EXHIBIT C

Geotechnical Exploration Data Report (GEDR)

Geotechnical Exploration Data Report

Eagle Creek Flood Basin

July 28, 2023

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GEOTECHNICAL EXPLORATION DATA REPORT

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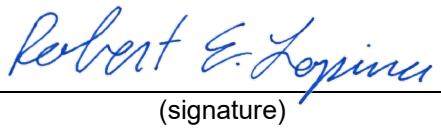
Prepared by  (signature)

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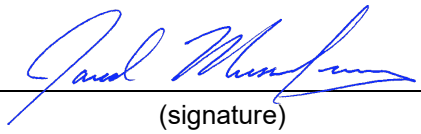
Reviewed by  (signature)

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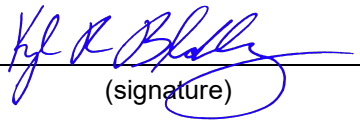
Approved by  (signature)

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Executive Summary

As part of the Hancock County Flood Risk Reduction (HCFRR) Program, the Maumee Watershed Conservancy District (MWCD) is planning a flood storage basin on Eagle Creek. The proposed Eagle Creek Flood Basin is intended to provide storage during flood events to reduce the peak flow rates in Eagle Creek and the Blanchard River, thereby reducing the water surface elevations and risk of flooding and associated damages downstream of the project area, near Findlay, Ohio.

Stantec conducted a geotechnical exploration to support design of the flood basin. One-hundred twenty (120) borings were advanced, and six (6) test pits were excavated to provide geotechnical data used to support the design of the flood storage basin. Soil sampling included both disturbed (Standard Penetration Testing (SPT) and bulk sampling) and undisturbed (Shelby Tube (ST)) methods. Rock coring was also completed in select borings to facilitate sampling and hydraulic pressure testing. During the exploration, twenty-nine (29) open standpipe piezometers were installed. Twenty-five (25) of the open standpipe piezometers were outfitted with electronic transducers for data collection. These twenty-five (25) piezometers were developed, and in-situ slug testing was conducted. Piezometers were monitored and data was used to provide information supporting a Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a) as reported under separate cover.

A laboratory testing program was conducted on samples of subsurface materials collected at the site, to support subsequent design analyses. Soil testing was performed to characterize the soil type, shear strength, hydraulic conductivity, and other material properties. The table below shows a summary of the laboratory testing performed. This report includes methods and results of the exploration and laboratory programs.

Laboratory Testing Summary

Laboratory Test	ASTM Test No.	Number of Tests	Laboratory Test	ASTM Test No.	Number of Tests
Natural moisture content	D2216	1,054	CD direct shear (1-point)	D3080	7
Particle size analysis	D422	153	Hydraulic conductivity (falling head)	D5084	12
Atterberg limits	D4318	147	Consolidation	D2435	42
Soil classification	D2487	147	Soil water characteristic curve	D6836	3
Specific gravity	D854	33	Double hydrometer	D4221	6
Unit weight determination	D7263	120	Pinhole	D4647	6
CU triaxial compression (1-point)	D4767	24	Crumb	D6572	6
UU triaxial compression (1-point)	D2850	31	Soil resistivity	G57	8
Unconfined compression	D2166	1	Standard/Modified Proctor	D698/ D1557	17

Abbreviations

ASTM	American Society for Testing and Materials
C_c	Compression Index
C_r	Recompression Index
CD	Consolidated-Drained Direct Shear Test
cm/sec	Centimeters per second
CME	Central Mine Equipment (Drill Rig Manufacturer)
CU	Consolidated-Undrained Triaxial Compression Test
e	Void Ratio
ER	Engineering Regulation (published by USACE)
HCFRR	Hancock County Flood Risk Reduction
hr	Hour
k_v	Vertical Hydraulic Conductivity
lbf	Pounds-force
mm	Millimeter
MPa	Megapascal
MWCD	Maumee Watershed Conservancy District
NAD83	North American Datum 1983
NAVD88	North American Vertical Datum 1988
NQ	Rock Core System returning 1.875-inch diameter sample
OUPS	Ohio Utility Protection Service
pcf	Pounds per Cubic Foot
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
RQD	Rock Quality Designation
σ_p'	Preconsolidation Pressure
SPT	Standard Penetration Test
ST	Shelby Tube

s_u	Undrained Shear Strength
SWCC	Soil Water Characteristic Curve
tsf	Tons per Square Foot
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UTV	Utility Terrain Vehicle
UU	Unconsolidated-Undrained Triaxial Compression Test

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND, OVERVIEW, AND OBJECTIVES

As part of the Hancock County Flood Risk Reduction (HCFRR) Program, the Maumee Watershed Conservancy District (MWCD) is planning a flood storage basin on Eagle Creek to reduce flooding near Findlay, Ohio. The proposed Eagle Creek Flood Basin is intended to provide storage during flood events to reduce the peak flow rates in Eagle Creek and the Blanchard River, thereby reducing the water surface elevations and risk of flooding and associated damages downstream of the proposed project area. Stantec Consulting Services Inc. (Stantec) was contracted by MWCD to perform engineering and design services for the project, including the geotechnical exploration reported herein.

Figure 1 shows the preliminary site layout for the Eagle Creek Flood Basin. Eagle Creek flows south to north, and is a tributary to the Blanchard River, with a confluence in the central portion of the City of Findlay. The proposed flood storage basin is located approximately 4 miles south of the City of Findlay downtown. The proposed flood basin includes an approximately 3.75-mile-long embankment dam, anticipated to be up to 30 feet tall. Other design components include principal and auxiliary spillway structures, exterior drainage, and interior drainage and land use. This report summarizes the geotechnical field and laboratory data collected to support design of the project components.

Introduction

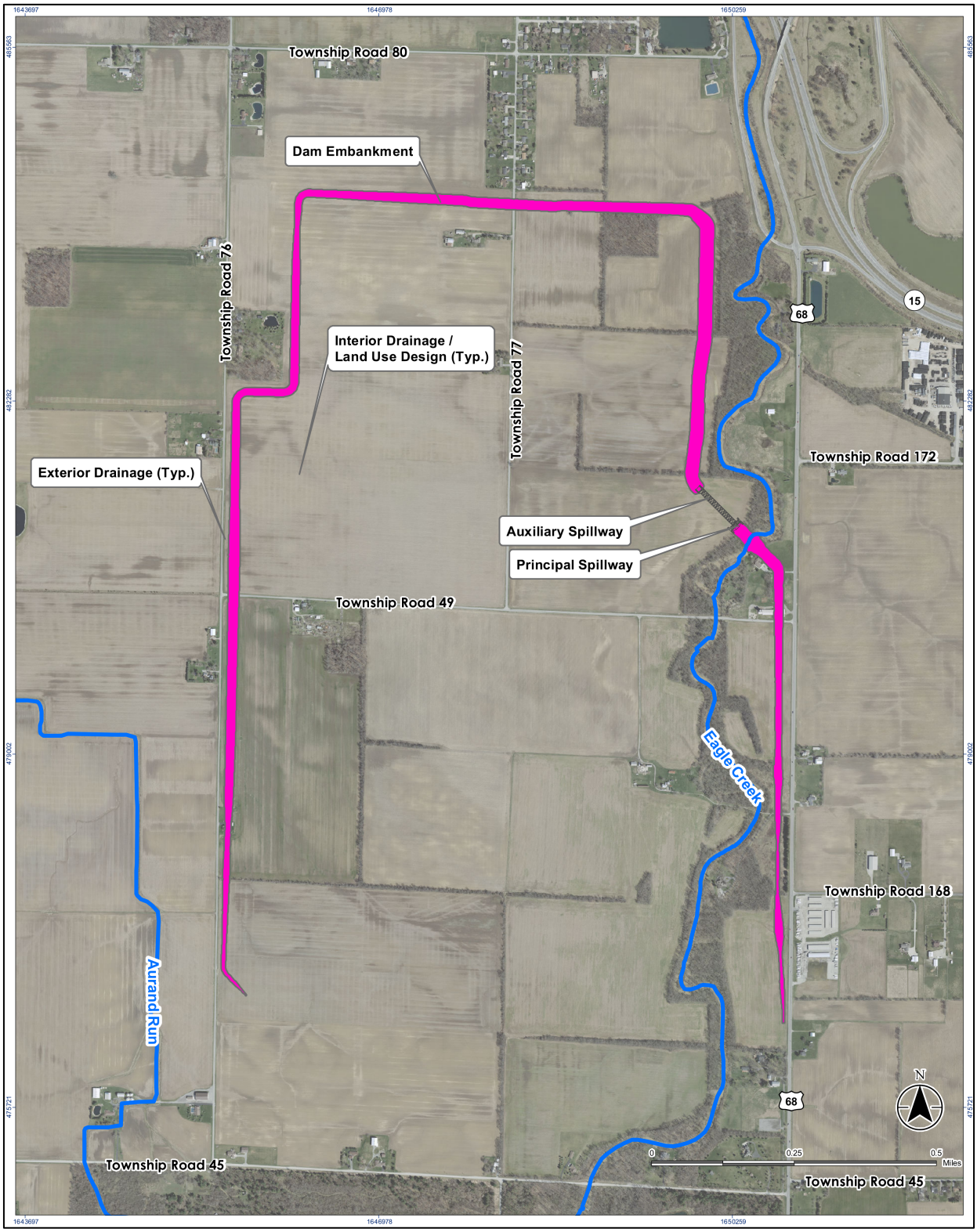

Figure 1. Site Layout

1.2 LIMITATIONS

The methods and locations of the subsurface exploration were selected to gather information to support design of the proposed flood storage basin. The exploration specifically targeted materials below the proposed embankment footprint and near the anticipated spillway structures and potential borrow sites. The field and laboratory testing were based on the project alignment and structure locations anticipated at the time of exploration. The methods used in this field exploration include inherent limitations as described below.

The information presented herein was gathered from the borings advanced during this exploration using that degree of care and skill ordinarily exercised under similar circumstances by competent members of the engineering profession. However, no warranties can be made regarding the continuity of conditions between borings.

The boring logs (provided in Attachment A-3) describe subsurface conditions at the specific locations at the time of drilling. The groundwater levels will fluctuate over time with the proposed flood storage basin water level, weather conditions, and/or other influences.

Piezometric data collected at the project site were recorded between May 2021 and September 2022. These may or may not reflect long term high or low piezometric conditions, as water levels will fluctuate over time.

2.0 GEOTECHNICAL EXPLORATION PROGRAM

2.1 WORK SITE CONDITIONS

Two phases of field exploration were completed to support design of the proposed flood storage basin. The two phases are identified as the preliminary design field exploration and the final design field exploration.

The preliminary design field exploration program started on December 7, 2020 and concluded on March 10, 2021. During this exploration phase, average onsite temperatures were between 20ºF to 45ºF. The weather consisted of cool to freezing conditions with strong winds and ground surfaces were generally damp or saturated.

The final design field exploration program started on March 5, 2022 and concluded on March 24, 2022. During this exploration phase, average onsite temperatures were between 70ºF to 90ºF. The weather consisted of mostly clear or partially clear days. Some inclement weather occurred to the extent of pausing work.

2.2 SITE ACCESSIBILITY, LOGISTICS, AND SAFETY

Prior to mobilization of the drill crews, boring locations were selected, located by a licensed surveyor, and staked in the field with wooden lathes and white flagging. Boring locations were accessed with drill rigs and support vehicles from township roads and traveling along the edges of the properties to reduce the risk of damage to agricultural fields and residential properties. The drill crews also used a four-wheel drive UTV as needed during the preliminary design field exploration to access the drilling locations and traverse the project site.

Two drill crews conducted the preliminary design field exploration, and one drill crew conducted the final design field exploration. The drill crews included a driller, driller's helper, and field engineer to coordinate the drilling activities. One of the responsibilities of the engineer was to communicate with the project team on a daily basis to coordinate work activities, resolve potential conflicts, and promote the health and safety of the work crew. The goal was to complete the work on this site without incidents of any type; no injuries, no illnesses, no impacts to the environment or to property and equipment. In order to achieve this goal, the project team worked together to perform an effective hazard assessment. The team then established appropriate precautions and communicated these daily among project staff. Field staff were responsible for communicating changing field conditions to the project manager, so these conditions and appropriate precautions could be reevaluated as needed. No lost-time incidents were recorded during the execution of the field work.

2.2.1 Utility Clearance

Stantec contacted the Ohio Utilities Protection Service (OUPS) in an attempt to locate underground utilities at the project site prior to beginning field work. Stantec also coordinated with MWCD to contact

local property owners regarding the presence of buried agricultural drainage tiles. Overhead powerlines near boring B-3.55 caused the boring to be offset approximately 30 feet south along the proposed embankment alignment. Boring B-3.85 was relocated approximately 40 feet south to avoid an existing structure on the property. Boring B-4.19 was moved approximately 30 feet north of the planned location to avoid an existing electric line, trees, and a residential driveway. No additional conflicts were identified by OUPS, Stantec, or the local property owners, and no utilities were disturbed during the geotechnical exploration.

2.2.2 Environmental Protection

Stantec's field activities were performed using methods that seek to reduce the risk of introduction of contaminated materials onto the ground or into underground water sources. The drill crews monitored the use of lubricating oils, hydraulic fluids, and other products involved in the drilling operations, such that accidental releases to the environment were avoided.

2.2.3 Waste Collection and Soil Cuttings Disposal

Waste generated during the execution of the geotechnical explorations was generally limited to trash derived from drilling, sampling, and instrumentation equipment packaging. Waste was collected by the drill crews as it accumulated and was disposed of offsite.

Soil cuttings were dispersed around the boring locations to reclaim areas disturbed by the drill rigs or support vehicles. Water used to support the drilling program was obtained from Eagle Creek. No water was released into existing water bodies by the drilling methods or field work activities.

2.3 BORING/TEST PIT LOCATIONS

2.3.1 Boring/Test Pit Plan and Layout

Stantec advanced ninety-four (94) borings during the preliminary design field exploration to obtain geotechnical data for the Eagle Creek Flood Basin. Sixty-nine (69) of those borings were located along the proposed embankment alignment and at five (5) selected embankment cross sections. The borings along the alignment were spaced at approximately 200-foot intervals in areas with a proposed embankment height greater than 10 feet, and 400-foot intervals in areas with a proposed embankment height less than 10 feet. Borings at the selected cross sections were located on the proposed alignment and at the upstream and downstream toes of the proposed embankment. The cross sections were selected near proposed structure locations and areas of taller embankment fills.

Ten (10) borings advanced during the preliminary design field exploration were located at regular intervals approximately 400 feet upstream from the toe of the proposed embankment to evaluate the thickness and continuity of an upper fine-grained soil layer. Thirteen (13) borings were located within the interior of the basin to classify and quantify potential borrow materials. Two (2) borings were advanced in the vicinity of the proposed auxiliary and principal spillway structures.

The final design field exploration included the advancement of twenty-six (26) borings and the excavation of six (6) test pits. Ten (10) borings and the six (6) test pits were located in the borrow pit areas identified during preliminary design. Thirteen (13) borings were located at the location of the proposed spillway structures, which was selected during preliminary design. Three (3) borings were located along the eastern alignment of the embankment dam, adjacent to Eagle Creek.

A summary of the borings and test pits advanced for this project is provided in Attachment A-1. A boring and test pit layout and boring/test pit logs are provided in Attachment A-2 and Attachment A-3, respectively.

2.3.2 Sampling and Field Testing Summary

The geotechnical exploration included disturbed soil sampling in eighty-five (85) borings and undisturbed soil sampling in eleven (11) borings. Twenty-two (22) borings included both disturbed and undisturbed sampling. Two (2) borings were advanced without sampling to facilitate piezometer installation. Ninety (90) borings were advanced to auger or sampler refusal to estimate the top of rock elevation. Upon reaching auger refusal, rock coring was performed in forty-four (44) borings to sample and assess the upper 5 to 10 feet of the bedrock formation. Several bulk samples were obtained from auger cuttings in select borings and also from the six (6) test pits. Sampling methodology is discussed in Section 2.5.

Hydraulic pressure testing was performed on the bedrock within fifteen (15) of the borings advanced during the preliminary design field exploration. Details regarding the hydraulic pressure testing are discussed in Section 2.6.

A summary of the sampling conducted per boring and test pit is provided in Attachment A-1.

2.3.3 Survey

Prior to the start of the preliminary design exploration program, boring locations were surveyed and staked by Bockrath & Associates between December 2 and 3, 2020. Preliminary design phase borings were drilled at their staked locations except as described below.

Following the initial boring location survey, the proposed embankment alignment crossing Eagle Creek was revised based on a discussion with MWCD. Bockrath & Associates surveyed the updated locations of the planned borings and provided the boring coordinates and elevation data for the preliminary design program (94 borings) to Stantec on February 8, 2021.

After completing the planned geotechnical exploration, as-drilled boring locations were collected for select borings re-located due to utility or structure interferences, and for offset borings performed to obtain additional samples. These as-drilled locations were surveyed by Bockrath & Associates on October 6, 2021 and were provided to Stantec on October 14, 2021.

The boring locations for the final design exploration program were surveyed and staked by Bockrath & Associates on April 26 and 27, 2022. The coordinates and elevations were provided to Stantec on May 19, 2022. One boring (B-4.19) was relocated approximately 30 feet north of the planned location to avoid an existing electric line, trees, and a residential driveway.

Boring location coordinates were recorded per Ohio North State Plane (North American Datum (NAD) 83), with elevations surveyed per North American Vertical Datum of 1988 (NAVD88). The surveyed locations of the borings and test pits are summarized in Attachment A-1. A boring and test pit layout is presented in Attachment A-2.

2.3.4 Equipment

The drilling of borings/excavation of test pits (Section 2.4), sampling (Section 2.5), hydraulic pressure testing (Section 2.6), and piezometer installation (Section 2.9) operations were executed by Stantec personnel. The field crews used track-mounted drill rigs to advance the borings. Hollow-stem augers were used to drill and obtain disturbed and undisturbed samples of the soil overburden. At selected locations, NQ-sized coring equipment was used to collect bedrock samples. The energy ratio of the automatic hammers and drill rod systems was measured for each of the drill rigs. Table 1 shows a list of rigs used in the program, along with the applicable energy ratio for each rig. The Automatic Hammer Energy Verification Reports are included in Attachment D-1.

Table 1. Drill Rigs Used

Drill Rig	Exploration Phase Used	Borings Drilled	Automatic Hammer Energy Ratio (%)	Date of Energy Ratio Verification
CME 55 Track-Mounted Drill Rig (Stantec Rig No. 711)	Preliminary Design	23	93.5	May 21, 2021
CME 45 Track-Mounted Drill Rig (Stantec Rig No. 815)	Preliminary Design	71	87.6	April 14, 2021
CME 55 Track-Mounted Drill Rig (Stantec Rig No. 709)	Final Design	26	89.8	February 23, 2021

Test pits were completed using a 6,000-pound miniature excavator (John Deere, Model 27D). A standard bucket was used to excavate the soil.

2.4 DRILLING/EXCAVATION METHODS

Although this exploration was conducted prior to construction of the embankment, borings were advanced using hollow-stem augers in accordance with the guidelines presented in ER 1110-1-1807, “Drilling in Earth Embankments and Levees” (USACE 2014). Hollow stem augering was completed in general accordance with ASTM D6151.

The test pits were excavated within a rectangular footprint (generally 4 feet by 10 feet). The test pits were excavated to depths ranging from 4.5 to 6.0 feet. The actual dimensions of the excavation were recorded and are presented in the test pit logs in Attachment A-3.

2.5 SAMPLING METHODS OVERVIEW

Stantec performed disturbed and/or undisturbed sampling in one-hundred and eighteen (118) borings and six (6) test pits as summarized in Attachment A-1. The sampling was performed to develop a better

understanding of the subsurface profile in the project area and provide samples for subsequent laboratory testing.

2.5.1 Bulk Sampling

Bulk samples were obtained from thirteen borings as outlined in Attachment A-1. A total of thirteen (13) bulk samples were taken from auger cuttings and saved in a plastic bag. Thirty (30) bulk samples were obtained from the test pits and were saved in plastic buckets with lids.

2.5.2 Shelby Tube Sampling

Undisturbed Shelby tube sampling was performed in thirty-three (33) borings, as outlined in Attachment A-1, to provide specimens for subsequent laboratory testing. Stantec personnel selected the zones for undisturbed sampling based on the soil conditions encountered during the drilling process. Undisturbed soil sampling was conducted in accordance with ASTM D1587. Stantec drill crews paid particular attention to sampling, handling, storage, and transportation of the soil samples to reduce the disturbance of the recovered samples.

Once the tube was removed from the boring, the Stantec engineer measured the recovery and recorded the information on the boring logs. The Shelby tubes were sealed and labeled for shipping and storage and kept in a manner to reduce the risk of freezing or other weather exposure. Plastic caps were placed over the ends and secured with black vinyl tape. The tubes were stored in an upright position following sample preservation, during transportation to the laboratory, and until testing was complete.

2.5.3 Standard Penetration Test (SPT) Sampling

Disturbed SPT sampling was performed in one hundred and seven (107) borings, as outlined in Attachment A-1, to provide specimens for subsequent laboratory index testing used in characterizing the soil profiles. The SPT samples were driven with an automatic hammer and were collected in accordance with ASTM D1586. The SPT sampling consisted of dropping a 140-pound weight from a height of 30 inches to drive a split-spoon sampler 18 inches. Soil properties can be estimated by the SPT N-value, which is the number of blows it takes to drive the spoon the last 12 inches. This method is typically used to obtain soil samples, estimate the consistency or relative density of the soil, and to estimate the vertical extents of the subsurface soil horizons. The samples were logged in the field, placed into jars with an air-tight lid and transported to Stantec's geotechnical laboratory for testing.

2.5.4 Rock Coring

Upon encountering bedrock, rock coring was performed in forty-four (44) borings using NQ-size equipment. Recovery length and rock quality designation (RQD, ASTM D6032) percentage were recorded for the core runs. The recovery is a measurement of the core sample obtained from a core run. The RQD is measured by dividing the sum of intact rock core segments longer than four inches by the total length of the core run. These values are shown on the boring logs in Attachment A-3.

The recovered core specimens were digitally photographed and placed in labeled core boxes (wooden or cardboard). Following the guidance of ASTM D5079, the recovered core was temporarily stored onsite and later transported to the rock core storage warehouse at Stantec's Lexington, Kentucky location. Rock core photographs and summaries of observed rock discontinuities are provided in Attachment A-4.

2.6 HYDRAULIC PRESSURE TESTING

Hydraulic pressure testing in rock was performed in fifteen (15) borings. The pressure testing was conducted using a single-packer system. The Lugeon method of pressure testing was used to correlate the test results to hydraulic conductivity and condition of discontinuities within the rock mass. Details and results of the pressure testing are discussed in Section 4.1.2. Attachment C-1 contains the pressure testing data sheets and results.

Generally following the United States Department of the Interior, Bureau of Reclamation standard 7310, pressure testing was conducted using a single packer configuration. The pressure in the packer was allowed to equalize for up to ten minutes after inflation to develop an adequate seal. Testing was conducted using a five-stage Lugeon method. The maximum pressure applied during the test intervals was calculated by adding one-half pound per square inch (psi) per foot of vertical depth from the top of the boring to the midpoint of the test interval in the boring with a maximum pressure of 15 psi. The pressure was incrementally increased to the calculated maximum, and then decreased again in five total stages to complete the test.

Prior to testing at each location, the pressure was allowed to stabilize within the packer system. Following stabilization, the gauge pressure was maintained at a constant pressure for the duration of the stage. The quantity of flow at each stage was measured over a five-minute interval. The top and bottom of the testing interval, test pressure, and meter reading were recorded at one-minute intervals. The average flow over each timed period was used to calculate the Lugeon value.

2.7 INSPECTION AND LOGGING

The three-person field crews included a driller, a driller's helper, and a field engineer to serve as an inspector. The engineer monitored the drilling operations, maintained boring logs, and communicated subsurface conditions encountered with the project team to facilitate revisions to the exploration program when appropriate. The engineer was also responsible for collecting, logging, and securing samples from the drilling operations and recording the information on Stantec subsurface logs. During the sampling operations, particular attention was paid to soil type, color, texture, plasticity, moisture content, consistency or relative density (as applicable), and apparent changes in material index properties. Significant features of rock cores were noted along with the elevation and depth of those features, as well as the percent recovery and RQD for each coring run. The boring and test pit logs are presented in Attachment A-3.

2.8 BORING/TEST PIT COMPLETION

Upon completion of drilling and sampling activities, borings were backfilled as detailed in the following sub-sections.

2.8.1 Backfill of Borings without Instrumentation

Borings were backfilled with bentonite-cement grout. A tremie pipe was lowered to the bottom of each borehole and grout was injected as the drilling tools were removed to displace water and remaining soil cuttings, providing a seal within the boring. Backfill grout was mixed with the following proportions:

- 30 gallons of water
- 94 lbs. of Portland Cement
- 25 lbs. of Bentonite

This produced a mix with a Water : Cement : Bentonite (W : C : B) ratio (by weight) of 2.7 : 1.0 : 0.3.

2.8.2 Backfill of Borings with Instrumentation

See Section 2.9.1 for backfilling methodology in borings with piezometers.

2.8.3 Backfill of Test Pits

Each test pit was backfilled with soils that had been excavated during test pit operations. Soil was compacted using the mini-excavator bucket and track.

2.9 INSTRUMENTATION

The subsurface exploration included the installation of twenty-nine (29) piezometers at selected locations across the proposed project site. Twenty-five (25) were installed during the preliminary design field exploration, and four (4) were installed during the final design field exploration. The instruments were installed in general accordance with ASTM D5092. The piezometers were installed as open standpipe piezometers. The piezometers installed during the preliminary design field exploration were subsequently outfitted with electronic transducers and data collectors to monitor and aid in the understanding of the piezometric conditions existing at the project site. The piezometers also provided a means to perform in-situ permeability tests (slug tests) on native soils at specific locations and within targeted material types. Slug testing was performed on the piezometers installed during the preliminary design field exploration.

2.9.1 Installation

The piezometer installation and development were performed under the direction of a geotechnical engineer who was experienced with this type of piezometer and had prior knowledge/training on the installation process. Piezometer installation records were drafted for each piezometer. The installation records include notes and details of the installation process and are provided in Attachment B-1.

Prior to the field exploration, screen intervals were estimated for the twenty-nine (29) piezometer locations to target the varying soil horizons across the project site. Actual screen intervals were selected in the field based on the conditions encountered in the borings. Upon completion of the borings, the piezometer was installed through the annulus of the hollow-stem augers to the targeted depth.

The piezometers were constructed with two-inch diameter, Schedule 40 PVC riser pipe. The well screen had 0.010-inch slotted openings and the bottom joint of the screen was fitted with a sealed cap. During the preliminary design field exploration, piezometers were installed to evaluate hydraulic pressures within targeted subsurface soil horizons; therefore, 5-foot long well screens were installed. During the final design field exploration, the piezometers were installed to evaluate general groundwater levels around the proposed spillway structure to inform construction conditions. For this purpose, 10-foot long well screens were installed. After installation of the screen and riser, the field crews slowly poured a 20/40 mesh sand to construct a filter zone extending above and below the screened interval.

The filter sand used to construct the piezometers had less than two percent by weight passing the number 200 sieve and did not contain deleterious quantities of organic matter or soft, friable, thin, or elongated particles in accordance with the quality requirements in ASTM C33.

Above the filter sand zone, an approximately two-foot thick or greater bentonite pellet seal layer was typically installed. Piezometer B-3.1 had a one-foot bentonite seal at the top of the borehole annulus due to the limited depth of the overall installation. In locations where the targeted screened elevation was significantly above the boring termination elevation, bentonite pellets were poured to within one foot below the sand filter zone. The crews allowed the bentonite seal to hydrate for a minimum of 30 minutes in accordance with the manufacturer’s specifications. The remaining borehole annulus was backfilled with non-shrink, bentonite-cement grout using the tremie-method. In some instances, the bentonite pellet seal extended to the top of the borehole annulus and no grout was installed.

The open-standpipe piezometers installed during the preliminary design field exploration were outfitted on May 5, 2021, with Levelogger 5 Water Level Datalogger transducers manufactured by Solinst Canada Ltd. The transducers are non-vented and were set to record pressure (psi) and temperature readings (Degrees Fahrenheit) every 15 minutes. To perform atmospheric pressure corrections to the readings recorded by the transducers, a Barologger 5 Datalogger barometer was installed in one piezometer location to measure changes in atmospheric pressure. Transducers were not outfitted in the piezometers installed during the final design field exploration.

Solinst Levelogger 5 transducers were installed within selected open-standpipe location to targeted depths below ground surface. The transducers were installed such that the instrument would typically remain submerged throughout the monitoring life. The transducers were attached to the cap of the open standpipe with a 1/16-inch stainless steel cable. Slug testing, as outlined in Section 2.9.3, was performed within the completed piezometers installed during the preliminary design field exploration to evaluate their functionality and provide information for calculating total hydraulic conductivity values within the screened zones.

Attachment B-2 contains the piezometer summary table.

2.9.2 Development

Stantec completed piezometer development on March 10, 2021, for the instruments installed during the preliminary design field exploration. Prior to development, water levels were recorded using a portable water level indicator. Development consisted of removing water from the piezometer with a battery powered pump until improved clarity was returned. Once the development was completed, the bottom depth of the piezometer was checked for consistency with the installation log.

The piezometers installed during the final design field exploration were intended only to inform general water levels to be expected during construction. Since no slug testing or transducer installation was to be performed, these piezometers were not subjected to the development process.

2.9.3 Slug Testing

Following instrument development and allowing time for recharge, Stantec returned to the site to perform slug testing of the piezometers installed during the preliminary design field exploration. Slug testing was not performed on the piezometers installed during the final design field exploration. The slug tests were performed in accordance with ASTM D4044 and Stantec's standard operating procedure. A pressure transducer with a data recorder manufactured by In-Situ, Inc. was used to collect the water level information.

An initial measurement of the static water level was recorded using a portable water level indicator. Then, the pressure transducer was inserted into the pipe. A slug (4-foot long and approximately 1-inch in diameter) was then lowered into the open standpipe, causing the water level to rise. The water levels were then recorded by the pressure transducer at regular intervals until 95 percent of the slug had dissipated, or the water level was within 5 percent of the static water level prior to the test.

The results were recorded electronically and downloaded into a data collector. Raw data was checked in the field for any discrepancies prior to demobilizing from the site. The results from slug testing are discussed in Section 4.1.4.

2.9.4 Monitoring

Stantec began a monitoring program after installation of the instruments listed in Attachment B-2. The purpose of the monitoring program was to obtain periodic water level readings from piezometers. To facilitate the water level data collection, electronic transducers were installed in the open standpipes as discussed in Section 2.9.1. Piezometer readings began at the time of transducer installation in May 2021. Readings were collected on 15-minute intervals. Stantec returned to the site in August 2021 to download the collected water level data for use in preliminary design.

In August 2021, eight (8) of the piezometers were observed to be damaged or were not properly recording data. Following the site visit in August 2021, six (6) of the eight (8) piezometer transducers were repaired or reset to properly record data. The remaining two transducers had sustained irreparable damage and were determined to be out of service. Specific discussions regarding the cause of transducer damage can be found in the Geotechnical Design Report (Stantec, 2023b).

A field visit was conducted in November 2021 to obtain additional piezometer data. Manual piezometer readings were collected from the instruments. Transducer data was obtained from nineteen (19) instruments. Three (3) instruments experienced software malfunctions and one (1) additional instrument was determined to be out of service, totaling three (3) instruments out of service during this site visit. One (1) of the previously out of service instruments was replaced and set to record data.

Another field visit was conducted in June 2022 to obtain additional piezometer data. Manual piezometer readings were collected from the instruments. Transducer data was recovered from three (3) instruments. Four (4) additional transducers were determined to be out of service, totaling six (6) instruments out of service. Sixteen (16) transducers experienced software malfunctions and were inactive (did not record data) between November 2021 and June 2022. The inactive transducers were re-activated so they would collect data prior to the next field visit.

Another data-collection field visit was made in September 2022. Manual piezometer readings were collected from the instruments. Transducer data was obtained from eleven (11) instruments. Six (6) additional instruments were determined to be out of service, totaling twelve (12) instruments out of service. Three (3) instruments experienced software malfunctions and did not record data.

A summary of the data collection history for each instrument is summarized in Table 2.

Table 2. Summary of Transducer Data Collection

Boring	Installation Date	August 2021	November 2021	June 2022	September 2022
B-3.1	1/19/2021	Data Acquired	Software Malfunction	Software Malfunction	Software Malfunction
B-3.14	1/28/2021	Out of Service	Out of Service	Out of Service	Out of Service
B-3.24	2/4/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.24 (Barometer)	2/4/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.30	1/20/2021	Data Acquired	Software Malfunction	Data Acquired	Data Acquired
B-3.31	1/20/2021	Data Acquired	Data Acquired	Software Malfunction	Out of Service
B-3.32	1/20/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.36	1/6/2021	Software Malfunction	Data Acquired	Software Malfunction	Software Malfunction
B-3.37	1/6/2021	Software Malfunction	Out of Service	Out of Service	Out of Service
B-3.38	1/5/2021	Software Malfunction	Software Malfunction	Data Acquired	Data Acquired
B-3.43	1/13/2021	Software Malfunction	Data Acquired	Software Malfunction	Out of Service
B-3.43a	1/13/2021	Software Malfunction	Data Acquired	Software Malfunction	Out of Service
B-3.44	2/17/2021	Software Malfunction	Data Acquired	Software Malfunction	Data Acquired
B-3.44a	2/4/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.45	2/4/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.45a	2/4/2021	Data Acquired	Data Acquired	Software Malfunction	Software Malfunction
B-3.51	3/8/2021	Data Acquired	Data Acquired	Software Malfunction	Out of Service
B-3.51a	3/8/2021	Data Acquired	Data Acquired	Out of Service	Out of Service
B-3.52	3/5/2021	Data Acquired	Data Acquired	Out of Service	Out of Service
B-3.52a	3/9/2021	Data Acquired	Data Acquired	Out of Service	Out of Service
B-3.53	3/4/2021	Data Acquired	Data Acquired	Out of Service	Out of Service
B-3.53a	3/9/2021	Out of Service	Out of Service (Replaced)	Data Acquired	Out of Service
B-3.61	2/3/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.72	1/18/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.76	1/13/2021	Data Acquired	Data Acquired	Software Malfunction	Data Acquired
B-3.82	2/2/2021	Data Acquired	Data Acquired	Software Malfunction	Out of Service

3.0 LABORATORY TESTING PROGRAM

3.1 GENERAL

The soil samples obtained during the exploration were subjected to laboratory testing performed by Stantec and GeoTesting Express. The laboratory tests were performed in accordance with applicable ASTM standard testing procedures.

In general, the laboratory analyses consisted of natural moisture content determinations, particle size analysis (sieve and hydrometer), Atterberg limits, specific gravity, unit weight, consolidated-undrained triaxial compression, unconsolidated-undrained triaxial compression, consolidated-drained direct shear, unconfined compression, consolidation, falling head permeability, soil water characteristic curve, dispersive clay (double hydrometer, pinhole, and crumb), soil resistivity, and standard and modified Proctor testing. Applicable test results were used to characterize the samples according to the Unified Soil Classification System (USCS).

The tests listed above supplemented the existing data from historical explorations. Laboratory testing also aided in defining the different soil horizons encountered at the project site, developing cross-sections used in engineering analyses, and characterizing the various subsurface materials encountered. A summary of the laboratory testing results, and individual test data sheets, are presented in Attachment E-2.

3.2 INDEX AND USCS CLASSIFICATION

Index testing was performed to determine soil classifications (ASTM D2487), develop a general understanding of expected soil behavior, and provide data for shear strength and hydraulic conductivity correlations. Additionally, index testing was used to evaluate the visual descriptions provided on the field boring logs. The testing consisted of natural moisture content determination (ASTM D2216), particle size analysis (ASTM D422), Atterberg limits (ASTM D4318), and specific gravity (ASTM D854). Unit weight determination (ASTM D7263) was also performed in conjunction with other tests.

3.3 SHEAR STRENGTH TESTING

3.3.1 Triaxial Compression Testing

Triaxial compression shear strength testing was performed on undisturbed samples of soils that were able to be extruded and trimmed from Shelby tubes, as well as remolded samples of potential borrow material.

Selected specimens were subjected to consolidated-undrained (CU) tests with pore pressure measurements for use in estimating both drained and undrained shear strength parameters. The CU tests were performed in accordance with ASTM D4767. Unconsolidated-undrained (UU) triaxial testing was performed in accordance with ASTM D2850 to provide a secondary means by which undrained strengths

could be estimated. The range of in situ and proposed vertical effective stresses was considered during the assignment of CU and UU triaxial laboratory testing. In general, the confining stress assigned to each specimen was equal to or greater than the in-situ vertical effective stresses estimated based on its location within the subsurface. Unconfined compressive strength testing (ASTM D2166) was conducted to provide an additional estimate of undrained shear strength.

3.3.2 Direct Shear Testing

Consolidated-drained (CD) direct shear testing (ASTM D3080) was performed on undisturbed and disturbed/remolded samples. Generally, coarse-grained native foundation soils were subject to CD testing to develop drained strength parameters. Where applicable, the tested coarse-grained soils were subject to ASTM D3080 gradation criteria, which removes particles larger than the number five sieve, prior to shear testing. The tests were generally performed under loading conditions representative of estimated field and proposed conditions. Disturbed samples were remolded to total unit weights estimated based on typical properties of similar materials. They were then consolidated under a range of vertical stresses representative of the in-situ and proposed effective stresses and sheared under drained conditions.

3.4 CONSOLIDATION TESTING

Consolidation tests were performed on select undisturbed samples per ASTM D2435 to estimate compressibility parameters of fine-grained native soils for use in settlement analyses.

3.5 HYDRAULIC CONDUCTIVITY TESTING

Falling head permeability (i.e., hydraulic conductivity) tests were performed on select undisturbed and remolded disturbed soil samples using a flexible wall permeameter, per ASTM D5084. Disturbed samples of potential fill soils were remolded to total unit weights based on results of standard Proctor testing (see Section 3.9). Samples were tested under a range of confining stresses representative of the effective stresses under loading from the proposed project configuration.

3.6 SOIL WATER CHARACTERISTIC CURVE

Soil Water Characteristic Curve (SWCC) testing was completed on undisturbed and remolded soil specimens. The tests were performed in accordance with ASTM D6836. The tests provided a material-specific relationship between volumetric water content and matric suction for use in seepage modeling of unsaturated materials. In addition, testing for the SWCC included natural moisture content, unit weight, and specific gravity determinations.

3.7 DISPERSIVE CLAY TESTING

A series of crumb (ASTM D6572), double hydrometer (ASTM D4221), and pinhole (ASTM D4647) tests were performed on representative soil samples to estimate if the materials are dispersive. Dispersive soils typically are more erodible than non-dispersive soils (other factors equal).

The soil specimens were maintained and tested at their as-received moisture content, as drying (especially oven drying) can alter dispersive characteristics. The crumb, double hydrometer, and pinhole tests are independent of one another. The crumb test is not applicable to soils with less than 12 percent fraction finer than 0.005 mm and a plasticity index less than or equal to 8, and the double hydrometer and pinhole tests are not applicable to soils with less than 12 percent fraction finer than 0.005 mm and a plasticity index less than or equal to 4.

3.8 SOIL RESISTIVITY TESTING

Soil resistivity testing was performed on select undisturbed and bulk samples per ASTM G57 to estimate corrosivity characteristics of the soil on the proposed structures.

3.9 STANDARD PROCTOR TESTING

Standard Proctor tests were performed per ASTM D698 on bulk samples of potential embankment fill soil. Methods A and B were followed, which use a 4-inch diameter Proctor mold, with three layers of material (screened to pass the No. 4 sieve for Method A and the 3/8-inch sieve for Method B) compacted by 25 blows (5.50-lbf hammer dropped at a height of 12 inches) per layer.

3.10 MODIFIED PROCTOR TESTING

Modified Proctor tests were performed per ASTM D1557 on bulk samples of potential embankment fill soil. Method A was followed, which uses a 4-inch diameter Proctor mold, with five layers of material (screened to pass the No. 4 sieve) compacted by 25 blows (10.00-lbf hammer dropped at a height of 18 inches) per layer.

4.0 RESULTS

4.1 FIELD EXPLORATION PROGRAM

4.1.1 Drilling Observations

4.1.1.1 Soil

Below 0.1 to 1.2 feet of topsoil, the soils encountered in borings advanced for this exploration can be categorized in one of the four soil layers defined for the project:

- Upper Fine-Grained material
- Upper Coarse-Grained material
- Lower Fine-Grained material
- Lower Coarse-Grained material

The Upper Fine-Grained material was encountered in each of the borings advanced for this exploration. The thickness of this layer ranged from 1.5 to 12.5 feet, averaging 6.6 feet. This soil typically classified as a lean clay (CL) with varying amounts of sand, with an average plasticity index of 17. This soil was typically described as brown to orange-brown.

The Upper Coarse-Grained material was typically encountered in the central and eastern portions of the proposed basin. The presence and thickness of this material generally increased in borings located closer to Eagle Creek, with thicknesses generally ranging between 2 and 6 feet. Samples that were classified in the laboratory typically classified as a silty sand (SM), clayey sand (SC), or a silty, clayey sand (SC-SM), with about 40 percent of the samples classifying as non-plastic. Samples that did exhibit plasticity had an average plasticity index of 8. This soil was typically described as gray, although it was common for the soil be described as brown at higher elevations. The Upper Coarse-Grained material was typically not encountered in the borings advanced along the western dam alignment.

The Lower Fine-Grained material exhibited increased sand and gravel content, less plasticity, and higher blow counts when compared to the Upper Fine-Grained material. This soil was encountered in most borings, with a typical thickness ranging between 4 and 10 feet. This soil typically classified as a lean clay (CL) with varying amounts of sand and gravel, with an average plasticity index of 11. Soils in this layer were typically described as gray. This layer was encountered below the Upper Fine-Grained material and was often interlayered with the Upper Coarse-Grained material.

The Lower Coarse-Grained material was typically encountered in the central and eastern portions of the proposed basin. The presence and thickness of this material generally increased in borings located closer to Eagle Creek, with thicknesses generally ranging between 1 and 5 feet. Where present, this layer was typically encountered directly above the top of bedrock; however, there were several instances where

fine-grained material was observed between this layer and the top of rock. The Lower Coarse-Grained material included visual and laboratory classifications indicating increased gravel content compared to the Upper Coarse-Grained material. Samples that were classified in this layer typically classified as non-plastic silty sand (SM), well-graded sand with silt (SW-SM), or silty, clayey sand (SC-SM). Approximately two-thirds of the samples classified as non-plastic. Samples that did exhibit plasticity had an average plasticity index of 5. This soil was typically described as gray or gray and black. Similar to the Upper Coarse-Grained material, the Lower Coarse-Grained material was typically not encountered in the borings advanced along the western dam alignment.

4.1.1.2 Bedrock

The depth to bedrock ranged from 6.5 feet (El. 801.6 feet) in B-3.1 to 25.3 feet (El. 773.8 feet) in B-3.27. A summary of the encountered bedrock depths and elevations is provided in Attachment A-1. The bedrock was described as gray dolomite with shale laminations, highly to slightly weathered, fractured to highly fractured, slightly rough to smooth, and thin to medium bedded. A hydro-carbon odor was typically observed near the top of rock. Recovery of the rock core runs ranged from 56 to 100 percent with an average of 98 percent. The RQD ranged from 0 to 100 percent, with an average of 31 percent. Fractured zones and water loss were noted in the bedrock until the termination depths. Rock core photos and descriptions of the observed discontinuities are included in Attachment A-4.

4.1.2 Hydraulic Pressure Testing

Water pressure testing was performed in fifteen (15) borings, as described in Section 2.6. The pressure testing was conducted to assist in estimating permeability and flow regimes through the bedrock. These tests were conducted with a single packer configuration following completion of rock coring.

Prior to testing at each location, the nitrogen pressure in the inflatable packer was allowed to stabilize for up to 10 minutes after inflation to develop an adequate seal. Following stabilization, the bypass valve was adjusted to apply the target pressure for each stage and the gauge was maintained at a constant pressure for the duration of the stage. The quantity of flow at each stage was measured on one-minute intervals during a five-minute pressure stage. The top and bottom of the testing interval, test pressure, and meter readings were recorded on field data forms. The average flow over each timed period was used to calculate the Lugeon value.

The Lugeon value is empirically defined as the hydraulic conductivity required to achieve a flow rate of 1 liter/minute per meter of test interval under a reference water pressure equal to 1 MPa (Equation 1).

$$Lugeon\ Value = \alpha \times \frac{q}{L} \times \frac{P_0}{P} \qquad \textbf{Equation 1}$$

Where: α = 12.42 (dimensionless factor for English units)
q = flow rate (gallons/minute)
L = Length (feet)
P_0 = 145 psi (reference pressure)
P = water pressure (psi)

Under ideal conditions (i.e., homogeneous and isotropic), one Lugeon is equivalent to 1.3 x 10^{-5} cm/sec (Quinones-Rozo, 2010). The published relationships provided in Quinones-Rozo (2010) were used to interpret the Lugeon values. Results of this interpretation are summarized in Table 3. Pressure testing calculation sheets are provided in Attachment C-1.

Table 3. Summary of Pressure Testing Results

Boring	Test Interval (feet)	Lugeon Value	Flow Potential Classification	Approximate Hydraulic Conductivity (cm/sec)	Condition of Rock Mass Discontinuities based on Lugeon value
B-3.2	13.0-20.0	0	Very Low	< 1 x 10^{-5}	Very tight
B-3.6	14.1-22.1	0	Very Low	< 1 x 10^{-5}	Very tight
B-3.10	15.4-23.4	0	Very Low	< 1 x 10^{-5}	Very tight
B-3.14	17.5-24.6	25	Medium	3.1 x 10^{-4}	Some open
B-3.18	21.5-28.5	49	Medium	5.9 x 10^{-4}	Some open
B-3.22	22.0-29.2	73	High	7.8 x 10^{-4}	Many open
B-3.26	22.5-29.7	23	Medium	2.9 x 10^{-4}	Some open
B-3.31	22.6-29.8	145	Very High	> 1 x 10^{-3}	Open closely spaced or voids
B-3.37	17.0-24.2	0	Very Low	< 1 x 10^{-5}	Very tight
B-3.44	22.0-29.4	11	Moderate	1.4 x 10^{-4}	Few partly open
B-3.45	22.5-29.8	44	Medium	5.3 x 10^{-4}	Some open
B-3.49	16.5-24.2	35	Medium	4.3 x 10^{-4}	Some open
B-3.52	17.5-24.7	46	Medium	5.5 x 10^{-4}	Some open
B-3.56	27.5-35.9	180	Very High	> 1 x 10^{-3}	Open closely spaced or voids
B-3.60	21.2-29.2	0	Very Low	< 1 x 10^{-5}	Very tight

Note: Classification, hydraulic conductivity, and condition of rock mass discontinuities are based on Table 2 provided in Camilo Quinones-Rozo, P.E. (2010)

The Lugeon value and approximate hydraulic conductivity of the bedrock was generally highest near Eagle Creek in the southeast portion of the basin. Additional areas with high Lugeon and hydraulic conductivity values were observed near the area where the proposed embankment will cross Eagle Creek, and in the northwest corner of the proposed basin.

4.1.3 Piezometric Data and Slug Test Results

4.1.3.1 Observed Groundwater Conditions During Drilling

Historical water levels reported in previous project phases ranged between 4.0 to 15.0 feet below the ground surface, with the lowest water level elevation of 781.5 feet recorded on the eastern side of the project area.

Water levels during drilling were observed between 1.4 to 18.5 feet below the ground surface with the lowest water level elevation of 778.7 feet in boring B-3.44a and the highest water level elevation of 804.1 feet in boring B-3.61. Groundwater was observed in 96 of the 126 borings/test pits during exploration. The encountered water levels are recorded on the boring logs in Attachment A-3.

4.1.3.2 Monitored Groundwater Conditions

As discussed in Section 2.9, twenty-nine (29) open standpipe piezometers were installed as part of the field explorations. The installation logs and a summary table are included in Exhibit B-1 and Exhibit B-2, respectively. A Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a) was developed to present the results of aquifer testing, interpretation of groundwater movement, and construction of a three-dimensional subsurface model to support the design. The memorandum can be found as an exhibit to the Geotechnical Design Report (Stantec, 2023b), and results of the hydrogeological review are summarized in the subsections below.

Water levels were recorded at 15-minute intervals at 17 of the 29 piezometers using electronic transducers. A barometric pressure transducer was also set up on site to record every 15-minutes. The barometric pressure data was used to correct the non-vented pressure transducer data.

Hydrographs (groundwater and surface water elevations with respect to time) for 2021 and 2022 are provided in the Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a) and are included in this report as Attachment B-3. The Eagle Creek water surface elevations at USGS stream gauge (04188496) were downloaded from the USGS hydrologic inventory. The hydrographs show Eagle Creek water surface elevations, groundwater level recordings for piezometers with available data, and precipitation data from the NOAA station USW00014825. The location of the USGS stream gauge is shown on figures within the Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a).

Groundwater elevations typically reflect variations in precipitation and seasonal patterns that influence local groundwater recharge through direct infiltration. Precipitation events result in a rise in groundwater and surface water levels. Flooding along Eagle Creek was reported at the site on May 10, 2021.

Groundwater and surface water levels appear to rise and fall together, indicating a groundwater-surface water interaction. Groundwater levels in piezometers located near Eagle Creek such as B-3.51A, B-3.51, B-3.52A, B-3.52, and B-3.53 respond similarly to Eagle Creek surface water levels. Groundwater levels in piezometers located farther from Eagle Creek appear to be less responsive to the surface water.

The 2021 hydrograph shows groundwater elevations were higher during May 2021 (spring) than during August 2021 (summer). This is likely a seasonal pattern. Groundwater at the site was recorded between approximate elevations of 782 and 807 feet NAVD88. The depth to groundwater at the site was variable, due to topography, depth to bedrock, and seasonal fluctuations. The average depth to groundwater below ground surface on May 5, 2021 and August 31, 2021 was 3.4 feet and 6.1 feet, respectively. Groundwater was observed to generally mimic the surface topography below the ground surface. Additional observations of the piezometric conditions along with groundwater contour maps interpreted from the

data can be found in the Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a).

4.1.4 Slug Testing

Single well instantaneous displacement testing (slug testing) was conducted to estimate site-specific horizontal hydraulic conductivity in the screened intervals of select piezometers. Stantec personnel performed rising head and falling head slug tests on May 5, August 31, and September 1, 2021, at twenty-four (24) piezometer locations, as described in Section 2.9.3. Due to an insufficient amount of water in boring B-3.1, a planned slug test was unable to be performed. Slug testing was performed in borings B-3.37 and B-3.44 but the data acquired from the testing came back inconclusive and was discarded from the analysis.

Horizontal hydraulic conductivities for confined and unconfined water bearing zones were calculated using standard slug test response evaluation methods. Methods and results of the slug testing analyses are reported in the Hydrogeological and Geological Review Technical Memorandum (Stantec, 2023a).

The hydraulic conductivity values observed from slug testing ranged from 1.2 to 170.1 feet per day (4.2×10^{-4} to 6.0×10^{-2} centimeters per second). The lowest hydraulic conductivity value was observed at piezometer B-3.72 within the Lower Fine-Grained unit and the highest hydraulic conductivity value was observed at piezometer B-3.82, which was mostly screened within the Lower Coarse-Grained unit.

4.2 LABORATORY TESTING PROGRAM

A summary of the completed laboratory tests is presented in Table 4. Tabulated laboratory results are included in Attachment E-1, and individual laboratory data reports for the specific tests performed are provided in Attachment E-2.

Results

Table 4. Laboratory Testing Summary

Laboratory Test	ASTM Test No.	Number of Tests
Natural moisture content	D2216	1,054
Particle size analysis	D422	153
Atterberg limits	D4318	147
Soil classification	D2487	147
Specific gravity	D854	33
Unit weight determination	D7263	120
CU triaxial compression (1-point)	D4767	24
UU triaxial compression (1-point)	D2850	31
Unconfined compression	D2166	1
CD direct shear (1-point)	D3080	7
Hydraulic conductivity (falling head)	D5084	12
Consolidation	D2435	42
Soil water characteristic curve	D6836	3
Double hydrometer	D4221	6
Pinhole	D4647	6
Crumb	D6572	6
Soil resistivity	G57	8
Standard Proctor	D698	14
Modified Proctor	D1557	3

4.2.1 Index and USCS Classification

The results of the index testing and USCS classifications are summarized in the subsections below.

4.2.1.1 Natural Moisture Content

The natural moisture content test results are summarized in the tables in Attachment E-1. The moisture contents are reported on the laboratory reports for moisture content, soil summary, consolidated-undrained triaxial compression, unconsolidated-undrained triaxial compression, consolidated-drained direct shear, unconfined compression, consolidation, hydraulic conductivity, soil water characteristic curve, and soil resistivity included in Attachment E-2.

4.2.1.2 USCS Classification, Atterberg Limits, and Particle Size Analysis

The Atterberg limits, fines content results, and USCS classification for tested samples are tabulated in Attachment E-1. The detailed laboratory reports are located in Attachment E-2.

4.2.1.3 Unit Weight and Specific Gravity

The unit weight and specific gravity test results for tested samples are tabulated in Attachment E-1. Unit weights were measured from trimmed Shelby tube specimens as part of the extrusion process prior to the samples being testing for shear strength, consolidation, or hydraulic characteristics. Therefore, unit weights and specific gravity results are presented on laboratory reports for soil summary, consolidated-undrained triaxial compression, unconsolidated-undrained triaxial compression, consolidated-drained direct shear, unconfined compression, consolidation, falling head hydraulic conductivity, and soil water characteristic curve tests. The detailed laboratory test reports are found in Attachment E-2.

4.2.2 Shear Strength Testing

4.2.2.1 Triaxial Compression Testing

The results of the CU triaxial compression tests are summarized in Table 5. The laboratory test reports for the Consolidated-Undrained (CU) triaxial compression tests with pore pressure measurements are included in Attachment E-2.

The results of the UU triaxial compression tests are summarized in Attachment E-1. The laboratory test reports for the unconsolidated-undrained (UU) triaxial compression tests are included in Attachment E-2.

The result of one unconfined compression test is summarized in Table 6. The laboratory test report for the unconfined compression test is included in Attachment E-2.

Table 5. Consolidated-Undrained Triaxial Compression Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Confining Stress (tsf)	Drained Failure[1]		Undrained Failure[2]	
				p' (tsf)	q (tsf)	p (tsf)	q (tsf)
B-3.44a[3]	2.0-2.5	790.2-790.7	0.27	0.34	0.26	0.68	0.42
	2.5-3.0	789.7-790.2	0.65	1.03	0.65	1.66	1.01
	4.1-4.6	788.1-788.6	1.01	1.31	0.66	1.82	0.82
B-3.45a[3]	4.2-4.7	787.6-788.1	1.05	1.06	0.59	1.75	0.71
	4.8-5.3	787.0-787.5	1.39	1.80	0.96	2.49	1.10
	5.4-5.9	786.4-786.9	1.74	1.78	0.97	2.99	1.25
B-3.48a[3] B-3.48a B-3.50a	2.1-2.6	788.5-789.0	0.35	0.38	0.23	0.57	0.22
	2.6-3.1	788.0-788.5	0.67	1.00	0.62	1.57	0.90
	2.2-2.7	784.4-784.9	1.04	0.80	0.52	1.55	0.52
B-3.51a[3] B-3.51a B-3.53a	2.3-2.8	789.2-789.7	1.02	1.23	0.71	1.90	0.86
	2.8-3.3	788.7-789.2	1.44	1.68	0.98	2.67	1.23
	0.4-0.9	788.3-788.8	1.68	1.41	0.85	2.55	0.86
B-3.72[3, 4]	5.0-10.0	788.2-793.2	0.28	0.44	0.26	0.68	0.40
			0.64	0.66	0.36	1.11	0.47
			1.61	2.49	1.37	3.24	1.67
B-4.2	8.0-8.5	790.0-790.5	1.08	1.33	0.74	2.53	1.45
B-4.7	7.5-8.0	789.8-790.3	2.52	1.71	0.82	3.35	0.83
B-4.10	8.4-8.9	792.6-793.1	1.80	2.29	1.35	4.64	2.84
TP-4.1[4]	2.5-5.0	794.3-796.8	0.51	0.85	0.55	1.52	1.02
TP-4.2[4]	2.5-5.0	793.9-796.4	0.82	0.76	0.42	1.36	0.54
TP-4.3[4]	2.5-5.5	793.0-796.0	0.83	1.23	0.73	2.10	1.29
TP-4.4[4]	2.0-4.5	792.6-795.1	1.33	1.50	0.79	2.28	0.95
TP-4.5[4]	2.0-4.0	793.6-795.6	1.35	1.55	0.82	2.44	1.10
TP-4.6[4]	1.5-3.5	794.6-796.6	0.93	1.29	0.78	2.29	1.38

[1] Drained failure was considered to be at the maximum effective principal stress ratio

[2] Undrained failure was considered to be the greater of the maximum deviator stress or the deviator stress at 15 percent axial strain

[3] Three-point consolidated-undrained triaxial compression test completed

[4] Testing performed on remolded samples at estimated in-place density

Note: Stresses and p-q failure points are reported in units of tons per square foot (tsf)

Results

Table 6. Unconfined Compression Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Unconfined Compressive Strength (tsf)
B-3.43a	4.0-4.5	788.4-788.9	0.46

Note: Strength is reported in units of tons per square foot (tsf)

4.2.2.2 Direct Shear Testing

The results of the direct shear testing are presented in Table 7. See Attachment E-2 for the laboratory data sheets and stress plots.

Table 7. Direct Shear Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Shear Stress (tsf)	Normal Stress (tsf)
B-3.43a	8.0-8.5	784.4-784.9	0.92	1.65
B-3.48a[1]	4.1-4.7	786.4-787.0	0.41	0.36
			0.67	0.72
			1.01	1.08
B-3.48[1, 2] B-3.49 B-3.50 B-3.51 B-3.52 B-3.53	Various (7.5-18.4)	Various (772.7-782.6)	0.55	0.72
			1.22	1.44
			1.51	1.80

[1] Three-point direct shear test completed
[2] Testing performed on remolded disturbed samples at estimated in-place density. See laboratory outputs for specific test interval depths.
Note: Stresses are reported in units of tons per square foot (tsf)

4.2.3 Hydraulic Conductivity Testing

The results of the falling head hydraulic conductivity tests (vertical, k_v) for tested samples are summarized in Table 8. The detailed falling head hydraulic conductivity laboratory reports are located in Attachment E-2.

Table 8. Falling Head Hydraulic Conductivity Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Average Hydraulic Conductivity, k_v (cm/s)
B-3.43a	9.1-9.4	783.5-783.8	2.00×10^{-8}
B-3.45a	11.8-12.0	780.3-780.5	1.01×10^{-6}
B-3.49a	0.6-0.9	789.2-789.5	1.19×10^{-8}
B-3.51a	5.4-5.6	786.4-786.6	5.01×10^{-5}
B-3.52a	1.0-1.2	788.7-788.9	3.46×10^{-7}
B-3.76(1)	4.0-10.0	786.0-792.0	9.41×10^{-9}
B-3.83(1)	5.0-8.5	795.8-799.3	9.48×10^{-9}
B-3.48(2) B-3.49 B-3.50 B-3.51 B-3.52 B-3.53	Various (7.5-18.4)	Various (772.7-782.6)	2.20×10^{-6}
B-4.15	13.7-13.9	779.5-779.7	1.6×10^{-6}
TP-4.1(1)	2.5-5.0	794.3-796.8	5.82×10^{-9}
TP-4.3(1)	2.5-5.5	793.0-796.0	4.26×10^{-8}
TP-4.5(1)	2.0-4.0	793.6-795.6	2.09×10^{-8}

(1) Testing performed on remolded bulk samples at estimated in-place density.

(2) Testing performed on remolded specimen from multiple split-spoon samples at estimated in-place density. See laboratory outputs for specific test interval depths.

Note: Hydraulic conductivity reported in units of centimeters per second (cm/s)

4.2.4 Consolidation Testing

The results of the consolidation tests are summarized in the tables in Attachment E-1. The consolidation test results are presented in Attachment E-2. The tests were performed on select undisturbed samples to determine compressibility parameters. Preconsolidation pressure was estimated using the Casagrande method, and the compression index (C_c) was corrected for sample disturbance. Evaluation of the test results are shown graphically in Attachment E-2.

4.2.5 Soil Water Characteristic Curve

The SWCC test results are presented in Attachment E-2. The tests were performed on select undisturbed samples and provide a material-specific relationship between volumetric water content and matric suction for use in modeling unsaturated seepage.

4.2.6 Dispersive Clay Testing

Crumb, double hydrometer, and pinhole tests were performed on representative materials applicable to such testing. The ranges of potential results from the tests are presented in Table 9 and the results of the dispersive clay testing are presented in Table 10 and Attachment E-2.

Table 9. Dispersive Clay Testing – Possible Outcomes (per the respective ASTM Standards)

Test Type	Result Level	Result Description
Crumb (ASTM D6572)	Grade 1	No Reaction
	Grade 2	Slight Reaction
	Grade 3	Moderate Reaction
	Grade 4	Strong Reaction
Double Hydrometer (ASTM 4221)	<30% Dispersion	Nondispersive
	30 – 50% Dispersion	Intermediate
	>50% Dispersion	Dispersive
Pinhole (ASTM D4647)	Class ND1	Nondispersive
	Class ND2	
	Class ND3	Slightly to Moderately Dispersive
	Class ND4	
	Class D1	Dispersive
	Class D2	

Results

Table 10. Dispersive Clay Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Crumb (Grade)			Double Hydrometer (% Dispersion)	Pinhole (Class)
			2 min	1 hr	6 hr		
B-3.51a	0.0-2.0	790.0-792.0	1	1	1	1.5	ND1
			1	1	1		
B-3.72	5.0-10.0	788.2-793.2	1	1	1	36.8	ND1
			1	1	1		
B-3.74	8.0-10.0	787.5-789.5	1	1	1	26.4	ND1
			1	1	1		
B-3.76	4.0-10.0	786.0-792.0	1	1	1	24.5	ND1
			1	1	1		
B-3.80	5.0-10.0	790.3-795.3	1	1	1	24.4	ND1
			1	1	1		
B-3.83	5.0-8.5	795.8-799.3	1	1	1	27.1	ND1
			1	1	1		

4.2.7 Soil Resistivity Testing

The results of the soil resistivity tests are summarized in Table 11. The laboratory test reports for the soil resistivity tests are included in Attachment E-2.

Table 11. Soil Resistivity Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Resistivity at 15.5°C (Ω-cm)
B-3.44a	2.0-4.0	788.7-790.7	1,892
B-3.50a	2.0-4.0	783.1-785.1	1,416
B-3.50a	6.0-8.0	779.1-781.1	2,261
B-3.51a	8.0-10.0	782.0-784.0	1,488
B-3.53a	0.0-2.0	787.2-789.2	2,706
B-3.76	4.0-10.0	786.0-792.0	1,430
B-3.80	5.0-10.0	790.3-795.3	1,236
B-3.83	5.0-8.5	795.8-799.3	2,410

Note: Resistivity is reported in units of ohms-centimeters (Ω-cm)

4.2.8 Standard Proctor Testing

The results of the standard Proctor tests are summarized in Table 12. The laboratory data sheets of the standard Proctor tests are provided in Attachment E-2.

Results

Table 12. Standard Proctor Testing Summary

Boring	Sample Source Depth (feet)	Sample Source Elevation (feet)	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)
B-3.72	5.0-10.0	788.2-793.2	110.0	17.8
B-3.74	8.0-10.0	787.5-789.5	116.9	14.8
B-3.76	4.0-10.0	786.0-792.0	114.1	15.5
B-3.80	5.0-10.0	790.3-795.3	118.3	13.9
B-3.83	5.0-8.5	795.8-799.3	114.5	15.5
TP-4.1	2.5-5.0 Sample A	794.3-796.8	103.7	20.9
TP-4.2	2.5-5.0 Sample A	793.9-796.4	111.3	16.8
TP-4.3	2.5-5.5 Sample A(1)	793.0-796.0	116.6	14.3
TP-4.3	2.5-5.5 Sample B(1)	793.0-796.0	112.3	16.3
TP-4.4	2.0-4.5 Sample A	792.6-795.1	106.6	19.2
TP-4.5	2.0-4.0 Sample A(1)	793.6-795.6	108.3	17.9
TP-4.5	2.0-4.0 Sample B(1)	793.6-795.6	109.2	18.1
TP-4.6	1.5-3.5 Sample A(1)	794.6-796.6	116.5	14.8
TP-4.6	1.5-3.5 Sample B(1)	794.6-796.6	114.9	15.1

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple values.

Note: Unit weight is reported in units of pounds per cubic feet (pcf)

4.2.9 Modified Proctor Testing

The results of the modified Proctor tests are summarized in Table 13. The laboratory data sheets of the modified Proctor tests are provided in Attachment E-2.

Results

Table 13. Modified Proctor Testing Summary

Boring	Sample Source Depth (feet)	Sample Source Elevation (feet)	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)
TP-4.2 Sample B	2.5-5.0	793.9-796.4	125.2	10.9
TP-4.4 Sample B	2.0-4.5	792.6-795.1	120.7	12.6
TP-4.6 Sample C	1.5-3.5	794.6-796.6	125.6	10.7

Note: Unit weight is reported in units of pounds per cubic feet (pcf)

5.0 SUMMARY

The intent of the field and laboratory testing program was to supplement existing information to support the design of the Eagle Creek Flood Basin. This document summarizes the field and laboratory testing and data collection performed as part of preliminary and final design. The information reported was considered along with results of the previous geotechnical explorations to characterize the material parameters in the analysis models and evaluate the conditions of the proposed components of the Eagle Creek Flood Basin. Interpretations of the current and historical data are summarized for material characterization in the body of the Geotechnical Design Report (Stantec, 2023b).

6.0 REFERENCES

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ATTACHMENT A-1

Boring / Test Pit Summary

Attachment A-1. Boring/Test Pit Summary

Boring (B) / Test Pit (TP)	Northing	Easting	Ground Surface Elevation (feet)	Sampled Overburden Thickness (feet)	Top of Bedrock Elevation (feet)	Bottom of Boring Elevation (feet)	Sample/Test Type[(1)]
B-3.1	476889.6	1645626.4	808.1	6.5	801.6	800.8	SPT
B-3.2	477476.9	1645587.3	805.2	9.5	795.7	785.2	SPT, PT, RC
B-3.3	478072.1	1645587.3	803.2	14.5	788.7	788.7	SPT
B-3.4	478393.1	1645743.9	800.0	11.4	788.6	778.6	SPT, RC
B-3.5	478698.5	1645602.9	799.2	12.0	787.2	787.2	SPT
B-3.6	479003.9	1645595.1	798.7	12.1	786.6	776.6	SPT,PT, RC
B-3.7	479301.5	1645602.9	798.1	12.5	785.6	785.4	SPT
B-3.8	479586.5	1645601.6	798.0	13.8	784.2	773.8	SPT, RC
B-3.9	479886.0	1645610.8	797.2	10.0	787.2	783.8	SPT
B-3.10	480213.2	1645615.5	797.2	13.4	783.8	773.8	SPT, PT, RC
B-3.11	480429.8	1645615.5	796.8	14.2	782.6	782.6	SPT
B-3.12	480747.7	1645615.5	796.4	12.5	783.9	773.7	SPT, RC
B-3.13	481028.8	1645624.7	796.9	11.0	785.9	785.5	SPT
B-3.14	481323.7	1645629.3	799.1	13.5	785.6	774.5	SPT, PT, RC
B-3.15	481641.7	1645633.9	799.3	14.5	784.8	784.7	SPT
B-3.16	481895.1	1645638.5	800.1	18.2	781.9	771.8	SPT, RC
B-3.17	482365.1	1645850.5	800.9	20.0	780.9	780.8	SPT
B-3.18	482388.2	1646140.8	800.4	17.7	782.7	771.9	SPT, PT, RC
B-3.19	482637.0	1646168.4	800.2	19.8	780.4	780.4	SPT
B-3.20	482885.8	1646177.6	800.1	15.5	784.6	773.5	SPT, RC
B-3.21	483153.1	1646182.2	800.8	17.5	783.3	783.3	SPT
B-3.22	483480.3	1646186.9	801.4	17.5	783.9	772.2	SPT, PT, RC
B-3.23	483752.1	1646196.1	804.0	20.0	784.0	783.9	SPT
B-3.24	484060.9	1646338.9	801.9	17.5	784.4	774.1	SPT, RC
B-3.25	484065.5	1646633.8	800.7	18.2	782.5	781.9	SPT
B-3.26	484065.5	1646951.8	799.9	19.0	780.9	770.2	SPT, PT, RC
B-3.27	484056.3	1647228.3	799.1	25.3	773.8	772.6	SPT
B-3.28	484051.7	1647541.6	799.2	23.5	775.7	764.5	SPT, RC
B-3.29	484051.7	1647836.5	797.9	20.5	777.4	776.6	SPT
B-3.30	484047.1	1648131.4	797.6	20.2	777.4	776.7	SPT
B-3.31	483960.3	1648132.3	797.5	19.8	777.7	767.7	SPT, PT, RC
B-3.32	484152.7	1648129.5	797.3	19.8	777.5	777.5	SPT
B-3.33	484048.1	1648465.7	798.0	18.2	779.8	779.2	SPT
B-3.34	484029.7	1648820.7	797.6	20.7	776.9	766.9	SPT, RC
B-3.35	484034.3	1649171.0	797.5	19.5	778.0	778.0	SPT
B-3.36	483925.8	1649904.9	790.1	13.5	776.6	775.6	SPT
B-3.37	483988.2	1649996.1	790.0	13.5	776.5	765.8	SPT, PT, RC
B-3.38	484069.0	1650105.4	790.6	14.8	775.8	775.8	SPT
B-3.39	483753.1	1649996.1	790.9	13.7	777.2	775.6	SPT
B-3.40	483259.9	1650000.7	791.1	17.5	773.6	762.1	SPT, RC
B-3.41	482988.0	1650005.3	790.7	20.8	769.9	769.8	SPT
B-3.42	482377.2	1649995.9	793.6	18.5	775.1	762.9	SPT, RC
B-3.43	481806.4	1649866.2	792.9	18.8	774.1	761.8	SPT, RC

Boring (B) / Test Pit (TP)	Northing	Easting	Ground Surface Elevation (feet)	Sampled Overburden Thickness (feet)	Top of Bedrock Elevation (feet)	Bottom of Boring Elevation (feet)	Sample/Test Type[1]
B-3.43A	481800.4	1649865.6	792.9	12.0[2]	-	780.9	ST
B-3.44	481797.8	1649953.1	792.6	18.5	774.1	763.2	SPT, PT, RC
B-3.44A	481790.8	1649953.0	792.7	14.0[2]	-	778.7	ST
B-3.45	481785.8	1650038.5	792.3	16.5	775.8	762.5	SPT, RC
B-3.45A	481779.5	1650037.5	792.3	16.5	775.8	772.9	ST
B-3.46	481381.5	1649912.1	793.4	18.6	774.8	764.8	SPT, RC
B-3.47	481162.9	1650130.1	793.7	17.5	776.2	764.7	SPT, RC
B-3.48	480936.6	1650369.7	791.1	17.5	773.6	761.9	SPT, RC
B-3.48A[3]	480936.6	1650369.7	791.1	6.0[2]	-	785.1	ST
B-3.49	480983.6	1650405.8	790.1	13.5	776.6	765.9	SPT, PT, RC
B-3.49A[3]	480983.6	1650405.8	790.1	6.0[2]	-	784.1	ST
B-3.50	481032.6	1650442.8	787.1	11.5	775.6	764.1	SPT, RC
B-3.50A[3]	481032.6	1650442.8	787.1	8.0[2]	-	779.1	ST
B-3.51	480884.4	1650455.7	791.3	15.4	775.9	765.9	SPT, RC
B-3.51A	480880.8	1650460.1	792.0	13.5[2]	-	778.5	ST
B-3.52	480930.8	1650491.2	789.2	14.4	774.8	764.5	SPT, PT, RC
B-3.52A	480925.7	1650497.0	789.9	10.5[2]	-	779.4	ST
B-3.53	480972.4	1650528.4	788.7	13.8	774.9	764.2	SPT, RC
B-3.53A	480964.8	1650536.6	789.2	12.0[2]	-	777.2	ST
B-3.54	480836.9	1650632.2	793.3	19.5	773.8	763.8	SPT, RC
B-3.55[4]	480183.1	1650719.4	800.3	23.4	776.9	766.4	SPT, RC
B-3.56	479719.9	1650715.1	802.3	24.0	778.3	766.4	SPT, PT, RC
B-3.57	479143.7	1650705.9	803.9	24.5	779.4	779.4	SPT
B-3.58	478581.3	1650701.3	803.3	21.5	781.8	771.8	SPT, RC
B-3.59	477936.0	1650696.7	806.8	22.9	783.9	783.9	SPT
B-3.60	477346.0	1650687.5	799.3	19.2	780.1	770.1	SPT, PT, RC
B-3.61	476686.9	1650696.7	808.1	24.5	783.6	783.6	SPT
B-3.62	478378.5	1646359.2	803.5	9.0[2]	-	794.5	SPT
B-3.63	479295.8	1646225.5	798.5	9.0[2]	-	789.5	SPT
B-3.64	480097.9	1646225.5	797.3	9.0[2]	-	788.3	SPT
B-3.65	481029.0	1646216.3	796.6	9.0[2]	-	787.6	SPT
B-3.66	481881.7	1646216.3	799.7	9.0[2]	-	790.7	SPT
B-3.67	482600.8	1646824.8	799.9	9.0[2]	-	790.9	SPT
B-3.68	483462.7	1646723.4	803.5	9.0[2]	-	794.5	SPT
B-3.69	483453.5	1647792.7	800.6	9.0[2]	-	791.6	SPT
B-3.70	483472.0	1648834.5	800.4	9.0[2]	-	791.4	SPT
B-3.71	483112.4	1649281.6	797.3	9.0[2]	-	788.3	SPT
B-3.72	483153.9	1648654.7	798.2	14.0[2]	-	784.2	SPT, Bulk
B-3.73	482411.8	1649221.7	794.6	14.0[2]	-	780.6	SPT, Bulk
B-3.74	481398.8	1647141.0	797.5	14.0[2]	-	783.5	SPT, Bulk
B-3.75	481388.9	1648303.3	797.3	14.0[2]	-	783.3	SPT, Bulk
B-3.76	481388.5	1649230.9	796.0	16.3	779.7	779.6	SPT, Bulk
B-3.77	480692.5	1648871.4	795.4	14.5	780.9	780.9	SPT, Bulk
B-3.78	480471.2	1647133.6	797.5	12.4	785.1	785.1	SPT, Bulk
B-3.79	479553.8	1647393.2	798.8	12.3	786.5	786.5	SPT, Bulk

Boring (B) / Test Pit (TP)	Northing	Easting	Ground Surface Elevation (feet)	Sampled Overburden Thickness (feet)	Top of Bedrock Elevation (feet)	Bottom of Boring Elevation (feet)	Sample/Test Type[1]
B-3.80	479499.4	1648486.3	800.3	14.0[2]	-	786.3	SPT, Bulk
B-3.81	478559.6	1647393.2	804.5	14.0[2]	-	790.5	SPT, Bulk
B-3.82	478539.8	1648506.1	801.1	14.0[2]	-	787.1	SPT, Bulk
B-3.83	477560.5	1647378.4	804.3	10.1	794.2	794.1	SPT, Bulk
B-3.84	477525.7	1648545.7	803.4	14.0[2]	-	789.4	SPT, Bulk
B-3.85[4]	480536.5	1650712.9	798.4	21.1	777.3	767.3	SPT, RC
B-4.1	478770.9	1646275.5	800.9	13.2	787.7	787.6	SPT, ST
B-4.2	479679.1	1646546.6	798.5	13.2	785.3	785.2	SPT, ST
B-4.3	480347.2	1646592.2	798.5	14.6	783.9	783.9	SPT, ST
B-4.4	481678.1	1646603.6	799.6	15.3	784.3	783.8	SPT, ST
B-4.5	481265.7	1647739.0	797.4	18.4	779.0	778.5	SPT, ST
B-4.6	481479.2	1648833.1	797.0	18.2	778.8	778.8	SPT, ST
B-4.7	481106.6	1648375.5	797.8	19.4	778.4	778.4	SPT, ST
B-4.8	479899.8	1647909.8	798.4	16.5	781.9	781.8	SPT, ST
B-4.9	479093.8	1647464.3	799.8	11.7	788.1	788.1	SPT, ST
B-4.10	478657.9	1646896.3	801.5	13.1	788.4	788.3	SPT, ST
B-4.11	481419.0	1649967.2	793.8	17.5	776.3	775.6	SPT, ST
B-4.12	481456.6	1649996.2	793.2	15.9	777.3	771.2	SPT, ST, RC
B-4.12A	481448.6	1650002.1	793.1	15.9	777.2	776.6	ST
B-4.13	481330.8	1650088.9	792.7	16.2	776.5	771.7	SPT, ST, RC
B-4.13A[3]	481330.8	1650088.9	792.7	16.2	776.5	776.2	-
B-4.14	481220.0	1650189.4	793.6	17.8	775.8	769.7	SPT, ST, RC
B-4.14A[3]	481220.0	1650189.4	793.6	17.8	775.8	775.0	-
B-4.15	481090.6	1650232.5	793.4	18.4	775.0	773.8	SPT, ST
B-4.16	481109.2	1650295.7	792.3	18.2	774.1	768.3	SPT, ST, RC
B-4.16A	481117.3	1650289.8	792.4	18.2	774.2	773.4	ST
B-4.17	481172.1	1650313.6	792.5	17.5	775.0	774.3	SPT, ST
B-4.18	478766.2	1650680.5	799.1	20.6	778.5	773.0	SPT, ST, RC
B-4.19	478440.9	1650681.0	804.1	22.0	782.1	777.1	SPT, ST, RC
B-4.20	478256.2	1650680.5	806.3	21.0	785.3	779.8	SPT, ST, RC
B-4.21	481257.4	1650131.6	793.0	17.6	775.4	770.2	SPT, ST, RC
B-4.22	481299.1	1650182.4	793.1	17.5	775.6	775.1	SPT, ST
TP-4.1[5]	479038.4	1646912.3	799.3	5.5[2]	-	793.8	Bulk
TP-4.2[5]	479364.1	1646906.3	798.9	5.0[2]	-	793.9	Bulk
TP-4.3[5]	479682.6	1647065.9	798.5	6.0[2]	-	792.5	Bulk
TP-4.4[5]	481035.6	1646708.6	797.1	4.5[2]	-	792.6	Bulk
TP-4.5[5]	480668.6	1647403.4	797.6	5.0[2]	-	792.6	Bulk
TP-4.6[5]	480919.0	1648259.7	798.1	4.9[2]	-	793.2	Bulk

Note: Elevations are recorded in NAVD 88, Northing/Easting are Ohio State Plane North NAD 83

[1] SPT= Standard Penetration Test using 2-inch diameter split-spoon
ST = undisturbed thin-walled Shelby tube (3-inch diameter)
Bulk = bag sample of auger cuttings / test pit spoils
RC = rock core
PT = pressure test

[2] Boring/Test Pit did not encounter bedrock

[3] Boring is a companion boring and is located within 5 feet of the reported parent location.

[4] Coordinates and elevation obtained from surveyors at estimated boring location as noted in the field.

[5] Coordinates and elevation represent approximate location of test pit.

ATTACHMENT A-2

Boring / Test Pit Location Figure

Attachment No.

A-2

Title

Boring/Test Pit Location Figure

Client/Project 173409690 REVB

Maumee Watershed Conservancy District
Hancock County Flood Risk Reduction Program
Eagle Creek Flood Basin Final Design

Project Location

Eagle Township
Hancock County, Ohio

Prepared by ANP on 2023-03-07
TR by RL on 2023-03-07
IR Review by KRB on 2023-03-07

N

0 740 1,480 Feet

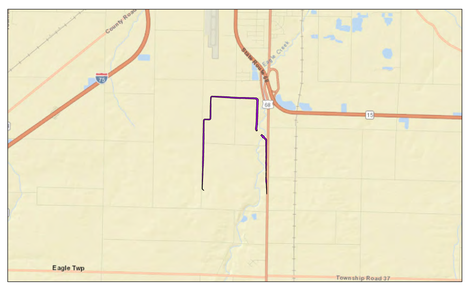
(At original document size of 22x34)
1:73,314

Legend

- Dam Centerline
- Proposed Spillway Structure
- Dam Alignment
- Proposed Wetlands

Completed Borings

- Borings from Previous Explorations
- Embankment Borings
- Embankment Borings with Piezometer
- Shallow Borings
- Borrow Site Borings
- Borrow Site Borings with Piezometer
- Spillway Structure Boring
- Spillway Structure Boring with Piezometer
- Test Pit



Notes

1. Coordinate System: NAD 1983 2011 StatePlane Ohio North FIPS 3401 Ft US
2. Background: 2022 Aerial Photography, Hancock County Auditor GIS Data Downloads

Stantec

Maumee Watershed Conservancy District

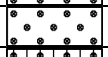
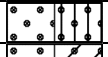
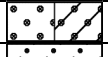
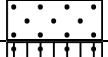
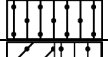
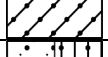
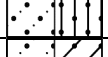
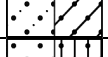
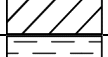
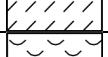
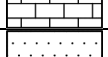
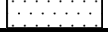
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

I:\173409690\gis\mxds\geotechnical\ec_stantec_ansi_d_l_borings_v5_COMPLETED.mxd Revised: 2023-03-07 By: apoller

ATTACHMENT A-3

Boring / Test Pit Logs

Strata Graphics

Symbol	Strata
	Fill
	Topsoil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Non-Durable Shale
	Durable Shale
	Coal
	Dolomite
	Sandstone

Water Level Graphics

Symbol	Description
	First Water Level Reading
	Second Water Level Reading

Sampler Graphics

Symbol	Sampler	
	SPT	Standard Penetration Test with Split Spoon (2-in dia.)
	ST	Shelby Tube
	RC	Rock Core

Consistency of Fine-Grained Soils

Description	N-Value (blows/ft)
Very Soft	<2
Soft	2 – 4
Firm	4 – 15
Hard	15 – 30
Very Hard	>30

Density of Coarse-Grained Soils

Description	N-Value (blows/ft)
Very Loose	<4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	>50

Description of Plasticity

Description	Plasticity Index
Non-Plastic	0
Low Plasticity	1 – 15
Medium Plasticity	15 – 30
High Plasticity	>30

Modified from Sowers, 1979

Degree of Fracturing

Description	Spacing
Unfractured	> 10 ft
Intact	3 ft – 10 ft
Slightly Fractured	1 ft – 3 ft
Moderately Fractured	4 in – 12 in
Fractured	2 in – 4 in
Highly Fractured	< 2 in

Common Abbreviations

B	Bulk Sample
HSA	Hollow Stem Auger
LL	Liquid Limit
NP	Non-Plastic
PL	Plastic Limit
RQD	Rock Quality Designation
SS	Split Spoon
WC	Water Content
WOH	Weight of Hammer
WOR	Weight of Rod

Stantec

SUBSURFACE LOG

Boring No. **B-3.1**

Client	Maumee Watershed Conservancy District	Boring Location	476,889.6 N; 1,645,626.4 E
Project Number	173409690	Surface Elevation	808.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/19/21 (Completed: 1/19/21)
Project Location	Hancock County, Ohio	Depth to Water	N/A (Date/Time: N/A)
Inspector	PC	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	808.1							
	808.0	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange to gray, low plasticity, firm, moist, trace silt		SPT	1	0.9	1-2-4	
1								
2				SPT	2	0.9	3-3-3	
3								
4				SPT	3	0.8	4-6-5	
5				SPT	4	1.2	2-3-5	
6	801.6			SPT	5	0.7	21-50/2"	
		Dolomite, gray						
7	800.8							
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10, 20, 30, 40, 50, 60, 70, 80, 90)

Auger refusal at 7.3'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.

Stantec

SUBSURFACE LOG

Boring No. **B-3.2**

Client	Maumee Watershed Conservancy District	Boring Location	477,476.9 N; 1,645,587.3 E
Project Number	173409690	Surface Elevation	805.2 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/19/21
Project Location	Hancock County, Ohio	Depth to Water	N/A
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 1/19/21 | Date/Time: N/A | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	805.2							
	805.1	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown-orange to gray, medium plasticity, firm, dry to moist		SPT	1	0.7	1-3-4	
2				SPT	2	1.1	3-4-7	
3				SPT	3	1.2	5-5-7	
4		*Trace to little stone fragments at 4.5'*						
5				SPT	4	1.2	1-3-4	
6				SPT	5	1.5	2-5-8	
7	797.7							
		LEAN CLAY, VISUAL, gray, low plasticity, hard, dry, little gravel		SPT	6	1.5	5-13-14	
8								
9	795.7							
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 10/22/21

Boring No. **B-3.2**

Client Maumee Watershed Conservancy District

Boring Location 477,476.9 N; 1,645,587.3 E

Project Number 173409690

Surface Elevation 805.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, strong petroleum odor, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations *(Continued)*		RC	1	1.5	22	
11								
12								
13								
14				RC	2	5.0	42	
15								
16		*Moderately fractured from 16.3' to 16.8'*						
17								
18				RC	3	3.2	41	
19								
20	785.2	*Boring terminated and backfilled with cement bentonite grout.*						
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.3**

Client	Maumee Watershed Conservancy District	Boring Location	478,072.1 N; 1,645,587.3 E
Project Number	173409690	Surface Elevation	803.2 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/7/20
Inspector	PC	Completed	12/8/20
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	13.5 ft
		Date/Time	12/8/20 10:30
		Depth to Water	5.0 ft
		Date/Time	12/8/20 14:12
Drill Rig Type and ID	CME 45T#3, #815		

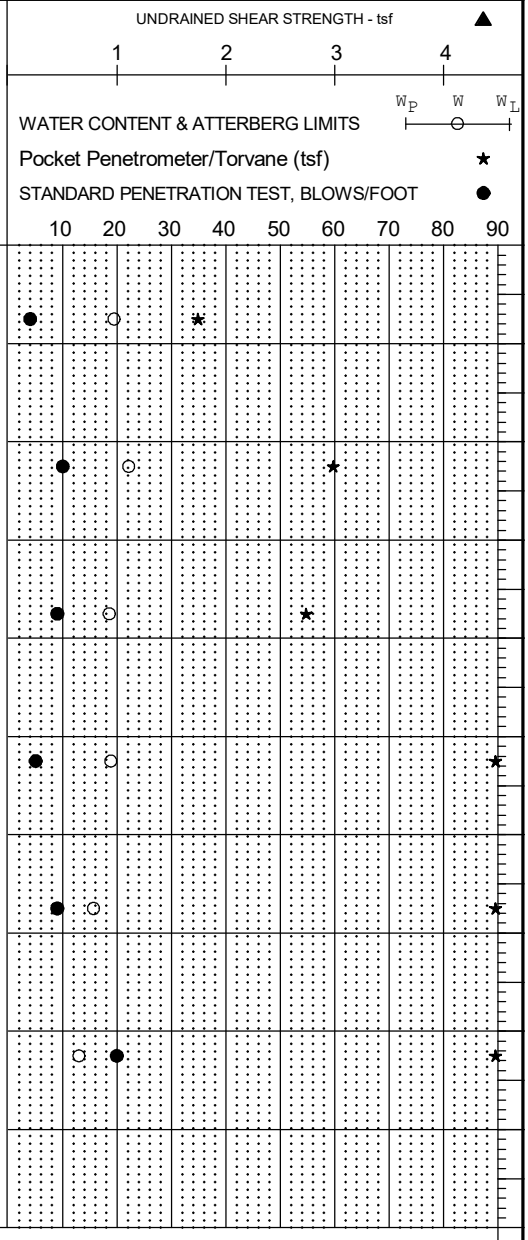
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	803.2					ft		
0	803.1	Topsoil						
		LEAN CLAY, VISUAL, dark brown-orange, low plasticity, soft to firm, moist, iron oxide staining, little sand		SPT	1	1.3	1-2-2	
1								
2				SPT	2	1.2	3-5-5	
3								
4				SPT	3	1.3	3-5-4	
5								
				SPT	4	0.7	3-2-3	
6	797.2							
		SANDY LEAN CLAY, VISUAL, dark brown to gray, low plasticity, firm to hard, dry, trace gravel, little silt		SPT	5	1.3	3-4-5	
7								
8				SPT	6	1.5	5-10-10	
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.3**

Client Maumee Watershed Conservancy District

Boring Location 478,072.1 N; 1,645,587.3 E

Project Number 173409690

Surface Elevation 803.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, VISUAL, dark brown to gray, low plasticity, firm to hard, dry, trace gravel, little silt *(Continued)*		SPT	7	0.5	6-5-6	
11	791.7							
12		SILTY CLAY, VISUAL, dark gray, low plasticity, firm, moist, trace sand						
13				SPT	8	1.3	3-6-8	
14	788.7							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Auger refusal at 14.5'. Boring terminated and backfilled with cement bentonite grout.

SUBSURFACE LOG

Boring No. **B-3.4**

Client	Maumee Watershed Conservancy District	Boring Location	478,393.1 N; 1,645,743.9 E
Project Number	173409690	Surface Elevation	800.0 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	12/9/20 (Completed: 12/9/20)
Project Location	Hancock County, Ohio	Depth to Water	11.4 ft (Date/Time: 12/8/20 15:43)
Inspector	PC	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	800.0					ft		
0	799.9	Topsoil						
0–1		SANDY LEAN CLAY, CL, light brown to dark grayish brown, low plasticity, soft to hard, moist		SPT	1	0.9	1-1-2	
1–2				SPT	2	1.1	2-2-3	
2–3				SPT	3	1.3	2-4-5	
4–5		*Wet, clayey sand seam from 4.5' to 4.7'*		SPT	4	1.5	3-4-11	
5–6				SPT	5	1.5	7-9-10	
7–8		*Sand seam from 7.0' to 7.1'*		SPT	6	1.5	4-7-9	
9–10	790.0							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-3.4**

Client Maumee Watershed Conservancy District

Boring Location 478,393.1 N; 1,645,743.9 E

Project Number 173409690

Surface Elevation 800.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, dark gray, low plasticity, hard, moist, slight petroleum odor, little sand		SPT	7		4-5-50/5"	
11	788.6							
12		Dolomite, gray, very fine grained to fine grained, moderately hard to hard, laminated, slightly weathered, horizontal, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations		RC	1	5.0	26	
13								
14								
15								
16								
17								
18								
19				RC	2	5.0	20	
20								
21	778.6							
22		*Boring terminated and backfilled with cement bentonite grout.*						
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.5**

Client	Maumee Watershed Conservancy District	Boring Location	478,698.5 N; 1,645,602.9 E
Project Number	173409690	Surface Elevation	799.2 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/7/21
Inspector	MF	Completed	12/9/20
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

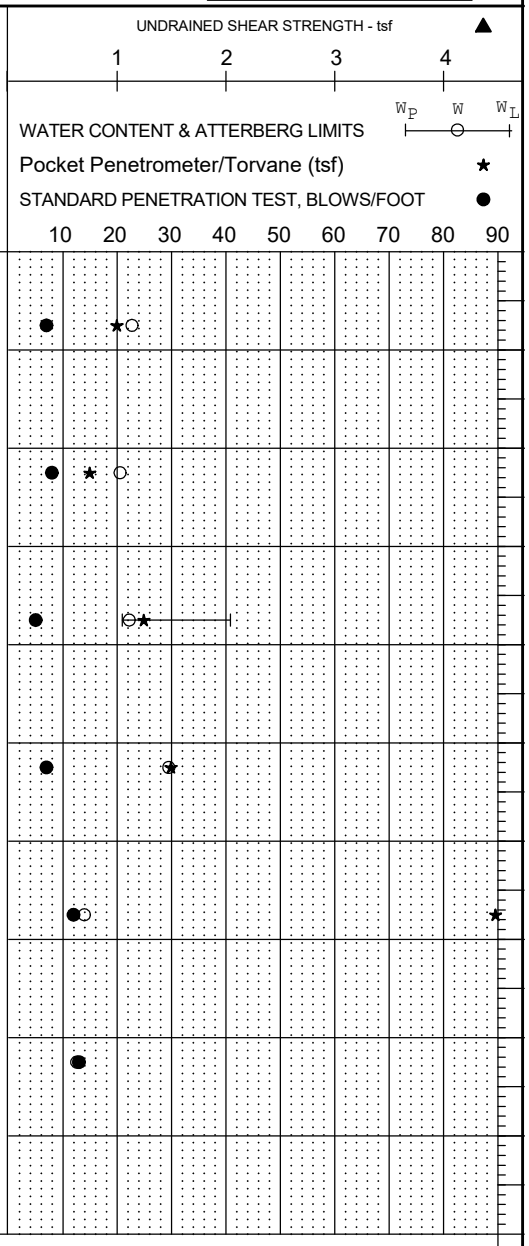
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.2							
	799.1	Topsoil						
		LEAN CLAY WITH SAND, CL, dark brown-orange to light gray, medium plasticity, firm, moist, iron oxide staining		SPT	1	1.0	2-3-4	
1								
2				SPT	2	0.9	1-3-5	
3				SPT	3	1.2	2-2-3	
4								
5				SPT	4	1.2	2-3-4	
	793.2							
6		LEAN CLAY, VISUAL, light gray, low plasticity, firm, moist, little sand		SPT	5	1.5	3-5-7	
7								
8				SPT	6	1.5	3-6-7	
9								
10								



Boring No. **B-3.5**

Client Maumee Watershed Conservancy District

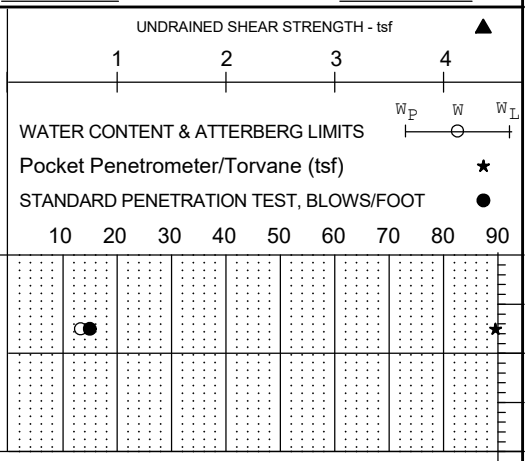
Boring Location 478,698.5 N; 1,645,602.9 E

Project Number 173409690

Surface Elevation 799.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, light gray, low plasticity, firm, moist, little sand *(Continued)*		SPT	7	1.5	3-5-10	
11		*Rock fragments in SPT-7*						
12	787.2							

Auger refusal at 12.0'. Boring terminated and backfilled with cement bentonite grout.



SUBSURFACE LOG

Boring No. **B-3.6**

Client	Maumee Watershed Conservancy District	Boring Location	479,003.9 N; 1,645,595.1 E
Project Number	173409690	Surface Elevation	798.7 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/21/21
Project Location	Hancock County, Ohio	Depth to Water	11.5 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88
Completed: 1/21/21
Date/Time: 1/21/21 10:11
Date/Time: N/A

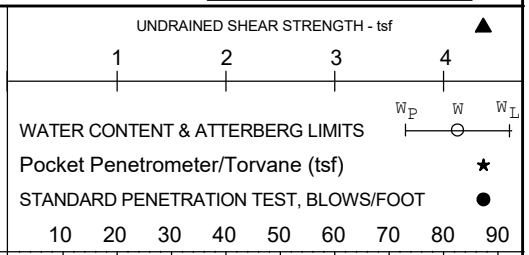
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.7					ft		
0	798.6	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange, low plasticity, soft to firm, moist, little silt		SPT	1	1.0	WOH-1-2	
1								
2				SPT	2	0.9	3-3-4	
3				SPT	3	1.0	5-5-5	
4								
5				SPT	4	1.3	2-4-7	
6								
7				SPT	5	1.3	2-6-9	
8				SPT	6	1.1	2-7-7	
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.6**

Client Maumee Watershed Conservancy District

Boring Location 479,003.9 N; 1,645,595.1 E

Project Number 173409690

Surface Elevation 798.7 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, VISUAL, brown-orange, low plasticity, soft to firm, moist, little silt *(Continued)*		SPT	7	0.3	2-13-11	
11	787.3							
12	786.6	CLAYEY SAND, VISUAL, gray, medium dense, wet, poorly graded, trace gravel						
13		Dolomite, gray, very fine grained, hard, laminated, slightly weathered, slight petroleum odor, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations		RC	1	4.3	8	
14								
15								
16								
17								
18								
19		*Severely fractured from 19.0' to 20.0'*		RC	2	4.6	14	
20								
21		*Moderately weathered and vuggy from 20.7' to 22.0'* *Moderately fractured from 20.9' to 21.3'*						
22	776.6							
		Boring terminated and backfilled with cement bentonite grout.						
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

SUBSURFACE LOG

Boring No. **B-3.7**

Client	Maumee Watershed Conservancy District	Boring Location	479,301.5 N; 1,645,602.9 E
Project Number	173409690	Surface Elevation	798.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/9/20
Project Location	Hancock County, Ohio	Depth to Water	12.5 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/9/20 | Date/Time: 12/9/20 14:29 | Date/Time: N/A

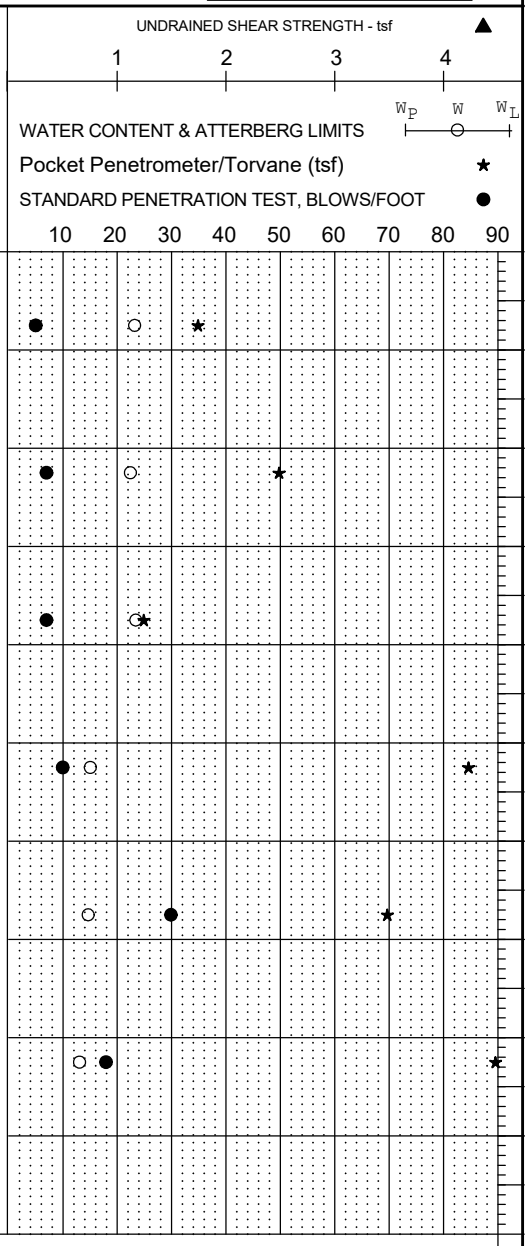
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.1					ft		
0	798.0	Topsoil						
		SANDY LEAN CLAY, VISUAL, dark brown-orange, low plasticity, firm, moist, trace silt		SPT	1	1.2	WOH-2-3	
1								
2				SPT	2	1.2	2-3-4	
3								
4	793.6			SPT	3	1.3	2-3-4	
		SILTY CLAY, VISUAL, dark brown-orange to dark gray, low plasticity, firm to hard, moist, little gravel, little sand						
5				SPT	4	1.5	4-5-5	
6								
7				SPT	5	1.5	5-14-16	
8	789.3			SPT	6	1.5	5-8-10	
		LEAN CLAY, VISUAL, dark gray, low to medium plasticity, hard, moist, some silt						
9								
10								



Boring No. **B-3.7**

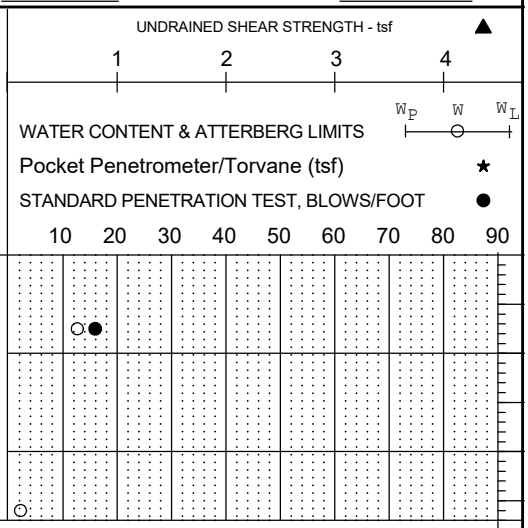
Client Maumee Watershed Conservancy District

Boring Location 479,301.5 N; 1,645,602.9 E

Project Number 173409690

Surface Elevation 798.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, dark gray, low to medium plasticity, hard, moist, some silt *(Continued)*		SPT	7	1.5	5-7-9	
11								
12	785.6							
	785.4	Dolomite, gray		SPT	8	0.2	50/2"	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								



Split spoon refusal at 12.7'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.8**

Client	Maumee Watershed Conservancy District	Boring Location	479,586.5 N; 1,645,601.6 E
Project Number	173409690	Surface Elevation	798.0 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/9/20
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/10/20 | Date/Time: 12/9/20 16:01 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.0					ft		
0	797.9	Topsoil						
		SANDY LEAN CLAY, VISUAL, light brown-orange, low plasticity, soft to firm, moist, trace silt		SPT	1	0.9	WOH-1-3	
1								
2				SPT	2	1.2	2-3-4	
3								
4				SPT	3	1.2	4-5-5	
5				SPT	4	1.5	2-3-3	
6	792.0	LEAN CLAY, VISUAL, dark brown to dark gray, low plasticity, hard, moist, some silt						
7				SPT	5	1.5	3-7-9	
8				SPT	6	0.3	6-7-9	
9								
10	788.0							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-3.8**

Client Maumee Watershed Conservancy District

Boring Location 479,586.5 N; 1,645,601.6 E

Project Number 173409690

Surface Elevation 798.0 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, SM, dark brown to dark gray, non-plastic, medium dense to dense, moist to wet *Atterberg limit = NP*		SPT	7	1.5	5-6-9	
11								
12								
13				SPT	8	1.5	21-22-28	
	784.2							
14		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered, slight petroleum odor, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations						
15				RC	1	2.8	29	
16								
17								
18								
19				RC	2	5.0	32	
20								
21		*Moderately fractured from 20.7' to 21.1'*						
22								
23				RC	3	2.0	18	

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.8**

Client Maumee Watershed Conservancy District

Boring Location 479,586.5 N; 1,645,601.6 E

Project Number 173409690

Surface Elevation 798.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ ; W_P W W_L ; 10 20 30 40 50 60 70 80 90
24	773.8	*Boring terminated and backfilled with cement bentonite grout.*							
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.9**

Client	Maumee Watershed Conservancy District	Boring Location	479,886.0 N; 1,645,610.8 E
Project Number	173409690	Surface Elevation	797.2 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/10/20
Inspector	MF	Completed	12/10/20
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	10.0 ft
		Date/Time	12/10/20 11:53
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.2					ft		
0	797.1	Topsoil						
		SANDY LEAN CLAY, VISUAL, light brown-orange, low to medium plasticity, firm, moist, little silt		SPT	1	0.9	WOH-2-3	
1								
2				SPT	2	1.0	2-3-3	
3								
4				SPT	3	1.5	2-3-4	
5								
				SPT	4	1.0	4-5-6	
6	791.2	SANDY LEAN CLAY, VISUAL, dark brown-orange to gray, low plasticity, firm to hard, moist, trace gravel and stone fragments, trace silt						
7				SPT	5	1.5	3-8-11	
8								
				SPT	6	1.5	10-15-14	
9								
10	787.2							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 11/12/21

SUBSURFACE LOG

Boring No. **B-3.9**

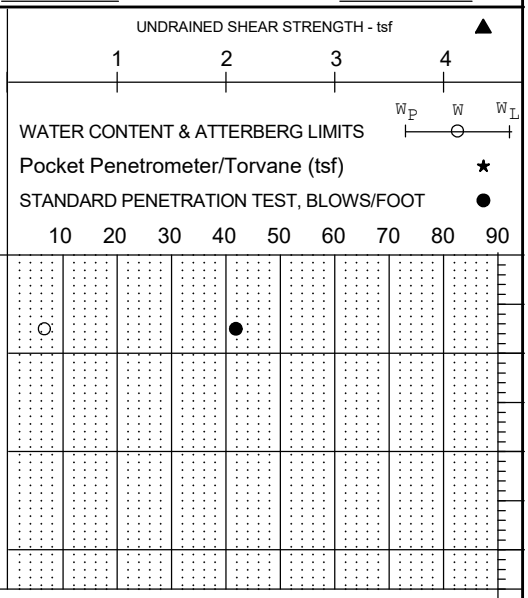
Client Maumee Watershed Conservancy District

Boring Location 479,886.0 N; 1,645,610.8 E

Project Number 173409690

Surface Elevation 797.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		Dolomite, gray		SPT	7	0.5	20-24-18	
11								
12		*Difficulty augering from 12.5' to 13.4'*						
13	783.8							
14		*Auger refusal at 13.4'. Boring terminated and backfilled with cement bentonite grout.*						
15								
16								
17								
18								
19								
20								
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-3.10**

Client	Maumee Watershed Conservancy District	Boring Location	480,213.2 N; 1,645,615.5 E
Project Number	173409690	Surface Elevation	797.2 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	1/22/21
Completed	1/25/21		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	BS	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

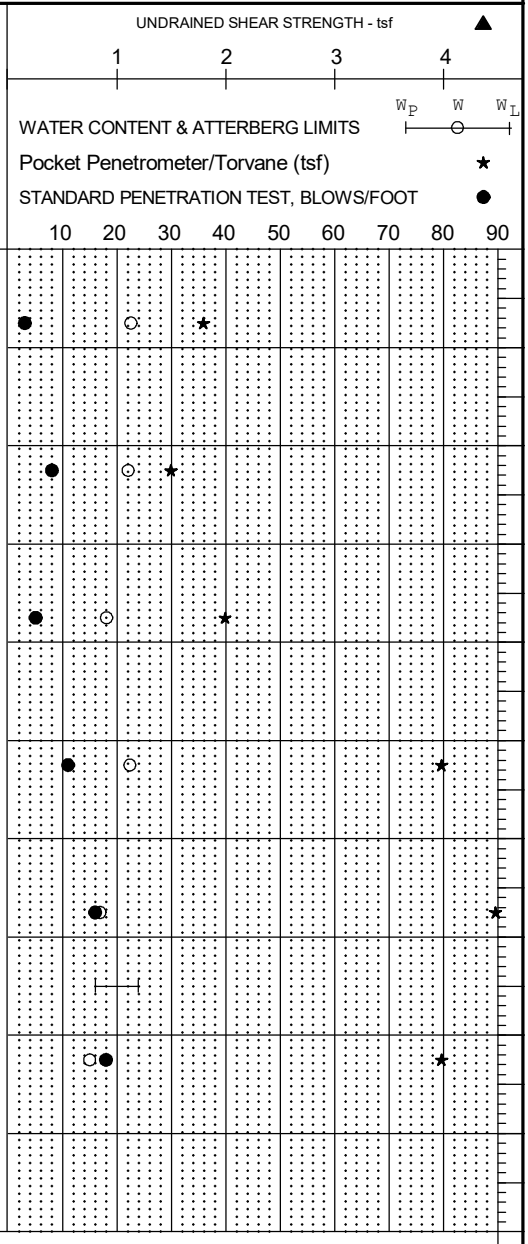
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.2					ft		
0	797.1	Topsoil						
		SANDY LEAN CLAY, CL, gray, low plasticity, soft to hard, dry to moist, slight petroleum odor		SPT	1	0.7	WOH-1-2	
1								
2				SPT	2	0.8	2-4-4	
3								
4				SPT	3	1.0	3-2-3	
5				SPT	4	1.3	2-4-7	
6								
7				SPT	5	1.5	5-7-9	
8				SPT	6	1.5	6-8-10	
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.10**

Client Maumee Watershed Conservancy District

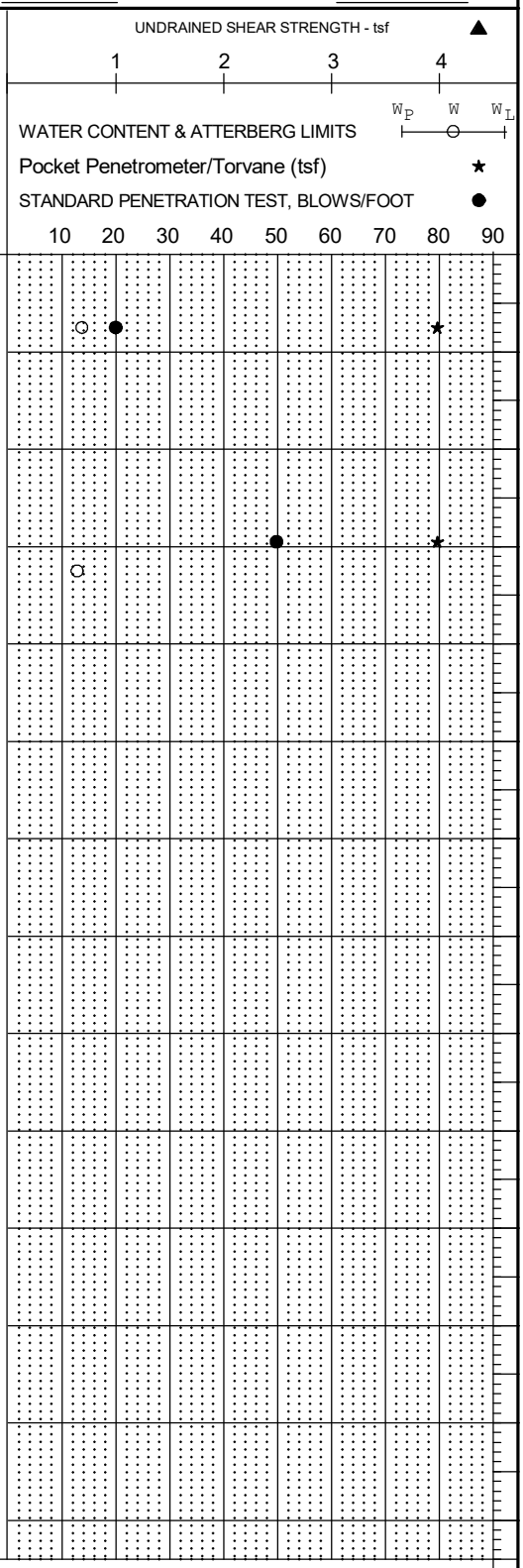
Boring Location 480,213.2 N; 1,645,615.5 E

Project Number 173409690

Surface Elevation 797.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray, low plasticity, soft to hard, dry to moist, slight petroleum odor *(Continued)*		SPT	7	1.5	4-8-12	
11								
12		*Trace gravel and sand from 11.0' to 13.0'*						
13	783.8			SPT	8	0.8	5-50/5"	
14		Dolomite, gray-white, moderately hard to hard, laminated, slight petroleum odor, fractured to highly fractured, with shale laminations		RC	1	3.6	20	
15		*Severely fractured from 13.4' to 13.9'*						
16								
17								
18				RC	2	5.0	0	
19								
20								
21								
22		*Vuggy from 22.4' to 23.4'*		RC	3	1.2	45	
23	773.8							

Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.11**

Client	Maumee Watershed Conservancy District	Boring Location	480,429.8 N; 1,645,615.5 E
Project Number	173409690	Surface Elevation	796.8 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/10/20
Project Location	Hancock County, Ohio	Depth to Water	7.6 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/10/20 | Date/Time: 12/10/20 14:43 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	796.8							
0	796.7	Topsoil						
		SANDY LEAN CLAY, VISUAL, dark brown-orange to gray, low to medium plasticity, firm, moist, trace silt		SPT	1	1.0	WOH-2-2	
1								
2				SPT	2	1.3	2-4-2	
3								
4	792.3			SPT	3	1.4	4-5-6	
		SANDY LEAN CLAY, VISUAL, gray to brown-orange, low plasticity, firm to hard, moist, trace gravel and stone fragments, trace silt		SPT	4	1.4	5-11-12	
5								
6				SPT	5	1.5	5-5-8	
7								
8	788.8			SPT	6	1.5	7-10-12	
		SILTY CLAY, VISUAL, gray-orange, low plasticity, hard, moist, some sand						
9								
10	786.8							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.11**

Client Maumee Watershed Conservancy District

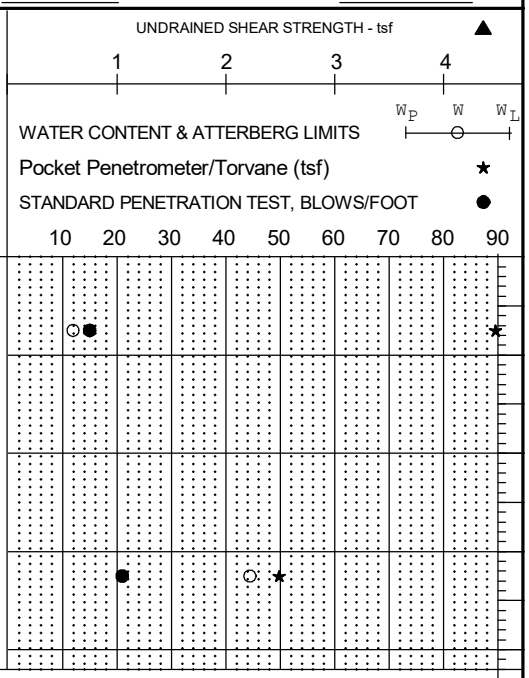
Boring Location 480,429.8 N; 1,645,615.5 E

Project Number 173409690

Surface Elevation 796.8 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low plasticity, hard, dry to wet, trace to little gravel and stone fragments, trace silt		SPT	7	1.5	5-6-9	
11								
12								
13				SPT	8	1.3	10-12-9	
14	782.6							

Auger refusal at 14.2'. Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.12**

Client	Maumee Watershed Conservancy District	Boring Location	480,747.7 N; 1,645,615.5 E
Project Number	173409690	Surface Elevation	796.4 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/10/20
Inspector	PC	Completed	12/11/20
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	796.4					ft		
0	796.3	Topsoil						
		SANDY LEAN CLAY, VISUAL, light brown-orange to gray, low plasticity, soft, moist, trace silt		SPT	1	1.1	2-2-2	
1								
2				SPT	2	1.0	2-2-2	
	793.4							
3		LEAN CLAY, CL, light brown-orange, low plasticity, firm, moist		SPT	3	1.5	3-5-7	
4	791.9							
		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, moist, trace sand		SPT	4	1.5	6-10-11	
5								
6				SPT	5	1.5	3-4-6	
7								
8				SPT	6	1.5	6-9-9	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.12**

Client Maumee Watershed Conservancy District

Boring Location 480,747.7 N; 1,645,615.5 E

Project Number 173409690

Surface Elevation 796.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, moist, trace sand *(Continued)*		SPT	7	0.9	4-6-9	
12	783.9							
13		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 30° bedding angle, fractured to highly fractured, with shale laminations		SPT	8	0.2	50/2"	
14		*Severely fractured from 12.7' to 13.2'*		RC	1	3.8	18	
17				RC	2	5.0	14	
22	773.7			RC	3	1.0	80	
23		*Boring terminated and backfilled with cement bentonite grout*						

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.13**

Client	Maumee Watershed Conservancy District	Boring Location	481,028.8 N; 1,645,624.7 E
Project Number	173409690	Surface Elevation	796.9 ft; Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	12/14/20; Completed 12/14/20
Project Location	Hancock County, Ohio	Depth to Water	11.0 ft; Date/Time 12/14/20 14:40
Inspector	PC	Depth to Water	7.5 ft; Date/Time 12/14/20 14:42
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic; Weight: 140 lb; Drop: 30"; Efficiency: 87.6%

Borehole Azimuth: N/A; Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	796.9							
	796.8	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange with gray, low plasticity, firm, moist, little silt		SPT	1	1.2	1-2-3	
1								
2				SPT	2	0.8	2-3-5	
3				SPT	3	1.4	3-5-9	
4								
5				SPT	4	0.8	4-6-8	
	790.9							
6		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, dry to moist, trace gravel		SPT	5	1.5	4-5-6	
7								
8				SPT	6	1.4	6-7-10	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-3.13**

Client Maumee Watershed Conservancy District

Boring Location 481,028.8 N; 1,645,624.7 E

Project Number 173409690

Surface Elevation 796.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf ▲ 1 2 3 4 / WATER CONTENT & ATTERBERG LIMITS W_P W W_L / Pocket Penetrometer/Torvane (tsf) ★ / STANDARD PENETRATION TEST, BLOWS/FOOT ● 10 20 30 40 50 60 70 80 90
						ft			
10	785.9	SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, dry to moist, trace gravel *(Continued)*		SPT	7	1.3	7-10-50/5"		
11	785.5	Dolomite, gray							

Split spoon refusal at 11.4'. Boring terminated and backfilled with cement bentonite grout.

12 13 14 15 16 17 18 19 20 21 22 23

Stantec

SUBSURFACE LOG

Boring No. **B-3.14**

Client	Maumee Watershed Conservancy District	Boring Location	481,323.7 N; 1,645,629.3 E
Project Number	173409690	Surface Elevation	799.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/28/21 (Completed: 1/28/21)
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft (Date/Time: 1/28/21 11:08)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.1							
	798.9	Topsoil						
1		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist		SPT	1	0.6	1-2-2	
2				SPT	2	0.6	2-3-5	
3				SPT	3	1.1	5-5-7	
4				SPT	4	1.0	5-6-6	
5				SPT	5	1.2	2-3-2	
6								
7								
8	791.1			SPT	6	1.4	3-6-8	
		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm, moist, some gravel						
9								
10								

Boring No. **B-3.14**

Client Maumee Watershed Conservancy District

Boring Location 481,323.7 N; 1,645,629.3 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm, moist, some gravel *(Continued)*		SPT	7	1.5	4-7-8	
11								
12	786.6							
13	785.6	SANDY LEAN CLAY, VISUAL, gray, low plasticity, hard, moist, little gravel		SPT	8	1.0	9-12-13	
14	784.5	Dolomite, gray, weathered						
15		Dolomite, gray with black, fine grained, hard, moderately weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations		RC	1	1.1	0	
16								
17								
18				RC	2	5.0	28	
19								
20								
21								
22				RC	3	3.9	33	
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.14**

Client Maumee Watershed Conservancy District

Boring Location 481,323.7 N; 1,645,629.3 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf; WATER CONTENT & ATTERBERG LIMITS; Pocket Penetrometer/Torvane (tsf); STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4; W_P W W_L; 10 20 30 40 50 60 70 80 90
24	774.5								
25		*Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.*							
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.15**

Client	Maumee Watershed Conservancy District	Boring Location	481,641.7 N; 1,645,633.9 E
Project Number	173409690	Surface Elevation	799.3 ft; Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	12/14/20; Completed 12/14/20
Project Location	Hancock County, Ohio	Depth to Water	14.5 ft; Date/Time 12/14/20 17:16
Inspector	PC	Depth to Water	N/A; Date/Time N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic; Weight: 140 lb; Drop: 30"; Efficiency: 87.6%

Borehole Azimuth: N/A; Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.3					ft		
0	799.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange to gray, low to medium plasticity, firm, moist, little silt		SPT	1	1.1	WOH-2-3	
1								
2				SPT	2	1.3	3-4-4	
3				SPT	3	1.3	4-5-5	
4	794.8							
		LEAN CLAY, VISUAL, dark brown, low plasticity, firm, moist, trace gravel, little sand		SPT	4	1.1	4-6-7	
5	793.3							
6		SANDY LEAN CLAY, CL, light brown-orange, low plasticity, firm, moist		SPT	5	1.5	2-3-5	
7	792.3							
		LEAN CLAY, VISUAL, dark brown, low plasticity, hard, moist, trace gravel, little sand		SPT	6	1.5	5-10-13	
8								
9								
10	789.3							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 10/22/21

Boring No. **B-3.15**

Client Maumee Watershed Conservancy District

Boring Location 481,641.7 N; 1,645,633.9 E

Project Number 173409690

Surface Elevation 799.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, gray, firm, moist, trace sand		SPT	7	1.5	4-6-7	
11								
12								
13				SPT	8	1.5	2-2-3	
14	784.8							
	784.7	Dolomite, gray		SPT	9	0.0	50/1"	
15								
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Split spoon refusal at 14.6'. Boring terminated and backfilled with cement bentonite grout

Stantec

SUBSURFACE LOG

Boring No. **B-3.16**

Client	Maumee Watershed Conservancy District	Boring Location	481,895.1 N; 1,645,638.5 E
Project Number	173409690	Surface Elevation	800.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/15/20
Project Location	Hancock County, Ohio	Depth to Water	18.0 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/15/20 | Date/Time: 12/15/20 10:44 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.1							
	800.0	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown-orange with light gray, low to medium plasticity, firm, moist, little silt		SPT	1	1.2	1-2-2	
2				SPT	2	1.2	3-4-5	
3				SPT	3	1.3	5-6-6	
4								
5				SPT	4	1.3	5-6-7	
6								
7	793.1			SPT	5	1.5	3-4-5	
		LEAN CLAY, VISUAL, brown to gray, low plasticity, hard, dry, trace to little stone fragments, trace sand, trace silt						
8				SPT	6	1.5	10-12-14	
9								
10	790.1							

Boring No. **B-3.16**

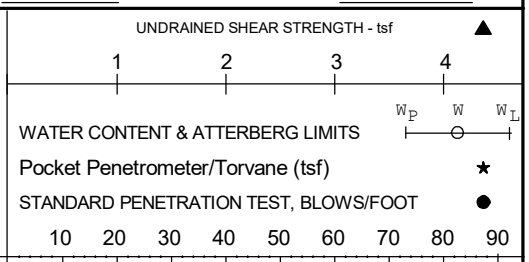
Client Maumee Watershed Conservancy District

Boring Location 481,895.1 N; 1,645,638.5 E

Project Number 173409690

Surface Elevation 800.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, moist to wet, trace stone fragments, trace sand		SPT	7	1.5	9-7-11	
11								
12								
13				SPT	8	1.5	4-3-4	
14								
15				SPT	9	1.5	3-5-6	
16								
17								
18	782.2			SPT	10	0.8	47-50/4"	
	781.9	SILTY SAND WITH GRAVEL, VISUAL, brown, fine to coarse, medium dense, wet						
19		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	2.9	42	
20								
21								
22								
23								



Boring No. **B-3.16**

Client Maumee Watershed Conservancy District

Boring Location 481,895.1 N; 1,645,638.5 E

Project Number 173409690

Surface Elevation 800.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*		RC	2	5.0	50	
25								
26								
27				RC	3	1.9	0	
28	771.8							
		Boring terminated and backfilled with cement bentonite grout.						
29								
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.17**

Client	Maumee Watershed Conservancy District	Boring Location	482,365.1 N; 1,645,850.5 E
Project Number	173409690	Surface Elevation	800.9 ft; Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	12/15/20; Completed 12/15/20
Project Location	Hancock County, Ohio	Depth to Water	14.3 ft; Date/Time 12/15/20 16:45
Inspector	PC	Depth to Water	N/A; Date/Time N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic; Weight: 140 lb; Drop: 30"; Efficiency: 87.6%

Borehole Azimuth: N/A; Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	800.9					ft		
0	800.8	Topsoil						
		SANDY LEAN CLAY, VISUAL, light brown-orange, low to medium plasticity, firm, moist, trace silt		SPT	1	1.0	1-2-2	
1								
2				SPT	2	1.5	3-4-6	
	797.9							
3		LEAN CLAY WITH SAND, CL, dark brown to gray, low plasticity, firm to hard, moist, iron oxide staining		SPT	3	1.3	3-5-7	
4								
5				SPT	4	0.6	4-3-9	
6								
7				SPT	5	1.5	5-7-8	
8				SPT	6	1.5	7-14-19	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.17**

Client Maumee Watershed Conservancy District

Boring Location 482,365.1 N; 1,645,850.5 E

Project Number 173409690

Surface Elevation 800.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	790.5							
		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, dry to moist, trace gravel, trace sand		SPT	7	1.5	6-5-7	
11								
12								
13				SPT	8	1.5	4-6-9	
14								
15								
16				SPT	9	1.5	3-2-4	
17								
18				SPT	10	1.5	6-6-12	
19								
20	780.9			SPT	11	0.1	50/1"	
	780.8	Dolomite, gray						
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Split spoon refusal at 20.1'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.18**

Client	Maumee Watershed Conservancy District	Boring Location	482,388.2 N; 1,646,140.8 E
Project Number	173409690	Surface Elevation	800.4 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/26/21
Project Location	Hancock County, Ohio	Depth to Water	11.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/27/21 | Date/Time: 1/26/21 15:23 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	800.4					ft		
0	800.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, very soft to firm, moist		SPT	1	0.4	WOH-1-1	
1								
2				SPT	2	1.2	2-3-3	
3				SPT	3	0.6	2-2-4	
4								
5				SPT	4	1.3	5-5-6	
6	793.9							
		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm to very hard, dry to moist, some gravel		SPT	5	1.5	2-3-5	
7								
8				SPT	6	0.8	10-14-18	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-3.18**

Client Maumee Watershed Conservancy District

Boring Location 482,388.2 N; 1,646,140.8 E

Project Number 173409690

Surface Elevation 800.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm to very hard, dry to moist, some gravel *(Continued)*		SPT	7	1.4	9-4-6	
11								
12								
13	787.4	SILTY SAND, VISUAL, gray, fine, non-plastic, medium dense, moist, some clay		SPT	8	1.2	5-5-7	
14								
15				SPT	9	1.5	3-2-9	
16								
17	782.7							
18	781.9	Dolomite, gray, weathered		SPT	10	0.8	25-22-50/0"	
19		Dolomite, gray with black, fine grained, hard, laminated to thin bedded, moderately weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations		RC	1	2.3	35	
20								
21								
22								
23				RC	2	5.0	20	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.18**

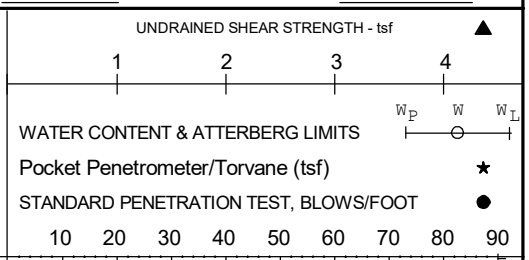
Client Maumee Watershed Conservancy District

Boring Location 482,388.2 N; 1,646,140.8 E

Project Number 173409690

Surface Elevation 800.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to thin bedded, moderately weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	2.7	0	
28	771.9							
		Boring terminated and backfilled with cement bentonite grout.						
29								
30								
31								
32								
33								
34								
35								
36								
37								



Stantec

SUBSURFACE LOG

Boring No. **B-3.19**

Client	Maumee Watershed Conservancy District	Boring Location	482,637.0 N; 1,646,168.4 E
Project Number	173409690	Surface Elevation	800.2 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/16/20
Project Location	Hancock County, Ohio	Depth to Water	13.0 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/16/20 | Date/Time: 12/16/20 12:01 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	800.2					ft		
0	800.1	Topsoil						
0–7		LEAN CLAY WITH SAND, CL, brown-orange, medium plasticity, firm, dry to moist		SPT	1	1.2	WOH-2-3	
				SPT	2	1.1	2-3-5	
				SPT	3	1.1	3-4-4	
				SPT	4	0.8	5-6-6	
				SPT	5	1.2	3-3-4	
7	792.7							
7–10		LEAN CLAY, VISUAL, dark brown to gray, low plasticity, hard, dry, trace silt		SPT	6	1.2	9-14-16	

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.19**

Client: Maumee Watershed Conservancy District
Boring Location: 482,637.0 N; 1,646,168.4 E
Project Number: 173409690
Surface Elevation: 800.2 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	789.7							
11		SILTY CLAY, VISUAL, gray, low plasticity, firm, moist, trace sand		SPT	7	1.5	3-4-8	
12								
13				SPT	8	1.0	2-2-2	
14								
15				SPT	9a	1.0	2-5-7	
16	784.2			SPT	9b	0.5		
17		SILTY SAND, SM, brown, non-plastic, medium dense, moist to wet						
18		*Atterberg limits = NP*		SPT	10	1.0	6-6-4	
19	780.4							
20		*Auger refusal at 19.8'. Boring terminated and backfilled with cement bentonite grout.*						
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.20**

Client	Maumee Watershed Conservancy District	Boring Location	482,885.8 N; 1,646,177.6 E
Project Number	173409690	Surface Elevation	800.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/16/20
Project Location	Hancock County, Ohio	Depth to Water	9.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/16/20 | Date/Time: 12/16/20 13:59 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.1							
	800.0	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown-orange, low plasticity, firm, moist, trace silt		SPT	1	1.0	2-3-3	
2				SPT	2	1.1	3-5-8	
3				SPT	3	0.9	4-5-5	
4	795.1							
5		LEAN CLAY, VISUAL, brown, low plasticity, firm to hard, dry to moist, little silt		SPT	4	0.7	4-5-6	
6				SPT	5	1.5	3-5-7	
7								
8	791.4			SPT	6	1.3	10-11-16	
9	791.1	WELL GRADED SAND, VISUAL, brown, fine to coarse, medium dense, moist, trace silt						
10								

Printed on 10/22/21

Boring No. **B-3.20**

Client Maumee Watershed Conservancy District

Boring Location 482,885.8 N; 1,646,177.6 E

Project Number 173409690

Surface Elevation 800.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, brown, low plasticity, firm, moist *(Continued)*		SPT	7	1.5	8-4-6	
11								
12								
13				SPT	8	0.7	8-7-8	
14								
15	784.6							
16		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		SPT	9	0.9	11-15-21	
17								
18								
19				RC	1	3.8	28	
20								
21								
22								
23				RC	2	4.7	60	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.20**

Client Maumee Watershed Conservancy District

Boring Location 482,885.8 N; 1,646,177.6 E

Project Number 173409690

Surface Elevation 800.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26	773.5			RC	3	0.4	100	
		Boring terminated and backfilled with cement bentonite grout.						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.21**

Client	Maumee Watershed Conservancy District	Boring Location	483,153.1 N; 1,646,182.2 E
Project Number	173409690	Surface Elevation	800.8 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/17/20
Inspector	MF	Completed	12/17/20
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	N/A
Overburden Drilling and Sampling Tools (Type and Size)	3-1/4" HSA, 2" SS w/o liners	Depth to Water	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Date/Time	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	87.6%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.8							
	800.7	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown, low plasticity, firm, moist, little silt		SPT	1	0.8	1-3-3	
1								
2				SPT	2	1.0	1-2-4	
3				SPT	3	1.2	4-5-6	
4								
5				SPT	4	0.6	6-7-7	
6								
7	793.3			SPT	5	0.9	2-3-8	
		LEAN CLAY, VISUAL, brown to gray, low to medium plasticity, hard, dry						
8		*Trace gravel and stone fragments from 8.5' to 9.0'*		SPT	6	1.3	8-14-15	
9								
10	790.8							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.21**

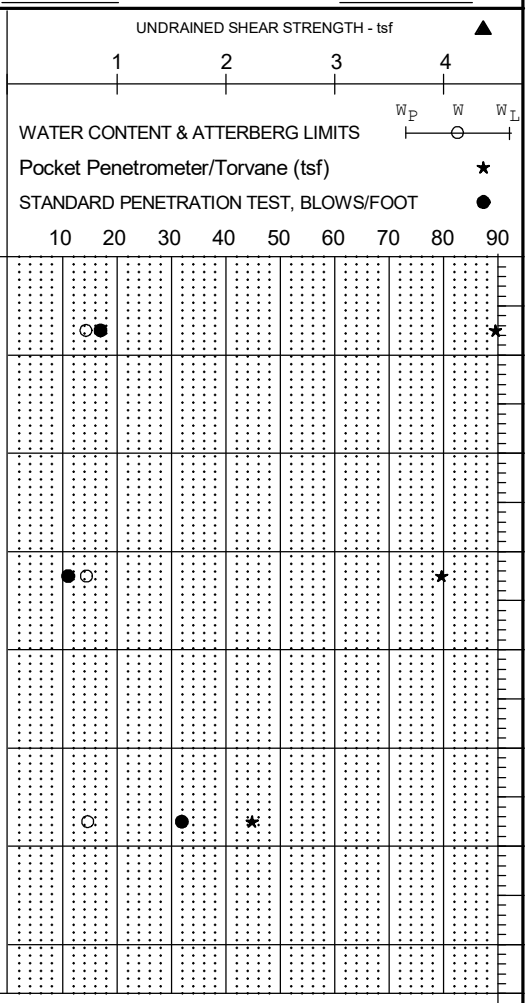
Client Maumee Watershed Conservancy District

Boring Location 483,153.1 N; 1,646,182.2 E

Project Number 173409690

Surface Elevation 800.8 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, dry		SPT	7	1.4	6-7-10	
11								
12								
13				SPT	8	1.1	5-5-6	
14								
15								
16				SPT	9	1.0	8-15-17	
17	783.3							
18		*Auger refusal at 17.5'. Boring terminated and backfilled with cement bentonite grout.*						
19								
20								
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-3.22**

Client	Maumee Watershed Conservancy District	Boring Location	483,480.3 N; 1,646,186.9 E
Project Number	173409690	Surface Elevation	801.4 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/25/21
Inspector	MF	Completed	1/26/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	801.4					ft		
0	801.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist		SPT	1	0.8	1-2-2	
1								
2				SPT	2	1.0	3-4-6	
3				SPT	3	1.0	6-5-7	
4								
5				SPT	4	0.9	6-6-5	
6	795.4	LEAN CLAY, VISUAL, gray and brown, low to medium plasticity, firm, moist		SPT	5	1.5	8-4-5	
7								
8	793.4	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, dry to moist, some gravel		SPT	6	1.5	7-11-14	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Boring No. **B-3.22**

Client Maumee Watershed Conservancy District

Boring Location 483,480.3 N; 1,646,186.9 E

Project Number 173409690

Surface Elevation 801.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, dry to moist, some gravel *(Continued)*		SPT	7	1.1	10-5-8	
11								
12								
13				SPT	8	0.0	5-7-7	
14								
15				SPT	9	1.2	3-4-5	
16								
17	783.9							
18		Dolomite, gray, weathered		SPT	10	0.4	50/5"	
19	782.2							
20		Dolomite, gray with black, fine grained, hard, laminated to thin, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.8	0	
21		*Severely fractured from 20.0' to 21.1'*						
22								
23				RC	2	5.0	44	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.22**

Client Maumee Watershed Conservancy District

Boring Location 483,480.3 N; 1,646,186.9 E

Project Number 173409690

Surface Elevation 801.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray with black, fine grained, hard, laminated to thin, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	3.2	44	
28								
29	772.2							
		Boring terminated and backfilled with cement bentonite grout.						
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.23**

Client	Maumee Watershed Conservancy District	Boring Location	483,752.1 N; 1,646,196.1 E
Project Number	173409690	Surface Elevation	804.0 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/17/20
Project Location	Hancock County, Ohio	Depth to Water	16.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/17/20 | Date/Time: 12/17/20 13:48 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	804.0							
0	803.9	Topsoil						
0		LEAN CLAY WITH SAND, CL, light brown-orange, medium plasticity, firm, moist		SPT	1	1.0	2-2-3	
2				SPT	2	0.9	3-5-5	
4				SPT	3	1.1	5-6-6	
5				SPT	4	0.5	5-5-5	
6	798.0	LEAN CLAY, VISUAL, brown-gray, low plasticity, hard, dry, trace to little stone fragments, little sand, trace silt		SPT	5	1.5	6-8-11	
8				SPT	6	1.3	7-12-15	
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Stantec

SUBSURFACE LOG

Boring No. **B-3.23**

Client Maumee Watershed Conservancy District

Boring Location 483,752.1 N; 1,646,196.1 E

Project Number 173409690

Surface Elevation 804.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, brown-gray, low plasticity, hard, dry, trace to little stone fragments, little sand, trace silt *(Continued)*		SPT	7	1.5	5-8-11	
11								
12	791.5							
13		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, dry to moist, trace gravel, little sand		SPT	8	1.5	7-9-10	
14								
15								
16				SPT	9	1.5	8-11-13	
17								
18				SPT	10	1.4	2-3-4	
19								
20	784.0			SPT	11	0.1	50/1"	
	783.9	Dolomite, gray						

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 20.1'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.24**

Client	Maumee Watershed Conservancy District	Boring Location	484,060.9 N; 1,646,338.9 E
Project Number	173409690	Surface Elevation	801.9 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	1/21/21
Completed	1/25/21		
Project Location	Hancock County, Ohio	Depth to Water	17.5 ft
Date/Time	1/21/21 16:11		
Inspector	MF	Depth to Water	13.0 ft
Date/Time	1/22/21 09:11		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	801.9					ft		
0	801.7	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist		SPT	1	0.9	1-1-2	
1								
2				SPT	2	1.0	2-2-3	
3				SPT	3	1.2	2-2-3	
4								
5				SPT	4	1.2	4-5-5	
	795.9							
6		LEAN CLAY, CL, brown to gray, low plasticity, firm, dry to moist, some gravel		SPT	5	1.5	4-5-8	
7								
8				SPT	6	1.1	4-6-8	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Boring No. **B-3.24**

Client Maumee Watershed Conservancy District

Boring Location 484,060.9 N; 1,646,338.9 E

Project Number 173409690

Surface Elevation 801.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, CL, brown to gray, low plasticity, firm, dry to moist, some gravel *(Continued)*		SPT	7	1.5	5-6-9	
11								
12								
13				SPT	8	1.5	3-3-5	
14								
15				SPT	9	1.5	2-4-5	
16								
17	784.4							
	784.1	Dolomite, gray, weathered		SPT	10	0.2	50/4"	
18		Dolomite, gray with black, fine grained, hard, laminated to thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations						
19				RC	1	3.0	13	
20								
21								
22								
23				RC	2	5.0	22	

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.24**

Client Maumee Watershed Conservancy District

Boring Location 484,060.9 N; 1,646,338.9 E

Project Number 173409690

Surface Elevation 801.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	2.0	25	
	774.1							
28		*Boring terminated and piezometer installed. See piezometer installation detail for additional informatio on piezometer depth, screen interval, and backfill information.*						
29								
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.25**

Client	Maumee Watershed Conservancy District	Boring Location	484,065.5 N; 1,646,633.8 E
Project Number	173409690	Surface Elevation	800.7 ft; Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	12/17/20; Completed 12/17/20
Project Location	Hancock County, Ohio	Depth to Water	17.5 ft; Date/Time 12/17/20 15:30
Inspector	MF	Depth to Water	13.0 ft; Date/Time 12/17/20 16:31
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic; Weight: 140 lb; Drop: 30"; Efficiency: 87.6%

Borehole Azimuth: N/A; Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.7							
	800.6	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown-orange, low to medium plasticity, firm, moist, trace silt		SPT	1	0.8	2-2-3	
2				SPT	2	1.0	3-3-4	
3				SPT	3	1.0	5-6-7	
4								
5				SPT	4	1.1	6-8-8	
6	794.7	LEAN CLAY, VISUAL, brown-gray, low to medium plasticity, firm to hard, dry to moist, trace silt		SPT	5	1.5	3-2-3	
7								
8				SPT	6	1.5	6-13-15	
9								
10	790.7							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.25**

Client Maumee Watershed Conservancy District

Boring Location 484,065.5 N; 1,646,633.8 E

Project Number 173409690

Surface Elevation 800.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, gray, low plasticity, firm to hard, moist		SPT	7	1.5	13-12-10	
11								
12								
13				SPT	8	1.5	5-11-10	
14								
15								
16				SPT	9	1.5	3-5-7	
17	783.2							
18	782.5	SILTY SAND WITH GRAVEL, VISUAL, black-gray, medium to coarse, very dense, moist		SPT	10	1.3	14-23-50/4"	
	781.9	Dolomite, gray, weathered						
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Split spoon refusal at 18.8'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.26**

Client	Maumee Watershed Conservancy District	Boring Location	484,065.5 N; 1,646,951.8 E
Project Number	173409690	Surface Elevation	799.9 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/20/21 (Completed: 1/21/21)
Project Location	Hancock County, Ohio	Depth to Water	17.5 ft (Date/Time: 1/20/21 15:49)
Inspector	MF	Depth to Water	11.0 ft (Date/Time: 1/21/21 10:43)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

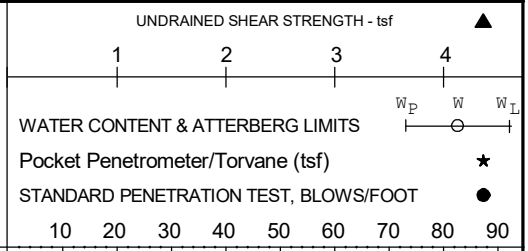
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.9							
	799.7	Topsoil						
1		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist		SPT	1	1.1	1-2-4	
2				SPT	2	0.8	2-4-4	
3				SPT	3	1.2	4-6-8	
4								
5	794.4			SPT	4	0.9	4-7-7	
		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to hard, dry to moist, some gravel						
6				SPT	5	1.5	2-4-7	
7								
8				SPT	6	1.3	6-10-11	
9								
10								



Boring No. **B-3.26**

Client Maumee Watershed Conservancy District

Boring Location 484,065.5 N; 1,646,951.8 E

Project Number 173409690

Surface Elevation 799.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to hard, dry to moist, some gravel *(Continued)*		SPT	7	1.0	5-8-9	
11								
12								
13				SPT	8	1.2	3-5-8	
14								
15				SPT	9	1.5	5-6-9	
16								
17	782.4							
18		SILTY SAND WITH GRAVEL, VISUAL, black and gray, fine to coarse, non-plastic, loose, wet, little clay		SPT	10	0.9	WOH-1-4	
19	780.9							
	780.2	Dolomite, gray, weathered						
20		Dolomite, gray with black, fine grained, hard, laminated to thin, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.2	42	
21								
22								
23				RC	2	5.0	46	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.26**

Client Maumee Watershed Conservancy District

Boring Location 484,065.5 N; 1,646,951.8 E

Project Number 173409690

Surface Elevation 799.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to thin, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27								
28				RC	3	3.8	26	
29	770.2							
30		*Boring terminated and backfilled with cement bentonite grout.*						
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.27**

Client	Maumee Watershed Conservancy District	Boring Location	484,056.3 N; 1,647,228.3 E
Project Number	173409690	Surface Elevation	799.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/18/20
Project Location	Hancock County, Ohio	Depth to Water	16.0 ft
Inspector	MF	Depth to Water	12.0 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 12/18/20
Date/Time: 12/18/20 09:12
Date/Time: 12/21/20 12:30

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.1							
	799.0	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown-orange to brown, low plasticity, firm, moist		SPT	1	0.8	WOH-2-3	
2				SPT	2	1.1	3-5-5	
3				SPT	3	1.3	6-6-7	
4								
5				SPT	4	1.0	5-7-8	
6								
7	791.6			SPT	5	1.5	3-5-8	
		SANDY LEAN CLAY, CL, gray, medium plasticity, firm to hard, moist						
8				SPT	6	1.5	8-14-20	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.27**

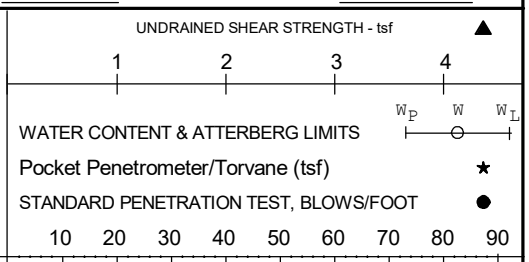
Client Maumee Watershed Conservancy District

Boring Location 484,056.3 N; 1,647,228.3 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray, medium plasticity, firm to hard, moist *(Continued)*		SPT	7	1.5	3-3-4	
11								
12								
13				SPT	8	1.5	6-6-7	
14								
15				SPT	9	1.5	3-8-9	
16								
17	781.6							
18		SILTY SAND WITH GRAVEL, VISUAL, brown with black, fine to medium, non-plastic, loose to medium dense, moist to wet		SPT	10	1.5	8-9-12	
19								
20				SPT	11	1.5	8-14-13	
21								
22								
23				SPT	12	1.5	8-4-4	



Boring No. **B-3.27**

Client Maumee Watershed Conservancy District

Boring Location 484,056.3 N; 1,647,228.3 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ ; W_P W W_L ; 10 20 30 40 50 60 70 80 90
24		SILTY SAND WITH GRAVEL, VISUAL, brown with black, fine to medium, non-plastic, loose to medium dense, moist to wet *(Continued)*							
25	773.8			SPT	13	0.8	38-50/4"		★ ○ ●
26	772.6	Dolomite, gray, weathered, moderate petroleum odor							
27		*Auger refusal at 26.5'. Boring terminated and backfilled with cement bentonite grout.*							
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.28**

Client	Maumee Watershed Conservancy District	Boring Location	484,051.7 N; 1,647,541.6 E
Project Number	173409690	Surface Elevation	799.2 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/21/20
Project Location	Hancock County, Ohio	Depth to Water	15.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/22/20 | Date/Time: 12/21/20 14:51 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.2					ft		
0	799.1	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown to orange, low to medium plasticity, firm to hard, dry to moist, trace silt		SPT	1	1.1	2-2-3	
1								
2				SPT	2	1.1	2-5-6	
3								
4				SPT	3	0.9	8-12-10	
5				SPT	4	0.8	4-7-12	
6	793.2							
		LEAN CLAY, VISUAL, brown with black, low plasticity, hard to very hard, dry to moist, some gravel		SPT	5	1.5	7-9-13	
7								
8				SPT	6	1.5	15-18-21	
9								
10	789.2							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.28**

Client: Maumee Watershed Conservancy District
Boring Location: 484,051.7 N; 1,647,541.6 E
Project Number: 173409690
Surface Elevation: 799.2 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, dry to moist, little silt		SPT	7	1.5	5-7-8	
11								
12								
13	786.2	SILTY SAND, SM, gray, non-plastic, medium dense to dense, moist to wet		SPT	8	1.1	4-5-5	
14								
15			▽					
16		*Atterberg limits = NP*		SPT	9	0.8	8-13-17	
17	781.7							
18		SILTY SAND WITH GRAVEL, VISUAL, black to gray, medium to coarse, non-plastic, loose to dense, moist to wet		SPT	10	0.8	1-2-6	
19								
20								
21				SPT	11	1.5	18-23-17	
22	776.7							
23	775.7	WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, black and gray, fine to medium, non-plastic, medium dense, moist		SPT	12	1.5	33-14-14	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.28**

Client Maumee Watershed Conservancy District

Boring Location 484,051.7 N; 1,647,541.6 E

Project Number 173409690

Surface Elevation 799.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray, weathered *(Continued)*						
	774.5							
25		Dolomite, gray with black, very fine grained, moderately hard to hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.5	27	
26								
27								
28				RC	2	5.0	44	
29								
30								
31								
32								
33				RC	3	3.5	71	
34	764.5							
35		*Boring terminated and backfilled with cement bentonite grout.*						
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.29**

Client	Maumee Watershed Conservancy District	Boring Location	484,051.7 N; 1,647,836.5 E
Project Number	173409690	Surface Elevation	797.9 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	12/22/20 (Completed: 12/22/20)
Project Location	Hancock County, Ohio	Depth to Water	16.0 ft (Date/Time: 12/22/20 13:00)
Inspector	PC	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.9							
	797.8	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown-orange, low to medium plasticity, firm, moist, little silt		SPT	1	0.8	WOH-2-3	
2				SPT	2	1.1	2-3-4	
3				SPT	3	0.9	4-5-7	
4								
5				SPT	4	1.1	4-5-6	
6	791.9	LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to hard, dry, iron oxide staining, trace stone fragments, trace silt		SPT	5	1.5	3-5-7	
7								
8				SPT	6	1.5	8-13-15	
9								
10	787.9							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Stantec

SUBSURFACE LOG

Boring No. **B-3.29**

Client Maumee Watershed Conservancy District

Boring Location 484,051.7 N; 1,647,836.5 E

Project Number 173409690

Surface Elevation 797.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, dry to moist, some silt		SPT	7	1.3	3-4-5	
11								
12								
13				SPT	8	1.5	4-5-5	
14								
15	782.6							
		WELL GRADED SAND WITH SILT, VISUAL, brown, fine to coarse, medium dense, moist to wet, trace clay		SPT	9	1.5	4-7-7	
16								
17								
18				SPT	10	1.5	2-5-7	
19								
20	777.4			SPT	11	0.4	46-50/4"	
		Dolomite, gray						
21	776.6							

Auger refusal at 21.3'. Boring terminated and backfilled with cement bentonite grout.

22

23

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.30**

Client	Maumee Watershed Conservancy District	Boring Location	484,047.1 N; 1,648,131.4 E
Project Number	173409690	Surface Elevation	797.6 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/19/21 (Completed: 1/20/21)
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft (Date/Time: 1/19/21 14:36)
Inspector	MF	Depth to Water	12.0 ft (Date/Time: 1/19/21 15:11)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.6							
	797.3	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray-white and orange-brown, low plasticity, firm, moist		SPT	1	0.7	1-2-3	
1								
				SPT	2	0.9	2-3-4	
2								
				SPT	3	1.2	4-4-6	
3								
				SPT	4	0.9	5-6-5	
4								
				SPT	5	1.2	1-2-4	
5								
	790.1							
		SANDY LEAN CLAY, CL, gray, low plasticity, firm to hard, moist		SPT	6	1.5	9-12-13	
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Stantec

SUBSURFACE LOG

Boring No. **B-3.30**

Client: Maumee Watershed Conservancy District
Boring Location: 484,047.1 N; 1,648,131.4 E
Project Number: 173409690
Surface Elevation: 797.6 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SANDY LEAN CLAY, CL, gray, low plasticity, firm to hard, moist *(Continued)*		SPT	7	1.5	2-7-8	
11								
12								
13				SPT	8	1.4	2-4-5	
14								
15	782.6							
	781.9	SILTY SAND, VISUAL, black and gray, fine, loose, wet		SPT	9	1.5	WOH-8-7	
16		WELL GRADED SAND WITH SILT, SW-SM, black and gray, non-plastic, medium dense, moist						
17								
18		*Atterberg limits = NP*		SPT	10	1.3	4-5-9	
19								
20	777.4							
	776.7	Dolomite, gray, weathered		SPT	11	0.9	43-50/5"	
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 20.9'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.

Stantec

SUBSURFACE LOG

Boring No. **B-3.31**

Client	Maumee Watershed Conservancy District	Boring Location	483,960.3 N; 1,648,132.3 E
Project Number	173409690	Surface Elevation	797.5 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/18/21 (Completed: 1/20/21)
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft (Date/Time: 1/18/21 16:27)
Inspector	MF	Depth to Water	8.3 ft (Date/Time: 1/19/21 09:01)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.5							
	797.3	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low to medium plasticity, firm, moist		SPT	1	1.1	2-2-4	
1								
2				SPT	2	1.1	4-5-6	
3				SPT	3	0.9	4-6-6	
4								
5				SPT	4	0.9	3-4-5	
6	791.0							
		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to very hard, dry to moist, trace gravel		SPT	5	1.5	1-5-6	
7								
8				SPT	6	1.5	11-15-16	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.31**

Client: Maumee Watershed Conservancy District
Boring Location: 483,960.3 N; 1,648,132.3 E
Project Number: 173409690
Surface Elevation: 797.5 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	787.0							
11		SILTY SAND, VISUAL, black and gray, fine, loose, wet		SPT	7	1.5	4-3-4	
12	785.0							
13		SANDY LEAN CLAY, CL, gray, low plasticity, firm, dry		SPT	8	1.5	3-3-6	
14	782.5							
15		SILTY SAND, SM, black and gray, non-plastic, medium dense, wet *Atterberg limits = NP*		SPT	9	1.5	8-6-10	
16								
17	780.0							
18		WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, black and gray, fine to coarse, dense, moist, trace clay		SPT	10	1.5	10-24-21	
19	777.7							
20		Dolomite, gray with black, fine grained, hard, laminated, moderately weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations		RC	1	1.4	21	
21								
22								
23				RC	2	5.0	44	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.31**

Client Maumee Watershed Conservancy District

Boring Location 483,960.3 N; 1,648,132.3 E

Project Number 173409690

Surface Elevation 797.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf (1 2 3 4) / WATER CONTENT & ATTERBERG LIMITS (W_P W W_L) / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)
24		Dolomite, gray with black, fine grained, hard, laminated, moderately weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations *(Continued)*							
25									
26									
27									
28				RC	3	3.6	22		
29		*Moderately fractured from 28.5' to 29.0'*							
	767.7								
30		*Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.*							
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.32**

Client	Maumee Watershed Conservancy District	Boring Location	484,152.7 N; 1,648,129.5 E
Project Number	173409690	Surface Elevation	797.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/20/21
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/20/21 | Date/Time: 1/20/21 09:42 | Date/Time: N/A

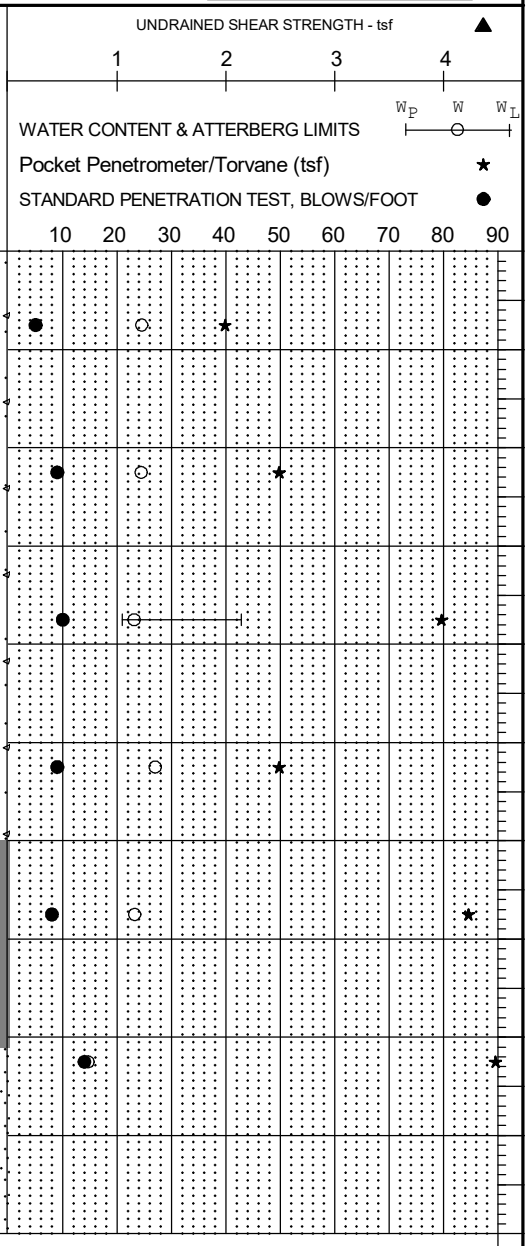
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.3							
	797.0	Topsoil						
1		LEAN CLAY WITH SAND, CL, gray-white and orange-brown, medium plasticity, firm, moist		SPT	1	0.6	1-3-2	
2				SPT	2	1.2	2-4-5	
3				SPT	3	1.1	4-5-5	
4				SPT	4	0.7	4-5-4	
5				SPT	5	1.5	3-3-5	
6								
7				SPT	6	1.3	4-5-9	
8	788.7							
9		LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist, some gravel						
10								



Boring No. **B-3.32**

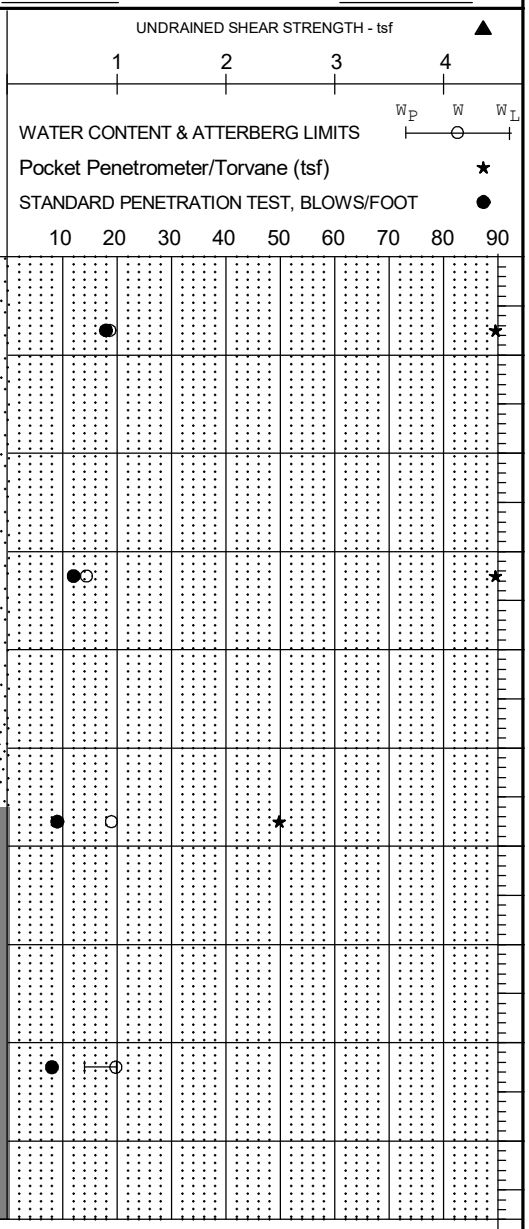
Client Maumee Watershed Conservancy District

Boring Location 484,152.7 N; 1,648,129.5 E

Project Number 173409690

Surface Elevation 797.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	786.3	LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist, some gravel *(Continued)*		SPT	7	1.2	6-8-10	
11		SILTY SAND, VISUAL, gray and black, fine, medium dense, moist						
12	784.8							
13		LEAN CLAY, VISUAL, gray, low plasticity, firm, moist, some gravel		SPT	8	1.5	5-5-7	
14								
15	781.8							
16		SILTY CLAYEY SAND, SC-SM, gray with black, low plasticity, loose to medium dense, wet		SPT	9	1.2	3-3-6	
17								
18	778.8			SPT	10	0.9	WOH-2-6	
19		WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, black and gray-white, fine to coarse, loose, moist						
	777.5							
20		*Auger refusal at 19.8'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.*						
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-3.33**

Client	Maumee Watershed Conservancy District	Boring Location	484,048.1 N; 1,648,465.7 E
Project Number	173409690	Surface Elevation	798.0 ft (Elevation Datum NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	12/22/20 (Completed 12/22/20)
Project Location	Hancock County, Ohio	Depth to Water	18.0 ft (Date/Time 12/22/20 15:49)
Inspector	PC	Depth to Water	11.2 ft (Date/Time 12/22/20 15:57)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.0					ft		
0	797.9	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange, low to medium plasticity, soft to firm, moist, little silt		SPT	1	1.1	WOH-1-3	
1								
2				SPT	2	1.1	2-3-4	
	795.0							
3		LEAN CLAY, VISUAL, brown-gray to dark brown, low plasticity, firm to hard, dry, trace to little stone fragments, trace silt		SPT	3	1.5	7-8-8	
4								
5				SPT	4	1.4	8-11-11	
6								
7				SPT	5	1.5	4-5-5	
8				SPT	6	1.5	9-11-16	
9								
10	788.0							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.33**

Client Maumee Watershed Conservancy District

Boring Location 484,048.1 N; 1,648,465.7 E

Project Number 173409690

Surface Elevation 798.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		LEAN CLAY WITH SAND, CL, gray, medium plasticity, firm to hard, dry to moist		SPT	7	1.5	5-7-9	
11								
12								
13				SPT	8	1.4	4-5-6	
14								
15								
16				SPT	9	1.5	2-5-6	
17								
18	780.0			SPT	10	0.8	6-50/4"	
	779.8	SILTY SAND, VISUAL, brown, fine to coarse, medium dense, wet, trace clay						
19	779.2	Dolomite, gray						
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Auger refusal at 18.8'. Boring terminated and backfilled with cement bentonite grout.

SUBSURFACE LOG

Boring No. **B-3.34**

Client	Maumee Watershed Conservancy District	Boring Location	484,029.7 N; 1,648,820.7 E
Project Number	173409690	Surface Elevation	797.6 ft
Project Name	Eagle Creek Flood Basin	Date Started	12/23/20
Project Location	Hancock County, Ohio	Depth to Water	18.5 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 12/23/20 | Date/Time: 12/23/20 09:20 | Date/Time: N/A

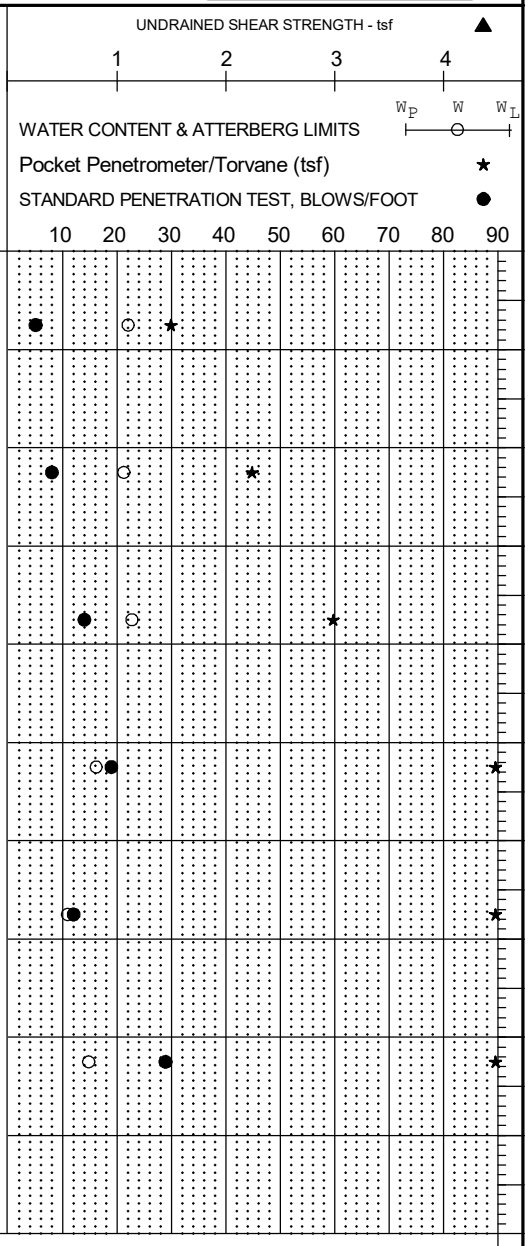
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.6					ft		
0	797.5	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-orange, low to medium plasticity, firm, moist, little silt		SPT	1	1.4	1-2-3	
1								
2				SPT	2	0.9	1-4-4	
3				SPT	3	1.4	6-6-8	
4	793.1							
		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to hard, dry, trace to little stone fragments, little silt		SPT	4	1.4	5-9-10	
5								
6				SPT	5	1.5	4-5-7	
7								
8				SPT	6	1.5	7-13-16	
9								
10								



Boring No. **B-3.34**

Client Maumee Watershed Conservancy District

Boring Location 484,029.7 N; 1,648,820.7 E

Project Number 173409690

Surface Elevation 797.6 ft Elevation Datum NAVD 88

UNDRAINED SHEAR STRENGTH - tsf

WATER CONTENT & ATTERBERG LIMITS

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm to hard, dry, trace to little stone fragments, little silt *(Continued)*		SPT	7	0.8	6-8-14	
11								
12								
13				SPT	8	0.1	10-7-5	
14								
15	782.6							
15		SILTY CLAY, VISUAL, gray, low plasticity, firm, moist, little sand		SPT	9	1.5	1-4-6	
16								
17	780.1							
18	779.1	SILTY SAND, VISUAL, brown, very fine to coarse, medium dense to dense, moist, some gravel		SPT	10	1.0	12-8-21	
19		WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, gray, very dense, moist						
20								
20	776.9			SPT	11	0.7	17-50/2"	
21		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered, 0° to 15° bedding angle, moderately fractured to fractured, with shale laminations		RC	1	0.5	0	
22								
23				RC	2	5.0	36	

Boring No. **B-3.34**

Client Maumee Watershed Conservancy District

Boring Location 484,029.7 N; 1,648,820.7 E

Project Number 173409690

Surface Elevation 797.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray, very fine grained, moderately hard to hard, laminated, slightly weathered, 0° to 15° bedding angle, moderately fractured to fractured, with shale laminations *(Continued)*						
25								
26								
27								
28				RC	3	4.5	47	
29								
30	766.9							
31		*Boring terminated and backfilled with cement bentonite grout.*						
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.35**

Client	Maumee Watershed Conservancy District	Boring Location	484,034.3 N; 1,649,171.0 E
Project Number	173409690	Surface Elevation	797.5 ft; Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	12/23/20; Completed 12/23/20
Project Location	Hancock County, Ohio	Depth to Water	18.0 ft; Date/Time 12/23/20 13:51
Inspector	PC	Depth to Water	N/A; Date/Time N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

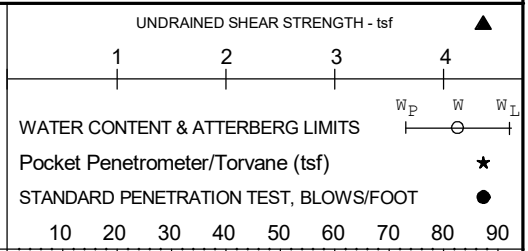
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic; Weight: 140 lb; Drop: 30"; Efficiency: 87.6%

Borehole Azimuth: N/A; Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.5					ft		
0	797.4	Topsoil						
		LEAN CLAY, VISUAL, brown-gray to gray-orange, low plasticity, firm to hard, dry to moist, trace stone fragments, trace silt		SPT	1	1.1	2-3-3	
1								
2				SPT	2	1.3	4-5-7	
3				SPT	3	1.3	8-11-13	
4								
5				SPT	4	0.9	8-12-12	
6								
7				SPT	5	1.5	4-5-7	
8				SPT	6	1.3	5-11-12	
9								
10	787.5							



Stantec

SUBSURFACE LOG

Boring No. **B-3.35**

Client Maumee Watershed Conservancy District

Boring Location 484,034.3 N; 1,649,171.0 E

Project Number 173409690

Surface Elevation 797.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAY, VISUAL, gray, low plasticity, firm, moist, trace gravel		SPT	7	1.5	4-7-7	
11								
12								
13				SPT	8	1.3	4-5-4	
14								
15								
16				SPT	9	1.5	2-5-5	
17								
18	779.5			SPT	10a	0.5	4-10-50/4"	
19	778.0	SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray, fine to coarse, dense to very dense, moist		SPT	10b	0.8		
20		*Auger refusal at 19.5'. Boring terminated and backfilled with cement bentonite grout.*						
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

SUBSURFACE LOG

Boring No. **B-3.36**

Client	Maumee Watershed Conservancy District	Boring Location	483,925.8 N; 1,649,904.9 E
Project Number	173409690	Surface Elevation	790.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/6/21
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft
Inspector	MF	Depth to Water	5.7 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/6/21 | Date/Time: 1/6/21 14:49 | Date/Time: 1/6/21 16:20

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.1							
	790.0	Topsoil						
		LEAN CLAY WITH SAND, CL, brown to orange, medium plasticity, firm, moist		SPT	1	0.9	WOH-2-3	
1								
				SPT	2	1.1	2-3-4	
2								
				SPT	3	1.2	4-5-5	
3								
				SPT	4	1.0	4-3-2	
4								
	783.6							
		CLAYEY SAND, SC, gray and brown, low plasticity, loose, moist		SPT	5	1.5	1-2-5	
5	782.8							
		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist		SPT	6	1.5	5-5-6	
6								
7								
8								
9								
10								

Stantec

SUBSURFACE LOG

Boring No. **B-3.36**

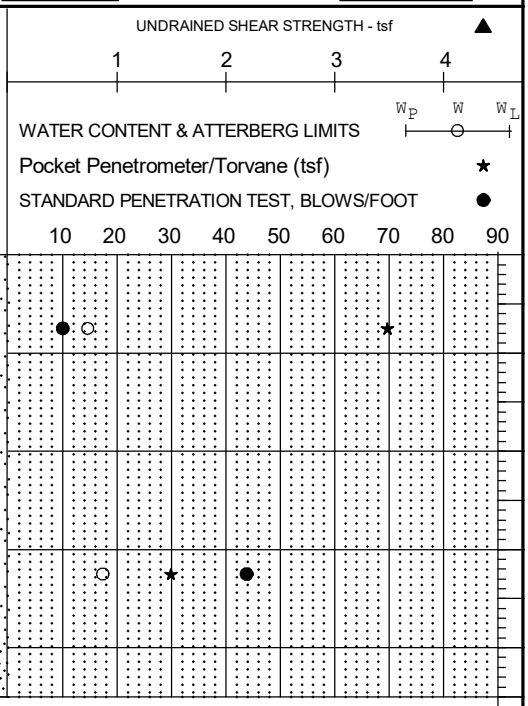
Client Maumee Watershed Conservancy District

Boring Location 483,925.8 N; 1,649,904.9 E

Project Number 173409690

Surface Elevation 790.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist *(Continued)*		SPT	7	1.1	4-5-5	
11	778.9							
		SILTY SAND, VISUAL, black and gray, fine, medium dense, moist to wet						
12	777.3							
13	776.6	SANDY LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, wet		SPT	8	1.5	2-2-42	
14	775.6	Dolomite, gray, weathered						
15		*Auger refusal to 14.5'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.*						
16								
17								
18								
19								
20								
21								
22								
23								



SUBSURFACE LOG

Boring No. **B-3.37**

Client	Maumee Watershed Conservancy District	Boring Location	483,988.2 N; 1,649,996.1 E
Project Number	173409690	Surface Elevation	790.0 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/5/21
Inspector	MF	Completed	1/5/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	7.5 ft
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	1/5/21 14:11
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" SS w/o liners	Depth to Water	5.7 ft
Rock Drilling and Sampling Tools (Type and Size)	NQ-2 Wireline, Solid Barrel, Surface Set Bit	Date/Time	1/6/21 10:14
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	87.6%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.0							
	789.9	Topsoil						
		LEAN CLAY WITH SAND, VISUAL, brown to orange, low plasticity, soft to firm, moist		SPT	1	0.7	WOH-1-3	
1								
2				SPT	2	1.2	2-3-5	
3				SPT	3	1.3	4-4-4	
4								
5				SPT	4	1.1	2-3-4	
6	783.5							
		LEAN CLAY, VISUAL, brown to gray, low plasticity, firm, moist, little sand		SPT	5	1.1	2-3-3	
7	782.5							
		SILTY SAND, VISUAL, brown and gray, fine, medium dense, moist, some clay						
8	781.7			SPT	6	1.3	3-4-6	
		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.37**

Client Maumee Watershed Conservancy District

Boring Location 483,988.2 N; 1,649,996.1 E

Project Number 173409690

Surface Elevation 790.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10								
	779.0	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist *(Continued)*		SPT	7	1.3	6-6-8	
11		SILTY CLAYEY SAND, VISUAL, gray, fine, medium dense, moist to wet						
12								
	777.0							
13	776.5	SANDY LEAN CLAY, CL, gray, low plasticity, hard, moist		SPT	8	1.5	2-8-25	
	775.8	Dolomite, gray, weathered						
14		Dolomite, dark gray, very fine grained to fine grained, hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	2.2	33	
15								
16								
17								
18								
19				RC	2	5.0	28	
20								
21								
22								
23				RC	3	2.6	69	

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.37**

Client Maumee Watershed Conservancy District

Boring Location 483,988.2 N; 1,649,996.1 E

Project Number 173409690

Surface Elevation 790.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ ; W_P W W_L ; 10 20 30 40 50 60 70 80 90 ★ ●
24	765.8	*Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen interval, and backfill information.*							
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.38**

Client	Maumee Watershed Conservancy District	Boring Location	484,069.0 N; 1,650,105.4 E
Project Number	173409690	Surface Elevation	790.6 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/4/21
Inspector	MF	Completed	1/4/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	10.5 ft
		Date/Time	1/4/21 15:10
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.6							
	790.5	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown to orange, low plasticity, firm to hard, moist		SPT	1	0.8	1-3-3	
1								
2				SPT	2	1.0	3-4-5	
3				SPT	3	1.1	9-10-11	
4								
5				SPT	4	1.1	6-6-6	
6								
7	783.1			SPT	5	1.4	8-3-6	
		LEAN CLAY, VISUAL, brown and gray, low plasticity, hard, dry to moist, little sand						
8				SPT	6	1.5	7-9-9	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.38**

Client Maumee Watershed Conservancy District

Boring Location 484,069.0 N; 1,650,105.4 E

Project Number 173409690

Surface Elevation 790.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	780.1							
11	779.4	SILTY CLAYEY SAND, SC-SM, black and gray, low plasticity, medium dense, moist		SPT	7	1.5	3-6-6	
12		SILTY CLAY, CL-ML, gray, low plasticity, firm, moist						
13				SPT	8	1.4	5-7-7	
14	775.8							
15	775.7	Dolomite, gray, weathered		SPT	9	0.1	50/1"	
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 14.9'. Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

Stantec

SUBSURFACE LOG

Boring No. **B-3.39**

Client	Maumee Watershed Conservancy District	Boring Location	483,753.1 N; 1,649,996.1 E
Project Number	173409690	Surface Elevation	790.9 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/7/21 (Completed: 1/7/21)
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft (Date/Time: 1/7/21 10:35)
Inspector	MF	Depth to Water	3.4 ft (Date/Time: 1/7/21 11:24)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.9							
	790.8	Topsoil						
		LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist, little silt		SPT	1	0.6	WOH-1-2	
2				SPT	2	1.2	2-3-4	
3				SPT	3	1.3	7-7-7	
4				SPT	4	1.1	8-6-5	
5				SPT	5	1.1	2-1-3	
6								
8	782.4			SPT	6	1.5	2-3-2	
		SILTY CLAYEY SAND, VISUAL, black and gray, fine to coarse, loose, wet						
10	780.9							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.39**

Client Maumee Watershed Conservancy District

Boring Location 483,753.1 N; 1,649,996.1 E

Project Number 173409690

Surface Elevation 790.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		CLAYEY SAND WITH GRAVEL, SC, gray, low plasticity, medium dense, wet		SPT	7	1.3	8-7-7	
11								
12								
13	777.9	SILTY CLAY, VISUAL, gray, low plasticity, hard, moist		SPT	8	1.5	7-10-9	
14	777.2	Dolomite, gray, weathered						
15	775.6			SPT	9	0.3	50/4"	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 15.3'. Boring terminated and backfilled with cement bentonite grout.

16 17 18 19 20 21 22 23

Stantec

SUBSURFACE LOG

Boring No. **B-3.40**

Client	Maumee Watershed Conservancy District	Boring Location	483,259.9 N; 1,650,000.7 E
Project Number	173409690	Surface Elevation	791.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/7/21 (Completed: 1/7/21)
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft (Date/Time: 1/7/21 13:50)
Inspector	MF	Depth to Water	4.0 ft (Date/Time: 1/7/21 14:32)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS.(psi) / RQD (%)
0	791.1					
	791.0	Topsoil				
1		LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist, some silt	SPT	1	0.9	1-2-3
2			SPT	2	0.9	2-2-4
3			SPT	3	1.1	3-4-5
4	786.6					
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist	SPT	4	1.0	3-3-3
5						
6			SPT	5	1.5	WOH-1-2
	784.1					
7		SILTY CLAYEY SAND, SC-SM, black, low plasticity, loose, moist to wet				
8			SPT	6	1.5	2-3-4
9						
	781.1					
10						

MONITOR WELL / PIEZOMETER

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)

Boring No. **B-3.40**

Client Maumee Watershed Conservancy District

Boring Location 483,259.9 N; 1,650,000.7 E

Project Number 173409690

Surface Elevation 791.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SILTY SAND WITH GRAVEL, VISUAL, gray-black, fine to coarse, medium dense, wet, some clay		SPT	7	1.5	5-6-7	
11								
12	778.2							
13		SILTY CLAY, VISUAL, gray, low plasticity, firm, moist to wet		SPT	8	1.3	3-3-4	
14								
15	775.6							
16		LEAN CLAY, VISUAL, gray, low plasticity, hard, dry to moist		SPT	9	1.4	16-16-16	
17	773.6							
18		Dolomite, gray, weathered		SPT	10	1.2	16-17-30	
19	772.1							
20		Dolomite, gray with black, fine grained, hard, slightly weathered, 0° to 15° bedding angle, moderately fractured to fractured, with shale laminations		RC	1	2.1	48	
21								
22								
23				RC	2	5.0	34	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.40**

Client Maumee Watershed Conservancy District

Boring Location 483,259.9 N; 1,650,000.7 E

Project Number 173409690

Surface Elevation 791.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, slightly weathered, 0° to 15° bedding angle, moderately fractured to fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	2.9	24	
28								
29	762.1							
30		*Boring terminated and backfilled with cement bentonite grout.*						
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.41**

Client	Maumee Watershed Conservancy District	Boring Location	482,988.0 N; 1,650,005.3 E
Project Number	173409690	Surface Elevation	790.7 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/8/21 (Completed: 1/8/21)
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft (Date/Time: 1/8/21 08:22)
Inspector	MF	Depth to Water	4.0 ft (Date/Time: 1/11/21 12:04)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.7							
	790.6	Topsoil						
1		LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist, with silt		SPT	1	0.6	2-2-2	
2				SPT	2	0.9	2-3-3	
3				SPT	3	1.1	4-3-3	
4								
5				SPT	4	1.1	2-3-2	
6								
7	783.7			SPT	5	1.3	WOH-2-1	
		LEAN CLAY, VISUAL, gray, low to medium plasticity, soft, moist						
8	782.2			SPT	6	1.5	2-1-2	
		SILTY CLAYEY SAND, VISUAL, gray and black, fine, very loose, wet						
9	780.7							
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.41**

Client Maumee Watershed Conservancy District

Boring Location 482,988.0 N; 1,650,005.3 E

Project Number 173409690

Surface Elevation 790.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		LEAN CLAY, VISUAL, brown to gray, low to medium plasticity, firm, moist, trace silt		SPT	7	1.5	5-4-3	
11		*Gravel from 10.9' to 11.0'*						
12	778.2	*Sand from 11.0' to 11.1'* *All gray at 11.1'*						
13	777.7	SILTY SAND, VISUAL, gray and black, fine, medium dense, wet		SPT	8	1.1	5-7-6	
14		LEAN CLAY, VISUAL, gray, low to medium plasticity, hard, moist to wet, some gravel						
15				SPT	9	0.2	8-9-9	
16								
17								
18				SPT	10	1.5	6-9-13	
19								
20				SPT	11	0.9	5-50/5"	
21	769.9							
	769.8	Dolomite, gray, weathered						

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Split spoon refusal at 20.9'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.42**

Client	Maumee Watershed Conservancy District	Boring Location	482,377.2 N; 1,649,995.9 E
Project Number	173409690	Surface Elevation	793.6 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/11/21 (Completed: 1/12/21)
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft (Date/Time: 1/11/21 14:12)
Inspector	MF	Depth to Water	2.5 ft (Date/Time: 1/12/21 09:30)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.6					ft		
0	793.5	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, firm, dry to moist		SPT	1	0.9	1-2-3	
1								
2				SPT	2	0.8	2-3-3	
3	790.1							
		LEAN CLAY, VISUAL, brown, low plasticity, firm, dry to moist, little gravel		SPT	3	1.2	5-5-8	
4								
5				SPT	4	1.2	4-5-7	
6	787.1							
		SILTY CLAYEY SAND, VISUAL, brown, very fine to fine, medium dense, wet		SPT	5	0.4	49-15-7	
7	786.1							
		LEAN CLAY, VISUAL, gray, low to medium plasticity, hard to very hard, moist		SPT	6	1.3	10-11-13	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-3.42**

Client Maumee Watershed Conservancy District

Boring Location 482,377.2 N; 1,649,995.9 E

Project Number 173409690

Surface Elevation 793.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, hard to very hard, moist *(Continued)*		SPT	7	1.2	9-17-18	
11	782.3							
		SILTY SAND, VISUAL, black and gray, fine to medium, loose, wet						
12								
13				SPT	8	1.5	2-2-4	
	779.7							
14		LEAN CLAY, CL, gray, low plasticity, firm, moist						
15								
16				SPT	9	1.2	3-2-7	
17								
18	775.1			SPT	10	0.8	8-13-24	
		Dolomite, gray, weathered						
19								
20				SPT	11	0.7	20-50/2"	
	772.9							
21		Dolomite, gray with black, very fine grained to fine grained, hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	0.3	0	
22								
23				RC	2	5.0	20	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.42**

Client Maumee Watershed Conservancy District

Boring Location 482,377.2 N; 1,649,995.9 E

Project Number 173409690

Surface Elevation 793.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray with black, very fine grained to fine grained, hard, laminated, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27		*Severely fractured from 27.4' to 27.5'*						
28				RC	3	4.7	26	
29								
30	762.9							
31		*Boring terminated and backfilled with cement bentonite grout.*						
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.43**

Client	Maumee Watershed Conservancy District	Boring Location	481,806.4 N; 1,649,866.2 E
Project Number	173409690	Surface Elevation	792.9 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/12/21 (Completed: 1/13/21)
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft (Date/Time: 1/12/21 13:56)
Inspector	MF	Depth to Water	4.0 ft (Date/Time: 1/13/21 10:31)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	792.9					ft		
0	792.7	Topsoil						
		LEAN CLAY WITH SAND, VISUAL, gray and orange-brown, medium plasticity, soft to firm, moist		SPT	1	0.5	2-3-4	
1								
2				SPT	2	0.8	4-4-7	
3								
4				SPT	3	1.1	4-5-5	
5				SPT	4	1.1	3-3-3	
6								
7	785.9			SPT	5	1.5	2-1-1	
		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, brown and gray-black, low plasticity, loose, moist						
8				SPT	6	0.6	1-1-4	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-3.43**

Client Maumee Watershed Conservancy District

Boring Location 481,806.4 N; 1,649,866.2 E

Project Number 173409690

Surface Elevation 792.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, brown and gray-black, low plasticity, loose, moist *(Continued)*		SPT	7	1.1	2-4-4	
11								
12								
13	779.9	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist, little sand		SPT	8	1.5	3-5-7	
14								
15				SPT	9	1.5	1-3-7	
16	776.5	SILTY SAND WITH GRAVEL, VISUAL, black, fine to coarse, medium dense, wet						
17								
18	774.1	Dolomite, gray, weathered		SPT	10	1.4	4-9-11	
19								
20				SPT	11	0.5	27-21-50/1"	
21	771.8	Dolomite, gray with black, fine grained, hard, laminated, slightly weathered to weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations						
22								
23				RC	1	5.0	18	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.43**

Client Maumee Watershed Conservancy District

Boring Location 481,806.4 N; 1,649,866.2 E

Project Number 173409690

Surface Elevation 792.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray with black, fine grained, hard, laminated, slightly weathered to weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27								
28				RC	2	5.0	36	
29								
30								
31	761.8							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

Stantec

SUBSURFACE LOG

Boring No. **B-3.43A**

Client	Maumee Watershed Conservancy District	Boring Location	481,800.4 N; 1,649,865.6 E
Project Number	173409690	Surface Elevation	792.9 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/13/21
Project Location	Hancock County, Ohio	Depth to Water	N/A
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/13/21 | Date/Time: N/A | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.9							
	792.7	Topsoil						
		LEAN CLAY WITH SAND, CL, gray and orange-brown, medium plasticity, soft to firm, moist						
1								
2								
3				ST	1	1.5	300	
4								
5				ST	2	0.8	300	
6								
7	785.9			ST	3	2.0	300	
		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, brown and gray-black, low plasticity, loose, moist						
8		*Lean clay from 8.0' to 8.5'*						
9				ST	4	2.0	300	
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 10/22/21

Boring No. **B-3.43A**

Client Maumee Watershed Conservancy District

Boring Location 481,800.4 N; 1,649,865.6 E

Project Number 173409690

Surface Elevation 792.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf (1 2 3 4) / WATER CONTENT & ATTERBERG LIMITS (W_P W W_L) / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)
						ft			
10		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, brown and gray-black, low plasticity, loose, moist *(Continued)*		ST	5	2.0	300		
11									
12	780.9								

Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information. Soil lithology from B-3.43 shown.

SUBSURFACE LOG

Boring No. **B-3.44**

Client	Maumee Watershed Conservancy District	Boring Location	481,797.8 N; 1,649,953.1 E
Project Number	173409690	Surface Elevation	792.6 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/1/21
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 2/3/21 | Date/Time: 2/1/21 17:46 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.6							
	792.4	Topsoil						
1		LEAN CLAY, VISUAL, gray and orange-brown, medium plasticity, firm, moist		SPT	1	0.9	2-2-4	
2				SPT	2	1.1	3-4-5	
3				SPT	3	1.2	6-5-6	
4	788.6	LEAN CLAY WITH SAND, VISUAL, gray and orange-brown, low plasticity, firm, moist						
5				SPT	4	0.7	5-5-6	
6								
7	785.6	SILTY CLAYEY SAND, SC-SM, gray and black, low plasticity, loose, moist		SPT	5	1.5	1-2-2	
8				SPT	6	0.8	WOH-3-3	
9								
10	782.6							

Boring No. **B-3.44**

Client Maumee Watershed Conservancy District

Boring Location 481,797.8 N; 1,649,953.1 E

Project Number 173409690

Surface Elevation 792.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine to coarse, loose, moist to wet		SPT	7	0.9	4-3-4	
12	780.1							
13		LEAN CLAY WITH GRAVEL, CL, gray, low plasticity, firm, moist		SPT	8	1.5	4-4-5	
15				SPT	9	1.1	2-2-8	
17	775.1							
18	774.1	SILTY CLAYEY SAND, VISUAL, gray, fine, dense, wet		SPT	10	1.5	6-6-25	
19	773.2	Dolomite, gray, weathered						
20		Dolomite, gray with black, fine grained, hard, laminated to very thick bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.6	25	
23				RC	2	5.0	24	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.44**

Client Maumee Watershed Conservancy District

Boring Location 481,797.8 N; 1,649,953.1 E

Project Number 173409690

Surface Elevation 792.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf (1 2 3 4) / WATER CONTENT & ATTERBERG LIMITS (W_P W W_L) / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)
24		Dolomite, gray with black, fine grained, hard, laminated to very thick bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*							
25									
26									
27		*Slightly fractured from 27.4' to 29.4'*		RC	3	3.4	79		
28									
29	763.2								

Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

30 31 32 33 34 35 36 37

SUBSURFACE LOG

Boring No. **B-3.44A**

Client	Maumee Watershed Conservancy District	Boring Location	481,790.8 N; 1,649,953.0 E
Project Number	173409690	Surface Elevation	792.7 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/4/21
Project Location	Hancock County, Ohio	Depth to Water	14.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 2/4/21 | Date/Time: 2/4/21 14:28 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.7							
	792.5	Topsoil						
		LEAN CLAY, CL, gray and orange-brown, medium plasticity, firm, moist						
3				ST	1	1.8	500	
	788.7							
		LEAN CLAY WITH SAND, CL, gray and orange-brown, low plasticity, firm, moist		ST	2	1.0	400	
	785.7			ST	3	2.0	500	
		SILTY CLAYEY SAND, VISUAL, gray and black, low plasticity, loose, moist		ST	4	1.2	600	
10	782.7							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 10/22/21

Boring No. **B-3.44A**

Client Maumee Watershed Conservancy District

Boring Location 481,790.8 N; 1,649,953.0 E

Project Number 173409690

Surface Elevation 792.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine to coarse, loose, moist to wet		ST	5	1.8	600	
12	780.2							
13		LEAN CLAY WITH GRAVEL, VISUAL, gray, low plasticity, firm, moist						
14	778.7							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information. Soil lithology from B-3.44 shown.

Stantec

SUBSURFACE LOG

Boring No. **B-3.45**

Client	Maumee Watershed Conservancy District	Boring Location	481,785.8 N; 1,650,038.5 E
Project Number	173409690	Surface Elevation	792.3 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	2/3/21 (Completed: 2/4/21)
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft (Date/Time: 2/3/21 10:53)
Inspector	MF	Depth to Water	5.5 ft (Date/Time: 2/3/21 15:53)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	792.3					ft		
0	792.1	Topsoil						
		LEAN CLAY WITH SAND, CL, gray and orange-brown, medium plasticity, firm to hard, moist		SPT	1	1.0	5-3-4	
1								
2				SPT	2	0.8	4-5-6	
3								
4	788.3			SPT	3	1.1	5-7-9	
		FAT CLAY, VISUAL, gray and orange-brown, medium plasticity, firm, moist						
5				SPT	4	0.9	5-6-5	
6								
	785.3			SPT	5	1.5	2-4-5	
7		SILTY SAND WITH GRAVEL, SM, gray and black, non-plastic, medium dense, moist to wet						
		Atterberg limits = NP		SPT	6	1.5	5-8-7	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.45**

Client Maumee Watershed Conservancy District

Boring Location 481,785.8 N; 1,650,038.5 E

Project Number 173409690

Surface Elevation 792.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, SM, gray and black, non-plastic, medium dense, moist to wet *(Continued)* *Increased fines content at 10.0'*		SPT	7	0.0	7-10-11	
12	779.8							
13		LEAN CLAY, CL, gray, low to medium plasticity, firm, moist		SPT	8	1.5	3-6-7	
15	776.6							
16	775.8	SILTY CLAYEY SAND, VISUAL, gray and black, fine to medium, very dense, wet, some gravel		SPT	9	1.5	3-10-44	
17		Dolomite, gray, weathered						
18				SPT	10	1.2	21-31-15	
19	772.5							
20		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	0.8	0	
21								
23				RC	2	5.0	50	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.45**

Client Maumee Watershed Conservancy District

Boring Location 481,785.8 N; 1,650,038.5 E

Project Number 173409690

Surface Elevation 792.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	4.2	67	
28								
29	762.5							
30		*Boring terminated and piezometer installed. See piezometer installation detail for additional information for piezometer depth, screen interval, and backfill information.*						
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.45A**

Client	Maumee Watershed Conservancy District	Boring Location	481,779.5 N; 1,650,037.5 E
Project Number	173409690	Surface Elevation	792.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/3/21
Inspector	MF	Completed	2/4/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.3							
	792.1	Topsoil						
		LEAN CLAY WITH SAND, VISUAL, gray and orange-brown, medium plasticity, firm to hard, moist						
3				ST	1	1.7	300	
	788.3							
		FAT CLAY, CH, gray and orange-brown, medium plasticity, firm, moist						
5				ST	2	2.0	500	
	785.3							
		SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine, non-plastic, medium dense, moist to wet		ST	3	1.9	350	
9				ST	4	1.3	700	

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.45A**

Client Maumee Watershed Conservancy District

Boring Location 481,779.5 N; 1,650,037.5 E

Project Number 173409690

Surface Elevation 792.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine, non-plastic, medium dense, moist to wet *(Continued)* *Increased fines at 10.0'*		ST	5	2.0	300	
12	779.8							
13		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist						
15	776.6							
16	775.8	SILTY CLAYEY SAND, VISUAL, gray and black, fine to medium, very dense, wet, some gravel						
17		Dolomite, gray, weathered						
19	772.9							

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Auger refusal at 19.4'. Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information. Soil lithology from B-3.45 shown.

SUBSURFACE LOG

Boring No. **B-3.46**

Client	Maumee Watershed Conservancy District	Boring Location	481,381.5 N; 1,649,912.1 E
Project Number	173409690	Surface Elevation	793.4 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/8/21
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 2/10/21
Date/Time: 2/9/21 09:09
Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

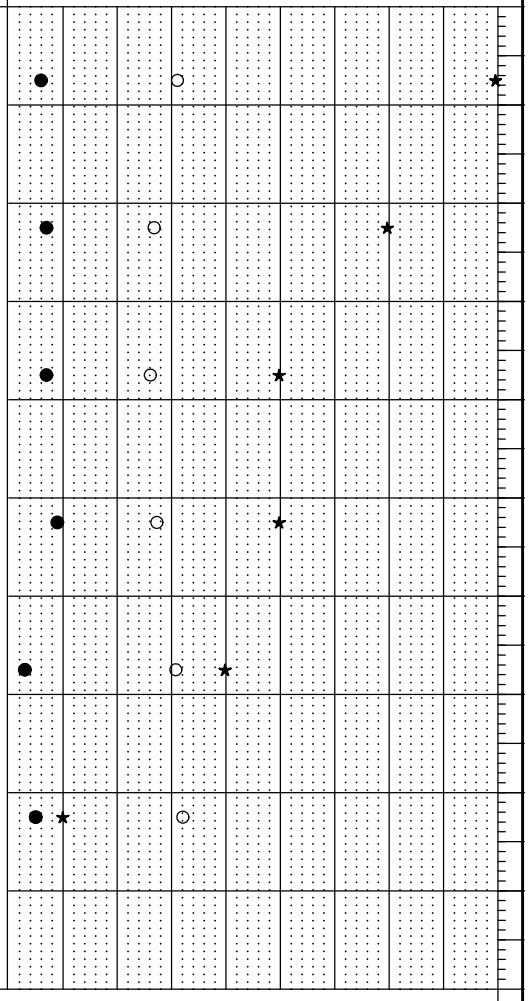
Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	793.4							
	793.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist		SPT	1	0.3	3-3-3	
1								
2				SPT	2	0.6	3-3-4	
3				SPT	3	1.1	4-4-3	
4								
5				SPT	4	1.1	3-4-5	
6								
7	785.9			SPT	5	1.1	2-2-1	
		SILTY CLAYEY SAND, VISUAL, gray with black, fine to medium, loose, wet		SPT	6	1.5	2-2-3	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90



Boring No. **B-3.46**

Client Maumee Watershed Conservancy District

Boring Location 481,381.5 N; 1,649,912.1 E

Project Number 173409690

Surface Elevation 793.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAYEY SAND, VISUAL, gray with black, fine to medium, loose, wet *(Continued)*		SPT	7	1.2	3-2-4	
11								
12	780.9							
13		SILTY SAND, VISUAL, gray with black, fine, medium dense, wet		SPT	8	1.2	6-8-8	
14								
15	778.4							
16	777.4	SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine to coarse, medium dense, moist		SPT	9	1.5	12-14-10	
17		LEAN CLAY, VISUAL, gray, low plasticity, hard to very hard, moist, some gravel						
18	774.8			SPT	10	0.6	32-43-50/1"	
19		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, wet, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations.		RC	1	1.5	0	
20								
21								
22		*Slightly fractured from 22.0' to 23.3'*		RC	2	5.0	42	
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.46**

Client Maumee Watershed Conservancy District

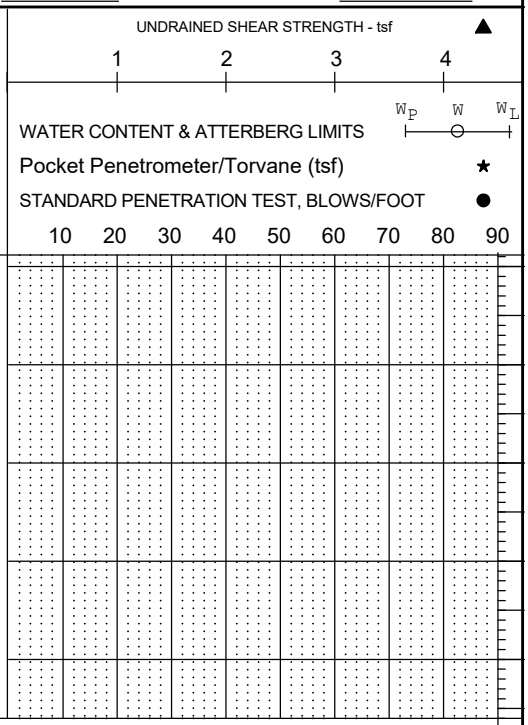
Boring Location 481,381.5 N; 1,649,912.1 E

Project Number 173409690

Surface Elevation 793.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, wet, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations. *(Continued)*						
25								
26								
27				RC	3	3.3	57	
28	764.8							
		Boring terminated and backfilled with cement bentonite grout.						
29								
30								
31								
32								
33								
34								
35								
36								
37								



SUBSURFACE LOG

Boring No. **B-3.47**

Client	Maumee Watershed Conservancy District	Boring Location	481,162.9 N; 1,650,130.1 E
Project Number	173409690	Surface Elevation	793.7 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/9/21
Inspector	MF	Completed	2/10/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	6.0 ft
		Date/Time	2/9/21 15:09
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

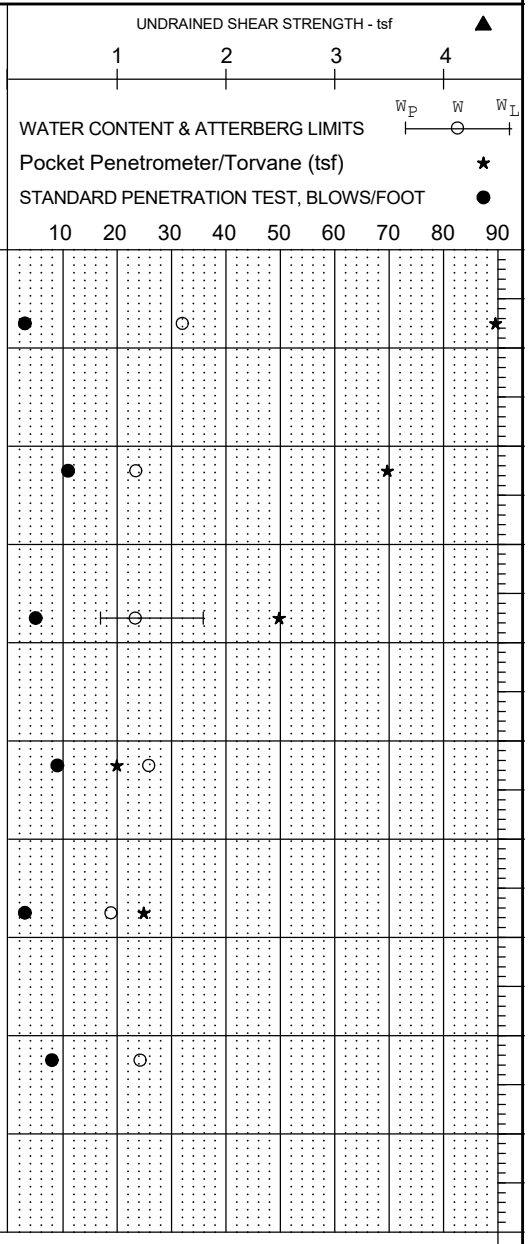
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.7					ft		
0	793.5	Topsoil						
		SANDY LEAN CLAY, CL, gray and orange-brown, medium plasticity, soft to firm, moist		SPT	1	0.3	2-1-2	
1								
2				SPT	2	1.1	4-5-6	
3				SPT	3	1.0	3-3-2	
4								
5	788.2			SPT	4	1.3	5-4-5	
		SILTY CLAYEY SAND, VISUAL, orange-brown with gray, fine, very loose to loose, moist						
6				SPT	5	1.5	2-2-1	
7								
	785.7							
8		SILTY SAND, SM, gray with black, non-plastic, loose, wet		SPT	6	1.4	2-3-5	
9								
10								



Boring No. **B-3.47**

Client Maumee Watershed Conservancy District

Boring Location 481,162.9 N; 1,650,130.1 E

Project Number 173409690

Surface Elevation 793.7 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, SM, gray with black, non-plastic, loose, wet *(Continued)* *Atterberg limits = NP*		SPT	7	1.3	5-4-5	
12	781.2							
13		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist, some sand		SPT	8	1.5	4-6-5	
15				SPT	9	1.5	3-3-5	
16	777.3							
17	776.2	WELL GRADED SAND, VISUAL, gray with black, fine to coarse, loose, moist to wet						
18		Dolomite, gray, weathered		SPT	10	0.5	49-50/1"	
19	774.7							
20		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	2.7	33	
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-3.47**

Client Maumee Watershed Conservancy District

Boring Location 481,162.9 N; 1,650,130.1 E

Project Number 173409690

Surface Elevation 793.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*		RC	2	5.0	26	
25								
26								
27				RC	3	2.3	39	
28								
29	764.7							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.48**

Client	Maumee Watershed Conservancy District	Boring Location	480,936.6 N; 1,650,369.7 E
Project Number	173409690	Surface Elevation	791.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/22/21
Inspector	MF	Completed	2/23/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	6.5 ft
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	2/22/21 12:59
		Depth to Water	N/A
		Date/Time	N/A

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	791.1					ft		
0		LEAN CLAY WITH SAND, VISUAL, brown, medium plasticity, firm, moist to wet		SPT	1	0.5	2-2-2	
1								
2				SPT	2	0.5	2-2-3	
3								
4	786.6			SPT	3	0.8	2-3-3	
5		SILTY CLAYEY SAND, VISUAL, gray with brown, fine, very loose to loose, wet		SPT	4	1.5	3-2-3	
6								
7	783.6			SPT	5	1.0	2-1-2	
8		WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, gray and black, fine to coarse, loose, wet		SPT	6	1.5	1-4-5	
9								
10	781.1							

UNDRAINED SHEAR STRENGTH - tsf
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT
10 20 30 40 50 60 70 80 90

Boring No. **B-3.48**

Client Maumee Watershed Conservancy District

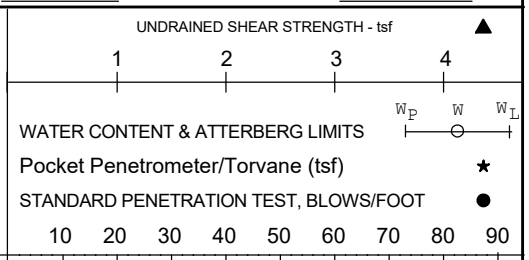
Boring Location 480,936.6 N; 1,650,369.7 E

Project Number 173409690

Surface Elevation 791.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist		SPT	7	1.0	2-3-2	
11								
12	778.6							
13		SILTY SAND, SM, gray, non-plastic, medium dense, moist to wet *Atterberg limits = NP*		SPT	8	1.0	5-6-8	
14								
15				SPT	9	1.5	5-7-9	
16	775.1							
17		SANDY LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist to wet						
18	773.6	Dolomite, gray, weathered		SPT	10	0.7	21-50/5"	
19	771.9							
20		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered to highly weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.0	0	
21								
22								
23				RC	2	4.8	22	



Boring No. **B-3.48**

Client Maumee Watershed Conservancy District

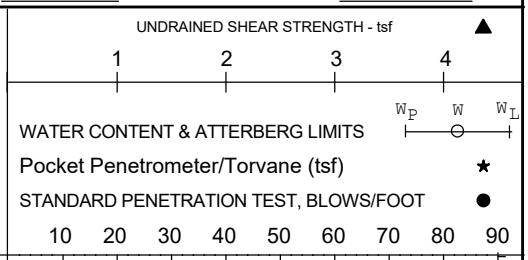
Boring Location 480,936.6 N; 1,650,369.7 E

Project Number 173409690

Surface Elevation 791.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, moderately weathered to highly weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	3.2	31	
28								
29	761.9							
		Boring terminated and backfilled with cement bentonite grout.						
30								
31								
32								
33								
34								
35								
36								
37								



Stantec

SUBSURFACE LOG

Boring No. **B-3.48A**

Client	Maumee Watershed Conservancy District	Boring Location	480,936.6 N; 1,650,369.7 E
Project Number	173409690	Surface Elevation	791.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/23/21
Inspector	MF	Completed	2/23/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	N/A
Overburden Drilling and Sampling Tools (Type and Size)	3-1/4" HSA, 3" Shelby Tubes	Depth to Water	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Date/Time	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	87.6%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	791.1	LEAN CLAY WITH SAND, CL, brown, medium plasticity, firm, moist		ST	1	2.0	100	
1								
2				ST	2	1.3	100	
3	787.1	SILTY CLAYEY SAND, VISUAL, gray with brown, fine, very loose to loose, wet						
4				ST	3	1.3	400	
5	785.1							
6		*Boring terminated and backfilled with cement bentonite grout. Soil lithology from B-3.48 shown. This boring is a companion boring with B-3.48 and is located within 5 feet of the reported location.*						
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.49**

Client	Maumee Watershed Conservancy District	Boring Location	480,983.6 N; 1,650,405.8 E
Project Number	173409690	Surface Elevation	790.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	2/23/21 (Completed: 2/23/21)
Project Location	Hancock County, Ohio	Depth to Water	4.5 ft (Date/Time: 2/23/21 14:11)
Inspector	MF	Depth to Water	9.9 ft (Date/Time: 2/23/21 15:28)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	790.1	SANDY LEAN CLAY, VISUAL, gray with brown, low plasticity, soft to firm, moist to wet		SPT	1	0.7	1-1-2	
1								
2				SPT	2	0.6	2-2-2	
3				SPT	3	1.2	2-2-2	
4	785.6	SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine to coarse, loose, moist to wet		SPT	4	1.3	2-4-4	
5								
6				SPT	5	0.8	5-4-3	
7	783.1							
	782.6	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist						
8		WELL GRADED SAND WITH SILT, VISUAL, gray with black, fine to coarse, very loose to loose, moist to wet, little clay		SPT	6	1.5	3-3-6	
9		*Small clay lens at 8.5'*						
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-3.49**

Client Maumee Watershed Conservancy District

Boring Location 480,983.6 N; 1,650,405.8 E

Project Number 173409690

Surface Elevation 790.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		WELL GRADED SAND WITH SILT, VISUAL, gray with black, fine to coarse, very loose to loose, moist to wet, little clay *(Continued)*		SPT	7	0.7	2-2-1	
11								
12								
13	776.6			SPT	8	1.4	9-10-50/5"	
14	775.9	Dolomite, gray, weathered						
15		Dolomite, gray with black, fine grained, soft to hard, laminated, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.9	14	
16								
17								
18								
19				RC	2	5.0	46	
20								
21								
22				RC	3	2.9	45	
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.49**

Client Maumee Watershed Conservancy District

Boring Location 480,983.6 N; 1,650,405.8 E

Project Number 173409690

Surface Elevation 790.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24	765.9	*Boring terminated and backfilled with cement bentonite grout.*						
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.49A**

Client	Maumee Watershed Conservancy District	Boring Location	480,983.6 N; 1,650,405.8 E
Project Number	173409690	Surface Elevation	790.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/23/21
Inspector	MF	Completed	2/23/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	790.1					ft		
0		SANDY LEAN CLAY, VISUAL, gray with brown, low plasticity, soft to firm, moist to wet		ST	1	1.5	100	
1								
2				ST	2	1.1	400	
3								
4	785.6							
5		SILTY SAND WITH GRAVEL, VISUAL, gray and black, fine to coarse, loose, moist to wet		ST	3	0.4	800	
6	784.1							
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout. Soil lithology from B-3.49 shown.
This boring is a companion boring with B-3.49 and is located within 5 feet of the reported location.

Stantec

SUBSURFACE LOG

Boring No. **B-3.50**

Client	Maumee Watershed Conservancy District	Boring Location	481,032.6 N; 1,650,442.8 E
Project Number	173409690	Surface Elevation	787.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/10/21
Inspector	MF	Completed	2/11/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	3.0 ft
		Date/Time	2/10/21 16:41
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	787.1					ft		
0		SANDY LEAN CLAY, VISUAL, gray, low plasticity, soft to firm, wet		SPT	1	0.1	1-2-2	
1								
2				SPT	2	0.6	WOH-2-1	
	784.1							
3		SILTY SAND, SM, gray with black, non-plastic, loose, moist to wet		SPT	3	1.3	2-2-2	
4								
5		*Atterberg limits = NP*		SPT	4	1.3	2-3-3	
		Small clay lens at 5.7'						
6								
7				SPT	5	0.7	2-4-2	
	779.6	*Small clay lens at 7.2'*						
8		WELL GRADED SAND WITH SILT, SW-SM, gray and black, non-plastic, medium dense, moist		SPT	6	1.5	4-4-6	
		Atterberg limits = NP						
9								
	777.1							
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.50**

Client Maumee Watershed Conservancy District

Boring Location 481,032.6 N; 1,650,442.8 E

Project Number 173409690

Surface Elevation 787.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10	776.6	SILTY SAND WITH GRAVEL, VISUAL, gray with black, coarse, medium dense, moist		SPT	7	1.5	12-10-18	
11	775.6	WELL GRADED SAND, VISUAL, gray with black, fine to coarse, medium dense, moist						
12		Dolomite, gray, weathered		SPT	8	0.1	50/1"	
13	774.1	Dolomite, gray with black, fine grained, hard, laminated to thin bedded, moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	3.2	66	
14								
15								
16								
17								
18				RC	2	5.0	10	
19								
20								
21								
22				RC	3	1.8	50	
23	764.1							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout.

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.50A**

Client	Maumee Watershed Conservancy District	Boring Location	481,032.6 N; 1,650,442.8 E
Project Number	173409690	Surface Elevation	787.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/11/21
Inspector	MF	Completed	2/11/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	787.1	SANDY LEAN CLAY, VISUAL, gray, low plasticity, soft to firm, wet						
3	784.1	SILTY SAND, VISUAL, gray with black, non-plastic, loose, moist to wet		ST	1	1.8	500	
5				ST	2	1.8	600	
7	779.6			ST	3	0.9	600	
8	779.1	WELL GRADED SAND WITH SILT, VISUAL, gray and black, non-plastic, medium dense, moist, with silt						

Boring terminated and backfilled with cement bentonite grout. Soil lithology from B-3.50 shown. This boring is a companion boring with B-3.50 and is located within 5 feet of the reported location.

SUBSURFACE LOG

Boring No. **B-3.51**

Client	Maumee Watershed Conservancy District	Boring Location	480,884.4 N; 1,650,455.7 E
Project Number	173409690	Surface Elevation	791.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/8/21
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft
Inspector	MF	Depth to Water	3.9 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 3/9/21
Date/Time: 3/8/21 13:36
Date/Time: 3/8/21 17:19

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)
WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	791.3							
	791.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown and gray, low plasticity, firm, moist		SPT	1	0.8	1-3-2	
1								
2				SPT	2	0.9	2-3-2	
	788.3							
3		CLAYEY SAND, SC, gray with brown, low plasticity, very loose to loose, moist		SPT	3	1.2	2-3-2	
4								
5	786.0			SPT	4	1.5	2-1-2	
	785.3	SILTY CLAYEY SAND, VISUAL, gray with brown, fine to coarse, very loose, wet						
6		SILTY SAND WITH GRAVEL, VISUAL, gray with brown, fine to coarse, very loose to loose, moist to wet, little clay		SPT	5	1.0	1-1-1	
7								
8	782.8			SPT	6	1.5	1-3-2	
	782.3	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist						
9								
10								

Printed on 11/12/21

Boring No. **B-3.51**

Client Maumee Watershed Conservancy District

Boring Location 480,884.4 N; 1,650,455.7 E

Project Number 173409690

Surface Elevation 791.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		WELL GRADED SAND WITH SILT, SW-SM, gray, non-plastic, very loose to loose, wet *(Continued)*		SPT	7	1.5	1-2-4	
11								
12								
13		*Atterberg limits = NP*		SPT	8	1.0	1-1-1	
14								
15	776.3							
	775.9	GRAVELLY LEAN CLAY, VISUAL, gray, low plasticity, very hard, moist		SPT	9	0.4	50/5"	
				RC	1	0.4	0	
16		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations						
17								
18		*Core loss from 16.2' to 17.2'*		RC	2	4.0	10	
19								
20								
21								
22								
23				RC	3	4.6	52	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.51**

Client Maumee Watershed Conservancy District

Boring Location 480,884.4 N; 1,650,455.7 E

Project Number 173409690

Surface Elevation 791.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24								
25	765.9							
26		*Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.*						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.51A**

Client	Maumee Watershed Conservancy District	Boring Location	480,880.8 N; 1,650,460.1 E
Project Number	173409690	Surface Elevation	792.0 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/8/21
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 3/9/21
Date/Time: 3/8/21 17:31
Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.0							
	791.9	Topsoil						
		SANDY LEAN CLAY, CL, brown and gray, low plasticity, firm, moist		ST	1	1.0	200	
2								
	789.0							
3		CLAYEY SAND, VISUAL, gray with brown, low plasticity, very loose to loose, moist		ST	2	1.6	400	
4								
5	786.7			ST	3	2.0	500	
	786.0	SILTY CLAYEY SAND, VISUAL, gray with brown, fine to coarse, very loose, wet						
6								
		SILTY SAND WITH GRAVEL, VISUAL, gray with brown, fine to coarse, very loose to loose, moist to wet, little clay		ST	4	2.0	600	
8	783.5							
	783.0	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist		ST	5	2.0	750	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Boring No. **B-3.51A**

Client Maumee Watershed Conservancy District

Boring Location 480,880.8 N; 1,650,460.1 E

Project Number 173409690

Surface Elevation 792.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		WELL GRADED SAND WITH SILT, VISUAL, gray, non-plastic, very loose to loose, wet *(Continued)*						
11								
12								
13	778.5							
14		*Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.* *Soil lithology from B-3.51 shown.*						
15								
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.52**

Client	Maumee Watershed Conservancy District	Boring Location	480,930.8 N; 1,650,491.2 E
Project Number	173409690	Surface Elevation	789.2 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/4/21
Project Location	Hancock County, Ohio	Depth to Water	3.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 3/5/21
Date/Time: 3/4/21 16:54
Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	789.2					ft		
0		SANDY LEAN CLAY, VISUAL, brown, low plasticity, soft, wet		SPT	1	0.8	WOH-1-2	
1	787.7							
2		CLAYEY SAND, VISUAL, brown, fine to medium, loose, wet		SPT	2	0.9	2-2-3	
3	786.2							
	785.4	SILTY SAND, VISUAL, brown and gray, fine to coarse, loose, moist to wet		SPT	3	1.3	3-3-5	
4	784.7	LEAN CLAY, VISUAL, gray, low plasticity, firm, moist						
5		SILTY SAND WITH GRAVEL, VISUAL, gray-black with brown, fine to coarse, very loose, wet		SPT	4	1.1	1-1-1	
6	783.2							
7		WELL GRADED SAND WITH SILT, VISUAL, gray and black, fine to coarse, medium dense, moist to wet *Clay lens from 7.0' to 7.3'*		SPT	5	1.2	2-6-7	
8				SPT	6	1.5	3-5-9	
9		*Clay lens from 8.7' to 8.9'*						
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)
WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-3.52**

Client Maumee Watershed Conservancy District

Boring Location 480,930.8 N; 1,650,491.2 E

Project Number 173409690

Surface Elevation 789.2 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		WELL GRADED SAND WITH SILT, VISUAL, gray and black, fine to coarse, medium dense, moist to wet *(Continued)*		SPT	7	1.1	3-7-7	
11								
12								
13				SPT	8	1.5	5-6-6	
14	774.8							
	774.5	Dolomite, gray, weathered						
15		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to highly weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.3	54	
16								
17								
18				RC	2	5.0	22	
19								
20								
21								
22				RC	3	3.7	35	
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.52**

Client Maumee Watershed Conservancy District

Boring Location 480,930.8 N; 1,650,491.2 E

Project Number 173409690

Surface Elevation 789.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf ▲ 1 2 3 4 / WATER CONTENT & ATTERBERG LIMITS W_P W W_L / Pocket Penetrometer/Torvane (tsf) ★ / STANDARD PENETRATION TEST, BLOWS/FOOT ● 10 20 30 40 50 60 70 80 90
24	764.5								
25		*Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.*							
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-3.52A**

Client	Maumee Watershed Conservancy District	Boring Location	480,925.7 N; 1,650,497.0 E
Project Number	173409690	Surface Elevation	789.9 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	3/8/21
Inspector	MF	Completed	3/9/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	789.9							
		SANDY LEAN CLAY, VISUAL, brown, low plasticity, soft, moist		ST	1	1.3	300	
1	788.4							
		CLAYEY SAND, VISUAL, brown, fine to medium, loose, wet						
2	786.9			ST	2	1.3	700	
3		SILTY SAND, VISUAL, brown and gray, fine to coarse, loose, moist to wet						
	786.1							
4	785.4	LEAN CLAY, VISUAL, gray, low plasticity, firm, moist						
		SILTY SAND WITH GRAVEL, VISUAL, gray-black with brown, fine to coarse, very loose, wet						
5	783.9							
6		WELL GRADED SAND WITH SILT, VISUAL, gray and black, fine to coarse, medium dense, moist to wet						
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.52A**

Client Maumee Watershed Conservancy District

Boring Location 480,925.7 N; 1,650,497.0 E

Project Number 173409690

Surface Elevation 789.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf; WATER CONTENT & ATTERBERG LIMITS; Pocket Penetrometer/Torvane (tsf); STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲; W_P W W_L; ★; ● 10 20 30 40 50 60 70 80 90
10	779.4								
11		*Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information. Soil lithology from B-3.52 shown.*							
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

Stantec

SUBSURFACE LOG

Boring No. **B-3.53**

Client	Maumee Watershed Conservancy District	Boring Location	480,972.4 N; 1,650,528.4 E
Project Number	173409690	Surface Elevation	788.7 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	3/4/21
Inspector	MF	Completed	3/4/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	1.4 ft
		Date/Time	3/4/21 11:23
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	788.7					ft		
0		SANDY LEAN CLAY, VISUAL, brown, low plasticity, soft, wet		SPT	1	0.7	WOH-1-2	
1	787.2							
2		CLAYEY SAND, VISUAL, brown with gray, fine to medium, loose, wet		SPT	2	0.9	2-3-5	
3	785.7							
		SILTY SAND, VISUAL, brown and gray, fine to coarse, medium dense, moist		SPT	3	1.5	5-9-8	
4	784.7	*Small clay lens at 3.8'*						
		SILTY SAND, SM, gray with brown, non-plastic, medium dense, moist to wet		SPT	4	1.5	3-3-9	
5								
6				SPT	5	1.5	4-9-15	
7		*Atterberg limits = NP*						
8				SPT	6	1.3	8-11-15	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.53**

Client Maumee Watershed Conservancy District

Boring Location 480,972.4 N; 1,650,528.4 E

Project Number 173409690

Surface Elevation 788.7 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, SM, gray with brown, non-plastic, medium dense, moist to wet *(Continued)*		SPT	7	1.5	2-5-5	
		Clay lens from 10.2' to 10.5'						
12								
13				SPT	8	1.1	6-16-45	
	774.9							
14		Dolomite, gray, weathered						
	774.2							
15		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.3	23	
16								
17								
18				RC	2	5.0	34	
19								
20								
21								
22				RC	3	3.7	46	
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.53**

Client Maumee Watershed Conservancy District

Boring Location 480,972.4 N; 1,650,528.4 E

Project Number 173409690

Surface Elevation 788.7 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24	764.2							

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

25 26 27 28 29 30 31 32 33 34 35 36 37

Stantec

SUBSURFACE LOG

Boring No. **B-3.53A**

Client	Maumee Watershed Conservancy District	Boring Location	480,964.8 N; 1,650,536.6 E
Project Number	173409690	Surface Elevation	789.2 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	3/4/21
Completed	3/9/21		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	789.2					ft		
0		SANDY LEAN CLAY, VISUAL, brown, low plasticity, soft, wet		ST	1	1.2	300	
1	787.7	CLAYEY SAND, VISUAL, brown with gray, fine to medium, loose, wet						
2				ST	2	2.0	700	
3	786.2	SILTY SAND, VISUAL, brown and gray, fine to coarse, medium dense, moist						
4	785.2	SILTY SAND, VISUAL, gray with brown, non-plastic, medium dense, moist to wet						
5								
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Boring No. **B-3.53A**

Client Maumee Watershed Conservancy District

Boring Location 480,964.8 N; 1,650,536.6 E

Project Number 173409690

Surface Elevation 789.2 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, VISUAL, gray with brown, non-plastic, medium dense, moist to wet *(Continued)*						
11								
12								
13	776.2							

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.
Soil lithology from B-3.53 shown.

14 15 16 17 18 19 20 21 22 23

SUBSURFACE LOG

Boring No. **B-3.54**

Client	Maumee Watershed Conservancy District	Boring Location	480,836.9 N; 1,650,632.2 E
Project Number	173409690	Surface Elevation	793.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/3/21
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft
Inspector	MF	Depth to Water	9.5 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 3/4/21 | Date/Time: 3/3/21 16:08 | Date/Time: 3/4/21 08:22

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	793.3							
	793.1	Topsoil						
		LEAN CLAY, CL, orange-brown and gray, medium plasticity, soft to firm, moist		SPT	1	0.5	1-1-2	
1								
2				SPT	2	0.8	3-3-2	
3				SPT	3	1.1	3-3-3	
4								
5				SPT	4	0.9	3-3-3	
6	786.8							
		SILTY SAND, SM, brown with gray, non-plastic, loose to medium dense, moist to wet		SPT	5	1.5	1-2-3	
7		*Clay lens from 7.3' to 7.5'*						
8				SPT	6	1.5	3-5-4	
		Small lean clay lens at 8.8'						
9								
10								

Boring No. **B-3.54**

Client Maumee Watershed Conservancy District

Boring Location 480,836.9 N; 1,650,632.2 E

Project Number 173409690

Surface Elevation 793.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, SM, brown with gray, non-plastic, loose to medium dense, moist to wet *(Continued)*		SPT	7	1.3	4-4-7	
		Atterberg limits = NP						
12								
13				SPT	8	0.9	3-5-6	
14								
15				SPT	9	0.8	4-8-5	
16	777.3							
		SILTY SAND WITH GRAVEL, VISUAL, gray, fine to coarse, medium dense, moist						
17								
18	775.1			SPT	10	0.7	3-5-50/2"	
		LEAN CLAY, VISUAL, gray, low to medium plasticity, hard to very hard, moist						
19	773.8							
20		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.5	73	
21								
22								
23				RC	2	5.0	40	

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.54**

Client Maumee Watershed Conservancy District

Boring Location 480,836.9 N; 1,650,632.2 E

Project Number 173409690

Surface Elevation 793.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27				RC	3	3.5	14	
28								
29	763.8							
		Boring terminated and backfilled with cement bentonite grout.						
30								
31								
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.55**

Client	Maumee Watershed Conservancy District	Boring Location	480,183.1 N; 1,650,719.4 E
Project Number	173409690	Surface Elevation	800.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/9/21
Project Location	Hancock County, Ohio	Depth to Water	12.5 ft
Inspector	MF	Depth to Water	14.0 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 3/10/21 | Date/Time: 3/9/21 16:03 | Date/Time: 3/9/21 17:07

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.3							
0	800.1	Topsoil						
0		SANDY LEAN CLAY, VISUAL, brown and gray, low plasticity, firm, moist		SPT	1	0.7	1-2-3	
2				SPT	2	1.3	2-3-3	
4				SPT	3	1.2	3-4-7	
5				SPT	4	0.8	3-8-7	
6				SPT	5	1.0	1-2-5	
7	792.8							
8		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm to hard, moist, some gravel		SPT	6	1.5	4-10-10	
9								
10								

Boring No. **B-3.55**

Client Maumee Watershed Conservancy District

Boring Location 480,183.1 N; 1,650,719.4 E

Project Number 173409690

Surface Elevation 800.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		LEAN CLAY, VISUAL, gray with brown, low plasticity, firm to hard, moist, some gravel *(Continued)*		SPT	7	0.0	13-16-10	
11								
12								
13				SPT	8	0.9	3-4-5	
14								
15	785.3							
	784.8	WELL GRADED SAND WITH SILT, VISUAL, gray with black, fine to coarse, medium dense, moist		SPT	9	1.4	7-6-6	
16		LEAN CLAY, VISUAL, gray, low plasticity, firm, moist, some gravel						
17								
18				SPT	10	1.3	2-6-8	
	781.3	*Dolomite boulder from 18.7' to 19.0'*						
19		SILTY SAND WITH GRAVEL, VISUAL, black and gray, fine to coarse, loose, moist						
20								
	779.3			SPT	11	1.5	4-5-4	
21		SILTY SAND, VISUAL, gray and black, fine to medium, loose to very dense, moist						
22								
23				SPT	12	1.4	5-35-50/1"	
	776.9							
	776.4							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring No. **B-3.55**

Client Maumee Watershed Conservancy District

Boring Location 480,183.1 N; 1,650,719.4 E

Project Number 173409690

Surface Elevation 800.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray with black, weathered						
25		Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to highly weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	1.8	17	
26		*Core loss from 25.1' to 25.7'*						
27								
28								
29				RC	2	5.0	46	
30								
31								
32				RC	3	2.6	69	
33	766.4							
34		*Boring terminated and backfilled with cement bentonite grout.*						
35		*Coordinates and elevation obtained from surveyors at estimated boring location as noted in the field.*						
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.56**

Client	Maumee Watershed Conservancy District	Boring Location	479,719.9 N; 1,650,715.1 E
Project Number	173409690	Surface Elevation	802.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/11/21
Project Location	Hancock County, Ohio	Depth to Water	17.5 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 2/11/21 | Date/Time: 2/11/21 16:19 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	802.3							
0	802.2	Topsoil LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to hard, moist, slight petroleum odor		SPT	1	1.0	2-3-3	
2				SPT	2	0.8	2-3-4	
4				SPT	3	0.8	3-4-4	
5				SPT	4	1.5	4-5-5	
7				SPT	5	1.3	6-10-14	
8				SPT	6	1.5	7-12-17	
10								

Boring No. **B-3.56**

Client Maumee Watershed Conservancy District

Boring Location 479,719.9 N; 1,650,715.1 E

Project Number 173409690

Surface Elevation 802.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to hard, moist, slight petroleum odor *(Continued)* *Trace sand at 11.0'*		SPT	7	1.4	4-7-16	
11								
12	789.8							
13		SILTY SAND, VISUAL, gray, medium dense, moist, some clay		SPT	8	1.4	4-6-7	
14								
15				SPT	9	1.5	4-5-5	
16								
17	784.8		▽					
18		LEAN CLAY, VISUAL, brown, low plasticity, hard, moist, slight petroleum odor		SPT	10	0.7	4-5-16	
19								
20	782.3							
21		SILTY SAND, VISUAL, gray, medium dense, moist, slight petroleum odor		SPT	11	1.5	6-7-10	
22								
23				SPT	12	1.5	6-5-6	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-3.56**

Client Maumee Watershed Conservancy District

Boring Location 479,719.9 N; 1,650,715.1 E

Project Number 173409690

Surface Elevation 802.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24	778.3	Dolomite, gray, weathered						
25				SPT	13	0.6	20-50/5"	
26	776.4	Dolomite, gray with black, fine grained, moderately hard to hard, laminated to very thin bedded, slightly weathered to highly weathered, 0° to 15° bedding angle, fractured to highly fractured, with shale laminations *Moderately fractured from 27.4' to 27.8'*		RC	1	3.4	26	
30				RC	2	2.9	30	
34				RC	3	3.5	31	
36	766.4	*Boring terminated and backfilled with cement bentonite grout.*						

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.57**

Client	Maumee Watershed Conservancy District	Boring Location	479,143.7 N; 1,650,705.9 E
Project Number	173409690	Surface Elevation	803.9 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/11/21
Project Location	Hancock County, Ohio	Depth to Water	12.5 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 2/11/21 | Date/Time: 2/11/21 10:53 | Date/Time: N/A

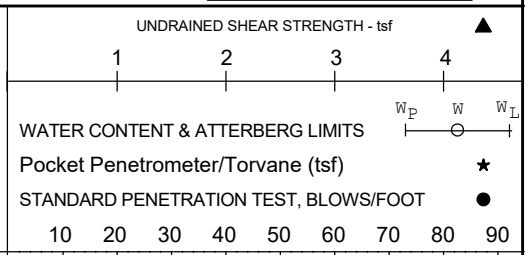
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	803.9					ft		
0	803.8	Topsoil						
		SANDY LEAN CLAY, CL, gray-brown, medium plasticity, firm to hard, moist		SPT	1	0.8	2-2-4	
1								
2				SPT	2	1.3	2-3-4	
3				SPT	3	1.5	3-5-5	
4								
5				SPT	4	1.5	4-4-8	
6								
7				SPT	5	1.4	8-9-10	
8				SPT	6	1.5	6-9-10	
9								
10								



Boring No. **B-3.57**

Client Maumee Watershed Conservancy District

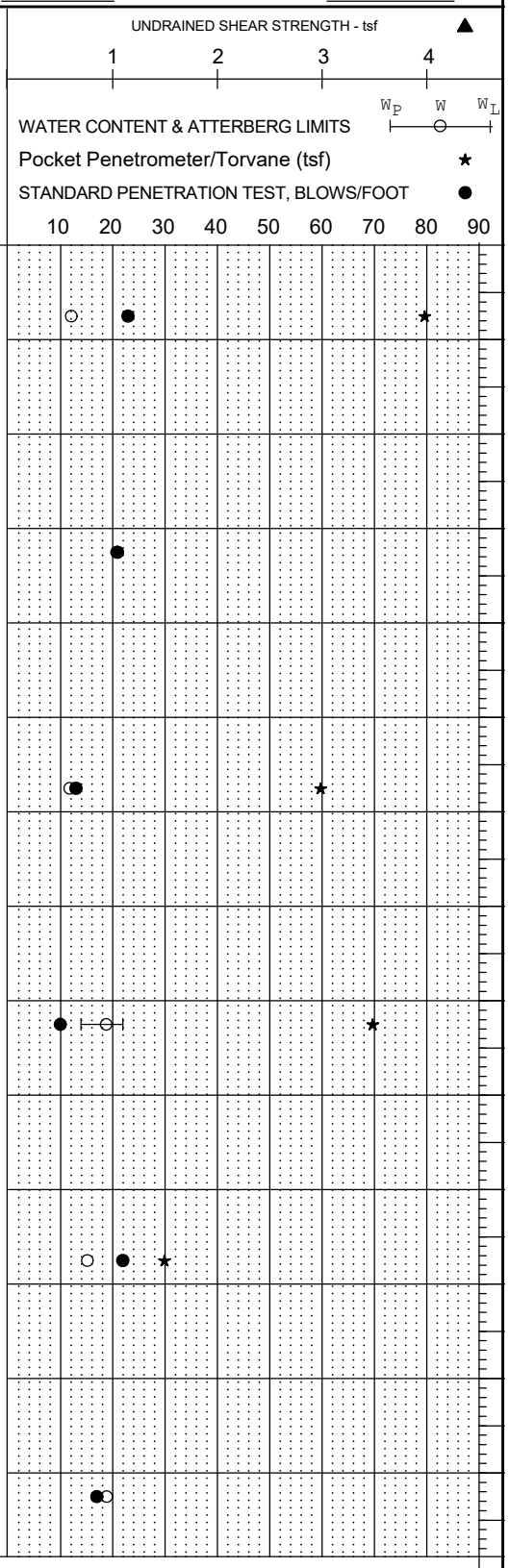
Boring Location 479,143.7 N; 1,650,705.9 E

Project Number 173409690

Surface Elevation 803.9 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray-brown, medium plasticity, firm to hard, moist *(Continued)*		SPT	7	1.5	12-15-8	
11								
12	791.4							
13		CLAYEY SAND, SC, gray, low plasticity, medium dense, moist to wet		SPT	8	1.3	7-10-11	
14								
15				SPT	9	1.3	6-7-6	
16								
17								
18				SPT	10	1.4	3-4-6	
19								
20				SPT	11	1.2	5-12-10	
21								
22								
23				SPT	12	1.5	6-7-10	



Stantec

SUBSURFACE LOG

Boring No. **B-3.57**

Client Maumee Watershed Conservancy District

Boring Location 479,143.7 N; 1,650,705.9 E

Project Number 173409690

Surface Elevation 803.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24	779.4							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Auger refusal at 24.5'. Boring terminated and backfilled with cement bentonite grout.

25 26 27 28 29 30 31 32 33 34 35 36 37

Stantec

SUBSURFACE LOG

Boring No. **B-3.58**

Client	Maumee Watershed Conservancy District	Boring Location	478,581.3 N; 1,650,701.3 E
Project Number	173409690	Surface Elevation	803.3 ft — Elevation Datum NAVD 88
Project Name	Eagle Creek Flood Basin	Date Started	2/9/21 — Completed 2/10/21
Project Location	Hancock County, Ohio	Depth to Water	8.0 ft — Date/Time 2/9/21 11:53
Inspector	BS	Depth to Water	3.0 ft — Date/Time 2/9/21 15:03
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic — Weight: 140 lb — Drop: 30" — Efficiency: 93.5%

Borehole Azimuth: N/A — Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	803.3							
	803.2	Topsoil						
		SANDY LEAN CLAY, VISUAL, brown-gray, low to medium plasticity, firm, moist, slight petroleum odor		SPT	1	1.3	2-2-3	
1								
2				SPT	2	1.0	2-2-5	
3								
4				SPT	3	1.5	4-6-8	
5				SPT	4	1.4	3-7-8	
6	797.3							
		CLAYEY SAND, SC, brown-gray, low plasticity, medium dense, moist, slight petroleum odor		SPT	5	1.2	7-8-8	
7								
8	794.8			SPT	6	1.2	2-4-6	
		WELL GRADED SAND WITH SILT, VISUAL, gray, medium dense, moist to wet, slight petroleum odor						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-3.58**

Client Maumee Watershed Conservancy District

Boring Location 478,581.3 N; 1,650,701.3 E

Project Number 173409690

Surface Elevation 803.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10								
10	792.3	WELL GRADED SAND WITH SILT, VISUAL, gray, medium dense, moist to wet, slight petroleum odor		SPT	7	1.5	3-7-8	
11		*(Continued)* LEAN CLAY, VISUAL, brown-gray, low to medium plasticity, firm to hard, moist, slight petroleum odor						
12								
13				SPT	8	1.3	4-10-11	
14								
15				SPT	9	1.3	3-4-7	
16								
17								
18	784.8			SPT	10	1.4	9-12-18	
19		SILTY SAND WITH GRAVEL, VISUAL, gray, dense to very dense, moist, slight petroleum odor						
20		*Some clay at 20.5'*		SPT	11	1.2	8-10-50/2"	
21	781.8							
22		Dolomite, gray, moderately hard to hard, laminated, slight petroleum odor, fractured to highly fractured, with shale laminations		RC	1	2.0	0	
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.58**

Client Maumee Watershed Conservancy District

Boring Location 478,581.3 N; 1,650,701.3 E

Project Number 173409690

Surface Elevation 803.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
24		Dolomite, gray, moderately hard to hard, laminated, slight petroleum odor, fractured to highly fractured, with shale laminations *(Continued)*		RC	2	3.0	0	
25								
26								
27								
28								
29				RC	3	4.6	12	
30		*Moderately fractured from 30.4' to 30.8'*						
31	771.8							
		Boring terminated and backfilled with cement bentonite grout.						
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.59**

Client	Maumee Watershed Conservancy District	Boring Location	477,936.0 N; 1,650,696.7 E
Project Number	173409690	Surface Elevation	806.8 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/8/21
Project Location	Hancock County, Ohio	Depth to Water	7.0 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88
Completed: 2/8/21
Date/Time: 2/8/21 14:50
Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	806.8					ft		
0	806.7	Topsoil						
		LEAN CLAY, VISUAL, brown-gray, low to medium plasticity, soft to hard, moist, slight petroleum odor, little sand		SPT	1	0.2	1-1-2	
1								
2				SPT	2	1.0	1-2-3	
3								
4				SPT	3	0.9	2-2-2	
5				SPT	4	1.5	2-2-6	
6		*Gravel fragments from 6.0' to 16.5'*						
7				SPT	5	1.3	7-9-11	
8				SPT	6	1.5	4-7-9	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.59**

Client Maumee Watershed Conservancy District

Boring Location 477,936.0 N; 1,650,696.7 E

Project Number 173409690

Surface Elevation 806.8 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, brown-gray, low to medium plasticity, soft to hard, moist, slight petroleum odor, little sand *(Continued)*		SPT	7	1.5	4-9-10	
11								
12								
13				SPT	8	0.7	5-13-21	
14								
15				SPT	9	0.7	5-10-14	
16	790.3	*Rock fragments at 16.0'*						
17		SILTY SAND WITH GRAVEL, VISUAL, gray-brown, dense to very dense, moist, slight petroleum odor, little clay						
18				SPT	10	0.8	21-24-25	
19								
20								
21				SPT	11	1.2	46-18-18	
22								
23	783.9			SPT	12	0.4	50/5"	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 22.9'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.60**

Client	Maumee Watershed Conservancy District	Boring Location	477,346.0 N; 1,650,687.5 E
Project Number	173409690	Surface Elevation	799.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/4/21
Inspector	BS	Completed	2/4/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	3.5 ft
		Date/Time	2/3/21 16:37
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.3					ft		
0	799.2	Topsoil						
		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm, moist, slight petroleum odor		SPT	1	1.1	1-2-2	
1								
2				SPT	2	1.5	3-3-4	
3								
4				SPT	3	1.3	3-4-6	
5	793.8			SPT	4	1.5	6-9-13	
		WELL GRADED GRAVEL, VISUAL, gray, non-plastic, medium dense, wet, slight petroleum odor						
6				SPT	5	1.5	6-12-8	
7								
8				SPT	6	0.7	8-11-10	
		Rock fragments from 8.5' to 9.0'						
9								
10	789.3							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Boring No. **B-3.60**

Client Maumee Watershed Conservancy District

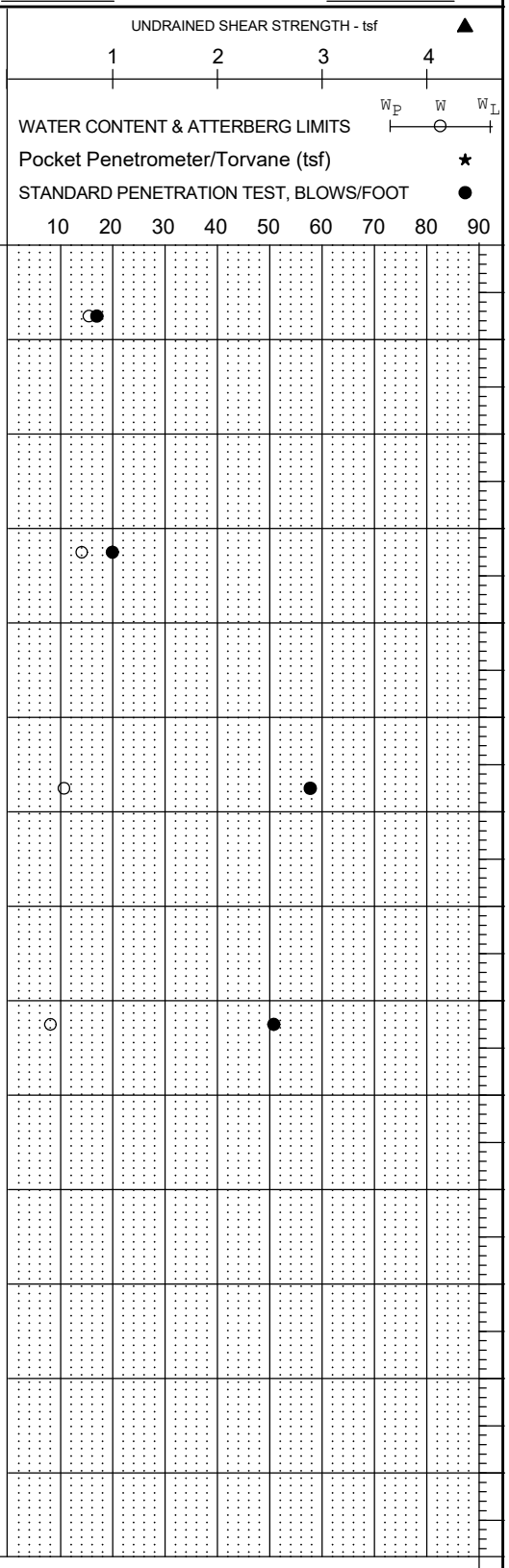
Boring Location 477,346.0 N; 1,650,687.5 E

Project Number 173409690

Surface Elevation 799.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		WELL GRADED SAND WITH SILT AND GRAVEL, SW-SM, gray, non-plastic, medium dense, moist, slight petroleum odor *Atterberg limits = NP*		SPT	7	1.0	6-8-9	
12	786.8							
13		SILTY SAND WITH GRAVEL, VISUAL, gray, non-plastic, medium dense to very dense, moist, slight petroleum odor		SPT	8	1.1	5-10-10	
15				SPT	9	1.2	24-30-28	
17	781.8							
18		LEAN CLAY, VISUAL, gray-black, low plasticity, very hard, moist, slight petroleum odor, with highly weathered shale		SPT	10	1.2	20-21-30	
19	780.1							
20		Dolomite, gray, hard, laminated, slight petroleum odor, fractured to highly fractured, with shale laminations		RC	1	3.0	10	
23								



Boring No. **B-3.60**

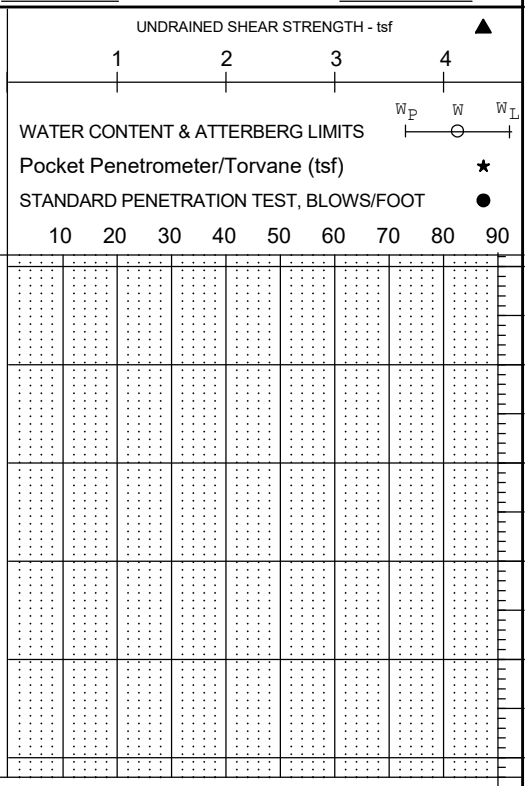
Client Maumee Watershed Conservancy District

Boring Location 477,346.0 N; 1,650,687.5 E

Project Number 173409690

Surface Elevation 799.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray, hard, laminated, slight petroleum odor, fractured to highly fractured, with shale laminations *(Continued)*		RC	2	5.0	20	
25								
26								
27								
28		*Moderately fractured from 27.9' to 28.9'*		RC	3	2.0	60	
29	770.1							
		Boring terminated and backfilled with cement bentonite grout.						
30								
31								
32								
33								
34								
35								
36								
37								



SUBSURFACE LOG

Boring No. **B-3.61**

Client	Maumee Watershed Conservancy District	Boring Location	476,686.9 N; 1,650,696.7 E
Project Number	173409690	Surface Elevation	808.1 ft
Project Name	Eagle Creek Flood Basin	Date Started	2/3/21
Project Location	Hancock County, Ohio	Depth to Water	4.0 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 2/3/21 | Date/Time: 2/3/21 14:32 | Date/Time: N/A

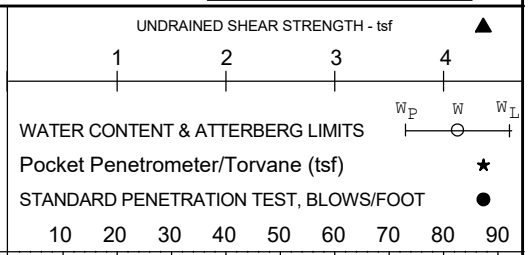
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	808.1							
	808.0	Topsoil						
1	806.6	LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm, moist, slight petroleum odor		SPT	1	1.1	3-4-3	
2	805.1	LEAN CLAY, VISUAL, brown-black, low plasticity, firm, moist, slight petroleum odor, some gravel		SPT	2	1.1	2-2-3	
3		SANDY LEAN CLAY, CL, gray-brown, low plasticity, firm, dry to moist, slight petroleum odor		SPT	3	1.2	3-3-5	
4								
5		*Rock fragments from 5.5' to 6.0'*		SPT	4	1.3	3-7-5	
6								
7				SPT	5	1.1	4-6-6	
8				SPT	6	1.5	3-6-5	
9								
10								



Boring No. **B-3.61**

Client Maumee Watershed Conservancy District

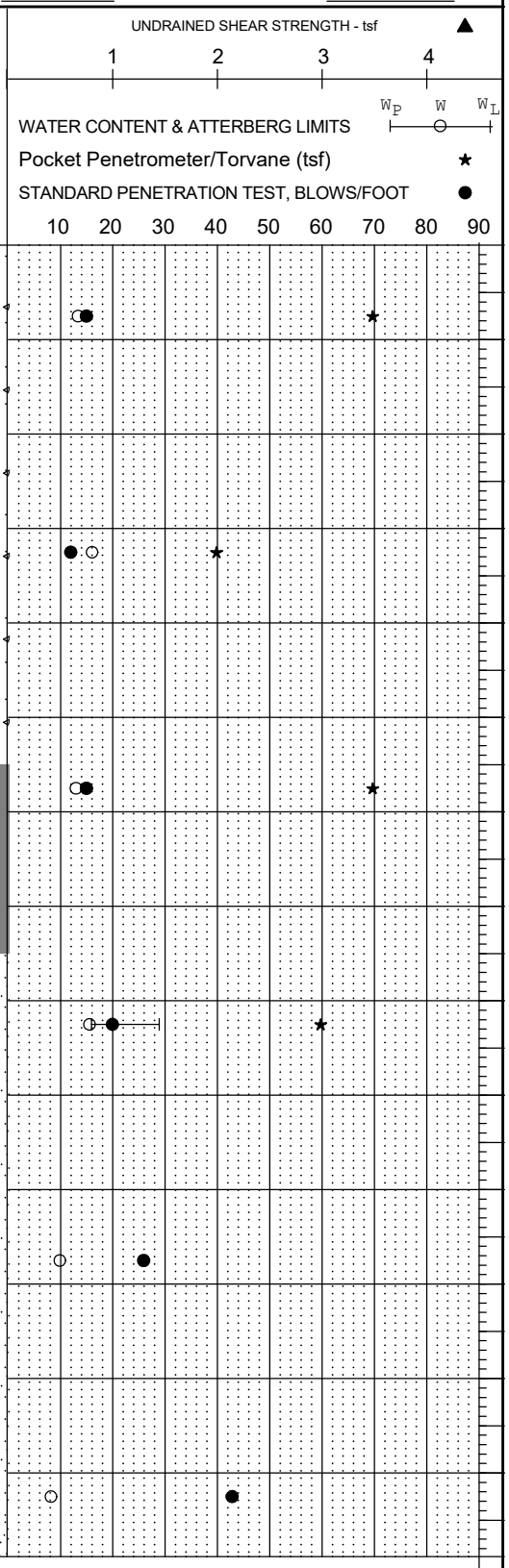
Boring Location 476,686.9 N; 1,650,696.7 E

Project Number 173409690

Surface Elevation 808.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray-brown, low plasticity, firm, dry to moist, slight petroleum odor *(Continued)*						
11				SPT	7	1.5	3-6-9	
12								
13		*Rock fragments in SPT-8*		SPT	8	1.2	4-5-7	
14								
15		*Rock fragments from 15.0' to 15.5'*		SPT	9	1.5	4-7-8	
16	791.6							
17		CLAYEY SAND, SC, gray, low plasticity, medium dense, moist, slight petroleum odor						
18				SPT	10	1.4	4-8-12	
19								
20	788.1							
21		SILTY SAND WITH GRAVEL, VISUAL, gray, medium, non-plastic, medium dense to dense, moist, slight petroleum odor		SPT	11	1.5	6-12-14	
22								
23				SPT	12	1.5	14-20-23	



Boring No. **B-3.61**

Client Maumee Watershed Conservancy District

Boring Location 476,686.9 N; 1,650,696.7 E

Project Number 173409690

Surface Elevation 808.1 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf (1 2 3 4) / WATER CONTENT & ATTERBERG LIMITS (W_P W W_L) / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)
24	783.6								

Auger refusal at 24.5'. Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

25 26 27 28 29 30 31 32 33 34 35 36 37

Stantec

SUBSURFACE LOG

Boring No. **B-3.62**

Client	Maumee Watershed Conservancy District	Boring Location	478,378.5 N; 1,646,359.2 E
Project Number	173409690	Surface Elevation	803.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/21/21
Project Location	Hancock County, Ohio	Depth to Water	3.5 ft
Inspector	PC	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 1/21/21 | Date/Time: 1/21/21 16:53 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	803.5							
	803.4	Topsoil						
		SANDY LEAN CLAY, CL, brown-orange to gray, low plasticity, soft to hard, dry to moist		SPT	1	1.0	WOH-WOH-2	
2				SPT	2	1.2	8-5-5	
3			▽	SPT	3	1.5	3-5-7	
5				SPT	4	1.2	5-11-11	
6				SPT	5	1.5	6-8-10	
8				SPT	6	1.1	4-7-10	
9	794.5							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout.

Printed on 11/12/21

SUBSURFACE LOG

Boring No. **B-3.63**

Client	Maumee Watershed Conservancy District	Boring Location	479,295.8 N; 1,646,225.5 E
Project Number	173409690	Surface Elevation	798.5 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	1/26/21 (Completed: 1/27/21)
Project Location	Hancock County, Ohio	Depth to Water	1.5 ft (Date/Time: 1/27/21 11:31)
Inspector	BS	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

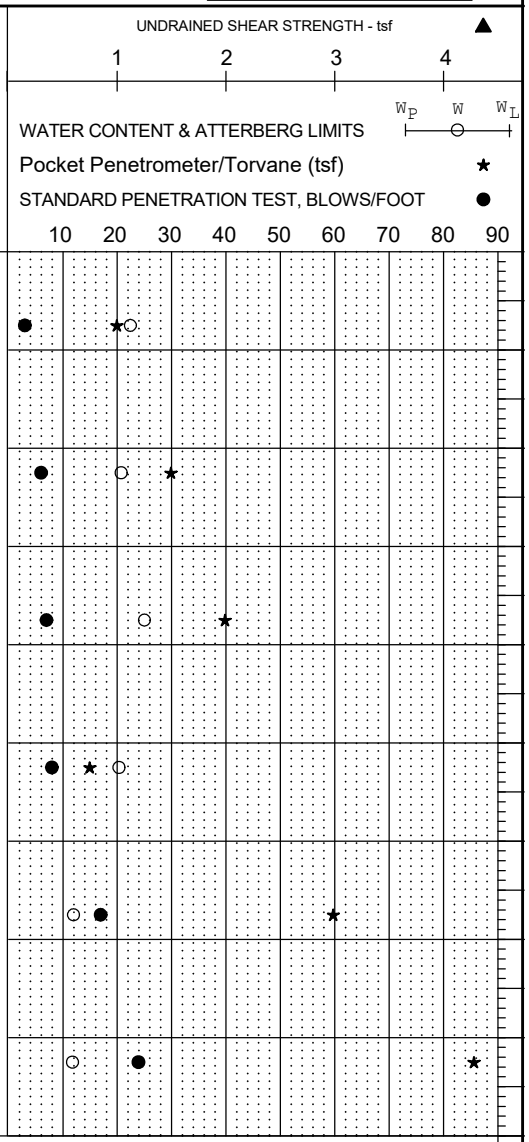
Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	798.5							
0	798.4	Topsoil						
0–1		LEAN CLAY, VISUAL, brown, low to medium plasticity, soft to hard, moist, slight petroleum odor, trace silt		SPT	1	0.8	WOH-1-2	
1–2				SPT	2	1.0	2-2-4	
2–3				SPT	3	1.5	3-3-4	
4–5				SPT	4	1.0	2-3-5	
5		*Wet and some gravel at 5.5'*						
6		*Little sand at 6.0'*		SPT	5	1.3	4-8-9	
7		*Gray at 7.0'*						
8				SPT	6	1.4	8-12-12	
9	789.5							

Boring terminated and backfilled with cement bentonite grout.



Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.64**

Client	Maumee Watershed Conservancy District	Boring Location	480,097.9 N; 1,646,225.5 E
Project Number	173409690	Surface Elevation	797.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/26/21
Project Location	Hancock County, Ohio	Depth to Water	1.5 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 1/26/21 | Date/Time: 1/27/21 11:31 | Date/Time: N/A

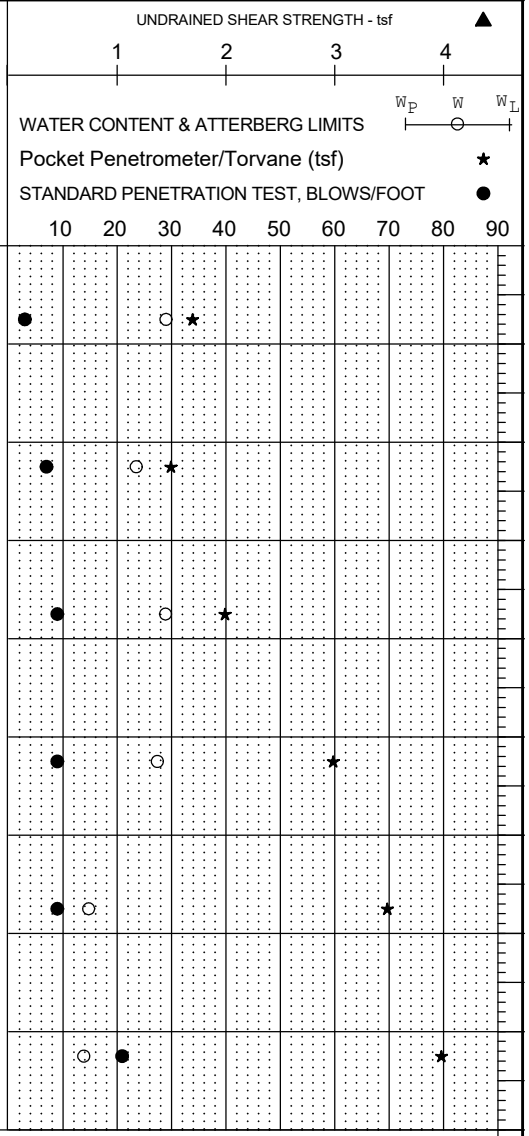
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.3					ft		
0	797.2	Topsoil						
		LEAN CLAY, VISUAL, gray, low to medium plasticity, soft to hard, moist, slight petroleum odor, trace silt		SPT	1	0.8	WOH-1-2	
1								
2				SPT	2	1.0	3-3-4	
3				SPT	3	1.2	3-4-5	
4								
5				SPT	4	0.8	3-4-5	
6		*Gravel fragments at 6.0'*		SPT	5	1.4	3-3-6	
7								
8				SPT	6	1.5	6-10-11	
9	788.3							
10		*Boring terminated and backfilled with cement bentonite grout.*						



SUBSURFACE LOG

Boring No. **B-3.65**

Client	Maumee Watershed Conservancy District	Boring Location	481,029.0 N; 1,646,216.3 E
Project Number	173409690	Surface Elevation	796.6 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/26/21
Inspector	BS	Completed	1/26/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
Drill Rig Type and ID	CME 55T#2, #711	Date/Time	N/A
Overburden Drilling and Sampling Tools (Type and Size)	3-1/4" HSA, 2" SS w/o liners	Depth to Water	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Date/Time	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	93.5%
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	796.6					ft		
0	796.5	Topsoil						
		LEAN CLAY, VISUAL, gray-orange, low to medium plasticity, firm to hard, moist, slight petroleum odor		SPT	1	1.1	WOH-1-3	
		Little sand from 0.0' to 2.0'						
1								
2				SPT	2	0.9	2-2-3	
3				SPT	3	1.3	3-4-6	
4								
5				SPT	4	1.4	5-7-11	
6								
7				SPT	5	1.5	3-5-8	
8				SPT	6	0.9	4-10-11	
9	787.6							
10		*Boring terminated and backfilled with cement bentonite grout.*						

Stantec

SUBSURFACE LOG

Boring No. **B-3.66**

Client	Maumee Watershed Conservancy District	Boring Location	481,881.7 N; 1,646,216.3 E
Project Number	173409690	Surface Elevation	799.7 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/21/21
Inspector	BS	Completed	1/27/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

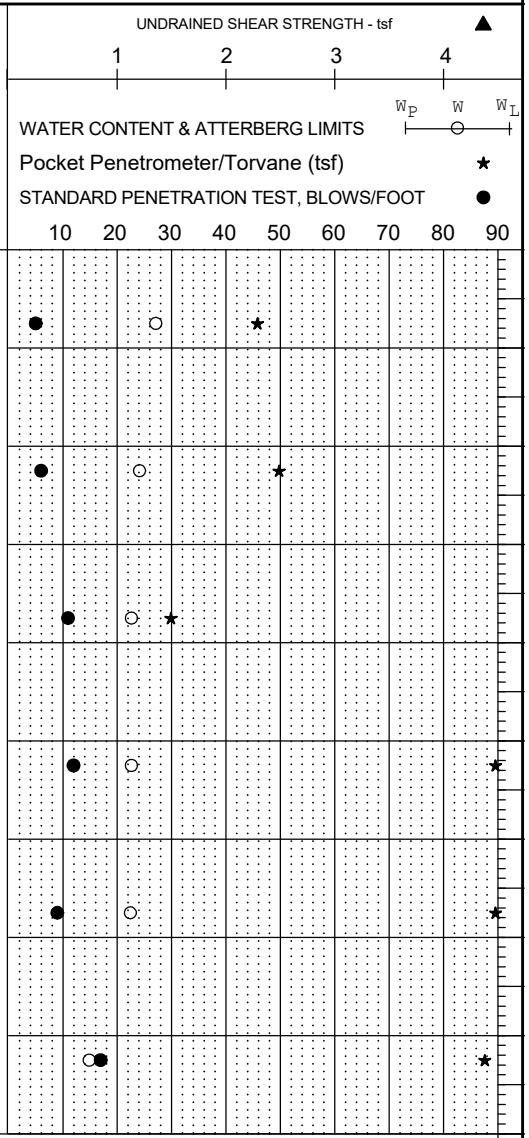
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.7					ft		
0	799.6	Topsoil						
		LEAN CLAY, VISUAL, brown, low to medium plasticity, firm to hard, moist, slight petroleum odor, trace silt		SPT	1	0.9	1-2-3	
1								
2				SPT	2	0.8	3-3-3	
3				SPT	3	1.1	3-5-6	
4								
5		*Gravel fragments at 5.0'*		SPT	4	1.1	4-6-6	
6								
7				SPT	5	1.3	2-3-6	
		Large gravel fragments at 7.5'						
8				SPT	6	1.0	3-6-11	
9	790.7							
10		*Boring terminated and backfilled with cement bentonite grout.*						



Stantec

SUBSURFACE LOG

Boring No. **B-3.67**

Client	Maumee Watershed Conservancy District	Boring Location	482,600.8 N; 1,646,824.8 E
Project Number	173409690	Surface Elevation	799.9 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/26/21
Project Location	Hancock County, Ohio	Depth to Water	N/A
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 1/28/21 | Date/Time: N/A | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.9							
0	799.8	Topsoil						
0–5		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to hard, moist, slight petroleum odor, little gravel		SPT	1	1.0	2-2-3	
1–5				SPT	2	0.9	4-3-5	
2–5				SPT	3	1.0	6-6-8	
3–5		*Gravel fragments at 5.0'*		SPT	4	0.9	6-5-6	
5–8				SPT	5	1.1	3-3-5	
6–8				SPT	6	1.5	7-9-10	
9	790.9							

Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.68**

Client	Maumee Watershed Conservancy District	Boring Location	483,462.7 N; 1,646,723.4 E
Project Number	173409690	Surface Elevation	803.5 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/25/21
Inspector	MF	Completed	1/26/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	803.5							
	803.3	Topsoil						
		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist		SPT	1	0.8	3-2-1	
1								
2				SPT	2	1.2	3-3-5	
3				SPT	3	1.3	5-5-9	
4	799.0							
		LEAN CLAY, VISUAL, gray-brown to brown, low plasticity, firm to very hard, moist, some gravel		SPT	4	0.9	7-10-10	
5								
6				SPT	5	1.4	6-6-4	
7								
8				SPT	6	1.5	9-18-16	
	794.5							
9		*Boring terminated and backfilled with cement bentonite grout.*						
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.69**

Client	Maumee Watershed Conservancy District	Boring Location	483,453.5 N; 1,647,792.7 E
Project Number	173409690	Surface Elevation	800.6 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/20/21
Project Location	Hancock County, Ohio	Depth to Water	6.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/20/21 | Date/Time: 1/20/21 14:52 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.6							
	800.4	Topsoil						
1		SANDY SILTY CLAY, CL-ML, gray and orange-brown, low plasticity, firm, dry to moist		SPT	1	1.3	1-3-2	
2				SPT	2	1.2	3-3-5	
3				SPT	3	1.2	4-4-5	
4								
5				SPT	4	1.2	5-6-7	
	794.6							
6		LEAN CLAY, VISUAL, brown with gray, low plasticity, firm to hard, moist, some gravel						
7		*Fine sand lens at 6.0'*		SPT	5	1.5	3-2-4	
8				SPT	6	1.2	11-13-13	
	791.6							
9		*Boring terminated and backfilled with cement bentonite grout.*						
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.70**

Client	Maumee Watershed Conservancy District	Boring Location	483,472.0 N; 1,648,834.5 E
Project Number	173409690	Surface Elevation	800.4 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/18/21
Inspector	MF	Completed	1/18/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	6.0 ft
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	1/18/21 14:41
		Depth to Water	N/A
		Date/Time	N/A

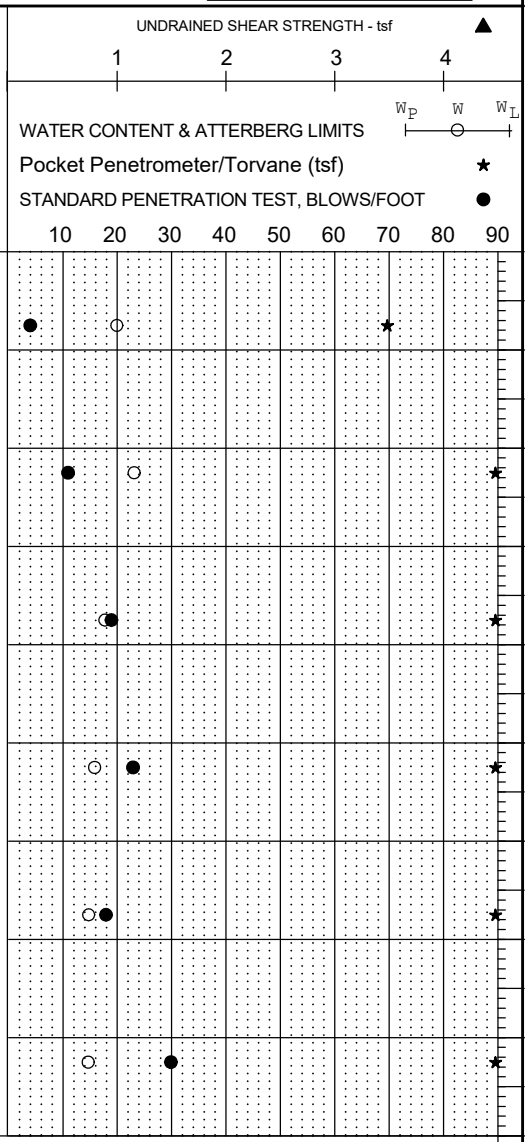
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.4							
	800.2	Topsoil						
1		SILTY CLAY, VISUAL, gray-white to orange-brown, low plasticity, firm to hard, moist, little gravel		SPT	1	0.8	1-1-3	
2				SPT	2	1.2	3-4-7	
3		*Stone fragment at 2.7'*		SPT	3	1.2	8-8-11	
4								
5				SPT	4	1.2	9-11-12	
6	793.9							
7		SILTY CLAY, VISUAL, brown with black, low plasticity, hard, moist, some gravel		SPT	5	1.5	7-8-10	
8				SPT	6	1.5	8-16-14	
9	791.4							
10		*Boring terminated and backfilled with cement bentonite grout.*						



Stantec

SUBSURFACE LOG

Boring No. **B-3.71**

Client	Maumee Watershed Conservancy District	Boring Location	483,112.4 N; 1,649,281.6 E
Project Number	173409690	Surface Elevation	797.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/11/21
Inspector	MF	Completed	1/11/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

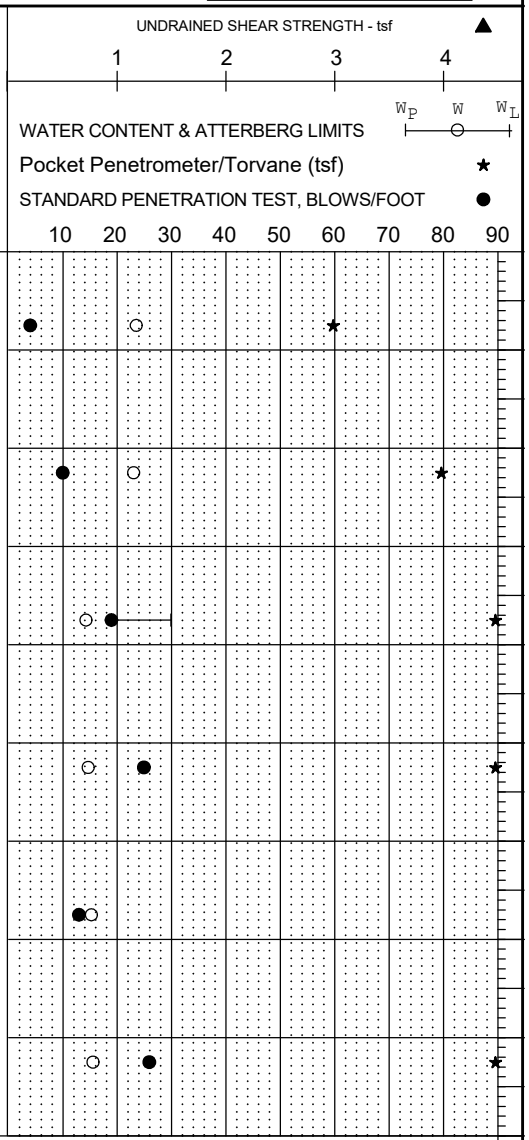
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.3					ft		
0	797.2	Topsoil						
		LEAN CLAY WITH SAND, CL, gray and orange-brown, low plasticity, firm to hard, dry to moist		SPT	1	0.4	1-1-3	
1								
2				SPT	2	1.1	3-3-7	
3				SPT	3	1.4	6-8-11	
4								
5				SPT	4	1.3	12-13-12	
6								
7				SPT	5	1.5	4-6-7	
8				SPT	6	1.1	7-13-13	
9	788.3							
10		*Boring terminated and backfilled with cement bentonite grout.*						



Stantec

SUBSURFACE LOG

Boring No. **B-3.72**

Client	Maumee Watershed Conservancy District	Boring Location	483,153.9 N; 1,648,654.7 E
Project Number	173409690	Surface Elevation	798.2 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/14/21
Project Location	Hancock County, Ohio	Depth to Water	7.5 ft
Inspector	MF	Depth to Water	11.0 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88
Completed: 1/18/21
Date/Time: 1/14/21 16:34
Date/Time: 1/14/21 17:00

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)
WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	798.2							
	798.0	Topsoil						
1		SILTY CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist		SPT	1	0.9	1-1-2	
2				SPT	2	0.9	2-3-4	
3				SPT	3	1.2	2-5-4	
4								
	793.2							
5	792.7	CLAYEY SAND, VISUAL, brown and gray, fine to medium, loose, wet						
		SILTY CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist		SPT	4	1.5	3-3-4	
6								
7		*Bulk sample obtained from 5.0' to 10.0'*						
	790.2							
8		LEAN CLAY, VISUAL, gray, low plasticity, hard, moist, some gravel		SPT	5	1.5	5-7-8	
9								
10								

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.72**

Client Maumee Watershed Conservancy District

Boring Location 483,153.9 N; 1,648,654.7 E

Project Number 173409690

Surface Elevation 798.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low plasticity, hard, moist, some gravel *(Continued)*		SPT	6	1.4	3-7-9	
11								
12								
13				SPT	7	1.3	4-7-10	
14								
15	783.2							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

16 17 18 19 20 21 22 23

Stantec

SUBSURFACE LOG

Boring No. **B-3.73**

Client	Maumee Watershed Conservancy District	Boring Location	482,411.8 N; 1,649,221.7 E
Project Number	173409690	Surface Elevation	794.6 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/12/21
Inspector	MF	Completed	1/12/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	10.0 ft
Drill Rig Type and ID	CME 45T#3, #815	Date/Time	1/12/21 11:09
		Depth to Water	N/A
		Date/Time	N/A

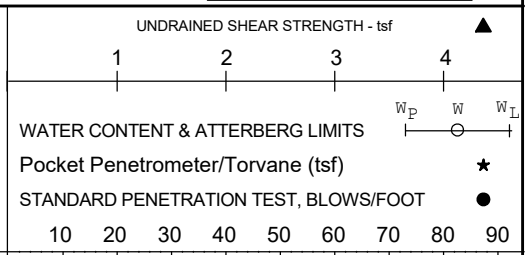
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	794.6					ft		
0	794.4	Topsoil						
		LEAN CLAY, VISUAL, gray, low plasticity, firm, moist		SPT	1	0.8	3-3-3	
1								
2				SPT	2	0.8	2-3-3	
3								
4				SPT	3	1.1	4-4-5	
	789.6							
5		LEAN CLAY, VISUAL, brown and gray, low plasticity, firm to very hard, moist, some gravel		SPT	4	1.5	8-13-19	
6								
7								
		Bulk sample obtained from 5.0' to 11.0'						
8				SPT	5	1.2	6-12-17	
9								
10								



Boring No. **B-3.73**

Client Maumee Watershed Conservancy District

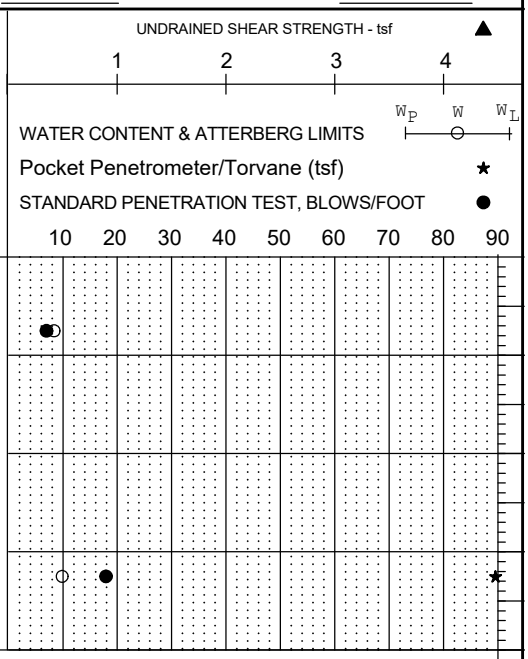
Boring Location 482,411.8 N; 1,649,221.7 E

Project Number 173409690

Surface Elevation 794.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, brown and gray, low plasticity, firm to very hard, moist, some gravel *(Continued)*		SPT	6	1.2	2-3-4	
11								
12								
13				SPT	7	1.5	8-8-10	
14	780.6							

Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.74**

Client	Maumee Watershed Conservancy District	Boring Location	481,398.8 N; 1,647,141.0 E
Project Number	173409690	Surface Elevation	797.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/27/21
Project Location	Hancock County, Ohio	Depth to Water	11.0 ft
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88
Completed: 1/27/21
Date/Time: 1/27/21 15:11
Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.5					ft		
0	797.4	Topsoil						
		SANDY LEAN CLAY, CL, gray-brown, medium plasticity, firm, dry to moist, slight petroleum odor		SPT	1	1.3	WOH-2-2	
1								
2				SPT	2	0.8	2-3-3	
3								
4				SPT	3	1.4	3-3-3	
5				SPT	4	1.2	1-2-3	
6								
7				SPT	5	1.5	3-5-5	
8				SPT	6	1.5	3-4-5	
9		*Bulk sample obtained from 8.0' to 10.0'*						
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.74**

Client Maumee Watershed Conservancy District

Boring Location 481,398.8 N; 1,647,141.0 E

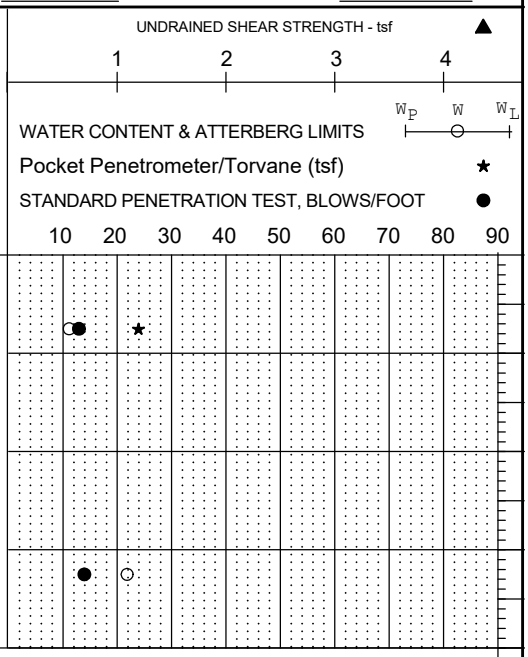
Project Number 173409690

Surface Elevation 797.5 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray-brown, medium plasticity, firm, dry to moist, slight petroleum odor *(Continued)*		SPT	7	1.0	2-5-8	
11	786.5							
12		SILTY SAND WITH GRAVEL, VISUAL, gray, medium, medium dense, wet						
13				SPT	8	1.3	4-6-8	
14	783.5							

Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.75**

Client	Maumee Watershed Conservancy District	Boring Location	481,388.9 N; 1,648,303.3 E
Project Number	173409690	Surface Elevation	797.3 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/14/21
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft
Inspector	MF	Depth to Water	8.0 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/14/21 | Date/Time: 1/14/21 15:28 | Date/Time: 1/14/21 15:38

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.3					ft		
0	797.0	Topsoil						
		SILTY CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist, little sand		SPT	1	1.0	WOH-2-3	
1								
2				SPT	2	0.9	3-2-4	
3								
4		*Fine sand lens from 3.8' to 4.0'*		SPT	3		3-2-4	
5	791.8							
6		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, moist, little gravel		SPT	4	1.5	2-4-5	
		Bulk sample obtained from 5.0' to 10.0'						
7								
8		*Small gravel lense at 8.2'*		SPT	5	1.3	4-9-15	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.75**

Client Maumee Watershed Conservancy District

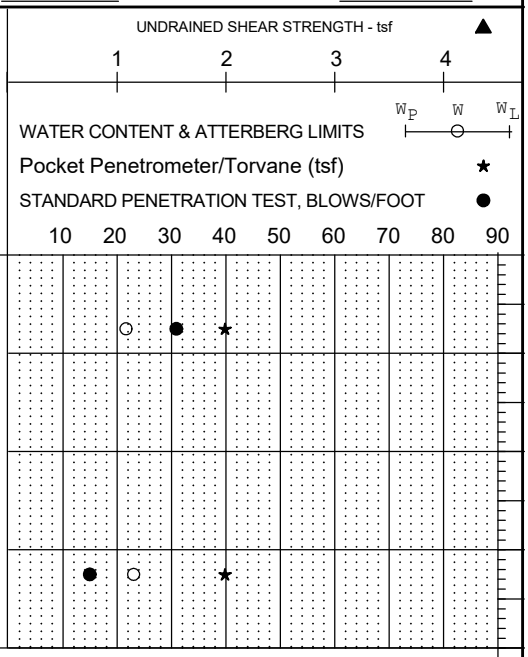
Boring Location 481,388.9 N; 1,648,303.3 E

Project Number 173409690

Surface Elevation 797.3 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, moist, little gravel *(Continued)*		SPT	6	1.0	9-14-17	
11		*Gravel/stone lens from 11.0' to 11.5'*						
12	784.5							
13	783.3	SILTY SAND WITH GRAVEL, VISUAL, black and gray, fine to medium, medium dense, wet		SPT	7	1.5	7-7-8	
14		*Boring terminated and backfilled with cement bentonite grout.*						
15								
16								
17								
18								
19								
20								
21								
22								
23								



SUBSURFACE LOG

Boring No. **B-3.76**

Client	Maumee Watershed Conservancy District	Boring Location	481,388.5 N; 1,649,230.9 E
Project Number	173409690	Surface Elevation	796.0 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/13/21
Project Location	Hancock County, Ohio	Depth to Water	8.3 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/13/21 | Date/Time: 1/13/21 16:44 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	796.0					ft		
0	795.7	Topsoil						
0		SILTY CLAY, VISUAL, orange-brown, low plasticity, very soft to soft, moist, little sand		SPT	1	0.3	WOH-WOH-1	
1								
2				SPT	2	0.6	2-1-2	
3	793.0							
3		LEAN CLAY, VISUAL, gray to brown, low plasticity, firm to hard, moist, some gravel		SPT	3	1.5	5-4-7	
4								
5								
5				SPT	4	0.3	12-11-12	
6		*Bulk sample obtained from 4.0' to 10.0'*						
7								
7		*Stone fragment in SPT-5*						
8				SPT	5	0.5	5-7-11	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.76**

Client Maumee Watershed Conservancy District

Boring Location 481,388.5 N; 1,649,230.9 E

Project Number 173409690

Surface Elevation 796.0 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		LEAN CLAY, VISUAL, gray to brown, low plasticity, firm to hard, moist, some gravel *(Continued)*		SPT	6	1.5	3-5-8	
11								
12								
13		*Fine sand lens from 12.5' to 12.9'*		SPT	7	1.5	5-5-7	
14								
15	781.0	GRAVELLY LEAN CLAY, VISUAL, gray, low plasticity, very hard, moist, little sand		SPT	8	1.4	2-6-50/5"	
16	779.7							
	779.6	Dolomite, gray, weathered						
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 16.4'. Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

SUBSURFACE LOG

Boring No. **B-3.77**

Client	Maumee Watershed Conservancy District	Boring Location	480,692.5 N; 1,648,871.4 E
Project Number	173409690	Surface Elevation	795.4 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/14/21
Project Location	Hancock County, Ohio	Depth to Water	11.0 ft
Inspector	MF	Depth to Water	7.0 ft
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 1/14/21 | Date/Time: 1/14/21 11:21 | Date/Time: 1/14/21 13:43

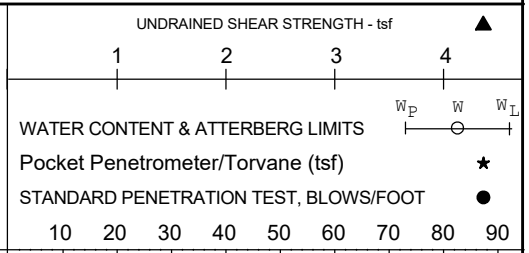
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	795.4					ft		
0	795.2	Topsoil						
		SILTY CLAY, VISUAL, gray and orange-brown, low plasticity, firm, moist		SPT	1	0.6	1-1-3	
1								
2				SPT	2	0.9	2-2-3	
3								
	791.4			SPT	3	1.5	4-4-7	
4		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist, some gravel						
		Large stone in shoe of SPT-3						
5				SPT	4	1.5	5-6-7	
6								
7								
8				SPT	5	1.3	2-3-5	
		Bulk sample obtained from 6.0' to 11.0'						
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.77**

Client Maumee Watershed Conservancy District

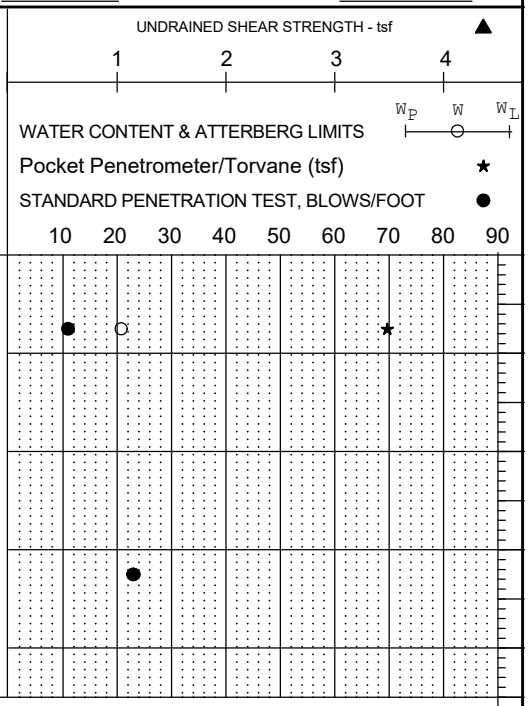
Boring Location 480,692.5 N; 1,648,871.4 E

Project Number 173409690

Surface Elevation 795.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low to medium plasticity, firm, moist, some gravel *(Continued)*		SPT	6	1.3	5-5-6	
11	784.4							
12		WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, gray, fine to coarse, medium dense, wet, some clay						
13				SPT	7	0.2	12-10-13	
14	780.9	*Large stone in shoe of SPT-7*						
15		*Auger refusal at 14.5'. Boring terminated and backfilled with cement bentonite grout.*						
16								
17								
18								
19								
20								
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-3.78**

Client	Maumee Watershed Conservancy District	Boring Location	480,471.2 N; 1,647,133.6 E
Project Number	173409690	Surface Elevation	797.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	1/28/21
Project Location	Hancock County, Ohio	Depth to Water	N/A
Inspector	BS	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

Elevation Datum: NAVD 88 | Completed: 1/28/21 | Date/Time: N/A | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY (ft)	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.5							
	797.4	Topsoil						
		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, soft to hard, moist, slight petroleum odor, little sand		SPT	1	0.8	1-1-2	
2				SPT	2	0.8	2-2-4	
		Small sandy zone at 2.5'						
4				SPT	3	1.1	5-5-6	
5				SPT	4	1.3	5-6-7	
6				SPT	5	1.5	5-9-11	
7		*Bulk sample obtained from 7.0' to 12.4'*						
8				SPT	6	1.4	8-10-9	
9								
10								

Boring No. **B-3.78**

Client Maumee Watershed Conservancy District

Boring Location 480,471.2 N; 1,647,133.6 E

Project Number 173409690

Surface Elevation 797.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf; WATER CONTENT & ATTERBERG LIMITS; Pocket Penetrometer/Torvane (tsf); STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4; W_P W W_L; 10 20 30 40 50 60 70 80 90
10		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, soft to hard, moist, slight petroleum odor, little sand *(Continued)*		SPT	7	0.3	4-8-14		
11									
12	785.1								
		Auger refusal at 12.4'. Boring terminated and backfilled with cement bentonite grout.							
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

Stantec

SUBSURFACE LOG

Boring No. **B-3.79**

Client	Maumee Watershed Conservancy District	Boring Location	479,553.8 N; 1,647,393.2 E
Project Number	173409690	Surface Elevation	798.8 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/28/21
Inspector	BS	Completed	1/28/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

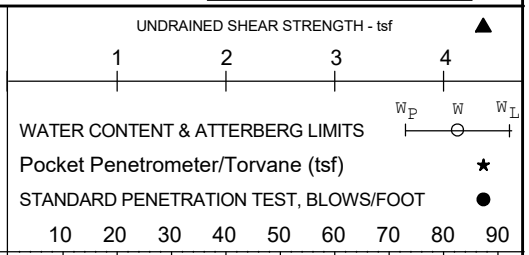
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.8					ft		
0	798.7	Topsoil						
		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to hard, moist, slight petroleum odor, little gravel, little sand		SPT	1	1.3	WOH-1-4	
1								
2				SPT	2	0.8	3-2-2	
3				SPT	3	1.3	4-4-5	
4								
5				SPT	4	1.4	5-7-9	
6		*Increased presence of sand/gravel in SPT-5*		SPT	5	1.5	6-6-8	
7								
8				SPT	6	1.5	5-7-9	
9		*Bulk sample obtained from 7.5' to 10.0'*						
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.79**

Client Maumee Watershed Conservancy District

Boring Location 479,553.8 N; 1,647,393.2 E

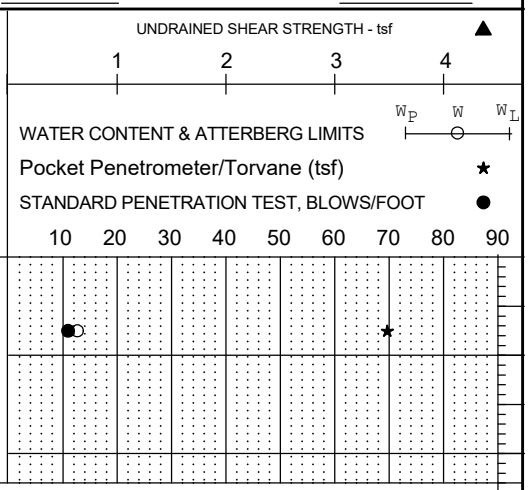
Project Number 173409690

Surface Elevation 798.8 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to hard, moist, slight petroleum odor, little gravel, little sand *(Continued)*		SPT	7	1.3	3-5-6	
12	786.5							

Auger refusal at 12.3'. Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.80**

Client	Maumee Watershed Conservancy District	Boring Location	479,499.4 N; 1,648,486.3 E
Project Number	173409690	Surface Elevation	800.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	2/1/21
Inspector	MF	Completed	2/2/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 45T#3, #815

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 87.6%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	800.3							
	800.1	Topsoil						
1		SANDY LEAN CLAY, VISUAL, gray and orange-brown, low plasticity, soft to firm, moist		SPT	1	0.9	1-2-2	
2				SPT	2	1.0	3-2-4	
3				SPT	3	1.2	2-3-4	
4								
	795.3							
5		LEAN CLAY WITH SAND, CL, gray, low plasticity, hard, moist		SPT	4	1.5	5-9-10	
6								
7								
		Bulk sample obtained from 5.0' to 10.0'						
8	791.8			SPT	5	1.5	11-12-16	
	791.3	SILTY SAND, VISUAL, black and gray, fine, medium dense, moist, some clay						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.80**

Client Maumee Watershed Conservancy District

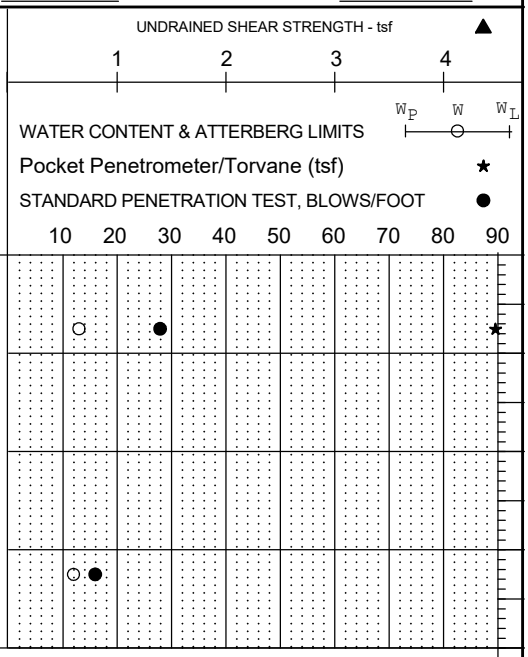
Boring Location 479,499.4 N; 1,648,486.3 E

Project Number 173409690

Surface Elevation 800.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist, some gravel *(Continued)*		SPT	6	0.7	9-15-13	
11								
		Large stone in shoe of SPT-6						
12								
13				SPT	7	0.5	5-7-9	
14	786.3							

Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-3.81**

Client	Maumee Watershed Conservancy District	Boring Location	478,559.6 N; 1,647,393.2 E
Project Number	173409690	Surface Elevation	804.5 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/28/21
Inspector	BS	Completed	1/28/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	804.5					ft		
0	804.4	Topsoil						
0–1		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to very hard, moist, slight petroleum odor, some sand		SPT	1	0.9	2-3-3	
1–2		*Very sandy in SPT-1*		SPT	2	1.4	2-4-4	
2–3				SPT	3	1.5	4-5-9	
3–4		*Rock fragments in bottom of SPT-3*		SPT	4	1.5	8-10-14	
4–5				SPT	5	1.5	7-8-7	
5–6				SPT	6	1.5	4-7-24	
6–7								
7–8		*Bulk sample obtained from 8.0' to 9.0'*						
8–9		*Rock fragments in bottom of SPT-6*						
9–10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10, 20, 30, 40, 50, 60, 70, 80, 90)

Stantec

SUBSURFACE LOG

Boring No. **B-3.81**

Client Maumee Watershed Conservancy District

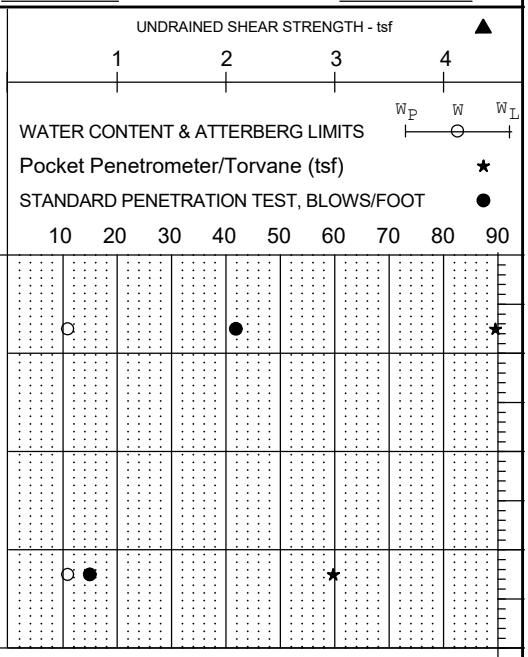
Boring Location 478,559.6 N; 1,647,393.2 E

Project Number 173409690

Surface Elevation 804.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray-brown, low to medium plasticity, firm to very hard, moist, slight petroleum odor, some sand *(Continued)*		SPT	7	1.5	14-21-21	
11								
12								
13				SPT	8	1.5	7-7-8	
14	790.5							

Boring terminated and backfilled with cement bentonite grout.



SUBSURFACE LOG

Boring No. **B-3.82**

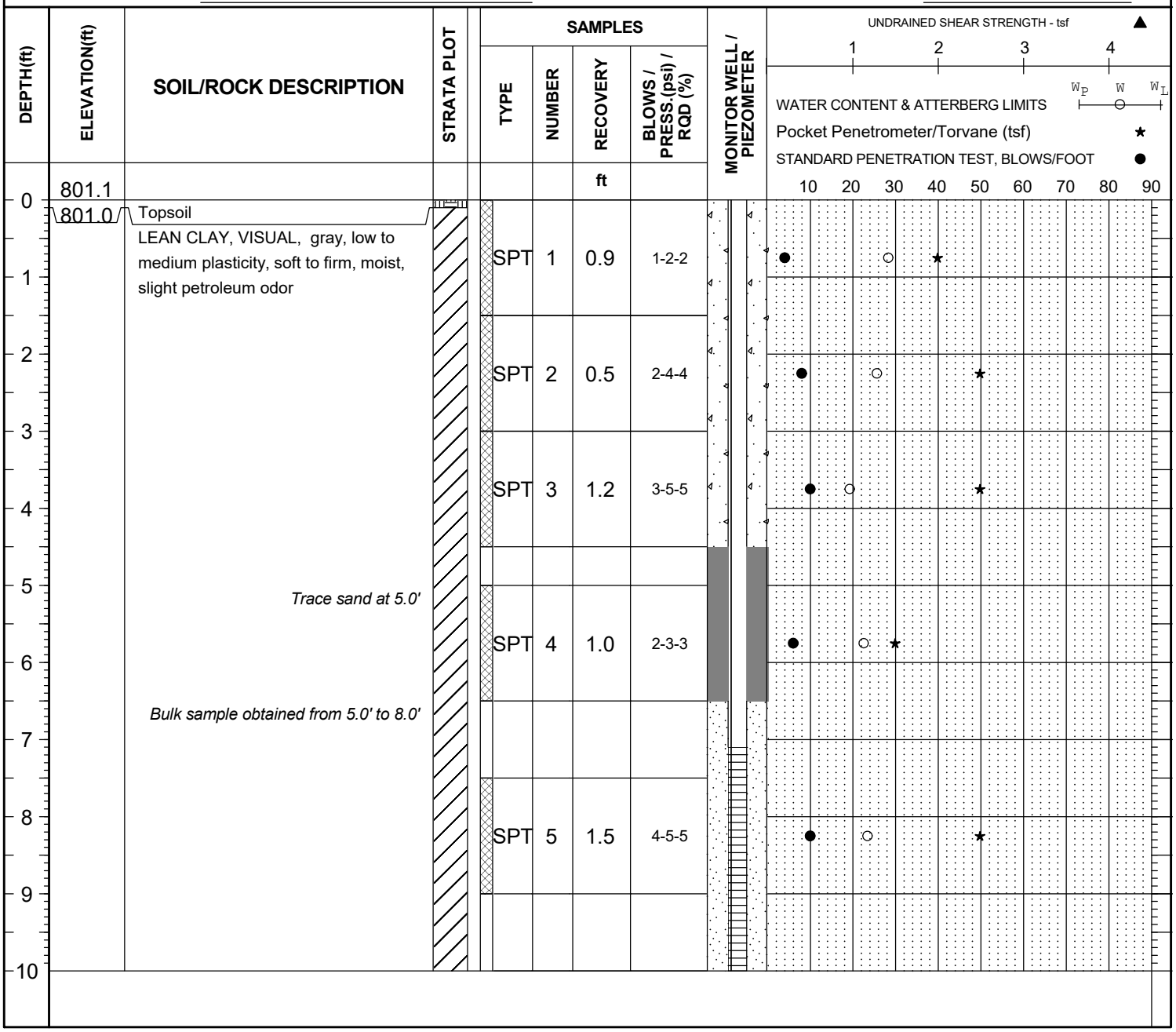
Client	Maumee Watershed Conservancy District	Boring Location	478,539.8 N; 1,648,506.1 E
Project Number	173409690	Surface Elevation	801.1 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	12/22/21
Inspector	BS	Completed	12/22/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
		Date/Time	N/A
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

Overburden Drilling and Sampling Tools (Type and Size) 4-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical



Stantec

SUBSURFACE LOG

Boring No. **B-3.82**

Client Maumee Watershed Conservancy District

Boring Location 478,539.8 N; 1,648,506.1 E

Project Number 173409690

Surface Elevation 801.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	790.6							
11		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray, low to medium plasticity, medium dense, moist, slight petroleum odor		SPT	6	1.5	6-8-9	
12	788.6							
13		SILTY SAND WITH GRAVEL, VISUAL, gray, non-plastic, medium dense, moist, slight petroleum odor, some clay		SPT	7	1.0	6-7-16	
14	787.1							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and piezometer installed. See peizometer installation detail for additional information for piezometer depth, screen interval, and backfill information.

15 16 17 18 19 20 21 22 23

Printed on 11/12/21

Stantec

SUBSURFACE LOG

Boring No. **B-3.83**

Client	Maumee Watershed Conservancy District	Boring Location	477,560.5 N; 1,647,378.4 E
Project Number	173409690	Surface Elevation	804.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	1/20/21
Inspector	BS	Completed	1/20/21
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	10.0 ft
		Date/Time	1/20/21 15:50
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#2, #711

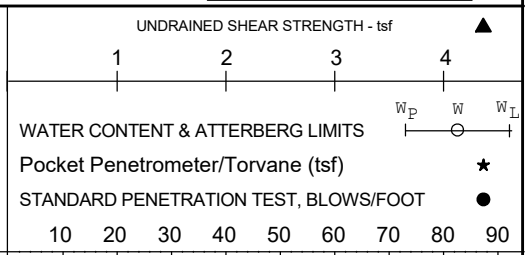
Overburden Drilling and Sampling Tools (Type and Size) 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size) N/A

Sampler Hammer Type Automatic Weight 140 lb Drop 30" Efficiency 93.5%

Borehole Azimuth N/A Borehole Inclination (from Vertical) Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY ft	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	804.3							
	804.2	Topsoil						
		LEAN CLAY, VISUAL, brown-orange, low to medium plasticity, firm to hard, moist, little sand		SPT	1	1.4	2-2-3	
2				SPT	2	1.0	3-5-5	
3				SPT	3	1.2	7-9-10	
5				SPT	4	1.3	2-3-6	
		Bulk sample obtained from 5.0' to 8.5'						
7	796.8							
		LEAN CLAY, VISUAL, gray, low plasticity, hard to very hard, moist, trace gravel		SPT	5	1.5	6-8-9	
10	794.2							



Stantec

SUBSURFACE LOG

Boring No. **B-3.83**

Client Maumee Watershed Conservancy District

Boring Location 477,560.5 N; 1,647,378.4 E

Project Number 173409690

Surface Elevation 804.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	794.1	Dolomite, gray		SPT	6	0.2	50/2"	

Split spoon refusal at 10.2'. Boring terminated and backfilled with cement bentonite grout.

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-3.84**

Client	Maumee Watershed Conservancy District	Boring Location	477,525.7 N; 1,648,545.7 E
Project Number	173409690	Surface Elevation	803.4 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	1/21/21
Completed	1/22/21		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	BS	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#2, #711

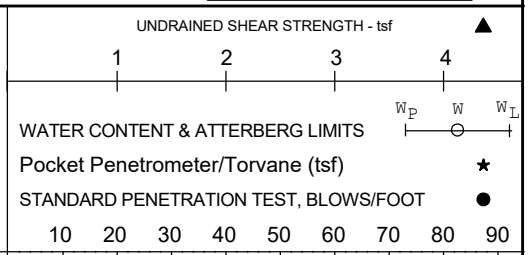
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 93.5%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	803.4					ft		
0	803.3	Topsoil						
		LEAN CLAY, VISUAL, gray-black, low to medium plasticity, firm to hard, moist, slight petroleum odor, some gravel		SPT	1	1.3	3-2-3	
1								
2				SPT	2	1.0	2-3-5	
3								
4				SPT	3	1.4	5-4-4	
5				SPT	4	1.2	4-5-5	
6								
7				SPT	5	1.5	4-5-8	
8		*Large rock fragments at 8.0'*		SPT	6	1.5	6-9-15	
9		*Bulk sample obtained from 8.0' to 10.0'*						
10								



Stantec

SUBSURFACE LOG

Boring No. **B-3.84**

Client Maumee Watershed Conservancy District

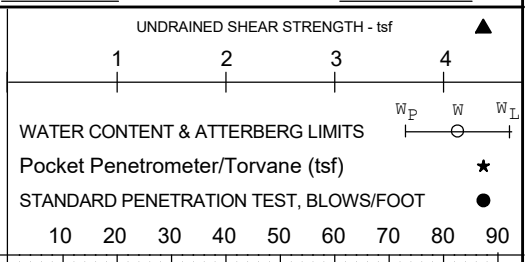
Boring Location 477,525.7 N; 1,648,545.7 E

Project Number 173409690

Surface Elevation 803.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray-black, low to medium plasticity, firm to hard, moist, slight petroleum odor, some gravel *(Continued)*		SPT	7	1.5	6-6-7	
11								
12								
13	790.4	SILTY SAND WITH GRAVEL, VISUAL, brown, non-plastic, medium dense, moist, slight petroleum odor, some clay		SPT	8	1.4	7-8-9	
14	789.4							
15								
16								
17								
18								
19								
20								
21								
22								
23								



Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-3.85**

Client	Maumee Watershed Conservancy District	Boring Location	480,536.5 N; 1,650,712.9 E
Project Number	173409690	Surface Elevation	798.4 ft
Project Name	Eagle Creek Flood Basin	Date Started	3/3/21
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 45T#3, #815

Elevation Datum: NAVD 88 | Completed: 3/3/21 | Date/Time: 3/3/21 08:50 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS. (psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.4					ft		
0	798.3	Topsoil						
		SANDY LEAN CLAY, VISUAL, orange-brown and gray, low plasticity, firm, moist		SPT	1	0.8	1-2-3	
1								
2				SPT	2	0.9	3-3-3	
3				SPT	3	1.5	3-5-5	
4								
5				SPT	4	1.5	4-6-7	
6								
7	790.9			SPT	5	0.5	4-6-7	
		LEAN CLAY, VISUAL, gray, low plasticity, very hard, moist, some gravel						
8				SPT	6	0.6	8-17-22	
9								
10	788.4							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-3.85**

Client Maumee Watershed Conservancy District

Boring Location 480,536.5 N; 1,650,712.9 E

Project Number 173409690

Surface Elevation 798.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, VISUAL, gray with black, fine to medium, medium dense, wet		SPT	7	1.3	5-5-6	
11	787.4	SILTY SAND WITH GRAVEL, VISUAL, gray and black, medium to coarse, medium dense, wet						
12	785.9	LEAN CLAY, VISUAL, gray, low to medium plasticity, firm to hard, moist		SPT	8	1.0	3-4-7	
13								
14				SPT	9	1.5	4-7-9	
15								
16				SPT	10	1.5	2-3-3	
17								
18				SPT	11	1.1	9-12-50/1"	
19	778.4	WELL GRADED SAND WITH SILT AND GRAVEL, VISUAL, gray with black, fine to coarse, very dense, moist						
20	777.3	Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations		RC	1	5.0	54	
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-3.85**

Client Maumee Watershed Conservancy District

Boring Location 480,536.5 N; 1,650,712.9 E

Project Number 173409690

Surface Elevation 798.4 ft

Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
24		Dolomite, gray with black, fine grained, hard, laminated to very thin bedded, slightly weathered to moderately weathered, 0° to 15° bedding angle, moderately to highly fractured, with shale laminations *(Continued)*						
25								
26								
27								
28				RC	2	5.0	40	
29								
30								
31	767.3							
32								
33								
34								
35								
36								
37								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout.
Coordinates and elevation obtained from surveyors at estimated boring location as noted in the field.

Stantec

SUBSURFACE LOG

Boring No. **B-4.1**

Client	Maumee Watershed Conservatory District	Boring Location	478,770.9 N; 1,646,275.5 E
Project Number	173409690	Surface Elevation	800.9 ft
Project Name	Eagle Creek Flood Basin	Date Started	5/5/22
Project Location	Hancock County, Ohio	Depth to Water	10.2 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Elevation Datum: NAVD 88 | Completed: 5/5/22 | Date/Time: 5/5/22 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	800.9					ft		
0		Topsoil						
	800.1							
1		LEAN CLAY WITH SAND, CL, brown and gray, low to medium plasticity, very soft to firm, dry to moist		SPT	1	0.7	WOH-WOH-1	
2								
3				SPT	2	1.1	2-3-3	
4								
5								
6				ST	1	1.5	200	
7	793.4							
8		SANDY LEAN CLAY, CL, gray with brown, low plasticity, firm to very hard, dry to wet		SPT	3	1.4	4-8-12	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 9/28/22

Boring No. **B-4.1**

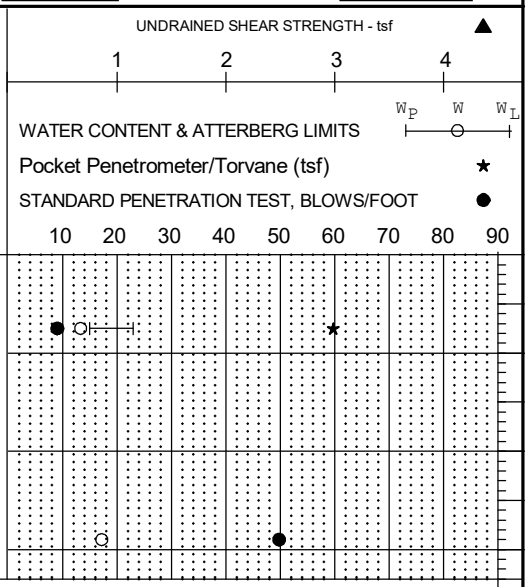
Client Maumee Watershed Conservatory District

Boring Location 478,770.9 N; 1,646,275.5 E

Project Number 173409690

Surface Elevation 800.9 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray with brown, low plasticity, firm to very hard, dry to wet *(Continued)*		SPT	4	1.2	2-4-5	
11								
12								
13	787.7			SPT	5	0.7	4-50/4"	
	787.6	Dolomite, gray, weathered						
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								



Split spoon refusal at 13.3'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-4.2**

Client	Maumee Watershed Conservatory District	Boring Location	479,679.1 N; 1,646,546.6 E
Project Number	173409690	Surface Elevation	798.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	5/5/22
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Elevation Datum: NAVD 88 | Completed: 5/5/22 | Date/Time: 5/5/22 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.5					ft		
0	797.6	Topsoil		SPT	1	0.6	WOH-1-1	
1		SANDY LEAN CLAY, VISUAL, brown with gray, low plasticity, very soft to soft, moist						
2								
3				SPT	2	1.1	1-1-3	
4	793.5							
5		SANDY LEAN CLAY, CL, brown with gray, low to medium plasticity, hard, moist		SPT	3	1.5	4-7-12	
6								
7								
8				ST	1	1.9	200	
9								
10	788.5							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.2**

Client: Maumee Watershed Conservatory District
Boring Location: 479,679.1 N; 1,646,546.6 E
Project Number: 173409690
Surface Elevation: 798.5 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND, SM, brown with black/gray/white, non-plastic, medium dense, moist to wet *Atterberg limits = NP*		SPT	4	0.6	3-4-7	
11								
12	786.0							
13	785.3	LEAN CLAY WITH GRAVEL, VISUAL, brownish gray, low plasticity, very hard, moist to wet		SPT	5	0.8	5-50/4"	
	785.2	Dolomite, gray, weathered						
14		*Split spoon refusal at 13.3'. Boring terminated and backfilled with cement bentonite grout.*						
15								
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT
10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.3**

Client	Maumee Watershed Conservatory District	Boring Location	480,347.2 N; 1,646,592.2 E
Project Number	173409690	Surface Elevation	798.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	5/5/22
Project Location	Hancock County, Ohio	Depth to Water	10.9 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Elevation Datum: NAVD 88 | Completed: 5/6/22 | Date/Time: 5/5/22 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.5					ft		
0		Topsoil						
	797.5			SPT	1	1.2	WOH-WOH-2	
1		SANDY LEAN CLAY, CL, light brown to gray, low to medium plasticity, soft, moist						
2								
3				SPT	2	0.8	WOH-2-2	
4								
5				ST	1	1.9	250	
6								
7								
8	790.3			SPT	3	1.5	5-6-7	
		LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist, trace gravel						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P W W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

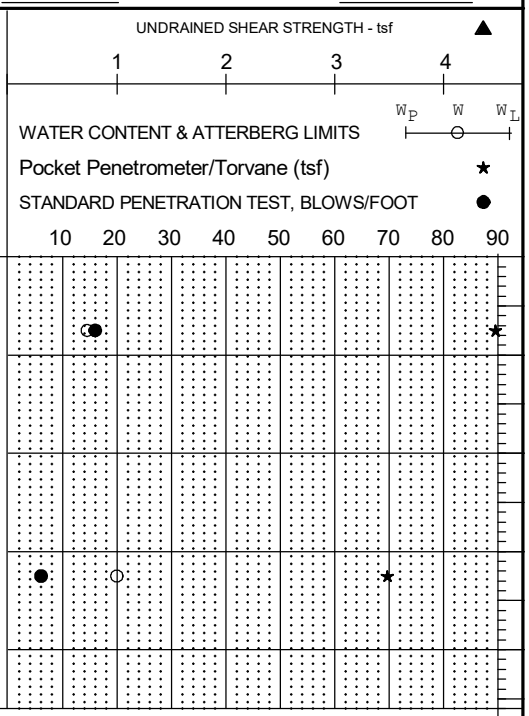
Printed on 9/28/22

SUBSURFACE LOG

Boring No. **B-4.3**

Client: Maumee Watershed Conservatory District
Boring Location: 480,347.2 N; 1,646,592.2 E
Project Number: 173409690
Surface Elevation: 798.5 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY, VISUAL, gray, low plasticity, firm to hard, moist, trace gravel *(Continued)*		SPT	4	1.5	4-7-9	
11	787.2							
12		SILTY SAND, SM, light gray to dark gray, non-plastic, loose, moist to wet						
13	784.7	*Atterberg limits = NP*		SPT	5	1.5	2-3-3	
14	783.9	LEAN CLAY, VISUAL, gray, low plasticity, firm, moist, trace gravel						
15		*Auger refusal at 14.6'. Boring terminated and backfilled with cement bentonite grout.*						
16								
17								
18								
19								
20								
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-4.4**

Client	Maumee Watershed Conservatory District	Boring Location	481,678.1 N; 1,646,603.6 E
Project Number	173409690	Surface Elevation	799.6 ft (Elevation Datum NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/10/22 (Completed 5/10/22)
Project Location	Hancock County, Ohio	Depth to Water	15.0 ft (Date/Time 5/10/22)
Inspector	MF	Depth to Water	6.9 ft (Date/Time 5/10/22)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.6					ft		
0	798.7	Topsoil		SPT	1	0.8	WOH-1-2	
1		LEAN CLAY WITH SAND, CL, brown and gray/black, medium plasticity, soft to firm, dry to moist						
2								
3				SPT	2	1.5	2-3-5	
4	795.6	SANDY LEAN CLAY, CL, dark brown, low plasticity, soft to firm, moist						
5				ST	1	1.1	100	
6								
7	792.1							
8		SANDY LEAN CLAY, VISUAL, brown and gray/black, low to medium plasticity, hard, dry to moist, trace gravel		SPT	3	1.5	6-10-13	
9								
10	789.6							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Stantec

SUBSURFACE LOG

Boring No. **B-4.4**

Client Maumee Watershed Conservatory District

Boring Location 481,678.1 N; 1,646,603.6 E

Project Number 173409690

Surface Elevation 799.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SANDY LEAN CLAY, CL, gray, low plasticity, firm, moist		SPT	4	1.5	3-3-4	
11								
12								
13				SPT	5	1.4	3-4-5	
14								
15	784.3	*Well-graded sand lens at 15.2'*		SPT	6	0.8	8-50/4"	
	783.8	Dolomite, gray, weathered						
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Split spoon refusal at 15.8'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-4.5**

Client	Maumee Watershed Conservatory District	Boring Location	481,265.7 N; 1,647,739.0 E
Project Number	173409690	Surface Elevation	797.4 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/11/22 (Completed: 5/11/22)
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft (Date/Time: 5/11/22)
Inspector	MF	Depth to Water	6.2 ft (Date/Time: 5/11/22)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.4					ft		
0		Topsoil						
	796.6							
1		SANDY LEAN CLAY, VISUAL, brown with gray, low plasticity, very soft to soft, moist to wet		SPT	1	0.8	WOH-WOH-1	
2								
		Sandy from 2.5' to 4.0'						
3				SPT	2	0.7	WOH-WOH-1	
4								
5								
6				ST	1	1.1	100	
7	789.9							
		SANDY LEAN CLAY, CL, gray, low plasticity, firm, moist		SPT	3	1.5	2-4-5	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.5**

Client Maumee Watershed Conservatory District

Boring Location 481,265.7 N; 1,647,739.0 E

Project Number 173409690

Surface Elevation 797.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10								
	786.4	SANDY LEAN CLAY, CL, gray, low plasticity, firm, moist *(Continued)*		SPT	4	1.5	2-5-11	
11		SILTY SAND WITH GRAVEL, VISUAL, gray to gray/white/black, fine to medium, non-plastic, medium dense, wet						
12								
13		*Gray clay lens from 13.3' to 13.5'*		SPT	5	1.4	2-10-12	
14								
15	782.4							
		SILTY CLAYEY SAND, SC-SM, black/gray/white, low plasticity, very loose, wet		SPT	6	1.4	2-1-2	
16	781.2							
		LEAN CLAY, VISUAL, gray, low plasticity, soft, moist to wet						
17	779.9							
	779.0	SILTY SAND WITH GRAVEL, VISUAL, black/gray/white, medium to coarse, non-plastic, loose, wet		SPT	7	0.8	2-2-50/5"	
18	778.5	Dolomite, gray, weathered						
19		*Split spoon refusal at 18.9'. Boring terminated and backfilled with cement bentonite grout.*						
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-4.6**

Client	Maumee Watershed Conservatory District	Boring Location	481,479.2 N; 1,648,833.1 E
Project Number	173409690	Surface Elevation	797.0 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/11/22 (Completed: 5/12/22)
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft (Date/Time: 5/11/22)
Inspector	MF	Depth to Water	5.5 ft (Date/Time: 5/11/22)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	797.0							
	796.0	Topsoil		SPT	1	1.0	WOH-2-2	
1		SANDY LEAN CLAY, VISUAL, brown with gray, low plasticity, soft, moist						
2								
	794.0							
3		CLAYEY SAND, SC, brown to gray, low plasticity, loose, moist		ST	1	2.0	300	
4								
	791.7		▽					
5		SANDY LEAN CLAY, CL, brown and gray, low plasticity, firm, moist	▼	SPT	2	1.5	2-5-4	
		Sand lens from 6.0' to 6.2'						
6								
7								
				SPT	3	1.5	2-4-4	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P — W — W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.6**

Client Maumee Watershed Conservatory District

Boring Location 481,479.2 N; 1,648,833.1 E

Project Number 173409690

Surface Elevation 797.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, brown and gray, low plasticity, firm, moist *(Continued)*		SPT	4	1.3	2-5-8	
11								
12								
13	784.1	SILTY SAND, SM, black/gray/white, non-plastic, medium dense, wet		SPT	5	1.2	2-8-10	
14								
15								
16		*Atterberg limits = NP*		SPT	6	1.5	9-11-18	
17								
18	778.8			SPT	7	0.7	17-50/2"	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 18.2'. Boring terminated and backfilled with cement bentonite grout.

19 20 21 22 23

Stantec

SUBSURFACE LOG

Boring No. **B-4.7**

Client	Maumee Watershed Conservatory District	Boring Location	481,106.6 N; 1,648,375.5 E
Project Number	173409690	Surface Elevation	797.8 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/11/22
Completed	5/11/22		
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft
Date/Time	5/11/22		
Inspector	MF	Depth to Water	6.6 ft
Date/Time	5/11/22		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.8					ft		
0	797.0	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown and grayish, low plasticity, very soft, moist		SPT	1	0.8	WOH-WOH-1	
2								
3				ST	1	2.0	100	
4	792.8	*Sand lens from 4.5' to 5.0'*						
5		LEAN CLAY WITH SAND, CL, gray, low plasticity, firm, moist		SPT	2	1.4	2-4-5	
6								
7	790.3							
8		CLAYEY SAND, SC, gray and black, low plasticity, medium dense, moist		ST	2	1.7	500	
9								
10								

Stantec

SUBSURFACE LOG

Boring No. **B-4.7**

Client Maumee Watershed Conservatory District

Boring Location 481,106.6 N; 1,648,375.5 E

Project Number 173409690

Surface Elevation 797.8 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		CLAYEY SAND, SC, gray and black, low plasticity, medium dense, moist *(Continued)*		SPT	3	1.5	1-6-12	
		Gravelly seam from 10.0' to 10.2'						
11		*Less fines content from 11.1' to 11.5'*						
12	785.3							
13		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, gray, low plasticity, medium dense, moist to wet		SPT	4	1.2	1-4-8	
14								
15	782.6							
	781.8	SILTY SAND WITH GRAVEL, VISUAL, black/gray/white, coarse, non-plastic, medium dense, moist to wet		SPT	5	1.4	4-5-13	
16		SILTY SAND, VISUAL, black/gray/white, coarse, medium dense, moist to wet, trace gravel						
17		*Increased gravel content from 17.5' to 19.4'*						
18				SPT	6	1.5	7-8-10	
19	778.4							
		Auger refusal at 19.4'. Boring terminated and backfilled with cement bentonite grout.						
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

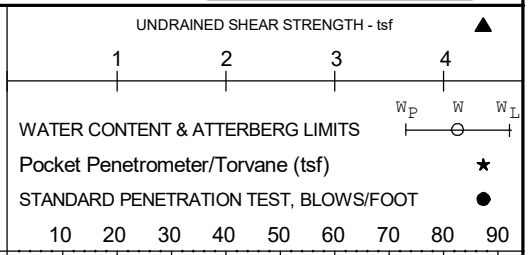
Printed on 9/28/22

SUBSURFACE LOG

Boring No. **B-4.8**

Client	Maumee Watershed Conservatory District	Boring Location	479,899.8 N; 1,647,909.8 E
Project Number	173409690	Surface Elevation	798.4 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	5/10/22
Inspector	MF	Completed	5/10/22
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	12.8 ft
Drill Rig Type and ID	CME 55T#1, #709	Date/Time	5/10/22
Overburden Drilling and Sampling Tools (Type and Size)	3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes	Depth to Water	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Date/Time	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	87.6%
Borehole Azimuth	N/A (Vertical)	Borehole Inclination (from Vertical)	Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.4					ft		
0	797.7	Topsoil						
1		SANDY LEAN CLAY, VISUAL, brown, low plasticity, soft, moist		SPT	1	0.8	WOH-1-2	
2	795.9							
3		CLAYEY SAND, SC, brown, low plasticity, loose, moist		ST	1	2.0	25	
4	793.4							
5		LEAN CLAY WITH SAND, CL, gray, low plasticity, firm, dry to moist		SPT	2	1.2	1-4-5	
6								
7								
8				SPT	3	1.5	3-6-8	
9								
10								



Boring No. **B-4.8**

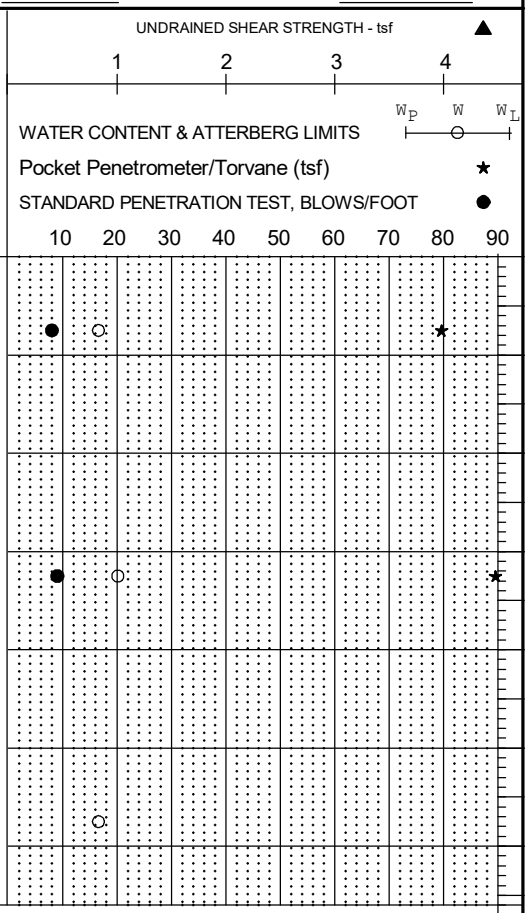
Client Maumee Watershed Conservatory District

Boring Location 479,899.8 N; 1,647,909.8 E

Project Number 173409690

Surface Elevation 798.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY WITH SAND, CL, gray, low plasticity, firm, dry to moist *(Continued)*		SPT	4	1.5	2-3-5	
11								
12	785.6							
13		SILTY SAND, SM, black and gray, non-plastic, loose to medium dense, moist to wet		SPT	5	1.5	2-3-6	
14		*Atterberg limits = NP*						
15		*Clay seam from 13.8' to 13.9'* *Stone in SPT-5 shoe*		SPT	6	1.2	5-1-50/6"	
16	781.9	*Clayey from 16.2' to 16.4'*						
	781.8	Dolomite, gray, weathered						
17		*Auger refusal at 16.6'. Boring terminated and backfilled with cement bentonite grout.*						
18								
19								
20								
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-4.9**

Client	Maumee Watershed Conservatory District	Boring Location	479,093.8 N; 1,647,464.3 E
Project Number	173409690	Surface Elevation	799.8 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/9/22 (Completed: 5/9/22)
Project Location	Hancock County, Ohio	Depth to Water	4.0 ft (Date/Time: 5/9/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	799.8							
	799.3	Topsoil						
1		LEAN CLAY WITH SAND, VISUAL, brown to gray, low plasticity, firm, moist		SPT	1	0.8	1-1-3	
2								
3				SPT	2	1.2	1-2-3	
4								
5				SPT	3	1.5	1-2-3	
6		*Small fine sand lens at 6.3'*						
7								
8	791.7			SPT	4	1.5	5-7-9	
		SANDY SILTY CLAY, CL-ML, gray, low plasticity, hard, dry to moist						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.9**

Client Maumee Watershed Conservatory District

Boring Location 479,093.8 N; 1,647,464.3 E

Project Number 173409690

Surface Elevation 799.8 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ / W_P W W_L / ★ / ● / 10 20 30 40 50 60 70 80 90
10		SANDY SILTY CLAY, CL-ML, gray, low plasticity, hard, dry to moist *(Continued)*		ST	1	0.6	1000		
11	788.1								
12		*Auger refusal at 11.7'. Boring terminated and backfilled with cement bentonite grout.*							
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

Stantec

SUBSURFACE LOG

Boring No. **B-4.10**

Client	Maumee Watershed Conservatory District	Boring Location	478,657.9 N; 1,646,896.3 E
Project Number	173409690	Surface Elevation	801.5 ft
Project Name	Eagle Creek Flood Basin	Date Started	5/9/22
Project Location	Hancock County, Ohio	Depth to Water	8.7 ft
Inspector	MF	Depth to Water	N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Elevation Datum: NAVD 88 | Completed: 5/9/22 | Date/Time: 5/9/22 | Date/Time: N/A

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	801.5					ft		
0	800.9	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown with gray, low to medium plasticity, soft to firm, dry to moist		SPT	1	0.8	WOH-1-2	
2								
3				SPT	2	1.1	2-2-5	
4								
5				SPT	3	1.4	3-5-5	
6								
7								
8				ST	1	1.6	800	
9								
10	791.5							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.10**

Client Maumee Watershed Conservatory District

Boring Location 478,657.9 N; 1,646,896.3 E

Project Number 173409690

Surface Elevation 801.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray, low plasticity, firm, dry to moist		SPT	4	1.5	2-5-8	
11		*Clayey sand seam from 10.0' to 10.5'*						
12								
13	788.4			SPT	5	1.0	3-50/2"	
	788.3	Dolomite, gray, weathered						
14		*Split spoon refusal at 13.2'. Boring terminated and backfilled with cement bentonite grout.*						
15								
16								
17								
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.11**

Client	Maumee Watershed Conservatory District	Boring Location	481,419.0 N; 1,649,967.2 E
Project Number	173409690	Surface Elevation	793.8 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/11/22 (Completed: 5/12/22)
Project Location	Hancock County, Ohio	Depth to Water	4.0 ft (Date/Time: 5/11/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

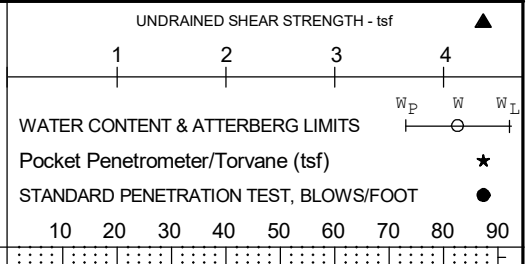
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.8					ft		
0		Topsoil		SPT	1	1.2	WOH-2-2	
1	792.8	LEAN CLAY WITH SAND, CL, brown with gray, medium plasticity, soft, moist						
2								
3				ST	1	1.2	100	
4	788.8							
5		SANDY LEAN CLAY, CL, brown to gray, low plasticity, very soft, wet		SPT	2	1.5	WOH-WOH-WOH	
6								
7								
8				SPT	3	1.1	WOH-WOH-WOH	
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-4.11**

Client Maumee Watershed Conservatory District

Boring Location 481,419.0 N; 1,649,967.2 E

Project Number 173409690

Surface Elevation 793.8 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	783.2							
11		SILTY SAND, VISUAL, gray, fine to medium, non-plastic, medium dense, wet *Gravelly from 10.6' to 11.1'*		SPT	4	1.4	6-6-6	
12	781.3							
13		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, gray, low plasticity, loose, wet		SPT	5	0.7	3-3-2	
14	778.8							
15		SILTY SAND, VISUAL, gray, fine, non-plastic, medium dense, wet						
16	777.5	*Clayey from 15.8' to 16.3'*		SPT	6	1.3	WOH-3-7	
17		SILTY SAND WITH GRAVEL, VISUAL, gray, coarse, non-plastic, medium dense, wet						
18	776.3	Dolomite, gray, weathered		SPT	7	0.7	53-50/2"	
	775.6	*Split spoon refusal at 18.2'. Boring terminated and backfilled with cement bentonite grout.*						
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲

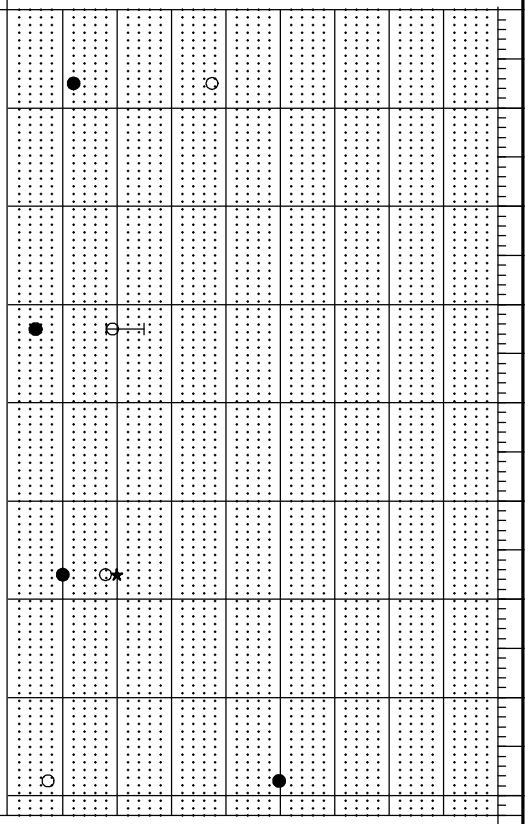
1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ●

10 20 30 40 50 60 70 80 90



Stantec

SUBSURFACE LOG

Boring No. **B-4.12**

Client	Maumee Watershed Conservatory District	Boring Location	481,456.6 N; 1,649,996.2 E
Project Number	173409690	Surface Elevation	793.2 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/16/22 (Completed: 5/16/22)
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft (Date/Time: 5/16/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.2					ft		
0	792.5	Topsoil						
1		FAT CLAY, VISUAL, brown and gray, medium to high plasticity, firm, moist		SPT	1	1.3	2-3-3	
2								
3				SPT	2	1.5	2-3-4	
4	788.2							
5		SANDY LEAN CLAY, CL, brown and gray, low to medium plasticity, soft, moist		ST	1	1.9	100	
6								
7	785.2							
8		SILTY SAND, SM, gray, non-plastic, very loose, wet *Atterberg limits = NP*		SPT	3	1.3	WOH-WOH-WOH	
9								
10	783.2							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

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Stantec

SUBSURFACE LOG

Boring No. **B-4.12**

Client Maumee Watershed Conservatory District

Boring Location 481,456.6 N; 1,649,996.2 E

Project Number 173409690

Surface Elevation 793.2 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, VISUAL, gray, fine to coarse, non-plastic, very loose, wet, some clay		SPT	4	1.1	1-1-1	
12	780.7							
13		LEAN CLAY WITH SAND, CL, gray, low plasticity, firm, moist		SPT	5	0.8	1-3-5	
15	777.3			SPT	6	1.3	2-10-20	
16		Dolomite, gray, weathered						
17	776.2							
18		Dolomite, gray and black, very fine to fine, soft to hard, laminated to thin, slightly weathered to moderately weathered, moist, 90° bedding angle, fractured to highly fractured, smooth to slightly rough, weak to slightly strong, fracture angle 10 to 90 degrees, with shale laminations		RC	1	4.7	20	
22	771.2							

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-4.12A**

Client	Maumee Watershed Conservatory District	Boring Location	481,448.6 N; 1,650,002.1 E
Project Number	173409690	Surface Elevation	793.1 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/16/22
Completed	5/17/22		
Project Location	Hancock County, Ohio	Depth to Water	7.0 ft
Date/Time	5/17/22		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.1					ft		
0	792.4	Topsoil						
1		FAT CLAY, CH, brown and gray, medium to high plasticity, firm, moist		ST	1	1.5	100	
2								
3				ST	2	1.0	200	
4	788.1							
5		LEAN CLAY WITH SAND, CL, brown and gray, low to medium plasticity, soft, moist		ST	3	1.2	200	
6								
7	785.1			ST	4	2.0	200	
8		SILTY SAND, VISUAL, gray, non-plastic, very loose, wet						
9								
10	783.1							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.12A**

Client Maumee Watershed Conservatory District

Boring Location 481,448.6 N; 1,650,002.1 E

Project Number 173409690

Surface Elevation 793.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, VISUAL, gray, fine to coarse, non-plastic, very loose, wet, some clay						
11								
12	780.6							
13		CLAYEY SAND, SC, gray, low plasticity, medium dense, moist						
14				ST	5	1.5	300	
15	777.2							
16	776.6	Dolomite, gray, weathered						
17		*Auger refusal at 16.5'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen information, and backfill information. Soil lithology from B-4.12 shown.*						
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-4.13**

Client	Maumee Watershed Conservatory District	Boring Location	481,330.8 N; 1,650,088.9 E
Project Number	173409690	Surface Elevation	792.7 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	5/17/22
Inspector	MF	Completed	5/17/22
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	5.0 ft
		Date/Time	5/17/22
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#1, #709

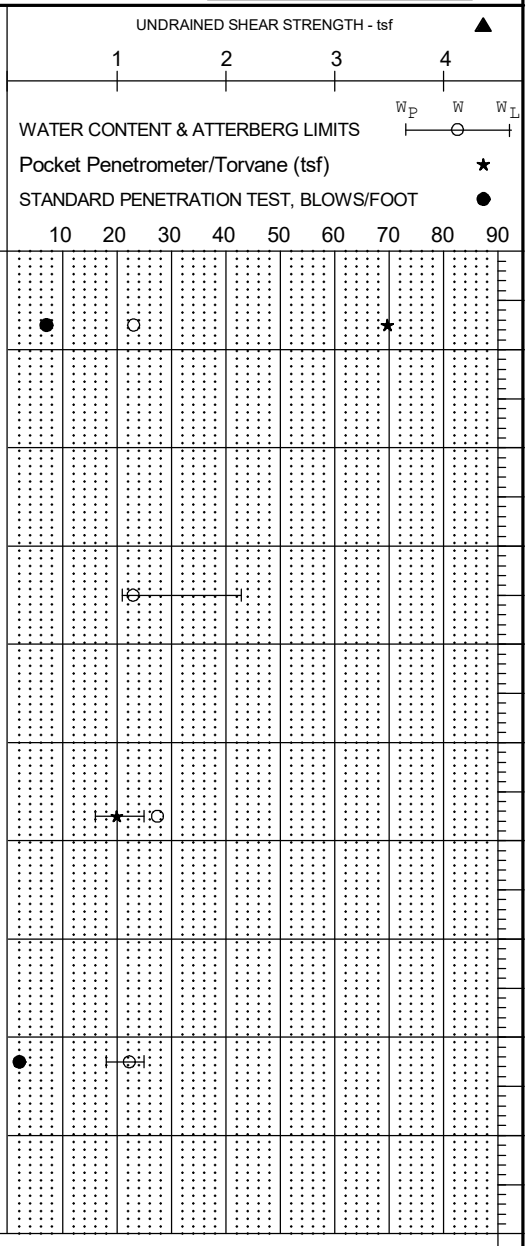
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	792.7					ft		
0	792.1	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown, low to medium plasticity, firm, dry to moist		SPT	1	1.1	2-3-4	
2								
3				ST	1	1.3	100	
4	787.7							
5		CLAYEY SAND, SC, gray, low plasticity, very loose, wet		SPT	2	1.3	WOH-WOH-WOH	
6		*Gravelly in SPT-2 shoe*						
7	785.2							
8		SILTY CLAYEY SAND, SC-SM, gray, low plasticity, very loose to medium dense, wet		SPT	3	1.2	1-1-1	
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-4.13**

Client Maumee Watershed Conservatory District

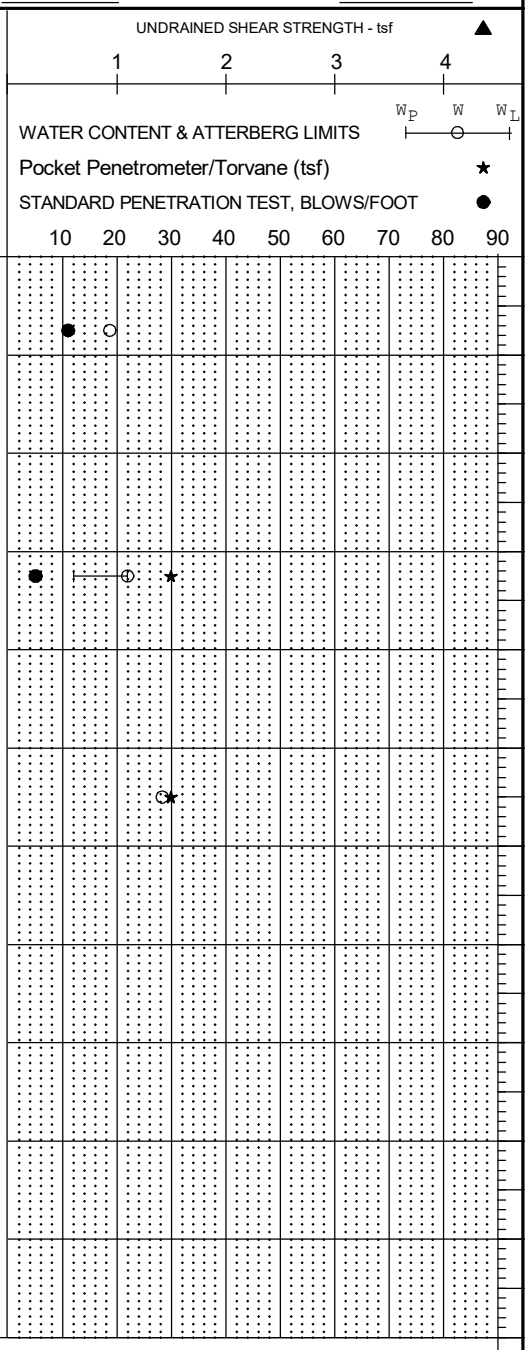
Boring Location 481,330.8 N; 1,650,088.9 E

Project Number 173409690

Surface Elevation 792.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY CLAYEY SAND, SC-SM, gray, low plasticity, very loose to medium dense, wet *(Continued)*						
		Gravel lens from 11.0' to 11.2'		SPT	4	1.2	4-7-4	
12	780.2							
		LEAN CLAY WITH SAND, CL, gray, low plasticity, firm, moist to wet		SPT	5	1.5	1-2-3	
14								
15				SPT	6	1.0	1-1-50/0"	
16	776.5							
		Dolomite, gray with black, very fine to fine, laminated to thin, highly weathered to slightly weathered, moist, 90° bedding angle, weak to moderately strong, highly to moderately fractured, fracture angle 10 to 80 degrees, with shale laminations		RC	1	5.0	18	
20								
21	771.7							

Boring terminated and backfilled with cement bentonite grout.



Stantec

SUBSURFACE LOG

Boring No. **B-4.13A**

Client	Maumee Watershed Conservatory District	Boring Location	481,330.8 N; 1,650,088.9 E
Project Number	173409690	Surface Elevation	792.7 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/17/22
Completed	5/17/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.7							
	792.1	Topsoil						
1		LEAN CLAY WITH SAND, VISUAL, brown, low to medium plasticity, firm, dry to moist						
2								
3								
4								
	787.7							
5		CLAYEY SAND, VISUAL, gray, low plasticity, very loose, wet						
6								
7	785.2							
		SILTY CLAYEY SAND, VISUAL, gray, low plasticity, very loose to medium dense, wet						
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Boring No. **B-4.13A**

Client Maumee Watershed Conservatory District

Boring Location 481,330.8 N; 1,650,088.9 E

Project Number 173409690

Surface Elevation 792.7 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SILTY CLAYEY SAND, VISUAL, gray, low plasticity, very loose to medium dense, wet *(Continued)*						
11								
12	780.2							
13		LEAN CLAY WITH SAND, VISUAL, gray, low plasticity, firm, moist to wet						
14								
15								
16	776.5							
	776.2	Dolomite, gray, weathered						
17		*Auger refusal at 16.5'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen information, and backfill information. Soil lithology from B-4.13 shown.*						
18								
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-4.14**

Client	Maumee Watershed Conservatory District	Boring Location	481,220.0 N; 1,650,189.4 E
Project Number	173409690	Surface Elevation	793.6 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/18/22 (Completed: 5/18/22)
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft (Date/Time: 5/18/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.6					ft		
0	792.9	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown with gray, low plasticity, firm to soft, moist		SPT	1	1.0	2-2-3	
2								
3				SPT	2	1.4	1-2-1	
4	788.6							
5		SILTY SAND, VISUAL, brown to gray, fine to coarse, non-plastic, very loose, wet		SPT	3	1.5	1-2-1	
6								
7								
8	785.1			SPT	4	1.1	2-2-4	
9		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, gray/tan/white, low plasticity, loose to medium dense, wet						
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-4.14**

Client Maumee Watershed Conservatory District

Boring Location 481,220.0 N; 1,650,189.4 E

Project Number 173409690

Surface Elevation 793.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, gray/tan/white, low plasticity, loose to medium dense, wet *(Continued)*		SPT	5	1.0	2-10-4	
11	782.1							
12		SANDY LEAN CLAY, CL, gray, low plasticity, firm, moist to wet		ST	1	1.6	400	
13								
14								
15				SPT	6	1.2	3-4-7	
16	777.7	SILTY SAND, VISUAL, black and gray, fine to coarse, medium dense, wet						
17	776.1							
18	775.8	FAT CLAY, VISUAL, gray, medium plasticity, firm, moist, with sand and silt		SPT	7	0.9	6-50/4"	
	774.7	Dolomite, gray, weathered						
19		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, moderate petroleum odor, weak to moderately strong, highly to moderately fractured, smooth to rough, fracture angle 5 to 70 degrees, with shale laminations.		RC	1	5.0	16	
20								
21								
22								
23								
	769.7							

UNDRAINED SHEAR STRENGTH - tsf

1 2 3 4

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT

10 20 30 40 50 60 70 80 90

Boring No. **B-4.14**

Client Maumee Watershed Conservatory District

Boring Location 481,220.0 N; 1,650,189.4 E

Project Number 173409690

Surface Elevation 793.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf ▲ 1 2 3 4 / WATER CONTENT & ATTERBERG LIMITS W_P W W_L / Pocket Penetrometer/Torvane (tsf) ★ / STANDARD PENETRATION TEST, BLOWS/FOOT ● 10 20 30 40 50 60 70 80 90
						ft			
24		*Boring terminated and backfilled with cement bentonite grout.*							
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-4.14A**

Client	Maumee Watershed Conservatory District	Boring Location	481,220.0 N; 1,650,189.4 E
Project Number	173409690	Surface Elevation	793.6 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/18/22
Completed	5/18/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	793.6							
	792.9	Topsoil						
1		LEAN CLAY WITH SAND, VISUAL, brown with gray, low plasticity, firm to soft, moist						
2								
3								
4								
	788.6							
5		SILTY SAND, VISUAL, brown to gray, fine to coarse, non-plastic, very loose, wet						
6								
7								
8	785.1							
		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray/tan/white, low plasticity, loose to medium dense, wet						
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.14A**

Client Maumee Watershed Conservatory District

Boring Location 481,220.0 N; 1,650,189.4 E

Project Number 173409690

Surface Elevation 793.6 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray/tan/white, low plasticity, loose to medium dense, wet *(Continued)*						
11	782.1							
12		SANDY LEAN CLAY, VISUAL, gray, low plasticity, firm, moist to wet						
13								
14								
15	777.7							
16		SILTY SAND, VISUAL, black and gray, fine to coarse, medium dense, wet						
17	776.1							
18	775.8	FAT CLAY, VISUAL, gray, medium plasticity, firm, moist, with sand and silt						
	775.0	Dolomite, gray, weathered						
19		*Auger refusal at 18.6'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen information, and backfill information. Soil lithology from B-4.14 shown.*						
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

SUBSURFACE LOG

Boring No. **B-4.15**

Client	Maumee Watershed Conservatory District	Boring Location	481,090.6 N; 1,650,232.5 E
Project Number	173409690	Surface Elevation	793.4 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	5/18/22
Inspector	MF	Completed	5/18/22
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	6.6 ft
Drill Rig Type and ID	CME 55T#1, #709	Date/Time	5/18/22
Overburden Drilling and Sampling Tools (Type and Size)	3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes	Depth to Water	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Date/Time	N/A
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	87.6%
Borehole Azimuth	N/A (Vertical)	Borehole Inclination (from Vertical)	Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.4					ft		
0	792.7	Topsoil						
1		LEAN CLAY WITH SAND, VISUAL, brown with gray, low to medium plasticity, soft, moist		SPT	1	1.2	WOH-1-2	
2								
3	789.7			SPT	2	1.5	1-1-2	
4		SILTY CLAYEY SAND, SC-SM, brown/gray to gray/black, low plasticity, loose, moist						
5				SPT	3	1.4	1-1-1	
6								
7	785.9							
8		SANDY LEAN CLAY, VISUAL, gray, low plasticity, soft, moist *Gravel from 7.8' to 8.1' and 8.5' to 9.0'*		SPT	4	1.2	WOH-1-2	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.15**

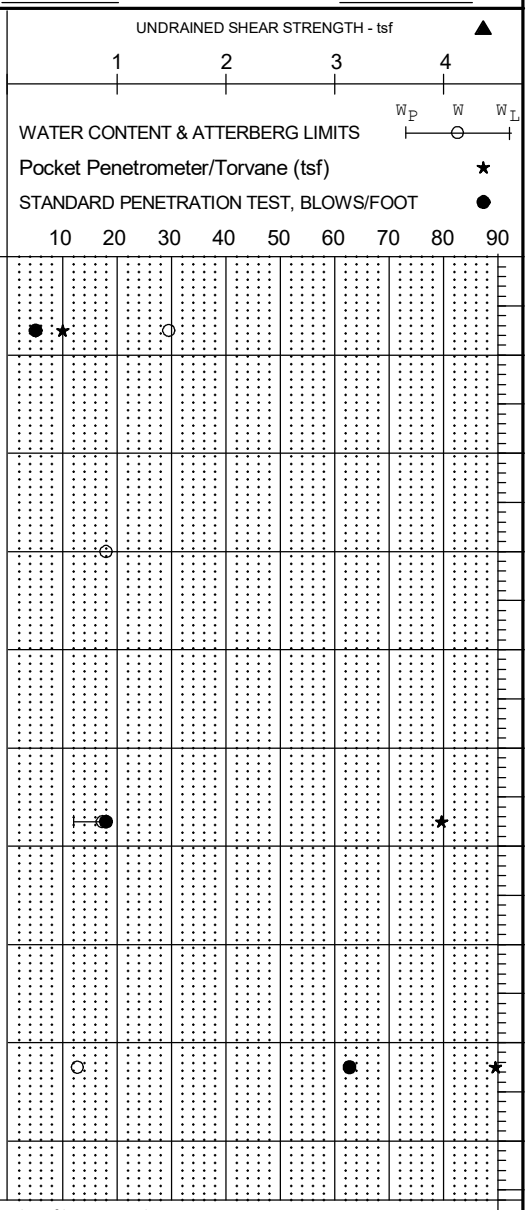
Client Maumee Watershed Conservatory District

Boring Location 481,090.6 N; 1,650,232.5 E

Project Number 173409690

Surface Elevation 793.4 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	782.8							
11		SANDY SILT, ML, gray and tan, non-plastic, soft, wet		SPT	5	1.2	1-2-3	
12								
13		*Atterberg limits = NP*		ST	1	1.7	200	
14								
15	778.4	SILTY CLAYEY SAND, SC-SM, black/gray/tan, low plasticity, medium dense, moist		SPT	6	1.3	2-9-9	
16		*Clay lens from 16.0' to 16.2'*						
17	775.9							
18	775.0	LEAN CLAY, VISUAL, gray, low plasticity, very hard, moist, with bedrock fragments		SPT	7	1.5	12-37-26	
19	773.8	Dolomite, gray, weathered						
20		*Auger refusal at 19.6'. Boring terminated and backfilled with cement bentonite grout.*						
21								
22								
23								



Stantec

SUBSURFACE LOG

Boring No. **B-4.16**

Client	Maumee Watershed Conservatory District	Boring Location	481,109.2 N; 1,650,295.7 E
Project Number	173409690	Surface Elevation	792.3 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/19/22
Completed	5/19/22		
Project Location	Hancock County, Ohio	Depth to Water	7.1 ft
Date/Time	5/19/22		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	792.3					ft		
0	791.6	Topsoil						
1		SANDY LEAN CLAY, CL, brown, low plasticity, soft to firm, moist		SPT	1	1.1	1-3-3	
2								
3				SPT	2	1.5	1-2-1	
4	787.3							
5	786.3	LEAN CLAY, CL, brown, medium plasticity, soft, moist to wet *Organic from 5.6' to 5.7'*		ST	1	1.8	100	
6		SILTY SAND, SM, gray and tan, non-plastic, loose, wet						
7								
8		*Atterberg limits = NP*		SPT	3	1.5	1-2-4	
9		*Organic from 8.7' to 8.9'*						
10	782.3							

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Boring No. **B-4.16**

Client Maumee Watershed Conservatory District

Boring Location 481,109.2 N; 1,650,295.7 E

Project Number 173409690

Surface Elevation 792.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY WITH SAND, VISUAL, gray with brown, medium plasticity, firm, moist		SPT	4	1.4	2-3-5	
11								
12	779.8							
13		WELL GRADED SAND, VISUAL, black and gray, fine to coarse, non-plastic, loose, wet, with clay and gravel		SPT	5	1.2	3-3-4	
14								
15	777.3							
16		SILTY SAND, VISUAL, gray and tan, non-plastic, medium dense, moist to wet		SPT	6	0.9	3-5-15	
17	774.8							
18	774.1	LEAN CLAY WITH GRAVEL, VISUAL, gray, low plasticity, hard to very hard, moist		SPT	7	1.5	13-23-40	
19	773.3	Dolomite, gray, weathered						
20		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, weak to strong, highly fractured to moderately fractured, smooth to rough, fracture angle 5 to 90 degrees, frequent vertical fractures and crumbled zones, with shale laminations		RC	1	5.0	14	
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Stantec

SUBSURFACE LOG

Boring No. **B-4.16**

Client Maumee Watershed Conservatory District

Boring Location 481,109.2 N; 1,650,295.7 E

Project Number 173409690

Surface Elevation 792.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ ; W_P W W_L ; 10 20 30 40 50 60 70 80 90
24	768.3	*Boring terminated and backfilled with cement bentonite grout.*							
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-4.16A**

Client	Maumee Watershed Conservatory District	Boring Location	481,117.3 N; 1,650,289.8 E
Project Number	173409690	Surface Elevation	792.4 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/19/22
Completed	5/19/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (ft)	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
0	792.4							
	791.7	Topsoil						
1		LEAN CLAY, CL, brown, medium plasticity, soft, moist to wet		ST	1	1.7	100	
2								
3				ST	2	1.1	100	
4								
5								
6	786.4			ST	3	2.0	100	
		SILTY SAND, SM, gray and tan, non-plastic, loose, wet *Atterberg Limits = NP* *Organic from 6.9' to 7.0'* *LL = 391, PL = 297, WC = 307*						
7								
8								
9								
10	782.4							

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.16A**

Client: Maumee Watershed Conservatory District
Boring Location: 481,117.3 N; 1,650,289.8 E
Project Number: 173409690
Surface Elevation: 792.4 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		LEAN CLAY WITH SAND, CL, gray with brown, medium plasticity, firm, moist		ST	4	1.6	200	
12	779.9							
13		WELL GRADED SAND, VISUAL, black and gray, fine to coarse, non-plastic, loose, wet, with clay and gravel						
14	777.4							
15		SILTY SAND, SM, gray and tan, non-plastic, medium dense, moist to wet *Atterberg limits = NP*		ST	5	0.4	1000	
17	774.9							
18	774.2	LEAN CLAY WITH GRAVEL, VISUAL, gray, low plasticity, very hard, moist						
19	773.4	Dolomite, gray, weathered						

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4
WATER CONTENT & ATTERBERG LIMITS: W_P W W_L
Pocket Penetrometer/Torvane (tsf)
STANDARD PENETRATION TEST, BLOWS/FOOT
10 20 30 40 50 60 70 80 90

Auger refusal at 19.0'. Boring terminated and piezometer installed. See piezometer installation detail for additional information on piezometer depth, screen information, and backfill information. Soil lithology from B-4.16 shown.

Stantec

SUBSURFACE LOG

Boring No. **B-4.17**

Client	Maumee Watershed Conservatory District	Boring Location	481,172.1 N; 1,650,313.6 E
Project Number	173409690	Surface Elevation	792.5 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	5/19/22
Inspector	MF	Completed	5/19/22
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	6.0 ft
		Date/Time	5/19/22
		Depth to Water	N/A
		Date/Time	N/A
		Drill Rig Type and ID	CME 55T#1, #709

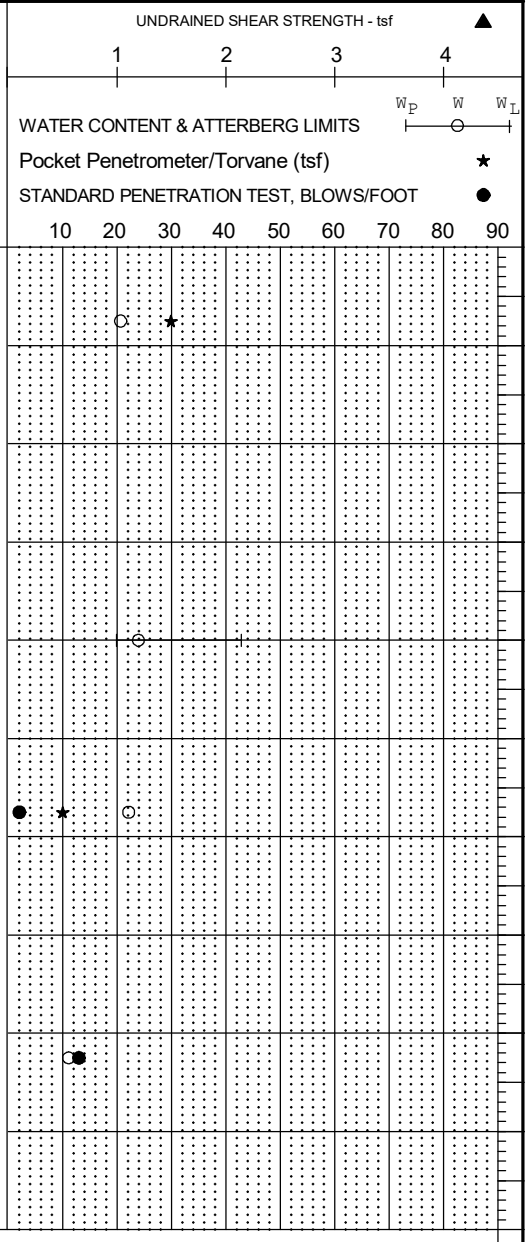
Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	792.5					ft		
0		Topsoil						
	791.6			SPT	1	0.8	WOH-WOH-2	
1		LEAN CLAY WITH SAND, CL, brown with gray, medium plasticity, soft, moist						
2								
3								
4				ST	1	1.4	100	
5	787.1							
		SILTY SAND, VISUAL, gray, fine, non-plastic, very loose, moist to wet		SPT	2	1.4	1-1-1	
6								
7	785.0							
		POORLY GRADED SAND WITH SILT AND GRAVEL, SP-SM, gray and tan, non-plastic, medium dense, wet *Atterberg limits = NP*		SPT	3	1.1	3-6-7	
8								
9								
10								



Stantec

SUBSURFACE LOG

Boring No. **B-4.17**

Client Maumee Watershed Conservatory District

Boring Location 481,172.1 N; 1,650,313.6 E

Project Number 173409690

Surface Elevation 792.5 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10	782.2	SILTY CLAY WITH SAND, CL-ML, gray, low plasticity, soft to firm, wet *Sand lens from 10.8' to 11.1'*		SPT	4	1.4	1-3-2	
11								
12								
13		*Sand lens from 13.2' to 13.4'*		SPT	5	1.3	1-2-1	
14								
15	777.5	SANDY SILTY CLAY, CL-ML, gray, low plasticity, firm, wet		SPT	6	1.2	1-2-4	
16	776.2	SILTY SAND, VISUAL, black, medium, non-plastic, loose, wet						
17	775.0	Dolomite, gray, weathered		SPT	7	0.4	6-50/2"	
18	774.3							
19								
20								
21								
22								
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Split spoon refusal at 18.2'. Boring terminated and backfilled with cement bentonite grout.

Stantec

SUBSURFACE LOG

Boring No. **B-4.18**

Client	Maumee Watershed Conservatory District	Boring Location	478,766.2 N; 1,650,680.5 E
Project Number	173409690	Surface Elevation	799.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/24/22 (Completed: 5/24/22)
Project Location	Hancock County, Ohio	Depth to Water	15.0 ft (Date/Time: 5/24/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.1					ft		
0		Topsoil						
	798.2			SPT	1	0.7	WOH-1-1	
1		LEAN CLAY WITH SAND, CL, brown and gray, medium plasticity, soft to firm, moist						
2								
3				SPT	2	1.3	2-2-3	
4								
5								
6				SPT	3	1.3	1-2-4	
7								
	791.6							
8		SANDY LEAN CLAY, CL, gray, low to medium plasticity, hard, moist		SPT	4	1.4	7-8-11	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Boring No. **B-4.18**

Client Maumee Watershed Conservatory District

Boring Location 478,766.2 N; 1,650,680.5 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray, low to medium plasticity, hard, moist *(Continued)*		SPT	5	1.5	4-8-10	
11								
12								
13				ST	1	2.0	500	
14								
15	784.1							
		SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray/tan/black, coarse, non-plastic, medium dense, wet		SPT	6	0.8	3-6-9	
16								
17	781.6							
		LEAN CLAY, VISUAL, gray, low plasticity, firm, moist, trace gravel		SPT	7	1.1	4-5-6	
18		*Coarse sand lens from 18.2' to 18.3'*						
19								
20	778.5			SPT	8	1.1	3-9-50/1"	
21	778.0	Dolomite, gray, weathered						
		Dolomite, gray with black, very fine to medium, laminated to very thin, highly weathered to slightly weathered, moist, petroleum odor, weak to strong, highly fractured to moderately fractured, smooth to rough, fracture angle 5 to 90 degrees, with shale laminations						
22								
23				RC	1	5.0	42	

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-4.18**

Client Maumee Watershed Conservatory District

Boring Location 478,766.2 N; 1,650,680.5 E

Project Number 173409690

Surface Elevation 799.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf (1 2 3 4) / WATER CONTENT & ATTERBERG LIMITS (W_P W W_L) / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT (10 20 30 40 50 60 70 80 90)
24									
25									
26	773.0								
		Boring terminated and backfilled with cement bentonite grout.							
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-4.19**

Client	Maumee Watershed Conservatory District	Boring Location	478,440.9 N; 1,650,681.0 E
Project Number	173409690	Surface Elevation	804.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/24/22 (Completed: 5/24/22)
Project Location	Hancock County, Ohio	Depth to Water	12.5 ft (Date/Time: 5/24/22)
Inspector	MF	Depth to Water	5.8 ft (Date/Time: 5/24/22)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	804.1					ft		
0	803.5	Topsoil						
1		LEAN CLAY WITH SAND, VISUAL, brown and gray, low to medium plasticity, soft to firm, moist		SPT	1	1.0	WOH-1-1	
2								
3				SPT	2	1.4	1-2-4	
4								
5								
6				ST	1	1.8	500	
7	796.6							
8		SANDY LEAN CLAY, VISUAL, gray and brown/black, low plasticity, hard, moist, trace gravel		SPT	3	1.5	7-12-11	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf: 1 2 3 4

WATER CONTENT & ATTERBERG LIMITS: W_P W W_L

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT: 10 20 30 40 50 60 70 80 90

Printed on 9/28/22

Boring No. **B-4.19**

Client Maumee Watershed Conservatory District

Boring Location 478,440.9 N; 1,650,681.0 E

Project Number 173409690

Surface Elevation 804.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY ft	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
10		SANDY LEAN CLAY, VISUAL, gray and brown/black, low plasticity, hard, moist, trace gravel *(Continued)*		SPT	4	1.5	4-5-10	
11								
12	791.6							
	791.1	CLAYEY GRAVEL, VISUAL, gray with black, fine to coarse, non-plastic, medium dense, wet						
13		SANDY LEAN CLAY, CL, gray with black, low plasticity, hard, moist		SPT	5	1.3	3-7-9	
14								
15				SPT	6	0.9	2-5-10	
16								
	787.1							
17		LEAN CLAY WITH SAND, CL, gray with black, low plasticity, firm, moist						
18				SPT	7	1.5	2-2-4	
19								
	784.1							
20		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, gray/black/white, low plasticity, dense, wet		SPT	8	1.3	9-20-13	
21	782.6							
	782.1	LEAN CLAY, VISUAL, gray with black, low plasticity, hard, moist, trace gravel						
22								
23								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-4.19**

Client Maumee Watershed Conservatory District

Boring Location 478,440.9 N; 1,650,681.0 E

Project Number 173409690

Surface Elevation 804.1 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ ; W_P W W_L ; ★ ; ● ; 10 20 30 40 50 60 70 80 90
24		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, petroleum odor, slightly strong to strong, smooth, highly to moderated fractured, fracture angle 5 to 90 degrees, with shale laminations *(Continued)*		RC	1	5.0	24		
25									
26									
27	777.1								
		Boring terminated and backfilled with cement bentonite grout.							
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-4.20**

Client	Maumee Watershed Conservatory District	Boring Location	478,256.2 N; 1,650,680.5 E
Project Number	173409690	Surface Elevation	806.3 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/23/22 (Completed: 5/23/22)
Project Location	Hancock County, Ohio	Depth to Water	10.0 ft (Date/Time: 5/23/22)
Inspector	MF	Depth to Water	6.1 ft (Date/Time: 5/23/22)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	806.3					ft		
0	806.1	Topsoil						
		LEAN CLAY WITH SAND, CL, brown and grayish green, low plasticity, very soft to firm, dry to moist		SPT	1	0.8	WOH-WOH-WOH	
1								
2								
3				SPT	2	1.5	4-4-6	
4								
5								
6				SPT	3	1.5	5-5-7	
7	798.8							
		SANDY LEAN CLAY, CL, gray, low plasticity, firm to hard, moist, oxidation in clay in some areas		ST	1	1.4	1000	
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Boring No. **B-4.20**

Client Maumee Watershed Conservatory District

Boring Location 478,256.2 N; 1,650,680.5 E

Project Number 173409690

Surface Elevation 806.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SANDY LEAN CLAY, CL, gray, low plasticity, firm to hard, moist, oxidation in clay in some areas *(Continued)* *Fine to coarse sand lens from 10.5' to 10.7'*		SPT	4	1.5	4-6-8	
11								
12								
13				SPT	5	1.1	4-5-15	
14								
15		*Some sand in SPT-6*		SPT	6	0.4	4-4-7	
16								
17								
18	787.6			SPT	7	1.5	4-7-14	
19	786.3	SILTY CLAYEY SAND WITH GRAVEL, VISUAL, gray, fine to medium, non-plastic, medium dense, moist						
20	785.3	LEAN CLAY, VISUAL, gray, low plasticity, hard, moist, trace gravel and sand		SPT	8	1.5	4-15-19	
21	784.8	Dolomite, gray, weathered						
22		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, weak to strong, smooth, highly to moderately fractured, fracture angle 5 to 90 degree, with shale laminations.						
23								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Boring No. **B-4.20**

Client Maumee Watershed Conservatory District

Boring Location 478,256.2 N; 1,650,680.5 E

Project Number 173409690

Surface Elevation 806.3 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER	UNDRAINED SHEAR STRENGTH - tsf / WATER CONTENT & ATTERBERG LIMITS / Pocket Penetrometer/Torvane (tsf) / STANDARD PENETRATION TEST, BLOWS/FOOT
						ft			1 2 3 4 ▲ / W_P W W_L / ★ / ● / 10 20 30 40 50 60 70 80 90
24		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, weak to strong, smooth, highly to moderately fractured, fracture angle 5 to 90 degree, with shale laminations. *(Continued)*		RC	1	5.0	28		
25									
26	779.8								
		Boring terminated and backfilled with cement bentonite grout.							
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									

Stantec

SUBSURFACE LOG

Boring No. **B-4.21**

Client	Maumee Watershed Conservatory District	Boring Location	481,257.4 N; 1,650,131.6 E
Project Number	173409690	Surface Elevation	793.0 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/17/22 (Completed: 5/18/22)
Project Location	Hancock County, Ohio	Depth to Water	4.0 ft (Date/Time: 5/17/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): NQ-2 Wireline, Solid Barrel, Surface Set Bit

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	NUMBER	RECOVERY	BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.0					ft		
0		Topsoil						
	792.1			SPT	1	1.1	WOH-2-1	
1		LEAN CLAY WITH SAND, VISUAL, brown with gray, low to medium plasticity, soft, moist						
2								
3				SPT	2	1.3	2-2-2	
4								
	788.0							
5		SANDY LEAN CLAY, CL, gray with brown, low plasticity, soft, moist		SPT	3	1.5	1-1-1	
6								
7								
	785.5							
8		SILTY CLAYEY SAND, SC-SM, gray, low plasticity, very loose, moist to wet		SPT	4	1.2	1-1-2	
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P — W — W_L)

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

Stantec

SUBSURFACE LOG

Boring No. **B-4.21**

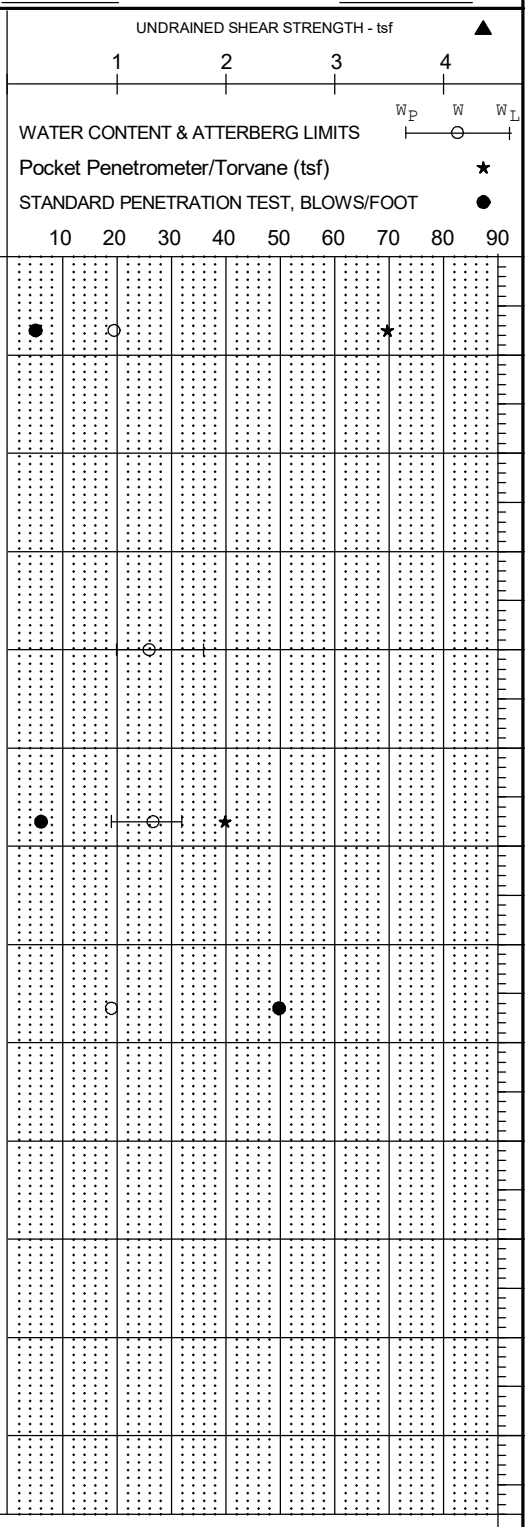
Client Maumee Watershed Conservatory District

Boring Location 481,257.4 N; 1,650,131.6 E

Project Number 173409690

Surface Elevation 793.0 ft Elevation Datum NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10	782.4							
		SANDY LEAN CLAY, CL, gray, low to medium plasticity, firm, moist to wet		SPT	5	1.4	2-2-3	
11								
12								
13								
14				ST	1	1.3	300	
15	778.0							
		LEAN CLAY, CL, gray, low plasticity, firm, moist		SPT	6	1.4	2-2-4	
16								
17	775.4							
	775.2	Dolomite, gray, weathered		SPT	7	0.3	50/4"	
18		Dolomite, gray with black, very fine to medium, laminated to thin, highly weathered to slightly weathered, moist, petroleum odor, weak to strong, highly to moderately fractured, fracture angle 10 to 90 degrees, with shale laminations.						
19								
20				RC	1	5.0	36	
21								
22	770.2							
23		*Boring terminated and backfilled with cement bentonite grout.*						



Stantec

SUBSURFACE LOG

Boring No. **B-4.22**

Client	Maumee Watershed Conservatory District	Boring Location	481,299.1 N; 1,650,182.4 E
Project Number	173409690	Surface Elevation	793.1 ft (Elevation Datum: NAVD 88)
Project Name	Eagle Creek Flood Basin	Date Started	5/12/22 (Completed: 5/12/22)
Project Location	Hancock County, Ohio	Depth to Water	5.0 ft (Date/Time: 5/12/22)
Inspector	MF	Depth to Water	N/A (Date/Time: N/A)
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	CME 55T#1, #709

Overburden Drilling and Sampling Tools (Type and Size): 3-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: 87.6%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	793.1					ft		
0		Topsoil						
	792.1			SPT	1	0.7	WOH-WOH-2	
1		LEAN CLAY WITH SAND, CL, brown and gray, medium plasticity, soft to firm, moist						
2								
3				SPT	2	1.4	2-2-3	
4								
5								
6				ST	1	2.0	200	
7	785.6							
8		SANDY LEAN CLAY, CL, gray, low plasticity, soft, moist to wet		SPT	3	1.5	WOH-1-1	
9								
10	783.1							

UNDRAINED SHEAR STRENGTH - tsf (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)

Pocket Penetrometer/Torvane (tsf)

STANDARD PENETRATION TEST, BLOWS/FOOT (10, 20, 30, 40, 50, 60, 70, 80, 90)

Printed on 9/28/22

Stantec

SUBSURFACE LOG

Boring No. **B-4.22**

Client: Maumee Watershed Conservatory District
Boring Location: 481,299.1 N; 1,650,182.4 E
Project Number: 173409690
Surface Elevation: 793.1 ft
Elevation Datum: NAVD 88

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
						ft		
10		SILTY SAND WITH GRAVEL, SM, gray, non-plastic, loose, wet *Atterberg limits = NP*		SPT	4	1.2	WOH-2-2	
11								
12								
13	779.4			SPT	5	1.5	4-4-2	
14		CLAYEY SAND WITH SILT, VISUAL, gray, fine, low plasticity, loose, wet						
15	778.1							
16	777.1	SANDY LEAN CLAY, VISUAL, gray, low to medium plasticity, soft, moist to wet		SPT	6	1.2	1-4-4	
17		SILTY SAND WITH GRAVEL, VISUAL, gray, fine to coarse, non-plastic, loose, wet						
18	775.6							
	775.1	Dolomite, gray, weathered		SPT	7	0.5	18-50/0"	

Split spoon refusal at 18.0'. Boring terminated and backfilled with cement bentonite grout.

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

Printed on 9/28/22

SUBSURFACE LOG

Boring No. **TP-4.1**

Client	Maumee Watershed Conservatory District	Boring Location	479,038.4 N; 1,646,912.3 E
Project Number	173409690	Surface Elevation	799.3 ft
Project Name	Eagle Creek Flood Basin	Elevation Datum	NAVD 88
Project Location	Hancock County, Ohio	Date Started	5/9/22
Inspector	MF	Completed	5/9/22
Drilling Contractor	Stantec Consulting Services Inc.	Depth to Water	N/A
Overburden Drilling and Sampling Tools (Type and Size)	Excavator Bucket, Bulk Sampling	Date/Time	N/A
Rock Drilling and Sampling Tools (Type and Size)	N/A	Depth to Water	N/A
Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D	Date/Time	N/A
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A%
Borehole Azimuth	N/A (Vertical)	Borehole Inclination (from Vertical)	Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	799.3					ft		
0	798.8	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown, medium plasticity, moist						
2								
3				B	1			
4								
5	793.8							
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
479,040.3 N; 1,646,907.3 E
479,036.4 N; 1,646,907.3 E
479,036.4 N; 1,646,917.3 E
479,040.4 N; 1,646,917.3 E

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SUBSURFACE LOG

Boring No. **TP-4.2**

Client	Maumee Watershed Conservatory District	Boring Location	479,364.1 N; 1,646,906.3 E
Project Number	173409690	Surface Elevation	798.9 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/9/22
Completed	5/9/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D

Overburden Drilling and Sampling Tools (Type and Size): Excavator Bucket, Bulk Sampling

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: N/A Weight: N/A Drop: N/A Efficiency: N/A%

Borehole Azimuth: N/A (Vertical) Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.9					ft		
0	798.4	Topsoil						
1		SANDY LEAN CLAY, CL, brown, low plasticity, moist						
2								
3				B	1			
4								
5	793.9							
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
479,369.4 N; 1,646,907.1 E
479,367.4 N; 1,646,910.5 E
479,358.7 N; 1,646,905.5 E
479,360.8 N; 1,646,902.1 E

SUBSURFACE LOG

Boring No. **TP-4.3**

Client	Maumee Watershed Conservatory District	Boring Location	479,682.6 N; 1,647,065.9 E
Project Number	173409690	Surface Elevation	798.5 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/9/22
Completed	5/9/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D

Overburden Drilling and Sampling Tools (Type and Size): Excavator Bucket, Bulk Sampling

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: N/A Weight: N/A Drop: N/A Efficiency: N/A%

Borehole Azimuth: N/A (Vertical) Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.5					ft		
0		Topsoil						
1	797.3							
		SANDY LEAN CLAY, CL, brown and grayish, low plasticity, moist						
2								
3								
4				B	1			
5	793.0							
	792.5	LEAN CLAY WITH SAND, VISUAL, gray, low plasticity, moist to wet						
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
479,684.6 N; 1,647,070.9 E
479,680.6 N; 1,647,070.9 E
479,680.6 N; 1,647,060.9 E
479,684.6 N; 1,647,060.9 E

Stantec

SUBSURFACE LOG

Boring No. **TP-4.4**

Client	Maumee Watershed Conservatory District	Boring Location	481,035.6 N; 1,646,708.6 E
Project Number	173409690	Surface Elevation	797.1 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/10/22
Completed	5/10/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D

Overburden Drilling and Sampling Tools (Type and Size): Excavator Bucket, Bulk Sampling

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: N/A Weight: N/A Drop: N/A Efficiency: N/A%

Borehole Azimuth: N/A (Vertical) Borehole Inclination (from Vertical): Vertical

UNDRAINED SHEAR STRENGTH - tsf ▲ (1, 2, 3, 4)

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

Pocket Penetrometer/Torvane (tsf) ★

STANDARD PENETRATION TEST, BLOWS/FOOT ● (10 20 30 40 50 60 70 80 90)

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.1					ft		
0	796.3	Topsoil						
1		SANDY LEAN CLAY, CL, brown with gray, low plasticity, moist						
2								
3		*Plastic drainage pipe struck and broken at 3.0'*		B	1			
4	792.6							
5								
6								
7								
8								
9								
10								

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
481,037.7 N; 1,646,713.6 E
481,033.6 N; 1,646,713.6 E
481,033.7 N; 1,646,703.6 E
481,037.6 N; 1,646,703.6 E

Stantec

SUBSURFACE LOG

Boring No. **TP-4.5**

Client	Maumee Watershed Conservatory District	Boring Location	480,668.6 N; 1,647,403.4 E
Project Number	173409690	Surface Elevation	797.6 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/10/22
Completed	5/10/22		
Project Location	Hancock County, Ohio	Depth to Water	N/A
Date/Time	N/A		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D

Overburden Drilling and Sampling Tools (Type and Size): Excavator Bucket, Bulk Sampling

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: N/A Weight: N/A Drop: N/A Efficiency: N/A%

Borehole Azimuth: N/A (Vertical) Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	797.6					ft		
0	797.0	Topsoil						
1		LEAN CLAY WITH SAND, CL, brown, medium plasticity, moist						
2								
3				B	1			
4								
5	792.6							
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
480,666.6 N; 1,647,398.4 E
480,670.6 N; 1,647,398.4 E
480,670.6 N; 1,647,408.4 E
480,666.7 N; 1,647,408.4 E

Stantec

SUBSURFACE LOG

Boring No. **TP-4.6**

Client	Maumee Watershed Conservatory District	Boring Location	480,919.0 N; 1,648,259.7 E
Project Number	173409690	Surface Elevation	798.1 ft
Elevation Datum	NAVD 88		
Project Name	Eagle Creek Flood Basin	Date Started	5/10/22
Completed	5/10/22		
Project Location	Hancock County, Ohio	Depth to Water	3.7 ft
Date/Time	5/10/22		
Inspector	MF	Depth to Water	N/A
Date/Time	N/A		
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	6,000 LB Mini Excavator, Model 27D

Overburden Drilling and Sampling Tools (Type and Size): Excavator Bucket, Bulk Sampling

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: N/A | Weight: N/A | Drop: N/A | Efficiency: N/A%

Borehole Azimuth: N/A (Vertical) | Borehole Inclination (from Vertical): Vertical

DEPTH(ft)	ELEVATION(ft)	SOIL/ROCK DESCRIPTION	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES BLOWS / PRESS.(psi) / RQD (%)	MONITOR WELL / PIEZOMETER
	798.1					ft		
0	797.5	Topsoil						
1		SANDY LEAN CLAY, CL, brown with gray, low plasticity, moist						
2				B	1			
3								
4		*Sand/gravel seam from 3.7' to 4.1'*						
	793.2							
5								
6								
7								
8								
9								
10								

UNDRAINED SHEAR STRENGTH - tsf ▲
1 2 3 4
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
Pocket Penetrometer/Torvane (tsf) ★
STANDARD PENETRATION TEST, BLOWS/FOOT ●
10 20 30 40 50 60 70 80 90

5 bulk samples were collected at this test pit from the denoted depth range.
Test pit backfilled with excavated soils. Location presented represents the approximate center of the test pit. The approximate coordinates of the test pit corners as follows:
480,917.0 N; 1,648,254.7 E
480,920.9 N; 1,648,254.7 E
480,921.0 N; 1,648,264.7 E
480,917.0 N; 1,648,264.7 E

ATTACHMENT A-4

Rock Core Photo Log

Figure 1 B-3.2 10.0’ to 20.0’

Depth (ft)	Discontinuity
10.2	joint, 90°, rough to smooth
10.6	fracture, 90°, rough, highly fractured
11.5	fracture, 90°, rough
11.8 to 12.5	fracture, 90°, smooth, highly fractured
13.2	mechanical break, 90°, smooth
13.9	mechanical break, 45°
14.5	mechanical break, 75°, smooth
15.6 to 16.3	fracture, 90°, highly fractured
18.2	joint, 90°, highly weathered joint possibly caused from barrel plug
19.0	mechanical break, 90°, smooth

Figure 2 B-3.4 11.4’ to 21.4’

Depth (ft)	Discontinuity
11.7 to 12.0	fracture, 90°, rough to smooth
12.8 to 13.8	fracture, 90°, rough to smooth
15.4 to 15.9	fracture, 90°, rough to smooth
17.3 to 17.4	fracture, 90°, rough to smooth
11.7 to 12.0	fracture, 90°, rough to smooth

Figure 3 B-3.6 12.1' to 22.1'

Depth (ft)	Discontinuity
12.2	mechanical break
12.9	mechanical break
15.0	mechanical break
19.0 to 20.0	fracture, rough, highly fractured zone due to drilling
20.0	mechanical break, smooth

Figure 4 B-3.8 14.2’ to 24.2’

Depth (ft)	Discontinuity
15.2	induced fracture
15.4	induced fracture
16.2	mechanical break, 0°, smooth
19.3	mechanical break
20.0	mechanical break
22.4 to 22.9	fracture, 90°, rough to smooth, vertical fracture

Figure 5 B-3.10 13.4’ to 23.4’

Depth (ft)	Discontinuity
13.4	mechanical break, 90°, rough to smooth
23.0	mechanical break, rough

Figure 6 B-3.12 12.7’ to 22.7’

Depth (ft)	Discontinuity
13.5 to 14.0	fracture, 90°, rough to smooth, vertical fracture
14.8	joint, 180°, rough
16.3	mechanical break, 10°, smooth
17.5	bedding fracture, 45°, smooth
19.4	joint, 0°, rough to smooth
22.2	joint, 0°, rough

Figure 7 B-3.14 14.6' to 24.6'

Depth (ft)	Discontinuity
14.7	fracture, 80°, planar, rough
14.8	fracture, 90°, planar, smooth
15.0	fracture, 90°, planar, rough to smooth
15.5	fracture, 10°, undulating to planar, rough
15.6	fracture, 30°, planar, rough to smooth
16.2	fracture, 90°, planar, smooth
16.4	fracture, 90°, planar, smooth
16.9	fracture, 5°, planar, rough
17.1	fracture, 80°, stepped to undulating, rough
17.4	fracture, 90°, planar, smooth
17.7	fracture, 5°, planar, rough to smooth
17.8	joint, 5°, planar, rough to smooth
17.9	fracture, 90°, planar, rough to smooth
18.1	joint, 5°, planar, smooth
18.3	fracture, 10°, stepped, rough

Depth (ft)	Discontinuity
18.4	fracture, 15°, undulating, smooth
18.7	fracture, 45°, undulating, rough
18.9	fracture, 10°, undulating to planar, rough to smooth
19.6	fracture, 15°, planar, rough to smooth
20.0	joint, 5°, planar, rough to smooth
20.3	fracture, 90°, planar, smooth
20.5	joint, 0°, planar, rough
21.0	fracture, 75°, stepped to undulating, rough
21.4	fracture, 5°, planar, rough
22.1	joint, 0°, undulating to planar, rough to smooth
22.3	fracture, 10°, undulating to planar, rough to smooth
22.5	joint, 5°, planar, rough
24.0	joint, 10°, undulating to planar, rough
24.1	joint, 0°, stepped to undulating, rough
24.3	fracture, 0°, planar, rough to smooth

Figure 8 B-3.16 18.3' to 28.3'

Depth (ft)	Discontinuity
19.9 to 21.4	bedding fracture, 0°, highly fractured
20.7	joint, 0°, clay filled joint
20.9	mechanical break, 0°
22.1 to 22.4	fracture, 45°, rough to smooth
23.8 to 24.4	fracture, 0°, highly fractured
25.4	mechanical break, 15°, smooth
26.2	fracture, 0°, smooth, weathered fracture
26.4 to 28.3	fracture, 0°, rough to smooth, fracture approx. every 2 inches

Figure 9 B-3.18 18.5’ to 28.5’

Depth (ft)	Discontinuity
18.6	fracture, 25°, undulating, rough to smooth
18.8	fracture, 90°, planar, rough to smooth
19.0	fracture, 0°, planar, rough to smooth
19.3	fracture, 0°, planar, smooth
19.5	fracture, 90°, undulating to planar, smooth, crumbled rocks
19.6	fracture, 5°, planar, smooth
19.9	fracture, 0°, planar, smooth
20.1	fracture, 5°, planar, smooth
20.2	joint, 0°, planar, rough to smooth
20.3	fracture, 10°, planar, rough to smooth
20.6	fracture, 15°, planar, smooth, crumbled rocks
20.9	fracture, 10°, planar, smooth
21.0	fracture, 5°, undulating to planar, smooth
21.2	fracture, 0°, planar, rough to smooth
21.6	joint, 0°, planar, rough to smooth
21.9	fracture, 0°, undulating to planar, rough
22.0	joint, 0°, planar, rough to smooth
22.4	joint, 5°, planar, rough to smooth
22.5	joint, 10°, planar, smooth
22.7	fracture, 90°, planar, smooth, parts crumbled
22.9	fracture, 10°, planar, rough to smooth
23.1	fracture, 5°, planar, rough to smooth

Depth (ft)	Discontinuity
23.4	fracture, 5°, planar, smooth
23.7	fracture, 0°, planar, smooth
23.9	joint, 0°, planar, rough to smooth
24.2	fracture, 80°, stepped, rough
24.6	fracture, 5°, planar, smooth
24.8	fracture, 15°, planar, rough
25.1	fracture, 10°, undulating to planar, rough to smooth
25.3	fracture, 30°, stepped to undulating, rough
25.4	fracture, 10°, undulating to planar, rough
25.7	fracture, 30°, planar, rough
25.9	fracture, 20°, planar, rough
26.1	joint, 10°, planar, rough
26.2	fracture, 5°, planar, rough to smooth
26.5	fracture, 0°, planar, smooth
26.8	fracture, 5°, planar, rough to smooth
26.9	joint, 0°, planar, rough
27.1	joint, 0°, planar, rough to smooth
27.5	fracture, 90°, planar, smooth
27.7	fracture, 10°, planar, rough to smooth, two breaks
27.9	fracture, 10°, planar, smooth
28.3	fracture, 15°, undulating to planar, rough

Figure 10 B-3.20 16.6’ to 26.6’

Depth (ft)	Discontinuity
17.0	joint, 30°, clay, smooth, loss 0.4' from washout
17.8	joint, 0°, clay, rough, loss 0.4' from washout
18.8	joint, 0°, rough
19.4 to 20.3	fracture, 90°, smooth, vertical fracture
21.5	joint, 0°, smooth
21.9 to 23.4	fracture, 0°, rough to smooth, highly fractured section
26.4	mechanical break, 0°, smooth

Figure 11 B-3.22 19.2' to 29.2'

Depth (ft)	Discontinuity
19.4	fracture, 20°, planar, rough to smooth, fragmented
19.5	fracture, 10°, planar, rough to smooth
19.6	fracture, 30°, planar, rough
19.9	fracture, 90°, planar, smooth
20.0	fracture, 80°, planar, rough
20.1	fracture, 0°, planar, rough, crumbled
20.2	fracture, 90°, planar, smooth
20.4	fracture, 80°, planar, smooth
20.7	fracture, 90°, planar, rough to smooth
20.9	fracture, 90°, planar, smooth
21.2	fracture, 5°, planar, rough
21.4	fracture, 0°, planar, smooth
21.9	fracture, 10°, planar, rough to smooth
22.5	fracture, 0°, planar, rough
22.6	fracture, 90°, planar, smooth
22.7	fracture, 0°, planar, rough to smooth
22.8	fracture, 90°, planar, rough to smooth
23.0	fracture, 0°, planar, smooth
23.5	joint, 0°, planar, rough
23.7	fracture, 80°, planar, rough to smooth
23.9	fracture, 0°, planar, smooth
24.0	fracture, 0°, planar, smooth

Depth (ft)	Discontinuity
24.1	fracture, 15°, planar, smooth
24.5	joint, 5°, planar, rough to smooth
24.9	fracture, 0°, planar, rough to smooth
25.0	fracture, 0°, planar, smooth
25.3	fracture, 5°, planar, smooth
25.5	fracture, 5°, stepped, rough to smooth
26.5	joint, 0°, planar, smooth
26.6	joint, 0°, planar, smooth
26.9	fracture, 0°, planar, rough, three small fractures
27.0	fracture, 10°, planar, rough
27.2	fracture, 90°, planar, smooth
27.4	fracture, 5°, planar, rough
27.6	fracture, 80°, planar, smooth
27.7	fracture, 10°, planar, rough to smooth
28.0	fracture, 15°, undulating to planar, rough to smooth
28.2	fracture, 5°, undulating to planar, rough to smooth
28.4	joint, 0°, planar, rough to smooth
28.5	joint, 0°, planar, rough to smooth
28.8	joint, 0°, planar, rough to smooth
29.0	fracture, 5°, planar, smooth
29.1	fracture, 5°, planar, striated

Figure 12 B-3.24 17.8’ to 27.8’

Depth (ft)	Discontinuity
18.3	fracture, 90°, planar, rough to smooth
18.5	fracture, 90°, planar, smooth
18.6	fracture, 90°, planar, smooth
18.7	fracture, 90°, undulating to planar, rough
18.8	fracture, 90°, planar, smooth
18.9	fracture, 90°, undulating to planar, smooth
19.2	fracture, 90°, undulating to planar, rough to smooth
19.6	joint, 0°, planar, rough to smooth
19.9	fracture, 90°, undulating to planar, rough
20.1	fracture, 90°, planar, rough
20.4	fracture, 5°, planar, rough
20.6	fracture, 90°, planar, smooth
20.8	fracture, 0°, planar, rough to smooth
21.1	fracture, 90°, planar, rough to smooth
21.2	fracture, 90°, planar, smooth
21.3	joint, 15°, planar, rough
21.5	fracture, 45°, stepped to undulating, rough
21.7	fracture, 15°, planar, rough
21.9	fracture, 0°, planar, rough to smooth

Depth (ft)	Discontinuity
22.6	fracture, 85°, stepped, smooth
22.9	fracture, 45°, planar, smooth
23.2	joint, 0°, planar, rough
23.4	fracture, 20°, undulating to planar, rough to smooth
23.6	joint, 0°, stepped to undulating, rough
24.4	fracture, 30°, stepped to undulating, rough
24.5	fracture, 5°, planar, smooth
24.6	fracture, 10°, planar, rough to smooth
25.3	fracture, 30°, undulating to planar, rough
25.5	fracture, 5°, undulating to planar, rough
25.7	joint, 25°, planar, rough to smooth
26.3	fracture, 0°, undulating to planar, smooth to striated
26.5	fracture, 10°, planar, rough to smooth
26.7	fracture, 0°, planar, rough to smooth
26.9	fracture, 0°, planar, smooth
27.0	joint, 10°, planar, rough
27.3	joint, 10°, planar, rough
27.6	joint, 20°, undulating to planar, rough

Figure 13 B-3.26 19.7’ to 29.7’

Depth (ft)	Discontinuity
20.0	fracture, 75°, planar, smooth
20.2	fracture, 80°, planar, rough to smooth
20.4	fracture, 90°, planar, rough to smooth
20.8	fracture, 90°, planar, smooth
21.1	fracture, 80°, undulating to planar, smooth
21.3	fracture, 0°, planar, smooth
21.5	fracture, 0°, undulating to planar, rough to smooth
21.8	fracture, 90°, planar, rough to smooth
21.9	fracture, 0°, planar, rough to smooth
22.2	fracture, 0°, planar, rough
22.4	fracture, 0°, planar, smooth
22.7	fracture, 90°, planar, rough to smooth
23.0	fracture, 0°, planar, rough
23.1	fracture, 0°, planar, rough to smooth
23.6	fracture, 0°, planar, rough
23.9	joint, 0°, planar, rough
24.0	joint, 0°, planar, rough

Depth (ft)	Discontinuity
24.3	fracture, 0°, planar, rough
24.4	fracture, 0°, planar, smooth
24.5	joint, 0°, planar, rough
24.8	joint, 0°, planar, rough
25.1	fracture, 25°, undulating to planar, rough
26.2	fracture, 0°, planar, rough
26.4	fracture, 10°, planar, rough
26.7	fracture, 45°, undulating to planar, rough
26.9	fracture, 20°, planar, rough to smooth
27.2	fracture, 10°, planar, rough to smooth
27.3	fracture, 0°, planar, smooth
27.7	fracture, 10°, planar, rough
28.3	joint, 5°, planar, rough to smooth
28.6	fracture, 10°, undulating to planar, rough to smooth
28.9	fracture, 15°, planar, rough to smooth
29.3	fracture, 15°, planar, rough

Figure 14 B-3.28 24.7' to 34.7'

Depth (ft)	Discontinuity
24.7 to 24.9	fracture, 90°, planar, rough to smooth, vertical fracture
25.4	fracture, 10°, stepped, rough
25.7	joint, 0°, planar, rough to smooth
26.0	fracture, 0°, planar, smooth
26.1	fracture, 90°, undulating to planar, rough
26.2	fracture, 0°, planar, rough to smooth
26.4 to 26.8	fracture, 15°, rough to smooth, highly fractured zone
28.6	mechanical break, 10°
30.7	joint, 15°, clay, highly weathered joint
31.6	joint, 10°, rough to smooth, moderately weathered joint
33.2	bedding fracture, 25°, smooth, break at shale stringer
34.4	mechanical break, 20°, smooth

Figure 15 B-3.31 19.8' to 29.8'

Depth (ft)	Discontinuity
20.3	fracture, 0°, planar, rough to smooth
20.4	fracture, 90°, planar, smooth
20.7	fracture, 10°, planar, rough
20.9	fracture, 90°, undulating, rough to smooth
21.7	fracture, 5°, planar, rough to smooth
21.9	fracture, 0°, planar, smooth
22.1	fracture, 0°, planar, smooth
22.4	fracture, 20°, planar, smooth
22.6	fracture, 10°, undulating to planar, rough to smooth
22.8	fracture, 0°, planar, smooth
23.6	fracture, 0°, planar, smooth
23.8	joint, 0°, planar, rough
24.2	fracture, 15°, planar, smooth
24.6	fracture, 0°, planar, rough

Depth (ft)	Discontinuity
24.9	fracture, 10°, undulating to planar, smooth to striated
25.1	fracture, 15°, undulating to planar, rough to smooth
25.5	fracture, 0°, planar, rough
25.7	fracture, 10°, undulating to planar, rough to smooth
26.1	fracture, 5°, undulating to planar, rough to smooth
26.6	fracture, 5°, undulating to planar, rough to smooth
26.8	fracture, 0°, planar, rough to smooth
27.4	fracture, 5°, planar, smooth
27.7	fracture, 45°, undulating to planar, rough to smooth
28.2	fracture, 30°, planar, smooth
28.4	fracture, 15°, undulating, rough
29.0	fracture, 20°, planar, rough to smooth
29.2	fracture, 60°, planar, rough
29.6	fracture, 90°, planar, smooth

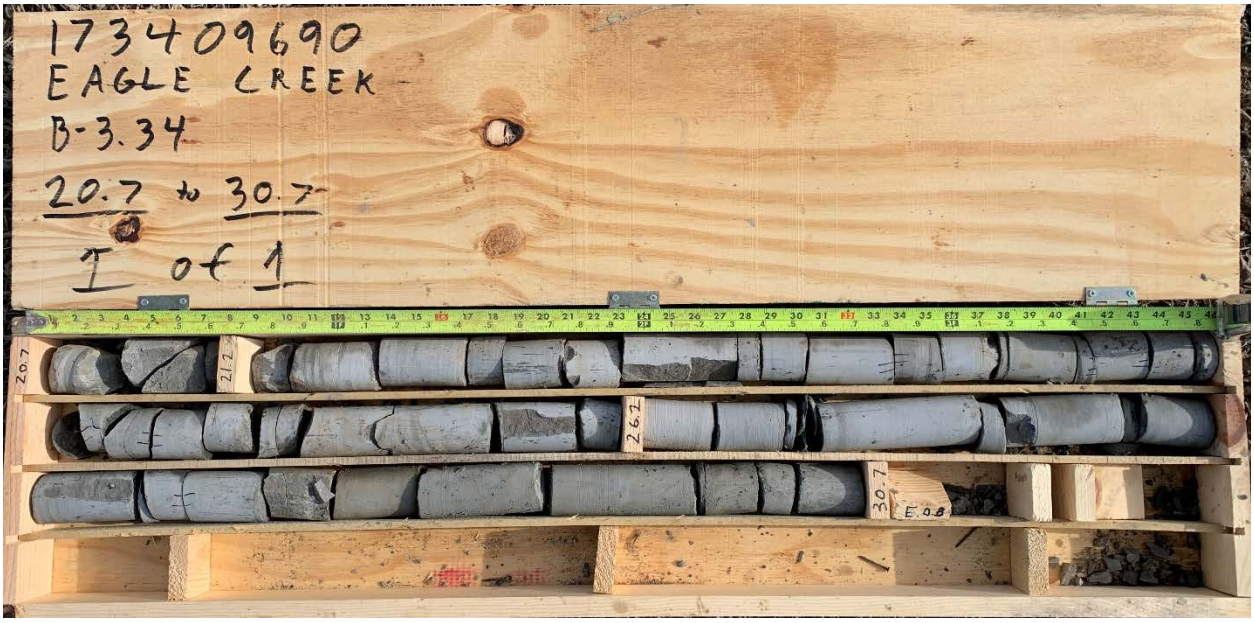


Figure 16 B-3.34 20.7' to 30.7'

Depth (ft)	Discontinuity
20.9 to 21.1	fracture, 45°, rough to smooth
21.6	joint, 0°, smooth, Weathered joint
21.9	joint, 0°, smooth, Weathered joint
22.2	fracture, 0°, rough
23.3	mechanical break, 5°, smooth
24.0	mechanical break, 5°, smooth
24.2	mechanical break, 5°, smooth
24.5	mechanical break, 5°, smooth
24.7	mechanical break, 5°, smooth
25.5	mechanical break, 10°, smooth
26.7	fracture, 0°, rough
27.3	fracture, 0°, rough
27.8	fracture, 0°, rough
28.5	mechanical break, 0°, smooth
29.2	joint, smooth
29.6	joint, smooth
30.1	joint, rough to smooth

Figure 17 B-3.37 14.2’ to 24.2’

Depth (ft)	Discontinuity
14.2	fracture, 90°, planar, rough to smooth
14.6	fracture, 80°, undulating, rough
14.9	fault, 90°, planar, rough
15.2	fracture, 75°, planar, rough to smooth
15.6	fracture, 10°, planar, rough to smooth
15.7	fracture, 0°, undulating to planar, rough to smooth
15.9	fracture, 0°, undulating to planar, rough
16.3	fracture, 0°, planar, rough to smooth
16.8	fracture, 0°, planar, smooth
17.1	fracture, 0°, planar, smooth
17.1	fracture, 10°, undulating, rough
17.3	fracture, 0°, planar, rough to smooth
17.5	fracture
19.8	bedding fracture, 30°, smooth, fracture at shale stringer
20.5	fracture, 0°, rough
22.1	joint, 30°, rough to smooth
23.0	mechanical break, 25°
23.6	mechanical break, 30°, smooth
23.8	mechanical break, 25°, smooth

Figure 18 B-3.40 19.0’ to 29.0’

Depth (ft)	Discontinuity
19.4	fracture, 75°, planar, smooth
19.8	fracture, 0°, undulating to planar, rough to smooth
19.9	fracture, 45°, undulating, rough
20.4	fracture, 0°, stepped, smooth
20.7	fracture, 90°, planar, rough
21.6	fracture, 0°, planar, smooth
21.8	fracture, 90°, planar, rough
22.2	fracture, 0°, planar, smooth
22.3	fracture, 80°, stepped, rough
22.9	fracture, 80°, planar, rough to smooth
23.5	fracture, 10°, planar, rough to smooth
24.1	fracture, 10°, undulating to planar, smooth
24.6	fracture, 80°, stepped, rough
25.6	fracture, 0°, planar, rough
26.7	fracture, 0°, planar, rough
28.1	fracture, 0°, planar, rough to smooth
28.4	fracture, 30°, planar, rough

Figure 19 B-3.42 20.7' to 30.7'

Depth (ft)	Discontinuity
17.9	fracture, 90°, planar, rough
21.7	joint, 0°, planar, rough
22.0	fracture, 5°, planar, rough
22.6	joint, 0°, planar, rough
23.1	fracture, 25°, undulating to planar, rough
23.3	fracture, 10°, stepped, rough
23.6	fracture, 0°, planar, rough
24.3	fracture, 0°, planar, rough
24.4	fracture, 25°, planar, rough to smooth
24.9	fracture, 10°, planar, rough
25.4	fracture, 10°, planar, rough
25.9	fracture, 5°, planar, rough
26.8	fracture, 90°, planar, rough
28.6	fracture, 10°, planar, rough
28.8	fracture, 10°, undulating to planar, rough
29.0	fracture, 0°, undulating, rough
29.6	fracture, 0°, undulating, rough to smooth

Figure 20 B-3.43 21.1' to 31.1'

Depth (ft)	Discontinuity
21.1	fracture, 90°, undulating to planar, rough
22.8	fracture, 15°, planar, rough
23.9	fracture, 0°, planar, smooth
24.1	fracture, 5°, planar, rough to smooth
25.8	fracture, 0°, planar, rough to smooth
26.4	fracture, 0°, planar, smooth
26.6	fracture, 5°, planar, rough
26.9	fracture, 5°, planar, rough to smooth
27.1	fracture, 30°, planar, rough to smooth
27.6	fracture, 5°, undulating to planar, rough to smooth
28.1	fracture, 0°, undulating to planar, rough to smooth
28.9	fracture, 0°, undulating to planar, rough
29.6	fracture, 0°, undulating to planar, rough
30.1 to 31.1	fracture, 10°, planar, rough to smooth, highly fractured zone

Figure 21 B-3.44 19.4’ to 29.4’

Depth (ft)	Discontinuity
19.5	fracture, 90°, undulating to planar, smooth
19.7	fracture, 90°, stepped to undulating, smooth
20.1	fracture, 90°, undulating to planar, smooth
20.6	fracture, 45°, planar, rough to smooth, highly fractured zone, crumbled
21.2	fracture, 20°, planar, smooth
21.3	fracture, 90°, planar, rough to smooth
21.4	fracture, 30°, stepped to undulating, rough to smooth
22.0	fracture, 90°, planar, rough
22.2	fracture, 90°, planar, smooth
22.4	fracture, 90°, planar, rough to smooth, highly fractured zone, crumbled
22.7	fracture, 0°, planar, smooth
23.0	fracture, 90°, planar, rough to smooth, small highly fractured zone
23.5	mechanical break, 0°, planar, smooth, several mechanical breaks
24.2	joint, 10°, planar, rough to smooth
24.4	joint, 0°, planar, smooth
24.7	fracture, 5°, planar, rough to smooth
25.1	fracture, 5°, planar, smooth
25.3	fracture, 10°, undulating to planar, rough to smooth
25.6	fracture, 45°, stepped to undulating, rough
25.9	fracture, 30°, undulating to planar, rough

Figure 22 B-3.45 19.8' to 29.8'

Depth (ft)	Discontinuity
20.2	fracture, 90°, undulating to planar, rough to smooth, heavily fractured and crumbled
20.7	fracture, 90°, planar, rough to smooth
20.9	fracture, 45°, planar, rough to smooth, highly fractured zone. Crumbled
21.2	fracture, 5°, planar, rough to smooth, many close fractures
21.7	fracture, 90°, undulating to planar, rough to smooth, highly fractured zone, crumbled
22.7 to 23.2	mechanical break, 0°, planar, rough to smooth, highly fractured zone
24.0	fracture, 90°, undulating to planar, rough to smooth, highly fractured zone, crumbled
24.5	fracture, 90°, planar, rough
24.7	joint, 25°, planar, rough
25.1	fracture, 60°, undulating to planar, rough to smooth
26.3	joint, 5°, undulating to planar, rough
26.9	fracture, 30°, undulating to planar, rough to smooth
27.2	fracture, 10°, planar, smooth
27.8	joint, 30°, undulating to planar, rough
28.0	fracture, 0°, planar, rough
28.2	fracture, 10°, planar, rough to smooth
28.6	fracture, 5°, planar, rough to smooth
28.8	joint, 20°, undulating to planar, smooth
29.3	joint, 5°, planar, rough
29.5	fracture, 45°, stepped to undulating, rough
29.7	fracture, 30°, undulating to planar, rough

Figure 23 B-3.46 18.6’ to 28.6’

Depth (ft)	Discontinuity
18.7	fracture, 80°, undulating, rough to smooth
19.0	fracture, 75°, stepped to undulating, smooth
19.1	fracture, 45°, planar, smooth
19.4	fracture, 30°, planar, rough
19.6	fracture, 5°, planar, rough to smooth
20.0	fracture, 10°, planar, rough to smooth
20.3	fracture, 5°, planar, rough to smooth
20.4	fracture, 10°, planar, rough to smooth
20.8	fracture, 30°, planar, rough
20.9	fracture, 20°, undulating to planar, rough
21.0	fracture, 45°, , rough to smooth
21.4	fracture, 15°, planar, rough
21.7	fracture, 0°, undulating to planar, rough
21.9	fracture, 45°, undulating to planar, rough

Depth (ft)	Discontinuity
22.1	fracture, 0°, planar, rough
22.4	joint, 0°, planar, rough
23.7	fracture, 0°, planar, smooth
24.0	fracture, 75°, planar, smooth
24.2	fracture, 90°, planar, rough to smooth
24.7	fracture, 0°, planar, rough
25.3	fracture, 90°, undulating to planar, rough to smooth
25.7	joint, 0°, planar, rough
25.9	joint, 0°, planar, rough to smooth
26.3	joint, 0°, planar, rough
27.0	fracture, 45°, undulating to planar, rough to smooth
27.1	joint, 0°, planar, rough
27.3	joint, 45°, planar, rough
28.3	joint, 15°, planar, rough

Figure 24 B-3.47 19.0’ to 29.0’

Depth (ft)	Discontinuity
19.1	fracture, 75°, undulating, rough to smooth, rounded rock
19.3	fracture, 90°, undulating to planar, rough to smooth, crumbled zone
19.6	fracture, 20°, planar, smooth

Figure 25 B-3.48 19.2' to 29.2'

Depth (ft)	Discontinuity
19.4	fracture, 90°, undulating to planar, rough to smooth, crumbled zone
19.9	fracture, 45°, rough to smooth, highly crumbled zone
21.1	fracture, 75°, planar, smooth, some crumbled pieces
21.4	fracture, 90°, planar, smooth
21.6	fracture, 75°, stepped, smooth
21.7	fracture, 90°, undulating to planar, rough to smooth
21.8	fracture, 60°, undulating, smooth
22.2	joint, 5°, undulating to planar, rough
22.5	joint, 5°, planar, rough
23.0	fracture, 90°, undulating to planar, rough to smooth, highly fractured/crumbled zone
24.0	fracture, 10°, planar, smooth
24.2	fracture, 20°, planar, smooth

Depth (ft)	Discontinuity
24.5	fracture, 20°, undulating to planar, rough to smooth
24.9	fracture, 25°, undulating to planar, rough
25.3	fracture, 5°, undulating to planar, smooth
25.7	fracture, 5°, planar, smooth
26.4	fracture, 5°, planar, rough to smooth
26.8	fracture, 10°, planar, rough
27.0	fracture, 0°, undulating, rough
27.2	fracture, 25°, planar, smooth
27.7	fracture, 15°, undulating, rough
28.0	fracture, 45°, undulating, rough
28.3	fracture, 80°, stepped, rough

Figure 26 B-3.49 14.2’ to 24.2’

Depth (ft)	Discontinuity
14.3	fracture, 90°, planar, rough to smooth, crumbled zone
14.4	joint, 0°, undulating to planar, rough
14.7	fracture, 20°, planar, smooth
14.9	fracture, 80°, planar, rough to smooth
15.1	fracture, 90°, planar, rough
15.4	fracture, 90°, planar, rough to smooth
15.8	fracture, 90°, stepped, rough
16.0	fracture, 90°, planar, rough
16.5	fracture, 90°, undulating, rough
17.0	fracture, 90°, planar, smooth
17.5	joint, 0°, planar, rough
17.6	fracture, 85°, planar, rough
17.9	fracture, 75°, undulating to planar, rough
18.3	fracture, 90°, stepped to undulating, rough to smooth
18.6	fracture, 90°, planar, rough to smooth
18.7	fracture, 90°, planar, rough

Depth (ft)	Discontinuity
18.9	fracture, 90°, planar, rough
19.0	joint, 90°, planar, rough
19.7	fracture, 90°, planar, rough
19.9	fracture, 90°, planar, rough to smooth, crumbled zone
20.2	joint, 0°, planar, rough
20.7	fracture, 15°, undulating to planar, smooth
21.1	fracture, 60°, undulating to planar, rough
21.4	fracture, 10°, stepped to undulating, rough to smooth
21.9	joint, 90°, planar, rough
22.6	fracture, 15°, undulating to planar, rough
22.8	joint, 5°, undulating to planar, rough
23.0	fracture, 30°, undulating to planar, rough to smooth
23.4	joint, 5°, undulating to planar, rough
23.8	fracture, 30°, planar, rough to smooth
24.0	fracture, 0°, planar, rough

Figure 27 B-3.50 13.0’ to 23.0’

Depth (ft)	Discontinuity
13.1	joint, 5°, planar, rough
13.9	fracture, 90°, planar, smooth
14.2	fracture, 90°, undulating to planar, rough to smooth
14.3	joint, 0°, planar, rough to smooth
14.7	joint, 0°, planar, rough to smooth
15.0	joint, 5°, planar, rough to smooth
15.2	fracture, 90°, undulating, smooth
15.5	fracture, 0°, planar, rough to smooth
15.8	joint, 0°, planar, rough
16.3	fracture, 80°, planar, smooth
16.8	fracture, 80°, planar, rough to smooth
17.1	fracture, 90°, planar, rough, crumbled zone
17.3	fracture, 70°, undulating to planar, rough to smooth
17.6	joint, 0°, planar, smooth

Depth (ft)	Discontinuity
17.8	fracture, 0°, planar, rough to smooth, small crumbled zone
18.1	joint, 5°, planar, rough
18.3	fracture, 45°, planar, rough to smooth
18.5	fracture, 20°, undulating, rough
18.9	joint, 10°, planar, rough to smooth
19.3	fracture, 20°, undulating to planar, rough
19.8	fracture, 5°, planar, rough to smooth
20.1	fracture, 90°, planar, rough to smooth
20.3 to 21.2	fracture, 90°, planar, rough to smooth, crumbled zone
21.3	fracture, 90°, planar, rough to smooth
21.5	joint, 0°, planar, rough
21.8	fracture, 0°, planar, smooth
22.5	fracture, 30°, undulating to planar, rough

Figure 28 B-3.51 15.4' to 25.4'

Depth (ft)	Discontinuity
16.0	fracture, 80°, planar, rough to smooth
17.5	fracture, 90°, planar, smooth
17.7	fracture, 85°, undulating, smooth
18.3	joint, 0°, planar, rough
18.5	fracture, 90°, undulating, rough to smooth
18.7	fracture, 80°, stepped to undulating, rough to smooth
18.9	fracture, 90°, planar, rough to smooth, small crumbled zone
19.2	joint, 0°, planar, rough
19.6	fracture, 90°, planar, smooth
19.7	joint, 0°, planar, rough
19.9	joint, 0°, planar, rough
20.0	fracture, 10°, undulating to planar, smooth
20.2	fracture, 90°, planar, smooth
20.3	fracture, 90°, undulating, rough to smooth
20.5	fracture, 90°, planar, rough to smooth, small crumbled zone

Depth (ft)	Discontinuity
20.7	joint, 0°, planar, rough
20.9	fracture, 90°, planar, smooth
21.3	joint, 0°, planar, rough to smooth
21.5	fracture, 90°, planar, rough
21.6	fracture, 15°, planar, smooth
22.0	fracture, 10°, undulating to planar, rough to smooth
22.5	fracture, 30°, planar, smooth
23.4	fracture, 20°, undulating to planar, smooth
23.6	fracture, 5°, planar, smooth
23.7	fracture, 30°, undulating to planar, rough
24.0	fracture, 45°, stepped to undulating, smooth
24.4	fracture, 45°, undulating to planar, rough
24.6	fracture, 45°, undulating to planar, rough to smooth
25.1	mechanical break, 30°, undulating, rough

Figure 29 B-3.52 14.7' to 24.7'

Depth (ft)	Discontinuity
14.9	joint, 0°, undulating to planar, rough to smooth
15.1	fracture, 90°, stepped to undulating, rough
15.3	fracture, 5°, planar, rough to smooth
15.4	fracture, 20°, planar, smooth
15.6	fracture, 45°, planar, smooth
16.0	joint, 10°, planar, smooth
16.1	fracture, 90°, planar, smooth
16.4	fracture, 90°, undulating, smooth
16.6	fracture, 80°, undulating to planar, rough to smooth
16.8	joint, 0°, planar, rough to smooth
17.2	joint, 0°, planar, rough
17.6	joint, 5°, planar, rough
17.9	fracture, 5°, undulating to planar, rough to smooth
18.2 to 18.5	fracture, 90°, planar, smooth
18.8	fracture, 90°, planar, smooth
18.9	fracture, 90°, planar, smooth

Depth (ft)	Discontinuity
19.1	fault, 5°, planar, rough
19.3	fracture, 90°, planar, rough
19.4	joint, 0°, planar, rough
19.8	fracture, 20°, planar, rough
20.0	fracture, 15°, planar, smooth
20.4	fracture, 45°, planar, smooth
20.8	fracture, 25°, planar, rough to smooth
21.1	joint, 0°, planar, rough
21.8	joint, 5°, planar, rough to smooth
22.4	fracture, 0°, planar, rough
22.6	fracture, 90°, planar, rough
23.3	joint, 0°, planar, rough
23.7	fracture, 90°, planar, rough to smooth
24.0	fracture, 80°, planar, rough to smooth
24.5	joint, 0°, planar, rough to smooth

Figure 30 B-3.53 14.5’ to 24.5’

Depth (ft)	Discontinuity
14.7	fault, 60°, planar, rough to smooth
15.0	fracture, 75°, undulating to planar, rough to smooth
15.2	fracture, 90°, planar, rough to smooth, crumbled zone
15.4	fracture, 90°, planar, smooth
15.7	fracture, 20°, undulating, smooth
16.1	fracture, 90°, undulating, rough
16.4	fracture, 90°, planar, rough to smooth
16.7	fracture, 90°, planar, rough to smooth
16.9	fracture, 90°, planar, smooth
17.4	joint, 90°, planar, rough
17.8	fracture, 5°, planar, rough to smooth
18.0	joint, 0°, planar, rough
18.2	fracture, 10°, planar, smooth
18.5	fracture, 10°, planar, smooth
19.3	fracture, 90°, undulating to planar, rough, crumbled zone

Depth (ft)	Discontinuity
20.0	fracture, 90°, planar, rough to smooth
20.6	joint, 0°, undulating to planar, rough
21.0	fracture, 80°, planar, smooth
21.2	joint, 5°, planar, rough
21.5	joint, 5°, planar, rough
21.9	fracture, 5°, planar, smooth
22.2	joint, 0°, planar, rough
22.5	fracture, 30°, planar, rough to smooth
22.8	fracture, 45°, planar, rough
23.1	fracture, 45°, planar, smooth
23.6	fracture, 60°, undulating to planar, smooth
23.8	fracture, 35°, planar, smooth
24.0	fracture, 45°, undulating, rough
24.3	fracture, 70°, undulating, rough

Figure 31 B-3.54 19.5' to 29.5'

Depth (ft)	Discontinuity
19.6	fracture, 0°, clay infilling, planar, rough
20.0	fracture, 90°, undulating, rough
20.4	fracture, 90°, planar, rough to smooth
20.5	joint, 0°, stepped to undulating, rough
21.1	joint, 10°, planar, smooth
21.5	fracture, 5°, planar, rough
22.0	fracture, 0°, planar, rough
22.6	joint, 0°, planar, rough
22.8	joint, 5°, planar, rough
23.5	joint, 10°, planar, rough
23.7	joint, 0°, planar, rough
24.0	joint, 0°, planar, rough
24.4	fracture, 5°, planar, rough to smooth
24.8	joint, 5°, planar, rough

Depth (ft)	Discontinuity
25.3	fracture, 40°, undulating to planar, rough
25.5	fracture, 45°, planar, rough to smooth
25.8	fracture, 60°, planar, rough
26.4	fracture, 30°, planar, rough
26.7	fracture, 30°, planar, rough to smooth
26.9	fracture, 20°, planar, rough
27.0	joint, 0°, planar, rough
27.2	joint, 10°, planar, rough to smooth
27.7	joint, 5°, undulating to planar, rough
28.0	joint, 0°, planar, rough
28.3	joint, 0°, planar, rough
28.7	fracture, 0°, planar, rough to smooth
29.1	joint, 5°, planar, rough
29.4	fracture, 0°, planar, rough to smooth

Figure 32 B-3.55 23.9’ to 33.9’

Depth (ft)	Discontinuity
24.2	fracture, 30°, planar, smooth
24.4	fracture, 90°, planar, rough to smooth
24.6	fracture, 90°, planar, rough to smooth
24.8	joint, 90°, undulating to planar, rough to smooth
25.1	fracture, 90°, planar, rough to smooth, crumbled zone
26.0	fracture, 90°, undulating, rough
26.4	joint, 10°, planar, rough to smooth
27.2	fracture, 90°, planar, rough to smooth
27.4	joint, 0°, planar, smooth
27.9	fracture, 90°, undulating to planar, rough to smooth
28.1	fracture, 75°, undulating to planar, rough to smooth
28.5 to 28.8	fracture, 0°, planar, rough to smooth, crumbled zone
29.1	joint, 0°, planar, rough

Depth (ft)	Discontinuity
29.4	fracture, 10°, undulating, smooth
29.8	fracture, 20°, planar, smooth
30.0	fracture, 20°, planar, smooth
30.3	joint, 0°, planar, rough
30.6	joint, 0°, planar, rough
31.5	joint, 0°, planar, rough to smooth
31.8	fracture, 10°, stepped, rough
32.1	fracture, 0°, undulating to planar, rough to smooth
32.2	fracture, 90°, stepped to undulating, smooth
32.5	fracture, 45°, stepped, rough to smooth
32.7	joint, 0°, planar, rough
33.2	joint, 0°, stepped to undulating, smooth
33.6	fracture, 85°, planar, smooth

Figure 33 B-3.56 25.9’ to 35.9’

Depth (ft)	Discontinuity
30.0 to 30.7	fracture, 90°, planar to undulating, rough
31.0 to 31.3	fracture, 90°, planar, smooth
34.5 to 34.6	fracture, 15°, undulating, rough

Figure 34 B-3.58 21.5’ to 31.5’

Depth (ft)	Discontinuity
23.3	mechanical break, rough to smooth
24.0	mechanical break, smooth
24.6	mechanical break, smooth

Figure 35 B-3.60 19.2’ to 29.2’

Depth (ft)	Discontinuity
21.0	mechanical break, smooth
23.0	mechanical break
28.0	mechanical break, rough to smooth

Figure 36 B-3.85 21.1' to 31.1'

Depth (ft)	Discontinuity
21.7	fracture, 90°, planar, smooth
22.0 to 22.5	fracture, 90°, planar, rough
23.0	joint, 0°, planar, rough
23.3	joint, 10°, planar, rough
23.5	fracture, 15°, planar, rough to smooth
23.8	fault, 0°, undulating to planar, rough
24.2	fracture, 25°, planar, rough
24.6	fracture, 80°, planar, rough
24.8	fracture, 10°, planar, rough to smooth
25.5	fracture, 90°, stepped to undulating, rough to smooth
25.8	fracture, 90°, stepped, rough to smooth
26.2	fracture, 90°, planar, rough, crumbled zone

Depth (ft)	Discontinuity
26.6	fracture, 15°, planar, smooth
26.9	fracture, 25°, undulating to planar, rough
27.2	fracture, 80°, stepped, rough
27.7	fracture, 20°, undulating, rough to smooth
28.1	fracture, 90°, planar, rough to smooth
28.6	joint, 0°, planar, rough
29.1	fracture, 5°, planar, smooth
29.5	fracture, 0°, planar, rough to smooth
29.9	fracture, 10°, planar, smooth
30.3	fracture, 15°, undulating, rough
30.6	joint, 0°, planar, rough to smooth
30.9	fracture, 0°, planar, smooth

Figure 37 B-4.12 17.0’ to 22.0’

Depth (ft)	Discontinuity
17.7	joint, 20°, planar, smooth
18.6	fracture, 40°, undulating to planar, smooth
18.9	fracture, 45°, planar, smooth
19.3 to 19.6	fracture, 90°, undulating to planar, smooth
20.2	joint, 10°, planar, rough
20.8	infill, 5°, clay

Figure 38 B-4.13 16.0’ to 21.0’

Depth (ft)	Discontinuity
16.0 to 16.2	infill, clay
17.0	fracture, 80°, undulating to planar, rough
17.8	joint, 10°, planar, smooth
18.9	fracture, 90°, planar, smooth to rough
19.9	fracture, 85°, planar, smooth
20.3	joint, 10°, undulating to planar, smooth to rough

Figure 39 B-4.14 18.9’ to 23.9’

Depth (ft)	Discontinuity
20.5	joint, 10°, planar, smooth to rough
20.8	joint, 10°, undulating to planar, rough
21.5	fracture, 65°, undulating, smooth to rough
22.8	joint, 10°, planar, smooth
23.4	joint, 20°, undulating to planar, smooth to rough

Figure 40 B-4.16 19.0’ to 24.0’

Depth (ft)	Discontinuity
19.0 to 20.7	fracture, 0-90°, undulating to planar, smooth to rough
20.7 to 21.0	fracture, 90°, undulating to planar, smooth to rough
21.1 to 21.4	fracture, 90°, undulating to planar, smooth
21.8	joint, 5°, planar, smooth
22.2	fracture, 45°, undulating to planar, smooth
22.9	fracture, 45°, undulating to planar, smooth
23.8	joint, 5°, planar, smooth

Figure 41 B-4.18 21.1’ to 26.1’

Depth (ft)	Discontinuity
21.6	fracture, 85°, planar, smooth
22.4	fracture, 80°, undulating to planar, smooth to rough
23.5	joint, 5°, planar, rough
24.3	joint, 10°, planar, smooth to rough
25.2	joint, 10°, planar, rough
25.6	joint, 10°, planar, smooth

Figure 42 B-4.19 22.0’ to 27.0’

Depth (ft)	Discontinuity
22.0 to 23.7	fracture, 0-90°, undulating to planar, smooth to rough
23.9	fracture, 10-90°, undulating to stepped, smooth
24.0 to 24.4	fracture, 90°, planar, smooth
25.0	joint, 10°, planar, smooth
26.0 to 26.6	joint, 0-20°, undulating to planar, smooth to rough
26.7 to 26.9	fracture, 85°, undulating to planar, smooth

Figure 43 B-4.20 21.5’ to 26.5’

Depth (ft)	Discontinuity
22.7 to 23.0	fracture, 80°, planar, smooth
23.2 to 23.7	fracture, 80°, undulating to planar, smooth
24.3	joint, 10°, planar, smooth to rough
25.6 to 26.1	fracture, 90°, planar, smooth to rough

Figure 44 B-4.21 17.8’ to 22.8’

Depth (ft)	Discontinuity
18.0	joint, 5°, planar, smooth to rough
18.7	fracture, 15°, undulating , smooth
19.1	joint, 5°, planar, smooth to rough
20.1 to 20.4	fracture, 70°, planar, smooth to rough
21.1	fracture, 30°, undulating, smooth
21.5 to 22.3	fracture, 0-90°, undulating to planar, smooth to rough
22.3 to 22.5	fracture, 85°, undulating to planar, smooth
22.5	joint, 10°, planar, smooth to rough

Table 600-13: Discontinuities in Bedrock (ODOT SGE, 2021)

Description	Parameters
Fault	Fracture which expresses displacement parallel to the surface that does not result in a polished surface.
Joint	Planar fracture that does no express displacement. Generally occurs at regularly spaced intervals.
Shear	Fracture which expresses displacement parallel to the surface that results in polished surface or slickensides.
Bedding	A surface produced along a bedding plane.
Contact	A surface produced along a contact plane (generally not seen in Ohio).

Table above was referenced when determining discontinuities in rock core samples.

ATTACHMENT B-1

Piezometer Detail Sheets

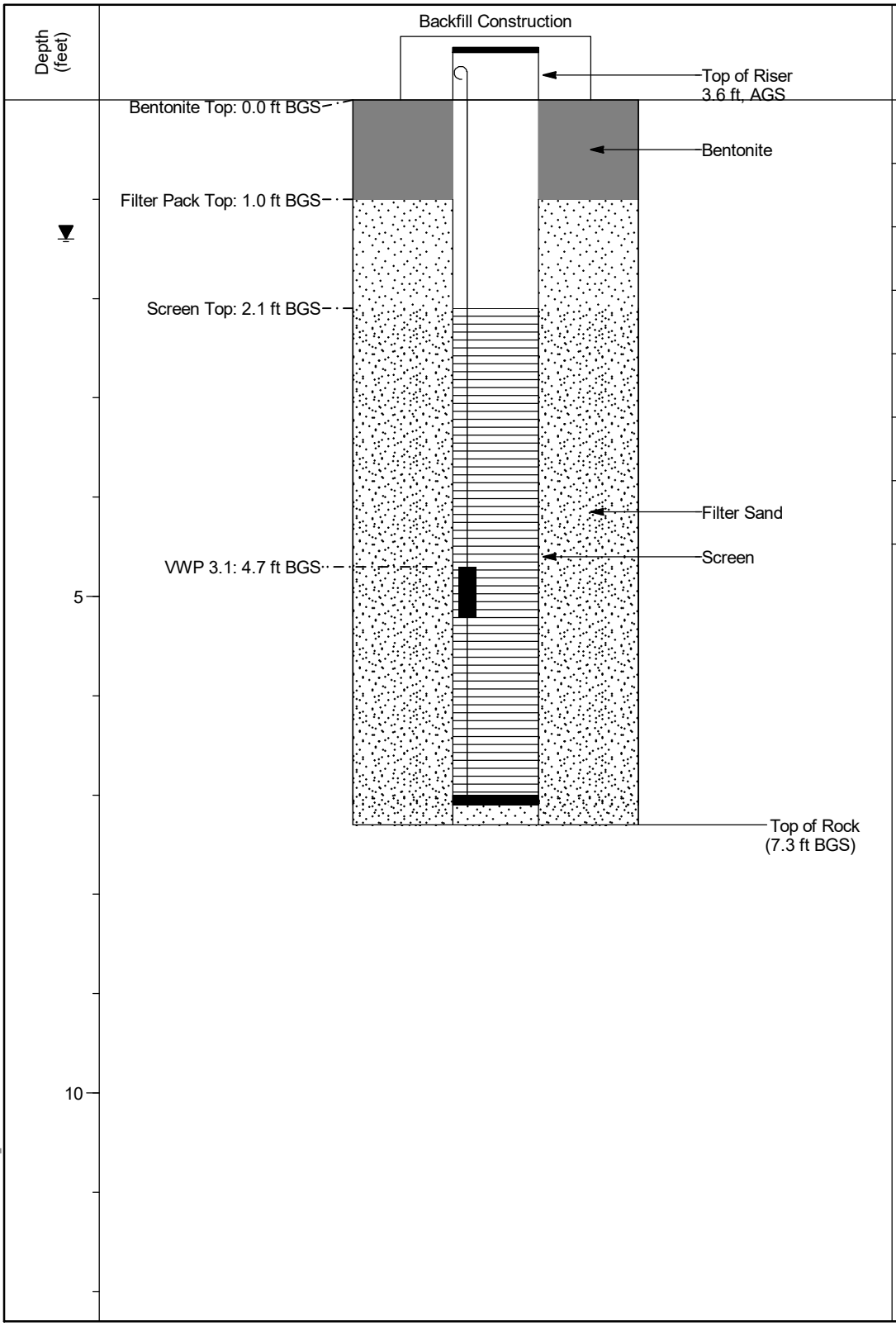
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.1**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#2, #711**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/19/21** COMPLETED: **1/19/21**
LOCATION: **476,889.61 N; 1,645,626.37 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **808.1** TOC ELEV (ft): **811.7**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **7.3** RISER DEPTH (ft): **7.1**
DTW AT COMPLETION (ft, bgs): **1.4**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
N/A

GROUT TOP (ft BGS):

GROUT BOTTOM (ft BGS):

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

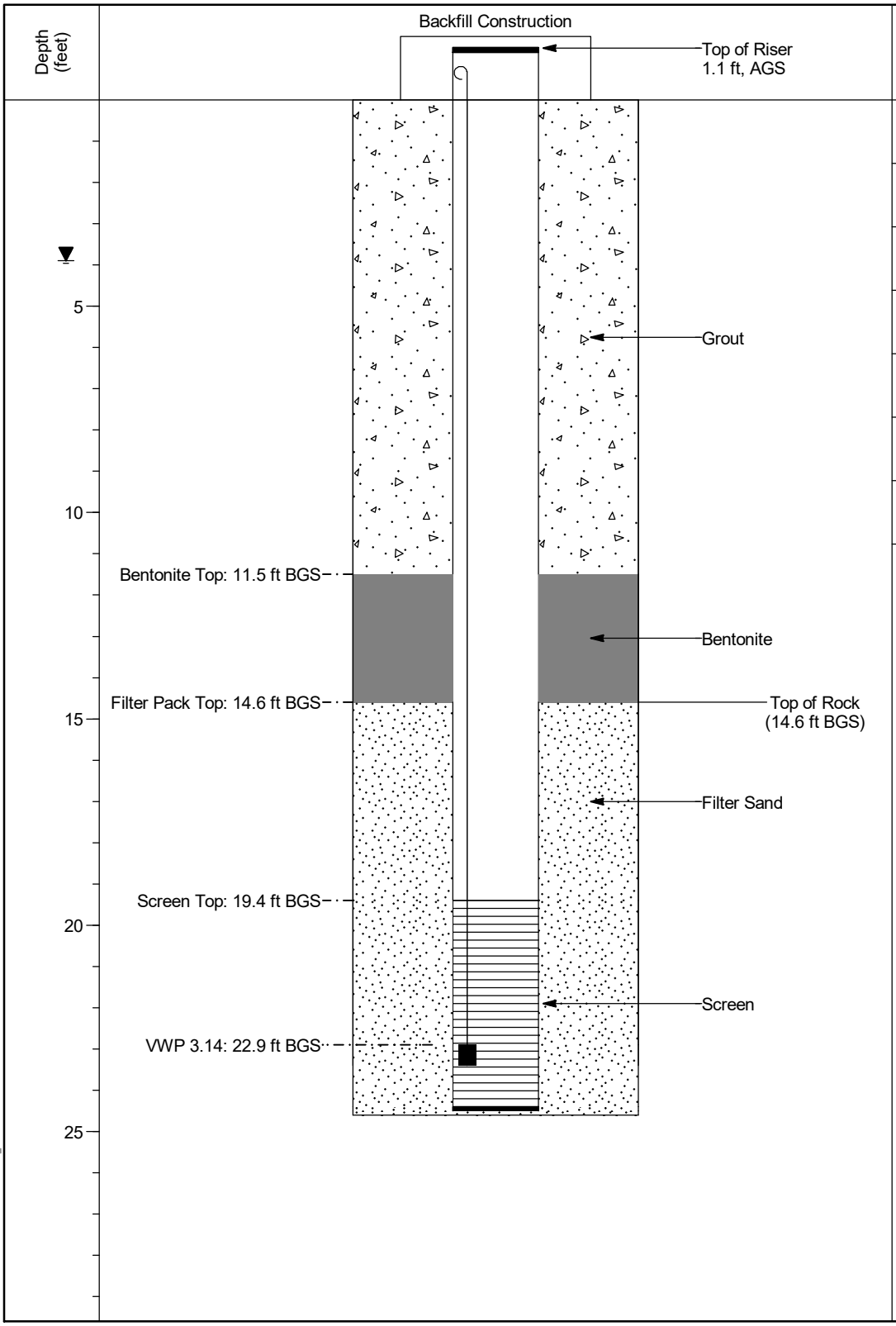
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.14**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/28/21** COMPLETED: **1/28/21**
LOCATION: **481,323.72 N; 1,645,629.32 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **799.1** TOC ELEV (ft): **800.2**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **24.6** RISER DEPTH (ft): **24.4**
DTW AT COMPLETION (ft, bgs): **3.9**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
11.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

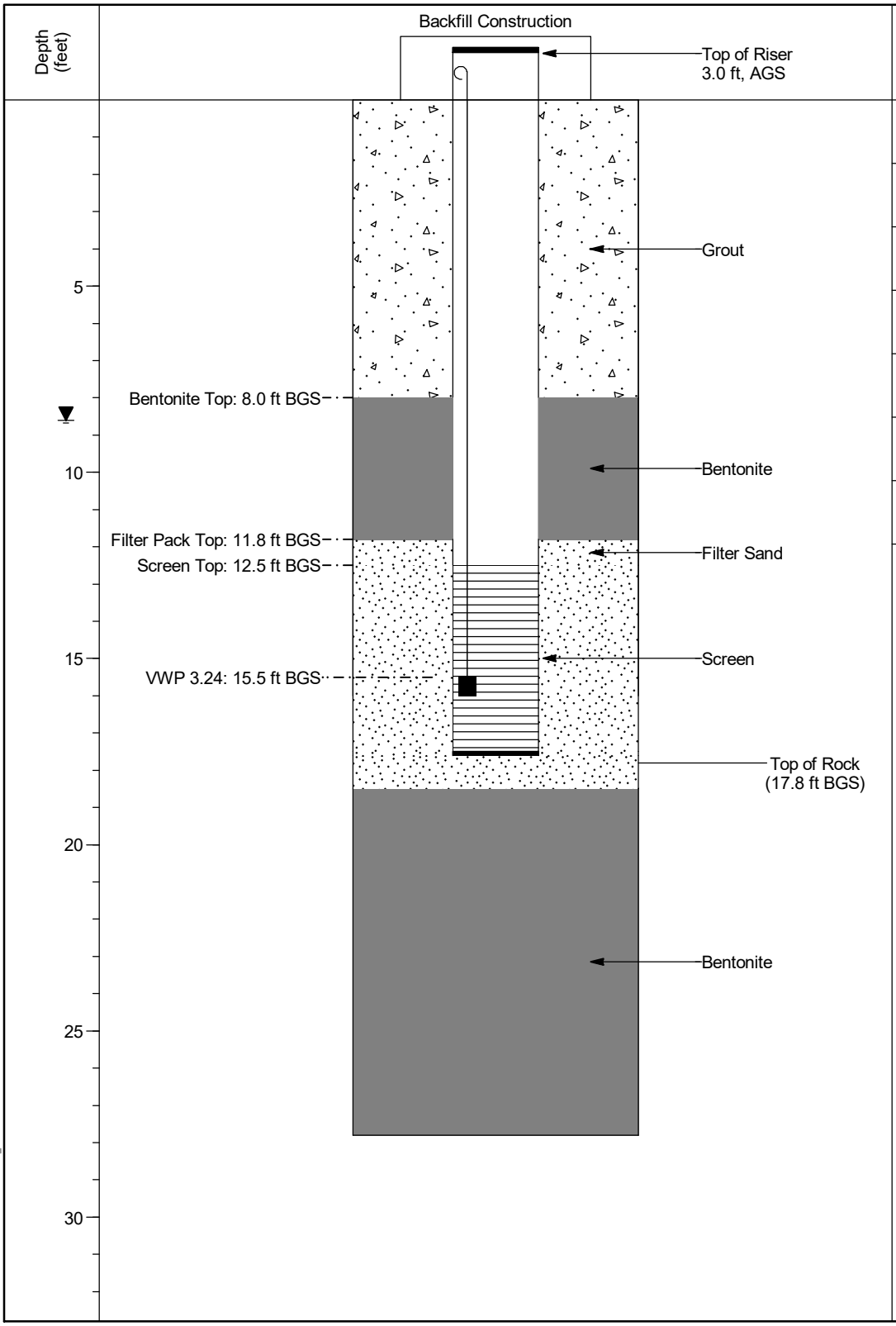
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.24**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/4/21** COMPLETED: **2/4/21**
LOCATION: **484,060.89 N; 1,646,338.89 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **801.9** TOC ELEV (ft): **804.9**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **27.8** RISER DEPTH (ft): **17.5**
DTW AT COMPLETION (ft, bgs): **8.6**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
8

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

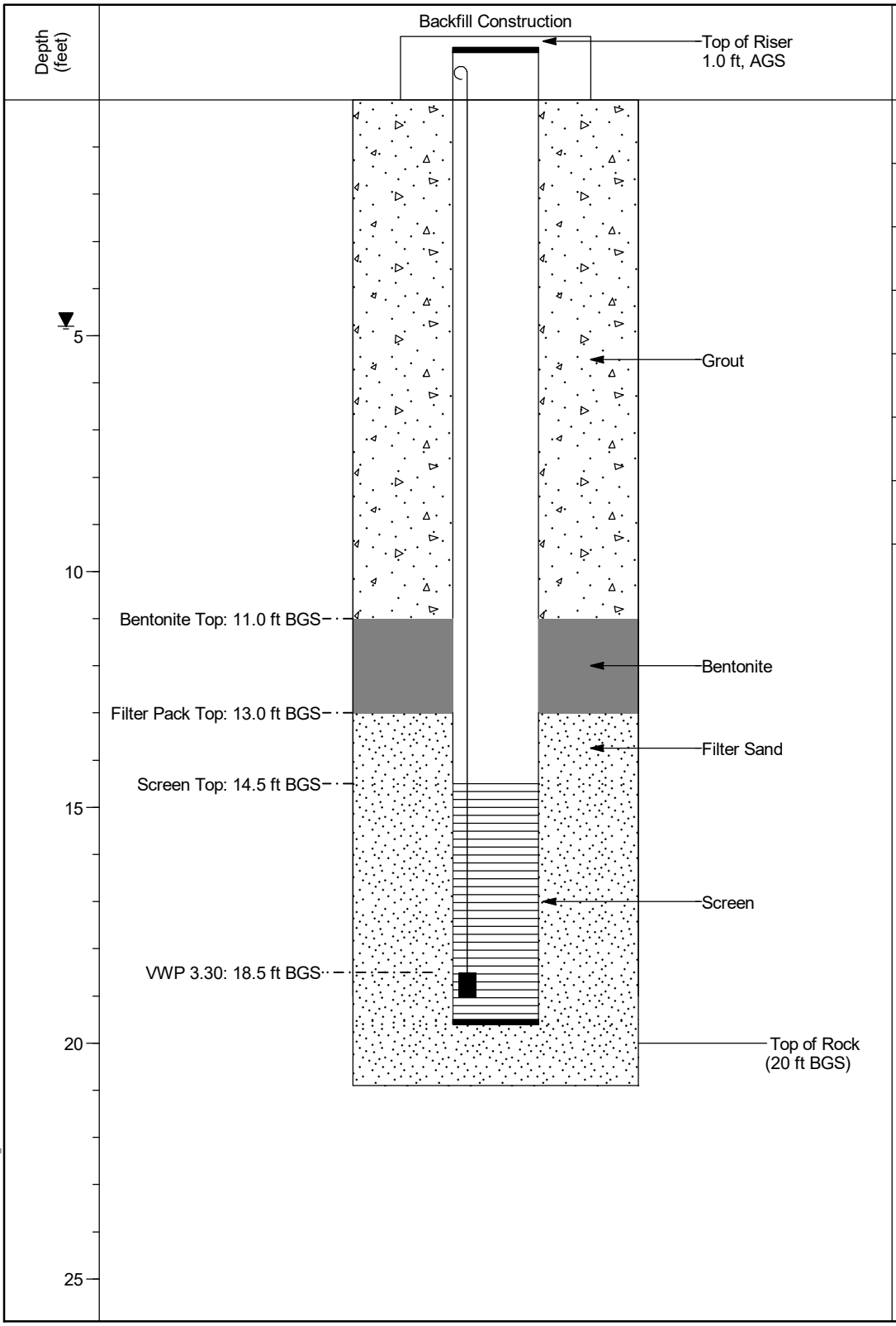
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.30**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/20/21** COMPLETED: **1/20/21**
LOCATION: **484,047.08 N; 1,648,131.41 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **797.6** TOC ELEV (ft): **798.6**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **20.9** RISER DEPTH (ft): **19.5**
DTW AT COMPLETION (ft, bgs): **4.8**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
11

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

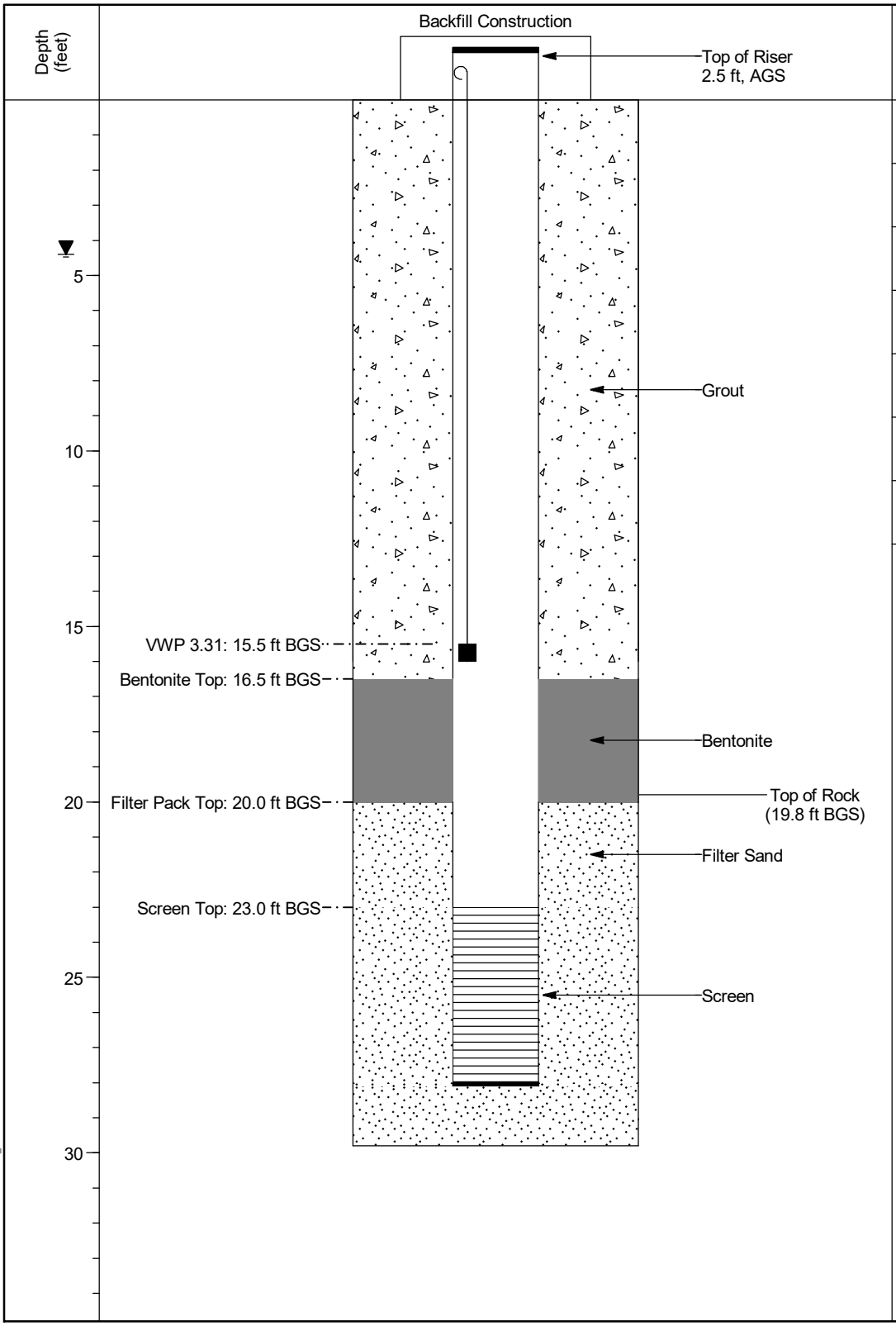
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.31**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/20/21** COMPLETED: **1/20/21**
LOCATION: **483,960.29 N; 1,648,132.28 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **797.5** TOC ELEV (ft): **800.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **29.8** RISER DEPTH (ft): **28.0**
DTW AT COMPLETION (ft, bgs): **4.4**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
16.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

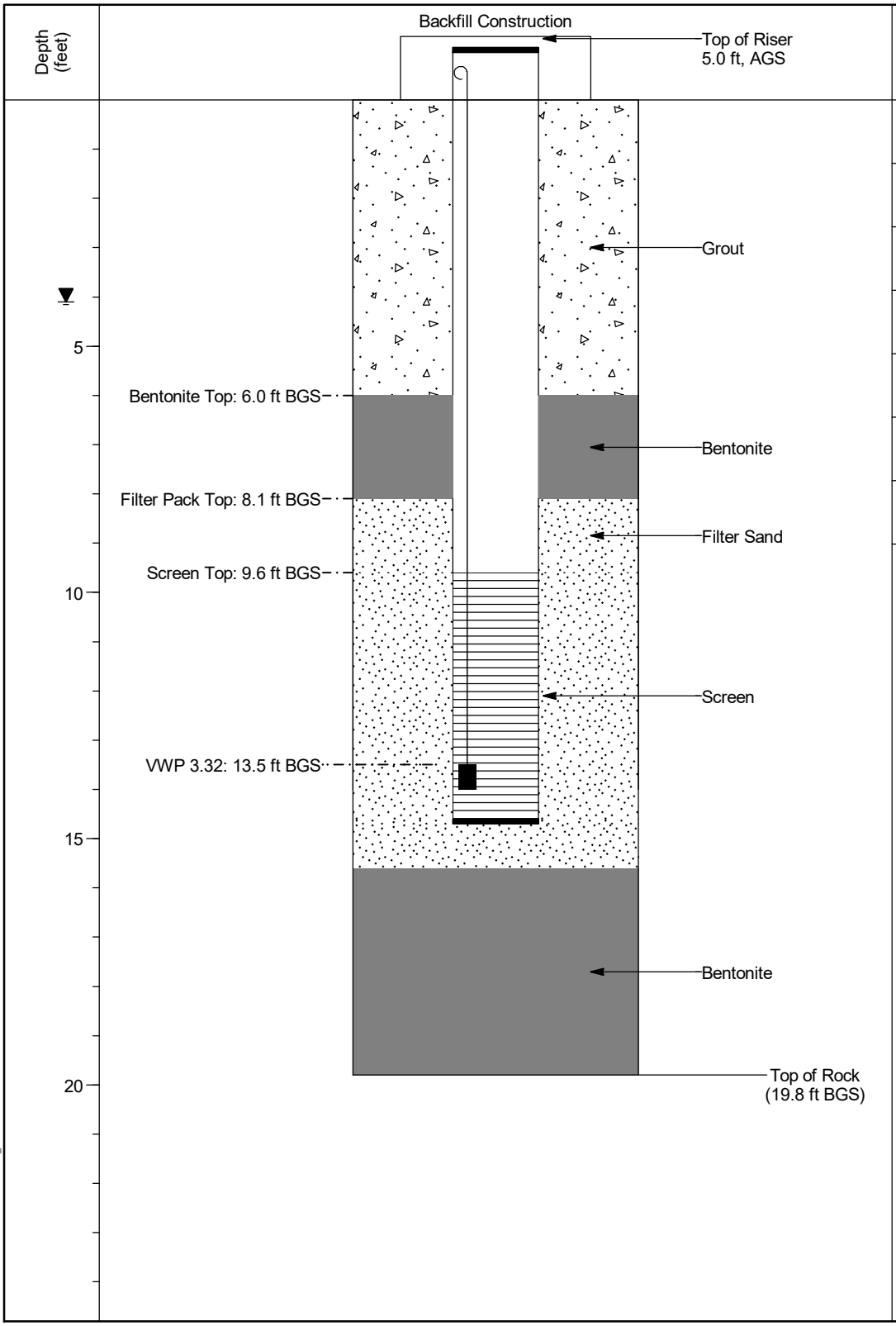
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.32**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/20/21** COMPLETED: **1/20/21**
LOCATION: **484,152.69 N; 1,648,129.52 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **797.3** TOC ELEV (ft): **802.3**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **19.8** RISER DEPTH (ft): **14.6**
DTW AT COMPLETION (ft, bgs): **4.1**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
6

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

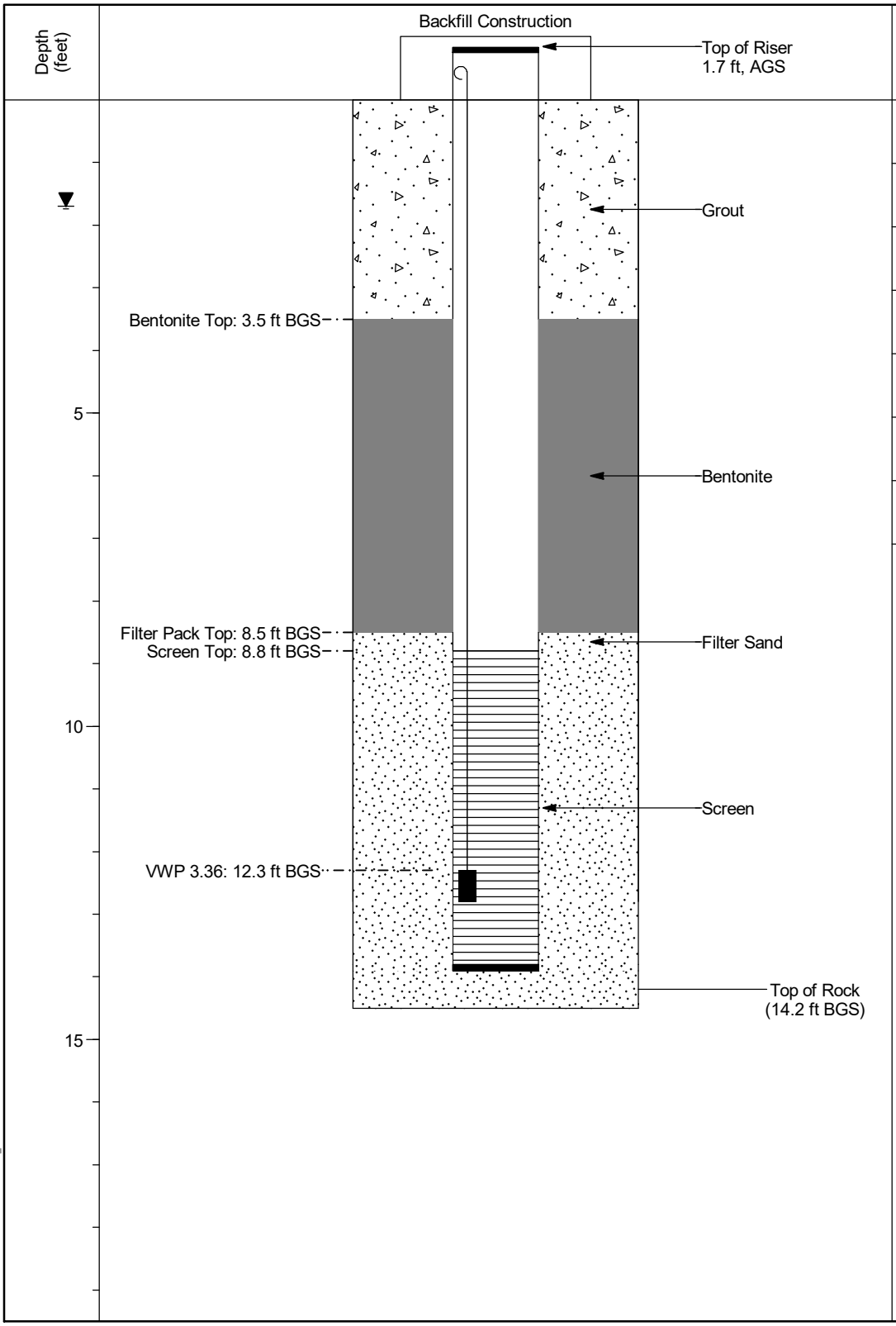
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.36**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/6/21** COMPLETED: **1/6/21**
LOCATION: **483,925.78 N; 1,649,904.92 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **790.1** TOC ELEV (ft): **791.8**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **14.5** RISER DEPTH (ft): **13.8**
DTW AT COMPLETION (ft, bgs): **1.7**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
3.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

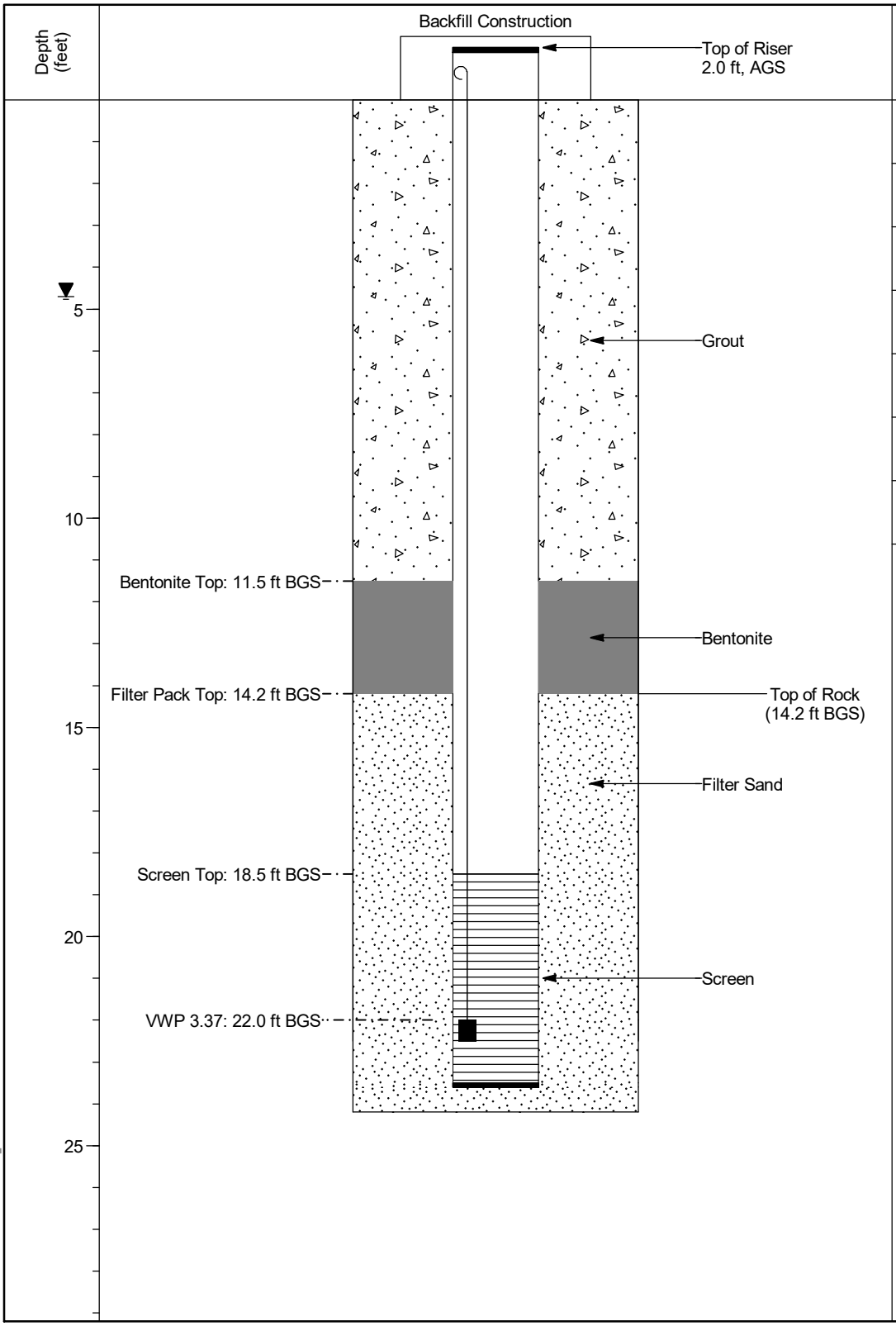
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.37**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/6/21** COMPLETED: **1/6/21**
LOCATION: **483,988.19 N; 1,649,996.09 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **790.0** TOC ELEV (ft): **792.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **24.2** RISER DEPTH (ft): **23.5**
DTW AT COMPLETION (ft, bgs): **4.7**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
11.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_1OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

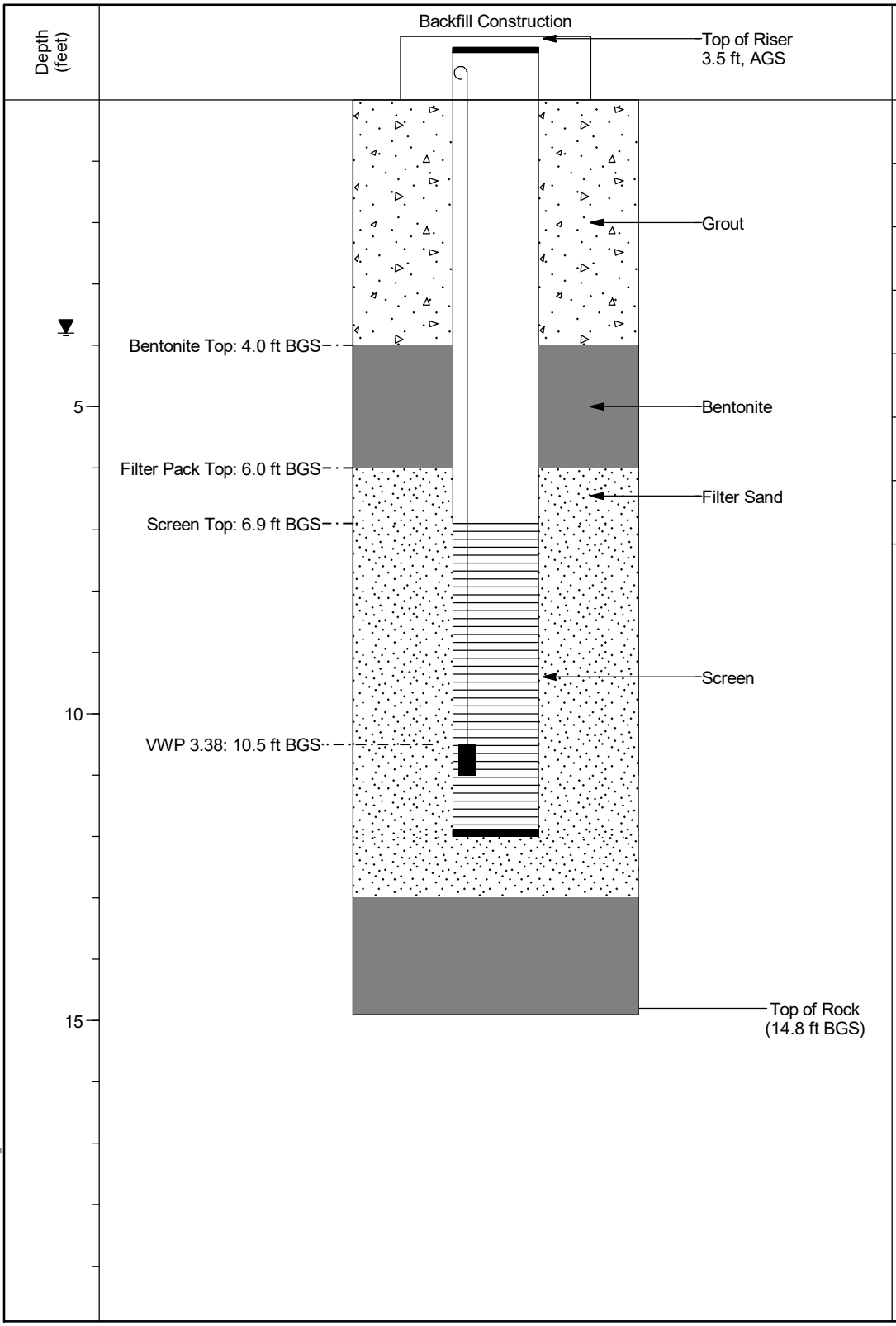
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.38**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/5/21** COMPLETED: **1/5/21**
LOCATION: **484,068.99 N; 1,650,105.43 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **790.6** TOC ELEV (ft): **794.1**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **14.9** RISER DEPTH (ft): **11.9**
DTW AT COMPLETION (ft, bgs): **3.8**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
4

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

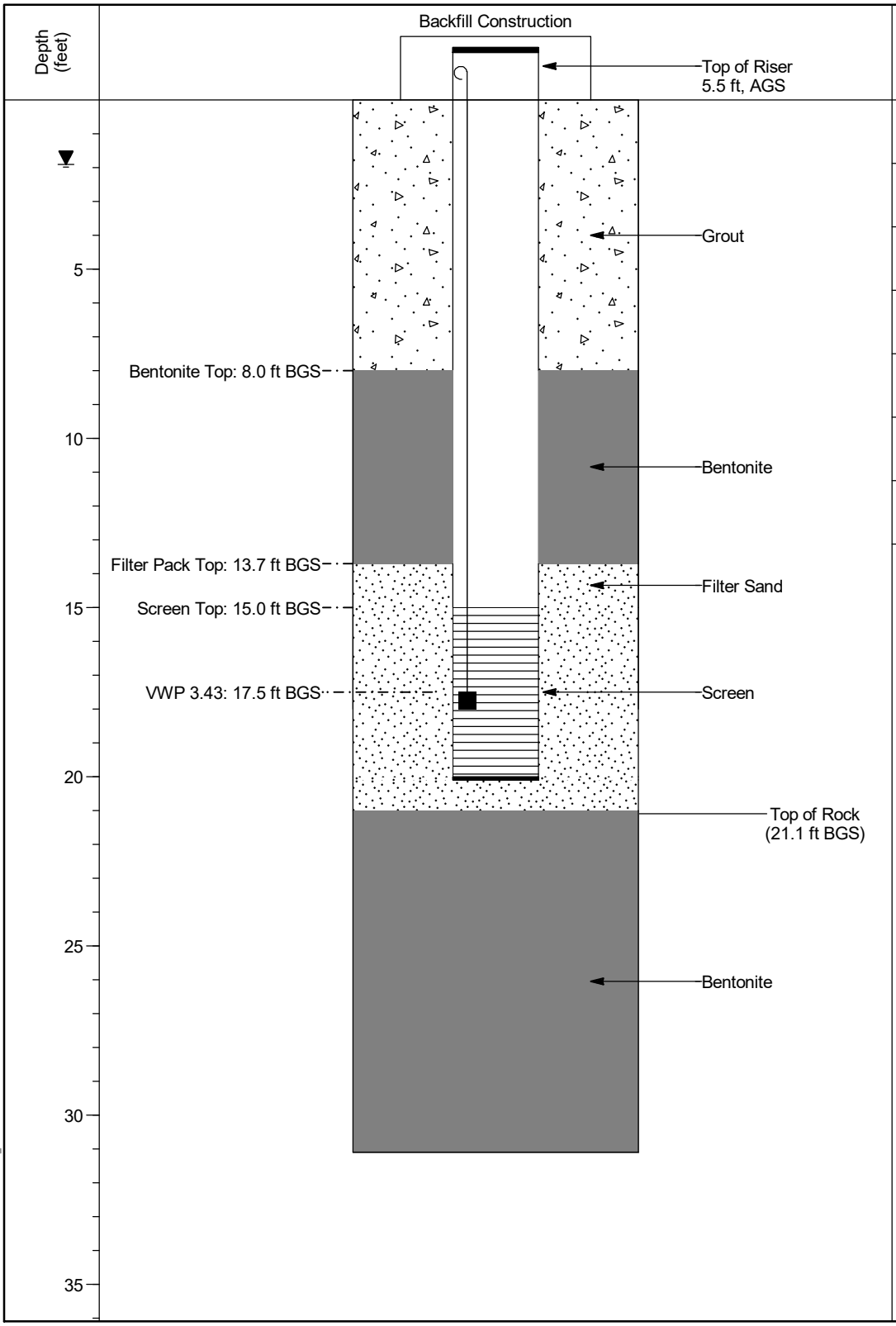
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.43**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/13/21** COMPLETED: **1/13/21**
LOCATION: **481,806.35 N; 1,649,866.16 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.9** TOC ELEV (ft): **798.4**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **31.1** RISER DEPTH (ft): **20.0**
DTW AT COMPLETION (ft, bgs): **1.9**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
8

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

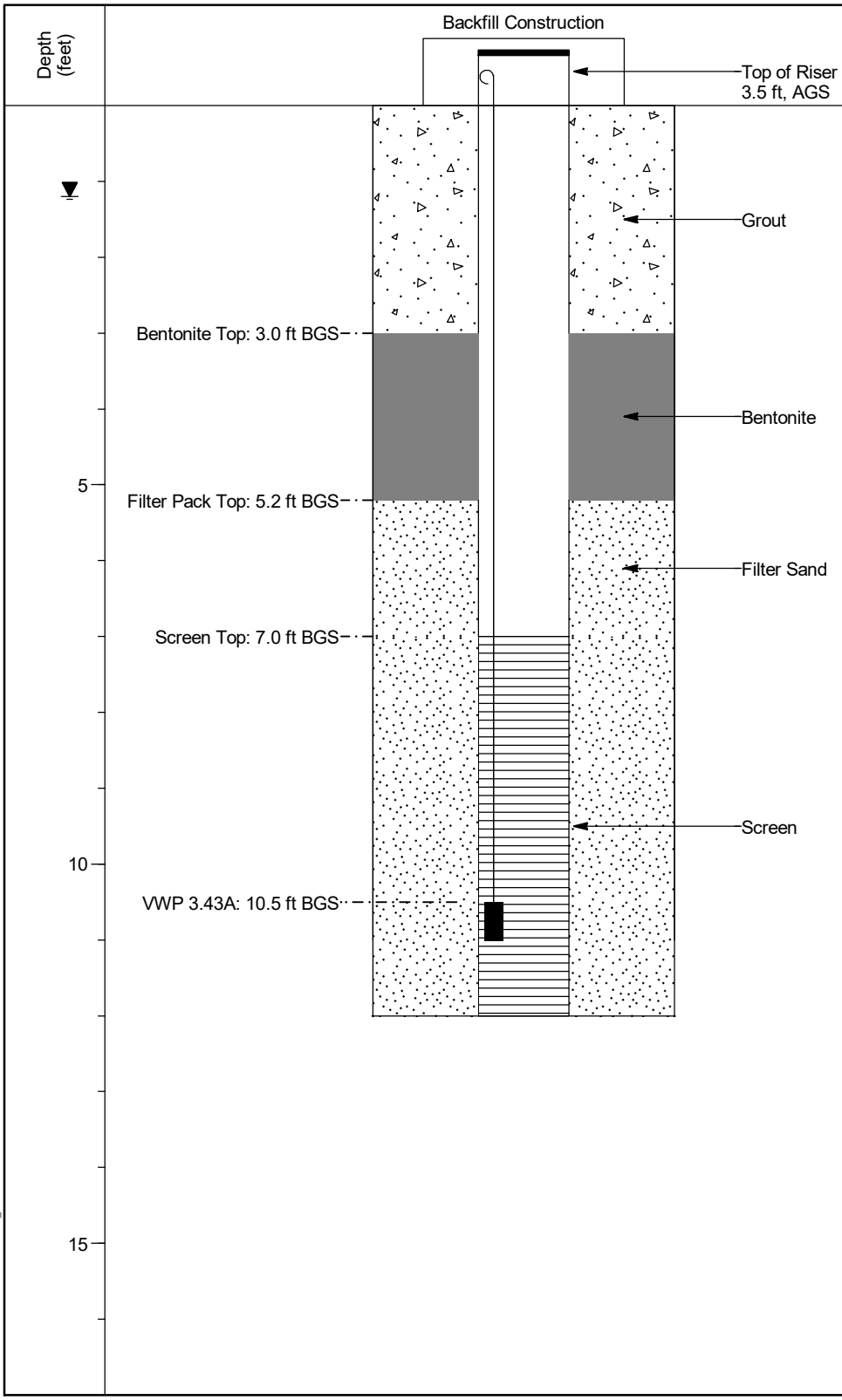
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.43A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/13/21** COMPLETED: **1/13/21**
LOCATION: **481,800.43 N; 1,649,865.60 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.9** TOC ELEV (ft): **796.4**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **12.0** RISER DEPTH (ft): **12.0**
DTW AT COMPLETION (ft, bgs): **1.2**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
3

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

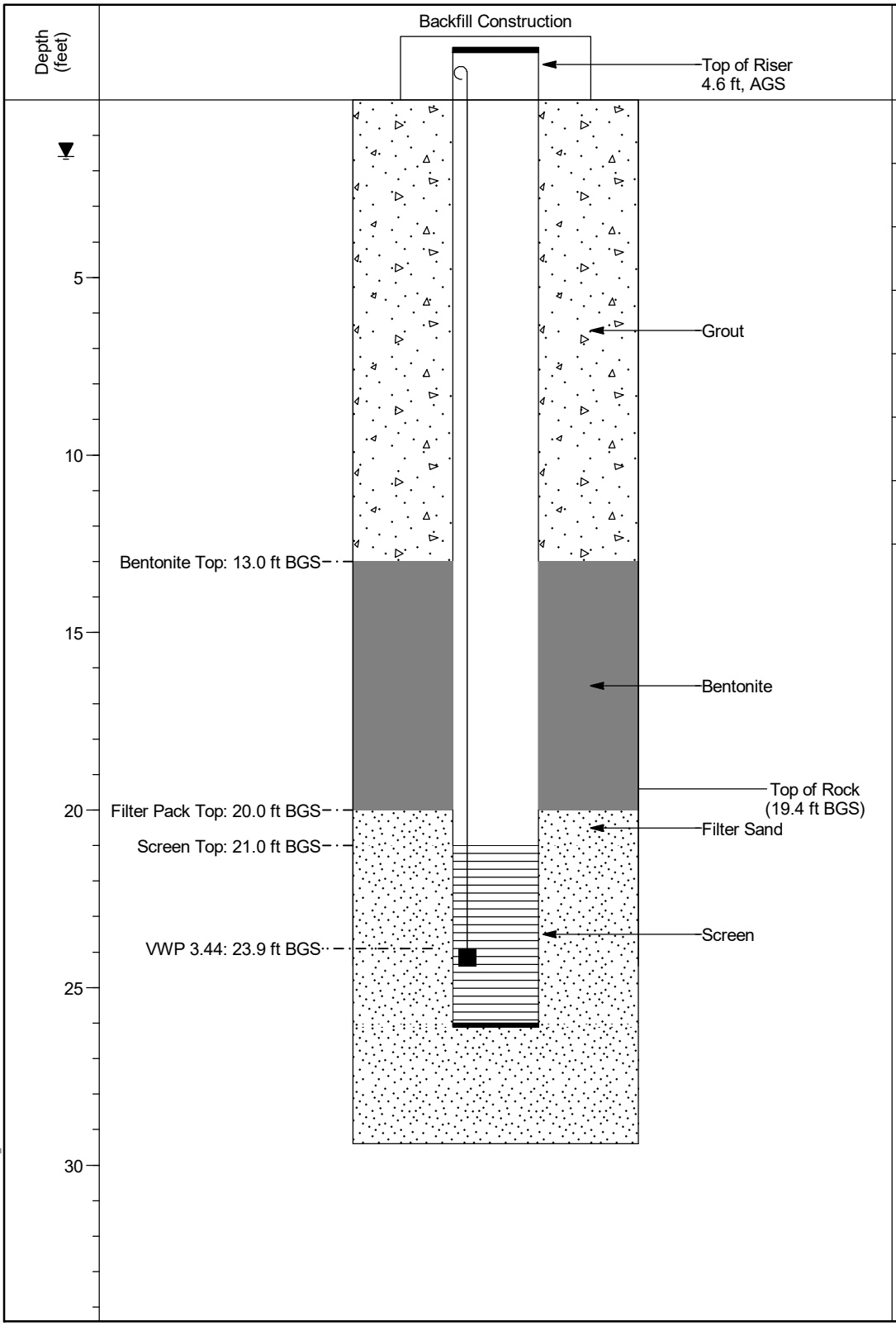
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.44** PAGE 1 OF 1

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/17/21** COMPLETED: **2/17/21**
LOCATION: **481,797.76 N; 1,649,953.12 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.6** TOC ELEV (ft): **797.2**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **29.4** RISER DEPTH (ft): **26.0**
DTW AT COMPLETION (ft, bgs): **1.6**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
13

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

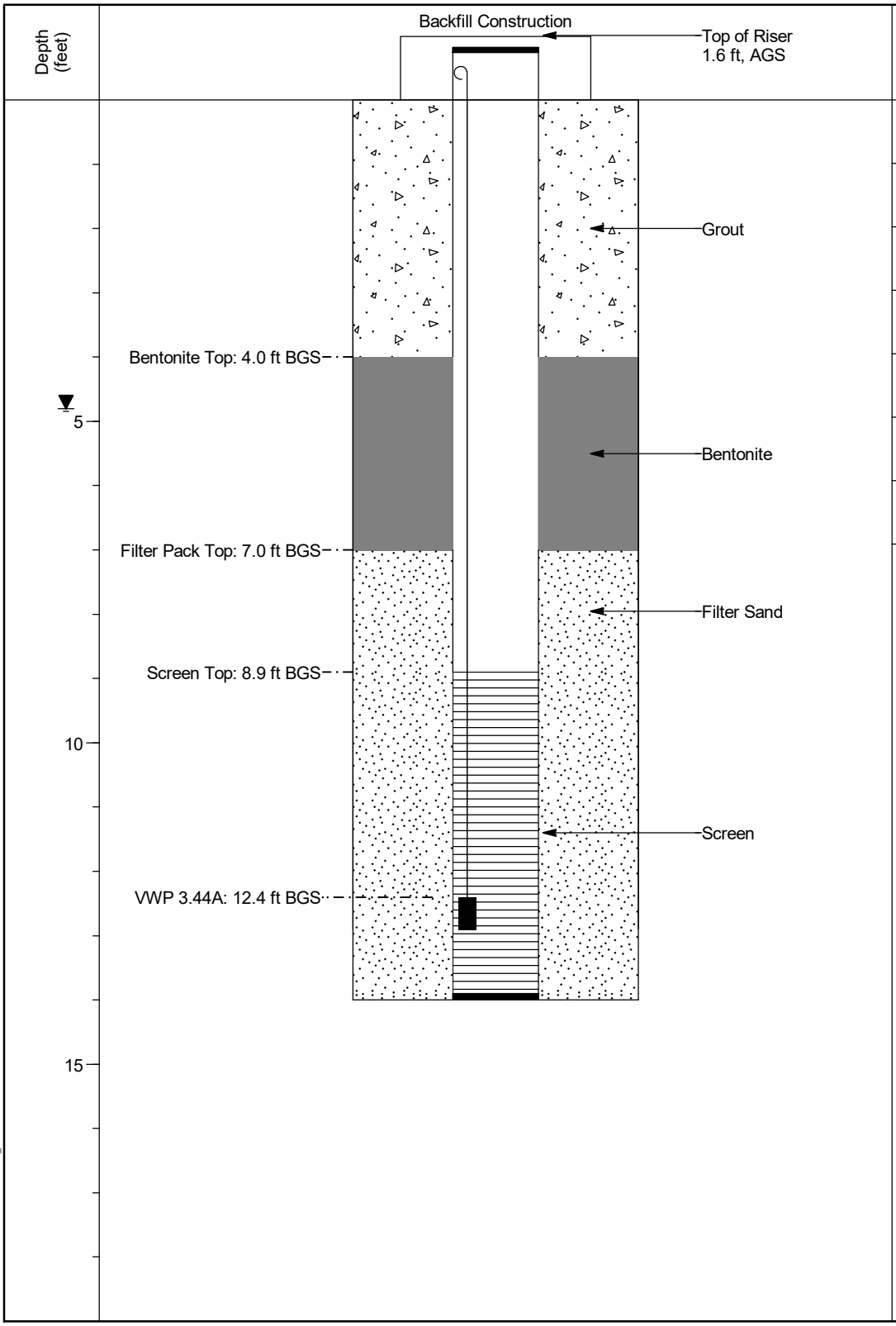
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.44A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/4/21** COMPLETED: **2/4/21**
LOCATION: **481,790.77 N; 1,649,952.98 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.7** TOC ELEV (ft): **794.3**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **14.0** RISER DEPTH (ft): **13.9**
DTW AT COMPLETION (ft, bgs): **4.8**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
4

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

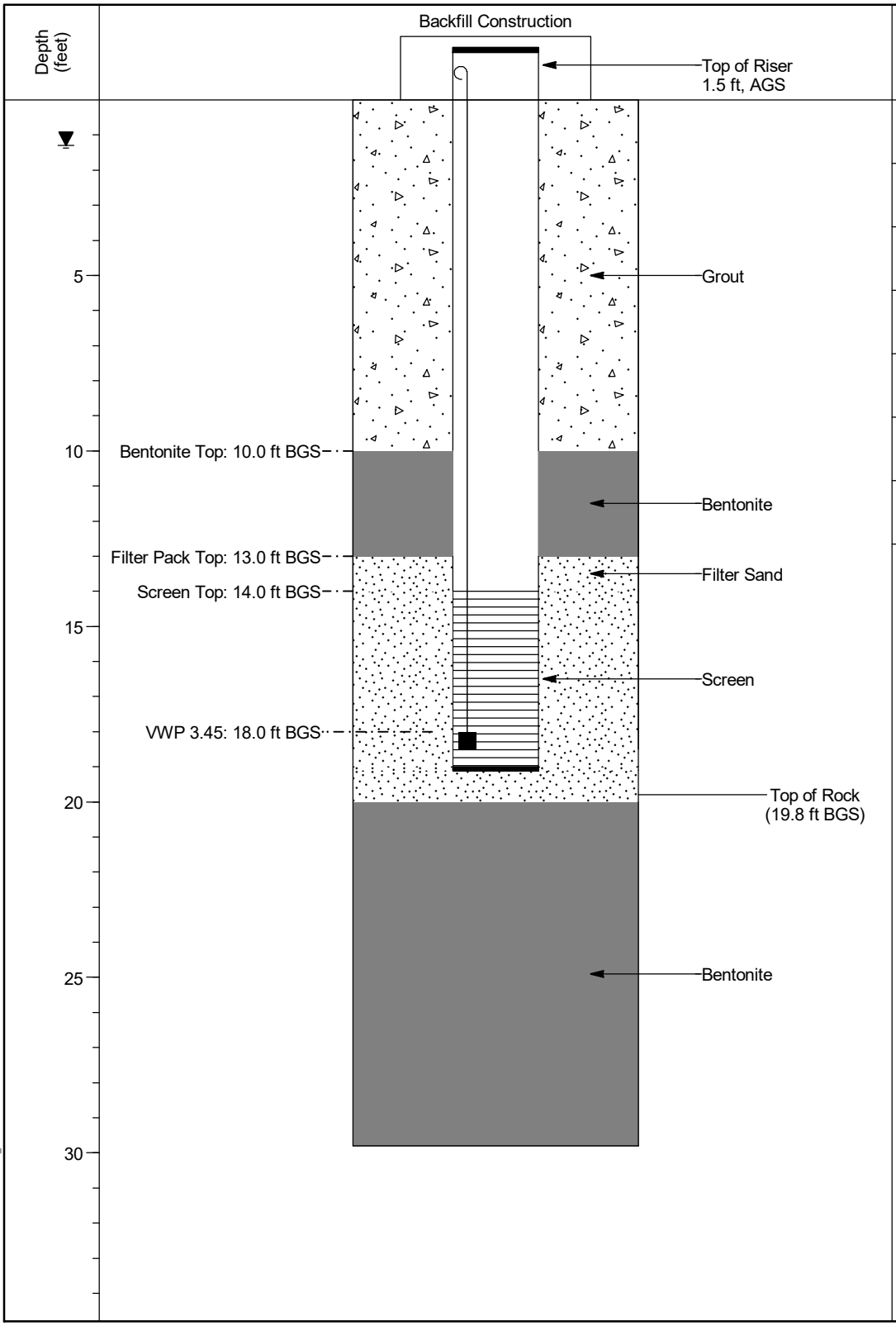
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.45**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/4/21** COMPLETED: **2/4/21**
LOCATION: **481,785.76 N; 1,650,038.55 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.3** TOC ELEV (ft): **793.8**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **29.8** RISER DEPTH (ft): **19.0**
DTW AT COMPLETION (ft, bgs): **1.3**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
10

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_2OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

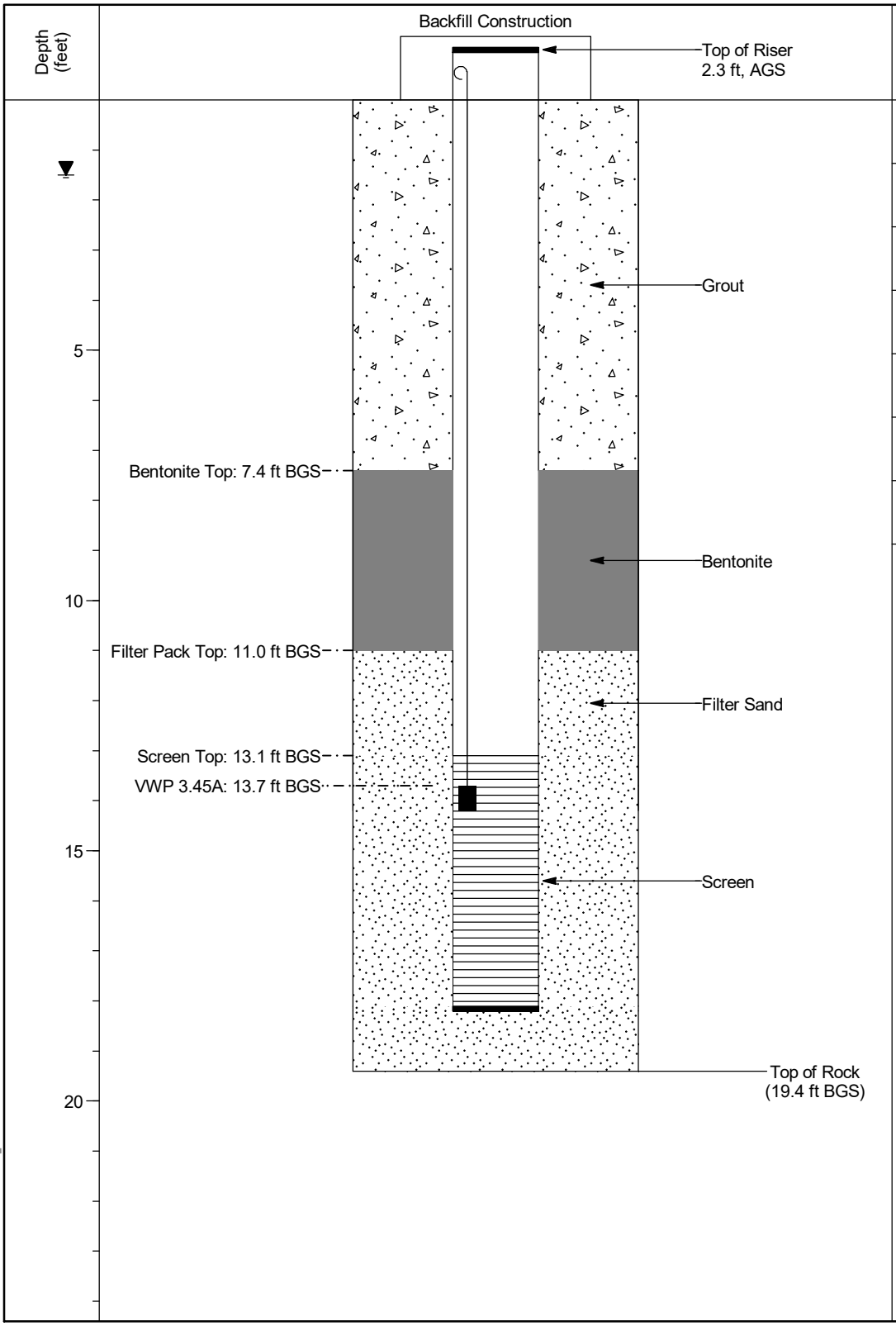
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.45A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/4/21** COMPLETED: **2/4/21**
LOCATION: **481,779.49 N; 1,650,037.53 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.3** TOC ELEV (ft): **794.6**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **19.4** RISER DEPTH (ft): **18.1**
DTW AT COMPLETION (ft, bgs): **1.5**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
7.4

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

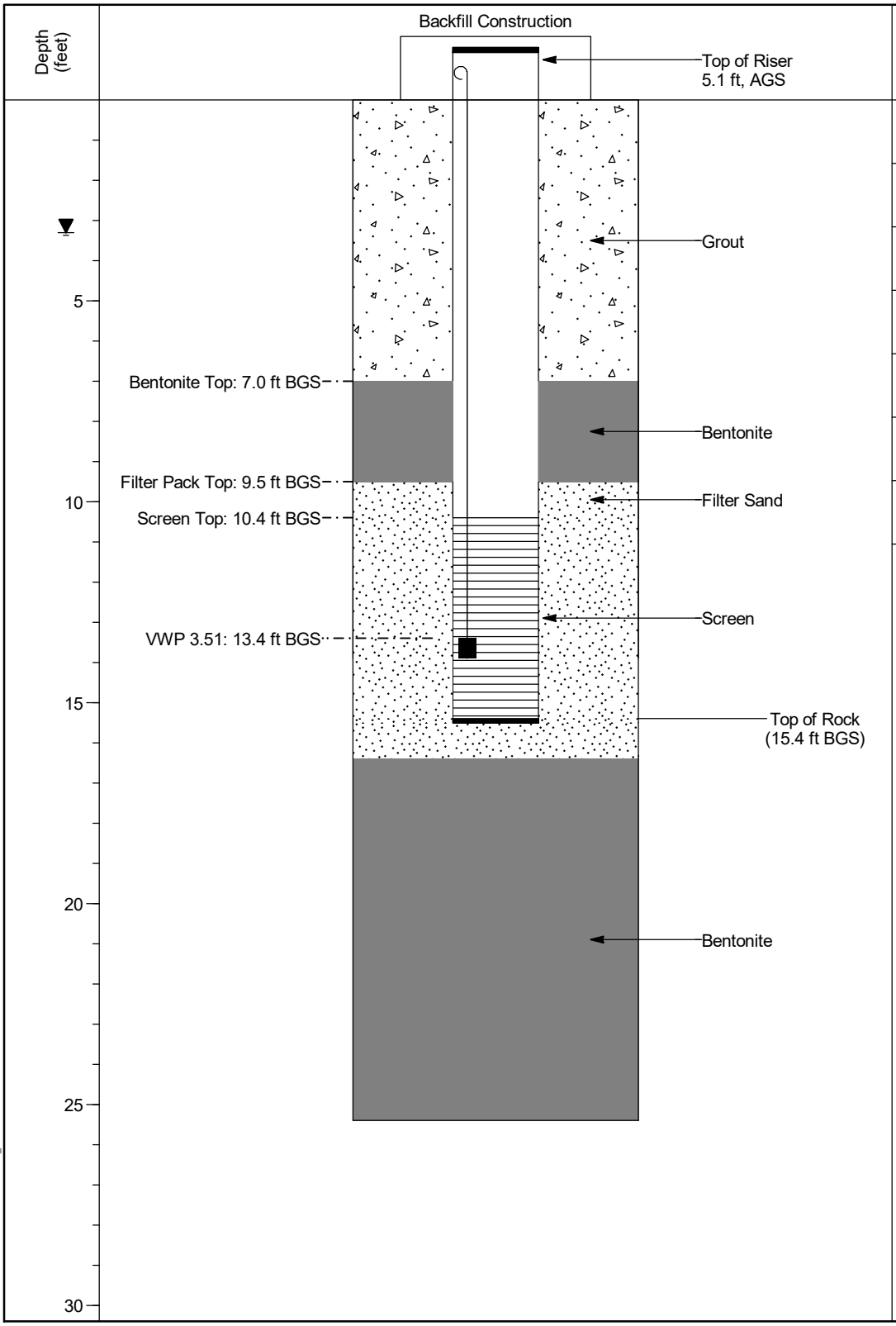
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.51**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/8/21** COMPLETED: **3/8/21**
LOCATION: **480,884.41 N; 1,650,455.70 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **791.3** TOC ELEV (ft): **796.4**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **25.4** RISER DEPTH (ft): **15.4**
DTW AT COMPLETION (ft, bgs): **3.3**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
7

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

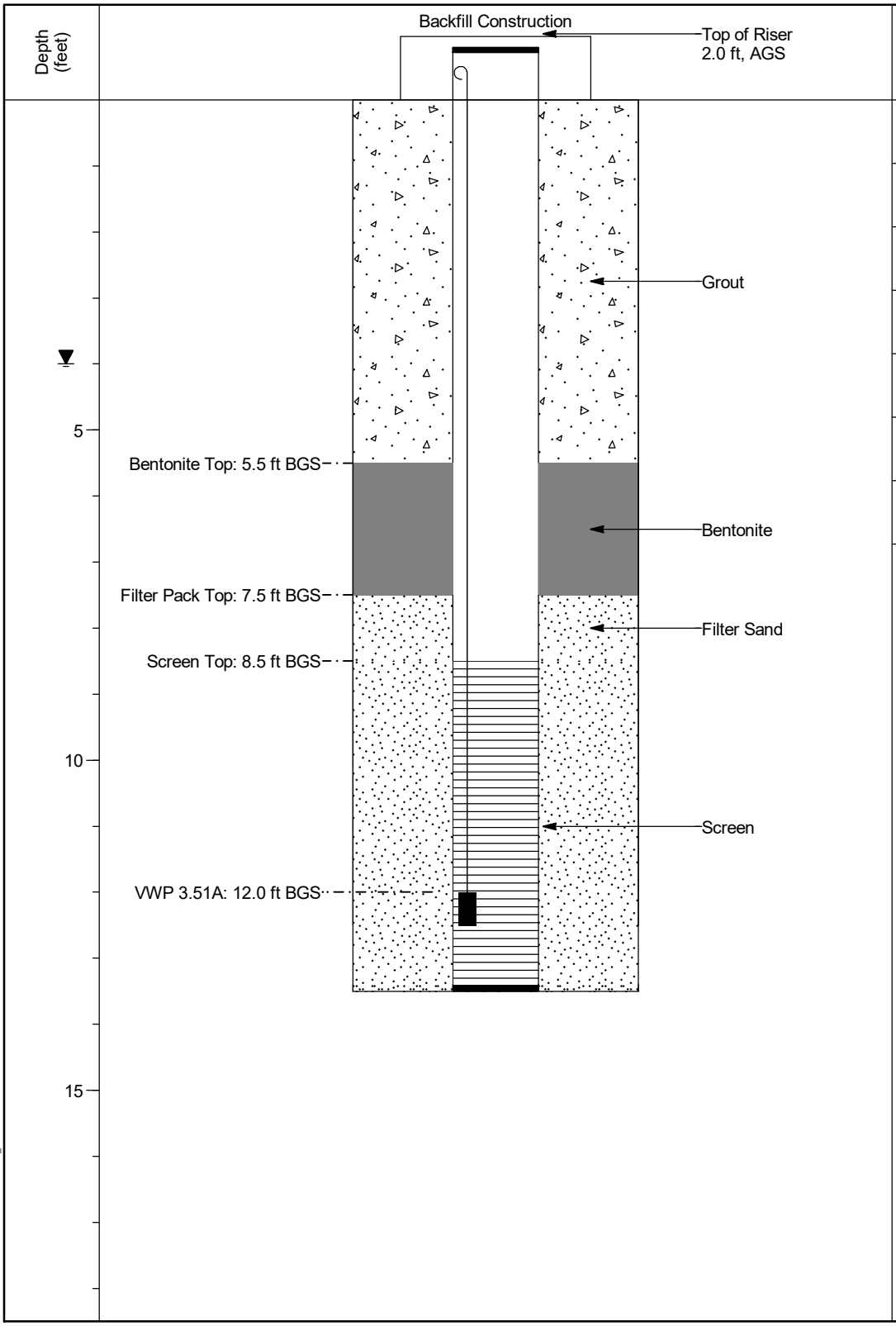
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.51A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/8/21** COMPLETED: **3/8/21**
LOCATION: **480,880.83 N; 1,650,460.09 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.0** TOC ELEV (ft): **794.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **13.5** RISER DEPTH (ft): **13.5**
DTW AT COMPLETION (ft, bgs): **4.0**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
5.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

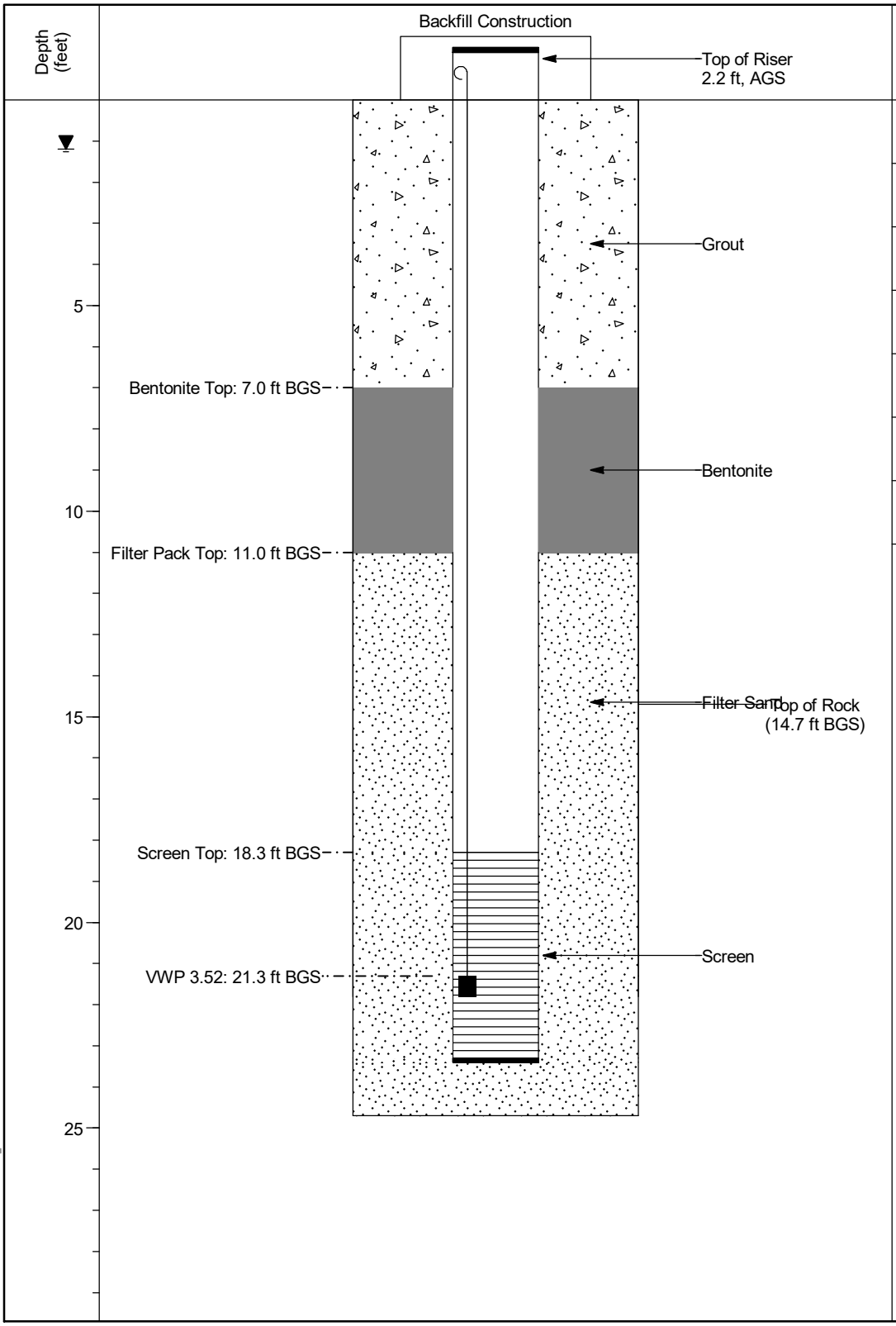
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.52**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/5/21** COMPLETED: **3/5/21**
LOCATION: **480,930.80 N; 1,650,491.23 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **789.2** TOC ELEV (ft): **791.4**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **24.7** RISER DEPTH (ft): **23.3**
DTW AT COMPLETION (ft, bgs): **1.2**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
7

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

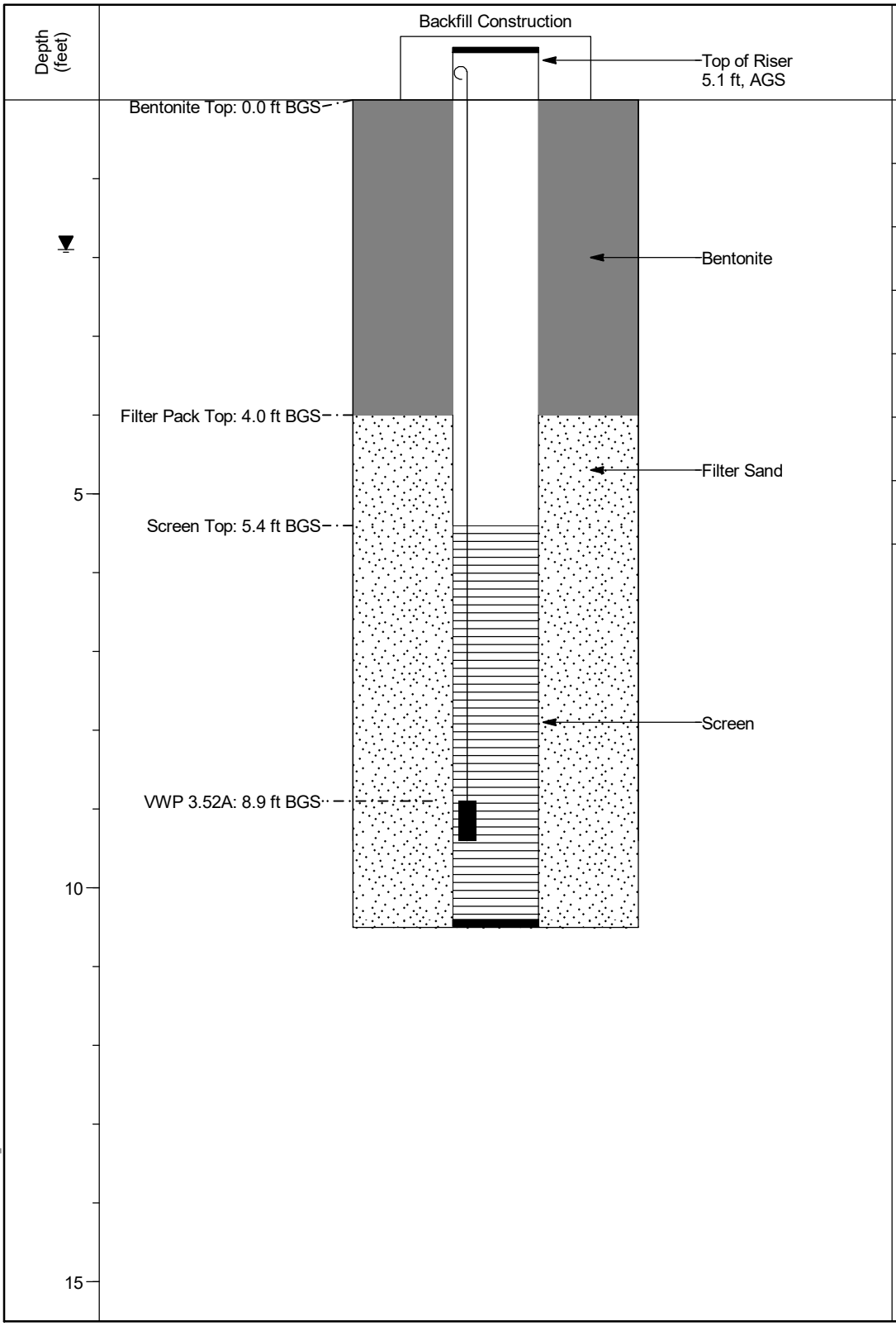
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.52A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/9/21** COMPLETED: **3/9/21**
LOCATION: **480,925.67 N; 1,650,496.97 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **789.9** TOC ELEV (ft): **795.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **10.5** RISER DEPTH (ft): **10.4**
DTW AT COMPLETION (ft, bgs): **1.9**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
N/A

GROUT TOP (ft BGS):

GROUT BOTTOM (ft BGS):

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

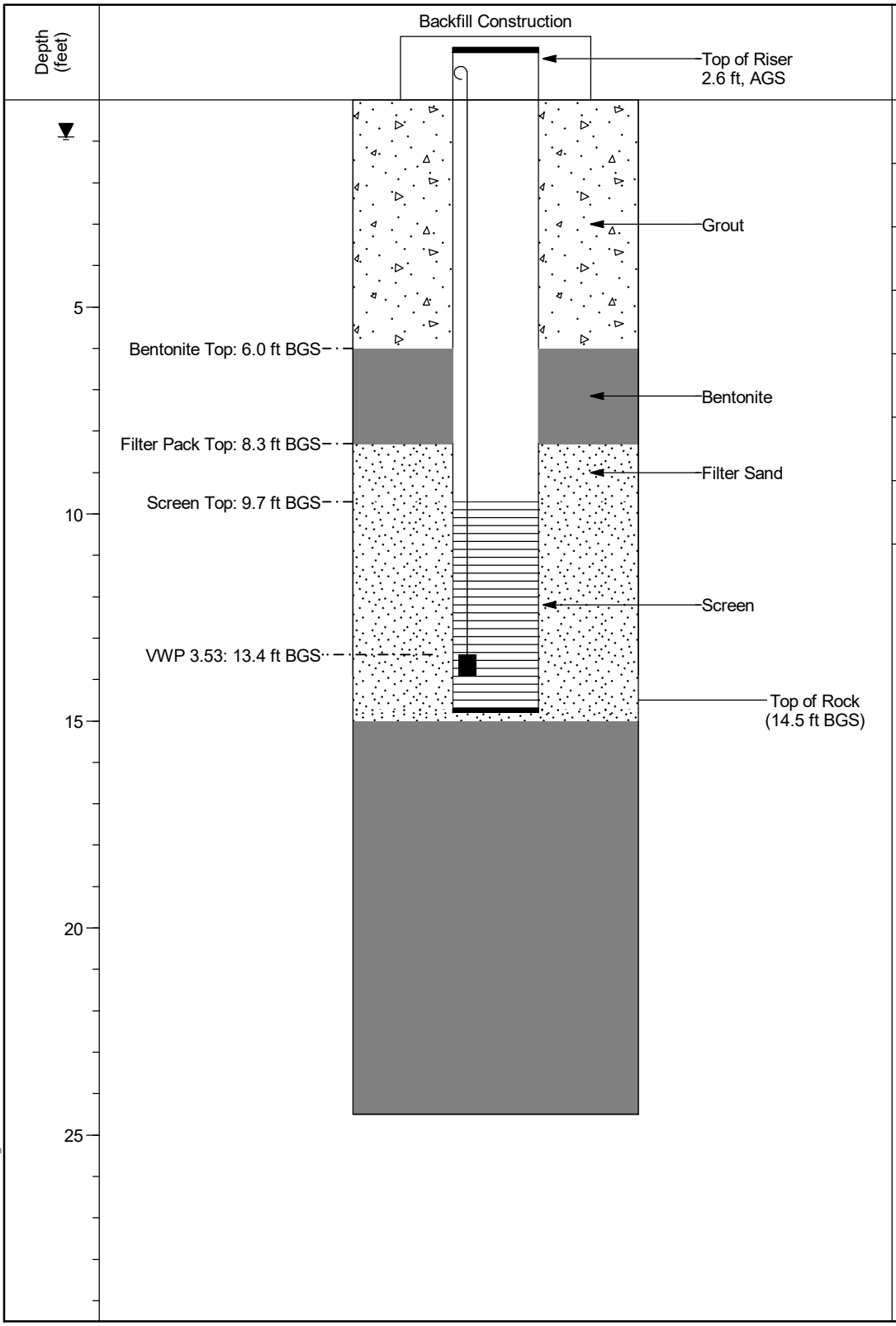
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.53**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/4/21** COMPLETED: **3/4/21**
LOCATION: **480,972.44 N; 1,650,528.40 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **788.7** TOC ELEV (ft): **791.3**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **24.5** RISER DEPTH (ft): **14.7**
DTW AT COMPLETION (ft, bgs): **0.9**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
6

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

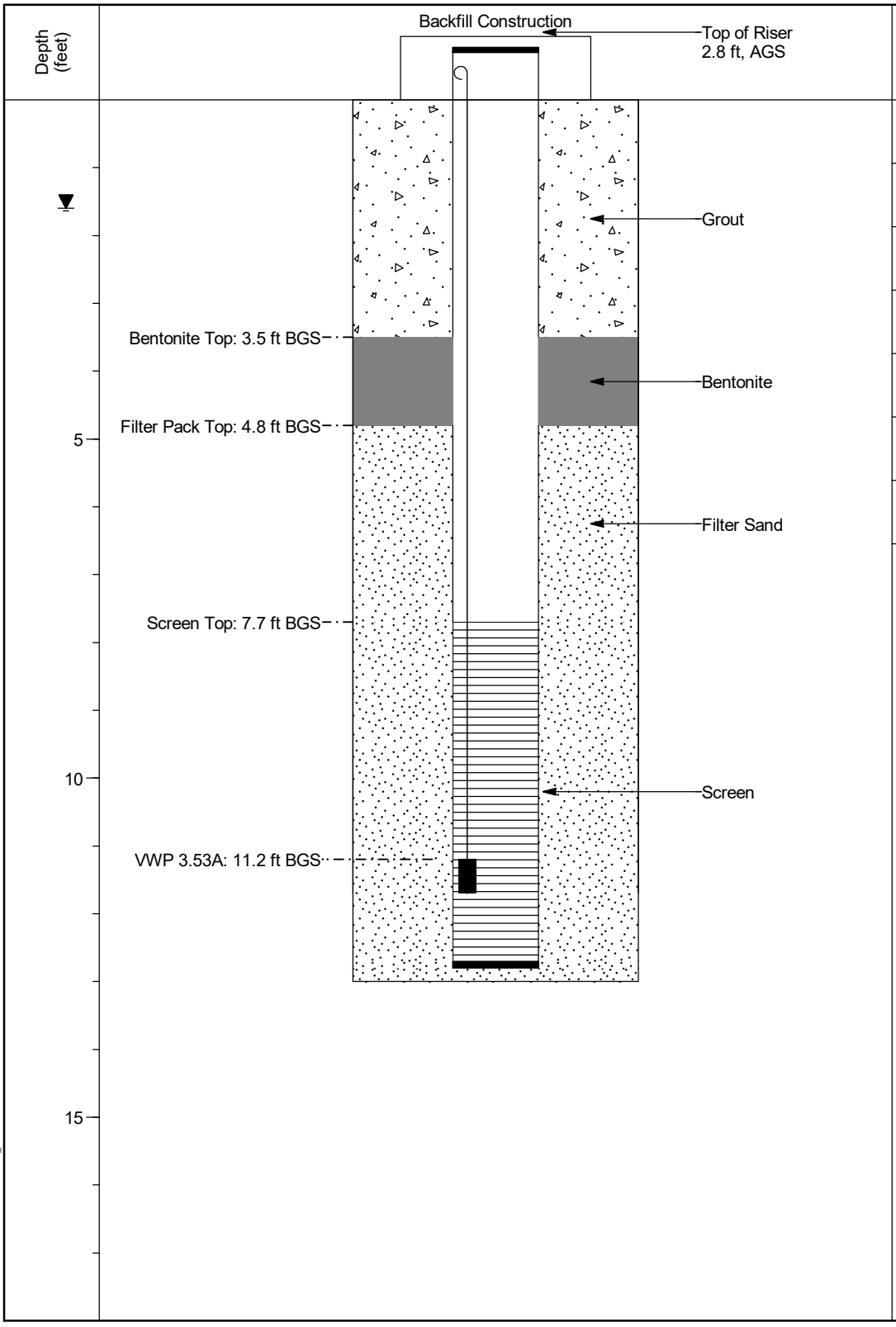
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.53A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **3/9/21** COMPLETED: **3/9/21**
LOCATION: **480,964.85 N; 1,650,536.59 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **789.2** TOC ELEV (ft): **792.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **13.0** RISER DEPTH (ft): **12.7**
DTW AT COMPLETION (ft, bgs): **1.6**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
3.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

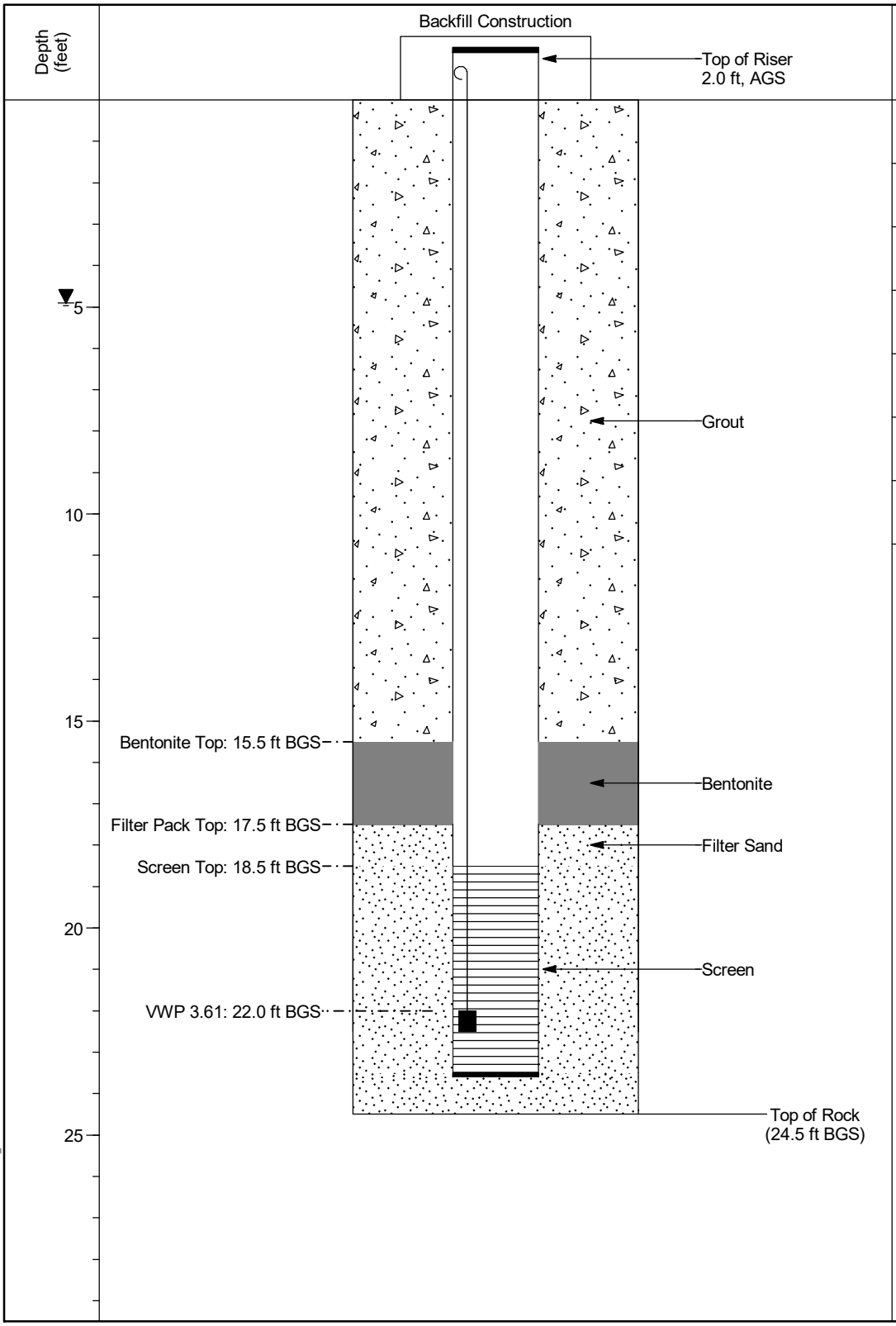
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.61**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#2, #711**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/3/21** COMPLETED: **2/3/21**
LOCATION: **476,686.88 N; 1,650,696.69 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **808.1** TOC ELEV (ft): **810.1**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **24.5** RISER DEPTH (ft): **23.5**
DTW AT COMPLETION (ft, bgs): **4.9**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
15.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

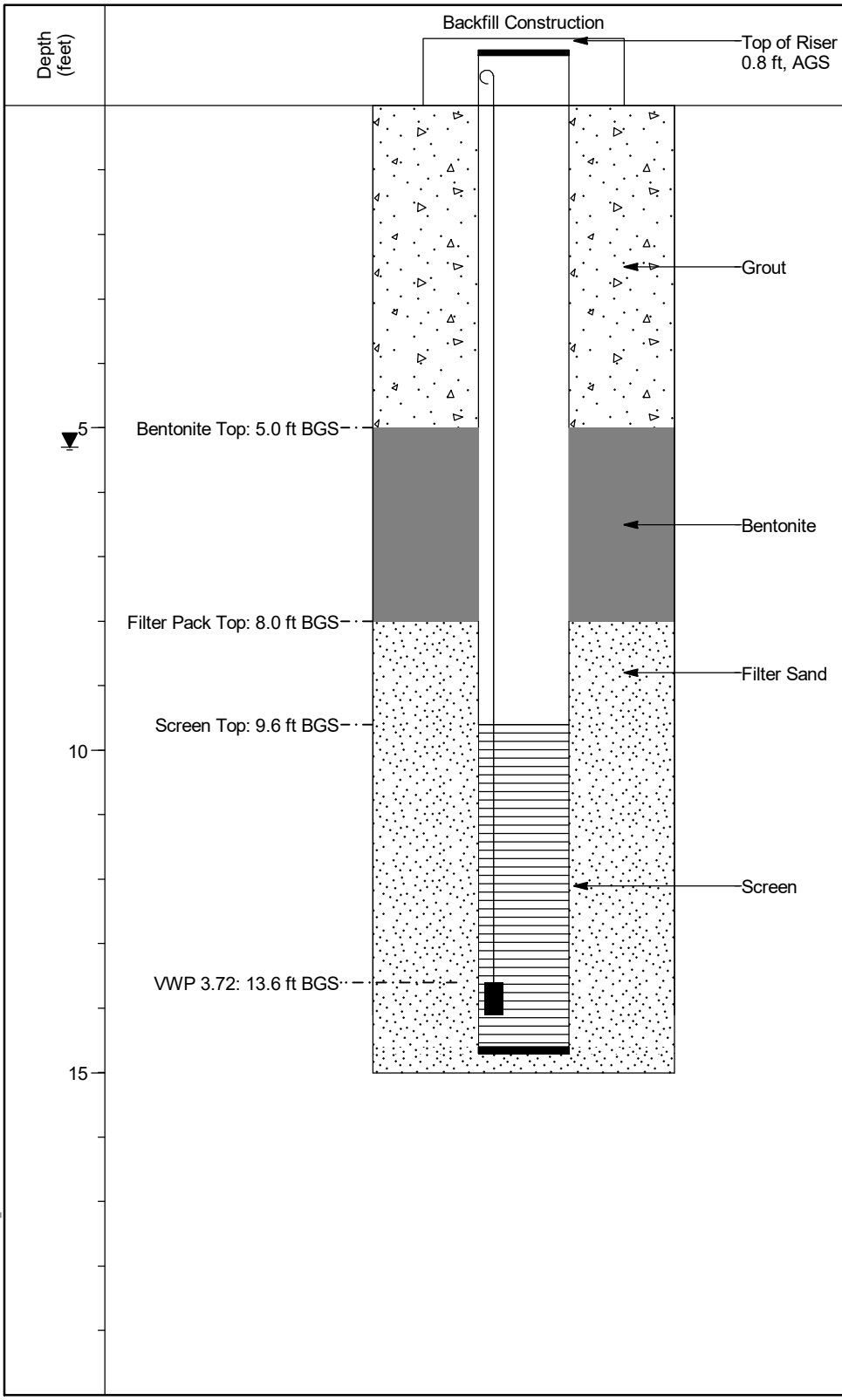
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.72**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/18/21** COMPLETED: **1/18/21**
LOCATION: **483,153.92 N; 1,648,654.71 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **798.2** TOC ELEV (ft): **799.0**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **15.0** RISER DEPTH (ft): **14.6**
DTW AT COMPLETION (ft, bgs): **5.3**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

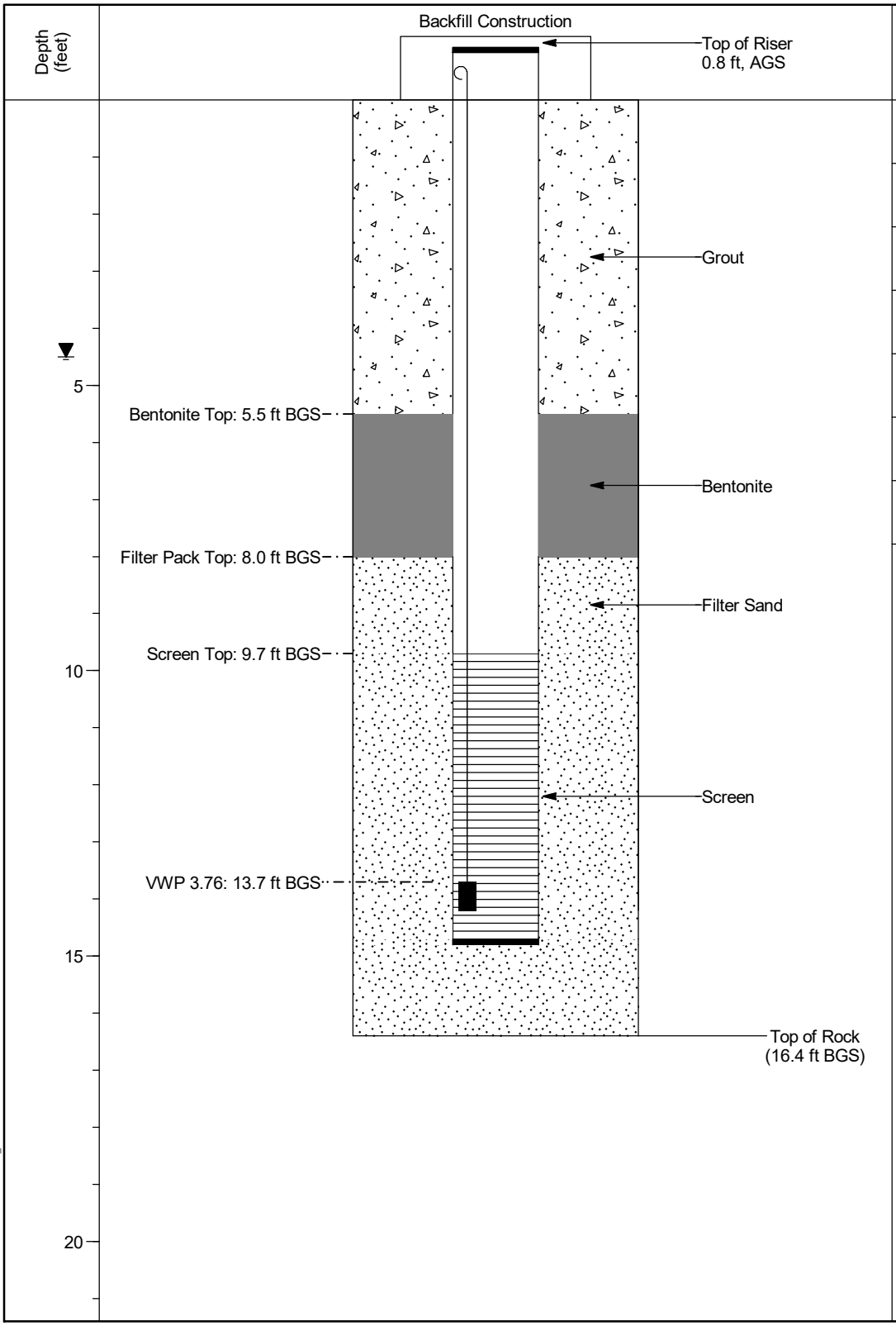
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.76**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 45T#3, #815**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **1/13/21** COMPLETED: **1/13/21**
LOCATION: **481,388.50 N; 1,649,230.90 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **796.0** TOC ELEV (ft): **796.8**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **16.4** RISER DEPTH (ft): **14.7**
DTW AT COMPLETION (ft, bgs): **4.5**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
5.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

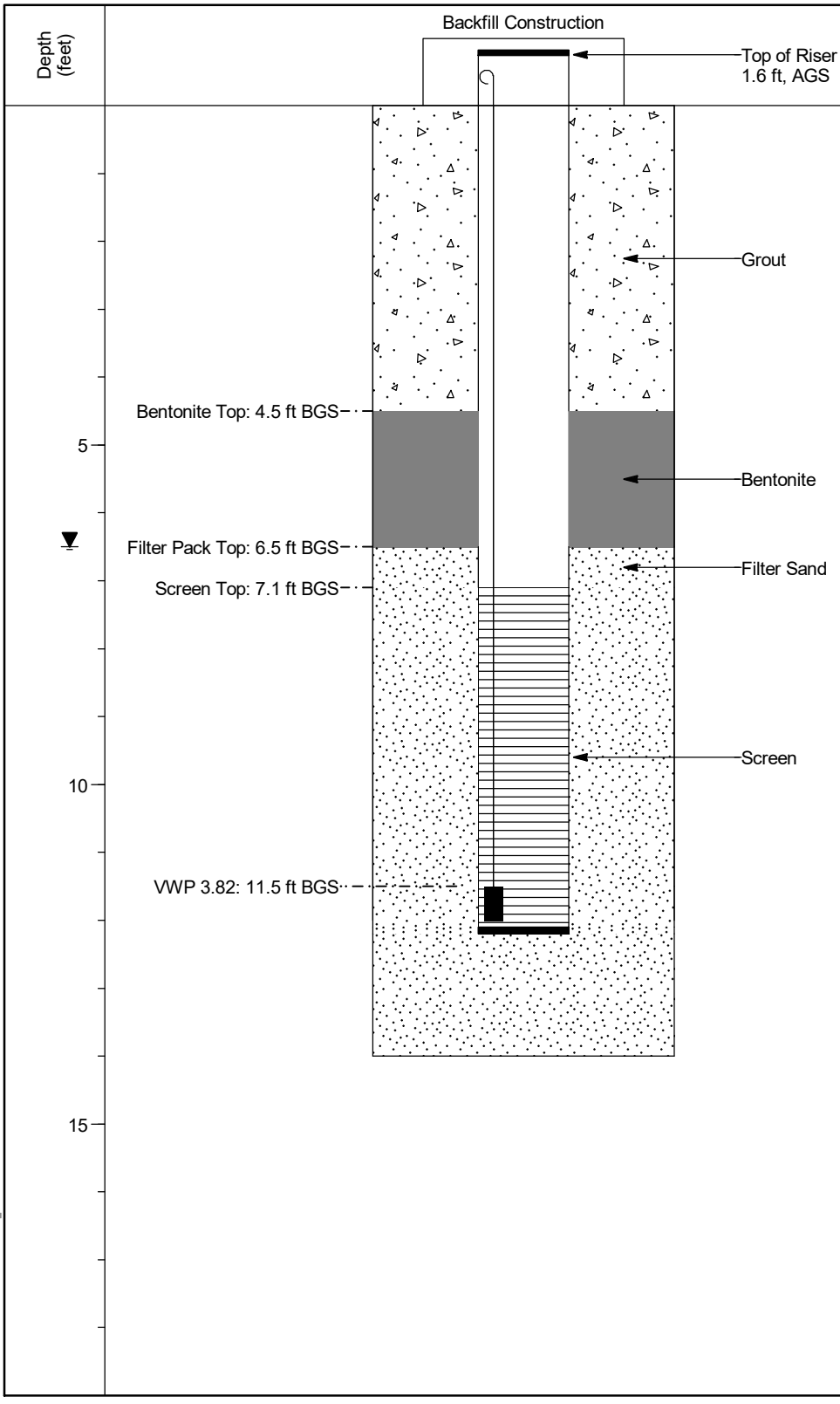
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-3.82**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#2, #711**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **MF**
REVIEWED BY: **PC**
APPROVED BY: **KB**

INSTALLATION: STARTED: **2/2/21** COMPLETED: **2/2/21**
LOCATION: **478,539.80 N; 1,648,506.11 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **801.1** TOC ELEV (ft): **802.7**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **14.0** RISER DEPTH (ft): **12.1**
DTW AT COMPLETION (ft, bgs): **6.5**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
4.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on boring log. Depth to water at completion was meaured on 05/05/2021 following installation of the electronic transducer.

Refer to boring log for additional details.

PZ DETAILS EAGLE CREEK GINT LOGS_3OF3.GPJ TDEC SUBSURF DT 20190530.GDT 11/22/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

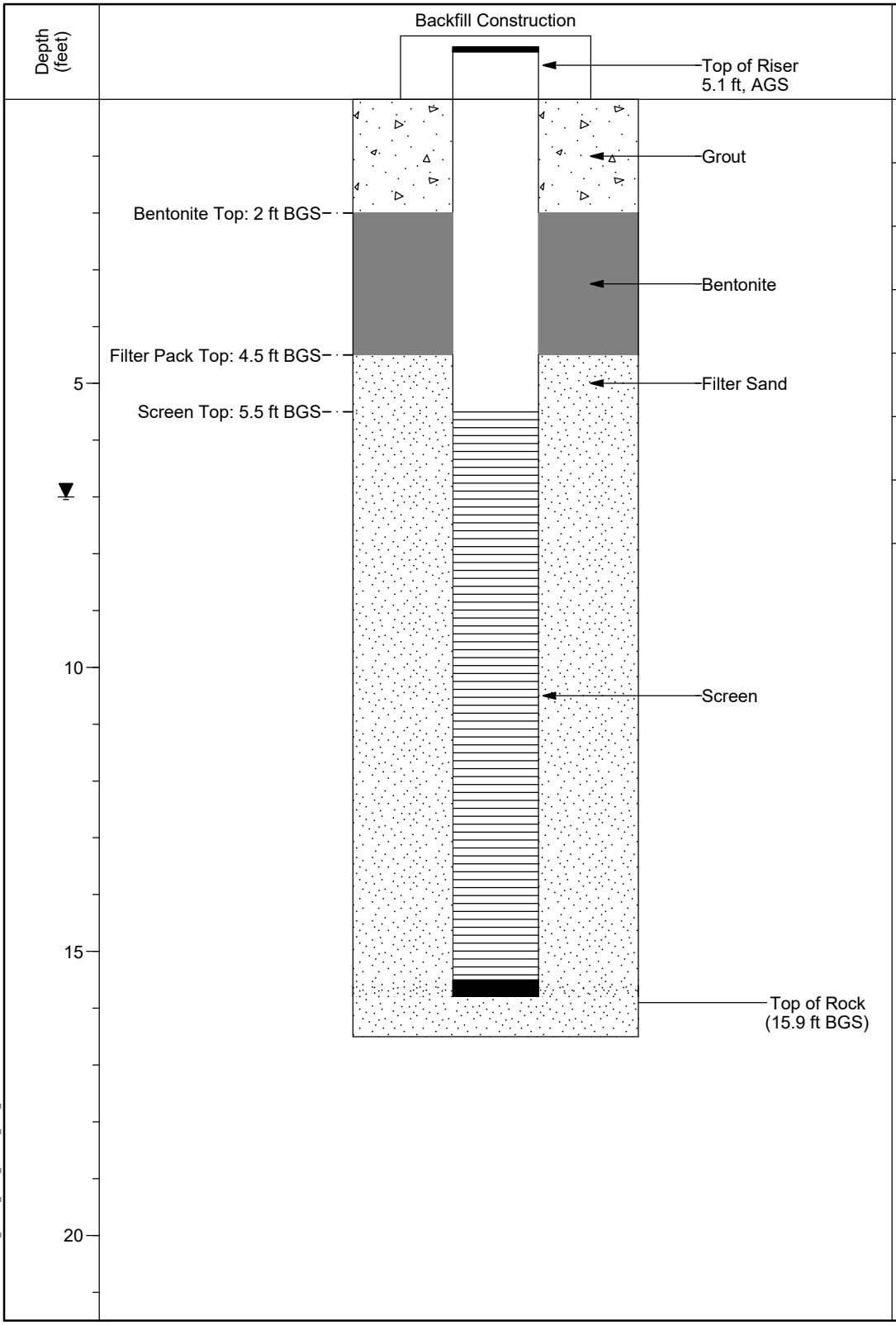
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-4.12A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **RL**
APPROVED BY: **KB**

INSTALLATION: STARTED: **5/17/22** COMPLETED: **5/17/22**
LOCATION: **481,448.60 N; 1,650,002.12 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **793.1** TOC ELEV (ft): **798.2**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **16.5** RISER DEPTH (ft): **15.5**
DTW AT COMPLETION (ft, bgs): **7.0**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
2

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on the boring log. Depth to water at completion was measured on 05/17/22.

Refer to boring log for additional details.

PZ DETAILS EAGLE_CREEK_FINAL_DESIGN_GINT_LOG.GPJ TDEC SUBSURF DT 20190530.GDT 9/21/22

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

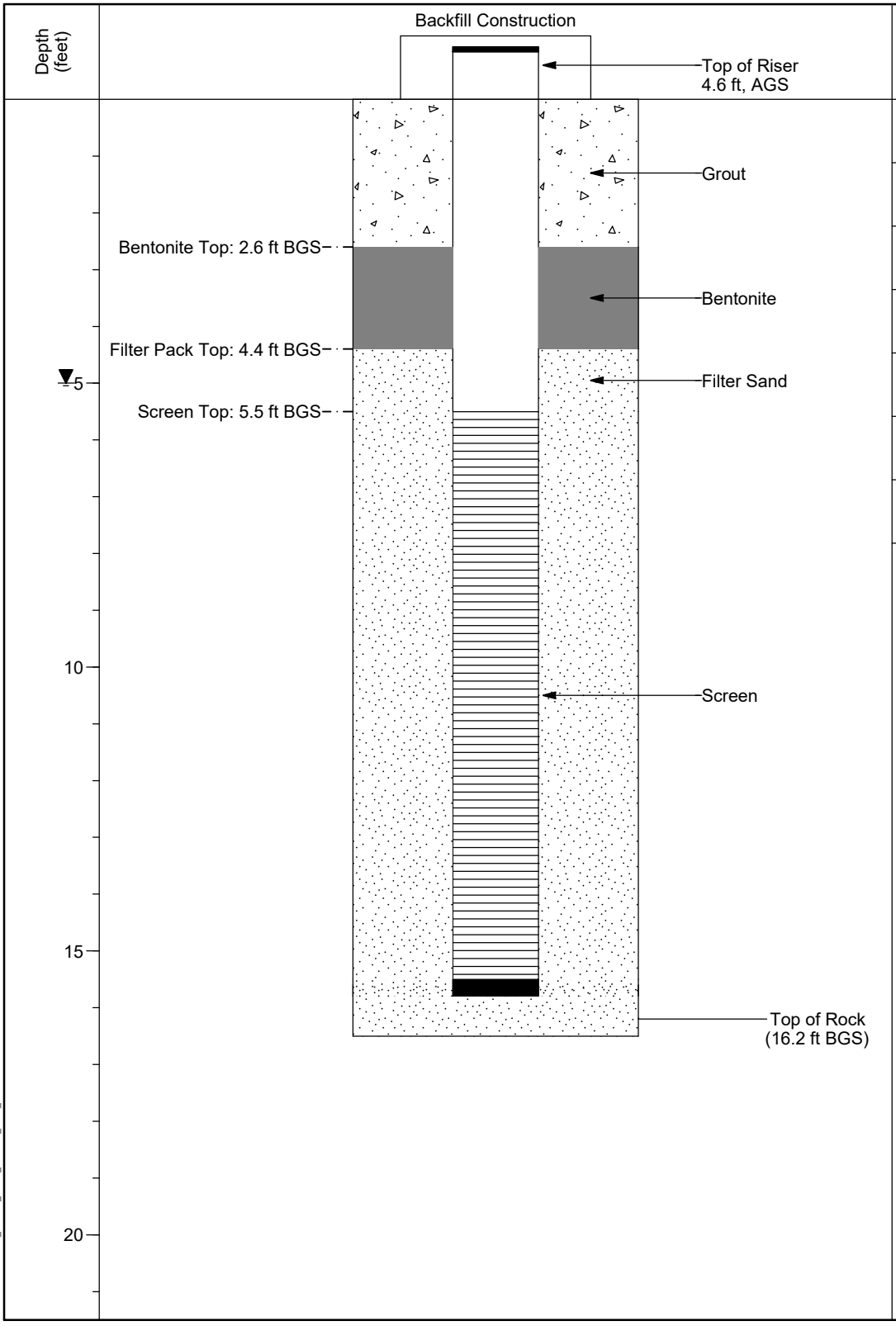
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-4.13A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA**
SAMPLING METHOD: **4-1/4" HSA**
OBSERVED BY: **MF**
REVIEWED BY: **RL**
APPROVED BY: **KB**

INSTALLATION: STARTED: **5/17/22** COMPLETED: **5/17/22**
LOCATION: **481,330.83 N; 1,650,088.90 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.7** TOC ELEV (ft): **797.3**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **16.5** RISER DEPTH (ft): **15.5**
DTW AT COMPLETION (ft, bgs): **5.0**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
2.6

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on the boring log. Depth to water at completion was measured on 05/17/22.

Refer to boring log for additional details.

PZ DETAILS EAGLE_CREEK_FINAL_DESIGN_GINT_LOG.GPJ TDEC SUBSURF DT 20190530.GDT 9/21/22

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

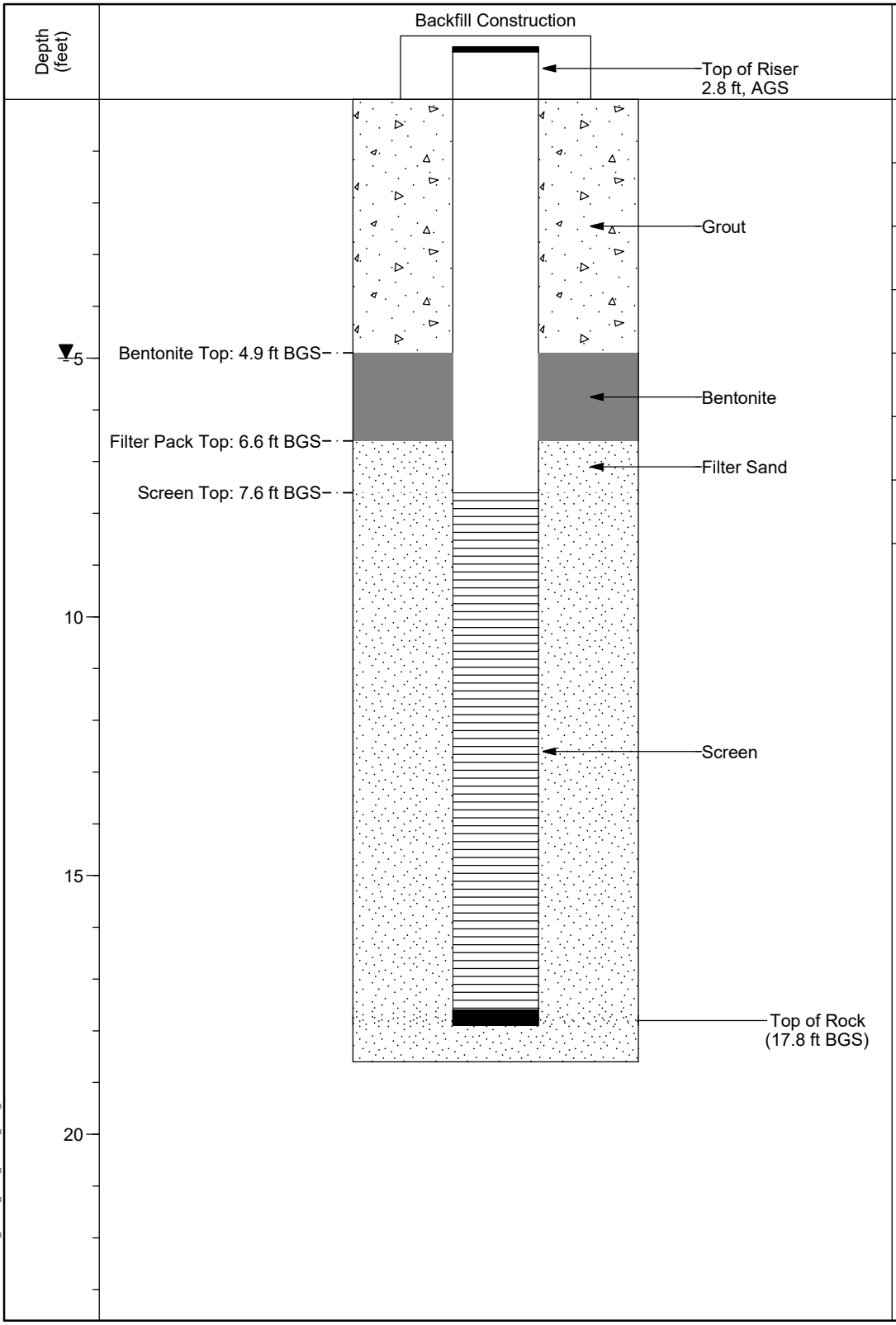
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-4.14A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA**
SAMPLING METHOD: **4-1/4" HSA**
OBSERVED BY: **MF**
REVIEWED BY: **RL**
APPROVED BY: **KB**

INSTALLATION: STARTED: **5/18/22** COMPLETED: **5/18/22**
LOCATION: **481,220.04 N; 1,650,189.41 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **793.6** TOC ELEV (ft): **796.4**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **18.6** RISER DEPTH (ft): **17.6**
DTW AT COMPLETION (ft, bgs): **5.0**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
4.9

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on the boring log. Depth to water at completion was measured on 05/18/22.

Refer to boring log for additional details.

PZ DETAILS EAGLE_CREEK_FINAL_DESIGN_GINT_LOG.GPJ TDEC SUBSURF DT 20190530.GDT 9/21/22

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

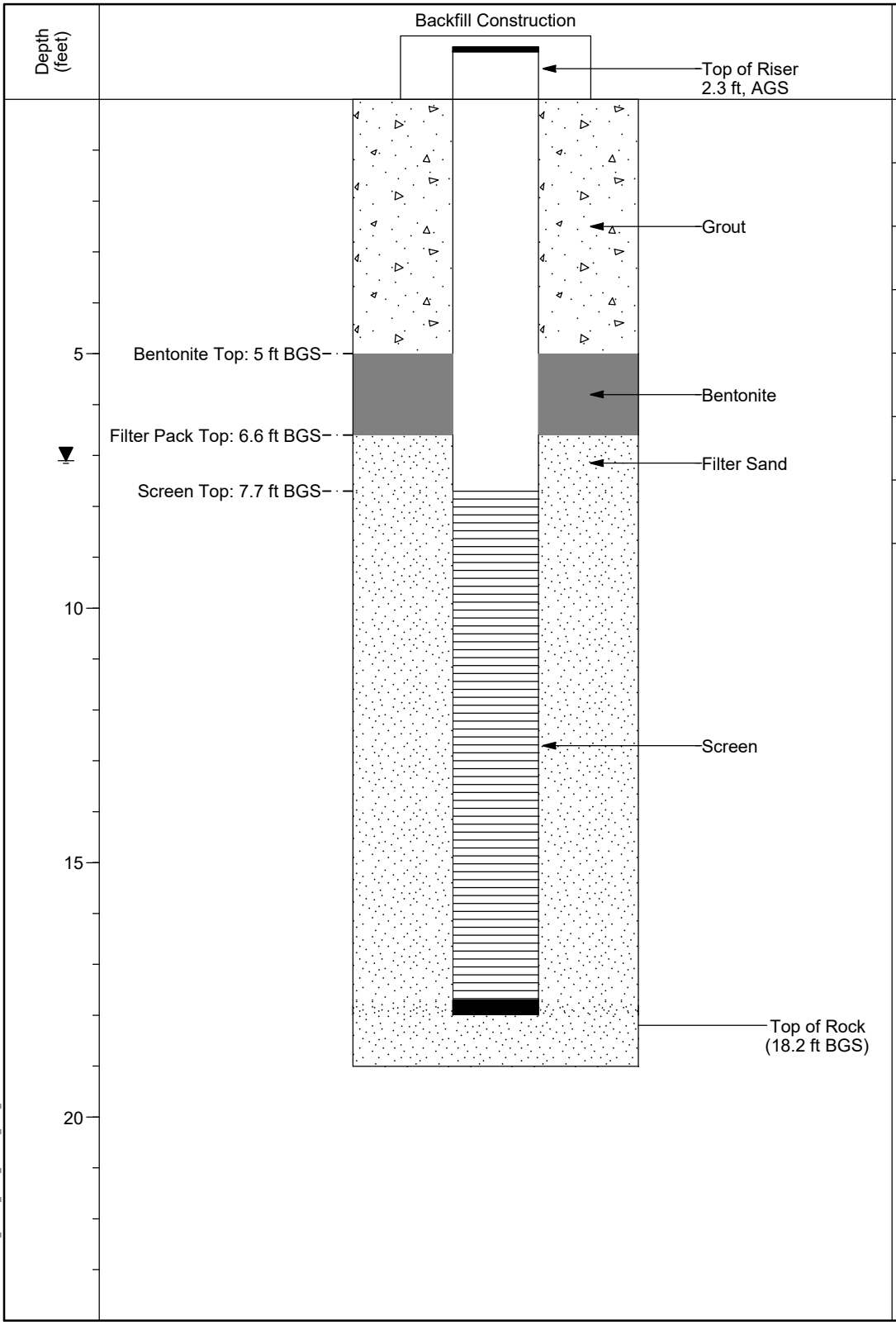
Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **B-4.16A**

PROJECT: **Eagle Creek Flood Basin**
PROJECT NUMBER: **173409690**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
SAMPLING METHOD: **4-1/4" HSA, 3" Shelby Tubes**
OBSERVED BY: **MF**
REVIEWED BY: **RL**
APPROVED BY: **KB**

INSTALLATION: STARTED: **5/19/22** COMPLETED: **5/19/22**
LOCATION: **481,117.32 N; 1,650,289.80 E**
LOC. DESCRIPTION:

GROUND ELEV (ft): **792.4** TOC ELEV (ft): **794.7**
ELEVATION DATUM: **NAVD 88**
BOREHOLE DEPTH (ft): **19.0** RISER DEPTH (ft): **17.7**
DTW AT COMPLETION (ft, bgs): **7.1**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT TYPE:
Cement Bentonite

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
2-inch riser pipe was installed at the completion of boring as described on the boring log. Depth to water at completion was measured on 05/19/22.

Refer to boring log for additional details.

PZ DETAILS EAGLE_CREEK_FINAL_DESIGN_GINT_LOG.GPJ TDEC SUBSURF DT 20190530.GDT 9/21/22

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

ATTACHMENT B-2

Piezometer Summary Table

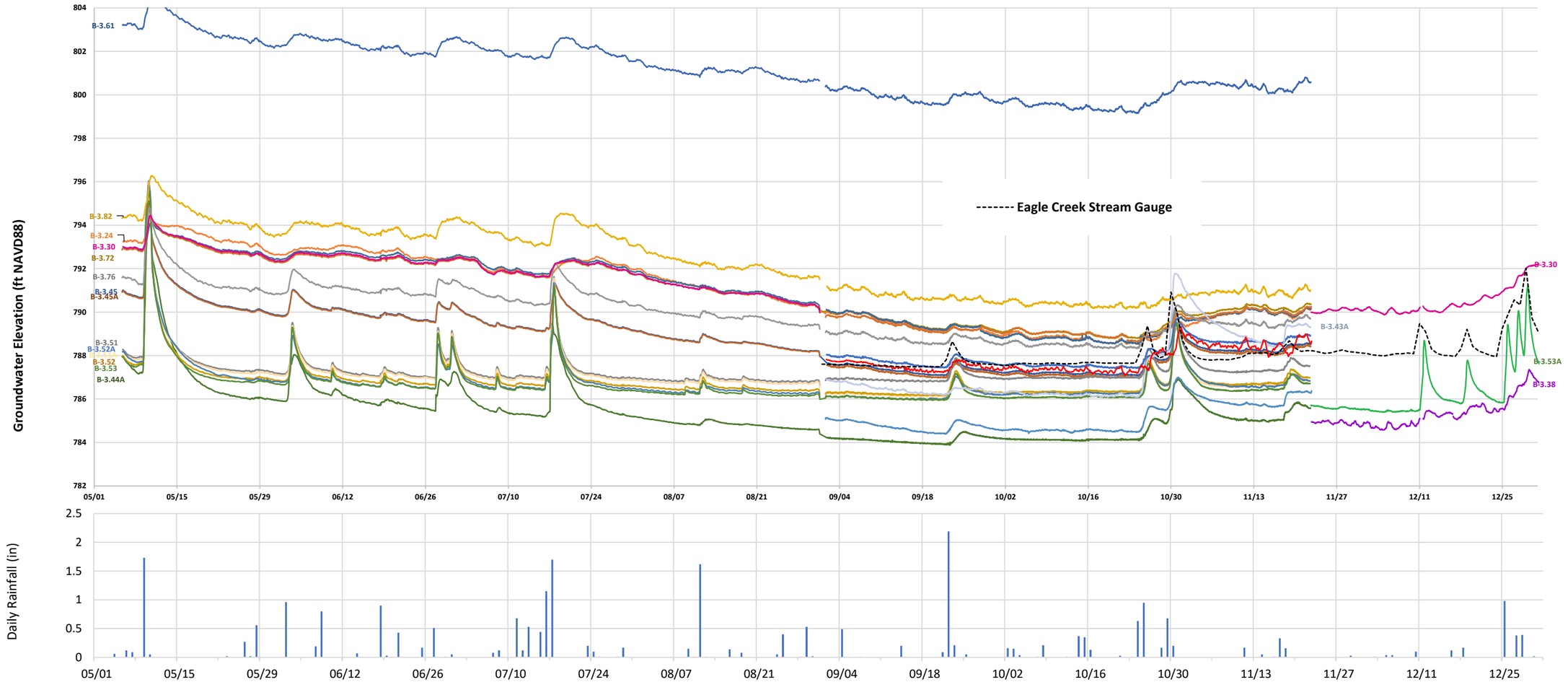
Attachment B-2 Piezometer Summary Table

Boring	Ground Surface Elevation (ft)	Top of Bedock Elevation (ft)	Top of Screen Depth (ft)	Bottom of Screen Depth (ft)	Sand Filter Top Depth (ft)	Sand Filter Bottom Depth (ft)	Transducer Tip Depth (ft)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Sand Filter Top Elevation (ft)	Sand Filter Bottom Elevation (ft)	Transducer Tip Elevation (ft)	Screened Layers (Materials)	Length of Screened Zone Influenced in Layer (ft)	Percentage of Screen in Layer
B-3.1	808.1	801.6	2.1	7.1	1.0	7.3	6.8	806.0	801.0	807.1	800.8	801.3	Upper Fine-Grained	5.5	87%
													Rock	0.8	13%
B-3.14	799.1	785.6	19.4	24.4	14.6	24.6	22.9	779.7	774.7	784.5	774.5	776.2	Rock	10.0	100%
B-3.24	801.9	784.4	12.5	17.5	11.8	18.5	15.5	789.4	784.4	790.1	783.4	786.4	Lower Fine-Grained	5.7	85%
													Rock	1.0	15%
B-3.30	797.6	777.4	14.5	19.5	13.0	20.9	18.5	783.1	778.1	784.6	776.7	779.1	Lower Fine-Grained	2.0	25%
													Lower Coarse-Grained	5.2	66%
													Rock	0.7	9%
B-3.31	797.5	777.7	23.0	28.0	20.0	29.8	15.5	774.5	769.5	777.5	767.7	782.0	Rock	9.8	100%
B-3.32	797.3	777.5	9.6	14.6	8.1	15.6	13.5	787.7	782.7	789.2	781.7	783.8	Upper Fine-Grained	0.5	7%
													Lower Fine-Grained	2.4	32%
													Upper Coarse-Grained	1.5	20%
													Lower Fine-Grained	3.0	40%
													Lower Coarse-Grained	0.1	1%
B-3.36	790.1	776.6	8.8	13.8	8.5	14.5	12.3	781.3	776.3	781.6	775.6	777.8	Lower Fine-Grained	2.7	45%
													Lower Coarse-Grained	1.6	27%
													Lower Fine-Grained	0.7	12%
													Rock	1.0	17%
B-3.37	790.0	776.5	18.5	23.5	14.2	24.2	22.0	771.5	766.5	775.8	765.8	768.0	Rock	10.0	100%
B-3.38	790.6	775.8	6.9	11.9	6.0	13.0	10.5	783.7	778.7	784.6	777.6	780.1	Upper Fine-Grained	4.5	64%
													Upper Coarse-Grained	0.7	10%
													Lower Fine-Grained	1.8	26%
B-3.43	792.9	774.1	15.0	20.0	13.7	21.0	17.5	777.9	772.9	779.2	771.9	775.4	Lower Fine-Grained	2.7	37%
													Lower Coarse-Grained	2.4	33%
													Rock	2.2	30%
B-3.43a	792.9	-	7.0	12.0	5.2	12.0	10.5	785.9	780.9	787.7	780.9	782.4	Upper Fine-Grained	1.8	26%
													Upper Coarse-Grained	5.0	74%
B-3.44	792.6	774.1	21.0	26.0	20.0	29.4	23.9	771.6	766.6	772.6	763.2	768.7	Rock	9.4	100%
B-3.44a	792.7	-	8.9	13.9	7.0	14.0	12.4	783.8	778.8	785.7	778.7	780.3	Upper Coarse-Grained	5.5	79%
													Lower Fine-Grained	1.5	21%
B-3.45	792.3	775.8	14.0	19.0	13.0	20.0	18.0	778.3	773.3	779.3	772.3	774.3	Lower Fine-Grained	2.7	39%
													Lower Coarse-Grained	0.8	11%
													Rock	3.5	50%
B-3.45a	792.3	775.8	13.1	18.1	11.0	19.4	13.7	779.2	774.2	781.3	772.9	778.6	Upper Coarse-Grained	1.5	18%
													Lower Fine-Grained	3.2	38%
													Lower Coarse-Grained	0.8	10%
													Rock	2.9	35%
B-3.51	791.3	775.9	10.4	15.4	9.5	16.4	13.4	780.9	775.9	781.8	774.9	777.9	Lower Coarse-Grained	5.5	80%
													Lower Fine-Grained	0.4	6%
													Rock	1.0	14%
B-3.51a	792.0	-	8.5	13.5	7.5	13.5	12.0	783.5	778.5	784.5	778.5	780.0	Upper Coarse-Grained	1.0	17%
													Lower Fine-Grained	0.5	8%
													Lower Coarse-Grained	4.5	75%
B-3.52	789.2	774.8	18.3	23.3	11.0	24.7	21.3	770.9	765.9	778.2	764.5	767.9	Lower Coarse-Grained	3.4	25%
													Rock	10.3	75%
B-3.52a	789.9	-	5.4	10.4	4.0	10.5	8.9	784.5	779.5	785.9	779.4	781.0	Lower Fine-Grained	0.5	8%
													Lower Coarse-Grained	6.0	92%
B-3.53	788.7	774.9	9.7	14.7	8.3	15.0	13.4	779.0	774.0	780.4	773.7	775.3	Lower Coarse-Grained	5.5	82%
													Rock	1.2	18%
B-3.53a	789.2	-	7.7	12.7	4.8	13.0	11.2	781.5	776.5	784.4	776.2	778.0	Lower Coarse-Grained	8.2	100%
B-3.61	808.1	783.6	18.5	23.5	17.5	24.5	22.0	789.6	784.6	790.6	783.6	786.1	Upper Coarse-Grained	2.5	36%
													Lower Coarse-Grained	4.5	64%
B-3.72	798.2	-	9.6	14.6	8.0	15.0	13.6	788.6	783.6	790.2	783.2	784.6	Lower Fine-Grained	7.0	100%
B-3.76	796.0	779.7	9.7	14.7	6.0	16.4	13.7	786.3	781.3	790.0	779.6	782.3	Lower Fine-Grained	10.3	99%
													Rock	0.1	1%
B-3.82	801.1	-	8.8	13.8	6.5	14.0	11.5	792.3	787.3	794.6	787.1	789.6	Upper Fine-Grained	1.0	13%
													Lower Fine-Grained	3.0	40%
													Lower Coarse-Grained	3.5	47%
B-4.12A	793.1	777.2	5.5	15.5	4.5	16.5	N/A[2]	787.6	777.6	788.6	776.6	N/A[2]	Upper Fine-Grained	3.5	29%
													Upper Coarse-Grained	4.5	38%
													Lower Fine-Grained	3.4	28%
													Rock	0.6	5%
B-4.13A	792.7	776.5	5.5	15.5	4.4	16.5	N/A[2]	787.2	777.2	788.3	776.2	N/A[2]	Upper Fine-Grained	0.6	5%
													Upper Coarse-Grained	7.5	62%
													Lower Fine-Grained	3.7	31%
													Rock	0.3	2%
B-4.14A	793.6	775.8	7.6	17.6	6.6	18.6	N/A[2]	786.0	776.0	787.0	775.0	N/A[2]	Upper Coarse-Grained	4.9	41%
													Lower Fine-Grained	4.4	37%
													Lower Coarse-Grained	1.6	13%
													Lower Fine-Grained	0.3	3%
													Rock	0.8	7%
B-4.16A	792.4	774.2	7.7	17.7	6.6	19.0	N/A[2]	784.7	774.7	785.8	773.4	N/A[2]	Upper Coarse-Grained	3.4	27%
													Lower Fine-Grained	2.5	20%
													Lower Coarse-Grained	5.0	40%
													Lower Fine-Grained	0.7	6%
													Rock	0.8	6%

Notes:
1. Depths recorded in feet below ground surface.
2. Piezometers installed as an open-standpipe piezometer with no electronic transducers.

ATTACHMENT B-3

Hydrographs



Note:

Precipitation data received from NOAA at station USW00014825
Stream Gauge data receive from USGS National Water Information System at site number 04188496 (Eagle Creek above Findlay OH)

Stantec

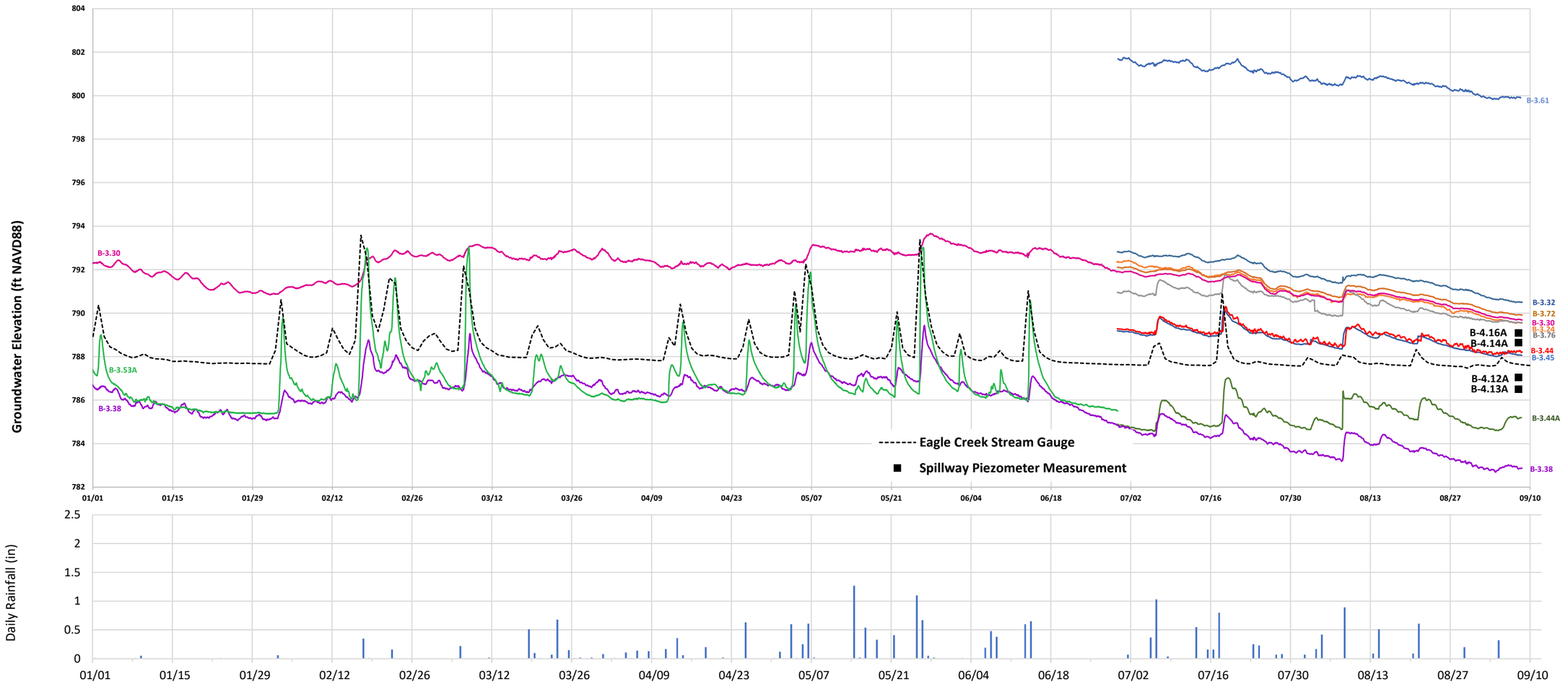
Client/Project

Maumee Watershed Conservancy District
Eagle Creek Flood Basin Final Design

Attachment

B-3

Title **Hydrograph - 2021**



Note:

Precipitation data received from NOAA at station USW00014825

Stream Gauge data receive from USGS National Water Information System at site number 04188496 (Eagle Creek above Findlay OH)

Stantec

Client/Project

Maumee Watershed Conservancy District
Eagle Creek Flood Basin Final Design

Attachment

B-3

Title **Hydrograph - 2022**

ATTACHMENT C-1

Pressure Testing Sheets

173409690	Eagle Creek	Ground Elevation:	805.20	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	2.2	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	803.00	ft	
	B-3.2	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

Stantec

	Depth (ft)	Elevation (Datum)	Test Length (ft)	Gauge (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
Water Pressure													
								175.2					
	13	792.20	7	5	6.8	0.00	1	175.2	0.00	0.0000			
	20	785.20					2	175.2	0.00	0.0000			
							3	175.2	0.00	0.0000			
							4	175.2	0.00	0.0000			
							5	175.2	0.00	0.0000	0.00E+00	6.80	0
								175.2					
	13	792.20	7	10	11.8	0.09	1	175.3	0.10	0.0019			
	20	785.20					2	175.3	0.00	0.0000			
							3	175.3	0.00	0.0000			
							4	175.3	0.00	0.0000			
							5	175.3	0.00	0.0000	3.82E-04	11.71	0
								175.4					
	13	792.20	7	15	16.8	0.00	1	175.4	0.00	0.0000			
	20	785.20					2	175.7	0.30	0.0057			
							3	175.7	0.00	0.0000			
							4	175.7	0.00	0.0000			
							5	175.7	0.00	0.0000	1.15E-03	16.80	1
								175.7					
	13	792.20	7	10	11.8	0.00	1	175.7	0.00	0.0000			
	20	785.20					2	175.7	0.00	0.0000			
							3	175.7	0.00	0.0000			
							4	175.7	0.00	0.0000			
							5	175.7	0.00	0.0000	0.00E+00	11.80	0
								175.7					
	13	792.20	7	5	6.8	0.00	1	175.7	0.00	0.0000			
	20	785.20					2	175.7	0.00	0.0000			
							3	175.7	0.00	0.0000			
							4	175.7	0.00	0.0000			
							5	175.7	0.00	0.0000	0.00E+00	6.80	0

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 0

Representative Lugeon Value: 0

173409690	Eagle Creek	Ground Elevation:	798.71 ft
	Geotechnical Exploration	Borehole Water Level Depth at Test:	0.0 ft
	Water Pressure Testing	Borehole Water Level Elevation:	798.71 ft
	B-3.6	Gauge Height:	2.0 ft
		Hole Diameter:	2.98 inches

Stantec

Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Water Pressure Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
							243.7					
14.1	784.61	8	5	5.9	0.00	1	243.7	0.00	0.0000			
22.1	776.61					2	243.7	0.00	0.0000			
						3	243.7	0.00	0.0000			
						4	243.7	0.00	0.0000			
						5	243.7	0.00	0.0000	0.00E+00	5.90	0
							243.9					
14.1	784.61	8	10	10.9	0.00	1	243.9	0.00	0.0000			
22.1	776.61					2	243.9	0.00	0.0000			
						3	244.0	0.10	0.0017			
						4	244.0	0.00	0.0000			
						5	244.0	0.00	0.0000	3.34E-04	10.90	0
							244.0					
14.1	784.61	8	15	15.9	0.00	1	244.0	0.00	0.0000			
22.1	776.61					2	244.0	0.00	0.0000			
						3	244.0	0.00	0.0000			
						4	244.0	0.00	0.0000			
						5	244.0	0.00	0.0000	0.00E+00	15.90	0
							244.0					
14.1	784.61	8	10	10.9	0.00	1	244.0	0.00	0.0000			
22.1	776.61					2	244.0	0.00	0.0000			
						3	244.0	0.00	0.0000			
						4	244.0	0.00	0.0000			
						5	244.0	0.00	0.0000	0.00E+00	10.90	0
							244.0					
14.1	784.61	8	5	5.9	0.00	1	244.0	0.00	0.0000			
22.1	776.61					2	244.0	0.00	0.0000			
						3	244.0	0.00	0.0000			
						4	244.0	0.00	0.0000			
						5	244.0	0.00	0.0000	0.00E+00	5.90	0

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **0**
Representative Lugeon Value: **0**

173409690	Eagle Creek		Ground Elevation:	797.23	ft
	Geotechnical Exploration		Borehole Water Level Depth at Test:	0.0	ft
	Water Pressure Testing		Borehole Water Level Elevation:	797.23	ft
	B-3.10		Gauge Height:	2.0	ft
			Hole Diameter:	2.98	inches

Stantec

	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
Water Pressure													
								270.7					
	15.4	781.83	8	5	5.9	0.00	1	270.7	0.00	0.0000			
	23.4	773.83					2	270.7	0.00	0.0000			
							3	270.7	0.00	0.0000			
							4	270.7	0.00	0.0000			
							5	270.7	0.00	0.0000	0.00E+00	5.90	0
								271.4					
	15.4	781.83	8	10	10.9	0.00	1	271.4	0.00	0.0000			
	23.4	773.83					2	271.4	0.00	0.0000			
							3	271.4	0.00	0.0000			
							4	271.4	0.00	0.0000			
							5	271.4	0.00	0.0000	0.00E+00	10.90	0
								271.7					
	15.4	781.83	8	15	15.9	0.00	1	271.7	0.00	0.0000			
	23.4	773.83					2	271.7	0.00	0.0000			
							3	271.7	0.00	0.0000			
							4	271.7	0.00	0.0000			
							5	271.7	0.00	0.0000	0.00E+00	15.90	0
								271.6					
	15.4	781.83	8	10	10.9	0.00	1	271.6	0.00	0.0000			
	23.4	773.83					2	271.6	0.00	0.0000			
							3	271.6	0.00	0.0000			
							4	271.6	0.00	0.0000			
							5	271.6	0.00	0.0000	0.00E+00	10.90	0
								271.6					
	15.4	781.83	8	5	5.9	0.00	1	271.6	0.00	0.0000			
	23.4	773.83					2	271.6	0.00	0.0000			
							3	271.6	0.00	0.0000			
							4	271.6	0.00	0.0000			
							5	271.6	0.00	0.0000	0.00E+00	5.90	0

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 0

Representative Lugeon Value: 0

173409690	Eagle Creek	Ground Elevation:	799.06	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	10.0	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	789.06	ft	
	B-3.14	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

Stantec

	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Water Pressure Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
								657.0					
	17.5	781.56	7.1	5	10.2	0.27	1	658.2	1.20	0.0226			
	24.6	774.46					2	659.5	1.30	0.0245			
							3	660.8	1.30	0.0245			
							4	662.0	1.20	0.0226			
							5	663.2	1.20	0.0226	2.33E-02	9.93	32
								663.7					
	17.5	781.56	7.1	10	15.2	0.38	1	665.2	1.50	0.0282			
	24.6	774.46					2	666.8	1.60	0.0301			
							3	668.3	1.50	0.0282			
							4	669.7	1.40	0.0264			
							5	671.2	1.50	0.0282	2.82E-02	14.82	26
								672.0					
	17.5	781.56	7.1	15	20.2	0.63	1	674.0	2.00	0.0377			
	24.6	774.46					2	676.0	2.00	0.0377			
							3	678.0	2.00	0.0377			
							4	680.0	2.00	0.0377			
							5	682.0	2.00	0.0377	3.77E-02	19.57	26
								682.5					
	17.5	781.56	7.1	10	15.2	0.21	1	683.5	1.00	0.0188			
	24.6	774.46					2	684.5	1.00	0.0188			
							3	685.5	1.00	0.0188			
							4	686.5	1.00	0.0188			
							5	687.4	0.90	0.0169	1.85E-02	14.99	17
								687.6					
	17.5	781.56	7.1	5	10.2	0.11	1	688.1	0.50	0.0094			
	24.6	774.46					2	688.8	0.70	0.0132			
							3	690.2	1.40	0.0264			
							4	691.5	1.30	0.0245			
							5	692.6	1.10	0.0207	1.88E-02	10.09	25

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **25**

Representative Lugeon Value: **25**

173409690	Eagle Creek	Ground Elevation:	800.35	ft
	Geotechnical Exploration	Borehole Water Level Depth at Test:	11.0	ft
	Water Pressure Testing	Borehole Water Level Elevation:	789.35	ft
	B-3.18	Gauge Height:	2.0	ft
		Hole Diameter:	2.98	inches

Stantec

	Water Pressure												
	Depth (ft)	**Elevation** (Plant Datum)	**Test Length** (ft)	**Gage** (psi)	**Test** (psi)	**Losses due flow**	**Time Step** (min)	**Flowmeter** (gal)	**Flow Rate** (gpm)	**Take** (cuft/ft)	**Average Take** (cuft/ft)	**Net Pressure**	**Lugeon Value**
								368.5					
	21.5	778.85	7	5	10.6	1.03	1	371.1	2.60	0.0497			
	28.5	771.85					2	373.6	2.50	0.0477			
							3	376.8	3.20	0.0611			
							4	379.5	2.70	0.0516			
							5	382.2	2.70	0.0516	5.23E-02	9.57	74
								383.3					
	21.5	778.85	7	10	15.6	1.45	1	386.4	3.10	0.0592			
	28.5	771.85					2	389.3	2.90	0.0554			
							3	392.0	2.70	0.0516			
							4	394.5	2.50	0.0477			
							5	397.1	2.60	0.0497	5.27E-02	14.15	50
								425.0					
	21.5	778.85	7	15	20.6	1.84	1	428.5	3.50	0.0668			
	28.5	771.85					2	432.2	3.70	0.0707			
							3	435.7	3.50	0.0668			
							4	439.3	3.60	0.0688			
							5	442.8	3.50	0.0668	6.80E-02	18.76	49
								443.8					
	21.5	778.85	7	10	15.6	1.19	1	446.6	2.80	0.0535			
	28.5	771.85					2	449.7	3.10	0.0592			
							3	452.6	2.90	0.0554			
							4	455.7	3.10	0.0592			
							5	458.7	3.00	0.0573	5.69E-02	14.41	53
								460.0					
	21.5	778.85	7	5	10.6	0.82	1	462.3	2.30	0.0439			
	28.5	771.85					2	464.5	2.20	0.0420			
							3	466.5	2.00	0.0382			
							4	468.6	2.10	0.0401			
							5	470.7	2.10	0.0401	4.09E-02	9.78	56

Note: Representative Lugeon value based on "Turbulent" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 56

Representative Lugeon Value: 49

173409690	Eagle Creek	Ground Elevation:	801.38	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	22.0	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	779.38	ft	
	B-3.22	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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					Water Pressure								
	Depth (ft)	**Elevation** (Plant Datum)	**Test Length** (ft)	**Gage** (psi)	**Test** (psi)	**Losses due flow**	**Time Step** (min)	**Flowmeter** (gal)	**Flow Rate** (gpm)	**Take** (cuft/ft)	**Average Take** (cuft/ft)	**Net Pressure**	**Lugeon Value**
								159.0					
	22	779.38	7.2	5	15.4	2.40	1	163.0	4.00	0.0743			
	29.2	772.18					2	166.9	3.90	0.0724			
							3	170.7	3.80	0.0706			
							4	174.5	3.80	0.0706			
							5	178.6	4.10	0.0761	7.28E-02	13.00	75
								180.0					
	22	779.38	7.2	10	20.4	5.06	1	185.8	5.80	0.1077			
	29.2	772.18					2	191.7	5.90	0.1096			
							3	197.5	5.80	0.1077			
							4	203.4	5.90	0.1096			
							5	209.4	6.00	0.1114	1.09E-01	15.34	96
								212.0					
	22	779.38	7.2	15	25.4	8.50	1	219.5	7.50	0.1393			
	29.2	772.18					2	227.0	7.50	0.1393			
							3	234.6	7.60	0.1411			
							4	242.5	7.90	0.1467			
							5	250.3	7.80	0.1448	1.42E-01	16.90	113
								251.5					
	22	779.38	7.2	10	20.4	4.89	1	257.2	5.70	0.1058			
	29.2	772.18					2	262.6	5.40	0.1003			
							3	268.5	5.90	0.1096			
							4	274.3	5.80	0.1077			
							5	280.0	5.70	0.1058	1.06E-01	15.51	92
								281.0					
	22	779.38	7.2	5	15.4	2.06	1	284.7	3.70	0.0687			
	29.2	772.18					2	288.5	3.80	0.0706			
							3	292.5	4.00	0.0743			
							4	296.4	3.90	0.0724			
							5	300.5	4.10	0.0761	7.24E-02	13.34	73

Note: Representative Lugeon value based on "Dilation" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 90

Representative Lugeon Value: 73

173409690	Eagle Creek	Ground Elevation:	799.86	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	11.0	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	788.86	ft	
	B-3.26	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Water Pressure Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
								111.5					
	22.5	777.36	7.2	5	10.6	0.21	1	112.5	1.00	0.0186			
	29.7	770.16					2	113.5	1.00	0.0186			
							3	114.5	1.00	0.0186			
							4	115.4	0.90	0.0167			
							5	116.3	0.90	0.0167	1.78E-02	10.39	23
								117.0					
	22.5	777.36	7.2	10	15.6	0.47	1	118.7	1.70	0.0316			
	29.7	770.16					2	120.3	1.60	0.0297			
							3	122.0	1.70	0.0316			
							4	123.6	1.60	0.0297			
							5	125.2	1.60	0.0297	3.05E-02	15.13	27
								126.0					
	22.5	777.36	7.2	15	20.6	0.52	1	127.8	1.80	0.0334			
	29.7	770.16					2	129.5	1.70	0.0316			
							3	131.2	1.70	0.0316			
							4	132.9	1.70	0.0316			
							5	134.6	1.70	0.0316	3.19E-02	20.08	21
								135.0					
	22.5	777.36	7.2	10	15.6	0.27	1	136.2	1.20	0.0223			
	29.7	770.16					2	137.5	1.30	0.0241			
							3	138.8	1.30	0.0241			
							4	140.1	1.30	0.0241			
							5	141.3	1.20	0.0223	2.34E-02	15.33	21
								141.5					
	22.5	777.36	7.2	5	10.6	0.16	1	142.3	0.80	0.0149			
	29.7	770.16					2	143.4	1.10	0.0204			
							3	144.3	0.90	0.0167			
							4	145.2	0.90	0.0167			
							5	146.3	1.10	0.0204	1.78E-02	10.44	23

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 23

Representative Lugeon Value: 23

173409690	Eagle Creek	Ground Elevation:	797.47	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	8.3	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	789.17	ft	
	B-3.31	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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					Water Pressure								
	Depth (ft)	**Elevation** (Plant Datum)	**Test Length** (ft)	**Gage** (psi)	**Test** (psi)	**Losses due flow**	**Time Step** (min)	**Flowmeter** (gal)	**Flow Rate** (gpm)	**Take** (cuft/ft)	**Average Take** (cuft/ft)	**Net Pressure**	**Lugeon Value**
								929.5					
	22.6	774.87	7.2	5	9.5	3.76	1	934.5	5.00	0.0928			
	29.8	767.67					2	940.0	5.50	0.1021			
							3	945.0	5.00	0.0928			
							4	950.5	5.50	0.1021			
							5	955.5	5.00	0.0928	9.66E-02	5.74	226
								957.5					
	22.6	774.87	7.2	10	14.5	8.50	1	965.0	7.50	0.1393			
	29.8	767.67					2	972.5	7.50	0.1393			
							3	980.0	7.50	0.1393			
							4	987.5	7.50	0.1393			
							5	995.0	7.50	0.1393	1.39E-01	6.00	313
								1000.0					
	22.6	774.87	7.2	15	19.5	15.18	1	1010.0	10.00	0.1857			
	29.8	767.67					2	1020.0	10.00	0.1857			
							3	1029.0	9.00	0.1671			
							4	1038.0	9.00	0.1671			
							5	1047.0	9.00	0.1671	1.75E-01	4.32	544
								1051.0					
	22.6	774.87	7.2	10	14.5	8.50	1	1058.5	7.50	0.1393			
	29.8	767.67					2	1066.5	8.00	0.1485			
							3	1074.5	8.00	0.1485			
							4	1082.5	8.00	0.1485			
							5	1090.0	7.50	0.1393	1.45E-01	6.00	325
								1092.0					
	22.6	774.87	7.2	5	9.5	2.40	1	1096.0	4.00	0.0743			
	29.8	767.67					2	1100.0	4.00	0.0743			
							3	1104.0	4.00	0.0743			
							4	1108.0	4.00	0.0743			
							5	1112.5	4.50	0.0836	7.61E-02	7.10	145

Note: Representative Lugeon value based on "Dilation" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 311

Representative Lugeon Value: 145

173409690	Eagle Creek	Ground Elevation:	790.02 ft
	Geotechnical Exploration	Borehole Water Level Depth at Test:	5.7 ft
	Water Pressure Testing	Borehole Water Level Elevation:	784.32 ft
	B-3.37	Gauge Height:	2.0 ft
		Hole Diameter:	2.98 inches

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Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Water Pressure Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
							895.0					
17	773.02	7.2	5	8.3	0.00	1	895.0	0.00	0.0000			
24.2	765.82					2	895.0	0.00	0.0000			
						3	895.0	0.00	0.0000			
						4	895.0	0.00	0.0000			
						5	895.0	0.00	0.0000	0.00E+00	8.30	0
							895.6					
17	773.02	7.2	10	13.3	0.09	1	895.7	0.10	0.0019			
24.2	765.82					2	895.8	0.10	0.0019			
						3	895.9	0.10	0.0019			
						4	896.0	0.10	0.0019			
						5	896.0	0.00	0.0000	1.49E-03	13.21	2
							896.5					
17	773.02	7.2	15	18.3	0.10	1	896.8	0.30	0.0056			
24.2	765.82					2	897.0	0.20	0.0037			
						3	897.1	0.10	0.0019			
						4	897.3	0.20	0.0037			
						5	897.5	0.20	0.0037	3.71E-03	18.20	3
							897.5					
17	773.02	7.2	10	13.3	0.00	1	897.5	0.00	0.0000			
24.2	765.82					2	897.5	0.00	0.0000			
						3	897.5	0.00	0.0000			
						4	897.5	0.00	0.0000			
						5	897.5	0.00	0.0000	0.00E+00	13.30	0
							897.4					
17	773.02	7.2	5	8.3	0.10	1	897.3	-0.10	-0.0019			
24.2	765.82					2	897.1	-0.20	-0.0037			
						3	897.0	-0.10	-0.0019			
						4	897.0	0.00	0.0000			
						5	897.0	0.00	0.0000	-1.49E-03	8.20	-2

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **0**
Representative Lugeon Value: **0**

173409690	Eagle Creek	Ground Elevation:	792.49 ft
	Geotechnical Exploration	Borehole Water Level Depth at Test:	6.0 ft
	Water Pressure Testing	Borehole Water Level Elevation:	786.49 ft
	B-3.44	Gauge Height:	2.0 ft
		Hole Diameter:	2.98 inches

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Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Water Pressure Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
							716.9					
22	770.49	7.4	5	8.5	0.11	1	717.4	0.50	0.0090			
29.4	763.09					2	717.7	0.30	0.0054			
						3	718.0	0.30	0.0054			
						4	718.2	0.20	0.0036			
						5	718.5	0.30	0.0054	5.78E-03	8.39	9
							718.6					
22	770.49	7.4	10	13.5	0.10	1	719.0	0.40	0.0072			
29.4	763.09					2	719.4	0.40	0.0072			
						3	719.8	0.40	0.0072			
						4	720.2	0.40	0.0072			
						5	720.5	0.30	0.0054	6.87E-03	13.40	7
							720.9					
22	770.49	7.4	15	18.5	0.13	1	721.5	0.60	0.0108			
29.4	763.09					2	722.1	0.60	0.0108			
						3	722.7	0.60	0.0108			
						4	723.2	0.50	0.0090			
						5	723.8	0.60	0.0108	1.05E-02	18.37	8
							724.0					
22	770.49	7.4	10	13.5	0.13	1	724.6	0.60	0.0108			
29.4	763.09					2	725.3	0.70	0.0126			
						3	726.0	0.70	0.0126			
						4	726.7	0.70	0.0126			
						5	727.3	0.60	0.0108	1.19E-02	13.37	12
							727.6					
22	770.49	7.4	5	8.5	0.14	1	728.3	0.70	0.0126			
29.4	763.09					2	729.0	0.70	0.0126			
						3	729.7	0.70	0.0126			
						4	730.5	0.80	0.0145			
						5	731.2	0.70	0.0126	1.30E-02	8.36	21

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **11**
Representative Lugeon Value: **11**

173409690	Eagle Creek	Ground Elevation:	792.02	ft
	Geotechnical Exploration	Borehole Water Level Depth at Test:	7.0	ft
	Water Pressure Testing	Borehole Water Level Elevation:	785.02	ft
	B-3.45	Gauge Height:	2.0	ft
		Hole Diameter:	2.98	inches

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					Water Pressure								
	Depth (ft)	**Elevation** (Plant Datum)	**Test Length** (ft)	**Gage** (psi)	**Test** (psi)	**Losses due flow**	**Time Step** (min)	**Flowmeter** (gal)	**Flow Rate** (gpm)	**Take** (cuft/ft)	**Average Take** (cuft/ft)	**Net Pressure**	**Lugeon Value**
								736.0					
	22.5	769.52	7.3	5	8.9	0.27	1	737.2	1.20	0.0220			
	29.8	762.22					2	738.5	1.30	0.0238			
							3	739.7	1.20	0.0220			
							4	740.8	1.10	0.0201			
							5	742.0	1.20	0.0220	2.20E-02	8.63	34
								744.0					
	22.5	769.52	7.3	10	13.9	0.96	1	746.5	2.50	0.0458			
	29.8	762.22					2	749.2	2.70	0.0494			
							3	751.7	2.50	0.0458			
							4	754.3	2.60	0.0476			
							5	756.8	2.50	0.0458	4.69E-02	12.94	49
								758.0					
	22.5	769.52	7.3	15	18.9	1.74	1	761.4	3.40	0.0623			
	29.8	762.22					2	764.7	3.30	0.0604			
							3	768.2	3.50	0.0641			
							4	771.6	3.40	0.0623			
							5	774.8	3.20	0.0586	6.15E-02	17.16	48
								775.8					
	22.5	769.52	7.3	10	13.9	0.82	1	778.1	2.30	0.0421			
	29.8	762.22					2	780.6	2.50	0.0458			
							3	782.9	2.30	0.0421			
							4	785.2	2.30	0.0421			
							5	787.6	2.40	0.0440	4.32E-02	13.08	45
								788.3					
	22.5	769.52	7.3	5	8.9	0.38	1	789.8	1.50	0.0275			
	29.8	762.22					2	791.4	1.60	0.0293			
							3	792.9	1.50	0.0275			
							4	794.5	1.60	0.0293			
							5	796.0	1.50	0.0275	2.82E-02	8.52	45

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **44**

Representative Lugeon Value: **44**

173409690	Eagle Creek	Ground Elevation:	790.14	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	9.9	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	780.24	ft	
	B-3.49	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Water Pressure Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
								86943.6					
	16.5	773.64	7.7	5	10.2	0.52	1	86945.4	1.80	0.0313			
	24.2	765.94					2	86947.2	1.80	0.0313			
							3	86949.0	1.80	0.0313			
							4	86950.5	1.50	0.0260			
							5	86951.9	1.40	0.0243	2.88E-02	9.68	40
								86953.2					
	16.5	773.64	7.7	10	15.2	1.27	1	86956.1	2.90	0.0504			
	24.2	765.94					2	86958.8	2.70	0.0469			
							3	86961.4	2.60	0.0451			
							4	86963.8	2.40	0.0417			
							5	86966.2	2.40	0.0417	4.51E-02	13.93	44
								86969.1					
	16.5	773.64	7.7	15	20.2	1.74	1	86972.5	3.40	0.0590			
	24.2	765.94					2	86975.8	3.30	0.0573			
							3	86979.1	3.30	0.0573			
							4	86982.4	3.30	0.0573			
							5	86985.4	3.00	0.0521	5.66E-02	18.46	41
								86986.3					
	16.5	773.64	7.7	10	15.2	0.52	1	86988.1	1.80	0.0313			
	24.2	765.94					2	86989.8	1.70	0.0295			
							3	86991.4	1.60	0.0278			
							4	86993.0	1.60	0.0278			
							5	86994.5	1.50	0.0260	2.85E-02	14.68	26
								86995.5					
	16.5	773.64	7.7	5	10.2	0.24	1	86996.6	1.10	0.0191			
	24.2	765.94					2	86997.7	1.10	0.0191			
							3	86998.8	1.10	0.0191			
							4	86999.9	1.10	0.0191			
							5	87001.0	1.10	0.0191	1.91E-02	9.96	26

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **35**

Representative Lugeon Value: **35**

173409690	Eagle Creek	Ground Elevation:	788.88	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	3.0	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	785.88	ft	
	B-3.52	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Water Pressure Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
								87276.0					
	17.5	771.38	7.2	5	7.2	0.27	1	87277.2	1.20	0.0223			
	24.7	764.18					2	87278.4	1.20	0.0223			
							3	87279.5	1.10	0.0204			
							4	87280.6	1.10	0.0204			
							5	87281.7	1.10	0.0204	2.12E-02	6.93	41
								87284.0					
	17.5	771.38	7.2	10	12.2	1.03	1	87286.6	2.60	0.0483			
	24.7	764.18					2	87289.1	2.50	0.0464			
							3	87291.4	2.30	0.0427			
							4	87293.6	2.20	0.0408			
							5	87296.0	2.40	0.0446	4.46E-02	11.17	54
								87298.5					
	17.5	771.38	7.2	15	17.2	1.74	1	87301.9	3.40	0.0631			
	24.7	764.18					2	87305.2	3.30	0.0613			
							3	87308.5	3.30	0.0613			
							4	87311.9	3.40	0.0631			
							5	87315.2	3.30	0.0613	6.20E-02	15.46	54
								87316.5					
	17.5	771.38	7.2	10	12.2	0.69	1	87318.6	2.10	0.0390			
	24.7	764.18					2	87320.7	2.10	0.0390			
							3	87322.6	1.90	0.0353			
							4	87324.6	2.00	0.0371			
							5	87326.7	2.10	0.0390	3.79E-02	11.51	44
								87327.3					
	17.5	771.38	7.2	5	7.2	0.24	1	87328.4	1.10	0.0204			
	24.7	764.18					2	87329.5	1.10	0.0204			
							3	87330.6	1.10	0.0204			
							4	87331.6	1.00	0.0186			
							5	87332.6	1.00	0.0186	1.97E-02	6.96	38

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 46

Representative Lugeon Value: 46

173409690	Eagle Creek	Ground Elevation:	802.34	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	17.5	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	784.84	ft	
	B-3.56	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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	Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
Water Pressure													
								87018.5					
	27.5	774.84	8.4	5	13.4	5.79	1	87024.7	6.20	0.0987			
	35.9	766.44					2	87031.0	6.30	0.1003			
							3	87037.4	6.40	0.1019			
							4	87043.7	6.30	0.1003			
							5	87050.4	6.70	0.1066	1.02E-01	7.61	180
								87058.1					
	27.5	774.84	8.4	10	18.4	16.75	1	87068.6	10.50	0.1671			
	35.9	766.44					2	87079.6	11.00	0.1751			
							3	87090.5	10.90	0.1735			
							4	87101.6	11.10	0.1767			
							5	87112.5	10.90	0.1735	1.73E-01	1.65	1413
								87118.5					
	27.5	774.84	8.4	15	23.4	21.19	1	87130.3	11.80	0.1878			
	35.9	766.44					2	87142.3	12.00	0.1910			
							3	87153.7	11.40	0.1814			
							4	87164.8	11.10	0.1767			
							5	87176.0	11.20	0.1783	1.83E-01	2.21	1117
								87180.0					
	27.5	774.84	8.4	10	18.4	11.73	1	87188.8	8.80	0.1401			
	35.9	766.44					2	87197.7	8.90	0.1416			
							3	87206.5	8.80	0.1401			
							4	87215.1	8.60	0.1369			
							5	87223.8	8.70	0.1385	1.39E-01	6.67	282
								87228.0					
	27.5	774.84	8.4	5	13.4	6.77	1	87234.7	6.70	0.1066			
	35.9	766.44					2	87241.6	6.90	0.1098			
							3	87248.6	7.00	0.1114			
							4	87255.4	6.80	0.1082			
							5	87262.1	6.70	0.1066	1.09E-01	6.63	221

Note: Representative Lugeon value based on "Dilation" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: **643**

Representative Lugeon Value: **180**

173409690	Eagle Creek	Ground Elevation:	799.34	ft	
	Geotechnical Exploration	Borehole Water Level Depth at Test:	3.5	ft	
	Water Pressure Testing	Borehole Water Level Elevation:	795.84	ft	
	B-3.60	Gauge Height:	2.0	ft	
		Hole Diameter:	2.98	inches	

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Water Pressure

Depth (ft)	Elevation (Plant Datum)	Test Length (ft)	Gage (psi)	Test (psi)	Losses due flow	Time Step (min)	Flowmeter (gal)	Flow Rate (gpm)	Take (cuft/ft)	Average Take (cuft/ft)	Net Pressure	Lugeon Value
							805.8					
21.2	778.14	8	5	7.4	0.00	1	805.8	0.00	0.0000			
29.2	770.14					2	805.8	0.00	0.0000			
						3	805.8	0.00	0.0000			
						4	805.8	0.00	0.0000			
						5	805.8	0.00	0.0000	0.00E+00	7.40	0
							806.1					
21.2	778.14	8	10	12.4	0.00	1	806.1	0.00	0.0000			
29.2	770.14					2	806.1	0.00	0.0000			
						3	806.1	0.00	0.0000			
						4	806.1	0.00	0.0000			
						5	806.1	0.00	0.0000	0.00E+00	12.40	0
							806.1					
21.2	778.14	8	15	17.4	0.00	1	806.1	0.00	0.0000			
29.2	770.14					2	806.1	0.00	0.0000			
						3	806.1	0.00	0.0000			
						4	806.1	0.00	0.0000			
						5	806.1	0.00	0.0000	0.00E+00	17.40	0
							806.1					
21.2	778.14	8	10	12.4	0.00	1	806.1	0.00	0.0000			
29.2	770.14					2	806.1	0.00	0.0000			
						3	806.1	0.00	0.0000			
						4	806.1	0.00	0.0000			
						5	806.1	0.00	0.0000	0.00E+00	12.40	0
							806.1					
21.2	778.14	8	5	7.4	0.00	1	806.1	0.00	0.0000			
29.2	770.14					2	806.1	0.00	0.0000			
						3	806.1	0.00	0.0000			
						4	806.1	0.00	0.0000			
						5	806.1	0.00	0.0000	0.00E+00	7.40	0

Note: Representative Lugeon value based on "Laminar" Behavior in Table 3. Summary of current Lugeon interpretation practice, "Lugeon Test Interpretation, Revisited," Camilo Quinones-Rozo, P.E.

Average of Valid Stages: 0

Representative Lugeon Value: 0

ATTACHMENT D-1

Drill Rig Efficiency Sheets

Stantec Consulting Services Inc.
3052 Beaumont Centre Circle, Lexington, Kentucky 40513-1703

June 13, 2021 175568274

Attention: Mr. Jeff Dingrando
Stantec Consulting Services Inc.
3052 Beaumont Centre Circle
Lexington, Kentucky 40513-1703

Reference: Automatic Hammer Energy Verification – CME 55T#2 (#711) SN: 382535

Dear Mr. Dingrando,

Stantec Consulting Services Inc. (Stantec) is pleased to submit this letter regarding the automatic Standard Penetration Test (SPT) hammer energy verification of your 2013 CME 55T#2 (#711) SN: 382535. Included within this letter is a summary table followed by a detailed description of the testing equipment used, testing procedures and a summary of the test results.

Summary of Automatic Hammer Energy Verification	
Rig ID:	Stantec CME 55T#2 (#711) SN:382535
Hammer Type:	CME Automatic (140-lb)
Project and Location:	TVA Bull Run Fossil Plant, Clinton, Tennessee
Test Date and Time:	May 21, 2021, 0700 - 1100
Equipment Operator:	Benjamin A. Halada (Stantec)
Drill Operator:	Donald Clements (Stantec)
Energy Transfer Ratio (%) [Low-High-**Average**]	92.8% - 95.2% - **93.5%**

Equipment and Procedures

SPT hammer energy verification was performed on Friday, May 21, 2021 in Clinton, Tennessee, while the drill was operating on Tennessee Valley Authority's (TVA) Bull Run Fossil Plant project site. Stantec utilized energy measurement equipment manufactured by Pile Dynamics, Inc. (PDI), of Cleveland, Ohio. Equipment for data acquisition for energy measurements for dynamic penetrometers (per ASTM D 4633) consisted of PDI's Pile Driving Analyzer, Model SPT (SN 4565 TB), an instrumented NWJ rod (SN 393NWJ) with two strain gages (SN 393NWJ-1 and 393NWJ-2) and two piezoresistive accelerometers (SN K0040 and K11870). This system has a sampling frequency of 50 kHz. The instrumented rod measured two-feet in length and was located at the top of the drill string during energy measurement. The strain gages and accelerometers were located one-foot below the top of the instrumented rod. The SPT's were driven per ASTM D 1586 and ASTM D 6066.

The above referenced drill rig is equipped with a Central Mine Equipment (CME) automatic SPT hammer that utilizes a hydraulic motor to turn a chain that in turn lifts a 140-lb drive weight and releases the weight for a free fall distance of 30 inches. The drive weight impacts a CME anvil (12.75 inches in length and 2.50 inches in diameter) that is threaded into the top

Reference: Automatic Hammer Energy Verification – CME 55T#2 (#711) SN: 382535

of the instrumented rod. During the energy measurements, the hammer was operated in accordance with the manufacturers recommendations, was not lubricated between or during standard penetration tests, the blow rate was approximately 48 blows per minute and the auto hammer / sample rods were kept vertical. At the time of the tests, the weather was 60 to 76° Fahrenheit with partly cloudy skies and little to no wind.

Standard Penetration Testing was performed using a standard two-inch outer diameter split spoon sampler that was driven 1.5 feet. Testing began at a depth of 29.0 feet below the ground surface to 46.5 feet below the ground surface and was performed intermittently with a clean out interval of at least 1.0 feet between each sample. The boring was advanced using a 5 7/8" updraft bit and a bentonite based drilling fluid that had a density of 8.8 lbs/gal to 9.6 lbs/gal. The boring was advanced to the top of the next interval after each sample was completed. During the testing, the maximum transferred energy (EMX) was measured by the instrumented rod and compared to the theoretical potential energy (TPE) of the 140-lb drive weight dropping 30 inches. An energy transfer ratio (ETR) was then computed by dividing the EMX by the TPE.

Closing

The ETR for your 2013 CME 55T#2 (#711) SN: 382535 ranged from a low of 92.8% to a high of 95.2% with an average of 93.5%. Per ASTM D 4633, this hammer energy verification is valid for one year from the testing date of May 21, 2021. The attached Table 1 presents detailed results of the energy measurement.

Regards,

STANTEC CONSULTING SERVICES INC.

Benjamin A. Halada, P.E.
Senior Associate
Phone: (859) 422-3070
Ben.Halada@stantec.com

Attachment: Table 1: Summary of SPT Results – CME 55T#2 (#711)
Test interval summaries and plots of force and normalized velocity versus time
Pile Driving Analyzer, Model SPT Calibration
Rod Calibration
Piezoresistive Accelerometer Calibration

Table 1: Summary of SPT Results - CME 55T#2 (#711)

Stantec Consulting Services Inc.
Test Date: 5/21/2021
Drill Rig: CME 55T#2 (#711) SN: 382535
Rod Size: NW-J
Driller: Donald Clements

Project Number: 175568274
Boring ID: BRF-B13
Location: Clinton, TN
Hammer: 140 lbs
Drop Height: 30 inches
Theoretical Potential Energy (TPE): 350 lbs-ft

Test Date	Sample ID	Rod Length [1] (feet)	Beginning Depth [2] (feet)	Ending Depth [2] (feet)	Blow Counts (blows/6")	Field N-Value	Hammer Blow Rate (bpm)	Avg. Max Compressive Force (FMX) (kips)	Average Maximum Velocity (VMX) (ft/sec)	Average Transferred Energy (EMX) (lbs-ft)	Avg. Energy Transfer Ratio (ETR) [3] (%)
5/21/2021	SS07	35.0	29.0	30.5	**6 - 15 - 17**	**32**	48	47.1	16.6	326.1	93.1
5/21/2021	SS09	40.0	34.0	35.5	**15 - 16 - 18**	**34**	47	46.7	16.7	325.2	92.9
5/21/2021	SS10	41.0	36.5	38.0	**14 - 17 - 19**	**36**	47	45.6	17.6	333.3	95.2
5/21/2021	SS12	50.0	45.0	46.5	**16 - 13 - 13**	**26**	48	48.8	16.8	324.7	92.8
							(bpm)	(kips)	(ft/sec)	(lbs-ft)	(%)
					Overall Average Values:		48	47.1	16.9	327.3	93.5
					Standard Deviation:		0.5	1.2	0.4	3.5	1.0

1 - Depth below the location of the gages.
2 - Depth from existing ground surface.
3 - Computed from the (EMX / TPE) * 100%

Test Interval Summaries and Plots of Force and Normalized Velocity

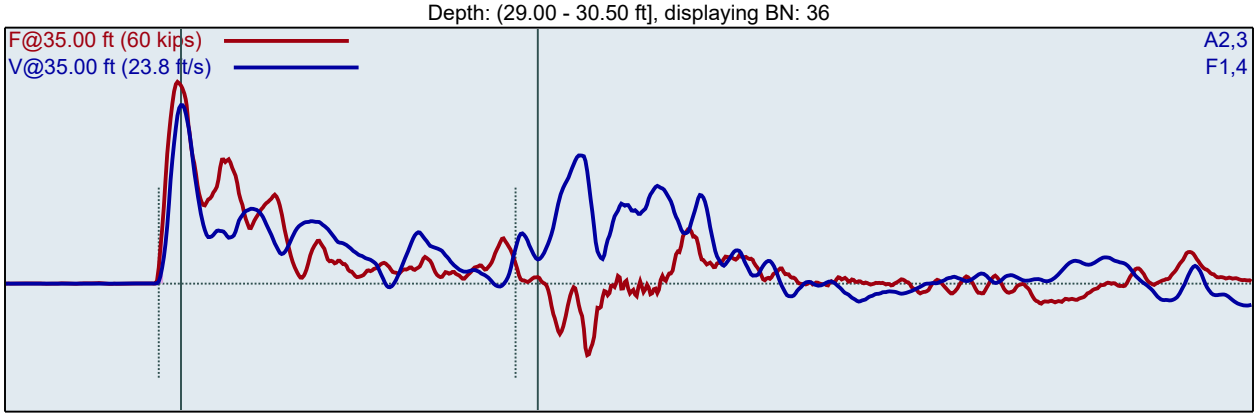
CME 55T#2 (#711) SN 382535
BAH
BRF-B13

29.0-30.5
Test date: 5/21/2021

AR: 1.41 in^2
LE: 35.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (29.00 - 30.50 ft], displaying BN: 36



F1 : [393NWJ2] 210.35 PDICAL (1) FF1
F4 : [393NWJ1] 209.72 PDICAL (1) FF1

A2 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1
A3 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	6	29.08	88.20	32.5	32.7	44.1	15.0	46
2	6	29.17	88.25	32.2	32.5	44.3	15.1	45
3	6	29.25	88.91	32.2	32.4	44.5	15.4	45
4	6	29.33	91.68	33.9	34.0	44.6	16.1	48
5	6	29.42	91.73	33.5	33.6	44.5	16.3	47
6	6	29.50	93.05	36.0	36.2	44.5	16.7	51
7	15	29.53	88.01	31.9	32.1	44.7	15.8	45
8	15	29.57	91.91	32.9	33.2	45.2	16.3	46
9	15	29.60	95.44	35.9	36.3	46.0	17.2	51
10	15	29.63	93.59	34.4	34.4	46.0	17.0	49
11	15	29.67	93.75	32.7	33.0	46.2	16.5	46
12	15	29.70	90.51	32.5	32.9	46.5	16.3	46
13	15	29.73	91.01	32.0	32.0	46.8	16.3	45
14	15	29.77	91.49	32.4	32.6	46.6	16.5	46
15	15	29.80	90.16	31.8	31.9	47.5	16.3	45
16	15	29.83	91.61	31.8	32.1	47.6	16.3	45
17	15	29.87	97.28	36.0	36.3	48.2	17.6	51
18	15	29.90	94.27	33.0	33.2	48.7	17.0	47
19	15	29.93	89.34	32.2	32.5	50.0	16.1	45
20	15	29.97	93.58	32.6	32.8	49.7	16.7	46
21	15	30.00	92.24	32.7	32.8	49.9	16.5	46
22	17	30.03	90.83	32.3	32.5	50.4	16.2	46
23	17	30.06	96.33	34.4	34.7	50.4	17.0	48
24	17	30.09	94.68	33.6	34.0	50.4	16.7	47
25	17	30.12	96.37	34.1	34.2	50.3	17.1	48
26	17	30.15	96.15	33.8	34.2	50.5	16.9	48
27	17	30.18	95.42	33.3	33.6	50.3	16.8	47
28	17	30.21	90.52	31.9	32.1	50.5	16.3	45

29	17	30.24	98.63	37.3	37.6	50.5	17.6	53
30	17	30.26	94.54	33.6	34.1	50.4	16.7	47
31	17	30.29	94.30	33.3	33.6	50.3	16.6	47
32	17	30.32	95.87	34.7	34.7	50.4	17.3	49
33	17	30.35	93.35	33.1	33.5	50.4	16.4	47
34	17	30.38	97.21	34.4	34.5	50.1	17.3	48
35	17	30.41	96.75	35.8	36.1	50.5	17.7	50
36	17	30.44	95.09	33.6	34.0	50.3	16.6	47
37	17	30.47	93.39	32.9	33.1	50.3	16.5	46
38	17	30.50	93.48	33.3	33.6	50.6	16.7	47
		Average	93.66	33.4	33.7	48.9	16.7	47
		Std Dev	2.55	1.3	1.4	1.9	0.5	2
		Maximum	98.63	37.3	37.6	50.6	17.7	53
		Minimum	88.01	31.8	31.9	44.7	15.8	45

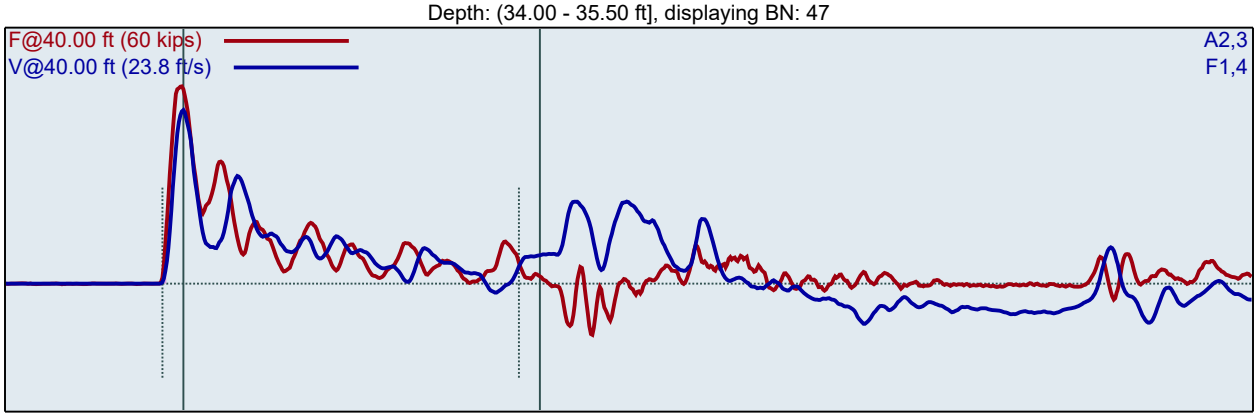
N-value: 32

Sample Interval Time: 46.06 seconds.

CME 55T#2 (#711) SN 382535 — 34.0-35.5
BAH — Test date: 5/21/2021
BRF-B13

AR: 1.41 in^2 — SP: 0.492 k/ft3
LE: 40.00 ft — EM: 30000 ksi
WS: 16807.9 ft/s

Depth: (34.00 - 35.50 ft], displaying BN: 47



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ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	15	34.03	91.66	33.5	33.7	44.7	17.3	47
2	15	34.07	98.94	35.9	36.2	46.3	18.0	51
3	15	34.10	89.73	32.1	32.3	47.2	16.1	45
4	15	34.13	95.33	34.8	35.1	47.3	17.8	49
5	15	34.17	94.51	33.9	34.1	47.2	17.4	48
6	15	34.20	93.59	32.7	32.8	47.4	17.1	46
7	15	34.23	93.37	33.6	33.8	47.3	17.2	47
8	15	34.27	93.20	32.6	32.8	47.3	17.1	46
9	15	34.30	91.24	32.4	32.6	47.4	16.5	46
10	15	34.33	91.58	31.7	31.9	47.4	16.5	45
11	15	34.37	93.46	33.0	33.3	47.5	17.0	47
12	15	34.40	93.43	32.9	33.1	47.4	17.2	46
13	15	34.43	92.47	32.3	32.6	47.5	16.9	46
14	15	34.47	90.10	32.0	32.4	47.5	16.5	45
15	15	34.50	92.87	32.8	33.0	47.3	17.0	46
16	16	34.53	91.48	31.9	32.3	47.5	16.6	45
17	16	34.56	92.75	32.4	32.7	47.5	16.9	46
18	16	34.59	91.68	32.4	32.8	47.4	16.4	46
19	16	34.63	94.09	32.9	33.4	47.5	17.1	46
20	16	34.66	96.02	35.1	35.3	47.4	18.1	49
21	16	34.69	94.43	33.3	33.6	47.3	17.2	47
22	16	34.72	92.55	31.8	32.3	47.2	16.5	45
23	16	34.75	90.85	32.0	32.3	47.5	16.5	45
24	16	34.78	91.70	31.8	32.1	47.5	16.1	45
25	16	34.81	95.67	33.8	34.1	47.3	17.4	48
26	16	34.84	90.87	31.6	32.1	47.3	16.3	45
27	16	34.88	92.28	32.6	32.8	47.5	16.4	46
28	16	34.91	89.37	31.8	32.0	47.5	16.2	45

29	16	34.94	92.10	32.1	32.3	47.4	16.4	45
30	16	34.97	93.05	33.3	33.3	47.5	16.6	47
31	16	35.00	96.21	34.7	35.2	47.3	17.4	49
32	18	35.03	92.01	32.1	32.3	47.4	16.1	45
33	18	35.06	92.38	32.0	32.4	47.4	16.2	45
34	18	35.08	91.95	32.6	32.9	47.3	16.1	46
35	18	35.11	95.57	35.2	35.7	47.4	17.3	50
36	18	35.14	93.72	34.9	35.5	47.6	16.9	49
37	18	35.17	96.10	36.5	36.8	47.4	17.3	51
38	18	35.19	93.43	33.0	33.3	47.3	16.4	47
39	18	35.22	90.01	32.5	32.7	47.4	16.2	46
40	18	35.25	93.33	34.1	34.4	47.6	16.6	48
41	18	35.28	94.00	33.9	34.1	47.3	16.8	48
42	18	35.31	91.06	32.6	33.0	47.5	16.1	46
43	18	35.33	95.46	34.6	34.8	47.4	16.9	49
44	18	35.36	91.08	32.9	33.1	47.5	16.3	46
45	18	35.39	94.34	34.9	34.9	47.4	16.9	49
46	18	35.42	91.95	33.1	33.3	47.5	16.3	47
47	18	35.44	91.31	32.8	33.1	47.4	16.2	46
48	18	35.47	91.29	33.0	33.3	47.5	16.1	46
49	18	35.50	92.42	32.9	33.3	47.4	16.1	46
		Average	92.84	33.1	33.5	47.4	16.6	47
		Std Dev	1.80	1.2	1.2	0.1	0.5	2
		Maximum	96.21	36.5	36.8	47.6	18.1	51
		Minimum	89.37	31.6	32.0	47.2	16.1	45

N-value: 34

Sample Interval Time: 60.77 seconds.

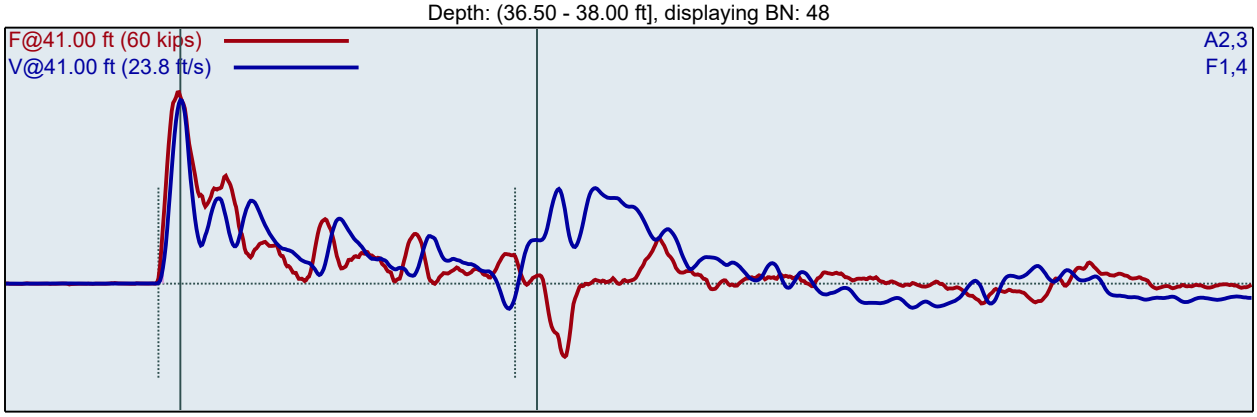
CME 55T#2 (#711) SN 382535
BAH
BRF-B13

36.5-38.0
Test date: 5/21/2021

AR: 1.41 in^2
LE: 41.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (36.50 - 38.00 ft], displaying BN: 48



F1 : [393NWJ2] 210.35 PDICAL (1) FF1
F4 : [393NWJ1] 209.72 PDICAL (1) FF1

A2 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1
A3 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	14	36.54	88.03	30.6	30.9	1.9	17.2	43
2	14	36.57	95.88	34.4	34.8	45.6	18.6	49
3	14	36.61	96.00	31.7	32.0	47.4	17.6	45
4	14	36.64	97.39	35.0	35.1	47.8	19.4	49
5	14	36.68	97.26	34.3	34.5	47.6	18.7	48
6	14	36.71	94.84	31.3	31.9	47.8	17.4	44
7	14	36.75	92.81	31.2	31.7	47.9	17.3	44
8	14	36.79	94.54	31.4	31.9	47.7	17.4	44
9	14	36.82	94.77	31.3	31.8	47.9	17.5	44
10	14	36.86	95.80	33.5	33.6	47.9	18.0	47
11	14	36.89	96.35	33.9	34.2	47.8	18.5	48
12	14	36.93	92.35	31.3	31.8	47.8	17.0	44
13	14	36.96	92.43	31.3	31.7	47.8	17.1	44
14	14	37.00	95.78	33.7	33.8	47.7	18.4	47
15	17	37.03	96.09	31.7	32.2	47.7	17.5	45
16	17	37.06	94.25	31.6	32.0	47.9	17.4	45
17	17	37.09	95.07	31.4	31.9	47.9	17.5	44
18	17	37.12	99.58	35.5	35.7	47.8	18.5	50
19	17	37.15	99.32	34.3	34.6	47.7	17.8	48
20	17	37.18	99.25	34.5	34.7	47.9	18.0	49
21	17	37.21	92.20	31.1	31.6	47.9	17.1	44
22	17	37.24	94.93	31.4	31.8	47.9	17.6	44
23	17	37.26	93.90	31.5	32.0	47.7	17.6	44
24	17	37.29	99.67	34.4	34.6	47.8	17.9	49
25	17	37.32	93.76	31.5	32.0	47.7	17.4	44
26	17	37.35	93.82	31.2	31.7	48.0	17.2	44
27	17	37.38	95.13	31.5	32.0	47.9	17.5	44
28	17	37.41	96.64	31.7	31.9	47.8	17.6	45

29	17	37.44	92.15	31.3	31.8	48.0	17.1	44
30	17	37.47	95.96	31.7	31.9	47.9	17.9	45
31	17	37.50	96.80	31.7	32.2	47.7	17.6	45
32	19	37.53	93.67	31.3	31.8	47.7	17.3	44
33	19	37.55	94.41	31.5	31.9	47.8	17.4	44
34	19	37.58	97.80	32.5	32.8	47.8	17.8	46
35	19	37.61	94.24	31.6	32.0	47.9	17.3	45
36	19	37.63	97.98	35.5	35.8	47.8	19.1	50
37	19	37.66	95.47	31.8	32.2	47.8	17.6	45
38	19	37.68	95.00	31.7	32.1	48.0	17.5	45
39	19	37.71	99.46	35.3	35.5	47.7	18.2	50
40	19	37.74	93.90	31.6	31.9	47.9	17.3	45
41	19	37.76	98.43	33.0	33.1	47.8	17.3	47
42	19	37.79	94.01	31.7	32.2	47.9	17.3	45
43	19	37.82	95.02	31.9	32.3	47.9	17.5	45
44	19	37.84	92.44	31.7	32.2	47.9	17.1	45
45	19	37.87	93.51	32.0	32.5	47.7	17.3	45
46	19	37.89	94.36	31.9	32.3	47.9	17.4	45
47	19	37.92	98.84	34.0	34.2	48.0	17.6	48
48	19	37.95	93.50	31.8	32.2	47.8	17.1	45
49	19	37.97	93.49	31.9	32.3	47.9	17.3	45
50	19	38.00	92.39	31.8	32.2	48.1	17.3	45
		Average	95.46	32.3	32.7	47.8	17.6	46
		Std Dev	2.29	1.3	1.2	0.1	0.4	2
		Maximum	99.67	35.5	35.8	48.1	19.1	50
		Minimum	92.15	31.1	31.6	47.7	17.1	44
				N-value: 36				

Sample Interval Time: 61.53 seconds.

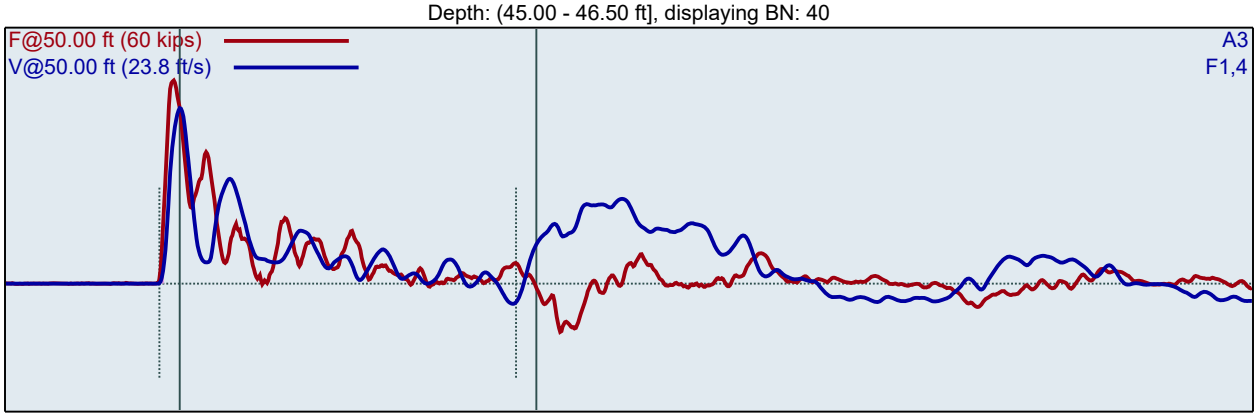
CME 55T#2 (#711) SN 382535
BAH
BRF-B13

45.0-46.5
Test date: 5/21/2021

AR: 1.41 in^2
LE: 50.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (45.00 - 46.50 ft], displaying BN: 40



F1 : [393NWJ2] 210.35 PDICAL (1) FF1
F4 : [393NWJ1] 209.72 PDICAL (1) FF1

A2 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	16	45.03	98.03	34.7	35.0	1.9	18.0	49
2	16	45.06	93.44	34.1	34.3	48.1	15.8	48
3	16	45.09	92.31	34.7	35.1	48.2	17.7	49
4	16	45.13	92.52	37.2	37.6	48.3	17.4	53
5	16	45.16	92.70	36.6	36.9	47.9	16.7	52
6	16	45.19	92.53	36.2	36.6	48.3	17.5	51
7	16	45.22	91.29	36.5	36.9	48.3	17.6	52
8	16	45.25	90.27	37.7	38.1	48.2	17.5	53
9	16	45.28	91.93	33.6	33.7	48.7	16.7	47
10	16	45.31	90.20	33.1	33.1	49.1	16.4	47
11	16	45.34	89.82	33.1	33.2	48.9	16.5	47
12	16	45.38	92.22	33.2	33.4	48.7	16.7	47
13	16	45.41	92.02	37.2	37.6	49.0	17.7	52
14	16	45.44	95.15	38.1	38.4	48.9	17.8	54
15	16	45.47	91.61	33.2	33.5	49.0	16.7	47
16	16	45.50	91.19	33.2	33.3	48.8	16.6	47
17	13	45.54	91.75	33.5	33.6	49.1	16.5	47
18	13	45.58	97.21	33.3	33.5	48.9	16.1	47
19	13	45.62	94.18	34.7	35.1	48.9	17.0	49
20	13	45.65	91.70	33.6	33.7	48.9	16.5	47
21	13	45.69	93.21	33.8	34.0	49.0	16.7	48
22	13	45.73	92.01	34.1	34.4	48.7	16.8	48
23	13	45.77	90.89	33.6	33.8	49.1	16.4	47
24	13	45.81	97.30	37.3	37.7	48.8	18.1	53
25	13	45.85	93.13	34.6	34.7	48.9	16.5	49
26	13	45.88	91.88	34.1	34.3	49.1	16.4	48
27	13	45.92	91.37	33.4	33.6	48.8	16.4	47
28	13	45.96	93.95	35.7	36.1	49.0	17.0	50

29	13	46.00	92.20	33.9	34.1	48.8	16.6	48
30	13	46.04	89.61	33.2	33.4	48.9	16.3	47
31	13	46.08	92.71	33.7	33.7	49.1	16.4	47
32	13	46.12	95.20	35.6	36.0	48.9	16.8	50
33	13	46.15	91.09	33.4	33.4	48.9	16.2	47
34	13	46.19	93.48	34.8	35.3	49.0	16.7	49
35	13	46.23	91.55	33.4	33.6	48.9	16.3	47
36	13	46.27	96.51	37.5	37.8	49.1	17.9	53
37	13	46.31	90.51	33.4	33.6	49.2	16.5	47
38	13	46.35	95.62	34.2	34.4	48.8	16.5	48
39	13	46.38	95.01	34.3	34.4	49.1	16.2	48
40	13	46.42	91.52	33.8	34.0	49.0	16.4	48
41	13	46.46	92.38	33.1	33.2	48.9	16.5	47
42	13	46.50	92.92	33.7	33.9	48.9	16.3	47
		Average	93.03	34.2	34.4	48.9	16.6	48
		Std Dev	2.02	1.1	1.2	0.1	0.5	2
		Maximum	97.30	37.5	37.8	49.2	18.1	53
		Minimum	89.61	33.1	33.2	48.7	16.1	47
				N-value: 26				

Sample Interval Time: 50.41 seconds.

Pile Driving Analyzer, Model SPT Calibration

Certificate of Calibration

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

was calibrated on 16 Oct 2020

using a PDA Calibration Box whose output was calibrated with test equipment traceable to NIST.

This certificate is valid for 2 years from above date.

Tested by: MO

Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

Certificate of Compliance

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

has been tested and passed all final test procedures on 16 Oct 2023

SEAL

Tested by: MCO

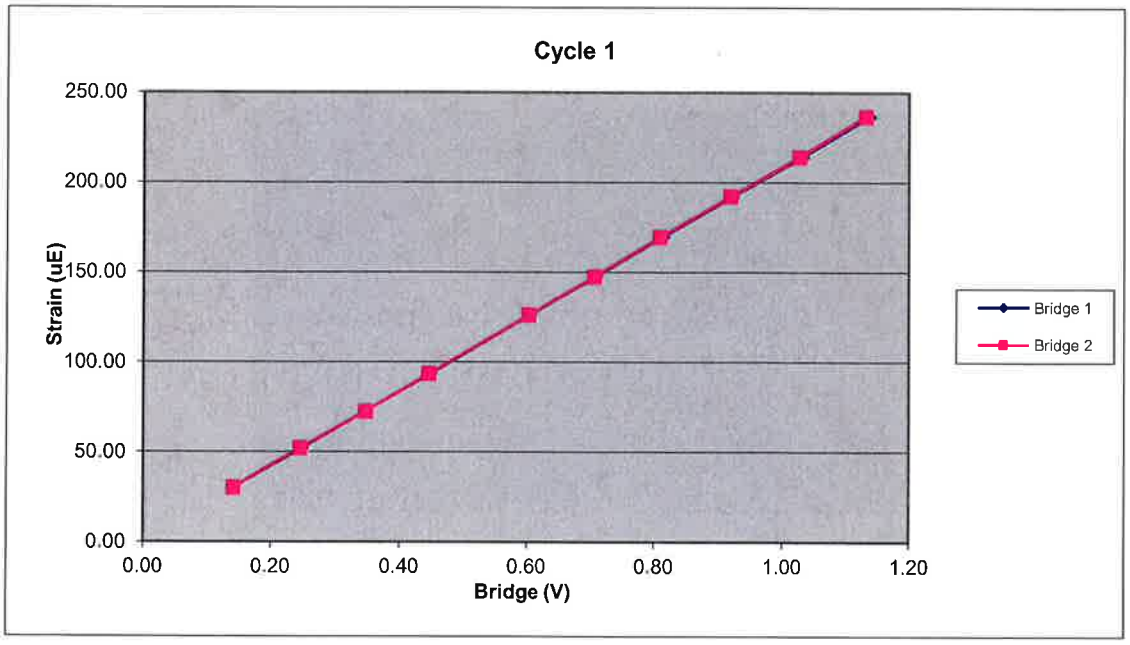
Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

NW-J Rod Calibration

393NWJ		Cycle 1		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1256.66	29.87	0.14	0.14
3	2182.58	51.93	0.25	0.25
4	3077.41	72.29	0.35	0.35
5	3958.59	93.22	0.45	0.45
6	5346.46	126.02	0.61	0.60
7	6263.90	147.20	0.71	0.71
8	7185.24	169.35	0.81	0.81
9	8153.08	191.99	0.92	0.92
10	9118.48	213.87	1.03	1.03
11	10058.44	236.37	1.14	1.13

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8852.44**	**Force Calibration (lb/V)**	**8876.59**
Offset	-12.10	Offset	-11.85
Correlation	0.999998	Correlation	0.999998
Strain Calibration (µE/V)	**207.62**	**Strain Calibration (µE/V)**	**208.19**
Offset	0.18	Offset	0.18
Correlation	0.999995	Correlation	0.999990

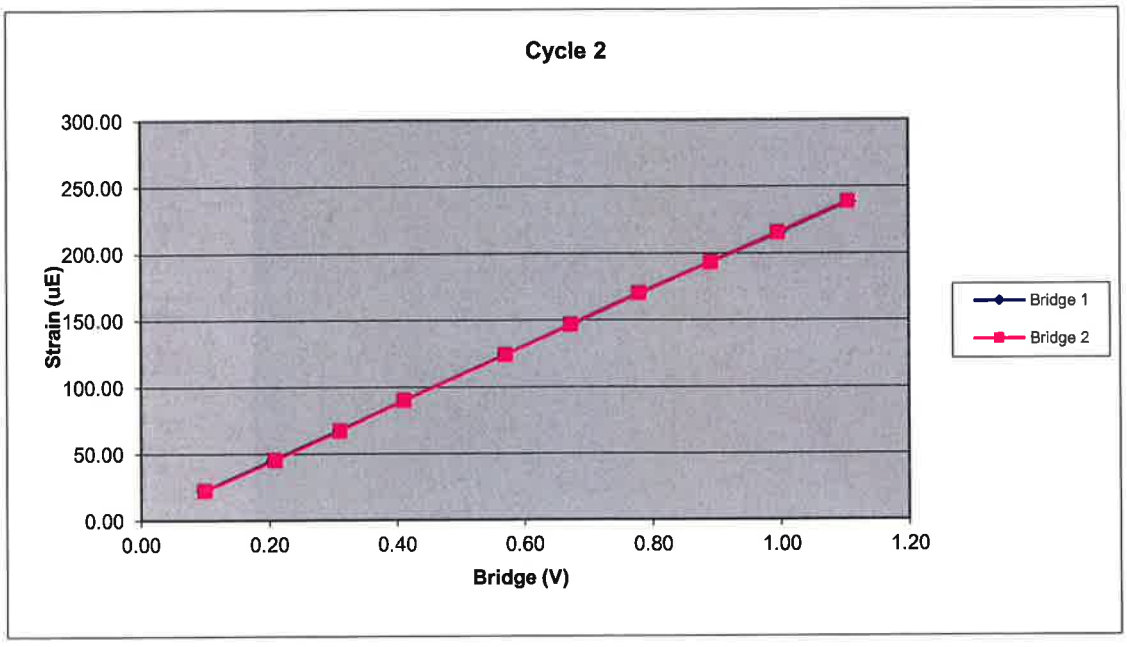
Force Strain Calibration	
EA (Kips)	**42636.94**
Offset	-19.58
Correlation	0.999992



393NWJ		Cycle 2		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	891.51	21.98	0.10	0.10
3	1857.21	45.07	0.21	0.21
4	2758.28	67.01	0.31	0.31
5	3650.96	89.73	0.41	0.41
6	5063.00	123.69	0.57	0.57
7	5972.06	146.18	0.67	0.67
8	6915.23	169.67	0.78	0.78
9	7903.84	192.74	0.89	0.89
10	8851.30	214.97	1.00	1.00
11	9814.66	238.41	1.11	1.11

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8842.81**	**Force Calibration (lb/V)**	**8870.66**
Offset	**14.62**	Offset	**-0.53**
Correlation	**0.999999**	Correlation	**0.999999**
Strain Calibration (µE/V)	**214.99**	**Strain Calibration (µE/V)**	**215.66**
Offset	**0.80**	Offset	**0.43**
Correlation	**0.999973**	Correlation	**0.999971**

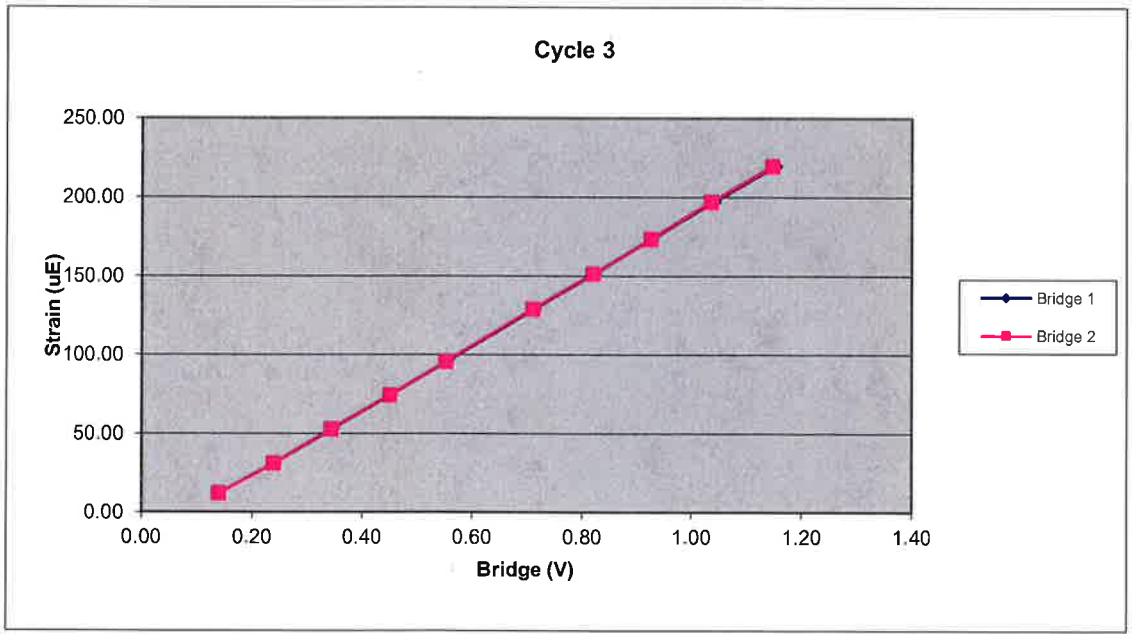
Force Strain Calibration	
EA (Kips)	**41129.20**
Offset	**-17.86**
Correlation	**0.999967**



393NWJ		Cycle 3		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1237.55	11.57	0.14	0.14
3	2124.20	30.83	0.24	0.24
4	3051.97	52.45	0.35	0.34
5	4004.70	74.09	0.45	0.45
6	4916.00	95.54	0.55	0.55
7	6318.58	128.91	0.71	0.71
8	7284.77	151.16	0.82	0.82
9	8219.37	173.23	0.93	0.93
10	9195.20	196.65	1.04	1.04
11	10203.39	219.28	1.15	1.15

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8860.79**	**Force Calibration (lb/V)**	**8887.76**
Offset	**-3.94**	Offset	**-4.95**
Correlation	**0.999997**	Correlation	**0.999999**
Strain Calibration (µE/V)	**206.56**	**Strain Calibration (µE/V)**	**207.19**
Offset	**-18.57**	Offset	**-18.59**
Correlation	**0.999962**	Correlation	**0.999969**

Force Strain Calibration	
EA (Kips)	**42893.26**
Offset	**792.77**
Correlation	**0.999966**



Bridge Excitation (V) 5
Shunt Resitor (ohm) 60.4k

Calibration Factors	393NWJ		
Bridge 1 (µE/V)	209.72	Bridge 2 (µE/V)	210.35
EA Factor (Kips)	42219.80	Area (in^2)	1.41

Calibrated by: _____
Calibrated Date: 11/23/2020

Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

Piezoresistive Accelerometer Calibration

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on 28Oct2020

Serial No:	K0040	**Temperature:**	20.0 °C
Model:	PR	**Humidity:**	45%
Calibrated on:	Channel 3 on 8G 5161 LE		

Ref Acc 1:	65538! 1040 g's/volt	**Cal on:**	27Jan2020
Ref Acc 2:	63479! 1080 g's/volt	**Cal on:**	09Sep2020

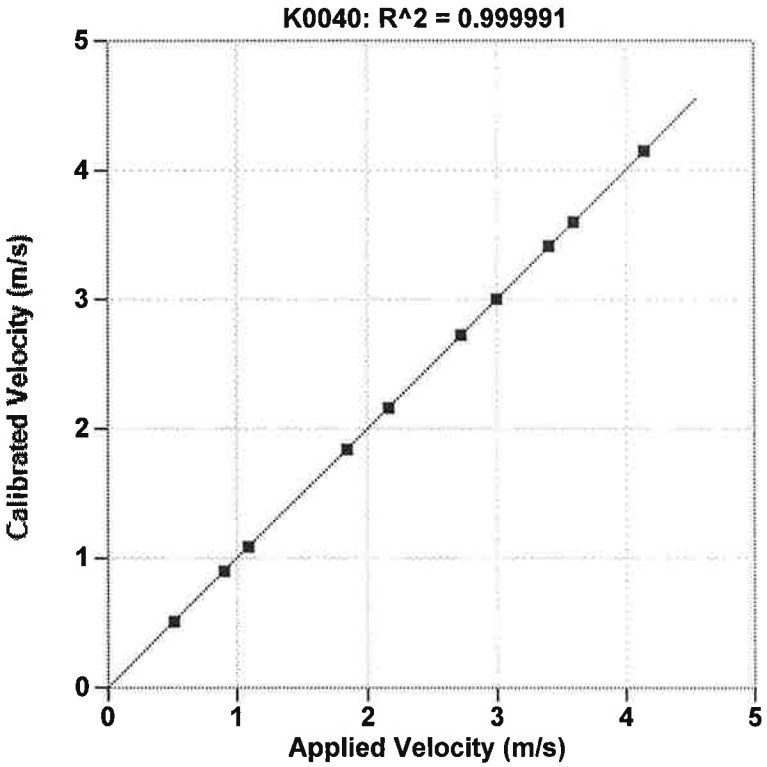
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

302.4 mv/5000g
(60.5 µv/g)
R^2: 0.999991 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K0040 Velocity
m/s	m/s
0.511	0.508
0.903	0.896
1.089	1.085
1.844	1.840
2.162	2.159
2.724	2.722
3.000	3.000
3.407	3.412
3.598	3.598
4.146	4.148

Maximum Acceleration: 905 g's

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on MAR 0 8 2021

Serial No:	K11870	**Temperature:**	21.0 °C
Model:	PR	**Humidity:**	40%
Calibrated on:	Channel 4 on 8G 5161 LE		

Ref Acc 1:	63479! 1080 g's/volt	**Cal on:**	09Sep2020
Ref Acc 2:	65538! 1040 g's/volt	**Cal on:**	27Jan2020

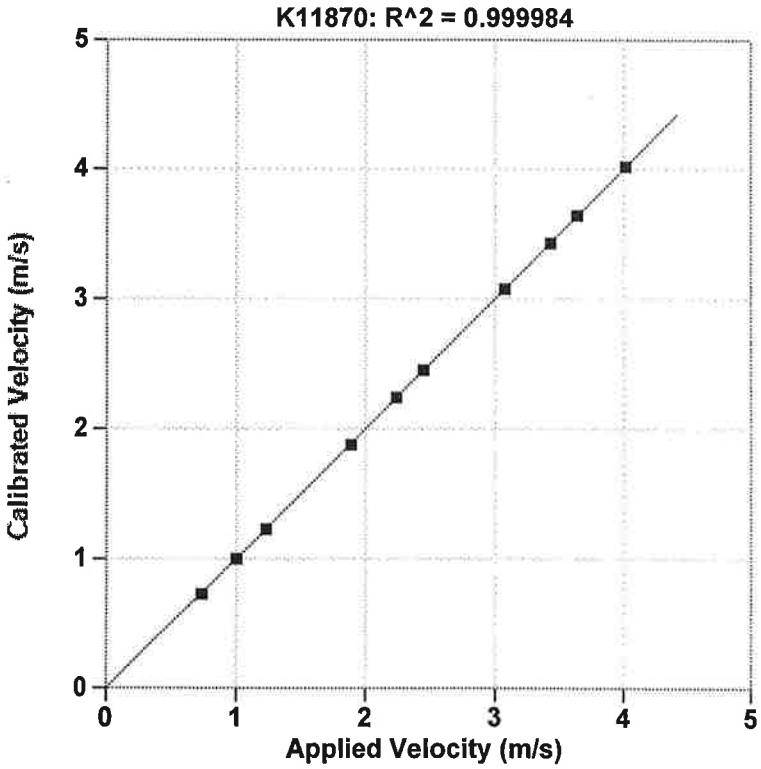
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

434.2 mv/5000g
(86.8 µv/g)
R^2: 0.999984 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K11870 Velocity
m/s	m/s
0.731	0.726
1.004	0.999
1.229	1.227
1.888	1.878
2.241	2.240
2.451	2.452
3.074	3.075
3.430	3.428
3.639	3.644
4.017	4.020

Maximum Acceleration: 871 g's

Stantec Consulting Services Inc.
3052 Beaumont Centre Circle, Lexington KY 40513-1703

April 20, 2021 175599999

Attention: Mr. Daniel Rogers
Stantec Consulting Services Inc.
3052 Beaumont Centre Circle
Lexington, Kentucky 40513-1703

Reference: Automatic Hammer Energy Verification – CME 45T#3 (#815) Drill Rig SN: 399874

Dear Mr. Rogers,

Stantec Consulting Services Inc. (Stantec) is pleased to submit this letter regarding the automatic Standard Penetration Test (SPT) hammer energy verification of your 2017 CME 45T#3 (#815) SN: 399874. Included within this letter is a summary table followed by a detailed description of the testing equipment used, testing procedures and a summary of the test results.

Summary of Automatic Hammer Energy Verification	
Rig ID:	Stantec CME 45T#3 (#815) SN: 399874
Hammer Type:	CME Automatic (140-lb)
Project and Location:	Boltz Lake, Dry Ridge, Kentucky
Test Date and Time:	April 14, 2021, 1200 - 1400
Equipment Operator:	Benjamin A. Halada (Stantec)
Drill Operator:	Andrew Clements (Stantec)
Energy Transfer Ratio (%) [Low-High-**Average**]	86.6% - 89.0% - **87.6%**

Equipment and Procedures

SPT hammer energy verification was performed on Wednesday, April 14, 2021 while the drill was operating at Stantec's Boltz Lake project site in Dry Ridge, Kentucky. Stantec utilized energy measurement equipment manufactured by Pile Dynamics, Inc. (PDI), of Cleveland, Ohio. Equipment for data acquisition for energy measurements for dynamic penetrometers (per ASTM D 4633) consisted of PDI's Pile Driving Analyzer, Model SPT (SN 4565 TB), an instrumented AW-J rod (SN 420AWJ) with two strain gages (SN 420AWJ-1 and 420AWJ-2) and two piezoresistive accelerometers (SN K0040 and K11870). This system has a sampling frequency of 50 kHz. The instrumented rod measured two-feet in length and was located at the top of the drill string during energy measurement. The strain gages and accelerometers were located one-foot below the top of the instrumented rod. The SPTs were driven per ASTM D 1586.

The above referenced drill rig is equipped with a Central Mine Equipment (CME) automatic SPT hammer that utilizes a hydraulic motor to turn a chain that in turn lifts a 140-lb drive weight and releases the weight for a free fall distance of 30 inches. The drive weight impacts a CME anvil (12.75 inches in length and 2.50 inches in diameter) that is threaded into the top

Reference: Automatic Hammer Energy Verification – CME 45T#3 (#815) Drill Rig SN: 399874

of the instrumented rod. During the energy measurements, the hammer was operated in accordance with the manufacturers recommendations, was not lubricated between or during standard penetration tests, the blow rate was approximately 50 blows per minute and the auto hammer / sample rods were kept vertical during testing. At the time of the tests, the weather was 50 to 60° Fahrenheit with mostly cloudy skies and a southerly wind of 5 miles per hour.

Standard Penetration Testing was performed using a standard two-inch outer diameter split spoon sampler that was driven 1.5 feet. Testing began at a depth of 24.0 feet below the ground surface and was performed intermittently, through 4.25-inch hollow stem augers, to 31.5 feet below the ground surface. During the testing, the maximum transferred energy (EMX) was measured by the instrumented rod and compared to the theoretical potential energy (TPE) of the 140-lb drive weight dropping 30 inches. An energy transfer ratio (ETR) was then computed by dividing the EMX by the TPE.

Closing

The ETR for your 2017 CME 45T#3 (#815) SN: 399874 ranged from a low of 86.6% to a high of 89.0% with an average of 87.6%. Per ASTM D 4633, this hammer energy verification is valid for one year from the testing date of April 14, 2021. The attached Table 1 presents detailed results of the energy measurement.

Regards,

STANTEC CONSULTING SERVICES INC.

Benjamin A. Halada, PE
Senior Associate
Phone: (859) 422-3070
ben.halada@stantec.com

Attachment: Table 1: Summary of SPT Results – Stantec CME 45T#3 (#815)
Test interval summaries and plots of force and normalized velocity versus time
Pile Driving Analyzer, Model SPT Calibration
Rod Calibration
Piezoresistive Accelerometer Calibration

Table 1: Summary of SPT Results - CME 45T#3 (#815)

Stantec Consulting Services Inc.
Test Date: 4/14/2021
Drill Rig: CME 45T#3 (#815) SN: 399874
Rod Size: AW-J
Driller: Andrew Clements

Project Number: 175529007
Boring ID: B-2
Location: Dry Ridge, KY
Hammer: 140 lbs
Drop Height: 30 inches
Theoretical Potential Energy (TPE): 350 lbs-ft

Test Date	Sample ID	Rod Length [1] (feet)	Beginning Depth [2] (feet)	Ending Depth [2] (feet)	Blow Counts (blows/6")	Field N-Value	Hammer Blow Rate (bpm)	Avg. Max Compressive Force (FMX) (kips)	Average Maximum Velocity (VMX) (ft/sec)	Average Transferred Energy (EMX) (lbs-ft)	Avg. Energy Transfer Ratio (ETR) [3] (%)
4/14/2021	SPT17	28.0	24.0	25.5	**2 - 4 - 7**	**11**	50	28.8	19.5	302.9	86.6
4/14/2021	SPT18	29.0	25.5	27.0	**3 - 5 - 11**	**16**	50	28.8	18.7	311.7	89.0
4/14/2021	SPT20	34.0	28.5	30.0	**6 - 5 - 9**	**14**	50	28.4	18.7	305.1	87.2
4/14/2021	SPT21	35.0	30.0	31.5	**8 - 8 - 7**	**15**	50	28.3	18.9	306.2	87.5
							(bpm)	(kips)	(ft/sec)	(lbs-ft)	(%)
					Overall Average Values:		50	28.6	19.0	306.5	87.6
					Standard Deviation:		0.3	0.2	0.3	3.2	0.9

1 - Depth below the location of the gages.
2 - Depth from existing ground surface.
3 - Computed from the (EMX / TPE) * 100%

Test Interval Summaries and Plots of Force and Normalized Velocity

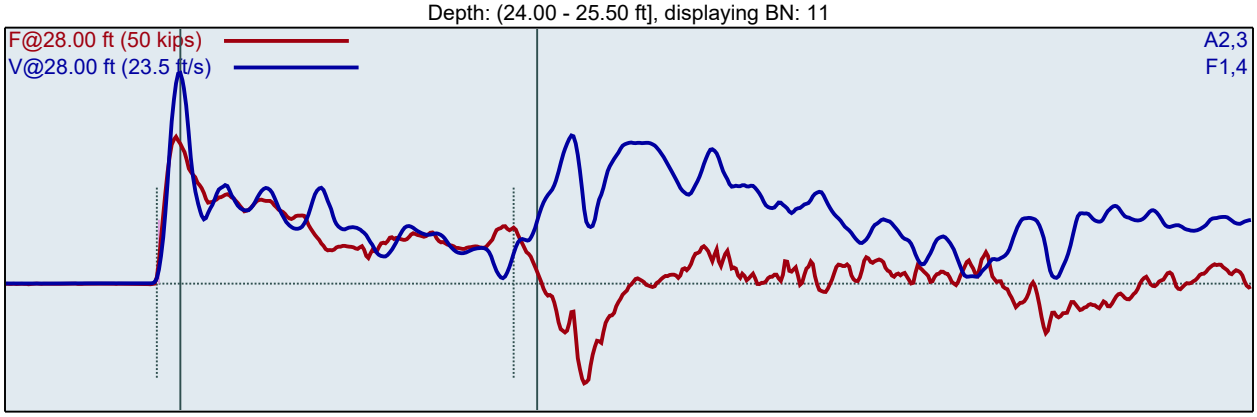
CME 45T#3 #815 SN 399874
BAH
B-2

24.0-25.5
Test date: 4/14/2021

AR: 1.19 in^2
LE: 28.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (24.00 - 25.50 ft], displaying BN: 11



F1 : [420AWJ1] 207.29 PDICAL (1) FF1
F4 : [420AWJ2] 206.7 PDICAL (1) FF1

A2 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1
A3 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	2	24.25	86.72	24.1	24.7	1.9	19.6	29
2	2	24.50	87.69	24.3	24.6	50.0	19.6	29
3	4	24.63	86.69	23.9	24.1	50.1	19.6	28
4	4	24.75	87.73	24.4	24.5	50.5	19.6	29
5	4	24.88	86.61	24.0	24.1	50.3	19.8	29
6	4	25.00	87.33	24.2	24.2	49.9	19.8	29
7	7	25.07	87.40	24.3	24.4	50.1	19.8	29
8	7	25.14	86.24	24.0	24.1	49.7	19.8	29
9	7	25.21	85.83	24.1	24.3	50.0	19.7	29
10	7	25.29	88.09	24.4	24.5	49.9	19.5	29
11	7	25.36	84.95	24.1	24.2	49.9	19.4	29
12	7	25.43	84.96	24.4	24.8	49.9	19.1	29
13	7	25.50	86.55	23.7	23.9	49.9	18.7	28
		Average	86.58	24.1	24.3	50.0	19.5	29
		Std Dev	0.99	0.2	0.2	0.2	0.3	0
		Maximum	88.09	24.4	24.8	50.5	19.8	29
		Minimum	84.95	23.7	23.9	49.7	18.7	28

N-value: 11

Sample Interval Time: 14.42 seconds.

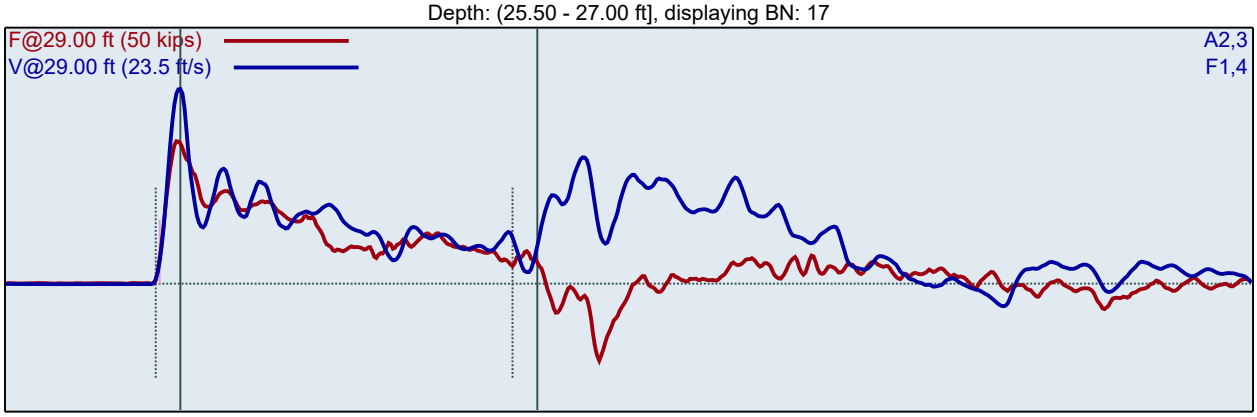
CME 45T#3 #815 SN 399874
BAH
B-2

25.5-27.0
Test date: 4/14/2021

AR: 1.19 in^2
LE: 29.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (25.50 - 27.00 ft], displaying BN: 17



F1 : [420AWJ1] 207.29 PDICAL (1) FF1
F4 : [420AWJ2] 206.7 PDICAL (1) FF1

A2 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1
A3 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	3	25.67	87.67	24.5	25.9	1.9	19.5	29
2	3	25.83	88.91	24.4	25.7	49.5	19.5	29
3	3	26.00	89.49	25.0	25.9	50.3	19.8	30
4	5	26.10	87.41	24.6	26.0	50.4	19.7	29
5	5	26.20	87.81	24.7	26.3	49.7	19.6	29
6	5	26.30	89.30	24.8	26.5	49.7	19.6	29
7	5	26.40	90.56	24.8	26.4	49.9	19.5	30
8	5	26.50	91.04	25.0	26.4	49.7	19.2	30
9	11	26.55	92.05	25.0	26.5	49.8	19.4	30
10	11	26.59	88.46	24.5	26.0	49.9	19.0	29
11	11	26.64	87.87	25.0	26.1	49.8	18.9	30
12	11	26.68	88.80	24.6	25.6	49.9	18.6	29
13	11	26.73	88.22	24.3	25.3	49.8	18.5	29
14	11	26.77	90.53	24.3	25.4	49.8	18.4	29
15	11	26.82	88.46	23.2	24.2	49.8	17.9	28
16	11	26.86	88.18	23.4	23.6	49.8	17.8	28
17	11	26.91	89.06	23.4	24.0	49.9	17.9	28
18	11	26.95	89.47	22.7	23.0	49.8	17.6	27
19	11	27.00	86.84	22.9	23.2	49.8	17.7	27
		Average	89.00	24.2	25.3	49.8	18.7	29
		Std Dev	1.38	0.8	1.2	0.2	0.7	1
		Maximum	92.05	25.0	26.5	50.4	19.7	30
		Minimum	86.84	22.7	23.0	49.7	17.6	27

N-value: 16

Sample Interval Time: 21.66 seconds.

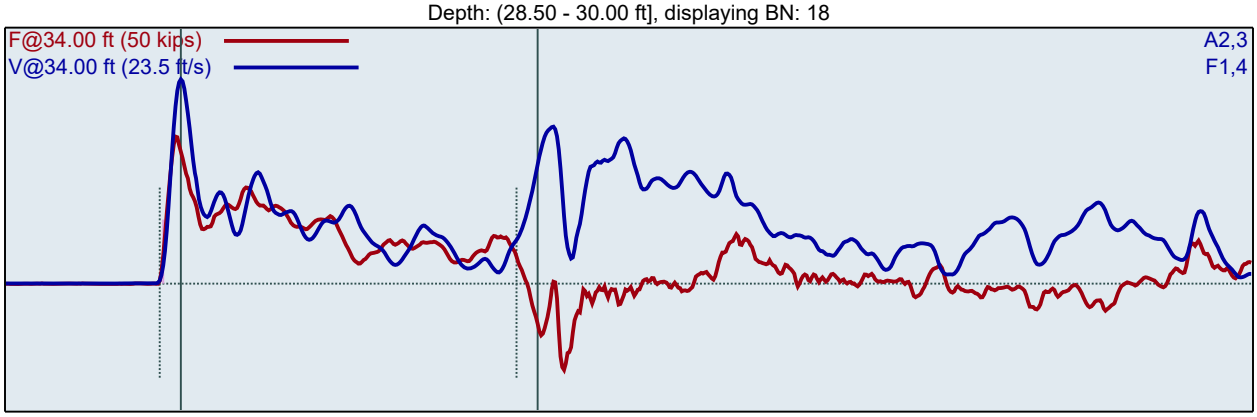
CME 45T#3 #815 SN 399874
BAH
B-2

28.5-30.0
Test date: 4/14/2021

AR: 1.19 in^2
LE: 34.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (28.50 - 30.00 ft], displaying BN: 18



F1 : [420AWJ1] 207.29 PDICAL (1) FF1
F4 : [420AWJ2] 206.7 PDICAL (1) FF1

A2 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1
A3 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	6	28.58	88.78	24.7	25.5	1.9	19.7	29
2	6	28.67	89.58	25.0	25.7	49.8	19.9	30
3	6	28.75	88.68	25.2	25.8	49.8	19.8	30
4	6	28.83	89.26	25.2	25.8	49.6	19.8	30
5	6	28.92	89.94	25.3	26.0	49.8	19.8	30
6	6	29.00	89.37	25.1	25.8	49.6	19.5	30
7	5	29.10	89.33	25.1	25.9	49.4	19.4	30
8	5	29.20	88.86	24.8	25.6	49.6	19.4	30
9	5	29.30	88.31	24.5	25.6	49.6	19.1	29
10	5	29.40	88.24	24.7	25.4	49.5	19.1	29
11	5	29.50	86.90	24.3	25.3	49.5	18.8	29
12	9	29.56	86.39	23.5	24.3	49.5	18.4	28
13	9	29.61	86.28	23.1	24.0	49.5	18.2	28
14	9	29.67	86.39	23.0	23.9	49.4	18.3	27
15	9	29.72	85.62	22.8	23.7	49.6	18.2	27
16	9	29.78	86.54	23.4	24.3	49.4	18.5	28
17	9	29.83	85.48	23.1	24.0	49.5	18.4	28
18	9	29.89	88.08	24.2	25.1	49.5	18.8	29
19	9	29.94	86.20	23.8	24.8	49.4	18.7	28
20	9	30.00	87.87	23.9	24.3	49.5	18.7	28
		Average	87.18	23.9	24.7	49.5	18.7	28
		Std Dev	1.19	0.7	0.7	0.1	0.4	1
		Maximum	89.33	25.1	25.9	49.6	19.4	30
		Minimum	85.48	22.8	23.7	49.4	18.2	27

N-value: 14

Sample Interval Time: 22.99 seconds.

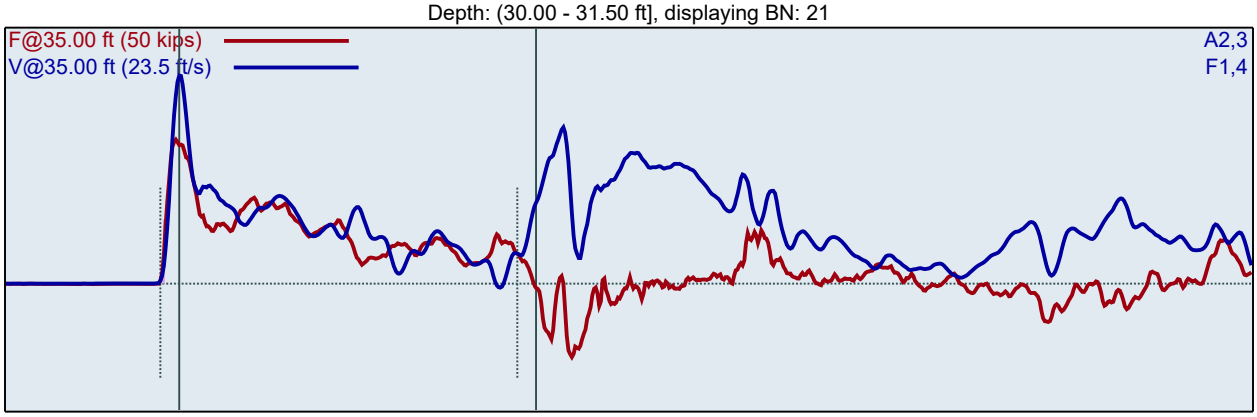
CME 45T#3 #815 SN 399874
BAH
B-2

30.0-31.5
Test date: 4/14/2021

AR: 1.19 in^2
LE: 35.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (30.00 - 31.50 ft], displaying BN: 21



F1 : [420AWJ1] 207.29 PDICAL (1) FF1
F4 : [420AWJ2] 206.7 PDICAL (1) FF1

A2 (PR): [K11870] 434.195 mv/6.4v/5000g (1) VF1
A3 (PR): [K0040] 302.373 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	8	30.06	88.42	25.1	26.0	1.9	19.4	30
2	8	30.13	88.17	24.6	24.8	50.4	19.2	29
3	8	30.19	86.66	24.5	25.0	50.0	19.1	29
4	8	30.25	92.07	23.9	24.5	50.1	19.2	28
5	8	30.31	89.30	24.0	24.4	50.0	19.2	29
6	8	30.38	89.29	23.7	24.1	50.1	18.8	28
7	8	30.44	86.93	23.5	24.1	50.1	18.9	28
8	8	30.50	89.32	23.4	23.8	50.4	18.9	28
9	8	30.56	86.97	23.2	23.2	50.0	18.2	28
10	8	30.63	87.51	23.1	23.3	50.3	18.3	28
11	8	30.69	87.09	23.8	23.9	50.1	18.2	28
12	8	30.75	86.02	23.1	23.6	50.2	18.6	28
13	8	30.81	86.53	24.4	24.6	50.1	18.8	29
14	8	30.88	87.21	23.9	24.2	50.2	19.1	28
15	8	30.94	88.69	24.0	24.2	50.2	19.2	29
16	8	31.00	87.60	24.2	24.5	50.1	19.2	29
17	7	31.07	86.40	23.6	23.9	50.4	19.0	28
18	7	31.14	88.26	23.2	23.6	50.1	19.7	28
19	7	31.21	88.86	23.3	23.5	50.0	19.2	28
20	7	31.29	87.71	23.5	24.0	50.2	19.3	28
21	7	31.36	88.32	23.7	23.8	50.0	19.2	28
22	7	31.43	87.81	24.2	24.5	50.1	19.1	29
23	7	31.50	87.64	24.2	24.2	50.3	18.7	29

Average	87.51	23.7	23.9	50.1	18.9	28
Std Dev	0.80	0.4	0.4	0.1	0.4	1
Maximum	88.86	24.4	24.6	50.4	19.7	29
Minimum	86.02	23.1	23.2	50.0	18.2	28

N-value: 15

Sample Interval Time: 26.30 seconds.

Pile Driving Analyzer, Model SPT Calibration

Certificate of Calibration

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

was calibrated on 16 Oct 2020

using a PDA Calibration Box whose output was calibrated with test equipment traceable to NIST.

This certificate is valid for 2 years from above date.

Tested by: MO

Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

Certificate of Compliance

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

has been tested and passed all final test procedures on 16 Oct 2023

SEAL

Tested by: MCO

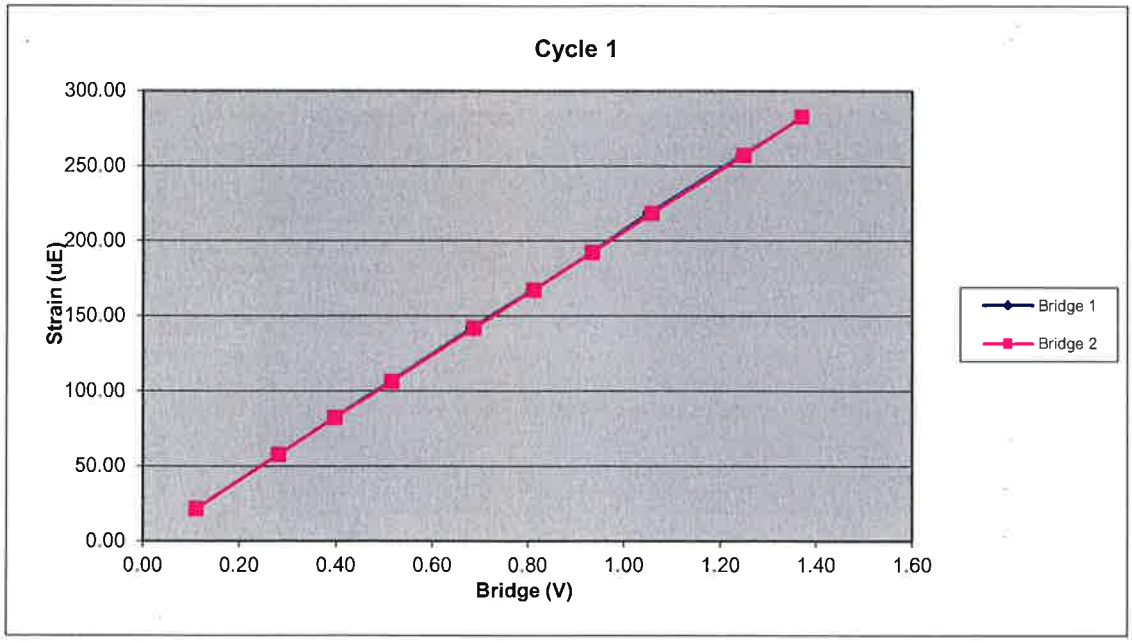
Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

AW-J Rod Calibration

420AWJ		Cycle 1		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	794.23	21.58	0.11	0.11
3	2061.62	57.65	0.28	0.28
4	2919.60	82.25	0.40	0.40
5	3785.67	106.28	0.51	0.51
6	5047.69	142.08	0.69	0.69
7	5968.84	167.53	0.81	0.81
8	6875.56	192.56	0.93	0.93
9	7764.54	218.68	1.05	1.06
10	9180.97	257.49	1.25	1.25
11	10068.97	283.27	1.37	1.37

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7369.52**	**Force Calibration (lb/V)**	**7362.65**
Offset	-10.59	Offset	-10.62
Correlation	0.999998	Correlation	0.999998
Strain Calibration (µE/V)	**207.40**	**Strain Calibration (µE/V)**	**207.21**
Offset	-0.65	Offset	-0.65
Correlation	0.999984	Correlation	0.999989

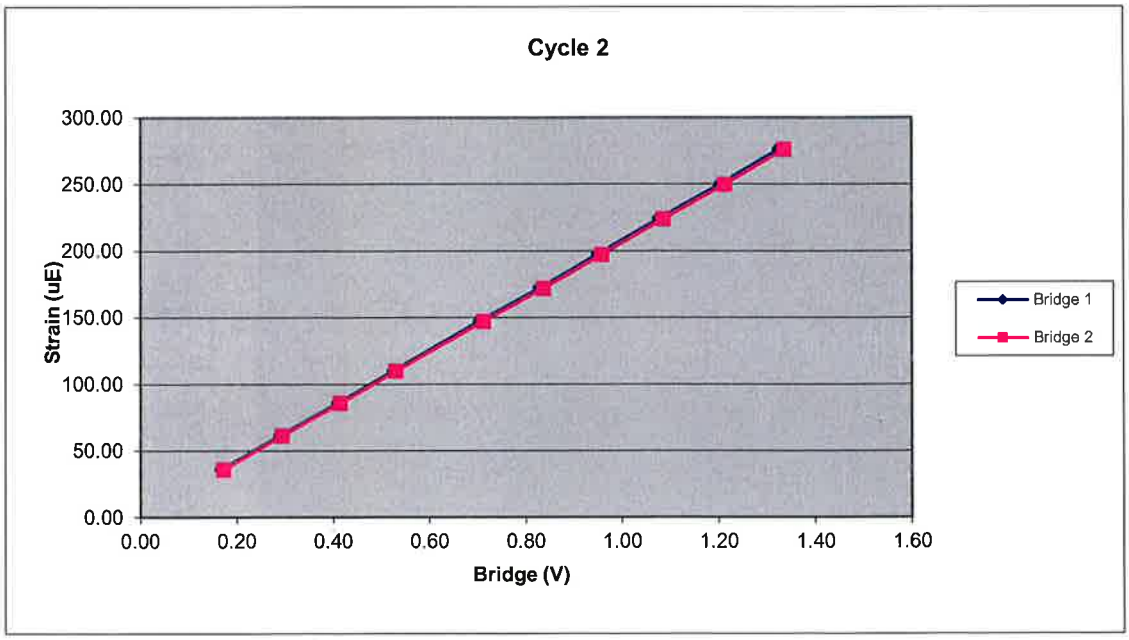
Force Strain Calibration	
EA (Kips)	**35531.47**
Offset	12.65
Correlation	0.999989



420AWJ		Cycle 2		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1273.43	35.95	0.17	0.17
3	2180.63	61.40	0.29	0.29
4	3076.53	85.91	0.41	0.42
5	3933.35	110.09	0.53	0.53
6	5260.48	147.41	0.71	0.71
7	6195.18	172.25	0.83	0.84
8	7081.63	197.63	0.95	0.96
9	8026.56	224.24	1.08	1.08
10	8975.68	250.08	1.20	1.21
11	9882.11	276.31	1.33	1.34

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7441.38**	**Force Calibration (lb/V)**	**7398.53**
Offset	**10.34**	Offset	**1.44**
Correlation	**1.000000**	Correlation	**0.999999**
Strain Calibration (µE/V)	**207.35**	**Strain Calibration (µE/V)**	**206.15**
Offset	**0.69**	Offset	**0.45**
Correlation	**0.999991**	Correlation	**0.999993**

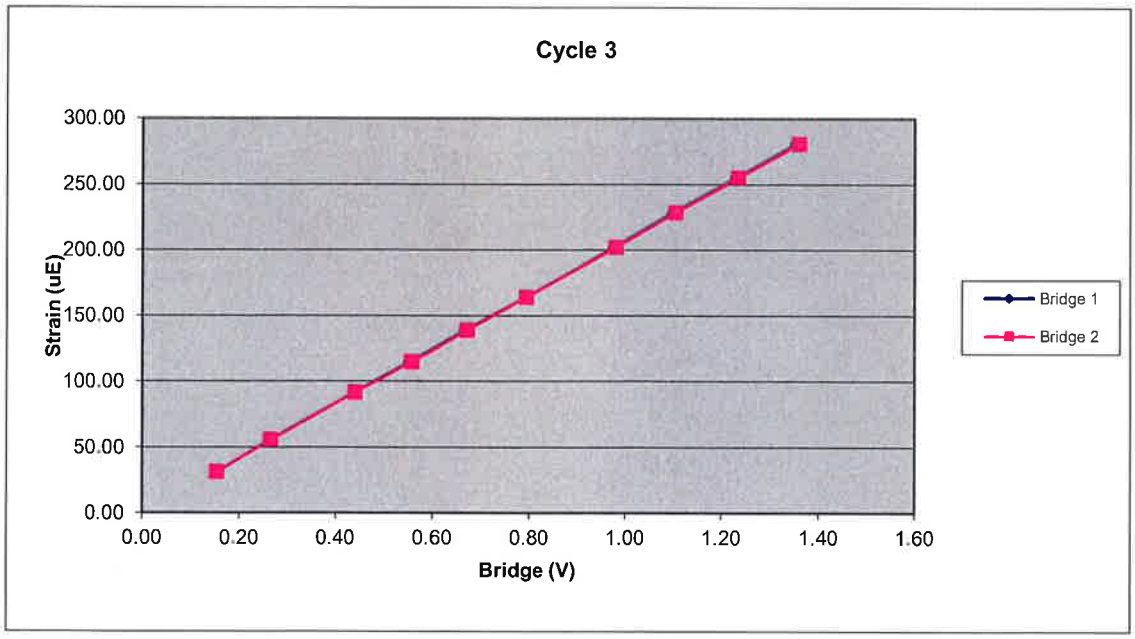
Force Strain Calibration	
EA (Kips)	**35887.92**
Offset	**-14.45**
Correlation	**0.999988**



420AWJ		Cycle 3		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1134.23	31.34	0.15	0.15
3	1960.73	55.45	0.27	0.27
4	3263.88	91.77	0.44	0.44
5	4122.16	114.89	0.56	0.56
6	4971.66	139.17	0.67	0.67
7	5884.62	164.38	0.80	0.80
8	7256.79	202.41	0.98	0.98
9	8174.72	228.99	1.10	1.11
10	9134.66	255.34	1.23	1.24
11	10059.71	281.21	1.36	1.36

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7413.07**	**Force Calibration (lb/V)**	**7399.60**
Offset	**-6.39**	Offset	**-3.56**
Correlation	**1.000000**	Correlation	**0.999999**
Strain Calibration (µE/V)	**207.12**	**Strain Calibration (µE/V)**	**206.75**
Offset	**-0.05**	Offset	**0.03**
Correlation	**0.999988**	Correlation	**0.999990**

Force Strain Calibration	
EA (Kips)	**35789.80**
Offset	**-4.60**
Correlation	**0.999989**



Bridge Excitation (V) 5
Shunt Resitor (ohm) 60.4k

Calibration Factors	420AWJ		
Bridge 1 (µE/V)	207.29	Bridge 2 (µE/V)	206.70
EA Factor (Kips)	35736.40	Area (in^2)	1.19

Calibrated by: _____
Calibrated Date: 2/23/2021

Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

Piezoresistive Accelerometer Calibration

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on 28Oct2020

Serial No:	K0040	**Temperature:**	20.0 °C
Model:	PR	**Humidity:**	45%
Calibrated on:	Channel 3 on 8G 5161 LE		

Ref Acc 1:	65538! 1040 g's/volt	**Cal on:**	27Jan2020
Ref Acc 2:	63479! 1080 g's/volt	**Cal on:**	09Sep2020

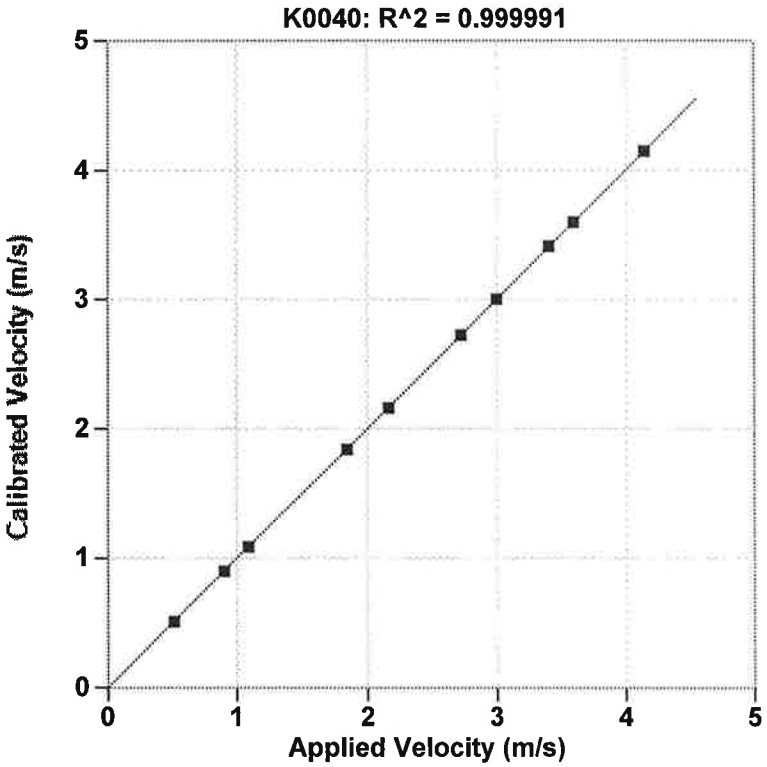
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

302.4 mv/5000g
(60.5 µv/g)
R^2: 0.999991 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K0040 Velocity
m/s	m/s
0.511	0.508
0.903	0.896
1.089	1.085
1.844	1.840
2.162	2.159
2.724	2.722
3.000	3.000
3.407	3.412
3.598	3.598
4.146	4.148

Maximum Acceleration: 905 g's

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on MAR 0 8 2021

Serial No:	K11870	**Temperature:**	21.0 °C
Model:	PR	**Humidity:**	40%
Calibrated on:	Channel 4 on 8G 5161 LE		

Ref Acc 1:	63479! 1080 g's/volt	**Cal on:**	09Sep2020
Ref Acc 2:	65538! 1040 g's/volt	**Cal on:**	27Jan2020

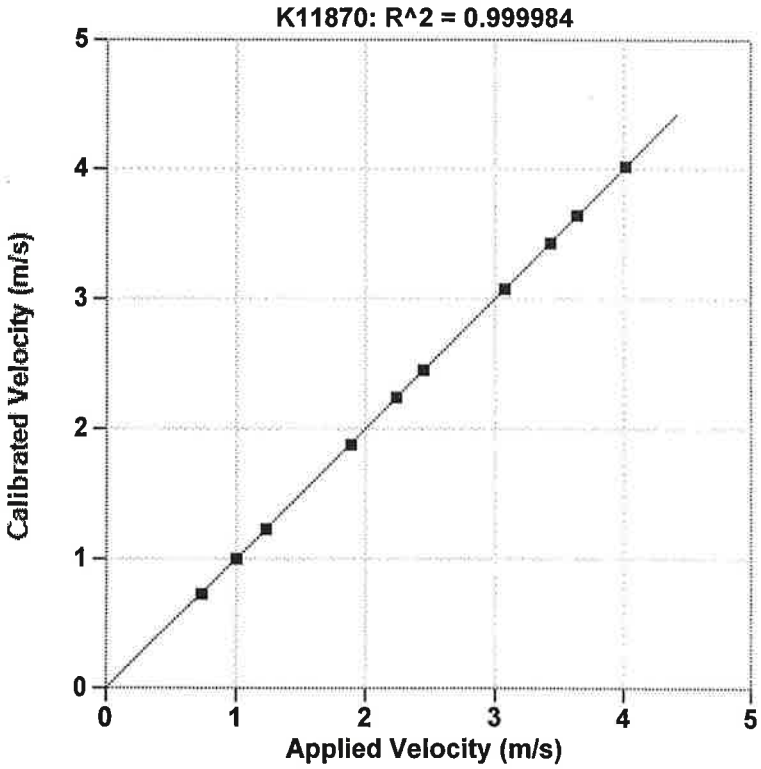
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

434.2 mv/5000g
(86.8 µv/g)
R^2: 0.999984 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K11870 Velocity
m/s	m/s
0.731	0.726
1.004	0.999
1.229	1.227
1.888	1.878
2.241	2.240
2.451	2.452
3.074	3.075
3.430	3.428
3.639	3.644
4.017	4.020

Maximum Acceleration: 871 g's

Stantec Consulting Services Inc.
3052 Beaumont Centre Circle, Lexington KY 40513-1703

March 7, 2021 175668043

Attention: Mr. Jeff Dingrando
Stantec Consulting Services Inc.
3052 Beaumont Centre Circle
Lexington, Kentucky 40513-1703

Reference: Automatic Hammer Energy Verification – CME 55 #1 (#709) Track Drill Rig SN: 330045

Dear Mr. Dingrando,

Stantec Consulting Services Inc. (Stantec) is pleased to submit this letter regarding the automatic Standard Penetration Test (SPT) hammer energy verification of your 2004 CME 55 Track #1 (#709) SN: 330045. Included within this letter is a summary table followed by a detailed description of the testing equipment used, testing procedures and a summary of the test results.

Summary of Automatic Hammer Energy Verification	
Rig ID:	Stantec CME 55 Track #1 (#709) SN: 330045
Hammer Type:	CME Automatic (140-lb)
Project and Location:	TVA KIF Seismic Borings, Kingston, Tennessee
Test Date and Time:	February 23, 2021 0800 - 1300
Equipment Operator:	Benjamin A. Halada (Stantec)
Drill Operator:	Eddie Caudill (Stantec)
Energy Transfer Ratio (%) [Low-High-**Average**]	84.2% - 95.6% - **89.8%**

Equipment and Procedures

SPT hammer energy verification was performed on Tuesday, February 23, 2021 in Kingston, Tennessee, while the drill was operating on the Tennessee Valley Authority (TVA) Kingston Fossil Plant property. Stantec utilized energy measurement equipment manufactured by Pile Dynamics, Inc. (PDI), of Cleveland, Ohio. Equipment for data acquisition for energy measurements for dynamic penetrometers (per ASTM D 4633) consisted of PDI's Pile Driving Analyzer, Model SPT (SN 4565 TB), an instrumented NW-J rod (SN 393NWJ) with two strain gages (SN 393NWJ-1 and 393NWJ-2) and two piezoresistive accelerometers (SN K3739 and K3740). This system has a sampling frequency of 50 kHz. The instrumented rod measured two-feet in length and was located at the top of the drill string during energy measurement. The strain gages and accelerometers were located one-foot below the top of the instrumented rod. The SPT's were driven per ASTM D 1586.

The above referenced drill rig is equipped with a Central Mine Equipment (CME) automatic SPT hammer that utilizes a hydraulic motor to turn a chain that in turn lifts a 140-lb drive weight and releases the weight for a free fall distance of 30 inches. The drive weight impacts

a CME anvil (12.75 inches in length and 2.50 inches in diameter) that is threaded into the top of the instrumented rod. During the energy measurements, the hammer was operated in accordance with the manufacturers recommendations, was not lubricated between or during standard penetration tests, the blow rate was approximately 54 blows per minute and the auto hammer / sample rods were kept vertical. At the time of the tests, the weather was 35 to 60° Fahrenheit with sunny skies and little to no wind.

Standard Penetration Testing was performed using a standard two-inch outer diameter split spoon sampler that was driven 1.5 feet. Testing began at a depth of 17.5 feet below the ground surface and was performed intermittently to 38.0 feet below the ground surface. The boring was advanced using a 4 7/8" diameter updraft bit and a bentonite based drilling fluid that had an average density of 9.0 lbs/gal. During the testing, the maximum transferred energy (EMX) was measured by the instrumented rod and compared to the theoretical potential energy (TPE) of the 140-lb drive weight dropping 30 inches. An energy transfer ratio (ETR) was then computed by dividing the EMX by the TPE.

Closing

The ETR for your 2004 CME 55 Track #1 (#709) SN: 330045 ranged from a low of 84.2% to a high of 95.6% with an average of 89.8%. Per ASTM D 4633, this hammer energy verification is valid for one year from the testing date of February 23, 2021. The attached Table 1 presents detailed results of the energy measurement.

Regards,

STANTEC CONSULTING SERVICES INC.

Benjamin A. Halada, PE
Senior Associate
Phone: (859) 422-3070
ben.halada@stantec.com

Attachment: Table 1: Summary of SPT Results – Stantec CME 55 Track #1 (#709)
Test interval summaries
Plots of force and normalized velocity versus time for each test interval
Pile Driving Analyzer, Model SPT Calibration
Rod Calibration
Piezoresistive Accelerometer Calibration

Table 1: Summary of SPT Results - CME 55 Track #1 (#709)

Stantec Consulting Services Inc.
Test Date: 2/23/2021
Drill Rig: CME 55 Track #1 (709) SN: 330045
Rod Size: NW-J
Driller: Eddie Caudill

Project Number: 175668043
Boring ID: KIF-B05
Location: TVA KIF
Hammer: 140 lbs
Drop Height: 30 inches
Theoretical Potential Energy (TPE): 350 lbs-ft

Test Date	Sample ID	Rod Length [1] (feet)	Beginning Depth [2] (feet)	Ending Depth [2] (feet)	Blow Counts (blows/6")	Field N-Value	Hammer Blow Rate (bpm)	Avg. Max Compressive Force (FMX) (kips)	Maximum Velocity (VMX) (ft/sec)	Transferred Energy (EMX) (lbs-ft)	Avg. Energy Transfer Ratio (ETR) [3] (%)
2/23/2021	SS08	23.0	17.5	19.0	**5 - 6 - 7**	**13**	55	39.6	16.3	296.8	84.8
2/23/2021	SS10	25.0	20.5	22.0	**2 - 3 - 4**	**7**	50	39.9	16.2	310.6	88.8
2/23/2021	SS13	34.0	28.0	29.5	**1 - 1 - 2**	**3**	56	39.7	15.9	334.3	95.6
2/23/2021	SS14	36.0	30.5	32.0	**1 2 3**	**5**	56	40.0	14.7	294.6	84.2
2/23/2021	SS16	44.0	38.0	39.5	**4 - 5 - 8**	**13**	54	39.6	16.2	334.7	95.6
							(bpm)	(kips)	(ft/sec)	(lbs-ft)	(%)
					Overall Average Values:		54	39.8	15.9	314.2	89.8
					Standard Deviation:		2.1	0.2	0.6	17.5	5.0

1 - Depth below the location of the gages.
2 - Depth from existing ground surface.
3 - Computed from the (EMX / TPE) * 100%

Test Interval Summaries and Plots of Force and Normalized Velocity

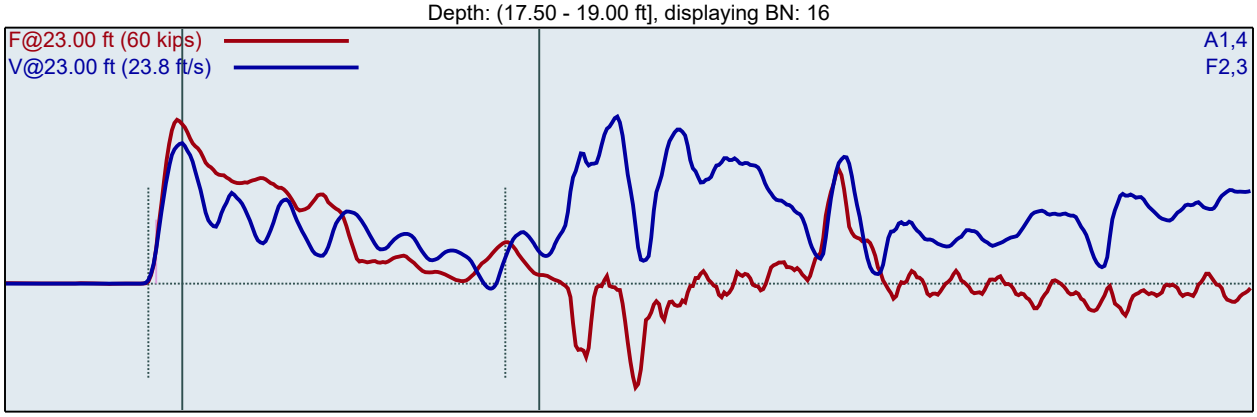
CME 55T#1 (#709) SN 33045
BAH
KIF-B05

SS08 17.5-19.0
Test date: 2/23/2021

AR: 1.41 in^2
LE: 23.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (17.50 - 19.00 ft], displaying BN: 16



F2 : [393NWJ1] 209.72 PDICAL (1) FF1
F3 : [393NWJ2] 210.35 PDICAL (1) FF1

A1 (PR): [K3740] 369.779 mv/6.4v/5000g (1) VF1
A4 (PR): [K3739] 309.8 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	5	17.60	78.68	26.7	26.8	1.9	15.7	38
2	5	17.70	82.48	27.5	27.6	52.6	16.1	39
3	5	17.80	83.88	27.8	28.0	54.6	15.9	39
4	5	17.90	80.88	28.4	28.4	54.7	16.0	40
5	5	18.00	83.15	28.1	28.2	54.4	16.1	40
6	6	18.08	83.56	28.7	28.7	54.6	15.9	40
7	6	18.17	83.43	28.4	28.5	54.8	15.9	40
8	6	18.25	84.12	28.3	28.4	54.6	15.9	40
9	6	18.33	85.35	28.1	28.2	54.9	16.1	40
10	6	18.42	85.07	27.5	27.5	54.5	15.8	39
11	6	18.50	83.93	28.2	28.2	55.0	16.5	40
12	7	18.57	86.33	28.5	28.7	54.7	16.7	40
13	7	18.64	86.66	28.5	28.5	54.9	17.1	40
14	7	18.71	84.06	28.2	28.3	55.0	16.8	40
15	7	18.79	84.92	28.7	28.8	54.6	17.1	40
16	7	18.86	84.58	27.2	27.4	55.0	15.6	38
17	7	18.93	84.64	27.6	27.9	54.5	16.0	39
18	7	19.00	85.98	27.8	28.2	54.9	16.4	39
		Average	84.82	28.1	28.2	54.8	16.3	40
		Std Dev	0.99	0.4	0.4	0.2	0.5	1
		Maximum	86.66	28.7	28.8	55.0	17.1	40
		Minimum	83.43	27.2	27.4	54.5	15.6	38
			N-value: 13					

Sample Interval Time: 18.67 seconds.

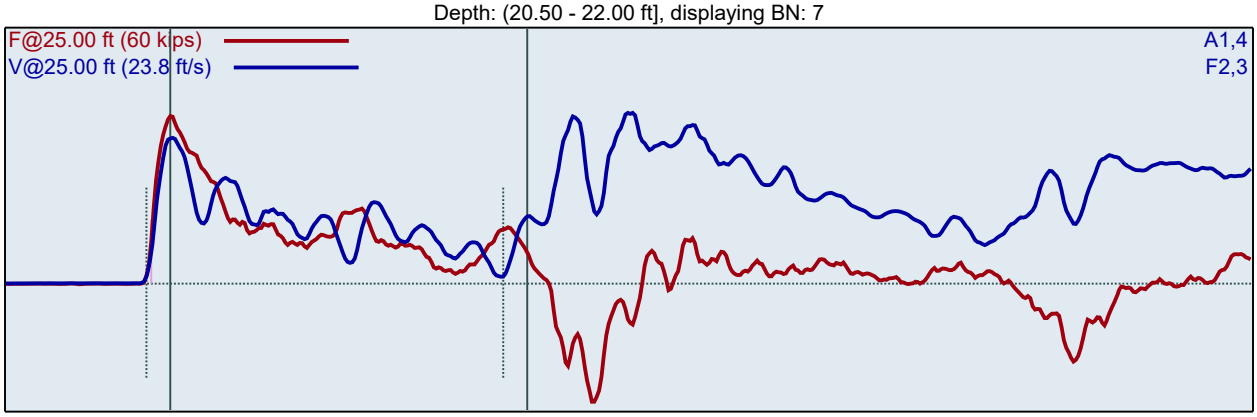
CME 55T#1 (#709) SN 33045
BAH
KIF-B05

SS10 20.5-22.0
Test date: 2/23/2021

AR: 1.41 in^2
LE: 25.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (20.50 - 22.00 ft], displaying BN: 7



F2 : [393NWJ1] 209.72 PDICAL (1) FF1
F3 : [393NWJ2] 210.35 PDICAL (1) FF1

A1 (PR): [K3740] 369.779 mv/6.4v/5000g (1) VF1
A4 (PR): [K3739] 309.8 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	2	20.75	84.81	27.8	28.1	58.8	15.6	39
2	2	21.00	86.37	28.2	28.5	50.0	16.5	40
3	3	21.17	88.29	28.4	28.9	50.2	16.3	40
4	3	21.33	88.21	28.3	28.9	50.1	16.4	40
5	3	21.50	90.68	28.2	28.7	50.2	17.4	40
6	4	21.63	87.16	28.3	28.8	50.0	16.3	40
7	4	21.75	89.21	27.9	28.3	50.2	15.9	39
8	4	21.88	87.93	28.5	29.1	50.3	15.1	40
9	4	22.00	89.77	28.2	28.8	50.4	15.8	40
		Average	88.75	28.3	28.8	50.2	16.2	40
		Std Dev	1.12	0.2	0.2	0.1	0.7	0
		Maximum	90.68	28.5	29.1	50.4	17.4	40
		Minimum	87.16	27.9	28.3	50.0	15.1	39

N-value: 7

Sample Interval Time: 9.56 seconds.

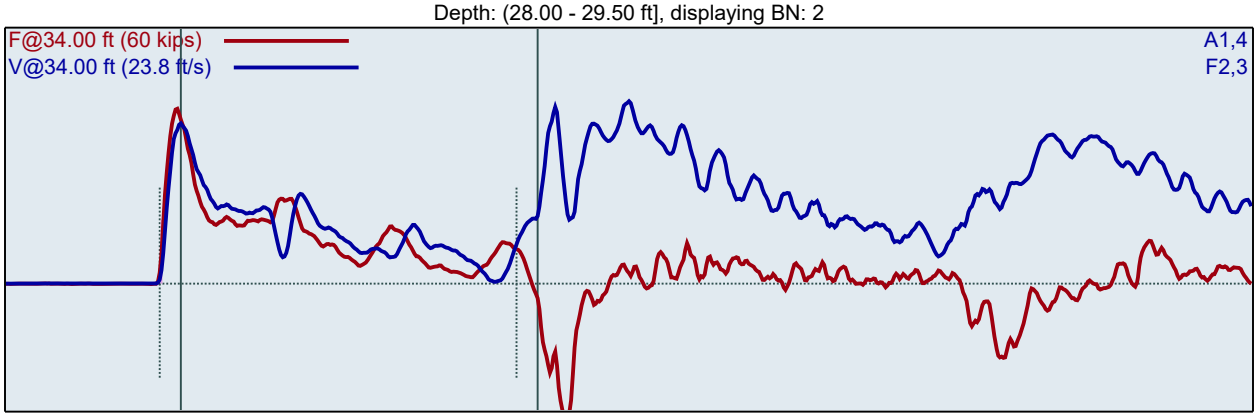
CME 55T#1 (#709) SN 33045
BAH
KIF-B05

SS13 28.0-29.5
Test date: 2/23/2021

AR: 1.41 in^2
LE: 34.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (28.00 - 29.50 ft], displaying BN: 2



F2 : [393NWJ1] 209.72 PDICAL (1) FF1
F3 : [393NWJ2] 210.35 PDICAL (1) FF1

A1 (PR): [K3740] 369.779 mv/6.4v/5000g (1) VF1
A4 (PR): [K3739] 309.8 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	1	28.50	93.56	27.8	28.3	1.9	16.0	39
2	1	29.00	99.77	29.1	29.7	54.9	17.0	41
3	2	29.25	92.00	27.3	27.6	56.6	15.2	39
4	2	29.50	94.99	27.9	28.5	56.0	15.4	39
		Average	95.59	28.1	28.6	55.8	15.9	40
		Std Dev	3.20	0.7	0.9	0.7	0.8	1
		Maximum	99.77	29.1	29.7	56.6	17.0	41
		Minimum	92.00	27.3	27.6	54.9	15.2	39
				N-value: 3				

Sample Interval Time: 3.23 seconds.

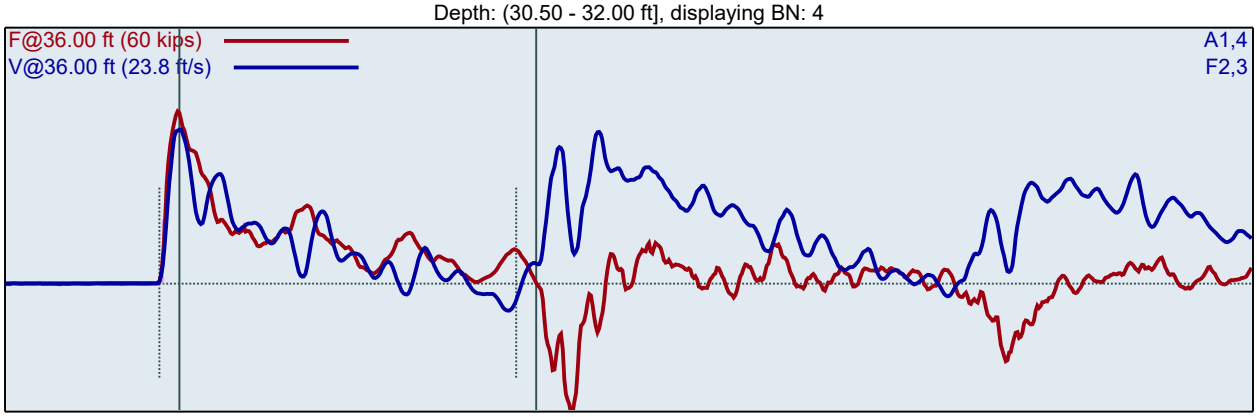
CME 55T#1 (#709) SN 33045
BAH
KIF-B05

SS14 30.5-32.0
Test date: 2/23/2021

AR: 1.41 in^2
LE: 36.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (30.50 - 32.00 ft], displaying BN: 4



F2 : [393NWJ1] 209.72 PDICAL (1) FF1
F3 : [393NWJ2] 210.35 PDICAL (1) FF1

A1 (PR): [K3740] 369.779 mv/6.4v/5000g (1) VF1
A4 (PR): [K3739] 309.8 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	1	31.00	94.12	28.5	28.8	1.9	17.0	40
2	2	31.25	85.35	28.5	28.8	55.9	15.2	40
3	2	31.50	88.95	28.3	28.8	55.9	15.6	40
4	3	31.67	83.66	28.7	29.2	55.8	14.4	40
5	3	31.83	82.39	28.5	28.8	55.7	14.0	40
6	3	32.00	80.68	28.7	28.8	55.8	14.2	40
		Average	84.21	28.5	28.9	55.8	14.7	40
		Std Dev	2.83	0.1	0.1	0.1	0.6	0
		Maximum	88.95	28.7	29.2	55.9	15.6	40
		Minimum	80.68	28.3	28.8	55.7	14.0	40

N-value: 5

Sample Interval Time: 5.41 seconds.

Pile Dynamics, Inc.
SPT Analyzer Results

PDA-S Ver. 2018.30 - Printed: 3/6/2021

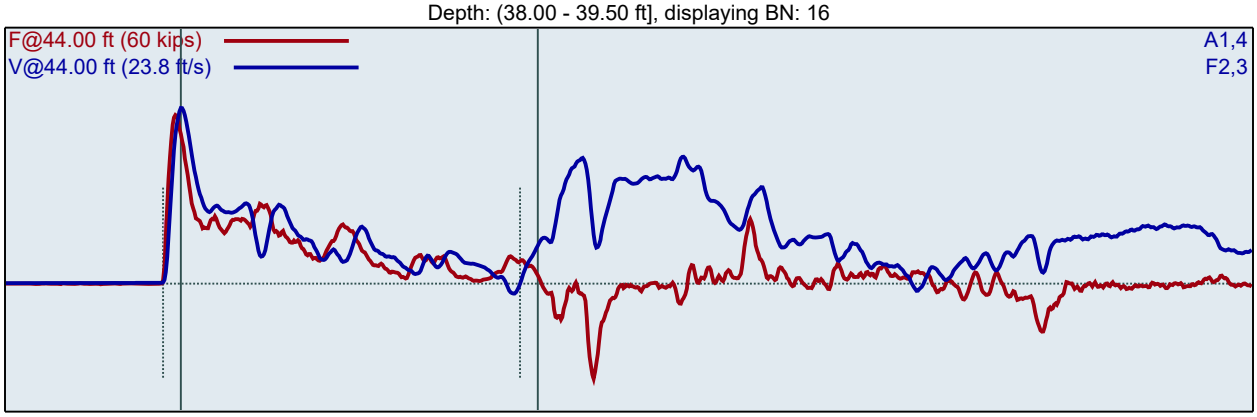
CME 55T#1 (#709) SN 33045
BAH
KIF-B05

SS16 38.0-39.5
Test date: 2/23/2021

AR: 1.41 in^2
LE: 44.00 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (38.00 - 39.50 ft], displaying BN: 16



F2 : [393NWJ1] 209.72 PDICAL (1) FF1
F3 : [393NWJ2] 210.35 PDICAL (1) FF1

A1 (PR): [K3740] 369.779 mv/6.4v/5000g (1) VF1
A4 (PR): [K3739] 309.8 mv/6.4v/5000g (1) VF1

ETR: Energy Transfer Ratio - Rated
CSX: Compression Stress Maximum
CSI: Compression Stress Maximum - Individual Sensor

BPM: Blows/Minute
VMX: Maximum Velocity
FMX: Maximum Force

BL#	BC /6"	LP ft	ETR %	CSX ksi	CSI ksi	BPM bpm	VMX ft/s	FMX kips
1	4	38.13	93.18	27.9	28.3	1.9	15.4	39
2	4	38.25	92.54	27.2	27.9	53.8	15.5	38
3	4	38.38	95.73	27.9	28.5	54.0	16.2	39
4	4	38.50	95.67	27.3	27.7	54.0	15.9	38
5	5	38.60	96.59	27.7	28.1	54.2	16.2	39
6	5	38.70	94.50	28.6	29.0	54.0	16.2	40
7	5	38.80	96.48	28.1	28.7	54.3	16.3	40
8	5	38.90	96.36	27.9	28.5	54.1	16.3	39
9	5	39.00	95.02	28.4	28.8	54.5	16.2	40
10	9	39.06	96.56	28.5	29.1	54.1	16.3	40
11	9	39.11	94.67	28.2	28.6	54.4	16.2	40
12	9	39.17	95.05	28.5	29.1	54.2	16.3	40
13	9	39.22	96.76	28.0	28.7	54.3	16.3	40
14	9	39.28	93.72	28.0	28.7	54.2	16.2	39
15	9	39.33	95.50	27.5	27.8	54.5	16.0	39
16	9	39.39	96.17	28.0	28.5	54.2	16.4	40
17	9	39.44	96.71	27.5	28.2	54.2	16.3	39
18	9	39.50	94.55	27.8	28.3	54.4	16.1	39
		Average	95.62	28.0	28.6	54.3	16.2	40
		Std Dev	0.98	0.4	0.4	0.1	0.1	0
		Maximum	96.76	28.6	29.1	54.5	16.4	40
		Minimum	93.72	27.5	27.8	54.0	16.0	39
			N-value: 14					

Sample Interval Time: 18.80 seconds.

Pile Driving Analyzer, Model SPT Calibration

Certificate of Calibration

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

was calibrated on 16 Oct 2020

using a PDA Calibration Box whose output was calibrated with test equipment traceable to NIST.

This certificate is valid for 2 years from above date.

Tested by: MO

Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

Certificate of Compliance

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4565 TB

has been tested and passed all final test procedures on 16 Oct 2023

SEAL

Tested by: MCO

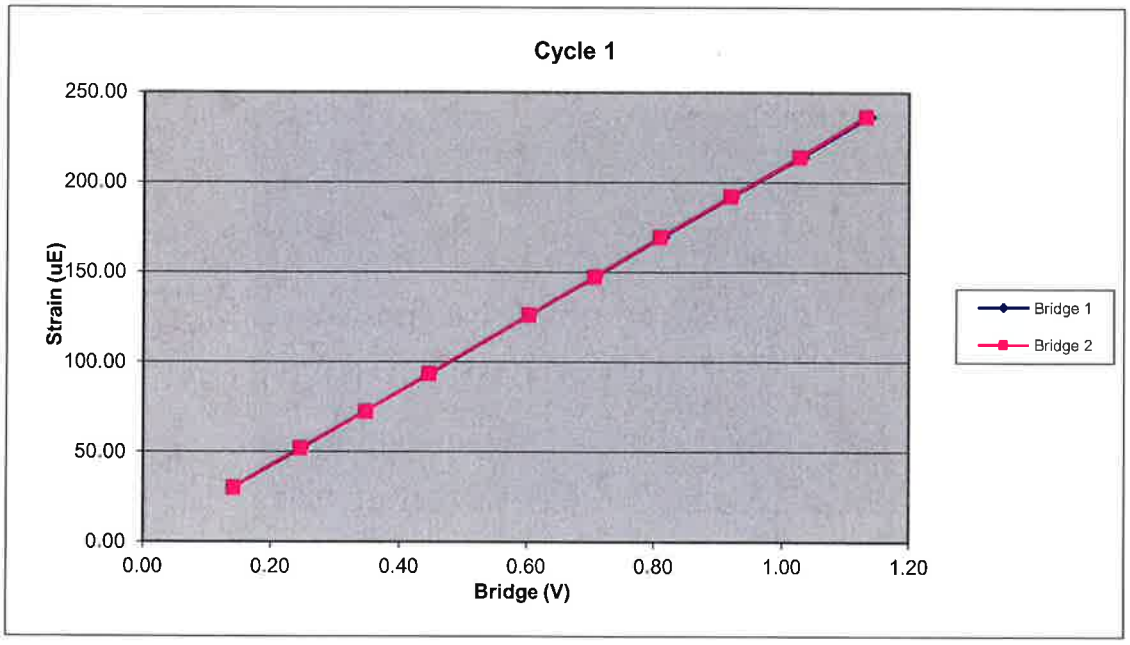
Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

NW-J Rod Calibration

393NWJ		Cycle 1		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1256.66	29.87	0.14	0.14
3	2182.58	51.93	0.25	0.25
4	3077.41	72.29	0.35	0.35
5	3958.59	93.22	0.45	0.45
6	5346.46	126.02	0.61	0.60
7	6263.90	147.20	0.71	0.71
8	7185.24	169.35	0.81	0.81
9	8153.08	191.99	0.92	0.92
10	9118.48	213.87	1.03	1.03
11	10058.44	236.37	1.14	1.13

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8852.44**	**Force Calibration (lb/V)**	**8876.59**
Offset	-12.10	Offset	-11.85
Correlation	0.999998	Correlation	0.999998
Strain Calibration (µE/V)	**207.62**	**Strain Calibration (µE/V)**	**208.19**
Offset	0.18	Offset	0.18
Correlation	0.999995	Correlation	0.999990

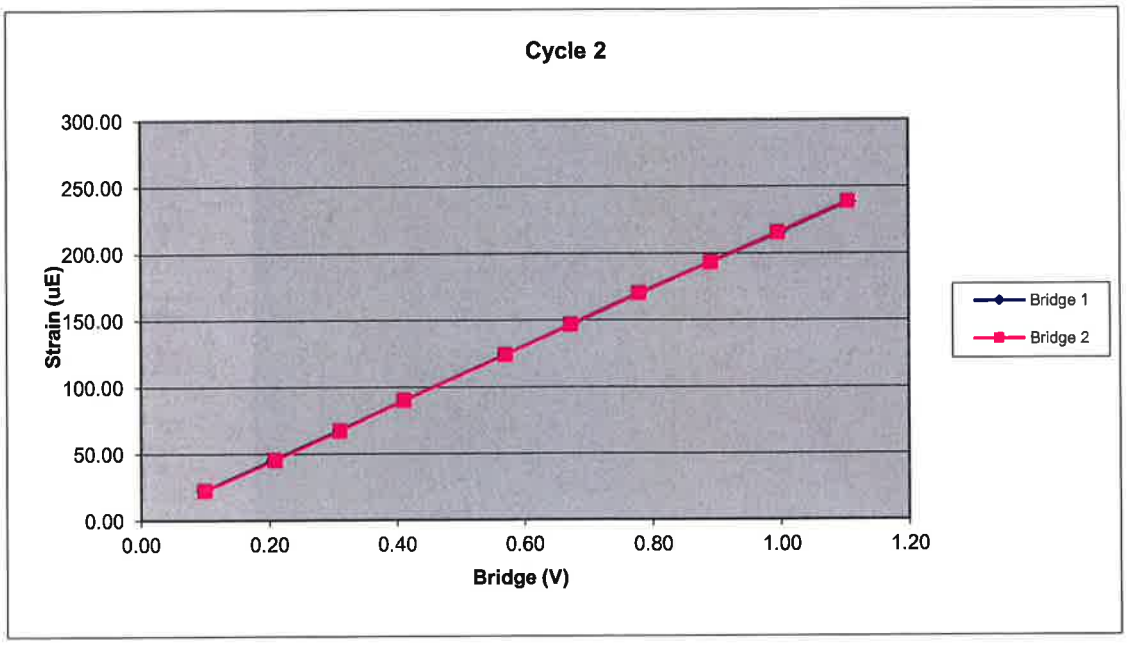
Force Strain Calibration	
EA (Kips)	**42636.94**
Offset	-19.58
Correlation	0.999992



393NWJ		Cycle 2		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	891.51	21.98	0.10	0.10
3	1857.21	45.07	0.21	0.21
4	2758.28	67.01	0.31	0.31
5	3650.96	89.73	0.41	0.41
6	5063.00	123.69	0.57	0.57
7	5972.06	146.18	0.67	0.67
8	6915.23	169.67	0.78	0.78
9	7903.84	192.74	0.89	0.89
10	8851.30	214.97	1.00	1.00
11	9814.66	238.41	1.11	1.11

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8842.81**	**Force Calibration (lb/V)**	**8870.66**
Offset	**14.62**	Offset	**-0.53**
Correlation	**0.999999**	Correlation	**0.999999**
Strain Calibration (µE/V)	**214.99**	**Strain Calibration (µE/V)**	**215.66**
Offset	**0.80**	Offset	**0.43**
Correlation	**0.999973**	Correlation	**0.999971**

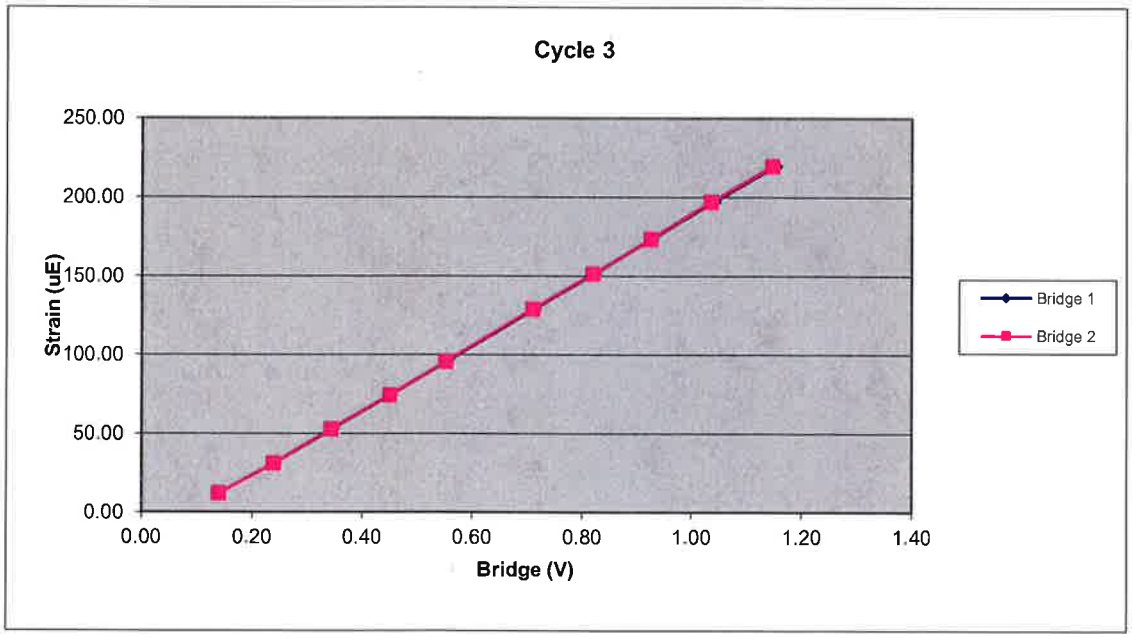
Force Strain Calibration	
EA (Kips)	**41129.20**
Offset	**-17.86**
Correlation	**0.999967**



393NWJ		Cycle 3		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	1237.55	11.57	0.14	0.14
3	2124.20	30.83	0.24	0.24
4	3051.97	52.45	0.35	0.34
5	4004.70	74.09	0.45	0.45
6	4916.00	95.54	0.55	0.55
7	6318.58	128.91	0.71	0.71
8	7284.77	151.16	0.82	0.82
9	8219.37	173.23	0.93	0.93
10	9195.20	196.65	1.04	1.04
11	10203.39	219.28	1.15	1.15

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**8860.79**	**Force Calibration (lb/V)**	**8887.76**
Offset	**-3.94**	Offset	**-4.95**
Correlation	**0.999997**	Correlation	**0.999999**
Strain Calibration (µE/V)	**206.56**	**Strain Calibration (µE/V)**	**207.19**
Offset	**-18.57**	Offset	**-18.59**
Correlation	**0.999962**	Correlation	**0.999969**

Force Strain Calibration	
EA (Kips)	**42893.26**
Offset	**792.77**
Correlation	**0.999966**



Bridge Excitation (V) 5
Shunt Resitor (ohm) 60.4k

Calibration Factors	393NWJ		
Bridge 1 (µE/V)	209.72	Bridge 2 (µE/V)	210.35
EA Factor (Kips)	42219.80	Area (in^2)	1.41

Calibrated by: _____
Calibrated Date: 11/23/2020

Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

Piezoresistive Accelerometer Calibration

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on 28Oct2020

Serial No:	K3739	**Temperature:**	20.0 °C
Model:	PR	**Humidity:**	45%
Calibrated on:	Channel 4 on 8G 5161 LE		

Ref Acc 1:	65538! 1040 g's/volt	**Cal on:**	27Jan2020
Ref Acc 2:	63479! 1080 g's/volt	**Cal on:**	09Sep2020

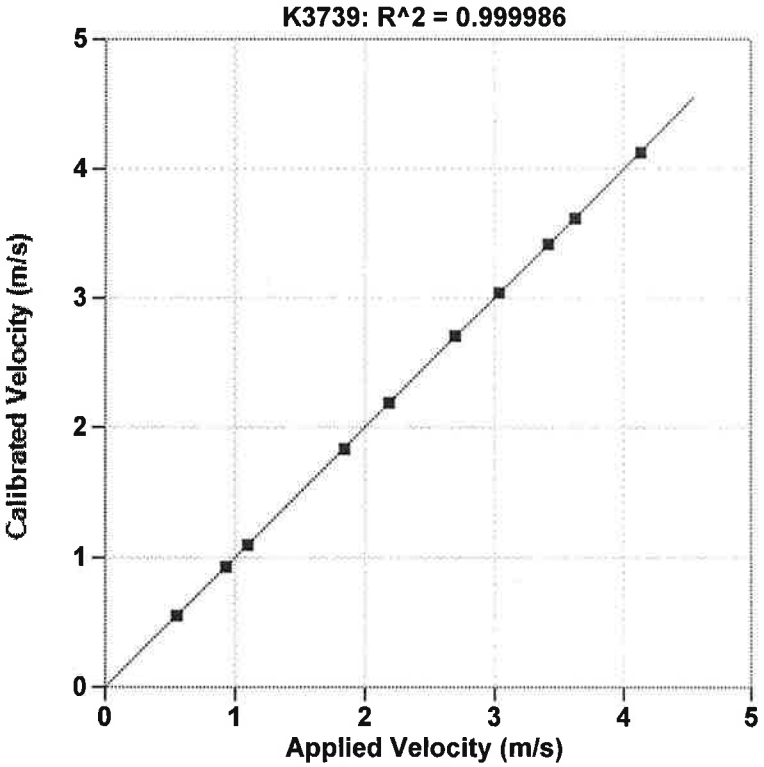
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

309.8 mv/5000g
(62.0 µv/g)
R^2: 0.999986 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K3739 Velocity
m/s	m/s
0.550	0.549
0.932	0.928
1.096	1.096
1.840	1.833
2.186	2.188
2.702	2.706
3.036	3.041
3.413	3.418
3.621	3.619
4.133	4.127

Maximum Acceleration: 903 g's

Accelerometer Calibration Certificate
Pile Dynamics, Inc.

Calibrated by Pile Dynamics, Inc.
Calibration performed on 28Oct2020

Serial No:	K3740	**Temperature:**	20.0 °C
Model:	PR	**Humidity:**	45%
Calibrated on:	Channel 3 on 8G 5161 LE		

Ref Acc 1:	65538! 1040 g's/volt	**Cal on:**	27Jan2020
Ref Acc 2:	63479! 1080 g's/volt	**Cal on:**	09Sep2020

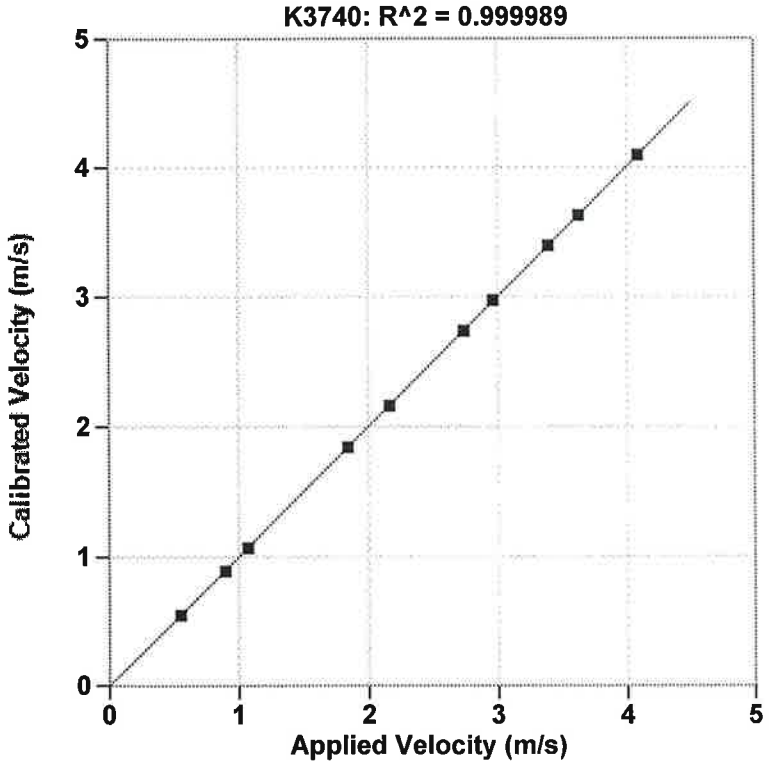
Reference accelerometer calibrations are traceable to the United States National Institute of Standards and Technology (NIST).

PDA CALIBRATION FACTOR

369.8 mv/5000g
(74.0 µv/g)
R^2: 0.999989 [Chip programmed]

Operator: William Johnson

Signed



Reference Velocity	S/N K3740 Velocity
m/s	m/s
0.549	0.549
0.896	0.889
1.073	1.068
1.842	1.839
2.163	2.160
2.739	2.736
2.966	2.973
3.394	3.394
3.629	3.630
4.093	4.094

Maximum Acceleration: 892 g's

ATTACHMENT E-1

Summary of Index and USCS Classification Laboratory Testing

Natural Moisture Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.1	0.0-1.5	806.6-808.1	20.7
B-3.1	1.5-3.0	805.1-806.6	19.3
B-3.1	3.0-4.5	803.6-805.1	18.6
B-3.1	4.5-6.0	802.1-803.6	18.5
B-3.1	6.0-6.7	801.4-802.1	19.3
B-3.2	0.0-1.5	803.7-805.2	19.7
B-3.2	1.5-3.0, 3.0-4.5	802.2-803.7, 800.7-802.2	19.7
B-3.2	1.5-3.0	802.2-803.7	20.6
B-3.2	3.0-4.5	800.7-802.2	18.9
B-3.2	4.5-6.0	799.2-800.7	16.3
B-3.2	6.0-7.5	797.7-799.2	16.3
B-3.2	7.5-9.0	796.2-797.7	12.3
B-3.3	0.0-1.5	801.7-803.2	19.5
B-3.3	1.5-3.0	800.2-801.7	22.2
B-3.3	3.0-4.5	798.7-800.2	18.6
B-3.3	4.5-6.0	797.2-798.7	18.9
B-3.3	6.0-7.5	795.7-797.2	15.7
B-3.3	7.5-9.0	794.2-795.7	13.0
B-3.3	10.0-11.5	791.7-793.2	14.6
B-3.3	12.5-14.0	789.2-790.7	11.5
B-3.4	0.0-1.5	798.5-800.0	20.0
B-3.4	1.5-3.0	797.0-798.5	20.9
B-3.4	3.0-4.5	795.5-797.0	20.0
B-3.4	4.5-6.0	794.0-795.5	19.3
B-3.4	6.0-7.5	792.5-794.0	11.2
B-3.4	7.5-9.0	791.0-792.5	12.0
B-3.4	10.0-11.4	788.6-790.0	13.8
B-3.5	0.0-1.5	797.7-799.2	22.8
B-3.5	1.5-3.0	796.2-797.7	20.6
B-3.5	3.0-4.5	794.7-796.2	22.3

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.5	4.5-6.0	793.2-794.7	29.6
B-3.5	6.0-7.5	791.7-793.2	14.0
B-3.5	7.5-9.0	790.2-791.7	12.6
B-3.5	10.0-11.5	787.7-789.2	13.3
B-3.6	0.0-1.5	797.2-798.7	27.2
B-3.6	1.5-3.0	795.7-797.2	23.4
B-3.6	3.0-4.5	794.2-795.7	22.6
B-3.6	4.5-6.0	792.7-794.2	14.2
B-3.6	6.0-7.5	791.2-792.7	15.4
B-3.6	7.5-9.0	789.7-791.2	15.2
B-3.6	10.0-11.5	787.2-788.7	19.1
B-3.7	0.0-1.5	796.6-798.1	23.3
B-3.7	1.5-3.0	795.1-796.6	22.5
B-3.7	3.0-4.5	793.6-795.1	23.5
B-3.7	4.5-6.0	792.1-793.6	15.1
B-3.7	6.0-7.5	790.6-792.1	14.7
B-3.7	7.5-9.0	789.1-790.6	13.1
B-3.7	10.0-11.5	786.6-788.1	12.7
B-3.7	12.5-12.7	785.4-785.6	2.2
B-3.8	0.0-1.5	796.5-798.0	25.0
B-3.8	1.5-3.0	795.0-796.5	20.4
B-3.8	3.0-4.5	793.5-795.0	20.6
B-3.8	4.5-6.0	792.0-793.5	20.3
B-3.8	6.0-7.5	790.5-792.0	18.0
B-3.8	7.5-9.0	789.0-790.5	19.2
B-3.8	10.0-11.5	786.5-788.0	22.7
B-3.8	12.5-14.0	784.0-785.5	13.0
B-3.9	0.0-1.5	795.7-797.2	24.0
B-3.9	1.5-3.0	794.2-795.7	22.8
B-3.9	3.0-4.5	792.7-794.2	20.6

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.9	4.5-6.0	791.2-792.7	23.1
B-3.9	6.0-7.5	789.7-791.2	15.3
B-3.9	7.5-9.0	788.2-789.7	12.2
B-3.9	10.0-11.5	785.7-787.2	6.6
B-3.10	0.0-1.5	795.7-797.2	22.6
B-3.10	1.5-3.0	794.2-795.7	22.1
B-3.10	3.0-4.5	792.7-794.2	18.1
B-3.10	4.5-6.0	791.2-792.7	22.4
B-3.10	6.0-7.5, 7.5-9.0	789.7-791.2, 788.2-789.7	16.0
B-3.10	6.0-7.5	789.7-791.2	16.9
B-3.10	7.5-9.0	788.2-789.7	15.0
B-3.10	10.0-11.5	785.7-787.2	13.7
B-3.10	12.5-14.0	783.2-784.7	12.8
B-3.11	0.0-1.5	795.3-796.8	24.8
B-3.11	1.5-3.0	793.8-795.3	21.9
B-3.11	3.0-4.5	792.3-793.8	24.2
B-3.11	4.5-6.0	790.8-792.3	16.0
B-3.11	6.0-7.5	789.3-790.8	15.9
B-3.11	7.5-9.0	787.8-789.3	20.3
B-3.11	10.0-11.5	785.3-786.8	11.9
B-3.11	12.5-14.0	782.8-784.3	44.6
B-3.12	0.0-1.5	794.9-796.4	20.1
B-3.12	1.5-3.0	793.4-794.9	21.6
B-3.12	3.0-4.5	791.9-793.4	19.0
B-3.12	4.5-6.0	790.4-791.9	19.8
B-3.12	6.0-7.5	788.9-790.4	19.7
B-3.12	7.5-9.0	787.4-788.9	20.2
B-3.12	10.0-11.5	784.9-786.4	19.5
B-3.12	12.5-12.7	783.7-783.9	10.5
B-3.13	0.0-1.5	795.4-796.9	22.8

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.13	1.5-3.0	793.9-795.4	22.5
B-3.13	3.0-4.5	792.4-793.9	22.4
B-3.13	4.5-6.0	790.9-792.4	19.7
B-3.13	6.0-7.5	789.4-790.9	16.7
B-3.13	7.5-9.0	787.9-789.4	13.9
B-3.13	10.0-11.4	785.5-786.9	19.1
B-3.14	0.0-1.5	797.6-799.1	25.4
B-3.14	1.5-3.0	796.1-797.6	26.2
B-3.14	3.0-4.5	794.6-796.1	22.0
B-3.14	4.5-6.0	793.1-794.6	21.7
B-3.14	6.0-7.5	791.6-793.1	22.3
B-3.14	7.5-9.0	790.1-791.6	23.3
B-3.14	10.0-11.5	787.6-789.1	20.6
B-3.14	12.5-14.0	785.1-786.6	16.8
B-3.15	0.0-1.5	797.8-799.3	24.8
B-3.15	1.5-3.0	796.3-797.8	19.7
B-3.15	3.0-4.5	794.8-796.3	27.4
B-3.15	4.5-6.0	793.3-794.8	19.7
B-3.15	6.0-7.5	791.8-793.3	17.1
B-3.15	7.5-9.0	790.3-791.8	18.6
B-3.15	10.0-11.5	787.8-789.3	18.4
B-3.15	12.5-14.0	785.3-786.8	19.5
B-3.16	0.0-1.5	798.6-800.1	24.7
B-3.16	1.5-3.0	797.1-798.6	23.6
B-3.16	3.0-4.5	795.6-797.1	16.4
B-3.16	4.5-6.0	794.1-795.6	20.8
B-3.16	6.0-7.5	792.6-794.1	22.2
B-3.16	7.5-9.0	791.1-792.6	16.1
B-3.16	10.0-11.5	788.6-790.1	13.0
B-3.16	12.5-14.0	786.1-787.6	16.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.16	15.0-16.5	783.6-785.1	15.0
B-3.16	17.5-18.3	781.8-782.6	24.5
B-3.17	0.0-1.5	799.4-800.9	23.5
B-3.17	1.5-3.0	797.9-799.4	21.4
B-3.17	3.0-4.5	796.4-797.9	15.4
B-3.17	4.5-6.0, 7.5-9.0	794.9-796.4, 791.9-793.4	15.6
B-3.17	4.5-6.0	794.9-796.4	14.3
B-3.17	6.0-7.5	793.4-794.9	14.0
B-3.17	7.5-9.0	791.9-793.4	16.8
B-3.17	10.0-11.5	789.4-790.9	17.6
B-3.17	12.5-14.0	786.9-788.4	15.8
B-3.17	15.0-16.5	784.4-785.9	18.3
B-3.17	17.5-19.0	781.9-783.4	18.7
B-3.17	20.0-20.1	780.8-780.9	4.7
B-3.18	0.0-1.5	798.9-800.4	27.6
B-3.18	1.5-3.0	797.4-798.9	21.6
B-3.18	3.0-4.5	795.9-797.4	20.6
B-3.18	4.5-6.0	794.4-795.9	21.9
B-3.18	6.0-7.5	792.9-794.4	22.7
B-3.18	7.5-9.0	791.4-792.9	13.3
B-3.18	10.0-11.5	788.9-790.4	16.7
B-3.18	12.5-14.0	786.4-787.9	26.3
B-3.18	15.0-16.5	783.9-785.4	20.2
B-3.18	17.5-18.5	781.9-782.9	11.0
B-3.19	0.0-1.5	798.7-800.2	24.5
B-3.19	1.5-3.0	797.2-798.7	25.2
B-3.19	3.0-4.5, 4.5-6.0	795.7-797.2, 794.2-795.7	19.5
B-3.19	3.0-4.5	795.7-797.2	21.7
B-3.19	4.5-6.0	794.2-795.7	17.2
B-3.19	6.0-7.5	792.7-794.2	21.8

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.19	7.5-9.0	791.2-792.7	16.4
B-3.19	10.0-11.5	788.7-790.2	19.9
B-3.19	12.5-14.0	786.2-787.7	20.2
B-3.19	15.0-16.0	784.2-785.2	17.7
B-3.19	16.0-16.5	783.7-784.2	17.7
B-3.19	17.5-19.0	781.2-782.7	20.8
B-3.20	0.0-1.5	798.6-800.1	26.5
B-3.20	1.5-3.0	797.1-798.6	22.9
B-3.20	3.0-4.5	795.6-797.1	22.0
B-3.20	4.5-6.0	794.1-795.6	18.9
B-3.20	6.0-7.5	792.6-794.1	17.9
B-3.20	7.5-9.0	791.1-792.6	14.1
B-3.20	10.0-11.5	788.6-790.1	23.8
B-3.20	12.5-14.0	786.1-787.6	25.6
B-3.20	15.0-16.5	783.6-785.1	8.1
B-3.21	0.0-1.5	799.3-800.8	23.0
B-3.21	1.5-3.0	797.8-799.3	22.8
B-3.21	3.0-4.5	796.3-797.8	22.0
B-3.21	4.5-6.0	794.8-796.3	23.8
B-3.21	6.0-7.5	793.3-794.8	23.5
B-3.21	7.5-9.0	791.8-793.3	15.2
B-3.21	10.0-11.5	789.3-790.8	14.3
B-3.21	12.5-14.0	786.8-788.3	14.4
B-3.21	15.0-16.5	784.3-785.8	14.6
B-3.22	0.0-1.5	799.9-801.4	23.9
B-3.22	1.5-3.0	798.4-799.9	28.1
B-3.22	3.0-4.5	796.9-798.4	25.8
B-3.22	4.5-6.0	795.4-796.9	18.6
B-3.22	6.0-7.5	793.9-795.4	18.0
B-3.22	7.5-9.0	792.4-793.9	15.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.22	10.0-11.5	789.9-791.4	10.0
B-3.22	15.0-16.5	784.9-786.4	15.6
B-3.22	17.5-17.9	783.5-783.9	3.5
B-3.23	0.0-1.5	802.5-804.0	23.6
B-3.23	1.5-3.0, 3.0-4.5	801.0-802.5, 799.5-801.0	21.9
B-3.23	1.5-3.0	801.0-802.5	22.1
B-3.23	3.0-4.5	799.5-801.0	21.7
B-3.23	4.5-6.0	798.0-799.5	26.0
B-3.23	6.0-7.5	796.5-798.0	15.0
B-3.23	7.5-9.0	795.0-796.5	15.2
B-3.23	10.0-11.5	792.5-794.0	15.6
B-3.23	12.5-14.0	790.0-791.5	12.0
B-3.23	15.0-16.5	787.5-789.0	12.3
B-3.23	17.5-19.0	785.0-786.5	16.5
B-3.23	20.0-20.1	783.9-784.0	4.0
B-3.24	0.0-1.5	800.4-801.9	22.5
B-3.24	1.5-3.0	798.9-800.4	20.9
B-3.24	3.0-4.5	797.4-798.9	20.5
B-3.24	4.5-6.0	795.9-797.4	16.1
B-3.24	6.0-7.5	794.4-795.9	15.2
B-3.24	7.5-9.0	792.9-794.4	18.4
B-3.24	10.0-11.5	790.4-791.9	16.4
B-3.24	12.5-14.0	787.9-789.4	15.0
B-3.24	15.0-16.5	785.4-786.9	15.9
B-3.24	17.5-17.8	784.1-784.4	7.3
B-3.25	0.0-1.5	799.2-800.7	24.6
B-3.25	1.5-3.0	797.7-799.2	22.6
B-3.25	3.0-4.5	796.2-797.7	22.0
B-3.25	4.5-6.0	794.7-796.2	19.5
B-3.25	6.0-7.5	793.2-794.7	31.4

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.25	7.5-9.0	791.7-793.2	16.1
B-3.25	10.0-11.5	789.2-790.7	18.0
B-3.25	12.5-14.0	786.7-788.2	22.5
B-3.25	15.0-16.5	784.2-785.7	14.6
B-3.25	17.5-19.0	781.7-783.2	11.0
B-3.26	0.0-1.5	798.4-799.9	23.1
B-3.26	1.5-3.0	796.9-798.4	24.0
B-3.26	3.0-4.5	795.4-796.9	22.7
B-3.26	4.5-6.0	793.9-795.4	21.4
B-3.26	6.0-7.5	792.4-793.9	18.9
B-3.26	7.5-9.0	790.9-792.4	18.0
B-3.26	10.0-11.5	788.4-789.9	18.7
B-3.26	12.5-14.0	785.9-787.4	14.0
B-3.26	15.0-16.5	783.4-784.9	13.1
B-3.26	17.5-19.0	780.9-782.4	20.9
B-3.27	0.0-1.5	797.6-799.1	25.4
B-3.27	1.5-3.0	796.1-797.6	23.9
B-3.27	3.0-4.5	794.6-796.1	22.0
B-3.27	4.5-6.0	793.1-794.6	19.7
B-3.27	6.0-7.5	791.6-793.1	19.1
B-3.27	7.5-9.0	790.1-791.6	16.4
B-3.27	10.0-11.5	787.6-789.1	19.9
B-3.27	12.5-14.0	785.1-786.6	12.5
B-3.27	15.0-16.5	782.6-784.1	15.7
B-3.27	17.5-19.0	780.1-781.6	19.0
B-3.27	20.0-21.5	777.6-779.1	18.1
B-3.27	22.5-24.0	775.1-776.6	14.9
B-3.27	25.0-25.8	773.3-774.1	16.6
B-3.28	0.0-1.5	797.7-799.2	20.7
B-3.28	1.5-3.0	796.2-797.7	20.3

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.28	3.0-4.5	794.7-796.2	10.3
B-3.28	4.5-6.0	793.2-794.7	15.3
B-3.28	6.0-7.5	791.7-793.2	15.6
B-3.28	7.5-9.0	790.2-791.7	15.4
B-3.28	10.0-11.5	787.7-789.2	16.5
B-3.28	12.5-14.0	785.2-786.7	17.4
B-3.28	15.0-16.5	782.7-784.2	23.9
B-3.28	17.5-19.0	780.2-781.7	21.8
B-3.28	20.0-21.5	777.7-779.2	7.7
B-3.28	22.5-24.0	775.2-776.7	7.0
B-3.29	0.0-1.5	796.4-797.9	26.2
B-3.29	1.5-3.0	794.9-796.4	24.0
B-3.29	3.0-4.5	793.4-794.9	22.4
B-3.29	4.5-6.0	791.9-793.4	32.1
B-3.29	6.0-7.5	790.4-791.9	16.8
B-3.29	7.5-9.0	788.9-790.4	14.0
B-3.29	10.0-11.5	786.4-787.9	13.6
B-3.29	12.5-14.0	783.9-785.4	14.0
B-3.29	15.0-16.5	781.4-782.9	27.1
B-3.29	17.5-19.0	778.9-780.4	15.1
B-3.29	20.0-20.8	777.1-777.9	12.3
B-3.30	0.0-1.5	796.1-797.6	28.6
B-3.30	1.5-3.0	794.6-796.1	28.9
B-3.30	3.0-4.5	793.1-794.6	21.1
B-3.30	4.5-6.0	791.6-793.1	24.4
B-3.30	6.0-7.5	790.1-791.6	26.6
B-3.30	7.5-9.0	788.6-790.1	17.4
B-3.30	10.0-11.5	786.1-787.6	13.5
B-3.30	12.5-14.0	783.6-785.1	12.8
B-3.30	15.0-16.5	781.1-782.6	22.6

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.30	17.5-19.0	778.6-780.1	14.5
B-3.30	20.0-20.9	776.7-777.6	12.4
B-3.31	0.0-1.5	796.0-797.5	26.0
B-3.31	1.5-3.0	794.5-796.0	23.8
B-3.31	3.0-4.5	793.0-794.5	23.4
B-3.31	4.5-6.0	791.5-793.0	25.5
B-3.31	6.0-7.5	790.0-791.5	18.3
B-3.31	7.5-9.0	788.5-790.0	16.2
B-3.31	10.0-11.5	786.0-787.5	21.5
B-3.31	12.5-14.0	783.5-785.0	12.3
B-3.31	15.0-16.5	781.0-782.5	21.4
B-3.31	17.5-19.0	778.5-780.0	8.4
B-3.32	0.0-1.5	795.8-797.3	24.6
B-3.32	1.5-3.0	794.3-795.8	24.5
B-3.32	3.0-4.5	792.8-794.3	23.2
B-3.32	4.5-6.0	791.3-792.8	27.1
B-3.32	6.0-7.5	789.8-791.3	23.3
B-3.32	7.5-9.0	788.3-789.8	14.7
B-3.32	10.0-11.5	785.8-787.3	18.7
B-3.32	12.5-14.0	783.3-784.8	14.4
B-3.32	15.0-16.5	780.8-782.3	19.0
B-3.32	17.5-19.0	778.3-779.8	19.8
B-3.33	0.0-1.5	796.5-798.0	21.1
B-3.33	1.5-3.0	795.0-796.5	24.3
B-3.33	3.0-4.5	793.5-795.0	16.6
B-3.33	4.5-6.0	792.0-793.5	15.2
B-3.33	6.0-7.5	790.5-792.0	15.5
B-3.33	7.5-9.0	789.0-790.5	14.2
B-3.33	10.0-11.5	786.5-788.0	16.9
B-3.33	12.5-14.0	784.0-785.5	12.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.33	15.0-16.5	781.5-783.0	13.6
B-3.33	17.5-18.3	779.7-780.5	18.2
B-3.34	0.0-1.5	796.1-797.6	22.1
B-3.34	1.5-3.0	794.6-796.1	21.3
B-3.34	3.0-4.5	793.1-794.6	22.8
B-3.34	4.5-6.0	791.6-793.1	16.2
B-3.34	6.0-7.5	790.1-791.6	10.9
B-3.34	7.5-9.0	788.6-790.1	14.8
B-3.34	10.0-11.5	786.1-787.6	16.4
B-3.34	12.5-14.0	783.6-785.1	14.2
B-3.34	15.0-16.5	781.1-782.6	13.0
B-3.34	17.5-19.0	778.6-780.1	10.2
B-3.34	20.0-20.7	776.9-777.6	8.5
B-3.35	0.0-1.5	796.0-797.5	18.5
B-3.35	1.5-3.0	794.5-796.0	16.1
B-3.35	3.0-4.5	793.0-794.5	15.2
B-3.35	4.5-6.0	791.5-793.0	16.0
B-3.35	6.0-7.5	790.0-791.5	14.8
B-3.35	7.5-9.0	788.5-790.0	15.2
B-3.35	10.0-11.5	786.0-787.5	17.7
B-3.35	12.5-14.0	783.5-785.0	20.5
B-3.35	15.0-16.5	781.0-782.5	13.5
B-3.35	17.5-18.0	779.5-780.0	13.4
B-3.35	18.0-18.8	778.7-779.5	9.0
B-3.36	0.0-1.5	788.6-790.1	29.4
B-3.36	1.5-3.0	787.1-788.6	25.5
B-3.36	3.0-4.5	785.6-787.1	24.6
B-3.36	4.5-6.0	784.1-785.6	31.6
B-3.36	6.0-7.5	782.6-784.1	16.7
B-3.36	7.5-9.0	781.1-782.6	12.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.36	10.0-11.5	778.6-780.1	14.6
B-3.36	12.5-14.0	776.1-777.6	17.4
B-3.37	0.0-1.5	788.5-790.0	22.6
B-3.37	1.5-3.0	787.0-788.5	26.1
B-3.37	3.0-4.5	785.5-787.0	25.3
B-3.37	4.5-6.0	784.0-785.5	26.7
B-3.37	6.0-7.5	782.5-784.0	24.5
B-3.37	7.5-9.0	781.0-782.5	17.8
B-3.37	10.0-11.5	778.5-780.0	21.2
B-3.37	12.5-14.0	776.0-777.5	12.0
B-3.38	0.0-1.5	789.1-790.6	28.3
B-3.38	1.5-3.0	787.6-789.1	21.1
B-3.38	3.0-4.5	786.1-787.6	23.3
B-3.38	4.5-6.0	784.6-786.1	20.2
B-3.38	6.0-7.5	783.1-784.6	21.0
B-3.38	7.5-9.0	781.6-783.1	12.1
B-3.38	10.0-11.5	779.1-780.6	16.3
B-3.38	12.5-14.0	776.6-778.1	18.4
B-3.38	14.8-14.9	775.7-775.8	5.3
B-3.39	0.0-1.5	789.4-790.9	28.7
B-3.39	1.5-3.0	787.9-789.4	26.2
B-3.39	3.0-4.5	786.4-787.9	24.6
B-3.39	4.5-6.0	784.9-786.4	31.0
B-3.39	6.0-7.5	783.4-784.9	27.3
B-3.39	7.5-9.0	781.9-783.4	38.8
B-3.39	10.0-11.5	779.4-780.9	21.0
B-3.39	12.5-14.0	776.9-778.4	24.2
B-3.39	15.0-15.3	775.6-775.9	11.6
B-3.40	0.0-1.5	789.6-791.1	22.2
B-3.40	1.5-3.0	788.1-789.6	23.4

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.40	3.0-4.5	786.6-788.1	22.9
B-3.40	4.5-6.0	785.1-786.6	24.4
B-3.40	6.0-7.5	783.6-785.1	21.0
B-3.40	7.5-9.0	782.1-783.6	21.0
B-3.40	10.0-11.5	779.6-781.1	24.1
B-3.40	12.5-14.0	777.1-778.6	22.8
B-3.40	15.0-16.5	774.6-776.1	10.8
B-3.40	17.5-19.0	772.1-773.6	10.6
B-3.41	0.0-1.5	789.2-790.7	22.2
B-3.41	1.5-3.0	787.7-789.2	22.3
B-3.41	3.0-4.5	786.2-787.7	25.1
B-3.41	4.5-6.0	784.7-786.2	22.6
B-3.41	6.0-7.5	783.2-784.7	25.0
B-3.41	7.5-9.0	781.7-783.2	34.8
B-3.41	10.0-11.5	779.2-780.7	32.0
B-3.41	12.5-14.0	776.7-778.2	23.0
B-3.41	15.0-16.5	774.2-775.7	29.6
B-3.41	17.5-19.0	771.7-773.2	18.2
B-3.41	20.0-20.9	769.8-770.7	21.7
B-3.42	0.0-1.5	792.1-793.6	16.2
B-3.42	1.5-3.0	790.6-792.1	21.5
B-3.42	3.0-4.5	789.1-790.6	14.3
B-3.42	4.5-6.0	787.6-789.1	17.4
B-3.42	6.0-7.5	786.1-787.6	21.1
B-3.42	7.5-9.0	784.6-786.1	14.9
B-3.42	10.0-11.5	782.1-783.6	17.7
B-3.42	12.5-14.0	779.6-781.1	17.4
B-3.42	15.0-16.5	777.1-778.6	22.7
B-3.42	17.5-19.0	774.6-776.1	11.2
B-3.42	20.0-20.7	772.9-773.6	12.5

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.43	0.0-1.5	791.4-792.9	24.6
B-3.43	1.5-3.0	789.9-791.4	23.5
B-3.43	3.0-4.5	788.4-789.9	24.3
B-3.43	4.5-6.0	786.9-788.4	24.6
B-3.43	6.0-7.5	785.4-786.9	26.8
B-3.43	7.5-9.0	783.9-785.4	29.9
B-3.43	10.0-11.5	781.4-782.9	17.1
B-3.43	12.5-14.0	778.9-780.4	26.1
B-3.43	15.0-16.5	776.4-777.9	23.0
B-3.43	17.5-19.0	773.9-775.4	22.4
B-3.43	20.0-21.1	771.8-772.9	11.8
B-3.43a	3.6-3.8	789.1-789.3	23.8
B-3.43a	4.0-4.5	788.4-788.9	27.7
B-3.43a	8.0-8.5	782.9-784.9	24.1
B-3.44	0.0-1.5	791.1-792.6	25.0
B-3.44	1.5-3.0	789.6-791.1	25.1
B-3.44	3.0-4.5	788.1-789.6	25.1
B-3.44	4.5-6.0	786.6-788.1	23.5
B-3.44	6.0-7.5	785.1-786.6	25.7
B-3.44	7.5-9.0	783.6-785.1	20.2
B-3.44	10.0-11.5	781.1-782.6	17.2
B-3.44	12.5-14.0	778.6-780.1	23.6
B-3.44	15.0-16.5	776.1-777.6	25.5
B-3.44	17.5-19.0	773.6-775.1	30.4
B-3.44a	2.0-4.0	788.7-790.7	21.6
B-3.44a	2.0-2.5	790.2-790.7	23.1
B-3.44a	2.5-3.0	789.7-790.2	23.0
B-3.44a	4.1-4.6	788.1-788.6	24.2
B-3.45	0.0-1.5	790.8-792.3	27.6
B-3.45	1.5-3.0	789.3-790.8	29.2

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.45	3.0-4.5	787.8-789.3	25.2
B-3.45	4.5-6.0	786.3-787.8	27.5
B-3.45	6.0-7.5	784.8-786.3	12.7
B-3.45	7.5-9.0	783.3-784.8	14.7
B-3.45	12.5-14.0	778.3-779.8	23.8
B-3.45	15.0-16.5	775.8-777.3	23.8
B-3.45	17.5-19.0	773.3-774.8	7.7
B-3.45a	2.4-3.1	789.2-789.9	32.5
B-3.45a	4.0-6.0	786.3-788.3	24.6
B-3.45a	4.2-4.7	787.6-788.1	25.7
B-3.45a	4.8-5.3	787.0-787.5	24.9
B-3.45a	5.4-5.9	786.4-786.9	18.3
B-3.45a	11.8-12.0	780.3-780.5	17.6
B-3.46	0.0-1.5	791.9-793.4	31.2
B-3.46	1.5-3.0	790.4-791.9	26.9
B-3.46	3.0-4.5	788.9-790.4	26.2
B-3.46	4.5-6.0	787.4-788.9	27.4
B-3.46	6.0-7.5	785.9-787.4	30.9
B-3.46	7.5-9.0	784.4-785.9	32.2
B-3.46	10.0-11.5	781.9-783.4	20.8
B-3.46	12.5-14.0	779.4-780.9	19.9
B-3.46	15.0-16.5	776.9-778.4	12.6
B-3.46	17.5-18.6	774.8-775.9	9.8
B-3.47	0.0-1.5	792.2-793.7	32.1
B-3.47	1.5-3.0	790.7-792.2	23.5
B-3.47	3.0-4.5	789.2-790.7	23.4
B-3.47	4.5-6.0	787.7-789.2	25.9
B-3.47	6.0-7.5	786.2-787.7	18.9
B-3.47	7.5-9.0	784.7-786.2	24.3
B-3.47	10.0-11.5	782.2-783.7	22.0

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.47	12.5-14.0	779.7-781.2	20.4
B-3.47	15.0-16.5	777.2-778.7	23.2
B-3.47	17.5-18.1	775.6-776.2	9.3
B-3.48	0.0-1.5	789.6-791.1	40.4
B-3.48	1.5-3.0	788.1-789.6	21.8
B-3.48	3.0-4.5	786.6-788.1	24.5
B-3.48	4.5-6.0	785.1-786.6	32.8
B-3.48	6.0-7.5	783.6-785.1	37.3
B-3.48	7.5-9.0	782.1-783.6	24.6
B-3.48	10.0-11.5	779.6-781.1	24.8
B-3.48	12.5-14.0	777.1-778.6	18.6
B-3.48	15.0-16.5	774.6-776.1	15.3
B-3.48	17.5-18.4	772.7-773.6	10.7
B-3.48a	1.1-1.8	789.3-790.0	23.1
B-3.48a	2.0-4.0	787.1-789.1	22.8
B-3.48a	2.1-2.6	788.5-789.0	23.8
B-3.48a	2.6-3.1	788.0-788.5	20.3
B-3.48a	4.1-4.7[(2)]	786.4-787.0	35.5
B-3.48a	4.1-4.7[(2)]	786.4-787.0	24.4
B-3.48a	4.1-4.7[(2)]	786.4-787.0	19.8
B-3.49	0.0-1.5	788.6-790.1	54.4
B-3.49	1.5-3.0	787.1-788.6	31.1
B-3.49	3.0-4.5	785.6-787.1	40.1
B-3.49	4.5-6.0	784.1-785.6	23.3
B-3.49	6.0-7.5	782.6-784.1	18.0
B-3.49	7.5-9.0	781.1-782.6	20.5
B-3.49	10.0-11.5	778.6-780.1	19.7
B-3.49	12.5-13.9	776.2-777.6	15.6
B-3.49a	0.6-0.9	789.2-789.5	41.6
B-3.49a	0.9-1.1	789.0-789.2	39.0

[(1)] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[(2)] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[(3)] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.50	0.0-1.5	785.6-787.1	79.4
B-3.50	1.5-3.0	784.1-785.6	66.2
B-3.50	3.0-4.5	782.6-784.1	35.6
B-3.50	4.5-6.0	781.1-782.6	21.0
B-3.50	6.0-7.5	779.6-781.1	23.3
B-3.50	7.5-9.0	778.1-779.6	17.5
B-3.50	10.0-11.5	775.6-777.1	18.6
B-3.50	12.5-12.6	774.5-774.6	10.3
B-3.50a	2.2-2.7	784.4-784.9	57.0
B-3.51	0.0-1.5	789.8-791.3	32.2
B-3.51	1.5-3.0	788.3-789.8	22.7
B-3.51	3.0-4.5	786.8-788.3	21.2
B-3.51	4.5-6.0	785.3-786.8	22.6
B-3.51	6.0-7.5	783.8-785.3	23.2
B-3.51	7.5-9.0	782.3-783.8	18.5
B-3.51	10.0-11.5	779.8-781.3	24.3
B-3.51	12.5-14.0	777.3-778.8	21.0
B-3.51	15.0-15.4	775.9-776.3	14.0
B-3.51a	0.0-2.0	790.0-792.0	25.6
B-3.51a	2.0-4.0	788.0-790.0	23.2
B-3.51a	2.3-2.8	789.2-789.7	20.2
B-3.51a	2.8-3.3	788.7-789.2	18.9
B-3.51a	4.0-6.0	786.0-788.0	16.2
B-3.52	0.0-1.5	787.7-789.2	47.3
B-3.52	1.5-3.0	786.2-787.7	30.5
B-3.52	3.0-4.5	784.7-786.2	19.9
B-3.52	4.5-6.0	783.2-784.7	25.0
B-3.52	6.0-7.5	781.7-783.2	20.3
B-3.52	7.5-9.0	780.2-781.7	20.3
B-3.52	10.0-11.5	777.7-779.2	24.0

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.52	12.5-14.0	775.2-776.7	16.6
B-3.52a	1.0-1.2	788.7-788.9	38.8
B-3.53	0.0-1.5	787.2-788.7	36.7
B-3.53	1.5-3.0	785.7-787.2	31.4
B-3.53	3.0-4.5	784.2-785.7	19.0
B-3.53	4.5-6.0	782.7-784.2	21.4
B-3.53	6.0-7.5	781.2-782.7	18.3
B-3.53	7.5-9.0	779.7-781.2	14.7
B-3.53	10.0-11.5	777.2-778.7	21.4
B-3.53	12.5-14.0	774.7-776.2	11.1
B-3.53a	0.4-0.9	788.3-788.8	34.6
B-3.54	0.0-1.5	791.8-793.3	30.3
B-3.54	1.5-3.0	790.3-791.8	28.4
B-3.54	3.0-4.5	788.8-790.3	26.3
B-3.54	4.5-6.0	787.3-788.8	25.7
B-3.54	6.0-7.5	785.8-787.3	28.2
B-3.54	7.5-9.0	784.3-785.8	22.4
B-3.54	10.0-11.5	781.8-783.3	18.1
B-3.54	12.5-14.0	779.3-780.8	17.4
B-3.54	15.0-16.5	776.8-778.3	11.5
B-3.54	17.5-18.7	774.6-775.8	13.0
B-3.55	0.0-1.5	798.8-800.3	18.8
B-3.55	1.5-3.0	797.3-798.8	21.7
B-3.55	3.0-4.5	795.8-797.3	17.8
B-3.55	4.5-6.0	794.3-795.8	15.1
B-3.55	6.0-7.5	792.8-794.3	19.5
B-3.55	7.5-9.0	791.3-792.8	16.2
B-3.55	12.5-14.0	786.3-787.8	11.4
B-3.55	15.0-16.5	783.8-785.3	14.1
B-3.55	17.5-19.0	781.3-782.8	15.0

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.55	20.0-21.5	778.8-780.3	19.5
B-3.55	22.5-23.6	776.7-777.8	15.4
B-3.56	0.0-1.5	800.8-802.3	22.3
B-3.56	1.5-3.0	799.3-800.8	24.7
B-3.56	3.0-4.5	797.8-799.3	25.9
B-3.56	4.5-6.0	796.3-797.8	13.4
B-3.56	6.0-7.5	794.8-796.3	15.7
B-3.56	7.5-9.0	793.3-794.8	17.6
B-3.56	10.0-11.5	790.8-792.3	21.8
B-3.56	12.5-14.0	788.3-789.8	19.1
B-3.56	15.0-16.5	785.8-787.3	11.5
B-3.56	17.5-19.0	783.3-784.8	26.1
B-3.56	20.0-21.5	780.8-782.3	19.0
B-3.56	22.5-24.0	778.3-779.8	19.6
B-3.56	25.0-25.9	776.4-777.3	12.2
B-3.57	0.0-1.5	802.4-803.9	22.8
B-3.57	1.5-3.0	800.9-802.4	22.7
B-3.57	3.0-4.5	799.4-800.9	22.2
B-3.57	4.5-6.0	797.9-799.4	19.2
B-3.57	6.0-7.5	796.4-797.9	14.6
B-3.57	7.5-9.0	794.9-796.4	12.9
B-3.57	10.0-11.5	792.4-793.9	12.1
B-3.57	12.5-14.0	789.9-791.4	20.8
B-3.57	15.0-16.5	787.4-788.9	11.8
B-3.57	17.5-19.0	784.9-786.4	18.8
B-3.57	20.0-21.5	782.4-783.9	15.2
B-3.57	22.5-24.0	779.9-781.4	18.9
B-3.58	0.0-1.5	801.8-803.3	39.9
B-3.58	1.5-3.0	800.3-801.8	26.9
B-3.58	3.0-4.5	798.8-800.3	19.4

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.58	4.5-6.0	797.3-798.8	16.1
B-3.58	6.0-7.5	795.8-797.3	19.8
B-3.58	7.5-9.0	794.3-795.8	24.9
B-3.58	10.0-11.5	791.8-793.3	14.5
B-3.58	12.5-14.0	789.3-790.8	11.4
B-3.58	15.0-16.5	786.8-788.3	18.8
B-3.58	17.5-19.0	784.3-785.8	15.7
B-3.58	20.0-21.2	782.1-783.3	12.0
B-3.59	0.0-1.5	805.3-806.8	31.0
B-3.59	1.5-3.0	803.8-805.3	23.1
B-3.59	3.0-4.5	802.3-803.8	22.4
B-3.59	4.5-6.0	800.8-802.3	16.7
B-3.59	6.0-7.5	799.3-800.8	12.4
B-3.59	7.5-9.0	797.8-799.3	11.3
B-3.59	10.0-11.5	795.3-796.8	14.0
B-3.59	12.5-14.0	792.8-794.3	16.9
B-3.59	15.0-16.5	790.3-791.8	21.5
B-3.59	17.5-19.0	787.8-789.3	17.6
B-3.59	20.0-21.5	785.3-786.8	18.0
B-3.59	22.5-22.9	783.9-784.3	18.9
B-3.60	0.0-1.5	797.8-799.3	34.0
B-3.60	1.5-3.0	796.3-797.8	23.1
B-3.60	3.0-4.5	794.8-796.3	31.9
B-3.60	4.5-6.0	793.3-794.8	24.5
B-3.60	6.0-7.5	791.8-793.3	22.0
B-3.60	7.5-9.0	790.3-791.8	47.1
B-3.60	10.0-11.5	787.8-789.3	15.5
B-3.60	12.5-14.0	785.3-786.8	14.1
B-3.60	15.0-16.5	782.8-784.3	10.7
B-3.60	17.5-19.0	780.3-781.8	8.1

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.61	0.0-1.5	806.6-808.1	21.0
B-3.61	1.5-3.0	805.1-806.6	15.3
B-3.61	3.0-4.5	803.6-805.1	17.3
B-3.61	4.5-6.0	802.1-803.6	16.8
B-3.61	6.0-7.5	800.6-802.1	16.4
B-3.61	7.5-9.0	799.1-800.6	12.2
B-3.61	10.0-11.5	796.6-798.1	13.4
B-3.61	12.5-14.0	794.1-795.6	16.1
B-3.61	15.0-16.5	791.6-793.1	13.0
B-3.61	17.5-19.0	789.1-790.6	15.6
B-3.61	20.0-21.5	786.6-788.1	9.9
B-3.61	22.5-24.0	784.1-785.6	8.2
B-3.62	0.0-1.5	802.0-803.5	23.9
B-3.62	1.5-3.0	800.5-802.0	17.6
B-3.62	3.0-4.5	799.0-800.5	20.2
B-3.62	4.5-6.0	797.5-799.0	15.1
B-3.62	6.0-7.5	796.0-797.5	15.2
B-3.62	7.5-9.0	794.5-796.0	15.1
B-3.63	0.0-1.5	797.0-798.5	22.5
B-3.63	1.5-3.0	795.5-797.0	20.8
B-3.63	3.0-4.5	794.0-795.5	25.1
B-3.63	4.5-6.0	792.5-794.0	20.4
B-3.63	6.0-7.5	791.0-792.5	12.0
B-3.63	7.5-9.0	789.5-791.0	11.8
B-3.64	0.0-1.5	795.8-797.3	29.1
B-3.64	1.5-3.0	794.3-795.8	23.6
B-3.64	3.0-4.5	792.8-794.3	29.0
B-3.64	4.5-6.0	791.3-792.8	27.5
B-3.64	6.0-7.5	789.8-791.3	14.8
B-3.64	7.5-9.0	788.3-789.8	13.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.65	0.0-1.5	795.1-796.6	21.3
B-3.65	1.5-3.0	793.6-795.1	19.9
B-3.65	3.0-4.5	792.1-793.6	18.5
B-3.65	4.5-6.0	790.6-792.1	18.2
B-3.65	6.0-7.5	789.1-790.6	18.8
B-3.65	7.5-9.0	787.6-789.1	14.7
B-3.66	0.0-1.5	798.2-799.7	27.2
B-3.66	1.5-3.0	796.7-798.2	24.2
B-3.66	3.0-4.5	795.2-796.7	22.7
B-3.66	4.5-6.0	793.7-795.2	22.7
B-3.66	6.0-7.5	792.2-793.7	22.5
B-3.66	7.5-9.0	790.7-792.2	14.9
B-3.67	0.0-1.5	798.4-799.9	26.5
B-3.67	1.5-3.0	796.9-798.4	22.9
B-3.67	3.0-4.5	795.4-796.9	22.5
B-3.67	4.5-6.0	793.9-795.4	21.8
B-3.67	6.0-7.5	792.4-793.9	16.7
B-3.67	7.5-9.0	790.9-792.4	15.6
B-3.68	0.0-1.5	802.0-803.5	20.1
B-3.68	1.5-3.0	800.5-802.0	16.2
B-3.68	3.0-4.5	799.0-800.5	16.8
B-3.68	4.5-6.0	797.5-799.0	15.6
B-3.68	6.0-7.5	796.0-797.5	16.3
B-3.68	7.5-9.0	794.5-796.0	15.8
B-3.69	0.0-1.5	799.1-800.6	20.2
B-3.69	1.5-3.0	797.6-799.1	23.8
B-3.69	3.0-4.5	796.1-797.6	20.0
B-3.69	4.5-6.0	794.6-796.1	15.4
B-3.69	6.0-7.5	793.1-794.6	21.7
B-3.69	7.5-9.0	791.6-793.1	17.8

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.70	0.0-1.5	798.9-800.4	20.0
B-3.70	1.5-3.0	797.4-798.9	23.2
B-3.70	3.0-4.5	795.9-797.4	17.8
B-3.70	4.5-6.0	794.4-795.9	15.9
B-3.70	6.0-7.5	792.9-794.4	14.8
B-3.70	7.5-9.0	791.4-792.9	14.7
B-3.71	0.0-1.5	795.8-797.3	23.6
B-3.71	1.5-3.0	794.3-795.8	23.1
B-3.71	3.0-4.5	792.8-794.3	14.3
B-3.71	4.5-6.0	791.3-792.8	14.7
B-3.71	6.0-7.5	789.8-791.3	15.3
B-3.71	7.5-9.0	788.3-789.8	15.6
B-3.72	0.0-1.5	796.7-798.2	23.0
B-3.72	1.5-3.0	795.2-796.7	22.7
B-3.72	3.0-4.5	793.7-795.2	21.7
B-3.72	5.0-6.5	791.7-793.2	24.5
B-3.72	5.0-10.0	788.2-793.2	15.1
B-3.72	5.0-10.0[(1)]	788.2-793.2	17.3
B-3.72	5.0-10.0[(1)]	788.2-793.2	17.3
B-3.72	5.0-10.0[(1)]	788.2-793.2	17.7
B-3.72	7.5-9.0	789.2-790.7	12.9
B-3.72	10.0-11.5	786.7-788.2	12.5
B-3.72	12.5-14.0	784.2-785.7	12.3
B-3.73	0.0-1.5	793.1-794.6	20.2
B-3.73	1.5-3.0	791.6-793.1	18.8
B-3.73	3.0-4.5	790.1-791.6	19.2
B-3.73	5.0-6.5	788.1-789.6	16.2
B-3.73	7.5-9.0	785.6-787.1	17.4
B-3.73	10.0-11.5	783.1-784.6	8.4
B-3.73	12.5-14.0	780.6-782.1	9.9

[(1)] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[(2)] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[(3)] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.74	0.0-1.5	796.0-797.5	21.0
B-3.74	1.5-3.0	794.5-796.0	20.9
B-3.74	3.0-4.5	793.0-794.5	23.1
B-3.74	4.5-6.0	791.5-793.0	21.4
B-3.74	6.0-7.5	790.0-791.5	18.0
B-3.74	7.5-9.0	788.5-790.0	17.7
B-3.74	8.0-10.0	787.5-789.5	15.5
B-3.74	8.0-10.0(1)	787.5-789.5	14.5
B-3.74	8.0-10.0(1)	787.5-789.5	14.8
B-3.74	8.0-10.0(1)	787.5-789.5	14.7
B-3.74	10.0-11.5	786.0-787.5	11.2
B-3.74	12.5-14.0	783.5-785.0	21.9
B-3.75	0.0-1.5	795.8-797.3	19.5
B-3.75	1.5-3.0	794.3-795.8	17.5
B-3.75	3.0-4.5	792.8-794.3	19.3
B-3.75	5.0-6.5	790.8-792.3	22.0
B-3.75	7.5-9.0	788.3-789.8	21.2
B-3.75	10.0-11.5	785.8-787.3	21.7
B-3.75	12.5-14.0	783.3-784.8	23.1
B-3.76	0.0-1.5	794.5-796.0	17.1
B-3.76	1.5-3.0	793.0-794.5	22.7
B-3.76	3.0-4.5	791.5-793.0	15.9
B-3.76	4.0-10.0	786.0-792.0	16.2
B-3.76	4.0-10.0(1)	786.0-792.0	15.6
B-3.76	4.0-10.0(1)	786.0-792.0	14.7
B-3.76	4.0-10.0(1)	786.0-792.0	15.1
B-3.76	4.0-10.0(1)	786.0-792.0	14.6
B-3.76	5.0-6.5	789.5-791.0	16.1
B-3.76	7.5-9.0	787.0-788.5	16.4
B-3.76	10.0-11.5	784.5-786.0	12.1

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.76	12.5-14.0	782.0-783.5	23.6
B-3.76	15.0-16.4	779.6-781.0	25.0
B-3.77	0.0-1.5	793.9-795.4	18.3
B-3.77	1.5-3.0	792.4-793.9	21.0
B-3.77	3.0-4.5	790.9-792.4	30.5
B-3.77	5.0-6.5	788.9-790.4	19.2
B-3.77	7.5-9.0	786.4-787.9	15.2
B-3.77	10.0-11.5	783.9-785.4	20.8
B-3.77	12.5-14.0	781.4-782.9	23.2
B-3.78	0.0-1.5	796.0-797.5	24.4
B-3.78	1.5-3.0	794.5-796.0	23.6
B-3.78	3.0-4.5	793.0-794.5	20.3
B-3.78	4.5-6.0	791.5-793.0	20.9
B-3.78	6.0-7.5	790.0-791.5	13.2
B-3.78	7.5-9.0	788.5-790.0	17.6
B-3.78	10.0-11.5	786.0-787.5	17.2
B-3.79	0.0-1.5	797.3-798.8	22.8
B-3.79	1.5-3.0	795.8-797.3	23.3
B-3.79	3.0-4.5	794.3-795.8	18.4
B-3.79	4.5-6.0	792.8-794.3	14.3
B-3.79	6.0-7.5	791.3-792.8	11.9
B-3.79	7.5-9.0	789.8-791.3	12.9
B-3.79	10.0-11.5	787.3-788.8	12.7
B-3.80	0.0-1.5	798.8-800.3	23.8
B-3.80	1.5-3.0	797.3-798.8	18.6
B-3.80	3.0-4.5	795.8-797.3	21.1
B-3.80	5.0-6.5	793.8-795.3	14.9
B-3.80	5.0-10.0	790.3-795.3	14.2
B-3.80	5.0-10.0[(1)]	790.3-795.3	13.2
B-3.80	5.0-10.0[(1)]	790.3-795.3	13.8

[(1)] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[(2)] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[(3)] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.80	5.0-10.0[1]	790.3-795.3	13.8
B-3.80	7.5-9.0	791.3-792.8	16.9
B-3.80	10.0-11.5	788.8-790.3	13.0
B-3.80	12.5-14.0	786.3-787.8	12.0
B-3.81	0.0-1.5	803.0-804.5	22.5
B-3.81	1.5-3.0	801.5-803.0	17.6
B-3.81	3.0-4.5	800.0-801.5	17.8
B-3.81	4.5-6.0	798.5-800.0	14.7
B-3.81	6.0-7.5	797.0-798.5	14.2
B-3.81	7.5-9.0	795.5-797.0	14.6
B-3.81	10.0-11.5	793.0-794.5	10.9
B-3.81	12.5-14.0	790.5-792.0	10.9
B-3.82	0.0-1.5	799.6-801.1	28.4
B-3.82	1.5-3.0	798.1-799.6	25.7
B-3.82	3.0-4.5	796.6-798.1	19.3
B-3.82	5.0-6.5	794.6-796.1	22.6
B-3.82	7.5-9.0	792.1-793.6	23.5
B-3.82	10.0-11.5	789.6-791.1	11.5
B-3.82	12.5-14.0	787.1-788.6	11.4
B-3.83	0.0-1.5	802.8-804.3	20.3
B-3.83	1.5-3.0	801.3-802.8	20.8
B-3.83	3.0-4.5	799.8-801.3	20.6
B-3.83	5.0-6.5	797.8-799.3	14.6
B-3.83	5.0-8.5	795.8-799.3	16.2
B-3.83	5.0-8.5	795.8-799.3	15.2[1]
B-3.83	5.0-8.5	795.8-799.3	15.5[1]
B-3.83	7.5-9.0	795.3-796.8	11.6
B-3.83	10.0-10.2	794.1-794.3	13.5
B-3.84	0.0-1.5	801.9-803.4	26.4
B-3.84	1.5-3.0	800.4-801.9	22.4

[1] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[2] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[3] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-3.84	3.0-4.5	798.9-800.4	23.1
B-3.84	4.5-6.0	797.4-798.9	19.4
B-3.84	6.0-7.5	795.9-797.4	16.6
B-3.84	7.5-9.0	794.4-795.9	11.7
B-3.84	10.0-11.5	791.9-793.4	12.4
B-3.84	12.5-14.0	789.4-790.9	17.0
B-3.85	0.0-1.5	796.9-798.4	24.9
B-3.85	1.5-3.0	795.4-796.9	22.2
B-3.85	3.0-4.5	793.9-795.4	20.4
B-3.85	4.5-6.0	792.4-793.9	22.6
B-3.85	6.0-7.5	790.9-792.4	19.4
B-3.85	7.5-9.0	789.4-790.9	13.7
B-3.85	10.0-11.5	786.9-788.4	24.8
B-3.85	12.5-14.0	784.4-785.9	19.7
B-3.85	15.0-16.5	781.9-783.4	20.5
B-3.85	17.5-19.0	779.4-780.9	18.5
B-3.85	20.0-21.1	777.3-778.4	18.6
B-3.48, B-3.49, B-3.50, B-3.51, B-3.52, B-3.53[3]	Various (7.5-18.4)	Various (772.7-782.6)	15.5
B-3.48, B-3.49, B-3.50, B-3.51, B-3.52, B-3.53[3]	Various (7.5-18.4)	Various (772.7-782.6)	21.8
B-4.1	0.0-1.5	799.4-800.9	21.3
B-4.1	2.5-4.0	796.9-798.4	16.3
B-4.1	5.0-7.0	793.9-795.9	22.1
B-4.1	5.1-5.2	795.7-795.8	19.4
B-4.1	5.4-5.5	795.4-795.5	18.2
B-4.1	7.5-9.0	791.9-793.4	14.1
B-4.1	10.0-11.5	789.4-790.9	13.3
B-4.1	12.5-13.3	787.6-788.4	17.2

[1] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.
[2] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.
[3] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.2	0.0-1.5	797.0-798.5	26.7
B-4.2	2.5-4.0	794.5-796.0	26.1
B-4.2	5.0-6.5	792.0-793.5	14.6
B-4.2	7.5-9.5	789.5-791.0	26.1
B-4.2	7.6-7.7	790.8-790.9	25.5
B-4.2	7.9-8.0	790.5-790.6	24.9
B-4.2	8.0-8.5	790.0-790.5	14.2
B-4.2	10.0-11.5	787.0-788.5	23.8
B-4.2	12.5-13.3	785.2-786.0	18.0
B-4.3	0.0-1.5	797.0-798.5	27.3
B-4.3	2.5-4.0	794.5-796.0	23.3
B-4.3	7.5-9.0	789.5-791.0	12.5
B-4.3	10.0-11.5	787.0-788.5	14.5
B-4.3	12.5-14.0	784.5-786.0	20.0
B-4.4	0.0-1.5	798.1-799.6	21.9
B-4.4	2.5-4.0	795.6-797.1	22.1
B-4.4	4.0-6.0	793.6-795.6	13.6
B-4.4	4.1-4.3	795.3-795.5	19.8
B-4.4	7.5-9.0	790.6-792.1	18.6
B-4.4	10.0-11.5	788.1-789.6	12.3
B-4.4	12.5-14.0	785.6-787.1	11.4
B-4.4	15.0-15.8	783.8-784.6	21.8
B-4.5	0.0-1.5	795.9-797.4	18.8
B-4.5	2.5-4.0	793.4-794.9	18.9
B-4.5	7.5-9.0	788.4-789.9	15.1
B-4.5	10.0-11.5	785.9-787.4	11.5
B-4.5	12.5-14.0	783.4-784.9	20.8
B-4.5	15.0-16.5	780.9-782.4	16.2
B-4.5	17.5-18.9	778.5-779.9	17.6
B-4.6	0.0-1.5	795.5-797.0	16.9

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.6	3.0-5.0	792.0-794.0	24.7
B-4.6	3.2-3.3	793.7-793.8	17.1
B-4.6	5.0-6.5	790.5-792.0	20.4
B-4.6	7.5-9.0	788.0-789.5	13.8
B-4.6	10.0-11.5	785.5-787.0	12.5
B-4.6	12.5-14.0	783.0-784.5	14.9
B-4.6	15.0-16.5	780.5-782.0	13.7
B-4.6	17.5-18.2	778.8-779.5	12.2
B-4.7	0.0-1.5	796.3-797.8	16.7
B-4.7	5.0-6.5	791.3-792.8	22.2
B-4.7	7.5-8.0	789.8-790.3	30.0
B-4.7	7.5-9.5	788.3-790.3	20.7
B-4.7	8.0-8.1	789.7-789.8	16.0
B-4.7	10.0-11.5	786.3-787.8	10.0
B-4.7	12.5-14.0	783.8-785.3	18.1
B-4.7	15.0-16.5	781.3-782.8	15.9
B-4.7	17.5-19.0	778.8-780.3	13.0
B-4.8	0.0-1.5	796.9-798.4	19.0
B-4.8	2.5-2.6	795.8-795.9	19.1
B-4.8	2.5-4.5	793.9-795.9	18.7
B-4.8	5.0-6.5	791.9-793.4	15.3
B-4.8	7.5-9.0	789.4-790.9	13.5
B-4.8	10.0-11.5	786.9-788.4	16.6
B-4.8	12.5-14.0	784.4-785.9	20.2
B-4.8	15.0-16.5	781.9-783.4	16.6
B-4.9	0.0-1.5	798.3-799.8	22.0
B-4.9	2.5-4.0	795.8-797.3	21.7
B-4.9	5.0-6.5	793.3-794.8	28.1
B-4.9	7.5-9.0	790.8-792.3	11.3
B-4.10	0.0-1.5	800.0-801.5	23.2

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.10	2.5-4.0	797.5-799.0	19.6
B-4.10	5.0-6.5	795.0-796.5	15.1
B-4.10	7.5-9.5	792.0-794.0	14.5
B-4.10	8.4-8.9	792.6-793.1	14.1
B-4.10	8.9-9.1	792.4-792.6	11.1
B-4.10	9.1-9.2	792.3-792.4	12.7
B-4.10	10.0-11.5	790.0-791.5	12.3
B-4.10	12.5-13.2	788.3-789.0	13.5
B-4.11	0.0-1.5	792.3-793.8	22.0
B-4.11	3.0-5.0	788.8-790.8	23.9
B-4.11	3.7-4.2	789.6-790.1	23.3
B-4.11	4.2-4.3	789.5-789.6	23.8
B-4.11	5.0-6.5	787.3-788.8	39.0
B-4.11	7.5-9.0	784.8-786.3	32.9
B-4.11	10.0-11.5	782.3-783.8	37.6
B-4.11	12.5-14.0	779.8-781.3	19.2
B-4.11	15.0-16.5	777.3-778.8	17.9
B-4.11	17.5-18.2	775.6-776.3	7.3
B-4.12	0.0-1.5	791.7-793.2	21.8
B-4.12	2.5-4.0	789.2-790.7	26.4
B-4.12	5.0-5.2	788.0-788.2	28.3
B-4.12	5.0-7.0	786.2-788.2	21.2
B-4.12	5.2-5.7	787.5-788.0	25.9
B-4.12	7.5-9.0	784.2-785.7	34.6
B-4.12	10.0-11.5	781.7-783.2	26.7
B-4.12	12.5-14.0	779.2-780.7	20.7
B-4.12	15.0-16.5	776.7-778.2	23.2
B-4.12a	1.0-3.0	790.1-792.1	26.1
B-4.12a	2.3-2.4	790.7-790.8	25.6
B-4.12a	3.0-5.0	788.1-790.1	27.1

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.12a	4.0-4.1	789.0-789.1	26.7
B-4.12a	7.0-9.0	784.1-786.1	27.0
B-4.12a	7.2-7.3	785.8-785.9	27.2
B-4.12a	7.3-7.8	785.3-785.8	27.4
B-4.12a	13.0-15.0	778.1-780.1	32.1
B-4.12a	13.8-14.3	778.8-779.3	12.4
B-4.12a	14.3-14.8	778.3-778.8	19.9
B-4.12a	14.8-14.9	778.2-778.3	22.4
B-4.13	0.0-1.5	791.2-792.7	23.1
B-4.13	2.5-4.5	788.2-790.2	23.4
B-4.13	2.6-2.7	790.0-790.1	21.5
B-4.13	2.7-2.8	789.9-790.0	22.2
B-4.13	2.8-3.3	789.4-789.9	22.5
B-4.13	5.0-6.5	786.2-787.7	27.5
B-4.13	7.5-9.0	783.7-785.2	22.3
B-4.13	10.0-11.5	781.2-782.7	18.7
B-4.13	12.5-14.0	778.7-780.2	22.0
B-4.13	15.0-16.0	776.7-777.7	28.4
B-4.14	0.0-1.5	792.1-793.6	20.1
B-4.14	2.5-4.0	789.6-791.1	24.7
B-4.14	5.0-6.5	787.1-788.6	20.1
B-4.14	7.5-9.0	784.6-786.1	30.7
B-4.14	10.0-11.5	782.1-783.6	14.5
B-4.14	11.5-13.5	780.1-782.1	18.9
B-4.14	12.4-12.9	780.7-781.2	23.9
B-4.14	12.9-13.4	780.2-780.7	22.2
B-4.14	13.4-13.5	780.1-780.2	18.6
B-4.14	15.0-16.5	777.1-778.6	25.5
B-4.14	17.5-18.9	774.7-776.1	8.0
B-4.15	0.0-1.5	791.9-793.4	20.5

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.15	2.5-4.0	789.4-790.9	21.7
B-4.15	5.0-6.5	786.9-788.4	19.6
B-4.15	7.5-9.0	784.4-785.9	30.0
B-4.15	10.0-11.5	781.9-783.4	29.6
B-4.15	12.0-14.0	779.4-781.4	17.7
B-4.15	13.4-13.5	779.9-780.0	13.7
B-4.15	13.5-13.6	779.8-779.9	13.1
B-4.15	13.6-13.7	779.7-779.8	14.1
B-4.15	13.7-13.9	779.5-779.7	17.0
B-4.15	15.0-16.5	776.9-778.4	17.3
B-4.15	17.5-19.0	774.4-775.9	12.7
B-4.16	0.0-1.5	790.8-792.3	24.2
B-4.16	2.5-4.0	788.3-789.8	23.2
B-4.16	5.0-7.0	785.3-787.3	30.2
B-4.16	5.5-5.6	786.7-786.8	27.8
B-4.16	5.6-5.7	786.6-786.7	74.4
B-4.16	5.7-5.8	786.5-786.6	23.8
B-4.16	5.8-6.3	786.0-786.5	21.3
B-4.16	7.5-9.0	783.3-784.8	28.7
B-4.16	10.0-11.5	780.8-782.3	23.5
B-4.16	12.5-14.0	778.3-779.8	32.7
B-4.16	15.0-16.5	775.8-777.3	16.5
B-4.16	17.5-19.0	773.3-774.8	9.6
B-4.16a	1.0-3.0	789.4-791.4	25.5
B-4.16a	1.2-1.3	791.1-791.2	22.2
B-4.16a	1.3-1.4	791.0-791.1	23.9
B-4.16a	1.4-1.5	790.9-791.0	25.1
B-4.16a	1.5-2.0	790.4-790.9	26.6
B-4.16a	5.0-6.9	787.4-785.3	19.0
B-4.16a	6.3-6.4	786.0-786.1	23.8

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.16a	6.9-7.0[2]	785.4-785.5	288.3[4]
B-4.16a	6.9-7.0[2]	785.4-785.5	307.4[4]
B-4.16a	10.0-12.0	780.4-782.4	40.6
B-4.16a	10.2-10.3	782.1-782.2	13.9
B-4.16a	10.3-10.4	782.0-782.1	13.8
B-4.16a	10.4-10.5	781.9-782.0	13.7
B-4.16a	15.0-15.1	777.3-777.4	16.7
B-4.16a	15.0-17.0	775.4-777.4	16.8
B-4.17	0.0-1.5	791.0-792.5	20.7
B-4.17	3.0-5.0	787.5-789.5	24.3
B-4.17	3.2-3.3	789.2-789.3	24.8
B-4.17	3.3-3.4	789.1-789.2	23.1
B-4.17	3.4-3.5	789.0-789.1	22.7
B-4.17	3.5-4.0	788.5-789.0	21.8
B-4.17	5.0-6.5	786.0-787.5	22.2
B-4.17	7.5-9.0	783.5-785.0	11.1
B-4.17	10.0-11.5	781.0-782.5	14.2
B-4.17	12.5-14.0	778.5-780.0	22.4
B-4.17	15.0-16.5	776.0-777.5	19.4
B-4.17	17.5-18.2	774.3-775.0	7.5
B-4.18	0.0-1.5	797.6-799.1	36.0
B-4.18	2.5-4.0	795.1-796.6	25.4
B-4.18	5.0-6.5	792.6-794.1	25.0
B-4.18	7.5-9.0	790.1-791.6	12.6
B-4.18	10.0-11.5	787.6-789.1	11.8
B-4.18	12.5-14.5	784.6-786.6	22.2
B-4.18	12.7-12.8	786.3-786.4	15.5
B-4.18	12.8-12.9	786.2-786.3	13.6
B-4.18	15.0-16.5	782.6-784.1	12.6
B-4.18	17.5-19.0	780.1-781.6	24.7

[1] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[2] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[3] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

[4] Testing performed on suspected organic seam.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.18	20.0-21.1	778.0-779.1	16.2
B-4.19	0.0-1.5	802.6-804.1	30.2
B-4.19	2.5-4.0	800.1-801.6	22.5
B-4.19	7.5-9.0	795.1-796.6	15.1
B-4.19	10.0-11.5	792.6-794.1	13.2
B-4.19	12.5-14.0	790.1-791.6	14.9
B-4.19	15.0-16.5	787.6-789.1	14.6
B-4.19	17.5-19.0	785.1-786.6	14.1
B-4.19	20.0-21.5	782.6-784.1	14.1
B-4.20	0.0-1.5	804.8-806.3	24.8
B-4.20	2.5-4.0	802.3-803.8	14.7
B-4.20	5.0-6.5	799.8-801.3	17.7
B-4.20	10.0-11.5	794.8-796.3	15.1
B-4.20	12.5-14.0	792.3-793.8	13.2
B-4.20	15.0-16.5	789.8-791.3	16.2
B-4.20	17.5-19.0	787.3-788.8	19.5
B-4.20	20.0-21.5	784.8-786.3	19.8
B-4.21	0.0-1.5	791.5-793.0	21.9
B-4.21	2.5-4.0	789.0-790.5	21.2
B-4.21	5.0-6.5	786.5-788.0	22.8
B-4.21	7.5-9.0	784.0-785.5	26.5
B-4.21	10.0-11.5	781.5-783.0	19.5
B-4.21	13.0-15.0	778.0-780.0	25.7
B-4.21	13.9-14.0	779.0-779.1	22.2
B-4.21	14.0-14.5	778.5-779.0	21.8
B-4.21	14.5-15.0	778.0-778.5	16.2
B-4.21	15.0-16.5	776.5-778.0	26.7
B-4.21	17.5-17.8	775.2-775.5	19.0
B-4.22	0.0-1.5	791.6-793.1	22.7
B-4.22	2.5-4.0	789.1-790.6	25.5

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
B-4.22	7.5-9.0	784.1-785.6	27.5
B-4.22	10.0-11.5	781.6-783.1	18.2
B-4.22	12.5-14.0	779.1-780.6	16.1
B-4.22	15.0-16.5	776.6-778.1	28.1
B-4.22	17.5-18.0	775.1-775.6	8.1
TP-4.1	2.5-5.0	794.3-796.8	22.6
TP-4.1	2.5-5.0(1)	794.3-796.8	20.2
TP-4.1	2.5-5.0(1)	794.3-796.8	19.4
TP-4.1	2.5-5.0(1)	794.3-796.8	18.7
TP-4.2	2.5-5.0(2)	793.9-796.4	19.0
TP-4.2	2.5-5.0(2)	793.9-796.4	21.8
TP-4.2	2.5-5.0(1)	793.9-796.4	21.0
TP-4.2	2.5-5.0(1)	793.9-796.4	30.3
TP-4.2	2.5-5.0(1)	793.9-796.4	17.5
TP-4.3	2.5-5.5 (2)	793.0-796.0	22.1
TP-4.3	2.5-5.5(2)	793.0-796.0	21.1
TP-4.3	2.5-5.5(1)	793.0-796.0	19.2
TP-4.3	2.5-5.5(1)	793.0-796.0	18.3
TP-4.3	2.5-5.5(1)	793.0-796.0	7.2
TP-4.3	2.5-5.5(1)	793.0-796.0	14.3
TP-4.4	2.0-4.5(2)	792.6-795.1	24.0
TP-4.4	2.0-4.5(2)	792.6-795.1	25.1
TP-4.4	2.0-4.5(1)	792.6-795.1	19.5
TP-4.4	2.0-4.5(1)	792.6-795.1	19.2
TP-4.4	2.0-4.5(1)	792.6-795.1	21.9
TP-4.5	2.0-4.0(2)	793.6-795.6	20.8
TP-4.5	2.0-4.0(2)	793.6-795.6	19.1
TP-4.5	2.0-4.0(1)	793.6-795.6	19.3
TP-4.5	2.0-4.0(1)	793.6-795.6	18.4
TP-4.5	2.0-4.0(1)	793.6-795.6	19.2

(1) Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

(2) Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

(3) Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Natural Moisture Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moisture Content (%)
TP-4.6	1.5-3.5	794.6-796.6	17.3
TP-4.6	1.5-3.5	794.6-796.6	18.3
TP-4.6	1.5-3.5	794.6-796.6	19.0
TP-4.6	1.5-3.5[(1)]	794.6-796.6	19.1
TP-4.6	1.5-3.5[(1)]	794.6-796.6	15.0
TP-4.6	1.5-3.5[(1)]	794.6-796.6	14.9

[(1)] Multiple tests were conducted on remolded bulk samples, resulting in multiple moisture content values.

[(2)] Multiple tests were conducted on specimens at the same depth within the Shelby tube or bulk sample, resulting in multiple moisture content values.

[(3)] Testing performed on remolded disturbed samples. See laboratory outputs for specific test interval depths.

Classification Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-3.2	1.5-3.0, 3.0-4.5	802.2-803.7, 800.7-802.2	41	21	1.9	22.4	31.9	43.8	Lean Clay with Sand (CL)
B-3.4	7.5-9.0	791.0-792.5	24	9	3.7	27.9	36.7	31.7	Sandy Lean Clay (CL)
B-3.5	3.0-4.5	794.7-796.2	41	20	0.4	21.4	34.5	43.7	Lean Clay with Sand (CL)
B-3.8	10.0-11.5	786.5-788.0	NP	NP	2.3	76.9	17.3	3.6	Silty Sand (SM)
B-3.10	6.0-7.5, 7.5-9.0	789.7-791.2, 788.2-789.7	24	8	4.9	28.1	34.7	32.3	Sandy Lean Clay (CL)
B-3.12	3.0-4.5	791.9-793.4	27	9	0.0	10.5	51.7	37.8	Lean Clay (CL)
B-3.15	6.0-7.5	791.8-793.3	25	10	2.6	35.4	25.8	36.2	Sandy Lean Clay (CL)
B-3.17	4.5-6.0, 7.5-9.0	794.9-796.4, 791.9-793.4	30	10	0.8	23.2	36.2	39.8	Lean Clay with Sand (CL)
B-3.19	3.0-4.5, 4.5-6.0	795.7-797.2, 794.2-795.7	41	20	0.4	20.5	34.3	44.8	Lean Clay with Sand (CL)
B-3.19	17.5-19.0	781.2-782.7	NP	NP	5.2	71.4	12.7	10.7	Silty Sand (SM)
B-3.23	1.5-3.0, 3.0-4.5	801.0-802.5, 799.5-801.0	41	23	1.0	23.4	31.0	44.6	Lean Clay with Sand (CL)
B-3.27	6.0-7.5	791.6-793.1	35	13	0.9	22.7	32.8	43.6	Lean Clay with Sand (CL)
B-3.27	12.5-14.0	785.1-786.6	26	15	6.6	27.8	38.3	27.3	Sandy Lean Clay (CL)
B-3.28	15.0-16.5	782.7-784.2	NP	NP	2.2	74.4	20.5	2.9	Silty Sand (SM)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-3.30	12.5-14.0	783.6-785.1	24	8	4.0	27.3	41.2	27.5	Sandy Lean Clay (CL)
B-3.30	17.5-19.0	778.6-780.1	NP	NP	9.3	79.0	9.1	2.6	Well Graded Sand with Silt (SW-SM)
B-3.31	12.5-14.0	783.5-785.0	25	10	1.4	29.7	43.7	25.2	Sandy Lean Clay (CL)
B-3.31	15.0-16.5	781.0-782.5	NP	NP	5.0	63.0	20.6	11.4	Silty Sand (SM)
B-3.32	3.0-4.5	792.8-794.3	43	22	0.0	20.2	33.9	45.9	Lean Clay with Sand (CL)
B-3.32	17.5-19.0	778.3-779.8	20	6	7.1	58.0	18.4	16.5	Silty, Clayey Sand (SC-SM)
B-3.33	10.0-11.5	786.5-788.0	33	15	1.1	14.3	36.4	48.2	Lean Clay with Sand (CL)
B-3.36	3.0-4.5	785.6-787.1	41	21	0.1	15.7	47.2	37.0	Lean Clay with Sand (CL)
B-3.36	6.0-7.5	782.6-784.1	24	8	12.3	46.0	24.5	17.2	Clayey Sand (SC)
B-3.37	12.5-14.0	776.0-777.5	22	8	11.2	32.7	31.0	25.1	Sandy Lean Clay (CL)
B-3.38	10.0-11.5	779.1-780.6	17	4	1.8	55.4	26.2	16.6	Silty, Clayey Sand (SC-SM)
B-3.38	12.5-14.0	776.6-778.1	20	6	0.3	20.3	39.2	40.2	Silty Clay with Sand (CL-ML)
B-3.39	10.0-11.5	779.4-780.9	27	11	28.9	42.6	18.0	10.5	Clayey Sand with Gravel (SC)
B-3.40	7.5-9.0	782.1-783.6	22	6	8.2	63.9	19.1	8.8	Silty, Clayey Sand (SC-SM)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-3.42	15.0-16.5	777.1-778.6	28	11	0.7	6.9	42.5	49.9	Lean Clay (CL)
B-3.43a	4.0-6.0	786.9-788.9	41	22	0.0	20.9	37.4	41.7	Lean Clay with Sand (CL)
B-3.43a	8.0-10.0	782.9-784.9	18	5	28.4	43.6	17.7	10.3	Silty Clayey Sand with Gravel (SC-SM)
B-3.44	7.5-9.0	783.6-785.1	23	6	6.7	64.6	18.0	10.7	Silty, Clayey Sand (SC-SM)
B-3.44	15.0-16.5	776.1-777.6	29	12	10.3	10.3	37.0	42.4	Lean Clay with Gravel (CL)
B-3.44a	2.0-4.0	788.7-790.7	44	25	1.5	10.8	42.0	45.7	Lean Clay (CL)
B-3.44a	4.0-6.0	786.7-788.7	32	13	0.0	29.0	43.3	27.7	Lean Clay with Sand (CL)
B-3.45	3.0-4.5	787.8-789.3	47	26	0.4	25.2	33.3	41.1	Lean Clay with Sand (CL)
B-3.45	7.5-9.0	783.3-784.8	NP	NP	29.2	55.5	10.9	4.4	Silty Sand with Gravel (SM)
B-3.45	12.5-14.0	778.3-779.8	35	15	0.0	4.3	38.7	57.0	Lean Clay (CL)
B-3.45a	4.0-6.0	786.3-788.3	52	30	0.4	14.2	38.5	46.9	Fat Clay (CH)
B-3.47	3.0-4.5	789.2-790.7	36	19	0.0	32.6	33.2	34.2	Sandy Lean Clay (CL)
B-3.47	10.0-11.5	782.2-783.7	NP	NP	0.5	77.7	10.9	10.9	Silty Sand (SM)
B-3.48	12.5-14.0	777.1-778.6	NP	NP	2.6	73.1	14.3	10.0	Silty Sand (SM)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-3.48a	2.0-4.0	787.1-789.1	32	15	0.0	20.2	50.7	29.1	Lean Clay with Sand (CL)
B-3.50	4.5-6.0	781.1-782.6	NP	NP	0.7	72.8	14.0	12.5	Silty Sand (SM)
B-3.50	7.5-9.0	778.1-779.6	NP	NP	3.9	86.0	7.3	2.8	Well Graded Sand with Silt (SW-SM)
B-3.51	3.0-4.5	786.8-788.3	24	8	0.4	56.3	25.2	18.1	Clayey Sand (SC)
B-3.51	12.5-14.0	777.3-778.8	NP	NP	8.4	80.7	6.2	4.7	Well Graded Sand with Silt (SW-SM)
B-3.51a	0.0-2.0	790.0-792.0	N/A	N/A	0.3	17.4	42.6	39.6	N/A[3]
B-3.51a	2.0-4.0	788.0-790.0	29	14	0.1	42.5	32.3	25.1	Sandy Lean Clay (CL)
B-3.53	6.0-7.5	781.2-782.7	NP	NP	0.2	86.7	9.3	3.8	Silty Sand (SM)
B-3.54	3.0-4.5	788.8-790.3	45	23	0.0	11.5	45.9	42.6	Lean Clay (CL)
B-3.54	10.0-11.5	781.8-783.3	NP	NP	1.4	56.9	27.9	13.8	Silty Sand (SM)
B-3.57	1.5-3.0	800.9-802.4	34	16	0.2	37.3	27.2	35.3	Sandy Lean Clay (CL)
B-3.57	17.5-19.0	784.9-786.4	22	8	6.4	44.7	27.7	21.2	Clayey Sand (SC)
B-3.58	6.0-7.5	795.8-797.3	23	8	4.8	48.4	21.1	25.7	Clayey Sand (SC)
B-3.60	10.0-11.5	787.8-789.3	NP	NP	27.1	64.5	5.2	3.2	Well Graded Sand with Silt And Gravel (SW-SM)
B-3.61	4.5-6.0	802.1-803.6	31	12	11.8	28.7	31.6	27.9	Sandy Lean Clay (CL)
B-3.61	17.5-19.0	789.1-790.6	29	13	12.8	50.1	16.7	20.4	Clayey Sand (SC)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-3.62	4.5-6.0	797.5-799.0	28	10	4.8	27.5	36.0	31.7	Sandy Lean Clay (CL)
B-3.69	4.5-6.0	794.6-796.1	24	7	6.0	38.2	31.5	24.3	Sandy Silty Clay (CL-ML)
B-3.71	3.0-4.5	792.8-794.3	30	11	0.9	27.1	35.1	36.9	Lean Clay with Sand (CL)
B-3.72	5.0-10.0	788.2-793.2	N/A	N/A	1.0	24.2	35.8	38.9	N/A[3]
B-3.74	1.5-3.0	794.5-796.0	37	20	0.8	44.5	25.6	29.0	Sandy Lean Clay (CL)
B-3.74	8.0-10.0	787.5-789.5	N/A	N/A	0.4	27.0	34.6	37.9	N/A
B-3.76	4.0-10.0	786.0-792.0	N/A	N/A	0.7	27.1	31.8	40.4	N/A[3]
B-3.80	5.0-6.5	793.8-795.3	30	12	6.0	23.6	40.1	30.3	Lean Clay with Sand (CL)
B-3.80	5.0-10.0	790.3-795.3	N/A	N/A	2.7	24.7	29.6	43.0	N/A[3]
B-3.83	5.0-8.5	795.8-799.3	N/A	N/A	4.0	23.9	31.4	40.6	N/A[3]
B-4.1	2.5-4.0	796.9-798.4	37	16	2.9	21.1	35.9	40.1	Lean Clay with Sand (CL)
B-4.1	5.0-7.0	793.9-795.9	34	14	0.6	28.8	70.6[4]		Lean Clay with Sand (CL)
B-4.1	10.0-11.5	789.4-790.9	23	8	3.5	28.4	32.8	35.3	Sandy Lean Clay (CL)
B-4.2	5.0-6.5	792.0-793.5	26	8	3.7	27.5	34.3	34.5	Sandy Lean Clay (CL)
B-4.2	7.5-9.5	789.5-791.0	40	18	0.0	33.0	67.0[4]		Sandy Lean Clay (CL)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-4.2	10.0-11.5	787-788.5	NP	NP	0.9	49.2	23.6	26.3	Silty Sand (SM)
B-4.3	2.5-4.0	794.5-796	35	16	0.0	30.3	32.6	37.1	Sandy Lean Clay (CL)
B-4.3	12.5-14.0	784.5-786.0	NP	NP	0.0	62.3	20.8	16.9	Silty Sand (SM)
B-4.4	2.5-4.0	795.6-797.1	43	20	0.7	18.2	28.2	52.9	Lean Clay with Sand (CL)
B-4.4	4.0-6.0	793.6-795.6	26	13	4.3	40.9	54.8[4]		Sandy Lean Clay (CL)
B-4.4	10.0-11.5	788.1-789.6	22	8	10.5	39.1	25.6	24.8	Sandy Lean Clay (CL)
B-4.5	7.5-9.0	788.4-789.9	25	9	2.8	27.8	38.9	30.5	Sandy Lean Clay (CL)
B-4.5	15.0-16.5	780.9-782.4	16	4	5.7	69.7	16.0	8.6	Silty, Clayey Sand (SC-SM)
B-4.6	3.0-5.0	792.0-794.0	24	9	2.8	55.9	41.3[4]		Sandy Clay (SC)
B-4.6	7.5-9.0	788.0-789.5	26	9	5.5	28.4	26.2	39.9	Sandy Lean Clay (CL)
B-4.6	15.0-16.5	780.5-782.0	NP	NP	3.3	83.8	3.9	9.0	Silty Sand (SM)
B-4.7	5.0-6.5	791.3-792.8	28	10	2.5	20.1	36.2	41.2	Lean Clay with Sand (CL)
B-4.7	7.5-9.5	788.3-790.3	24	8	1.5	51.2	47.3[4]		Sandy Clay (SC)
B-4.7	12.5-14.0	783.8-785.3	18	5	15.3	58.2	12.4	14.1	Silty, Clayey Sand with Gravel (SC-SM)
B-4.8	2.5-4.5	793.9-795.9	24	10	3.5	56.0	40.5[4]		Sandy Clay (SC)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-4.8	5.0-6.5	791.9-793.4	29	10	1.9	25.6	33.5	39	Lean Clay with Sand (CL)
B-4.8	12.5-14.0	784.4-785.9	NP	NP	9.6	62.7	11.7	16	Silty Sand (SM)
B-4.9	7.5-9.0	790.8-792.3	22	7	4.4	29.8	32.0	33.8	Sandy Silty Clay (CL-ML)
B-4.10	7.5-9.5	792.0-794.0	24	8	3.5	24.7	71.8[4]		Lean Clay with Sand (CL)
B-4.10	10.0-11.5	790.0-791.5	22	8	3.1	27.8	32.8	36.3	Sandy Lean Clay (CL)
B-4.11	3.0-5.0	788.8-790.8	45	26	0.0	19.3	80.7[4]		Lean Clay with Sand (CL)
B-4.11	5.0-6.5	787.3-788.8	28	11	0.0	44.6	25.7	29.7	Sandy Lean Clay (CL)
B-4.11	12.5-14.0	779.8-781.3	25	7	32.0	40.1	14.5	13.4	Silty, Clayey Sand with Gravel (SC-SM)
B-4.12	5.0-7.0	786.2-788.2	31	15	0.0	30.5	69.5[4]		Sandy Lean Clay (CL)
B-4.12	7.5-9.0	784.2-785.7	NP	NP	0.0	60.1	29.5	10.4	Silty Sand (SM)
B-4.12	12.5-14.0	779.2-780.7	22	9	6.2	15.4	43.8	34.6	Lean Clay with Sand (CL)
B-4.12a	1.0-3.0	790.1-792.1	54	31	0.0	2.9	97.1[4]		Fat Clay (CH)
B-4.12a	3.0-5.0	788.1-790.1	52	30	0.0	4.4	95.6[4]		Fat Clay (CH)
B-4.12a	7.0-9.0	784.1-786.1	41	22	0.0	21.7	78.3[4]		Lean Clay with Sand (CL)
B-4.12a	13.0-15.0	778.1-780.1	27	11	0.0	67.5	32.5[4]		Clayey Sand (SC)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-4.13	2.5-4.5	788.2-790.2	43	22	0.0	23.4	76.6[4]		Lean Clay with Sand (CL)
B-4.13	5.0-6.5	786.2-787.7	25	9	3.7	56.8	20.9	18.6	Clayey Sand (SC)
B-4.13	7.5-9.0	783.7-785.2	25	7	14.7	60.7	19.5	5.1	Silty, Clayey Sand (SC-SM)
B-4.13	12.5-14.0	778.7-780.2	22	10	5.0	16.1	51.4	27.5	Lean Clay with Sand (CL)
B-4.14	2.5-4.0	789.6-791.1	35	14	0.0	19.9	31.5	48.6	Lean Clay with Sand (CL)
B-4.14	10.0-11.5	782.1-783.6	22	7	26.5	42.7	15.6	15.2	Silty, Clayey Sand with Gravel (SC-SM)
B-4.14	11.5-13.5	780.1-782.1	27	12	0.0	40.6	59.4[4]		Sandy Lean Clay (CL)
B-4.14	15.0-16.5	777.1-778.6	22	8	0.1	33.6	37.3	29	Sandy Lean Clay (CL)
B-4.15	5.0-6.5	786.9-788.4	24	6	0.8	63.3	16.4	19.5	Silty, Clayey Sand (SC-SM)
B-4.15	12.0-14.0	779.4-781.4	NP	NP	0.0	32.6	67.4[4]		Sandy Silt (ML)
B-4.15	15.0-16.5	776.9-778.4	18	6	8.6	54.9	18.6	17.9	Silty, Clayey Sand (SC-SM)
B-4.16	2.5-4.0	788.3-789.8	33	14	0.0	41.4	28.4	30.2	Sandy Lean Clay (CL)
B-4.16	5.0-7.0	785.3-787.3	42	20	0.0	14.8	85.2[4]		Lean Clay (CL)
B-4.16	7.5-9.0	783.3-784.8	NP	NP	11.8	70.8	11.3	6.1	Silty Sand (SM)
B-4.16a	1.0-3.0	789.4-791.4	46	24	0.0	13.9	86.1[4]		Lean Clay (CL)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-4.16a	6.9-7.0	785.4-785.5	391	98	0.0	39.8	60.2		Sandy Elastic Silt (MH)[6]
B-4.16a	5.0-6.9	787.4-785.3	NP	NP	13.0	66.0	21.0		Silty Sand (SM)
B-4.16a	10.0-12.0	780.4-782.4	46	25	0.0	22.9	77.1		Lean Clay with Sand (CL)
B-4.16a	15.0-17.0	775.4-777.4	NP	NP	0.9	86.5	12.6[4]		Silty Sand (SM)
B-4.17	3.0-5.0	787.5-789.5	43	23	0.0	22.2	77.8[4]		Lean Clay with Sand (CL)
B-4.17	7.5-9.0	783.5-785.0	NP	NP	38.4	50.6	6.4	4.6	Poorly Graded Sand with Silt and Gravel (SP-SM)
B-4.17	12.5-14.0	778.5-780	21	7	0.6	27.3	29.6	42.5	Silty Clay with Sand (CL-ML)
B-4.17	15.0-16.5	776-777.5	18	6	0.5	47.7	34.3	17.5	Sandy Silty Clay (CL-ML)
B-4.18	2.5-4.0	795.1-796.6	38	15	0.8	29.0	25.1	45.1	Lean Clay with Sand (CL)
B-4.18	10.0-11.5	787.6-789.1	24	9	6.6	27.7	41.8	23.9	Sandy Lean Clay (CL)
B-4.18	12.5-14.5	784.6-786.6	39	19	6.7	31.2	62.1[4]		Sandy Lean Clay (CL)
B-4.19	15.0-16.5	787.6-789.1	24	10	3.8	30.3	34.0	31.9	Sandy Lean Clay (CL)
B-4.19	17.5-19.0	785.1-786.6	29	12	2.2	23.5	31.9	42.4	Lean Clay with Sand (CL)
B-4.19	20.0-21.5	782.6-784.1	17	4	25.8	49.8	8.6	15.8	Silty, Clayey Sand with Gravel (SC-SM)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

[6] Testing performed on suspected organic seam.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
B-4.20	5.0-6.5	799.8-801.3	28	10	2.5	21.3	27.7	48.5	Lean Clay with Sand (CL)
B-4.20	12.5-14.0	792.3-793.8	25	10	3.8	27.0	42.3	26.9	Sandy Lean Clay (CL)
B-4.21	5.0-6.5	786.5-788.0	30	11	4.1	29.2	32.0	34.7	Sandy Lean Clay (CL)
B-4.21	7.5-9.0	784.0-785.5	22	6	7.5	46.7	19.1	26.7	Silty, Clayey Sand (SC-SM)
B-4.21	13.0-15.0	778.0-780.0	36	16	0.0	30.0	70.0[4]		Sandy Lean Clay (CL)
B-4.21	15.0-16.5	776.5-778.0	32	13	0.0	1.5	40.5	58.0	Lean Clay (CL)
B-4.22	2.5-4.0	789.1-790.6	43	20	0.1	17.9	35.1	46.9	Lean Clay with Sand (CL)
B-4.22	7.5-9.0	784.1-785.6	30	9	0.0	33.3	39.2	27.5	Sandy Lean Clay (CL)
B-4.22	10.0-11.5	781.6-783.1	NP	NP	16.3	71.1	6.7	5.9	Silty Sand with Gravel (SM)
TP-4.1	2.5-5.0	794.3-796.8	43	23	1.1	21.6	25.0	52.3	Lean Clay with Sand (CL)
TP-4.2	2.5-5.0[5]	793.9-796.4	28	11	6.2	35.0	26.4	32.4	Sandy Lean Clay (CL)
TP-4.2	2.5-5.0[5]	793.9-796.4	34	15	1.9	30.2	26.1	41.8	Sandy Lean Clay (CL)
TP-4.3	2.5-5.5[5]	793.0-796.0	35	15	13.1	33.5	24.6	28.8	Sandy Lean Clay (CL)
TP-4.3	2.5-5.5[5]	793.0-796.0	31	13	3.3	36.5	30.0	30.2	Sandy Lean Clay (CL)
TP-4.4	2.0-4.5[5]	792.6-795.1	29	12	0.9	31.1	39.0	29.0	Sandy Lean Clay (CL)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Classification Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Atterberg Limits		Particle Size Analysis[2]				USCS Class.
			Liquid Limit (LL)	Plasticity Index (PI)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	
TP-4.4	2.0-4.5[5]	792.6-795.1	31	15	0.2	30.9	37.4	31.5	Sandy Lean Clay (CL)
TP-4.5	2.0-4.0[5]	793.6-795.6	36	17	2.1	26.3	32.2	39.4	Lean Clay with Sand (CL)
TP-4.5	2.0-4.0[5]	793.6-795.6	36	16	3.6	24.2	33.8	38.4	Lean Clay with Sand (CL)
TP-4.6	1.5-3.5[5]	794.6-796.6	28	12	3.8	43.0	28.7	24.5	Sandy Lean Clay (CL)
TP-4.6	1.5-3.5[5]	794.6-796.6	29	12	3.2	39.1	29.5	28.2	Sandy Lean Clay (CL)
TP-4.6	1.5-3.5[5]	794.6-796.6	29	11	4.0	43.7	27.8	24.5	Sandy Lean Clay (CL)

[1] NP = non-plastic

[2] The sum of each of the particle sizes may not equal 100 due to rounding. See the laboratory reports in Exhibit E-2 for detailed percentages.

[3] Double hydrometer tests provide gradation results, but not results for Atterberg limits or USCS classifications.

[4] Results provided as material passing #200 sieve.

[5] Multiple tests were conducted on remolded bulk samples from the same interval.

Unit Weight and Specific Gravity Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moist Unit Weight (pcf)	Dry Unit Weight (pcf)	Specific Gravity
B-3.43a	3.6-3.8	789.1-789.3	122.6[(1)]	99.0	2.65
B-3.43a	4.0-4.5	788.4-788.9	120.9	94.7	
B-3.43a	8.0-8.5	784.4-784.9	114.2	92.0	
B-3.43a	8.0-10.0	782.9-784.9	125.4	94.4	2.61[(2)]
B-3.43a	8.0-10.0	782.9-784.9	118.5	91.0	
B-3.43a	9.1-9.4	783.5-783.8	137.8[(1)]	120.7	2.65
B-3.44a	2.0-2.5	790.2-790.7	124.5	101.2	2.74[(2)]
B-3.44a	2.5-3.0	789.7-790.2	128.0	104.0	
B-3.44a	4.1-4.6	788.1-788.6	126.6	101.9	2.75
B-3.45a	2.4-3.1	789.2-789.9	110.5[(1)]	83.4	2.62
B-3.45a	4.2-4.7	787.6-788.1	120.2	95.6	
B-3.45a	4.8-5.3	787.0-787.5	124.6	99.8	2.73[(2)]
B-3.45a	5.4-5.9	786.4-786.9	131.3	110.9	
B-3.45a	11.8-12.0	780.3-780.5	132.3[(1)]	112.5	2.75
B-3.48a	1.1-1.8	789.3-790.0	112.4[(1)]	91.3	2.65
B-3.48a	2.1-2.6	788.5-789.0	115.5	93.2	2.68[(2)]
B-3.48a	2.6-3.1	788.0-788.5	124.7	103.6	
B-3.48a	4.1-4.7	786.4-787.0	106.4	78.5	
B-3.48a	4.1-4.7	786.4-787.0	126.4	101.6	
B-3.48a	4.1-4.7	786.4-787.0	121.9	101.8	
B-3.49a	0.6-0.9	789.2-789.5	90.1[(1)]	63.6	2.64[(2)]
B-3.49a	0.9-1.1	789.0-789.2	107.5[(1)]	77.3	
B-3.50a	2.2-2.7	784.4-784.9	100.4	64.0	2.63
B-3.51a	2.3-2.8	789.2-789.7	129.0	107.3	2.71[(2)]
B-3.51a	2.8-3.3	788.7-789.2	132.0	111.1	
B-3.51a	5.4-5.6	786.4-786.6	119.8[(1)]	103.1	2.71
B-3.52a	1.0-1.2	788.7-788.9	108.5[(1)]	78.2	2.68

[(1)] Calculated using the dry unit weight and moisture content reported on the laboratory report (falling head permeability, consolidation, or soil water characteristic curve)
[(2)] One specific gravity was performed on the Shelby tube or remolded sample and recorded on multiple reports
[(3)] Testing performed on remolded disturbed samples or bulk samples at estimated range of in-place density
[(4)] Multiple tests were conducted on remolded bulk samples, resulting in multiple unit weight values.
Note: Unit weights reported in units of pounds per cubic foot (pcf)

Unit Weight and Specific Gravity Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moist Unit Weight (pcf)	Dry Unit Weight (pcf)	Specific Gravity
B-3.53a	0.4-0.9	788.3-788.8	109.0	81.0	2.63
B-3.72[3]	5.0-10.0	788.2-793.2	128.4	109.5	2.75[2]
B-3.72[3]	5.0-10.0	788.2-793.2	126.6	107.9	
B-3.72[3]	5.0-10.0	788.2-793.2	130.5	111.0	
B-3.74[3]	8.0-10.0	787.5-789.5	137.8	120.4	2.66[2]
B-3.74[3]	8.0-10.0	787.5-789.5	136.3	118.8	
B-3.74[3]	8.0-10.0	787.5-789.5	136.5	119.0	
B-3.76[3]	4.0-10.0	786.0-792.0	133.4[1]	115.4	2.73
B-3.76[3]	4.0-10.0	786.0-792.0	131.9	115.0	2.75[2]
B-3.76[3]	4.0-10.0	786.0-792.0	135.3	117.6	
B-3.76[3]	4.0-10.0	786.0-792.0	135.4	118.1	
B-3.80[3]	5.0-10.0	790.3-795.3	138.1	122.0	2.72[2]
B-3.80[3]	5.0-10.0	790.3-795.3	138.7	121.9	
B-3.80[3]	5.0-10.0	790.3-795.3	135.5	119.0	
B-3.83[3]	5.0-8.5	795.8-799.3	134.0[1]	116.3	2.67
B-3.48[3] B-3.49 B-3.50 B-3.51 B-3.52 B-3.53	Various (7.5-18.4)	Various (772.7-782.6)	129.6[1]	112.2	
B-3.48[3] B-3.49 B-3.50 B-3.51 B-3.52 B-3.53	Various (7.5-18.4)	Various (772.7-782.6)	133.5	109.6	

[1] Calculated using the dry unit weight and moisture content reported on the laboratory report (falling head permeability, consolidation, or soil water characteristic curve)

[2] One specific gravity was performed on the Shelby tube or remolded sample and recorded on multiple reports

[3] Testing performed on remolded disturbed samples or bulk samples at estimated range of in-place density

[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple unit weight values.

Note: Unit weights reported in units of pounds per cubic foot (pcf)

Unit Weight and Specific Gravity Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moist Unit Weight (pcf)	Dry Unit Weight (pcf)	Specific Gravity
B-4.1	5.1-5.2	795.7-795.8	125.0[1]	104.7	
B-4.1	5.4-5.5	795.4-795.5	124.2[1]	105.1	
B-4.2	7.6-7.7	790.8-790.9	118.8[1]	94.6	
B-4.2	7.9-8.0	790.5-790.6	120.0[1]	96.1	
B-4.2	8.0-8.5	790.0-790.5	138.2[1]	121.0	
B-4.4	4.1-4.3	795.3-795.5	124.6[1]	104.0	
B-4.6	3.2-3.3	793.7-793.8	123.5[1]	105.5	
B-4.7	7.5-8.0	789.8-790.3	120.0[1]	92.3	
B-4.7	8.0-8.1	789.7-789.8	133.5[1]	115.1	
B-4.8	2.5-2.6	795.8-795.9	120.1[1]	100.8	
B-4.10	8.4-8.9	792.6-793.1	133.5[1]	117.0	
B-4.10	8.9-9.1	792.4-792.6	143.1[1]	128.8	
B-4.10	9.1-9.2	792.3-792.4	135.7[1]	120.4	
B-4.11	3.7-4.2	789.6-790.1	122.8[1]	99.6	
B-4.11	4.2-4.3	789.5-789.6	124.4[1]	100.5	
B-4.12	5.0-5.2	788.0-788.2	121.8[1]	94.9	
B-4.12	5.2-5.7	787.5-788.0	125.5[1]	99.7	
B-4.12a	2.3-2.4	790.7-790.8	121.9[1]	97.1	
B-4.12a	4.0-4.1	789.0-789.1	120.5[1]	95.1	
B-4.12a	7.2-7.3	785.8-785.9	123.9[1]	97.4	
B-4.12a	7.3-7.8	785.3-785.8	122.9[1]	96.4	
B-4.12a	13.8-14.3	778.8-779.3	133.5[1]	118.8	
B-4.12a	14.3-14.8	778.3-778.8	129.6[1]	108.1	
B-4.12a	14.8-14.9	778.2-778.3	126.4[1]	103.3	
B-4.13	2.6-2.7	790.0-790.1	107.9[1]	88.8	
B-4.13	2.7-2.8	789.9-790.0	123.8[1]	101.3	

[1] Calculated using the dry unit weight and moisture content reported on the laboratory report (falling head permeability, consolidation, or soil water characteristic curve)

[2] One specific gravity was performed on the Shelby tube or remolded sample and recorded on multiple reports

[3] Testing performed on remolded disturbed samples or bulk samples at estimated range of in-place density

[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple unit weight values.

Note: Unit weights reported in units of pounds per cubic foot (pcf)

Unit Weight and Specific Gravity Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moist Unit Weight (pcf)	Dry Unit Weight (pcf)	Specific Gravity
B-4.13	2.8-3.3	789.4-789.9	125.6[1]	102.5	
B-4.14	12.4-12.9	780.7-781.2	125.3[1]	101.1	
B-4.14	12.9-13.4	780.2-780.7	127.2[1]	104.1	
B-4.14	13.4-13.5	780.1-780.2	133.5[1]	112.6	
B-4.15	13.4-13.5	779.9-780.0	136.8[1]	120.4	
B-4.15	13.5-13.6	779.8-779.9	143.8[1]	127.2	
B-4.15	13.6-13.7	779.7-779.8	139.1[1]	122.0	
B-4.15	13.7-13.9	779.5-779.7	129.4[1]	110.6	
B-4.16	5.5-5.6	786.7-786.8	119.4[1]	93.5	
B-4.16	5.6-5.7	786.6-786.7	88.1[1]	50.5	
B-4.16	5.7-5.8	786.5-786.6	117.1[1]	94.6	
B-4.16	5.8-6.3	786.0-786.5	123.2[1]	101.6	
B-4.16a	1.2-1.3	791.1-791.2	122.7[1]	100.4	
B-4.16a	1.3-1.4	791.0-791.1	118.0[1]	95.3	
B-4.16a	1.4-1.5	790.9-791.0	114.3[1]	91.4	
B-4.16a	1.5-2.0	790.4-790.9	112.7[1]	89.0	
B-4.16a	6.3-6.4	786.0-786.1	118.3[1]	95.5	
B-4.16a	6.9-7.0	785.4-785.5	59.7[1]	15.4	
B-4.16a	10.2-10.3	782.1-782.2	141.1[1]	123.9	
B-4.16a	10.3-10.4	782.0-782.1	141.0[1]	123.9	
B-4.16a	10.4-10.5	781.9-782.0	136.7[1]	120.3	
B-4.16a	15.0-15.1	777.3-777.4	124.7[1]	106.9	
B-4.17	3.2-3.3	789.2-789.3	109.5[1]	87.7	
B-4.17	3.3-3.4	789.1-789.2	123.6[1]	100.5	
B-4.17	3.4-3.5	789.0-789.1	124.6[1]	101.6	
B-4.17	3.5-4.0	788.5-789.0	128.4[1]	105.4	

[1] Calculated using the dry unit weight and moisture content reported on the laboratory report (falling head permeability, consolidation, or soil water characteristic curve)
[2] One specific gravity was performed on the Shelby tube or remolded sample and recorded on multiple reports
[3] Testing performed on remolded disturbed samples or bulk samples at estimated range of in-place density
[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple unit weight values.
Note: Unit weights reported in units of pounds per cubic foot (pcf)

Unit Weight and Specific Gravity Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Moist Unit Weight (pcf)	Dry Unit Weight (pcf)	Specific Gravity
B-4.18	12.7-12.8	786.3-786.4	125.8[1]	109.0	
B-4.18	12.8-12.9	786.2-786.3	131.3[1]	115.6	
B-4.21	13.9-14.0	779.0-779.1	130.0[1]	106.4	
B-4.21	14.0-14.5	778.5-779.0	128.6[1]	105.6	
B-4.21	14.5-15.0	778.0-778.5	132.9[1]	114.4	
TP-4.1[3]	2.5-5.0[4]	794.3-796.8	128.4	106.8	2.75[2]
TP-4.1[3	2.5-5.0[4]	794.3-796.8	131.2	109.9	
TP-4.1[3]	2.5-5.0[4]	794.3-796.8	131.3	110.6	
TP-4.2[3]	2.5-5.0[4]	793.9-796.4	127.6	97.9	2.72[2]
TP-4.2[3]	2.5-5.0[4]	793.9-796.4	128.2	105.9	
TP-4.2[3]	2.5-5.0[4]	793.9-796.4	132.9	113.1	
TP-4.3[3]	2.5-5.5[4]	793.0-796.0	126.1[1]	106.6	2.68
TP-4.3[3]	2.5-5.5[4]	793.0-796.0	129.2	108.4	2.71
TP-4.3[3]	2.5-5.5[4]	793.0-796.0	134.8	117.9	2.70[2]
TP-4.3[3]	2.5-5.5[4]	793.0-796.0	133.4	124.4	
TP-4.4[3]	2.0-4.5[4]	792.6-795.1	126.7	106.1	2.65[2]
TP-4.4[3]	2.0-4.5[4]	792.6-795.1	131.9	110.7	
TP-4.4[3]	2.0-4.5[4]	792.6-795.1	126.9	104.1	2.65
TP-4.5[3]	2.0-4.0[4]	793.6-795.6	129.2	108.3	2.64
TP-4.5[3]	2.0-4.0[4]	793.6-795.6	130.3	109.3	2.71[2]
TP-4.5[3]	2.0-4.0[4]	793.6-795.6	130.4	110.2	
TP-4.6[3]	1.5-3.5[4]	794.6-796.6	128.4	107.8	2.77
TP-4.6[3]	1.5-3.5[4]	794.6-796.6	134.3	116.9	2.65[2]
TP-4.6[3]	1.5-3.5[4]	794.6-796.6	134.6	117.2	

[1] Calculated using the dry unit weight and moisture content reported on the laboratory report (falling head permeability, consolidation, or soil water characteristic curve)

[2] One specific gravity was performed on the Shelby tube or remolded sample and recorded on multiple reports

[3] Testing performed on remolded disturbed samples or bulk samples at estimated range of in-place density

[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple unit weight values.

Note: Unit weights reported in units of pounds per cubic foot (pcf)

Unconsolidated-Undrained Triaxial Compression Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Confining Stress (tsf)	Undrained Shear Strength S_u (tsf)[1]
B-3.74[2, 3]	8.0-10.0	787.5-789.5	0.38	1.56
			0.72	1.46
			1.08	1.57
B-3.76[2, 3]	4.0-10.0	786.0-792.0	0.36	1.43
			0.72	1.93
			1.10	2.18
B-3.80[2, 3]	5.0-10.0	790.3-795.3	0.36	3.14
			0.72	2.68
			1.08	2.49
B-4.11	3.7-4.2	789.6-790.1	0.36	0.71
B-4.12	5.2-5.7	787.5-788.0	0.36	0.35
B-4.12a	7.3-7.8	785.3-785.8	0.72	0.33
B-4.12a	13.8-14.3	778.8-779.3	1.08	0.11
B-4.12a	14.3-14.8	778.3-778.8	1.44	0.81
B-4.13	2.8-3.3	789.4-789.9	0.36	0.54
B-4.14	12.4-12.9	780.7-781.2	0.72	0.92
B-4.14	12.9-13.4	780.2-780.7	1.08	1.16
B-4.16	5.8-6.3	786.0-786.5	0.36	0.37
B-4.16a	1.5-2.0	790.4-790.9	0.36	0.52
B-4.17	3.5-4.0	788.5-789.0	0.36	0.69
B-4.21	14.0-14.5	778.5-779.0	0.72	0.61
B-4.21	14.5-15.0	778.0-778.5	1.08	0.60
TP-4.1[3]	2.5-5.0	794.3-796.8	1.80	2.32
TP-4.2[3]	2.5-5.0[4]	793.9-796.4	0.37	0.29
TP-4.2[3]	2.5-5.0[4]	793.9-796.4	0.37	1.41

[1] Undrained failure was considered to be the deviator stress at 15 percent axial strain

[2] Three-point unconsolidated-undrained triaxial compression test completed

[3] Testing performed on remolded disturbed or bulk samples at estimated range of in-place density

[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple undrained shear strength values.

Note: Stresses and strengths are reported in units of tons per square foot (tsf)

Unconsolidated-Undrained Triaxial Compression Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Confining Stress (tsf)	Undrained Shear Strength S_u (tsf)[1]
TP-4.3[3]	2.5-5.5	793.0-796.0	1.44	0.45
TP-4.4[3]	2.0-4.5[4]	792.6-795.1	0.72	1.79
TP-4.4[3]	2.0-4.5[4]	792.6-795.1	1.07	0.88
TP-4.5[3]	2.0-4.0	793.6-795.6	1.07	1.61
TP-4.6[3]	1.5-3.5[4]	794.6-796.6	0.73	0.29
TP-4.6[3]	1.5-3.5[4]	794.6-796.6	1.45	1.62

[1] Undrained failure was considered to be the deviator stress at 15 percent axial strain

[2] Three-point unconsolidated-undrained triaxial compression test completed

[3] Testing performed on remolded disturbed or bulk samples at estimated range of in-place density

[4] Multiple tests were conducted on remolded bulk samples, resulting in multiple undrained shear strength values.

Note: Stresses and strengths are reported in units of tons per square foot (tsf)

Consolidation Testing Summary

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Initial Void Ratio, e_0	Compression Index, C_c	Recompression Index, C_r	Preconsolidation Pressure, σ_p (tsf)
B-3.43a	3.6-3.8	789.1-789.3	0.67	0.28	0.069	5.7
B-3.49a	0.9-1.1	789.0-789.2	0.72	0.40	0.10	1.7
B-4.1	5.1-5.2	795.7-795.8	0.667	0.21	0.038	1.51
B-4.1	5.4-5.5	795.4-795.5	0.657	0.18	0.030	1.21
B-4.2	7.6-7.7	790.8-790.9	0.793	0.24	0.035	0.62
B-4.2	7.9-8.0	790.5-790.6	0.763	0.20	0.028	0.80
B-4.4	4.1-4.3	795.3-795.5	0.654	0.23	0.029	2.37
B-4.6	3.2-3.3	793.7-793.8	0.613	0.20	0.0098	2.03
B-4.7	8.0-8.1	789.7-789.8	0.463	0.13	0.0080	1.19
B-4.8	2.5-2.6	795.8-795.9	0.669	0.22	0.019	0.39
B-4.10	8.9-9.1	792.4-792.6	0.331	0.088	0.011	1.85
B-4.10	9.1-9.2	792.3-792.4	0.430	0.10	0.015	1.09
B-4.11	4.2-4.3	789.5-789.6	0.713	0.22	0.035	2.36
B-4.12	5.0-5.2	788.0-788.2	0.836	0.26	0.040	1.26
B-4.12a	2.3-2.4	790.7-790.8	0.786	0.23	0.038	2.31
B-4.12a	4.0-4.1	789.0-789.1	0.806	0.25	0.047	1.44
B-4.12a	7.2-7.3	785.8-785.9	0.757	0.23	0.021	1.29
B-4.12a	14.8-14.9	778.2-778.3	0.640	0.23	0.039	5.36
B-4.13	2.6-2.7	790.0-790.1	0.949	0.33	0.031	0.22
B-4.13	2.7-2.8	789.9-790.0	0.715	0.25	0.038	1.06
B-4.14	13.4-13.5	780.1-780.2	0.531	0.079	0.0058	0.65

(1) Test was performed on a seam of organic material. The laboratory report is included in Attachment E-2; however, no estimations of compression index, recompression index, and preconsolidation pressures were made.

Note: Preconsolidation pressure is reported in units of tons per square feet (tsf)

Consolidation Testing Summary (Continued)

Boring	Test Interval Depth (feet)	Test Interval Elevation (feet)	Initial Void Ratio, e_0	Compression Index, C_c	Recompression Index, C_r	Preconsolidation Pressure, σ_p (tsf)
B-4.15	13.4-13.5	779.9-780.0	0.403	0.084	0.0038	4.42
B-4.15	13.5-13.6	779.8-779.9	0.328	0.12	0.0072	6.49
B-4.15	13.6-13.7	779.7-779.8	0.407	0.083	0.0073	3.88
B-4.16	5.5-5.6	786.7-786.8	0.834	0.24	0.025	0.80
B-4.16	5.6-5.7(1)	786.6-786.7	-	-	-	-
B-4.16	5.7-5.8	786.5-786.6	0.817	0.26	0.020	0.84
B-4.16a	1.2-1.3	791.1-791.2	0.729	0.24	0.022	1.67
B-4.16a	1.3-1.4	791.0-791.1	0.819	0.32	0.034	1.39
B-4.16a	1.4-1.5	790.9-791.0	0.884	0.31	0.035	1.92
B-4.16a	6.3-6.4	786.0-786.1	0.797	0.26	0.020	1.02
B-4.16a	6.9-7.0(1)	785.4-785.5	-	-	-	-
B-4.16a	10.2-10.3	782.1-782.2	0.395	0.11	0.0046	2.38
B-4.16a	10.3-10.4	782.0-782.1	0.396	0.11	0.011	1.82
B-4.16a	10.4-10.5	781.9-782.0	0.422	0.12	0.011	1.38
B-4.16a	15.0-15.1	777.3-777.4	0.559	0.14	0.0056	3.70
B-4.17	3.2-3.3	789.2-789.3	0.953	0.26	0.033	0.26
B-4.17	3.3-3.4	789.1-789.2	0.718	0.23	0.023	0.94
B-4.17	3.4-3.5	789.0-789.1	0.698	0.20	0.026	1.97
B-4.18	12.7-12.8	786.3-786.4	0.586	0.17	0.024	0.83
B-4.18	12.8-12.9	786.2-786.3	0.491	0.15	0.020	1.52
B-4.21	13.9-14.0	779.0-779.1	0.667	0.19	0.055	2.24

(1) Test was performed on a seam of organic material. The laboratory report is included in Attachment E-2; however, no estimations of compression index, recompression index, and preconsolidation pressures were made.

Note: Preconsolidation pressure is reported in units of tons per square feet (tsf)

ATTACHMENT E-2

Laboratory Test Reports

Attachment E-2. Laboratory Testing Results

Attachment E-2. Laboratory Testing Results

Natural Moisture Content

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.3, 0.0'-1.5'	1	12/15/20	Dist	No. 10			Yes	32.08	73.01	66.33	19.5
B-3.3, 1.5'-3.0'	2	12/15/20	Hom	No. 10			Yes	32.13	82.95	73.71	22.2
B-3.3, 3.0'-4.5'	3	12/15/20	Hom	No. 10			Yes	30.69	81.94	73.89	18.6
B-3.3, 4.5'-6.0'	4	12/15/20	Dist	No. 10			Yes	30.60	80.75	72.77	18.9
B-3.3, 6.0'-7.5'	5	12/15/20	Hom	No. 10			Yes	31.24	89.76	81.83	15.7
B-3.3, 7.5'-9.0'	6	12/15/20	Dist	No. 10			Yes	31.87	79.09	73.64	13.0
B-3.3, 10.0'-11.5'	7	12/15/20	Dist	No. 10			Yes	32.25	76.01	70.44	14.6
B-3.3, 12.5'-14.0'	8	12/15/20	Hom	No. 10			Yes	32.07	94.75	88.29	11.5
B-3.4, 0.0'-1.5'	9	12/15/20	Hom	No. 10			Yes	32.00	82.71	74.25	20.0
B-3.4, 1.5'-3.0'	10	12/15/20	Hom	No. 10			Yes	30.49	75.98	68.13	20.9
B-3.4, 3.0'-4.5'	11	12/15/20	Dist	No. 10			Yes	31.80	84.70	75.88	20.0
B-3.4, 4.5'-6.0'	12	12/15/20	Hom	No. 10			Yes	32.18	85.57	76.92	19.3
B-3.4, 6.0'-7.5'	13	12/15/20	Dist	No. 10			Yes	31.91	79.38	74.58	11.2
B-3.4, 7.5'-9.0'	14	12/15/20	Hom	No. 10			Yes	31.68	70.70	66.52	12.0
B-3.4, 10.0'-11.4'	15	12/15/20	Hom	No. 10			Yes	32.31	97.90	89.97	13.8
B-3.5, 0.0'-1.5'	16	12/15/20	Hom	No. 10			Yes	30.71	91.06	79.85	22.8
B-3.5, 1.5'-3.0'	17	12/15/20	Hom	No. 10			Yes	31.55	72.47	65.49	20.6
B-3.5, 3.0'-4.5'	18	12/15/20	Hom	No. 10			Yes	32.23	71.51	64.35	22.3
B-3.5, 4.5'-6.0'	19	12/15/20	Hom	No. 10			Yes	30.71	86.83	74.00	29.6
B-3.5, 6.0'-7.5'	20	12/15/20	Hom	No. 10			Yes	30.92	86.27	79.47	14.0
B-3.5, 7.5'-9.0'	21	12/15/20	Hom	No. 10			Yes	30.70	81.28	75.61	12.6
B-3.5, 10.0'-11.5'	22	12/15/20	Hom	No. 10			Yes	31.93	80.10	74.45	13.3
B-3.7, 0.0'-1.5'	23	12/15/20	Hom	No. 10			Yes	32.12	79.98	70.94	23.3
B-3.7, 1.5'-3.0'	24	12/15/20	Hom	No. 10			Yes	32.16	75.33	67.41	22.5
B-3.7, 3.0'-4.5'	25	12/15/20	Hom	No. 10			Yes	32.03	87.31	76.79	23.5
B-3.7, 4.5'-6.0'	26	12/15/20	Hom	No. 10			Yes	31.80	77.24	71.27	15.1
B-3.7, 6.0'-7.5'	27	12/15/20	Hom	No. 10			Yes	32.05	77.20	71.42	14.7
B-3.7, 7.5'-9.0'	28	12/15/20	Hom	No. 10			Yes	32.30	91.50	84.64	13.1

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.7, 10.0'-11.5'	29	12/15/20	Hom	No. 10			Yes	30.94	81.01	75.37	12.7
B-3.7, 12.5'-12.7'	30	12/15/20	Dist	No. 10			Yes	32.09	74.73	73.83	2.2
B-3.8, 0.0'-1.5'	31	12/15/20	Hom	No. 10			Yes	32.24	85.86	75.12	25.0
B-3.8, 1.5'-3.0'	32	12/15/20	Hom	No. 10			Yes	30.54	73.73	66.42	20.4
B-3.8, 3.0'-4.5'	33	12/15/20	Hom	No. 10			Yes	32.16	80.80	72.49	20.6
B-3.8, 4.5'-6.0'	34	12/15/20	Hom	No. 10			Yes	32.35	75.78	68.46	20.3
B-3.8, 6.0'-7.5'	35	12/15/20	Hom	No. 10			Yes	32.03	80.25	72.90	18.0
B-3.8, 7.5'-9.0'	36	12/15/20	Dist	No. 10			Yes	31.88	71.92	65.48	19.2
B-3.8, 10.0'-11.5'	37	12/15/20	Dist	No. 10			Yes	32.45	70.92	63.81	22.7
B-3.8, 12.5'-14.0'	38	12/15/20	Dist	No. 10			Yes	31.87	91.80	84.89	13.0
B-3.9, 0.0'-1.5'	39	12/15/20	Hom	No. 10			Yes	31.93	76.92	68.22	24.0
B-3.9, 1.5'-3.0'	40	12/15/20	Hom	No. 10			Yes	31.90	77.14	68.75	22.8
B-3.9, 3.0'-4.5'	41	12/15/20	Dist	No. 10			Yes	31.61	71.38	64.60	20.6
B-3.9, 4.5'-6.0'	42	12/15/20	Hom	No. 10			Yes	30.59	71.91	64.16	23.1
B-3.9, 6.0'-7.5'	43	12/15/20	Dist	No. 10			Yes	32.04	88.75	81.21	15.3
B-3.9, 7.5'-9.0'	44	12/15/20	Dist	No. 10			Yes	31.22	72.18	67.72	12.2
B-3.9, 10.0'-11.5'	45	12/15/20	Dist	No. 10			Yes	32.18	70.97	68.56	6.6
B-3.11, 0.0'-1.5'	46	12/15/20	Dist	No. 10			Yes	20.92	76.06	65.11	24.8
B-3.11, 1.5'-3.0'	47	12/15/20	Dist	No. 10			Yes	20.78	78.75	68.34	21.9
B-3.11, 3.0'-4.5'	48	12/15/20	Dist	No. 10			Yes	31.65	74.62	66.26	24.2
B-3.11, 4.5'-6.0'	49	12/15/20	Dist	No. 10			Yes	30.68	81.88	74.80	16.0
B-3.11, 6.0'-7.5'	50	12/15/20	Dist	No. 10			Yes	20.68	89.23	79.81	15.9
B-3.11, 7.5'-9.0'	51	12/15/20	Dist	No. 10			Yes	32.02	80.38	72.22	20.3
B-3.11, 10.0'-11.5'	52	12/15/20	Dist	No. 10			Yes	31.72	81.53	76.22	11.9
B-3.11, 12.5'-14.0'	53	12/15/20	Dist	No. 10			Yes	32.43	89.56	71.94	44.6
B-3.12, 0.0'-1.5'	54	12/15/20	Dist	No. 10			Yes	30.68	80.03	71.76	20.1
B-3.12, 1.5'-3.0'	55	12/15/20	Dist	No. 10			Yes	20.55	78.56	68.24	21.6
B-3.12, 3.0'-4.5'	56	12/15/20	Dist	No. 10			Yes	30.91	77.23	69.82	19.0

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.12, 4.5'-6.0'	57	12/15/20	Dist	No. 10			Yes	20.59	81.08	71.10	19.8
B-3.12, 6.0'-7.5'	58	12/15/20	Dist	No. 10			Yes	20.66	82.81	72.58	19.7
B-3.12, 7.5'-9.0'	59	12/15/20	Hom	No. 10			Yes	20.83	79.78	69.87	20.2
B-3.12, 10.0'-11.5'	60	12/15/20	Dist	No. 10			Yes	32.04	79.95	72.13	19.5
B-3.12, 12.5'-12.7'	61										

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.13, 0.0'-1.5'	62	1/13/21	Hom	No. 10			Yes	31.80	82.91	73.43	22.8
B-3.13, 1.5'-3.0'	63	1/13/21	Hom	No. 10			Yes	30.71	82.16	72.72	22.5
B-3.13, 3.0'-4.5'	64	1/13/21	Hom	No. 10			Yes	30.92	81.15	71.95	22.4
B-3.13, 4.5'-6.0'	65	1/13/21	Hom	No. 10			Yes	31.89	81.25	73.14	19.7
B-3.13, 6.0'-7.5'	66	1/13/21	Hom	No. 10			Yes	32.05	81.43	74.38	16.7
B-3.13, 7.5'-9.0'	67	1/13/21	Hom	No. 10			Yes	31.88	81.11	75.12	13.9
B-3.13, 10.0'-11.4'	68	1/13/21	Dist	No. 10			Yes	32.25	81.48	73.57	19.1
B-3.15, 0.0'-1.5'	69	1/13/21	Hom	No. 10			Yes	32.24	81.43	71.64	24.8
B-3.15, 1.5'-3.0'	70	1/13/21	Hom	No. 10			Yes	31.89	81.95	73.71	19.7
B-3.15, 3.0'-4.5'	71	1/13/21	Hom	No. 10			Yes	31.62	82.11	71.24	27.4
B-3.15, 4.5'-6.0'	72	1/13/21	Hom	No. 10			Yes	30.92	81.66	73.32	19.7
B-3.15, 6.0'-7.5'	73	1/13/21	Hom	No. 10			Yes	32.22	82.10	74.80	17.1
B-3.15, 7.5'-9.0'	74	1/13/21	Hom	No. 10			Yes	31.93	82.44	74.53	18.6
B-3.15, 10.0'-11.5'	75	1/13/21	Hom	No. 10			Yes	32.31	82.95	75.08	18.4
B-3.15, 12.5'-14.0'	76	1/13/21	Hom	No. 10			Yes	32.27	82.05	73.94	19.5
B-3.15, 14.5'-14.6': no sample	77										
B-3.16, 0.0'-1.5'	78	1/13/21	Hom	No. 10			Yes	31.69	82.87	72.73	24.7
B-3.16, 1.5'-3.0'	79	1/13/21	Hom	No. 10			Yes	30.52	82.98	72.95	23.6
B-3.16, 3.0'-4.5'	80	1/13/21	Hom	No. 10			Yes	31.55	81.56	74.51	16.4
B-3.16, 4.5'-6.0'	81	1/13/21	Hom	No. 10			Yes	32.01	82.70	73.97	20.8
B-3.16, 6.0'-7.5'	82	1/13/21	Hom	No. 10			Yes	30.85	80.55	71.53	22.2
B-3.16, 7.5'-9.0'	83	1/13/21	Hom	No. 10			Yes	31.24	80.03	73.28	16.1
B-3.16, 10.0'-11.5'	84	1/13/21	Hom	No. 10			Yes	30.92	80.82	75.08	13.0
B-3.16, 12.5'-14.0'	85	1/13/21	Hom	No. 10			Yes	30.67	80.83	73.57	16.9
B-3.16, 15.0'-16.5'	86	1/13/21	Hom	No. 10			Yes	31.62	82.19	75.59	15.0
B-3.16, 17.5'-18.3'	87	1/13/21	Hom	No. 10			Yes	30.60	82.90	72.61	24.5
B-3.17, 0.0'-1.5'	88	1/13/21	Hom	No. 10			Yes	30.54	81.17	71.53	23.5
B-3.17, 1.5'-3.0'	89	1/13/21	Hom	No. 10			Yes	30.71	82.74	73.56	21.4

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Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.17, 3.0'-4.5'	90	1/13/21	Dist	No. 10			Yes	30.71	81.35	74.61	15.4
B-3.17, 4.5'-6.0'	92	1/13/21	Hom	No. 10			Yes	32.07	82.48	76.18	14.3
B-3.17, 6.0'-7.5'	93	1/13/21	Hom	No. 10			Yes	32.05	81.81	75.71	14.0
B-3.17, 7.5'-9.0'	94	1/13/21	Hom	No. 10			Yes	31.79	81.02	73.95	16.8
B-3.17, 10.0'-11.5'	95	1/13/21	Hom	No. 10			Yes	32.05	82.03	74.56	17.6
B-3.17, 12.5'-14.0'	96	1/13/21	Hom	No. 10			Yes	32.03	82.58	75.68	15.8
B-3.17, 15.0'-16.5'	97	1/13/21	Hom	No. 10			Yes	20.88	91.77	80.82	18.3
B-3.17, 17.5'-19.0'	98	1/13/21	Hom	No. 10			Yes	32.01	82.25	74.32	18.7
B-3.17, 20.0'-20.1'	99	1/13/21	Dist	3/8"			No	20.85	51.78	50.39	4.7
B-3.19, 0.0'-1.5'	100	1/13/21	Hom	No. 10			Yes	20.99	70.65	60.89	24.5
B-3.19, 1.5'-3.0'	101	1/13/21	Hom	No. 10			Yes	20.99	71.05	60.96	25.2
B-3.19, 3.0'-4.5'	103	1/13/21	Hom	No. 10			Yes	21.34	70.67	61.89	21.7
B-3.19, 4.5'-6.0'	104	1/13/21	Hom	No. 10			Yes	21.37	70.16	62.99	17.2
B-3.19, 6.0'-7.5'	105	1/13/21	Hom	No. 10			Yes	20.78	71.14	62.13	21.8
B-3.19, 7.5'-9.0'	106	1/13/21	Hom	No. 10			Yes	20.98	71.26	64.19	16.4
B-3.19, 10.0'-11.5'	107	1/13/21	Hom	No. 10			Yes	20.73	70.40	62.14	19.9
B-3.19, 12.5'-14.0'	108	1/13/21	Hom	No. 10			Yes	20.77	71.18	62.72	20.2
B-3.19, 15.0'-16.0'	109	1/13/21	Hom	No. 10			Yes	20.75	71.86	64.16	17.7
B-3.19, 16.0'-16.5'	110	1/13/21	Dist	No. 4			Yes	20.98	163.32	141.91	17.7
B-3.19, 17.5'-19.0'	111	1/13/21	Dist	No. 4			Yes	21.10	174.16	147.81	20.8
B-3.20, 0.0'-1.5'	112	1/13/21	Hom	No. 10			Yes	30.64	80.30	69.89	26.5
B-3.20, 1.5'-3.0'	113	1/13/21	Hom	No. 10			Yes	31.24	80.21	71.10	22.9
B-3.20, 3.0'-4.5'	114	1/13/21	Hom	No. 10			Yes	32.12	81.08	72.26	22.0
B-3.20, 4.5'-6.0'	115	1/13/21	Hom	No. 10			Yes	32.24	82.28	74.33	18.9
B-3.20, 6.0'-7.5'	116	1/13/21	Hom	No. 10			Yes	32.21	80.80	73.42	17.9
B-3.20, 7.5'-9.0'	117	1/13/21	Hom	No. 10			Yes	32.03	81.20	75.12	14.1
B-3.20, 10.0'-11.5'	118	1/13/21	Hom	No. 10			Yes	30.68	80.78	71.16	23.8
B-3.20, 12.5'-14.0'	119	1/13/21	Hom	No. 10			Yes	31.73	82.39	72.07	25.6

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.20, 15.0'-16.5'	120	1/13/21	Dist	No. 4			Yes	31.67	146.91	138.31	8.1
B-3.21, 0.0'-1.5'	121	1/13/21	Hom	No. 10			Yes	30.69	82.52	72.82	23.0
B-3.21, 1.5'-3.0'	122	1/13/21	Hom	No. 10			Yes	32.55	81.45	72.36	22.8
B-3.21, 3.0'-4.5'	123	1/13/21	Hom	No. 10			Yes	32.25	82.04	73.05	22.0
B-3.21, 4.5'-6.0'	124	1/13/21	Hom	No. 10			Yes	20.72	71.92	62.07	23.8
B-3.21, 6.0'-7.5'	125	1/13/21	Hom	No. 10			Yes	20.91	71.43	61.81	23.5
B-3.21, 7.5'-9.0'	126	1/13/21	Dist	No. 10			Yes	20.69	71.61	64.90	15.2
B-3.21, 10.0'-11.5'	127	1/13/21	Hom	No. 10			Yes	20.56	70.27	64.06	14.3
B-3.21, 12.5'-14.0'	128	1/13/21	Hom	No. 10			Yes	20.70	71.33	64.94	14.4
B-3.21, 15.0'-16.5'	129	1/13/21	Dist	No. 10			Yes	20.89	70.59	64.24	14.6
B-3.23, 0.0'-1.5'	130	1/13/21	Hom	No. 10			Yes	21.09	70.92	61.42	23.6
B-3.23, 1.5'-3.0'	132	1/13/21	Hom	No. 10			Yes	21.73	70.12	61.36	22.1
B-3.23, 3.0'-4.5'	133	1/13/21	Hom	No. 10			Yes	21.51	70.11	61.46	21.7
B-3.23, 4.5'-6.0'	134	1/13/21	Hom	No. 10			Yes	20.73	71.52	61.04	26.0
B-3.23, 6.0'-7.5'	135	1/13/21	Hom	No. 10			Yes	21.57	70.58	64.17	15.0
B-3.23, 7.5'-9.0'	136	1/13/21	Hom	No. 10			Yes	20.78	70.46	63.92	15.2
B-3.23, 10.0'-11.5'	137	1/13/21	Hom	No. 10			Yes	31.97	82.05	75.28	15.6
B-3.23, 12.5'-14.0'	138	1/13/21	Hom	No. 10			Yes	21.21	82.90	76.31	12.0
B-3.23, 15.0'-16.5'	139	1/13/21	Hom	No. 10			Yes	31.92	81.62	76.19	12.3
B-3.23, 17.5'-19.0'	140	1/13/21	Hom	No. 10			Yes	20.69	70.57	63.52	16.5
B-3.23, 20.0'-20.1'	141	1/13/21	Dist	3/8"			No	20.87	85.85	83.38	4.0
B-3.25, 0.0'-1.5'	142	1/13/21	Hom	No. 10			Yes	20.68	70.44	60.60	24.6
B-3.25, 1.5'-3.0'	143	1/13/21	Hom	No. 10			Yes	20.78	70.43	61.27	22.6
B-3.25, 3.0'-4.5'	144	1/13/21	Hom	No. 10			Yes	20.55	70.04	61.11	22.0
B-3.25, 4.5'-6.0'	145	1/13/21	Hom	No. 10			Yes	20.59	89.77	78.48	19.5
B-3.25, 6.0'-7.5'	146	1/13/21	Hom	No. 10			Yes	32.23	81.91	70.05	31.4
B-3.25, 7.5'-9.0'	147	1/13/21	Hom	No. 10			Yes	32.32	82.47	75.50	16.1
B-3.25, 10.0'-11.5'	148	1/13/21	Hom	No. 10			Yes	30.89	81.74	73.99	18.0

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded		Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
					Amount	Size					
B-3.25, 12.5'-14.0'	149	1/13/21	Hom	No. 10			Yes	20.67	70.43	61.29	22.5
B-3.25, 15.0'-16.5'	150	1/13/21	Hom	No. 10			Yes	20.58	72.18	65.59	14.6
B-3.25, 17.5'-19.0'	151	1/13/21	Dist	No. 4			Yes	31.88	167.76	154.30	11.0
B-3.27, 0.0'-1.5'	152	1/13/21	Hom	No. 10			Yes	32.38	82.29	72.19	25.4
B-3.27, 1.5'-3.0'	153	1/13/21	Hom	No. 10			Yes	32.03	82.52	72.77	23.9
B-3.27, 3.0'-4.5'	154	1/13/21	Hom	No. 10			Yes	30.94	80.40	71.49	22.0
B-3.27, 4.5'-6.0'	155	1/13/21	Hom	No. 10			Yes	30.70	81.80	73.39	19.7
B-3.27, 6.0'-7.5'	156	1/13/21	Hom	No. 10			Yes	21.30	70.64	62.73	19.1
B-3.27, 7.5'-9.0'	157	1/13/21	Hom	No. 10			Yes	32.52	82.98	75.88	16.4
B-3.27, 10.0'-11.5'	158	1/13/21	Hom	No. 10			Yes	32.30	81.32	73.17	19.9
B-3.27, 12.5'-14.0'	159	1/13/21	Hom	No. 10			Yes	21.63	70.17	64.78	12.5
B-3.27, 15.0'-16.5'	160	1/13/21	Hom	No. 10			Yes	32.10	81.21	74.55	15.7
B-3.27, 17.5'-19.0'	161	1/13/21	Dist	No. 10			Yes	20.65	174.10	149.56	19.0
B-3.27, 20.0'-21.5'	162	1/13/21	Dist	No. 4			Yes	20.78	174.25	150.76	18.1
B-3.27, 22.5'-24.0'	163	1/13/21	Dist	No. 4			Yes	20.75	170.21	150.81	14.9
B-3.27, 25.0'-25.8'	164	1/13/21	Dist	No. 4			Yes	20.87	174.65	152.76	16.6
B-3.28, 0.0'-1.5'	165	1/14/21	Hom	No. 10			Yes	31.93	84.92	75.84	20.7
B-3.28, 1.5'-3.0'	166	1/14/21	Hom	No. 10			Yes	32.04	93.18	82.85	20.3
B-3.28, 3.0'-4.5'	167	1/14/21	Hom	No. 10			Yes	32.20	84.58	79.71	10.3
B-3.28, 4.5'-6.0'	168	1/14/21	Hom	No. 10			Yes	32.15	96.72	88.15	15.3
B-3.28, 6.0'-7.5'	169	1/14/21	Hom	No. 10			Yes	32.26	85.46	78.29	15.6
B-3.28, 7.5'-9.0'	170	1/14/21	Hom	No. 10			Yes	32.25	81.11	74.60	15.4
B-3.28, 10.0'-11.5'	171	1/14/21	Hom	No. 10			Yes	31.98	83.99	76.63	16.5
B-3.28, 12.5'-14.0'	172	1/14/21	Dist	No. 10			Yes	30.74	85.68	77.52	17.4
B-3.28, 15.0'-16.5'	173	1/14/21	Dist	No. 10			Yes	30.56	64.56	58.01	23.9
B-3.28, 17.5'-19.0'	174	1/14/21	Dist	No. 4			Yes	30.71	180.97	154.11	21.8
B-3.28, 20.0'-21.5'	175	1/14/21	Dist	No. 4			Yes	32.28	173.66	163.53	7.7
B-3.28, 22.5'-24.0'	176	1/14/21	Dist	No. 4			Yes	32.06	169.08	160.17	7.0

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.29, 0.0'-1.5'	177	1/14/21	Dist	No. 10			Yes	31.24	69.13	61.26	26.2
B-3.29, 1.5'-3.0'	178	1/14/21	Hom	No. 10			Yes	32.36	72.02	64.35	24.0
B-3.29, 3.0'-4.5'	179	1/14/21	Hom	No. 10			Yes	30.92	88.90	78.28	22.4
B-3.29, 4.5'-6.0'	180	1/14/21	Hom	No. 10			Yes	32.05	98.80	82.57	32.1
B-3.29, 6.0'-7.5'	181	1/14/21	Dist	No. 10			Yes	31.69	82.55	75.23	16.8
B-3.29, 7.5'-9.0'	182	1/14/21	Dist	No. 10			Yes	31.74	81.73	75.58	14.0
B-3.29, 10.0'-11.5'	183	1/14/21	Hom	No. 10			Yes	30.63	87.73	80.89	13.6
B-3.29, 12.5'-14.0'	184	1/14/21	Hom	No. 10			Yes	32.20	91.62	84.33	14.0
B-3.29, 15.0'-16.5'	185	1/14/21	Dist	No. 10			Yes	32.54	147.25	122.82	27.1
B-3.29, 17.5'-19.0'	186	1/14/21	Dist	No. 4			Yes	32.05	179.24	159.97	15.1
B-3.29, 20.0'-20.8'	187	1/14/21	Dist	No. 10			Yes	30.96	188.04	170.83	12.3
B-3.33, 0.0'-1.5'	188	1/14/21	Hom	No. 10			Yes	32.36	122.95	107.19	21.1
B-3.33, 1.5'-3.0'	189	1/14/21	Hom	No. 10			Yes	30.73	91.67	79.76	24.3
B-3.33, 3.0'-4.5'	190	1/14/21	Dist	No. 10			Yes	31.82	100.50	90.70	16.6
B-3.33, 4.5'-6.0'	191	1/14/21	Dist	No. 10			Yes	31.92	89.24	81.66	15.2
B-3.33, 6.0'-7.5'	192	1/14/21	Dist	No. 10			Yes	31.71	82.69	75.85	15.5
B-3.33, 7.5'-9.0'	193	1/14/21	Hom	No. 10			Yes	32.25	86.09	79.40	14.2
B-3.33, 10.0'-11.5'	194	1/14/21	Hom	No. 10			Yes	30.93	68.28	62.89	16.9
B-3.33, 12.5'-14.0'	195	1/14/21	Hom	No. 10			Yes	31.68	96.99	89.53	12.9
B-3.33, 15.0'-16.5'	196	1/14/21	Hom	No. 10			Yes	32.29	93.85	86.50	13.6
B-3.33, 17.5'-18.3'	197	1/14/21	Dist	No. 10			Yes	32.26	131.40	116.16	18.2
B-3.34, 0.0'-1.5'	198	1/14/21	Hom	No. 10			Yes	32.10	73.28	65.83	22.1
B-3.34, 1.5'-3.0'	199	1/14/21	Hom	No. 10			Yes	31.89	79.13	70.82	21.3
B-3.34, 3.0'-4.5'	200	1/14/21	Hom	No. 10			Yes	32.32	79.51	70.75	22.8
B-3.34, 4.5'-6.0'	201	1/14/21	Hom	No. 10			Yes	31.27	79.86	73.10	16.2
B-3.34, 6.0'-7.5'	202	1/14/21	Hom	No. 10			Yes	30.95	83.35	78.18	10.9
B-3.34, 7.5'-9.0'	203	1/14/21	Hom	No. 10			Yes	32.02	79.08	73.03	14.8
B-3.34, 10.0'-11.5'	204	1/14/21	Hom	No. 10			Yes	30.86	89.73	81.45	16.4

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.34, 12.5'-14.0'	205	1/14/21	Dist	No. 10			Yes	30.53	70.04	65.13	14.2
B-3.34, 15.0'-16.5'	206	1/14/21	Hom	No. 10			Yes	31.96	72.79	68.09	13.0
B-3.34, 17.5'-19.0'	207	1/14/21	Hom	No. 4			No	31.93	121.55	113.25	10.2
B-3.34, 20.0'-20.7'	208	1/14/21	Dist	3/8"			No	32.23	128.16	120.68	8.5
B-3.35, 0.0'-1.5'	209	1/14/21	Hom	No. 10			Yes	31.57	92.49	82.96	18.5
B-3.35, 1.5'-3.0'	210	1/14/21	Dist	No. 10			Yes	30.93	99.57	90.06	16.1
B-3.35, 3.0'-4.5'	211	1/14/21	Dist	No. 10			Yes	30.69	79.67	73.20	15.2
B-3.35, 4.5'-6.0'	212	1/14/21	Dist	No. 10			Yes	32.10	79.87	73.28	16.0
B-3.35, 6.0'-7.5'	213	1/14/21	Hom	No. 10			Yes	30.69	78.46	72.31	14.8
B-3.35, 7.5'-9.0'	214	1/14/21	Hom	No. 10			Yes	32.09	78.23	72.13	15.2
B-3.35, 10.0'-11.5'	215	1/14/21	Hom	No. 10			Yes	31.63	89.92	81.17	17.7
B-3.35, 12.5'-14.0'	216	1/14/21	Hom	No. 10			Yes	32.26	91.00	81.02	20.5
B-3.35, 15.0'-16.5'	217	1/14/21	Hom	No. 10			Yes	30.72	92.30	84.97	13.5
B-3.35, 17.5'-18.0'	218	1/14/21	Dist	No. 10			Yes	30.63	103.53	94.90	13.4
B-3.35, 18.0'-18.8'	219	1/14/21	Dist	No. 10			Yes	32.08	87.19	82.64	9.0

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Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP/MT

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.1, 0.0'-1.5'	220	1/28/21	Hom	No. 10			Yes	32.14	89.83	79.94	20.7
B-3.1, 1.5'-3.0'	221	1/28/21	Hom	No. 10			Yes	30.77	85.33	76.52	19.3
B-3.1, 3.0'-4.5'	222	1/28/21	Hom	No. 10			Yes	30.52	90.50	81.09	18.6
B-3.1, 4.5'-6.0'	223	1/28/21	Hom	No. 10			Yes	32.64	79.35	72.05	18.5
B-3.1, 6.0'-6.7'	224	1/28/21	Hom	No. 10			Yes	31.74	83.60	75.20	19.3
B-3.2, 0.0'-1.5'	225	1/28/21	Hom	No. 10			Yes	30.85	77.85	70.12	19.7
B-3.2, 1.5'-3.0'	227	1/28/21	Hom	No. 10			Yes	31.82	74.48	67.20	20.6
B-3.2, 3.0'-4.5'	228	1/28/21	Hom	No. 10			Yes	32.08	75.41	68.52	18.9
B-3.2, 4.5'-6.0'	229	1/28/21	Hom	No. 10			Yes	32.12	97.14	88.04	16.3
B-3.2, 6.0'-7.5'	230	1/28/21	Hom	No. 10			Yes	32.09	87.37	79.64	16.3
B-3.2, 7.5'-9.0'	231	1/28/21	Hom	No. 10			Yes	32.26	86.67	80.69	12.3
B-3.6, 0.0'-1.5'	232	1/28/21	Dist	No. 10			Yes	32.36	75.72	66.45	27.2
B-3.6, 1.5'-3.0'	233	1/28/21	Hom	No. 10			Yes	30.62	83.68	73.63	23.4
B-3.6, 3.0'-4.5'	234	1/28/21	Hom	No. 10			Yes	30.72	75.63	67.34	22.6
B-3.6, 4.5'-6.0'	235	1/28/21	Hom	No. 10			Yes	32.25	101.68	93.05	14.2
B-3.6, 6.0'-7.5'	236	1/28/21	Hom	No. 10			Yes	31.92	105.61	95.77	15.4
B-3.6, 7.5'-9.0'	237	1/28/21	Hom	No. 10			Yes	32.07	99.80	90.84	15.2
B-3.6, 10.0'-11.5'	238	1/28/21	Dist	No. 10			Yes	32.26	88.52	79.51	19.1
B-3.10, 0.0'-1.5'	239	1/28/21	Dist	No. 10			Yes	32.01	98.79	86.50	22.6
B-3.10, 1.5'-3.0'	240	1/28/21	Hom	No. 10			Yes	32.47	100.32	88.05	22.1
B-3.10, 3.0'-4.5'	241	1/28/21	Hom	No. 10			Yes	30.62	67.10	61.51	18.1
B-3.10, 4.5'-6.0'	242	1/28/21	Hom	No. 10			Yes	31.95	90.93	80.15	22.4
B-3.10, 6.0'-7.5'	244	1/28/21	Hom	No. 10			Yes	30.70	69.68	64.04	16.9
B-3.10, 7.5'-9.0'	245	1/28/21	Hom	No. 10			Yes	30.69	68.16	63.28	15.0
B-3.10, 10.0'-11.5'	246	1/28/21	Hom	No. 10			Yes	30.95	71.48	66.59	13.7
B-3.10, 12.5'-14.0'	247	1/28/21	Dist	No. 10			Yes	32.19	90.86	84.22	12.8
B-3.26, 0.0'-1.5'	248	1/28/21	Hom	No. 10			Yes	21.23	74.84	64.77	23.1
B-3.26, 1.5'-3.0'	249	1/28/21	Hom	No. 10			Yes	21.46	83.63	71.58	24.0

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.26, 3.0'-4.5'	250	1/28/21	Hom	No. 10			Yes	21.58	90.95	78.13	22.7
B-3.26, 4.5'-6.0'	251	1/28/21	Hom	No. 10			Yes	21.55	88.48	76.69	21.4
B-3.26, 6.0'-7.5'	252	1/28/21	Hom	No. 10			Yes	21.38	71.85	63.82	18.9
B-3.26, 7.5'-9.0'	253	1/28/21	Hom	No. 10			Yes	21.78	70.14	62.78	18.0
B-3.26, 10.0'-11.5'	254	1/28/21	Hom	No. 10			Yes	21.33	73.24	65.06	18.7
B-3.26, 12.5'-14.0'	255	1/28/21	Hom	No. 10			Yes	21.29	88.59	80.34	14.0
B-3.26, 15.0'-16.5'	256	1/28/21	Hom	No. 10			Yes	21.54	82.48	75.42	13.1
B-3.26, 17.5'-19.0'	257	1/28/21	Dist	No. 10			Yes	21.60	90.90	78.91	20.9
B-3.30, 0.0'-1.5'	258	1/28/21	Hom	No. 10			Yes	21.62	72.50	61.19	28.6
B-3.30, 1.5'-3.0'	259	1/28/21	Hom	No. 10			Yes	21.80	73.00	61.52	28.9
B-3.30, 3.0'-4.5'	260	1/28/21	Hom	No. 10			Yes	21.47	74.65	65.37	21.1
B-3.30, 4.5'-6.0'	261	1/28/21	Hom	No. 10			Yes	21.43	70.40	60.81	24.4
B-3.30, 6.0'-7.5'	262	1/28/21	Dist	No. 10			Yes	21.64	63.68	54.86	26.6
B-3.30, 7.5'-9.0'	263	1/28/21	Hom	No. 10			Yes	21.46	73.40	65.71	17.4
B-3.30, 10.0'-11.5'	264	1/28/21	Hom	No. 10			Yes	22.07	84.58	77.16	13.5
B-3.30, 12.5'-14.0'	265	1/28/21	Hom	No. 10			Yes	21.54	76.65	70.39	12.8
B-3.30, 15.0'-16.5'	266	1/27/21	Dist	No. 10			Yes	21.53	61.59	54.20	22.6
B-3.30, 17.5'-19.0'	267	1/27/21	Dist	No. 4			Yes	21.33	161.15	143.46	14.5
B-3.30, 20.0'-20.9'	268	1/27/21	Dist	No. 10			Yes	21.73	62.40	57.90	12.4
B-3.31, 0.0'-1.5'	269	1/28/21	Hom	No. 10			Yes	31.70	75.76	66.68	26.0
B-3.31, 1.5'-3.0'	270	1/28/21	Hom	No. 10			Yes	30.97	77.81	68.82	23.8
B-3.31, 3.0'-4.5'	271	1/28/21	Hom	No. 10			Yes	30.94	86.76	76.18	23.4
B-3.31, 4.5'-6.0'	272	1/28/21	Hom	No. 10			Yes	32.29	79.98	70.28	25.5
B-3.31, 6.0'-7.5'	273	1/28/21	Hom	No. 10			Yes	32.33	99.03	88.73	18.3
B-3.31, 7.5'-9.0'	274	1/28/21	Hom	No. 10			Yes	32.09	81.18	74.34	16.2
B-3.31, 10.0'-11.5'	275	1/28/21	Hom	No. 10			Yes	21.87	88.03	76.33	21.5
B-3.31, 12.5'-14.0'	276	1/28/21	Hom	No. 10			Yes	21.46	60.55	56.28	12.3
B-3.31, 15.0'-16.5'	277	1/28/21	Dist	No. 4			No	21.32	141.38	120.21	21.4

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.31, 17.5'-19.0'	278	1/28/21	Dist	No. 4			Yes	21.98	188.49	175.54	8.4
B-3.32, 0.0'-1.5'	279	1/27/21	Hom	No. 10			Yes	21.84	62.15	54.19	24.6
B-3.32, 1.5'-3.0'	280	1/27/21	Hom	No. 10			Yes	21.64	60.20	52.60	24.5
B-3.32, 3.0'-4.5'	281	1/27/21	Hom	No. 10			Yes	21.48	59.90	52.66	23.2
B-3.32, 4.5'-6.0'	282	1/27/21	Hom	No. 10			Yes	21.59	61.46	52.95	27.1
B-3.32, 6.0'-7.5'	283	1/27/21	Hom	No. 10			Yes	21.30	62.34	54.58	23.3
B-3.32, 7.5'-9.0'	284	1/27/21	Hom	No. 10			Yes	21.65	61.77	56.62	14.7
B-3.32, 10.0'-11.5'	285	1/27/21	Hom	No. 10			Yes	21.67	61.81	55.48	18.7
B-3.32, 12.5'-14.0'	286	1/27/21	Hom	No. 10			Yes	21.64	62.31	57.18	14.4
B-3.32, 15.0'-16.5'	287	1/27/21	Hom	No. 10			Yes	21.35	62.16	55.64	19.0
B-3.32, 17.5'-19.0'	288	1/28/21	Dist	No. 4			No	21.70	51.47	46.54	19.8
B-3.36, 0.0'-1.5'	289	1/27/21	Hom	No. 10			Yes	21.50	62.23	52.98	29.4
B-3.36, 1.5'-3.0'	290	1/27/21	Hom	No. 10			Yes	21.41	62.07	53.80	25.5
B-3.36, 3.0'-4.5'	291	1/27/21	Hom	No. 10			Yes	21.38	61.55	53.62	24.6
B-3.36, 4.5'-6.0'	292	1/27/21	Hom	No. 10			Yes	21.43	61.39	51.79	31.6
B-3.36, 6.0'-7.5'	293	1/27/21	Dist	No. 10			Yes	21.72	61.17	55.52	16.7
B-3.36, 7.5'-9.0'	294	1/27/21	Hom	No. 10			Yes	21.33	63.05	58.27	12.9
B-3.36, 10.0'-11.5'	295	1/27/21	Hom	No. 10			Yes	21.65	60.93	55.92	14.6
B-3.36, 12.5'-14.0'	296	1/27/21	Dist	No. 4			Yes	20.58	143.60	125.41	17.4
B-3.37, 0.0'-1.5'	297	1/27/21	Hom	No. 10			Yes	20.88	62.37	54.71	22.6
B-3.37, 1.5'-3.0'	298	1/27/21	Hom	No. 10			Yes	20.82	61.08	52.74	26.1
B-3.37, 3.0'-4.5'	299	1/27/21	Hom	No. 10			Yes	20.94	63.17	54.64	25.3
B-3.37, 4.5'-6.0'	300	1/27/21	Hom	No. 10			Yes	30.71	71.44	62.86	26.7
B-3.37, 6.0'-7.5'	301	1/27/21	Hom	No. 10			Yes	31.69	73.50	65.28	24.5
B-3.37, 7.5'-9.0'	302	1/27/21	Hom	No. 10			Yes	31.91	72.50	66.38	17.8
B-3.37, 10.0'-11.5'	303	1/27/21	Hom	No. 10			Yes	32.22	71.12	64.32	21.2
B-3.37, 12.5'-14.0'	304	1/27/21	Hom	No. 10			Yes	30.61	72.99	68.44	12.0
B-3.38, 0.0'-1.5'	305	1/27/21	Hom	No. 10			Yes	20.73	61.36	52.39	28.3

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.38, 1.5'-3.0'	306	1/27/21	Hom	No. 10			Yes	21.31	62.19	55.06	21.1
B-3.38, 3.0'-4.5'	307	1/27/21	Hom	No. 10			Yes	21.54	61.32	53.81	23.3
B-3.38, 4.5'-6.0'	308	1/27/21	Hom	No. 10			Yes	21.21	62.04	55.19	20.2
B-3.38, 6.0'-7.5'	309	1/27/21	Hom	No. 10			Yes	21.55	62.27	55.20	21.0
B-3.38, 7.5'-9.0'	310	1/27/21	Hom	No. 10			Yes	21.42	63.79	59.22	12.1
B-3.38, 10.0'-11.5'	311	1/27/21	Dist	No. 10			Yes	21.54	61.80	56.16	16.3
B-3.38, 12.5'-14.0'	312	1/27/21	Hom	No. 10			Yes	20.70	61.84	55.45	18.4
B-3.38, 14.8'-14.9'	313	1/27/21	Dist	No. 4			No	20.88	58.72	56.82	5.3
B-3.39, 0.0'-1.5'	314	1/27/21	Hom	No. 10			Yes	20.67	62.51	53.18	28.7
B-3.39, 1.5'-3.0'	315	1/27/21	Hom	No. 10			Yes	21.74	63.44	54.79	26.2
B-3.39, 3.0'-4.5'	316	1/27/21	Hom	No. 10			Yes	20.91	61.99	53.87	24.6
B-3.39, 4.5'-6.0'	317	1/27/21	Hom	No. 10			Yes	20.98	63.21	53.21	31.0
B-3.39, 6.0'-7.5'	318	1/27/21	Hom	No. 10			Yes	20.69	62.28	53.37	27.3
B-3.39, 7.5'-9.0'	319	1/27/21	Hom	No. 10			Yes	20.72	61.98	50.44	38.8
B-3.39, 10.0'-11.5'	320	1/27/21	Dist	No. 10			Yes	31.22	71.17	64.25	21.0
B-3.39, 12.5'-14.0'	321	1/27/21	Dist	No. 10			Yes	21.09	62.75	54.63	24.2
B-3.39, 15.0'-15.3'	322	1/27/21	Dist	No. 4			Yes	20.96	142.08	129.48	11.6
B-3.40, 0.0'-1.5'	323	1/27/21	Hom	No. 10			Yes	20.69	62.75	55.11	22.2
B-3.40, 1.5'-3.0'	324	1/27/21	Hom	No. 10			Yes	20.91	61.67	53.95	23.4
B-3.40, 3.0'-4.5'	325	1/27/21	Hom	No. 10			Yes	21.07	61.65	54.08	22.9
B-3.40, 4.5'-6.0'	326	1/27/21	Hom	No. 10			Yes	32.45	71.97	64.22	24.4
B-3.40, 6.0'-7.5'	327	1/27/21	Hom	No. 10			Yes	32.03	71.11	64.33	21.0
B-3.40, 7.5'-9.0'	328	1/27/21	Dist	No. 10			Yes	30.72	71.85	64.70	21.0
B-3.40, 10.0'-11.5'	329	1/27/21	Dist	No. 10			Yes	32.18	74.44	66.22	24.1
B-3.40, 12.5'-14.0'	330	1/27/21	Hom	No. 10			Yes	30.91	71.59	64.05	22.8
B-3.40, 15.0'-16.5'	331	1/27/21	Dist	No. 10			Yes	32.35	70.81	67.07	10.8
B-3.40, 17.5'-19.0'	332	1/27/21	Dist	No. 10			Yes	30.71	72.31	68.33	10.6
B-3.41, 0.0'-1.5'	333	1/27/21	Hom	No. 10			Yes	31.66	73.86	66.19	22.2

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.41, 1.5'-3.0'	334	1/27/21	Hom	No. 10			Yes	32.02	70.90	63.81	22.3
B-3.41, 3.0'-4.5'	335	1/27/21	Hom	No. 10			Yes	32.16	72.40	64.33	25.1
B-3.41, 4.5'-6.0'	336	1/27/21	Hom	No. 10			Yes	30.61	71.78	64.18	22.6
B-3.41, 6.0'-7.5'	337	1/27/21	Hom	No. 10			Yes	21.44	61.89	53.80	25.0
B-3.41, 7.5'-9.0'	338	1/27/21	Hom	No. 10			Yes	20.58	62.14	51.42	34.8
B-3.41, 10.0'-11.5'	339	1/27/21	Hom	No. 10			Yes	20.71	62.13	52.09	32.0
B-3.41, 12.5'-14.0'	340	1/27/21	Hom	No. 10			Yes	20.78	63.08	55.17	23.0
B-3.41, 15.0'-16.5'	341	1/27/21	Hom	No. 10			Yes	20.89	62.25	52.81	29.6
B-3.41, 17.5'-19.0'	342	1/27/21	Hom	No. 10			Yes	20.80	61.62	55.33	18.2
B-3.41, 20.0'-20.9'	343	1/27/21	Hom	No. 10			Yes	20.98	62.68	55.25	21.7
B-3.42, 0.0'-1.5'	344	1/27/21	Hom	No. 10			Yes	31.94	76.03	69.89	16.2
B-3.42, 1.5'-3.0'	345	1/27/21	Hom	No. 10			Yes	32.25	74.92	67.36	21.5
B-3.42, 3.0'-4.5'	346	1/27/21	Hom	No. 10			Yes	30.95	73.61	68.28	14.3
B-3.42, 4.5'-6.0'	347	1/27/21	Hom	No. 10			Yes	31.62	74.01	67.73	17.4
B-3.42, 6.0'-7.5'	348	1/27/21	Hom	No. 10			Yes	31.91	73.54	66.28	21.1
B-3.42, 7.5'-9.0'	349	1/27/21	Hom	No. 10			Yes	31.89	75.81	70.10	14.9
B-3.42, 10.0'-11.5'	350	1/27/21	Hom	No. 10			Yes	20.68	62.28	56.01	17.7
B-3.42, 12.5'-14.0'	351	1/27/21	Hom	No. 10			Yes	20.77	62.31	56.14	17.4
B-3.42, 15.0'-16.5'	352	1/27/21	Hom	No. 10			Yes	20.58	62.33	54.61	22.7
B-3.42, 17.5'-19.0'	353	1/27/21	Dist	No. 10			Yes	21.00	63.48	59.19	11.2
B-3.42, 20.0'-20.7'	354	1/27/21	Dist	No. 10			Yes	21.63	143.00	129.50	12.5
B-3.43, 0.0'-1.5'	355	1/27/21	Hom	No. 10			Yes	32.01	73.09	64.98	24.6
B-3.43, 1.5'-3.0'	356	1/27/21	Hom	No. 10			Yes	32.27	72.08	64.51	23.5
B-3.43, 3.0'-4.5'	357	1/27/21	Hom	No. 10			Yes	30.90	75.87	67.08	24.3
B-3.43, 4.5'-6.0'	358	1/27/21	Hom	No. 10			Yes	32.07	72.74	64.72	24.6
B-3.43, 6.0'-7.5'	359	1/27/21	Hom	No. 10			Yes	32.17	73.00	64.37	26.8
B-3.43, 7.5'-9.0'	360	1/27/21	Hom	No. 10			Yes	30.68	72.78	63.09	29.9
B-3.43, 10.0'-11.5'	361	1/27/21	Dist	No. 10			Yes	32.49	73.51	67.53	17.1

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.43, 12.5'-14.0'	362	1/27/21	Hom	No. 10			Yes	31.80	72.94	64.43	26.1
B-3.43, 15.0'-16.5'	363	1/27/21	Hom	No. 10			Yes	31.90	75.31	67.20	23.0
B-3.43, 17.5'-19.0'	364	1/27/21	Dist	No. 10			Yes	21.59	64.74	56.85	22.4
B-3.43, 20.0'-21.1'	365	1/27/21	Dist	No. 4			Yes	21.13	143.77	130.85	11.8
B-3.62, 0.0'-1.5'	366	1/28/21	Hom	No. 10			Yes	31.92	84.44	74.31	23.9
B-3.62, 1.5'-3.0'	367	1/28/21	Dist	No. 10			Yes	30.68	94.09	84.59	17.6
B-3.62, 3.0'-4.5'	368	1/28/21	Hom	No. 10			Yes	32.10	91.41	81.46	20.2
B-3.62, 4.5'-6.0'	369	1/28/21	Hom	No. 10			Yes	32.25	64.83	60.55	15.1
B-3.62, 6.0'-7.5'	370	1/28/21	Hom	No. 10			Yes	31.99	80.44	74.03	15.2
B-3.62, 7.5'-9.0'	371	1/28/21	Hom	No. 10			Yes	31.99	82.79	76.12	15.1
B-3.69, 0.0'-1.5'	372	1/28/21	Hom	No. 10			Yes	21.68	69.09	61.11	20.2
B-3.69, 1.5'-3.0'	373	1/28/21	Hom	No. 10			Yes	30.95	80.47	70.96	23.8
B-3.69, 3.0'-4.5'	374	1/28/21	Hom	No. 10			Yes	21.69	82.97	72.76	20.0
B-3.69, 4.5'-6.0'	375	1/28/21	Hom	No. 10			Yes	30.57	80.96	74.23	15.4
B-3.69, 6.0'-7.5'	376	1/28/21	Hom	No. 10			Yes	32.08	82.40	73.44	21.7
B-3.69, 7.5'-9.0'	377	1/28/21	Hom	No. 10			Yes	32.27	94.92	85.47	17.8
B-3.70, 0.0'-1.5'	378	1/28/21	Hom	No. 10			Yes	31.59	93.83	83.45	20.0
B-3.70, 1.5'-3.0'	379	1/28/21	Hom	No. 10			Yes	31.81	75.69	67.44	23.2
B-3.70, 3.0'-4.5'	380	1/28/21	Hom	No. 10			Yes	31.63	68.41	62.86	17.8
B-3.70, 4.5'-6.0'	381	1/28/21	Dist	No. 10			Yes	32.28	97.42	88.50	15.9
B-3.70, 6.0'-7.5'	382	1/28/21	Hom	No. 10			Yes	32.30	87.37	80.26	14.8
B-3.70, 7.5'-9.0'	383	1/28/21	Hom	No. 10			Yes	32.28	93.91	86.00	14.7
B-3.71, 0.0'-1.5'	384	1/27/21	Hom	No. 10			Yes	30.72	74.72	66.33	23.6
B-3.71, 1.5'-3.0'	385	1/27/21	Hom	No. 10			Yes	32.31	76.33	68.06	23.1
B-3.71, 3.0'-4.5'	386	1/27/21	Hom	No. 10			Yes	32.31	74.81	69.50	14.3
B-3.71, 4.5'-6.0'	387	1/27/21	Hom	No. 10			Yes	32.04	73.09	67.84	14.7
B-3.71, 6.0'-7.5'	388	1/27/21	Hom	No. 10			Yes	32.23	74.76	69.12	15.3
B-3.71, 7.5'-9.0'	389	1/27/21	Hom	No. 10			Yes	32.07	76.87	70.82	15.6

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.72, 0.0'-1.5'	390	1/27/21	Hom	No. 10			Yes	30.51	73.04	65.10	23.0
B-3.72, 1.5'-3.0'	391	1/27/21	Hom	No. 10			Yes	31.55	73.93	66.09	22.7
B-3.72, 3.0'-4.5'	392	1/27/21	Hom	No. 10			Yes	32.26	74.17	66.69	21.7
B-3.72, 5.0'-6.5'	393	1/27/21	Hom	No. 10			Yes	20.61	62.93	54.59	24.5
B-3.72, 7.5'-9.0'	394	1/27/21	Hom	No. 10			Yes	20.67	64.02	59.05	12.9
B-3.72, 10.0'-11.5'	395	1/27/21	Hom	No. 10			Yes	20.78	62.12	57.53	12.5
B-3.72, 12.5'-14.0'	396	1/27/21	Hom	No. 10			Yes	20.77	63.46	58.80	12.3
B-3.73, 0.0'-1.5'	397	1/27/21	Hom	No. 10			Yes	20.86	61.39	54.58	20.2
B-3.73, 1.5'-3.0'	398	1/27/21	Hom	No. 10			Yes	21.37	63.17	56.57	18.8
B-3.73, 3.0'-4.5'	399	1/27/21	Hom	No. 10			Yes	20.86	62.22	55.56	19.2
B-3.73, 5.0'-6.5'	400	1/27/21	Hom	No. 10			Yes	20.76	61.39	55.73	16.2
B-3.73, 7.5'-9.0'	401	1/27/21	Hom	No. 10			Yes	21.54	62.46	56.39	17.4
B-3.73, 10.0'-11.5'	402	1/27/21	Hom	No. 10			Yes	21.35	63.90	60.59	8.4
B-3.73, 12.5'-14.0'	403	1/27/21	Hom	No. 10			Yes	21.74	61.97	58.36	9.9
B-3.75, 0.0'-1.5'	404	1/27/21	Hom	No. 10			Yes	30.67	72.97	66.06	19.5
B-3.75, 1.5'-3.0'	405	1/27/21	Hom	No. 10			Yes	32.08	72.81	66.75	17.5
B-3.75, 3.0'-4.5'	406	1/27/21	Hom	No. 10			Yes	31.94	74.07	67.24	19.3
B-3.75, 5.0'-6.5'	407	1/27/21	Hom	No. 10			Yes	30.92	73.92	66.16	22.0
B-3.75, 7.5'-9.0'	408	1/27/21	Hom	No. 10			Yes	32.06	72.24	65.20	21.2
B-3.75, 10.0'-11.5'	409	1/27/21	Dist	No. 10			Yes	31.80	73.52	66.07	21.7
B-3.75, 12.5'-14.0'	411	1/27/21	Hom	No. 10			Yes	32.12	72.86	65.22	23.1
B-3.76, 0.0'-1.5'	412	1/27/21	Hom	No. 10			Yes	20.72	61.08	55.20	17.1
B-3.76, 1.5'-3.0'	413	1/27/21	Hom	No. 10			Yes	32.09	72.20	64.78	22.7
B-3.76, 3.0'-4.5'	414	1/27/21	Hom	No. 10			Yes	21.29	62.51	56.87	15.9
B-3.76, 5.0'-6.5'	415	1/27/21	Hom	No. 10			Yes	31.73	73.78	67.95	16.1
B-3.76, 7.5'-9.0'	416	1/27/21	Hom	No. 10			Yes	30.68	73.87	67.79	16.4
B-3.76, 10.0'-11.5'	417	1/27/21	Hom	No. 10			Yes	30.85	72.68	68.17	12.1

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.76, 12.5'-14.0'	418	1/27/21	Hom	No. 10			Yes	32.24	73.00	65.23	23.6
B-3.76, 15.0'-16.4'	419	1/27/21	Hom	No. 10			Yes	30.56	74.02	65.34	25.0
B-3.77, 0.0'-1.5'	420	1/27/21	Hom	No. 10			Yes	32.06	72.93	66.61	18.3
B-3.77, 1.5'-3.0'	421	1/27/21	Hom	No. 10			Yes	31.67	72.67	65.56	21.0
B-3.77, 3.0'-4.5'	422	1/27/21	Hom	No. 10			Yes	30.91	74.86	64.58	30.5
B-3.77, 5.0'-6.5'	423	1/27/21	Hom	No. 10			Yes	32.24	72.35	65.90	19.2
B-3.77, 7.5'-9.0'	424	1/27/21	Hom	No. 10			Yes	32.27	74.53	68.95	15.2
B-3.77, 10.0'-11.5'	425	1/27/21	Hom	No. 10			Yes	31.87	72.68	65.66	20.8
B-3.77, 12.5'-14.0'	426	1/27/21	Hom	No. 10			Yes	31.25	75.43	67.12	23.2
B-3.83, 0.0'-1.5'	427	1/28/21	Hom	No. 10			Yes	30.75	65.57	59.70	20.3
B-3.83, 1.5'-3.0'	428	1/28/21	Hom	No. 10			Yes	32.08	66.41	60.51	20.8
B-3.83, 3.0'-4.5'	429	1/28/21	Hom	No. 10			Yes	31.07	67.77	61.49	20.6
B-3.83, 5.0'-6.5'	430	1/28/21	Hom	No. 10			Yes	31.74	72.30	67.14	14.6
B-3.83, 7.5'-9.0'	431	1/28/21	Hom	No. 10			Yes	30.71	66.44	62.73	11.6
B-3.83, 10.0'-10.2'	432	1/28/21	Hom	No. 10			Yes	32.17	93.21	85.96	13.5

Comments

Reviewed By REL

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP/MT

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.14, 0.0'-1.5'	448	2/22/21	Hom	No. 10			Yes	20.79	86.64	73.30	25.4
B-3.14, 1.5'-3.0'	449	2/22/21	Hom	No. 10			Yes	20.94	89.35	75.14	26.2
B-3.14, 3.0'-4.5'	450	2/22/21	Dist	No. 10			Yes	21.16	69.20	60.53	22.0
B-3.14, 4.5'-6.0'	451	2/22/21	Hom	No. 10			Yes	21.45	83.33	72.30	21.7
B-3.14, 6.0'-7.5'	452	2/22/21	Hom	No. 10			Yes	20.70	84.59	72.93	22.3
B-3.14, 7.5'-9.0'	453	2/22/21	Hom	No. 10			Yes	20.91	78.64	67.74	23.3
B-3.14, 10.0'-11.5'	454	2/22/21	Hom	No. 10			Yes	32.47	84.01	75.20	20.6
B-3.14, 12.5'-14.0'	455	2/22/21	Hom	No. 10			Yes	32.08	97.77	88.30	16.8
B-3.18, 0.0'-1.5'	456	2/22/21	Dist	No. 10			Yes	30.74	87.01	74.85	27.6
B-3.18, 1.5'-3.0'	457	2/22/21	Hom	No. 10			Yes	32.07	85.77	76.23	21.6
B-3.18, 3.0'-4.5'	458	2/22/21	Hom	No. 10			Yes	30.91	76.37	68.61	20.6
B-3.18, 4.5'-6.0'	459	2/22/21	Hom	No. 10			Yes	31.59	82.94	73.70	21.9
B-3.18, 6.0'-7.5'	460	2/22/21	Dist	No. 10			Yes	30.67	88.52	77.83	22.7
B-3.18, 7.5'-9.0'	461	2/22/21	Dist	No. 10			Yes	30.93	111.49	102.03	13.3
B-3.18, 10.0'-11.5'	462	2/22/21	Dist	No. 10			Yes	32.28	91.48	83.01	16.7
B-3.18, 12.5'-14.0'	463	2/22/21	Hom	No. 10			Yes	30.96	94.15	80.99	26.3
B-3.18, 15.0'-16.5'	464	2/22/21	Hom	No. 10			Yes	20.71	76.02	66.73	20.2
B-3.18, 17.5'-18.5'	465	2/22/21	Dist	3/4"			No	20.88	173.56	158.43	11.0
B-3.22, 0.0'-1.5'	466	2/19/21	Hom	No. 10			Yes	31.89	73.10	65.14	23.9
B-3.22, 1.5'-3.0'	467	2/19/21	Hom	No. 10			Yes	32.07	72.26	63.44	28.1
B-3.22, 3.0'-4.5'	468	2/19/21	Hom	No. 10			Yes	31.93	71.02	63.01	25.8
B-3.22, 4.5'-6.0'	469	2/19/21	Hom	No. 10			Yes	32.05	71.64	65.42	18.6
B-3.22, 6.0'-7.5'	470	2/19/21	Hom	No. 10			Yes	31.80	72.67	66.43	18.0
B-3.22, 7.5'-9.0'	471	2/19/21	Hom	No. 10			Yes	31.66	72.33	66.76	15.9
B-3.22, 10.0'-11.5'	472	2/22/21	Dist	No. 10			Yes	32.20	76.03	72.06	10.0
B-3.22, 12.5'-14.0' (no recovery)	473										
B-3.22, 15.0'-16.5'	474	2/22/21	Hom	No. 10			Yes	31.96	88.27	80.69	15.6
B-3.22, 17.5'-17.9'	475	2/22/21	Dist	3/8"			No	32.27	225.14	218.58	3.5

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.24, 0.0'-1.5'	476	2/19/21	Hom	No. 10			Yes	21.53	62.77	55.19	22.5
B-3.24, 1.5'-3.0'	477	2/19/21	Hom	No. 10			Yes	21.68	62.42	55.37	20.9
B-3.24, 3.0'-4.5'	478	2/19/21	Hom	No. 10			Yes	21.27	62.91	55.83	20.5
B-3.24, 4.5'-6.0'	479	2/19/21	Hom	No. 10			Yes	21.65	60.27	54.92	16.1
B-3.24, 6.0'-7.5'	480	2/19/21	Hom	No. 10			Yes	26.40	66.57	61.28	15.2
B-3.24, 7.5'-9.0'	481	2/19/21	Hom	No. 10			Yes	26.40	66.77	60.51	18.4
B-3.24, 10.0'-11.5'	482	2/19/21	Hom	No. 10			Yes	24.62	70.30	63.85	16.4
B-3.24, 12.5'-14.0'	483	2/19/21	Hom	No. 10			Yes	24.66	67.60	62.00	15.0
B-3.24, 15.0'-16.5'	484	2/19/21	Hom	No. 10			Yes	26.02	69.34	63.40	15.9
B-3.24, 17.5'-17.8'	485	2/19/21	Dist	No. 4			No	25.19	82.29	78.40	7.3
B-3.44, 0.0'-1.5'	486	2/22/21	Hom	No. 10			Yes	21.23	74.67	63.97	25.0
B-3.44, 1.5'-3.0'	487	2/22/21	Hom	No. 10			Yes	20.72	61.47	53.30	25.1
B-3.44, 3.0'-4.5'	488	2/22/21	Hom	No. 10			Yes	21.07	78.95	67.32	25.1
B-3.44, 4.5'-6.0'	489	2/22/21	Hom	No. 10			Yes	20.67	77.13	66.37	23.5
B-3.44, 6.0'-7.5'	490	2/22/21	Hom	No. 10			Yes	20.71	98.17	82.35	25.7
B-3.44, 7.5'-9.0'	491	2/19/21	Hom	No. 10			Yes	32.02	76.34	68.89	20.2
B-3.44, 10.0'-11.5'	492	2/22/21	Dist	No. 4			Yes	20.99	197.64	171.66	17.2
B-3.44, 12.5'-14.0'	493	2/22/21	Hom	No. 10			Yes	20.94	75.05	64.72	23.6
B-3.44, 15.0'-16.5'	494	2/19/21	Hom	No. 10			Yes	30.69	75.40	66.31	25.5
B-3.44, 17.5'-19.0'	495	2/22/21	Dist	No. 10			Yes	21.08	97.77	79.90	30.4
B-3.45, 0.0'-1.5'	496	2/22/21	Hom	No. 10			Yes	31.95	75.33	65.96	27.6
B-3.45, 1.5'-3.0'	497	2/22/21	Hom	No. 10			Yes	32.34	74.94	65.30	29.2
B-3.45, 3.0'-4.5'	498	2/19/21	Hom	No. 10			Yes	31.62	74.99	66.25	25.2
B-3.45, 4.5'-6.0'	499	2/22/21	Hom	No. 10			Yes	31.81	92.89	79.70	27.5
B-3.45, 6.0'-7.5'	500	2/22/21	Dist	No. 4			Yes	32.05	170.90	155.30	12.7
B-3.45, 7.5'-9.0'	501	2/19/21	Dist	No. 10			Yes	31.21	77.69	71.74	14.7
B-3.45, 10.0'-11.5' (no recovery)	502										
B-3.45, 12.5'-14.0'	503	2/19/21	Hom	No. 10			Yes	31.29	75.38	66.91	23.8

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.45, 15.0'-16.5'	504	2/22/21	Dist	No. 10			Yes	31.67	109.73	94.71	23.8
B-3.45, 17.5'-19.0'	505	2/22/21	Dist	No. 4			Yes	32.07	171.16	161.24	7.7
B-3.46, 0.0'-1.5'	506	2/19/21	Hom	No. 10			Yes	21.83	71.07	59.37	31.2
B-3.46, 1.5'-3.0'	507	2/19/21	Hom	No. 10			Yes	21.10	75.67	64.09	26.9
B-3.46, 3.0'-4.5'	508	2/19/21	Hom	No. 10			Yes	21.64	98.22	82.34	26.2
B-3.46, 4.5'-6.0'	509	2/19/21	Hom	No. 10			Yes	21.39	79.71	67.15	27.4
B-3.46, 6.0'-7.5'	510	2/19/21	Hom	No. 10			Yes	22.03	86.02	70.90	30.9
B-3.46, 7.5'-9.0'	511	2/19/21	Hom	No. 10			Yes	21.80	89.18	72.78	32.2
B-3.46, 10.0'-11.5'	512	2/19/21	Dist	No. 4			Yes	21.52	175.79	149.27	20.8
B-3.46, 12.5'-14.0'	513	2/19/21	Dist	No. 4			Yes	21.78	158.29	135.67	19.9
B-3.46, 15.0'-16.5'	514	2/19/21	Dist	No. 4			Yes	21.45	173.31	156.37	12.6
B-3.46, 17.5'-18.6'	515	2/19/21	Dist	No. 4			Yes	21.69	135.69	125.47	9.8
B-3.47, 0.0'-1.5'	516	2/19/21	Dist	No. 10			Yes	21.55	100.47	81.31	32.1
B-3.47, 1.5'-3.0'	517	2/19/21	Hom	No. 10			Yes	21.33	78.36	67.50	23.5
B-3.47, 3.0'-4.5'	518	2/19/21	Hom	No. 10			Yes	31.87	74.25	66.20	23.4
B-3.47, 4.5'-6.0'	519	2/19/21	Dist	No. 10			Yes	21.24	90.94	76.61	25.9
B-3.47, 6.0'-7.5'	520	2/19/21	Dist	No. 10			Yes	21.66	120.39	104.73	18.9
B-3.47, 7.5'-9.0'	521	2/19/21	Dist	No. 10			Yes	21.31	101.83	86.07	24.3
B-3.47, 10.0'-11.5'	522	2/19/21	Hom	No. 10			Yes	30.52	76.14	67.92	22.0
B-3.47, 12.5'-14.0'	523	2/19/21	Hom	No. 10			Yes	21.42	110.08	95.05	20.4
B-3.47, 15.0'-16.5'	524	2/19/21	Hom	No. 10			Yes	21.30	93.46	79.85	23.2
B-3.47, 17.5'-18.1'	525	2/19/21	Dist	3/8"			No	21.63	125.65	116.77	9.3
B-3.50, 0.0'-1.5'	526	2/19/21	Dist	No. 10			Yes	21.62	58.93	42.42	79.4
B-3.50, 1.5'-3.0'	527	2/19/21	Dist	No. 10			Yes	21.53	75.77	54.16	66.2
B-3.50, 3.0'-4.5'	528	2/19/21	Hom	No. 10			Yes	21.67	98.69	78.47	35.6
B-3.50, 4.5'-6.0'	529	2/19/21	Hom	No. 10			Yes	32.47	87.31	77.81	21.0
B-3.50, 6.0'-7.5'	530	2/19/21	Dist	No. 10			Yes	21.67	188.02	156.54	23.3
B-3.50, 7.5'-9.0'	531	2/19/21	Dist	No. 4			Yes	21.63	156.26	136.19	17.5

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.50, 10.0'-11.5'	532	2/19/21	Dist	No. 4			Yes	21.48	142.29	123.32	18.6
B-3.50, 12.5'-12.6'	533	2/19/21	Dist	3/8"			No	21.55	103.55	95.91	10.3
B-3.56, 0.0'-1.5'	534	2/19/21	Hom	No. 10			Yes	20.70	70.87	61.73	22.3
B-3.56, 1.5'-3.0'	535	2/19/21	Hom	No. 10			Yes	20.74	83.59	71.15	24.7
B-3.56, 3.0'-4.5'	536	2/19/21	Hom	No. 10			Yes	20.91	88.01	74.20	25.9
B-3.56, 4.5'-6.0'	537	2/19/21	Hom	No. 10			Yes	21.46	72.37	66.37	13.4
B-3.56, 6.0'-7.5'	538	2/19/21	Dist	No. 10			Yes	20.62	100.64	89.78	15.7
B-3.56, 7.5'-9.0'	539	2/19/21	Hom	No. 10			Yes	21.03	85.72	76.06	17.6
B-3.56, 10.0'-11.5'	540	2/19/21	Hom	No. 10			Yes	20.77	83.62	72.36	21.8
B-3.56, 12.5'-14.0'	541	2/19/21	Dist	No. 4			Yes	20.94	162.27	139.61	19.1
B-3.56, 15.0'-16.5'	542	2/19/21	Dist	No. 4			Yes	20.66	150.20	136.80	11.5
B-3.56, 17.5'-19.0'	543	2/19/21	Dist	No. 10			Yes	20.70	67.06	57.46	26.1
B-3.56, 20.0'-21.5'	544	2/19/21	Dist	No. 4			Yes	32.15	185.05	160.60	19.0
B-3.56, 22.5'-24.0'	545	2/19/21	Dist	No. 4			Yes	31.81	192.38	166.07	19.6
B-3.56, 25.0'-25.9'	546	2/19/21	Dist	No. 4			Yes	32.08	187.80	170.92	12.2
B-3.57, 0.0'-1.5'	547	2/19/21	Hom	No. 10			Yes	32.29	85.43	75.56	22.8
B-3.57, 1.5'-3.0'	548	2/19/21	Hom	No. 10			Yes	30.93	74.43	66.38	22.7
B-3.57, 3.0'-4.5'	549	2/19/21	Hom	No. 10			Yes	32.07	96.43	84.74	22.2
B-3.57, 4.5'-6.0'	550	2/19/21	Hom	No. 10			Yes	32.25	113.90	100.75	19.2
B-3.57, 6.0'-7.5'	551	2/19/21	Hom	No. 10			Yes	30.87	87.05	79.90	14.6
B-3.57, 7.5'-9.0'	552	2/19/21	Hom	No. 10			Yes	31.96	95.32	88.07	12.9
B-3.57, 10.0'-11.5'	553	2/19/21	Dist	No. 10			Yes	32.20	90.64	84.34	12.1
B-3.57, 12.5'-14.0'	554	2/19/21	Dist	No. 10			Yes	32.04	109.22	95.95	20.8
B-3.57, 15.0'-16.5'	555	2/19/21	Dist	No. 4			Yes	32.10	170.61	155.99	11.8
B-3.57, 17.5'-19.0'	556	2/19/21	Hom	No. 10			Yes	32.21	73.95	67.35	18.8
B-3.57, 20.0'-21.5'	557	2/19/21	Dist	No. 4			Yes	30.75	184.23	163.98	15.2
B-3.57, 22.5'-24.0'	558	2/19/21	Dist	No. 4			Yes	21.53	176.40	151.76	18.9
B-3.58, 0.0'-1.5'	559	2/19/21	Dist	No. 10			Yes	32.32	90.09	73.62	39.9

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.58, 1.5'-3.0'	560	2/19/21	Dist	No. 10			Yes	30.69	111.76	94.55	26.9
B-3.58, 3.0'-4.5'	561	2/19/21	Dist	No. 10			Yes	30.96	103.41	91.62	19.4
B-3.58, 4.5'-6.0'	562	2/19/21	Dist	No. 10			Yes	30.93	93.08	84.45	16.1
B-3.58, 6.0'-7.5'	563	2/19/21	Hom	No. 10			Yes	30.54	73.76	66.62	19.8
B-3.58, 7.5'-9.0'	564	2/19/21	Dist	No. 10			Yes	31.57	97.83	84.62	24.9
B-3.58, 10.0'-11.5'	565	2/19/21	Hom	No. 10			Yes	30.75	95.70	87.48	14.5
B-3.58, 12.5'-14.0'	566	2/19/21	Hom	No. 10			Yes	30.92	105.71	98.07	11.4
B-3.58, 15.0'-16.5'	567	2/19/21	Hom	No. 10			Yes	32.28	87.37	78.66	18.8
B-3.58, 17.5'-19.0'	568	2/19/21	Dist	No. 4			Yes	32.33	176.08	156.55	15.7
B-3.58, 20.0'-21.2'	569	2/19/21	Dist	No. 4			Yes	30.61	194.61	177.00	12.0
B-3.59, 0.0'-1.5'	570	2/19/21	Dist	No. 10			Yes	21.08	57.57	48.94	31.0
B-3.59, 1.5'-3.0'	571	2/19/21	Hom	No. 10			Yes	21.21	72.55	62.90	23.1
B-3.59, 3.0'-4.5'	572	2/19/21	Dist	No. 10			Yes	20.73	87.89	75.58	22.4
B-3.59, 4.5'-6.0'	573	2/19/21	Dist	No. 10			Yes	20.69	72.43	65.02	16.7
B-3.59, 6.0'-7.5'	574	2/19/21	Dist	No. 10			Yes	21.01	62.01	57.49	12.4
B-3.59, 7.5'-9.0'	575	2/19/21	Hom	No. 10			Yes	20.72	77.01	71.31	11.3
B-3.59, 10.0'-11.5'	576	2/19/21	Hom	No. 10			Yes	20.88	88.59	80.28	14.0
B-3.59, 12.5'-14.0'	577	2/19/21	Hom	No. 10			Yes	20.95	78.23	69.93	16.9
B-3.59, 15.0'-16.5'	578	2/19/21	Dist	No. 10			Yes	20.84	87.03	75.30	21.5
B-3.59, 17.5'-19.0'	579	2/19/21	Dist	No. 4			Yes	20.88	162.98	141.69	17.6
B-3.59, 20.0'-21.5'	580	2/19/21	Dist	No. 4			Yes	20.69	167.71	145.29	18.0
B-3.59, 22.5'-22.9'	581	2/19/21	Dist	No. 4			Yes	20.90	205.53	176.19	18.9
B-3.60, 0.0'-1.5'	582	2/22/21	Dist	No. 10			Yes	30.57	67.44	58.08	34.0
B-3.60, 1.5'-3.0'	583	2/22/21	Hom	No. 10			Yes	31.90	78.58	69.82	23.1
B-3.60, 3.0'-4.5'	584	2/22/21	Dist	No. 10			Yes	32.26	85.93	72.94	31.9
B-3.60, 4.5'-6.0'	585	2/22/21	Dist	No. 10			Yes	31.93	109.62	94.35	24.5
B-3.60, 6.0'-7.5'	586	2/22/21	Dist	No. 4			Yes	32.46	199.82	169.64	22.0
B-3.60, 7.5'-9.0'	587	2/22/21	Dist	No. 10			Yes	21.67	79.31	60.86	47.1

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Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.60, 10.0'-11.5'	588	2/19/21	Dist	No. 4			Yes	31.74	158.05	141.07	15.5
B-3.60, 12.5'-14.0'	589	2/22/21	Dist	No. 4			Yes	21.68	159.52	142.50	14.1
B-3.60, 15.0'-16.5'	590	2/22/21	Dist	No. 4			Yes	21.55	180.66	165.28	10.7
B-3.60, 17.5'-19.0'	591	2/22/21	Dist	3/8"			No	21.37	165.32	154.57	8.1
B-3.61, 0.0'-1.5'	592	2/19/21	Dist	No. 10			Yes	21.64	74.82	65.58	21.0
B-3.61, 1.5'-3.0'	593	2/19/21	Dist	No. 10			Yes	21.36	96.80	86.80	15.3
B-3.61, 3.0'-4.5'	594	2/19/21	Dist	No. 10			Yes	21.44	87.58	77.83	17.3
B-3.61, 4.5'-6.0'	595	2/19/21	Hom	No. 10			Yes	32.25	72.49	66.70	16.8
B-3.61, 6.0'-7.5'	596	2/19/21	Dist	No. 10			Yes	21.45	83.11	74.41	16.4
B-3.61, 7.5'-9.0'	597	2/19/21	Dist	No. 10			Yes	21.40	90.98	83.42	12.2
B-3.61, 10.0'-11.5'	598	2/19/21	Hom	No. 10			Yes	21.47	84.72	77.23	13.4
B-3.61, 12.5'-14.0'	599	2/19/21	Dist	No. 10			Yes	21.67	76.73	69.09	16.1
B-3.61, 15.0'-16.5'	600	2/19/21	Dist	No. 10			Yes	21.75	78.78	72.22	13.0
B-3.61, 17.5'-19.0'	601	2/19/21	Hom	No. 10			Yes	32.15	76.28	70.33	15.6
B-3.61, 20.0'-21.5'	602	2/19/21	Dist	No. 4			Yes	21.57	179.11	164.93	9.9
B-3.61, 22.5'-24.0'	603	2/19/21	Dist	No. 4			Yes	21.38	179.84	167.81	8.2
B-3.63, 0.0'-1.5'	604	2/22/21	Dist	No. 10			Yes	21.68	82.59	71.39	22.5
B-3.63, 1.5'-3.0'	605	2/22/21	Dist	No. 10			Yes	21.74	84.76	73.91	20.8
B-3.63, 3.0'-4.5'	606	2/22/21	Dist	No. 10			Yes	21.43	76.25	65.25	25.1
B-3.63, 4.5'-6.0'	607	2/22/21	Dist	No. 10			Yes	21.58	96.68	83.95	20.4
B-3.63, 6.0'-7.5'	608	2/22/21	Hom	No. 10			Yes	21.65	77.63	71.61	12.0
B-3.63, 7.5'-9.0'	609	2/22/21	Hom	No. 10			Yes	21.11	75.98	70.18	11.8
B-3.64, 0.0'-1.5'	610	2/22/21	Dist	No. 10			Yes	21.85	85.14	70.86	29.1
B-3.64, 1.5'-3.0'	611	2/22/21	Dist	No. 10			Yes	22.41	93.07	79.57	23.6
B-3.64, 3.0'-4.5'	612	2/22/21	Dist	No. 10			Yes	21.44	77.03	64.54	29.0
B-3.64, 4.5'-6.0'	613	2/22/21	Dist	No. 10			Yes	21.39	80.47	67.72	27.5
B-3.64, 6.0'-7.5'	614	2/22/21	Dist	No. 10			Yes	21.58	72.36	65.81	14.8
B-3.64, 7.5'-9.0'	615	2/22/21	Hom	No. 10			Yes	21.44	79.60	72.49	13.9

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Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.65, 0.0'-1.5'	616	2/22/21	Hom	No. 10			Yes	21.70	84.29	73.32	21.3
B-3.65, 1.5'-3.0'	617	2/22/21	Dist	No. 10			Yes	21.35	82.89	72.67	19.9
B-3.65, 3.0'-4.5'	618	2/22/21	Dist	No. 10			Yes	21.88	75.65	67.24	18.5
B-3.65, 4.5'-6.0'	619	2/22/21	Dist	No. 10			Yes	21.31	80.88	71.71	18.2
B-3.65, 6.0'-7.5'	620	2/22/21	Dist	No. 10			Yes	21.66	82.82	73.13	18.8
B-3.65, 7.5'-9.0'	621	2/22/21	Hom	No. 10			Yes	21.63	84.38	76.34	14.7
B-3.66, 0.0'-1.5'	622	2/22/21	Hom	No. 10			Yes	21.43	74.55	63.18	27.2
B-3.66, 1.5'-3.0'	623	2/22/21	Hom	No. 10			Yes	21.53	74.69	64.32	24.2
B-3.66, 3.0'-4.5'	624	2/22/21	Hom	No. 10			Yes	31.31	99.10	86.55	22.7
B-3.66, 4.5'-6.0'	625	2/22/21	Dist	No. 10			Yes	31.69	74.25	66.38	22.7
B-3.66, 6.0'-7.5'	626	2/22/21	Hom	No. 10			Yes	31.64	94.87	83.25	22.5
B-3.66, 7.5'-9.0'	627	2/22/21	Dist	No. 10			Yes	31.26	98.56	89.81	14.9
B-3.67, 0.0'-1.5'	628	2/19/21	Hom	No. 10			Yes	20.79	61.31	52.81	26.5
B-3.67, 1.5'-3.0'	629	2/19/21	Hom	No. 10			Yes	20.82	62.02	54.34	22.9
B-3.67, 3.0'-4.5'	630	2/19/21	Hom	No. 10			Yes	20.76	65.01	56.89	22.5
B-3.67, 4.5'-6.0'	631	2/19/21	Hom	No. 10			Yes	20.73	61.23	53.97	21.8
B-3.67, 6.0'-7.5'	632	2/19/21	Hom	No. 10			Yes	20.59	61.75	55.85	16.7
B-3.67, 7.5'-9.0'	633	2/19/21	Hom	No. 10			Yes	20.86	64.48	58.58	15.6
B-3.68, 0.0'-1.5'	634	2/19/21	Hom	No. 10			Yes	32.35	75.96	68.66	20.1
B-3.68, 1.5'-3.0'	635	2/19/21	Hom	No. 10			Yes	31.91	71.28	65.78	16.2
B-3.68, 3.0'-4.5'	636	2/19/21	Hom	No. 10			Yes	32.09	75.65	69.40	16.8
B-3.68, 4.5'-6.0'	637	2/19/21	Hom	No. 10			Yes	31.03	74.30	68.45	15.6
B-3.68, 6.0'-7.5'	638	2/19/21	Hom	No. 10			Yes	32.25	71.99	66.41	16.3
B-3.68, 7.5'-9.0'	639	2/19/21	Hom	No. 10			Yes	32.24	72.29	66.82	15.8
B-3.74, 0.0'-1.5'	640	2/19/21	Hom	No. 10			Yes	20.80	61.44	54.40	21.0
B-3.74, 1.5'-3.0'	641	2/19/21	Hom	No. 10			Yes	31.65	75.86	68.23	20.9
B-3.74, 3.0'-4.5'	642	2/19/21	Hom	No. 10			Yes	20.82	62.98	55.06	23.1
B-3.74, 4.5'-6.0'	643	2/19/21	Hom	No. 10			Yes	20.79	62.38	55.05	21.4

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.74, 6.0'-7.5'	644	2/19/21	Hom	No. 10			Yes	20.78	61.37	55.19	18.0
B-3.74, 7.5'-9.0'	645	2/19/21	Hom	No. 10			Yes	20.74	66.52	59.64	17.7
B-3.74, 10.0'-11.5'	646	2/19/21	Hom	No. 10			Yes	32.04	79.64	74.83	11.2
B-3.74, 12.5'-14.0'	647	2/19/21	Dist	No. 4			Yes	32.22	155.62	133.47	21.9
B-3.78, 0.0'-1.5'	648	2/19/21	Hom	No. 10			Yes	21.39	60.12	52.52	24.4
B-3.78, 1.5'-3.0'	649	2/19/21	Hom	No. 10			Yes	21.77	61.40	53.83	23.6
B-3.78, 3.0'-4.5'	650	2/19/21	Hom	No. 10			Yes	21.56	63.89	56.74	20.3
B-3.78, 4.5'-6.0'	651	2/19/21	Hom	No. 10			Yes	21.44	62.56	55.46	20.9
B-3.78, 6.0'-7.5'	652	2/19/21	Hom	No. 10			Yes	21.34	65.10	60.00	13.2
B-3.78, 7.5'-9.0'	653	2/19/21	Hom	No. 10			Yes	21.45	61.62	55.60	17.6
B-3.78, 10.0'-11.5'	654	2/19/21	Hom	No. 10			Yes	21.37	61.59	55.68	17.2
B-3.79, 0.0'-1.5'	655	2/19/21	Hom	No. 10			Yes	20.98	63.43	55.56	22.8
B-3.79, 1.5'-3.0'	656	2/19/21	Hom	No. 10			Yes	20.59	65.60	57.08	23.3
B-3.79, 3.0'-4.5'	657	2/19/21	Hom	No. 10			Yes	20.91	61.15	54.89	18.4
B-3.79, 4.5'-6.0'	658	2/19/21	Hom	No. 10			Yes	30.61	70.40	65.43	14.3
B-3.79, 6.0'-7.5'	659	2/19/21	Hom	No. 10			Yes	30.68	73.13	68.61	11.9
B-3.79, 7.5'-9.0'	660	2/19/21	Hom	No. 10			Yes	31.96	71.43	66.93	12.9
B-3.79, 10.0'-11.5'	661	2/19/21	Hom	No. 10			Yes	31.69	72.18	67.63	12.7
B-3.80, 0.0'-1.5'	662	2/22/21	Dist	No. 10			Yes	20.75	76.96	66.14	23.8
B-3.80, 1.5'-3.0'	663	2/22/21	Dist	No. 10			Yes	20.70	76.67	67.89	18.6
B-3.80, 3.0'-4.5'	664	2/22/21	Dist	No. 10			Yes	20.64	91.02	78.77	21.1
B-3.80, 5.0'-6.5'	665	2/19/21	Hom	No. 10			Yes	32.06	74.45	68.95	14.9
B-3.80, 7.5'-9.0'	666	2/22/21	Hom	No. 10			Yes	21.01	103.49	91.59	16.9
B-3.80, 10.0'-11.5'	667	2/22/21	Hom	No. 10			Yes	21.16	92.79	84.55	13.0
B-3.80, 12.5'-14.0'	668	2/22/21	Hom	No. 10			Yes	20.72	72.01	66.51	12.0
B-3.81, 0.0'-1.5'	669	2/19/21	Hom	No. 10			Yes	21.35	64.92	56.92	22.5
B-3.81, 1.5'-3.0'	670	2/19/21	Hom	No. 10			Yes	21.59	62.00	55.95	17.6
B-3.81, 3.0'-4.5'	671	2/19/21	Hom	No. 10			Yes	21.67	64.00	57.61	17.8

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP/MT

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.81, 4.5'-6.0'	672	2/19/21	Hom	No. 10			Yes	21.71	61.10	56.05	14.7
B-3.81, 6.0'-7.5'	673	2/19/21	Hom	No. 10			Yes	21.74	62.25	57.21	14.2
B-3.81, 7.5'-9.0'	674	2/19/21	Hom	No. 10			Yes	21.44	63.51	58.15	14.6
B-3.81, 10.0'-11.5'	675	2/19/21	Hom	No. 10			Yes	21.87	67.41	62.92	10.9
B-3.81, 12.5'-14.0'	676	2/19/21	Hom	No. 10			Yes	21.31	60.83	56.95	10.9
B-3.82, 0.0'-1.5'	677	2/19/21	Hom	No. 10			Yes	26.09	67.30	58.19	28.4
B-3.82, 1.5'-3.0'	678	2/19/21	Hom	No. 10			Yes	26.00	70.42	61.35	25.7
B-3.82, 3.0'-4.5'	679	2/19/21	Hom	No. 10			Yes	25.69	65.26	58.87	19.3
B-3.82, 5.0'-6.5'	680	2/19/21	Hom	No. 10			Yes	24.95	65.12	57.71	22.6
B-3.82, 7.5'-9.0'	681	2/19/21	Hom	No. 10			Yes	25.55	70.06	61.59	23.5
B-3.82, 10.0'-11.5'	682	2/19/21	Hom	No. 10			Yes	25.20	65.68	61.52	11.5
B-3.82, 12.5'-14.0'	683	2/19/21	Dist	No. 4			Yes	26.08	144.77	132.62	11.4
B-3.84, 0.0'-1.5'	684	2/19/21	Hom	No. 10			Yes	25.40	65.38	57.04	26.4
B-3.84, 1.5'-3.0'	685	2/19/21	Hom	No. 10			Yes	26.39	70.87	62.73	22.4
B-3.84, 3.0'-4.5'	686	2/19/21	Hom	No. 10			Yes	25.32	63.89	56.66	23.1
B-3.84, 4.5'-6.0'	687	2/19/21	Hom	No. 10			Yes	25.68	64.76	58.40	19.4
B-3.84, 6.0'-7.5'	688	2/19/21	Hom	No. 10			Yes	24.86	63.36	57.88	16.6
B-3.84, 7.5'-9.0'	689	2/19/21	Hom	No. 10			Yes	25.83	67.28	62.93	11.7
B-3.84, 10.0'-11.5'	690	2/19/21	Hom	No. 10			Yes	25.34	68.08	63.36	12.4
B-3.84, 12.5'-14.0'	691	2/19/21	Hom	No. 10			Yes	25.12	65.57	59.68	17.0

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.48, 0.0'-1.5'	692	3/16/21	Hom	No. 10			Yes	20.75	62.00	50.12	40.4
B-3.48, 1.5'-3.0'	693	3/16/21	Hom	No. 10			Yes	20.95	61.85	54.54	21.8
B-3.48, 3.0'-4.5'	694	3/16/21	Hom	No. 10			Yes	20.78	62.01	53.90	24.5
B-3.48, 4.5'-6.0'	695	3/16/21	Dist	No. 10			Yes	20.79	71.33	58.85	32.8
B-3.48, 6.0'-7.5'	696	3/16/21	Hom	No. 10			Yes	20.69	60.92	49.99	37.3
B-3.48, 7.5'-9.0'	697	3/16/21	Dist	No. 4			Yes	20.59	156.65	129.79	24.6
B-3.48, 10.0'-11.5'	698	3/16/21	Hom	No. 10			Yes	20.82	63.30	54.87	24.8
B-3.48, 12.5'-14.0'	699	3/16/21	Dist	No. 10			Yes	20.77	73.00	64.82	18.6
B-3.48, 15.0'-16.5'	700	3/16/21	Dist	No. 10			Yes	20.79	66.27	60.22	15.3
B-3.48, 17.5'-18.4'	701	3/16/21	Dist	No. 4			No	32.47	139.59	129.24	10.7
B-3.49, 0.0'-1.5'	702	3/16/21	Hom	No. 10			Yes	20.72	63.16	48.21	54.4
B-3.49, 1.5'-3.0'	703	3/16/21	Hom	No. 10			Yes	20.73	62.71	52.76	31.1
B-3.49, 3.0'-4.5'	704	3/16/21	Hom	No. 10			Yes	20.82	62.37	50.47	40.1
B-3.49, 4.5'-6.0'	705	3/16/21	Dist	No. 4			Yes	20.59	154.35	129.08	23.3
B-3.49, 6.0'-7.5'	706	3/16/21	Hom	No. 10			Yes	20.86	62.12	55.83	18.0
B-3.49, 7.5'-9.0'	707	3/16/21	Dist	No. 10			Yes	20.91	75.01	65.81	20.5
B-3.49, 10.0'-11.5'	708	3/16/21	Dist	No. 10			Yes	20.76	61.50	54.79	19.7
B-3.49, 12.5'-13.9'	709	3/16/21	Dist	No. 10			Yes	20.98	65.29	59.31	15.6
B-3.51, 0.0'-1.5'	710	3/15/21	Dist	No. 10			Yes	31.69	77.32	66.20	32.2
B-3.51, 1.5'-3.0'	711	3/15/21	Dist	No. 10			Yes	32.30	69.55	62.67	22.7
B-3.51, 3.0'-4.5'	712	3/15/21	Hom	No. 10			Yes	30.54	77.57	69.34	21.2
B-3.51, 4.5'-6.0'	713	3/15/21	Dist	No. 10			Yes	32.05	78.56	70.00	22.6
B-3.51, 6.0'-7.5'	714	3/15/21	Dist	No. 10			Yes	30.72	88.54	77.66	23.2
B-3.51, 7.5'-9.0'	715	3/15/21	Dist	No. 10			Yes	32.32	121.79	107.81	18.5
B-3.51, 10.0'-11.5'	716	3/15/21	Dist	No. 10			Yes	32.08	98.65	85.62	24.3
B-3.51, 12.5'-14.0'	717	3/15/21	Dist	No. 10			Yes	31.63	72.38	65.30	21.0
B-3.51, 15.0'-15.4'	718	3/15/21	Hom	No. 10			Yes	31.23	84.58	78.04	14.0
B-3.52, 0.0'-1.5'	719	3/15/21	Dist	No. 10			Yes	30.95	80.40	64.53	47.3

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.52, 1.5'-3.0'	720	3/15/21	Dist	No. 10			Yes	32.18	89.50	76.11	30.5
B-3.52, 3.0'-4.5'	721	3/15/21	Dist	No. 10			Yes	32.06	101.01	89.56	19.9
B-3.52, 4.5'-6.0'	722	3/15/21	Dist	No. 10			Yes	30.92	84.41	73.70	25.0
B-3.52, 6.0'-7.5'	723	3/15/21	Dist	No. 10			Yes	30.67	87.75	78.13	20.3
B-3.52, 7.5'-9.0'	724	3/15/21	Dist	No. 10			Yes	32.37	129.39	113.00	20.3
B-3.52, 10.0'-11.5'	725	3/15/21	Dist	No. 10			Yes	31.66	119.63	102.59	24.0
B-3.52, 12.5'-14.0'	726	3/15/21	Dist	No. 10			Yes	31.29	120.33	107.68	16.6
B-3.53, 0.0'-1.5'	727	3/16/21	Hom	No. 10			Yes	21.40	62.40	51.40	36.7
B-3.53, 1.5'-3.0'	728	3/16/21	Hom	No. 10			Yes	20.92	63.81	53.55	31.4
B-3.53, 3.0'-4.5'	729	3/16/21	Dist	No. 10			Yes	20.66	65.41	58.27	19.0
B-3.53, 4.5'-6.0'	730	3/16/21	Dist	No. 10			Yes	20.95	73.50	64.22	21.4
B-3.53, 6.0'-7.5'	731	3/16/21	Dist	No. 10			Yes	20.70	71.60	63.74	18.3
B-3.53, 7.5'-9.0'	732	3/16/21	Dist	No. 10			Yes	20.92	62.76	57.39	14.7
B-3.53, 10.0'-11.5'	733	3/16/21	Dist	No. 10			Yes	21.03	65.37	57.56	21.4
B-3.53, 12.5'-14.0'	734	3/16/21	Dist	No. 10			Yes	21.07	150.37	137.46	11.1
B-3.54, 0.0'-1.5'	735	3/16/21	Hom	No. 4			No	20.74	60.52	51.28	30.3
B-3.54, 1.5'-3.0'	736	3/16/21	Hom	No. 10			Yes	20.69	61.16	52.21	28.4
B-3.54, 3.0'-4.5'	737	3/16/21	Hom	No. 10			Yes	21.16	62.78	54.11	26.3
B-3.54, 4.5'-6.0'	738	3/16/21	Hom	No. 10			Yes	21.38	62.56	54.14	25.7
B-3.54, 6.0'-7.5'	739	3/16/21	Hom	No. 10			Yes	21.00	65.92	56.05	28.2
B-3.54, 7.5'-9.0'	740	3/16/21	Dist	No. 10			Yes	20.71	73.17	63.58	22.4
B-3.54, 10.0'-11.5'	741	3/16/21	Hom	No. 10			Yes	21.13	61.60	55.41	18.1
B-3.54, 12.5'-14.0'	742	3/16/21	Dist	No. 10			Yes	20.72	75.42	67.31	17.4
B-3.54, 15.0'-16.5'	743	3/16/21	Dist	No. 10			Yes	20.77	76.38	70.63	11.5
B-3.54, 17.5'-18.7'	744	3/16/21	Dist	No. 10			Yes	20.61	68.20	62.71	13.0
B-3.55, 0.0'-1.5'	745	3/16/21	Hom	No. 10			Yes	32.14	80.97	73.26	18.8
B-3.55, 1.5'-3.0'	746	3/16/21	Hom	No. 10			Yes	31.80	77.34	69.22	21.7
B-3.55, 3.0'-4.5'	747	3/16/21	Hom	No. 10			Yes	30.71	71.52	65.34	17.8

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.55, 4.5'-6.0'	748	3/16/21	Hom	No. 10			Yes	31.92	73.41	67.96	15.1
B-3.55, 6.0'-7.5'	749	3/16/21	Hom	No. 10			Yes	30.68	73.16	66.22	19.5
B-3.55, 7.5'-9.0'	750	3/16/21	Hom	No. 10			Yes	30.71	72.05	66.28	16.2
B-3.55, 10.0'-11.5' No Sample	751										
B-3.55, 12.5'-14.0'	752	3/16/21	Hom	No. 10			Yes	32.08	76.79	72.20	11.4
B-3.55, 15.0'-16.5'	753	3/16/21	Hom	No. 10			Yes	32.04	70.12	65.42	14.1
B-3.55, 17.5'-19.0'	754	3/16/21	Hom	No. 10			Yes	32.46	71.04	66.01	15.0
B-3.55, 20.0'-21.5'	755	3/16/21	Dist	No. 4			No	32.10	151.61	132.09	19.5
B-3.55, 22.5'-23.6'	756	3/16/21	Dist	No. 4			Yes	30.62	153.54	137.17	15.4
B-3.85, 0.0'-1.5'	757	3/16/21	Hom	No. 10			Yes	32.05	76.11	67.34	24.9
B-3.85, 1.5'-3.0'	758	3/16/21	Hom	No. 10			Yes	32.05	70.14	63.23	22.2
B-3.85, 3.0'-4.5'	759	3/16/21	Hom	No. 10			Yes	30.69	72.57	65.47	20.4
B-3.85, 4.5'-6.0'	760	3/16/21	Hom	No. 10			Yes	32.37	72.91	65.45	22.6
B-3.85, 6.0'-7.5'	761	3/16/21	Hom	No. 10			Yes	32.16	70.23	64.05	19.4
B-3.85, 7.5'-9.0'	762	3/16/21	Hom	No. 10			Yes	32.12	69.90	65.34	13.7
B-3.85, 10.0'-11.5'	763	3/16/21	Dist	No. 4			No	30.85	153.27	128.98	24.8
B-3.85, 12.5'-14.0'	764	3/16/21	Hom	No. 10			Yes	31.68	70.14	63.82	19.7
B-3.85, 15.0'-16.5'	765	3/16/21	Hom	No. 10			Yes	30.80	70.58	63.80	20.5
B-3.85, 17.5'-19.0'	766	3/16/21	Hom	No. 10			Yes	32.24	74.71	68.07	18.5
B-3.85, 20.0'-21.1'	767	3/16/21	Dist	No. 4			Yes	31.94	163.33	142.75	18.6

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek

Project Number 173409690

Tested By JMB

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-3.44a, 2.0'-4.0'	772	5/11/21	Hom	3/4"			No	31.93	113.69	99.14	21.6
B-3.45a, 4.0'-6.0'	778	5/11/21	Hom	3/8"			No	30.10	91.23	79.18	24.6
B-3.48a, 2.0'-4.0'	783	4/27/21	Hom	3/8"			No	32.07	126.50	108.97	22.8
B-3.51a, 2.0'-4.0'	792	4/27/21	Hom	3/8"			No	32.00	143.90	122.84	23.2

Comments

Reviewed By RJ

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek Flood Basin

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.1, 0.0'-1.5'	884	6/10/22	Dist	No. 10			Yes	31.80	81.33	72.63	21.3
B-4.1, 2.5'-4.0'	885	6/10/22	Hom	No. 10			Yes	31.89	66.52	61.67	16.3
B-4.1, 7.5'-9.0'	886	6/10/22	Hom	No. 10			Yes	30.95	87.20	80.23	14.1
B-4.1, 10.0'-11.5'	887	6/10/22	Hom	No. 10			Yes	31.71	61.43	57.95	13.3
B-4.1, 12.5'-13.3'	888	6/10/22	Dist	No. 10			Yes	30.92	77.50	70.65	17.2
B-4.2, 0.0'-1.5'	889	6/10/22	Dist	No. 10			Yes	32.03	85.22	74.01	26.7
B-4.2, 2.5'-4.0'	890	6/10/22	Hom	No. 10			Yes	30.93	68.95	61.08	26.1
B-4.2, 5.0'-6.5'	891	6/10/22	Hom	No. 10			Yes	30.69	72.86	67.48	14.6
B-4.2, 10.0'-11.5'	892	6/10/22	Dist	No. 10			Yes	32.27	65.82	59.37	23.8
B-4.2, 12.5'-13.3'	893	6/10/22	Dist	No. 10			Yes	30.94	90.21	81.16	18.0
B-4.3, 0.0'-1.5'	894	6/10/22	Dist	No. 10			Yes	31.81	62.41	55.84	27.3
B-4.3, 2.5'-4.0'	895	6/10/22	Hom	No. 10			Yes	30.76	62.01	56.11	23.3
B-4.3, 7.5'-9.0'	896	6/14/22	Dist	No. 10			Yes	30.68	79.81	74.35	12.5
B-4.3, 10.0'-11.5'	897	6/14/22	Dist	No. 10			Yes	31.70	99.22	90.66	14.5
B-4.3, 12.5'-14.0'	898	6/14/22	Dist	No. 10			Yes	32.24	72.60	65.86	20.0
B-4.4, 0.0'-1.5'	899	6/10/22	Hom	No. 10			Yes	31.94	89.54	79.21	21.9
B-4.4, 2.5'-4.0'	900	6/10/22	Hom	No. 10			Yes	30.54	67.28	60.62	22.1
B-4.4, 7.5'-9.0'	901	6/10/22	Hom	No. 10			Yes	32.06	78.18	70.94	18.6
B-4.4, 10.0'-11.5'	902	6/10/22	Hom	No. 10			Yes	32.08	64.54	60.99	12.3
B-4.4, 12.5'-14.0'	903	6/10/22	Hom	No. 10			Yes	32.24	82.73	77.58	11.4
B-4.4, 15.0'-15.8'	904	6/10/22	Dist	No. 10			Yes	31.91	94.73	83.49	21.8
B-4.5, 0.0'-1.5'	905	6/13/22	Hom	No. 10			Yes	32.29	73.42	66.91	18.8
B-4.5, 2.5'-4.0'	906	6/13/22	Dist	No. 10			Yes	30.93	85.78	77.08	18.9
B-4.5, 7.5'-9.0'	907	6/13/22	Hom	No. 10			Yes	31.80	67.99	63.25	15.1
B-4.5, 10.0'-11.5'	908	6/13/22	Hom	No. 10			Yes	31.62	103.35	95.96	11.5
B-4.5, 12.5'-14.0'	909	6/13/22	Dist	No. 10			Yes	30.67	116.27	101.56	20.8
B-4.5, 15.0'-16.5'	910	6/13/22	Dist	No. 10			Yes	32.02	70.70	65.32	16.2
B-4.5, 17.5'-18.9'	911	6/13/22	Dist	No. 10			Yes	30.92	105.42	94.27	17.6

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek Flood Basin

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.6, 0.0'-1.5'	912	6/15/22	Hom	No. 10			Yes	31.74	97.92	88.37	16.9
B-4.6, 5.0'-6.5'	913	6/15/22	Hom	No. 10			Yes	32.06	96.88	85.91	20.4
B-4.6, 7.5'-9.0'	914	6/15/22	Hom	No. 10			Yes	30.69	65.59	61.35	13.8
B-4.6, 10.0'-11.5'	915	6/15/22	Hom	No. 10			Yes	32.31	92.62	85.91	12.5
B-4.6, 12.5'-14.0'	916	6/15/22	Dist	No. 10			Yes	30.92	110.45	100.12	14.9
B-4.6, 15.0'-16.5'	917	6/15/22	Dist	No. 10			Yes	30.54	81.05	74.96	13.7
B-4.6, 17.5'-18.2'	918	6/15/22	Dist	No. 10			Yes	31.89	100.06	92.66	12.2
B-4.7, 0.0'-1.5'	919	6/13/22	Hom	No. 10			Yes	30.95	69.87	64.31	16.7
B-4.7, 5.0'-6.5'	920	6/13/22	Hom	No. 10			Yes	31.70	65.04	58.98	22.2
B-4.7, 10.0'-11.5'	921	6/13/22	Hom	No. 10			Yes	32.25	84.43	79.67	10.0
B-4.7, 12.5'-14.0'	922	6/13/22	Dist	No. 10			Yes	31.65	65.85	60.60	18.1
B-4.7, 15.0'-16.5'	923	6/13/22	Dist	No. 10			Yes	32.05	145.48	129.96	15.9
B-4.7, 17.5'-19.0'	924	6/15/22	Dist	No. 10			Yes	32.07	89.13	82.57	13.0
B-4.8, 0.0'-1.5'	925	6/10/22	Hom	No. 10			Yes	32.06	92.68	82.98	19.0
B-4.8, 5.0'-6.5'	926	6/10/22	Hom	No. 10			Yes	32.26	63.72	59.55	15.3
B-4.8, 7.5'-9.0'	927	6/10/22	Hom	No. 10			Yes	31.64	62.90	59.19	13.5
B-4.8, 10.0'-11.5'	928	6/10/22	Hom	No. 10			Yes	32.32	67.52	62.52	16.6
B-4.8, 12.5'-14.0'	929	6/10/22	Dist	No. 10			Yes	32.48	72.05	65.40	20.2
B-4.8, 15.0'-16.5'	930	6/10/22	Dist	No. 10			Yes	31.89	79.84	73.01	16.6
B-4.9, 0.0'-1.5'	931	6/14/22	Dist	No. 10			Yes	30.68	67.40	60.79	22.0
B-4.9, 2.5'-4.0'	932	6/14/22	Hom	No. 10			Yes	30.92	99.62	87.35	21.7
B-4.9, 5.0'-6.5'	933	6/14/22	Hom	No. 10			Yes	30.54	80.14	69.27	28.1
B-4.9, 7.5'-9.0'	934	6/14/22	Hom	No. 10			Yes	31.93	63.76	60.52	11.3
B-4.10, 0.0'-1.5'	935	6/14/22	Dist	No. 10			Yes	31.74	74.56	66.50	23.2
B-4.10, 2.5'-4.0'	936	6/14/22	Hom	No. 10			Yes	32.06	98.50	87.61	19.6
B-4.10, 5.0'-6.5'	937	6/14/22	Dist	No. 10			Yes	32.08	76.12	70.33	15.1
B-4.10, 10.0'-11.5'	938	6/14/22	Hom	No. 10			Yes	32.32	62.37	59.08	12.3
B-4.10, 12.5'-13.2'	939	6/14/22	Hom	No. 10			Yes	31.89	71.90	67.14	13.5

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek Flood Basin

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.11, 0.0'-1.5'	940	6/15/22	Hom	No. 10			Yes	31.94	71.52	64.39	22.0
B-4.11, 5.0'-6.5'	941	6/15/22	Hom	No. 10			Yes	30.76	79.26	65.64	39.0
B-4.11, 7.5'-9.0'	942	6/15/22	Dist	No. 10			Yes	31.71	88.50	74.44	32.9
B-4.11, 10.0'-11.5'	943	6/15/22	Dist	No. 10			Yes	32.25	90.66	74.70	37.6
B-4.11, 12.5'-14.0'	944	6/10/22	Dist	No. 10			Yes	31.14	57.43	53.19	19.2
B-4.11, 15.0'-16.5'	945	6/10/22	Dist	No. 10			Yes	30.67	90.45	81.39	17.9
B-4.11, 17.5'-18.2'	946	6/10/22	Dist	No. 10			Yes	32.14	194.31	183.23	7.3
B-4.12, 0.0'-1.5'	947	6/17/22	Hom	No. 10			Yes	20.84	73.41	64.00	21.8
B-4.12, 2.5'-4.0'	948	6/17/22	Hom	No. 10			Yes	20.79	80.83	68.29	26.4
B-4.12, 7.5'-9.0'	949	6/17/22	Dist	No. 10			Yes	20.78	60.06	49.97	34.6
B-4.12, 10.0'-11.5'	950	6/17/22	Dist	No. 10			Yes	21.04	93.86	78.52	26.7
B-4.12, 12.5'-14.0'	951	6/17/22	Dist	No. 10			Yes	21.04	55.68	49.73	20.7
B-4.12, 15.0'-16.5'	952	6/17/22	Dist	No. 10			Yes	20.70	114.96	97.21	23.2
B-4.13, 0.0'-1.5'	953	6/17/22	Hom	No. 10			Yes	20.87	74.27	64.24	23.1
B-4.13, 5.0'-6.5'	954	6/17/22	Dist	No. 10			Yes	20.96	59.67	51.33	27.5
B-4.13, 7.5'-9.0'	955	6/17/22	Dist	No. 10			Yes	21.22	72.27	62.97	22.3
B-4.13, 10.0'-11.5'	956	6/17/22	Dist	No. 10			Yes	20.90	77.76	68.80	18.7
B-4.13, 12.5'-14.0'	957	6/17/22	Dist	No. 10			Yes	20.66	54.84	48.67	22.0
B-4.13, 15.0'-16.0'	958	6/17/22	Hom	No. 10			Yes	20.80	64.86	55.11	28.4
B-4.14, 0.0'-1.5'	959	6/16/22	Hom	No. 10			Yes	31.82	65.92	60.22	20.1
B-4.14, 2.5'-4.0'	960	6/16/22	Hom	No. 10			Yes	32.20	66.59	59.77	24.7
B-4.14, 5.0'-6.5'	961	6/16/22	Dist	No. 10			Yes	32.04	79.06	71.20	20.1
B-4.14, 7.5'-9.0'	962	6/16/22	Dist	No. 10			Yes	32.09	80.14	68.86	30.7
B-4.14, 10.0'-11.5'	963	6/16/22	Dist	No. 10			Yes	31.93	82.89	76.42	14.5
B-4.14, 15.0'-16.5'	964	6/22/22	Dist	No. 10			Yes	32.26	63.06	56.80	25.5
B-4.14, 17.5'-18.9'	965	6/22/22	Dist	No. 10			Yes	32.02	102.58	97.36	8.0
B-4.15, 0.0'-1.5'	966	6/22/22	Dist	No. 10			Yes	21.07	71.05	62.53	20.5
B-4.15, 2.5'-4.0'	967	6/22/22	Hom	No. 10			Yes	20.90	85.25	73.78	21.7

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek Flood Basin

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.15, 5.0'-6.5'	968	6/22/22	Dist	No. 10			Yes	31.81	67.05	61.27	19.6
B-4.15, 7.5'-9.0'	969	6/22/22	Hom	No. 10			Yes	21.05	83.91	69.42	30.0
B-4.15, 10.0'-11.5'	970	6/22/22	Dist	No. 10			Yes	31.62	66.71	58.69	29.6
B-4.15, 15.0'-16.5'	971	6/22/22	Dist	No. 10			Yes	20.93	77.76	69.37	17.3
B-4.15, 17.5'-19.0'	972	6/22/22	Dist	No. 10			Yes	20.78	81.71	74.83	12.7
B-4.16, 0.0'-1.5'	973	6/22/22	Hom	No. 10			Yes	32.27	100.55	87.24	24.2
B-4.16, 2.5'-4.0'	974	6/22/22	Hom	No. 10			Yes	31.87	65.60	59.24	23.2
B-4.16, 7.5'-9.0'	975	6/22/22	Dist	No. 10			Yes	32.31	74.74	65.28	28.7
B-4.16, 10.0'-11.5'	976	6/22/22	Dist	No. 10			Yes	32.46	75.13	67.02	23.5
B-4.16, 12.5'-14.0'	977	6/22/22	Dist	No. 10			Yes	20.87	69.14	57.25	32.7
B-4.16, 15.0'-16.5'	978	6/22/22	Dist	No. 10			Yes	32.19	155.94	138.41	16.5
B-4.16, 17.5'-19.0'	979	6/22/22	Dist	No. 10			Yes	32.27	156.00	145.19	9.6
B-4.17, 0.0'-1.5'	980	6/22/22	Dist	No. 10			Yes	21.14	74.15	65.05	20.7
B-4.17, 5.0'-6.5'	981	6/22/22	Dist	No. 10			Yes	30.67	68.33	61.48	22.2
B-4.17, 7.5'-9.0'	982	6/22/22	Dist	No. 10			Yes	32.17	69.82	66.06	11.1
B-4.17, 10.0'-11.5'	983	6/22/22	Dist	No. 10			Yes	20.84	114.04	102.44	14.2
B-4.17, 12.5'-14.0'	984	6/22/22	Hom	No. 10			Yes	20.87	71.45	62.18	22.4
B-4.17, 15.0'-16.5'	985	6/22/22	Dist	No. 10			Yes	30.96	60.53	55.72	19.4
B-4.17, 17.5'-18.2'	986	6/22/22	Dist	No. 10			Yes	30.73	114.94	109.07	7.5
B-4.18, 0.0'-1.5'	987	6/16/22	Hom	No. 10			Yes	30.69	69.23	59.02	36.0
B-4.18, 2.5'-4.0'	988	6/16/22	Hom	No. 10			Yes	31.71	82.70	72.36	25.4
B-4.18, 5.0'-6.5'	989	6/16/22	Hom	No. 10			Yes	32.08	87.06	76.06	25.0
B-4.18, 7.5'-9.0'	990	6/16/22	Hom	No. 10			Yes	32.31	73.35	68.76	12.6
B-4.18, 10.0'-11.5'	991	6/16/22	Hom	No. 10			Yes	30.76	65.27	61.62	11.8
B-4.18, 15.0'-16.5'	992	6/16/22	Dist	No. 10			Yes	31.80	90.73	84.12	12.6
B-4.18, 17.5'-19.0'	993	6/16/22	Dist	No. 10			Yes	31.74	83.62	73.36	24.7
B-4.18, 20.0'-21.1'	994	6/16/22	Dist	No. 10			Yes	30.94	89.85	81.64	16.2
B-4.19, 0.0'-1.5'	995	6/17/22	Dist	No. 10			Yes	21.04	61.60	52.20	30.2

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Eagle Creek Flood Basin

Project Number: 173409690

Tested By: JP

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.19, 2.5'-4.0'	996	6/17/22	Hom	No. 10			Yes	20.72	78.63	67.98	22.5
B-4.19, 7.5'-9.0'	997	6/17/22	Hom	No. 10			Yes	20.86	64.94	59.16	15.1
B-4.19, 10.0'-11.5'	998	6/17/22	Hom	No. 10			Yes	20.92	74.02	67.84	13.2
B-4.19, 12.5'-14.0'	999	6/16/22	Dist	No. 10			Yes	32.17	93.98	85.95	14.9
B-4.19, 15.0'-16.5'	1000	6/16/22	Hom	No. 10			Yes	32.27	70.90	65.99	14.6
B-4.19, 17.5'-19.0'	1001	6/16/22	Hom	No. 10			Yes	31.61	63.87	59.89	14.1
B-4.19, 20.0'-21.5'	1002	6/16/22	Dist	No. 10			Yes	32.25	77.29	71.73	14.1
B-4.20, 0.0'-1.5'	1003	6/17/22	Dist	No. 10			Yes	20.80	73.70	63.18	24.8
B-4.20, 2.5'-4.0'	1004	6/17/22	Dist	No. 10			Yes	20.88	64.98	59.34	14.7
B-4.20, 5.0'-6.5'	1005	6/17/22	Hom	No. 10			Yes	20.87	62.45	56.21	17.7
B-4.20, 10.0'-11.5'	1006	6/17/22	Dist	No. 10			Yes	21.14	68.12	61.96	15.1
B-4.20, 12.5'-14.0'	1007	6/17/22	Hom	No. 10			Yes	21.00	58.16	53.83	13.2
B-4.20, 15.0'-16.5'	1008	6/17/22	Hom	No. 10			Yes	21.06	93.24	83.17	16.2
B-4.20, 17.5'-19.0'	1009	6/17/22	Hom	No. 10			Yes	20.84	80.84	71.06	19.5
B-4.20, 20.0'-21.5'	1010	6/17/22	Hom	No. 10			Yes	20.77	88.21	77.08	19.8
B-4.21, 0.0'-1.5'	1011	6/16/22	Hom	No. 10			Yes	30.95	104.24	91.05	21.9
B-4.21, 2.5'-4.0'	1012	6/16/22	Hom	No. 10			Yes	30.67	90.85	80.31	21.2
B-4.21, 5.0'-6.5'	1013	6/16/22	Dist	No. 10			Yes	31.75	71.67	64.26	22.8
B-4.21, 7.5'-9.0'	1014	6/16/22	Dist	No. 10			Yes	31.72	62.52	56.07	26.5
B-4.21, 10.0'-11.5'	1015	6/16/22	Dist	No. 10			Yes	32.25	88.07	78.98	19.5
B-4.21, 15.0'-16.5'	1016	6/16/22	Hom	No. 10			Yes	30.98	66.08	58.68	26.7
B-4.21, 17.5'-17.8'	1017	6/16/22	Dist	No. 10			Yes	32.52	84.31	76.03	19.0
B-4.22, 0.0'-1.5'	1018	6/10/22	Hom	No. 10			Yes	31.62	78.34	69.71	22.7
B-4.22, 2.5'-4.0'	1019	6/10/22	Hom	No. 10			Yes	30.69	73.41	64.73	25.5
B-4.22, 7.5'-9.0'	1020	6/10/22	Hom	No. 10			Yes	31.70	70.70	62.29	27.5
B-4.22, 10.0'-11.5'	1021	6/10/22	Dist	No. 10			Yes	32.23	71.99	65.86	18.2
B-4.22, 12.5'-14.0'	1022	6/10/22	Dist	No. 10			Yes	32.07	122.99	110.41	16.1
B-4.22, 15.0'-16.5'	1023	6/10/22	Dist	No. 10			Yes	30.92	80.27	69.43	28.1

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek Flood Basin

Project Number 173409690

Tested By JP

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
B-4.22, 17.5'-18.0'	1024	6/10/22	Dist	No. 10			Yes	31.74	88.80	84.53	8.1

Comments

Reviewed By REL

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Eagle Creek Flood Basin

Project Number 173409690

Tested By TRH/MW

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & Can Weight (g)	Moisture Content (%)
TP-4.1-A, 2.5'-5.0'	1025	6/20/22	Dist	3/4"			No	30.08	175.32	148.50	22.6
TP-4.2-A, 2.5'-5.0'	1026	6/20/22	Dist	3/4"			No	30.19	206.50	178.37	19.0
TP-4.2-B, 2.5'-5.0'	1028	6/20/22	Dist	3/4"			No	29.99	212.22	179.65	21.8
TP-4.3-A, 2.5'-5.5'	1029	6/20/22	Dist	1 1/2"			No	31.42	130.83	112.85	22.1
TP-4.3-B, 2.5'-5.5'	1030	6/20/22	Dist	3/4"			No	32.22	201.33	171.88	21.1
TP-4.4-A, 2.0'-4.5'	1031	6/20/22	Dist	3/4"			No	31.50	198.49	166.13	24.0
TP-4.4-B, 2.0'-4.5'	1033	6/20/22	Dist	3/8"			No	31.71	212.23	175.99	25.1
TP-4.5-A, 2.0'-4.0'	1034	6/20/22	Dist	3/4"			No	31.73	192.91	165.20	20.8
TP-4.5-B, 2.0'-4.0'	1035	6/20/22	Dist	1 1/2"			No	31.71	189.24	163.94	19.1
TP-4.6-A, 1.5'-3.5'	1036	6/20/22	Dist	3/4"			No	30.10	182.71	160.25	17.3
TP-4.6-B, 1.5'-3.5'	1037	6/20/22	Dist	3/4"			No	31.53	230.17	199.40	18.3
TP-4.6-C, 1.5'-3.5'	1038	6/20/22	Dist	3/4"			No	30.39	213.26	184.04	19.0

Comments

Reviewed By RJ

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	---	Sample Type:	---	Tested By:	twh
Sample ID:	---	Test Date:	08/11/22	Checked By:	MCM
Depth :	---	Test Id:	337068		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-4.1	ST	5.0-7.0	Moist, dark brown clay with sand	22.1
B-4.2	ST	7.5-9.5	Moist, dark gray sandy clay	26.1
B-4.4	ST	4.0-6.0	Moist, dark brown sandy clay	13.6
B-4.6	ST	3.0-5.0	Moist, greenish brown clayey sand	24.7
B-4.7	ST	7.5-9.5	Moist, greenish brown clayey sand	20.7
B-4.8	ST	2.5-4.5	Moist, greenish brown clayey sand	18.7
B-4.10	ST	7.5-9.5	Moist, dark greenish brown clay with sand	14.5
B-4.12	ST	5.0-7.0	Moist, greenish brown sandy clay	21.2
B-4.12A	ST	1.0-3.0	Moist, dark brown clay	26.1
B-4.12A	ST	3.0-5.0	Moist, greenish brown clay	27.1

Notes: Temperature of Drying : 110º Celsius

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	---	Sample Type:	---	Tested By:	twh
Sample ID:	---	Test Date:	08/18/22	Checked By:	MCM
Depth :	---	Test Id:	337155		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-4.11	ST	3.0-5.0	Moist, greenish brown clay with sand	23.9
B-4.12A	ST	7.0-9.0	Moist, greenish brown clay with sand	27.0
B-4.12A	ST	13.0-15.0	Moist, dark gray clayey sand	32.1
B-4.13	ST	2.5-4.5	Moist, dark brown clay with sand	23.4
B-4.14	ST	11.5-13.5	Moist, dark gray sandy clay	18.9
B-4.15	ST	12.0-14.0	Moist, dark gray sandy silt	17.7
B-4.16	ST	5.0-7.0	Moist, grayish brown clay	30.2
B-4.16A	ST	1.0-3.0	Moist, dark brown clay	25.5
B-4.16A	ST	5.0-7.0	Moist, very dark gray silt	307.4
B-4.16A	ST	10.0-12.0	Moist, greenish brown clay with sand	40.6

Notes: Temperature of Drying : 110º Celsius

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	---	Sample Type:	---	Tested By:	twh
Sample ID:	---	Test Date:	08/17/22	Checked By:	MCM
Depth :	---	Test Id:	337259		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-4.16A	ST	15.0-17.0	Moist, dark gray silty sand	16.8
B-4.17	ST	3.0-5.0	Moist, dark brown clay with sand	24.3
B-4.18	ST	12.5-14.5	Moist, dark brown sandy clay	22.2
B-4.21	ST	13.0-15.0	Moist, greenish brown sandy clay	25.7

Notes: Temperature of Drying : 110º Celsius

Attachment E-2. Laboratory Testing Results

Soil Classifications

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.2, 1.5'-3.0', 3.0'-4.5'	Lab ID	226
Sample Type	SPT Composite	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): 19.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.8
No. 4	4.75	98.1
No. 10	2	93.9
No. 40	0.425	88.8
No. 200	0.075	75.7
	0.02	61.1
	0.005	43.8
	0.002	32.8
estimated	0.001	24.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.9	6.1
Coarse Sand	4.2	5.1
Medium Sand	5.1	---
Fine Sand	13.1	13.1
Silt	31.9	42.9
Clay	43.8	32.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	20
Plasticity Index:	21
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (15)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.2, 1.5'-3.0', 3.0'-4.5'	Lab ID	226

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	01-29-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	98.1
No. 10	93.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

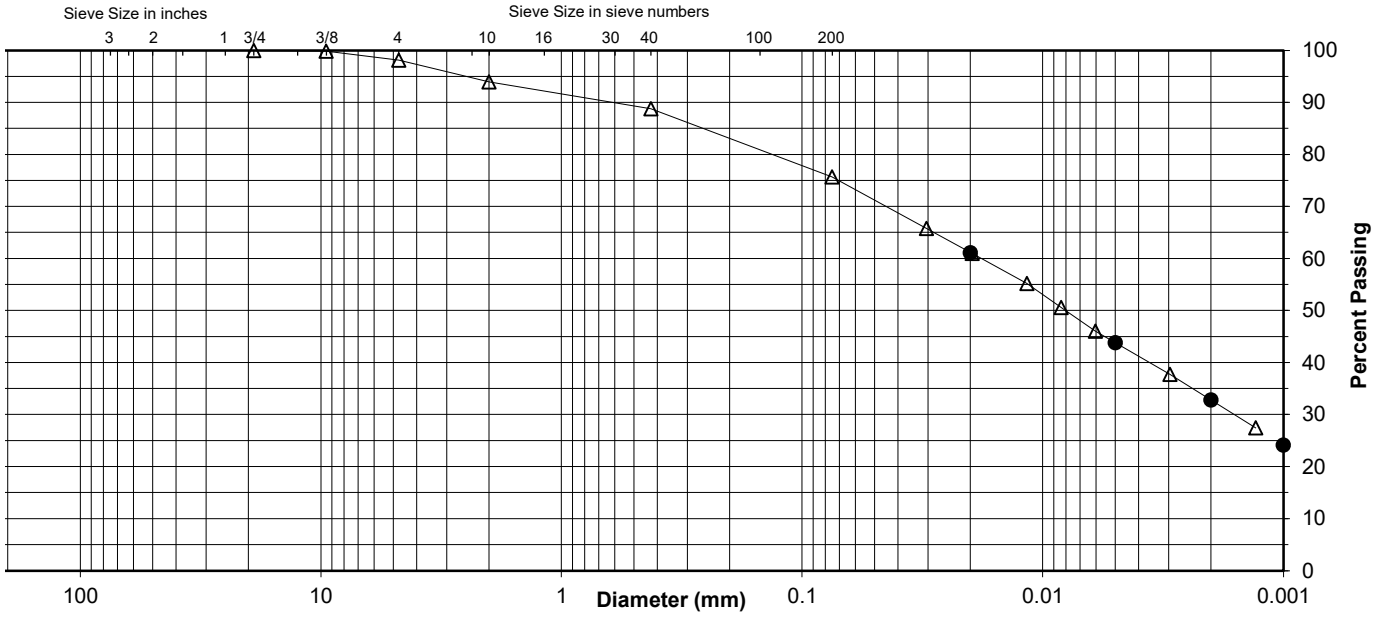
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	88.8
No. 200	75.7
0.02 mm	61.1
0.005 mm	43.8
0.002 mm	32.8
0.001 mm	24.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.9	4.2	5.1	13.1	31.9	43.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	6.1			5.1	13.1	42.9	32.8



Comments

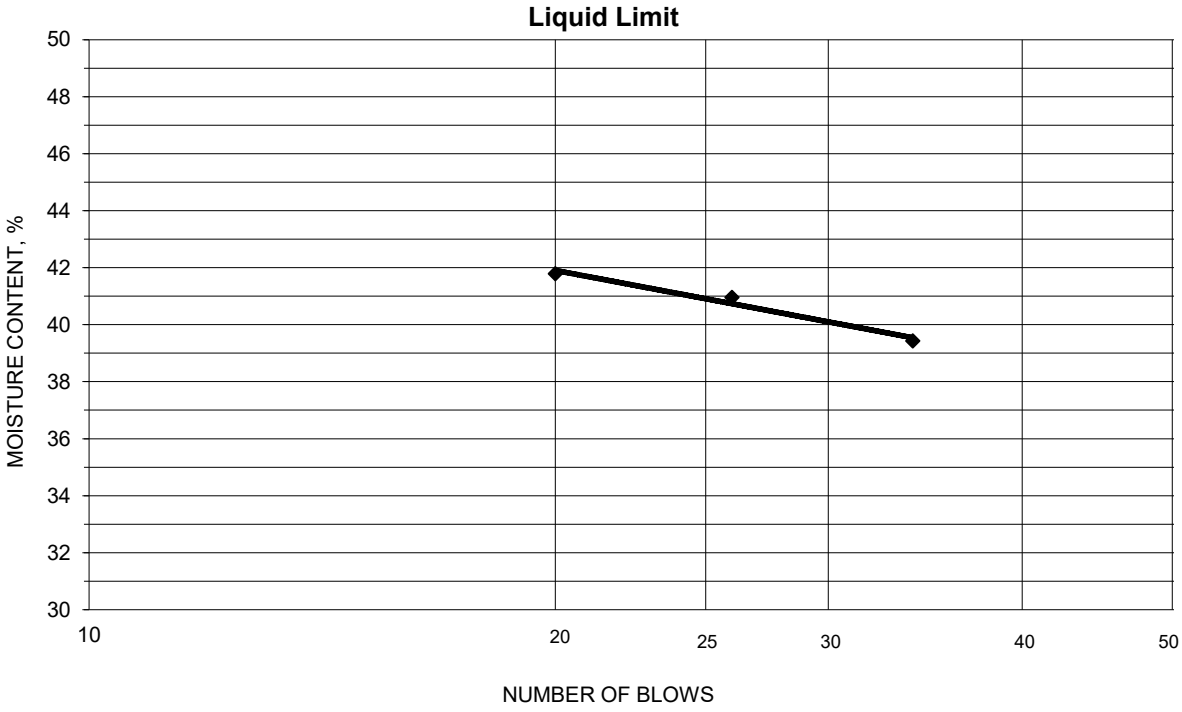
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.2, 1.5'-3.0', 3.0'-4.5'			Lab ID	226
				% + No. 40	11
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.68	22.81	10.46	34	39.4	
28.03	22.98	10.65	26	41.0	
29.86	24.31	11.03	20	41.8	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.06	16.05	11.04	20.2	20	21
17.68	16.55	11.07	20.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.4, 7.5'-9.0'	Lab ID	14
Sample Type	SPT	Date Received	12-15-20
		Date Reported	12-22-20

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.4
No. 4	4.75	96.3
No. 10	2	92.1
No. 40	0.425	83.5
No. 200	0.075	68.4
	0.02	51.3
	0.005	31.7
	0.002	20.2
estimated	0.001	13.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.7	7.9
Coarse Sand	4.2	8.6
Medium Sand	8.6	---
Fine Sand	15.1	15.1
Silt	36.7	48.2
Clay	31.7	20.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	15
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.4, 7.5'-9.0'	Lab ID	14

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MA
Test Date	12-16-2020
Date Received	12-15-2020

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.4
No. 4	96.3
No. 10	92.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

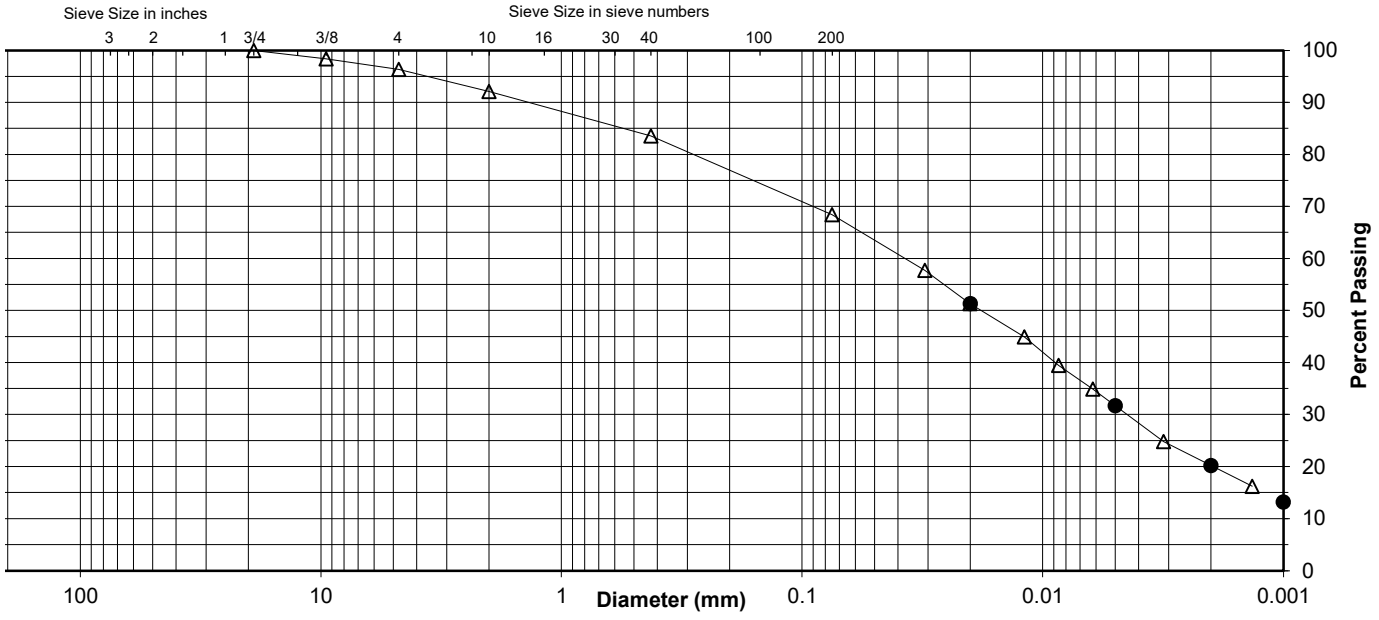
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.5
No. 200	68.4
0.02 mm	51.3
0.005 mm	31.7
0.002 mm	20.2
0.001 mm	13.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.7	4.2	8.6	15.1	36.7	31.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	7.9			8.6	15.1	48.2	20.2



Comments

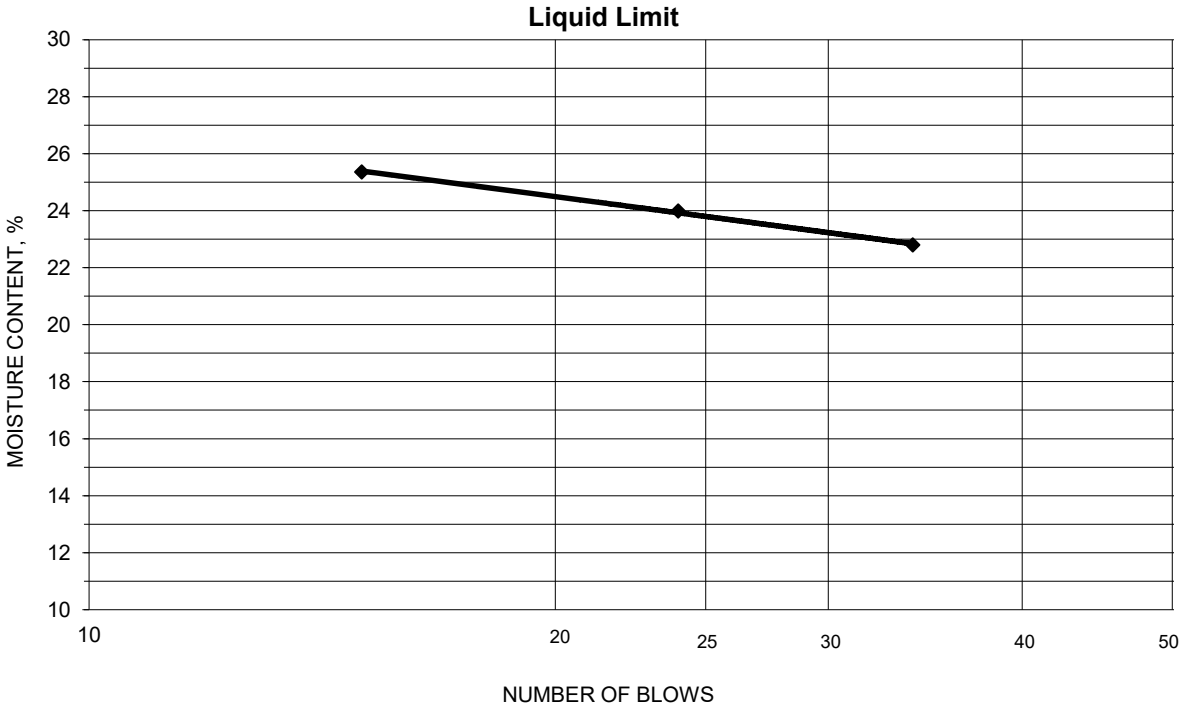
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.4, 7.5'-9.0'			Lab ID	14
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	12-15-2020
Test Date	12-18-2020	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.57	22.87	11.03	34	22.8	
24.55	21.94	11.06	24	24.0	
24.87	22.09	11.13	15	25.4	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.91	16.97	10.65	14.9	15	9
18.22	17.32	10.99	14.2		

Remarks:

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.5, 3.0'-4.5'	Lab ID	18
Sample Type	SPT	Date Received	12-15-20
		Date Reported	12-22-20

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	97.3
No. 40	0.425	91.9
No. 200	0.075	78.2
	0.02	66.5
	0.005	43.7
	0.002	32.4
estimated	0.001	25.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	2.7
Coarse Sand	2.3	5.4
Medium Sand	5.4	---
Fine Sand	13.7	13.7
Silt	34.5	45.8
Clay	43.7	32.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	21
Plasticity Index:	20
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (15)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.5, 3.0'-4.5'	Lab ID	18

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MA
Test Date	12-16-2020
Date Received	12-15-2020

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	97.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

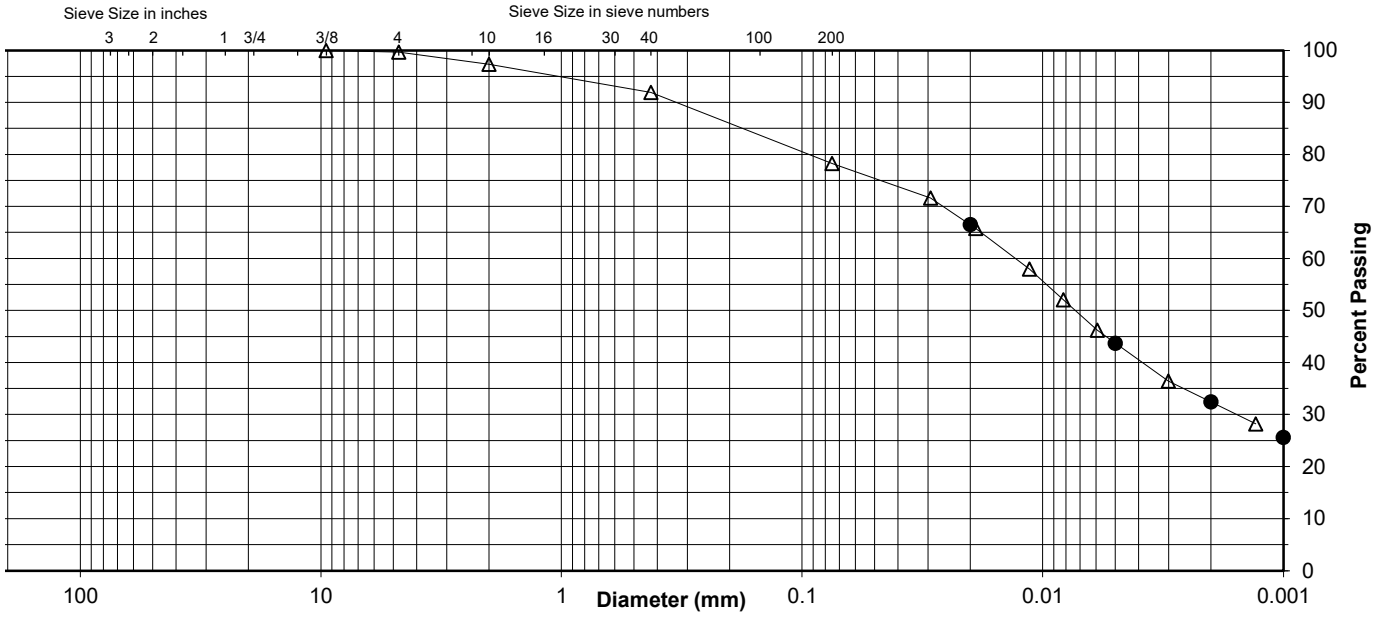
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	91.9
No. 200	78.2
0.02 mm	66.5
0.005 mm	43.7
0.002 mm	32.4
0.001 mm	25.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	2.3	5.4	13.7	34.5	43.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	2.7			5.4	13.7	45.8	32.4



Comments

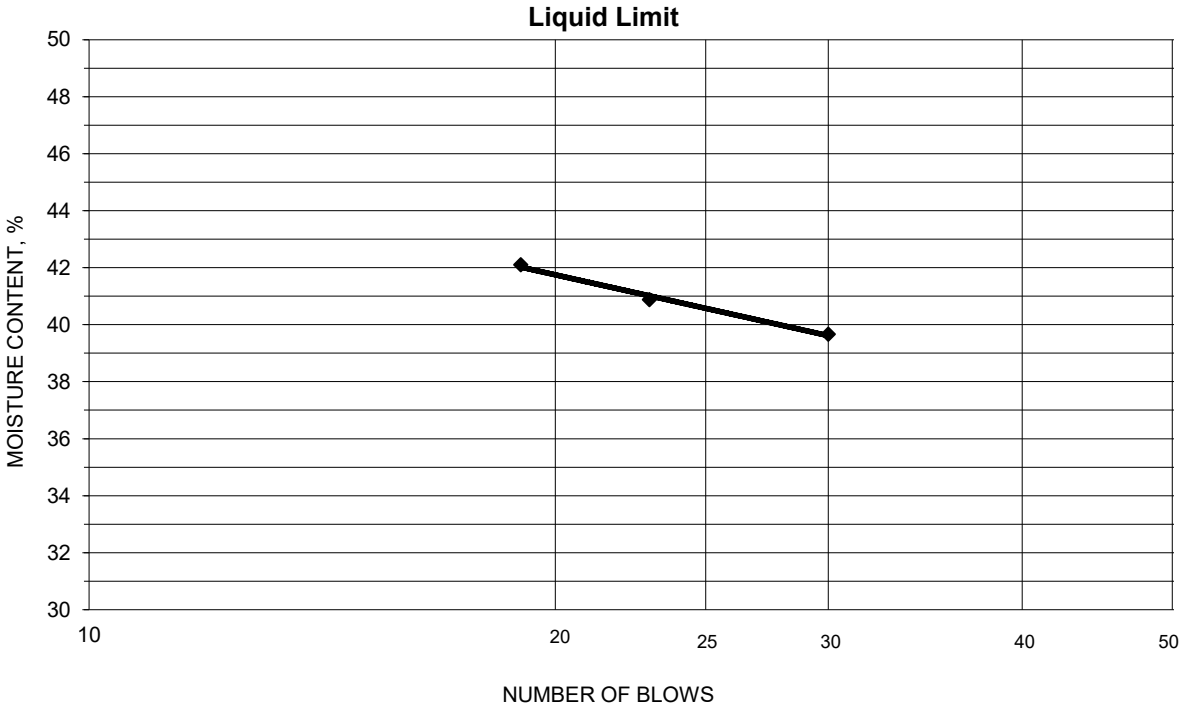
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.5, 3.0'-4.5'			Lab ID	18
				% + No. 40	8
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	12-15-2020
Test Date	12-17-2020	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.69	20.06	10.91	30	39.7	
24.26	20.43	11.06	23	40.9	
23.30	19.65	10.98	19	42.1	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.13	16.87	11.01	21.5	21	20
18.68	17.33	11.04	21.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.8, 10.0'-11.5'	Lab ID	37
Sample Type	SPT	Date Received	12-15-20
		Date Reported	12-22-20

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.6
No. 4	4.75	97.8
No. 10	2	97.3
No. 40	0.425	96.5
No. 200	0.075	20.9
	0.02	8.3
	0.005	3.6
	0.002	1.7
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.2	2.7
Coarse Sand	0.5	0.8
Medium Sand	0.8	---
Fine Sand	75.6	75.6
Silt	17.3	19.2
Clay	3.6	1.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Project Number: 173409690
Source: B-3.8, 10.0'-11.5'
Lab ID: 37

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MA
Test Date: 12-16-2020
Date Received: 12-15-2020

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.6
No. 4	97.8
No. 10	97.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

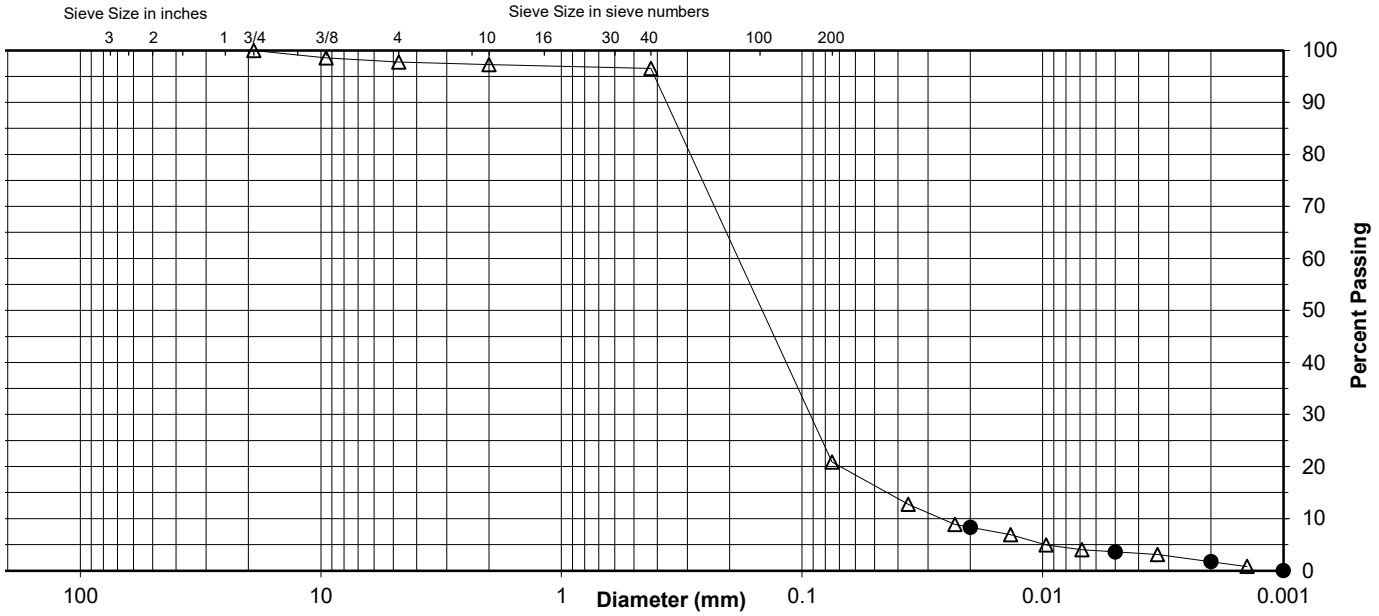
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	96.5
No. 200	20.9
0.02 mm	8.3
0.005 mm	3.6
0.002 mm	1.7
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.2	0.5	0.8	75.6	17.3	3.6

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.7	0.8	75.6	19.2	1.7



Comments

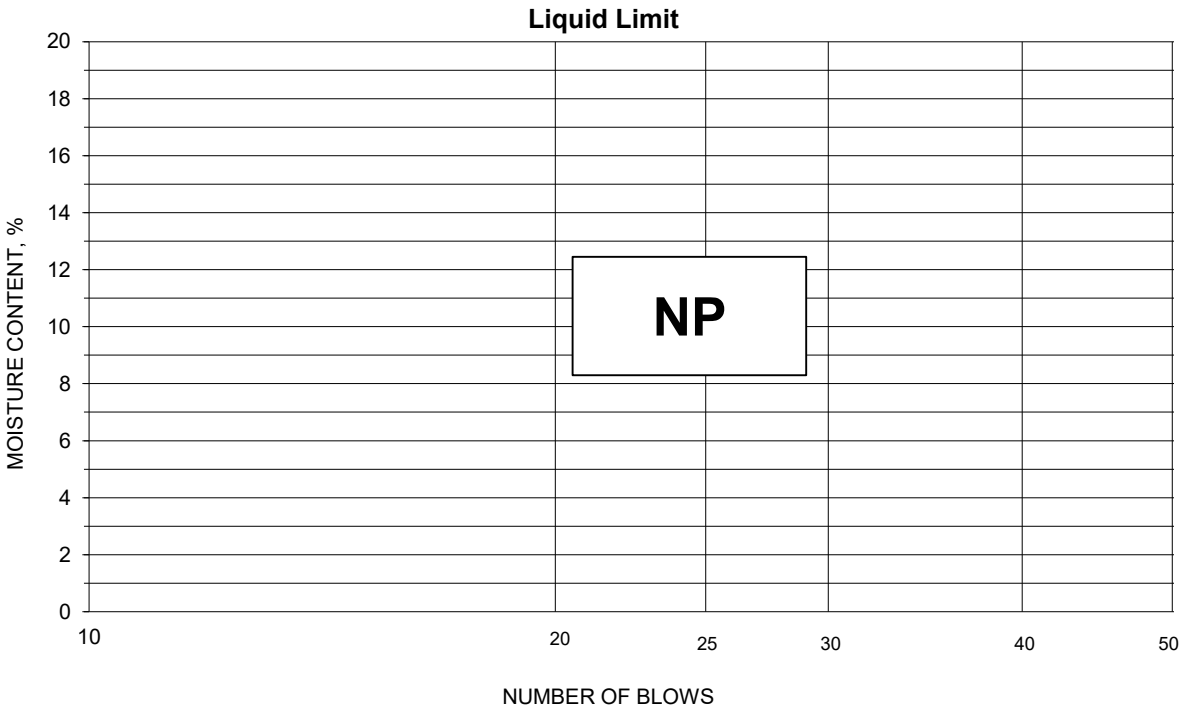
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.8, 10.0'-11.5'			Lab ID	37
				% + No. 40	3
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	12-15-2020
Test Date	12-17-2020	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.10, 6.0'-7.5', 7.5'-9.0'	Lab ID	243
Sample Type	SPT Composite	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): 16.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	98.7
3/8"	9.5	96.9
No. 4	4.75	95.1
No. 10	2	91.4
No. 40	0.425	84.2
No. 200	0.075	67.0
	0.02	53.5
	0.005	32.3
	0.002	15.8
estimated	0.001	10.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.9	8.6
Coarse Sand	3.7	7.2
Medium Sand	7.2	---
Fine Sand	17.2	17.2
Silt	34.7	51.2
Clay	32.3	15.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	16
Plasticity Index:	8
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Sandy lean clay

AASHTO Classification: A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Project Number: 173409690
Source: B-3.10, 6.0'-7.5', 7.5'-9.0'
Lab ID: 243

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MT
Test Date: 02-02-2021
Date Received: 01-27-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	98.7
3/8"	96.9
No. 4	95.1
No. 10	91.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

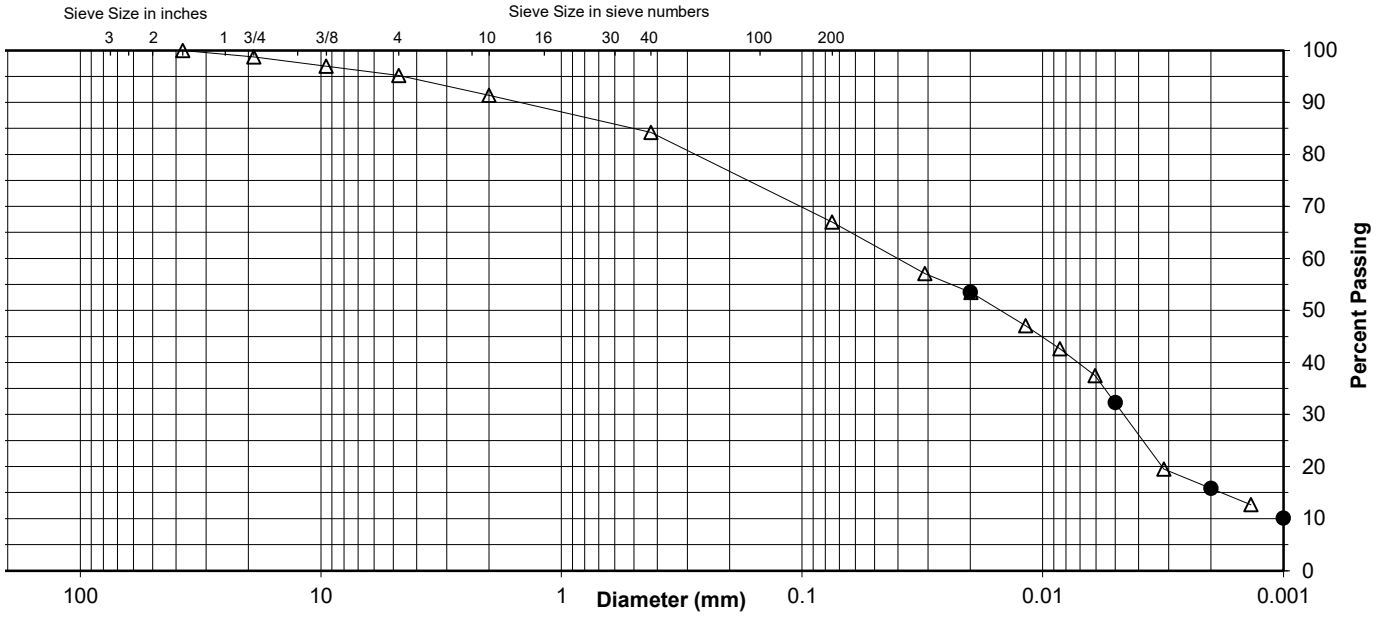
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.2
No. 200	67.0
0.02 mm	53.5
0.005 mm	32.3
0.002 mm	15.8
0.001 mm	10.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	1.3	3.6	3.7	7.2	17.2	34.7	32.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.6			7.2	17.2	51.2	15.8



Comments:

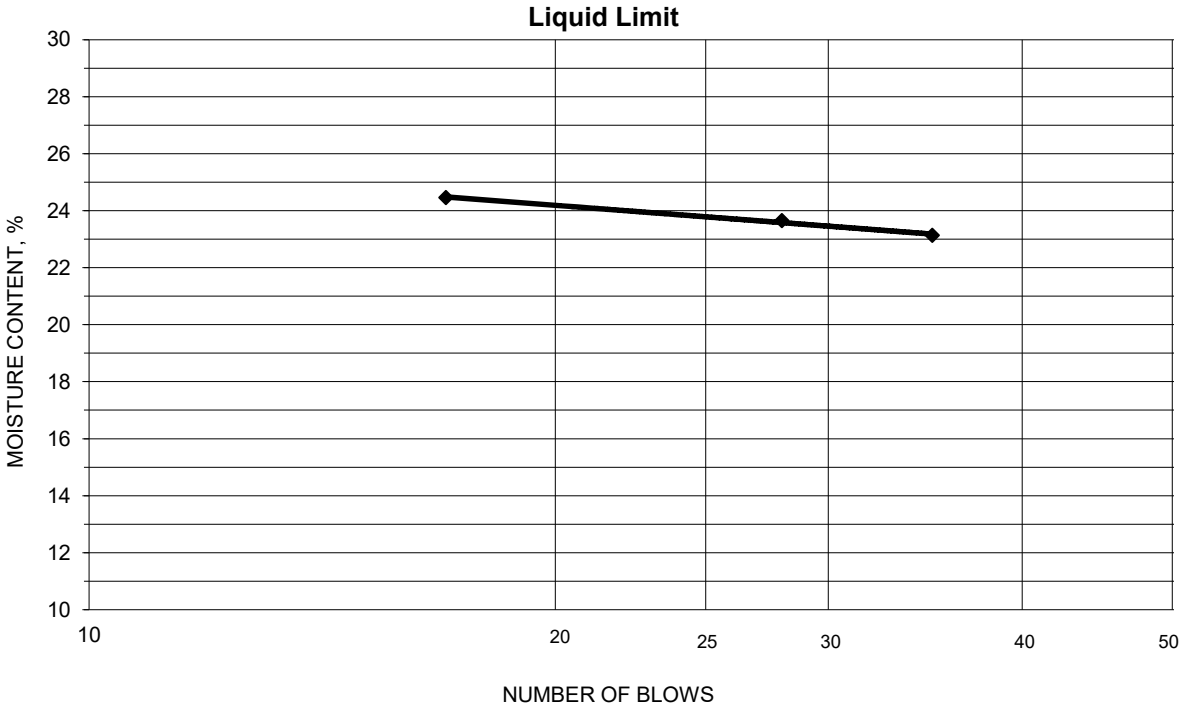
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.10, 6.0'-7.5', 7.5'-9.0'			Lab ID	243
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.25	21.68	10.57	35	23.1	
25.52	22.76	11.09	28	23.7	
24.80	22.08	10.96	17	24.5	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.06	17.96	11.06	15.9	16	8
19.07	17.96	11.07	16.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.12, 3.0'-4.5'	Lab ID	56
Sample Type	SPT	Date Received	12-15-20
		Date Reported	12-22-20

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.9
No. 40	0.425	98.7
No. 200	0.075	89.5
	0.02	68.2
	0.005	37.8
	0.002	24.3
estimated	0.001	16.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.1
Coarse Sand	0.1	1.2
Medium Sand	1.2	---
Fine Sand	9.2	9.2
Silt	51.7	65.2
Clay	37.8	24.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	18
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay

AASHTO Classification: A-4 (7)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.12, 3.0'-4.5'	Lab ID	56

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MA
Test Date	12-16-2020
Date Received	12-15-2020

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

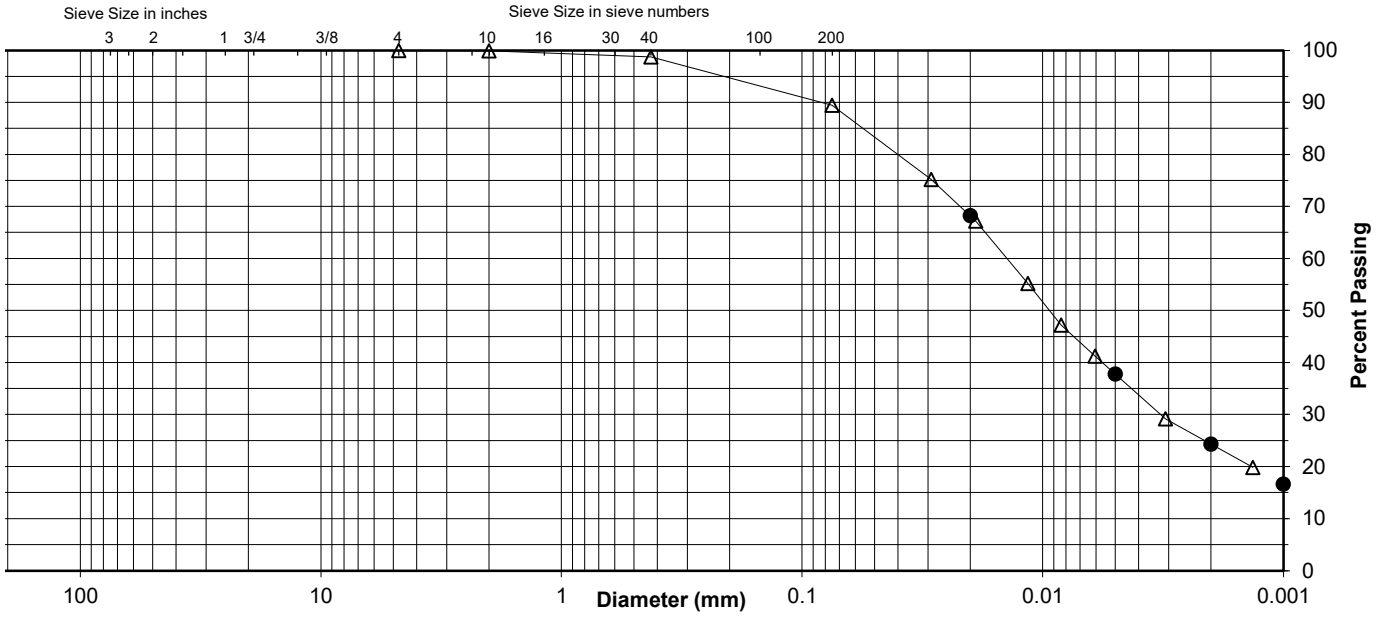
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	98.7
No. 200	89.5
0.02 mm	68.2
0.005 mm	37.8
0.002 mm	24.3
0.001 mm	16.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.1	1.2	9.2	51.7	37.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.1			1.2	9.2	65.2	24.3



Comments

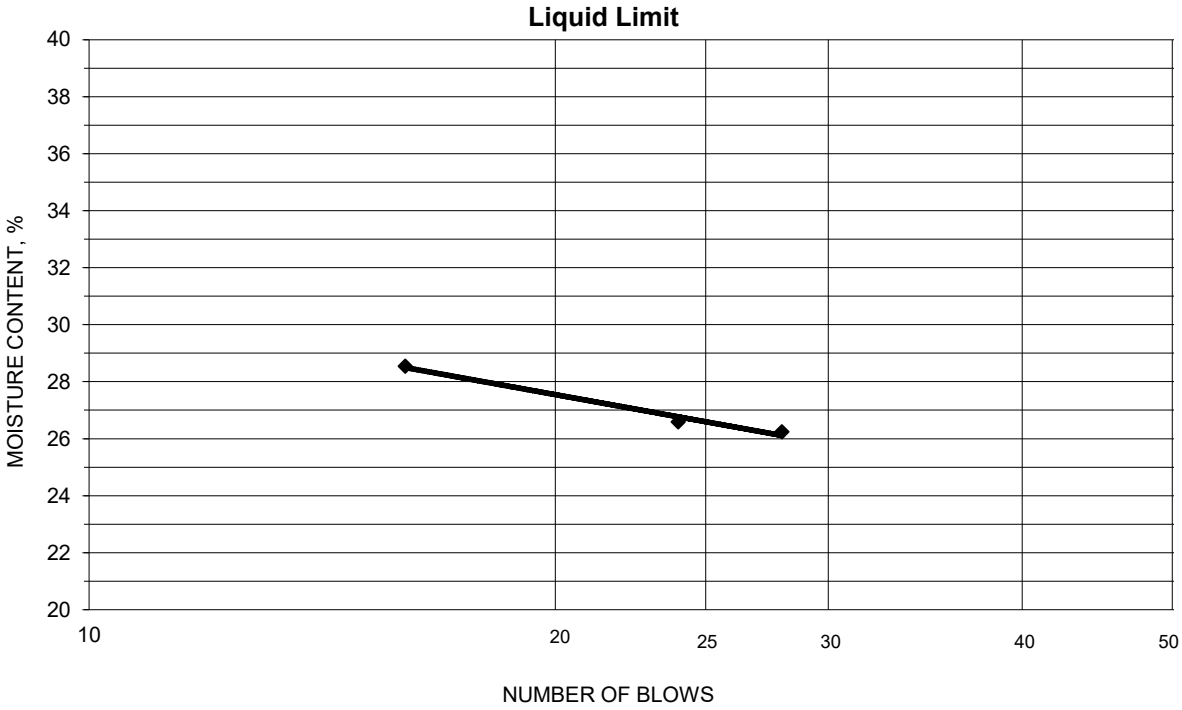
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.12, 3.0'-4.5'			Lab ID	56
				% + No. 40	1
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	12-15-2020
Test Date	12-17-2020	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.38	21.58	10.91	28	26.2	
25.18	22.21	11.04	24	26.6	
25.37	22.19	11.05	16	28.5	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.82	19.21	10.58	18.7	18	9
21.97	20.29	11.09	18.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.15, 6.0'-7.5'	Lab ID	73
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-21-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.5
3/8"	9.5	97.5
No. 4	4.75	97.4
No. 10	2	94.7
No. 40	0.425	88.4
No. 200	0.075	62.0
	0.02	51.2
	0.005	36.2
	0.002	26.8
estimated	0.001	19.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.6	5.3
Coarse Sand	2.7	6.3
Medium Sand	6.3	---
Fine Sand	26.4	26.4
Silt	25.8	35.2
Clay	36.2	26.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	15
Plasticity Index:	10
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.15, 6.0'-7.5'	Lab ID	73

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.5
3/8"	97.5
No. 4	97.4
No. 10	94.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

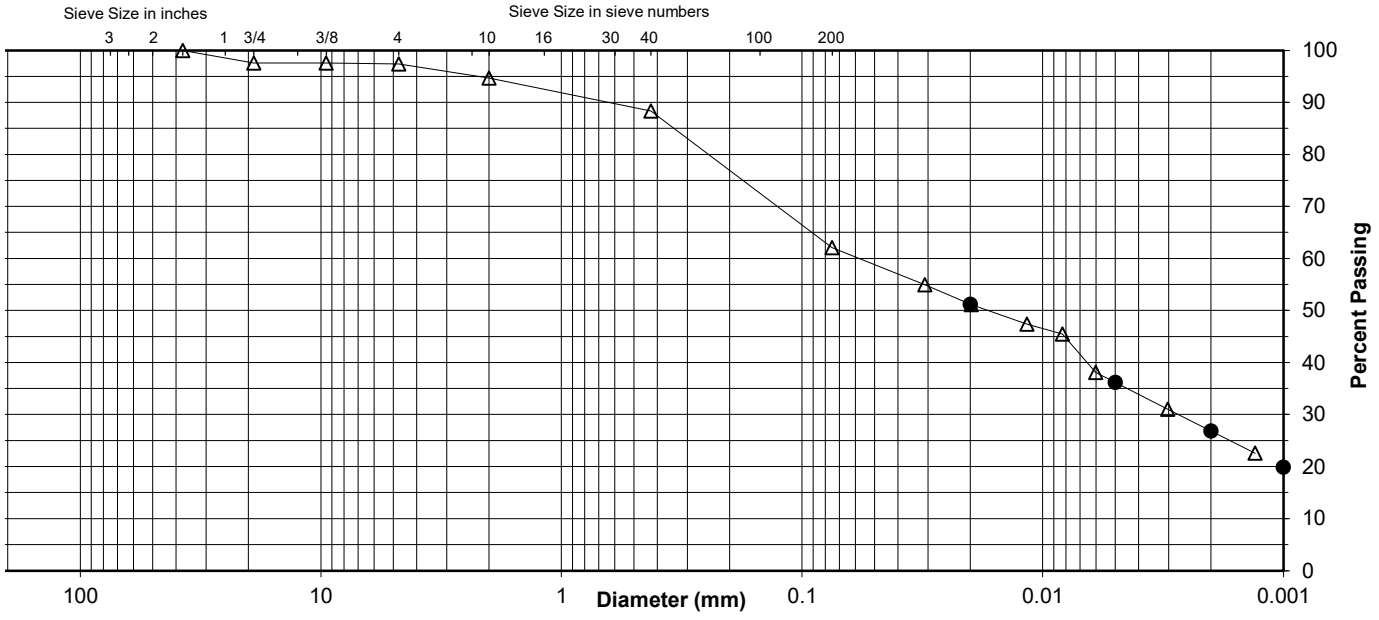
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	88.4
No. 200	62.0
0.02 mm	51.2
0.005 mm	36.2
0.002 mm	26.8
0.001 mm	19.9

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	2.5	0.1	2.7	6.3	26.4	25.8	36.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	5.3	6.3	26.4	35.2	26.8



Comments

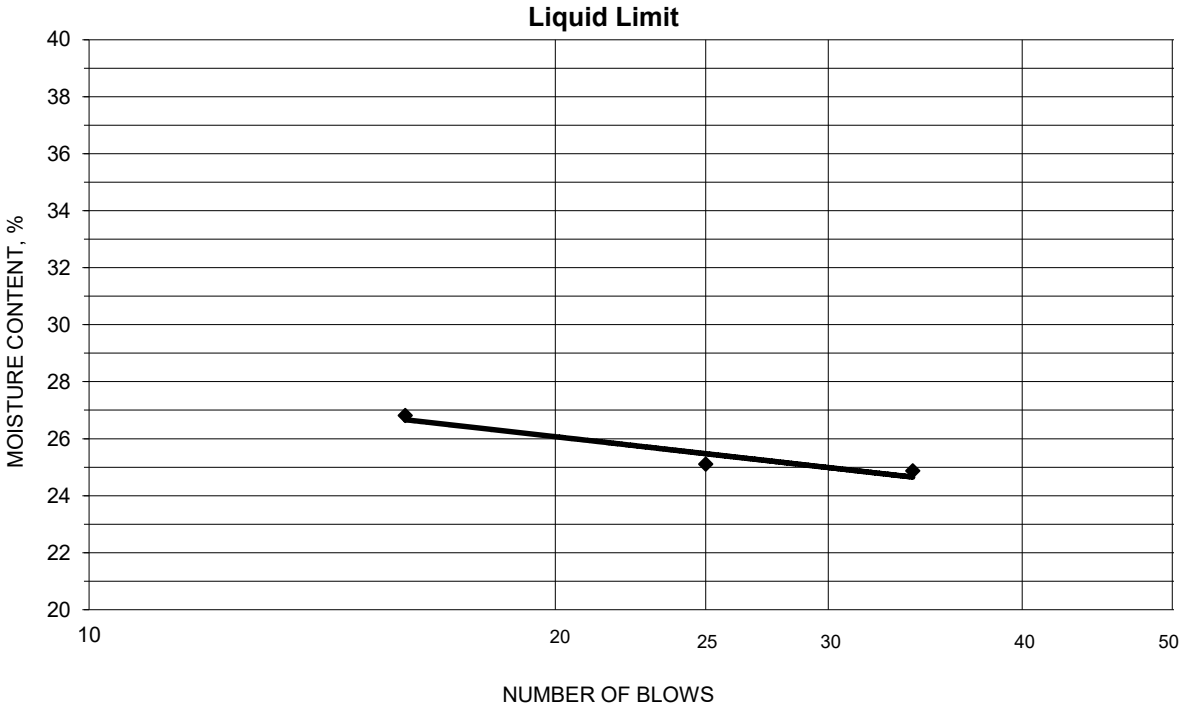
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.15, 6.0'-7.5'			Lab ID	73
				% + No. 40	12
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
29.79	26.06	11.06	34	24.9	
27.88	24.50	11.04	25	25.1	
27.13	23.62	10.53	16	26.8	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.54	15.78	10.69	14.9	15	10
16.33	15.56	10.57	15.4		

Remarks:

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.17, 4.5'-6.0', 7.5'-9.0'	Lab ID	91
Sample Type	SPT Composite	Date Received	1-13-21
		Date Reported	1-21-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): 15.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.6
No. 4	4.75	99.2
No. 10	2	96.1
No. 40	0.425	89.0
No. 200	0.075	76.0
	0.02	57.7
	0.005	39.8
	0.002	27.6
estimated	0.001	19.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.8	3.9
Coarse Sand	3.1	7.1
Medium Sand	7.1	---
Fine Sand	13.0	13.0
Silt	36.2	48.4
Clay	39.8	27.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	20
Plasticity Index:	10
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-4 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.17, 4.5'-6.0', 7.5'-9.0'	Lab ID	91

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.6
No. 4	99.2
No. 10	96.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

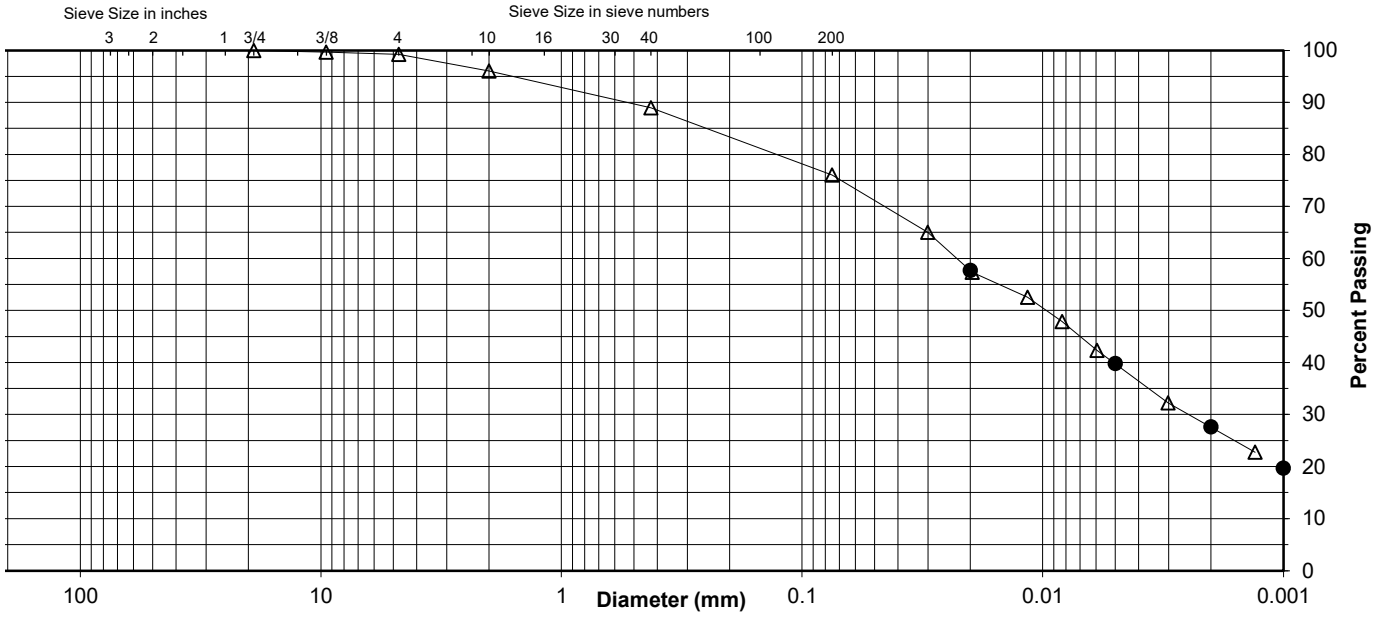
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	89.0
No. 200	76.0
0.02 mm	57.7
0.005 mm	39.8
0.002 mm	27.6
0.001 mm	19.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.8	3.1	7.1	13.0	36.2	39.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	3.9			7.1	13.0	48.4	27.6



Comments

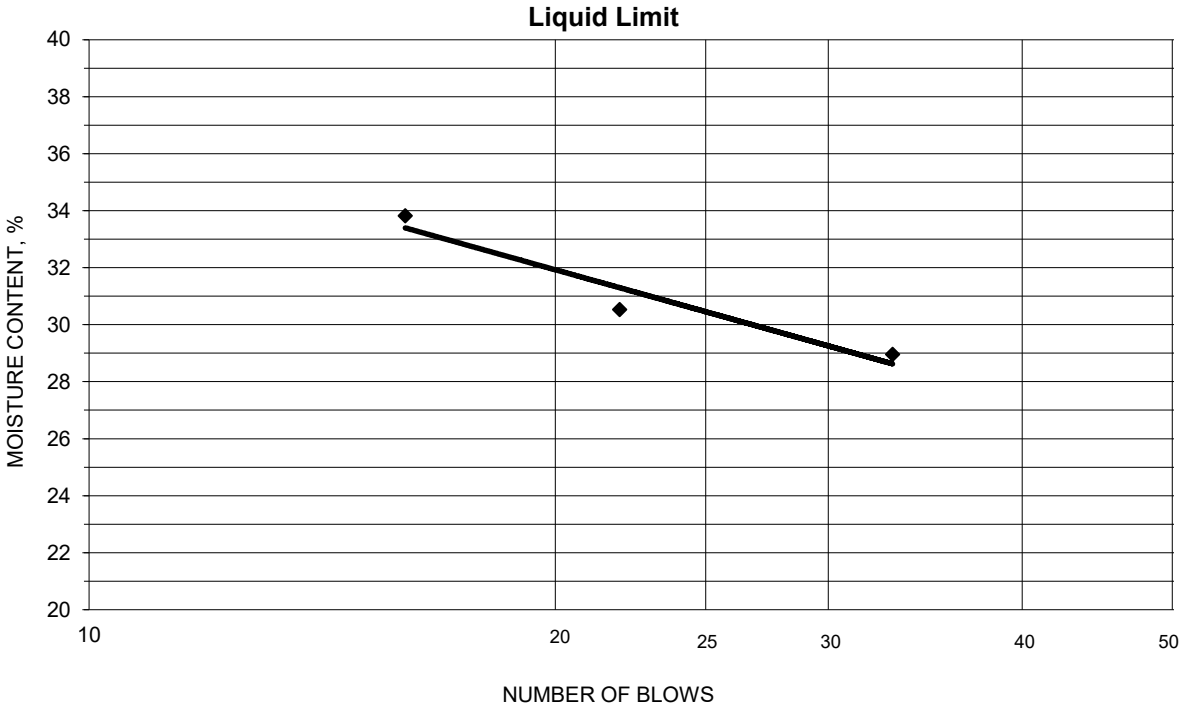
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.17, 4.5'-6.0', 7.5'-9.0'			Lab ID	91
				% + No. 40	11
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
22.86	20.21	11.06	33	29.0	
26.59	22.95	11.03	22	30.5	
27.39	23.25	11.01	16	33.8	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.12	16.12	11.06	19.8	20	10
17.38	16.36	11.14	19.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.19, 3.0'-4.5', 4.5'-6.0'	Lab ID	102
Sample Type	SPT Composite	Date Received	1-13-21
		Date Reported	1-21-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): 19.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	95.8
No. 40	0.425	92.2
No. 200	0.075	79.1
	0.02	64.5
	0.005	44.8
	0.002	33.2
estimated	0.001	25.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	4.2
Coarse Sand	3.8	3.6
Medium Sand	3.6	---
Fine Sand	13.1	13.1
Silt	34.3	45.9
Clay	44.8	33.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	21
Plasticity Index:	20
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (15)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.19, 3.0'-4.5', 4.5'-6.0'	Lab ID	102

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	95.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

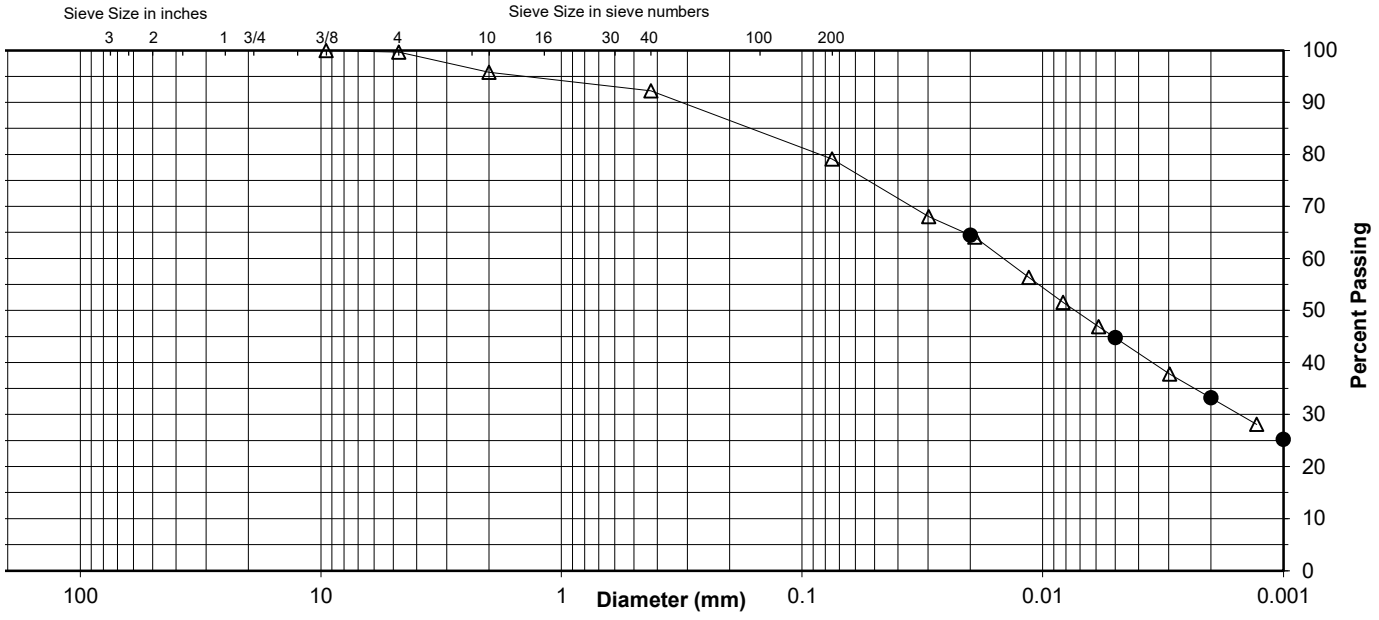
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.2
No. 200	79.1
0.02 mm	64.5
0.005 mm	44.8
0.002 mm	33.2
0.001 mm	25.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	3.8	3.6	13.1	34.3	44.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	4.2			3.6	13.1	45.9	33.2



Comments

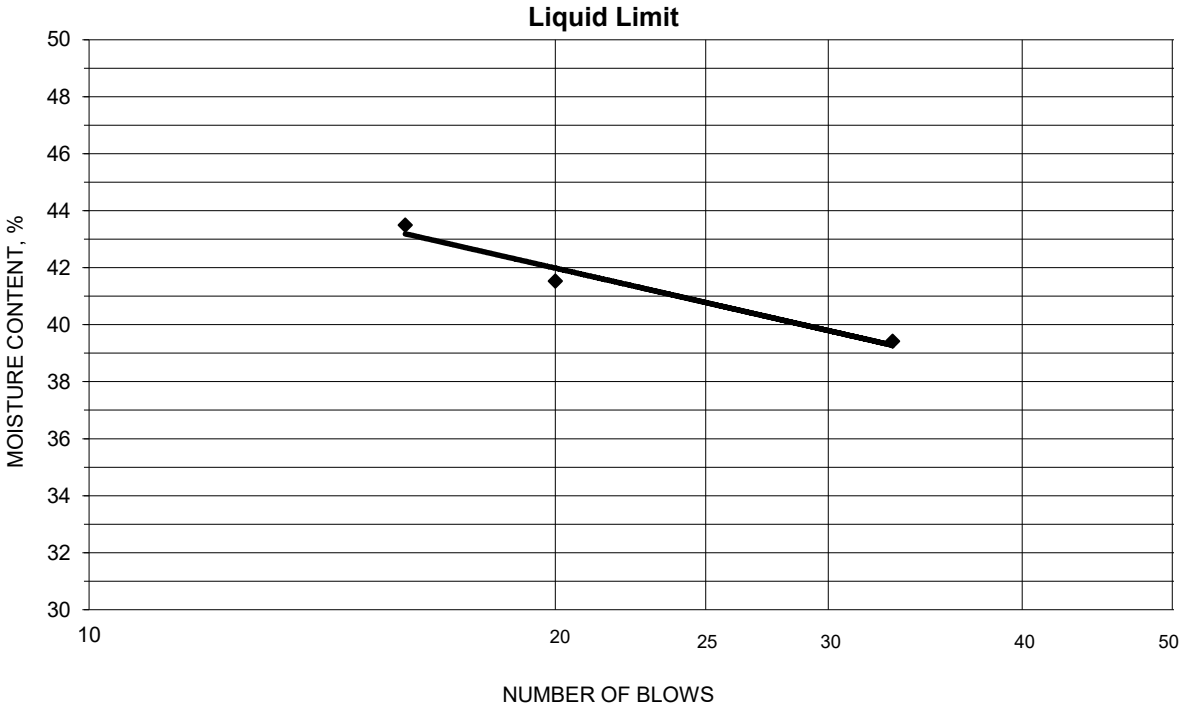
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.19, 3.0'-4.5', 4.5'-6.0'			Lab ID	102
				% + No. 40	8
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.31	21.99	11.03	33	39.4	
24.45	20.50	10.99	20	41.5	
24.36	20.21	10.67	16	43.5	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.10	15.16	10.64	20.8	21	20
16.50	15.51	10.64	20.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.19, 17.5'-19.0'	Lab ID	111
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.9
No. 4	4.75	94.8
No. 10	2	89.5
No. 40	0.425	46.1
No. 200	0.075	23.4
	0.02	15.9
	0.005	10.7
	0.002	8.1
estimated	0.001	6.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.2	10.5
Coarse Sand	5.3	43.4
Medium Sand	43.4	---
Fine Sand	22.7	22.7
Silt	12.7	15.3
Clay	10.7	8.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.19, 17.5'-19.0'	Lab ID	111

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.9
No. 4	94.8
No. 10	89.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

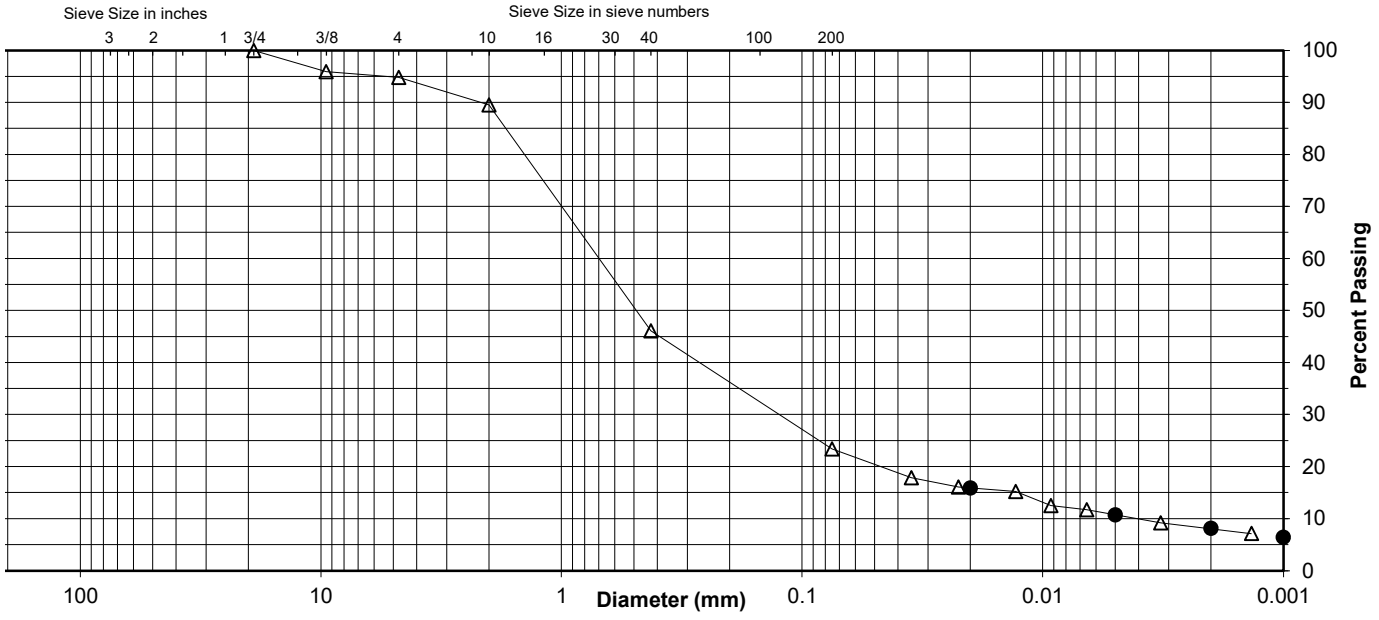
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	46.1
No. 200	23.4
0.02 mm	15.9
0.005 mm	10.7
0.002 mm	8.1
0.001 mm	6.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	5.2	5.3	43.4	22.7	12.7	10.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.5			43.4	22.7	15.3	8.1



Comments

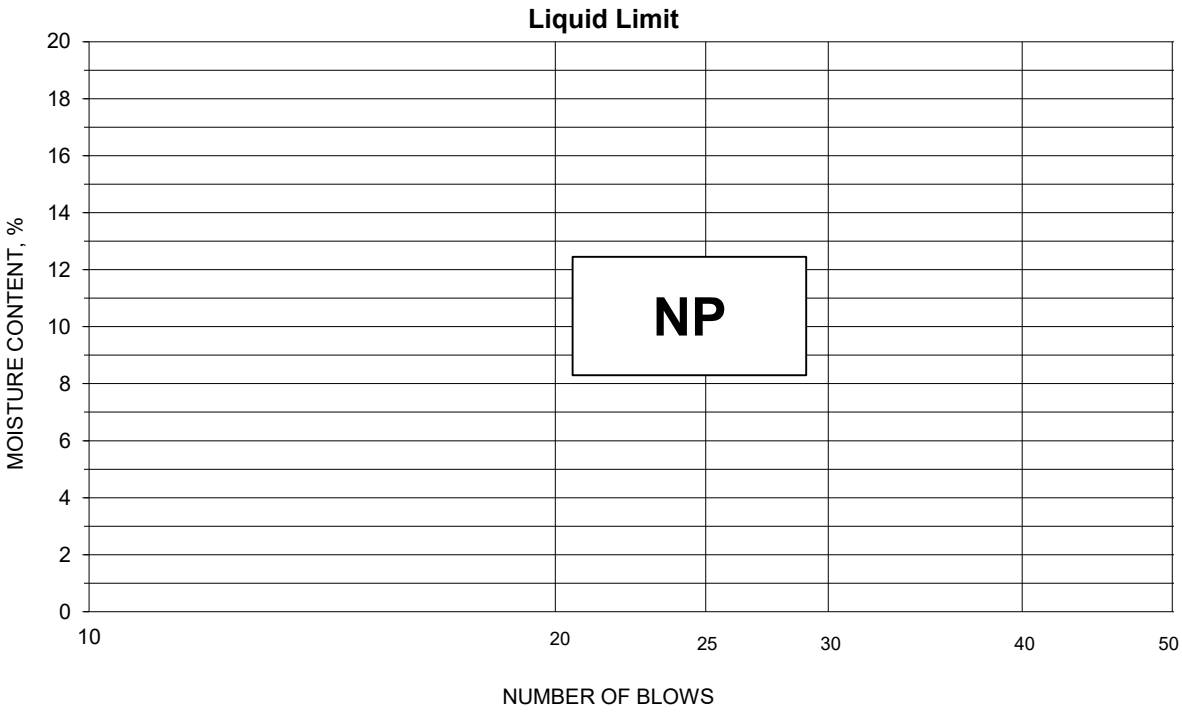
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.19, 17.5'-19.0'			Lab ID	111
				% + No. 40	54
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.23, 1.5'-3.0', 3.0'-4.5'	Lab ID	131
Sample Type	SPT Composite	Date Received	1-13-21
		Date Reported	1-22-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): 21.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.0
No. 10	2	91.6
No. 40	0.425	87.6
No. 200	0.075	75.6
	0.02	62.6
	0.005	44.6
	0.002	34.3
estimated	0.001	27.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.0	8.4
Coarse Sand	7.4	4.0
Medium Sand	4.0	---
Fine Sand	12.0	12.0
Silt	31.0	41.3
Clay	44.6	34.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	18
Plasticity Index:	23
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (16)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.23, 1.5'-3.0', 3.0'-4.5'	Lab ID	131

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.0
No. 10	91.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

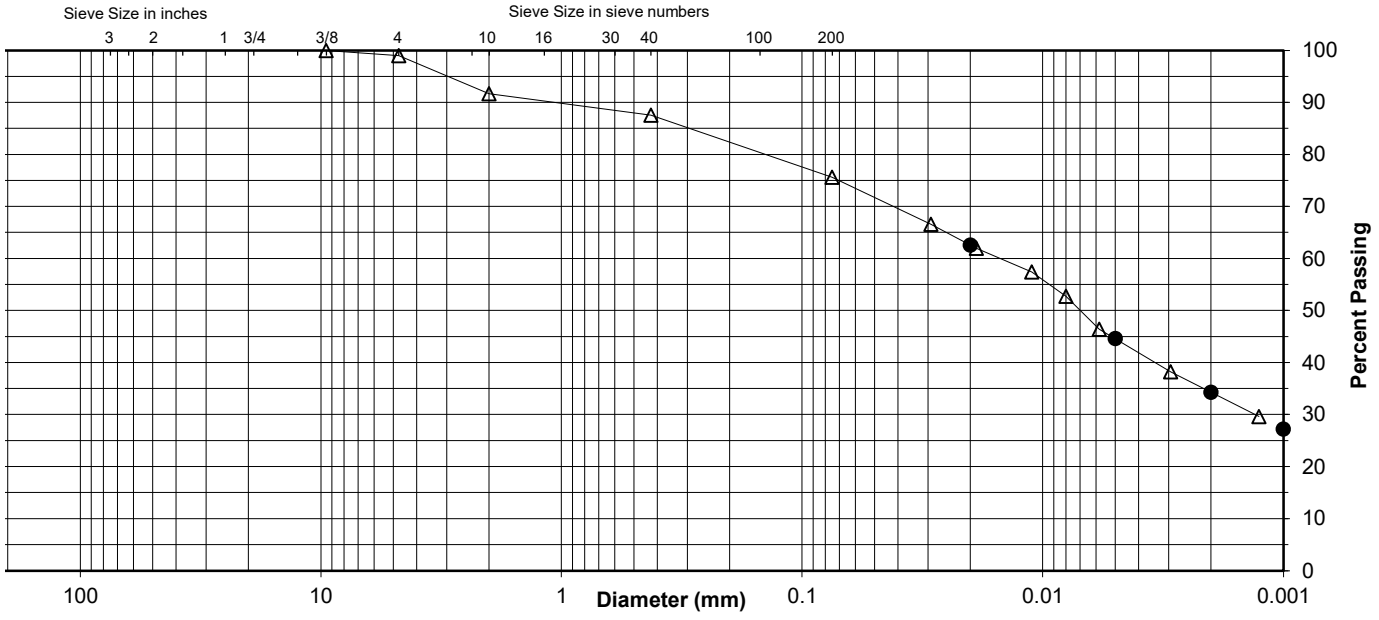
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	87.6
No. 200	75.6
0.02 mm	62.6
0.005 mm	44.6
0.002 mm	34.3
0.001 mm	27.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.0	7.4	4.0	12.0	31.0	44.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.4			4.0	12.0	41.3	34.3



Comments

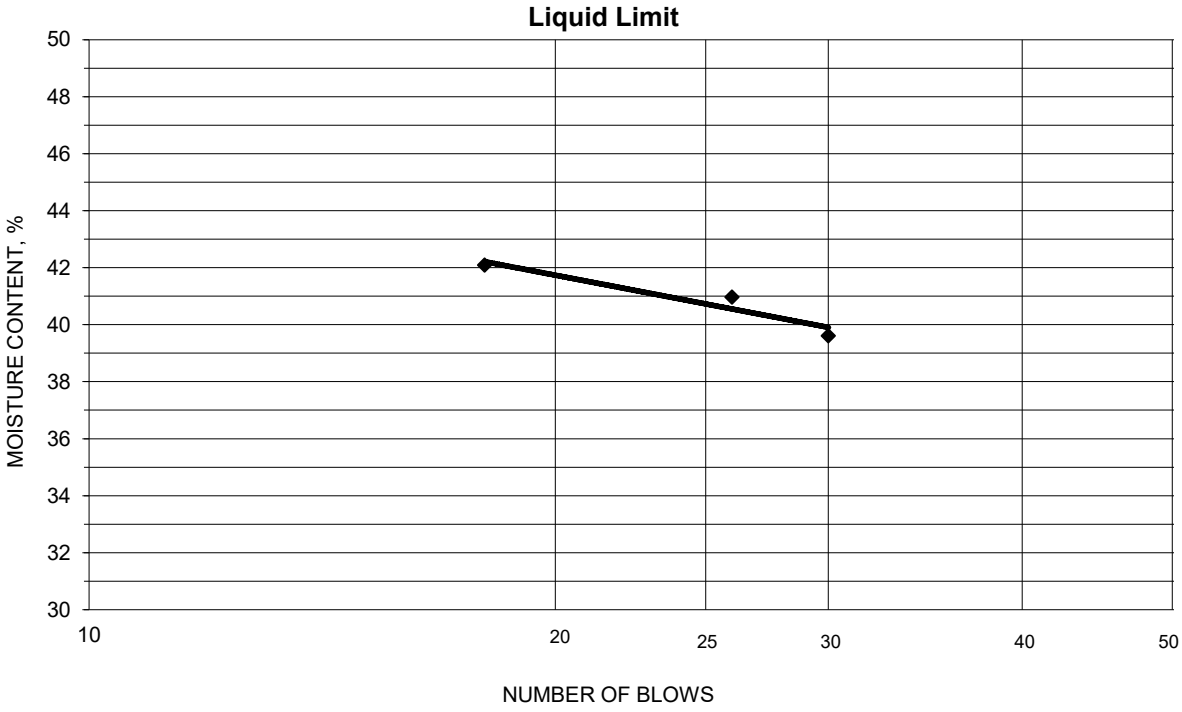
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.23, 1.5'-3.0', 3.0'-4.5'			Lab ID	131
				% + No. 40	12
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.89	22.26	10.57	30	39.6	
25.29	21.14	11.01	26	41.0	
27.53	22.63	10.99	18	42.1	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.52	16.50	11.00	18.5	18	23
17.29	16.33	11.09	18.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.27, 6.0'-7.5'	Lab ID	156
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.4
No. 4	4.75	99.1
No. 10	2	94.5
No. 40	0.425	89.4
No. 200	0.075	76.4
	0.02	63.1
	0.005	43.6
	0.002	31.3
estimated	0.001	22.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.9	5.5
Coarse Sand	4.6	5.1
Medium Sand	5.1	---
Fine Sand	13.0	13.0
Silt	32.8	45.1
Clay	43.6	31.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	22
Plasticity Index:	13
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (9)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.27, 6.0'-7.5'	Lab ID	156

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.4
No. 4	99.1
No. 10	94.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

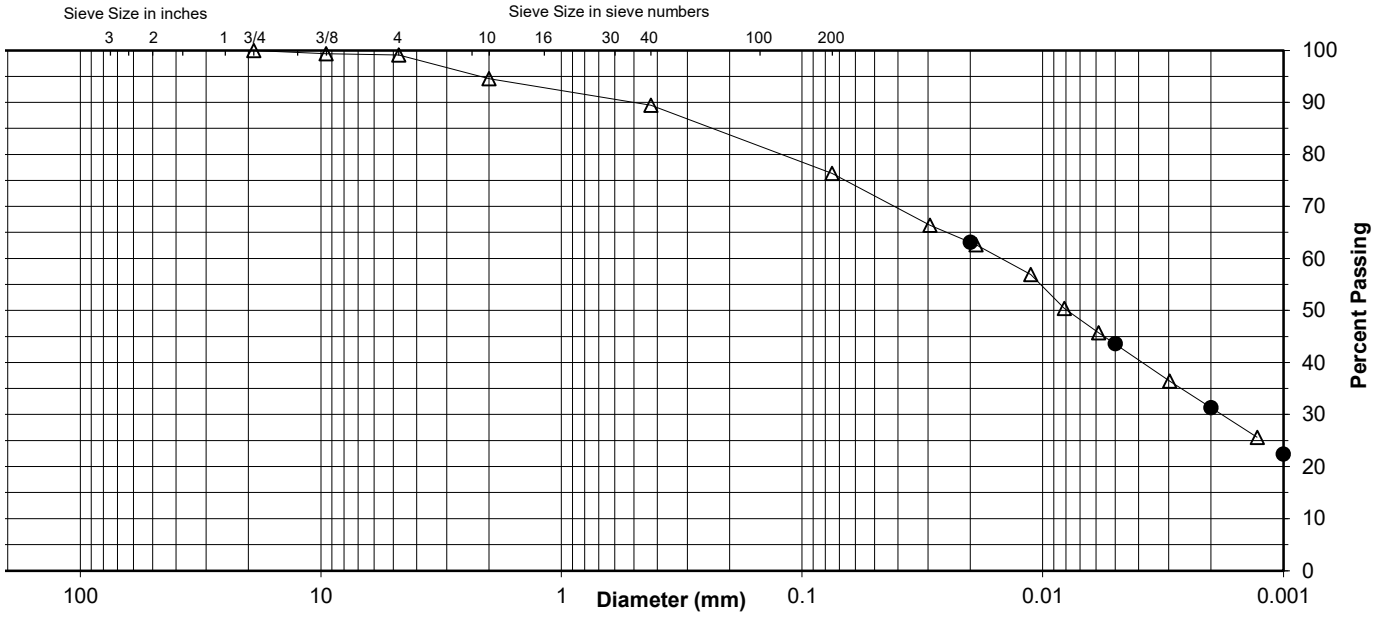
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	89.4
No. 200	76.4
0.02 mm	63.1
0.005 mm	43.6
0.002 mm	31.3
0.001 mm	22.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.9	4.6	5.1	13.0	32.8	43.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.5			5.1	13.0	45.1	31.3



Comments

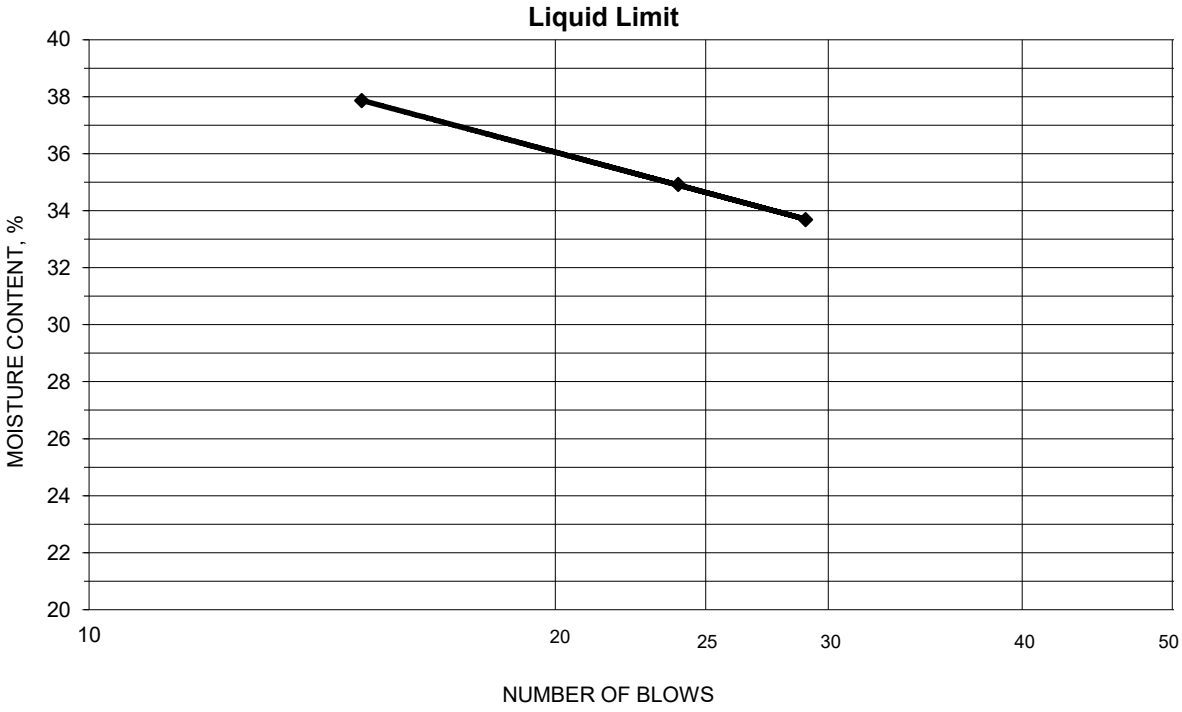
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.27, 6.0'-7.5'			Lab ID	156
				% + No. 40	11
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.71	20.51	11.01	29	33.7	
23.73	20.44	11.02	24	34.9	
23.44	19.93	10.66	15	37.9	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.39	17.05	11.04	22.3	22	13
17.96	16.75	11.06	21.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.27, 12.5'-14.0'	Lab ID	159
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-21-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.0
No. 4	4.75	93.4
No. 10	2	89.6
No. 40	0.425	80.9
No. 200	0.075	65.6
	0.02	47.2
	0.005	27.3
	0.002	17.9
estimated	0.001	11.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.6	10.4
Coarse Sand	3.8	8.7
Medium Sand	8.7	---
Fine Sand	15.3	15.3
Silt	38.3	47.7
Clay	27.3	17.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	26
Plastic Limit:	11
Plasticity Index:	15
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.27, 12.5'-14.0'	Lab ID	159

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-14-2021
Date Received	01-13-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.0
No. 4	93.4
No. 10	89.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

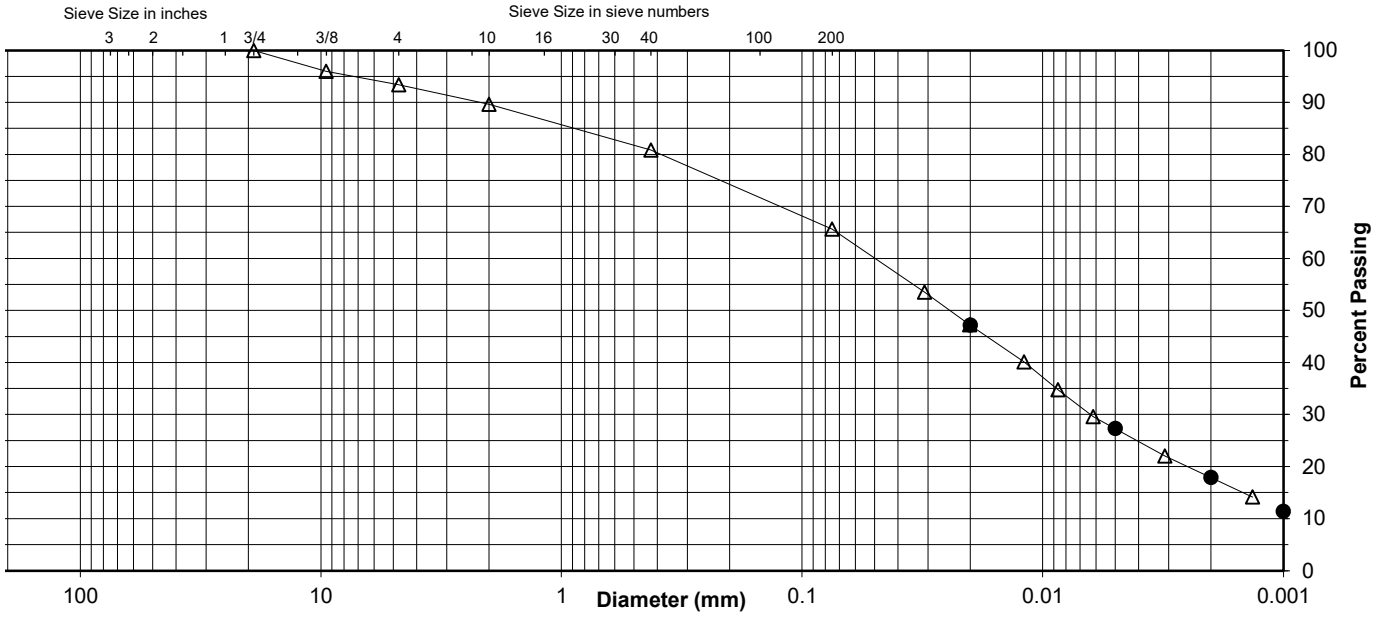
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	80.9
No. 200	65.6
0.02 mm	47.2
0.005 mm	27.3
0.002 mm	17.9
0.001 mm	11.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	6.6	3.8	8.7	15.3	38.3	27.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.4			8.7	15.3	47.7	17.9



Comments

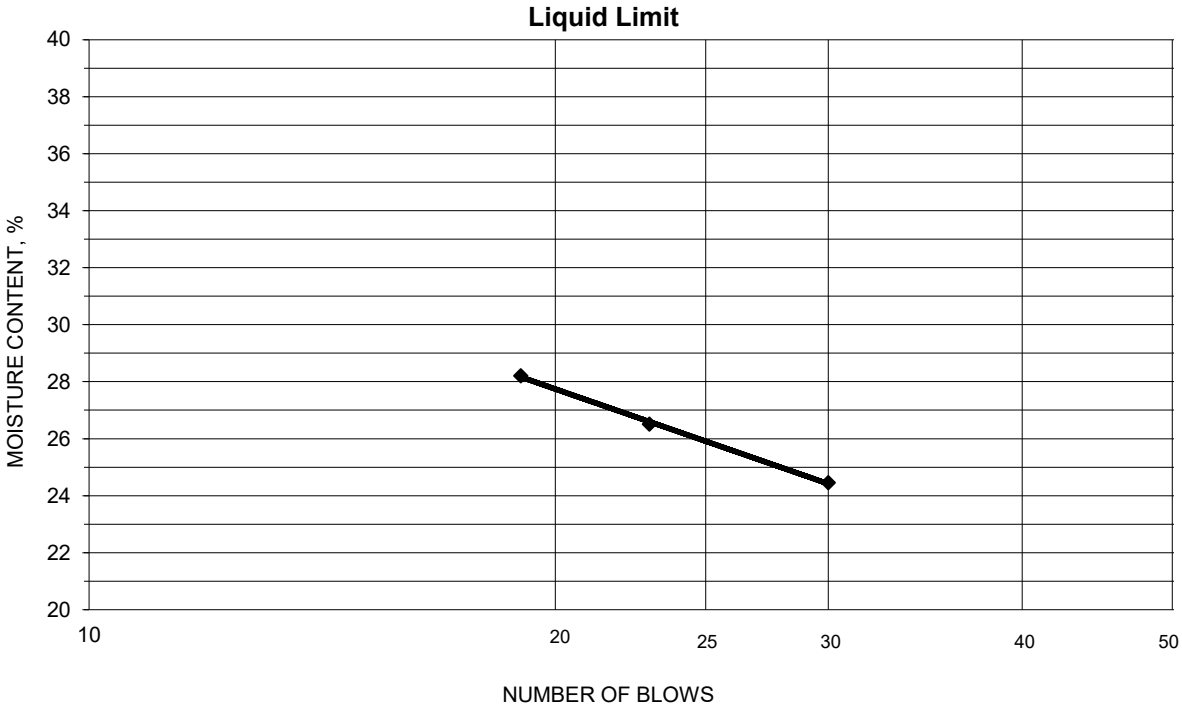
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.27, 12.5'-14.0'			Lab ID	159
				% + No. 40	19
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-15-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
28.19	24.73	10.58	30	24.5	
28.84	25.11	11.04	23	26.5	
29.94	25.79	11.08	19	28.2	26



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.25	15.74	10.91	10.6	11	15
16.45	15.86	10.57	11.2		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.28, 15.0'-16.5'	Lab ID	173
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.0
No. 4	4.75	97.8
No. 10	2	97.1
No. 40	0.425	94.7
No. 200	0.075	23.4
	0.02	8.6
	0.005	2.9
	0.002	0.6
estimated	0.001	0.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.2	2.9
Coarse Sand	0.7	2.4
Medium Sand	2.4	---
Fine Sand	71.3	71.3
Silt	20.5	22.8
Clay	2.9	0.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.28, 15.0'-16.5'	Lab ID	173

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-15-2021
Date Received	01-13-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.0
No. 4	97.8
No. 10	97.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

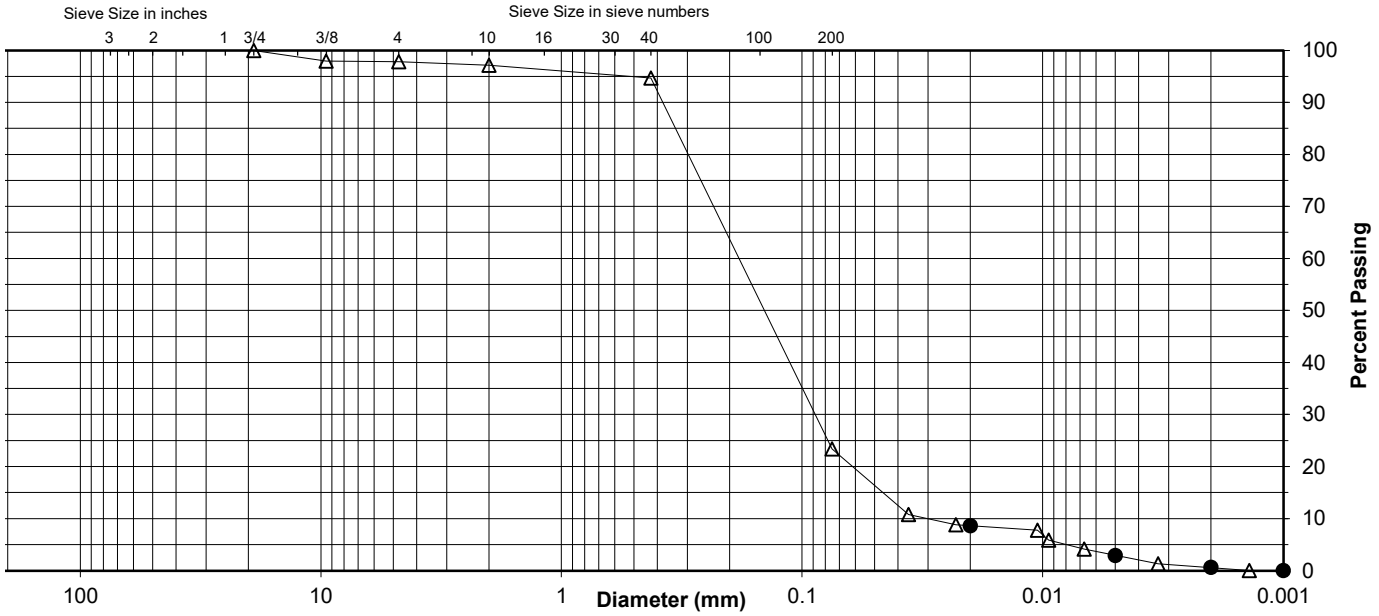
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	94.7
No. 200	23.4
0.02 mm	8.6
0.005 mm	2.9
0.002 mm	0.6
0.001 mm	0.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.2	0.7	2.4	71.3	20.5	2.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.9	2.4	71.3	22.8	0.6



Comments

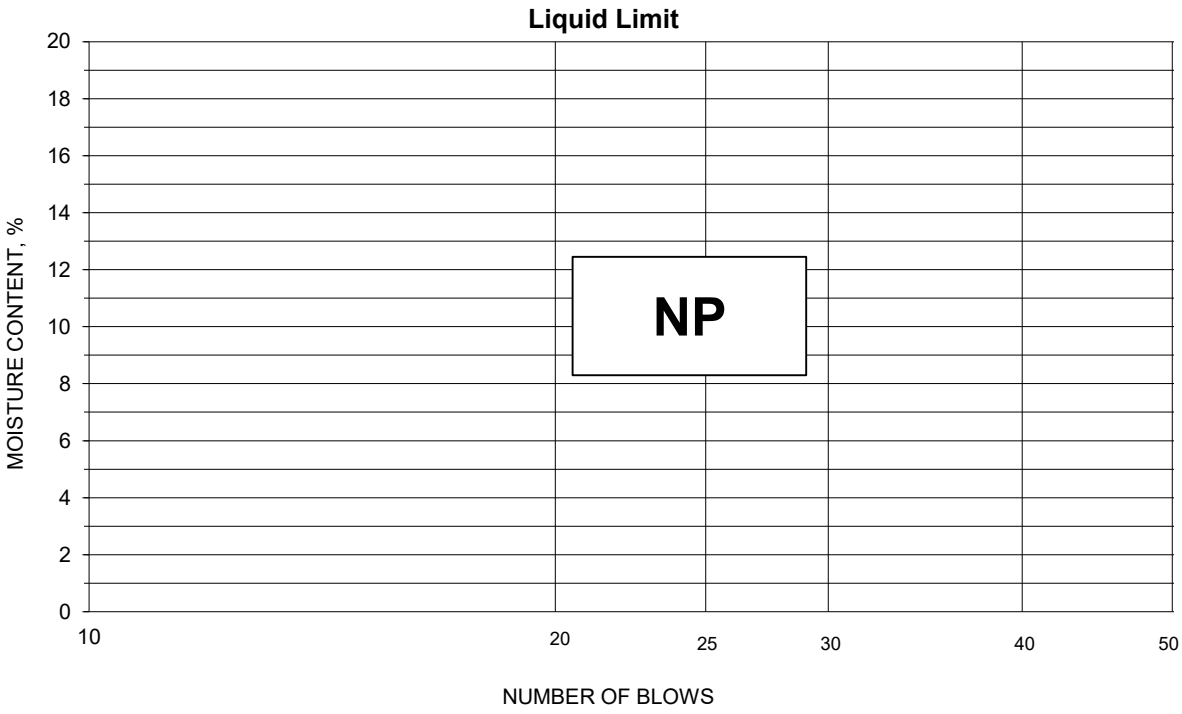
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.28, 15.0'-16.5'			Lab ID	173
				% + No. 40	5
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-19-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.30, 12.5'-14.0'	Lab ID	265
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size Sieve Size	Particle Size (mm)	% Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.9
No. 4	4.75	96.0
No. 10	2	92.7
No. 40	0.425	85.0
No. 200	0.075	68.7
	0.02	44.5
	0.005	27.5
	0.002	19.7
estimated	0.001	12.2

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	4.0	7.3
Coarse Sand	3.3	7.7
Medium Sand	7.7	---
Fine Sand	16.3	16.3
Silt	41.2	49.0
Clay	27.5	19.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	16
Plasticity Index:	8
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.30, 12.5'-14.0'	Lab ID	265

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-02-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.9
No. 4	96.0
No. 10	92.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

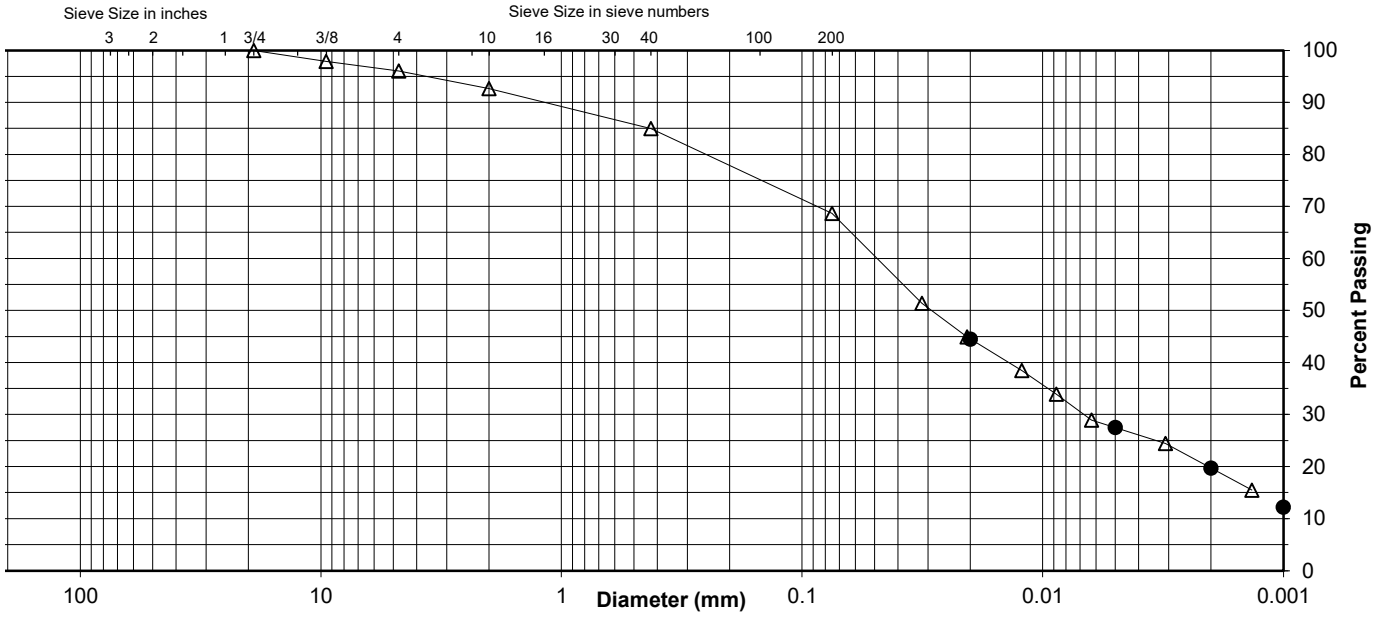
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	85.0
No. 200	68.7
0.02 mm	44.5
0.005 mm	27.5
0.002 mm	19.7
0.001 mm	12.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.0	3.3	7.7	16.3	41.2	27.5

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	7.3	7.7	16.3	49.0	19.7



Comments

Reviewed By REL

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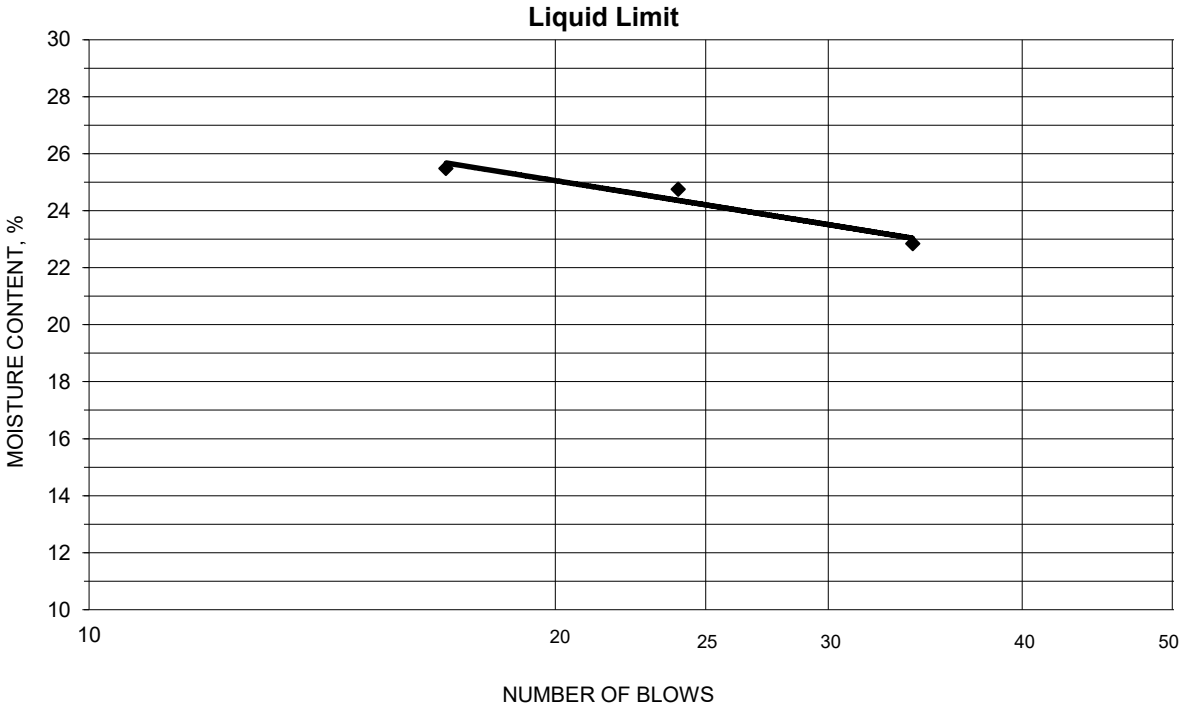
ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.30, 12.5'-14.0'			Lab ID	265
				% + No. 40	15
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.32	22.57	10.53	34	22.8	
24.41	21.68	10.65	24	24.8	
24.15	21.49	11.05	17	25.5	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.90	18.72	11.03	15.3	16	8
20.32	19.06	11.03	15.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.30, 17.5'-19.0'	Lab ID	267
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.6
No. 4	4.75	90.7
No. 10	2	74.5
No. 40	0.425	33.0
No. 200	0.075	11.7
	0.02	5.1
	0.005	2.6
	0.002	1.7
estimated	0.001	0.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	9.3	25.5
Coarse Sand	16.2	41.5
Medium Sand	41.5	---
Fine Sand	21.3	21.3
Silt	9.1	10.0
Clay	2.6	1.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SW-SM

Group Name: Well-graded sand with silt

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.30, 17.5'-19.0'	Lab ID	267

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.6
No. 4	90.7
No. 10	74.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

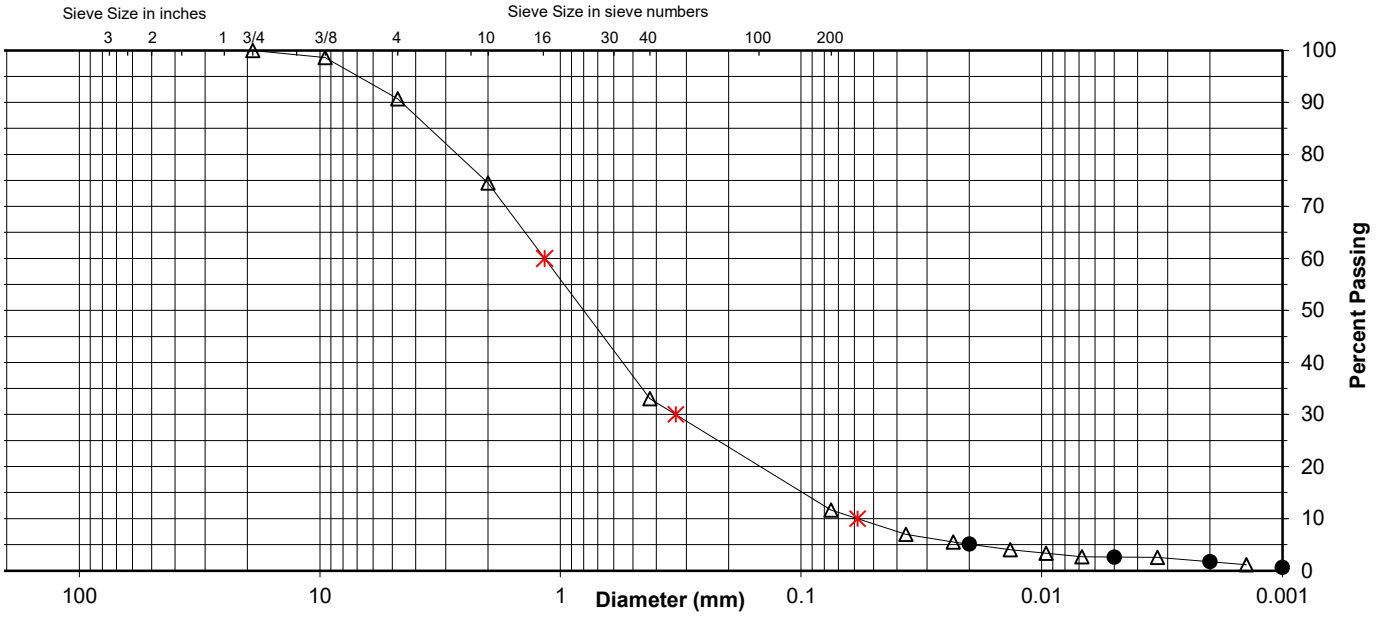
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	33.0
No. 200	11.7
0.02 mm	5.1
0.005 mm	2.6
0.002 mm	1.7
0.001 mm	0.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	9.3	16.2	41.5	21.3	9.1	2.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	25.5			41.5	21.3	10.0	1.7



Comments

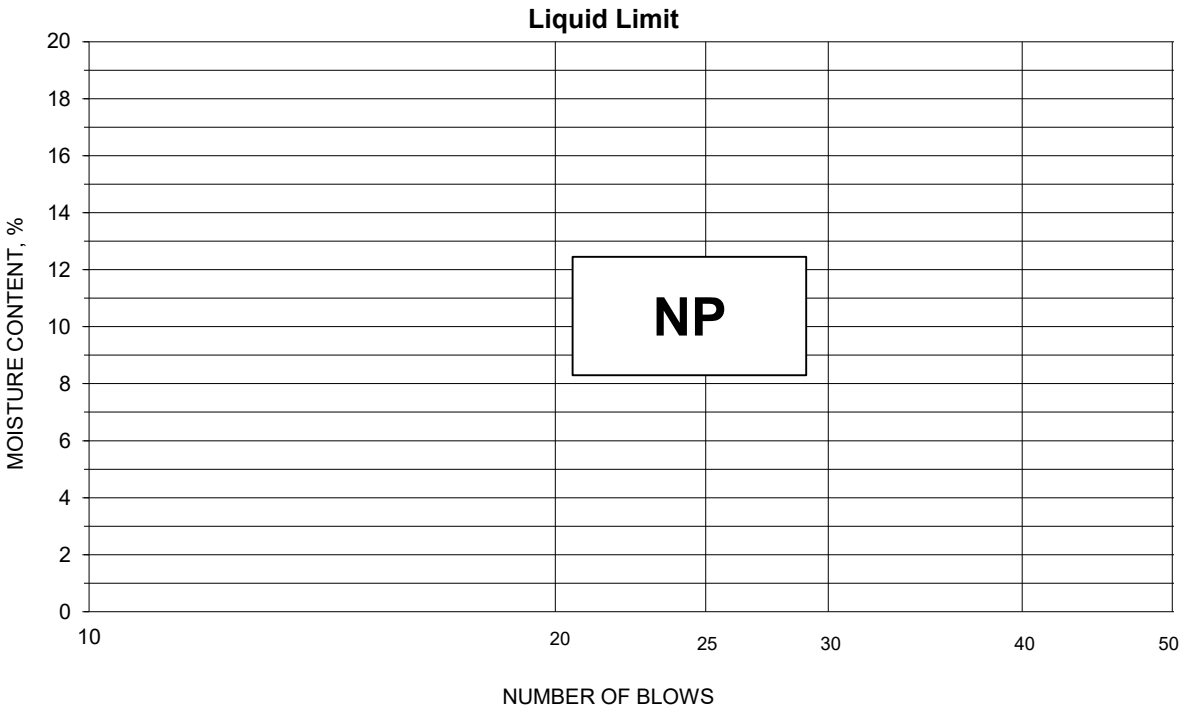
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.30, 17.5'-19.0'			Lab ID	267
				% + No. 40	67
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.31, 12.5'-14.0'	Lab ID	276
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.8
No. 4	4.75	98.6
No. 10	2	93.8
No. 40	0.425	84.9
No. 200	0.075	68.9
	0.02	45.0
	0.005	25.2
	0.002	15.2
estimated	0.001	9.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.4	6.2
Coarse Sand	4.8	8.9
Medium Sand	8.9	---
Fine Sand	16.0	16.0
Silt	43.7	53.7
Clay	25.2	15.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	15
Plasticity Index:	10
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.31, 12.5'-14.0'	Lab ID	276

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-01-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	98.6
No. 10	93.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

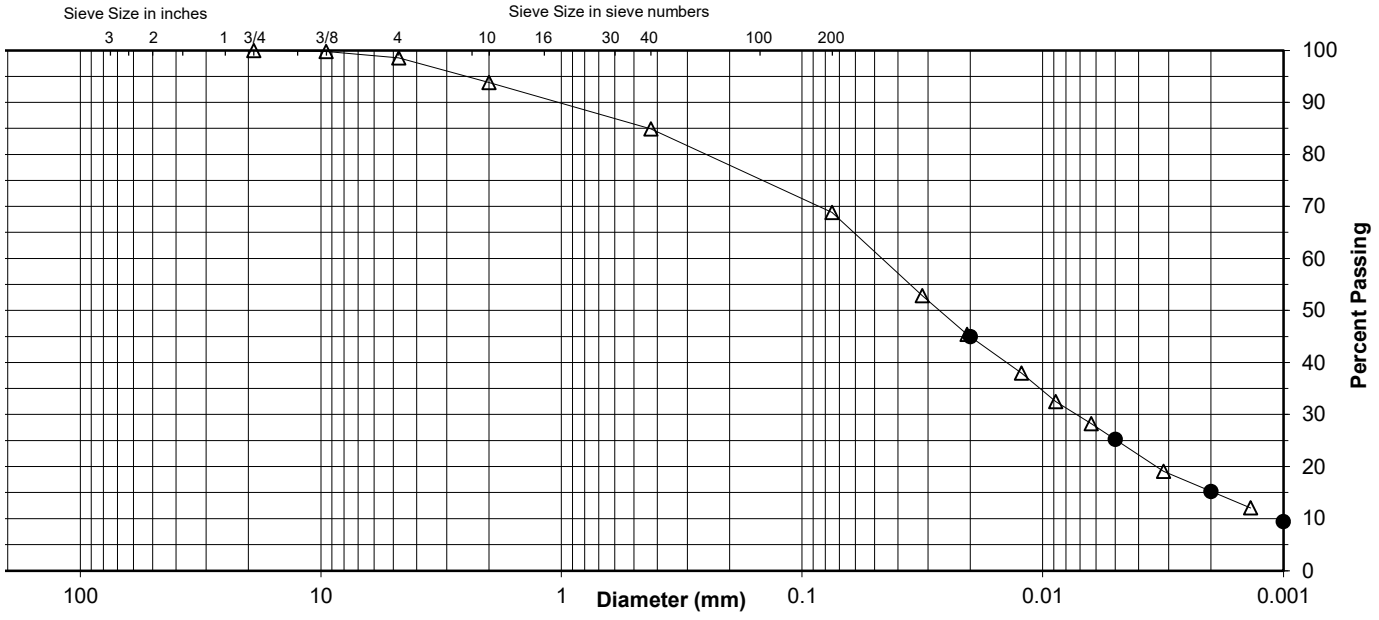
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.9
No. 200	68.9
0.02 mm	45.0
0.005 mm	25.2
0.002 mm	15.2
0.001 mm	9.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.4	4.8	8.9	16.0	43.7	25.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	6.2			8.9	16.0	53.7	15.2



Comments

Reviewed By REL

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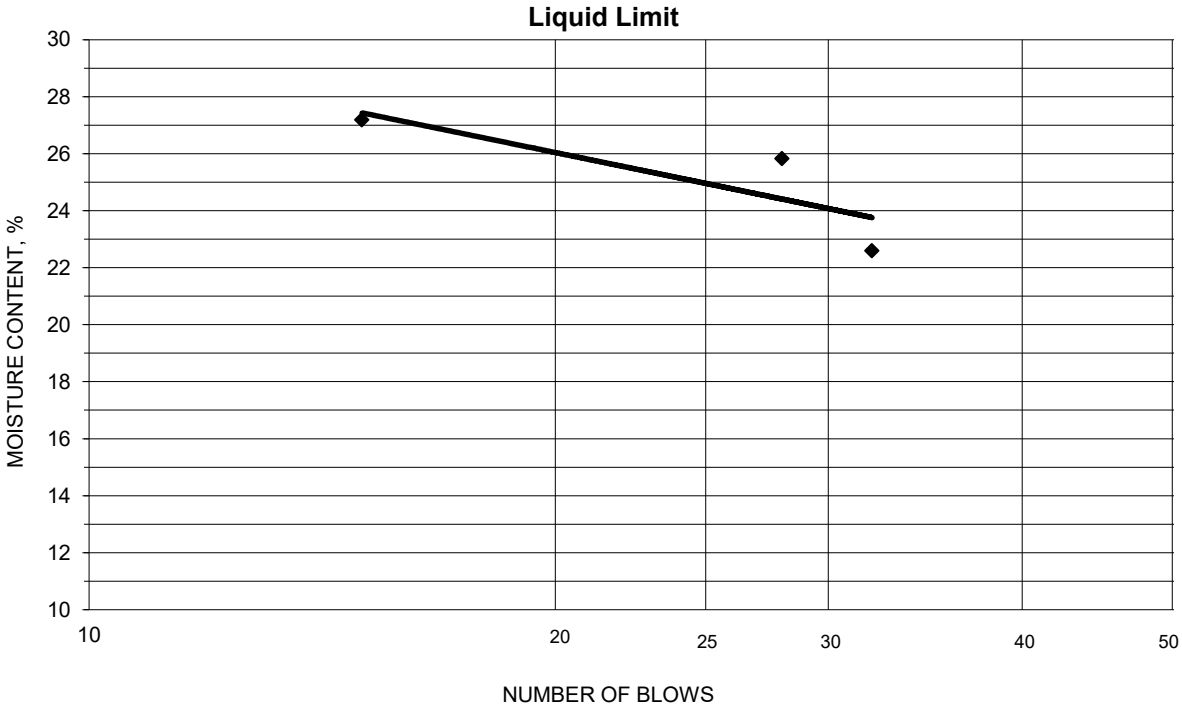
ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.31, 12.5'-14.0'			Lab ID	276
				% + No. 40	15
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
33.04	28.98	11.01	32	22.6	
26.61	23.42	11.07	28	25.8	
26.72	23.36	11.00	15	27.2	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.40	16.57	11.03	15.0	15	10
16.04	15.35	10.52	14.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.31, 15.0'-16.5'	Lab ID	277
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	96.9
3/8"	9.5	95.8
No. 4	4.75	95.0
No. 10	2	91.4
No. 40	0.425	77.6
No. 200	0.075	32.0
	0.02	19.9
	0.005	11.4
	0.002	6.8
estimated	0.001	4.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.0	8.6
Coarse Sand	3.6	13.8
Medium Sand	13.8	---
Fine Sand	45.6	45.6
Silt	20.6	25.2
Clay	11.4	6.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Project Number: 173409690
Source: B-3.31, 15.0'-16.5'
Lab ID: 277

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 02-01-2021
Date Received: 01-27-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	96.9
3/8"	95.8
No. 4	95.0
No. 10	91.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

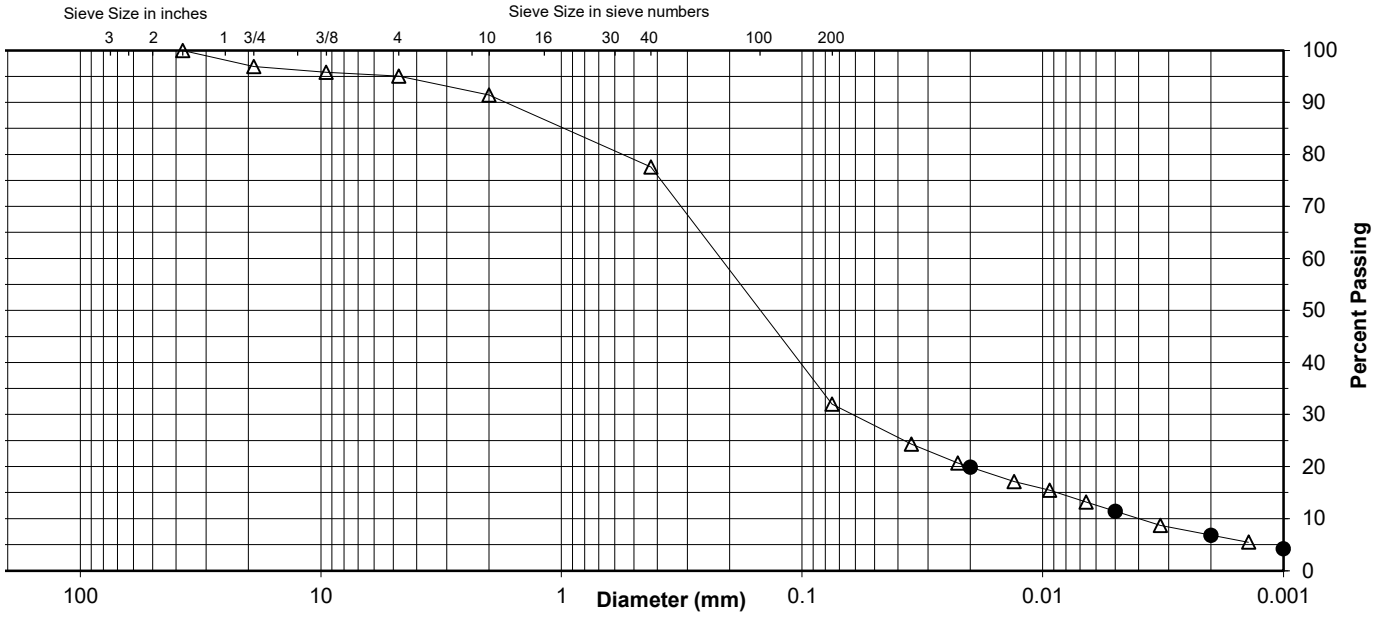
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	77.6
No. 200	32.0
0.02 mm	19.9
0.005 mm	11.4
0.002 mm	6.8
0.001 mm	4.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	3.1	1.9	3.6	13.8	45.6	20.6	11.4

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	8.6	13.8	45.6	25.2	6.8



Comments

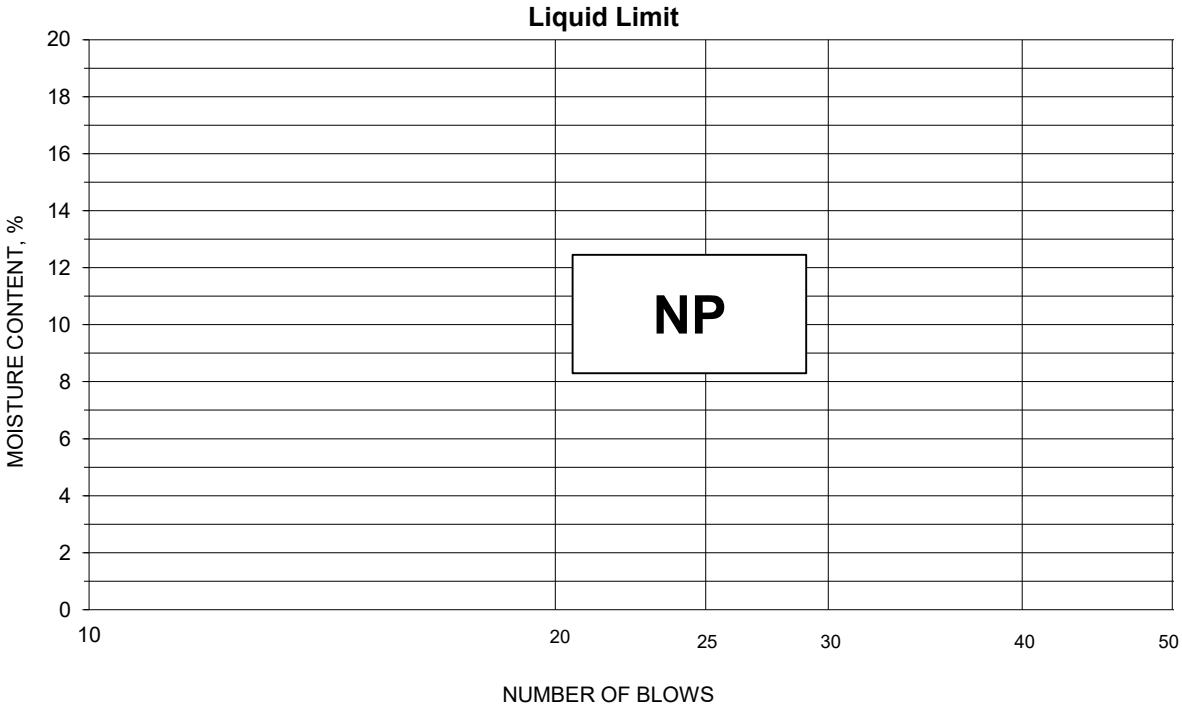
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.31, 15.0'-16.5'			Lab ID	277
				% + No. 40	22
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.32, 3.0'-4.5'	Lab ID	281
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	100.0
No. 10	2	91.9
No. 40	0.425	89.8
No. 200	0.075	79.8
	0.02	69.4
	0.005	45.9
	0.002	33.7
estimated	0.001	25.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	8.1
Coarse Sand	8.1	2.1
Medium Sand	2.1	---
Fine Sand	10.0	10.0
Silt	33.9	46.1
Clay	45.9	33.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	43
Plastic Limit:	21
Plasticity Index:	22
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (17)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.32, 3.0'-4.5'	Lab ID	281

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	100.0
No. 10	91.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

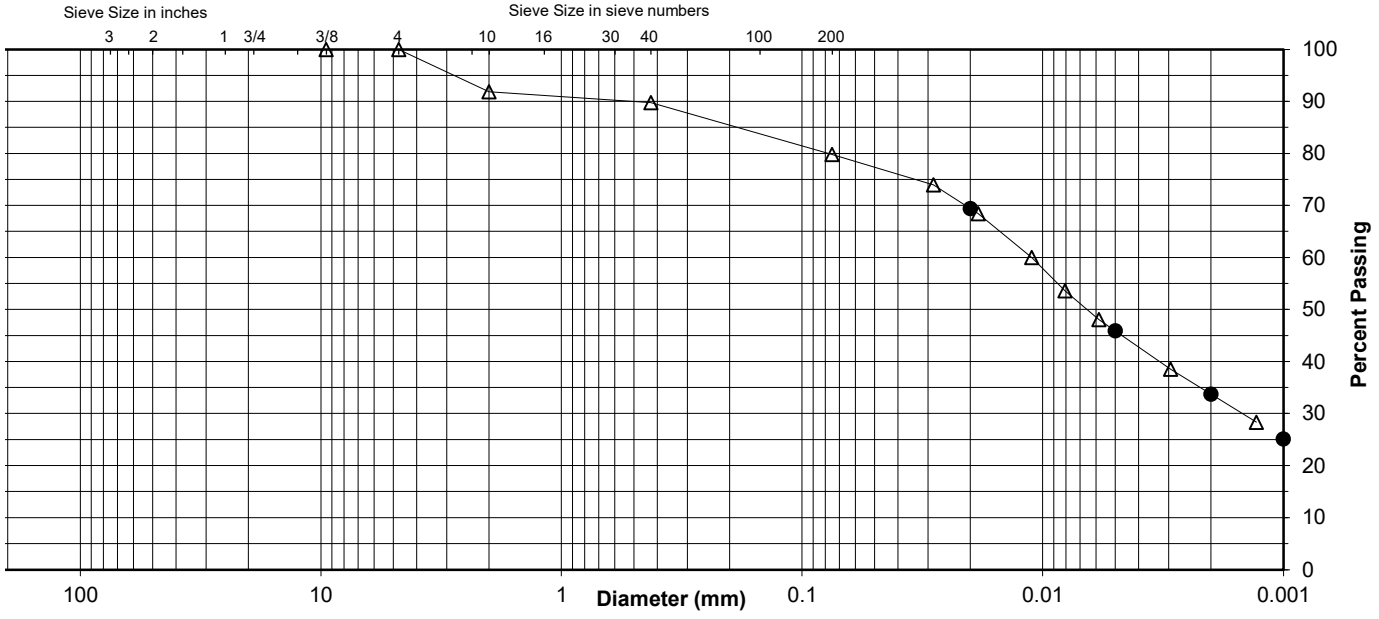
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	89.8
No. 200	79.8
0.02 mm	69.4
0.005 mm	45.9
0.002 mm	33.7
0.001 mm	25.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	8.1	2.1	10.0	33.9	45.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.1			2.1	10.0	46.1	33.7



Comments

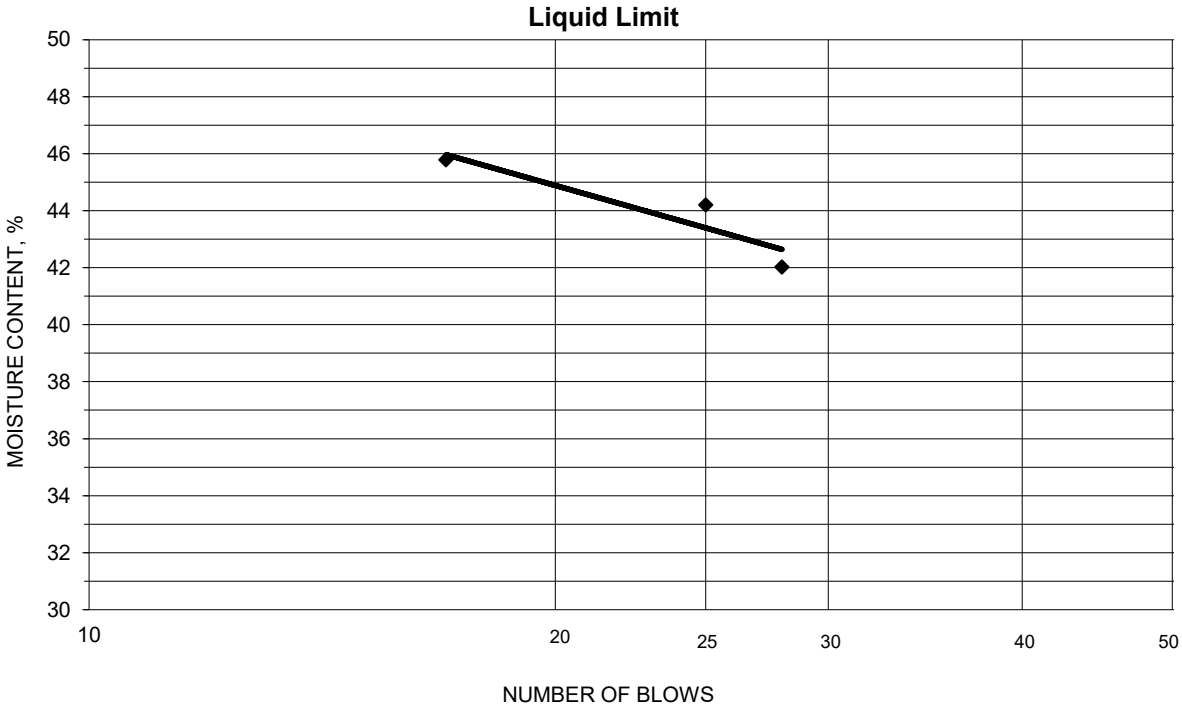
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.32, 3.0'-4.5'			Lab ID	281
				% + No. 40	10
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.74	22.00	10.72	28	42.0	
26.77	21.93	10.98	25	44.2	
25.88	21.21	11.01	17	45.8	43



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.46	16.34	11.00	21.0	21	22
17.30	16.19	11.06	21.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.32, 17.5'-19.0'	Lab ID	288
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.7
No. 4	4.75	92.9
No. 10	2	80.2
No. 40	0.425	48.0
No. 200	0.075	34.9
	0.02	23.3
	0.005	16.5
	0.002	12.1
estimated	0.001	8.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.1	19.8
Coarse Sand	12.7	32.2
Medium Sand	32.2	---
Fine Sand	13.1	13.1
Silt	18.4	22.8
Clay	16.5	12.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	20
Plastic Limit:	14
Plasticity Index:	6
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC-SM
Group Name:	Silty, clayey sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.32, 17.5'-19.0'	Lab ID	288

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	01-29-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.7
No. 4	92.9
No. 10	80.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

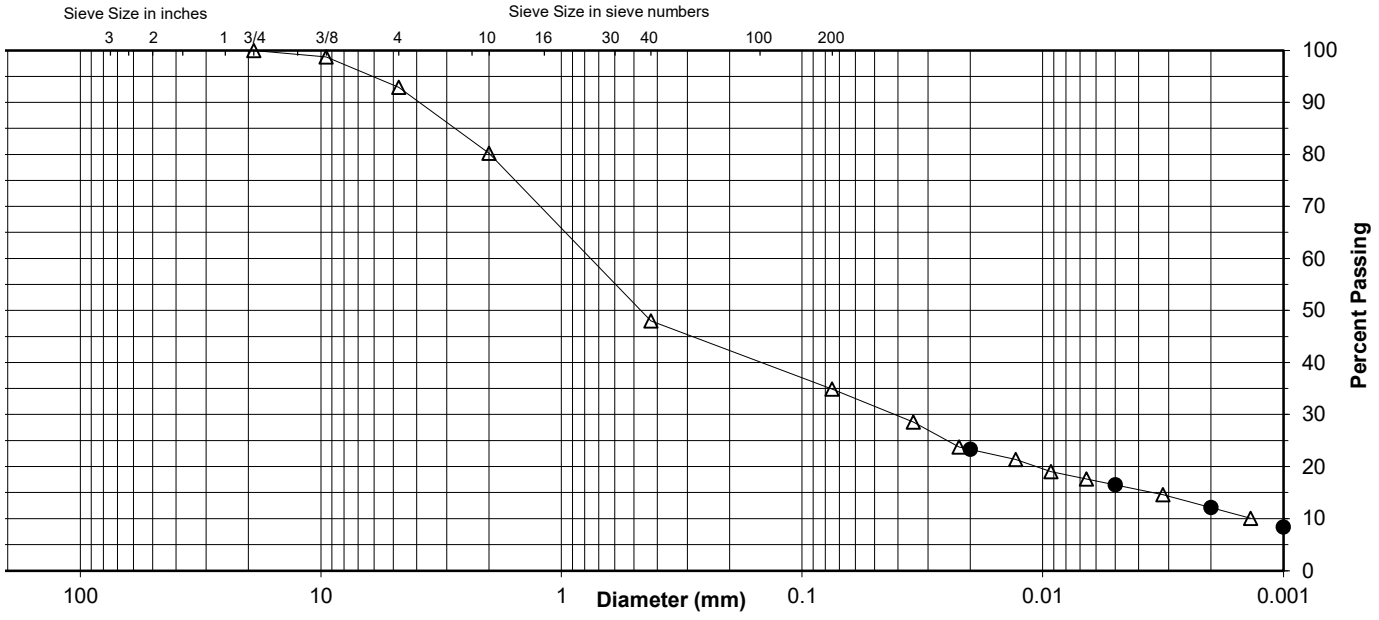
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	48.0
No. 200	34.9
0.02 mm	23.3
0.005 mm	16.5
0.002 mm	12.1
0.001 mm	8.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	7.1	12.7	32.2	13.1	18.4	16.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	19.8			32.2	13.1	22.8	12.1



Comments

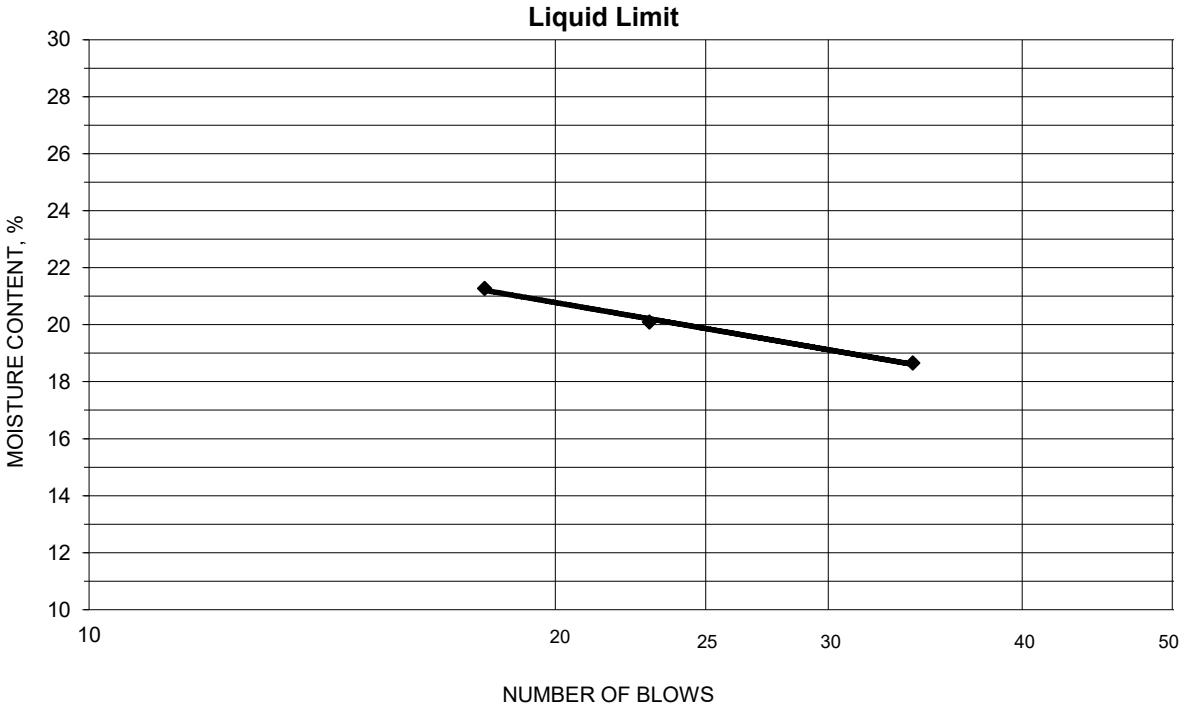
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.32, 17.5'-19.0'			Lab ID	288
				% + No. 40	52
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
34.55	30.84	10.95	34	18.7	
31.37	27.91	10.69	23	20.1	
28.70	25.60	11.03	18	21.3	20



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.19	15.52	10.72	14.0	14	6
16.93	16.17	10.66	13.8		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.33, 10.0'-11.5'	Lab ID	194
Sample Type	SPT	Date Received	1-13-21
		Date Reported	1-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	98.9
No. 10	2	96.5
No. 40	0.425	93.3
No. 200	0.075	84.6
	0.02	69.2
	0.005	48.2
	0.002	34.9
estimated	0.001	24.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.1	3.5
Coarse Sand	2.4	3.2
Medium Sand	3.2	---
Fine Sand	8.7	8.7
Silt	36.4	49.7
Clay	48.2	34.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	18
Plasticity Index:	15
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (12)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.33, 10.0'-11.5'	Lab ID	194

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-15-2021
Date Received	01-13-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	98.9
No. 10	96.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

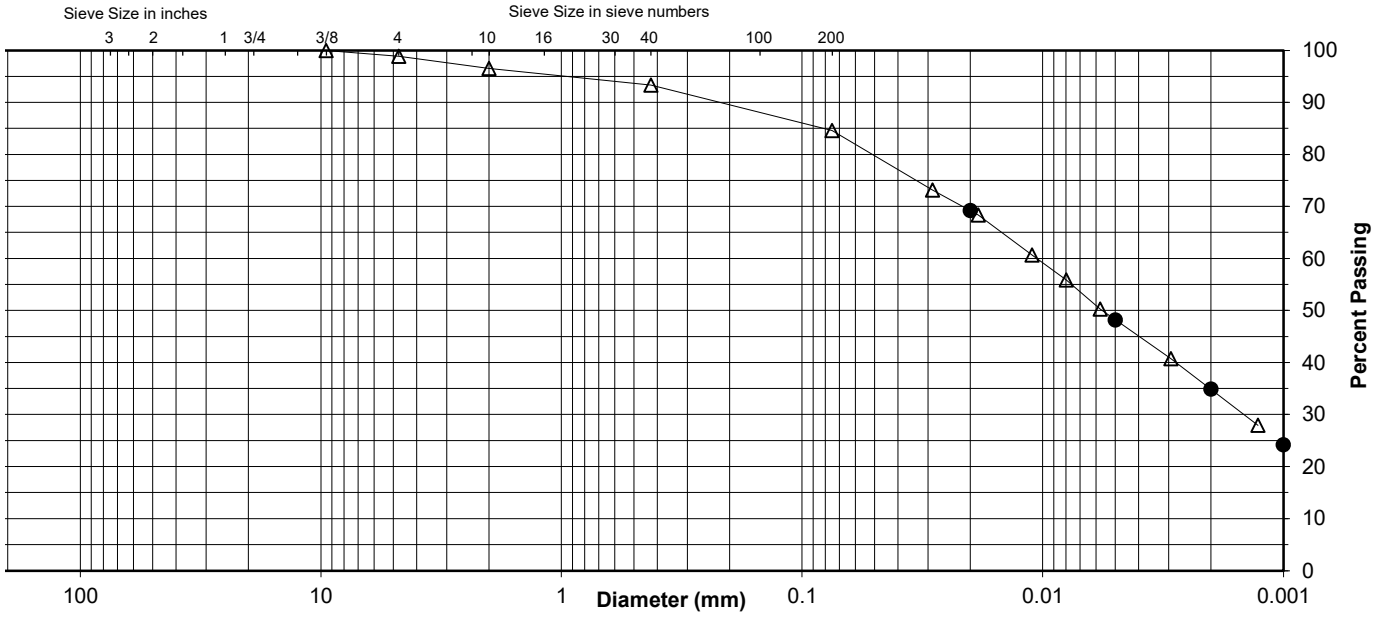
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	93.3
No. 200	84.6
0.02 mm	69.2
0.005 mm	48.2
0.002 mm	34.9
0.001 mm	24.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.1	2.4	3.2	8.7	36.4	48.2

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	3.5	3.2	8.7	49.7	34.9



Comments

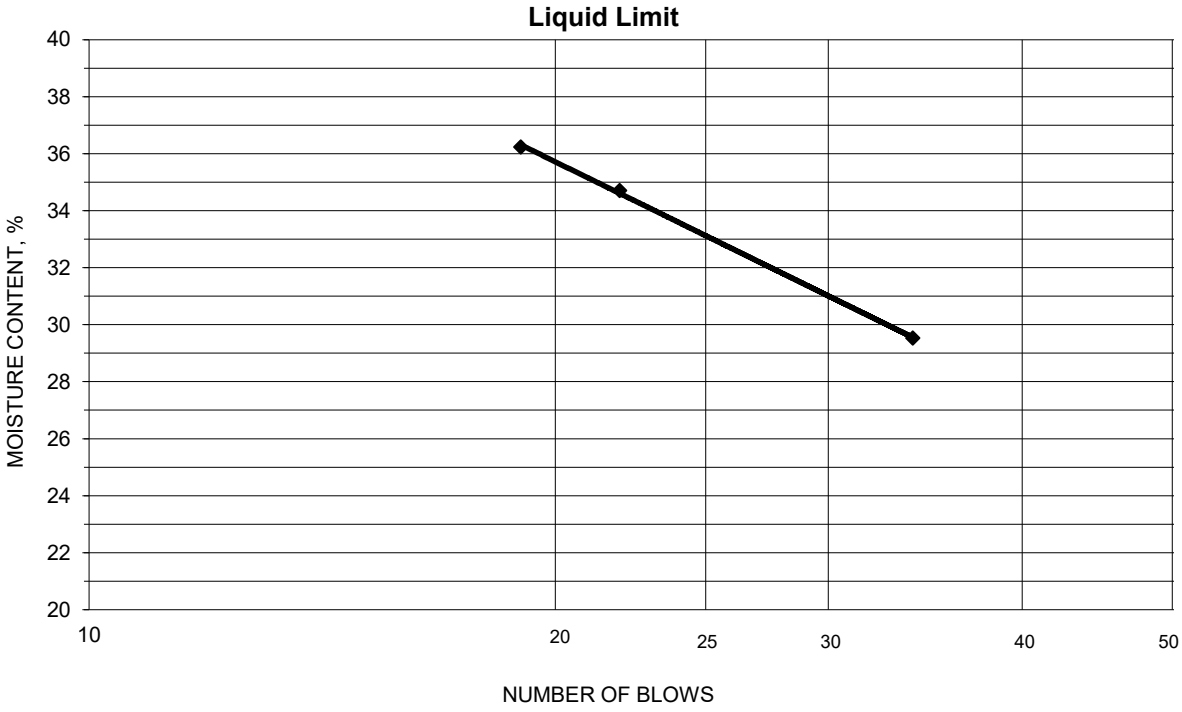
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.33, 10.0'-11.5'			Lab ID	194
				% + No. 40	7
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-13-2021
Test Date	01-19-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.82	23.22	11.03	34	29.5	
24.42	20.88	10.68	22	34.7	
24.84	21.18	11.08	19	36.2	33



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.49	15.65	10.82	17.4	18	15
17.74	16.74	11.07	17.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.36, 3.0'-4.5'	Lab ID	291
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 24.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.9
No. 10	2	98.9
No. 40	0.425	96.5
No. 200	0.075	84.2
	0.02	61.9
	0.005	37.0
	0.002	26.4
estimated	0.001	19.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.1	1.1
Coarse Sand	1.0	2.4
Medium Sand	2.4	---
Fine Sand	12.3	12.3
Silt	47.2	57.8
Clay	37.0	26.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	20
Plasticity Index:	21
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (18)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.36, 3.0'-4.5'
Project Number: 173409690
Lab ID: 291

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 01-29-2021
Date Received: 01-27-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.9
No. 10	98.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

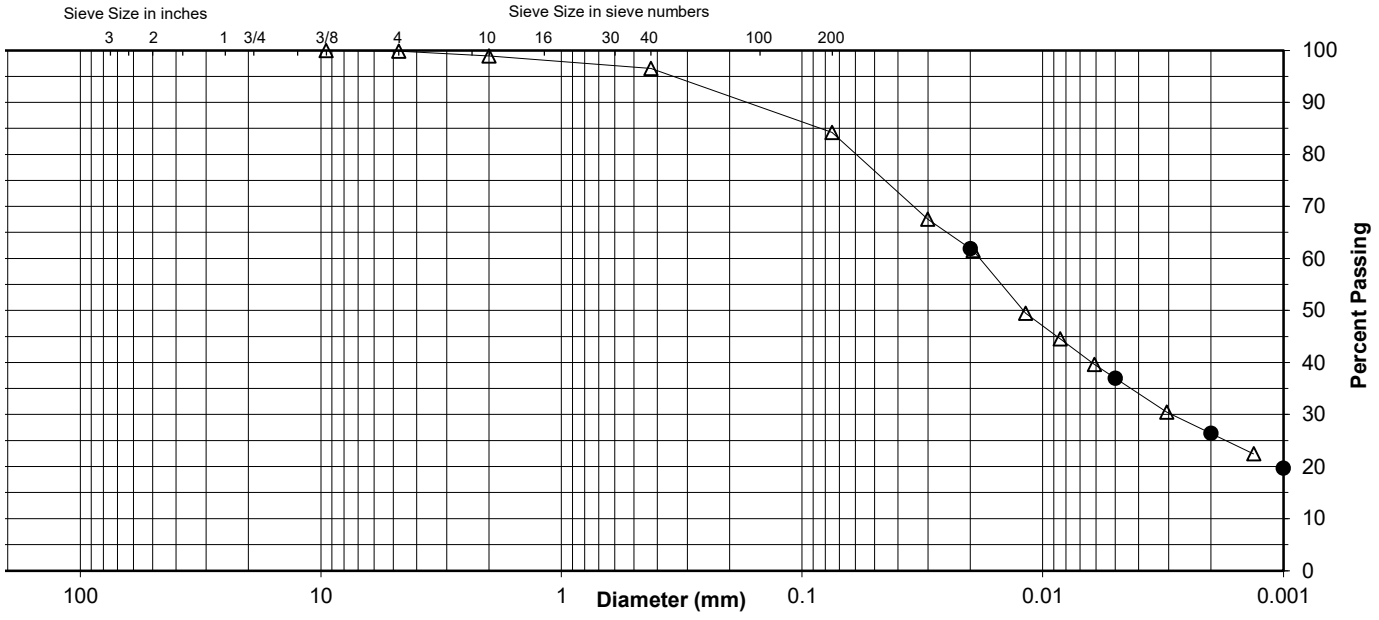
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	96.5
No. 200	84.2
0.02 mm	61.9
0.005 mm	37.0
0.002 mm	26.4
0.001 mm	19.7

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.1	1.0	2.4	12.3	47.2	37.0

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	1.1	2.4	12.3	57.8	26.4



Comments:

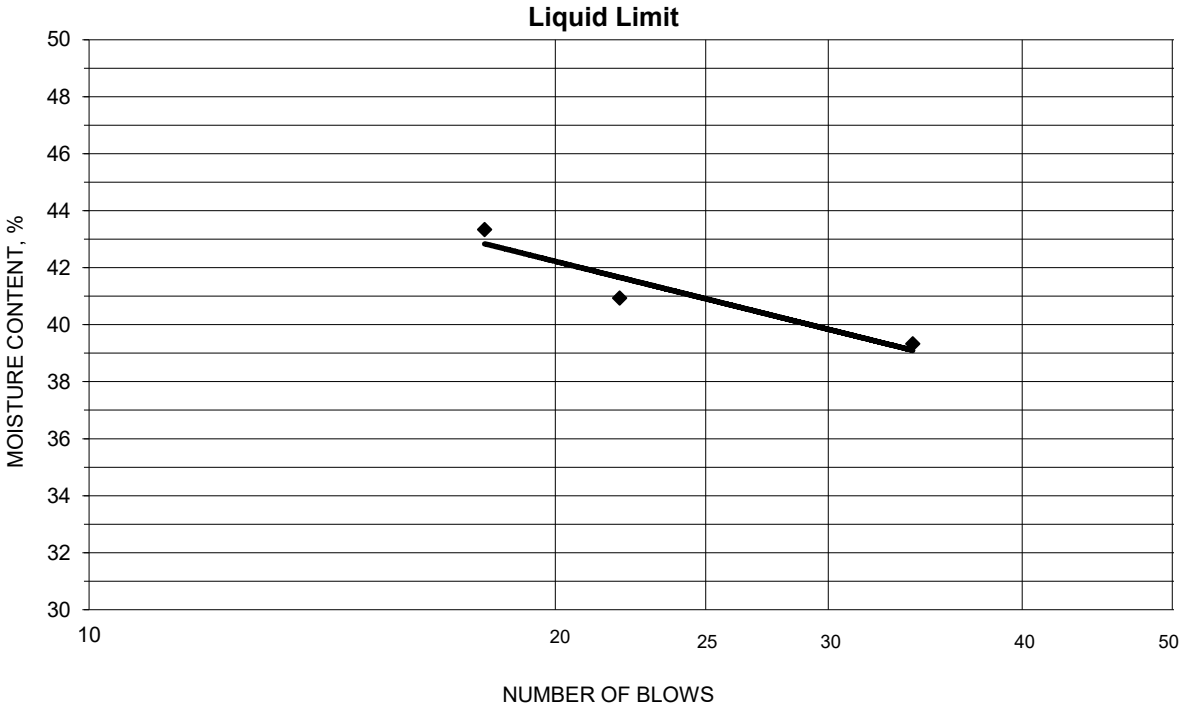
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.36, 3.0'-4.5'			Lab ID	291
				% + No. 40	3
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.30	24.77	10.71	34	39.3	
29.12	23.86	11.01	22	40.9	
27.69	22.55	10.69	18	43.3	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.77	15.81	10.96	19.8	20	21
17.42	16.35	11.03	20.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.36, 6.0'-7.5'	Lab ID	293
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.2
3/8"	9.5	92.9
No. 4	4.75	87.7
No. 10	2	79.0
No. 40	0.425	64.7
No. 200	0.075	41.7
	0.02	29.0
	0.005	17.2
	0.002	12.1
estimated	0.001	8.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.3	21.0
Coarse Sand	8.7	14.3
Medium Sand	14.3	---
Fine Sand	23.0	23.0
Silt	24.5	29.6
Clay	17.2	12.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	16
Plasticity Index:	8
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.36, 6.0'-7.5'	Lab ID	293

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.2
3/8"	92.9
No. 4	87.7
No. 10	79.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

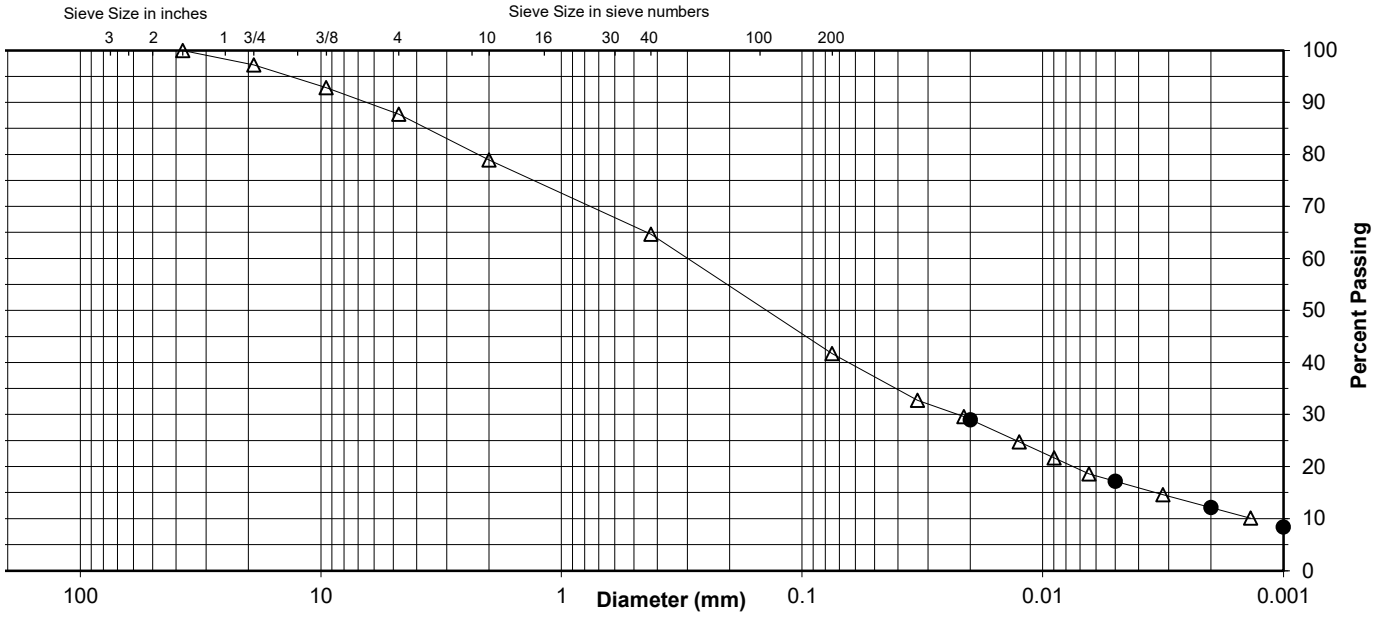
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	64.7
No. 200	41.7
0.02 mm	29.0
0.005 mm	17.2
0.002 mm	12.1
0.001 mm	8.4

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	2.8	9.5	8.7	14.3	23.0	24.5	17.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	21.0	14.3	23.0	29.6	12.1



Comments

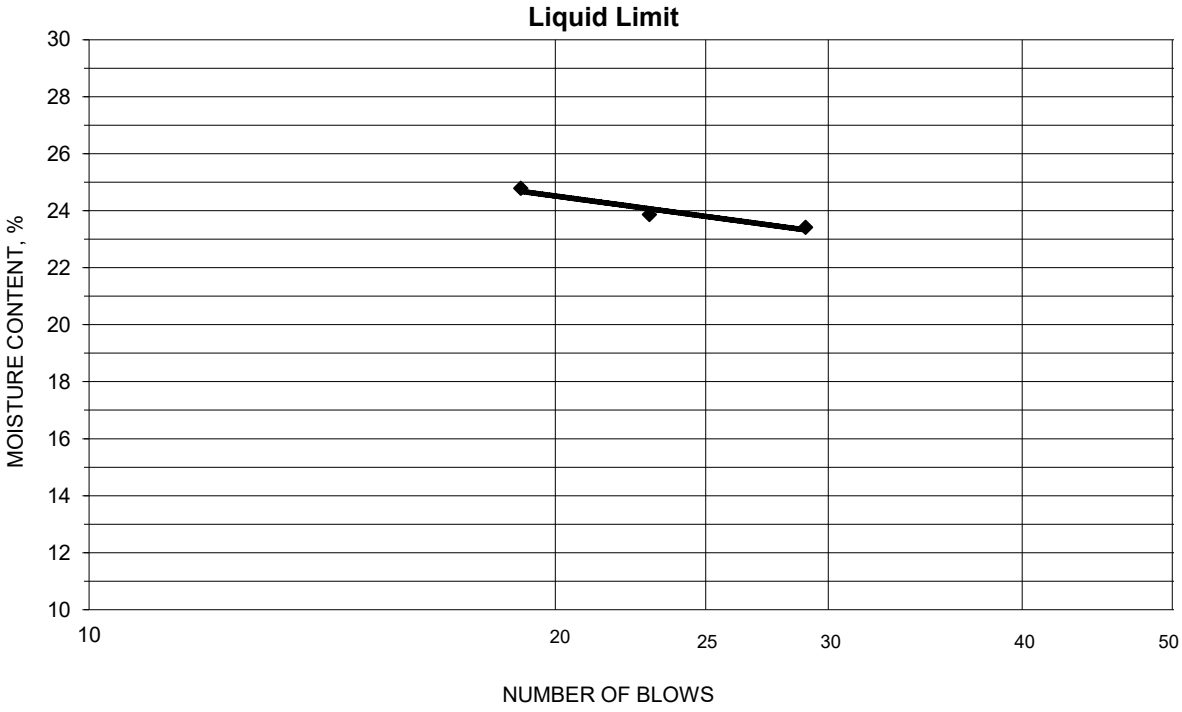
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.36, 6.0'-7.5'			Lab ID	293
				% + No. 40	35
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
31.28	27.44	11.04	29	23.4	
29.20	25.71	11.09	23	23.9	
34.43	29.78	11.02	19	24.8	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.35	15.54	10.67	16.6	16	8
16.86	15.98	10.59	16.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.37, 12.5'-14.0'	Lab ID	304
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	94.6
3/8"	9.5	92.2
No. 4	4.75	88.8
No. 10	2	83.9
No. 40	0.425	75.5
No. 200	0.075	56.1
	0.02	42.1
	0.005	25.1
	0.002	17.0
estimated	0.001	11.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	11.2	16.1
Coarse Sand	4.9	8.4
Medium Sand	8.4	---
Fine Sand	19.4	19.4
Silt	31.0	39.1
Clay	25.1	17.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	14
Plasticity Index:	8
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.37, 12.5'-14.0'	Lab ID	304

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	94.6
3/8"	92.2
No. 4	88.8
No. 10	83.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

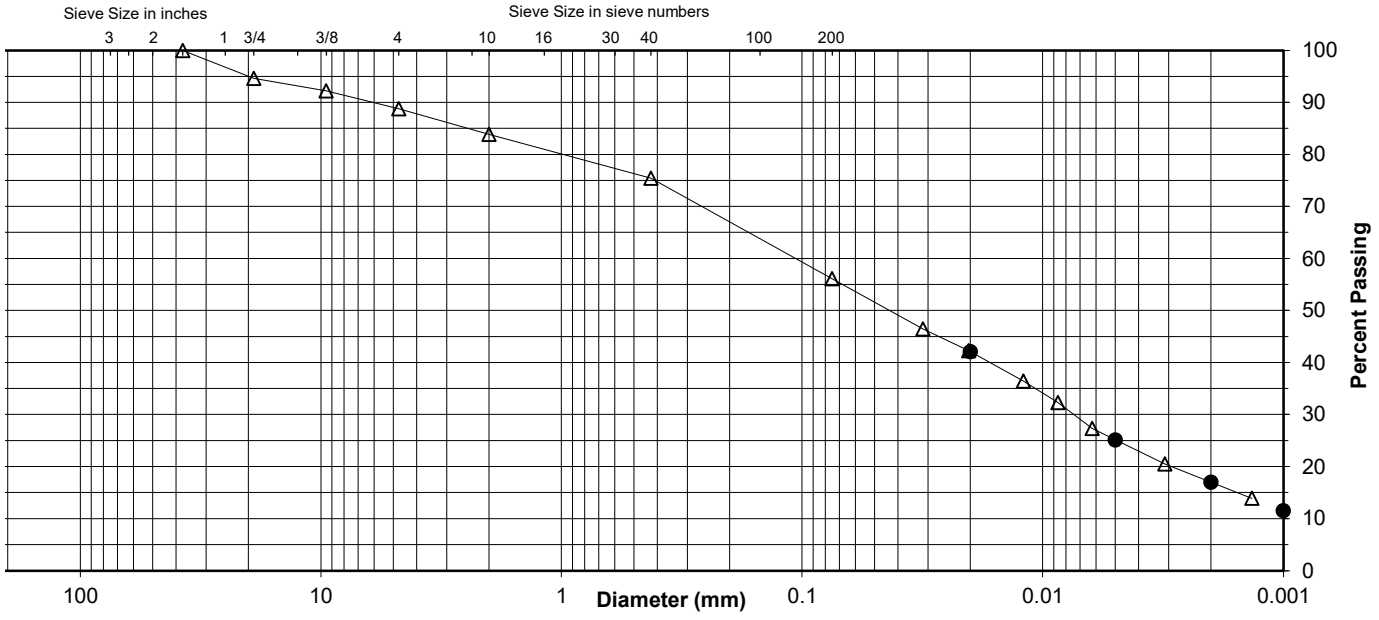
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	75.5
No. 200	56.1
0.02 mm	42.1
0.005 mm	25.1
0.002 mm	17.0
0.001 mm	11.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	5.4	5.8	4.9	8.4	19.4	31.0	25.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	16.1			8.4	19.4	39.1	17.0



Comments

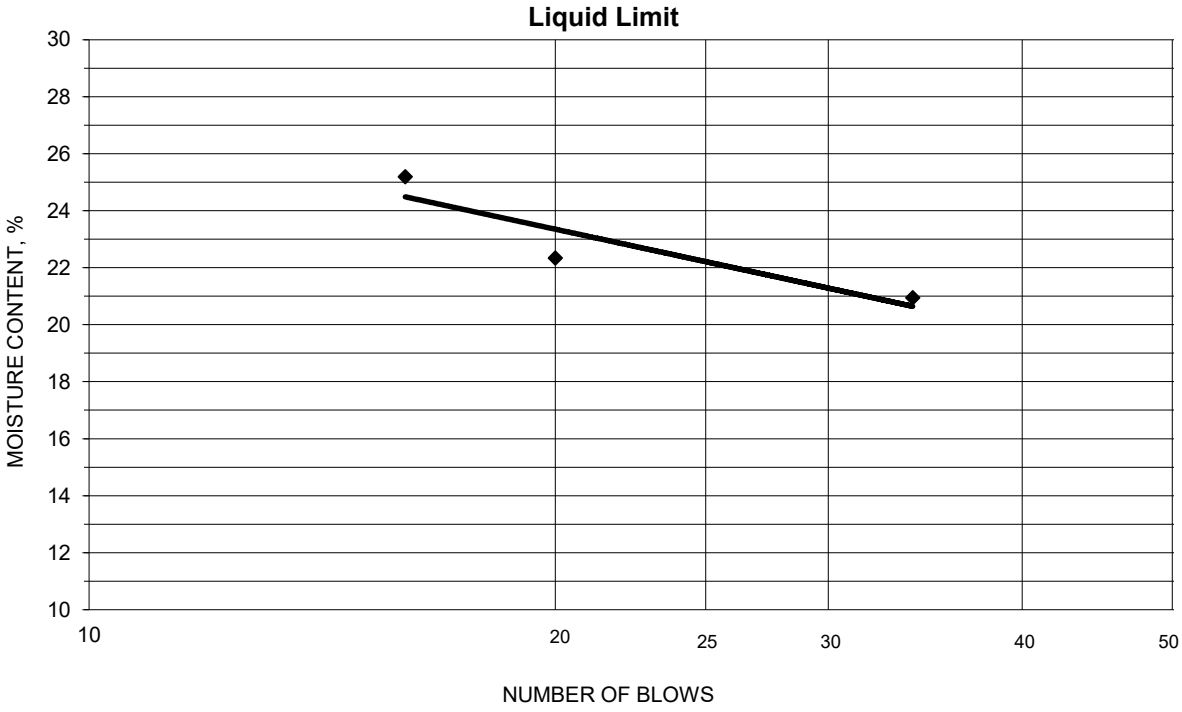
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.37, 12.5'-14.0'			Lab ID	304
				% + No. 40	25
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.91	27.49	11.16	34	20.9	
32.23	28.36	11.04	20	22.3	
28.67	25.12	11.03	16	25.2	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.52	16.75	11.00	13.4	14	8
17.41	16.62	11.07	14.2		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.38, 10.0'-11.5'	Lab ID	311
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.9
No. 4	4.75	98.2
No. 10	2	93.3
No. 40	0.425	59.6
No. 200	0.075	42.8
	0.02	26.9
	0.005	16.6
	0.002	9.2
estimated	0.001	3.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.8	6.7
Coarse Sand	4.9	33.7
Medium Sand	33.7	---
Fine Sand	16.8	16.8
Silt	26.2	33.6
Clay	16.6	9.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	17
Plastic Limit:	13
Plasticity Index:	4
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.38, 10.0'-11.5'	Lab ID	311

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	01-29-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.9
No. 4	98.2
No. 10	93.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

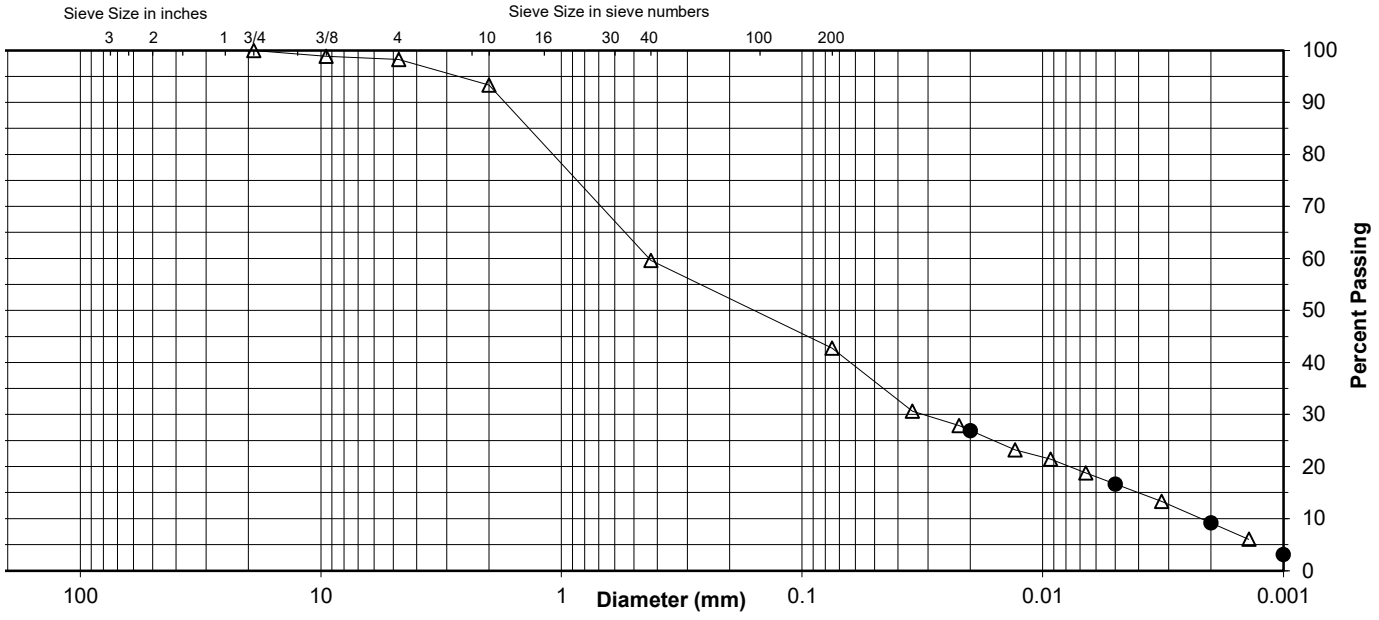
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	59.6
No. 200	42.8
0.02 mm	26.9
0.005 mm	16.6
0.002 mm	9.2
0.001 mm	3.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.8	4.9	33.7	16.8	26.2	16.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	6.7			33.7	16.8	33.6	9.2



Comments

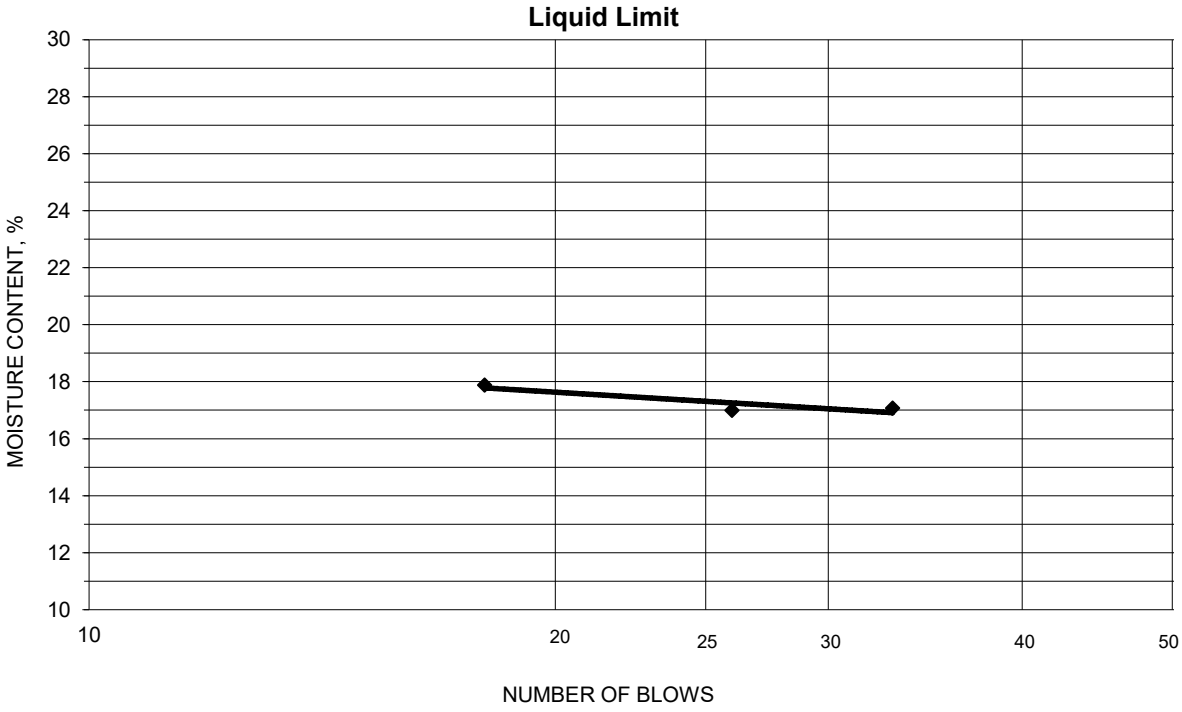
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.38, 10.0'-11.5'			Lab ID	311
				% + No. 40	40
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
31.37	28.40	11.00	33	17.1	
32.25	29.15	10.91	26	17.0	
35.58	31.86	11.06	18	17.9	17



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.32	16.59	11.07	13.2	13	4
17.36	16.66	11.05	12.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.38, 12.5'-14.0'	Lab ID	312
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.7
No. 10	2	98.5
No. 40	0.425	96.4
No. 200	0.075	79.4
	0.02	58.7
	0.005	40.2
	0.002	27.0
estimated	0.001	17.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.3	1.5
Coarse Sand	1.2	2.1
Medium Sand	2.1	---
Fine Sand	17.0	17.0
Silt	39.2	52.4
Clay	40.2	27.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	20
Plastic Limit:	14
Plasticity Index:	6
Activity Index:	0.2

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML

Group Name: Silty clay with sand

AASHTO Classification: A-4 (2)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.38, 12.5'-14.0'

Project Number: 173409690
Lab ID: 312

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MT
Test Date: 01-28-2021
Date Received: 01-27-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.7
No. 10	98.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

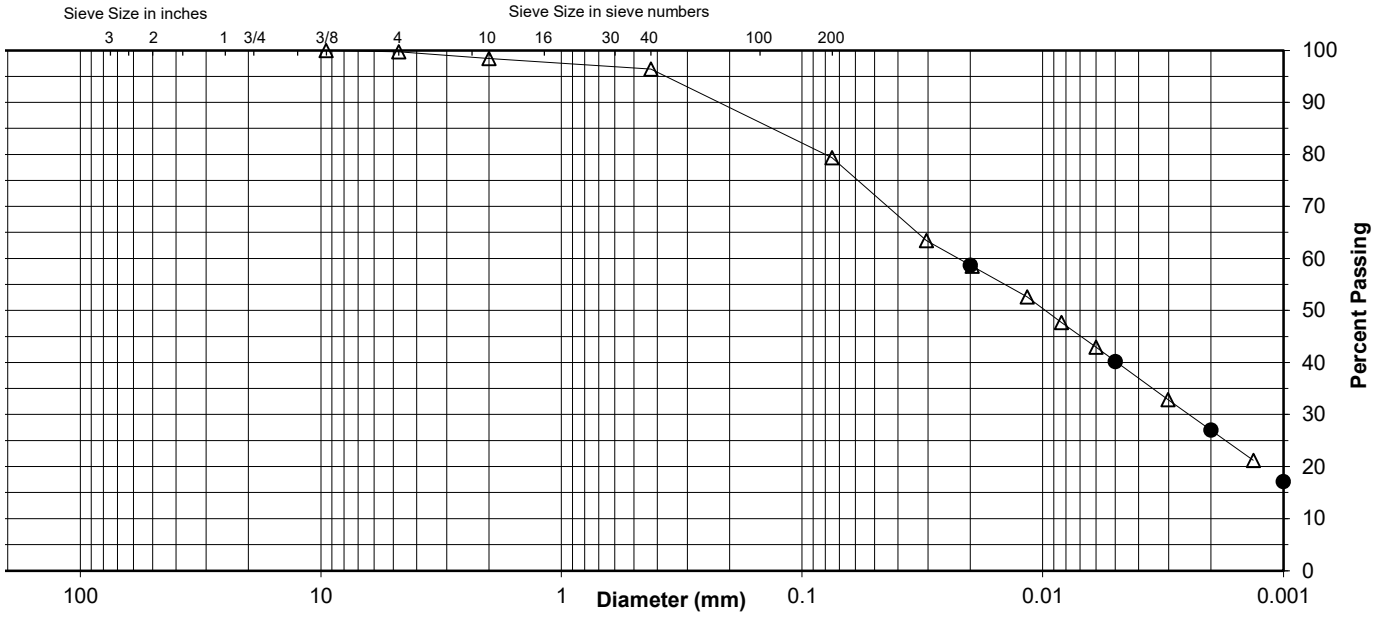
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	96.4
No. 200	79.4
0.02 mm	58.7
0.005 mm	40.2
0.002 mm	27.0
0.001 mm	17.1

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.3	1.2	2.1	17.0	39.2	40.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	1.5	2.1	17.0	52.4	27.0



Comments:

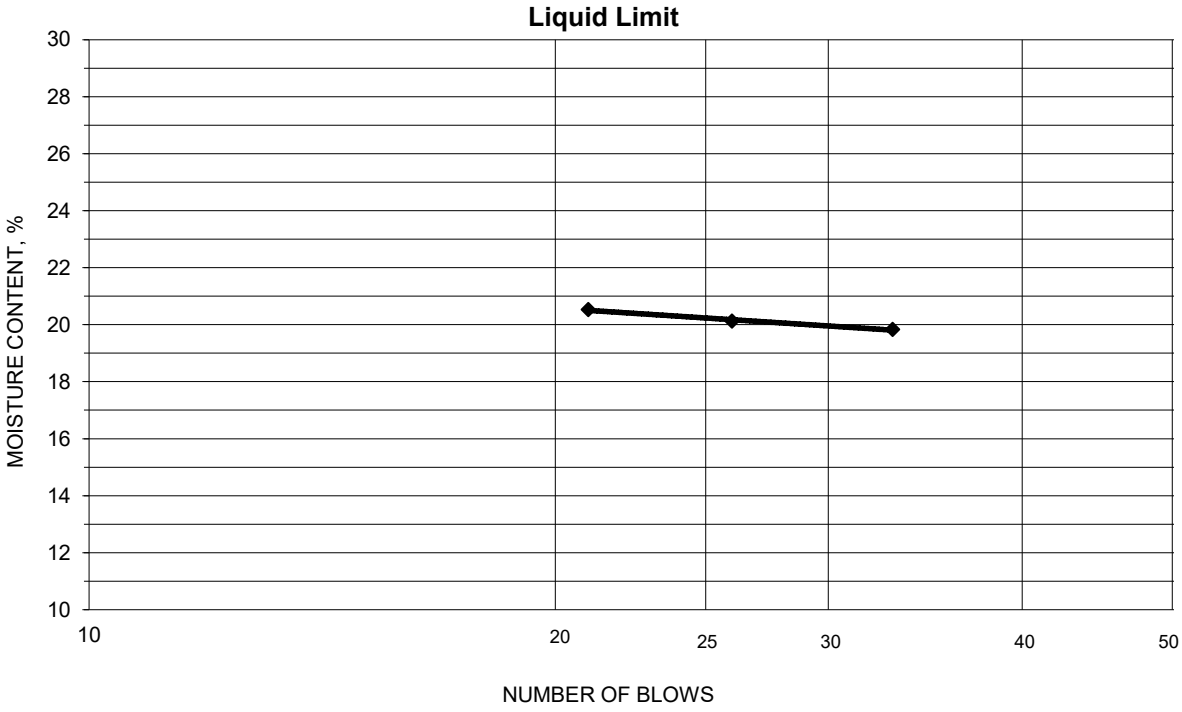
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.38, 12.5'-14.0'			Lab ID	312
				% + No. 40	4
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
32.70	29.13	11.13	33	19.8	
29.92	26.67	10.52	26	20.1	
28.53	25.51	10.80	21	20.5	20



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.61	16.83	11.07	13.5	14	6
17.49	16.66	10.57	13.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.39, 10.0'-11.5'	Lab ID	320
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.6
3/8"	9.5	84.9
No. 4	4.75	71.1
No. 10	2	61.0
No. 40	0.425	40.6
No. 200	0.075	28.5
	0.02	17.6
	0.005	10.5
	0.002	6.7
estimated	0.001	3.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	28.9	39.0
Coarse Sand	10.1	20.4
Medium Sand	20.4	---
Fine Sand	12.1	12.1
Silt	18.0	21.8
Clay	10.5	6.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	16
Plasticity Index:	11
Activity Index:	1.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand with gravel
AASHTO Classification:	A-2-6 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.39, 10.0'-11.5'	Lab ID	320

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	01-29-2021
Date Received	01-27-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.6
3/8"	84.9
No. 4	71.1
No. 10	61.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

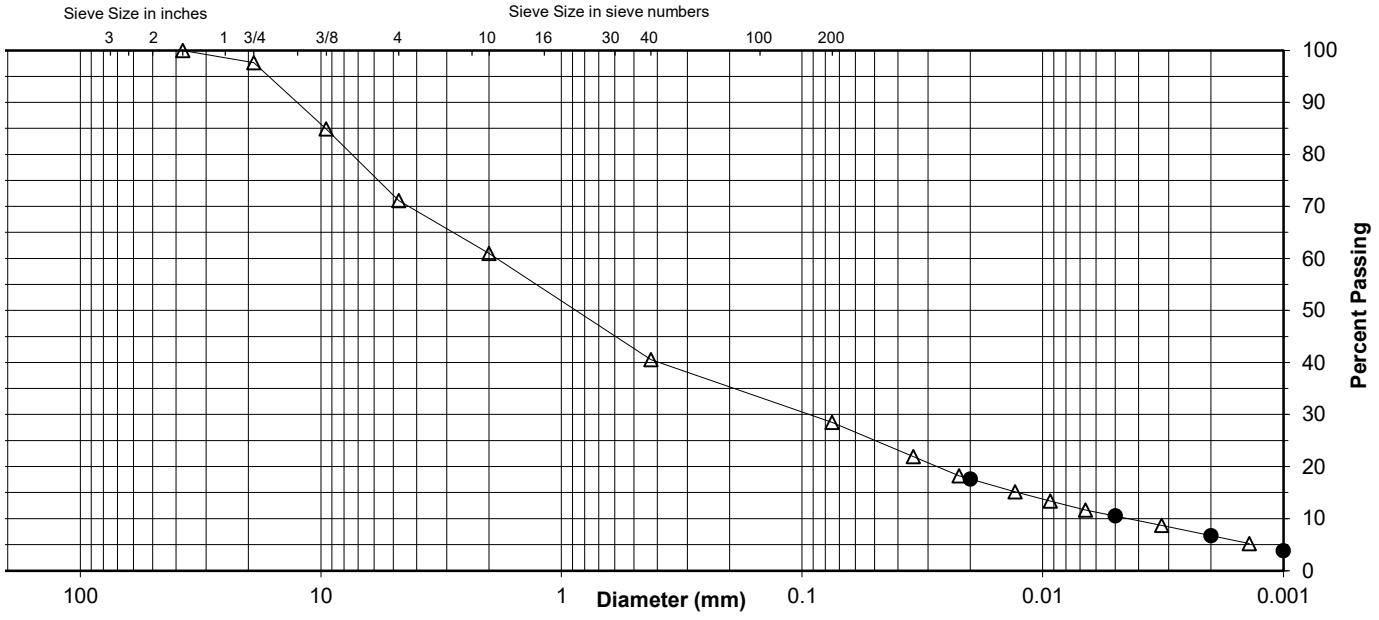
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	40.6
No. 200	28.5
0.02 mm	17.6
0.005 mm	10.5
0.002 mm	6.7
0.001 mm	3.8

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.4	26.5	10.1	20.4	12.1	18.0	10.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	39.0			20.4	12.1	21.8	6.7



Comments

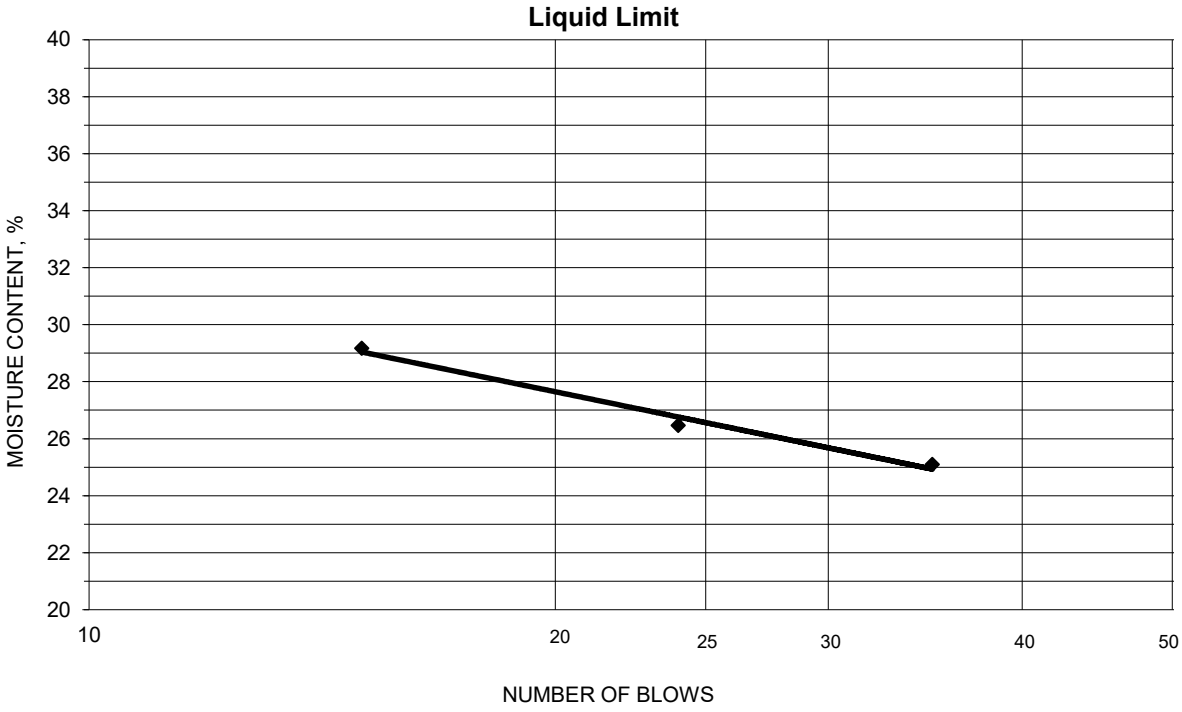
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.39, 10.0'-11.5'			Lab ID	320
				% + No. 40	59
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.80	26.84	11.06	35	25.1	
30.89	26.74	11.06	24	26.5	
27.43	23.62	10.56	15	29.2	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.70	16.77	11.02	16.2	16	11
17.92	16.95	11.03	16.4		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.40, 7.5'-9.0'	Lab ID	328
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.6
No. 4	4.75	91.8
No. 10	2	81.9
No. 40	0.425	55.2
No. 200	0.075	27.9
	0.02	15.2
	0.005	8.8
	0.002	5.8
estimated	0.001	3.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	8.2	18.1
Coarse Sand	9.9	26.7
Medium Sand	26.7	---
Fine Sand	27.3	27.3
Silt	19.1	22.1
Clay	8.8	5.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	16
Plasticity Index:	6
Activity Index:	1.0

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC-SM
Group Name:	Silty, clayey sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.40, 7.5'-9.0'	Lab ID	328

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	01-29-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.6
No. 4	91.8
No. 10	81.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

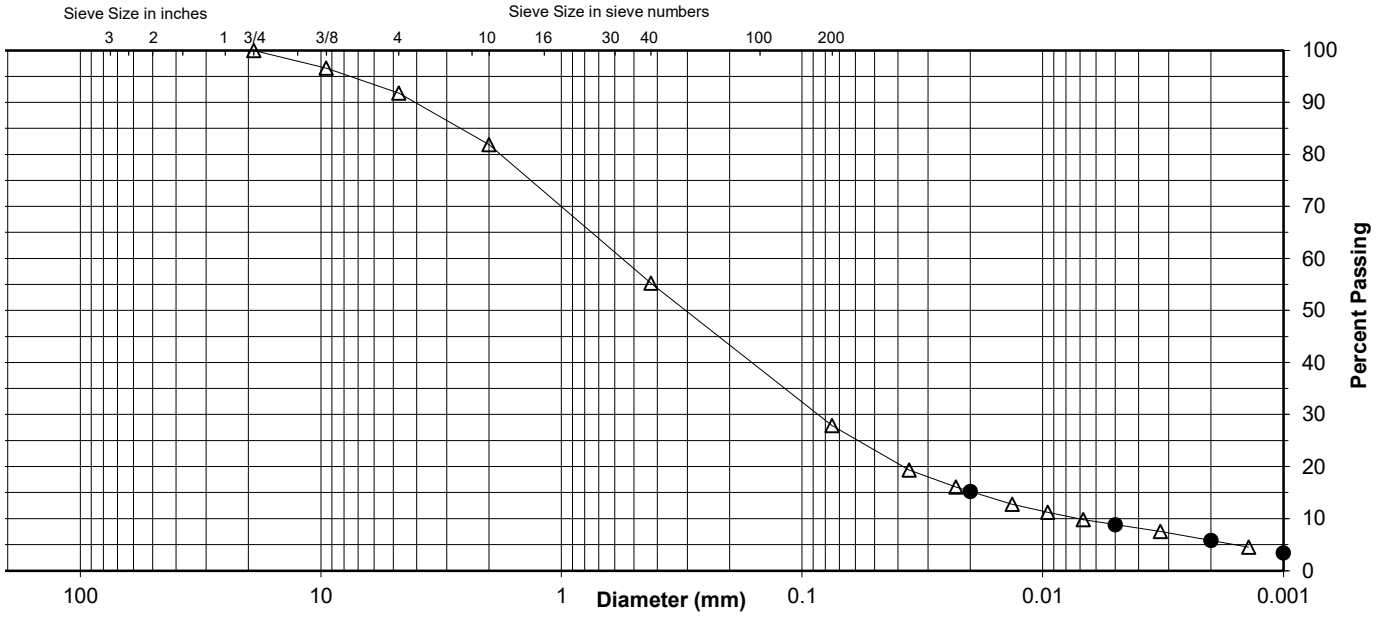
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	55.2
No. 200	27.9
0.02 mm	15.2
0.005 mm	8.8
0.002 mm	5.8
0.001 mm	3.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	8.2	9.9	26.7	27.3	19.1	8.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	18.1			26.7	27.3	22.1	5.8



Comments

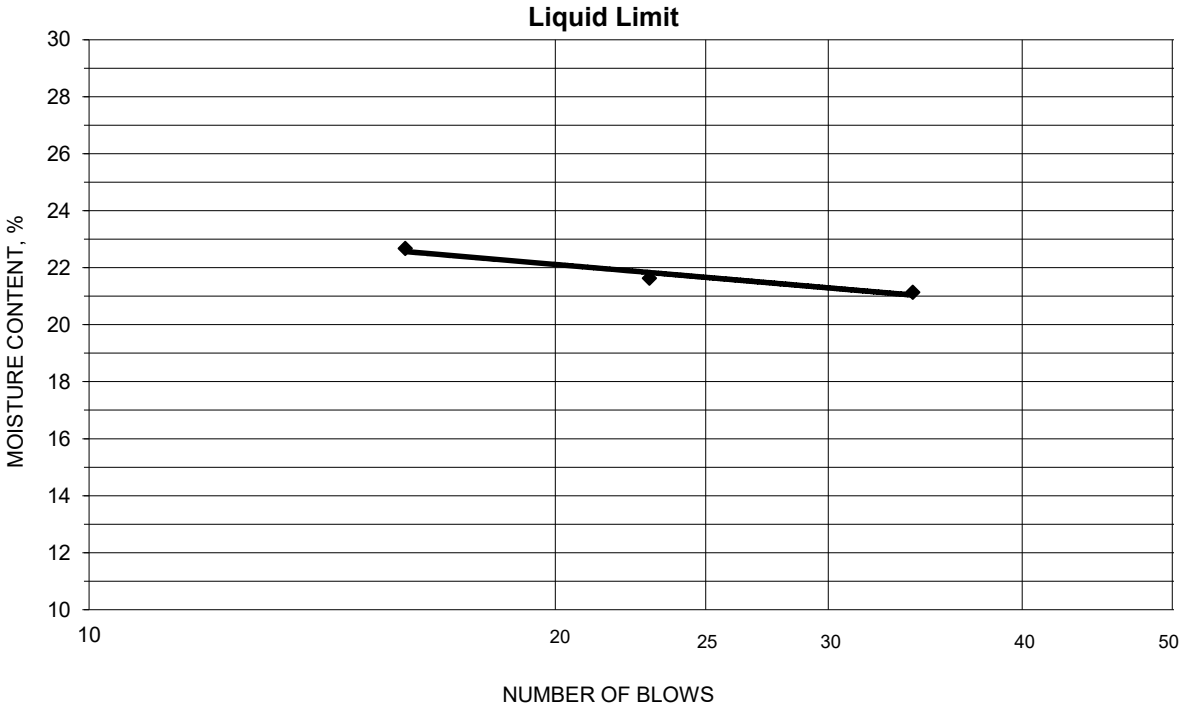
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.40, 7.5'-9.0'			Lab ID	328
				% + No. 40	45
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
32.60	28.77	10.65	34	21.1	
31.51	27.87	11.04	23	21.6	
39.82	34.49	10.98	16	22.7	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.47	15.68	10.90	16.5	16	6
17.17	16.33	11.01	15.8		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.42, 15.0'-16.5'	Lab ID	352
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.3
No. 4	4.75	99.3
No. 10	2	99.0
No. 40	0.425	97.5
No. 200	0.075	92.4
	0.02	79.5
	0.005	49.9
	0.002	32.8
estimated	0.001	22.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.7	1.0
Coarse Sand	0.3	1.5
Medium Sand	1.5	---
Fine Sand	5.1	5.1
Silt	42.5	59.6
Clay	49.9	32.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	17
Plasticity Index:	11
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay
AASHTO Classification:	A-6 (9)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.42, 15.0'-16.5'	Lab ID	352

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.3
No. 4	99.3
No. 10	99.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

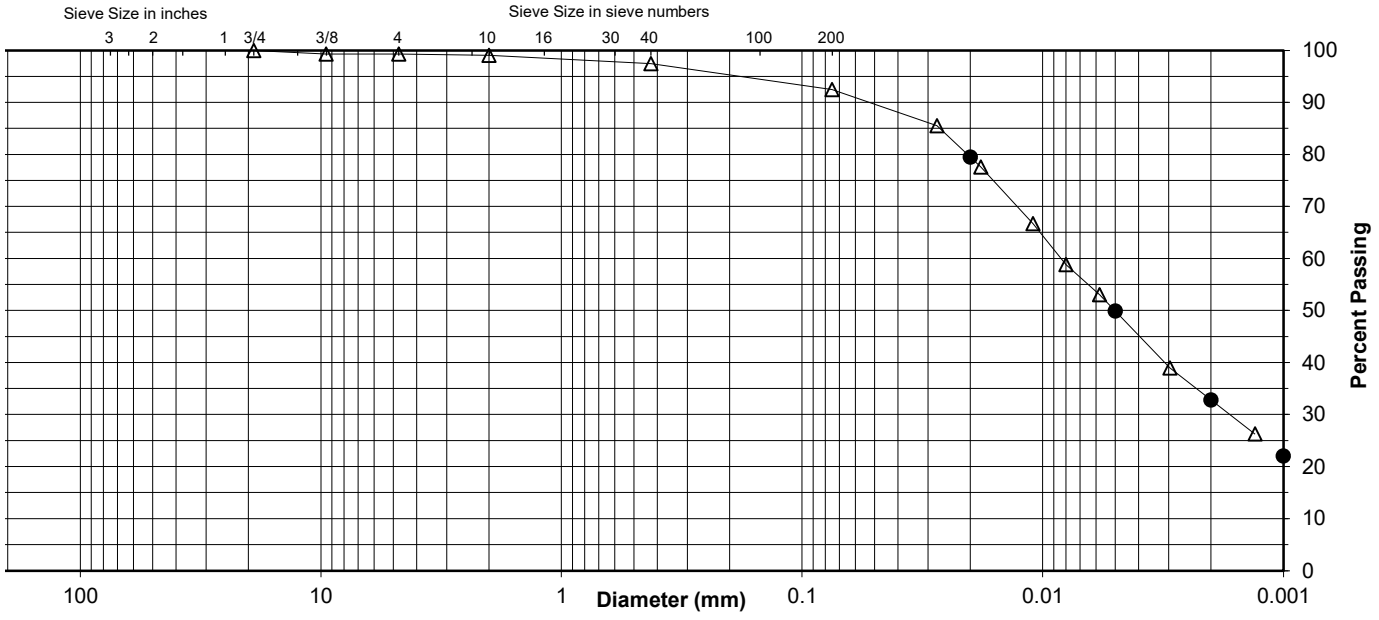
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	97.5
No. 200	92.4
0.02 mm	79.5
0.005 mm	49.9
0.002 mm	32.8
0.001 mm	22.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.7	0.3	1.5	5.1	42.5	49.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.0			1.5	5.1	59.6	32.8



Comments

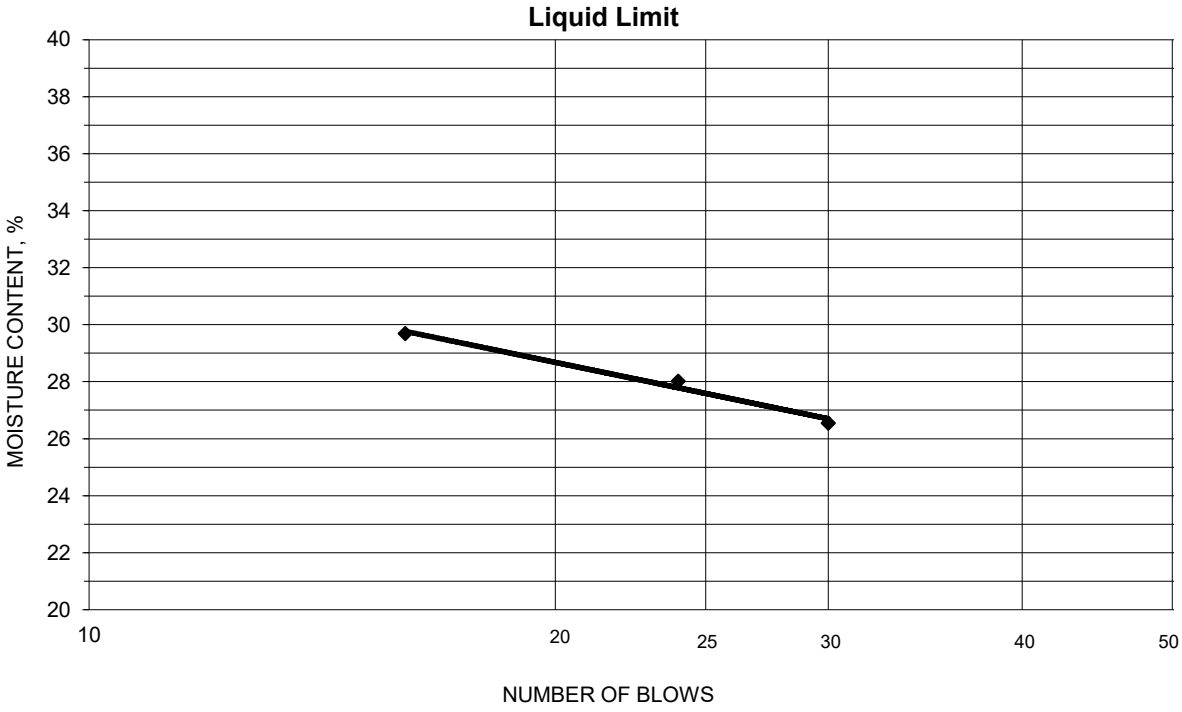
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.42, 15.0'-16.5'			Lab ID	352
				% + No. 40	3
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.61	26.50	11.02	30	26.6	
29.14	25.19	11.09	24	28.0	
27.55	23.67	10.60	16	29.7	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.34	16.41	10.99	17.2	17	11
16.01	15.22	10.56	17.0		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.43a, 4.0'-6.0'	Lab ID	444
Sample Type	ST	Date Received	2-8-21
		Date Reported	3-17-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.2
No. 40	0.425	95.8
No. 200	0.075	79.1
	0.02	67.4
	0.005	41.7
	0.002	30.4
estimated	0.001	23.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.8
Coarse Sand	0.8	3.4
Medium Sand	3.4	---
Fine Sand	16.7	16.7
Silt	37.4	48.7
Clay	41.7	30.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	19
Plasticity Index:	22
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-7-6 (17)

Comments:

Reviewed By RJ

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.43a, 4.0'-6.0'	Lab ID	444

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	03-09-2021
Date Received	02-08-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

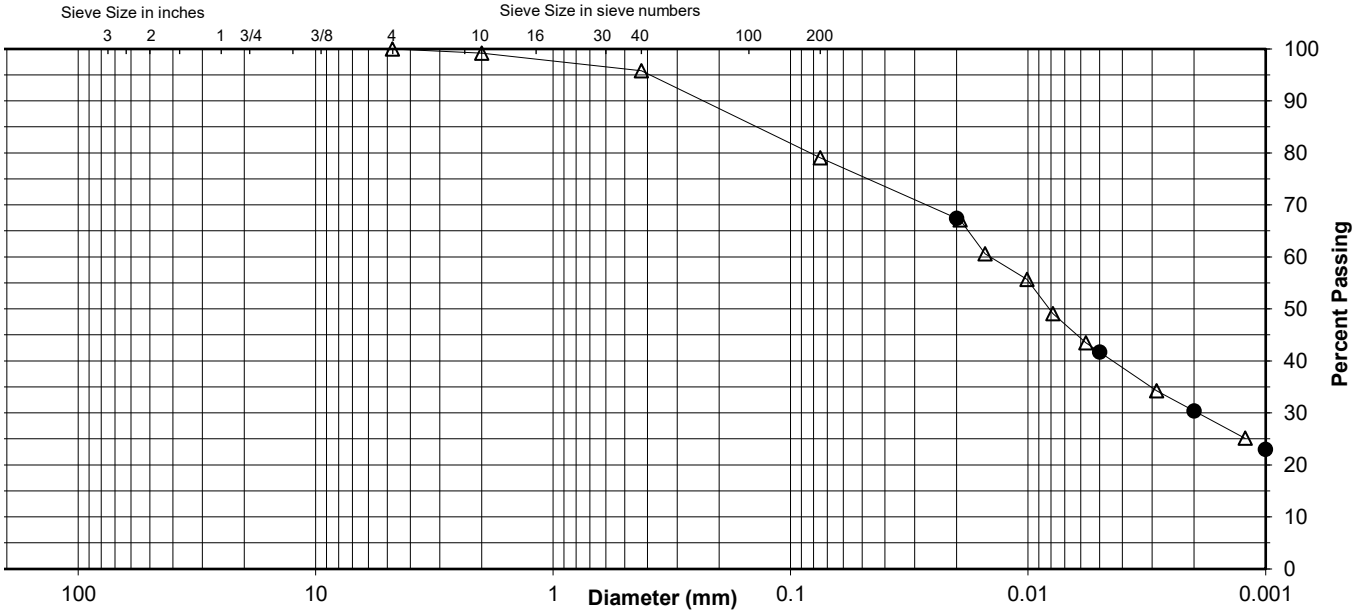
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.8
No. 200	79.1
0.02 mm	67.4
0.005 mm	41.7
0.002 mm	30.4
0.001 mm	23.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.8	3.4	16.7	37.4	41.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.8			3.4	16.7	48.7	30.4



Comments

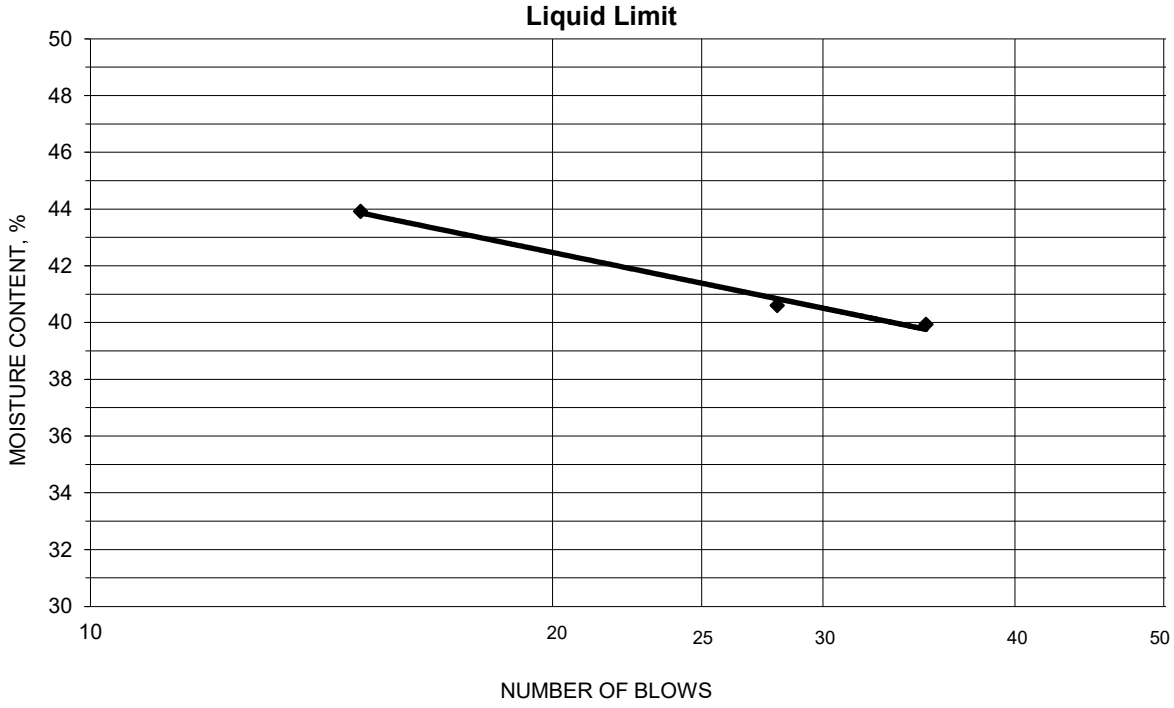
Reviewed By RJ

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.43a, 4.0'-6.0'			Lab ID	444
				% + No. 40	4
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	02-08-2021
Test Date	03-11-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
12.76	10.36	4.35	35	39.9	
11.68	9.54	4.27	28	40.6	
12.58	10.05	4.29	15	43.9	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.98	10.72	4.26	19.5	19	22
10.98	9.93	4.31	18.7		

Remarks: _____

Reviewed By RJ

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.43a, 8.0'-10.0'	Lab ID	446
Sample Type	ST	Date Received	2-8-21
		Date Reported	3-17-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	94.2
3/8"	9.5	80.5
No. 4	4.75	71.6
No. 10	2	63.8
No. 40	0.425	52.1
No. 200	0.075	28.0
	0.02	17.4
	0.005	10.3
	0.002	6.3
estimated	0.001	3.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	28.4	36.2
Coarse Sand	7.8	11.7
Medium Sand	11.7	---
Fine Sand	24.1	24.1
Silt	17.7	21.7
Clay	10.3	6.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	18
Plastic Limit:	13
Plasticity Index:	5
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM
Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By RJ

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.43a, 8.0'-10.0'	Lab ID	446

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	03-09-2021
Date Received	02-08-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	94.2
3/8"	80.5
No. 4	71.6
No. 10	63.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

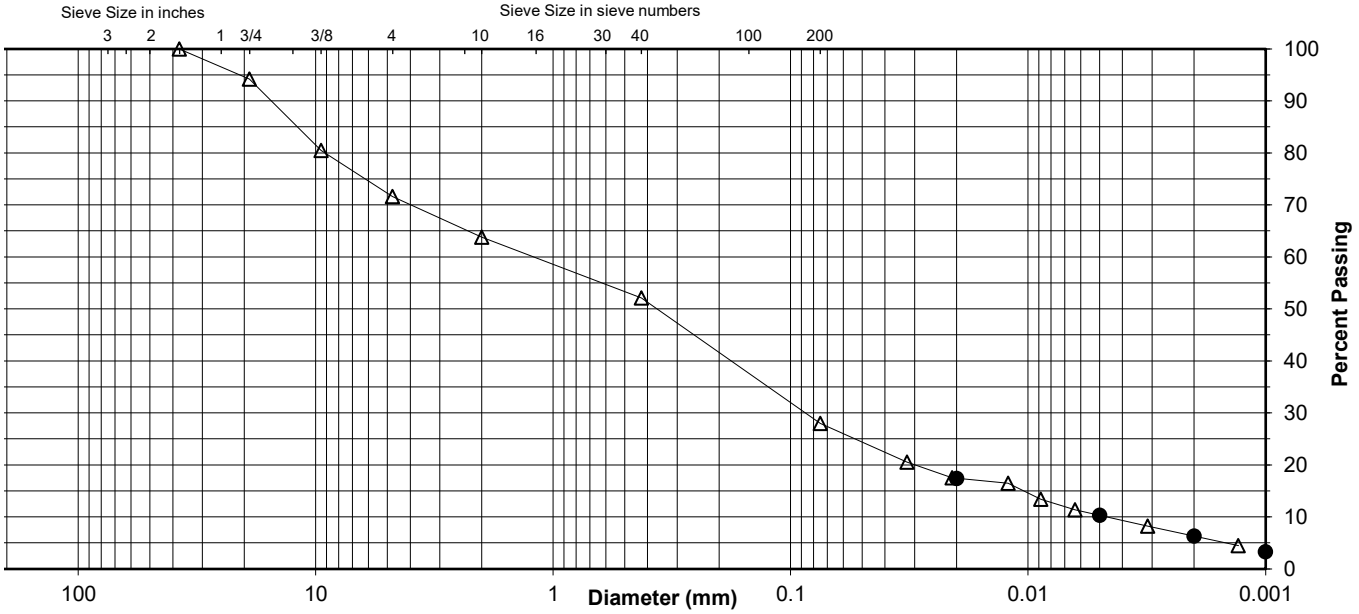
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	52.1
No. 200	28.0
0.02 mm	17.4
0.005 mm	10.3
0.002 mm	6.3
0.001 mm	3.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	5.8	22.6	7.8	11.7	24.1	17.7	10.3

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	36.2	11.7	24.1	21.7	6.3



Comments

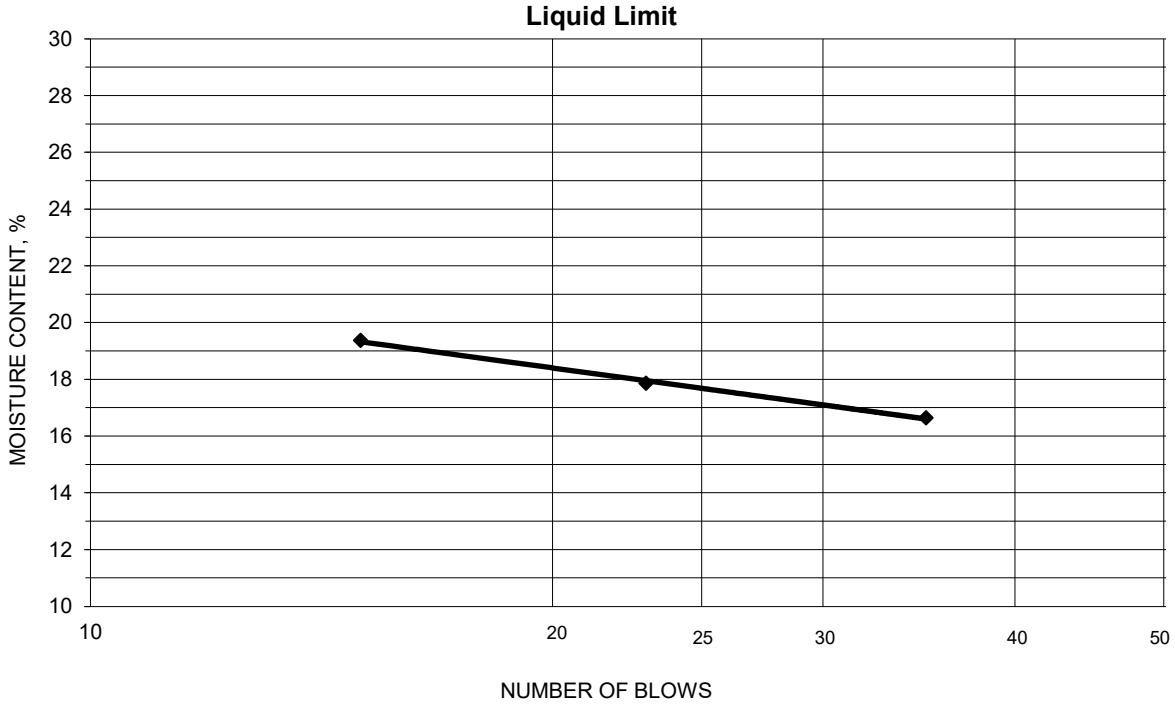
Reviewed By RJ

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.43a, 8.0'-10.0'			Lab ID	446
				% + No. 40	48
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	02-08-2021
Test Date	03-11-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
14.87	13.36	4.29	35	16.6	
14.66	13.09	4.30	23	17.9	
14.47	12.81	4.24	15	19.4	18



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
13.59	12.53	4.34	12.9	13	5
12.80	11.85	4.35	12.7		

Remarks: _____

Reviewed By RJ

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44, 7.5'-9.0'	Lab ID	491
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.8
3/8"	9.5	97.0
No. 4	4.75	93.3
No. 10	2	77.4
No. 40	0.425	51.7
No. 200	0.075	28.7
	0.02	18.6
	0.005	10.7
	0.002	7.9
estimated	0.001	6.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.7	22.6
Coarse Sand	15.9	25.7
Medium Sand	25.7	---
Fine Sand	23.0	23.0
Silt	18.0	20.8
Clay	10.7	7.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	23
Plastic Limit:	17
Plasticity Index:	6
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC-SM
Group Name:	Silty, clayey sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44, 7.5'-9.0'	Lab ID	491

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.8
3/8"	97.0
No. 4	93.3
No. 10	77.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

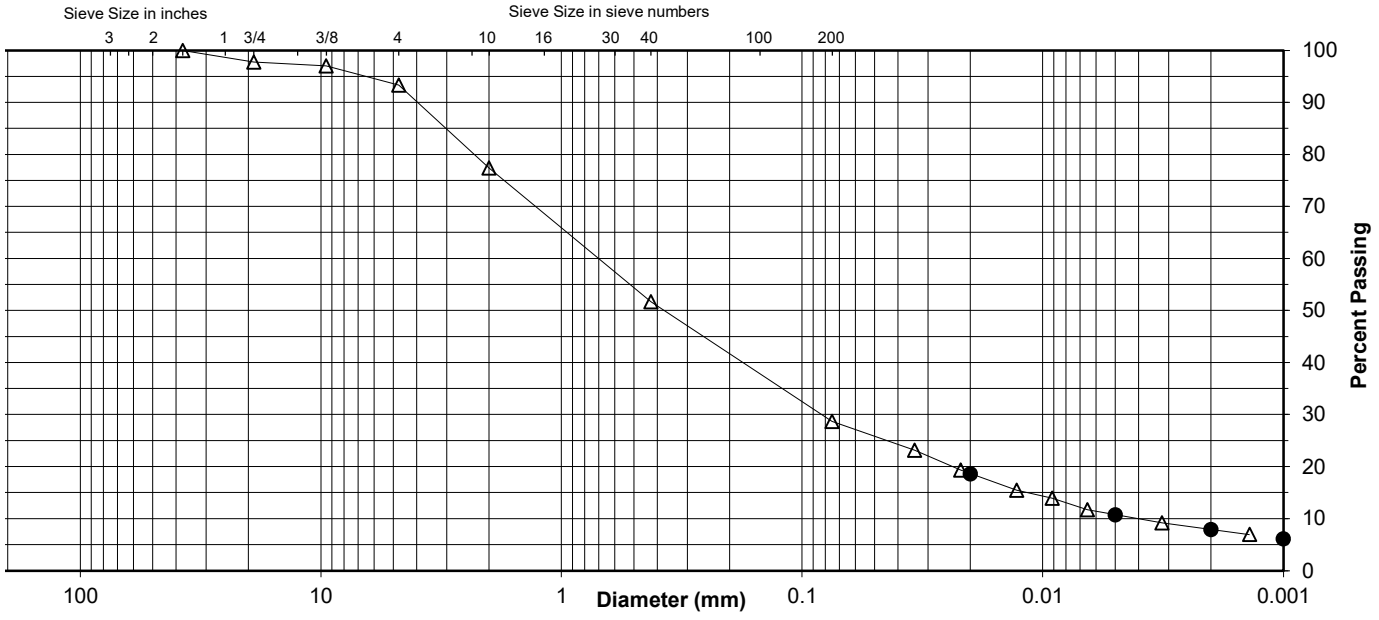
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	51.7
No. 200	28.7
0.02 mm	18.6
0.005 mm	10.7
0.002 mm	7.9
0.001 mm	6.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.2	4.5	15.9	25.7	23.0	18.0	10.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	22.6			25.7	23.0	20.8	7.9



Comments

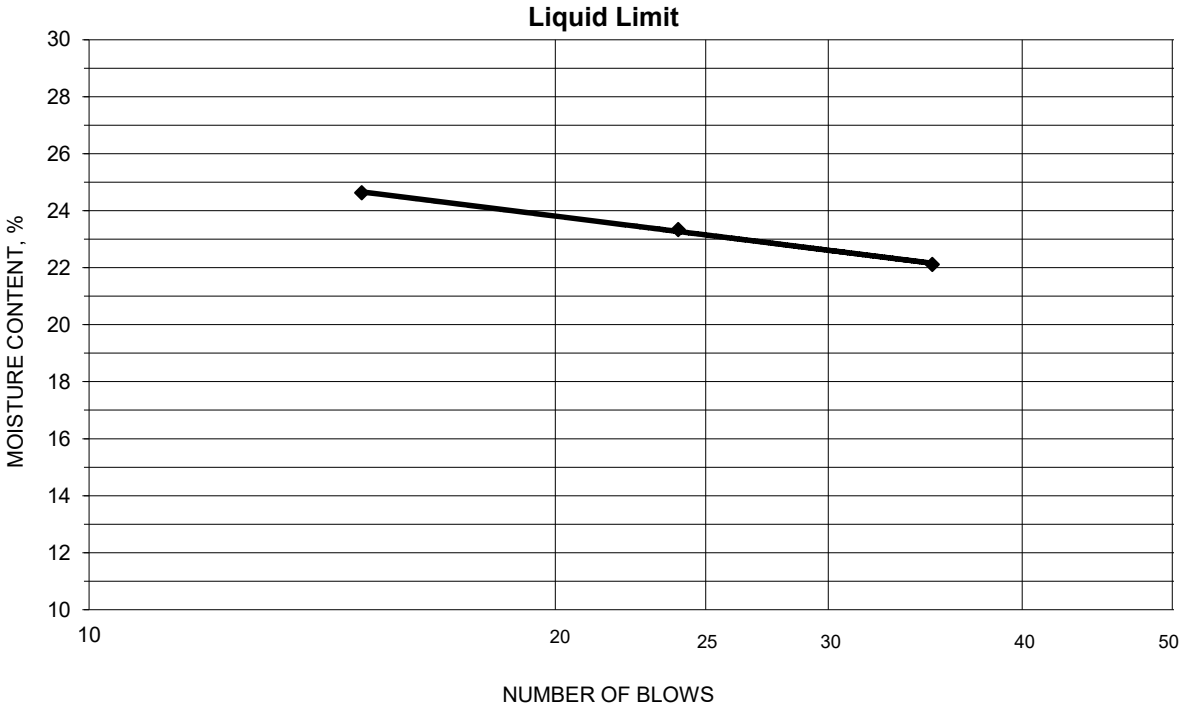
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.44, 7.5'-9.0'			Lab ID	491
				% + No. 40	48
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.85	22.28	10.66	35	22.1	
23.75	21.25	10.54	24	23.3	
24.85	22.03	10.58	15	24.6	23



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.03	18.74	11.05	16.8	17	6
19.18	18.02	10.95	16.4		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44, 15.0'-16.5'	Lab ID	494
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	92.2
3/8"	9.5	91.6
No. 4	4.75	89.7
No. 10	2	85.9
No. 40	0.425	82.8
No. 200	0.075	79.4
	0.02	66.9
	0.005	42.4
	0.002	28.1
estimated	0.001	17.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	10.3	14.1
Coarse Sand	3.8	3.1
Medium Sand	3.1	---
Fine Sand	3.4	3.4
Silt	37.0	51.3
Clay	42.4	28.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	17
Plasticity Index:	12
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with gravel

AASHTO Classification: A-6 (8)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44, 15.0'-16.5'	Lab ID	494

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	92.2
3/8"	91.6
No. 4	89.7
No. 10	85.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

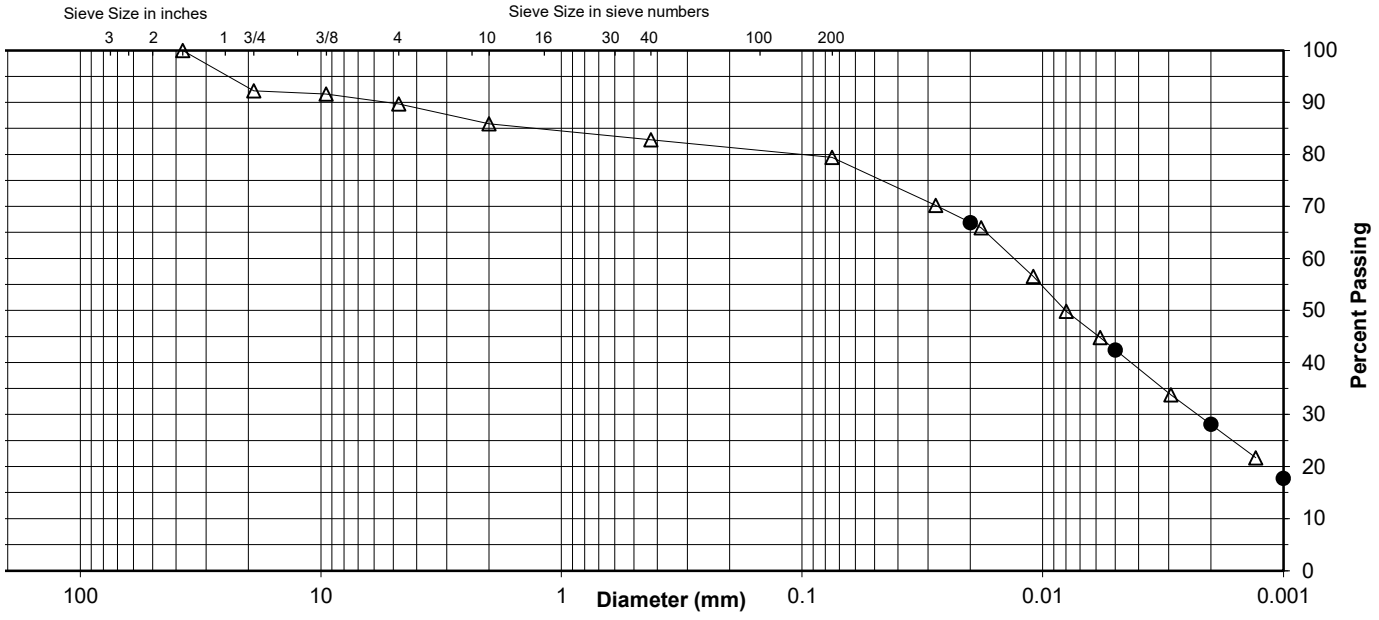
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	82.8
No. 200	79.4
0.02 mm	66.9
0.005 mm	42.4
0.002 mm	28.1
0.001 mm	17.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	7.8	2.5	3.8	3.1	3.4	37.0	42.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	14.1			3.1	3.4	51.3	28.1



Comments

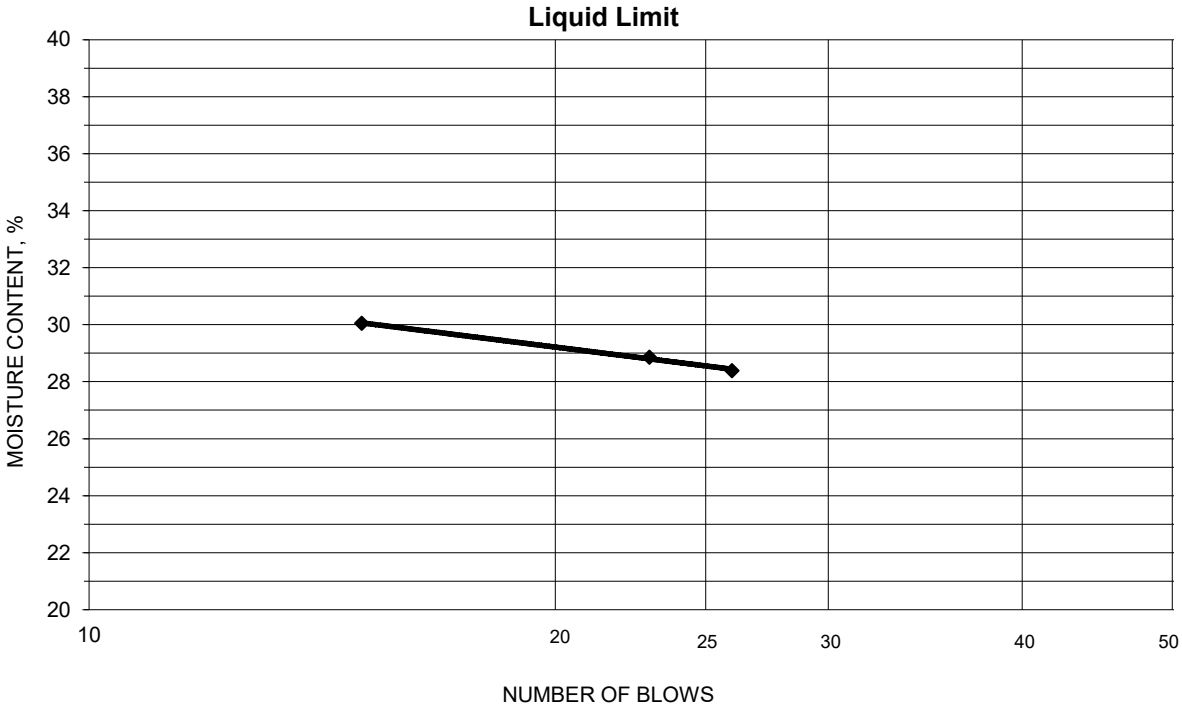
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.44, 15.0'-16.5'			Lab ID	494
				% + No. 40	17
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
32.14	27.45	10.93	26	28.4	
27.53	23.85	11.10	23	28.9	
28.56	24.38	10.47	15	30.1	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.44	16.44	10.58	17.1	17	12
17.98	16.95	10.99	17.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44a, 2.0'-4.0'	Lab ID	772
Sample Type	ST	Date Received	4-14-21
		Date Reported	5-12-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.5
No. 4	4.75	98.5
No. 10	2	98.5
No. 40	0.425	97.9
No. 200	0.075	87.7
	0.02	66.4
	0.005	45.7
	0.002	34.6
estimated	0.001	27.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.5	1.5
Coarse Sand	0.0	0.6
Medium Sand	0.6	---
Fine Sand	10.2	10.2
Silt	42.0	53.1
Clay	45.7	34.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	44
Plastic Limit:	19
Plasticity Index:	25
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay
AASHTO Classification:	A-7-6 (23)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44a, 2.0'-4.0'	Lab ID	772

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	04-28-2021
Date Received	04-14-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.5
No. 4	98.5
No. 10	98.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

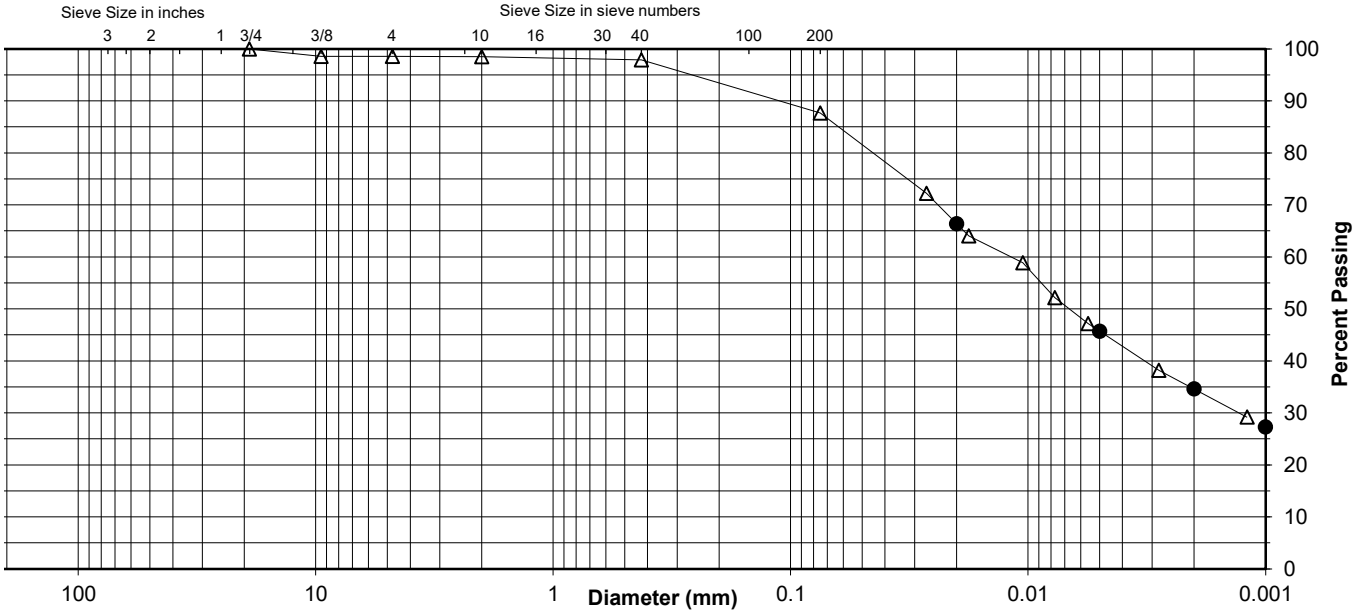
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	97.9
No. 200	87.7
0.02 mm	66.4
0.005 mm	45.7
0.002 mm	34.6
0.001 mm	27.3

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	1.5	0.0	0.6	10.2	42.0	45.7

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	1.5	0.6	10.2	53.1	34.6



Comments

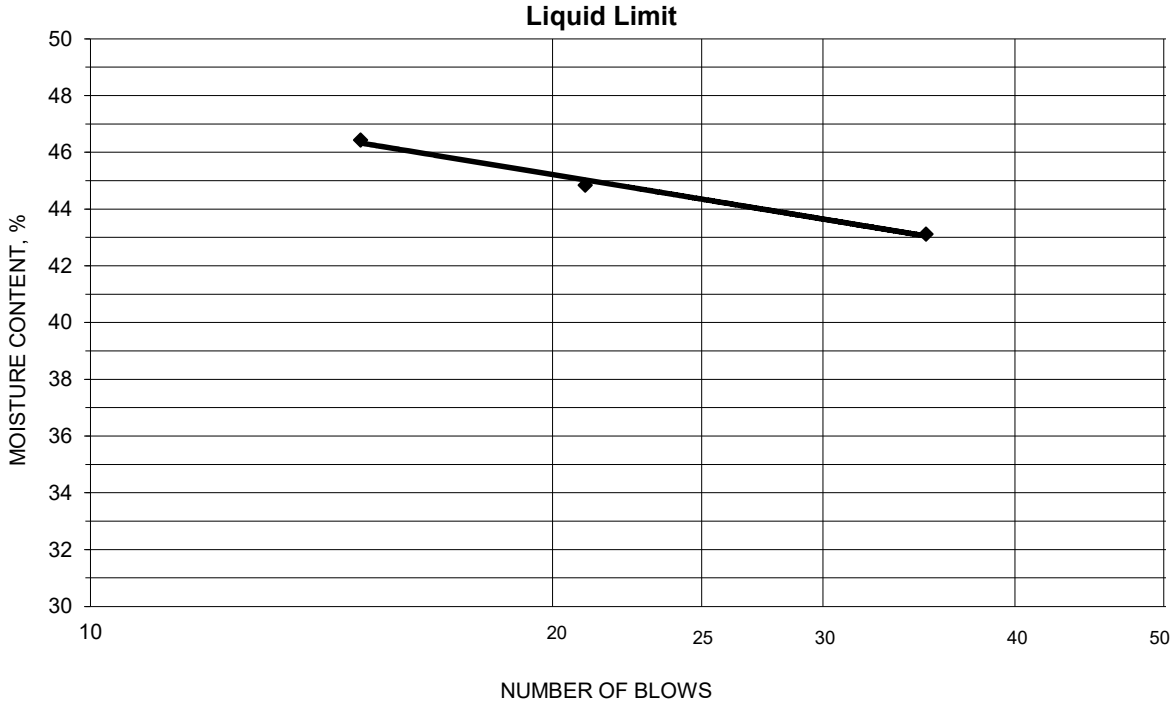
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.44a, 2.0'-4.0'			Lab ID	772
				% + No. 40	2
Tested By	KWS	Test Method	ASTM D 4318 Method A	Date Received	04-14-2021
Test Date	05-04-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.50	16.18	10.80	35	43.1	
18.26	16.04	11.09	21	44.8	
17.88	15.86	11.51	15	46.4	44



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.59	16.55	11.16	19.3	19	25
17.46	16.39	10.91	19.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44a, 4.0'-6.0'	Lab ID	773
Sample Type	ST	Date Received	4-14-21
		Date Reported	5-12-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	100.0
No. 40	0.425	99.4
No. 200	0.075	71.0
	0.02	43.7
	0.005	27.7
	0.002	19.5
estimated	0.001	14.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	0.6
Medium Sand	0.6	---
Fine Sand	28.4	28.4
Silt	43.3	51.5
Clay	27.7	19.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	19
Plasticity Index:	13
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.44a, 4.0'-6.0'	Lab ID	773

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	04-28-2021
Date Received	04-14-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

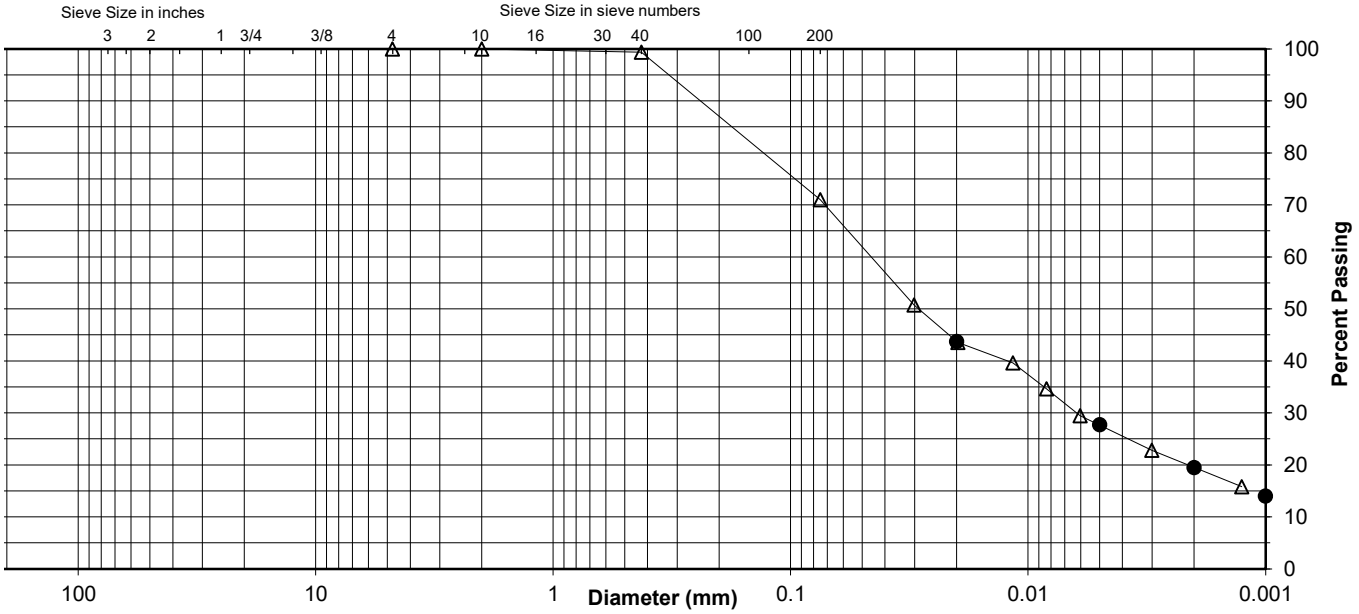
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	99.4
No. 200	71.0
0.02 mm	43.7
0.005 mm	27.7
0.002 mm	19.5
0.001 mm	14.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	0.6	28.4	43.3	27.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.0			0.6	28.4	51.5	19.5



Comments

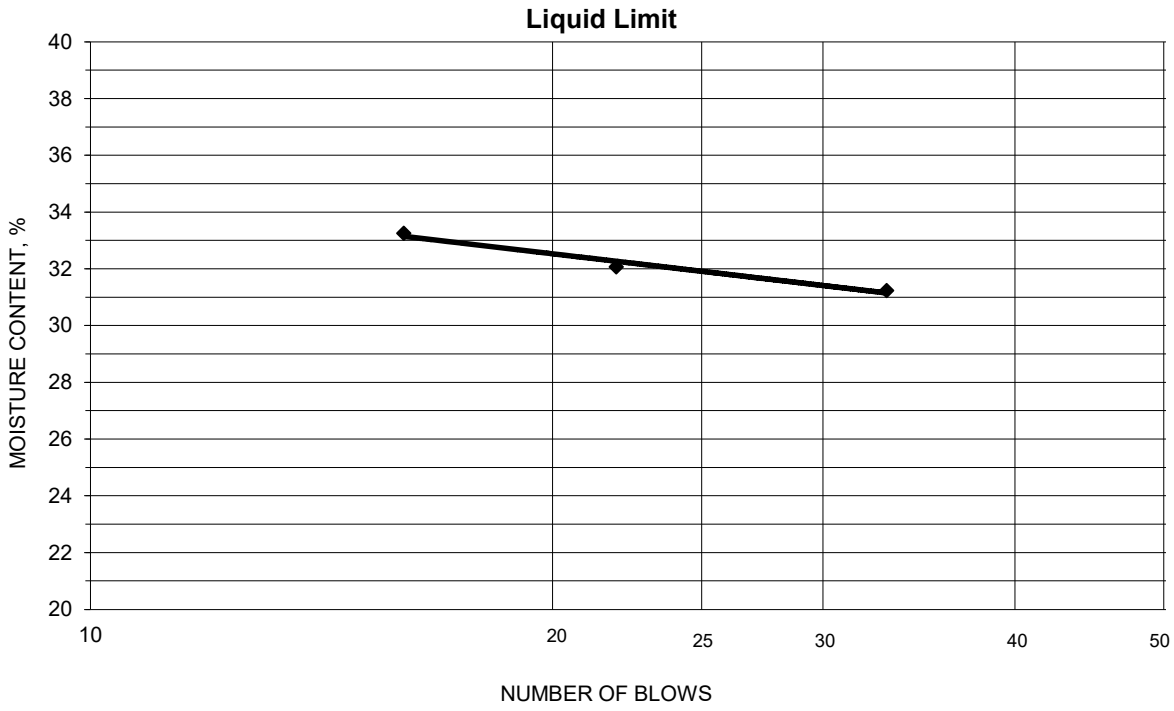
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.44a, 4.0'-6.0'			Lab ID	773
				% + No. 40	1
Tested By	KWS	Test Method	ASTM D 4318 Method A	Date Received	04-14-2021
Test Date	05-04-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.58	15.99	10.90	33	31.2	
18.36	16.59	11.07	22	32.1	
17.33	15.86	11.44	16	33.3	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.90	16.85	11.29	18.9	19	13
17.55	16.50	10.83	18.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 3.0'-4.5'	Lab ID	498
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	86.2
No. 40	0.425	83.2
No. 200	0.075	74.4
	0.02	60.6
	0.005	41.1
	0.002	30.1
estimated	0.001	23.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	13.8
Coarse Sand	13.4	3.0
Medium Sand	3.0	---
Fine Sand	8.8	8.8
Silt	33.3	44.3
Clay	41.1	30.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	47
Plastic Limit:	21
Plasticity Index:	26
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (19)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 3.0'-4.5'	Lab ID	498

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-23-2021
Date Received	02-19-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	86.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

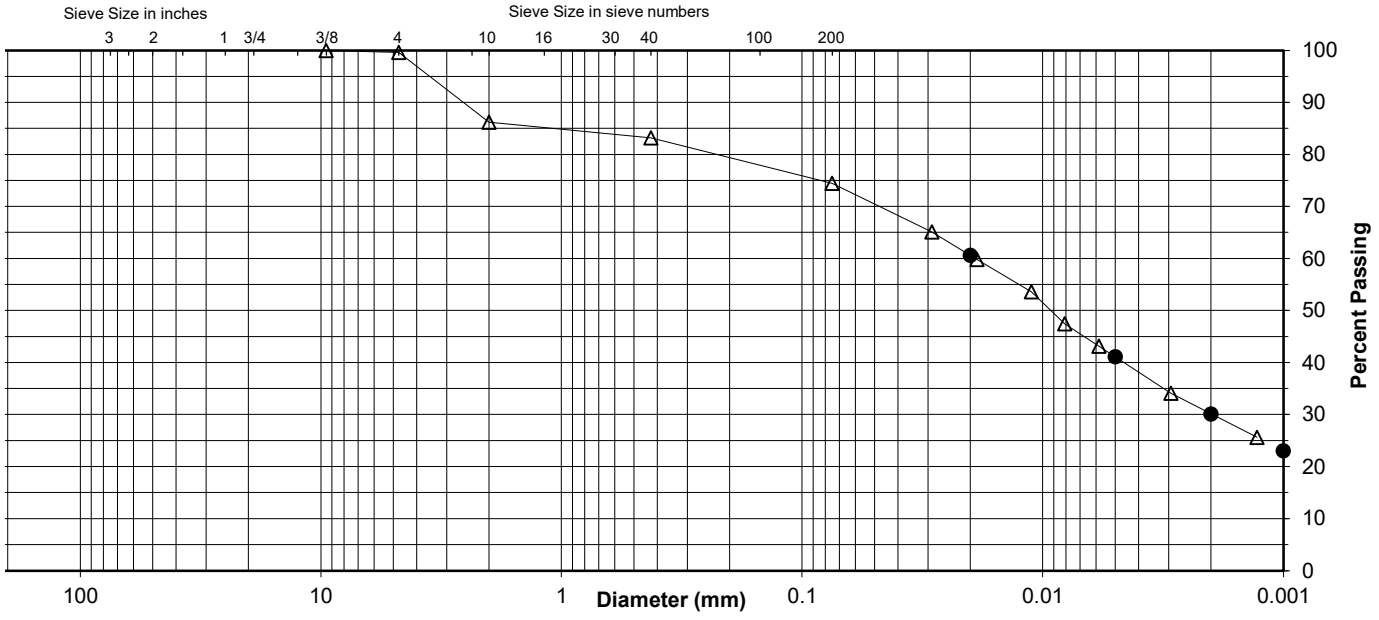
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.2
No. 200	74.4
0.02 mm	60.6
0.005 mm	41.1
0.002 mm	30.1
0.001 mm	23.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	13.4	3.0	8.8	33.3	41.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	13.8			3.0	8.8	44.3	30.1



Comments

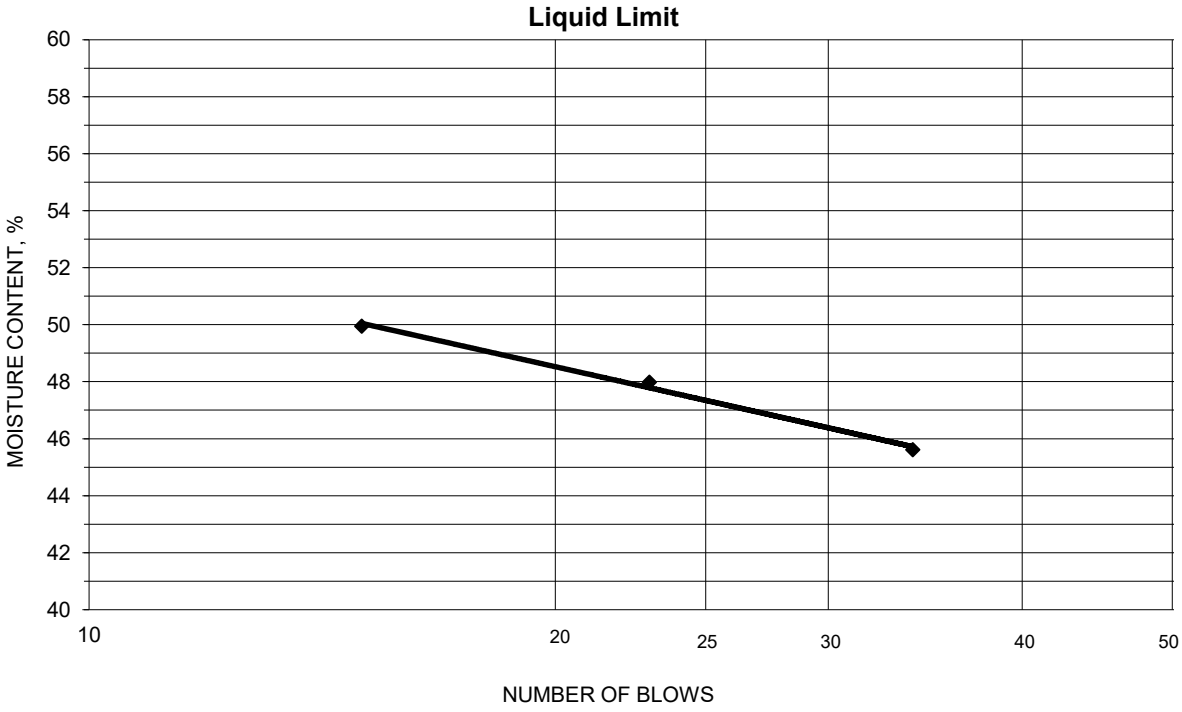
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.45, 3.0'-4.5'			Lab ID	498
				% + No. 40	17
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.72	21.83	11.11	34	45.6	
27.57	22.22	11.07	23	48.0	
26.86	21.59	11.04	15	50.0	47



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.92	15.84	10.68	20.9	21	26
17.98	16.76	11.02	21.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 7.5'-9.0'	Lab ID	501
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	88.9
No. 4	4.75	70.8
No. 10	2	52.9
No. 40	0.425	27.8
No. 200	0.075	15.3
	0.02	9.2
	0.005	4.4
	0.002	2.8
estimated	0.001	1.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	29.2	47.1
Coarse Sand	17.9	25.1
Medium Sand	25.1	---
Fine Sand	12.5	12.5
Silt	10.9	12.5
Clay	4.4	2.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SM

Group Name: Silty sand with gravel

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 7.5'-9.0'	Lab ID	501

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-23-2021
Date Received	02-19-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	88.9
No. 4	70.8
No. 10	52.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

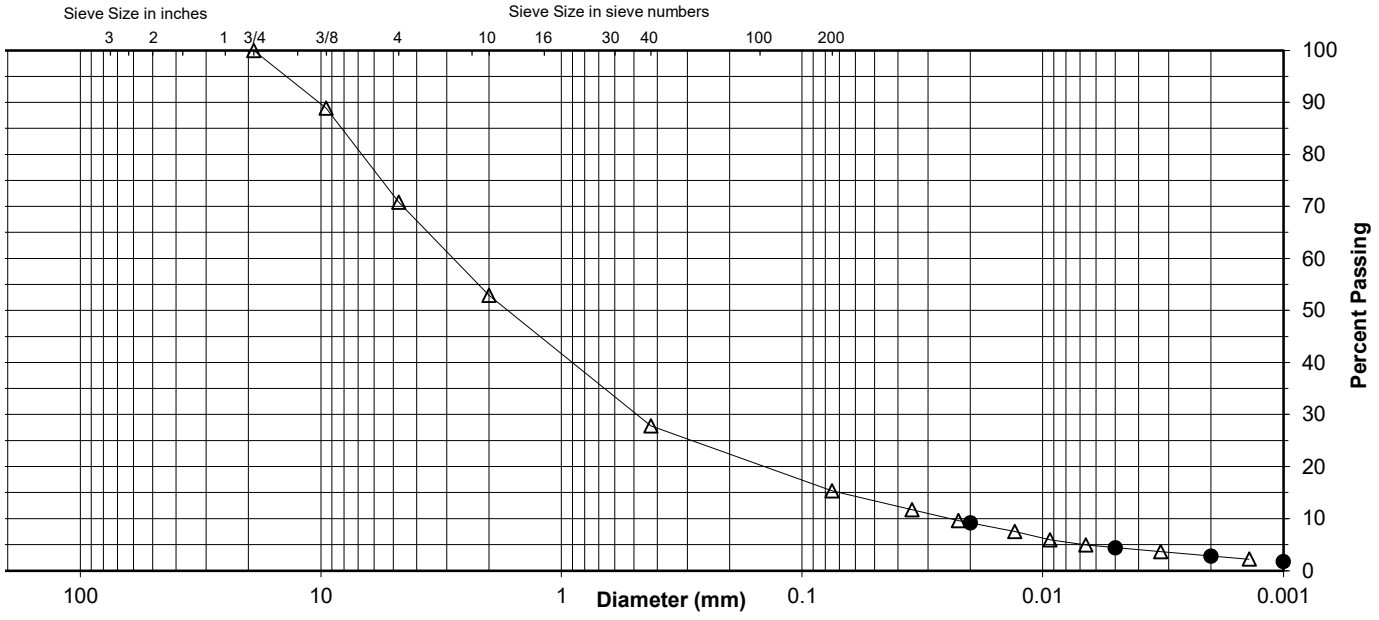
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	27.8
No. 200	15.3
0.02 mm	9.2
0.005 mm	4.4
0.002 mm	2.8
0.001 mm	1.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	29.2	17.9	25.1	12.5	10.9	4.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	47.1			25.1	12.5	12.5	2.8



Comments

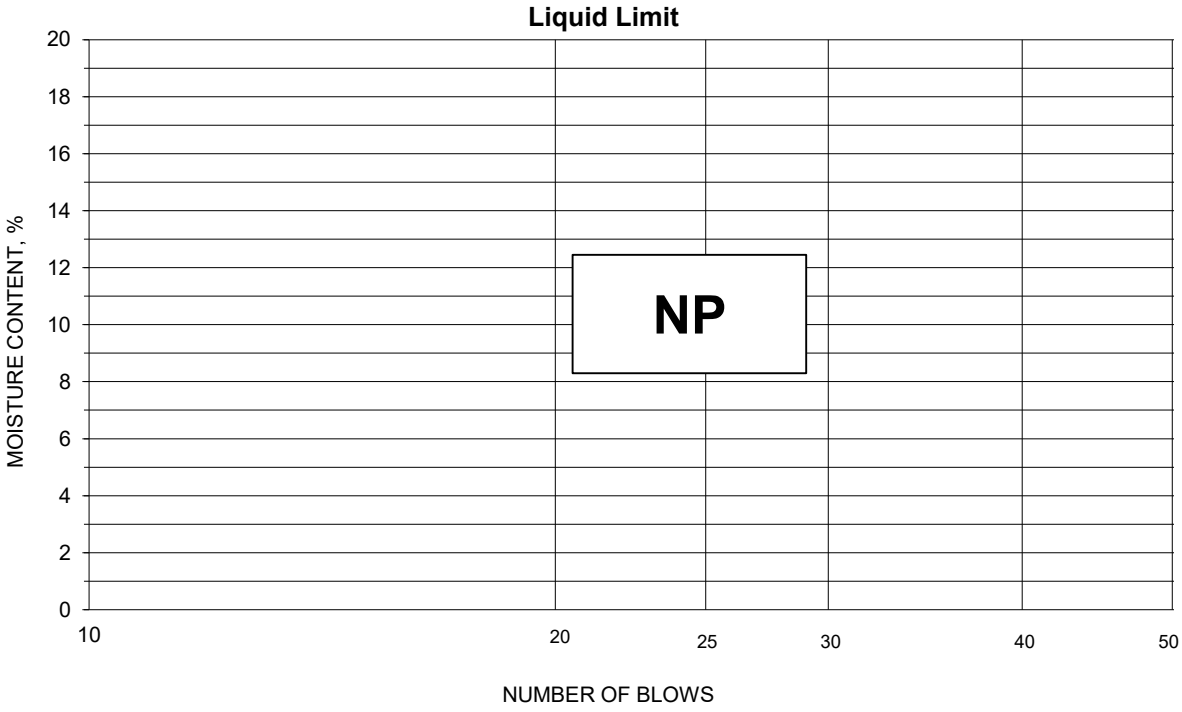
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.45, 7.5'-9.0'			Lab ID	501
				% + No. 40	72
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 12.5'-14.0'	Lab ID	503
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	97.4
No. 40	0.425	97.1
No. 200	0.075	95.7
	0.02	81.4
	0.005	57.0
	0.002	39.1
estimated	0.001	26.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	2.6
Coarse Sand	2.6	0.3
Medium Sand	0.3	---
Fine Sand	1.4	1.4
Silt	38.7	56.6
Clay	57.0	39.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	20
Plasticity Index:	15
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay

AASHTO Classification: A-6 (15)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45, 12.5'-14.0'	Lab ID	503

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	97.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

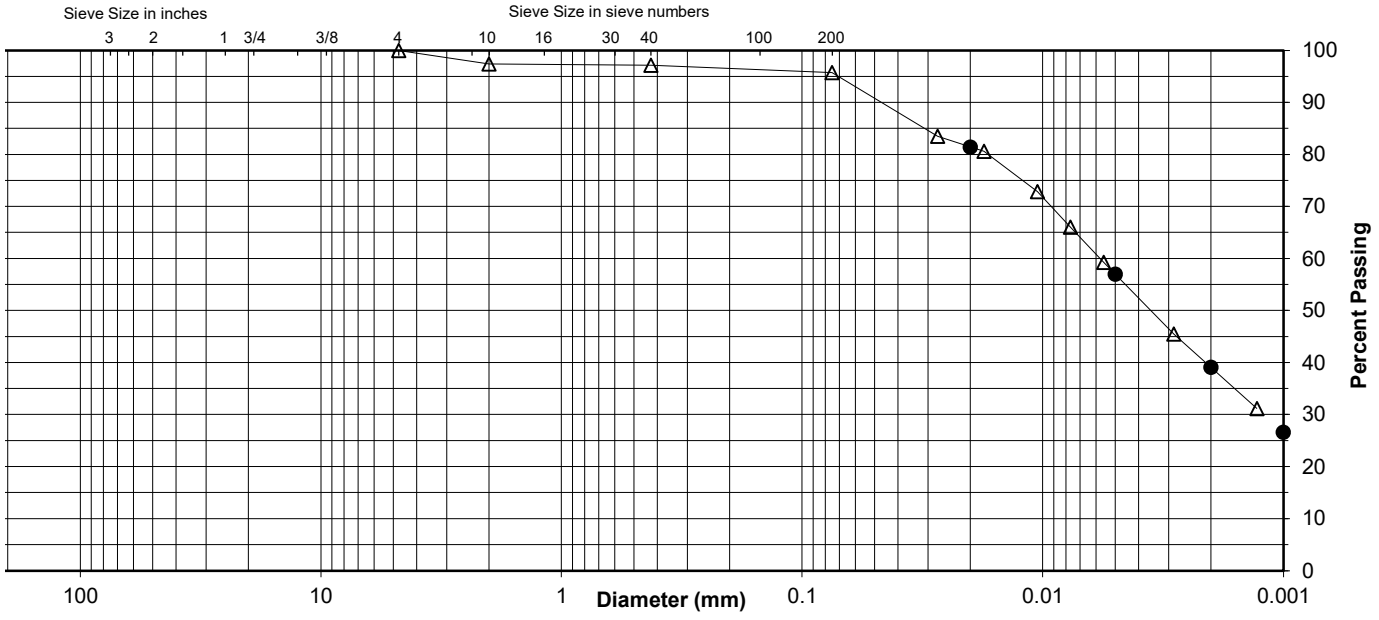
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	97.1
No. 200	95.7
0.02 mm	81.4
0.005 mm	57.0
0.002 mm	39.1
0.001 mm	26.6

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.0	2.6	0.3	1.4	38.7	57.0

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	2.6	0.3	1.4	56.6	39.1



Comments

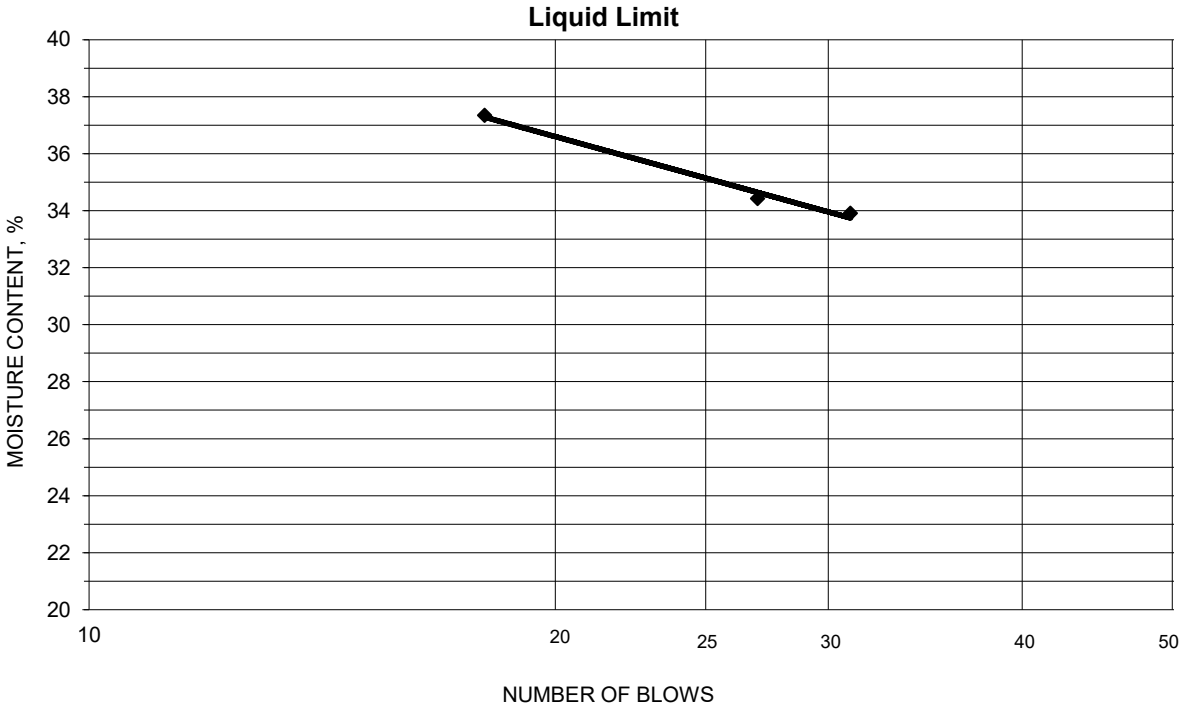
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.45, 12.5'-14.0'			Lab ID	503
				% + No. 40	3
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.81	23.48	10.71	31	33.9	
29.03	24.40	10.95	27	34.4	
28.37	23.65	11.01	18	37.3	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.82	16.72	11.07	19.5	20	15
16.58	15.61	10.65	19.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45a, 4.0'-6.0'	Lab ID	778
Sample Type	ST	Date Received	4-14-21
		Date Reported	5-12-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 24.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	99.2
No. 40	0.425	96.1
No. 200	0.075	85.4
	0.02	64.8
	0.005	46.9
	0.002	35.5
estimated	0.001	28.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	0.8
Coarse Sand	0.4	3.1
Medium Sand	3.1	---
Fine Sand	10.7	10.7
Silt	38.5	49.9
Clay	46.9	35.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	52
Plastic Limit:	22
Plasticity Index:	30
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CH
Group Name:	Fat clay
AASHTO Classification:	A-7-6 (27)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.45a, 4.0'-6.0'	Lab ID	778

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	04-28-2021
Date Received	04-14-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	99.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

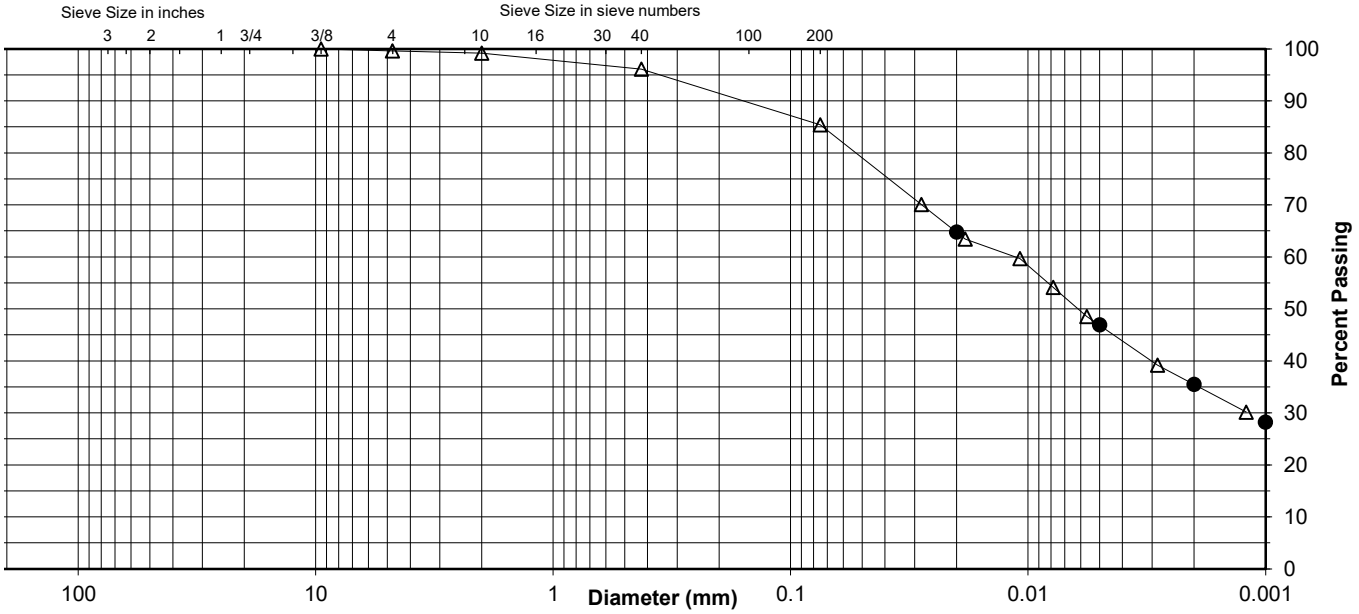
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	96.1
No. 200	85.4
0.02 mm	64.8
0.005 mm	46.9
0.002 mm	35.5
0.001 mm	28.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	0.4	3.1	10.7	38.5	46.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	0.8	3.1	10.7	49.9	35.5



Comments

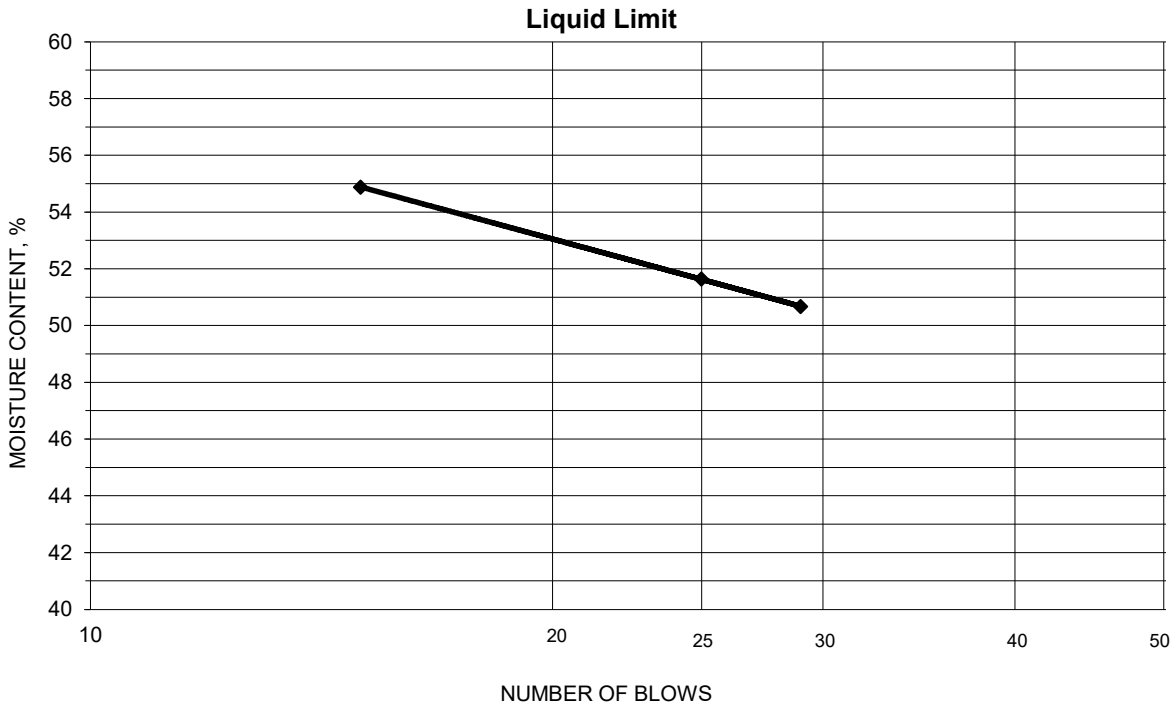
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.45a, 4.0'-6.0'			Lab ID	778
				% + No. 40	4
Tested By	KWS	Test Method	ASTM D 4318 Method A	Date Received	04-14-2021
Test Date	05-04-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.49	14.60	10.87	29	50.7	
17.40	15.20	10.94	25	51.6	
17.29	15.21	11.42	15	54.9	52



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.97	16.84	11.68	21.9	22	30
18.03	16.89	11.53	21.3		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.47, 3.0'-4.5'	Lab ID	518
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.0
No. 40	0.425	97.5
No. 200	0.075	67.4
	0.02	50.5
	0.005	34.2
	0.002	26.7
estimated	0.001	22.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	1.0
Coarse Sand	1.0	1.5
Medium Sand	1.5	---
Fine Sand	30.1	30.1
Silt	33.2	40.7
Clay	34.2	26.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	36
Plastic Limit:	17
Plasticity Index:	19
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (10)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.47, 3.0'-4.5'	Lab ID	518

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

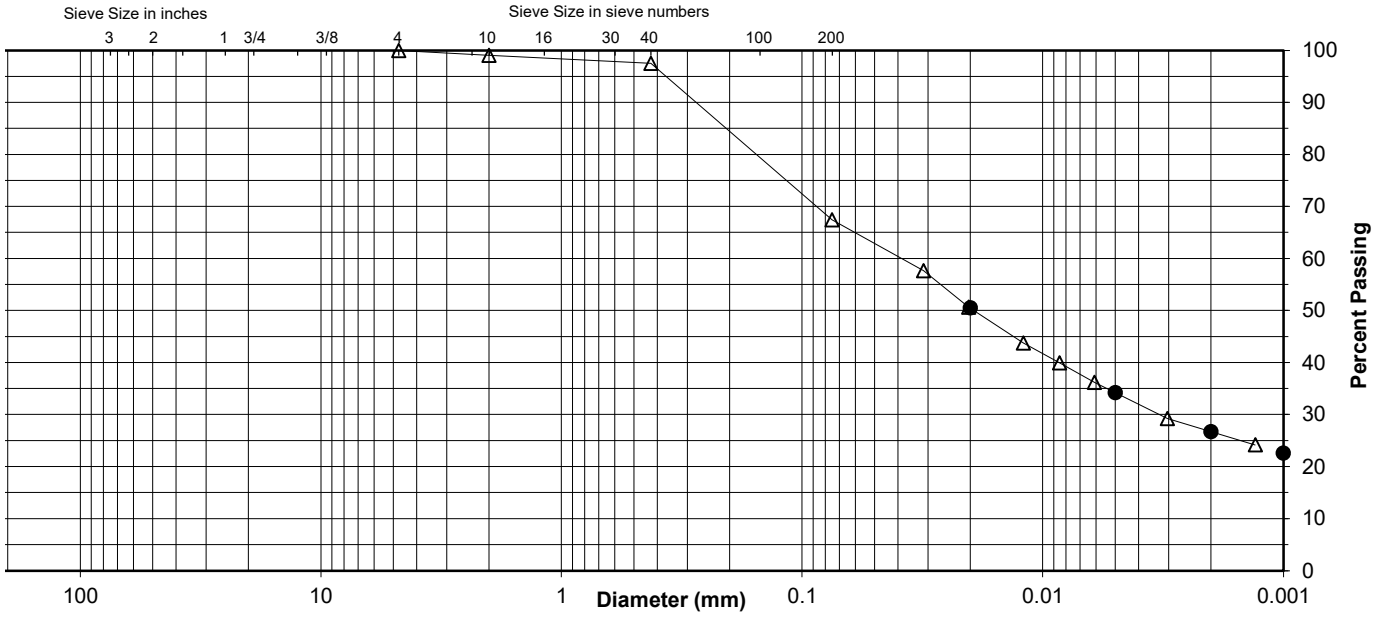
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	97.5
No. 200	67.4
0.02 mm	50.5
0.005 mm	34.2
0.002 mm	26.7
0.001 mm	22.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	1.0	1.5	30.1	33.2	34.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.0			1.5	30.1	40.7	26.7



Comments

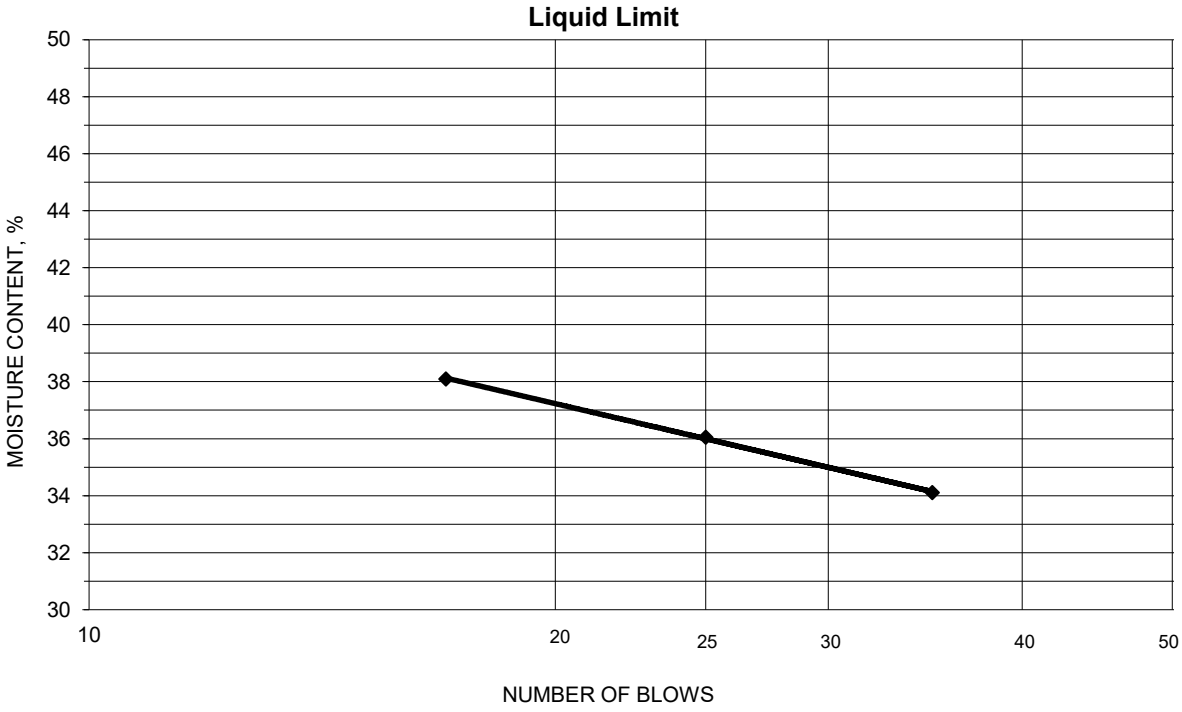
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.47, 3.0'-4.5'			Lab ID	518
				% + No. 40	2
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.62	23.39	10.99	35	34.1	
25.83	21.90	11.00	25	36.1	
24.36	20.55	10.55	17	38.1	36



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.48	16.55	11.04	16.9	17	19
17.43	16.45	10.58	16.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.47, 10.0'-11.5'	Lab ID	522
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.5
No. 10	2	98.6
No. 40	0.425	91.2
No. 200	0.075	21.8
	0.02	15.1
	0.005	10.9
	0.002	7.4
estimated	0.001	5.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.5	1.4
Coarse Sand	0.9	7.4
Medium Sand	7.4	---
Fine Sand	69.4	69.4
Silt	10.9	14.4
Clay	10.9	7.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.47, 10.0'-11.5'	Lab ID	522

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.5
No. 10	98.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

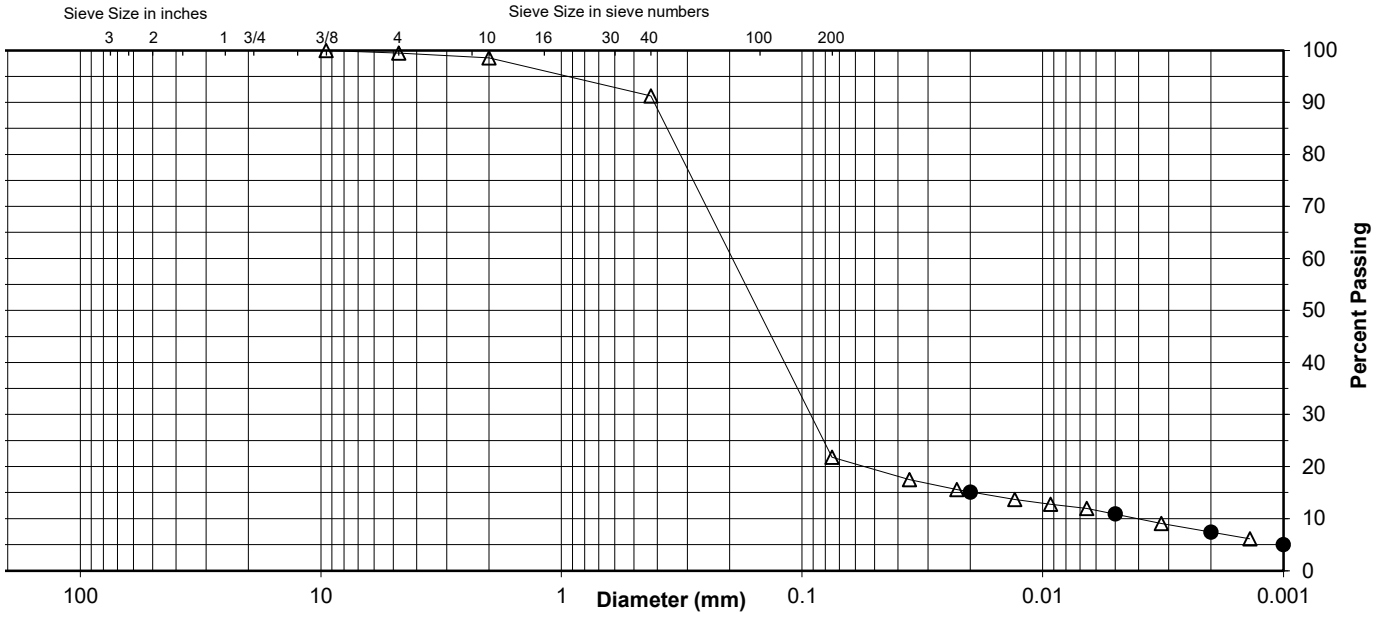
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	91.2
No. 200	21.8
0.02 mm	15.1
0.005 mm	10.9
0.002 mm	7.4
0.001 mm	5.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.5	0.9	7.4	69.4	10.9	10.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	1.4	7.4	69.4	14.4	7.4



Comments

Reviewed By REL

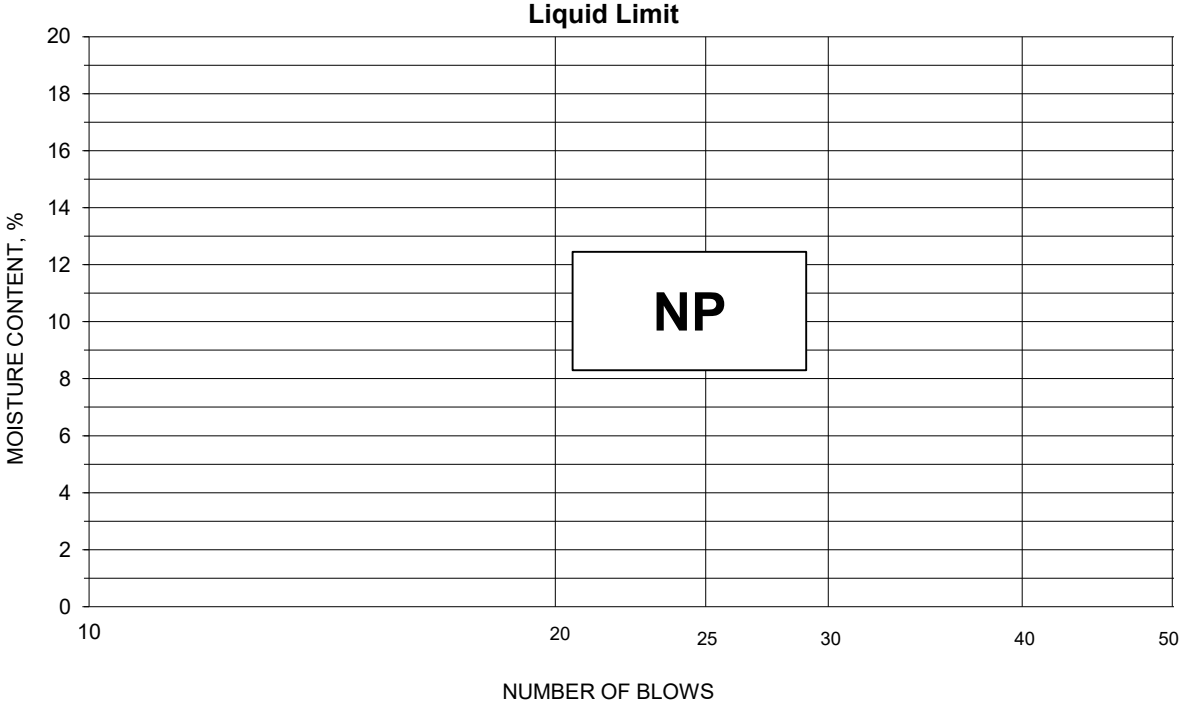
Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.47, 10.0'-11.5'			Lab ID	522
				% + No. 40	9
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit

Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.48, 12.5'-14.0'	Lab ID	699
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.0
No. 4	4.75	97.4
No. 10	2	94.8
No. 40	0.425	62.3
No. 200	0.075	24.3
	0.02	16.2
	0.005	10.0
	0.002	7.0
estimated	0.001	4.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.6	5.2
Coarse Sand	2.6	32.5
Medium Sand	32.5	---
Fine Sand	38.0	38.0
Silt	14.3	17.3
Clay	10.0	7.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.48, 12.5'-14.0'	Lab ID	699

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	03-17-2021
Date Received	03-15-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.0
No. 4	97.4
No. 10	94.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

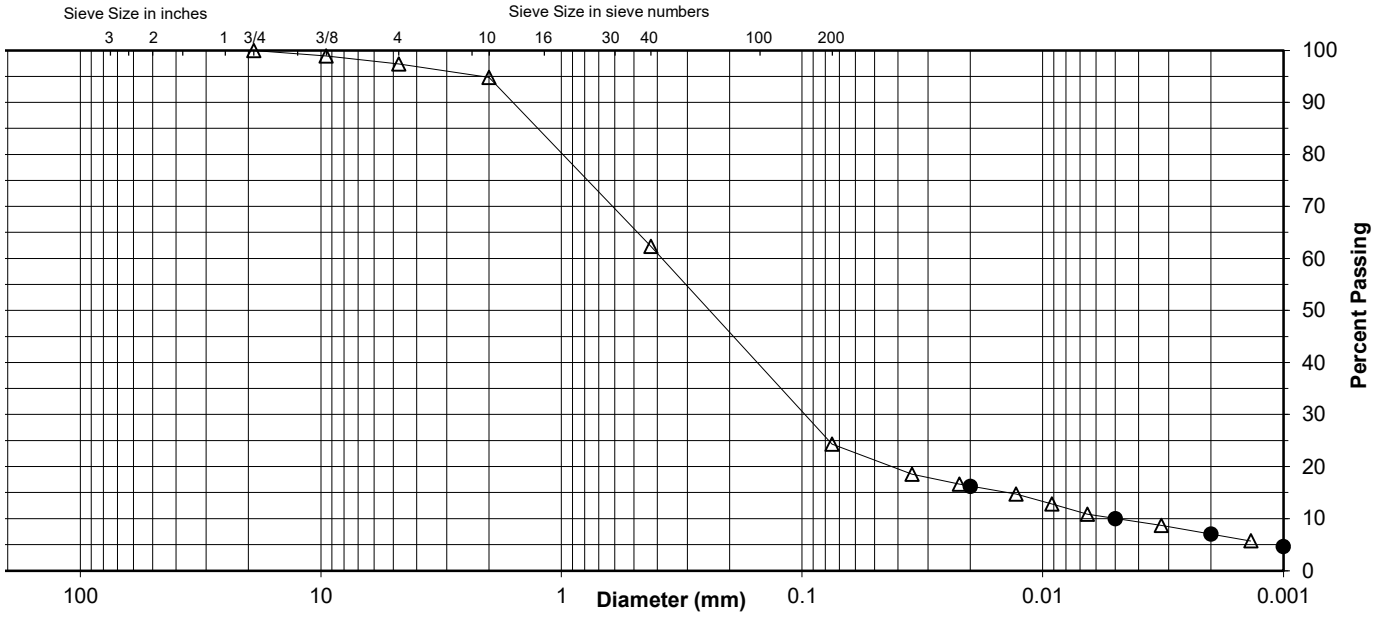
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	62.3
No. 200	24.3
0.02 mm	16.2
0.005 mm	10.0
0.002 mm	7.0
0.001 mm	4.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.6	2.6	32.5	38.0	14.3	10.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.2			32.5	38.0	17.3	7.0



Comments

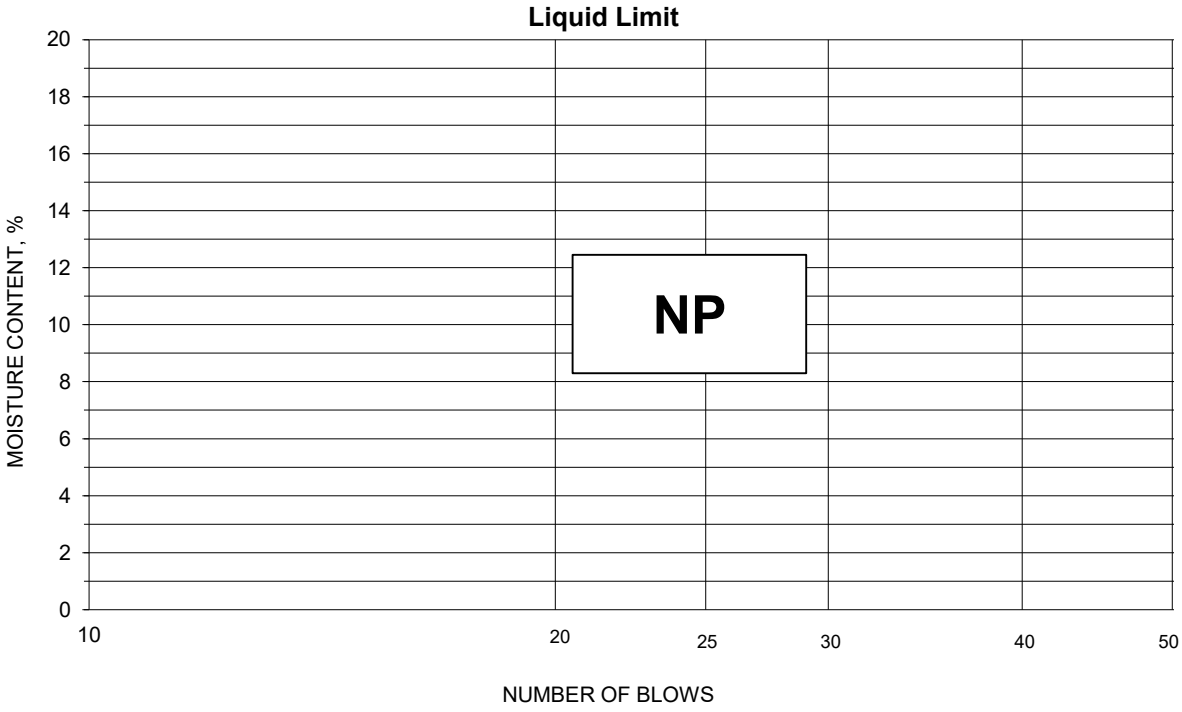
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.48, 12.5'-14.0'			Lab ID	699
				% + No. 40	38
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-19-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.48a, 2.0'-4.0'	Lab ID	783
Sample Type	ST	Date Received	4-14-21
		Date Reported	5-18-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	100.0
No. 40	0.425	99.8
No. 200	0.075	79.8
	0.02	50.3
	0.005	29.1
	0.002	18.7
estimated	0.001	11.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	0.2
Medium Sand	0.2	---
Fine Sand	20.0	20.0
Silt	50.7	61.1
Clay	29.1	18.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	17
Plasticity Index:	15
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-6 (10)

Comments:

Reviewed By RJ

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.48a, 2.0'-4.0'	Lab ID	783

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	05-12-2021
Date Received	04-14-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

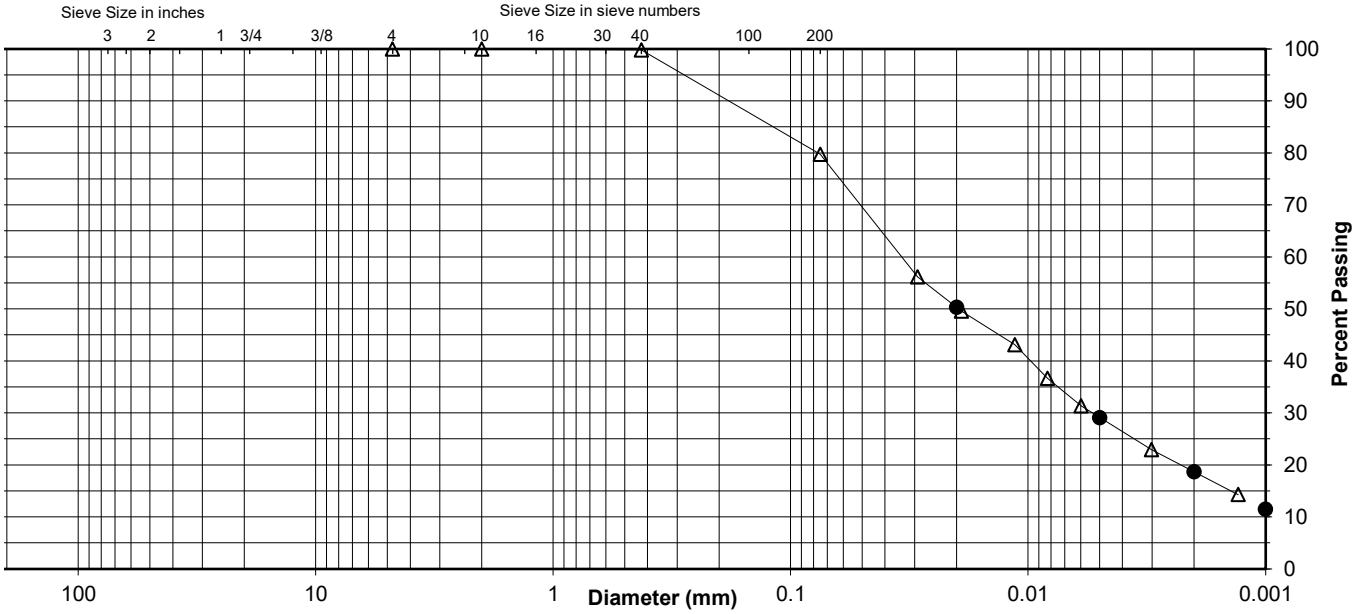
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	99.8
No. 200	79.8
0.02 mm	50.3
0.005 mm	29.1
0.002 mm	18.7
0.001 mm	11.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	0.2	20.0	50.7	29.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.0			0.2	20.0	61.1	18.7



Comments

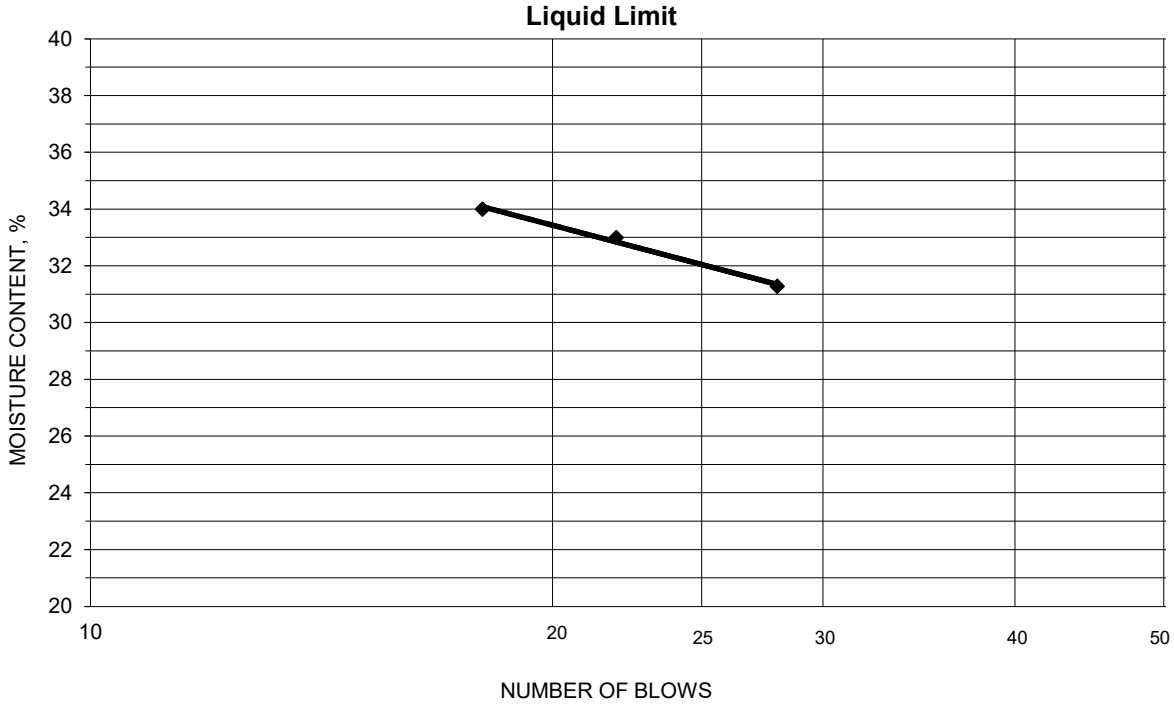
Reviewed By RJ

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.48a, 2.0'-4.0'			Lab ID	783
				% + No. 40	0
Tested By	DB	Test Method	ASTM D 4318 Method A	Date Received	04-14-2021
Test Date	05-13-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
21.14	18.58	11.05	18	34.0	
21.02	18.64	11.03	28	31.3	
21.37	18.76	10.85	22	33.0	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.93	17.77	11.11	17.4	17	15
17.96	16.91	10.79	17.2		

Remarks:

Reviewed By RJ

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.50, 4.5'-6.0'	Lab ID	529
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.3
No. 10	2	95.6
No. 40	0.425	76.1
No. 200	0.075	26.5
	0.02	18.8
	0.005	12.5
	0.002	8.6
estimated	0.001	5.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.7	4.4
Coarse Sand	3.7	19.5
Medium Sand	19.5	---
Fine Sand	49.6	49.6
Silt	14.0	17.9
Clay	12.5	8.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.50, 4.5'-6.0'
Project Number: 173409690
Lab ID: 529

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MT
Test Date: 02-22-2021
Date Received: 02-19-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.3
No. 10	95.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

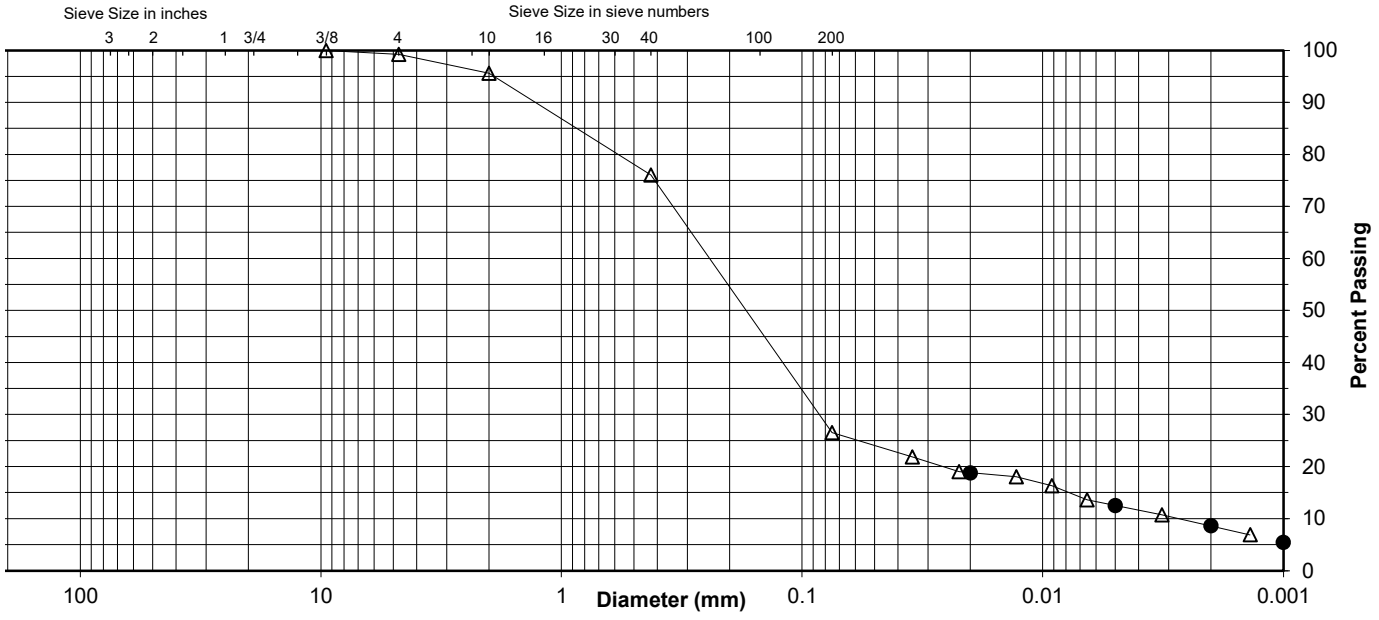
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	76.1
No. 200	26.5
0.02 mm	18.8
0.005 mm	12.5
0.002 mm	8.6
0.001 mm	5.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.7	3.7	19.5	49.6	14.0	12.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	4.4			19.5	49.6	17.9	8.6



Comments:

Reviewed By: REL

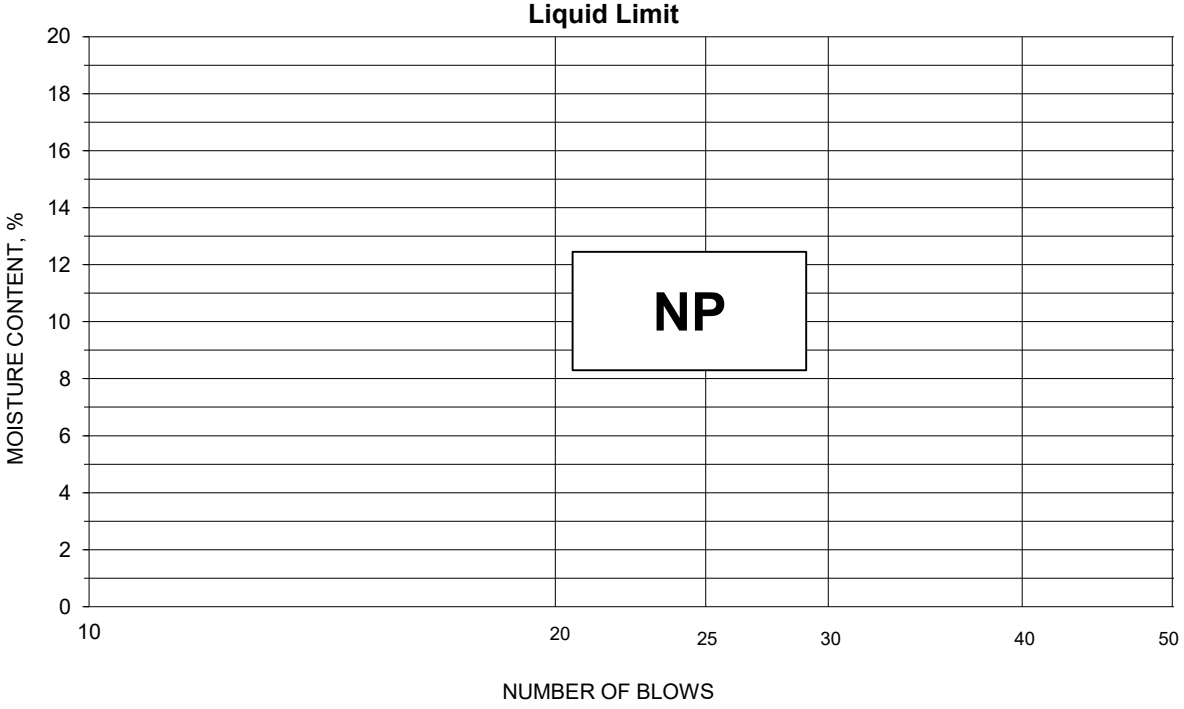
Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.50, 4.5'-6.0'			Lab ID	529
				% + No. 40	24
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit

Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.50, 7.5'-9.0'	Lab ID	531
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.3
No. 4	4.75	96.1
No. 10	2	92.6
No. 40	0.425	37.4
No. 200	0.075	10.1
	0.02	5.3
	0.005	2.8
	0.002	1.7
estimated	0.001	0.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.9	7.4
Coarse Sand	3.5	55.2
Medium Sand	55.2	---
Fine Sand	27.3	27.3
Silt	7.3	8.4
Clay	2.8	1.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SW-SM

Group Name: Well-graded sand with silt

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.50, 7.5'-9.0'	Lab ID	531

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-23-2021
Date Received	02-19-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.3
No. 4	96.1
No. 10	92.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

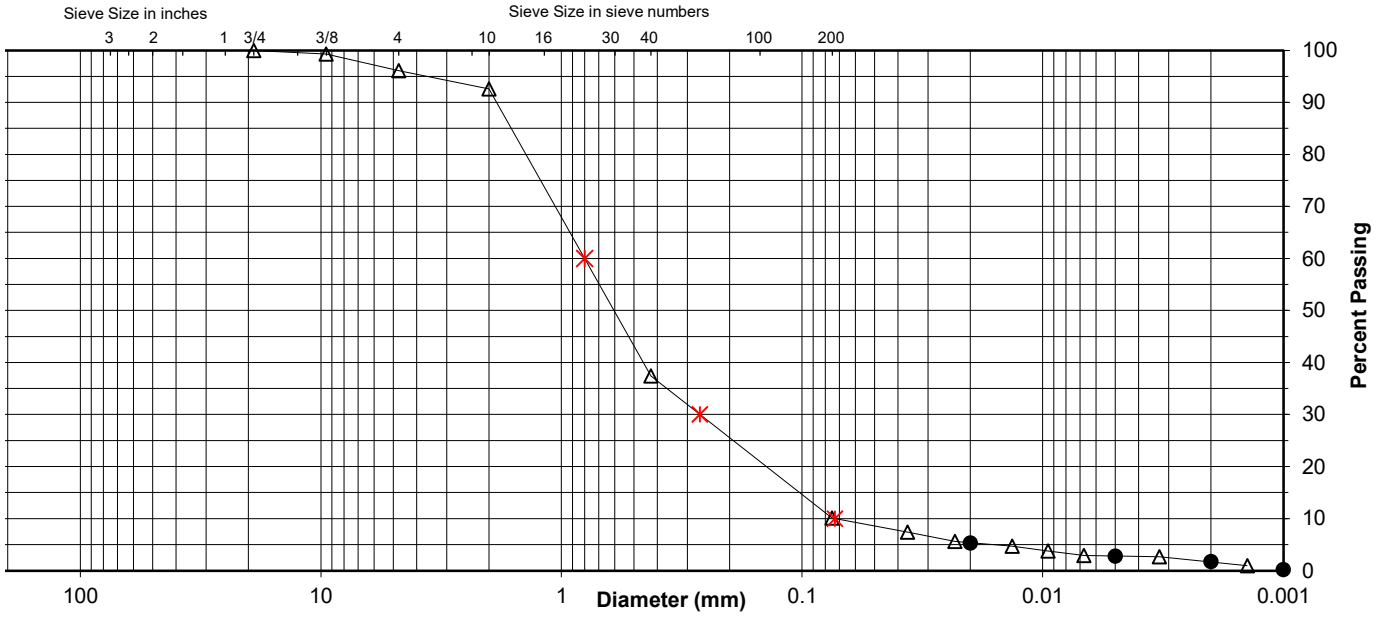
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	37.4
No. 200	10.1
0.02 mm	5.3
0.005 mm	2.8
0.002 mm	1.7
0.001 mm	0.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.9	3.5	55.2	27.3	7.3	2.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	7.4			55.2	27.3	8.4	1.7



Comments

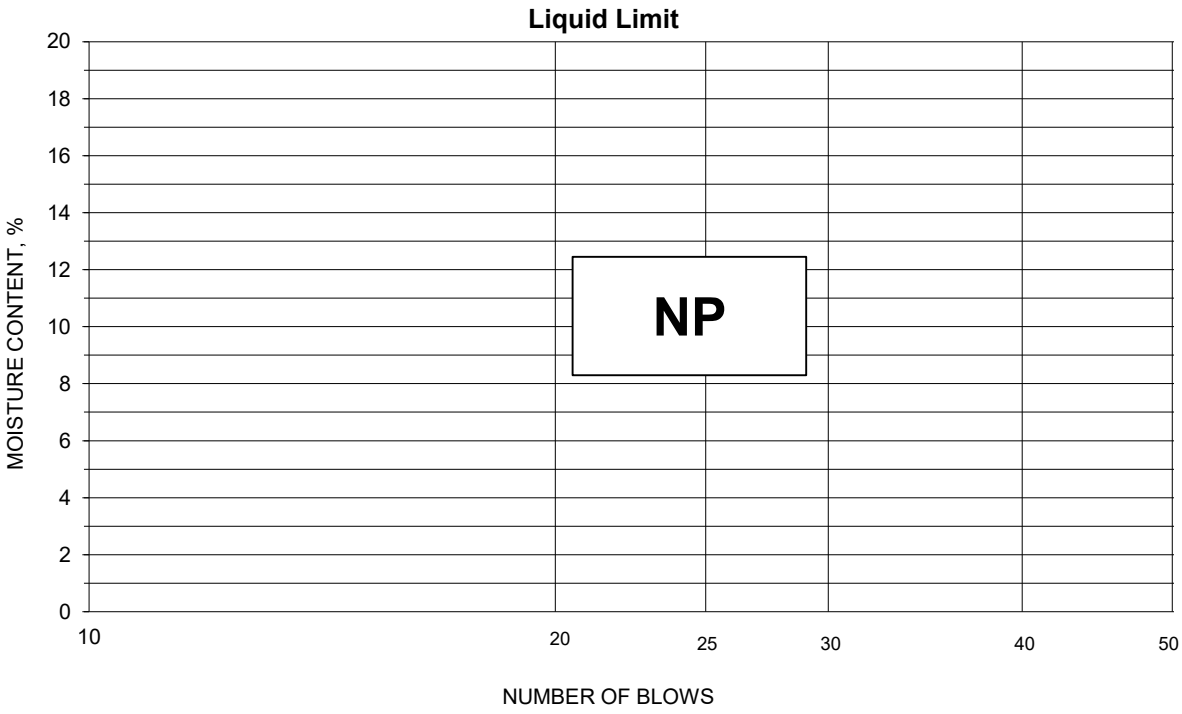
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.50, 7.5'-9.0'			Lab ID	531
				% + No. 40	63
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	03-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.51, 3.0'-4.5'	Lab ID	712
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	98.5
No. 40	0.425	85.0
No. 200	0.075	43.3
	0.02	28.7
	0.005	18.1
	0.002	13.9
estimated	0.001	10.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	1.5
Coarse Sand	1.1	13.5
Medium Sand	13.5	---
Fine Sand	41.7	41.7
Silt	25.2	29.4
Clay	18.1	13.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	16
Plasticity Index:	8
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.51, 3.0'-4.5'	Lab ID	712

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	03-16-2021
Date Received	03-15-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	98.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

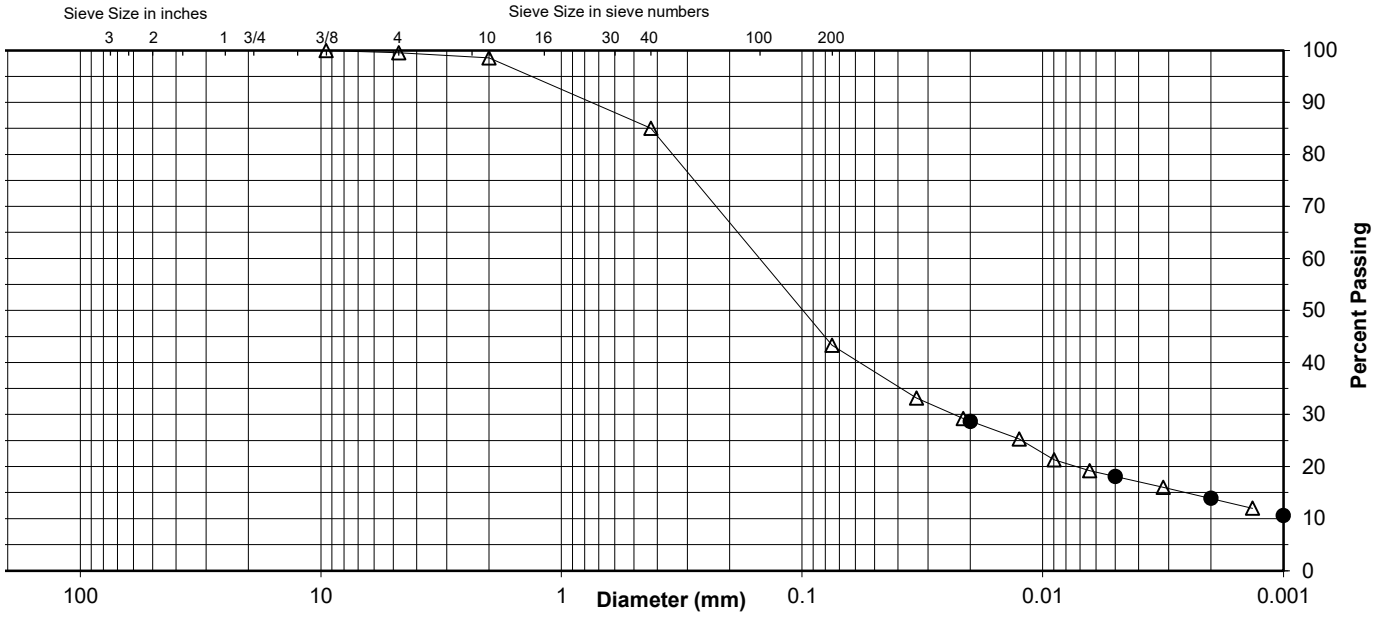
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	85.0
No. 200	43.3
0.02 mm	28.7
0.005 mm	18.1
0.002 mm	13.9
0.001 mm	10.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	1.1	13.5	41.7	25.2	18.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.5			13.5	41.7	29.4	13.9



Comments

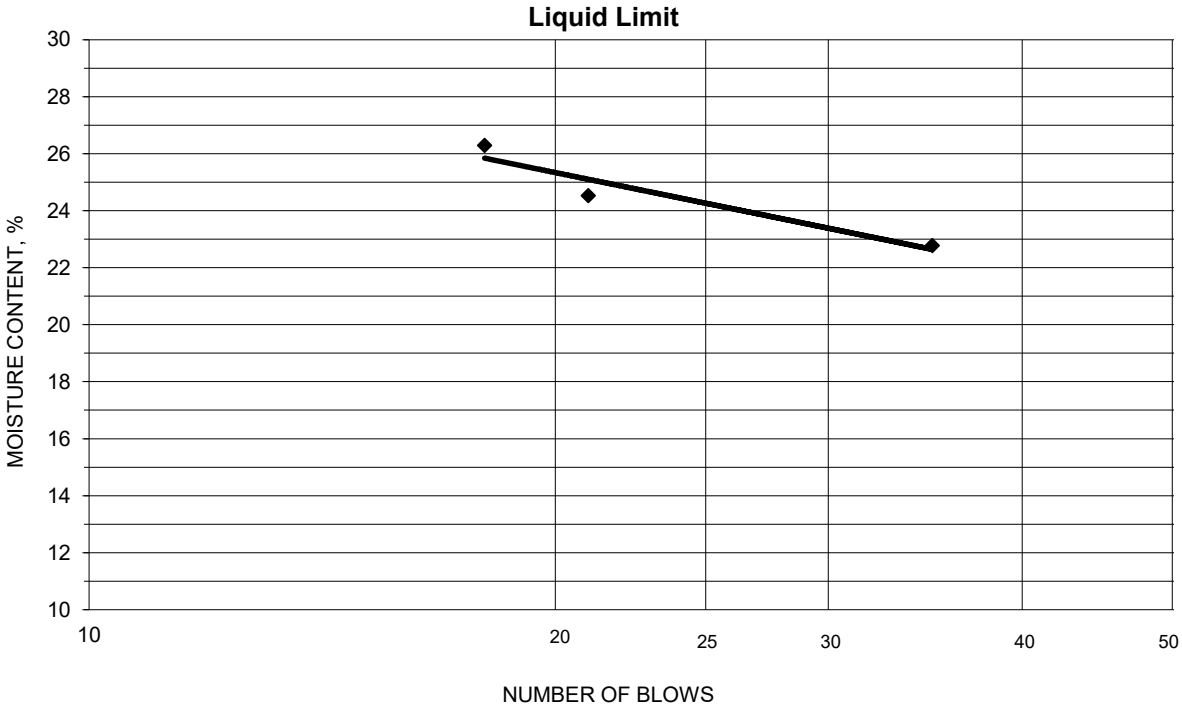
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.51, 3.0'-4.5'			Lab ID	712
				% + No. 40	15
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-17-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
32.12	28.15	10.72	35	22.8	
29.00	25.39	10.67	21	24.5	
27.52	24.10	11.09	18	26.3	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.79	16.84	11.11	16.6	16	8
17.35	16.49	11.07	15.9		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.51, 12.5'-14.0'	Lab ID	717
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.7
No. 4	4.75	91.6
No. 10	2	79.8
No. 40	0.425	42.1
No. 200	0.075	10.9
	0.02	8.1
	0.005	4.7
	0.002	3.6
estimated	0.001	2.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	8.4	20.2
Coarse Sand	11.8	37.7
Medium Sand	37.7	---
Fine Sand	31.2	31.2
Silt	6.2	7.3
Clay	4.7	3.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SW-SM

Group Name: Well-graded sand with silt

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.51, 12.5'-14.0'

Project Number: 173409690
Lab ID: 717

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MT
Test Date: 03-16-2021
Date Received: 03-15-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.7
No. 4	91.6
No. 10	79.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

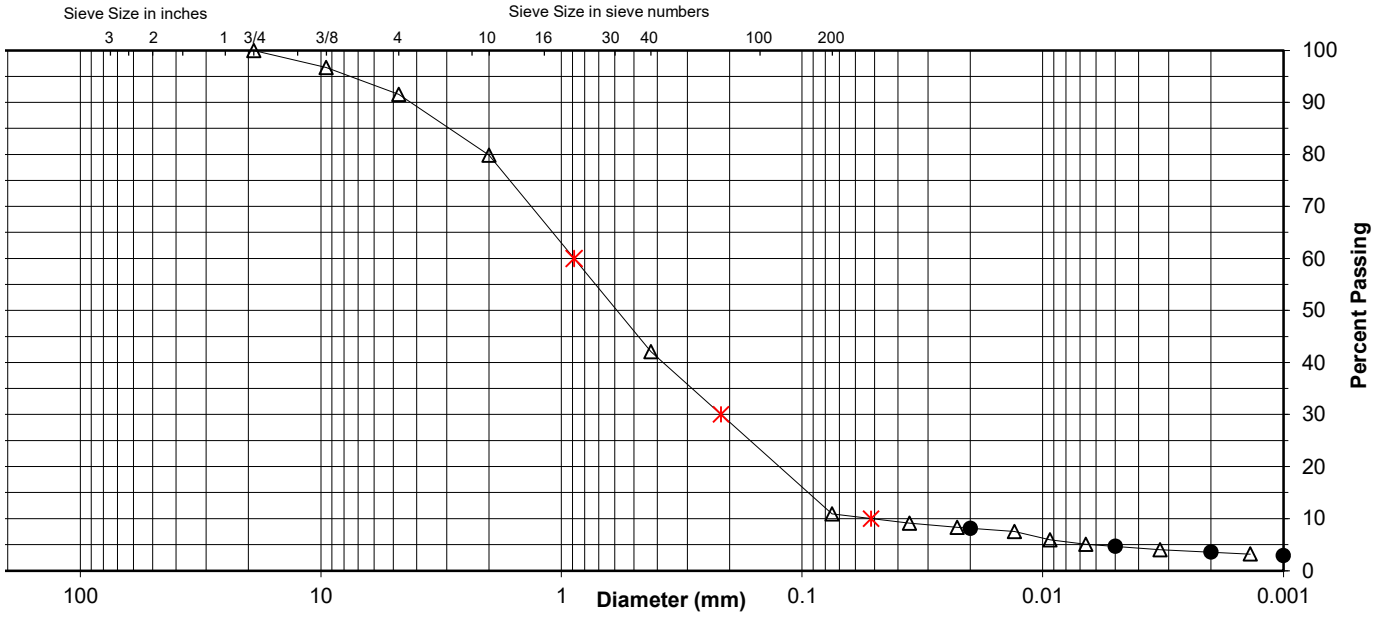
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	42.1
No. 200	10.9
0.02 mm	8.1
0.005 mm	4.7
0.002 mm	3.6
0.001 mm	2.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	8.4	11.8	37.7	31.2	6.2	4.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	20.2			37.7	31.2	7.3	3.6



Comments

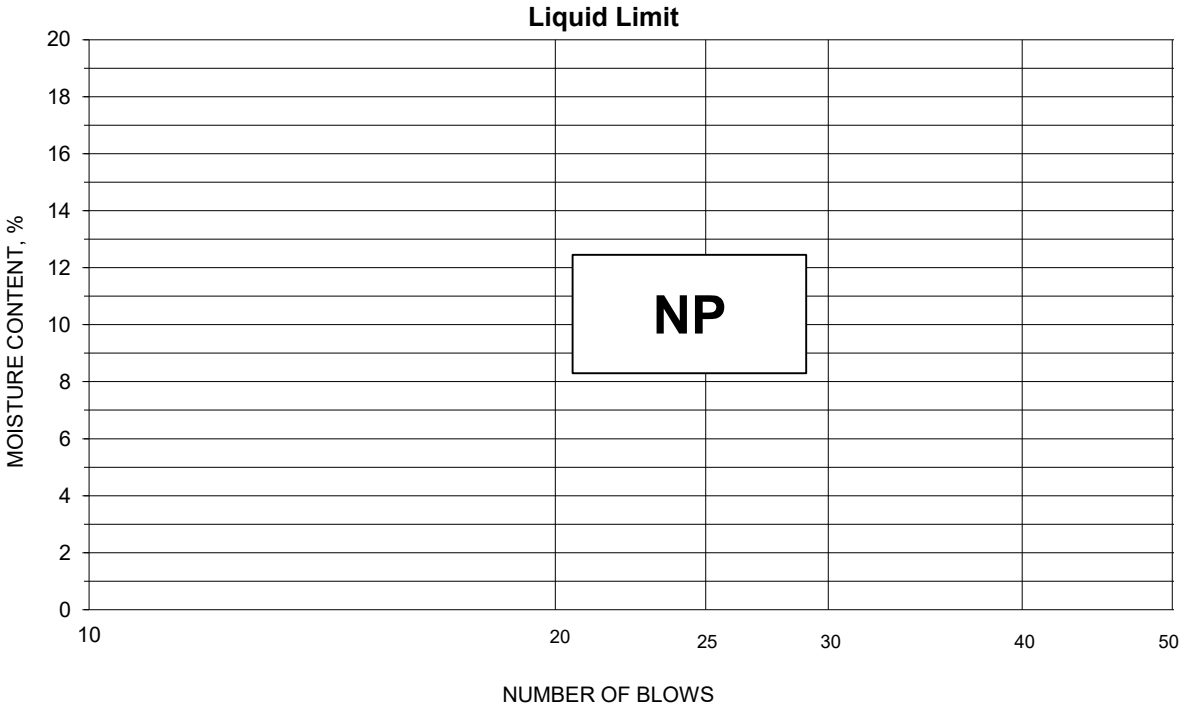
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.51, 12.5'-14.0'			Lab ID	717
				% + No. 40	58
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-17-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.51a, 2.0'-4.0'	Lab ID	792
Sample Type	ST	Date Received	4-14-21
		Date Reported	5-12-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 32.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.9
No. 10	2	99.8
No. 40	0.425	95.5
No. 200	0.075	57.4
	0.02	37.9
	0.005	25.1
	0.002	18.0
estimated	0.001	13.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.1	0.2
Coarse Sand	0.1	4.3
Medium Sand	4.3	---
Fine Sand	38.1	38.1
Silt	32.3	39.4
Clay	25.1	18.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	15
Plasticity Index:	14
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.51a, 2.0'-4.0'	Lab ID	792

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	04-28-2021
Date Received	04-14-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.9
No. 10	99.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

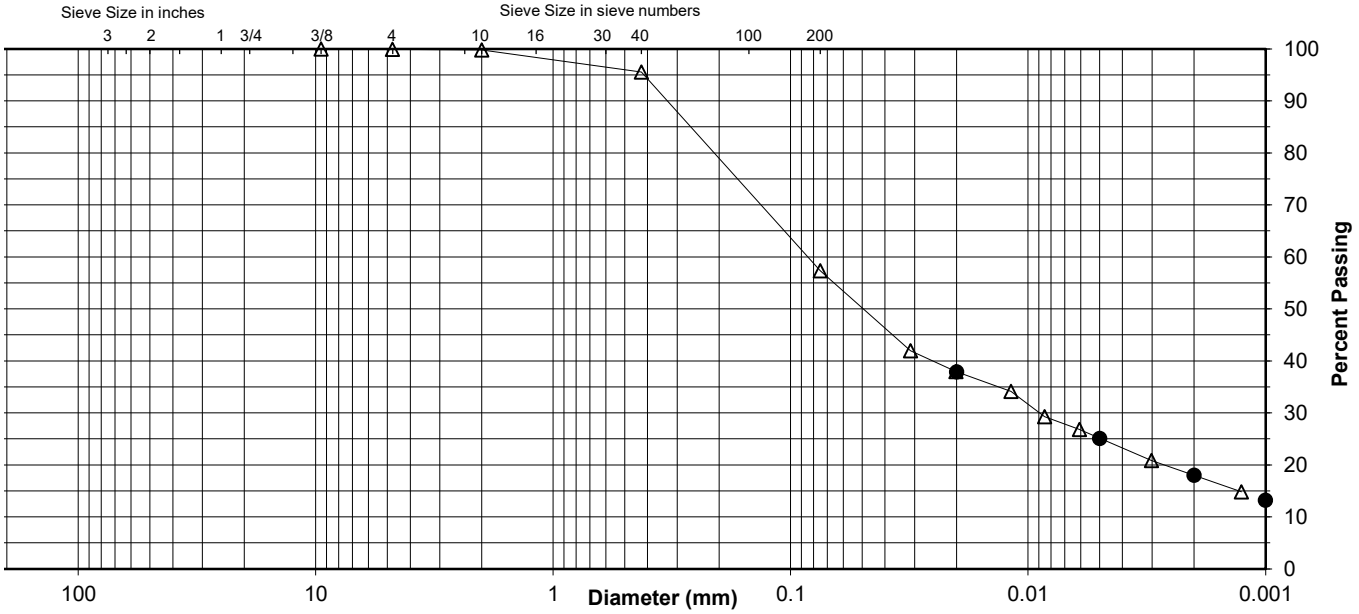
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.5
No. 200	57.4
0.02 mm	37.9
0.005 mm	25.1
0.002 mm	18.0
0.001 mm	13.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.1	0.1	4.3	38.1	32.3	25.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.2			4.3	38.1	39.4	18.0



Comments

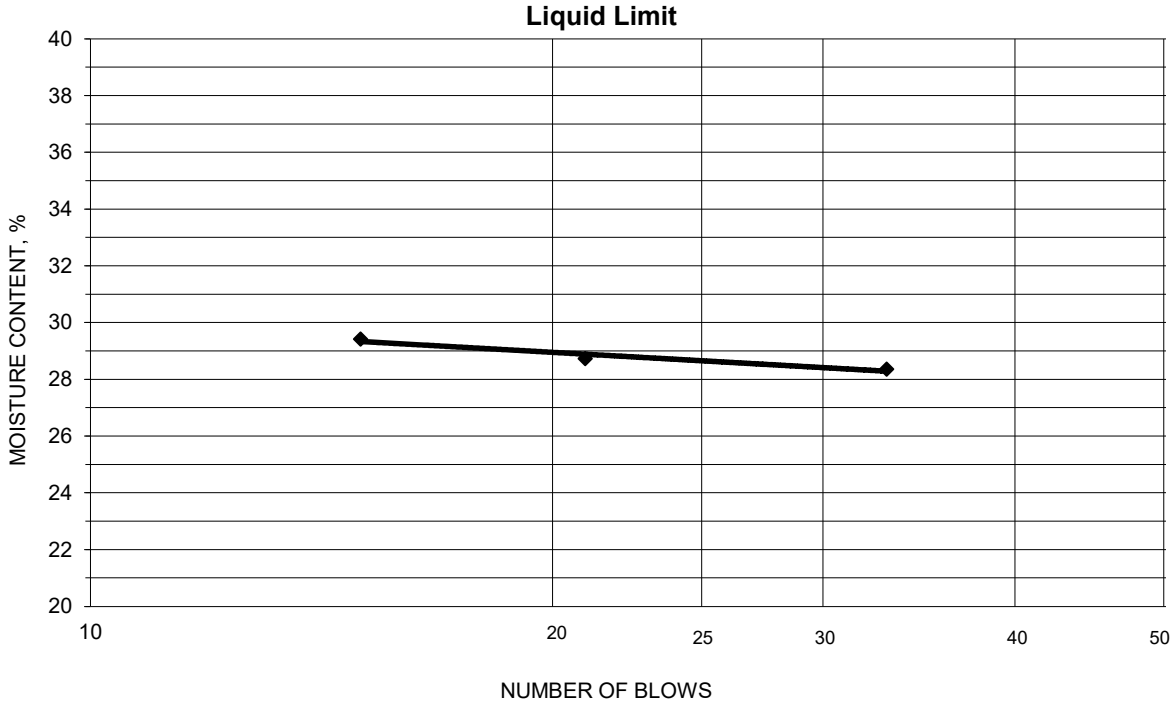
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.51a, 2.0'-4.0'			Lab ID	792
				% + No. 40	4
Tested By	KWS	Test Method	ASTM D 4318 Method A	Date Received	04-14-2021
Test Date	05-04-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.17	16.54	11.00	15	29.4	
18.36	16.80	11.37	21	28.7	
18.89	17.22	11.33	33	28.4	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.06	17.21	11.67	15.3	15	14
17.41	16.54	10.86	15.3		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.53, 6.0'-7.5'	Lab ID	731
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.8
No. 10	2	98.8
No. 40	0.425	84.0
No. 200	0.075	13.1
	0.02	7.1
	0.005	3.8
	0.002	2.4
estimated	0.001	1.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.2	1.2
Coarse Sand	1.0	14.8
Medium Sand	14.8	---
Fine Sand	70.9	70.9
Silt	9.3	10.7
Clay	3.8	2.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.53, 6.0'-7.5'	Lab ID	731

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	03-17-2021
Date Received	03-15-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.8
No. 10	98.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

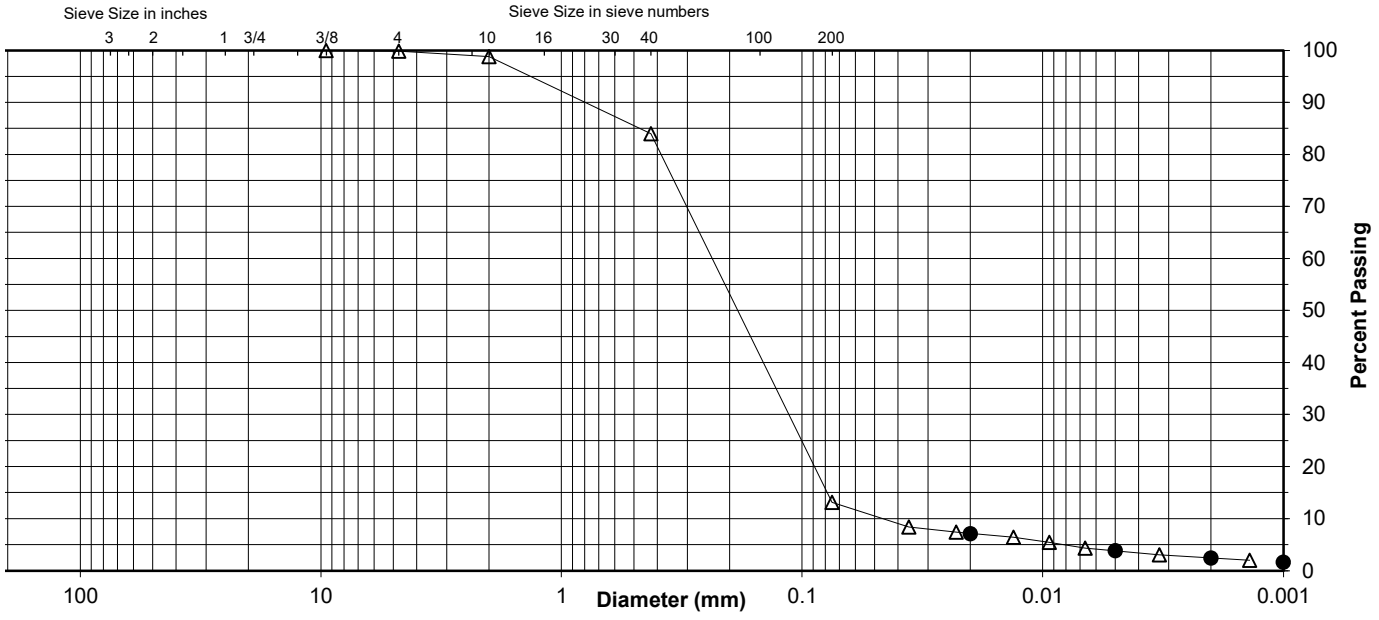
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.0
No. 200	13.1
0.02 mm	7.1
0.005 mm	3.8
0.002 mm	2.4
0.001 mm	1.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.2	1.0	14.8	70.9	9.3	3.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.2			14.8	70.9	10.7	2.4



Comments

Reviewed By REL

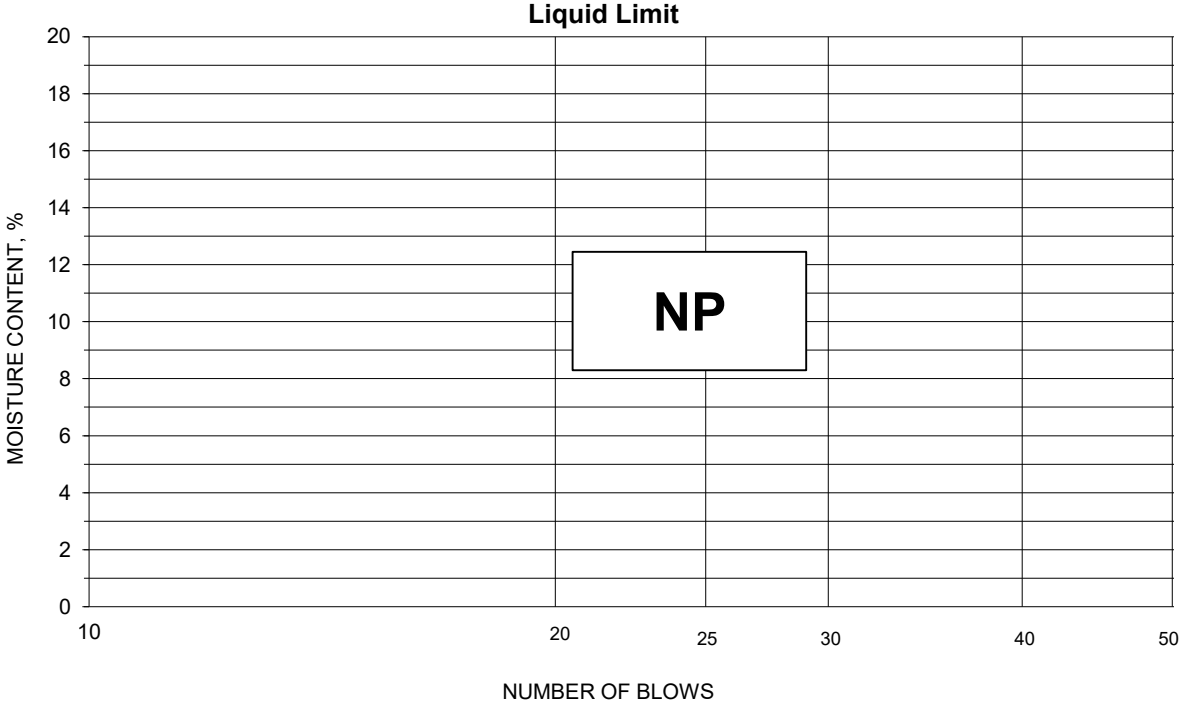
Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.53, 6.0'-7.5'			Lab ID	731
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-18-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit

Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.54, 3.0'-4.5'	Lab ID	737
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 26.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	100.0
No. 40	0.425	99.4
No. 200	0.075	88.5
	0.02	66.2
	0.005	42.6
	0.002	31.6
estimated	0.001	22.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	0.6
Medium Sand	0.6	---
Fine Sand	10.9	10.9
Silt	45.9	56.9
Clay	42.6	31.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	45
Plastic Limit:	22
Plasticity Index:	23
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay
AASHTO Classification:	A-7-6 (21)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.54, 3.0'-4.5'	Lab ID	737

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	03-17-2021
Date Received	03-15-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

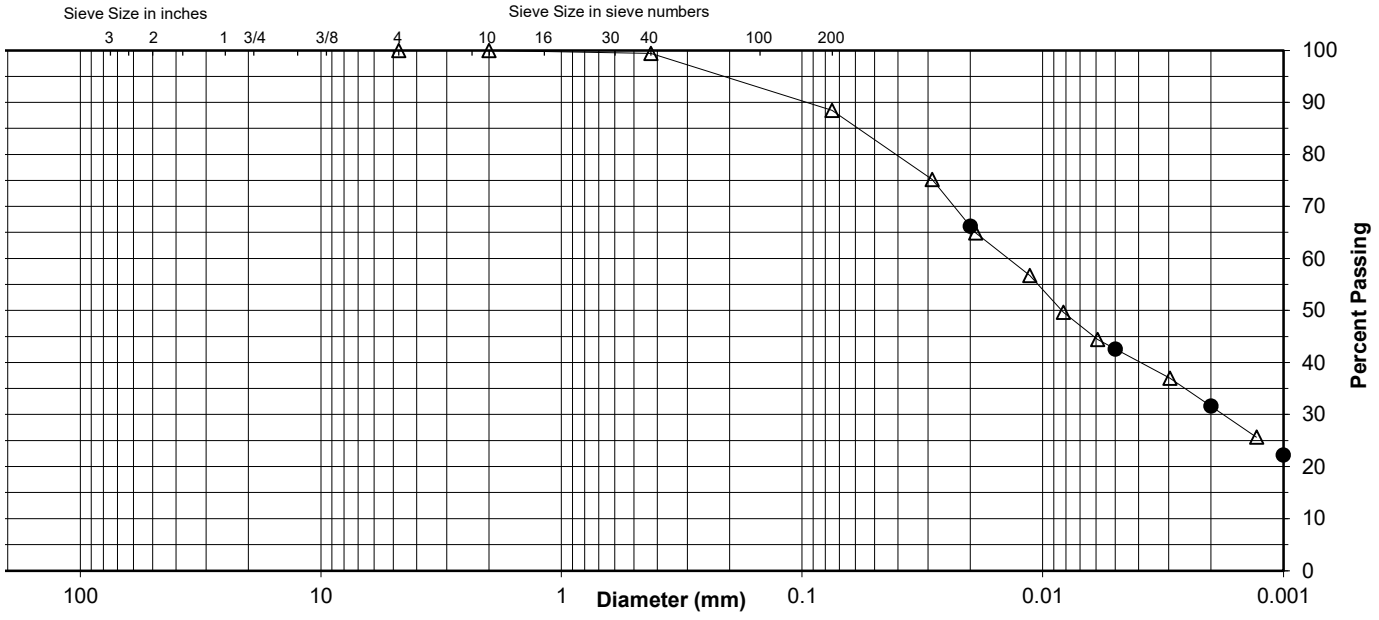
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	99.4
No. 200	88.5
0.02 mm	66.2
0.005 mm	42.6
0.002 mm	31.6
0.001 mm	22.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.0	0.0	0.6	10.9	45.9	42.6

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	0.0	0.6	10.9	56.9	31.6



Comments

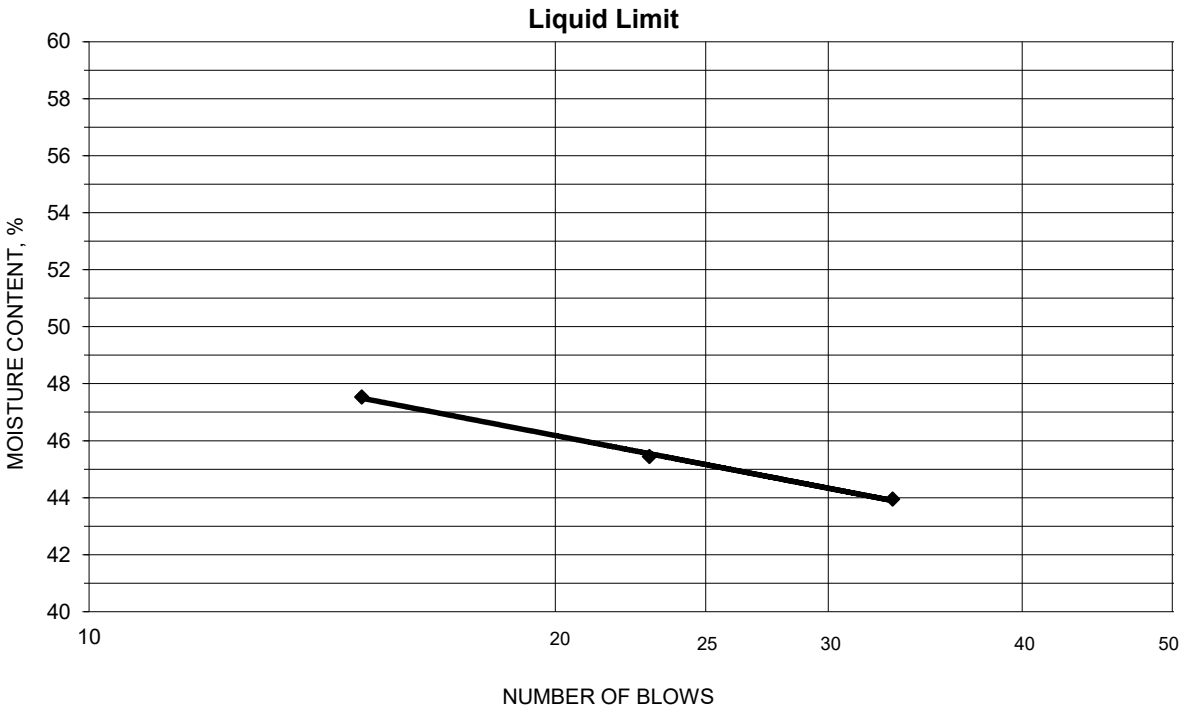
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.54, 3.0'-4.5'			Lab ID	737
				% + No. 40	1
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-19-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
28.49	23.15	11.00	33	44.0	
26.61	21.72	10.96	23	45.4	
27.27	21.87	10.51	15	47.5	45



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.37	16.22	11.06	22.3	22	23
17.76	16.48	10.58	21.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.54, 10.0'-11.5'	Lab ID	741
Sample Type	SPT	Date Received	3-15-21
		Date Reported	3-22-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.5
No. 4	4.75	98.6
No. 10	2	96.5
No. 40	0.425	83.9
No. 200	0.075	41.7
	0.02	22.2
	0.005	13.8
	0.002	9.5
estimated	0.001	6.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.4	3.5
Coarse Sand	2.1	12.6
Medium Sand	12.6	---
Fine Sand	42.2	42.2
Silt	27.9	32.2
Clay	13.8	9.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.54, 10.0'-11.5'

Project Number: 173409690
Lab ID: 741

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: MT
Test Date: 03-17-2021
Date Received: 03-15-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.5
No. 4	98.6
No. 10	96.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

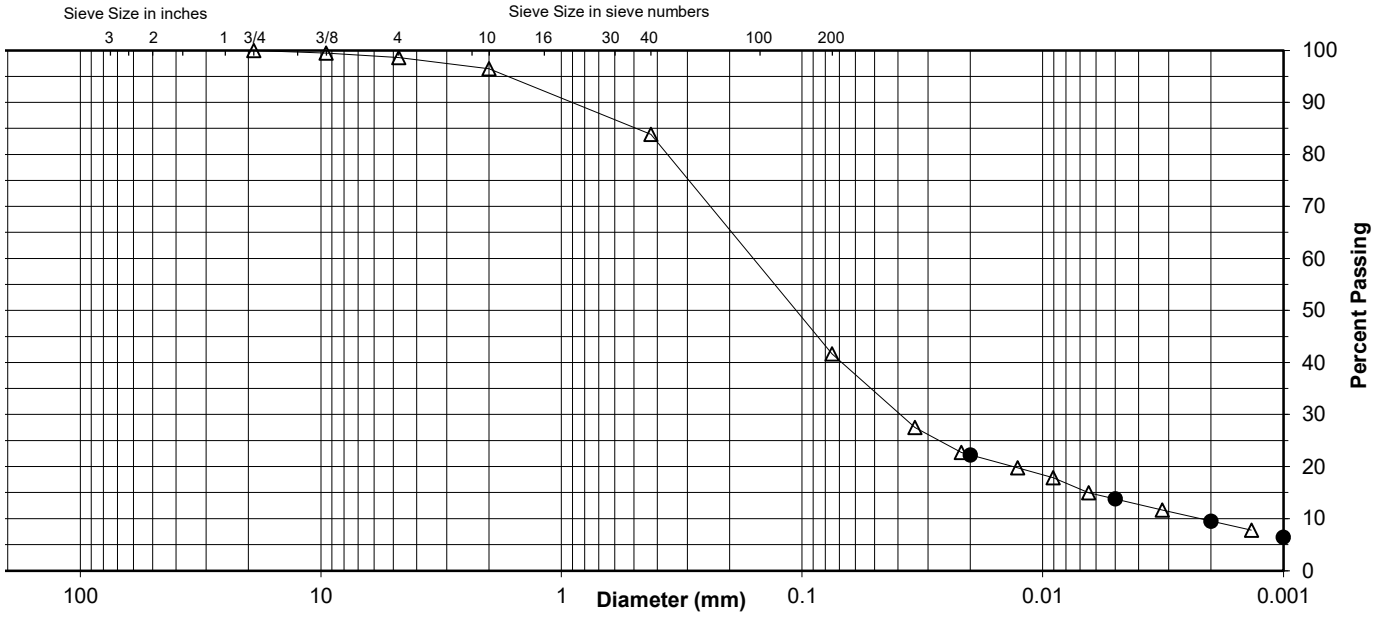
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.9
No. 200	41.7
0.02 mm	22.2
0.005 mm	13.8
0.002 mm	9.5
0.001 mm	6.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.4	2.1	12.6	42.2	27.9	13.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	3.5			12.6	42.2	32.2	9.5



Comments

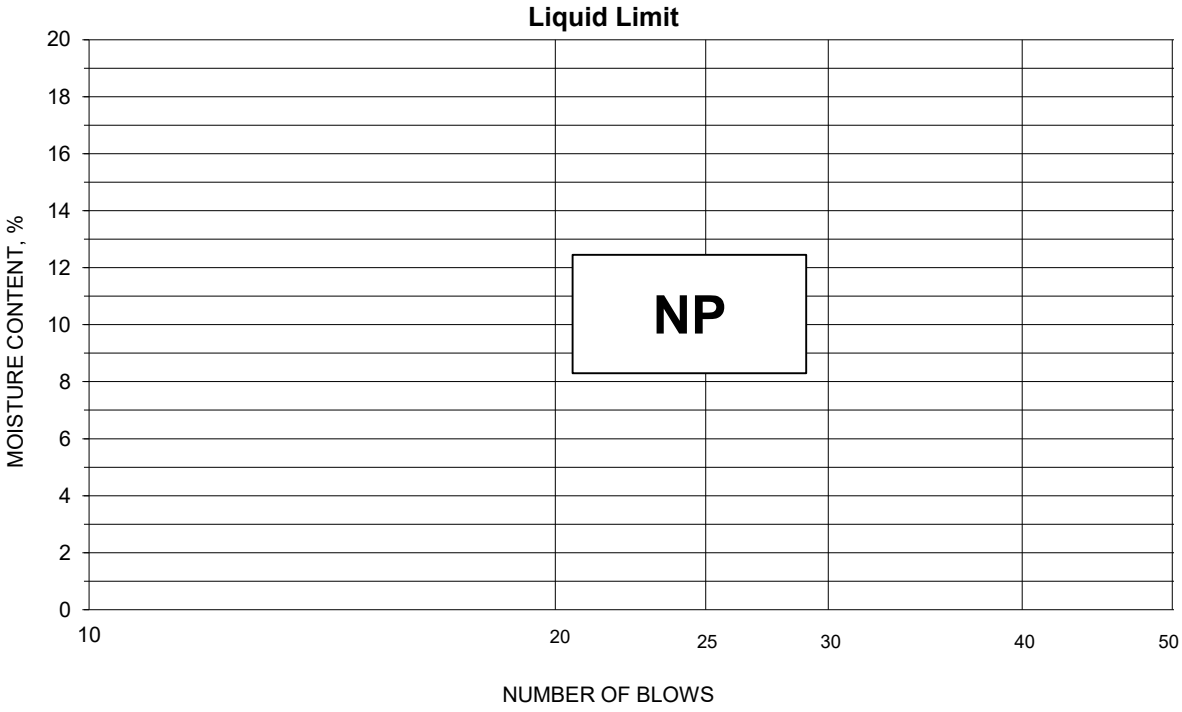
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.54, 10.0'-11.5'			Lab ID	741
				% + No. 40	16
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	03-15-2021
Test Date	03-19-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.57, 1.5'-3.0'	Lab ID	548
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.8
No. 10	2	98.7
No. 40	0.425	95.2
No. 200	0.075	62.5
	0.02	49.0
	0.005	35.3
	0.002	28.1
estimated	0.001	23.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.2	1.3
Coarse Sand	1.1	3.5
Medium Sand	3.5	---
Fine Sand	32.7	32.7
Silt	27.2	34.4
Clay	35.3	28.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	18
Plasticity Index:	16
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.57, 1.5'-3.0'	Lab ID	548

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.8
No. 10	98.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

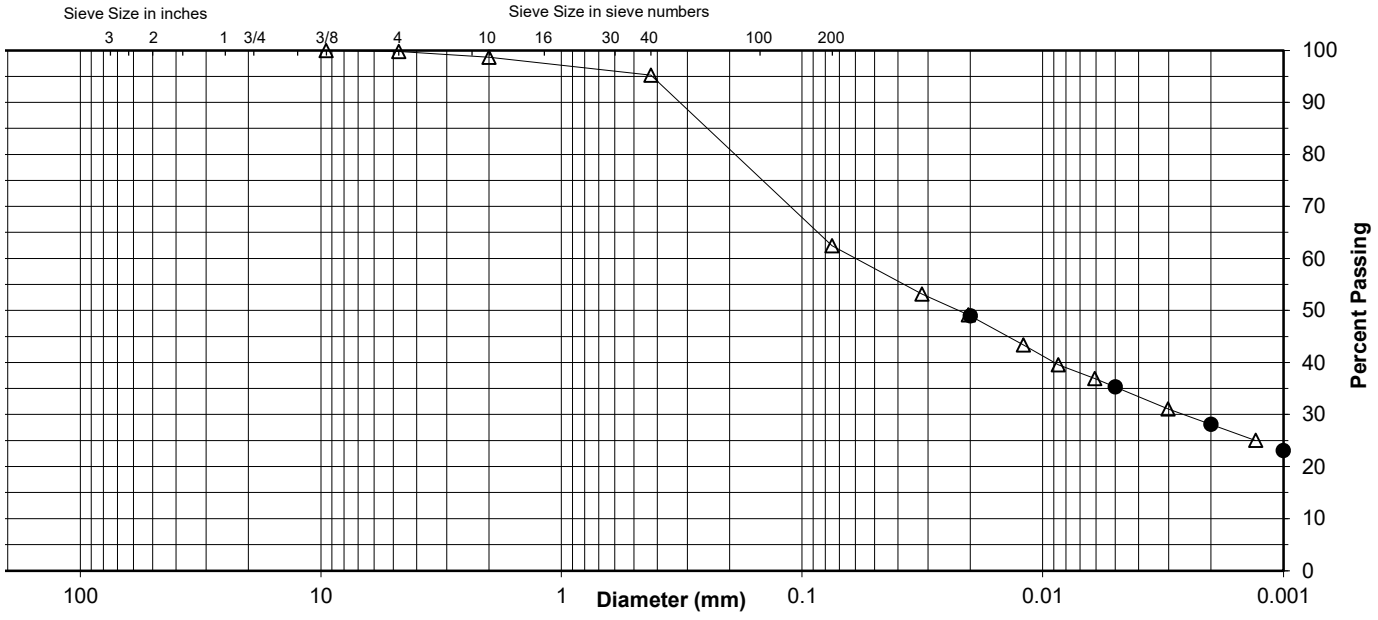
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.2
No. 200	62.5
0.02 mm	49.0
0.005 mm	35.3
0.002 mm	28.1
0.001 mm	23.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.2	1.1	3.5	32.7	27.2	35.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.3			3.5	32.7	34.4	28.1



Comments

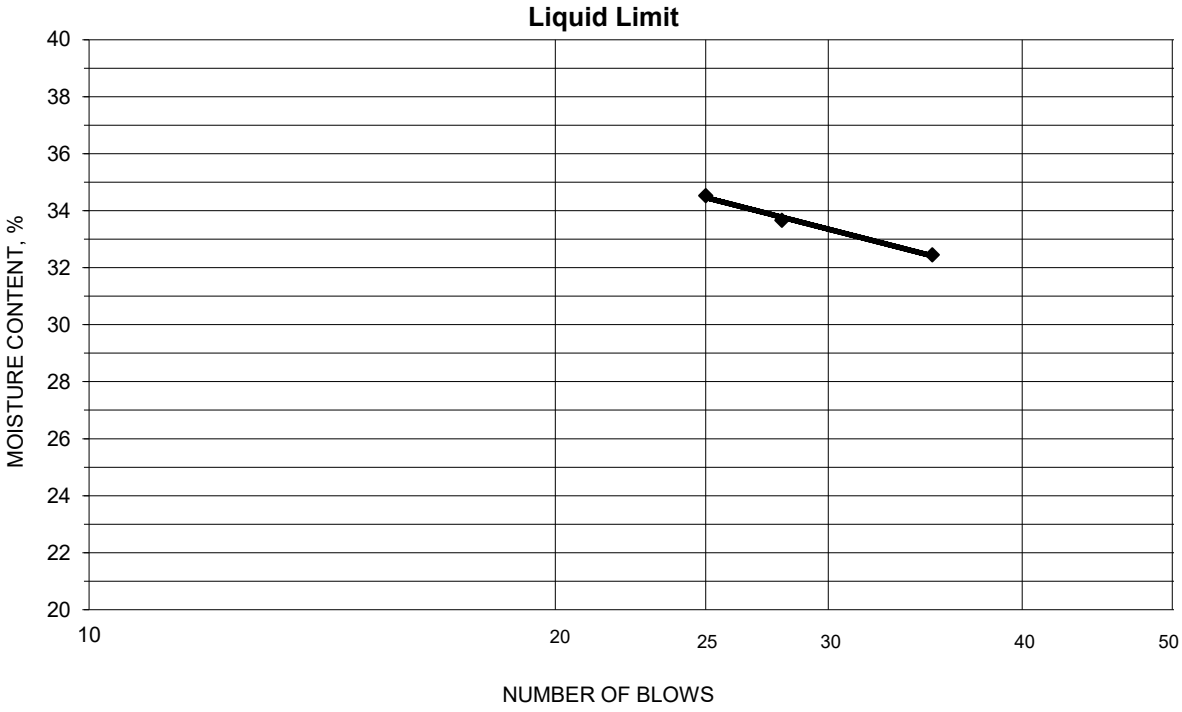
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.57, 1.5'-3.0'			Lab ID	548
				% + No. 40	5
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-25-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.46	21.15	10.95	35	32.5	
24.50	21.12	11.08	28	33.7	
24.48	21.02	11.00	25	34.5	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.24	17.16	11.01	17.6	18	16
17.03	16.05	10.57	17.9		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.57, 17.5'-19.0'	Lab ID	556
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size Sieve Size	Particle Size (mm)	% Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.2
No. 4	4.75	93.6
No. 10	2	82.0
No. 40	0.425	69.1
No. 200	0.075	48.9
	0.02	33.6
	0.005	21.2
	0.002	14.8
estimated	0.001	10.7

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	6.4	18.0
Coarse Sand	11.6	12.9
Medium Sand	12.9	---
Fine Sand	20.2	20.2
Silt	27.7	34.1
Clay	21.2	14.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	14
Plasticity Index:	8
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.57, 17.5'-19.0'	Lab ID	556

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.2
No. 4	93.6
No. 10	82.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

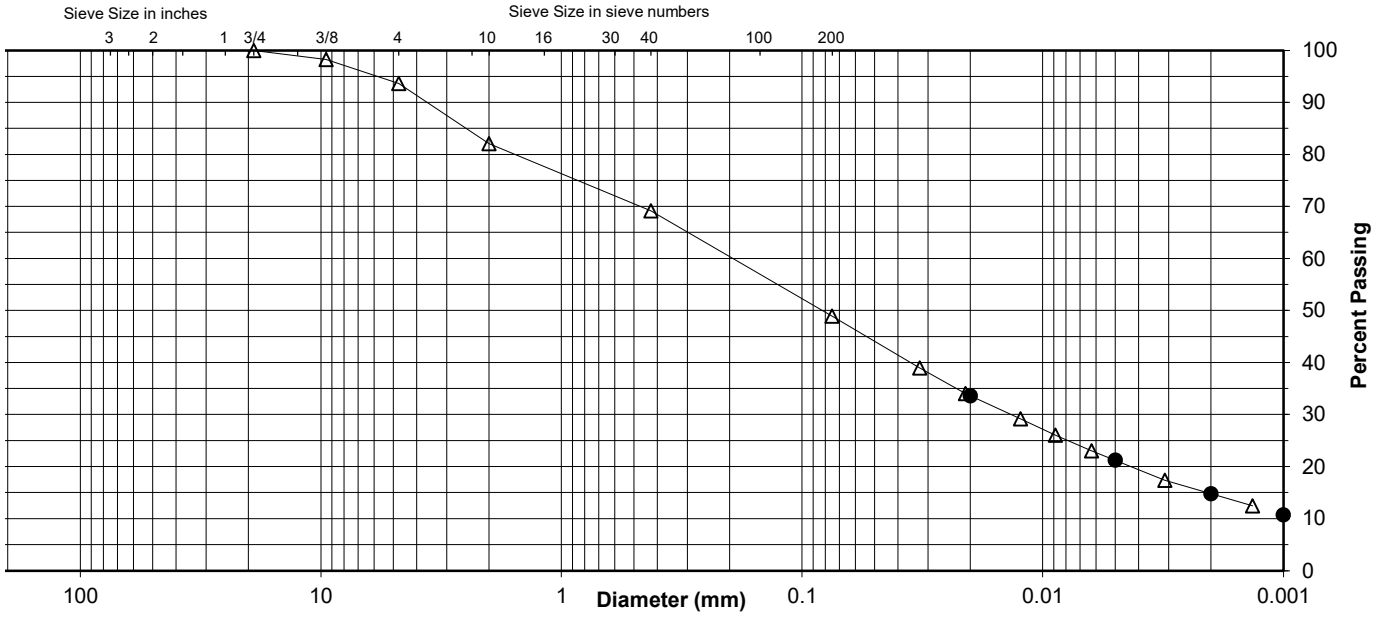
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	69.1
No. 200	48.9
0.02 mm	33.6
0.005 mm	21.2
0.002 mm	14.8
0.001 mm	10.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	6.4	11.6	12.9	20.2	27.7	21.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	18.0			12.9	20.2	34.1	14.8



Comments

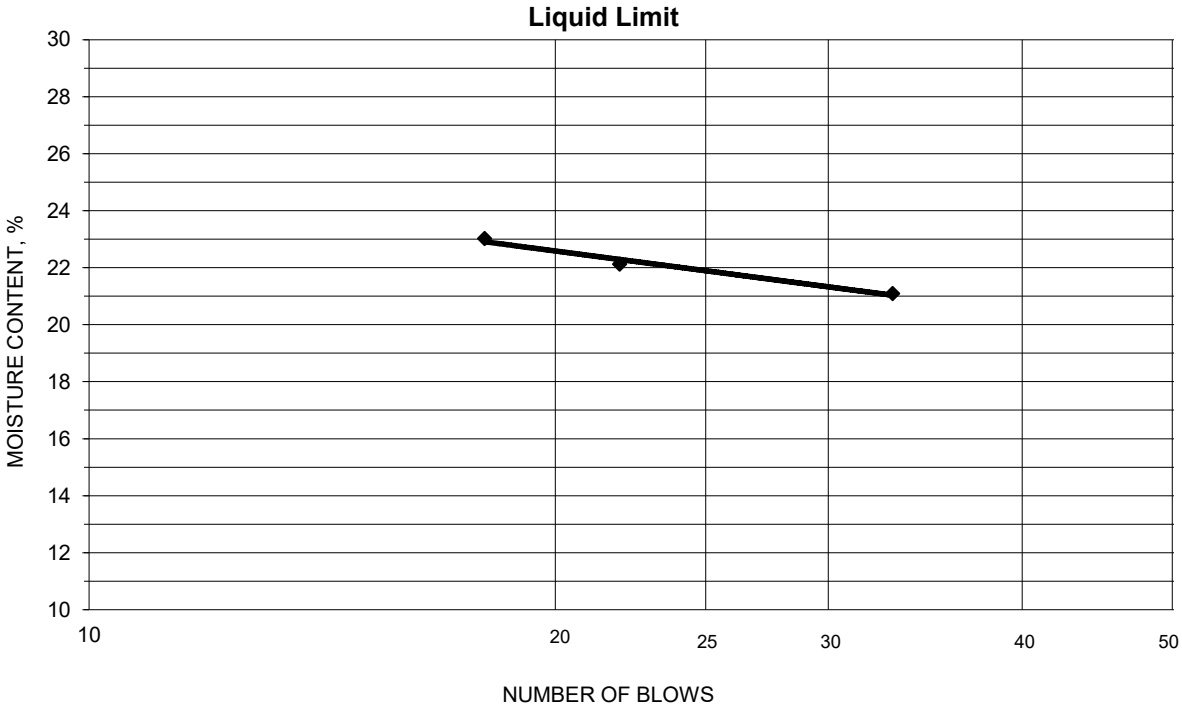
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.57, 17.5'-19.0'			Lab ID	556
				% + No. 40	31
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-25-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.26	22.78	11.02	33	21.1	
25.80	23.13	11.06	22	22.1	
25.27	22.53	10.63	18	23.0	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.23	17.28	10.70	14.4	14	8
17.78	16.88	10.69	14.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.58, 6.0'-7.5'	Lab ID	563
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size Sieve Size	Particle Size (mm)	% Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.2
No. 4	4.75	95.2
No. 10	2	90.6
No. 40	0.425	84.4
No. 200	0.075	46.8
	0.02	37.3
	0.005	25.7
	0.002	18.6
estimated	0.001	13.4

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	4.8	9.4
Coarse Sand	4.6	6.2
Medium Sand	6.2	---
Fine Sand	37.6	37.6
Silt	21.1	28.2
Clay	25.7	18.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	23
Plastic Limit:	15
Plasticity Index:	8
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.58, 6.0'-7.5'	Lab ID	563

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.2
No. 4	95.2
No. 10	90.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

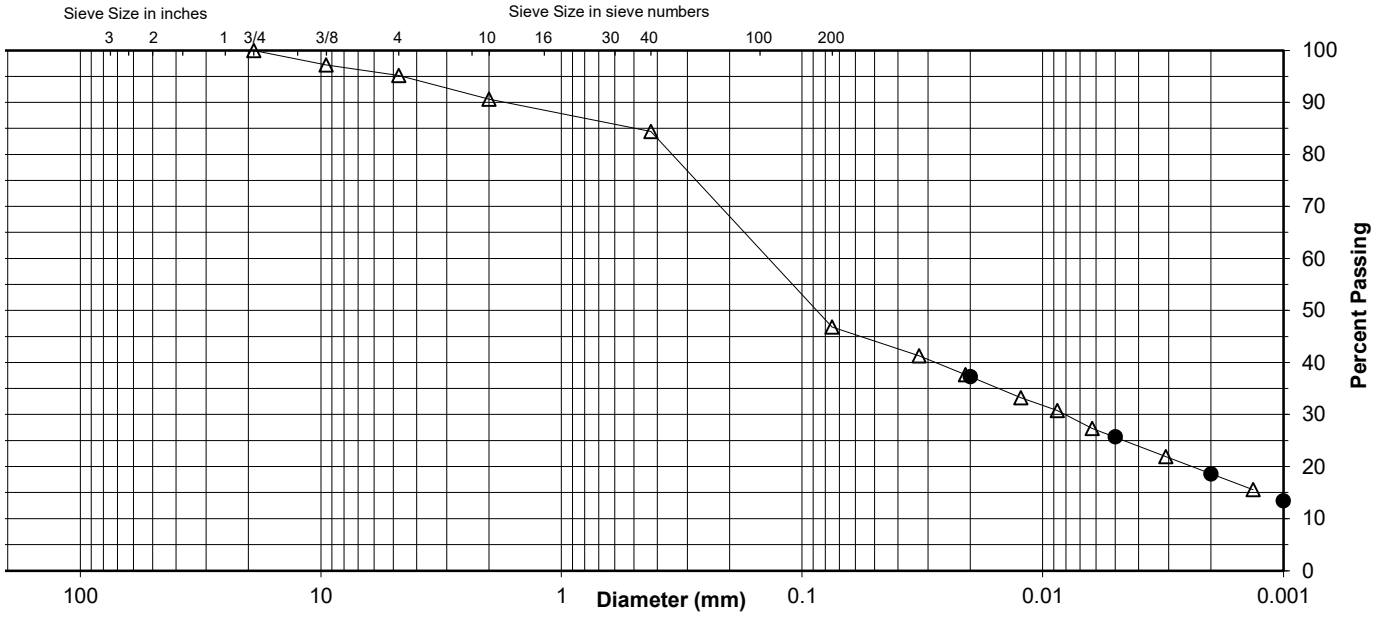
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.4
No. 200	46.8
0.02 mm	37.3
0.005 mm	25.7
0.002 mm	18.6
0.001 mm	13.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.8	4.6	6.2	37.6	21.1	25.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.4			6.2	37.6	28.2	18.6



Comments

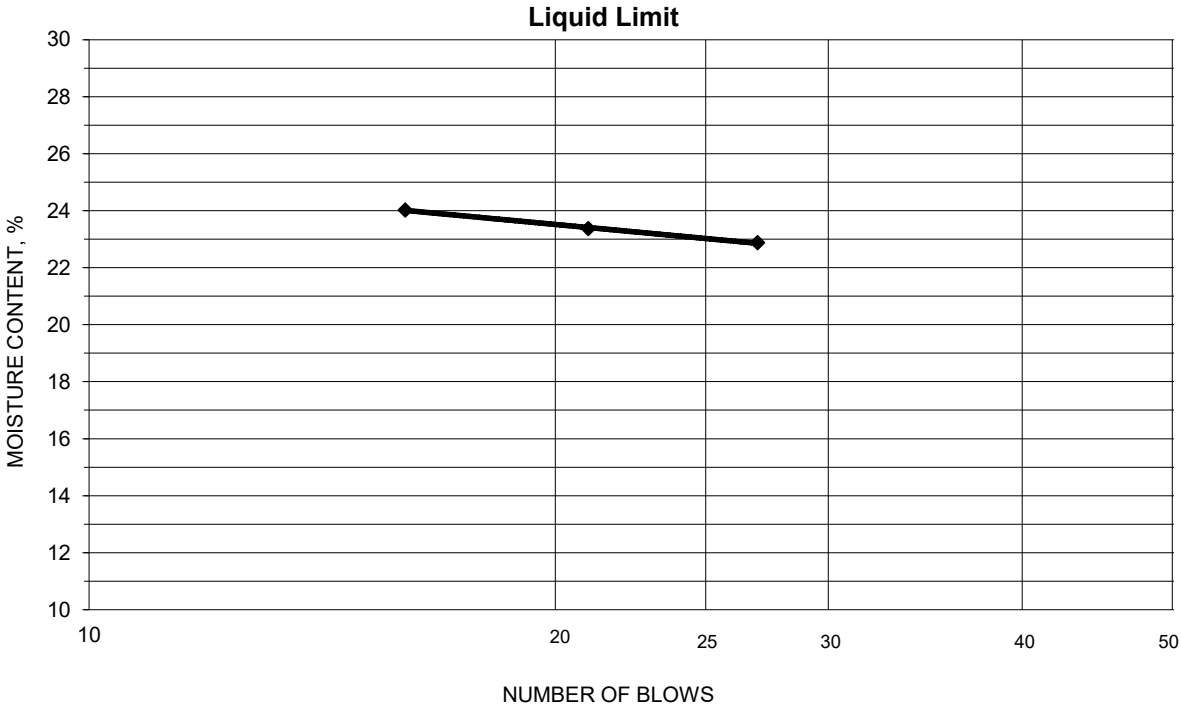
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.58, 6.0'-7.5'			Lab ID	563
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-25-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.06	22.45	11.04	27	22.9	
25.27	22.58	11.07	21	23.4	
24.68	22.02	10.95	16	24.0	23



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.28	17.30	10.87	15.2	15	8
19.03	17.96	11.03	15.4		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.60, 10.0'-11.5'	Lab ID	588
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	87.3
3/8"	9.5	82.4
No. 4	4.75	72.9
No. 10	2	56.0
No. 40	0.425	15.8
No. 200	0.075	8.4
	0.02	5.5
	0.005	3.2
	0.002	1.9
estimated	0.001	0.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	27.1	44.0
Coarse Sand	16.9	40.2
Medium Sand	40.2	---
Fine Sand	7.4	7.4
Silt	5.2	6.5
Clay	3.2	1.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SW-SM

Group Name: Well-graded sand with silt and gravel

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.60, 10.0'-11.5'	Lab ID	588

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-23-2021
Date Received	02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	87.3
3/8"	82.4
No. 4	72.9
No. 10	56.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

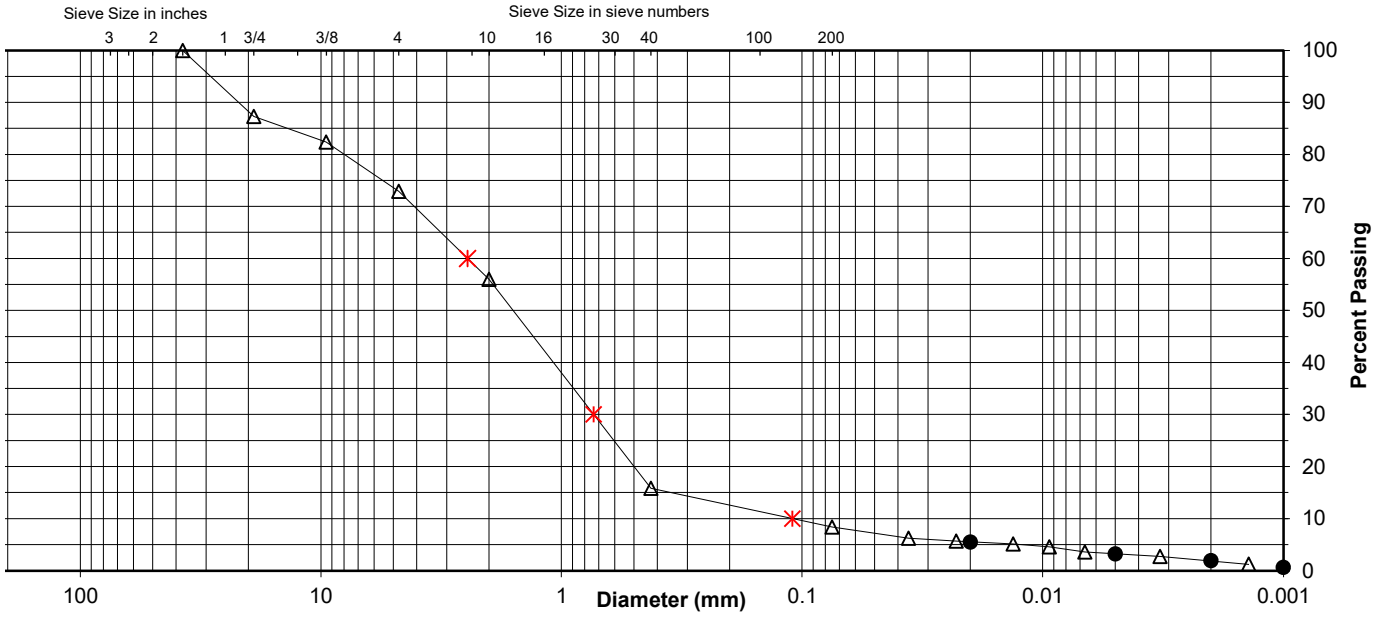
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	15.8
No. 200	8.4
0.02 mm	5.5
0.005 mm	3.2
0.002 mm	1.9
0.001 mm	0.6

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	12.7	14.4	16.9	40.2	7.4	5.2	3.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	44.0	40.2	7.4	6.5	1.9



Comments

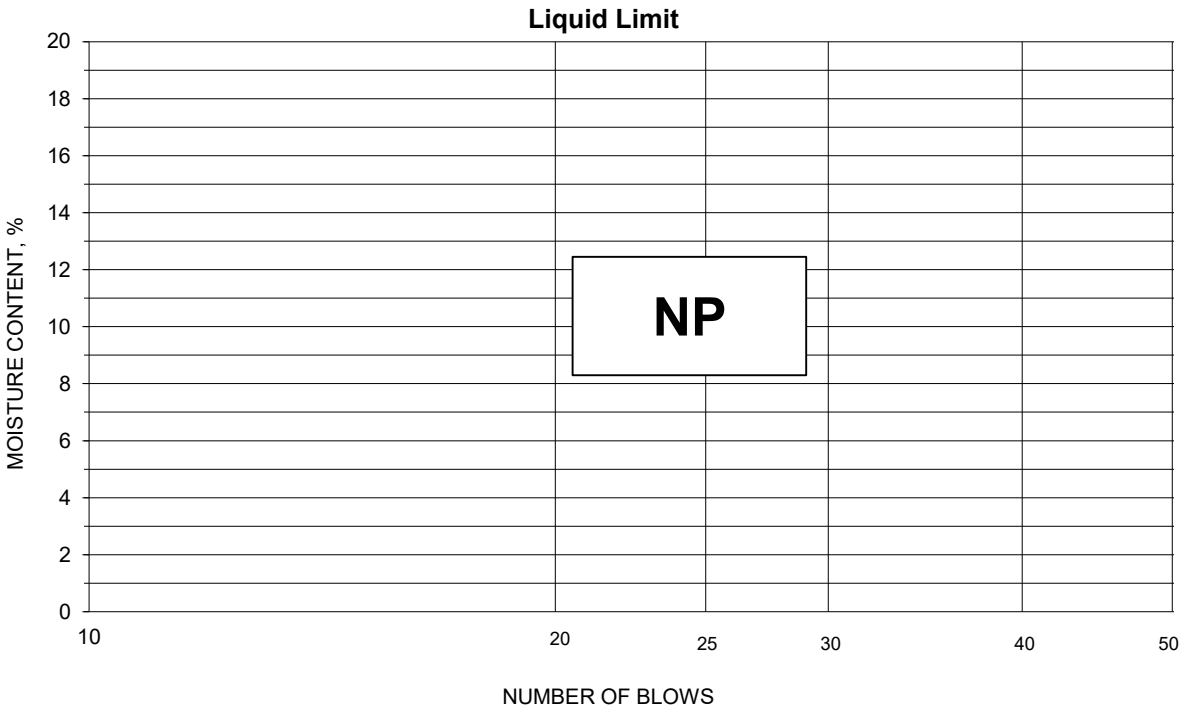
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.60, 10.0'-11.5'			Lab ID	588
				% + No. 40	84
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	03-02-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.61, 4.5'-6.0'	Lab ID	595
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	95.2
3/8"	9.5	90.7
No. 4	4.75	88.2
No. 10	2	83.3
No. 40	0.425	71.3
No. 200	0.075	59.5
	0.02	46.0
	0.005	27.9
	0.002	19.1
estimated	0.001	13.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	11.8	16.7
Coarse Sand	4.9	12.0
Medium Sand	12.0	---
Fine Sand	11.8	11.8
Silt	31.6	40.4
Clay	27.9	19.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	31
Plastic Limit:	19
Plasticity Index:	12
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.61, 4.5'-6.0'	Lab ID	595

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-24-2021
Date Received	02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	95.2
3/8"	90.7
No. 4	88.2
No. 10	83.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

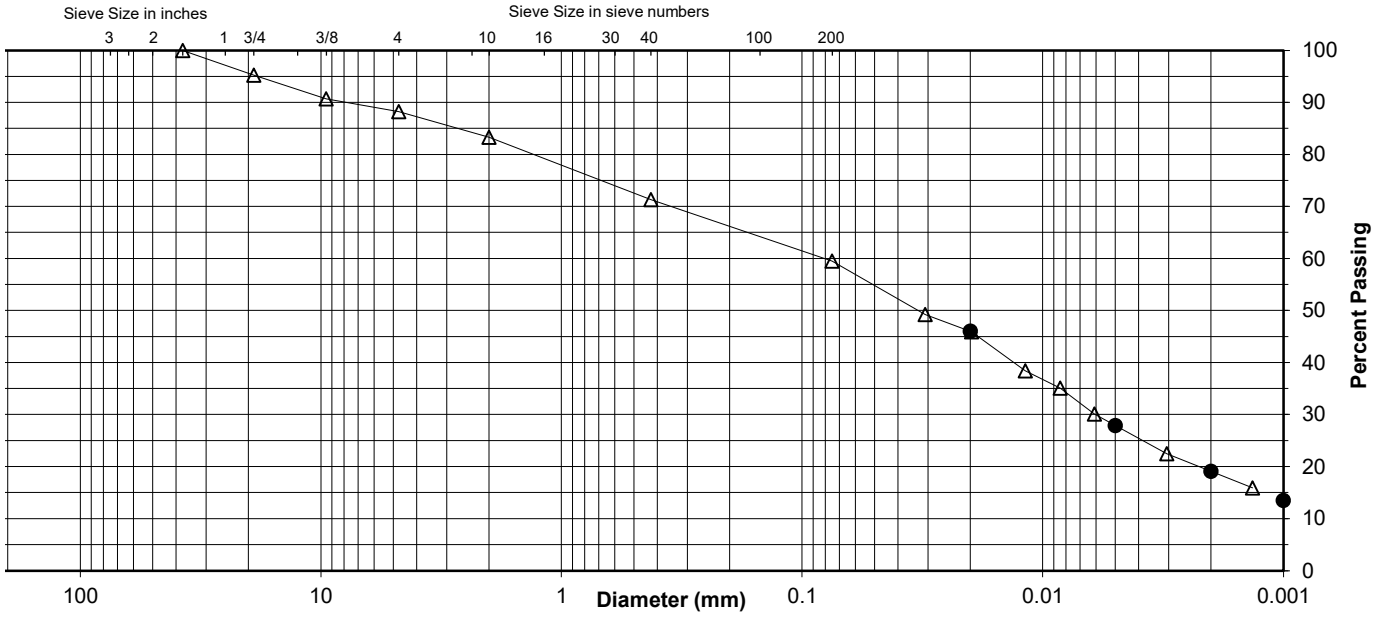
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	71.3
No. 200	59.5
0.02 mm	46.0
0.005 mm	27.9
0.002 mm	19.1
0.001 mm	13.5

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	4.8	7.0	4.9	12.0	11.8	31.6	27.9

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	16.7	12.0	11.8	40.4	19.1



Comments

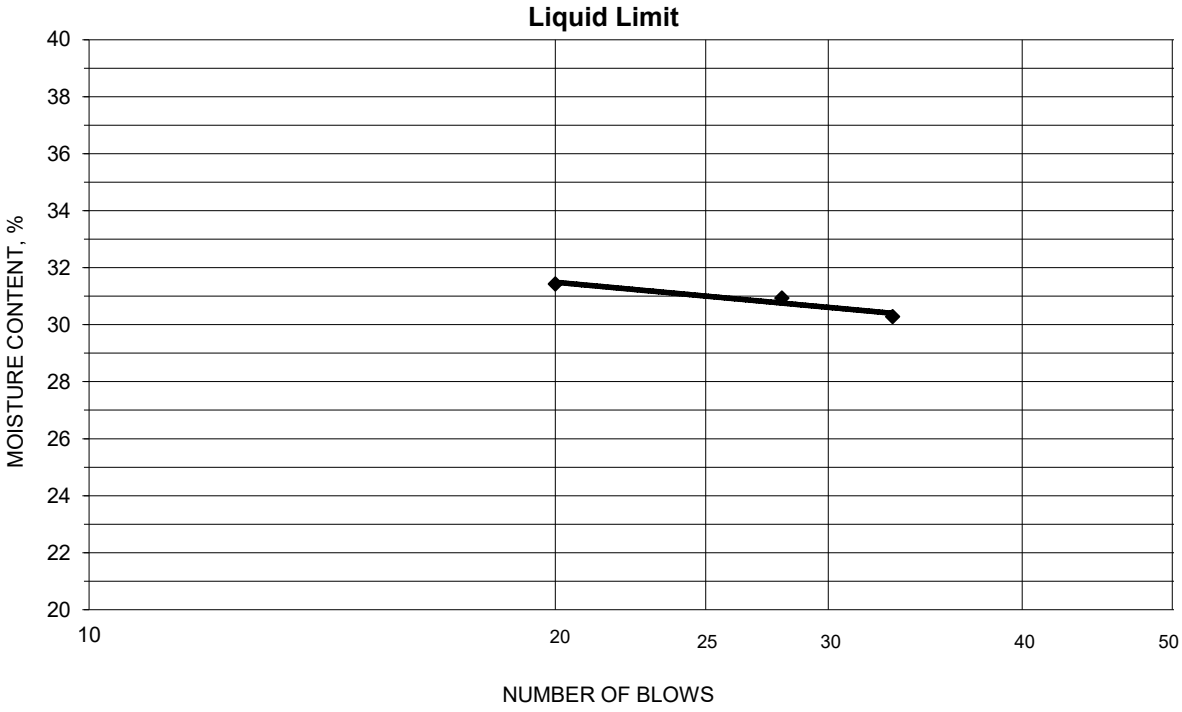
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.61, 4.5'-6.0'			Lab ID	595
				% + No. 40	29
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	03-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
29.55	25.25	11.05	33	30.3	
28.55	24.42	11.07	28	30.9	
29.64	25.18	10.99	20	31.4	31



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.90	16.82	11.02	18.6	19	12
17.50	16.49	11.07	18.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.61, 17.5'-19.0'	Lab ID	601
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	89.7
3/8"	9.5	88.5
No. 4	4.75	87.2
No. 10	2	77.7
No. 40	0.425	44.4
No. 200	0.075	37.1
	0.02	30.7
	0.005	20.4
	0.002	14.5
estimated	0.001	9.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.8	22.3
Coarse Sand	9.5	33.3
Medium Sand	33.3	---
Fine Sand	7.3	7.3
Silt	16.7	22.6
Clay	20.4	14.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	16
Plasticity Index:	13
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-6 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.61, 17.5'-19.0'

Project Number: 173409690
Lab ID: 601

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 02-23-2021
Date Received: 02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	89.7
3/8"	88.5
No. 4	87.2
No. 10	77.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

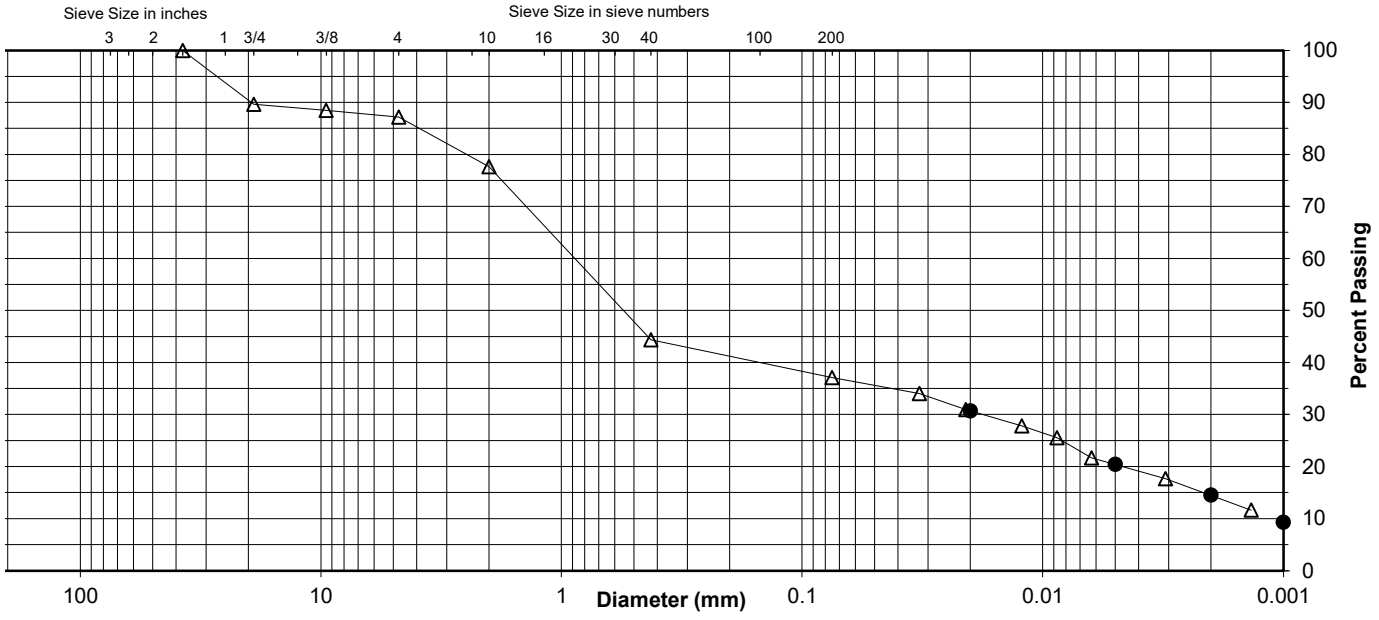
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	44.4
No. 200	37.1
0.02 mm	30.7
0.005 mm	20.4
0.002 mm	14.5
0.001 mm	9.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	10.3	2.5	9.5	33.3	7.3	16.7	20.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	22.3			33.3	7.3	22.6	14.5



Comments:

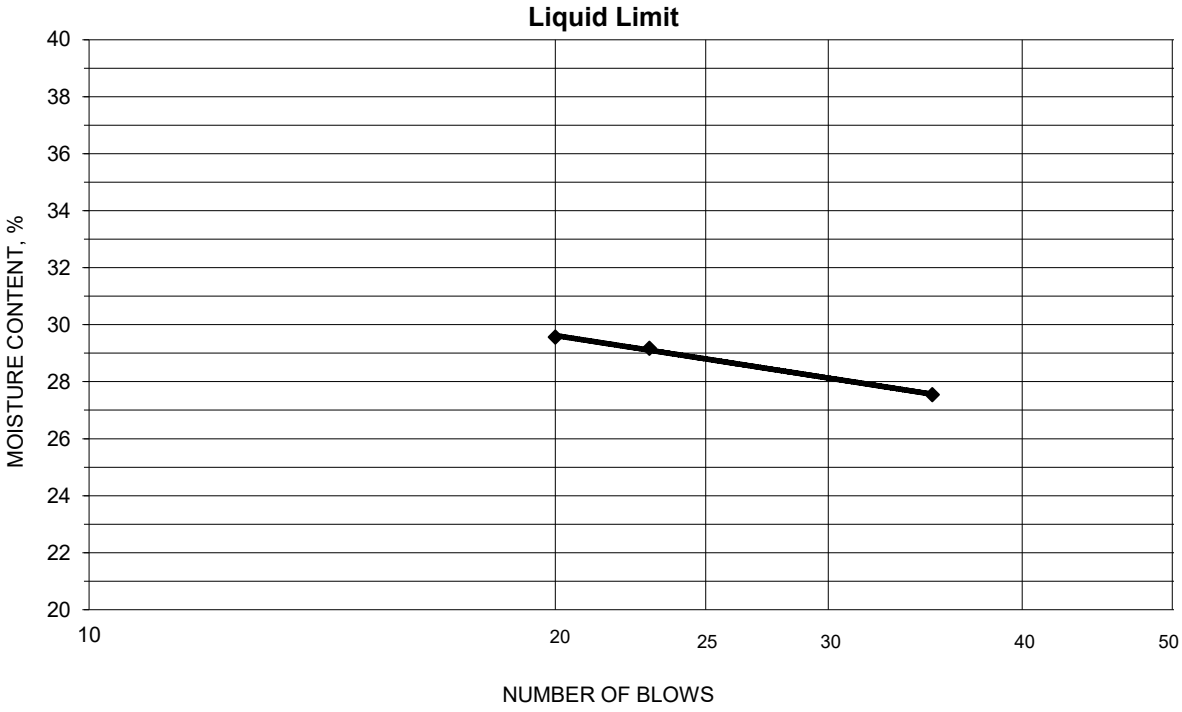
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.61, 17.5'-19.0'			Lab ID	601
				% + No. 40	56
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.85	26.55	10.94	35	27.5	
28.00	24.17	11.04	23	29.2	
28.66	24.60	10.87	20	29.6	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.64	15.78	10.65	16.8	16	13
17.69	16.78	11.06	15.9		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.62, 4.5'-6.0'	Lab ID	369
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-5-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.9
No. 4	4.75	95.2
No. 10	2	91.8
No. 40	0.425	82.9
No. 200	0.075	67.7
	0.02	51.1
	0.005	31.7
	0.002	23.4
estimated	0.001	16.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.8	8.2
Coarse Sand	3.4	8.9
Medium Sand	8.9	---
Fine Sand	15.2	15.2
Silt	36.0	44.3
Clay	31.7	23.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	18
Plasticity Index:	10
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (5)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.62, 4.5'-6.0'	Lab ID	369

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-02-2021
Date Received	01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.9
No. 4	95.2
No. 10	91.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

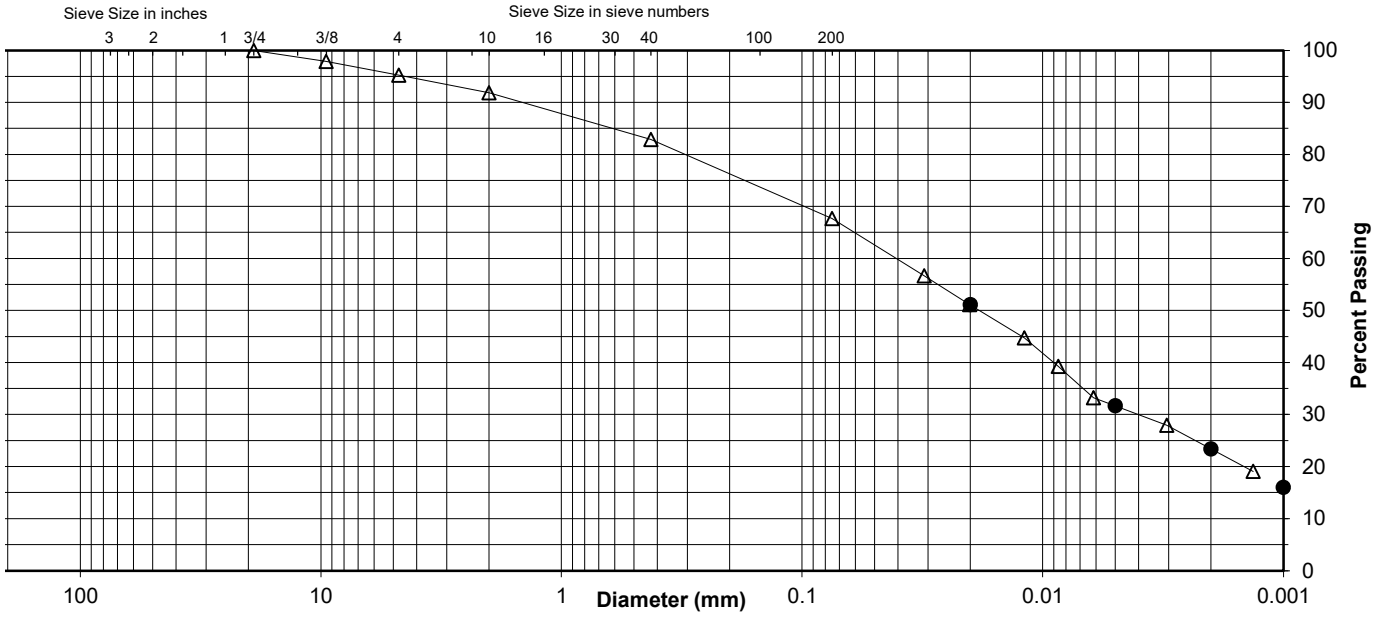
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	82.9
No. 200	67.7
0.02 mm	51.1
0.005 mm	31.7
0.002 mm	23.4
0.001 mm	16.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.8	3.4	8.9	15.2	36.0	31.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.2			8.9	15.2	44.3	23.4



Comments

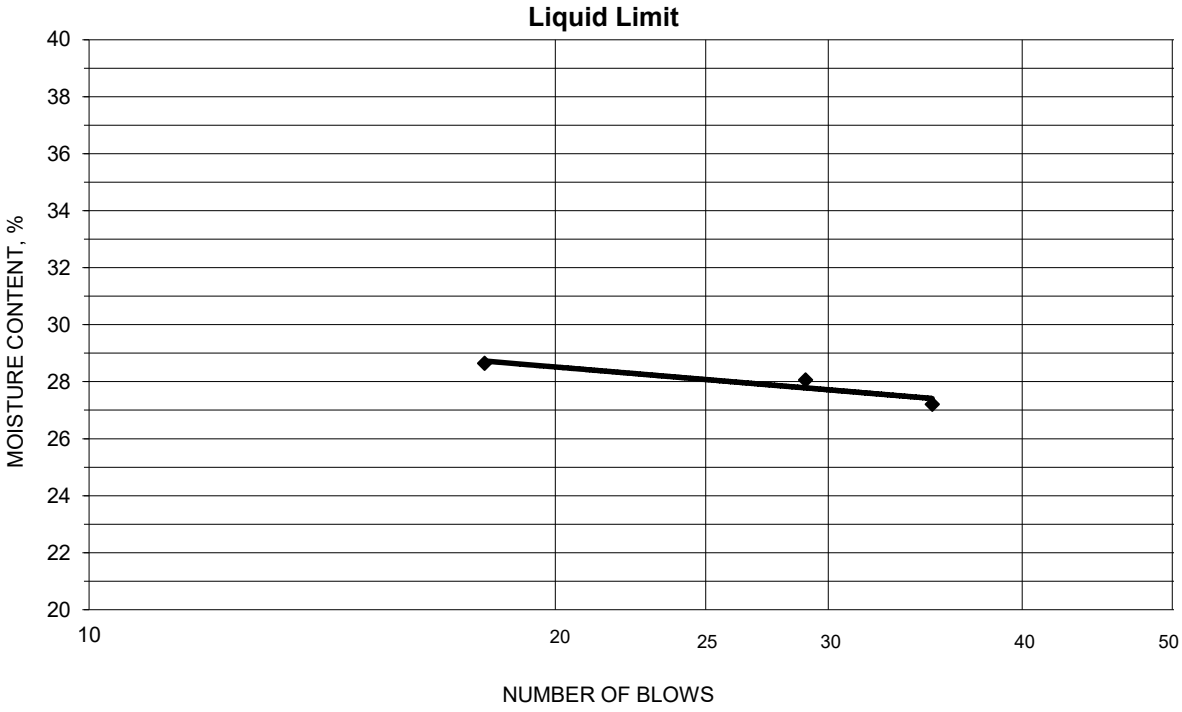
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.62, 4.5'-6.0'			Lab ID	369
				% + No. 40	17
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.17	21.37	11.08	35	27.2	
23.20	20.45	10.65	29	28.1	
23.39	20.64	11.04	18	28.6	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.93	17.72	11.12	18.3	18	10
20.07	18.65	10.87	18.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.69, 4.5'-6.0'	Lab ID	375
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.9
No. 4	4.75	94.0
No. 10	2	87.7
No. 40	0.425	73.9
No. 200	0.075	55.8
	0.02	41.5
	0.005	24.3
	0.002	16.8
estimated	0.001	11.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.0	12.3
Coarse Sand	6.3	13.8
Medium Sand	13.8	---
Fine Sand	18.1	18.1
Silt	31.5	39.0
Clay	24.3	16.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	17
Plasticity Index:	7
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL-ML
Group Name:	Sandy silty clay
AASHTO Classification:	A-4 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek
Source: B-3.69, 4.5'-6.0'
Project Number: 173409690
Lab ID: 375

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 01-29-2021
Date Received: 01-27-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.9
No. 4	94.0
No. 10	87.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

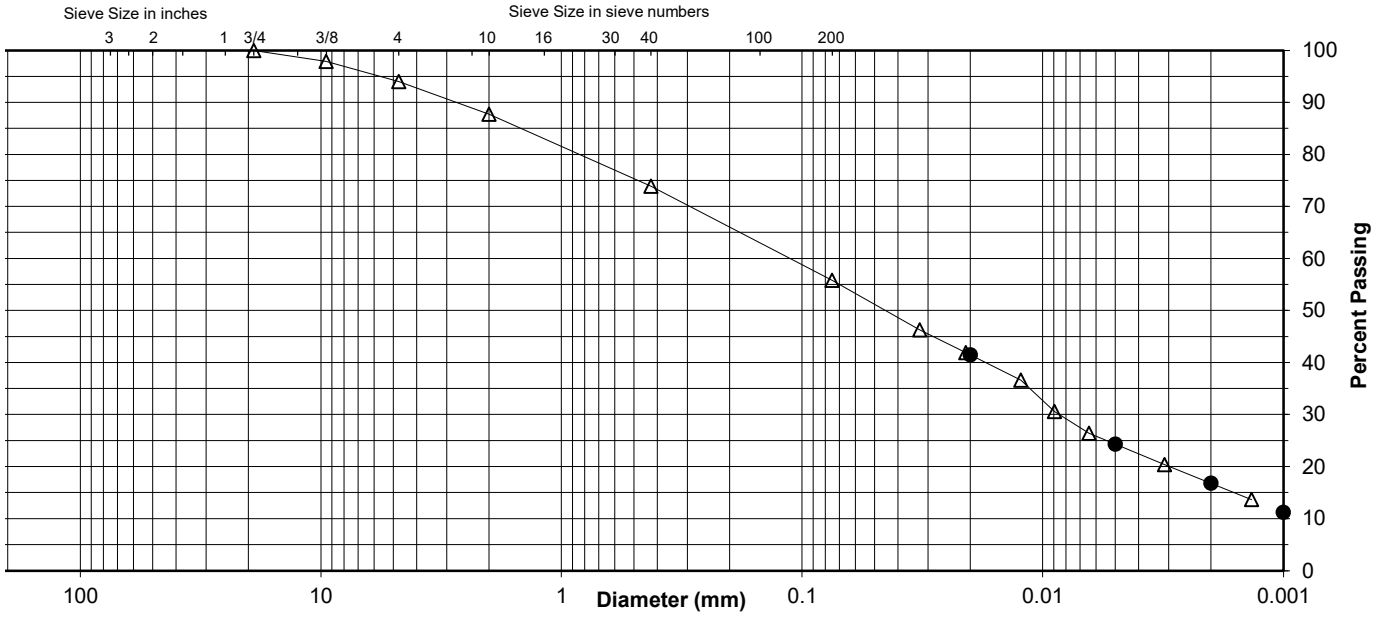
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	73.9
No. 200	55.8
0.02 mm	41.5
0.005 mm	24.3
0.002 mm	16.8
0.001 mm	11.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	6.0	6.3	13.8	18.1	31.5	24.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	12.3			13.8	18.1	39.0	16.8



Comments:

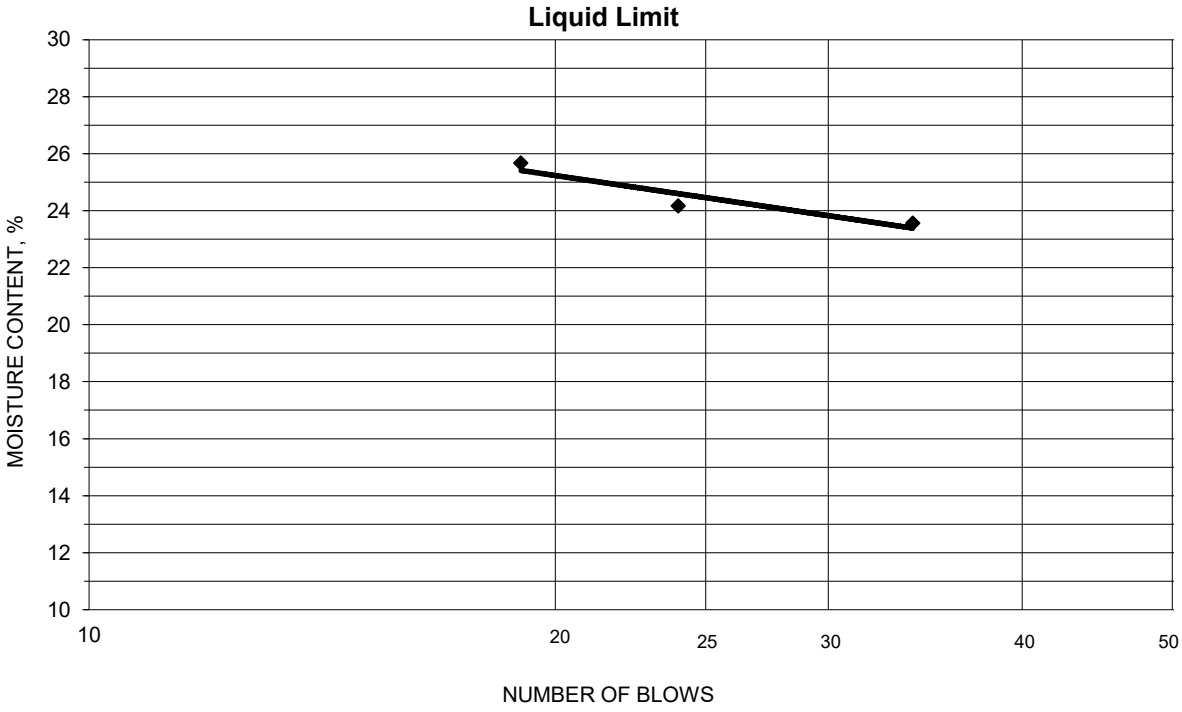
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.69, 4.5'-6.0'			Lab ID	375
				% + No. 40	26
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	02-03-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
30.00	26.39	11.07	34	23.6	
29.59	25.97	10.99	24	24.2	
26.45	23.30	11.03	19	25.7	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.42	15.57	10.64	17.2	17	7
16.23	15.40	10.70	17.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.71, 3.0'-4.5'	Lab ID	386
Sample Type	SPT	Date Received	1-27-21
		Date Reported	2-4-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.1
No. 10	2	95.0
No. 40	0.425	87.3
No. 200	0.075	72.0
	0.02	55.8
	0.005	36.9
	0.002	25.7
estimated	0.001	18.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.9	5.0
Coarse Sand	4.1	7.7
Medium Sand	7.7	---
Fine Sand	15.3	15.3
Silt	35.1	46.3
Clay	36.9	25.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	19
Plasticity Index:	11
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.71, 3.0'-4.5'	Lab ID	386

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	01-28-2021
Date Received	01-27-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.1
No. 10	95.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

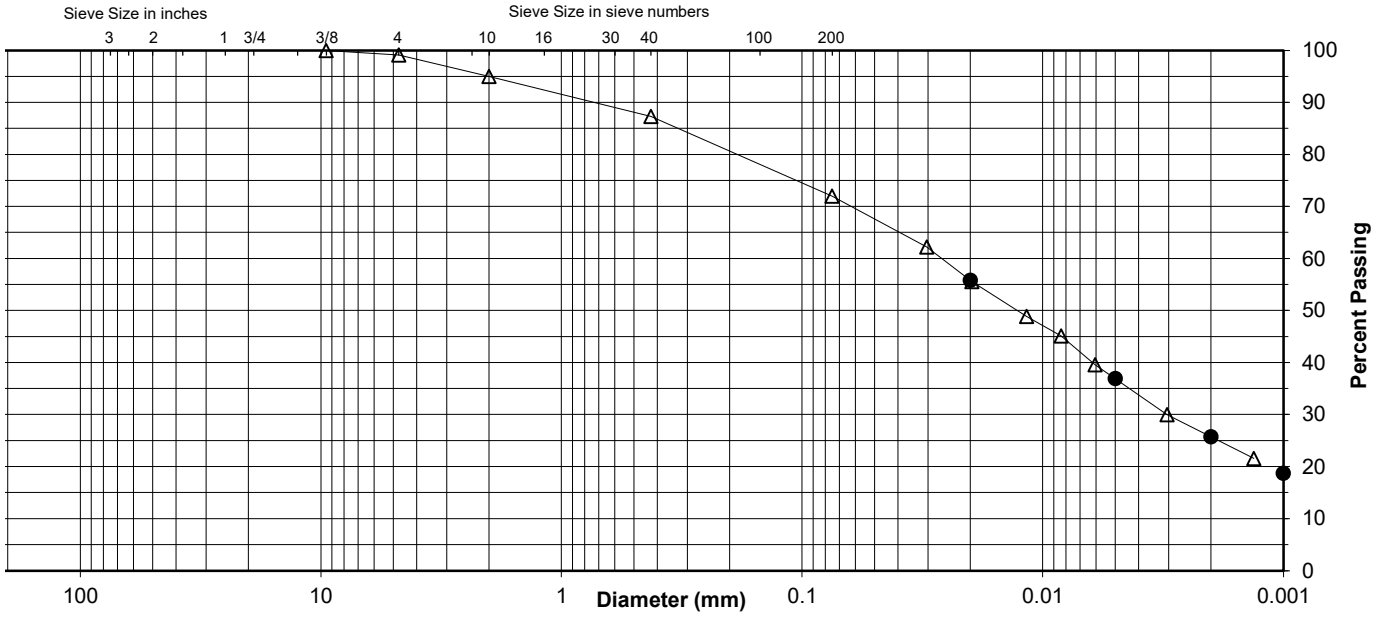
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	87.3
No. 200	72.0
0.02 mm	55.8
0.005 mm	36.9
0.002 mm	25.7
0.001 mm	18.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.9	4.1	7.7	15.3	35.1	36.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.0			7.7	15.3	46.3	25.7



Comments

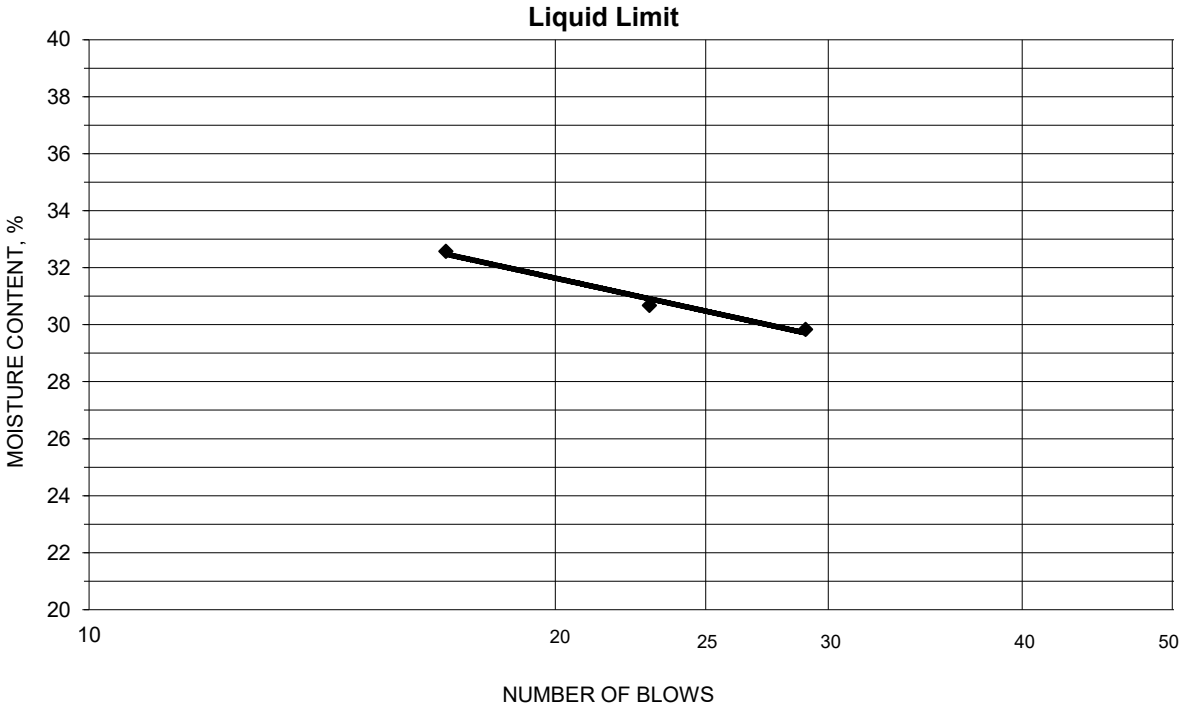
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.71, 3.0'-4.5'			Lab ID	386
				% + No. 40	13
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	01-27-2021
Test Date	01-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
29.78	25.48	11.07	29	29.8	
30.67	26.05	10.99	23	30.7	
32.63	27.33	11.06	17	32.6	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.81	16.72	11.06	19.3	19	11
17.45	16.44	11.08	18.8		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.74, 1.5'-3.0'	Lab ID	641
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-1-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.3
No. 4	4.75	99.2
No. 10	2	94.3
No. 40	0.425	90.9
No. 200	0.075	54.7
	0.02	39.6
	0.005	29.1
	0.002	23.0
estimated	0.001	18.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.8	5.7
Coarse Sand	4.9	3.4
Medium Sand	3.4	---
Fine Sand	36.2	36.2
Silt	25.6	31.7
Clay	29.1	23.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	37
Plastic Limit:	17
Plasticity Index:	20
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (8)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.74, 1.5'-3.0'	Lab ID	641

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MT
Test Date	02-22-2021
Date Received	02-19-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.3
No. 4	99.2
No. 10	94.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

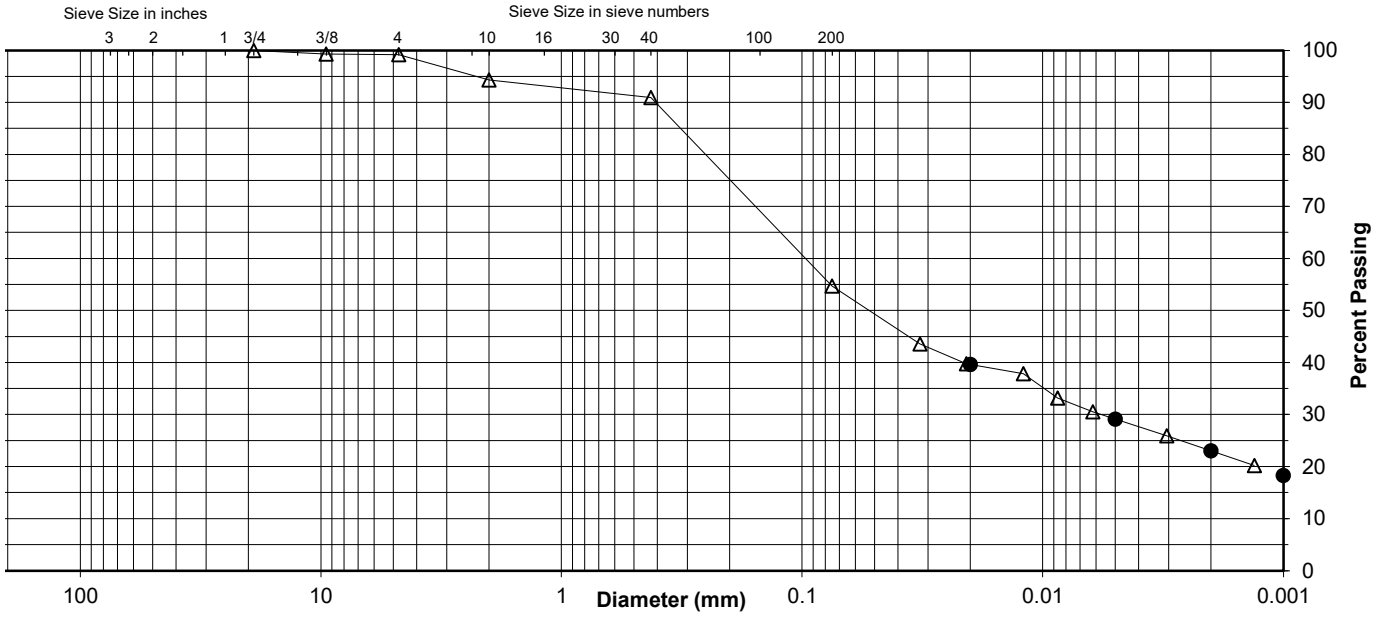
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	90.9
No. 200	54.7
0.02 mm	39.6
0.005 mm	29.1
0.002 mm	23.0
0.001 mm	18.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.8	4.9	3.4	36.2	25.6	29.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.7			3.4	36.2	31.7	23.0



Comments

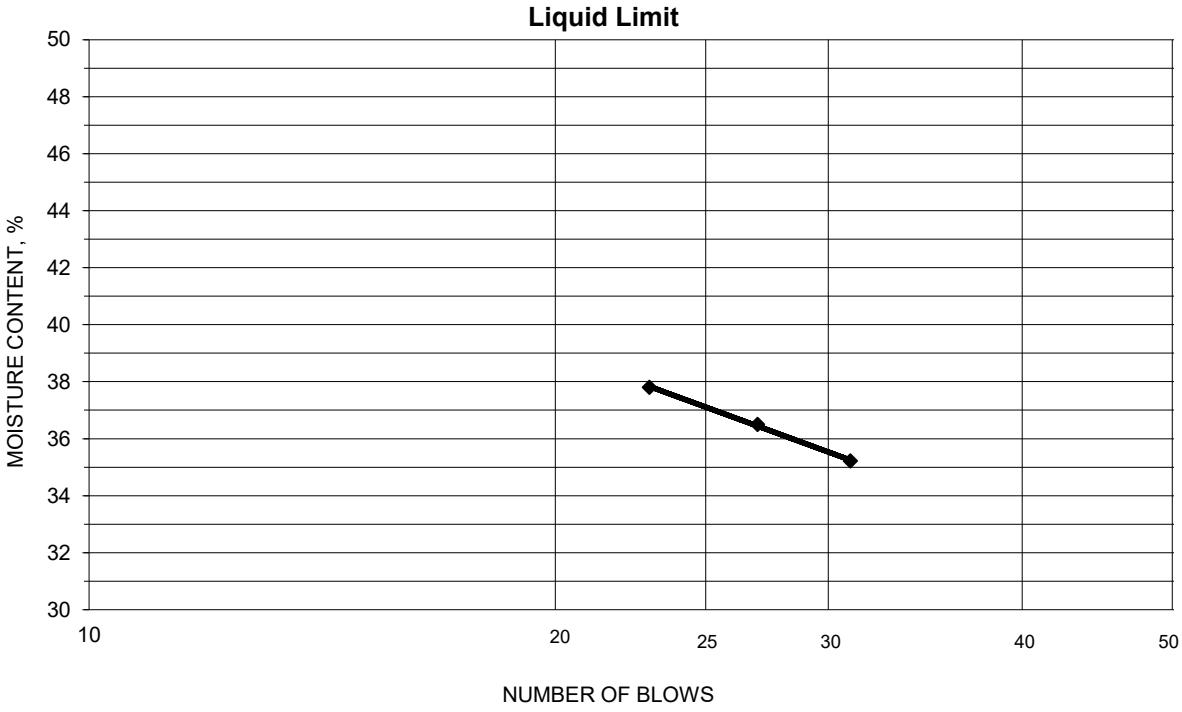
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.74, 1.5'-3.0'			Lab ID	641
				% + No. 40	9
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	02-26-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
29.68	24.82	11.02	31	35.2	
27.11	22.81	11.03	27	36.5	
27.99	23.34	11.04	23	37.8	37



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.24	16.34	11.09	17.1	17	20
17.67	16.68	11.08	17.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.80, 5.0'-6.5'	Lab ID	665
Sample Type	SPT	Date Received	2-19-21
		Date Reported	3-3-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.9

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.3
3/8"	9.5	95.9
No. 4	4.75	94.0
No. 10	2	90.6
No. 40	0.425	83.2
No. 200	0.075	70.4
	0.02	48.8
	0.005	30.3
	0.002	17.8
estimated	0.001	10.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.0	9.4
Coarse Sand	3.4	7.4
Medium Sand	7.4	---
Fine Sand	12.8	12.8
Silt	40.1	52.6
Clay	30.3	17.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	18
Plasticity Index:	12
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek	Project Number	173409690
Source	B-3.80, 5.0'-6.5'	Lab ID	665

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	02-24-2021
Date Received	02-19-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.3
3/8"	95.9
No. 4	94.0
No. 10	90.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

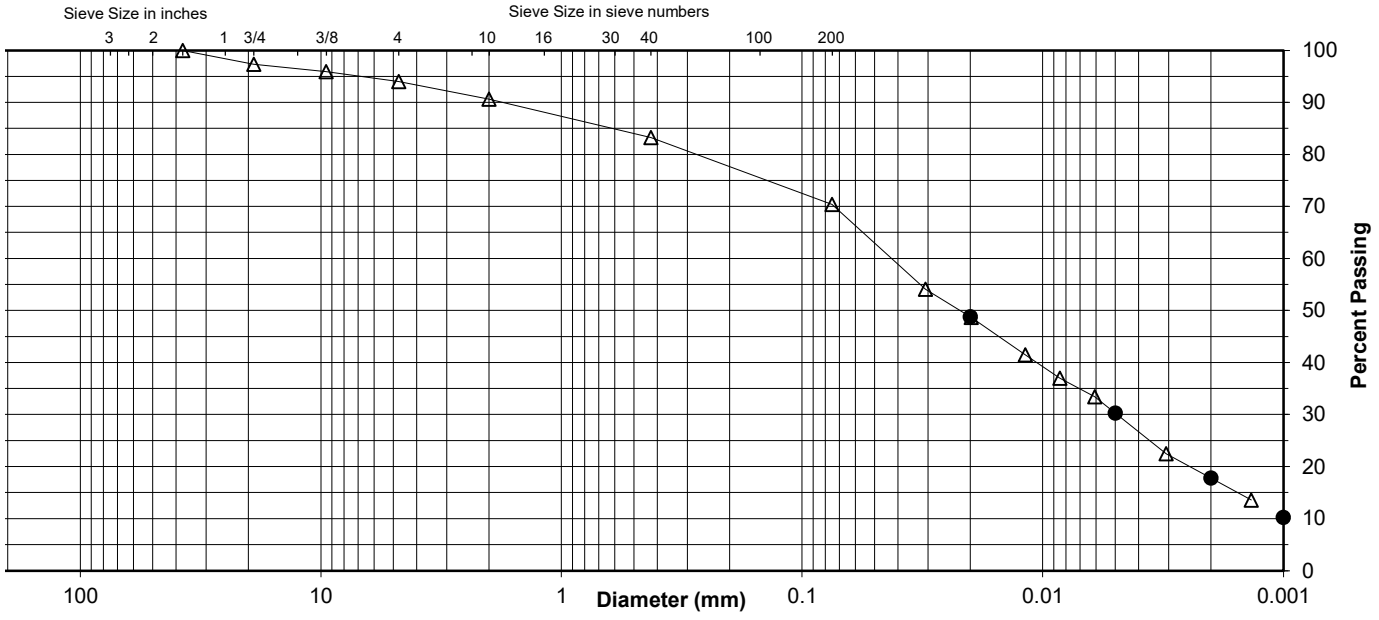
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.2
No. 200	70.4
0.02 mm	48.8
0.005 mm	30.3
0.002 mm	17.8
0.001 mm	10.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.7	3.3	3.4	7.4	12.8	40.1	30.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.4			7.4	12.8	52.6	17.8



Comments

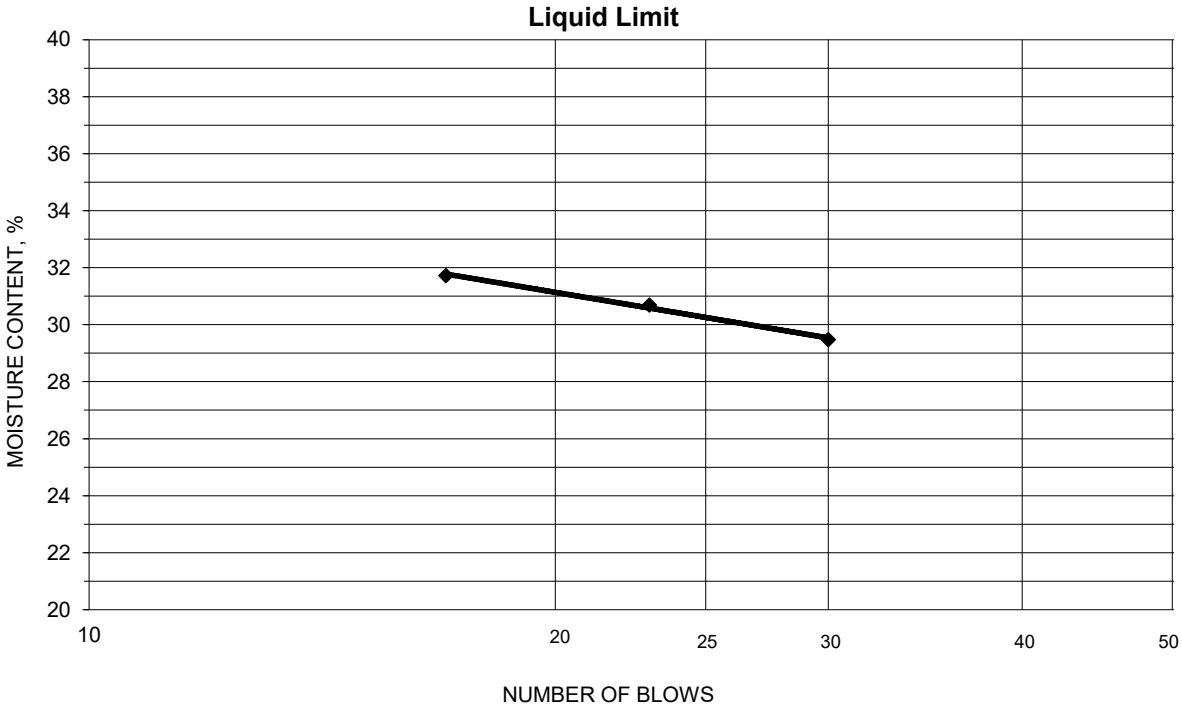
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek			Project No.	173409690
Source	B-3.80, 5.0'-6.5'			Lab ID	665
				% + No. 40	17
Tested By	MT	Test Method	ASTM D 4318 Method A	Date Received	02-19-2021
Test Date	03-01-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
28.15	24.25	11.02	30	29.5	
31.01	26.21	10.57	23	30.7	
27.41	23.46	11.01	17	31.7	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.55	16.58	11.05	17.5	18	12
17.94	16.89	10.99	17.8		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.1, 2.5'-4.0'	Lab ID	885
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.2
No. 4	4.75	97.1
No. 10	2	94.8
No. 40	0.425	89.7
No. 200	0.075	76.0
	0.02	59.6
	0.005	40.1
	0.002	29.5
estimated	0.001	23.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.9	5.2
Coarse Sand	2.3	5.1
Medium Sand	5.1	---
Fine Sand	13.7	13.7
Silt	35.9	46.5
Clay	40.1	29.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	37
Plastic Limit:	21
Plasticity Index:	16
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (11)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.1, 2.5'-4.0'
Lab ID: 885

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-14-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.2
No. 4	97.1
No. 10	94.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

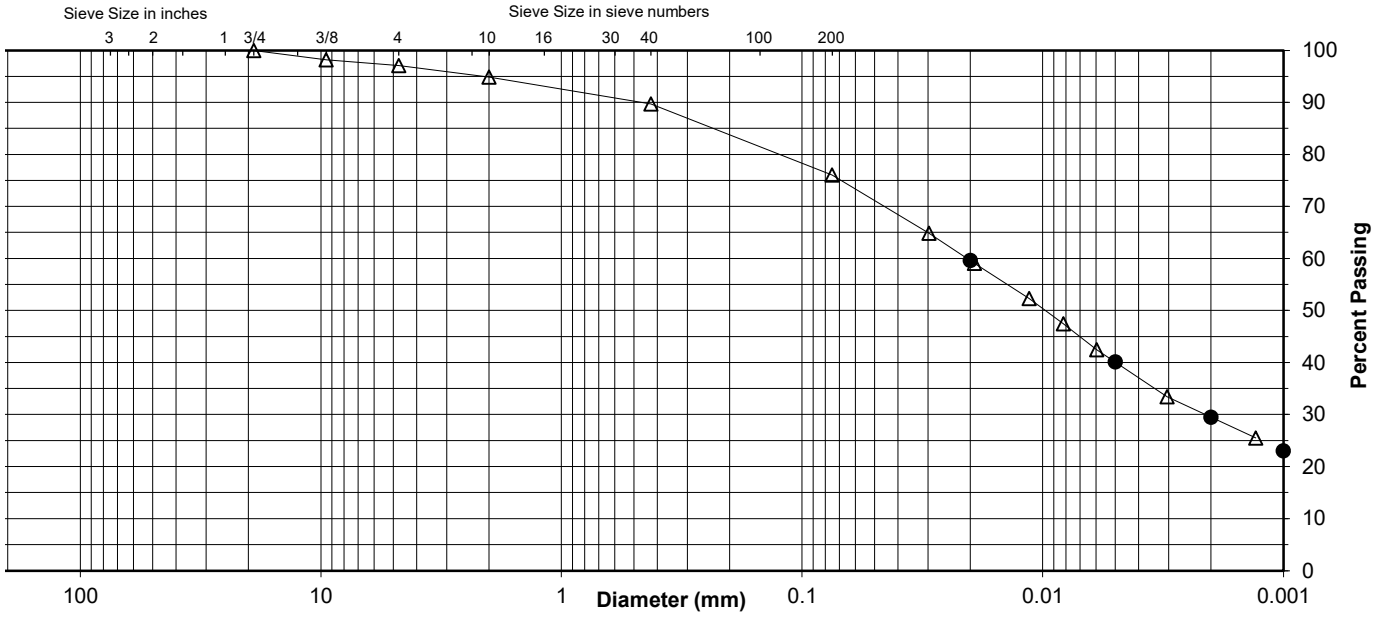
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	89.7
No. 200	76.0
0.02 mm	59.6
0.005 mm	40.1
0.002 mm	29.5
0.001 mm	23.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.9	2.3	5.1	13.7	35.9	40.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.2			5.1	13.7	46.5	29.5



Comments:

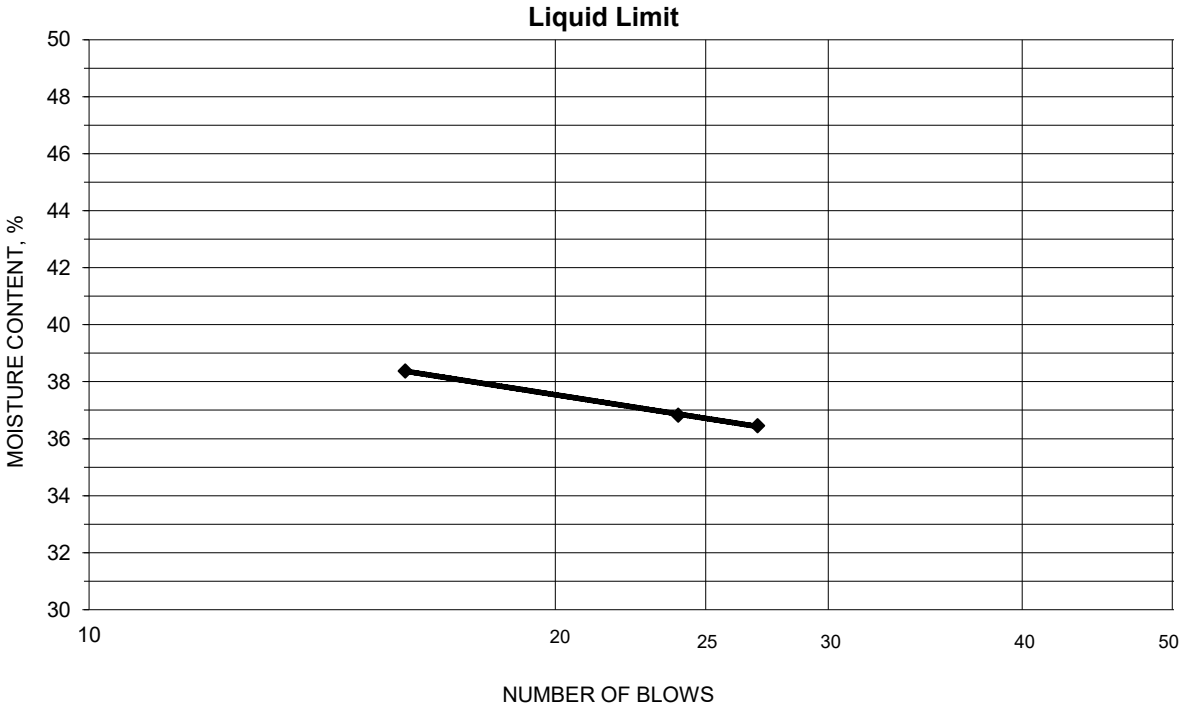
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.1, 2.5'-4.0'			Lab ID	885
				% + No. 40	10
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.55	20.09	10.60	27	36.5	
23.51	20.03	10.58	24	36.8	
23.30	19.80	10.68	16	38.4	37



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.21	17.73	10.62	20.8	21	16
18.49	17.23	11.03	20.3		

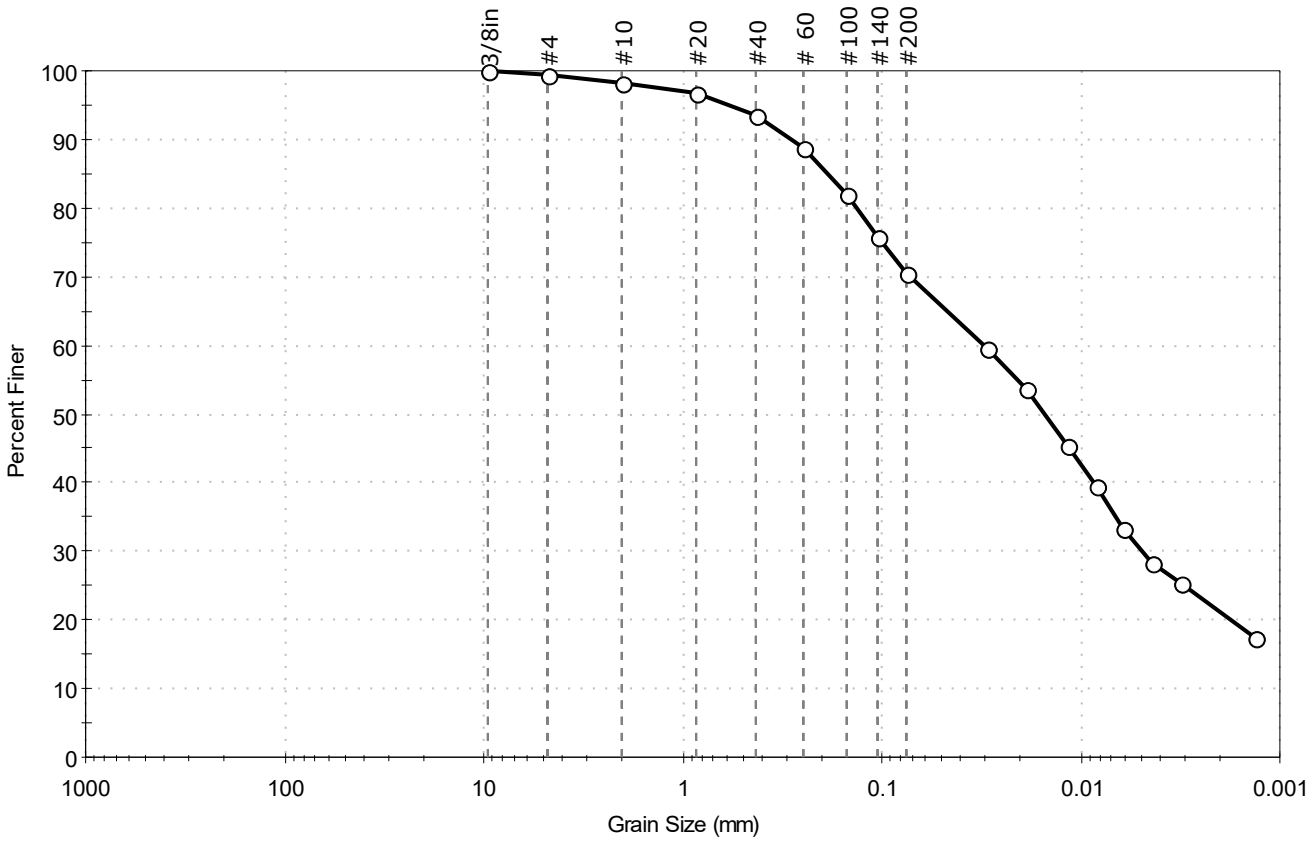
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.1	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/15/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337021		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.6	28.8	70.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	97		
#40	0.42	93		
# 60	0.25	89		
#100	0.15	82		
#140	0.11	76		
#200	0.075	71		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0294	60		
---	0.0189	54		
---	0.0117	46		
---	0.0084	40		
---	0.0061	33		
---	0.0044	28		
---	0.0031	25		
---	0.0013	17		

Coefficients

D_{85} =0.1879 mm	D_{30} =0.0048 mm
D_{60} =0.0303 mm	D_{15} =N/A
D_{50} =0.0153 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Lean CLAY with Sand (CL)

AASHTO Clayey Soils (A-6 (8))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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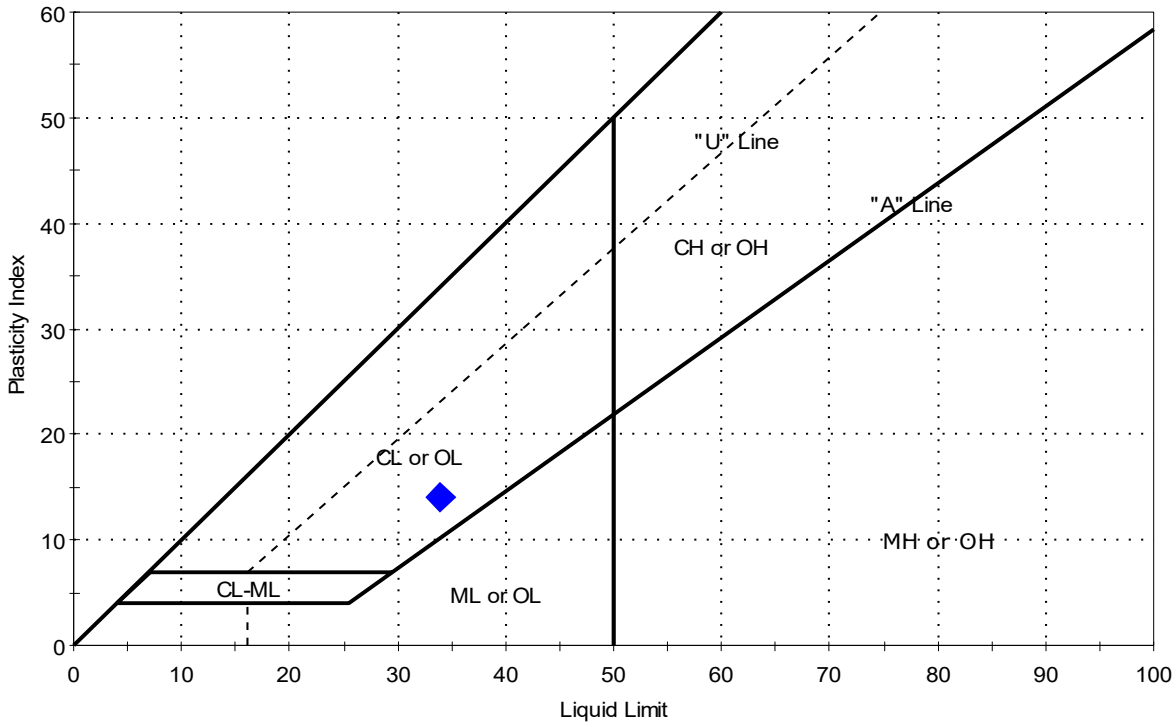
Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.1	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337022		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.1	5.0-7.0	22	34	20	14	0.2	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
7% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.1, 10.0'-11.5'	Lab ID	887
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.2
No. 4	4.75	96.5
No. 10	2	92.0
No. 40	0.425	83.7
No. 200	0.075	68.1
	0.02	54.9
	0.005	35.3
	0.002	25.7
estimated	0.001	20.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.5	8.0
Coarse Sand	4.5	8.3
Medium Sand	8.3	---
Fine Sand	15.6	15.6
Silt	32.8	42.4
Clay	35.3	25.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	23
Plastic Limit:	15
Plasticity Index:	8
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.1, 10.0'-11.5'	Lab ID	887

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-14-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.2
No. 4	96.5
No. 10	92.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

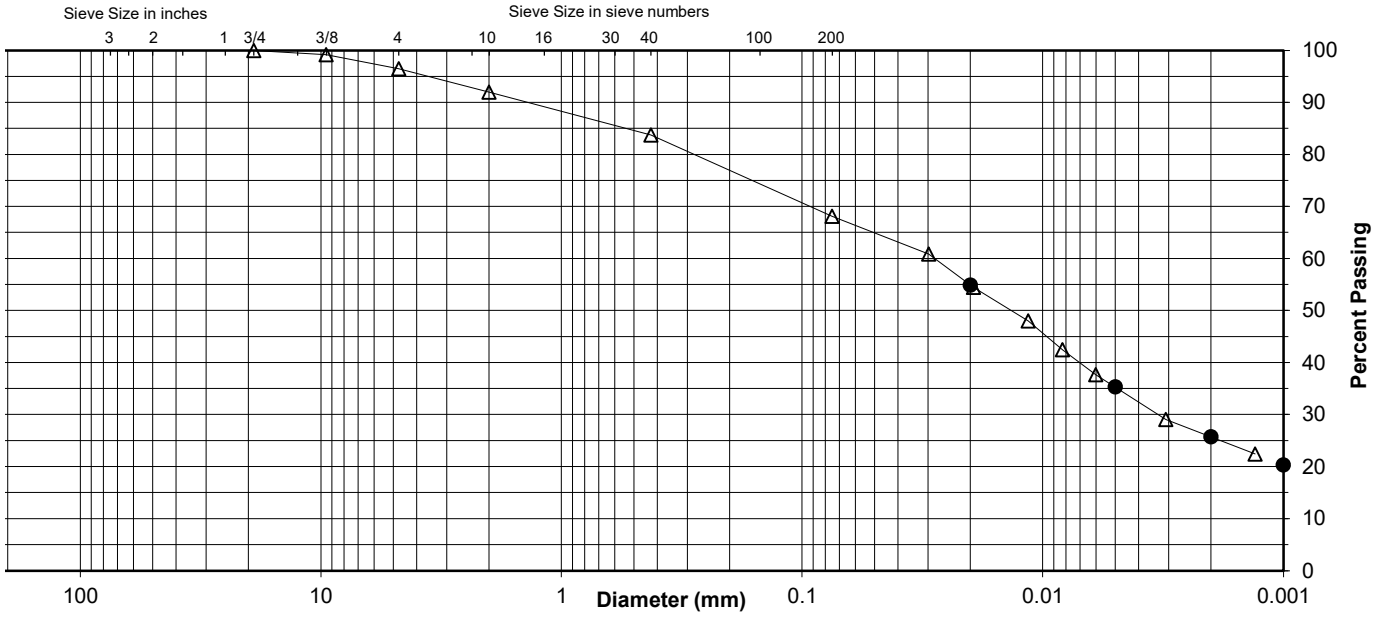
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.7
No. 200	68.1
0.02 mm	54.9
0.005 mm	35.3
0.002 mm	25.7
0.001 mm	20.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.5	4.5	8.3	15.6	32.8	35.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.0			8.3	15.6	42.4	25.7



Comments

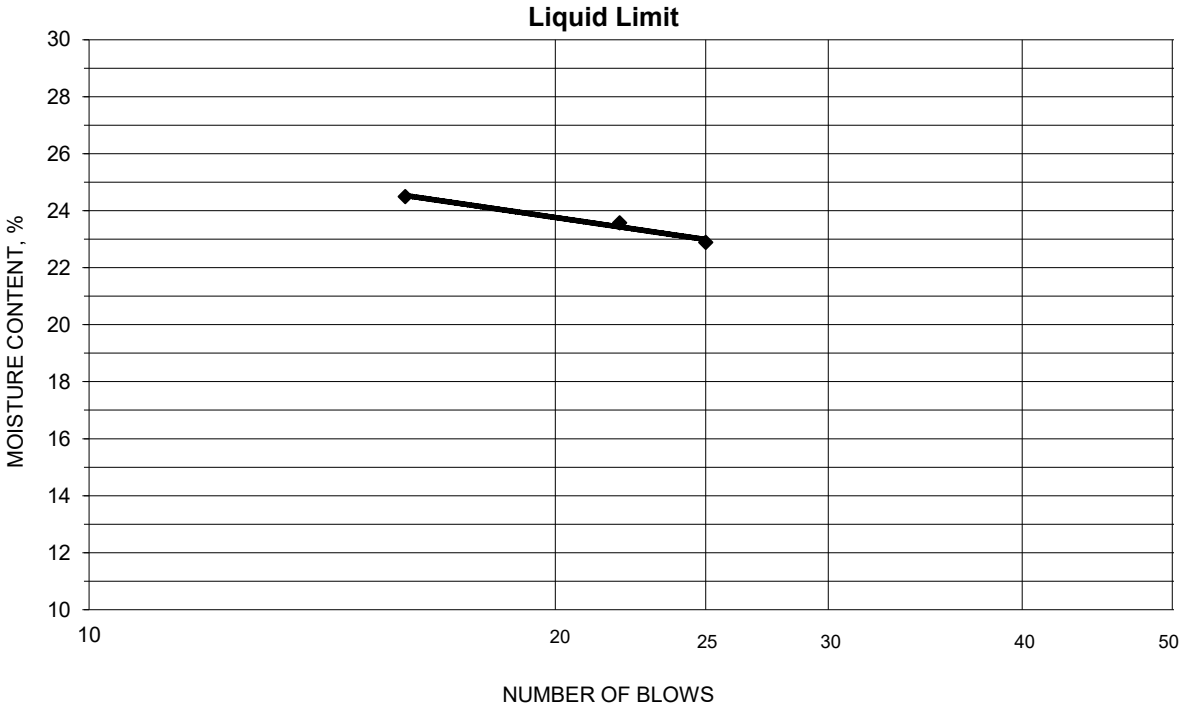
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.1, 10.0'-11.5'			Lab ID	887
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-17-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.95	21.54	11.01	25	22.9	
23.43	21.07	11.06	22	23.6	
23.92	21.39	11.06	16	24.5	23



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.50	18.36	10.59	14.7	15	8
19.33	18.26	10.90	14.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.2, 5.0'-6.5'	Lab ID	891
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.2
No. 4	4.75	96.3
No. 10	2	92.6
No. 40	0.425	83.9
No. 200	0.075	68.8
	0.02	55.4
	0.005	34.5
	0.002	23.7
estimated	0.001	17.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.7	7.4
Coarse Sand	3.7	8.7
Medium Sand	8.7	---
Fine Sand	15.1	15.1
Silt	34.3	45.1
Clay	34.5	23.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	26
Plastic Limit:	18
Plasticity Index:	8
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.2, 5.0'-6.5'	Lab ID	891

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-14-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.2
No. 4	96.3
No. 10	92.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

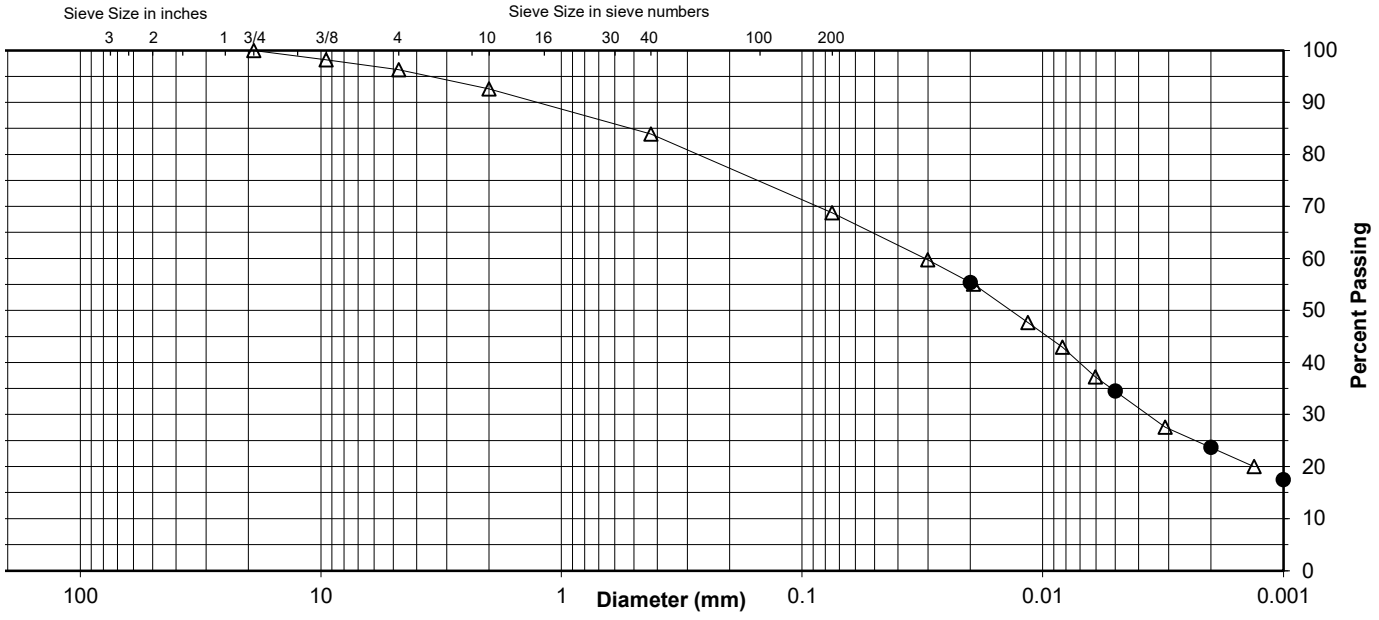
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.9
No. 200	68.8
0.02 mm	55.4
0.005 mm	34.5
0.002 mm	23.7
0.001 mm	17.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.7	3.7	8.7	15.1	34.3	34.5

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	7.4	8.7	15.1	45.1	23.7



Comments

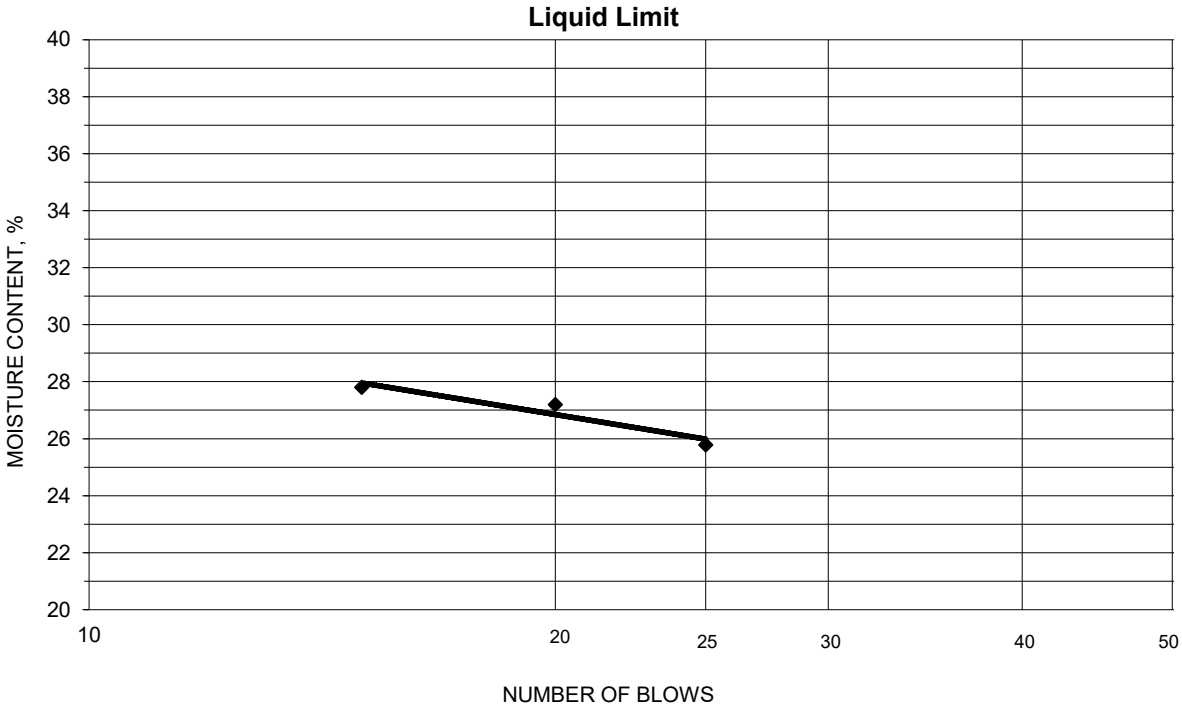
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.2, 5.0'-6.5'			Lab ID	891
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.09	20.63	11.09	25	25.8	
21.69	19.31	10.56	20	27.2	
23.12	20.39	10.57	15	27.8	26



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.17	19.54	10.52	18.1	18	8
20.91	19.39	10.51	17.1		

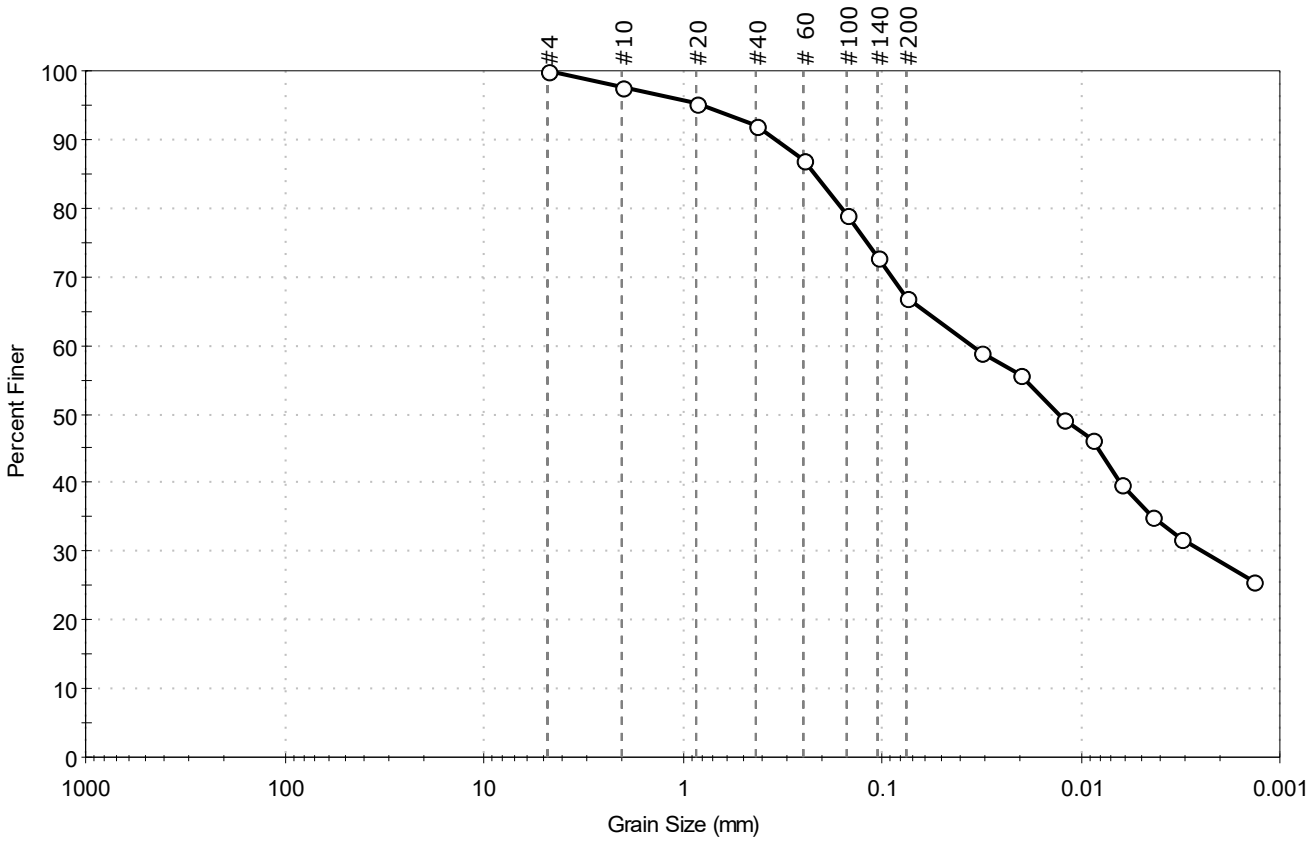
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.2	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337026		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	33.0	67.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	98		
#20	0.85	95		
#40	0.42	92		
# 60	0.25	87		
#100	0.15	79		
#140	0.11	73		
#200	0.075	67		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0319	59		
---	0.0201	56		
---	0.0123	49		
---	0.0087	46		
---	0.0062	40		
---	0.0044	35		
---	0.0032	32		
---	0.0014	26		

Coefficients

D_{85} =0.2189 mm	D_{30} =0.0024 mm
D_{60} =0.0359 mm	D_{15} =N/A
D_{50} =0.0129 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (11))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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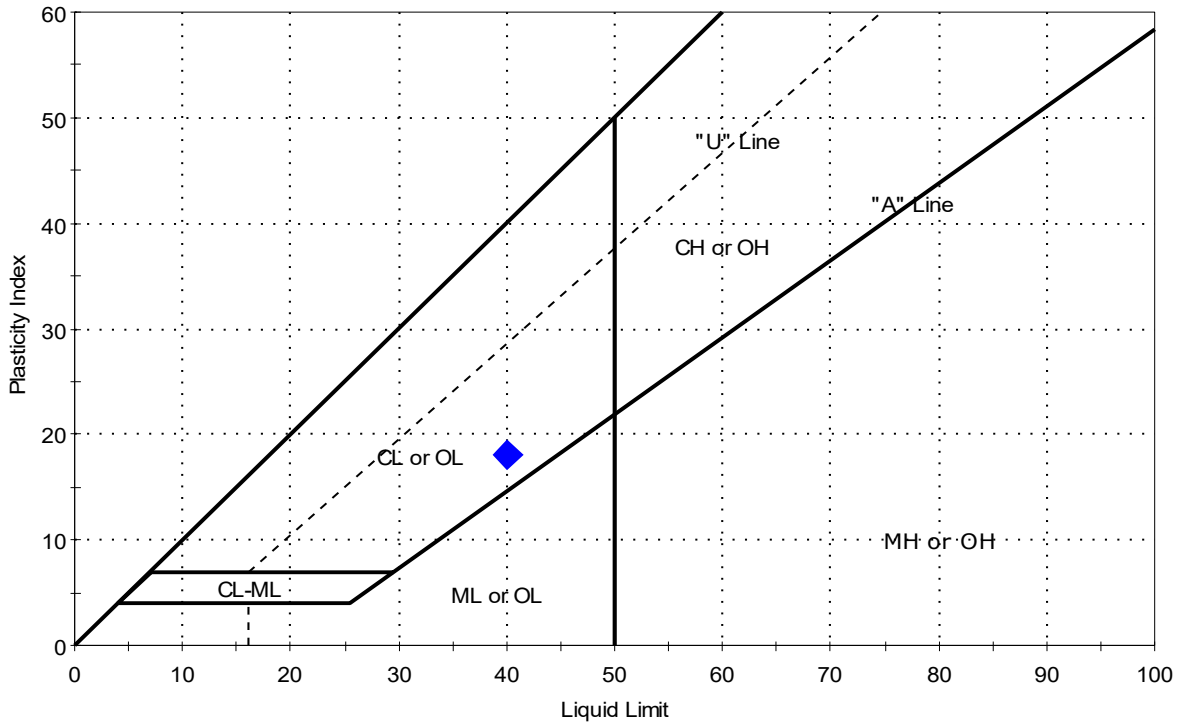
GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.2	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337027		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.2	7.5-9.5	26	40	22	18	0.2	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
8% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.2, 10.0'-11.5'	Lab ID	892
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.1
No. 10	2	97.2
No. 40	0.425	92.3
No. 200	0.075	49.9
	0.02	39.0
	0.005	26.3
	0.002	18.9
estimated	0.001	13.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.9	2.8
Coarse Sand	1.9	4.9
Medium Sand	4.9	---
Fine Sand	42.4	42.4
Silt	23.6	31.0
Clay	26.3	18.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.2, 10.0'-11.5'	Lab ID	892

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-14-2022
Date Received	06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.1
No. 10	97.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

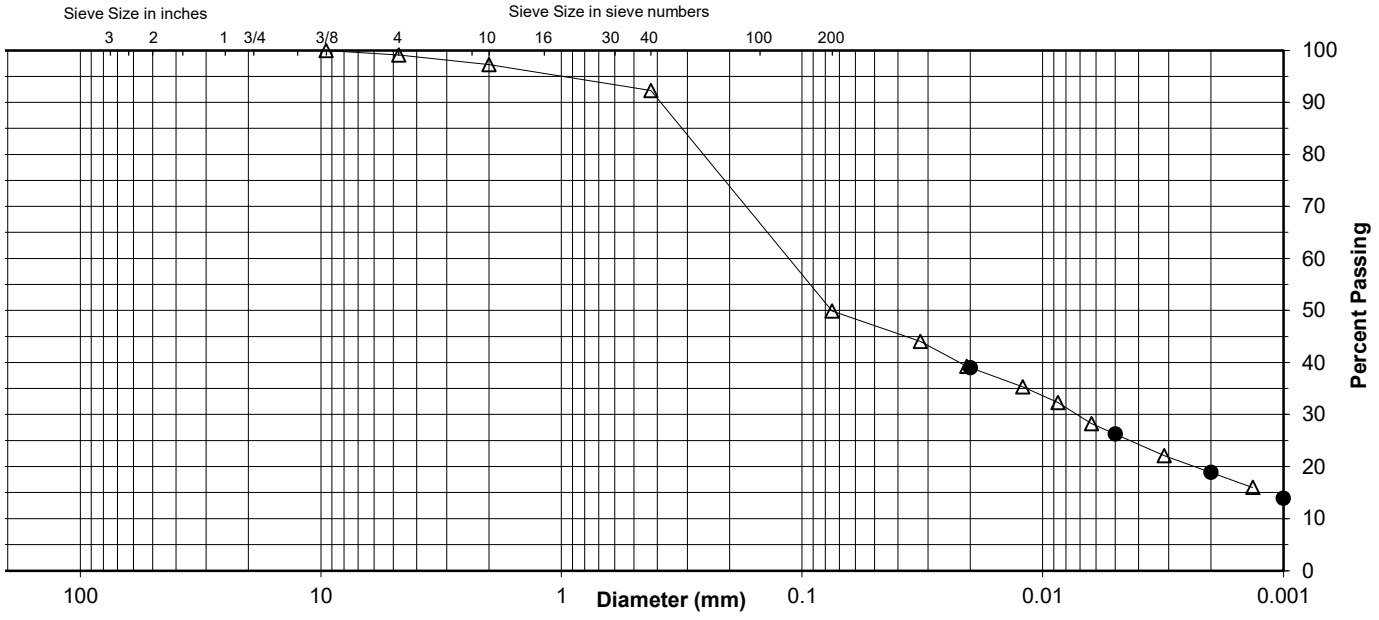
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.3
No. 200	49.9
0.02 mm	39.0
0.005 mm	26.3
0.002 mm	18.9
0.001 mm	13.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.9	1.9	4.9	42.4	23.6	26.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	2.8			4.9	42.4	31.0	18.9



Comments

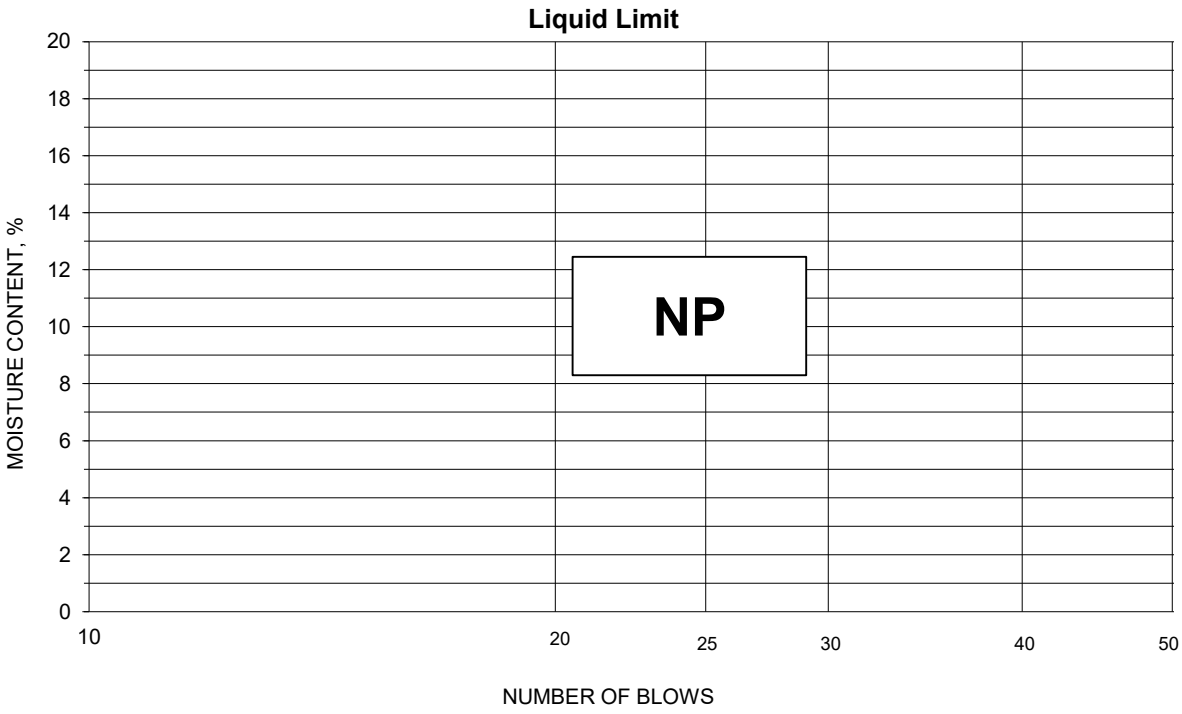
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.2, 10.0'-11.5'			Lab ID	892
				% + No. 40	8
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.3, 2.5'-4.0'	Lab ID	895
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.5
No. 40	0.425	94.8
No. 200	0.075	69.7
	0.02	54.8
	0.005	37.1
	0.002	28.2
estimated	0.001	22.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.5
Coarse Sand	0.5	4.7
Medium Sand	4.7	---
Fine Sand	25.1	25.1
Silt	32.6	41.5
Clay	37.1	28.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	19
Plasticity Index:	16
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-6 (9)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.3, 2.5'-4.0'
Lab ID: 895

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-15-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

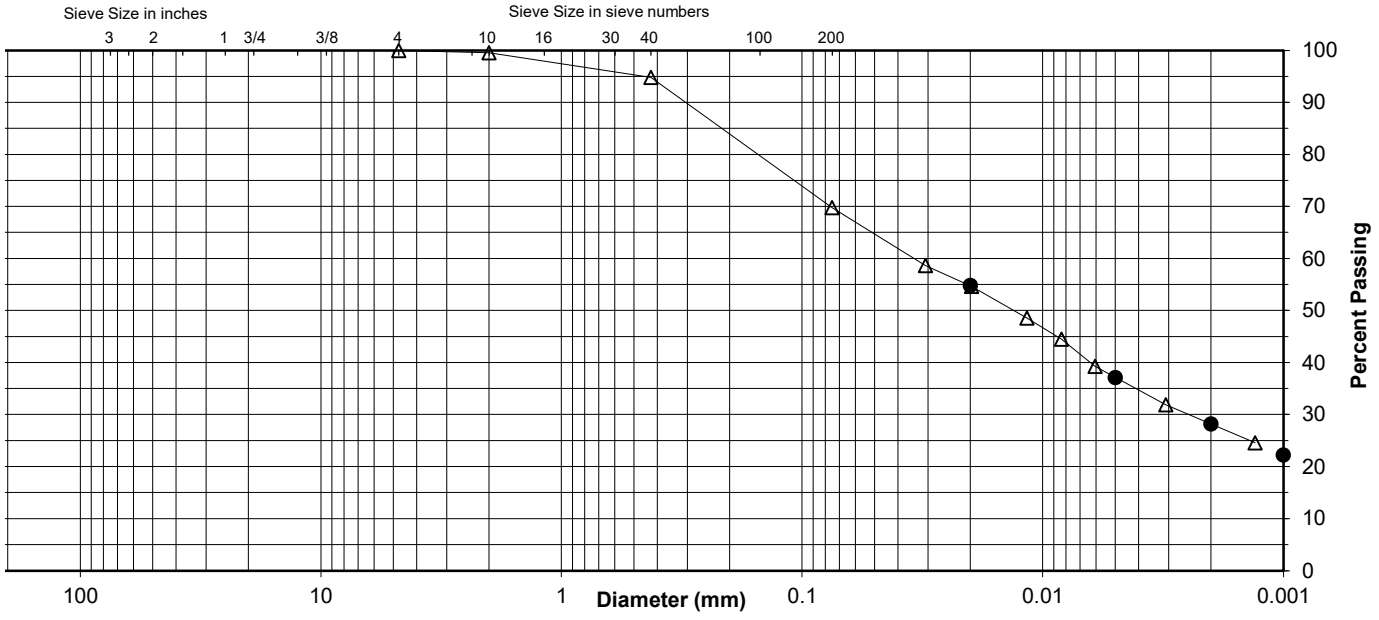
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	94.8
No. 200	69.7
0.02 mm	54.8
0.005 mm	37.1
0.002 mm	28.2
0.001 mm	22.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.5	4.7	25.1	32.6	37.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.5			4.7	25.1	41.5	28.2



Comments:

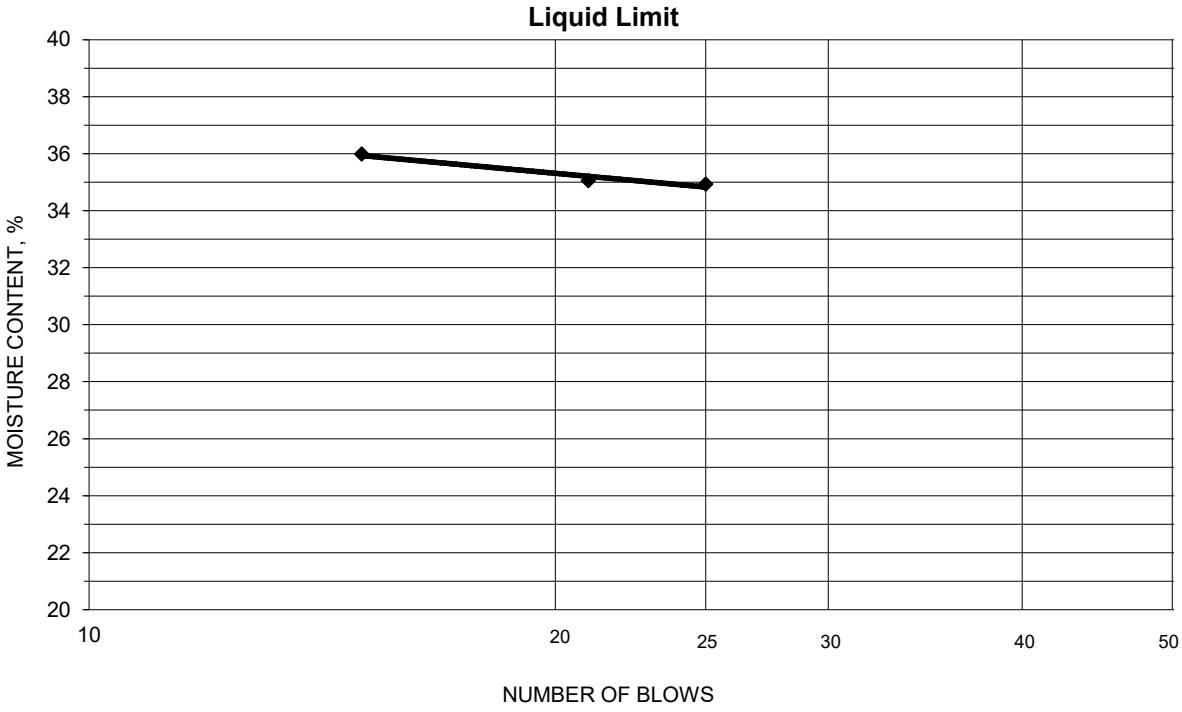
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.3, 2.5'-4.0'			Lab ID	895
				% + No. 40	5
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.31	20.88	11.06	25	34.9	
23.26	20.07	10.97	21	35.1	
23.22	20.01	11.09	15	36.0	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.89	18.45	11.04	19.4	19	16
18.63	17.31	10.52	19.4		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.3, 12.5'-14.0'	Lab ID	898
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.6
No. 40	0.425	98.8
No. 200	0.075	37.7
	0.02	26.3
	0.005	16.9
	0.002	13.3
estimated	0.001	10.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.4
Coarse Sand	0.4	0.8
Medium Sand	0.8	---
Fine Sand	61.1	61.1
Silt	20.8	24.4
Clay	16.9	13.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.3, 12.5'-14.0'
Lab ID: 898

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-22-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

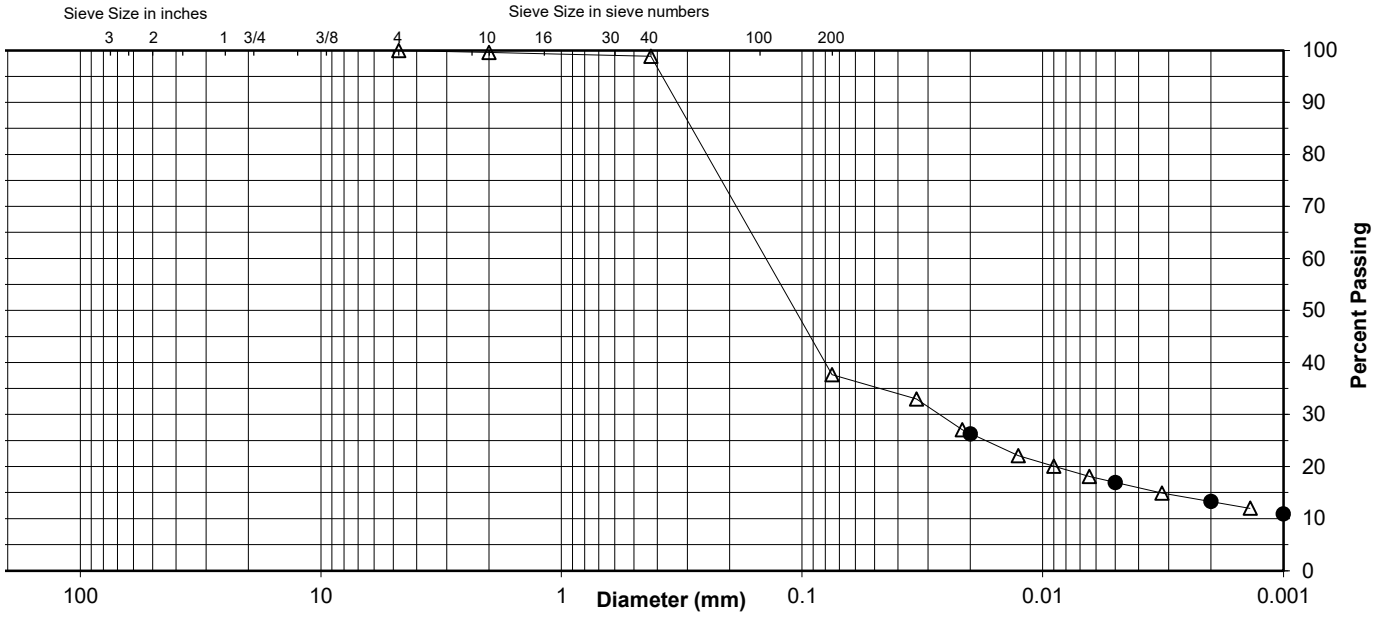
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	98.8
No. 200	37.7
0.02 mm	26.3
0.005 mm	16.9
0.002 mm	13.3
0.001 mm	10.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.4	0.8	61.1	20.8	16.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.4			0.8	61.1	24.4	13.3



Comments:

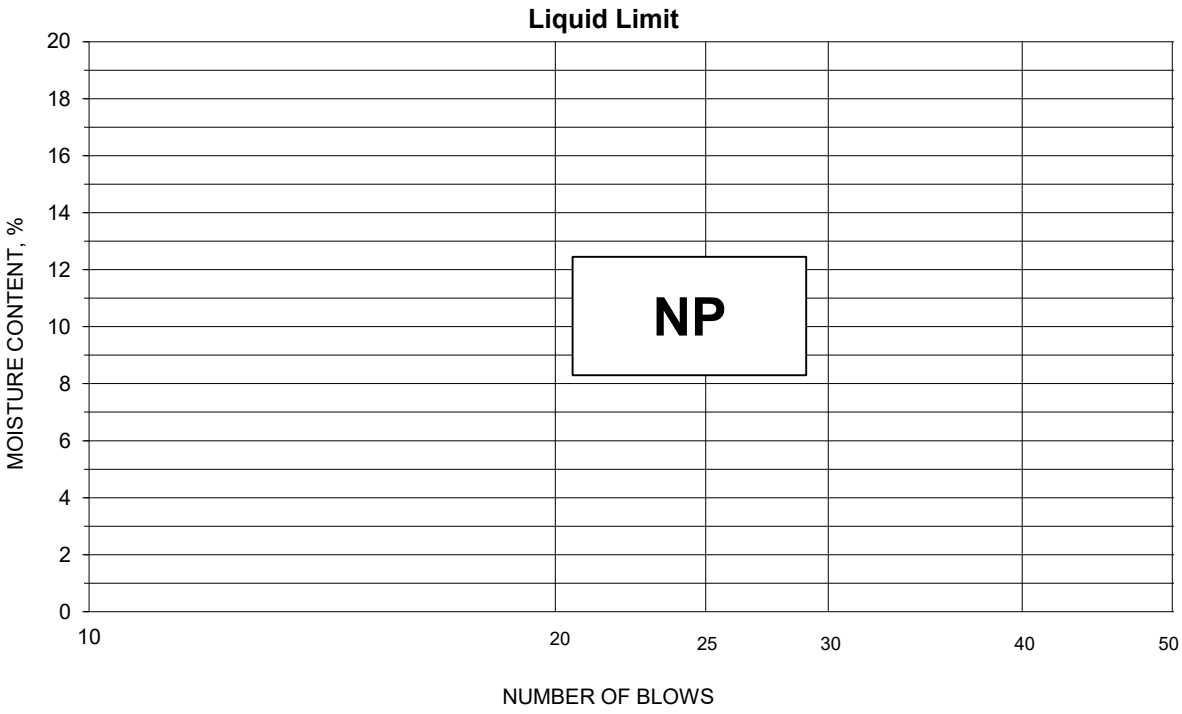
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.3, 12.5'-14.0'			Lab ID	898
				% + No. 40	1
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.4, 2.5'-4.0'	Lab ID	900
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.3
No. 10	2	98.5
No. 40	0.425	94.1
No. 200	0.075	81.1
	0.02	71.2
	0.005	52.9
	0.002	41.5
estimated	0.001	34.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.7	1.5
Coarse Sand	0.8	4.4
Medium Sand	4.4	---
Fine Sand	13.0	13.0
Silt	28.2	39.6
Clay	52.9	41.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	43
Plastic Limit:	23
Plasticity Index:	20
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (16)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.4, 2.5'-4.0'
Lab ID: 900

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-13-2022
Date Received: 06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.3
No. 10	98.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

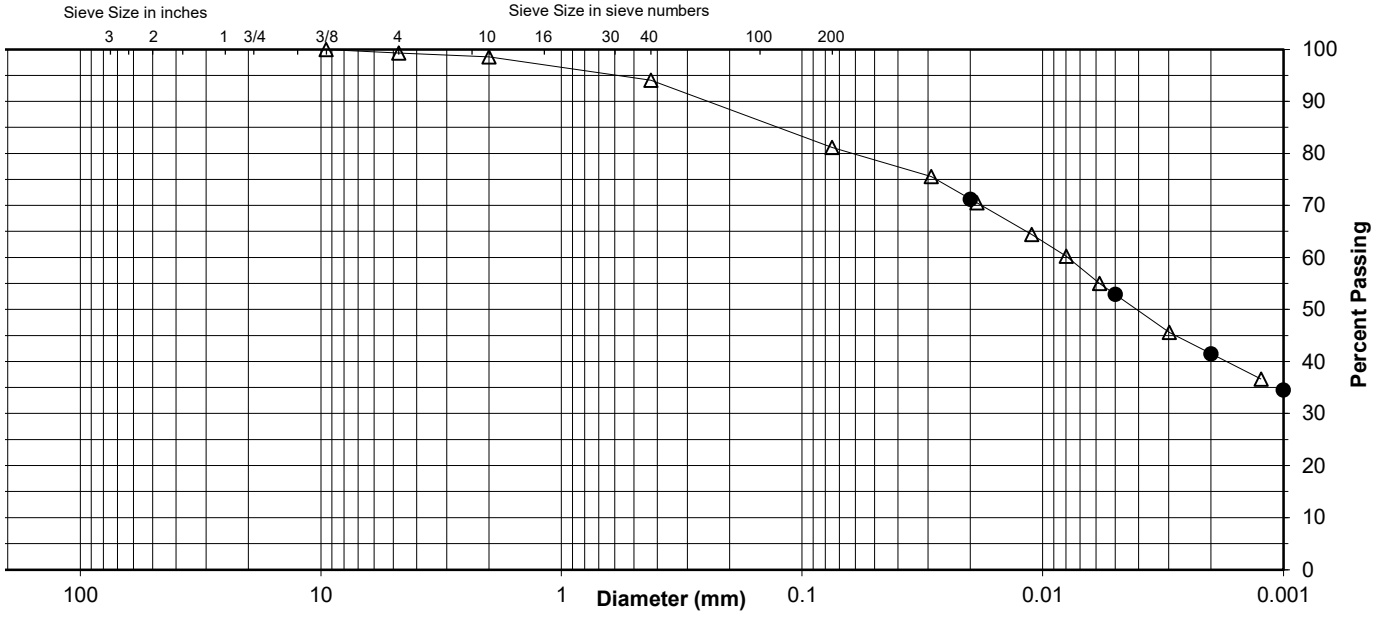
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	94.1
No. 200	81.1
0.02 mm	71.2
0.005 mm	52.9
0.002 mm	41.5
0.001 mm	34.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.7	0.8	4.4	13.0	28.2	52.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.5			4.4	13.0	39.6	41.5



Comments:

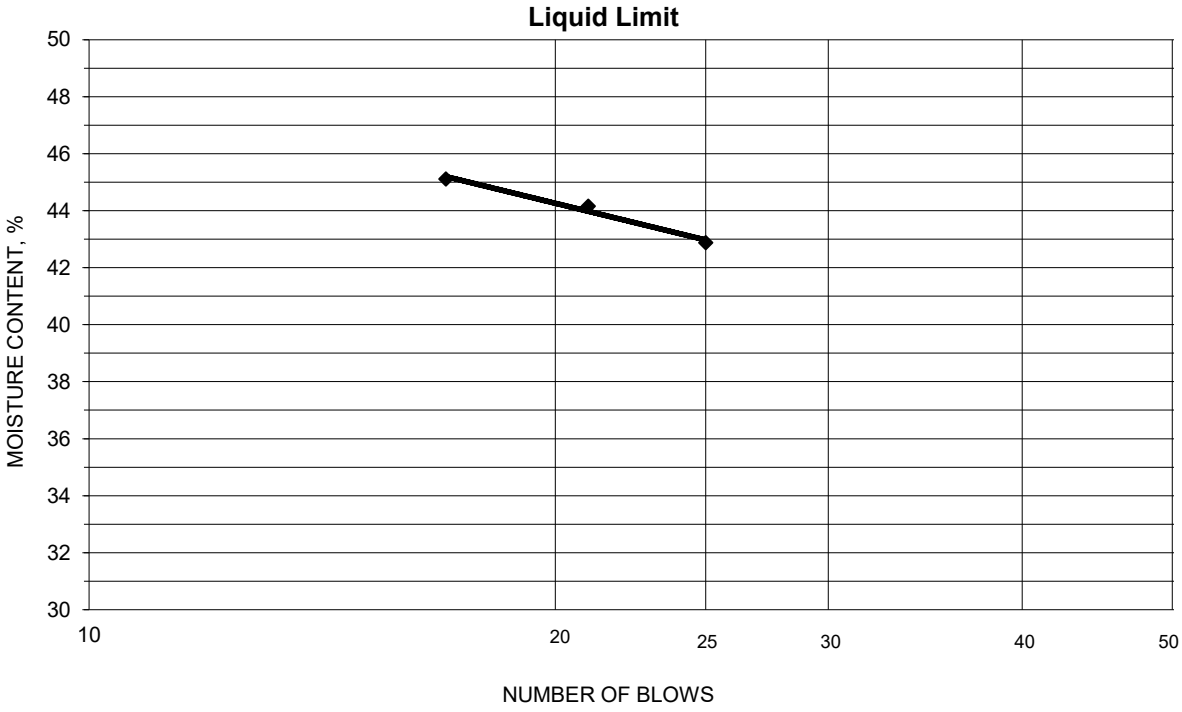
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.4, 2.5'-4.0'			Lab ID	900
				% + No. 40	6
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.52	19.76	10.99	25	42.9	
22.85	19.22	11.00	21	44.2	
23.04	19.30	11.01	17	45.1	43



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.12	16.71	10.48	22.6	23	20
19.93	18.30	11.02	22.4		

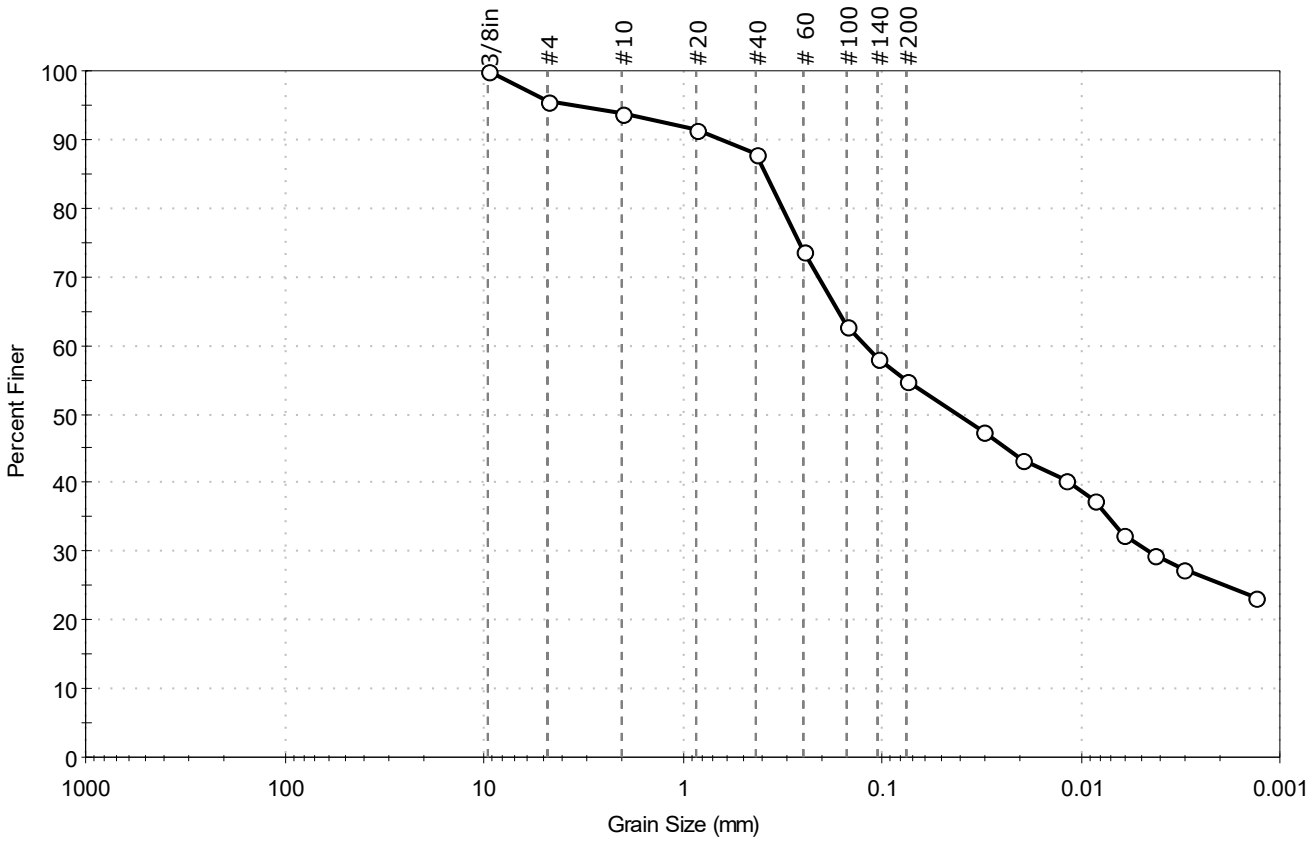
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.4	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	4.0-6.0	Test Id:	337032		
Test Comment:	---				
Visual Description:	Moist, dark brown sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	4.3	40.9	54.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	96		
#10	2.00	94		
#20	0.85	92		
#40	0.42	88		
# 60	0.25	74		
#100	0.15	63		
#140	0.11	58		
#200	0.075	55		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0307	47		
---	0.0195	43		
---	0.0119	40		
---	0.0085	37		
---	0.0061	32		
---	0.0043	29		
---	0.0031	27		
---	0.0013	23		

Coefficients

D_{85} =0.3797 mm	D_{30} =0.0047 mm
D_{60} =0.1223 mm	D_{15} =N/A
D_{50} =0.0419 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (4))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

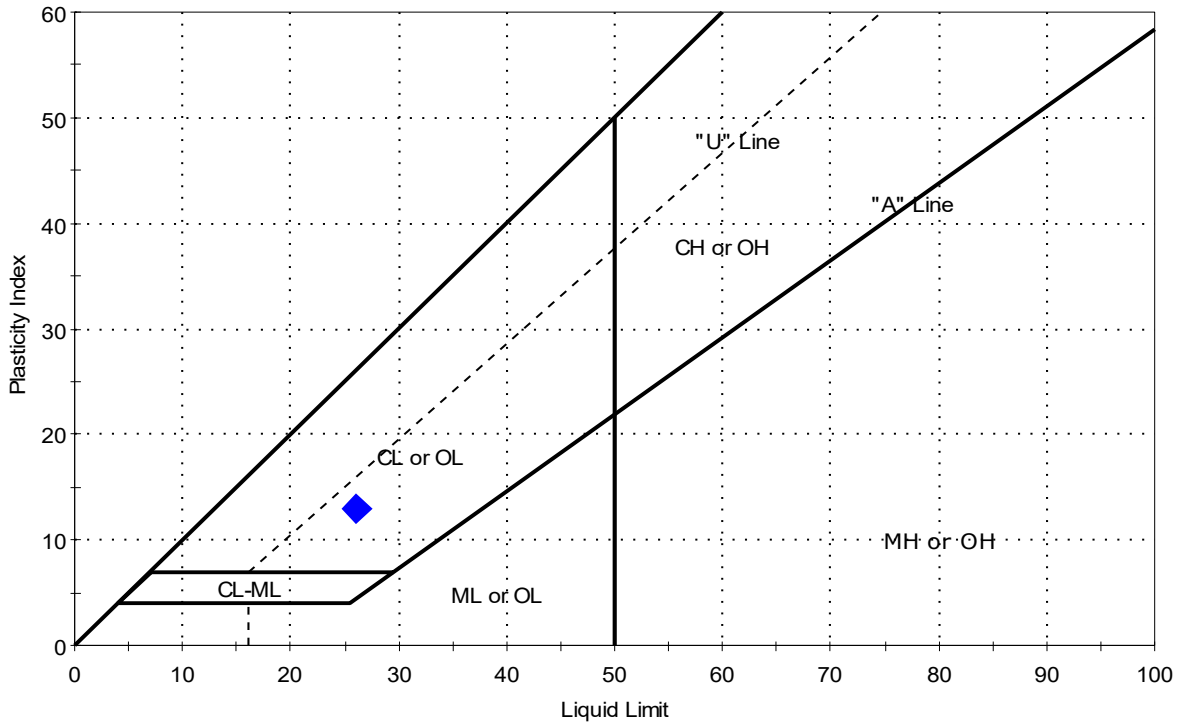
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.4	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	4.0-6.0	Test Id:	337033		
Test Comment:	---				
Visual Description:	Moist, dark brown sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.4	4.0-6.0	14	26	13	13	0	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
12% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.4, 10.0'-11.5'	Lab ID	902
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	94.8
No. 4	4.75	89.5
No. 10	2	81.7
No. 40	0.425	67.2
No. 200	0.075	50.4
	0.02	42.4
	0.005	24.8
	0.002	17.7
estimated	0.001	13.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	10.5	18.3
Coarse Sand	7.8	14.5
Medium Sand	14.5	---
Fine Sand	16.8	16.8
Silt	25.6	32.7
Clay	24.8	17.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	14
Plasticity Index:	8
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (1)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.4, 10.0'-11.5'
Lab ID: 902

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-13-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	94.8
No. 4	89.5
No. 10	81.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

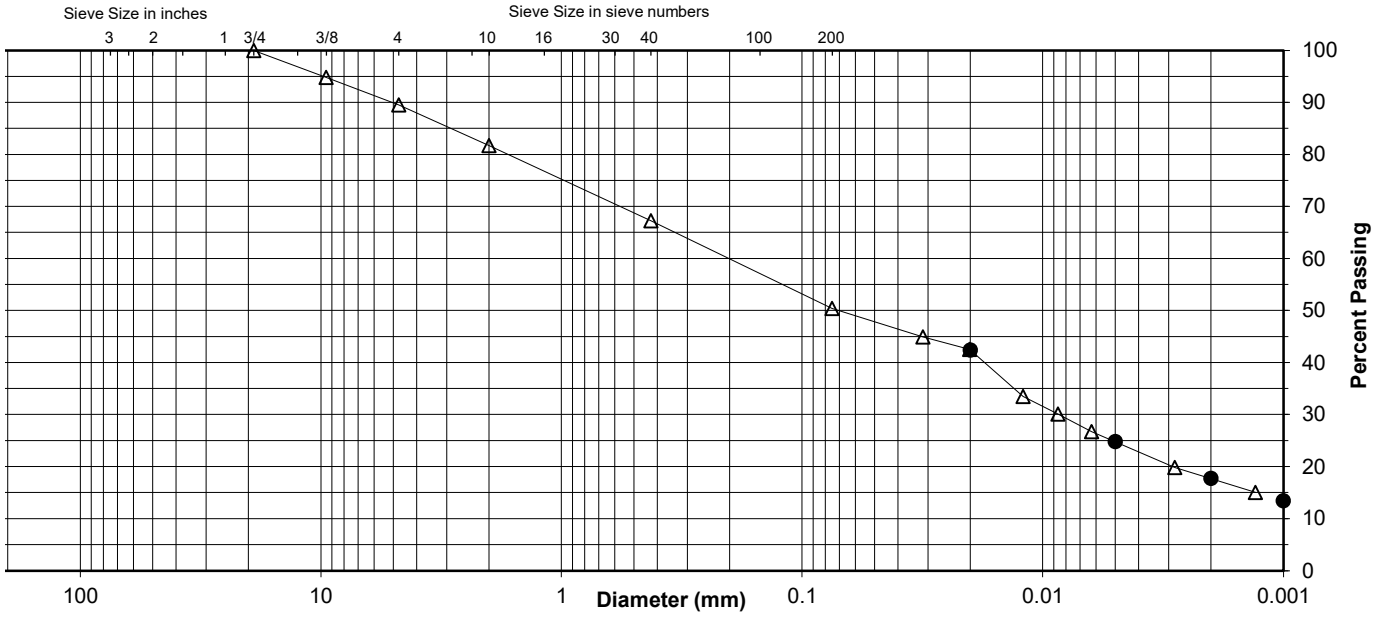
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	67.2
No. 200	50.4
0.02 mm	42.4
0.005 mm	24.8
0.002 mm	17.7
0.001 mm	13.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	10.5	7.8	14.5	16.8	25.6	24.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	18.3			14.5	16.8	32.7	17.7



Comments

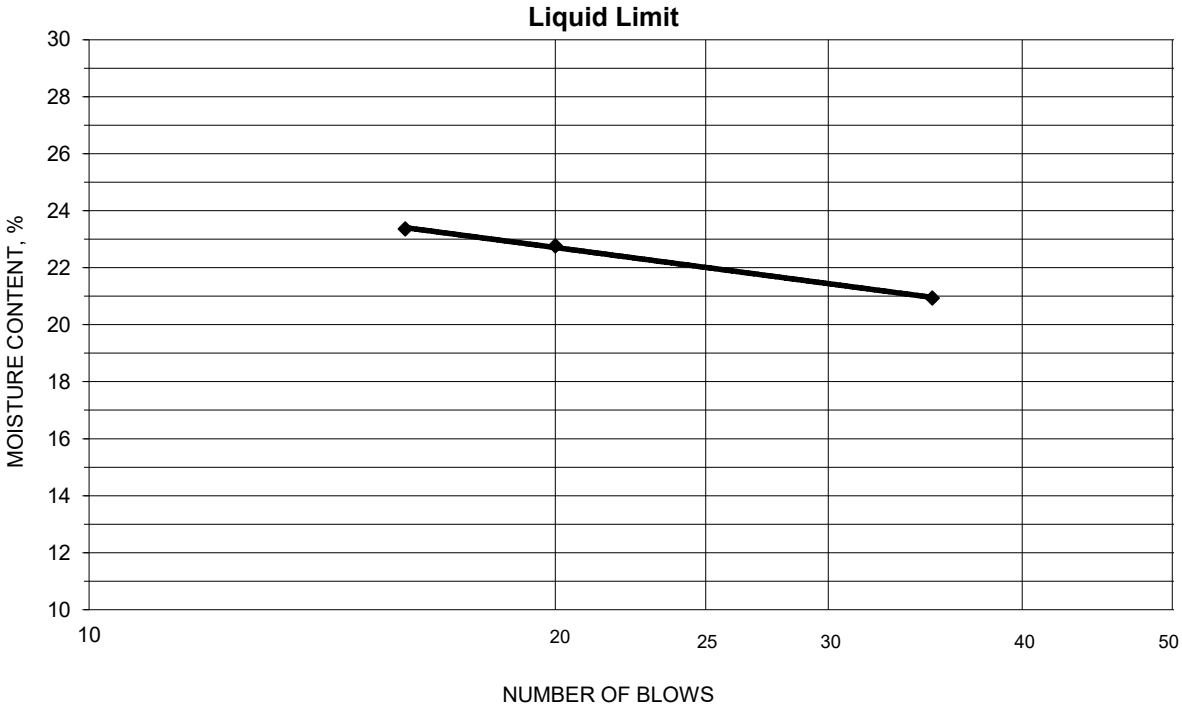
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.4, 10.0'-11.5'			Lab ID	902
				% + No. 40	33
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.52	25.25	14.41	35	20.9	
26.40	24.18	14.43	20	22.8	
27.77	25.24	14.41	16	23.4	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
25.27	23.89	14.37	14.5	14	8
25.73	24.30	14.41	14.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.5, 7.5'-9.0'	Lab ID	907
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.5
No. 4	4.75	97.2
No. 10	2	93.1
No. 40	0.425	83.9
No. 200	0.075	69.4
	0.02	51.6
	0.005	30.5
	0.002	20.8
estimated	0.001	16.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.8	6.9
Coarse Sand	4.1	9.2
Medium Sand	9.2	---
Fine Sand	14.5	14.5
Silt	38.9	48.6
Clay	30.5	20.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	16
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.5, 7.5'-9.0'
Lab ID: 907

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-15-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.5
No. 4	97.2
No. 10	93.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

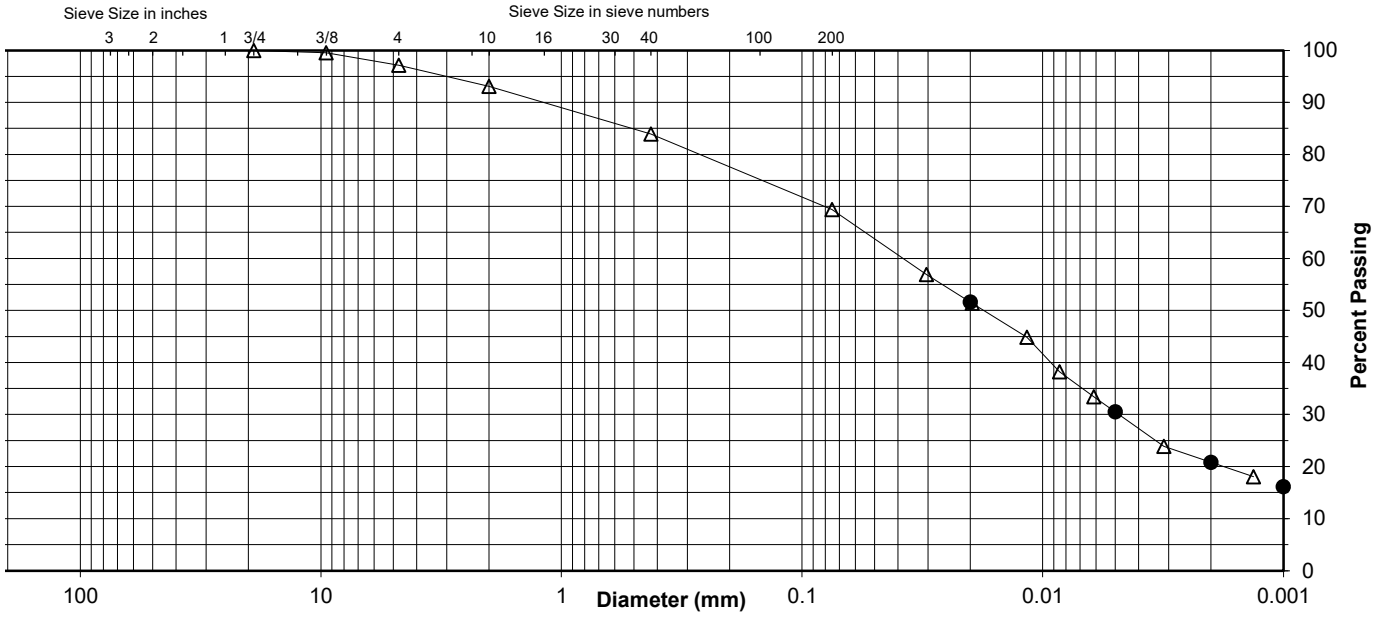
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	83.9
No. 200	69.4
0.02 mm	51.6
0.005 mm	30.5
0.002 mm	20.8
0.001 mm	16.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.8	4.1	9.2	14.5	38.9	30.5

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	6.9	9.2	14.5	48.6	20.8



Comments:

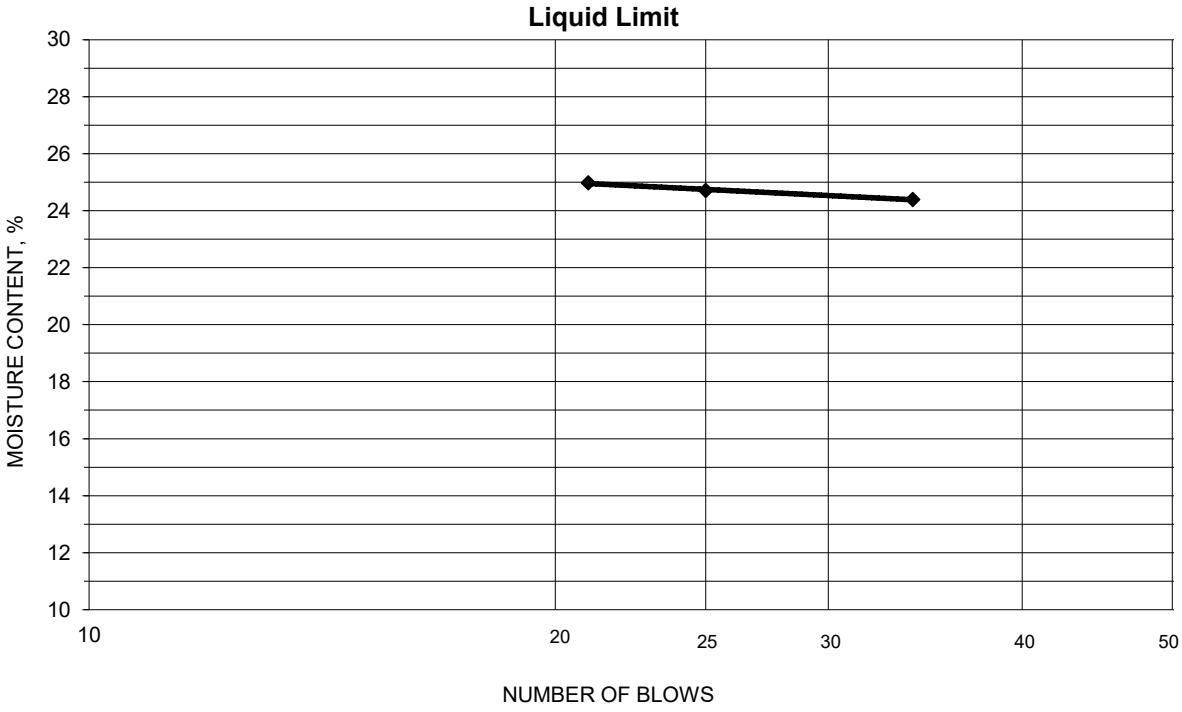
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.5, 7.5'-9.0'			Lab ID	907
				% + No. 40	16
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-17-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.97	22.24	11.05	34	24.4	
22.98	20.61	11.02	25	24.7	
23.98	21.37	10.92	21	25.0	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.48	19.95	10.62	16.4	16	9
20.76	19.42	11.09	16.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.5, 15.0'-16.5'	Lab ID	910
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 16.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.9
No. 4	4.75	94.3
No. 10	2	74.1
No. 40	0.425	34.5
No. 200	0.075	24.6
	0.02	16.0
	0.005	8.6
	0.002	5.8
estimated	0.001	3.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.7	25.9
Coarse Sand	20.2	39.6
Medium Sand	39.6	---
Fine Sand	9.9	9.9
Silt	16.0	18.8
Clay	8.6	5.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	16
Plastic Limit:	12
Plasticity Index:	4
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.5, 15.0'-16.5'	Lab ID	910

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-15-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.9
No. 4	94.3
No. 10	74.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

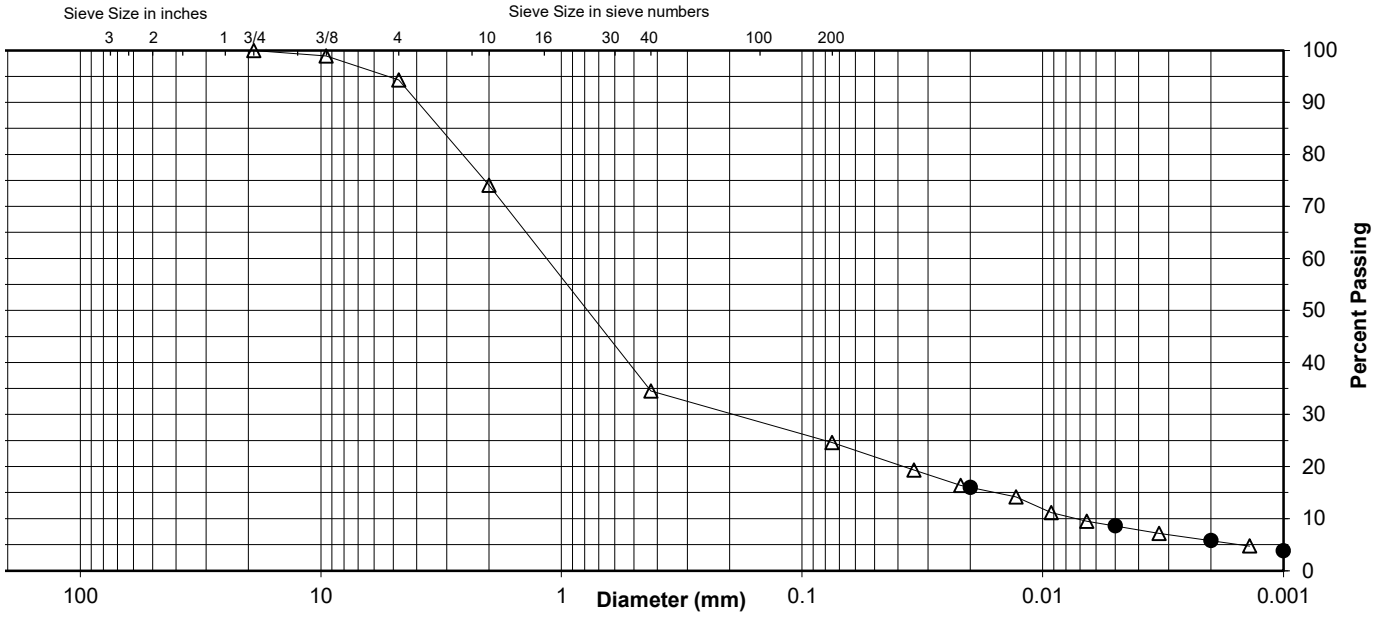
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	34.5
No. 200	24.6
0.02 mm	16.0
0.005 mm	8.6
0.002 mm	5.8
0.001 mm	3.8

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	5.7	20.2	39.6	9.9	16.0	8.6

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	25.9	39.6	9.9	18.8	5.8



Comments

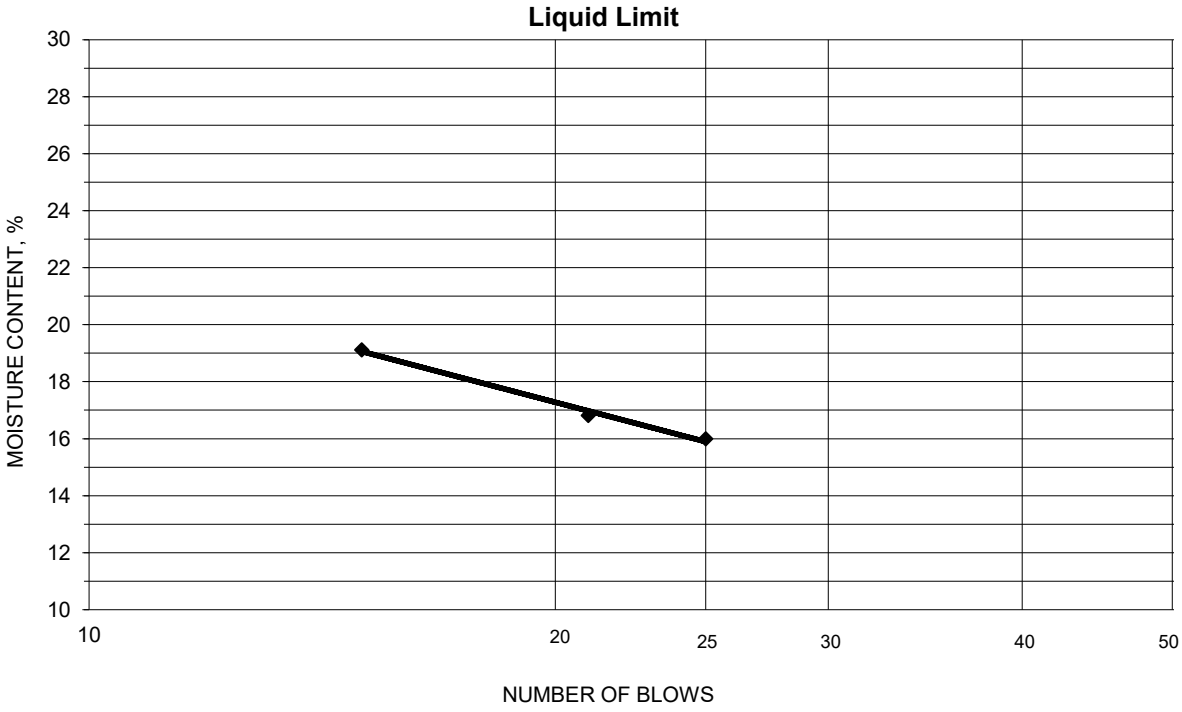
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.5, 15.0'-16.5'			Lab ID	910
				% + No. 40	65
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.19	23.24	11.05	25	16.0	
26.26	24.07	11.05	21	16.8	
22.37	20.56	11.09	15	19.1	16



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
25.89	24.22	10.99	12.6	12	4
23.35	21.97	10.66	12.2		

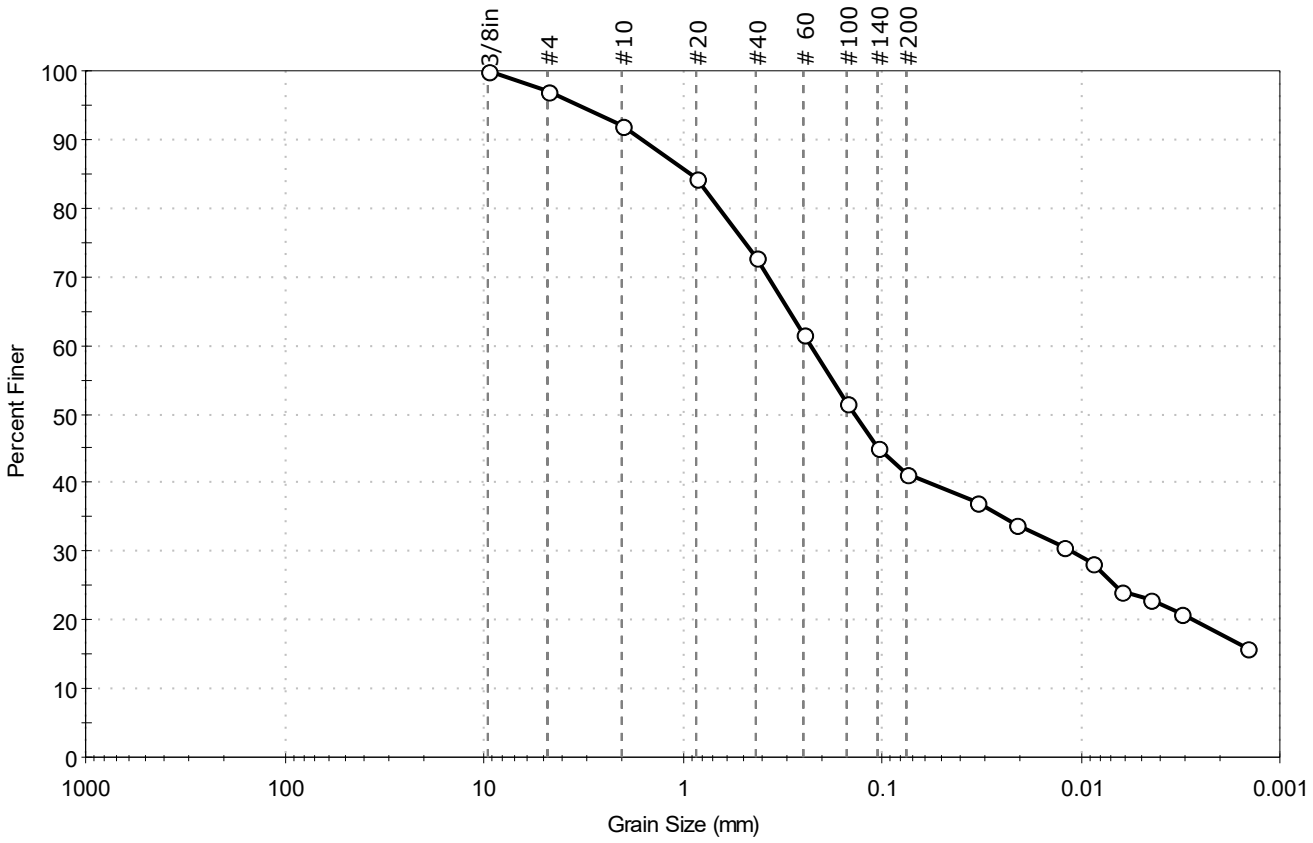
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.6	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337036		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	2.8	55.9	41.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	97		
#10	2.00	92		
#20	0.85	84		
#40	0.42	73		
# 60	0.25	62		
#100	0.15	51		
#140	0.11	45		
#200	0.075	41		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0334	37		
---	0.0215	34		
---	0.0124	31		
---	0.0088	28		
---	0.0063	24		
---	0.0045	23		
---	0.0032	21		
---	0.0014	16		

Coefficients

D_{85} =0.9085 mm	D_{30} =0.0113 mm
D_{60} =0.2300 mm	D_{15} =N/A
D_{50} =0.1385 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Clayey SAND (SC)

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

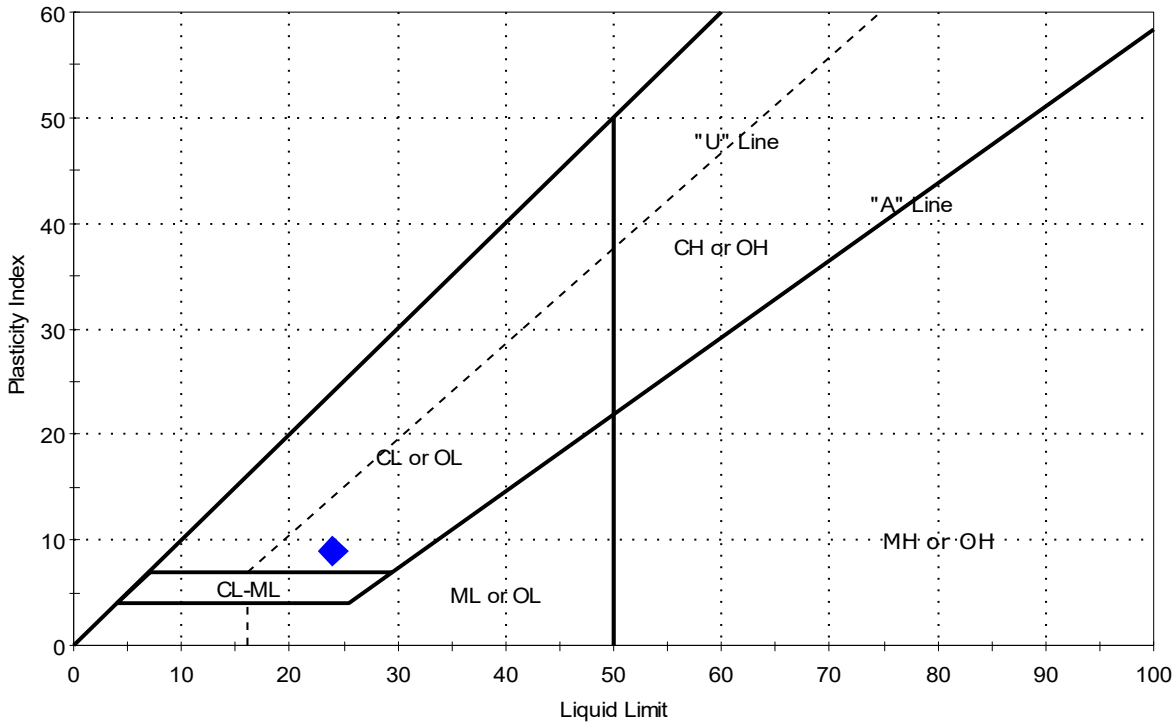
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.6	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337037		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.6	3.0-5.0	25	24	15	9	1.1	Clayey SAND (SC)

Sample Prepared using the DRY method
27% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.6, 7.5'-9.0'	Lab ID	914
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.9
No. 4	4.75	94.5
No. 10	2	90.2
No. 40	0.425	81.0
No. 200	0.075	66.1
	0.02	59.2
	0.005	39.9
	0.002	30.2
estimated	0.001	24.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.5	9.8
Coarse Sand	4.3	9.2
Medium Sand	9.2	---
Fine Sand	14.9	14.9
Silt	26.2	35.9
Clay	39.9	30.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	26
Plastic Limit:	17
Plasticity Index:	9
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.6, 7.5'-9.0'	Lab ID	914

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-28-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.9
No. 4	94.5
No. 10	90.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

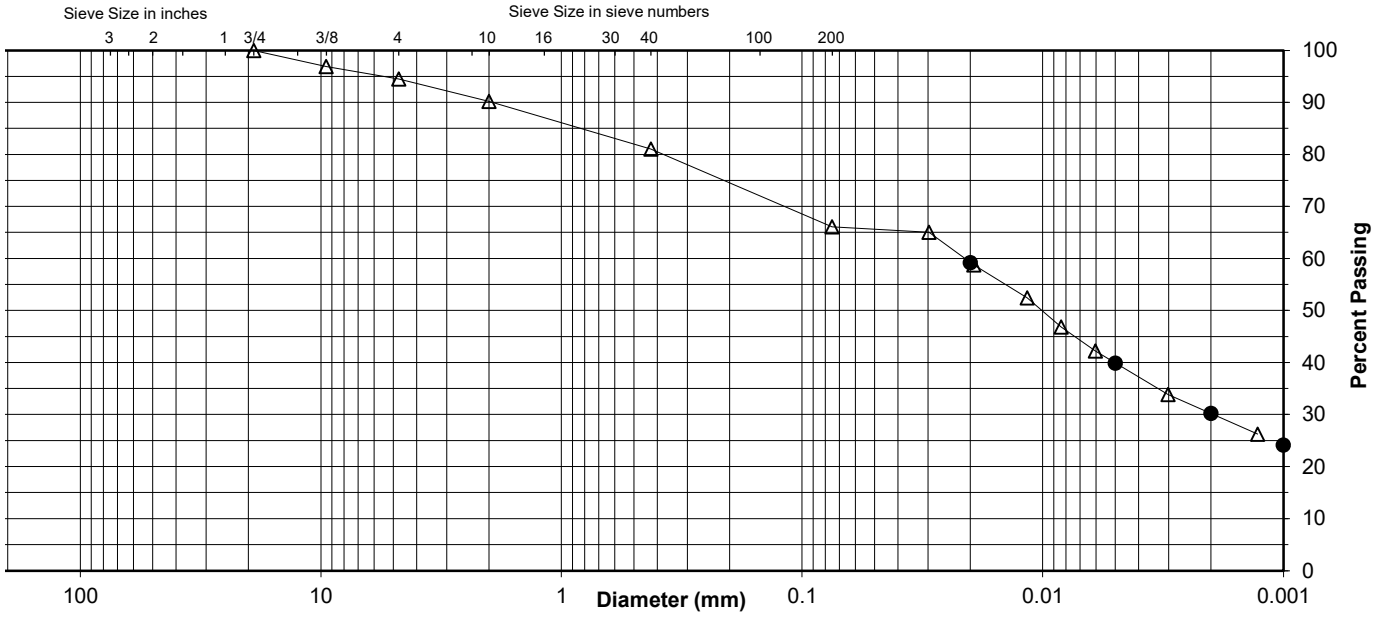
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	81.0
No. 200	66.1
0.02 mm	59.2
0.005 mm	39.9
0.002 mm	30.2
0.001 mm	24.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	5.5	4.3	9.2	14.9	26.2	39.9

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	9.8	9.2	14.9	35.9	30.2



Comments

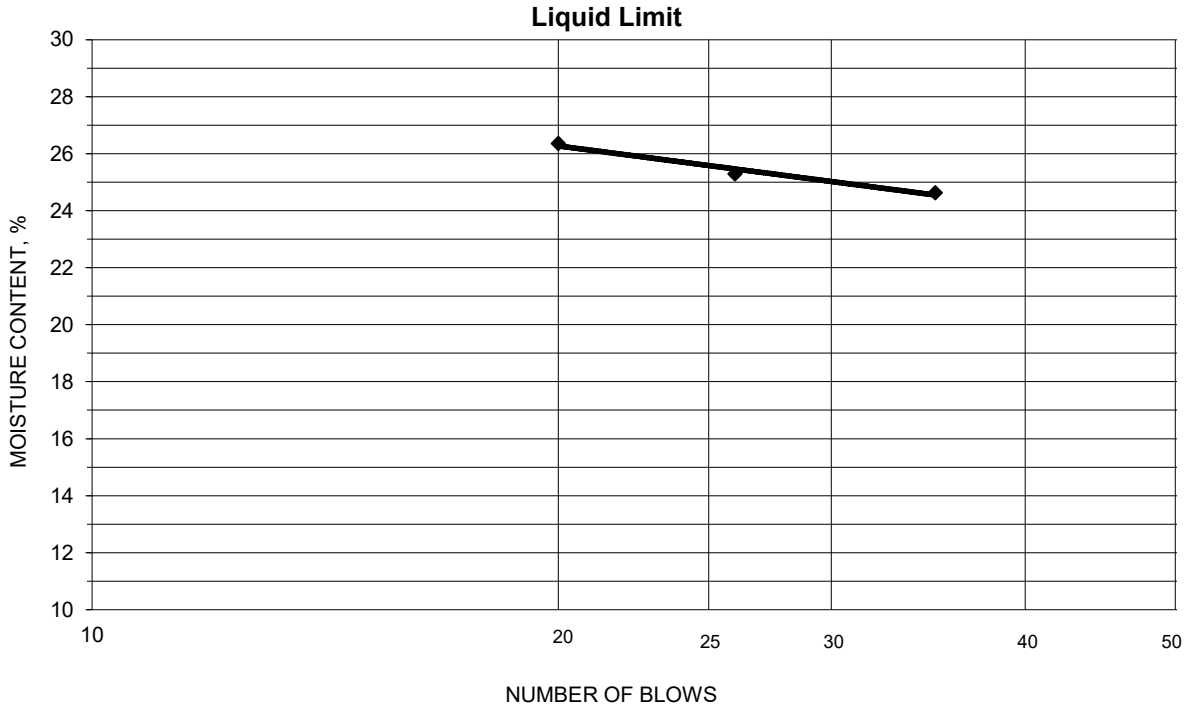
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.6, 7.5'-9.0'			Lab ID	914
				% + No. 40	19
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.31	22.49	11.04	35	24.6	
24.79	22.01	11.02	26	25.3	
24.29	21.53	11.06	20	26.4	26



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.80	20.22	10.56	16.4	17	9
20.24	18.90	11.08	17.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.6, 15.0'-16.5'	Lab ID	917
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.6
No. 4	4.75	96.7
No. 10	2	83.8
No. 40	0.425	20.9
No. 200	0.075	12.9
	0.02	11.8
	0.005	9.0
	0.002	7.5
estimated	0.001	6.2

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	3.3	16.2
Coarse Sand	12.9	62.9
Medium Sand	62.9	---
Fine Sand	8.0	8.0
Silt	3.9	5.4
Clay	9.0	7.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SM

Group Name: Silty sand

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.6, 15.0'-16.5'	Lab ID	917

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-22-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.6
No. 4	96.7
No. 10	83.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

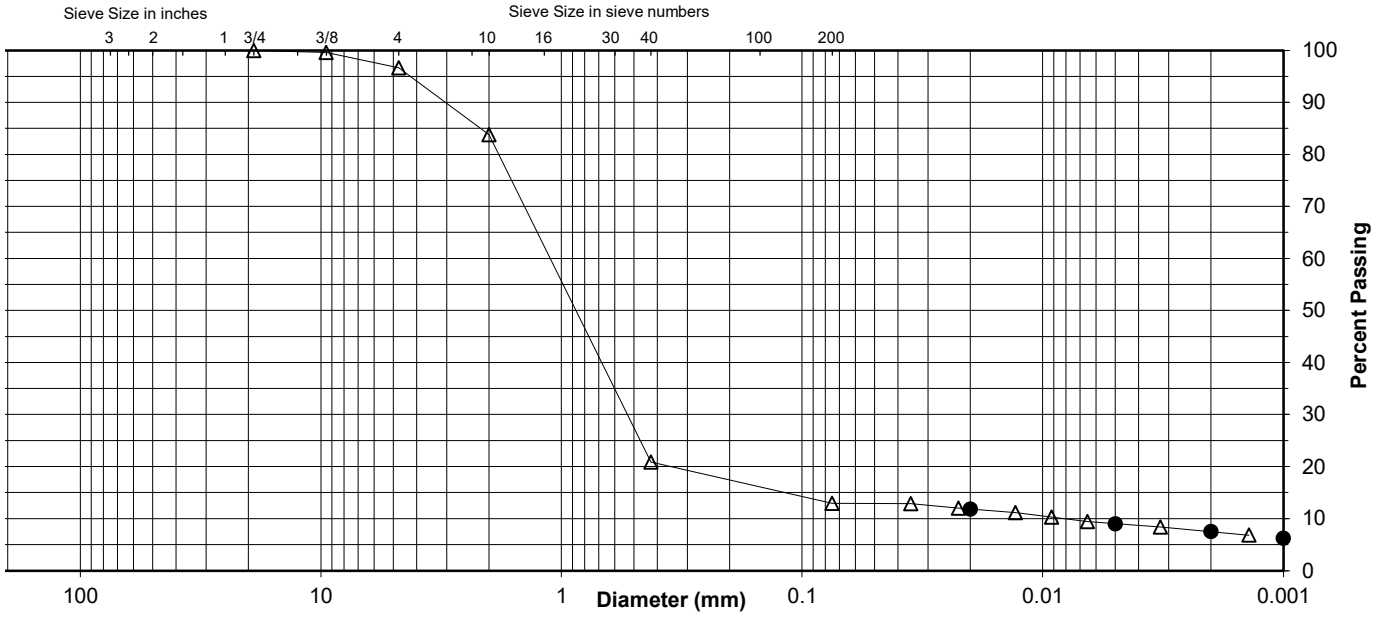
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	20.9
No. 200	12.9
0.02 mm	11.8
0.005 mm	9.0
0.002 mm	7.5
0.001 mm	6.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	3.3	12.9	62.9	8.0	3.9	9.0

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	16.2	62.9	8.0	5.4	7.5



Comments

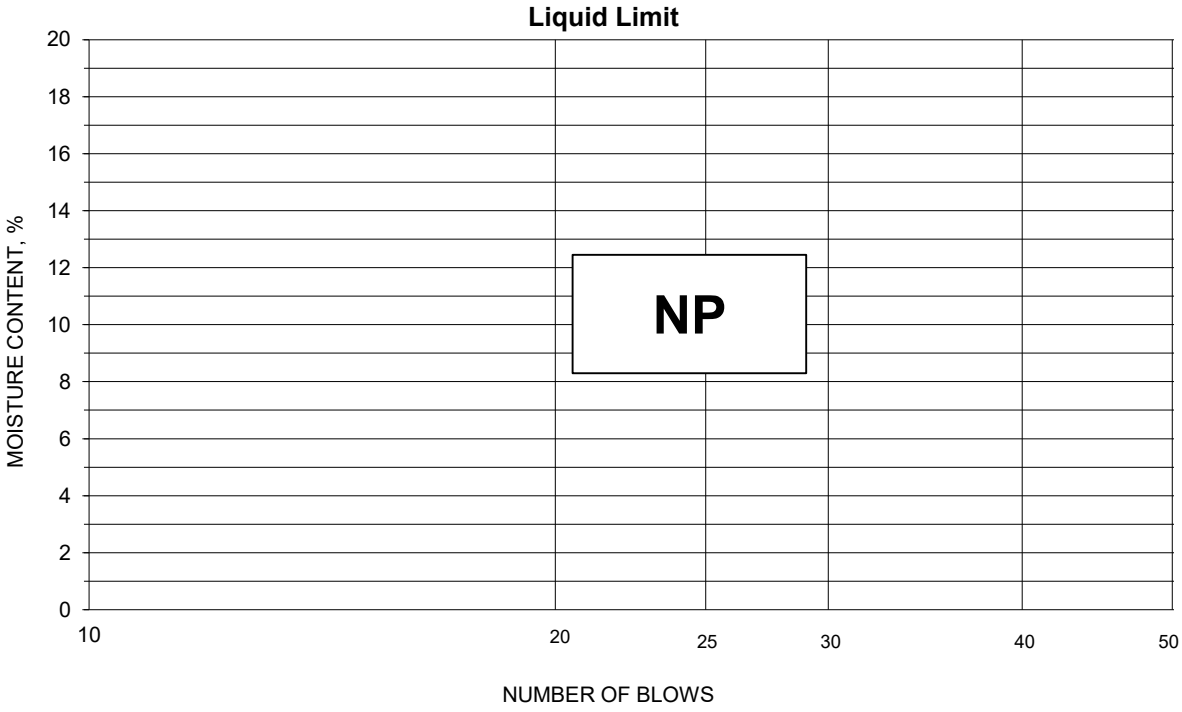
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.6, 15.0'-16.5'			Lab ID	917
				% + No. 40	79
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-27-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.7, 5.0'-6.5'	Lab ID	920
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	97.5
No. 10	2	94.9
No. 40	0.425	89.2
No. 200	0.075	77.4
	0.02	64.9
	0.005	41.2
	0.002	30.1
estimated	0.001	23.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.5	5.1
Coarse Sand	2.6	5.7
Medium Sand	5.7	---
Fine Sand	11.8	11.8
Silt	36.2	47.3
Clay	41.2	30.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	18
Plasticity Index:	10
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-4 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.7, 5.0'-6.5'
Lab ID: 920

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-15-2022
Date Received: 06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	97.5
No. 10	94.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

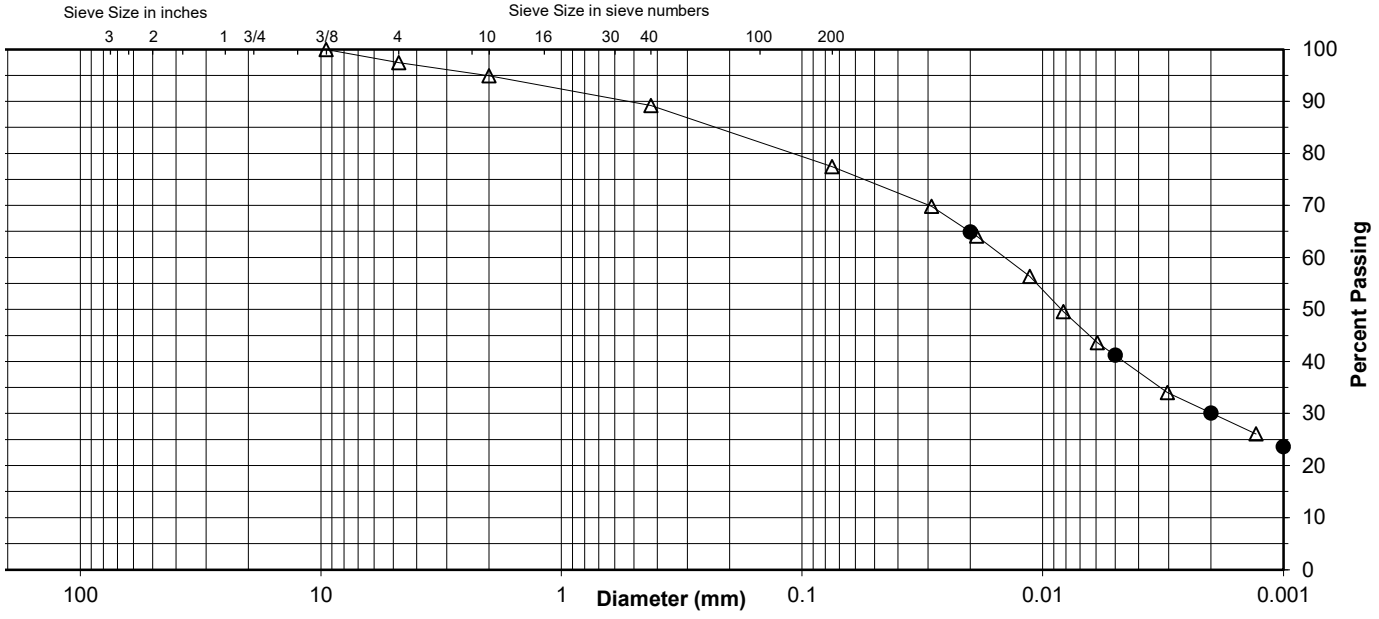
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	89.2
No. 200	77.4
0.02 mm	64.9
0.005 mm	41.2
0.002 mm	30.1
0.001 mm	23.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.5	2.6	5.7	11.8	36.2	41.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.1			5.7	11.8	47.3	30.1



Comments:

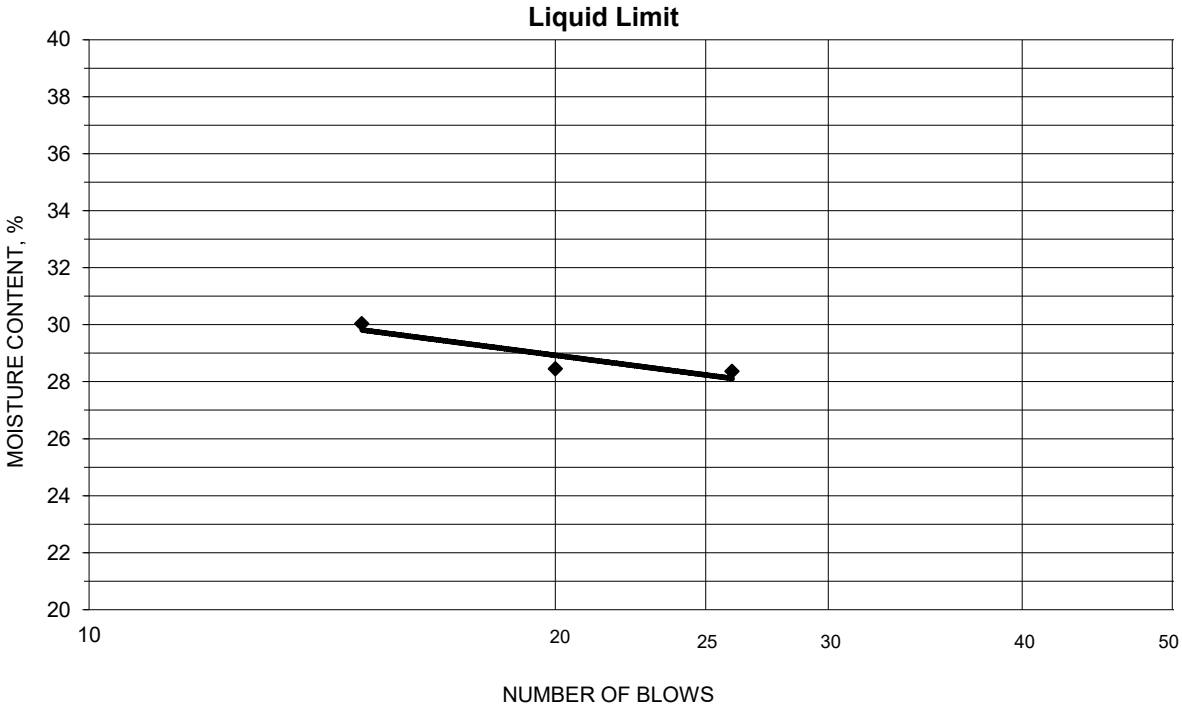
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.7, 5.0'-6.5'			Lab ID	920
				% + No. 40	11
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.16	21.27	11.08	26	28.4	
23.87	21.03	11.05	20	28.5	
24.38	21.31	11.09	15	30.0	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.92	18.53	11.06	18.6	18	10
19.83	18.41	10.57	18.1		

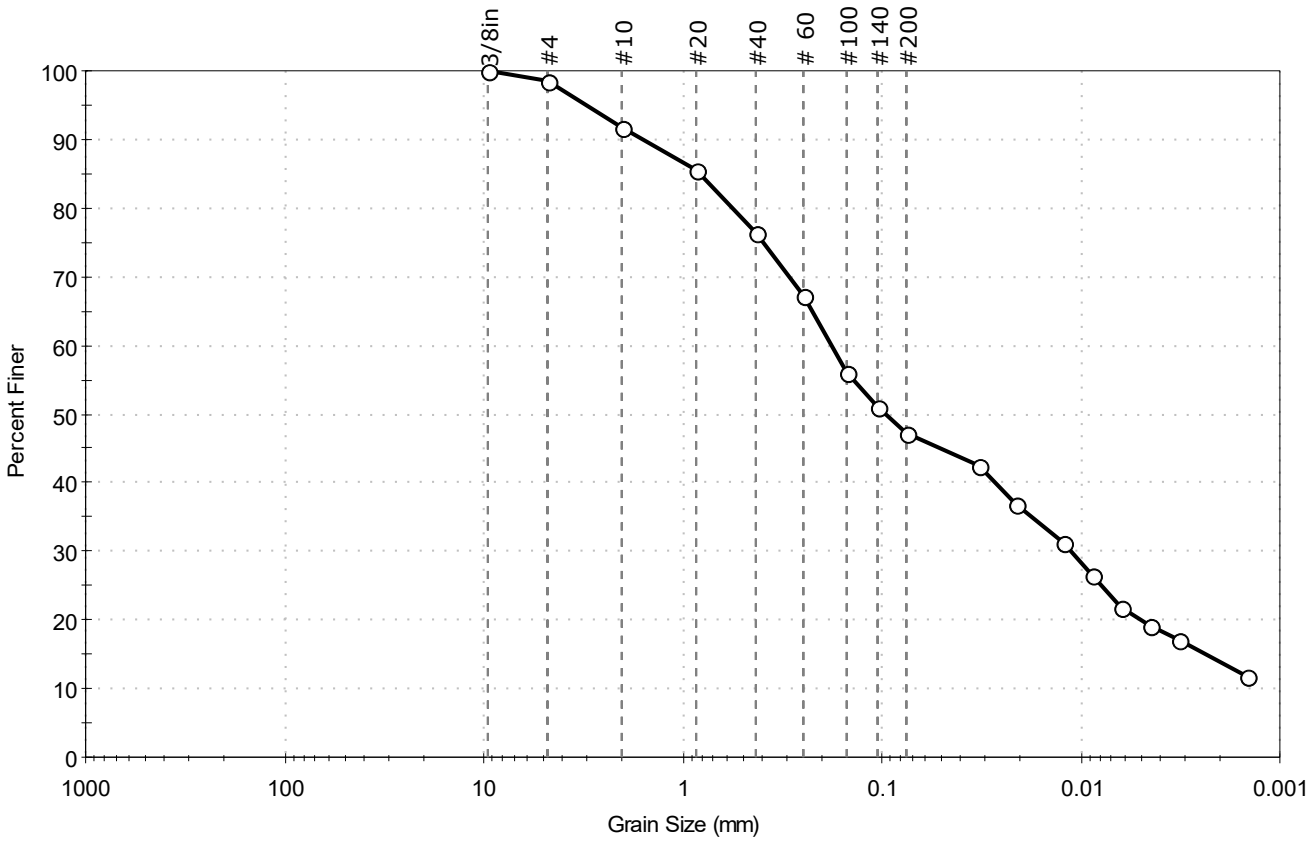
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.7	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337040		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	1.5	51.2	47.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	99		
#10	2.00	92		
#20	0.85	86		
#40	0.42	77		
# 60	0.25	67		
#100	0.15	56		
#140	0.11	51		
#200	0.075	47		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0327	43		
---	0.0210	37		
---	0.0122	31		
---	0.0088	27		
---	0.0063	22		
---	0.0045	19		
---	0.0032	17		
---	0.0015	12		

Coefficients

D_{85} =0.8102 mm	D_{30} =0.0112 mm
D_{60} =0.1797 mm	D_{15} =0.0023 mm
D_{50} =0.0956 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Clayey SAND (SC)

AASHTO Silty Soils (A-4 (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

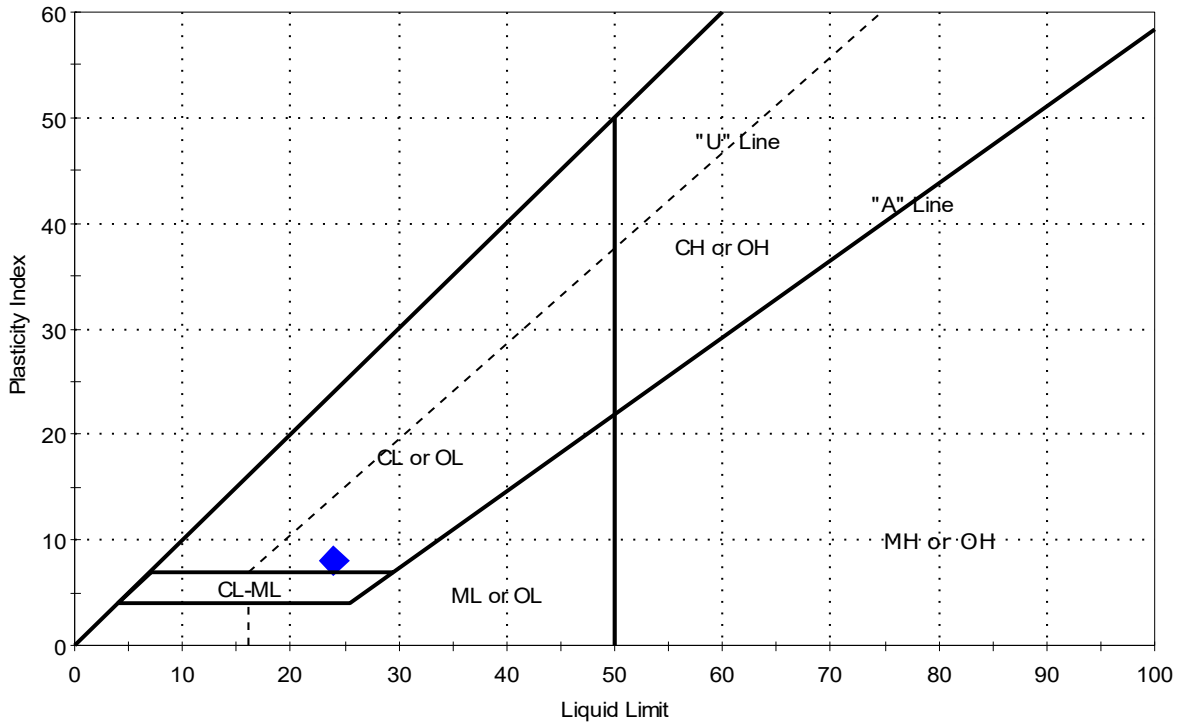
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.7	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337041		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.7	7.5-9.5	21	24	16	8	0.6	Clayey SAND (SC)

Sample Prepared using the DRY method
23% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.7, 12.5'-14.0'	Lab ID	922
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.9
3/8"	9.5	93.1
No. 4	4.75	84.7
No. 10	2	67.6
No. 40	0.425	41.3
No. 200	0.075	26.5
	0.02	22.0
	0.005	14.1
	0.002	11.1
estimated	0.001	9.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	15.3	32.4
Coarse Sand	17.1	26.3
Medium Sand	26.3	---
Fine Sand	14.8	14.8
Silt	12.4	15.4
Clay	14.1	11.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	18
Plastic Limit:	13
Plasticity Index:	5
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.7, 12.5'-14.0'
Lab ID: 922

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-15-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.9
3/8"	93.1
No. 4	84.7
No. 10	67.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

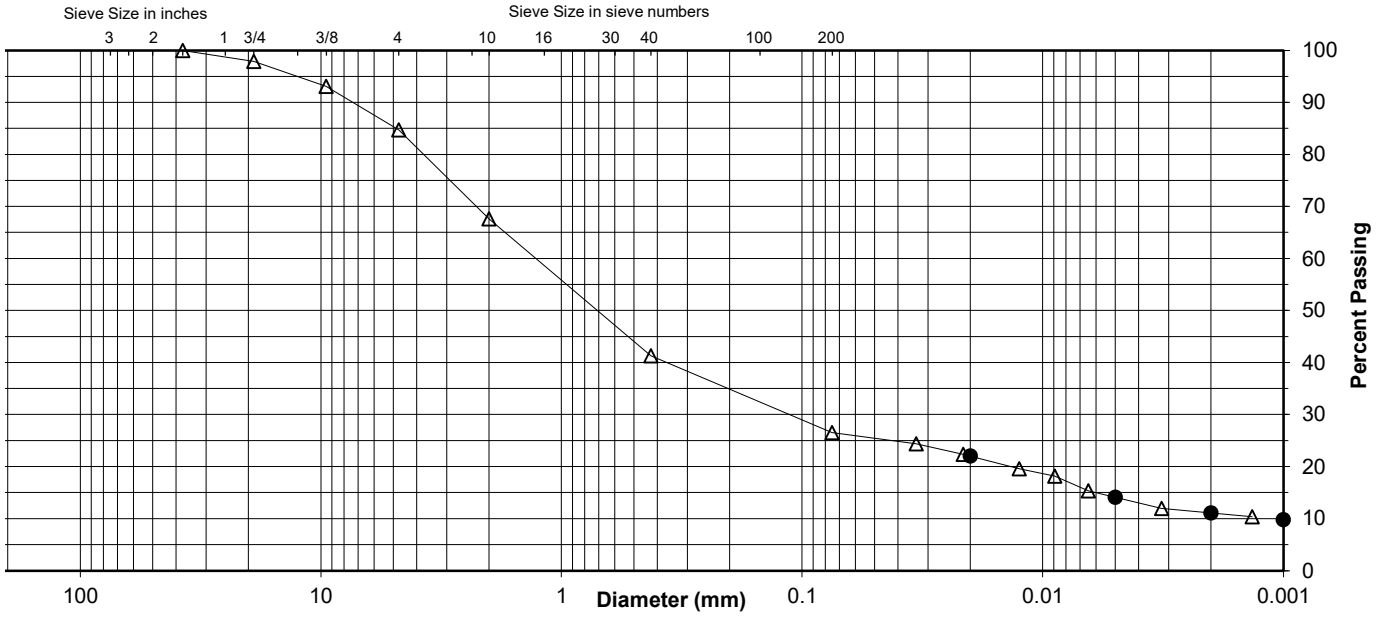
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	41.3
No. 200	26.5
0.02 mm	22.0
0.005 mm	14.1
0.002 mm	11.1
0.001 mm	9.8

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.1	13.2	17.1	26.3	14.8	12.4	14.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	32.4			26.3	14.8	15.4	11.1



Comments

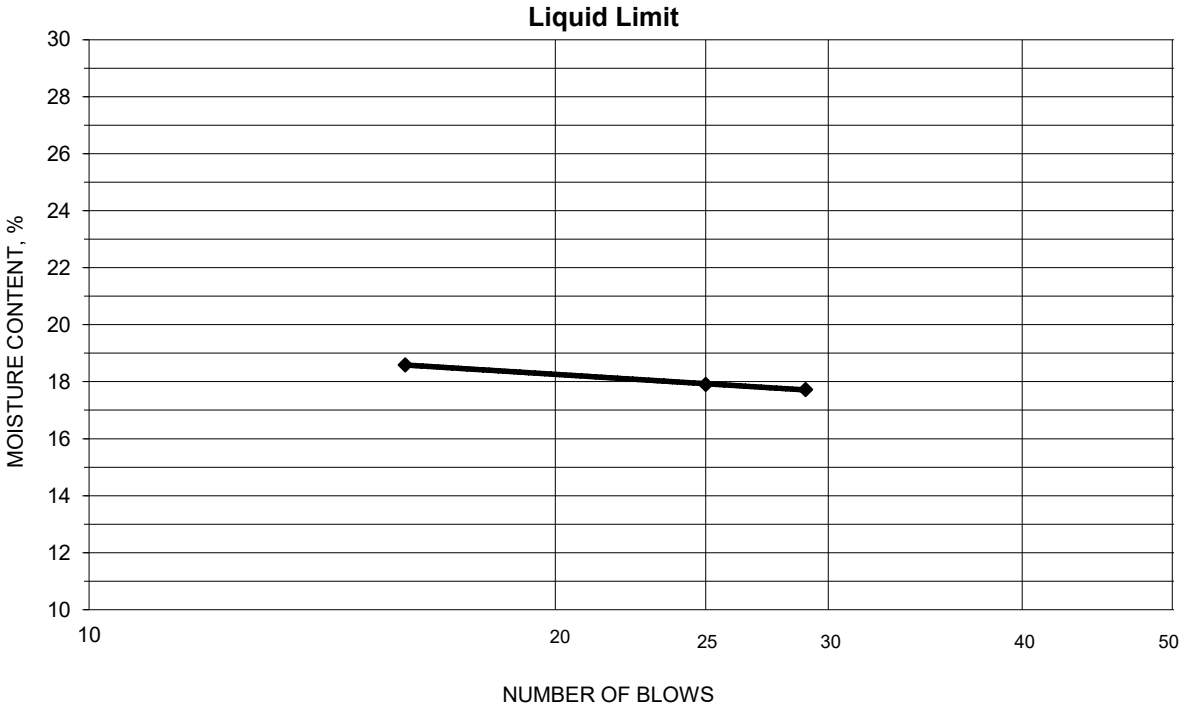
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.7, 12.5'-14.0'			Lab ID	922
				% + No. 40	59
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.12	22.09	10.64	29	17.7	
26.77	24.38	11.03	25	17.9	
24.15	22.01	10.50	16	18.6	18



PLASTIC LIMIT AND PLASTICITY INDEX

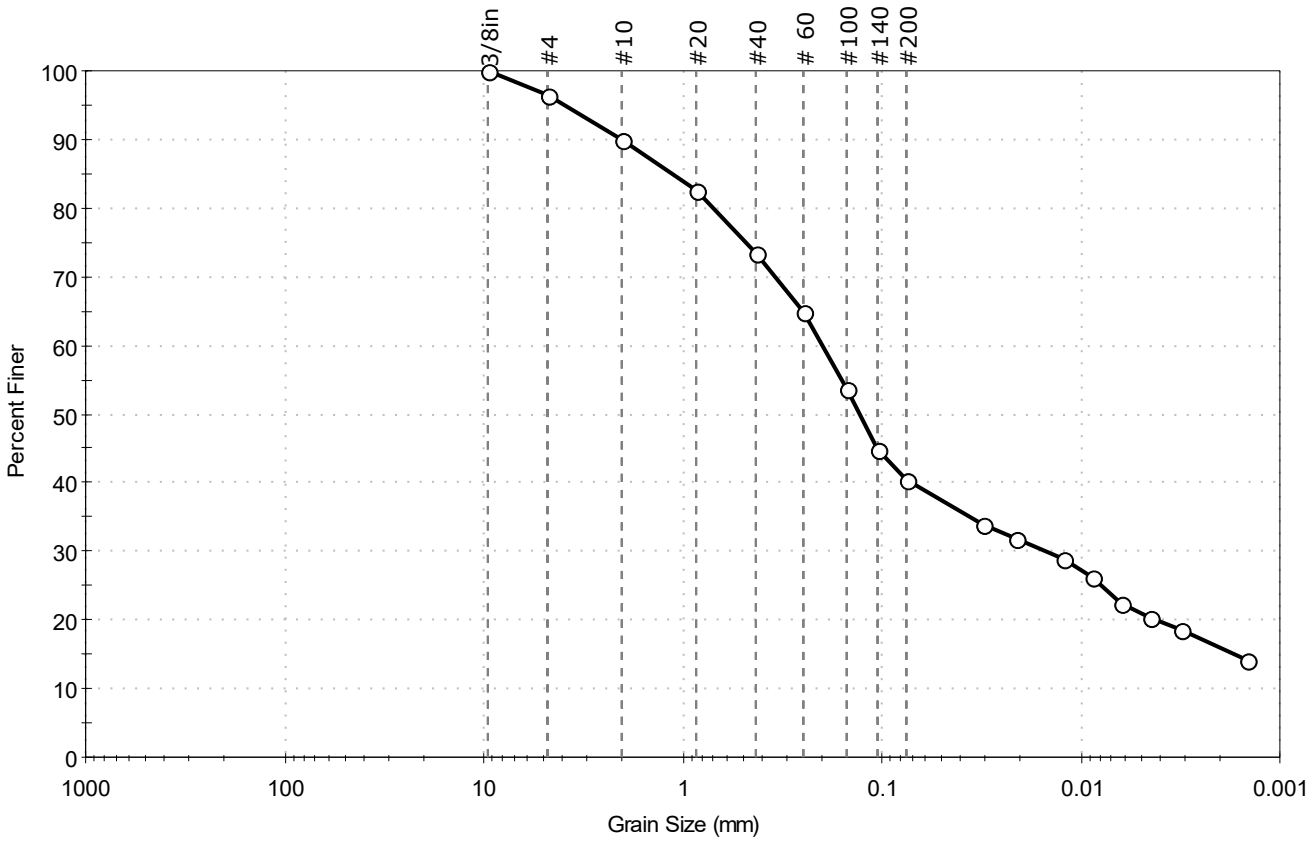
Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.35	20.13	10.65	12.9	13	5
22.29	20.99	11.08	13.1		

Remarks: _____

Reviewed By REL

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.8	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	2.5-4.5	Test Id:	337050		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	3.5	56.0	40.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	96		
#10	2.00	90		
#20	0.85	83		
#40	0.42	74		
# 60	0.25	65		
#100	0.15	54		
#140	0.11	45		
#200	0.075	41		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0314	34		
---	0.0213	32		
---	0.0124	29		
---	0.0088	26		
---	0.0063	22		
---	0.0045	20		
---	0.0032	18		
---	0.0014	14		

Coefficients

D_{85} = 1.1061 mm	D_{30} = 0.0148 mm
D_{60} = 0.1999 mm	D_{15} = 0.0017 mm
D_{50} = 0.1293 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Clayey SAND (SC)

AASHTO Silty Soils (A-4 (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

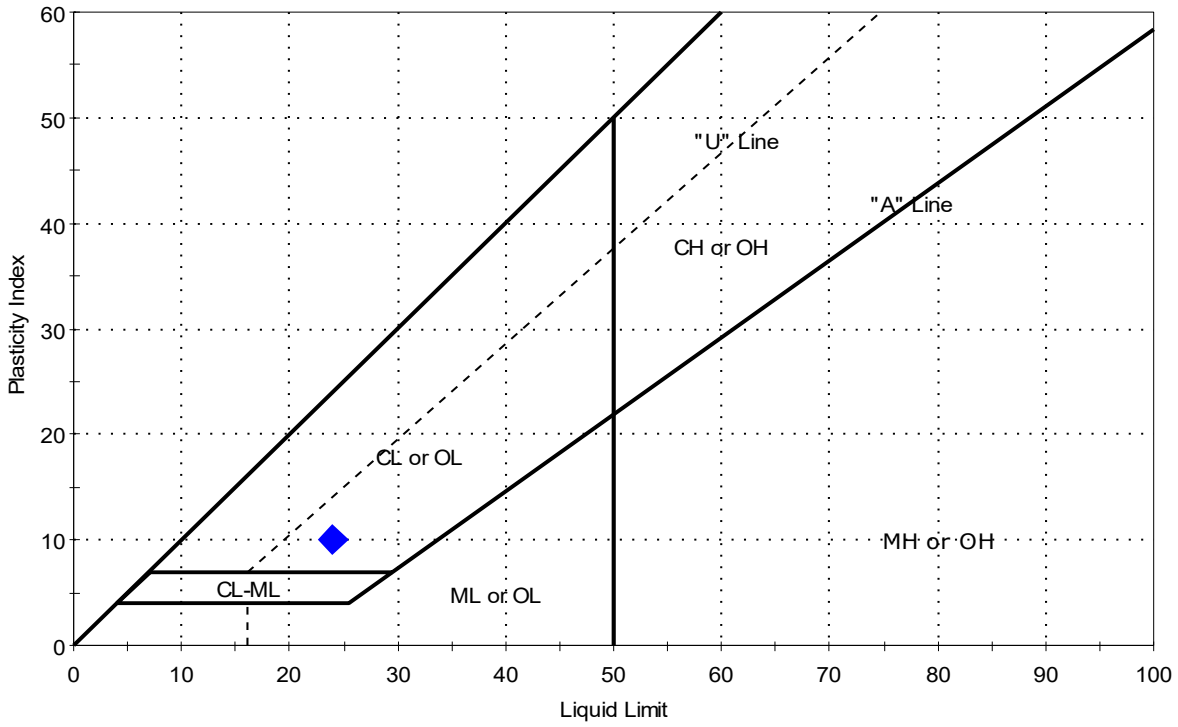
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.8	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	2.5-4.5	Test Id:	337051		
Test Comment:	---				
Visual Description:	Moist, greenish brown clayey sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.8	2.5-4.5	19	24	14	10	0.5	Clayey SAND (SC)

Sample Prepared using the DRY method
26% Retained on #40 Sieve
Dry Strength: HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.8, 5.0'-6.5'	Lab ID	926
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.7
No. 4	4.75	98.1
No. 10	2	94.5
No. 40	0.425	86.3
No. 200	0.075	72.5
	0.02	61.0
	0.005	39.0
	0.002	27.8
estimated	0.001	18.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.9	5.5
Coarse Sand	3.6	8.2
Medium Sand	8.2	---
Fine Sand	13.8	13.8
Silt	33.5	44.7
Clay	39.0	27.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	19
Plasticity Index:	10
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-4 (5)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.8, 5.0'-6.5'	Lab ID	926

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-13-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.7
No. 4	98.1
No. 10	94.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

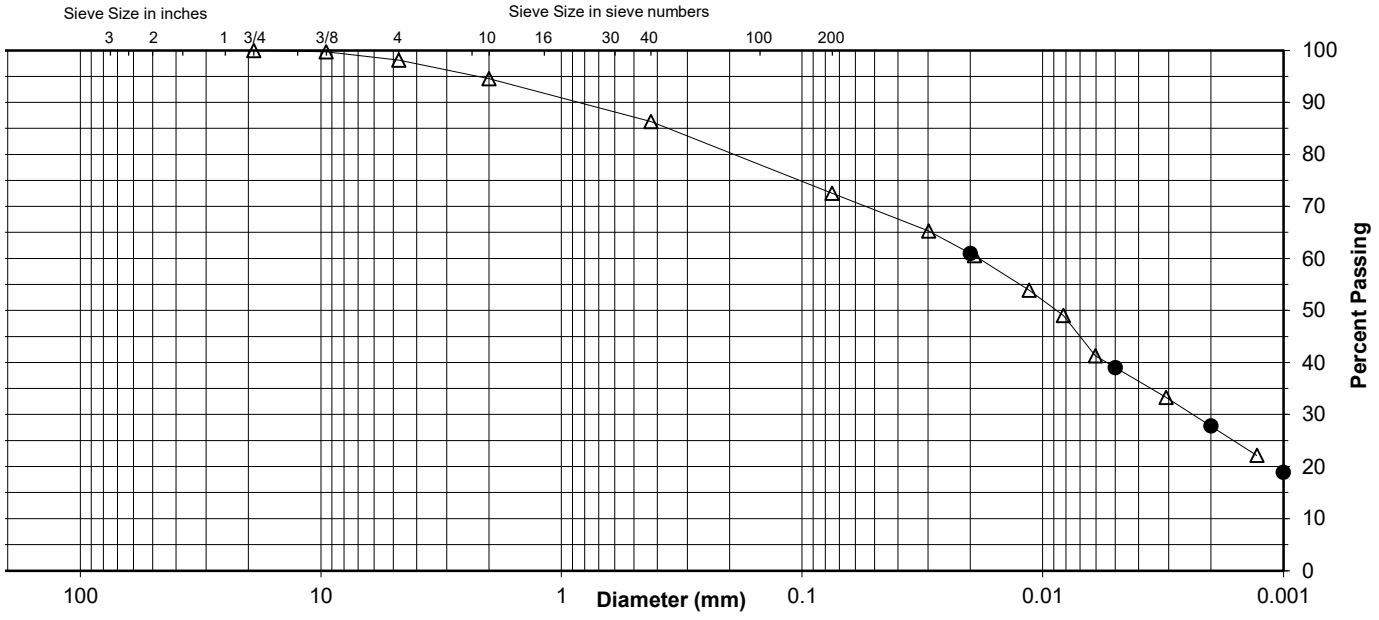
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	86.3
No. 200	72.5
0.02 mm	61.0
0.005 mm	39.0
0.002 mm	27.8
0.001 mm	18.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.9	3.6	8.2	13.8	33.5	39.0

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	5.5	8.2	13.8	44.7	27.8



Comments

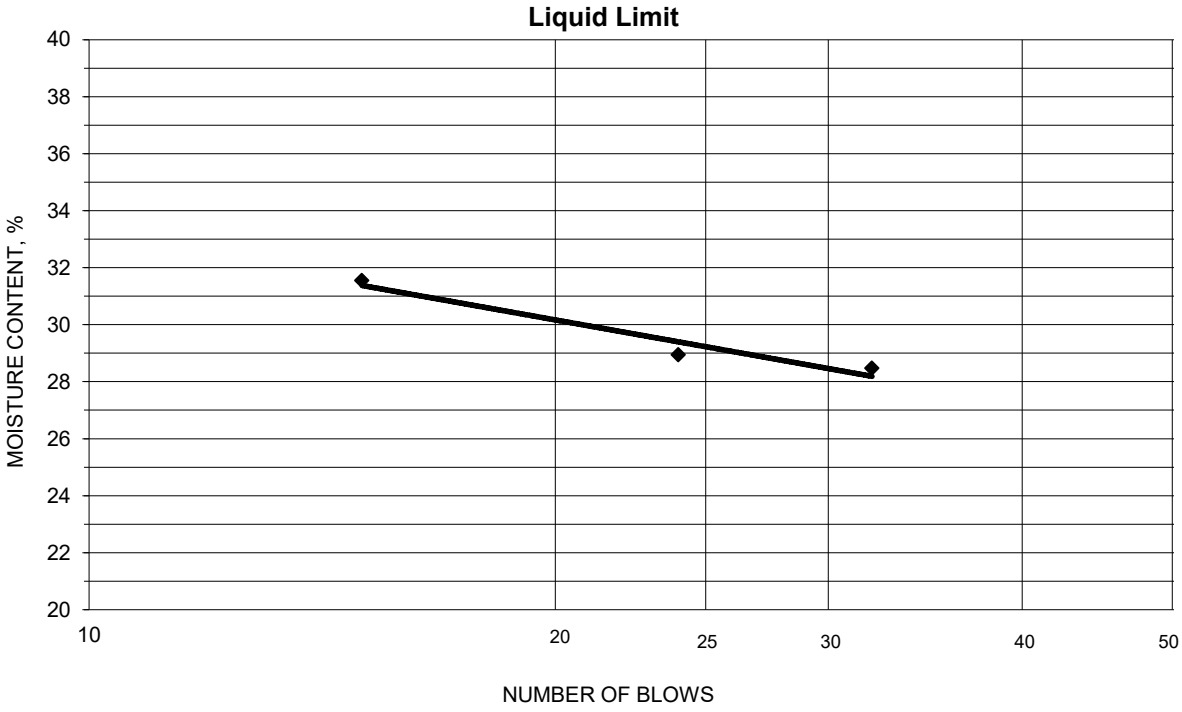
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.8, 5.0'-6.5'			Lab ID	926
				% + No. 40	14
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.53	20.68	10.67	32	28.5	
22.39	19.84	11.03	24	28.9	
22.66	19.77	10.61	15	31.6	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.52	18.13	11.01	19.5	19	10
18.04	16.90	10.92	19.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.8, 12.5'-14.0'	Lab ID	929
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	94.3
3/8"	9.5	90.9
No. 4	4.75	90.4
No. 10	2	89.6
No. 40	0.425	84.9
No. 200	0.075	27.7
	0.02	24.6
	0.005	16.0
	0.002	12.1
estimated	0.001	10.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	9.6	10.4
Coarse Sand	0.8	4.7
Medium Sand	4.7	---
Fine Sand	57.2	57.2
Silt	11.7	15.6
Clay	16.0	12.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.8, 12.5'-14.0'	Lab ID	929

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-13-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	94.3
3/8"	90.9
No. 4	90.4
No. 10	89.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

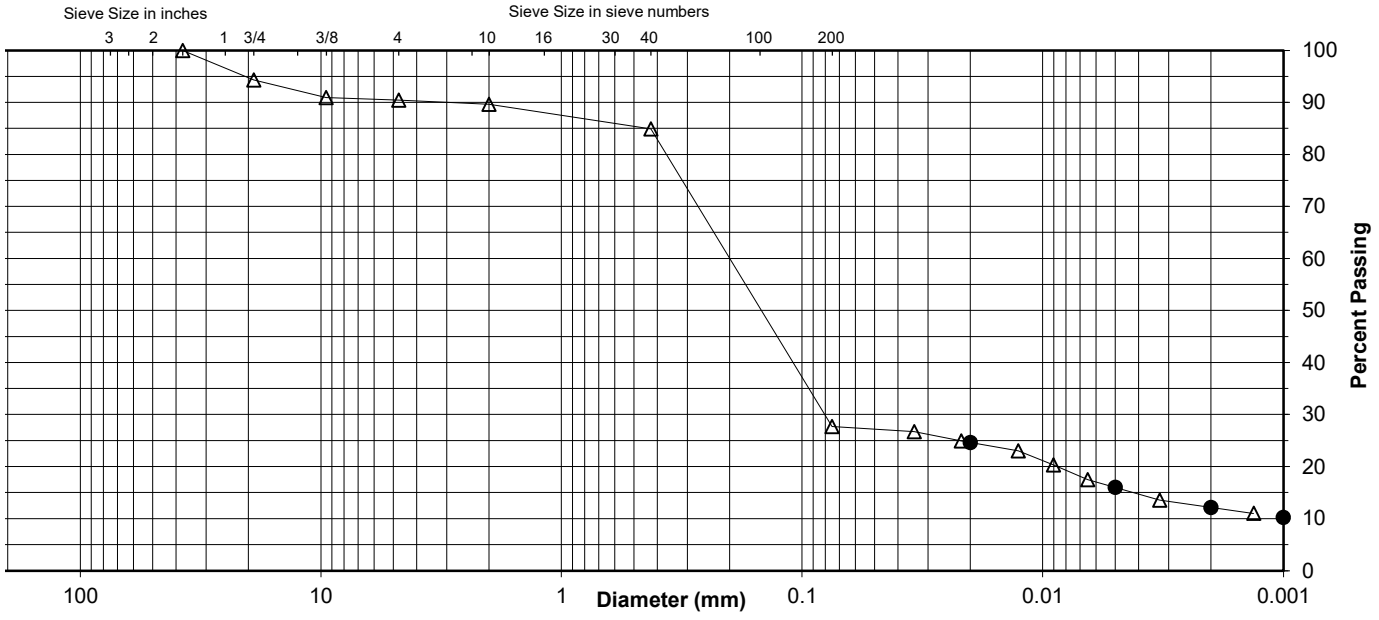
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.9
No. 200	27.7
0.02 mm	24.6
0.005 mm	16.0
0.002 mm	12.1
0.001 mm	10.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	5.7	3.9	0.8	4.7	57.2	11.7	16.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.4			4.7	57.2	15.6	12.1



Comments

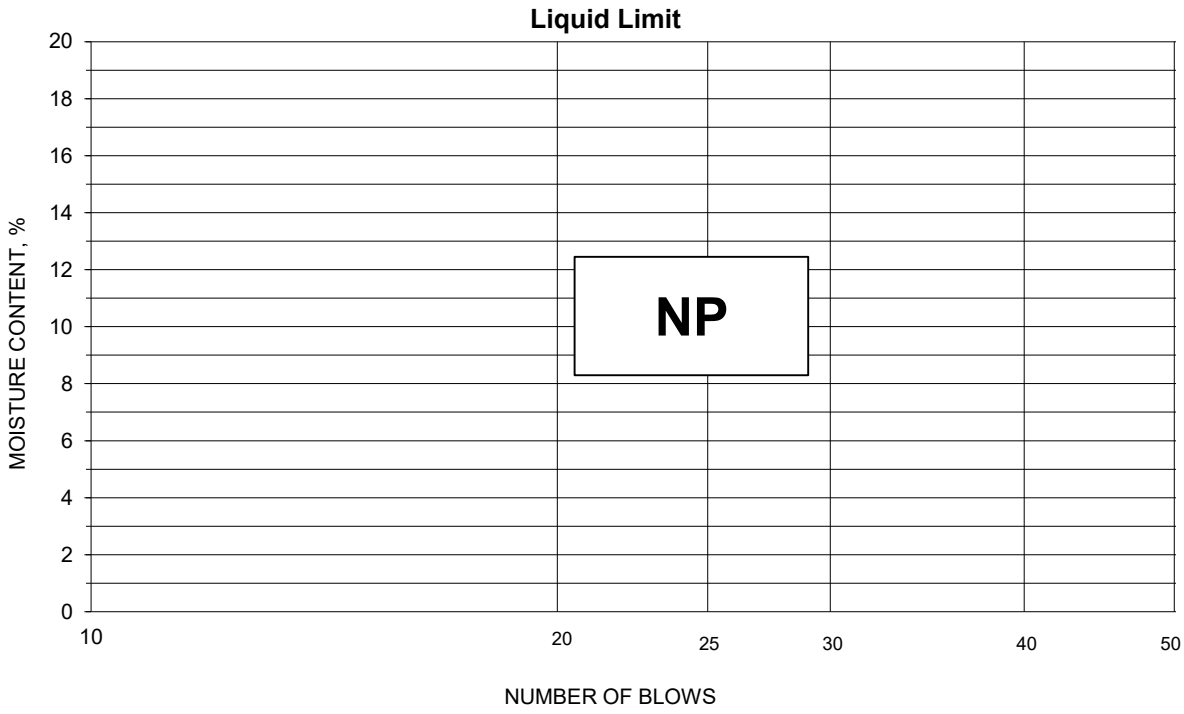
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.8, 12.5'-14.0'			Lab ID	929
				% + No. 40	15
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.9, 7.5'-9.0'	Lab ID	934
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 11.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.2
No. 4	4.75	95.6
No. 10	2	90.3
No. 40	0.425	80.4
No. 200	0.075	65.8
	0.02	53.9
	0.005	33.8
	0.002	26.2
estimated	0.001	20.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.4	9.7
Coarse Sand	5.3	9.9
Medium Sand	9.9	---
Fine Sand	14.6	14.6
Silt	32.0	39.6
Clay	33.8	26.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	15
Plasticity Index:	7
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML

Group Name: Sandy silty clay

AASHTO Classification: A-4 (2)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.9, 7.5'-9.0'	Lab ID	934

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-22-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.2
No. 4	95.6
No. 10	90.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

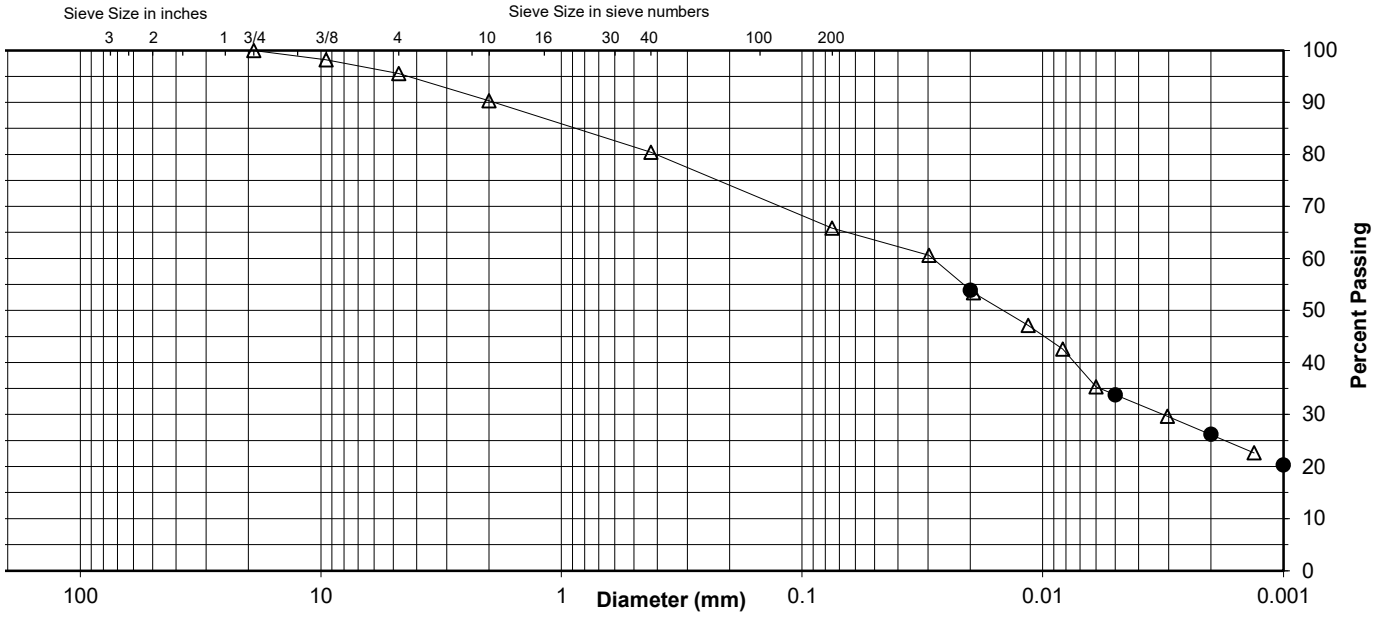
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	80.4
No. 200	65.8
0.02 mm	53.9
0.005 mm	33.8
0.002 mm	26.2
0.001 mm	20.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.4	5.3	9.9	14.6	32.0	33.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.7			9.9	14.6	39.6	26.2



Comments

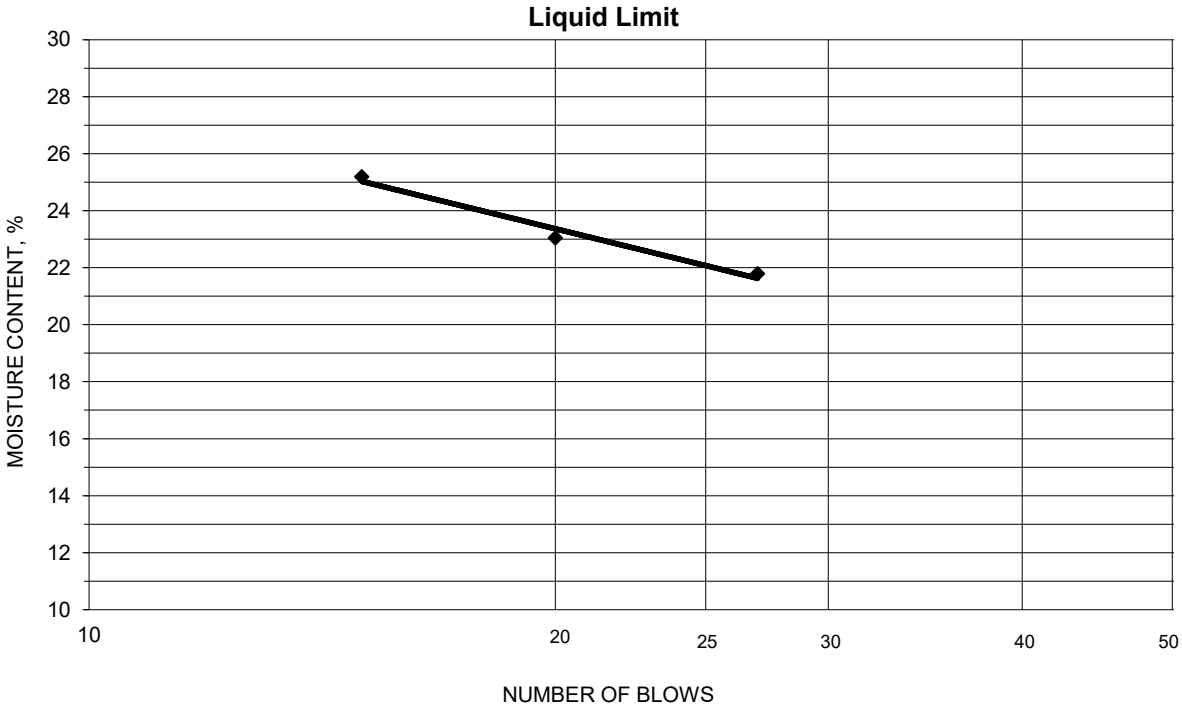
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.9, 7.5'-9.0'			Lab ID	934
				% + No. 40	20
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.06	24.79	14.37	27	21.8	
29.32	26.52	14.37	20	23.0	
27.34	24.74	14.42	15	25.2	22



PLASTIC LIMIT AND PLASTICITY INDEX

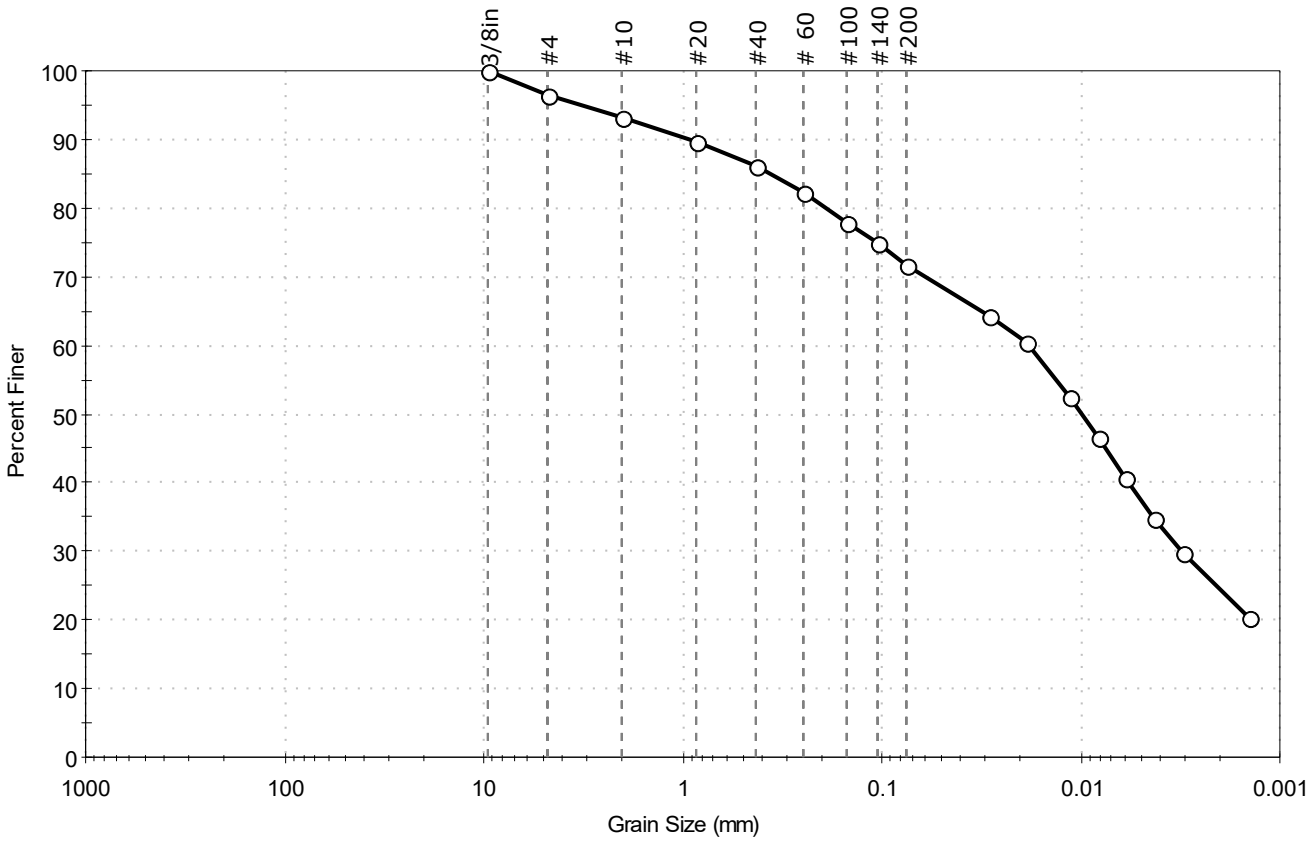
Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
26.10	24.63	14.40	14.4	15	7
25.89	24.40	14.43	14.9		

Remarks: _____

Reviewed By REL

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.10	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337054		
Test Comment:	---				
Visual Description:	Moist, dark greenish brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	3.5	24.7	71.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	96		
#10	2.00	93		
#20	0.85	90		
#40	0.42	86		
# 60	0.25	82		
#100	0.15	78		
#140	0.11	75		
#200	0.075	72		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0287	64		
---	0.0186	60		
---	0.0114	52		
---	0.0082	47		
---	0.0059	41		
---	0.0043	35		
---	0.0031	30		
---	0.0014	20		

Coefficients

D_{85} = 0.3652 mm	D_{30} = 0.0031 mm
D_{60} = 0.0182 mm	D_{15} = N/A
D_{50} = 0.0099 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean CLAY with Sand (CL)

AASHTO Silty Soils (A-4 (3))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

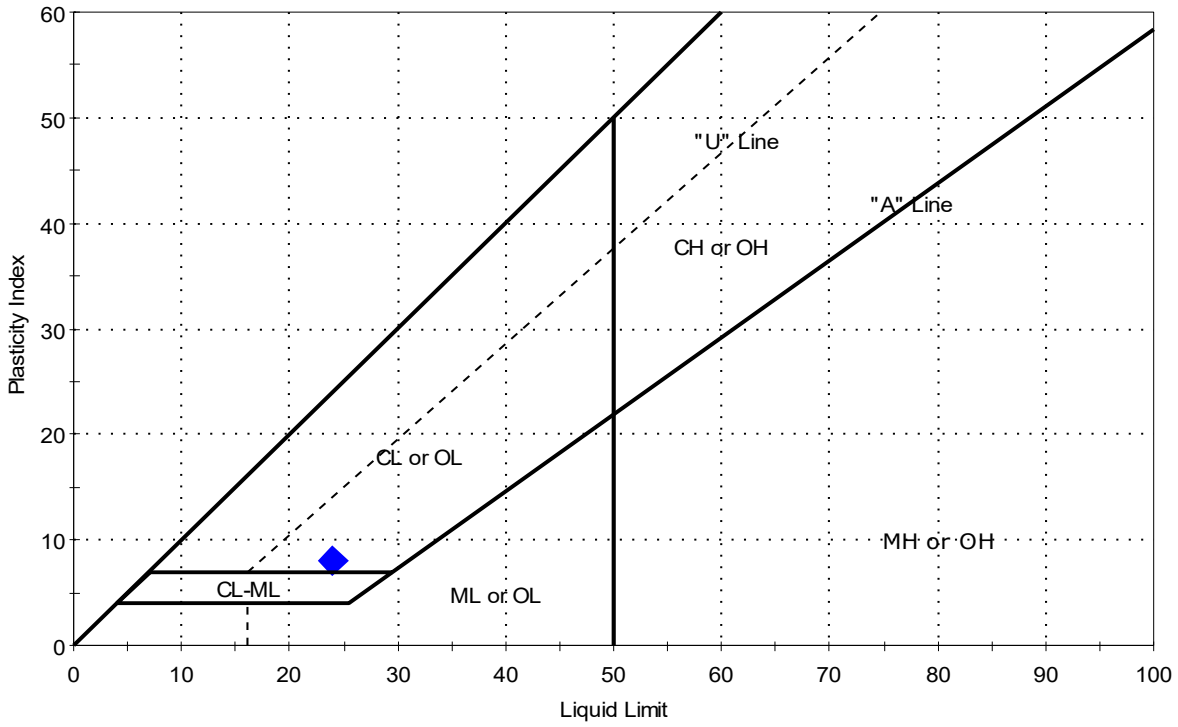
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.10	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.5-9.5	Test Id:	337055		
Test Comment:	---				
Visual Description:	Moist, dark greenish brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.10	7.5-9.5	15	24	16	8	-0.2	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
14% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.10, 10.0'-11.5'	Lab ID	938
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 12.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.0
No. 4	4.75	96.9
No. 10	2	93.5
No. 40	0.425	85.6
No. 200	0.075	69.1
	0.02	54.9
	0.005	36.3
	0.002	26.7
estimated	0.001	21.4

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	3.1	6.5
Coarse Sand	3.4	7.9
Medium Sand	7.9	---
Fine Sand	16.5	16.5
Silt	32.8	42.4
Clay	36.3	26.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	14
Plasticity Index:	8
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.10, 10.0'-11.5'
Lab ID: 938

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-22-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.0
No. 4	96.9
No. 10	93.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

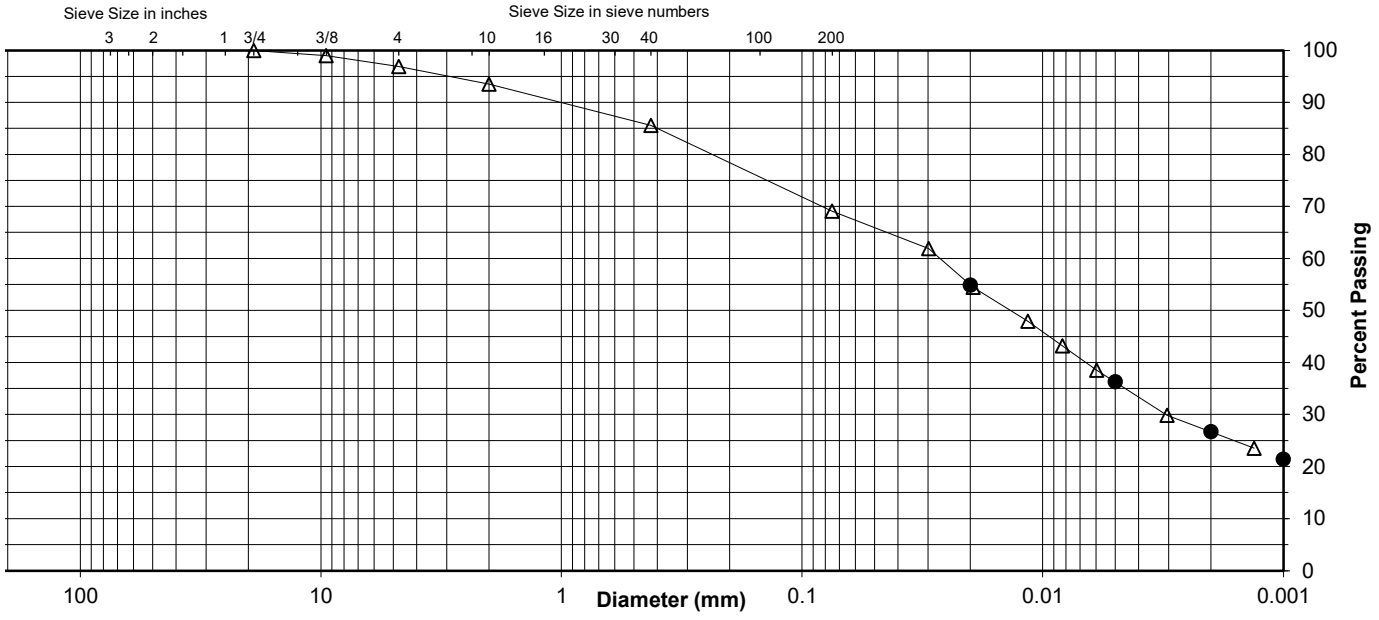
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	85.6
No. 200	69.1
0.02 mm	54.9
0.005 mm	36.3
0.002 mm	26.7
0.001 mm	21.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.1	3.4	7.9	16.5	32.8	36.3

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	6.5	7.9	16.5	42.4	26.7



Comments:

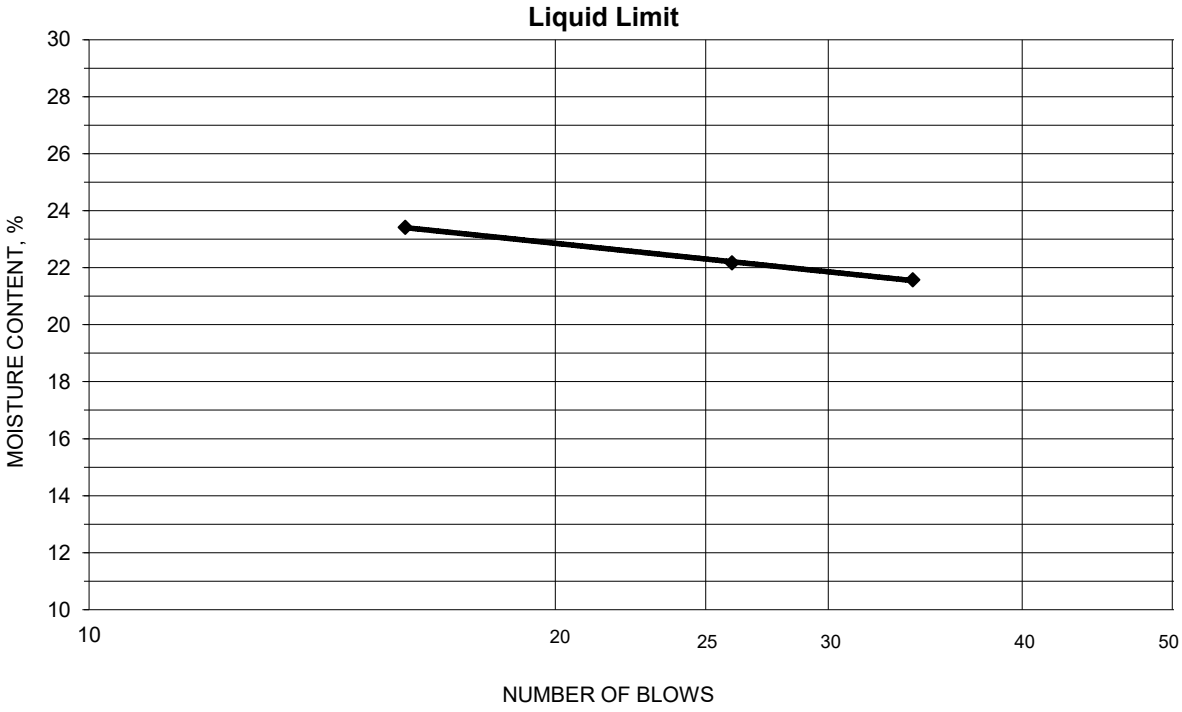
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.10, 10.0'-11.5'			Lab ID	938
				% + No. 40	14
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-27-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.32	21.96	11.02	34	21.6	
24.04	21.69	11.09	26	22.2	
24.91	22.28	11.05	16	23.4	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.58	19.33	10.61	14.3	14	8
21.87	20.44	10.58	14.5		

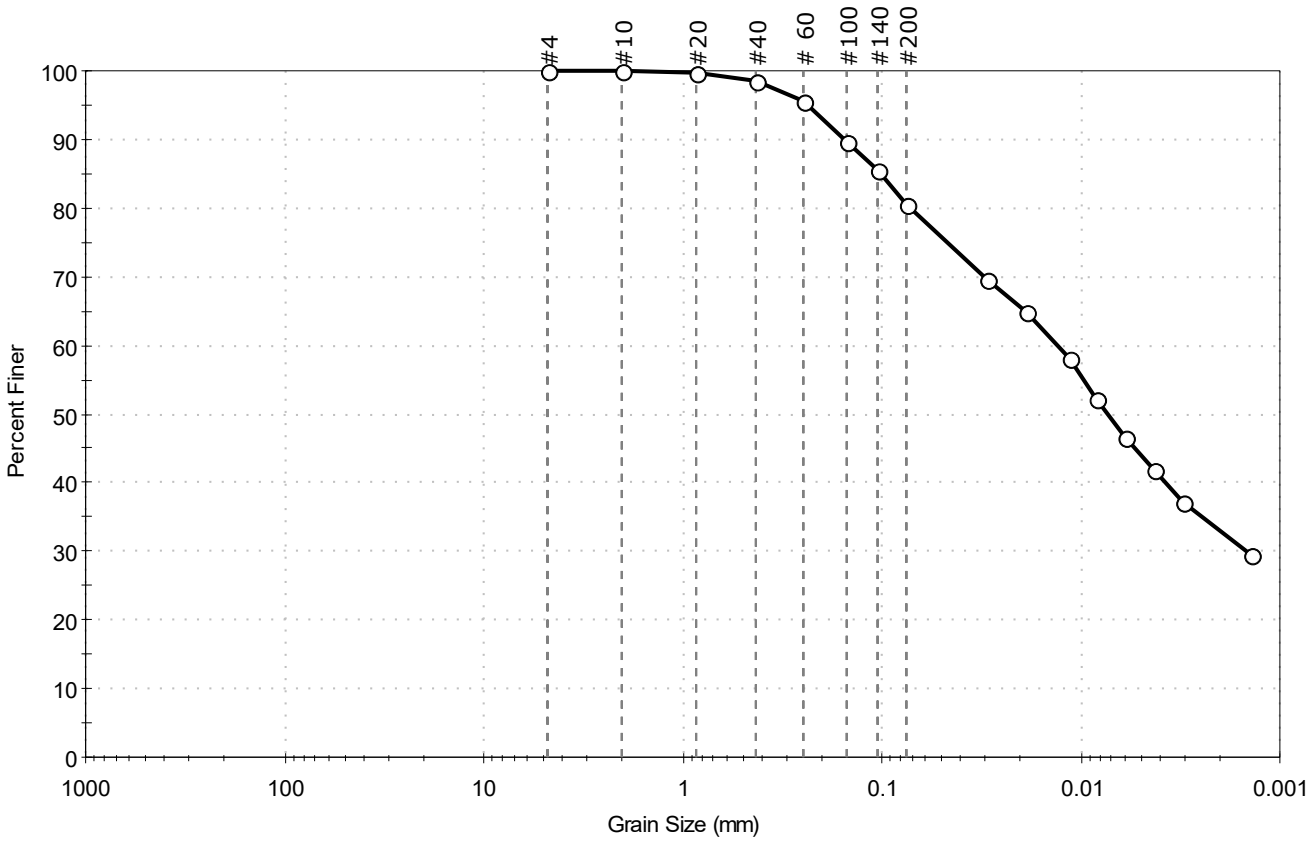
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.11	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337082		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	19.3	80.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
# 60	0.25	95		
#100	0.15	90		
#140	0.11	85		
#200	0.075	81		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0294	70		
---	0.0190	65		
---	0.0115	58		
---	0.0083	52		
---	0.0060	46		
---	0.0043	42		
---	0.0031	37		
---	0.0014	30		

Coefficients

D_{85} =0.1024 mm	D_{30} =0.0015 mm
D_{60} =0.0133 mm	D_{15} =N/A
D_{50} =0.0073 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Lean CLAY with Sand (CL)

AASHTO Clayey Soils (A-7-6 (21))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

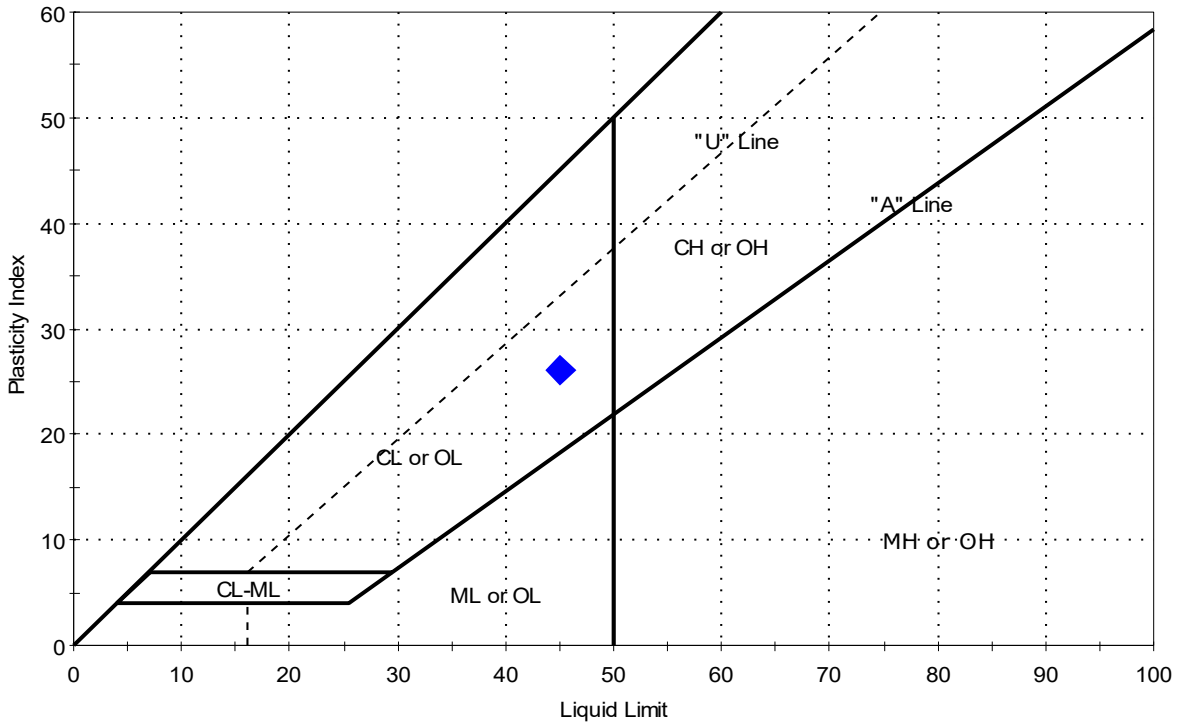
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.11	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337087		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.11	3.0-5.0	24	45	19	26	0.2	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
1% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.11, 5.0'-6.5'	Lab ID	941
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 39.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.4
No. 40	0.425	92.8
No. 200	0.075	55.4
	0.02	47.3
	0.005	29.7
	0.002	23.5
estimated	0.001	19.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.6
Coarse Sand	0.6	6.6
Medium Sand	6.6	---
Fine Sand	37.4	37.4
Silt	25.7	31.9
Clay	29.7	23.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	17
Plasticity Index:	11
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-6 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.11, 5.0'-6.5'	Lab ID	941

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-22-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

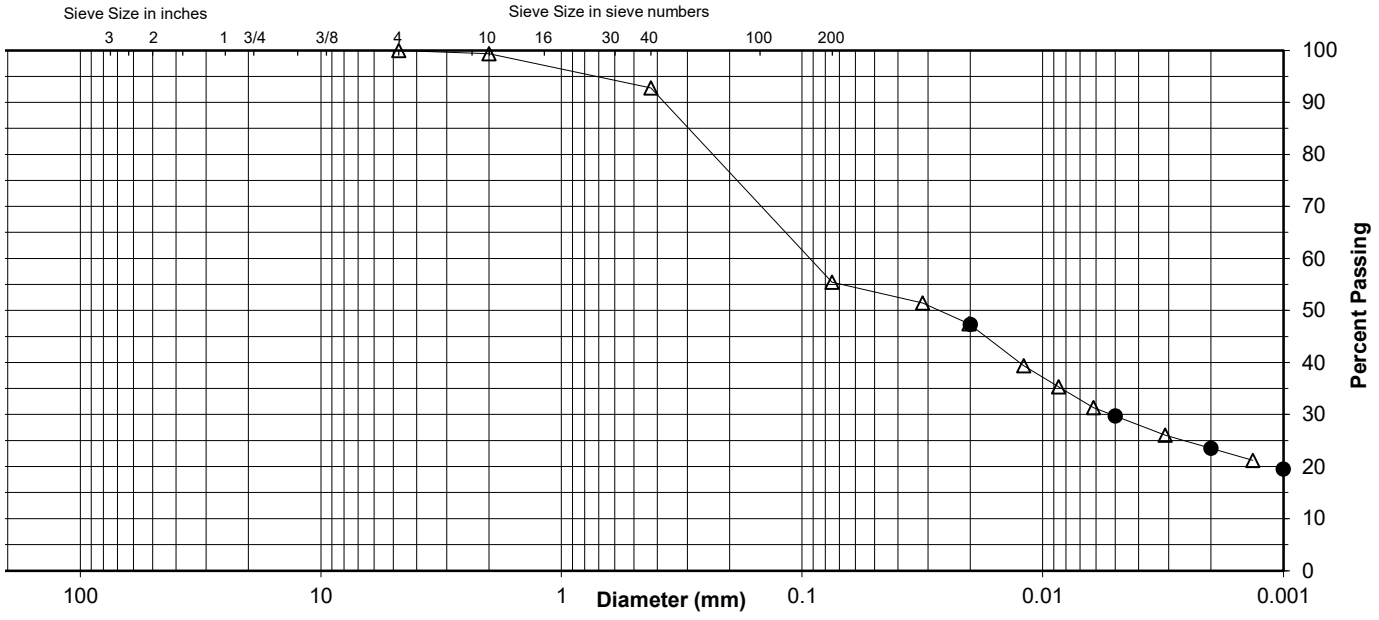
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.8
No. 200	55.4
0.02 mm	47.3
0.005 mm	29.7
0.002 mm	23.5
0.001 mm	19.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.6	6.6	37.4	25.7	29.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.6			6.6	37.4	31.9	23.5



Comments

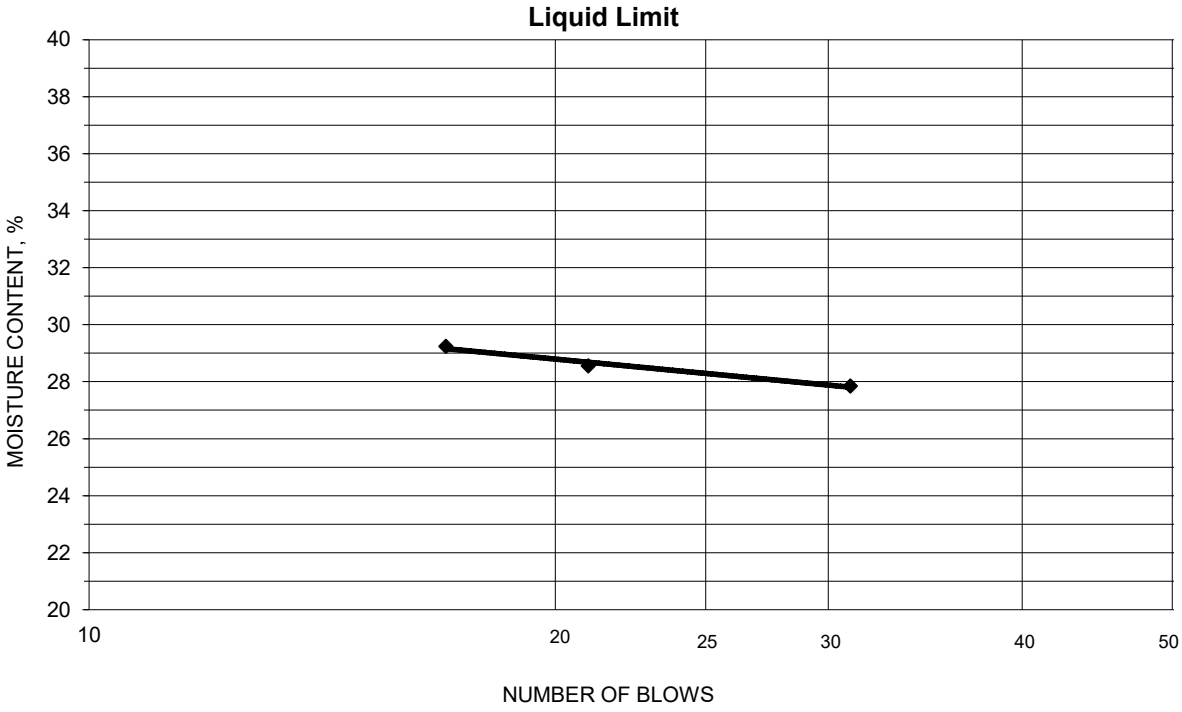
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.11, 5.0'-6.5'			Lab ID	941
				% + No. 40	7
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.72	20.96	11.05	31	27.9	
24.18	21.27	11.08	21	28.6	
24.22	21.22	10.96	17	29.2	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.48	18.20	10.97	17.7	17	11
19.77	18.43	10.57	17.0		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.11, 12.5'-14.0'	Lab ID	944
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	79.9
3/8"	9.5	75.9
No. 4	4.75	68.0
No. 10	2	59.4
No. 40	0.425	46.1
No. 200	0.075	27.9
	0.02	21.6
	0.005	13.4
	0.002	10.2
estimated	0.001	8.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	32.0	40.6
Coarse Sand	8.6	13.3
Medium Sand	13.3	---
Fine Sand	18.2	18.2
Silt	14.5	17.7
Clay	13.4	10.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	18
Plasticity Index:	7
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.11, 12.5'-14.0'	Lab ID	944

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-13-2022
Date Received	06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	79.9
3/8"	75.9
No. 4	68.0
No. 10	59.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

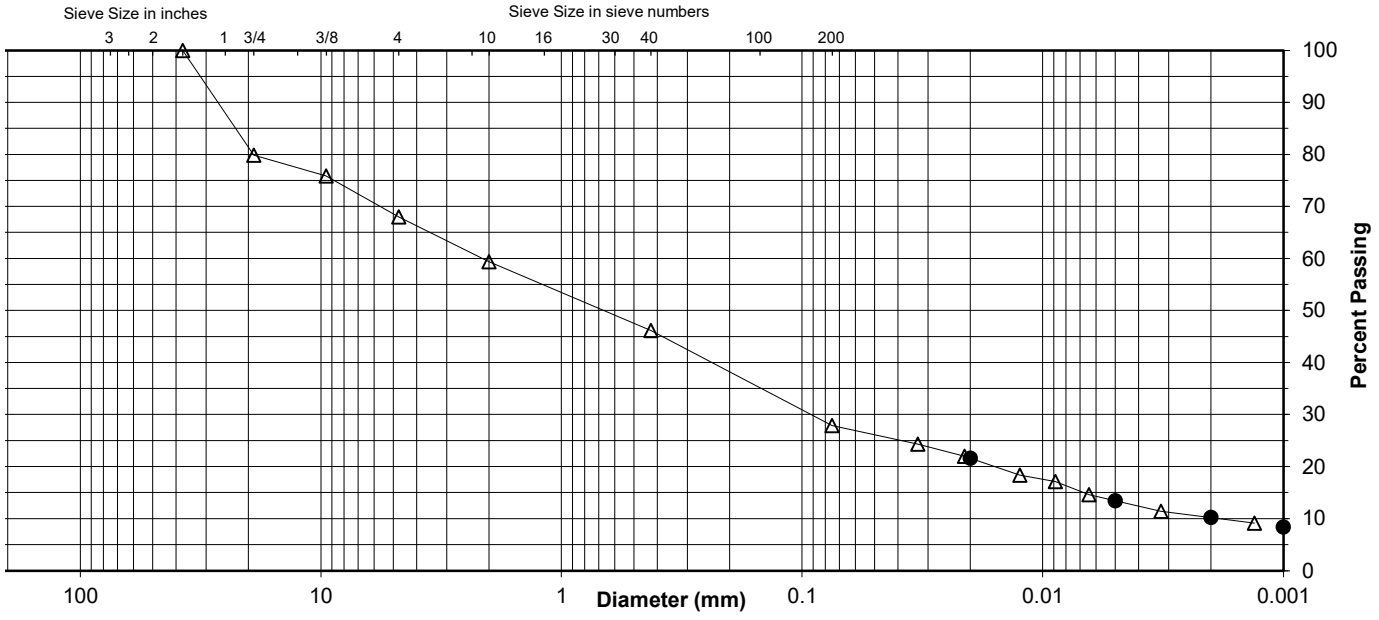
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	46.1
No. 200	27.9
0.02 mm	21.6
0.005 mm	13.4
0.002 mm	10.2
0.001 mm	8.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	20.1	11.9	8.6	13.3	18.2	14.5	13.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	40.6			13.3	18.2	17.7	10.2



Comments

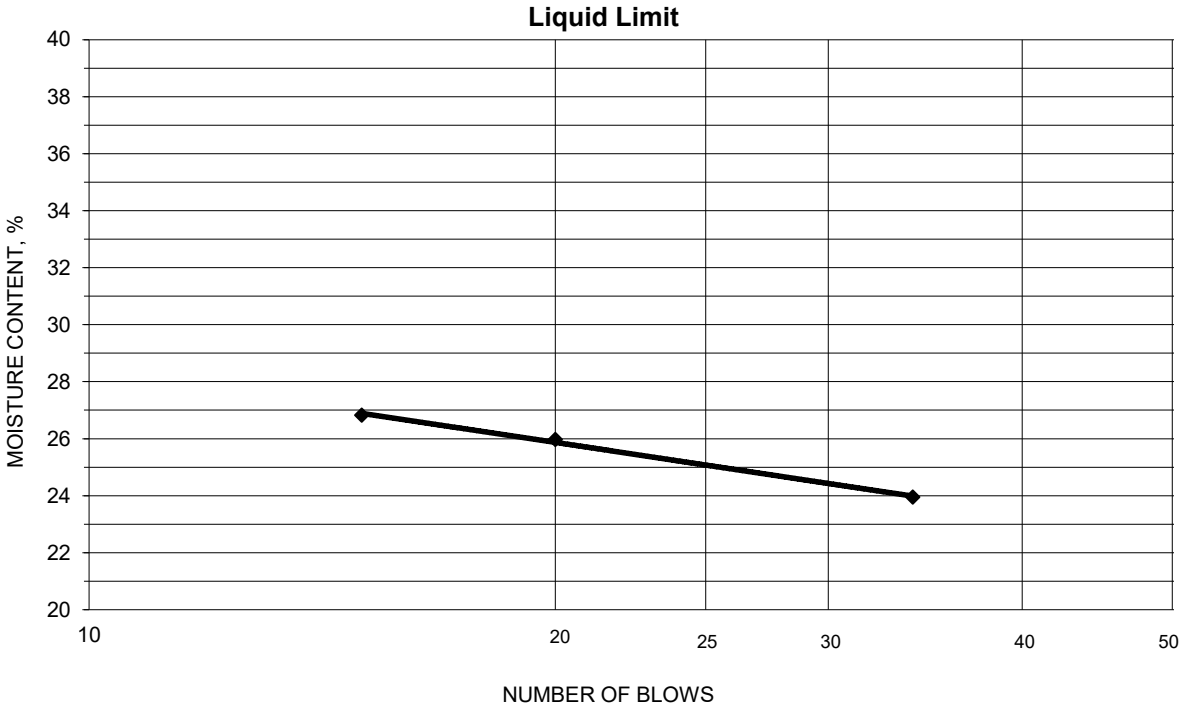
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.11, 12.5'-14.0'			Lab ID	944
				% + No. 40	54
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
21.67	19.62	11.06	34	23.9	
22.42	20.08	11.07	20	26.0	
20.75	18.69	11.01	15	26.8	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.25	20.51	10.89	18.1	18	7
20.35	18.92	10.58	17.1		

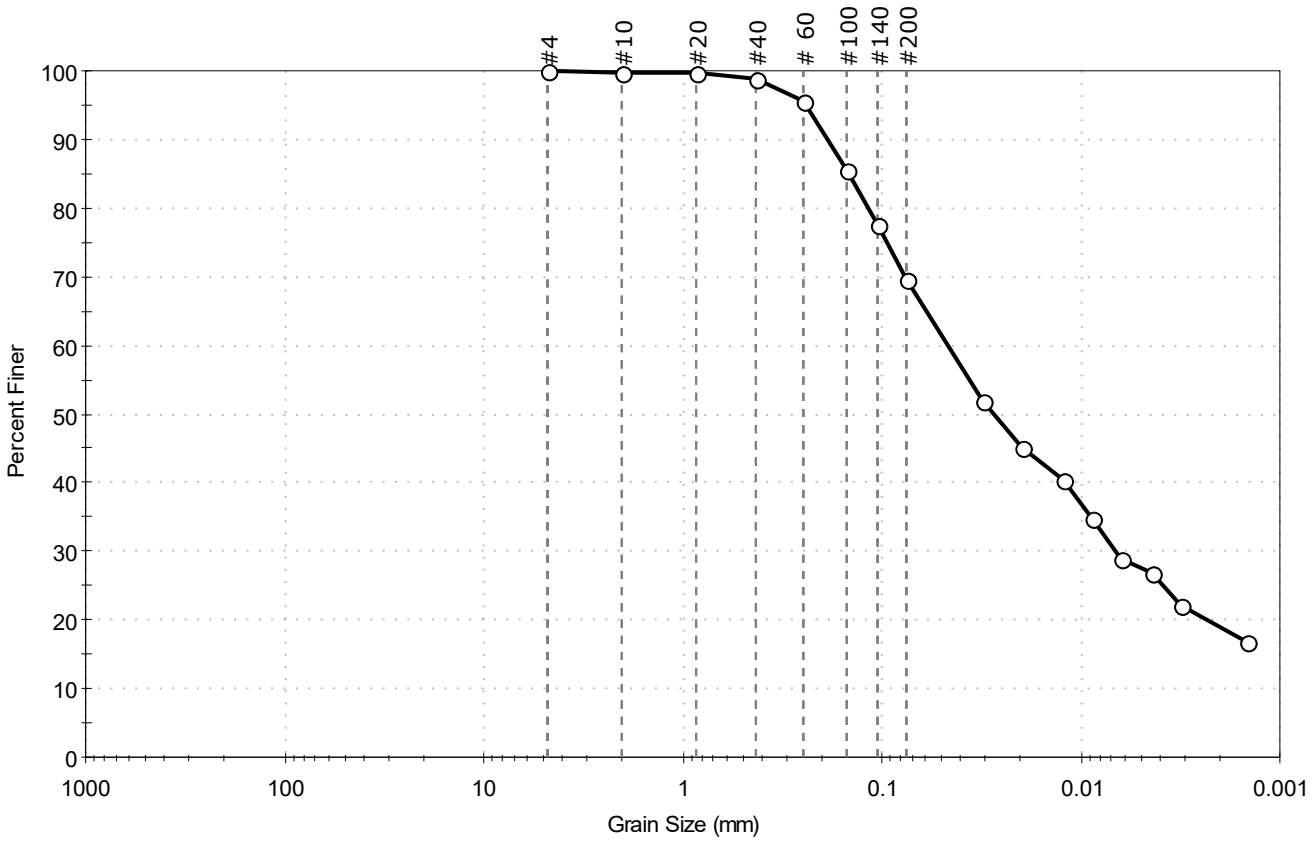
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337060		
Test Comment:	---				
Visual Description:	Moist, greenish brown sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	30.5	69.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
# 60	0.25	96		
#100	0.15	85		
#140	0.11	78		
#200	0.075	70		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0311	52		
---	0.0198	45		
---	0.0121	41		
---	0.0087	35		
---	0.0062	29		
---	0.0044	27		
---	0.0032	22		
---	0.0014	17		

Coefficients

D_{85} = 0.1470 mm	D_{30} = 0.0066 mm
D_{60} = 0.0465 mm	D_{15} = N/A
D_{50} = 0.0273 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (8))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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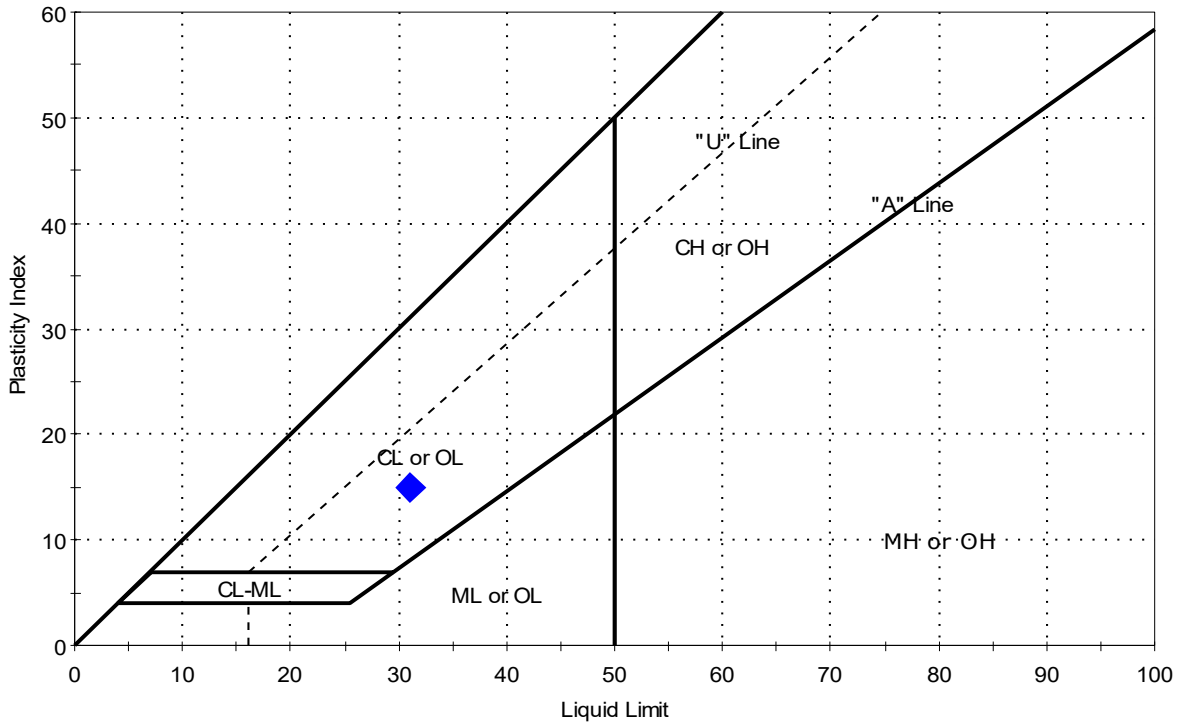
Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337061		
Test Comment:	---				
Visual Description:	Moist, greenish brown sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.12	5.0-7.0	21	31	16	15	0.3	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
1% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: NONE
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.12, 7.5'-9.0'	Lab ID	949
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 34.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.8
No. 40	0.425	92.7
No. 200	0.075	39.9
	0.02	20.5
	0.005	10.4
	0.002	6.6
estimated	0.001	4.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.2
Coarse Sand	0.2	7.1
Medium Sand	7.1	---
Fine Sand	52.8	52.8
Silt	29.5	33.3
Clay	10.4	6.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.12, 7.5'-9.0'	Lab ID	949

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

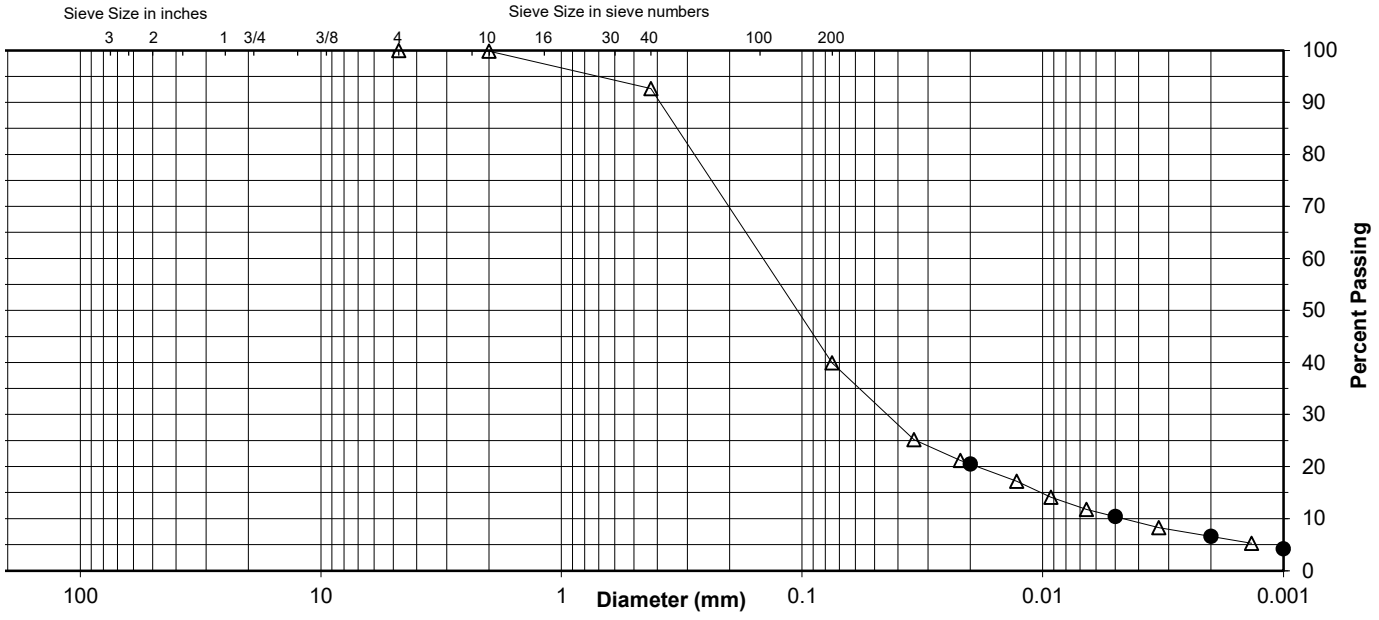
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.7
No. 200	39.9
0.02 mm	20.5
0.005 mm	10.4
0.002 mm	6.6
0.001 mm	4.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.0	0.2	7.1	52.8	29.5	10.4

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	0.2	7.1	52.8	33.3	6.6



Comments

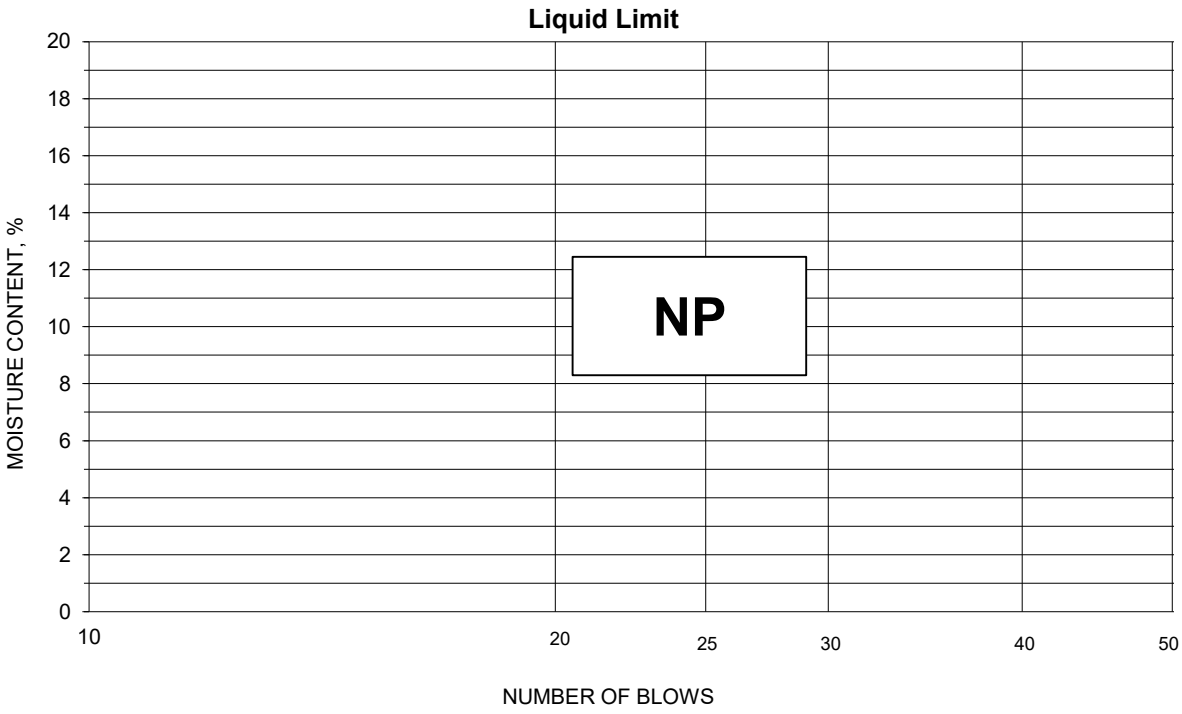
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.12, 7.5'-9.0'			Lab ID	949
				% + No. 40	7
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.12, 12.5'-14.0'	Lab ID	951
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	95.2
3/8"	9.5	94.7
No. 4	4.75	93.8
No. 10	2	91.9
No. 40	0.425	90.7
No. 200	0.075	78.4
	0.02	52.9
	0.005	34.6
	0.002	23.5
estimated	0.001	17.1

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.2	8.1
Coarse Sand	1.9	1.2
Medium Sand	1.2	---
Fine Sand	12.3	12.3
Silt	43.8	54.9
Clay	34.6	23.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	13
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.12, 12.5'-14.0'
Lab ID: 951

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	95.2
3/8"	94.7
No. 4	93.8
No. 10	91.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

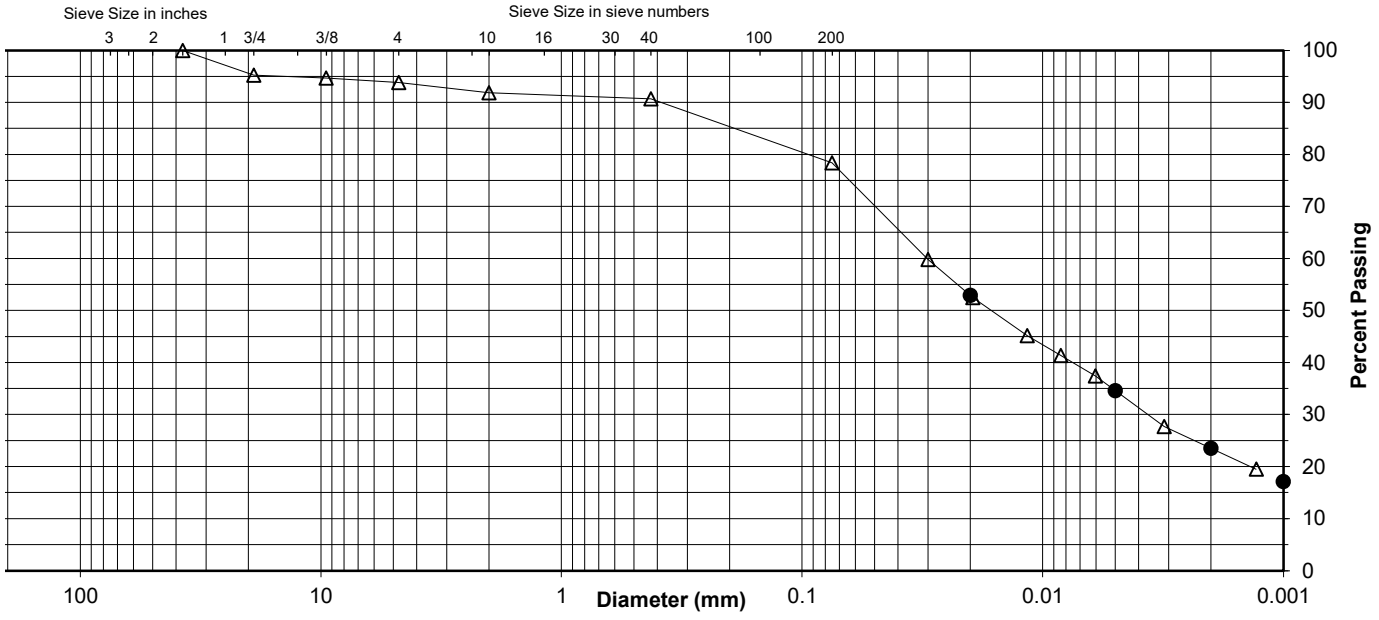
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	90.7
No. 200	78.4
0.02 mm	52.9
0.005 mm	34.6
0.002 mm	23.5
0.001 mm	17.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	4.8	1.4	1.9	1.2	12.3	43.8	34.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.1			1.2	12.3	54.9	23.5



Comments

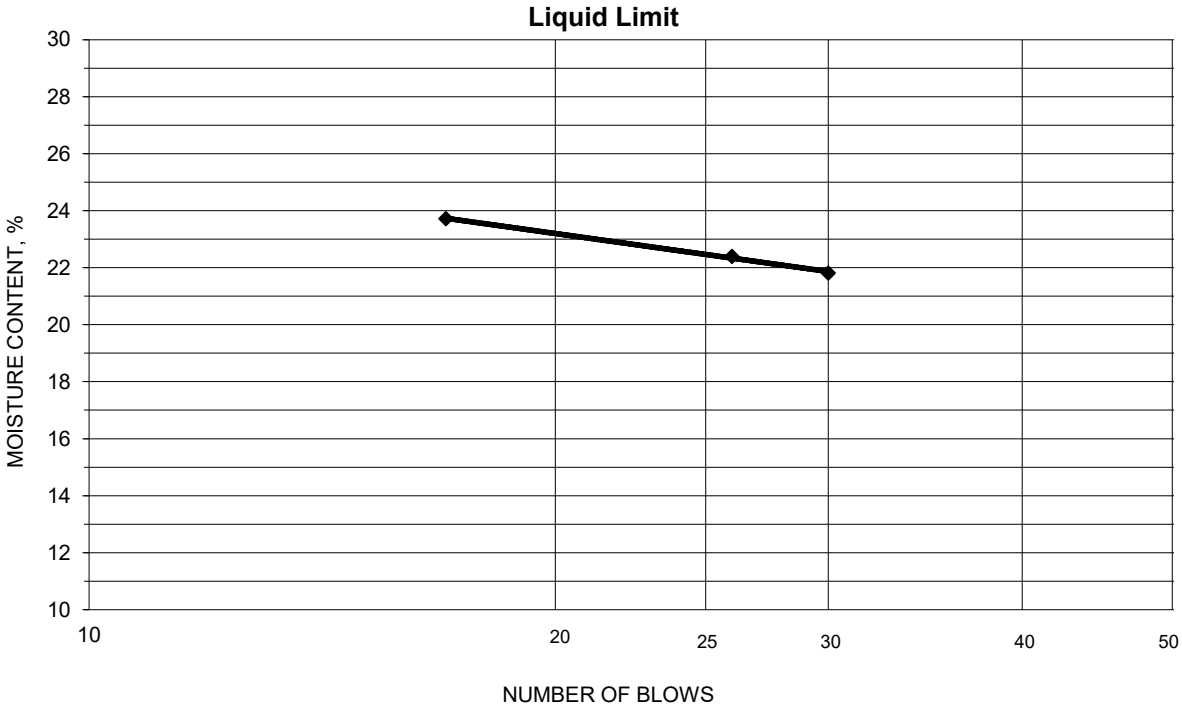
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.12, 12.5'-14.0'			Lab ID	951
				% + No. 40	9
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.59	22.90	10.57	30	21.8	
24.41	21.89	10.64	26	22.4	
24.58	21.99	11.07	17	23.7	22



PLASTIC LIMIT AND PLASTICITY INDEX

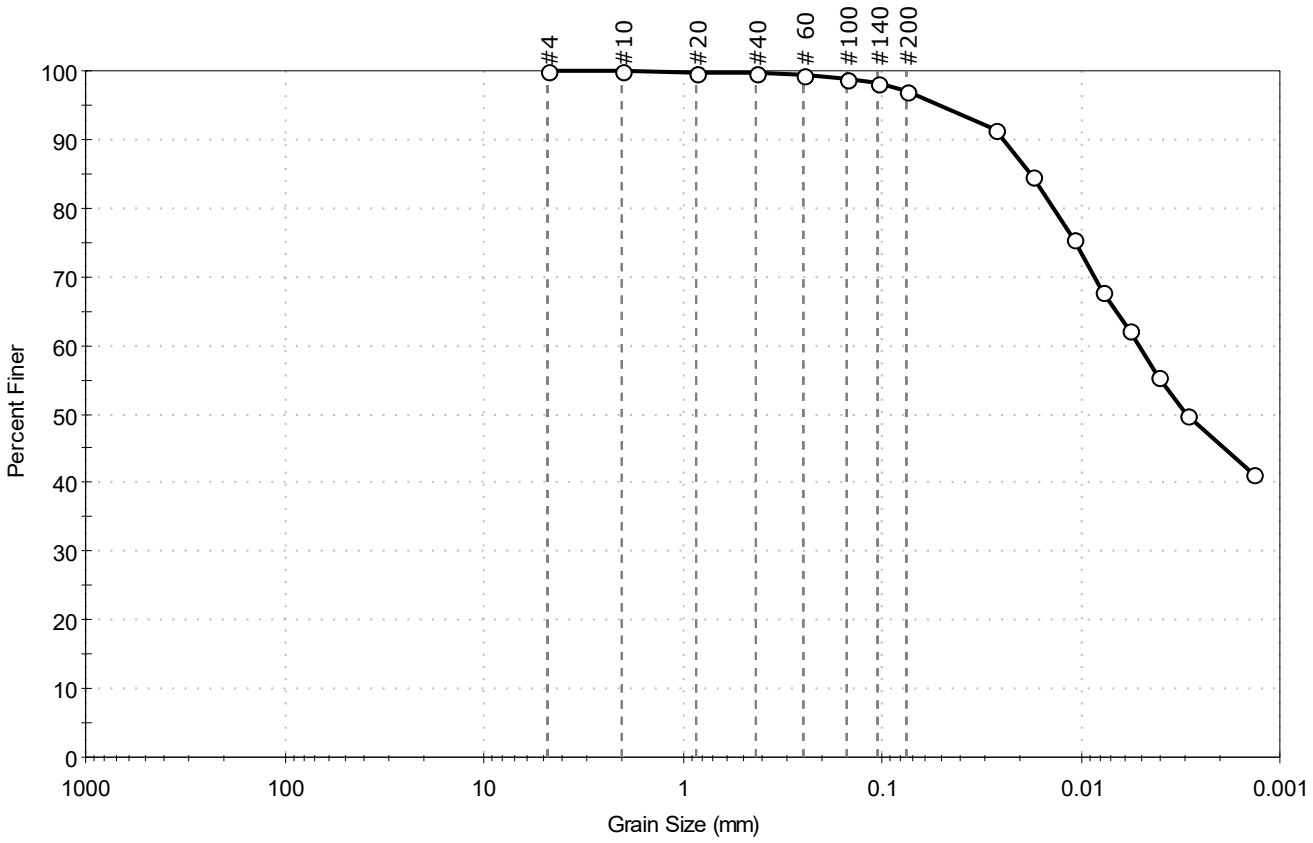
Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.21	19.12	10.97	13.4	13	9
19.58	18.54	10.62	13.1		

Remarks: _____

Reviewed By REL

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	1.0-3.0	Test Id:	337065		
Test Comment:	---				
Visual Description:	Moist, dark brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	2.9	97.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
# 60	0.25	99		
#100	0.15	99		
#140	0.11	98		
#200	0.075	97		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0270	91		
---	0.0173	85		
---	0.0108	76		
---	0.0079	68		
---	0.0057	62		
---	0.0041	55		
---	0.0029	50		
---	0.0014	41		

Coefficients

D_{85} = 0.0178 mm	D_{30} = N/A
D_{60} = 0.0051 mm	D_{15} = N/A
D_{50} = 0.0030 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Fat CLAY (CH)

AASHTO Clayey Soils (A-7-6 (34))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

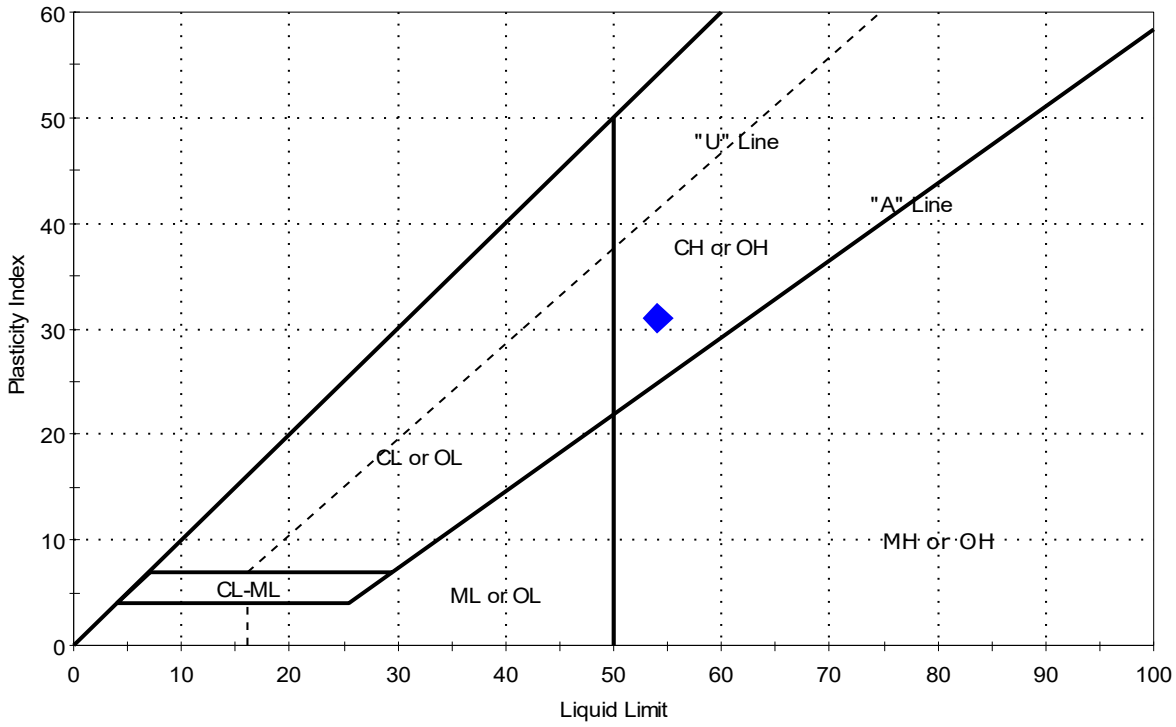
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	1.0-3.0	Test Id:	337066		
Test Comment:	---				
Visual Description:	Moist, dark brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



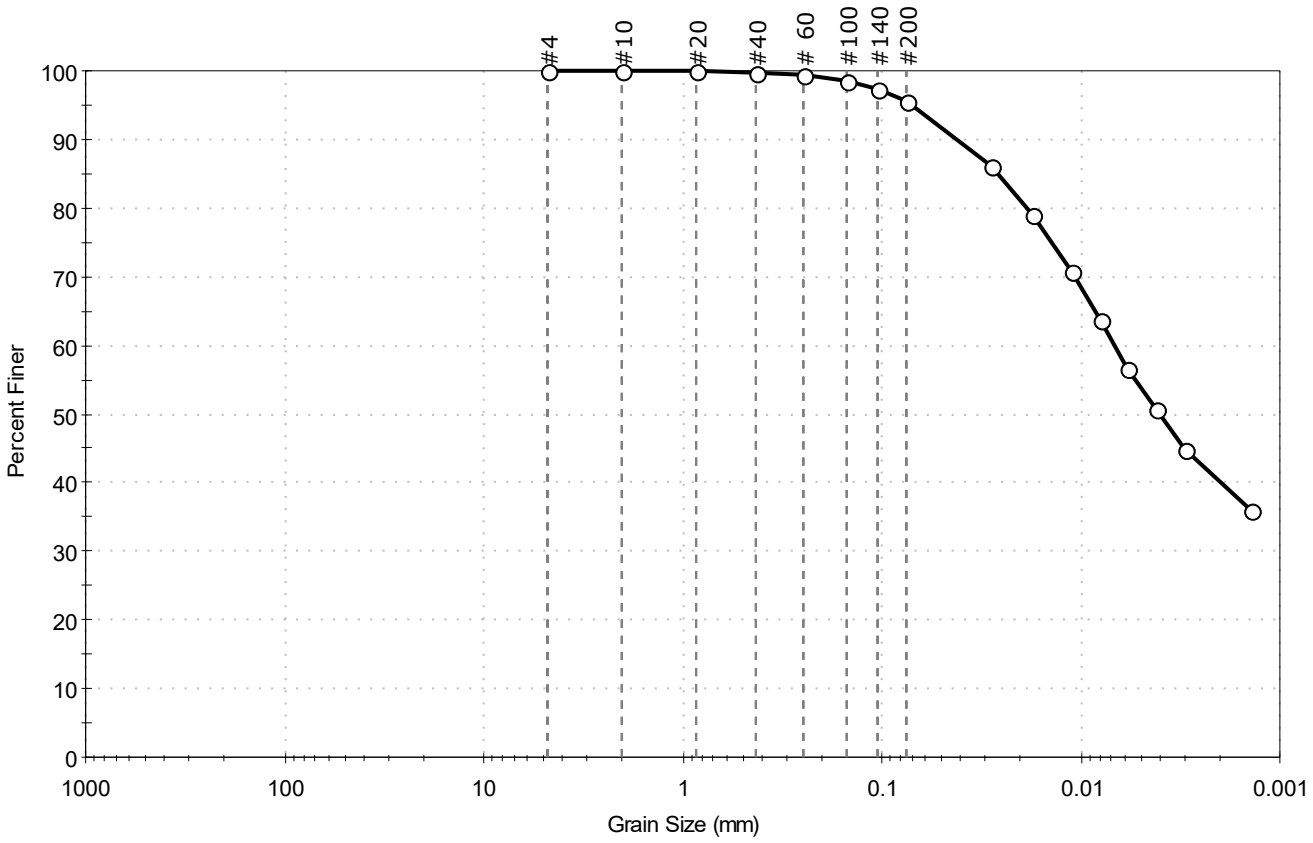
Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.12A	1.0-3.0	26	54	23	31	0.1	Fat CLAY (CH)

Sample Prepared using the DRY method
0% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: NONE
Toughness: MEDIUM

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337069		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	4.4	95.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
# 60	0.25	99		
#100	0.15	99		
#140	0.11	97		
#200	0.075	96		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0279	86		
---	0.0177	79		
---	0.0111	71		
---	0.0080	64		
---	0.0058	57		
---	0.0042	51		
---	0.0030	45		
---	0.0014	36		

Coefficients

D_{85} = 0.0261 mm	D_{30} = N/A
D_{60} = 0.0068 mm	D_{15} = N/A
D_{50} = 0.0040 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Fat CLAY (CH)

AASHTO Clayey Soils (A-7-6 (32))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

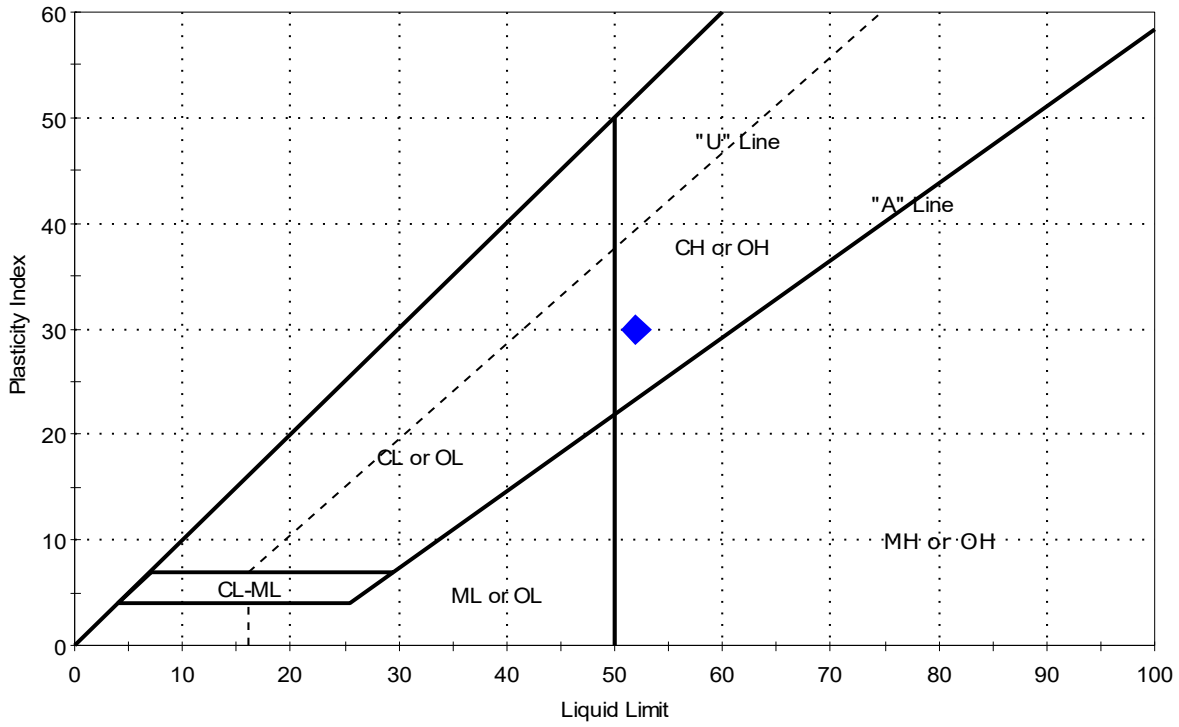
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337070		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

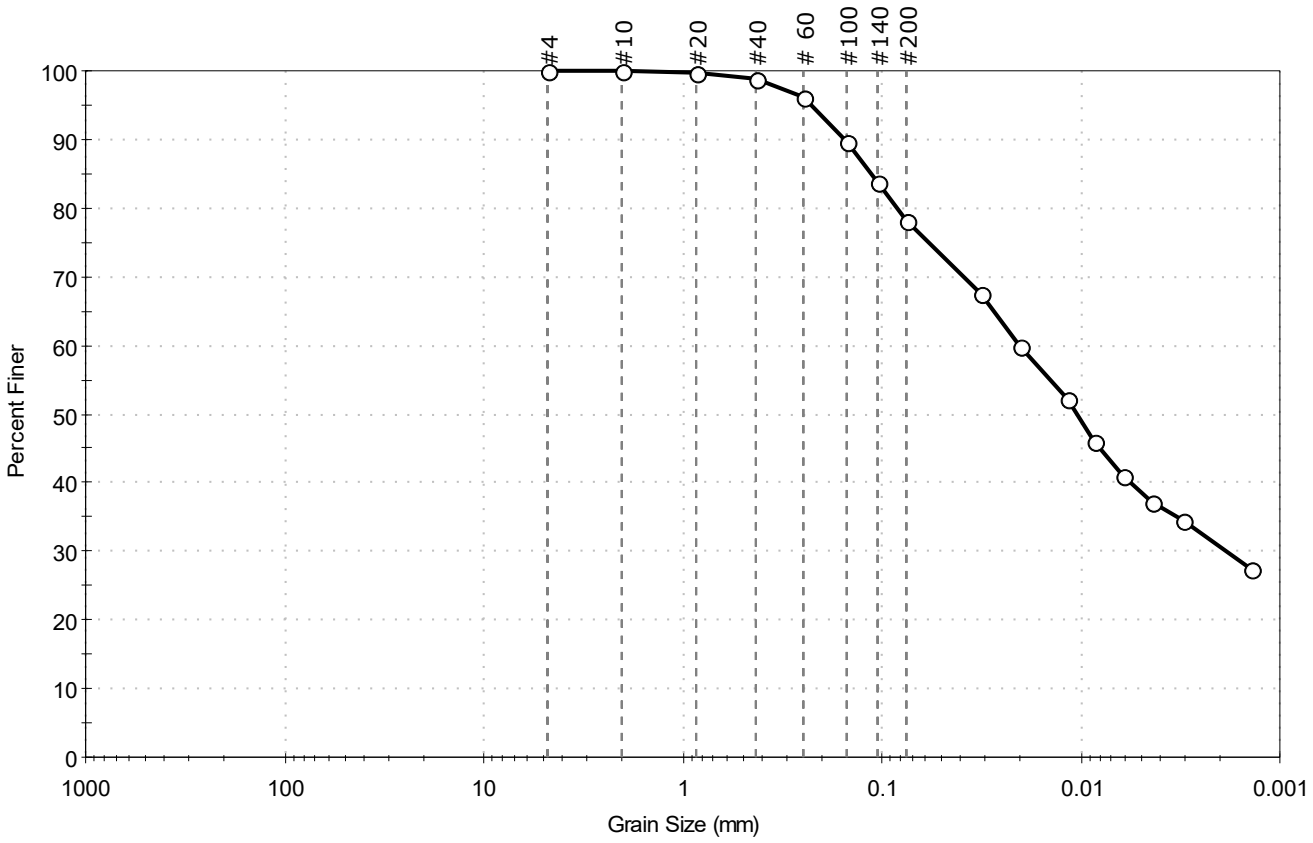


Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.12A	3.0-5.0	27	52	22	30	0.2	Fat CLAY (CH)

Sample Prepared using the DRY method
0% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: NONE
Toughness: MEDIUM

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	7.0-9.0	Test Id:	337083		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	21.7	78.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
# 60	0.25	96		
#100	0.15	90		
#140	0.11	84		
#200	0.075	78		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0322	67		
---	0.0205	60		
---	0.0117	52		
---	0.0085	46		
---	0.0061	41		
---	0.0044	37		
---	0.0031	35		
---	0.0014	27		

Coefficients

D_{85} = 0.1141 mm	D_{30} = 0.0019 mm
D_{60} = 0.0206 mm	D_{15} = N/A
D_{50} = 0.0105 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean CLAY with Sand (CL)

AASHTO Clayey Soils (A-7-6 (16))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

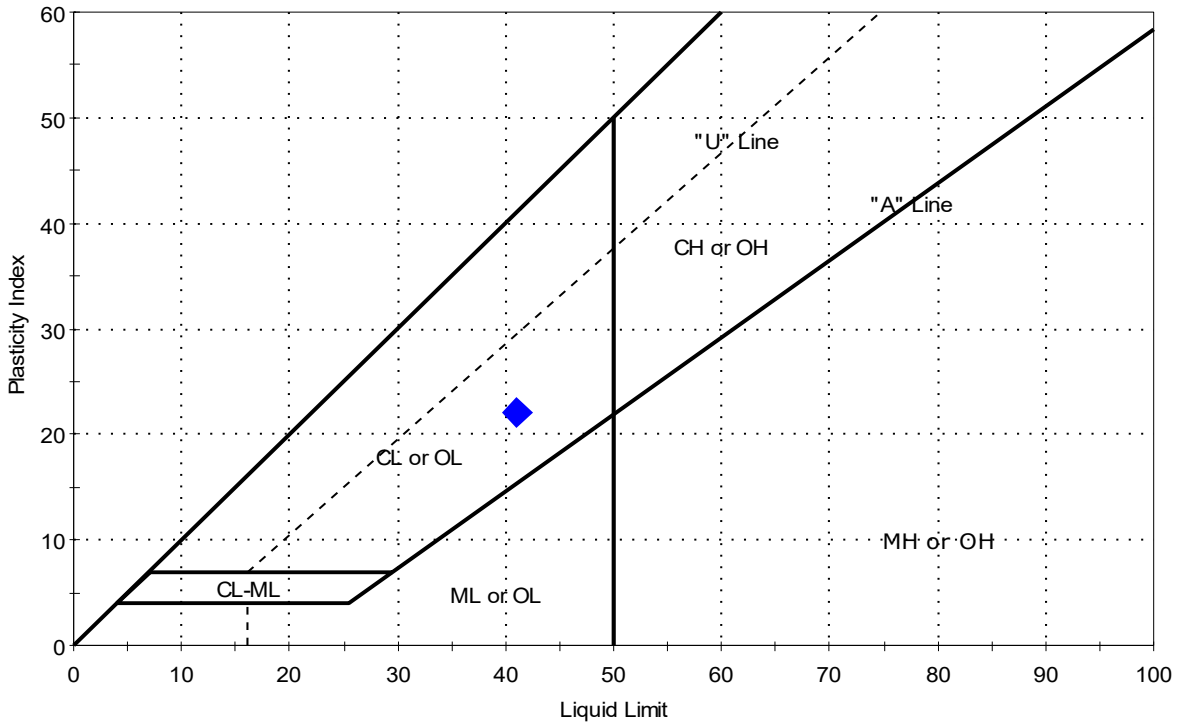
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	7.0-9.0	Test Id:	337088		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



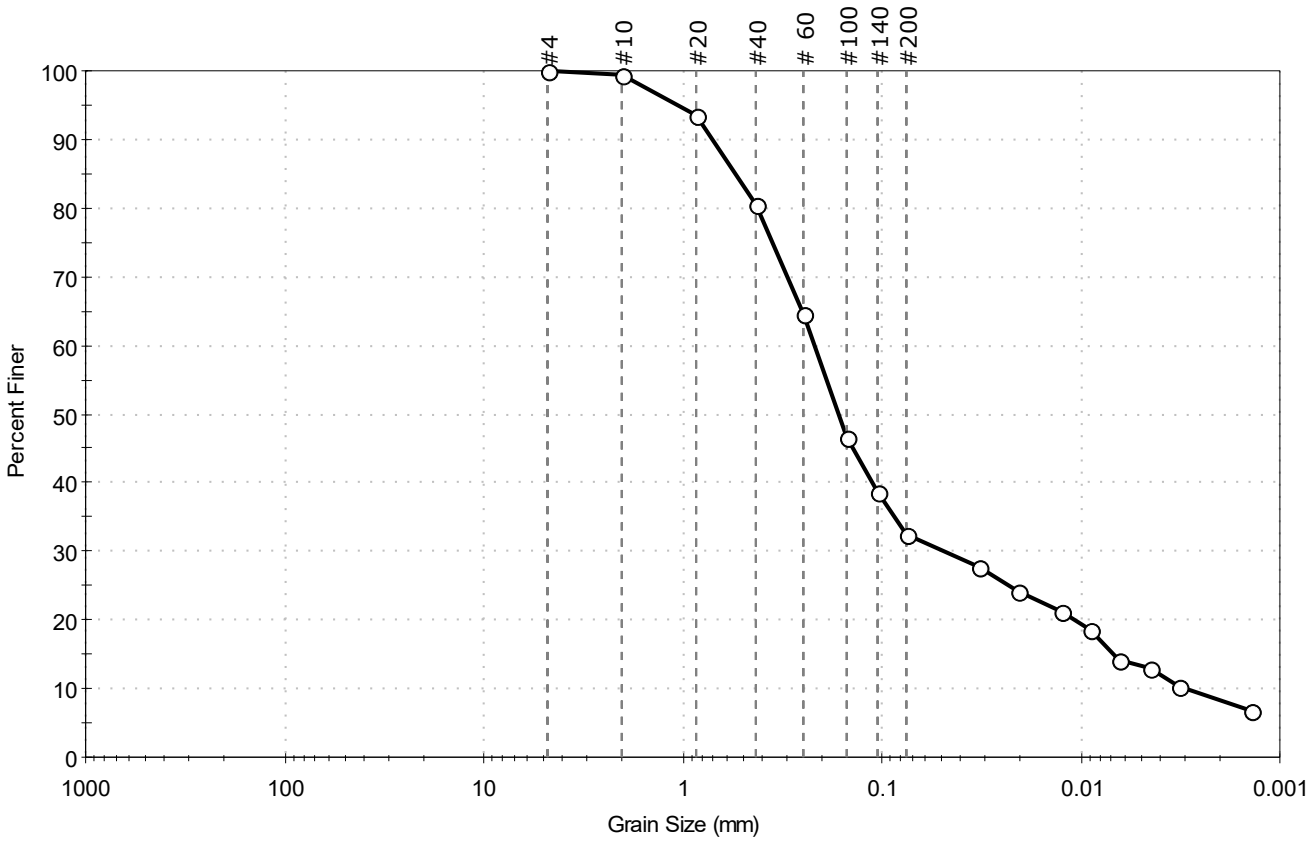
Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.12A	7.0-9.0	27	41	19	22	0.4	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
1% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	13.0-15.0	Test Id:	337084		
Test Comment:	---				
Visual Description:	Moist, dark gray clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	67.5	32.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	94		
#40	0.42	81		
# 60	0.25	65		
#100	0.15	46		
#140	0.11	39		
#200	0.075	32		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0325	28		
---	0.0206	24		
---	0.0125	21		
---	0.0090	19		
---	0.0064	14		
---	0.0045	13		
---	0.0033	10		
---	0.0014	7		

Coefficients

D_{85} =0.5381 mm	D_{30} =0.0480 mm
D_{60} =0.2200 mm	D_{15} =0.0069 mm
D_{50} =0.1657 mm	D_{10} =0.0030 mm
C_u =73.333	C_c =3.491

Classification

ASTM Clayey SAND (SC)

AASHTO Clayey Gravel and Sand (A-2-6 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

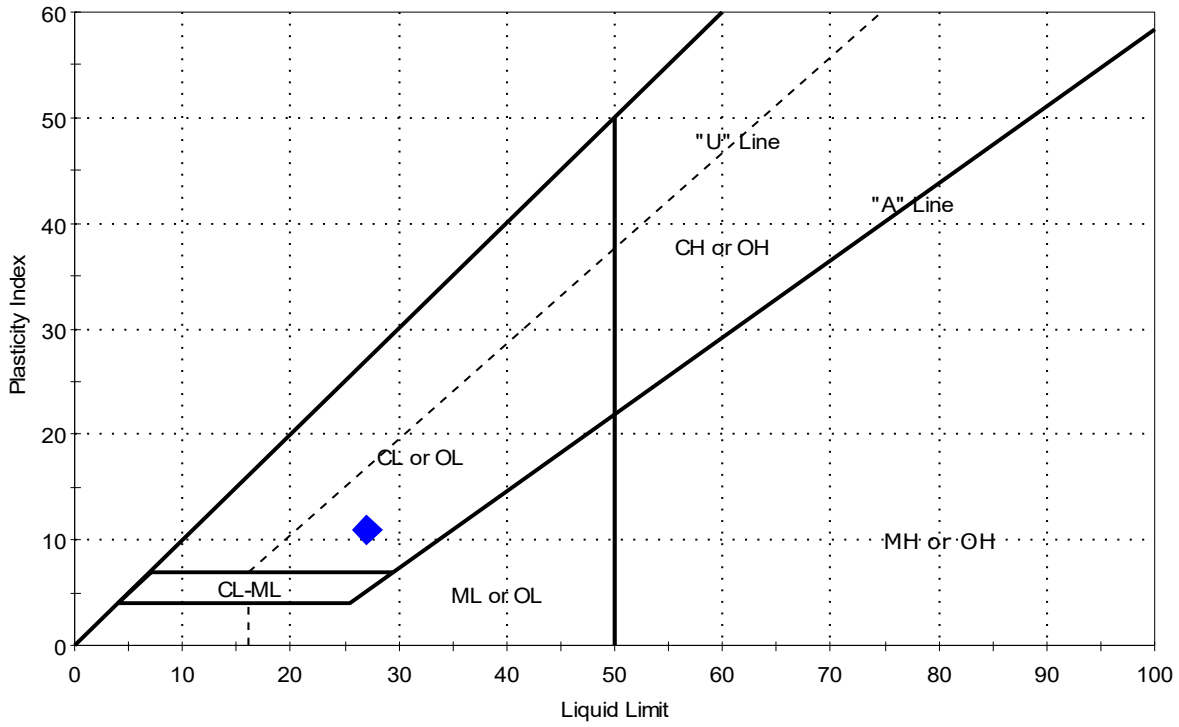
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.12A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	13.0-15.0	Test Id:	337089		
Test Comment:	---				
Visual Description:	Moist, dark gray clayey sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



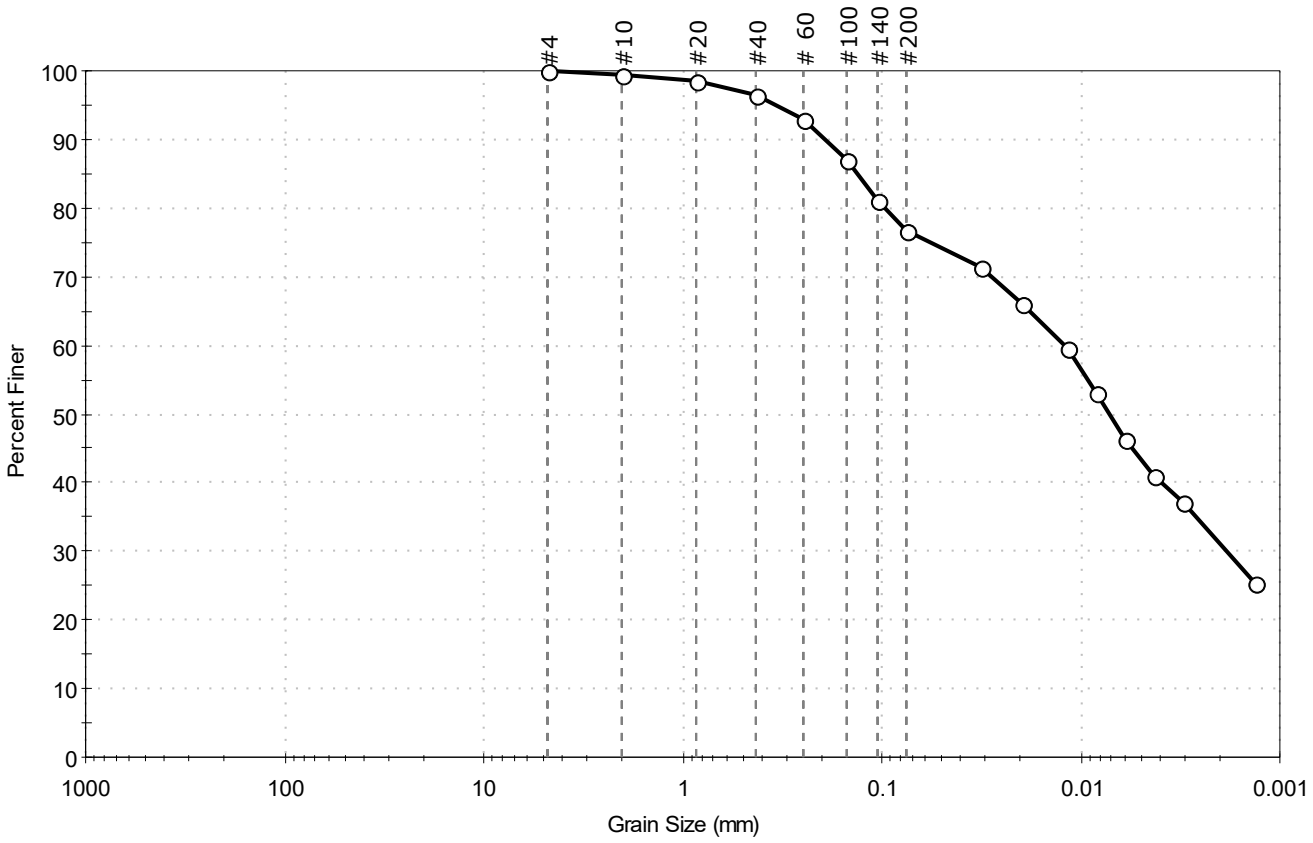
Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.12A	13.0-15.0	32	27	16	11	1.5	Clayey SAND (SC)

Sample Prepared using the DRY method
19% Retained on #40 Sieve
Dry Strength: HIGH
Dilatancy: SLOW
Toughness: MEDIUM

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.13	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/18/22	Checked By:	MCM
Depth :	2.5-4.5	Test Id:	337085		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	23.4	76.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	97		
# 60	0.25	93		
#100	0.15	87		
#140	0.11	81		
#200	0.075	77		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0321	71		
---	0.0199	66		
---	0.0116	60		
---	0.0084	53		
---	0.0061	46		
---	0.0043	41		
---	0.0031	37		
---	0.0013	25		

Coefficients

D_{85} = 0.1341 mm D_{30} = 0.0019 mm
D_{60} = 0.0121 mm D_{15} = N/A
D_{50} = 0.0073 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM Lean CLAY with Sand (CL)

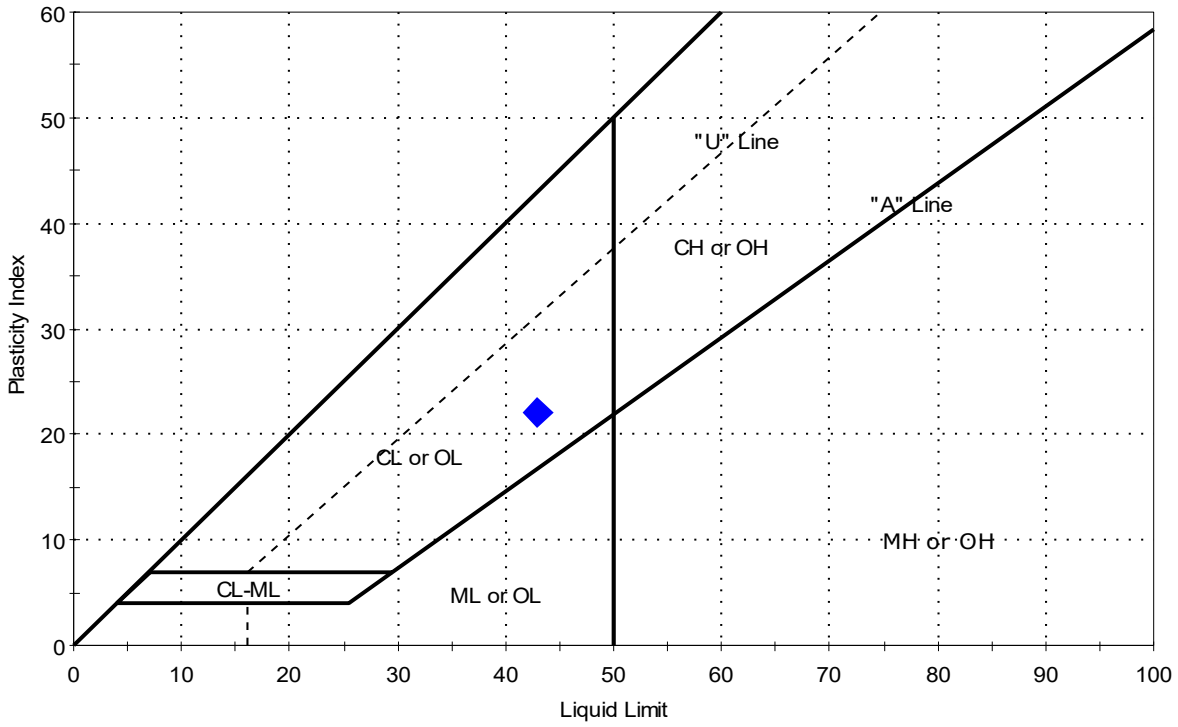
AASHTO Clayey Soils (A-7-6 (16))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.13	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	2.5-4.5	Test Id:	337090		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.13	2.5-4.5	23	43	21	22	0.1	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
3% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 5.0'-6.5'	Lab ID	954
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 27.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.8
No. 4	4.75	96.3
No. 10	2	90.5
No. 40	0.425	75.9
No. 200	0.075	39.5
	0.02	29.6
	0.005	18.6
	0.002	14.1
estimated	0.001	10.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.7	9.5
Coarse Sand	5.8	14.6
Medium Sand	14.6	---
Fine Sand	36.4	36.4
Silt	20.9	25.4
Clay	18.6	14.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	16
Plasticity Index:	9
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 5.0'-6.5'	Lab ID	954

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-22-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.8
No. 4	96.3
No. 10	90.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

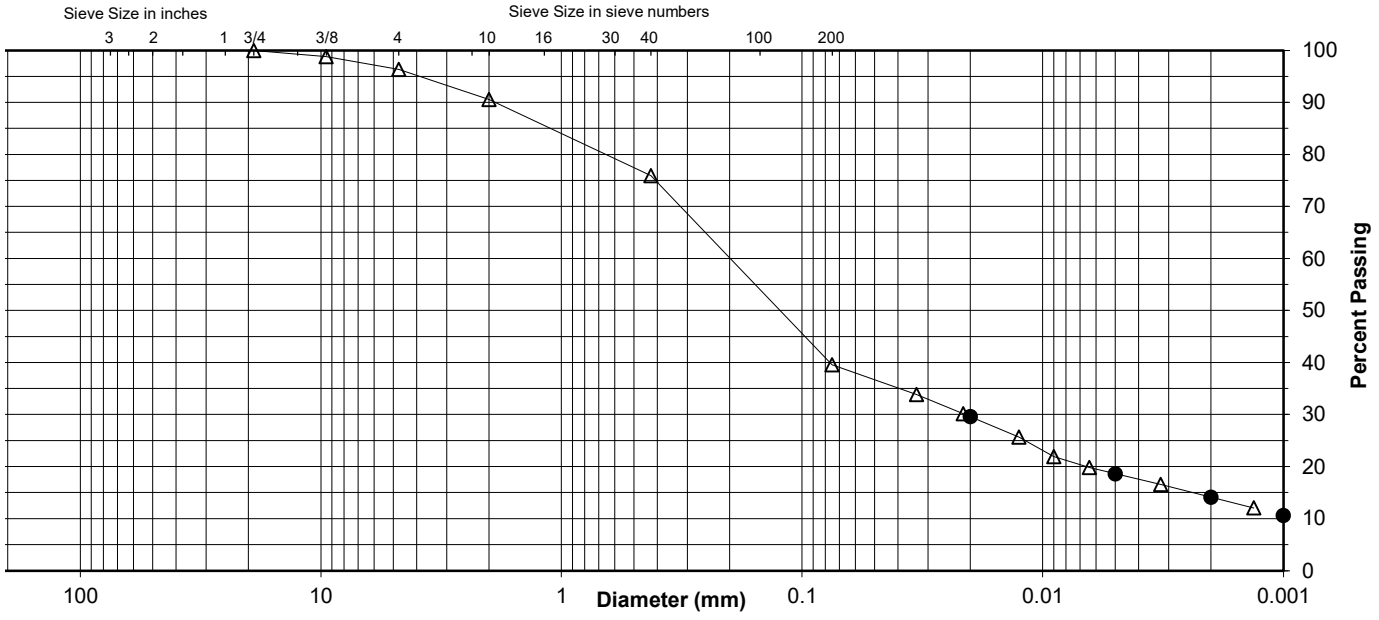
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	75.9
No. 200	39.5
0.02 mm	29.6
0.005 mm	18.6
0.002 mm	14.1
0.001 mm	10.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.7	5.8	14.6	36.4	20.9	18.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.5			14.6	36.4	25.4	14.1



Comments

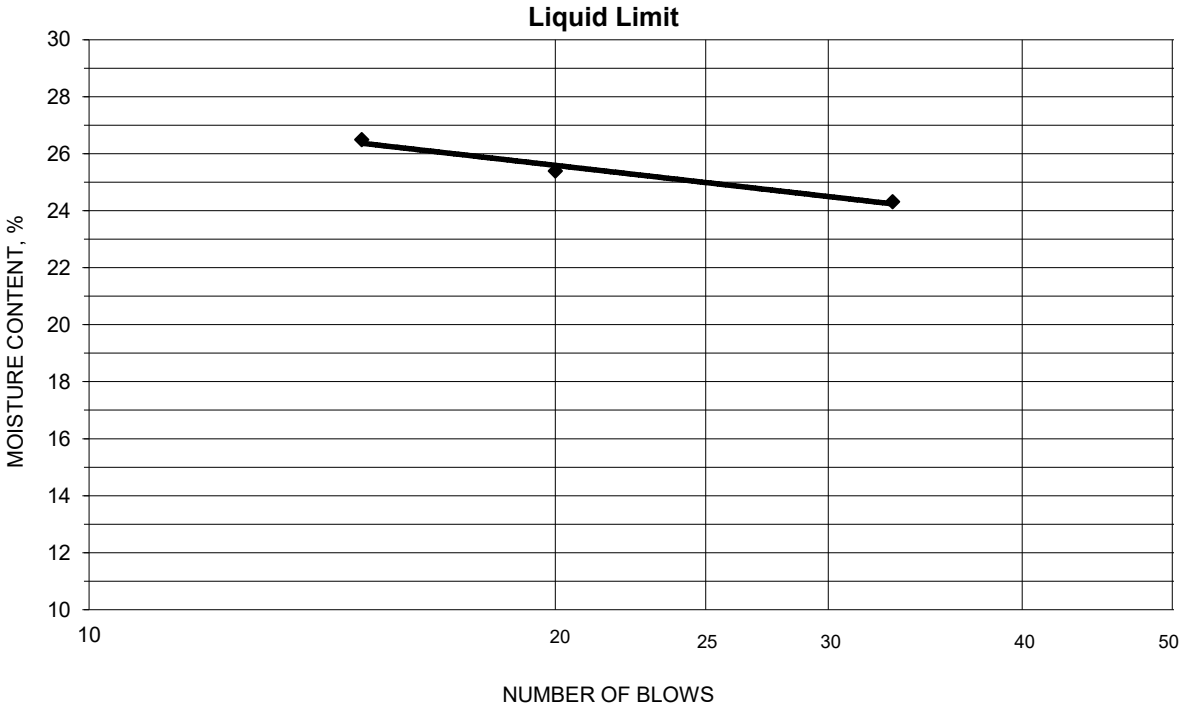
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.13, 5.0'-6.5'			Lab ID	954
				% + No. 40	24
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.97	25.32	14.42	33	24.3	
27.93	25.19	14.40	20	25.4	
28.00	25.16	14.44	15	26.5	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
23.47	22.17	14.39	16.7	16	9
26.65	24.94	14.40	16.2		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 7.5'-9.0'	Lab ID	955
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.3
No. 4	4.75	85.3
No. 10	2	66.3
No. 40	0.425	45.1
No. 200	0.075	24.6
	0.02	11.0
	0.005	5.1
	0.002	3.0
estimated	0.001	1.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	14.7	33.7
Coarse Sand	19.0	21.2
Medium Sand	21.2	---
Fine Sand	20.5	20.5
Silt	19.5	21.6
Clay	5.1	3.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	18
Plasticity Index:	7
Activity Index:	2.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 7.5'-9.0'	Lab ID	955

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-24-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.3
No. 4	85.3
No. 10	66.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

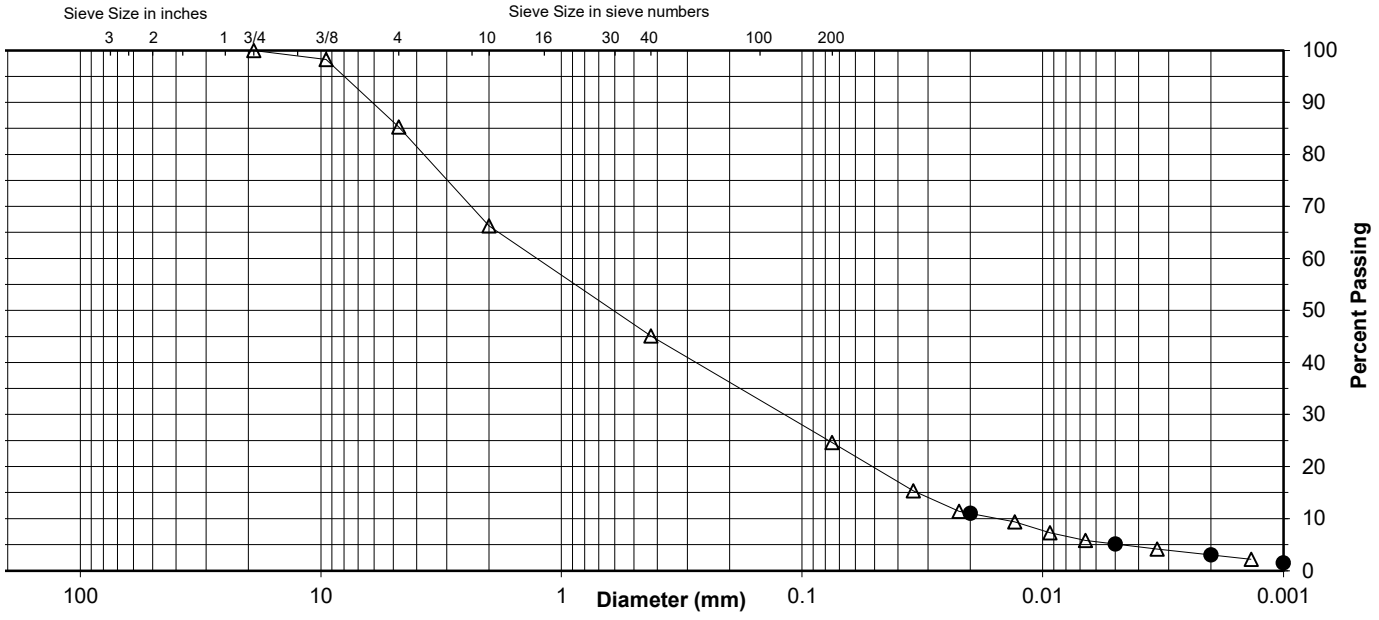
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	45.1
No. 200	24.6
0.02 mm	11.0
0.005 mm	5.1
0.002 mm	3.0
0.001 mm	1.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	14.7	19.0	21.2	20.5	19.5	5.1

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	33.7	21.2	20.5	21.6	3.0



Comments

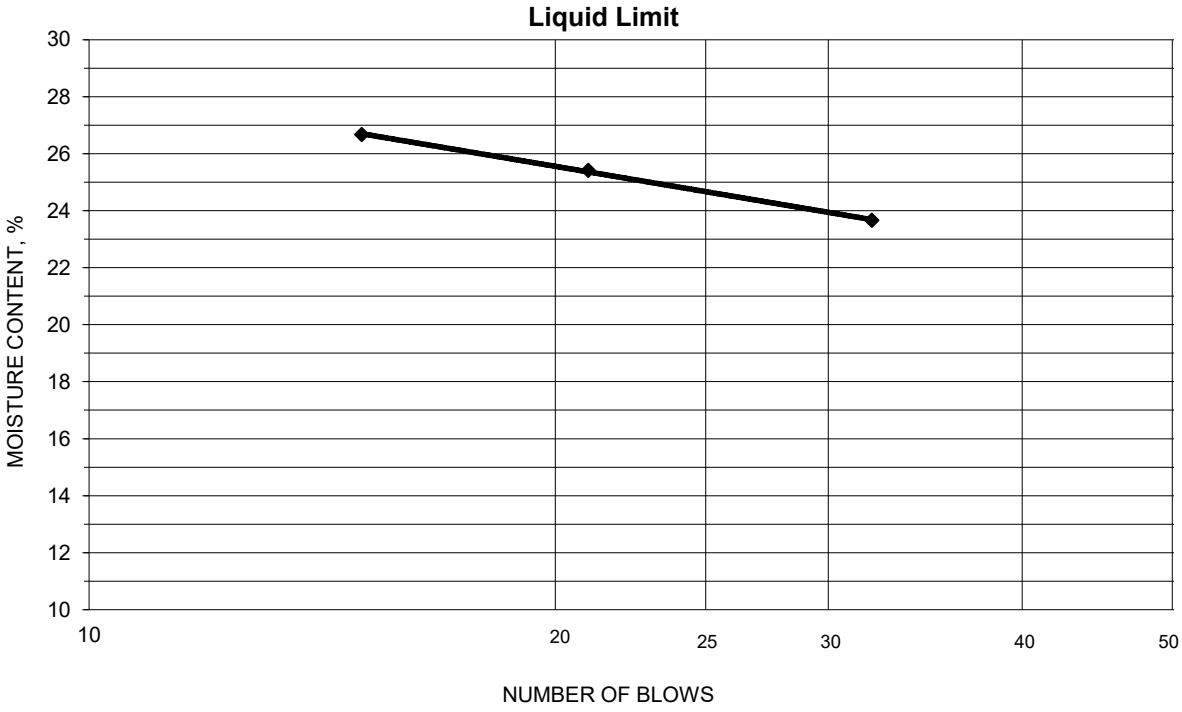
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.13, 7.5'-9.0'			Lab ID	955
				% + No. 40	55
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.42	24.94	14.46	32	23.7	
27.35	24.73	14.42	21	25.4	
27.08	24.41	14.40	15	26.7	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
23.96	22.50	14.41	18.0	18	7
23.65	22.26	14.42	17.7		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 12.5'-14.0'	Lab ID	957
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	96.1
3/8"	9.5	95.8
No. 4	4.75	95.0
No. 10	2	93.9
No. 40	0.425	92.4
No. 200	0.075	78.9
	0.02	46.7
	0.005	27.5
	0.002	16.7
estimated	0.001	9.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.0	6.1
Coarse Sand	1.1	1.5
Medium Sand	1.5	---
Fine Sand	13.5	13.5
Silt	51.4	62.2
Clay	27.5	16.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	12
Plasticity Index:	10
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-4 (5)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.13, 12.5'-14.0'	Lab ID	957

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	96.1
3/8"	95.8
No. 4	95.0
No. 10	93.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

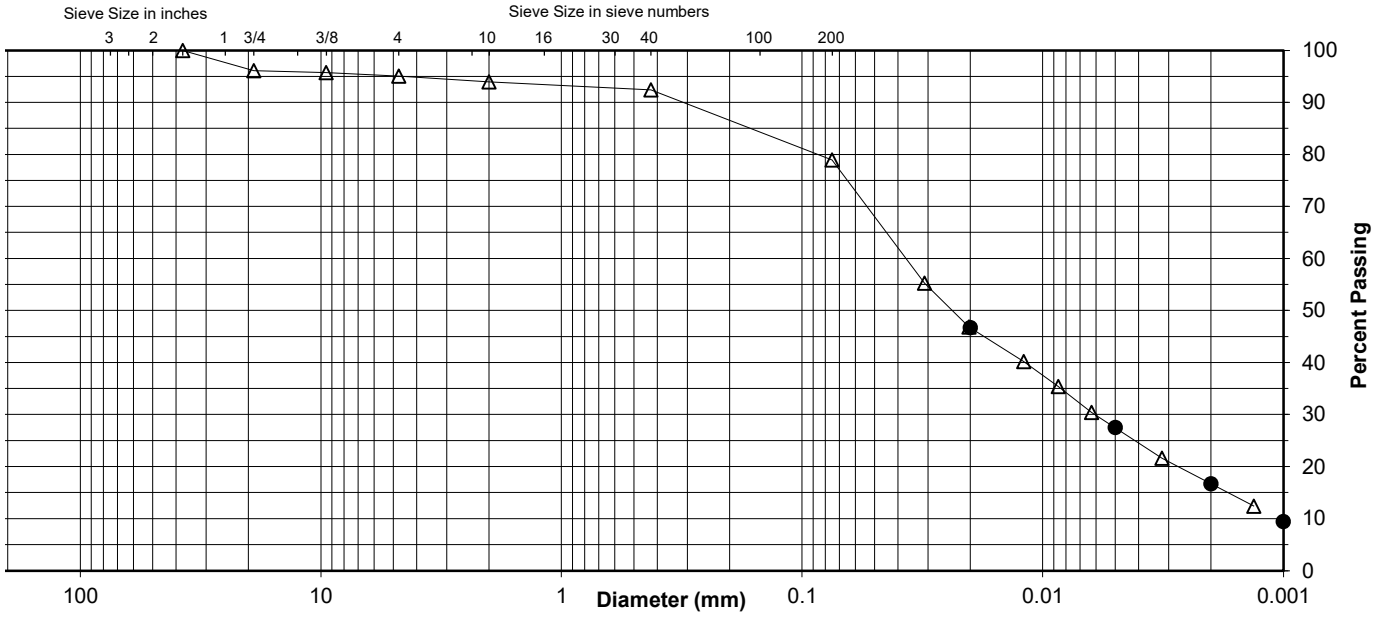
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.4
No. 200	78.9
0.02 mm	46.7
0.005 mm	27.5
0.002 mm	16.7
0.001 mm	9.4

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	3.9	1.1	1.1	1.5	13.5	51.4	27.5

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	6.1	1.5	13.5	62.2	16.7



Comments

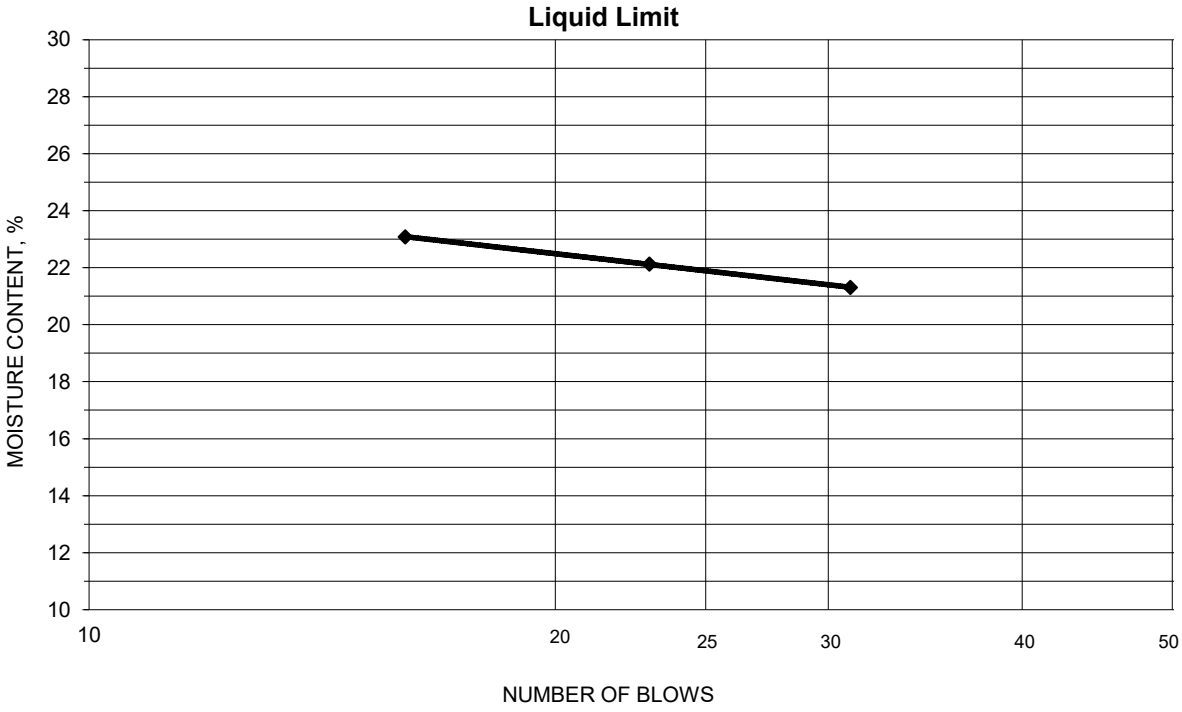
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.13, 12.5'-14.0'			Lab ID	957
				% + No. 40	8
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.91	23.27	10.88	31	21.3	
24.63	22.09	10.61	23	22.1	
24.70	22.14	11.05	16	23.1	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.02	20.86	11.06	11.8	12	10
21.52	20.32	10.58	12.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.14, 2.5'-4.0'	Lab ID	960
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 24.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.5
No. 40	0.425	98.3
No. 200	0.075	80.1
	0.02	69.6
	0.005	48.6
	0.002	39.7
estimated	0.001	33.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.5
Coarse Sand	0.5	1.2
Medium Sand	1.2	---
Fine Sand	18.2	18.2
Silt	31.5	40.4
Clay	48.6	39.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	21
Plasticity Index:	14
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (10)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.14, 2.5'-4.0'
Lab ID: 960

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-28-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	99.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

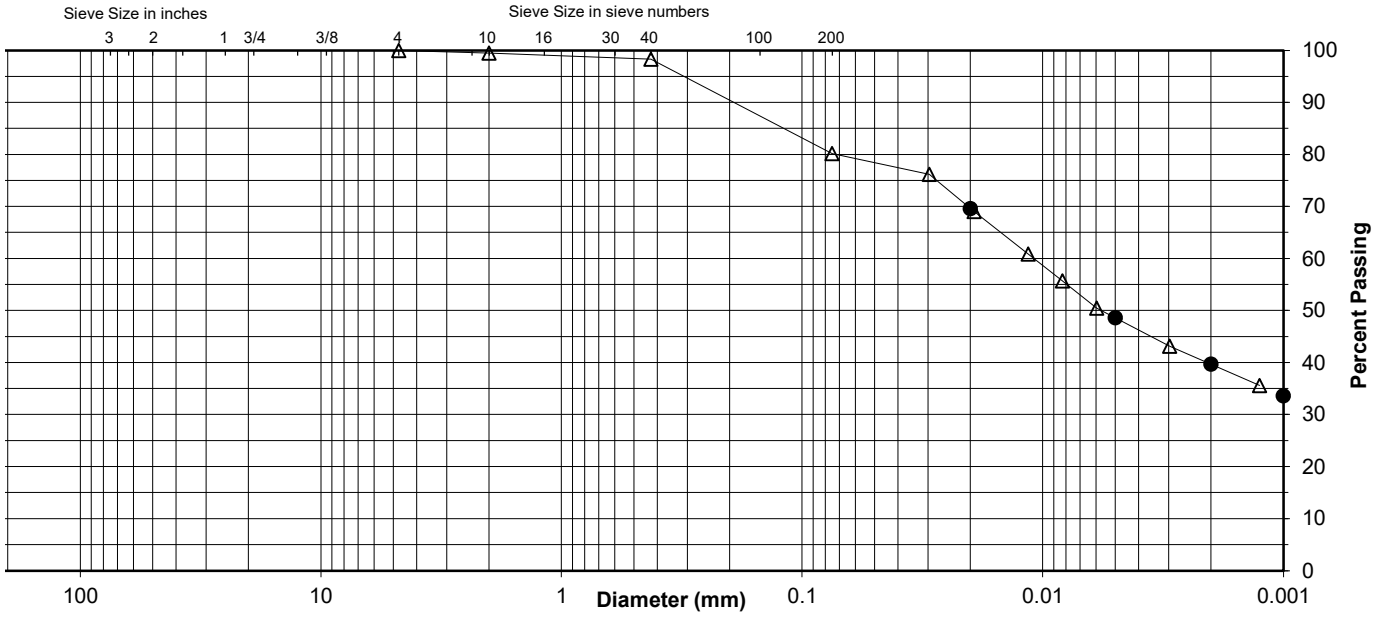
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	98.3
No. 200	80.1
0.02 mm	69.6
0.005 mm	48.6
0.002 mm	39.7
0.001 mm	33.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.5	1.2	18.2	31.5	48.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.5			1.2	18.2	40.4	39.7



Comments:

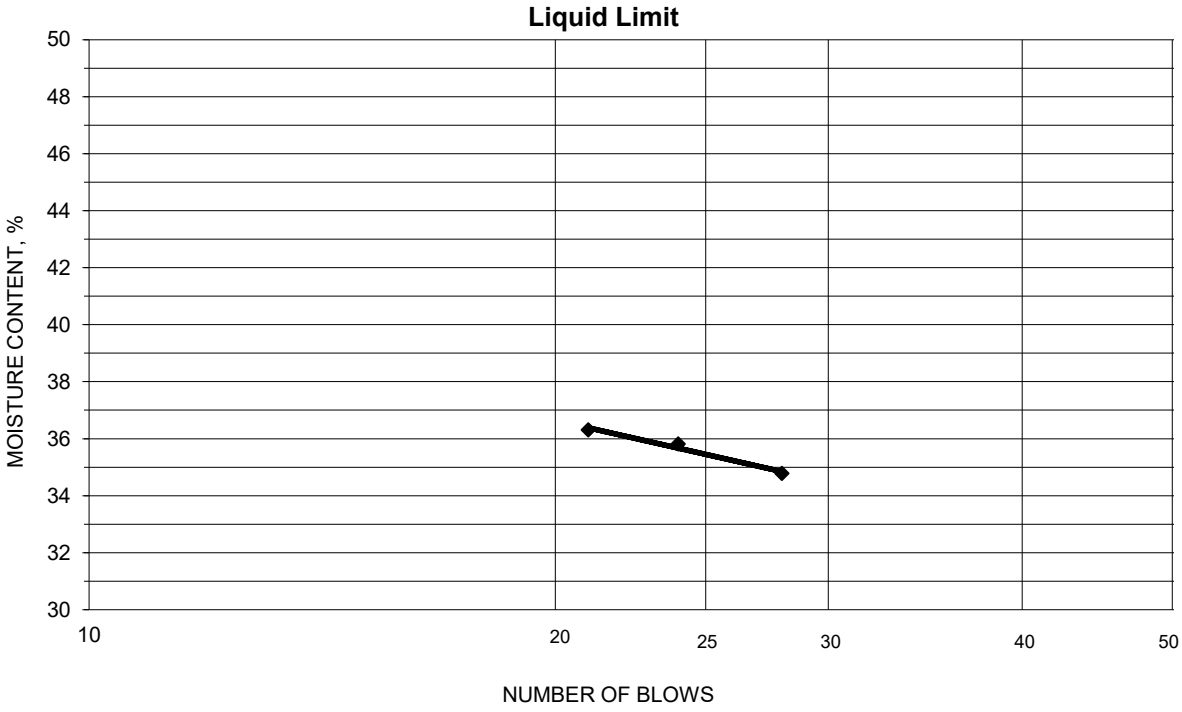
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.14, 2.5'-4.0'			Lab ID	960
				% + No. 40	2
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.48	20.27	11.04	28	34.8	
22.93	19.80	11.06	24	35.8	
23.28	19.90	10.59	21	36.3	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.12	18.47	10.56	20.9	21	14
18.58	17.27	10.92	20.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.14, 10.0'-11.5'	Lab ID	963
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	91.6
3/8"	9.5	84.3
No. 4	4.75	73.5
No. 10	2	50.2
No. 40	0.425	31.1
No. 200	0.075	30.8
	0.02	21.3
	0.005	15.2
	0.002	12.6
estimated	0.001	10.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	26.5	49.8
Coarse Sand	23.3	19.1
Medium Sand	19.1	---
Fine Sand	0.3	0.3
Silt	15.6	18.2
Clay	15.2	12.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	15
Plasticity Index:	7
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.14, 10.0'-11.5'	Lab ID	963

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-28-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	91.6
3/8"	84.3
No. 4	73.5
No. 10	50.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

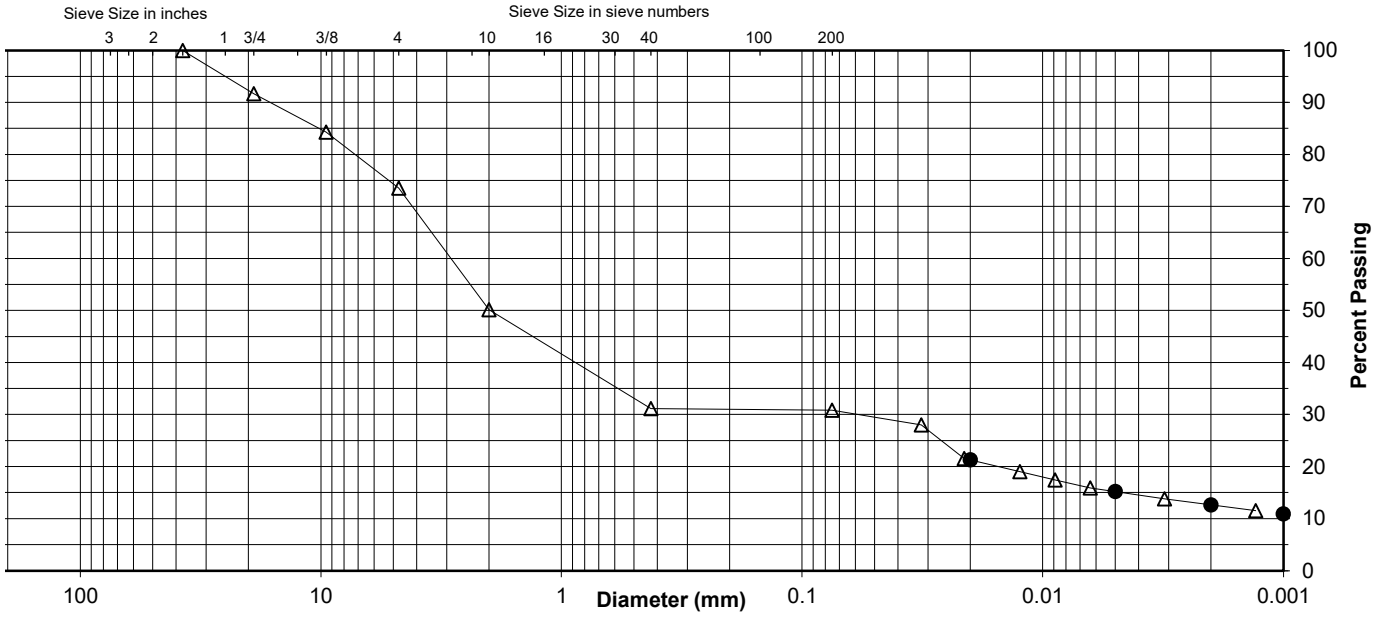
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	31.1
No. 200	30.8
0.02 mm	21.3
0.005 mm	15.2
0.002 mm	12.6
0.001 mm	10.9

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	8.4	18.1	23.3	19.1	0.3	15.6	15.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	49.8	19.1	0.3	18.2	12.6



Comments

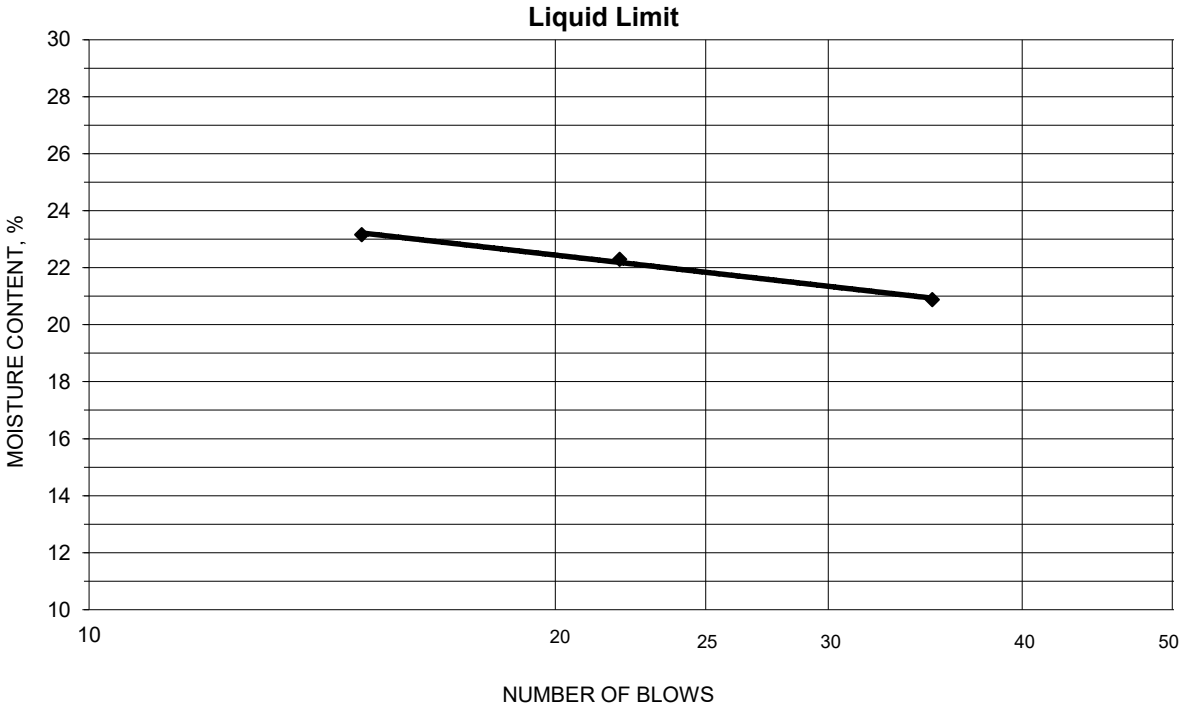
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.14, 10.0'-11.5'			Lab ID	963
				% + No. 40	69
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.64	22.22	10.63	35	20.9	
24.74	22.16	10.59	22	22.3	
24.10	21.62	10.91	15	23.2	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.88	18.68	10.50	14.7	15	7
18.62	17.59	10.47	14.5		

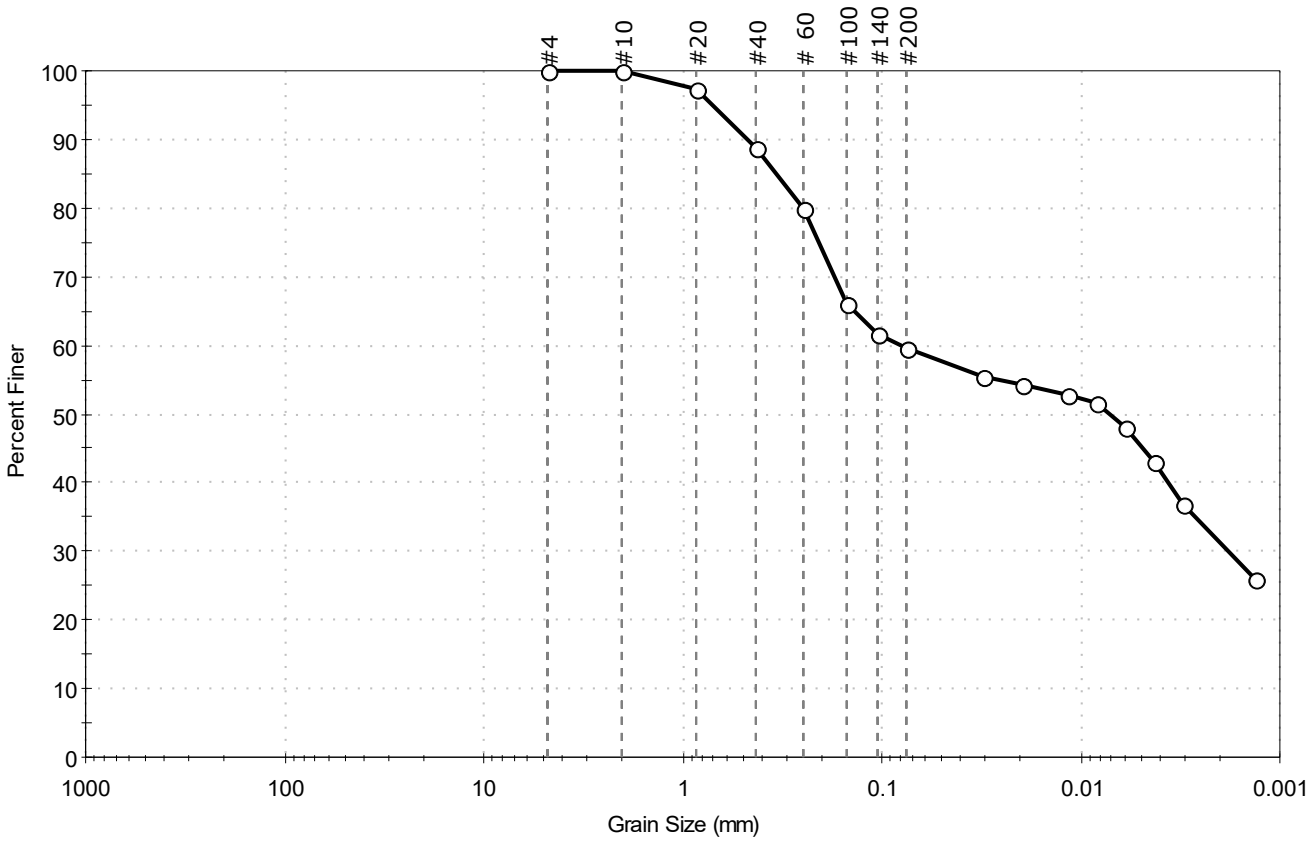
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.14	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/18/22	Checked By:	MCM
Depth :	11.5-13.5	Test Id:	337086		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	40.6	59.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	97		
#40	0.42	89		
# 60	0.25	80		
#100	0.15	66		
#140	0.11	62		
#200	0.075	59		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0308	55		
---	0.0199	54		
---	0.0116	53		
---	0.0084	52		
---	0.0060	48		
---	0.0043	43		
---	0.0031	37		
---	0.0013	26		

Coefficients

D_{85} = 0.3384 mm	D_{30} = 0.0018 mm
D_{60} = 0.0817 mm	D_{15} = N/A
D_{50} = 0.0072 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (4))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

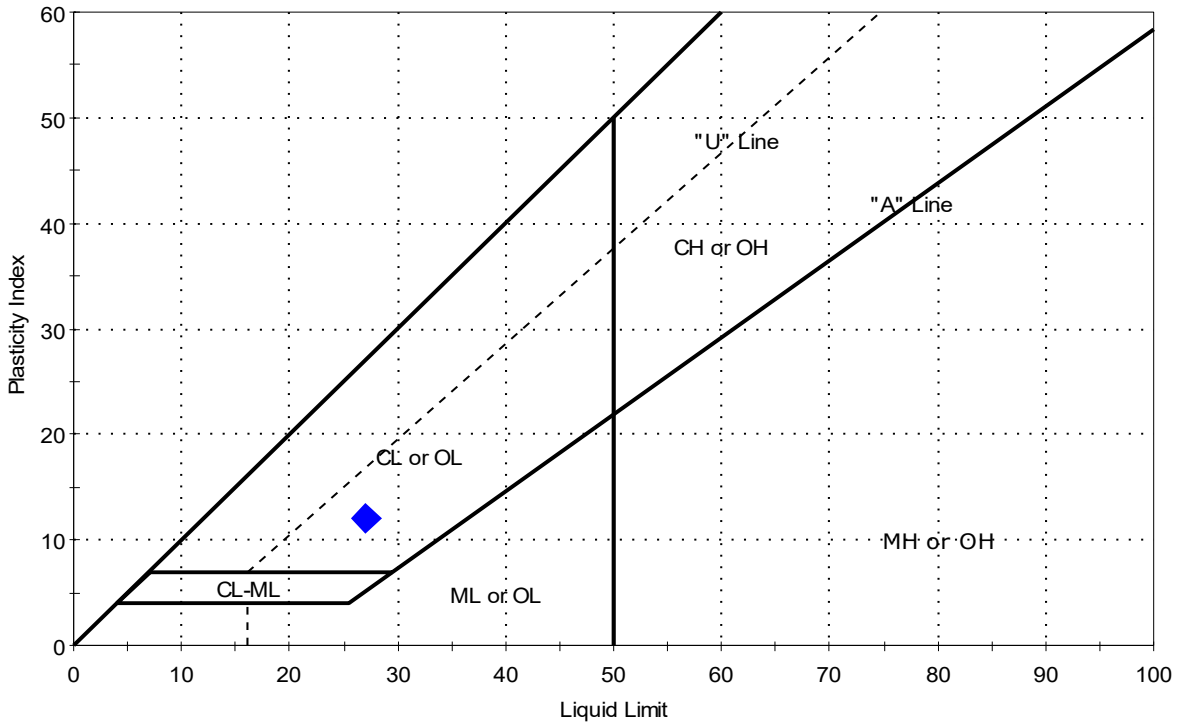
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.14	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/16/22	Checked By:	MCM
Depth :	11.5-13.5	Test Id:	337091		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.14	11.5-13.5	19	27	15	12	0.3	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
11% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.14, 15.0'-16.5'	Lab ID	964
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.9
No. 10	2	98.0
No. 40	0.425	78.9
No. 200	0.075	66.3
	0.02	52.1
	0.005	29.0
	0.002	18.8
estimated	0.001	14.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.1	2.0
Coarse Sand	1.9	19.1
Medium Sand	19.1	---
Fine Sand	12.6	12.6
Silt	37.3	47.5
Clay	29.0	18.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	14
Plasticity Index:	8
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (2)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.14, 15.0'-16.5'	Lab ID	964

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	SS
Test Date	07-05-2022
Date Received	06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.9
No. 10	98.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

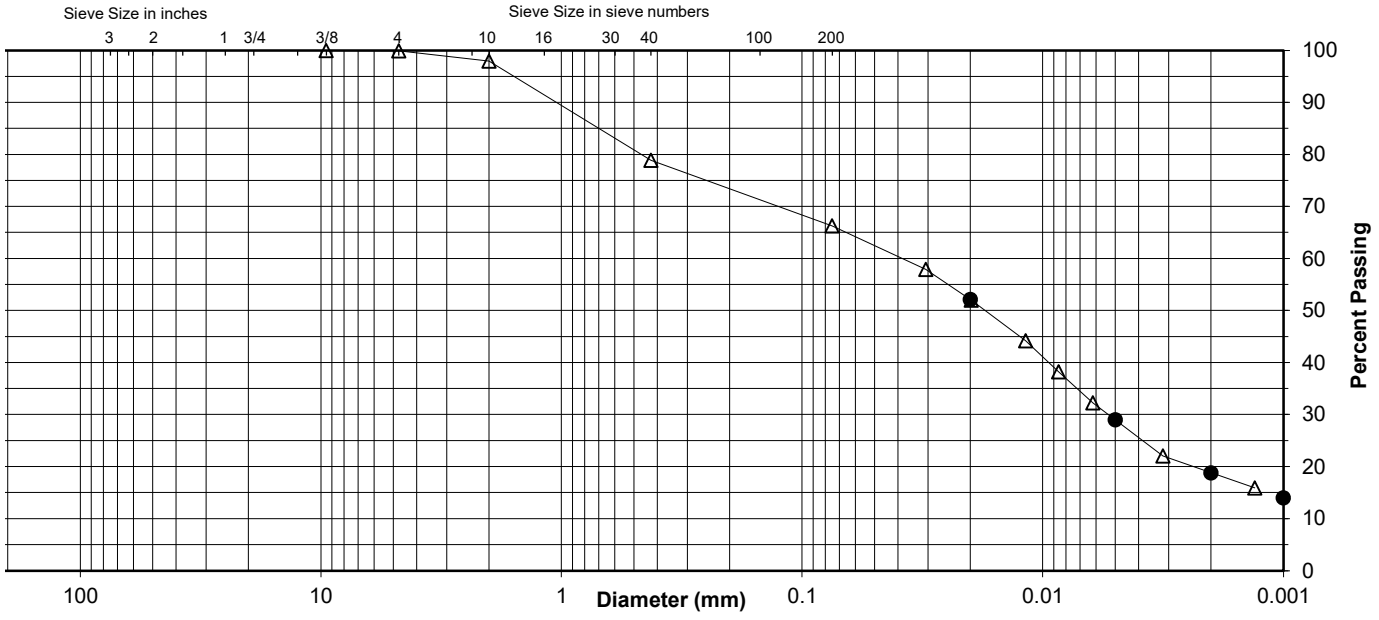
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	78.9
No. 200	66.3
0.02 mm	52.1
0.005 mm	29.0
0.002 mm	18.8
0.001 mm	14.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.1	1.9	19.1	12.6	37.3	29.0

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.0	19.1	12.6	47.5	18.8



Comments

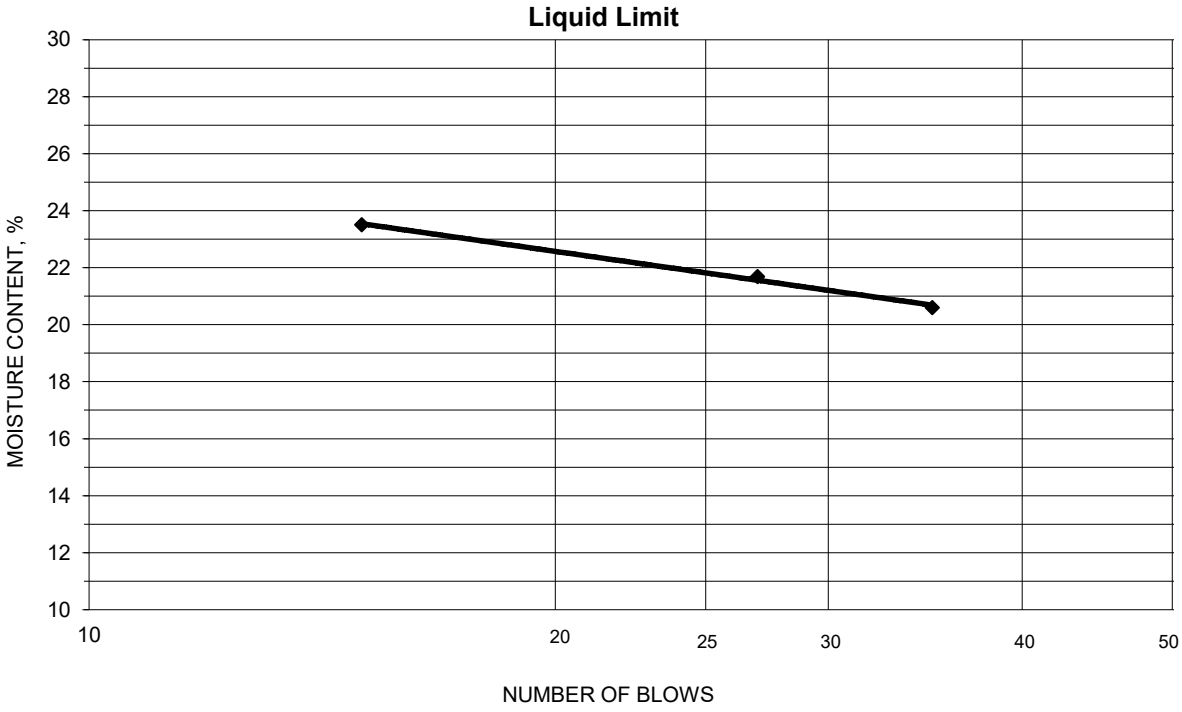
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.14, 15.0'-16.5'			Lab ID	964
				% + No. 40	21
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.11	20.97	10.58	35	20.6	
23.76	21.42	10.63	27	21.7	
24.88	22.25	11.06	15	23.5	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.92	21.48	11.07	13.8	14	8
20.58	19.45	10.97	13.3		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.15, 5.0'-6.5'	Lab ID	968
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.8
No. 4	4.75	99.2
No. 10	2	98.4
No. 40	0.425	93.4
No. 200	0.075	35.9
	0.02	30.3
	0.005	19.5
	0.002	16.0
estimated	0.001	14.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.8	1.6
Coarse Sand	0.8	5.0
Medium Sand	5.0	---
Fine Sand	57.5	57.5
Silt	16.4	19.9
Clay	19.5	16.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	18
Plasticity Index:	6
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.15, 5.0'-6.5'
Lab ID: 968

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 07-01-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	99.2
No. 10	98.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

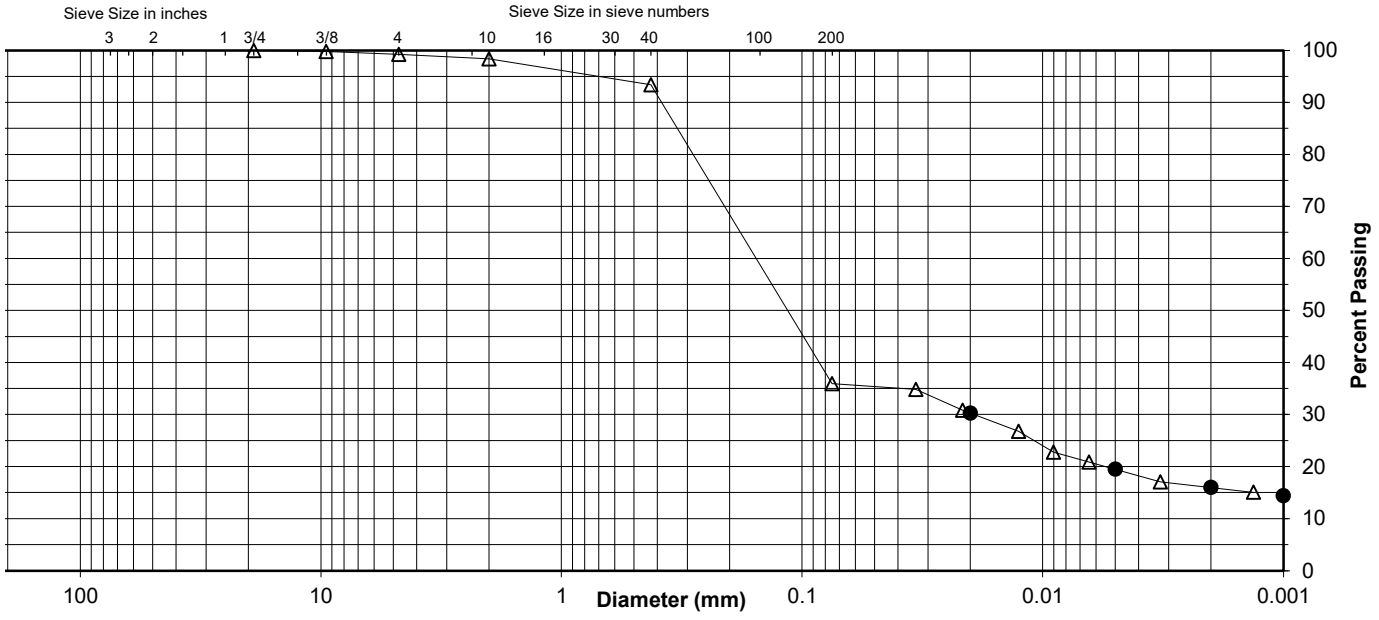
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	93.4
No. 200	35.9
0.02 mm	30.3
0.005 mm	19.5
0.002 mm	16.0
0.001 mm	14.4

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.8	0.8	5.0	57.5	16.4	19.5

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	1.6	5.0	57.5	19.9	16.0



Comments

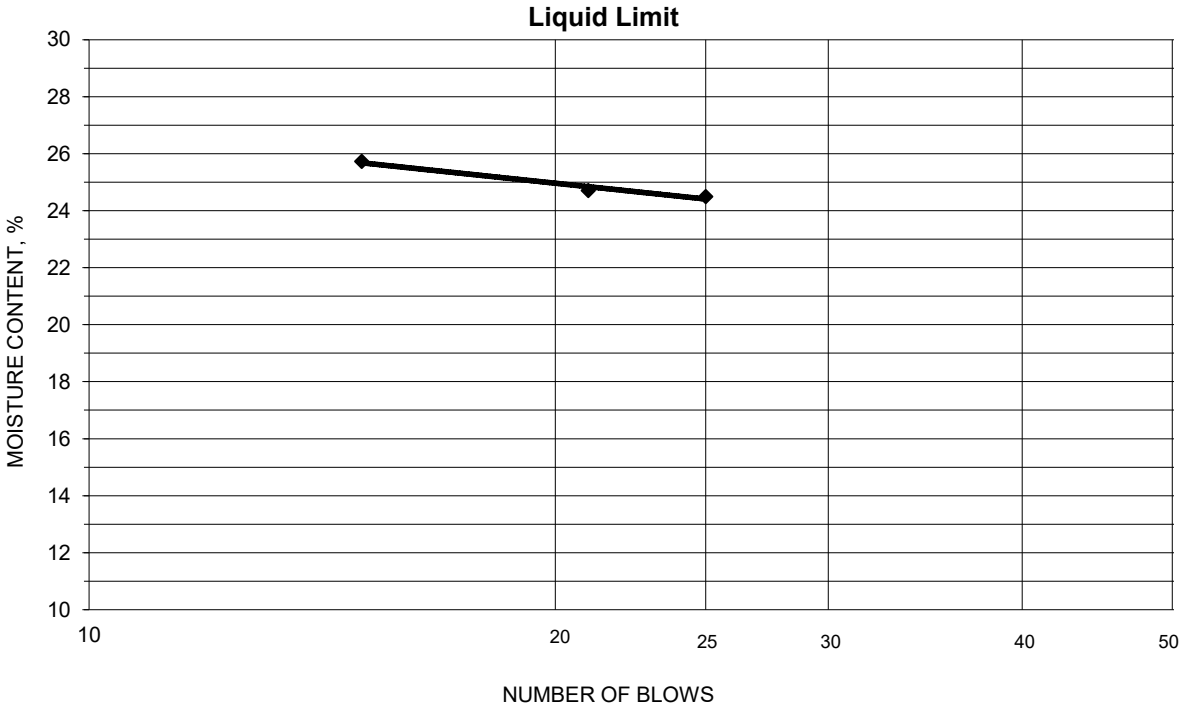
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.15, 5.0'-6.5'			Lab ID	968
				% + No. 40	7
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.75	24.32	14.40	25	24.5	
27.31	24.75	14.39	21	24.7	
27.84	25.09	14.40	15	25.7	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
24.35	22.85	14.40	17.8	18	6
26.49	24.67	14.47	17.8		

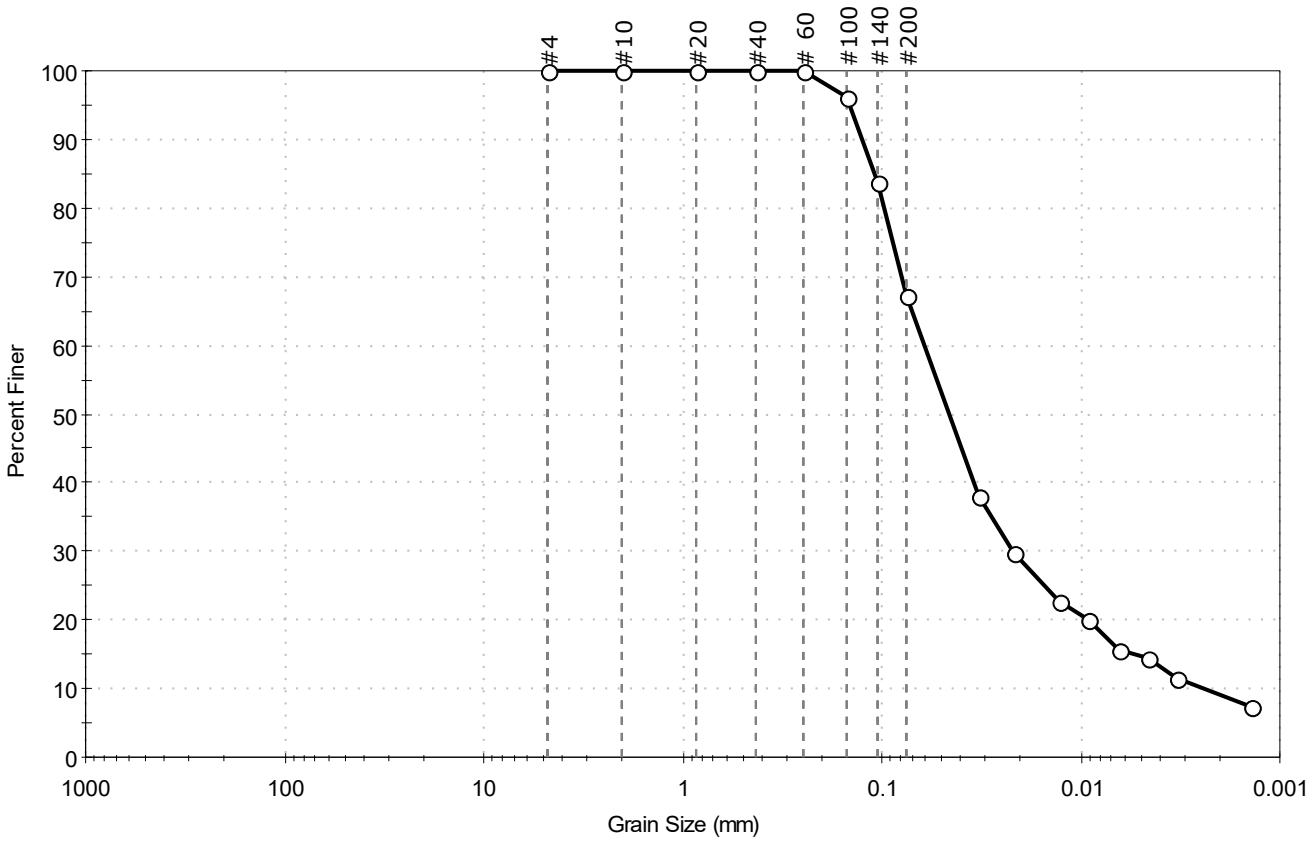
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.15	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/18/22	Checked By:	MCM
Depth :	12.0-14.0	Test Id:	337133		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	32.6	67.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
# 60	0.25	100		
#100	0.15	96		
#140	0.11	84		
#200	0.075	67		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0326	38		
---	0.0215	30		
---	0.0129	23		
---	0.0091	20		
---	0.0065	16		
---	0.0046	14		
---	0.0033	12		
---	0.0014	7		

Coefficients

D_{85} =0.1099 mm	D_{30} =0.0217 mm
D_{60} =0.0608 mm	D_{15} =0.0054 mm
D_{50} =0.0457 mm	D_{10} =0.0024 mm
C_u =25.333	C_c =3.227

Classification

ASTM Sandy SILT (ML)

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.15	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/10/22	Checked By:	MCM
Depth :	12.0-14.0	Test Id:	337134		
Test Comment:	---				
Visual Description:	Moist, dark gray sandy silt				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.15	12.0-14.0	18	n/a	n/a	n/a	n/a	Sandy SILT (ML)

0% Retained on #40 Sieve

Dry Strength: NONE

Dilatancy: RAPID

Toughness: n/a

The sample was determined to be Non-Plastic

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.15, 15.0'-16.5'	Lab ID	971
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.8
No. 4	4.75	91.4
No. 10	2	83.9
No. 40	0.425	58.1
No. 200	0.075	36.5
	0.02	29.3
	0.005	17.9
	0.002	14.0
estimated	0.001	12.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	8.6	16.1
Coarse Sand	7.5	25.8
Medium Sand	25.8	---
Fine Sand	21.6	21.6
Silt	18.6	22.5
Clay	17.9	14.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	18
Plastic Limit:	12
Plasticity Index:	6
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.15, 15.0'-16.5'	Lab ID	971

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	07-01-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.8
No. 4	91.4
No. 10	83.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

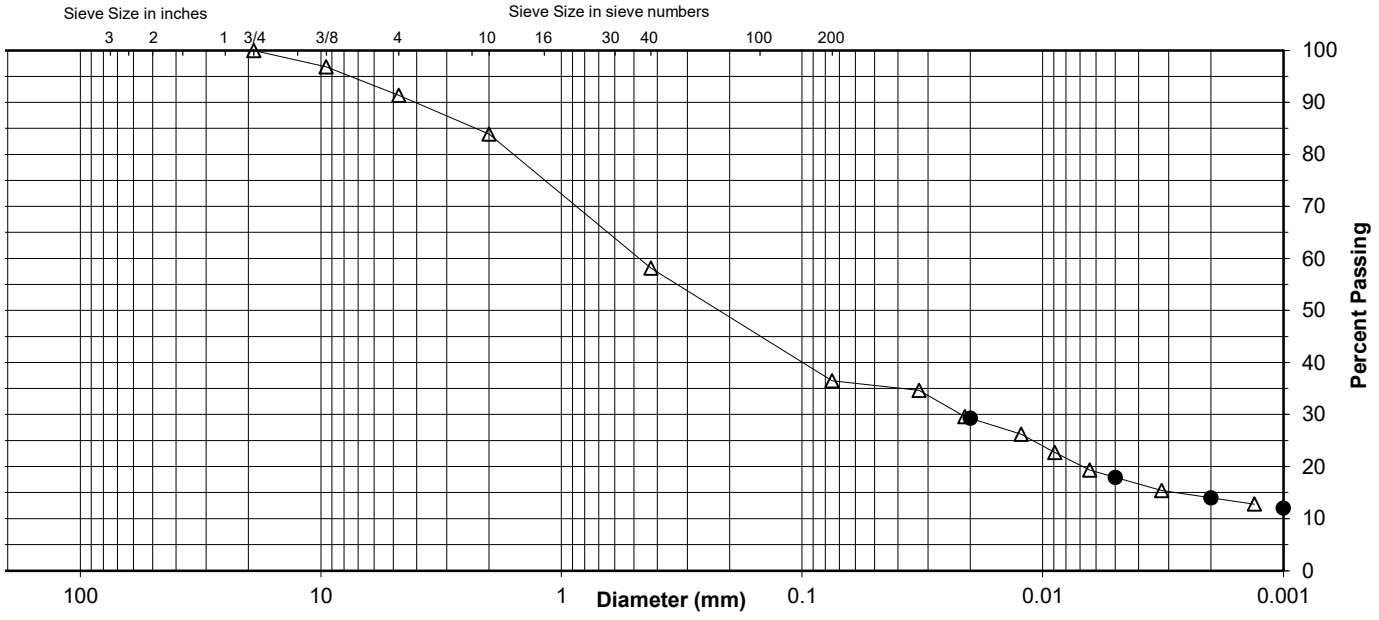
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	58.1
No. 200	36.5
0.02 mm	29.3
0.005 mm	17.9
0.002 mm	14.0
0.001 mm	12.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	8.6	7.5	25.8	21.6	18.6	17.9

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	16.1	25.8	21.6	22.5	14.0



Comments

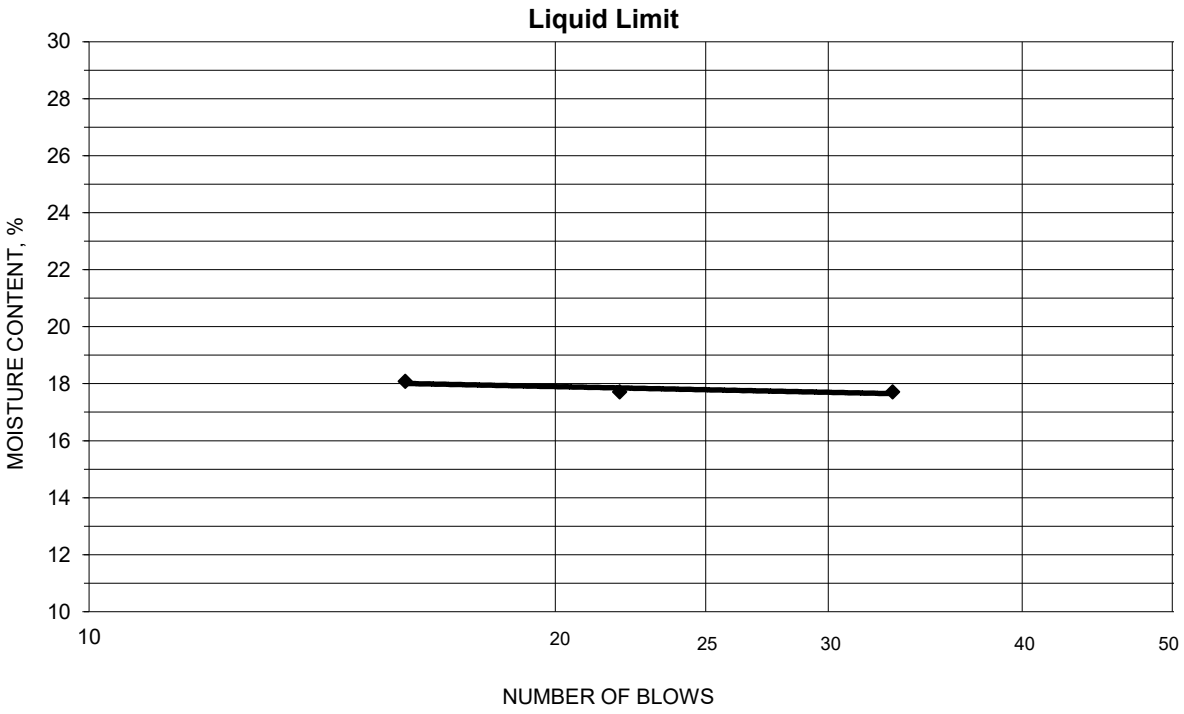
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.15, 15.0'-16.5'			Lab ID	971
				% + No. 40	42
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.58	24.23	10.96	33	17.7	
24.66	22.61	11.04	22	17.7	
24.57	22.42	10.53	16	18.1	18



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.74	20.58	10.63	11.7	12	6
22.10	20.95	11.04	11.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.16, 2.5'-4.0'	Lab ID	974
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 23.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	98.8
No. 40	0.425	84.5
No. 200	0.075	58.6
	0.02	47.1
	0.005	30.2
	0.002	23.8
estimated	0.001	19.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	1.2
Coarse Sand	1.2	14.3
Medium Sand	14.3	---
Fine Sand	25.9	25.9
Silt	28.4	34.8
Clay	30.2	23.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	19
Plasticity Index:	14
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-6 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.16, 2.5'-4.0'
Lab ID: 974

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 07-01-2022
Date Received: 06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	98.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

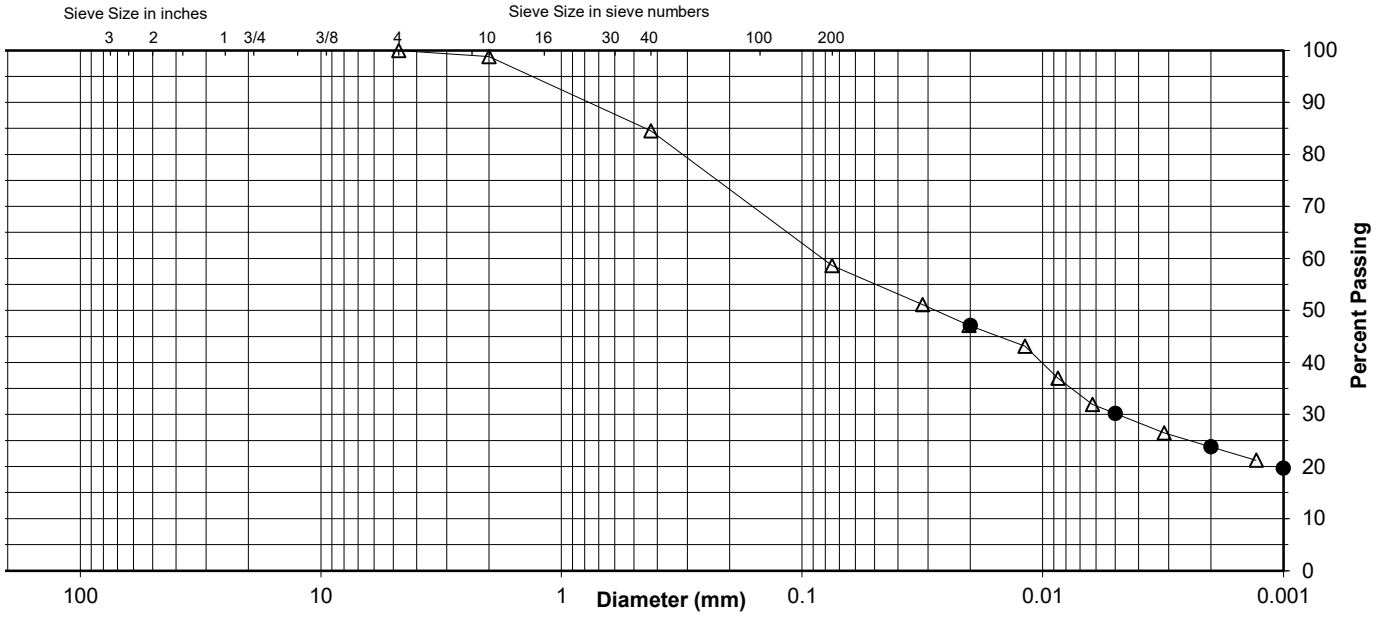
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	84.5
No. 200	58.6
0.02 mm	47.1
0.005 mm	30.2
0.002 mm	23.8
0.001 mm	19.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	1.2	14.3	25.9	28.4	30.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.2			14.3	25.9	34.8	23.8



Comments:

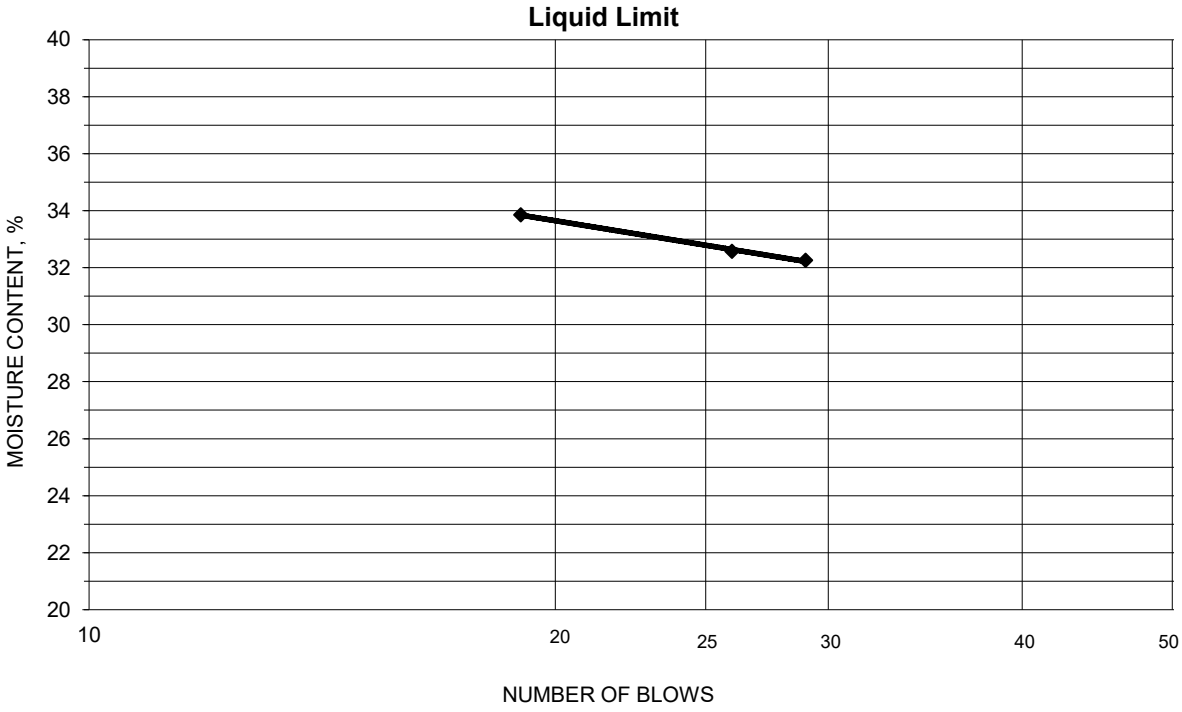
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.16, 2.5'-4.0'			Lab ID	974
				% + No. 40	15
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.40	20.39	11.06	29	32.3	
23.58	20.41	10.68	26	32.6	
22.46	19.46	10.60	19	33.9	33



PLASTIC LIMIT AND PLASTICITY INDEX

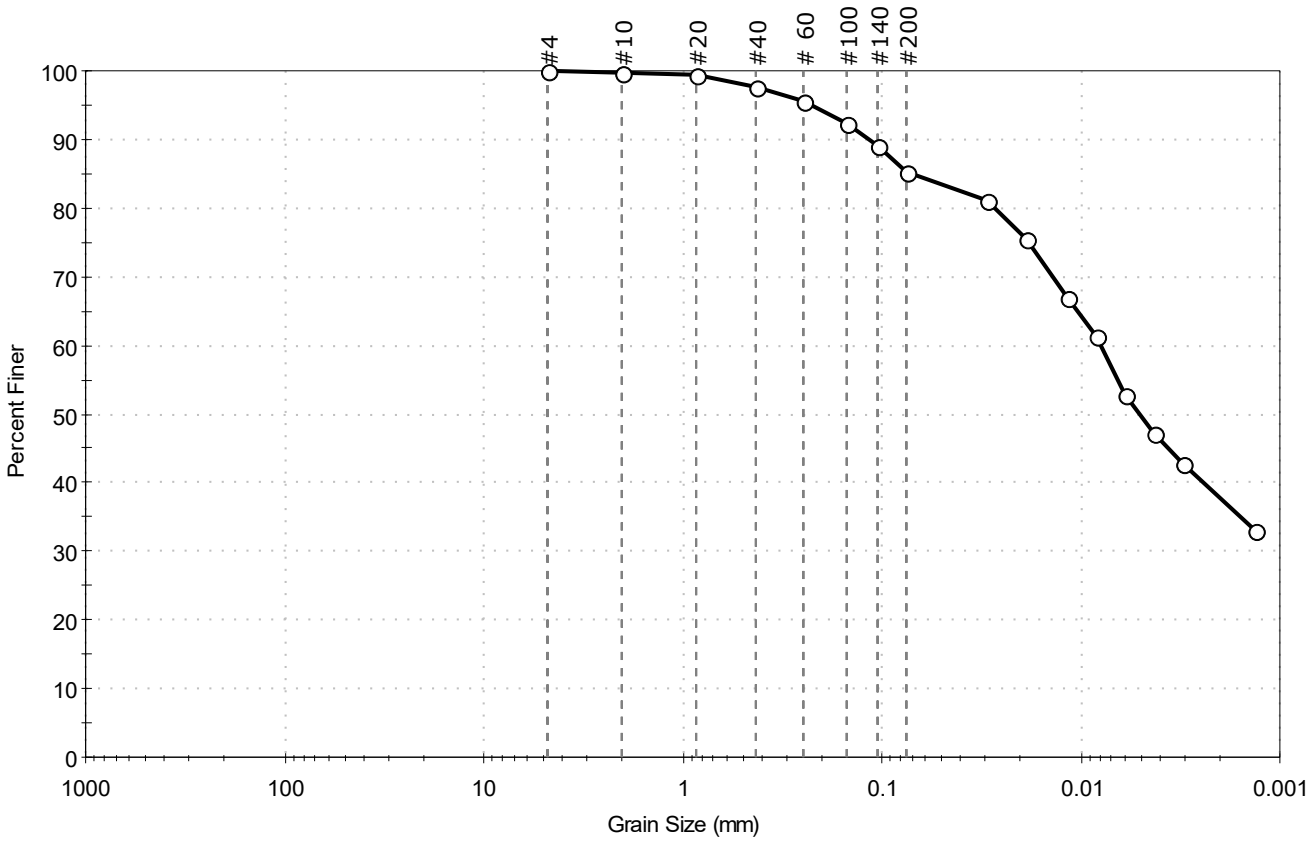
Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.51	18.11	11.03	19.8	19	14
20.75	19.20	11.06	19.0		

Remarks: _____

Reviewed By REL

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/15/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337141		
Test Comment:	---				
Visual Description:	Moist, grayish brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	14.8	85.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
# 60	0.25	96		
#100	0.15	92		
#140	0.11	89		
#200	0.075	85		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0298	81		
---	0.0188	76		
---	0.0115	67		
---	0.0084	61		
---	0.0060	53		
---	0.0043	47		
---	0.0031	43		
---	0.0013	33		

Coefficients

D_{85} = 0.0715 mm	D_{30} = N/A
D_{60} = 0.0079 mm	D_{15} = N/A
D_{50} = 0.0051 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean CLAY (CL)

AASHTO Clayey Soils (A-7-6 (18))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

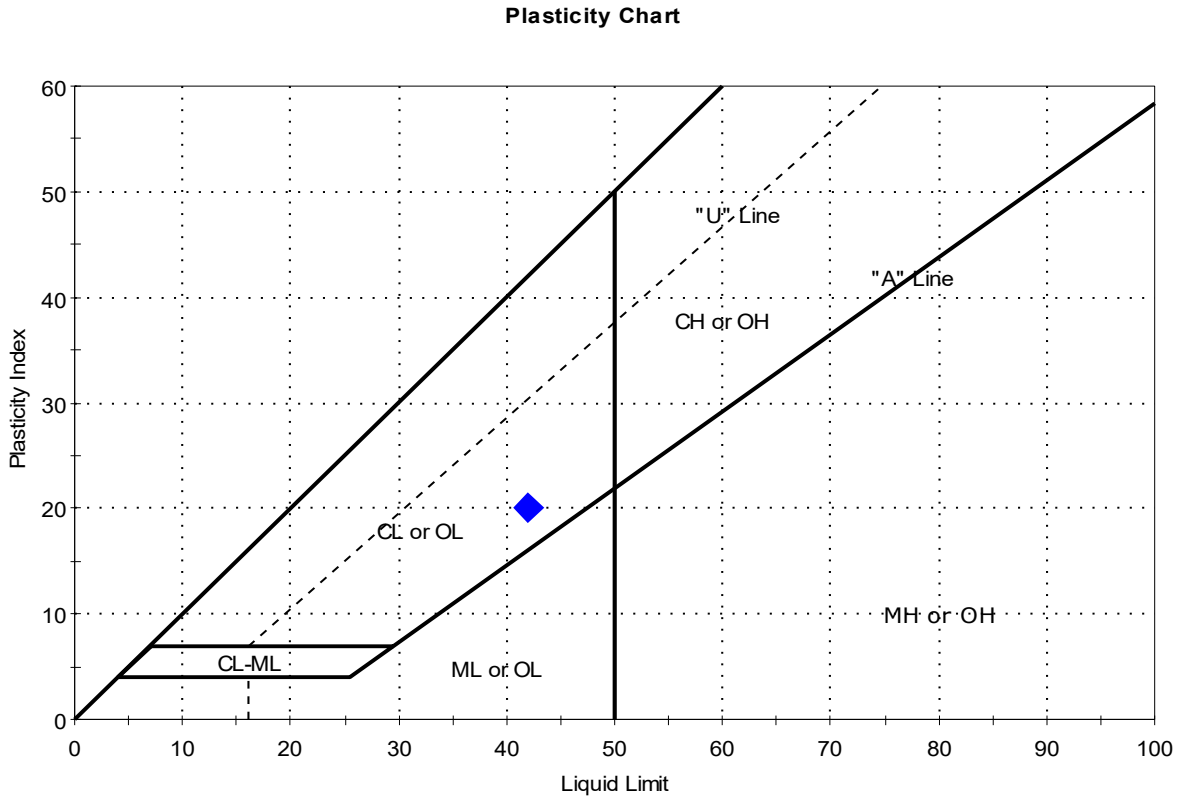
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/16/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337142		
Test Comment:	---				
Visual Description:	Moist, grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16	5.0-7.0	30	42	22	20	0.4	Lean CLAY (CL)

Sample Prepared using the DRY method
2% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.16, 7.5'-9.0'	Lab ID	975
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 28.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.5
No. 4	4.75	88.2
No. 10	2	64.8
No. 40	0.425	33.0
No. 200	0.075	17.4
	0.02	11.5
	0.005	6.1
	0.002	5.1
estimated	0.001	4.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	11.8	35.2
Coarse Sand	23.4	31.8
Medium Sand	31.8	---
Fine Sand	15.6	15.6
Silt	11.3	12.3
Clay	6.1	5.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SM
Group Name:	Silty sand
AASHTO Classification:	A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.16, 7.5'-9.0'	Lab ID	975

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: SS
Test Date: 07-05-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.5
No. 4	88.2
No. 10	64.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

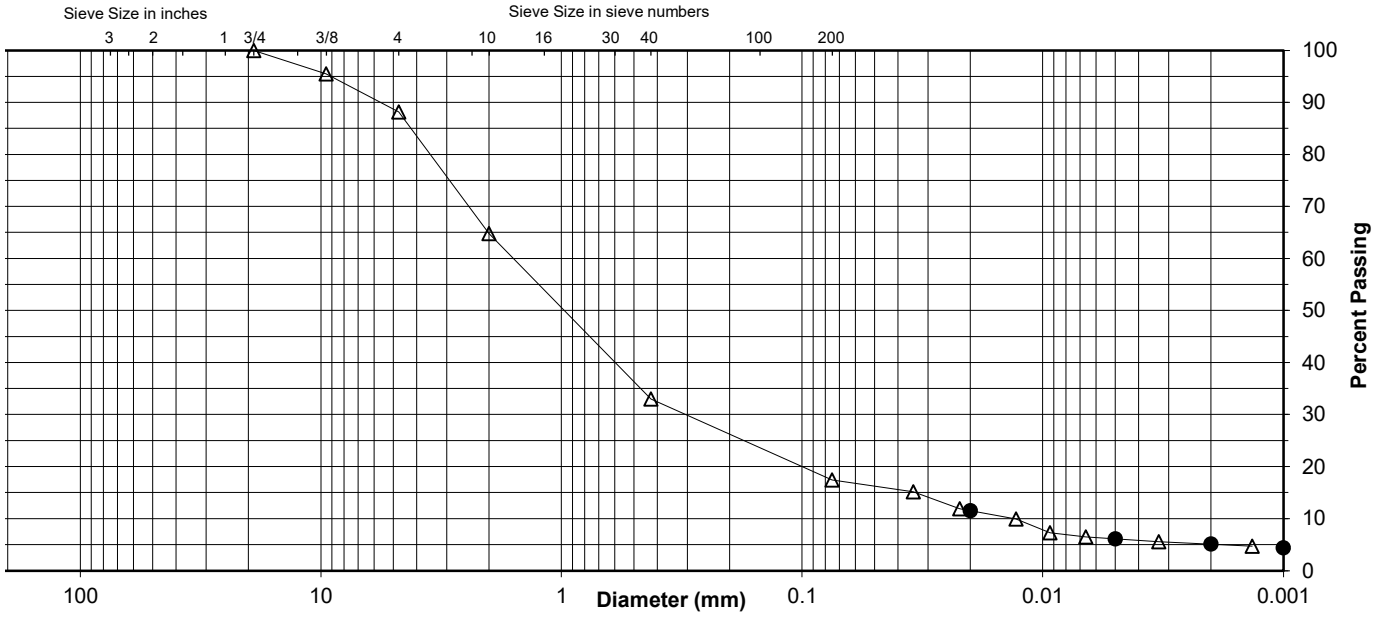
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	33.0
No. 200	17.4
0.02 mm	11.5
0.005 mm	6.1
0.002 mm	5.1
0.001 mm	4.4

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	11.8	23.4	31.8	15.6	11.3	6.1

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	35.2	31.8	15.6	12.3	5.1



Comments

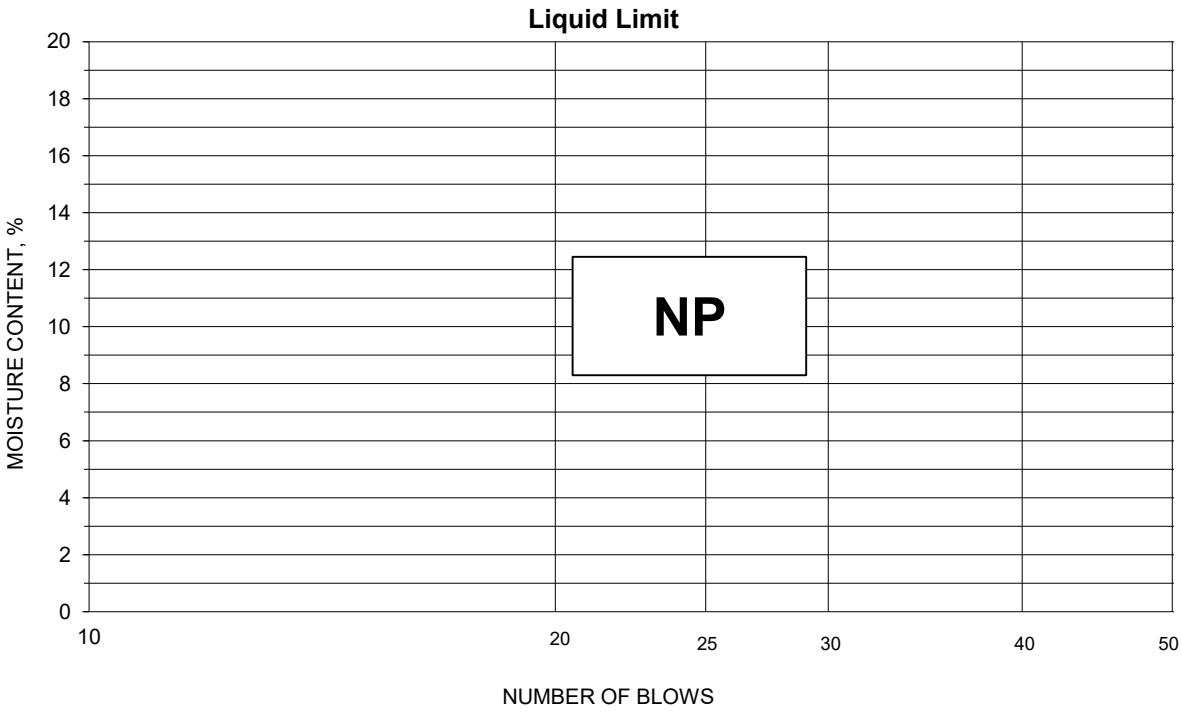
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.16, 7.5'-9.0'			Lab ID	975
				% + No. 40	67
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

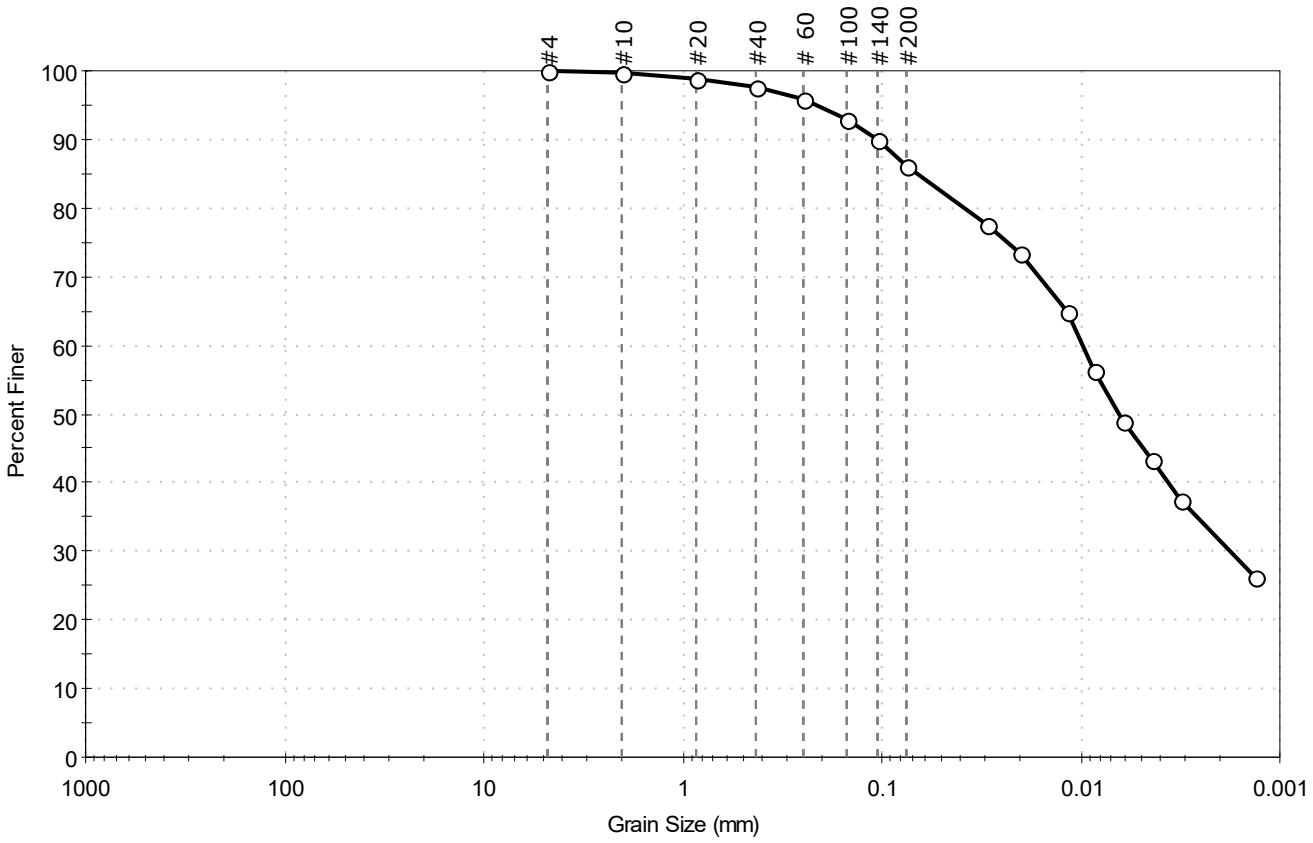
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/18/22	Checked By:	MCM
Depth :	1.0-3.0	Test Id:	337148		
Test Comment:	---				
Visual Description:	Moist, dark brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	13.9	86.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
# 60	0.25	96		
#100	0.15	93		
#140	0.11	90		
#200	0.075	86		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0294	78		
---	0.0202	73		
---	0.0117	65		
---	0.0085	56		
---	0.0061	49		
---	0.0044	43		
---	0.0031	38		
---	0.0013	26		

Coefficients

D_{85} = 0.0663 mm	D_{30} = 0.0018 mm
D_{60} = 0.0098 mm	D_{15} = N/A
D_{50} = 0.0063 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean CLAY (CL)

AASHTO Clayey Soils (A-7-6 (22))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

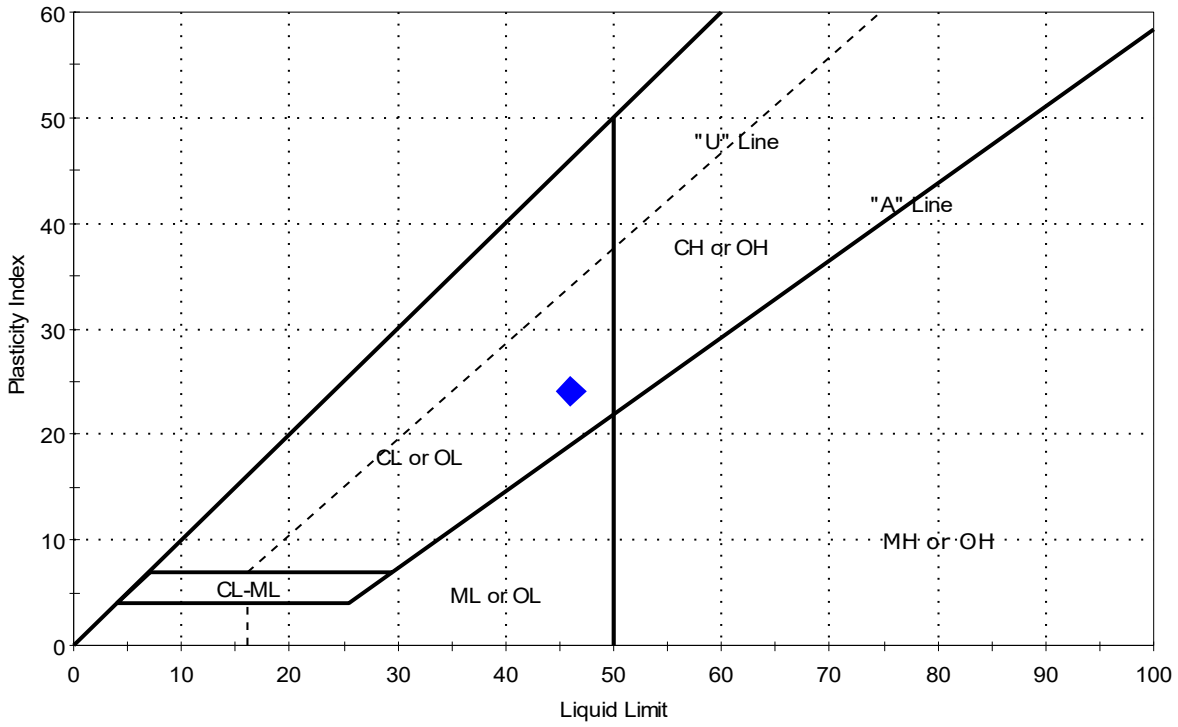
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/12/22	Checked By:	MCM
Depth :	1.0-3.0	Test Id:	337149		
Test Comment:	---				
Visual Description:	Moist, dark brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

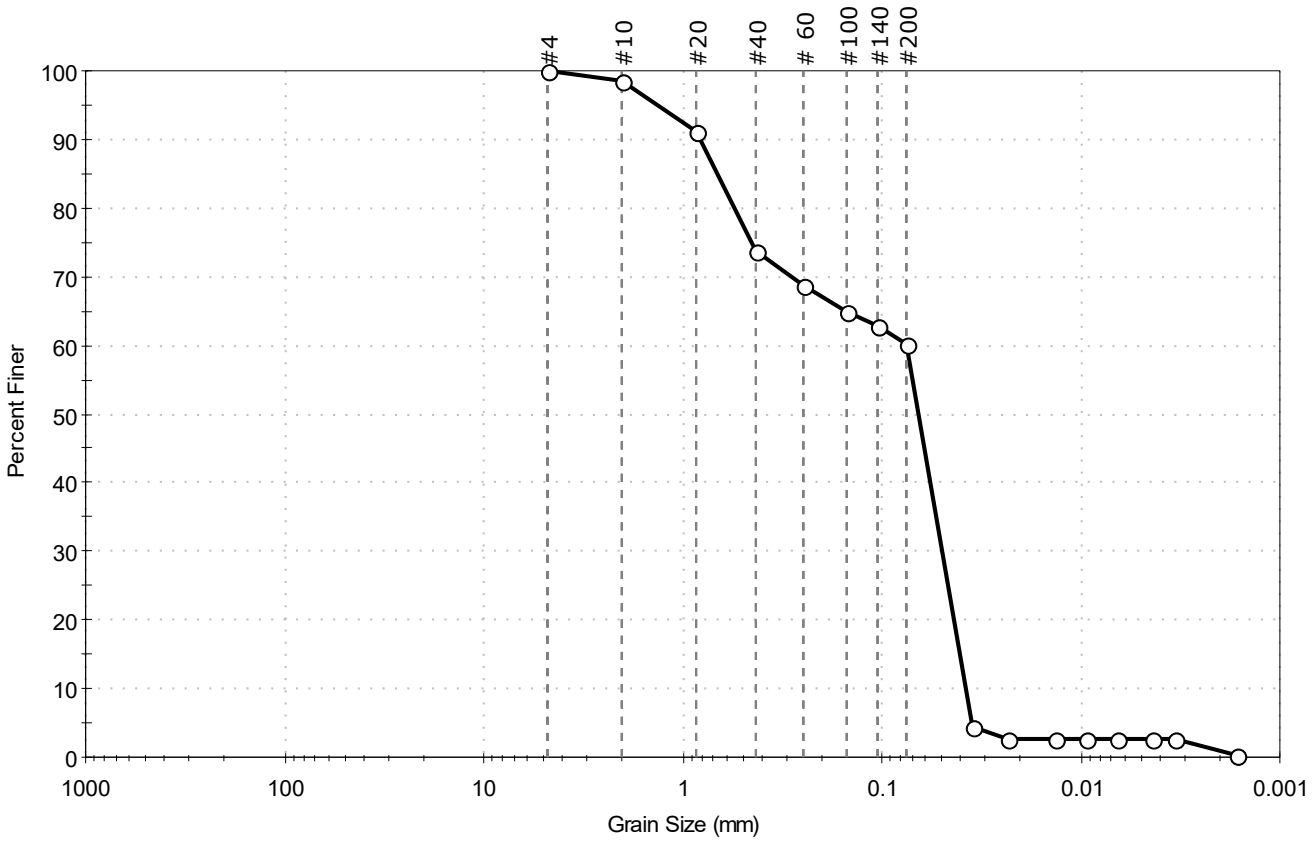


Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16A	1.0-3.0	26	46	22	24	0.1	Lean CLAY (CL)

Sample Prepared using the DRY method
2% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/19/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337267		
Test Comment:	---				
Visual Description:	Moist, very dark gray silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	39.8	60.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	98		
#20	0.85	91		
#40	0.42	74		
# 60	0.25	69		
#100	0.15	65		
#140	0.11	63		
#200	0.075	60		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0353	4		
---	0.0231	3		
---	0.0134	3		
---	0.0095	3		
---	0.0066	3		
---	0.0043	3		
---	0.0033	3		
---	0.0017	0		

Coefficients

D_{85} =0.6663 mm	D_{30} =0.0499 mm
D_{60} =0.0748 mm	D_{15} =0.0407 mm
D_{50} =0.0654 mm	D_{10} =0.0381 mm
C_u =1.963	C_c =0.874

Classification

ASTM Sandy Elastic SILT (MH)

AASHTO Clayey Soils (A-7-5 (89))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

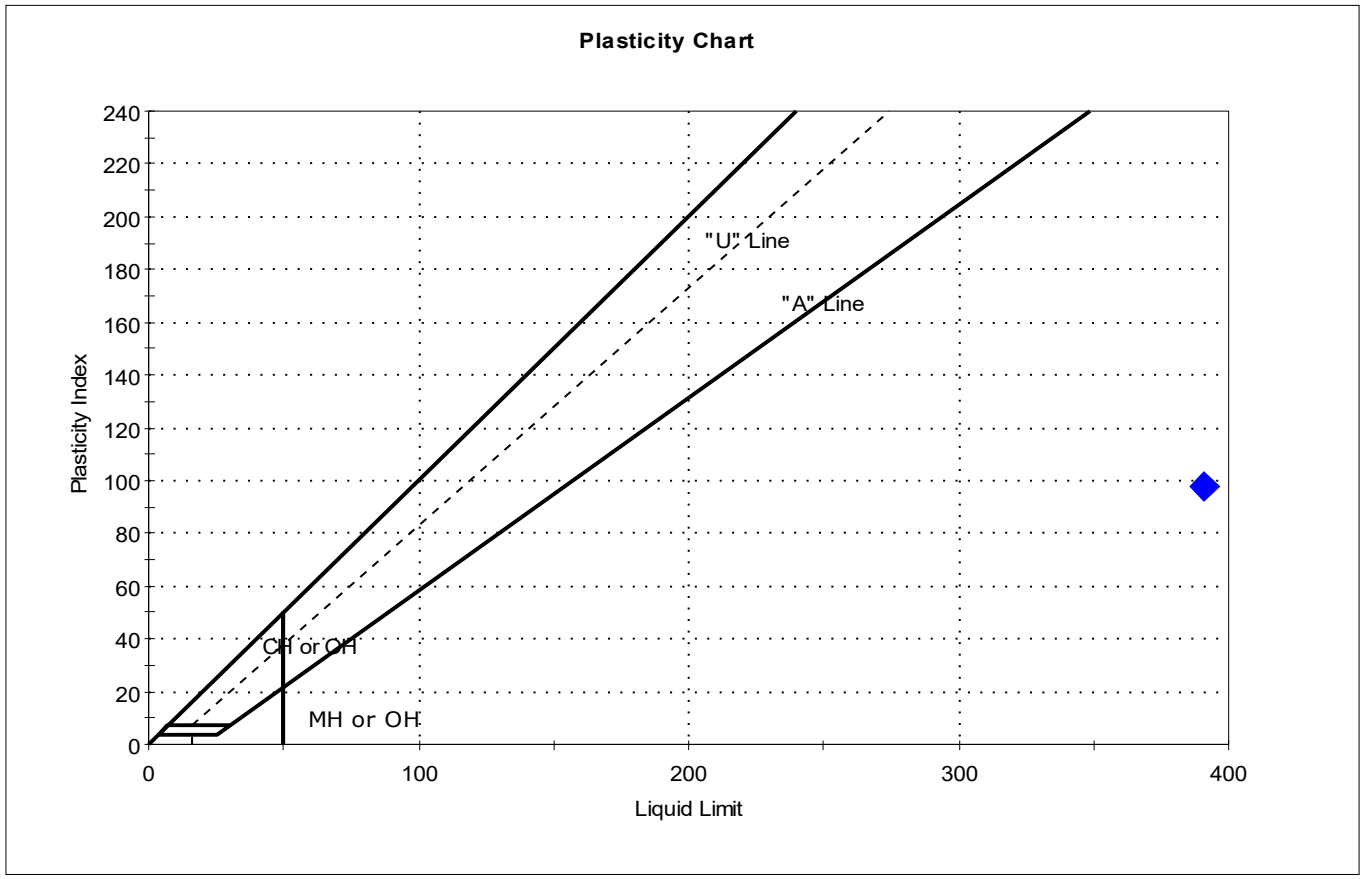
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/15/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	337268		
Test Comment:	---				
Visual Description:	Moist, very dark gray silt				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

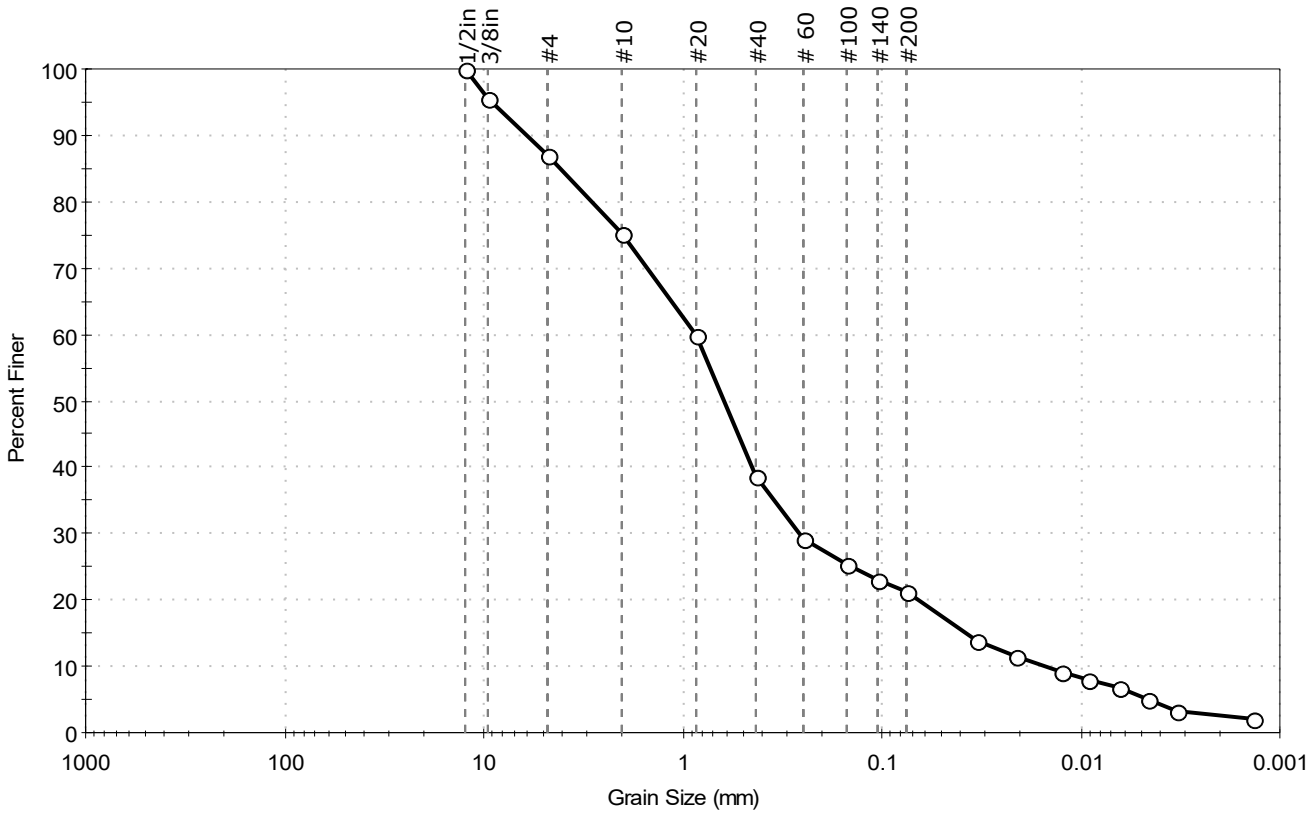


Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16A	5.0-7.0	307	391	293	98	0.1	Sandy Elastic SILT (MH)

Sample Prepared using the DRY method
26% Retained on #40 Sieve
Dry Strength: HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/31/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	338421		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	12.8	65.9	21.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1/2in	12.50	100		
3/8in	9.50	96		
#4	4.75	87		
#10	2.00	75		
#20	0.85	60		
#40	0.42	39		
# 60	0.25	29		
#100	0.15	25		
#140	0.11	23		
#200	0.075	21		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0333	14		
---	0.0211	12		
---	0.0126	9		
---	0.0091	8		
---	0.0064	7		
---	0.0046	5		
---	0.0033	3		
---	0.0014	2		

Coefficients

D_{85} =4.0756 mm	D_{30} =0.2596 mm
D_{60} =0.8494 mm	D_{15} =0.0374 mm
D_{50} =0.6136 mm	D_{10} =0.0151 mm
C_u =56.252	C_c =5.254

Classification

ASTM Silty SAND (SM)

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A1	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/29/22	Checked By:	MCM
Depth :	5.0-7.0	Test Id:	338422		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16A1	5.0-7.0	19	n/a	n/a	n/a	n/a	Silty SAND (SM)

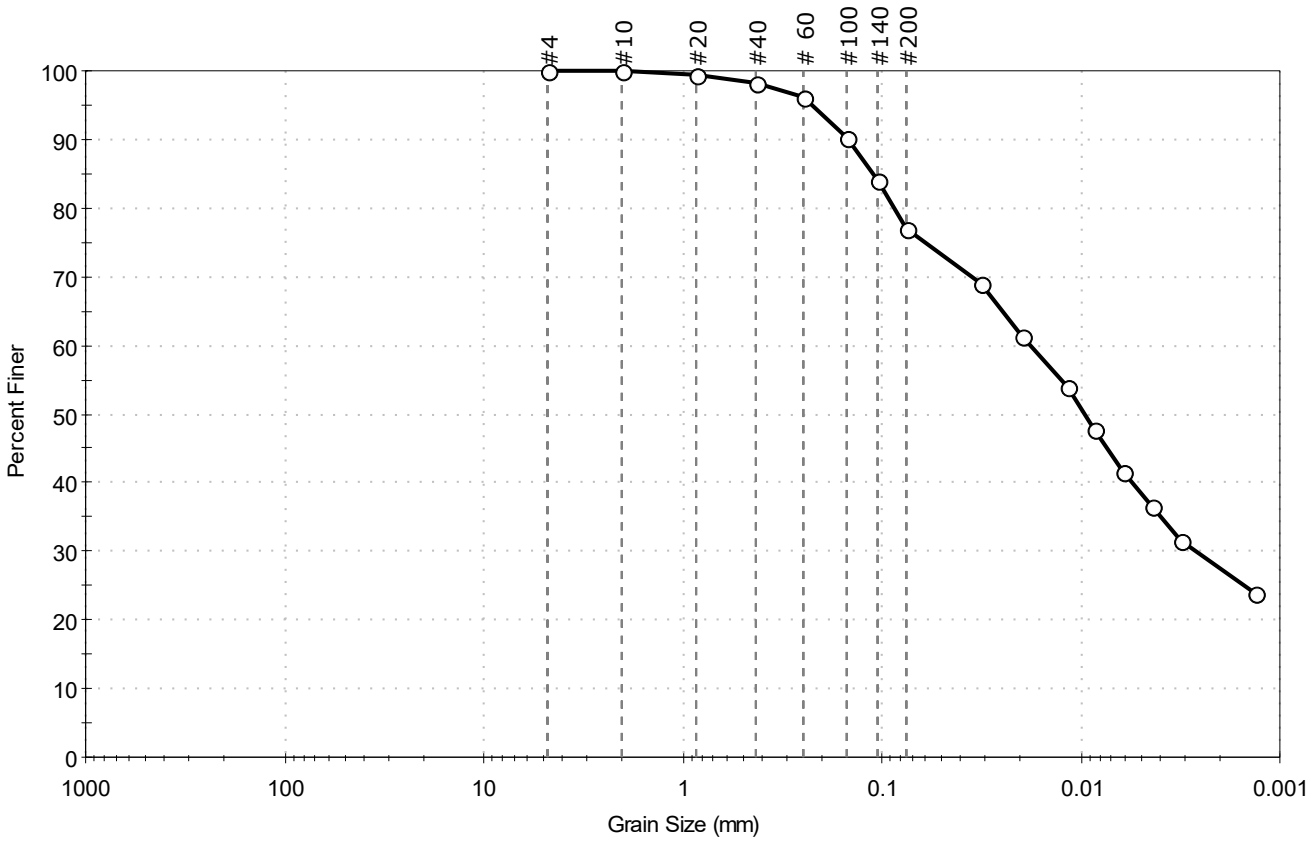
61% Retained on #40 Sieve
Dry Strength: NONE
Dilatancy: RAPID
Toughness: n/a
The sample was determined to be Non-Plastic

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/18/22	Checked By:	MCM
Depth :	10.0-12.0	Test Id:	337156		

Test Comment: ---
Visual Description: Moist, greenish brown clay with sand
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	22.9	77.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
# 60	0.25	96		
#100	0.15	90		
#140	0.11	84		
#200	0.075	77		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0322	69		
---	0.0199	61		
---	0.0117	54		
---	0.0085	48		
---	0.0061	41		
---	0.0044	36		
---	0.0031	31		
---	0.0013	24		

Coefficients

D_{85} = 0.1115 mm D_{30} = 0.0026 mm
D_{60} = 0.0180 mm D_{15} = N/A
D_{50} = 0.0095 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM Lean CLAY with Sand (CL)

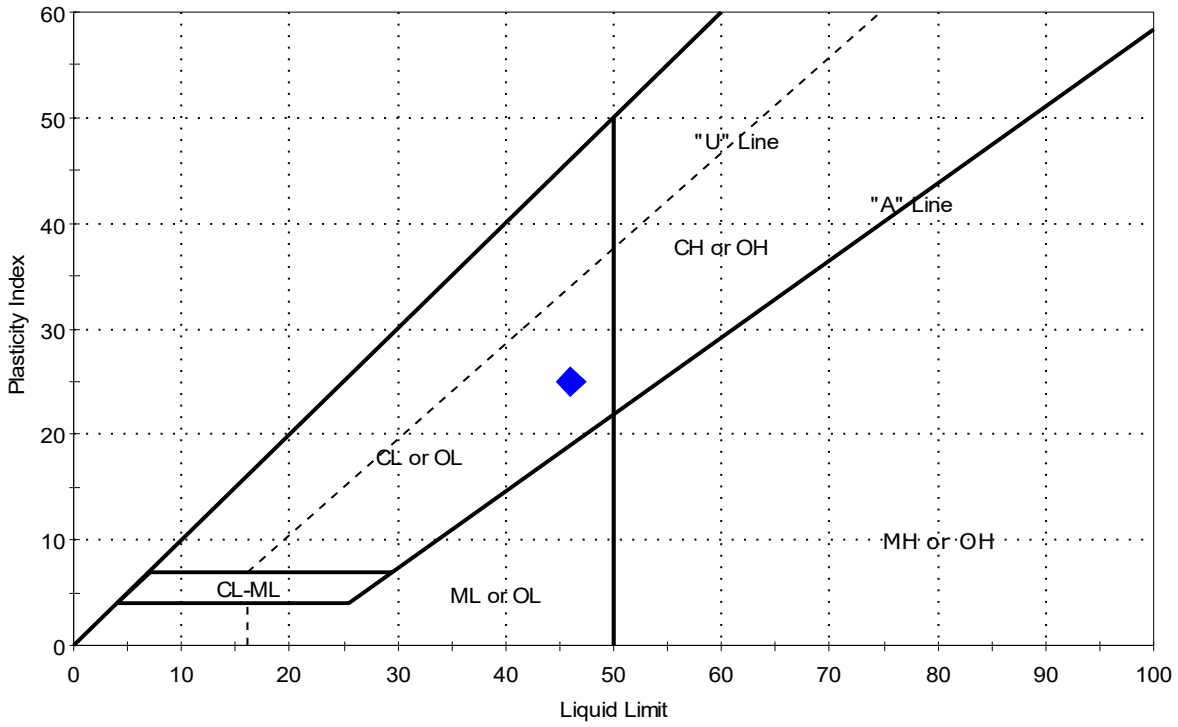
AASHTO Clayey Soils (A-7-6 (19))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/16/22	Checked By:	MCM
Depth :	10.0-12.0	Test Id:	337157		
Test Comment:	---				
Visual Description:	Moist, greenish brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

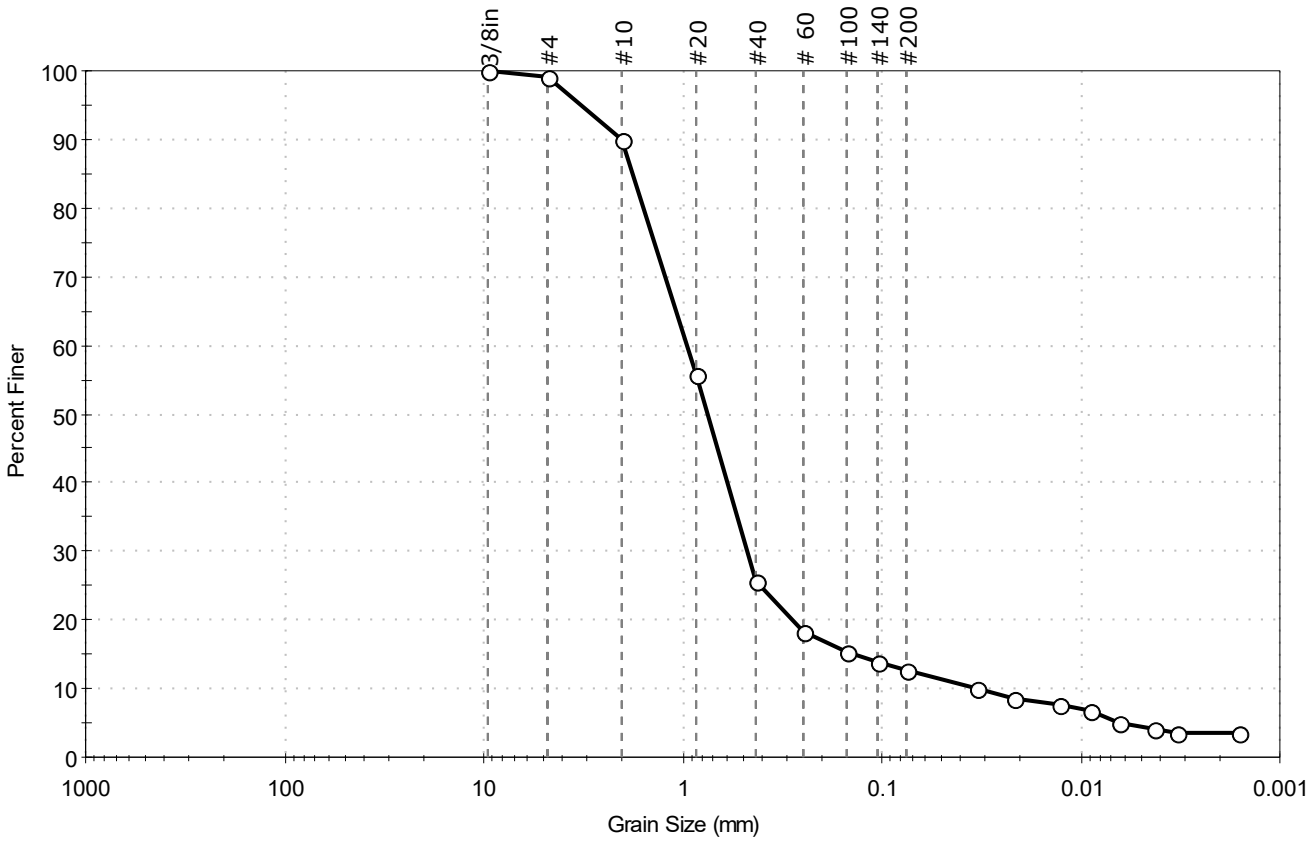


Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16A	10.0-12.0	41	46	21	25	0.8	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
2% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/17/22	Checked By:	MCM
Depth :	15.0-17.0	Test Id:	337162		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.9	86.5	12.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	99		
#10	2.00	90		
#20	0.85	56		
#40	0.42	26		
# 60	0.25	18		
#100	0.15	15		
#140	0.11	14		
#200	0.075	13		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0335	10		
---	0.0215	9		
---	0.0128	8		
---	0.0091	7		
---	0.0064	5		
---	0.0043	4		
---	0.0033	4		
---	0.0016	4		

Coefficients

D_{85} = 1.7604 mm	D_{30} = 0.4707 mm
D_{60} = 0.9428 mm	D_{15} = 0.1394 mm
D_{50} = 0.7436 mm	D_{10} = 0.0320 mm
C_u = 29.462	C_c = 7.344

Classification

ASTM Silty SAND (SM)

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.16A	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/11/22	Checked By:	MCM
Depth :	15.0-17.0	Test Id:	337163		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

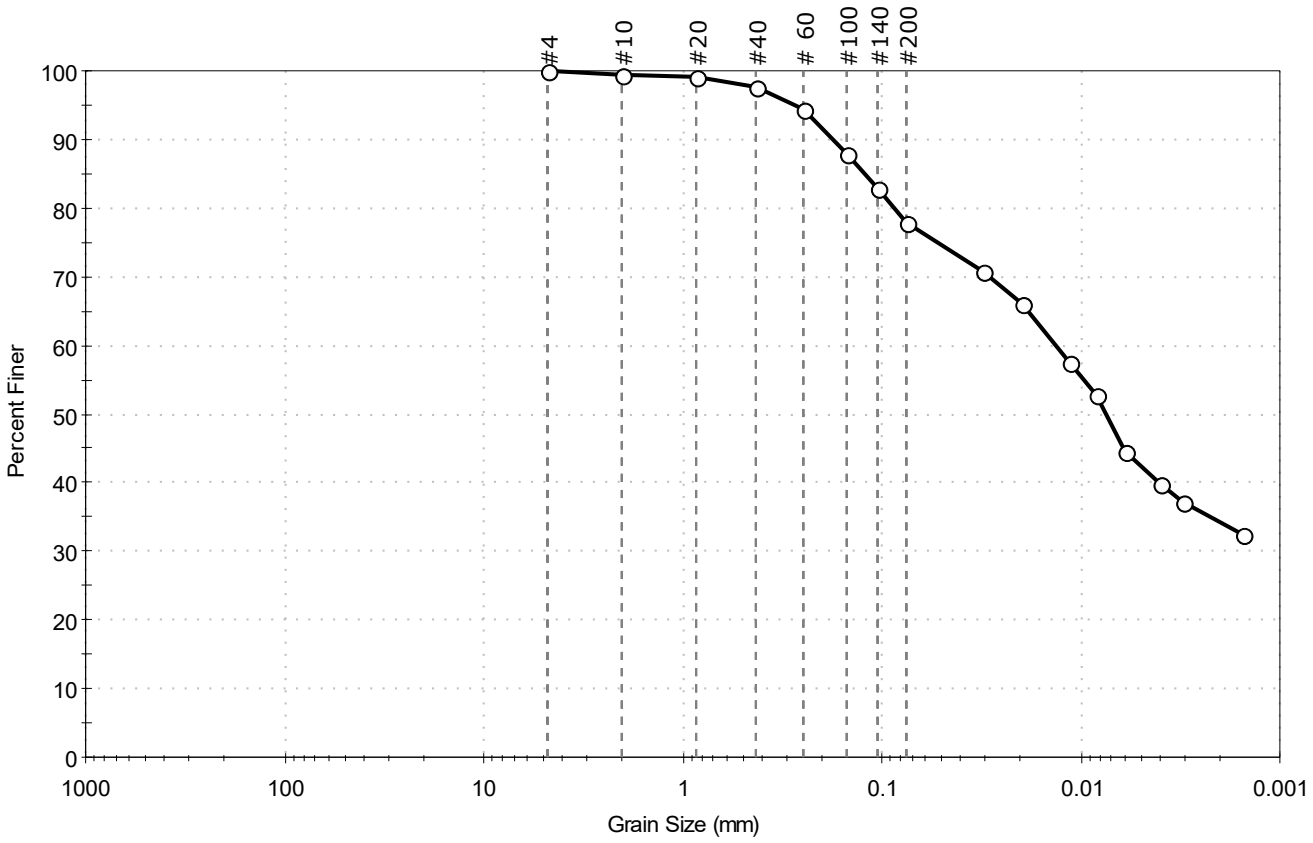
Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.16A	15.0-17.0	17	n/a	n/a	n/a	n/a	Silty SAND (SM)

74% Retained on #40 Sieve
Dry Strength: NONE
Dilatancy: RAPID
Toughness: n/a
The sample was determined to be Non-Plastic

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.17	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/17/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337246		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	22.2	77.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
# 60	0.25	94		
#100	0.15	88		
#140	0.11	83		
#200	0.075	78		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0313	71		
---	0.0197	66		
---	0.0115	58		
---	0.0083	53		
---	0.0060	44		
---	0.0040	40		
---	0.0031	37		
---	0.0015	32		

Coefficients

D_{85} = 0.1230 mm	D_{30} = N/A
D_{60} = 0.0134 mm	D_{15} = N/A
D_{50} = 0.0075 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean CLAY with Sand (CL)

AASHTO Clayey Soils (A-7-6 (17))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

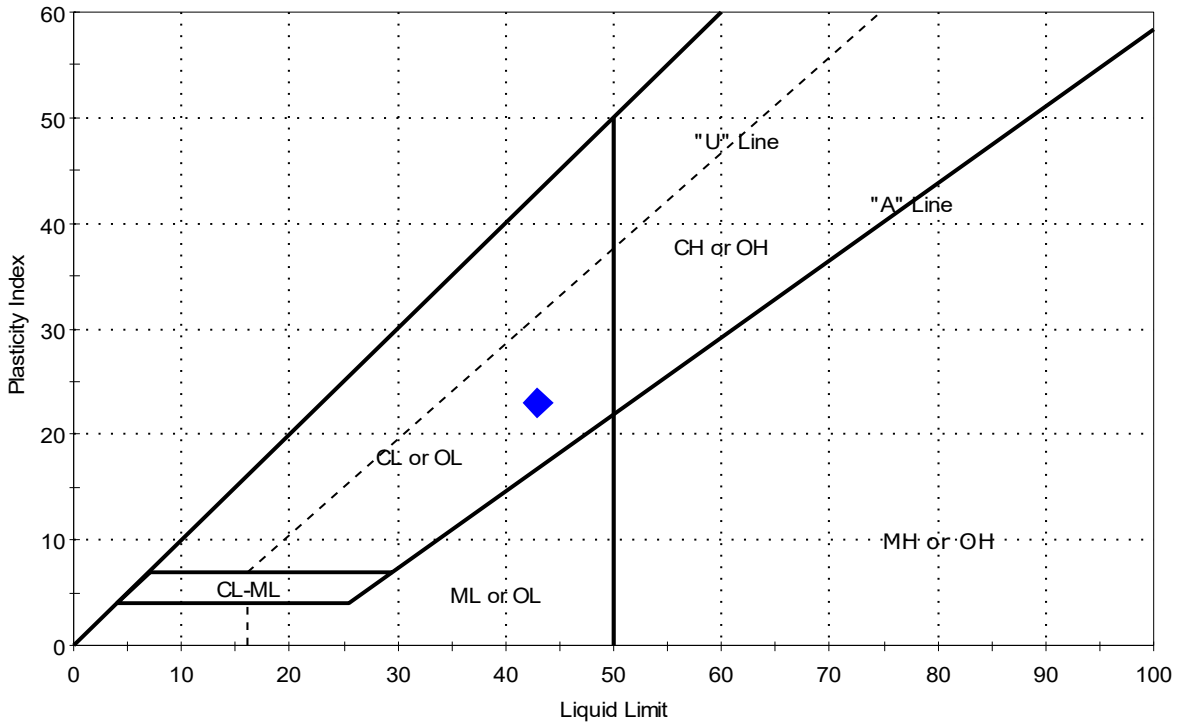
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.17	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/15/22	Checked By:	MCM
Depth :	3.0-5.0	Test Id:	337247		
Test Comment:	---				
Visual Description:	Moist, dark brown clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.17	3.0-5.0	24	43	20	23	0.2	Lean CLAY with Sand (CL)

Sample Prepared using the DRY method
2% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 7.5'-9.0'	Lab ID	982
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 11.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	92.6
3/8"	9.5	81.8
No. 4	4.75	61.6
No. 10	2	38.8
No. 40	0.425	22.7
No. 200	0.075	11.0
	0.02	7.9
	0.005	4.6
	0.002	3.6
estimated	0.001	2.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	38.4	61.2
Coarse Sand	22.8	16.1
Medium Sand	16.1	---
Fine Sand	11.7	11.7
Silt	6.4	7.4
Clay	4.6	3.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SP-SM

Group Name: Poorly graded sand with silt and gravel

AASHTO Classification: A-1-a (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 7.5'-9.0'	Lab ID	982

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: SS
Test Date: 07-05-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	92.6
3/8"	81.8
No. 4	61.6
No. 10	38.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

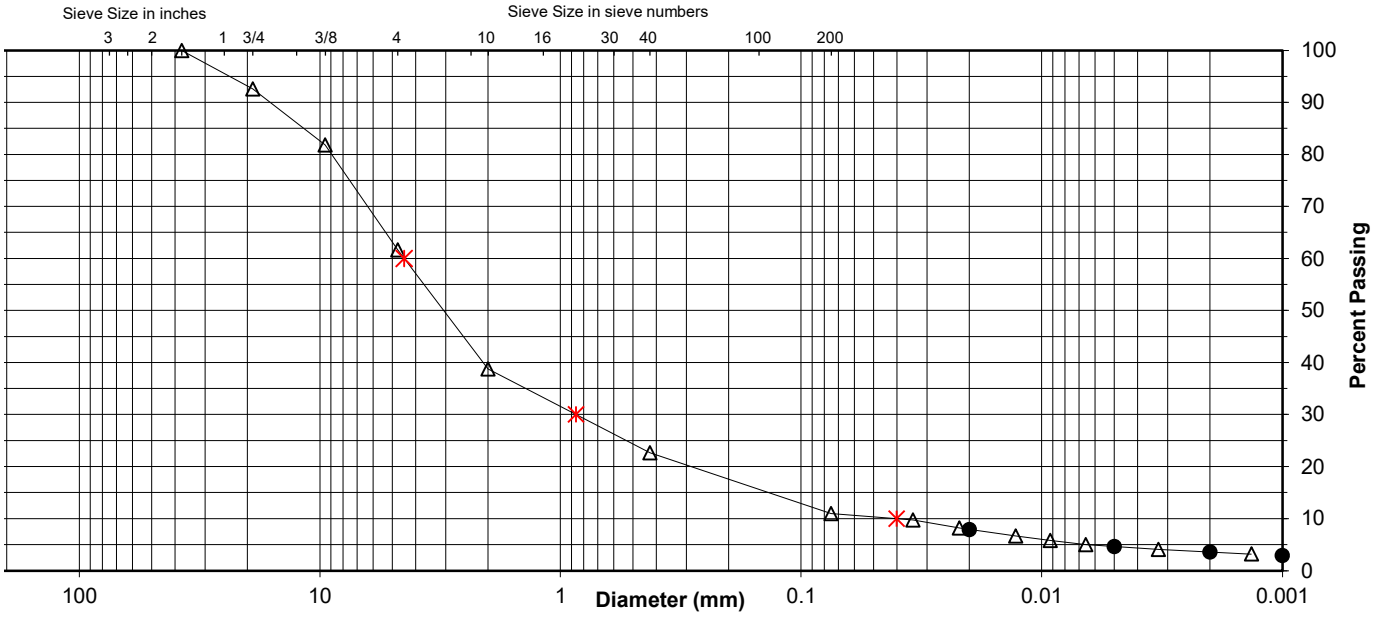
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	22.7
No. 200	11.0
0.02 mm	7.9
0.005 mm	4.6
0.002 mm	3.6
0.001 mm	2.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	7.4	31.0	22.8	16.1	11.7	6.4	4.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	61.2			16.1	11.7	7.4	3.6



Comments

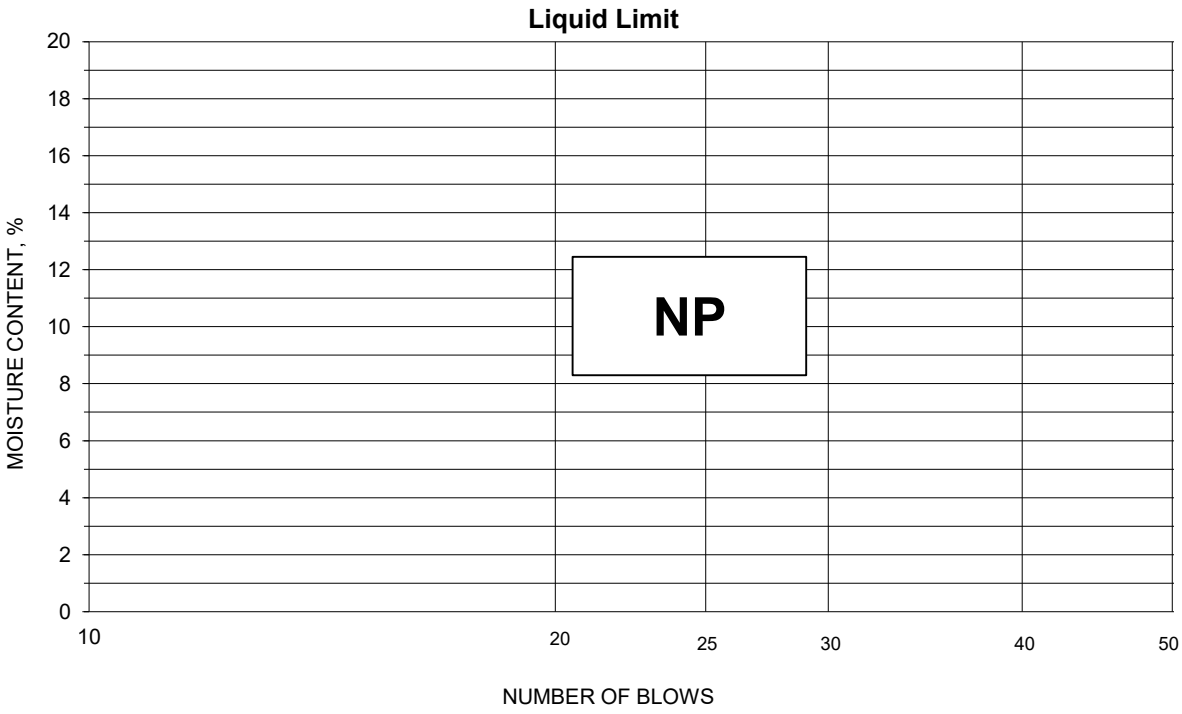
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.17, 7.5'-9.0'			Lab ID	982
				% + No. 40	77
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 12.5'-14.0'	Lab ID	984
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.6
No. 4	4.75	99.4
No. 10	2	97.3
No. 40	0.425	90.1
No. 200	0.075	72.1
	0.02	60.1
	0.005	42.5
	0.002	31.1
estimated	0.001	23.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.6	2.7
Coarse Sand	2.1	7.2
Medium Sand	7.2	---
Fine Sand	18.0	18.0
Silt	29.6	41.0
Clay	42.5	31.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	21
Plastic Limit:	14
Plasticity Index:	7
Activity Index:	0.2

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML

Group Name: Silty clay with sand

AASHTO Classification: A-4 (2)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 12.5'-14.0'	Lab ID	984

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	07-01-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.6
No. 4	99.4
No. 10	97.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

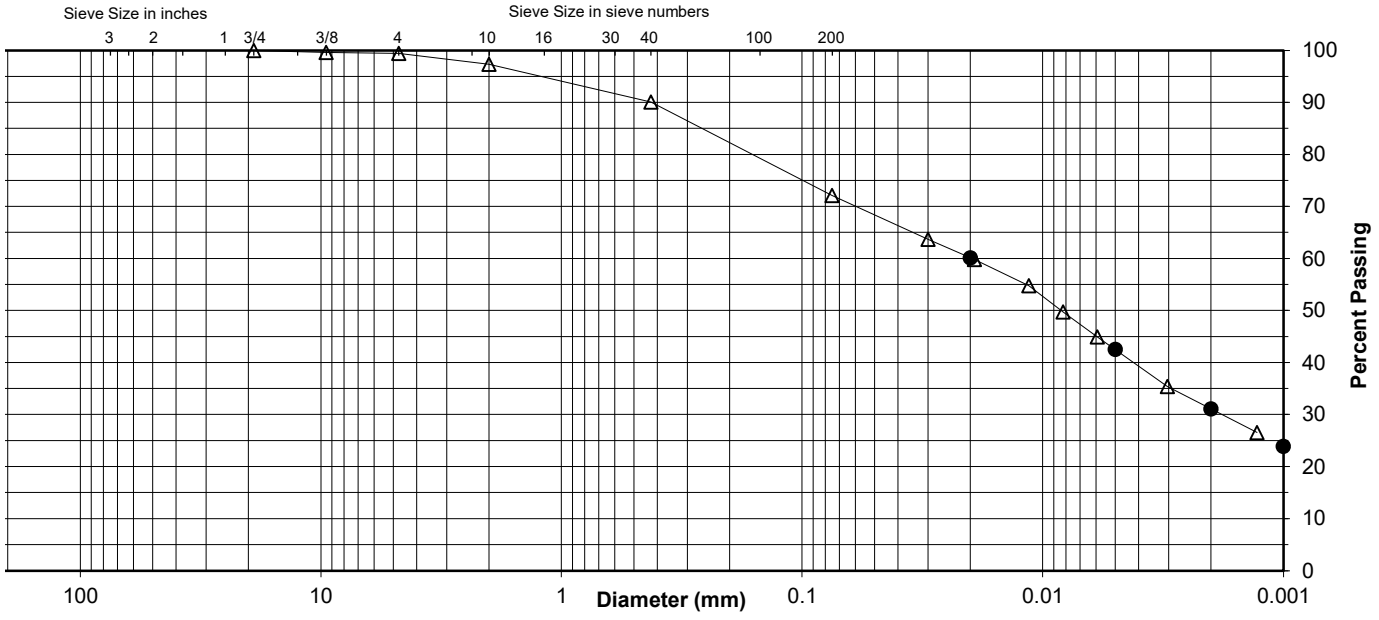
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	90.1
No. 200	72.1
0.02 mm	60.1
0.005 mm	42.5
0.002 mm	31.1
0.001 mm	23.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.6	2.1	7.2	18.0	29.6	42.5

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.7	7.2	18.0	41.0	31.1



Comments

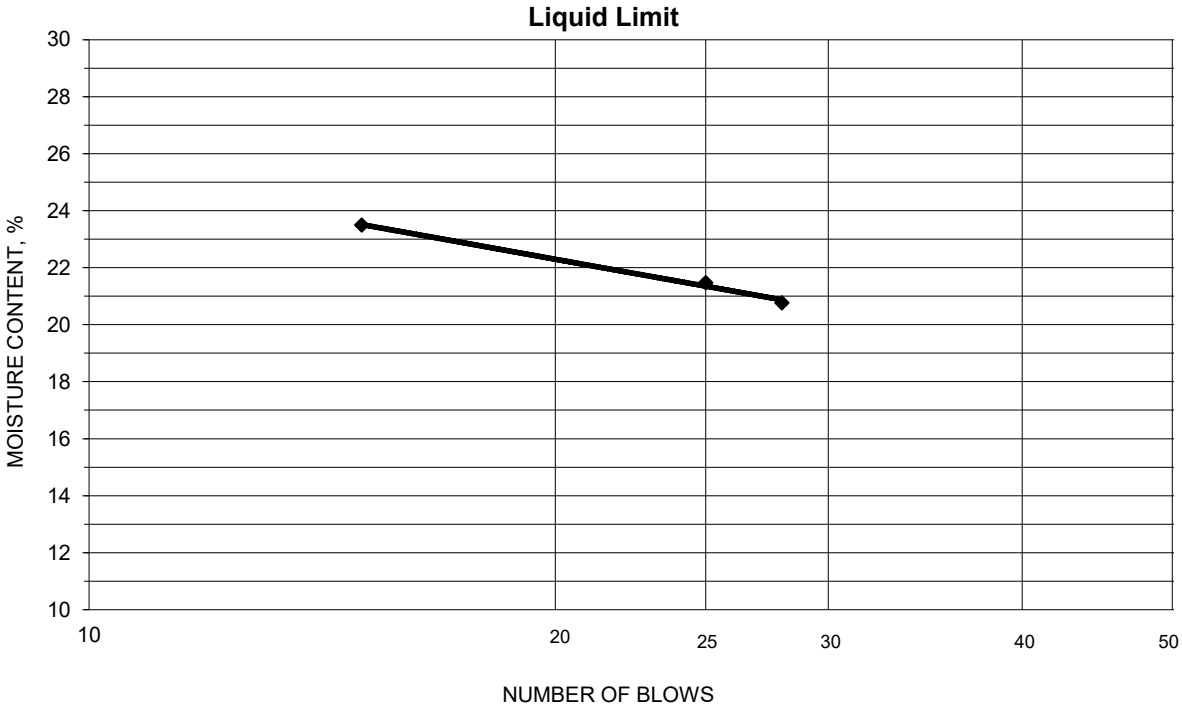
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.17, 12.5'-14.0'			Lab ID	984
				% + No. 40	10
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.52	22.20	11.03	28	20.8	
23.69	21.36	10.51	25	21.5	
24.32	21.79	11.02	15	23.5	21



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.34	19.13	10.59	14.2	14	7
21.67	20.36	10.68	13.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 15.0'-16.5'	Lab ID	985
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.5
No. 10	2	96.1
No. 40	0.425	72.0
No. 200	0.075	51.8
	0.02	35.7
	0.005	17.5
	0.002	13.5
estimated	0.001	12.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.5	3.9
Coarse Sand	3.4	24.1
Medium Sand	24.1	---
Fine Sand	20.2	20.2
Silt	34.3	38.3
Clay	17.5	13.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	18
Plastic Limit:	12
Plasticity Index:	6
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML

Group Name: Sandy silty clay

AASHTO Classification: A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.17, 15.0'-16.5'	Lab ID	985

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	07-01-2022
Date Received	06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.5
No. 10	96.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

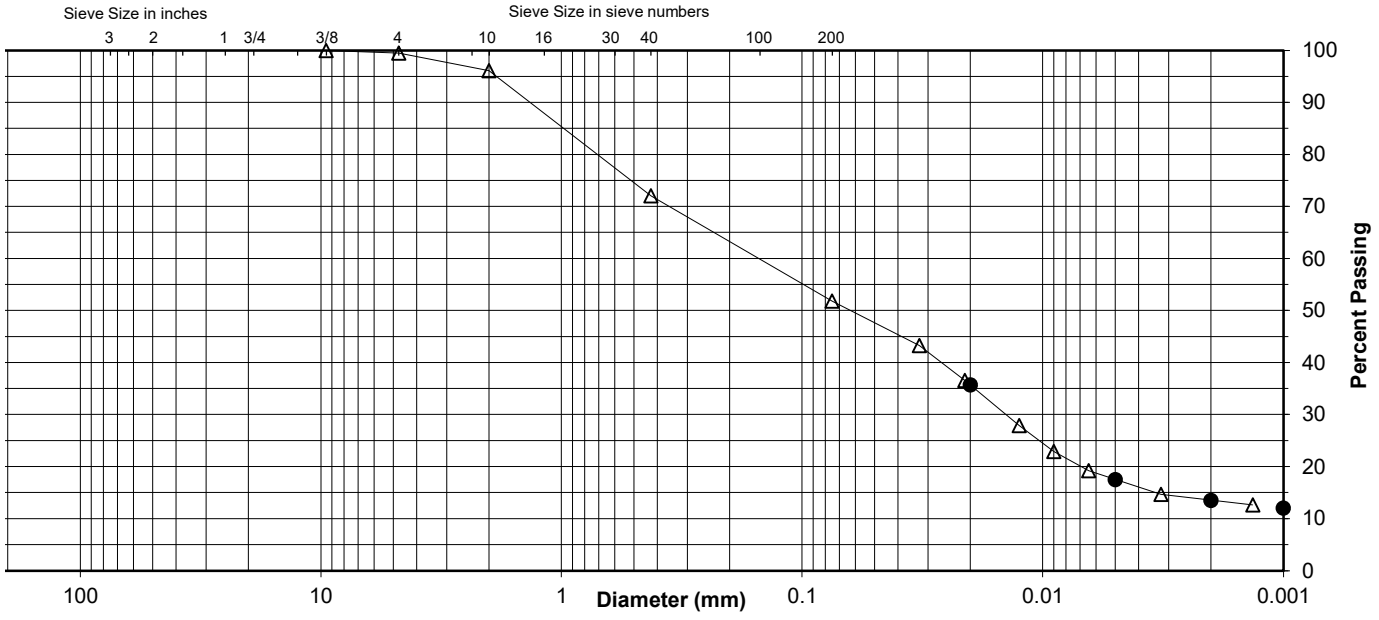
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	72.0
No. 200	51.8
0.02 mm	35.7
0.005 mm	17.5
0.002 mm	13.5
0.001 mm	12.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.5	3.4	24.1	20.2	34.3	17.5

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	3.9	24.1	20.2	38.3	13.5



Comments

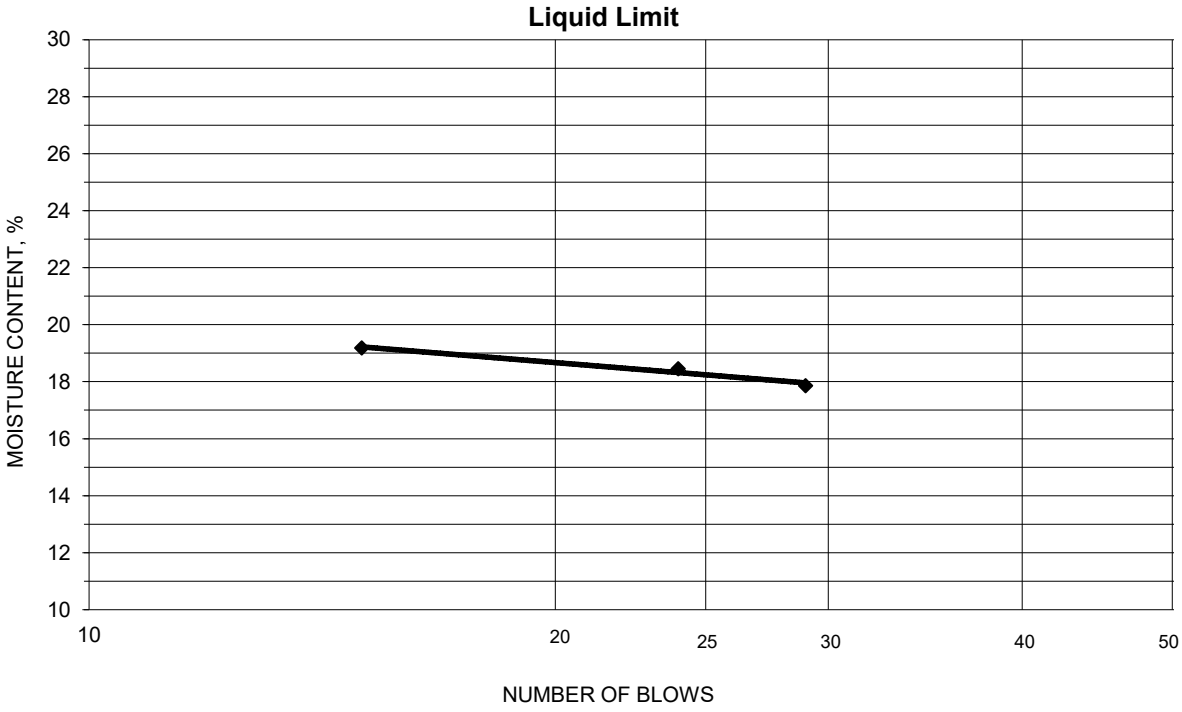
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.17, 15.0'-16.5'			Lab ID	985
				% + No. 40	28
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-12-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.04	24.27	14.36	29	17.9	
26.22	24.38	14.41	24	18.5	
27.48	25.37	14.37	15	19.2	18



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
26.14	24.85	14.43	12.4	12	6
27.31	25.92	14.39	12.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.18, 2.5'-4.0'	Lab ID	988
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.2
No. 10	2	96.5
No. 40	0.425	89.5
No. 200	0.075	70.2
	0.02	62.4
	0.005	45.1
	0.002	35.0
estimated	0.001	29.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.8	3.5
Coarse Sand	2.7	7.0
Medium Sand	7.0	---
Fine Sand	19.3	19.3
Silt	25.1	35.2
Clay	45.1	35.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	38
Plastic Limit:	23
Plasticity Index:	15
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (9)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.18, 2.5'-4.0'	Lab ID	988

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-22-2022
Date Received: 06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.2
No. 10	96.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

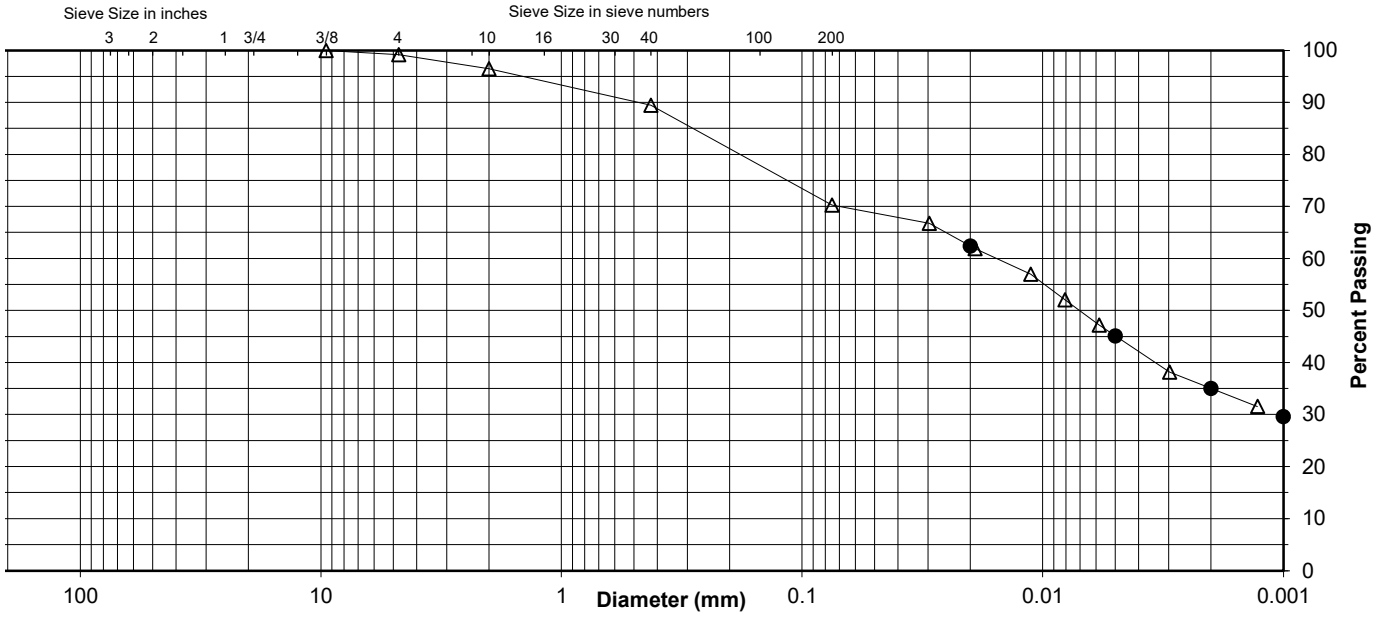
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	89.5
No. 200	70.2
0.02 mm	62.4
0.005 mm	45.1
0.002 mm	35.0
0.001 mm	29.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.8	2.7	7.0	19.3	25.1	45.1

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	3.5	7.0	19.3	35.2	35.0



Comments

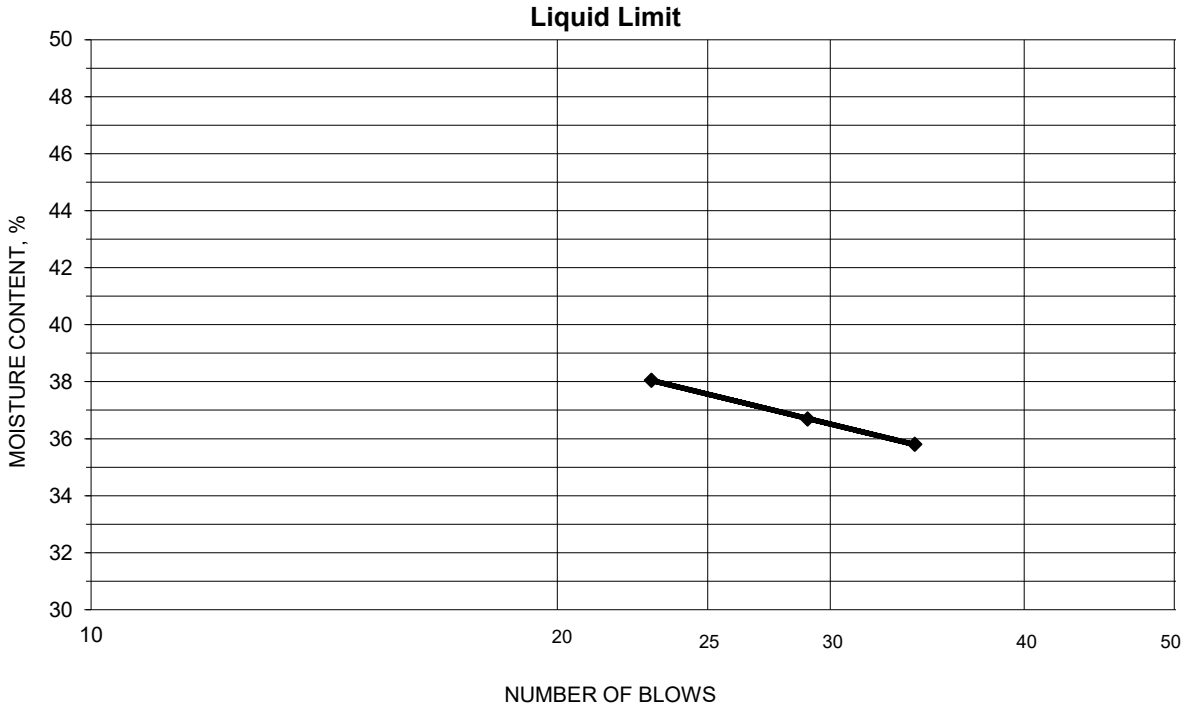
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.18, 2.5'-4.0'			Lab ID	988
				% + No. 40	11
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.64	20.31	11.01	34	35.8	
23.00	19.79	11.04	29	36.7	
23.20	19.84	11.01	23	38.1	38



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.00	18.27	10.70	22.9	23	15
21.10	19.26	11.04	22.4		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.18, 10.0'-11.5'	Lab ID	991
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 11.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	96.7
3/8"	9.5	95.1
No. 4	4.75	93.4
No. 10	2	88.7
No. 40	0.425	79.1
No. 200	0.075	65.7
	0.02	43.2
	0.005	23.9
	0.002	14.0
estimated	0.001	8.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.6	11.3
Coarse Sand	4.7	9.6
Medium Sand	9.6	---
Fine Sand	13.4	13.4
Silt	41.8	51.7
Clay	23.9	14.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	15
Plasticity Index:	9
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (3)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.18, 10.0'-11.5'	Lab ID	991

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	96.7
3/8"	95.1
No. 4	93.4
No. 10	88.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

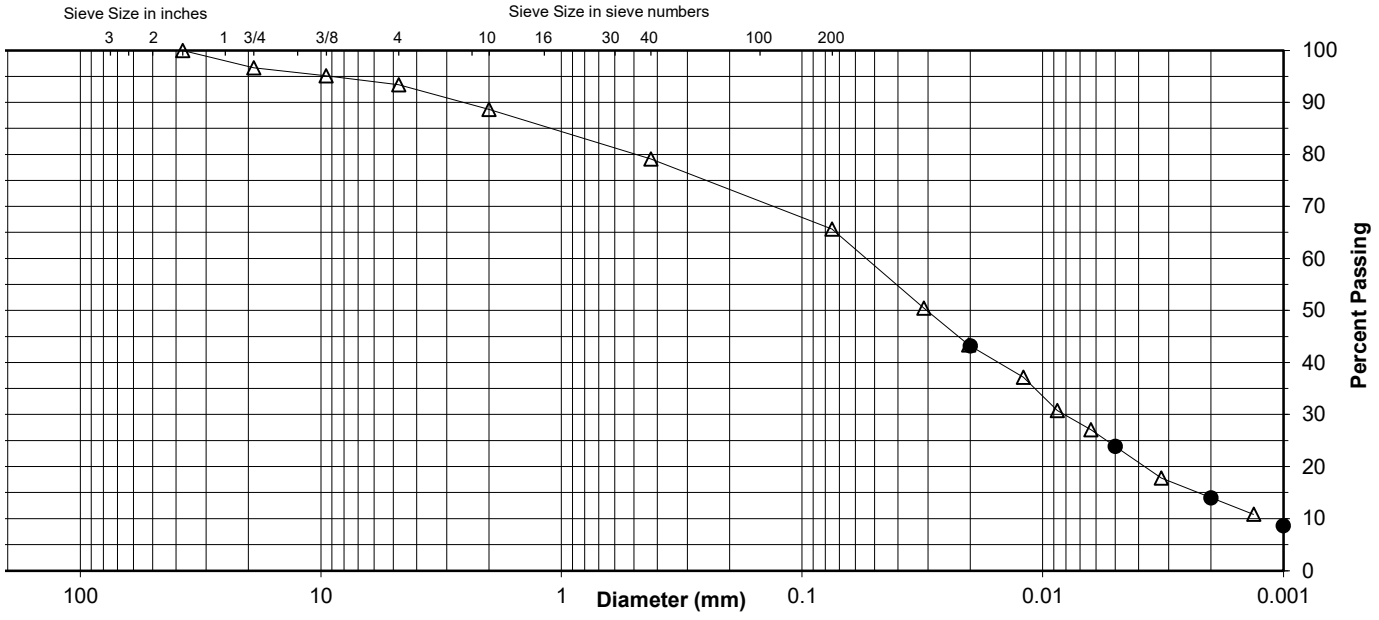
Specific Gravity: 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	79.1
No. 200	65.7
0.02 mm	43.2
0.005 mm	23.9
0.002 mm	14.0
0.001 mm	8.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	3.3	3.3	4.7	9.6	13.4	41.8	23.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	11.3			9.6	13.4	51.7	14.0



Comments

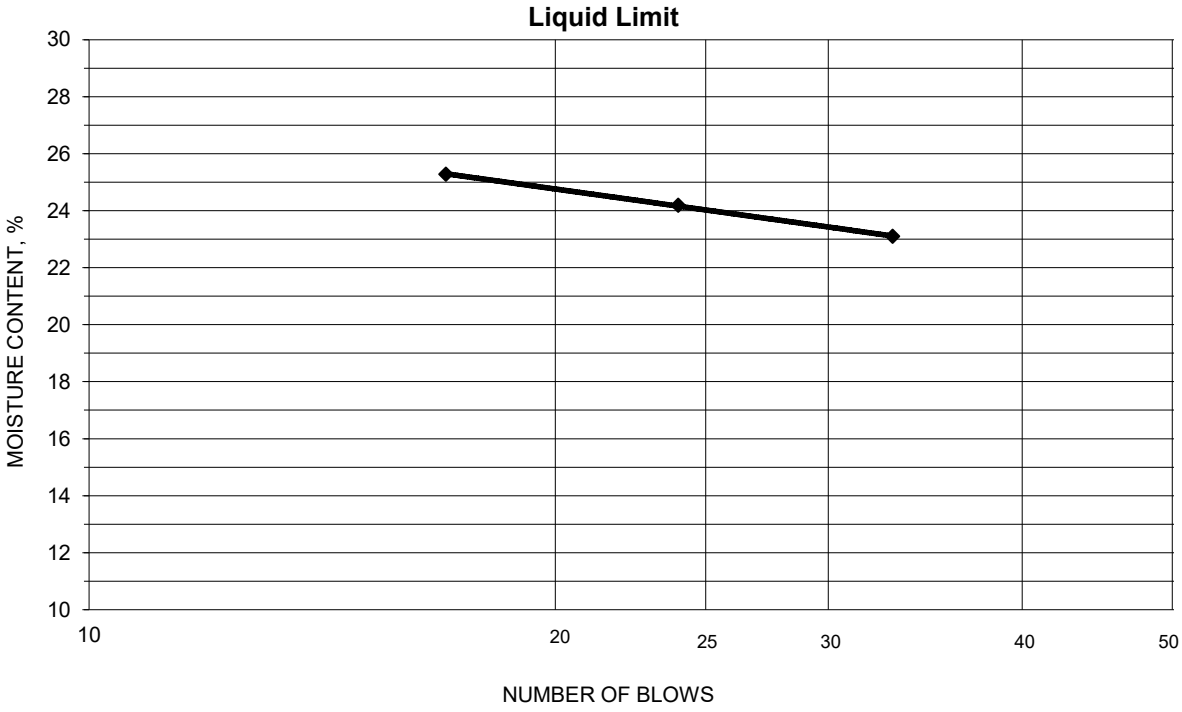
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.18, 10.0'-11.5'			Lab ID	991
				% + No. 40	21
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
27.37	24.94	14.42	33	23.1	
27.79	25.18	14.39	24	24.2	
27.76	25.07	14.43	17	25.3	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
24.86	23.50	14.38	14.9	15	9
25.62	24.20	14.43	14.5		

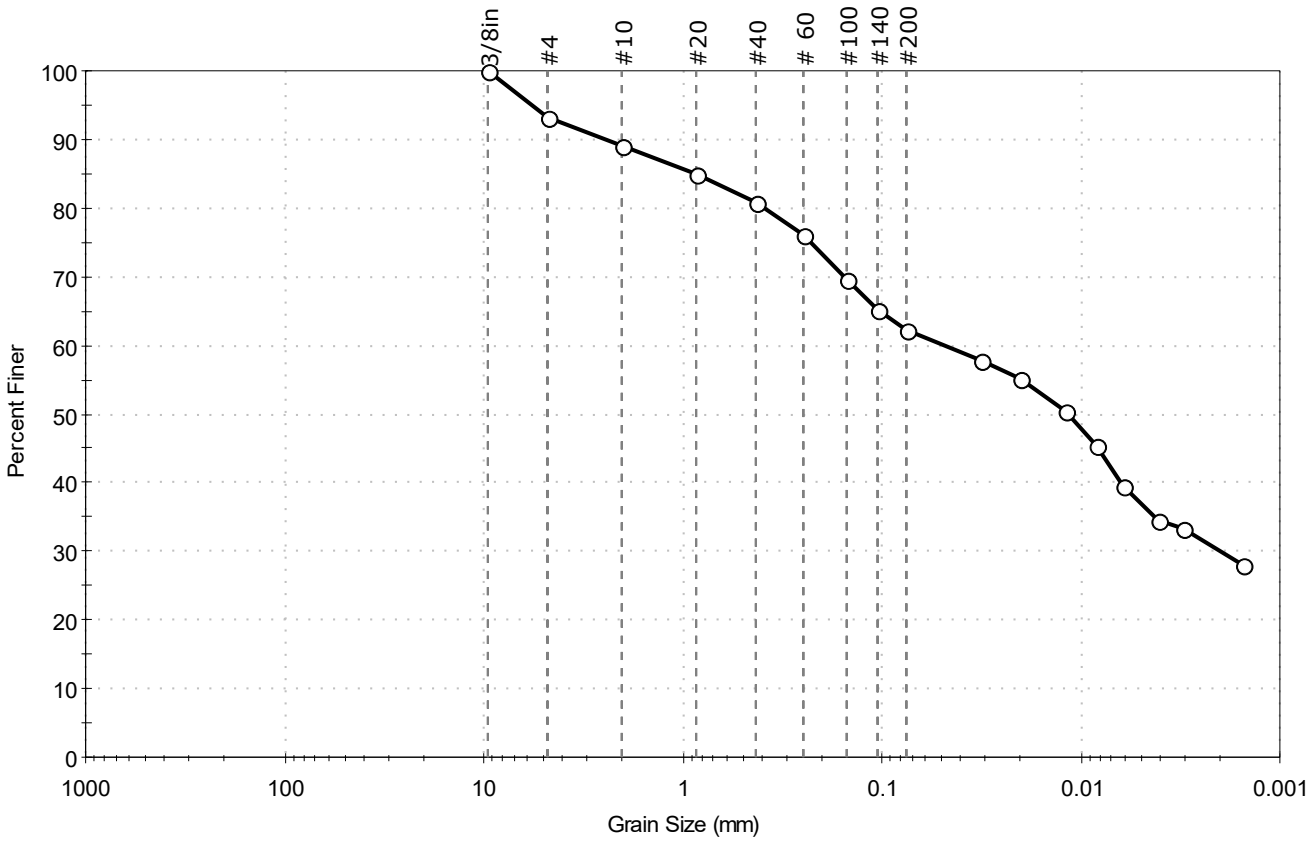
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.18	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/17/22	Checked By:	MCM
Depth :	12.5-14.5	Test Id:	337254		
Test Comment:	---				
Visual Description:	Moist, dark brown sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	6.7	31.2	62.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8in	9.50	100		
#4	4.75	93		
#10	2.00	89		
#20	0.85	85		
#40	0.42	81		
# 60	0.25	76		
#100	0.15	70		
#140	0.11	65		
#200	0.075	62		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0320	58		
---	0.0205	55		
---	0.0118	50		
---	0.0084	46		
---	0.0061	39		
---	0.0040	35		
---	0.0031	33		
---	0.0016	28		

Coefficients

D_{85} =0.8678 mm	D_{30} =0.0020 mm
D_{60} =0.0499 mm	D_{15} =N/A
D_{50} =0.0115 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (10))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

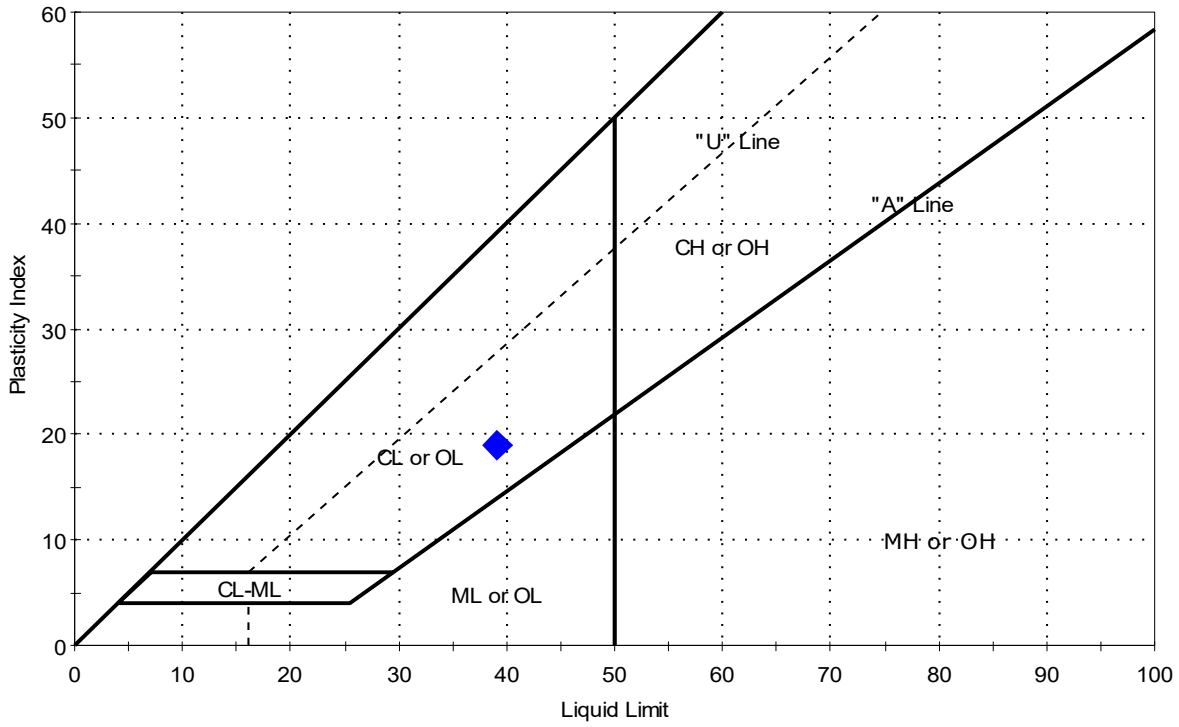
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.18	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/16/22	Checked By:	MCM
Depth :	12.5-14.5	Test Id:	337255		
Test Comment:	---				
Visual Description:	Moist, dark brown sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.18	12.5-14.5	22	39	20	19	0.1	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
19% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.19, 15.0'-16.5'	Lab ID	1000
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.4
No. 4	4.75	96.2
No. 10	2	88.2
No. 40	0.425	80.0
No. 200	0.075	65.9
	0.02	51.7
	0.005	31.9
	0.002	22.4
estimated	0.001	16.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.8	11.8
Coarse Sand	8.0	8.2
Medium Sand	8.2	---
Fine Sand	14.1	14.1
Silt	34.0	43.5
Clay	31.9	22.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	14
Plasticity Index:	10
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.19, 15.0'-16.5'	Lab ID	1000

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	SS
Test Date	07-05-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.4
No. 4	96.2
No. 10	88.2

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

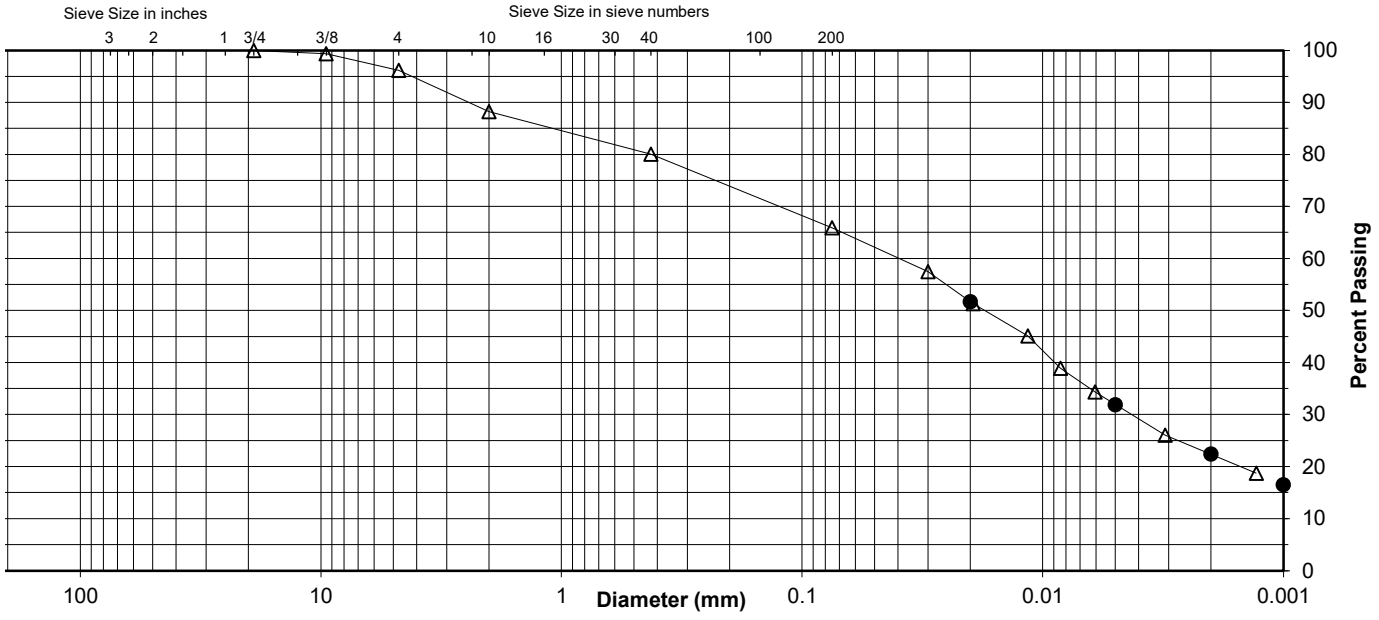
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	80.0
No. 200	65.9
0.02 mm	51.7
0.005 mm	31.9
0.002 mm	22.4
0.001 mm	16.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.8	8.0	8.2	14.1	34.0	31.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	11.8			8.2	14.1	43.5	22.4



Comments

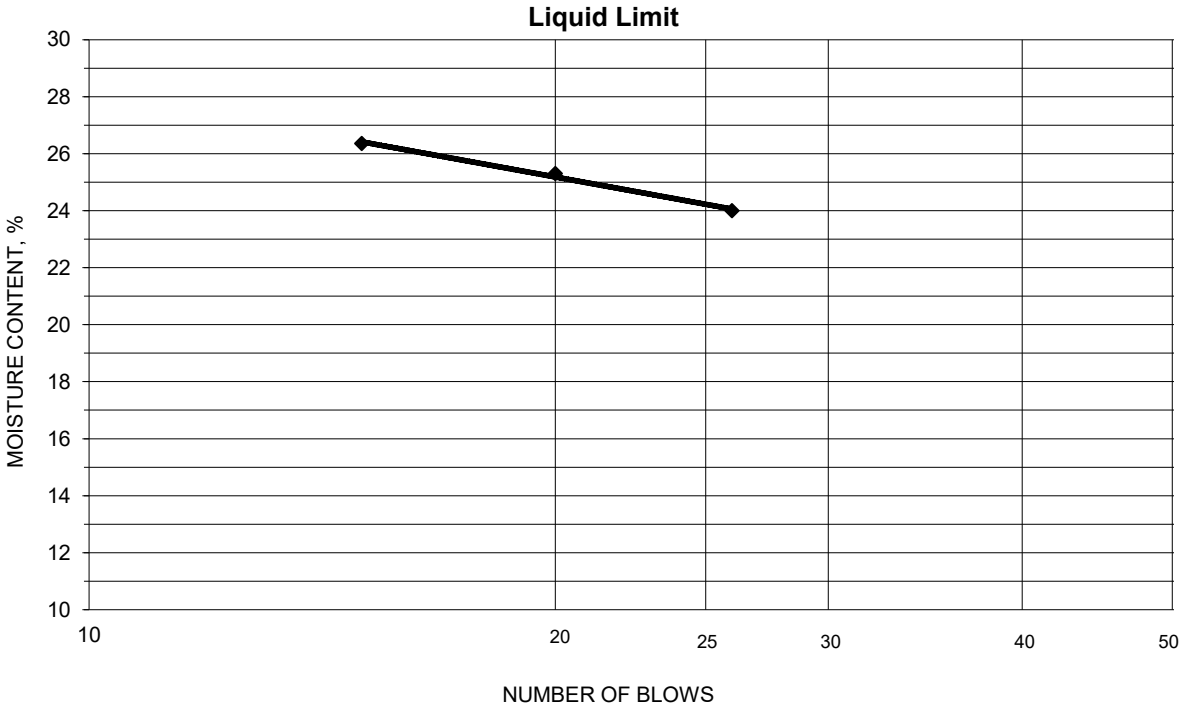
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.19, 15.0'-16.5'			Lab ID	1000
				% + No. 40	20
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.34	21.77	11.06	26	24.0	
24.67	21.92	11.05	20	25.3	
24.30	21.54	11.07	15	26.4	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.13	18.98	11.00	14.4	14	10
21.54	20.21	11.07	14.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.19, 17.5'-19.0'	Lab ID	1001
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.7
No. 4	4.75	97.8
No. 10	2	90.0
No. 40	0.425	84.9
No. 200	0.075	74.3
	0.02	63.1
	0.005	42.4
	0.002	30.6
estimated	0.001	24.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.2	10.0
Coarse Sand	7.8	5.1
Medium Sand	5.1	---
Fine Sand	10.6	10.6
Silt	31.9	43.7
Clay	42.4	30.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	17
Plasticity Index:	12
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (7)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.19, 17.5'-19.0'	Lab ID	1001

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	SS
Test Date	07-05-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.7
No. 4	97.8
No. 10	90.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

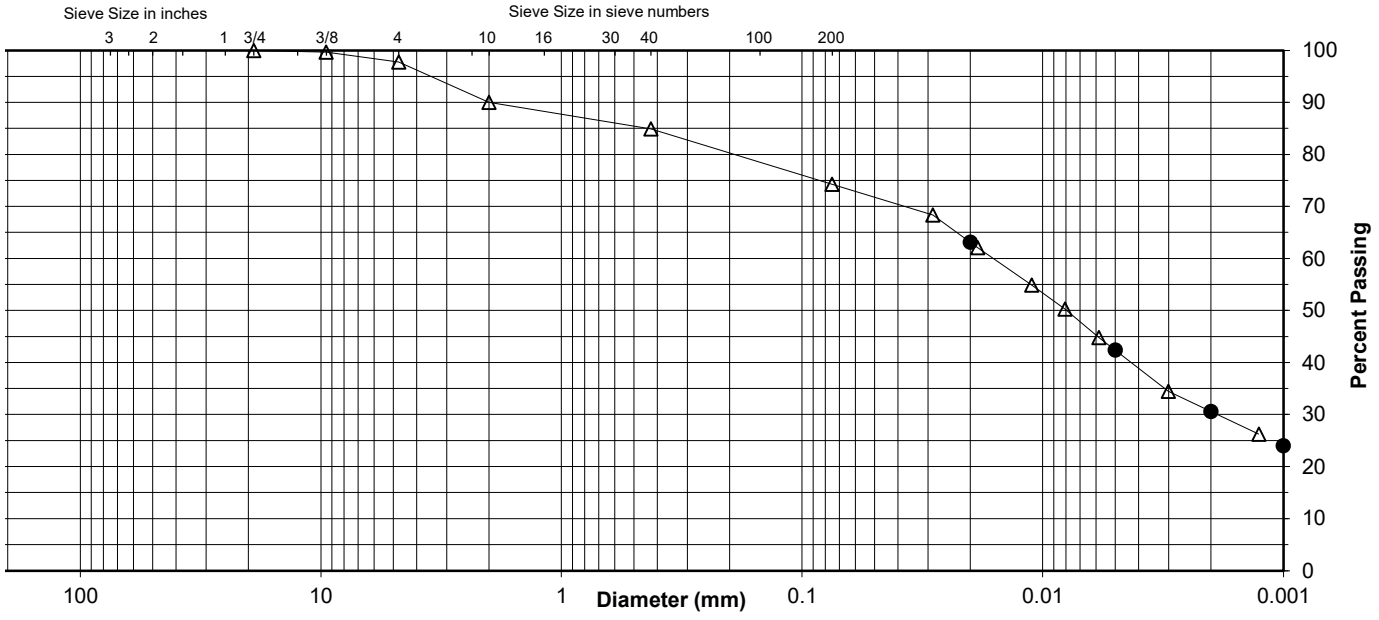
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	84.9
No. 200	74.3
0.02 mm	63.1
0.005 mm	42.4
0.002 mm	30.6
0.001 mm	24.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.2	7.8	5.1	10.6	31.9	42.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.0			5.1	10.6	43.7	30.6



Comments

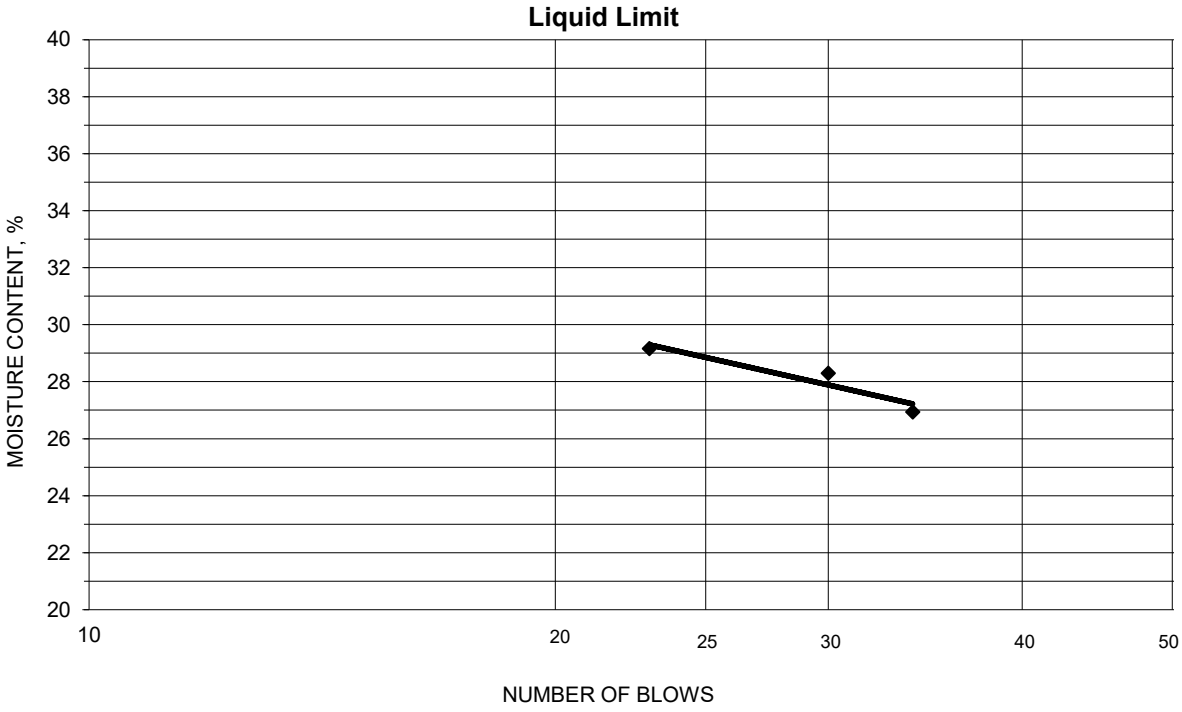
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.19, 17.5'-19.0'			Lab ID	1001
				% + No. 40	15
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.31	21.50	11.07	34	26.9	
23.57	20.78	10.92	30	28.3	
23.81	20.92	11.01	23	29.2	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.40	18.93	10.52	17.5	17	12
18.82	17.71	11.01	16.6		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.19, 20.0'-21.5'	Lab ID	1002
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	92.6
3/8"	9.5	84.2
No. 4	4.75	74.2
No. 10	2	60.9
No. 40	0.425	31.2
No. 200	0.075	24.4
	0.02	21.8
	0.005	15.8
	0.002	12.6
estimated	0.001	11.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	25.8	39.1
Coarse Sand	13.3	29.7
Medium Sand	29.7	---
Fine Sand	6.8	6.8
Silt	8.6	11.8
Clay	15.8	12.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	17
Plastic Limit:	13
Plasticity Index:	4
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.19, 20.0'-21.5'
Lab ID: 1002

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-29-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	92.6
3/8"	84.2
No. 4	74.2
No. 10	60.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

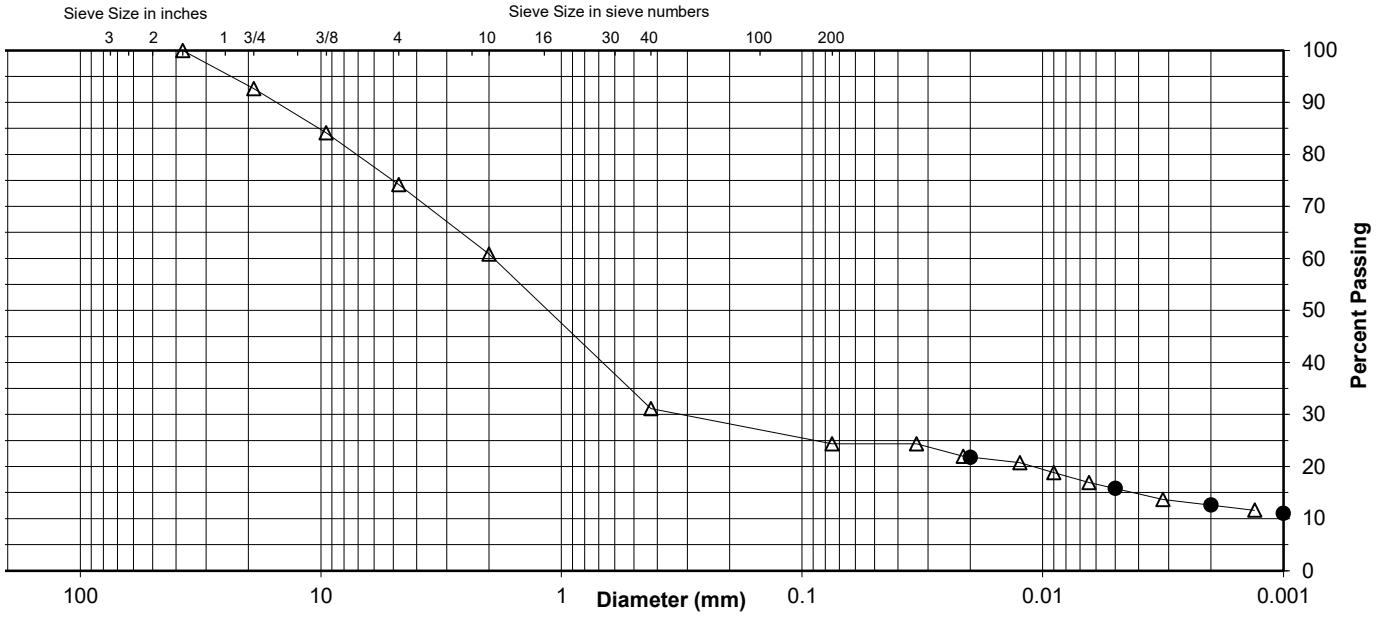
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	31.2
No. 200	24.4
0.02 mm	21.8
0.005 mm	15.8
0.002 mm	12.6
0.001 mm	11.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	7.4	18.4	13.3	29.7	6.8	8.6	15.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	39.1			29.7	6.8	11.8	12.6



Comments:

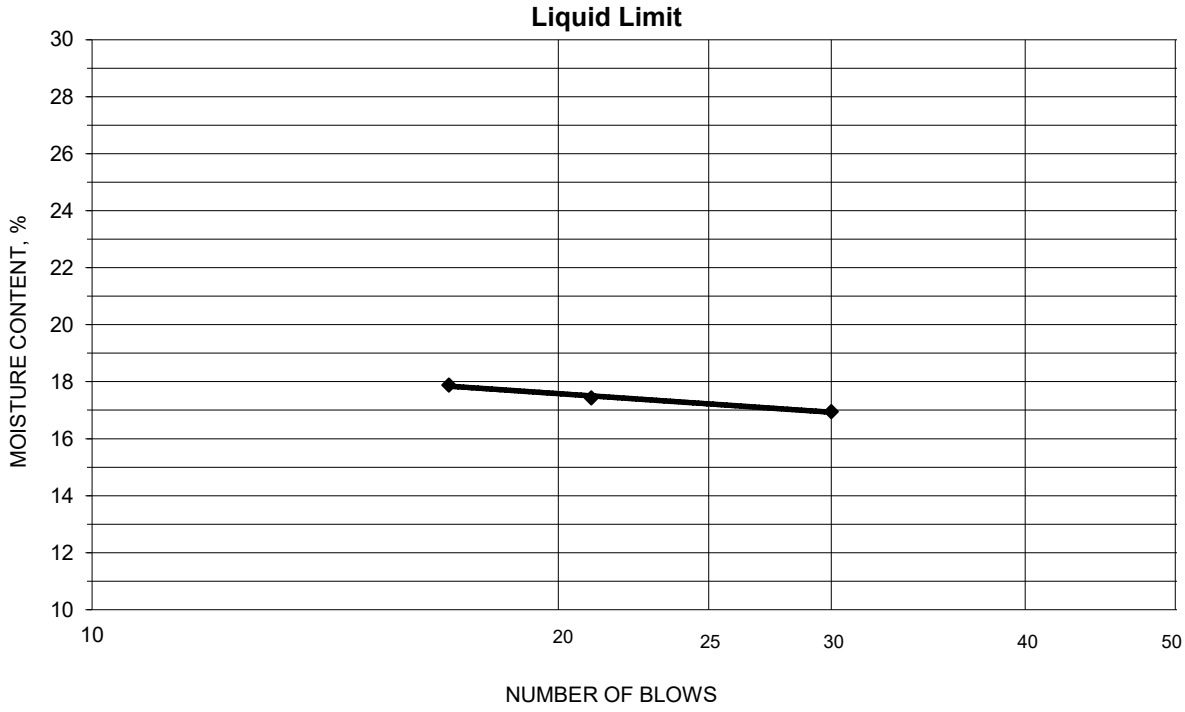
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.19, 20.0'-21.5'			Lab ID	1002
				% + No. 40	69
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.05	22.17	11.08	30	17.0	
25.49	23.34	11.01	21	17.4	
24.00	22.04	11.08	17	17.9	17



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.32	19.29	11.07	12.5	13	4
20.97	19.85	10.91	12.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.20, 5.0'-6.5'	Lab ID	1005
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.6
No. 4	4.75	97.5
No. 10	2	93.9
No. 40	0.425	86.0
No. 200	0.075	76.2
	0.02	70.9
	0.005	48.5
	0.002	37.0
estimated	0.001	29.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.5	6.1
Coarse Sand	3.6	7.9
Medium Sand	7.9	---
Fine Sand	9.8	9.8
Silt	27.7	39.2
Clay	48.5	37.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	18
Plasticity Index:	10
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-4 (6)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.20, 5.0'-6.5'	Lab ID	1005

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-28-2022
Date Received	06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.6
No. 4	97.5
No. 10	93.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

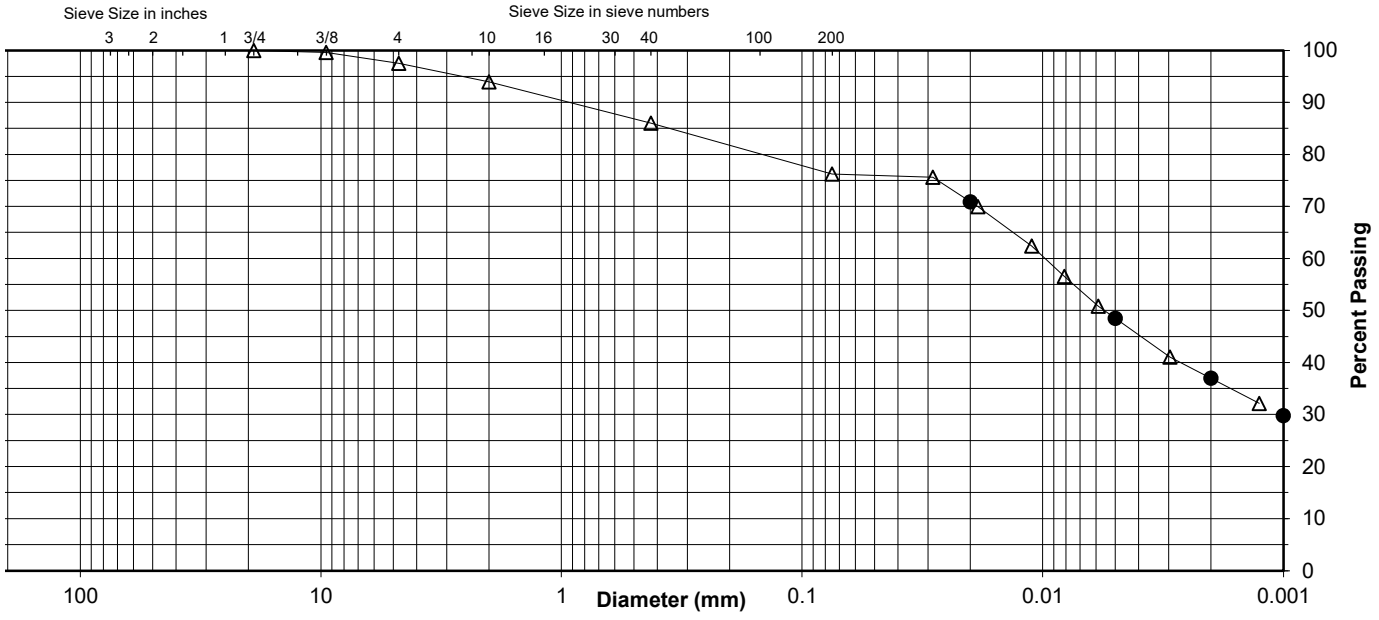
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	86.0
No. 200	76.2
0.02 mm	70.9
0.005 mm	48.5
0.002 mm	37.0
0.001 mm	29.8

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.5	3.6	7.9	9.8	27.7	48.5

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	6.1	7.9	9.8	39.2	37.0



Comments

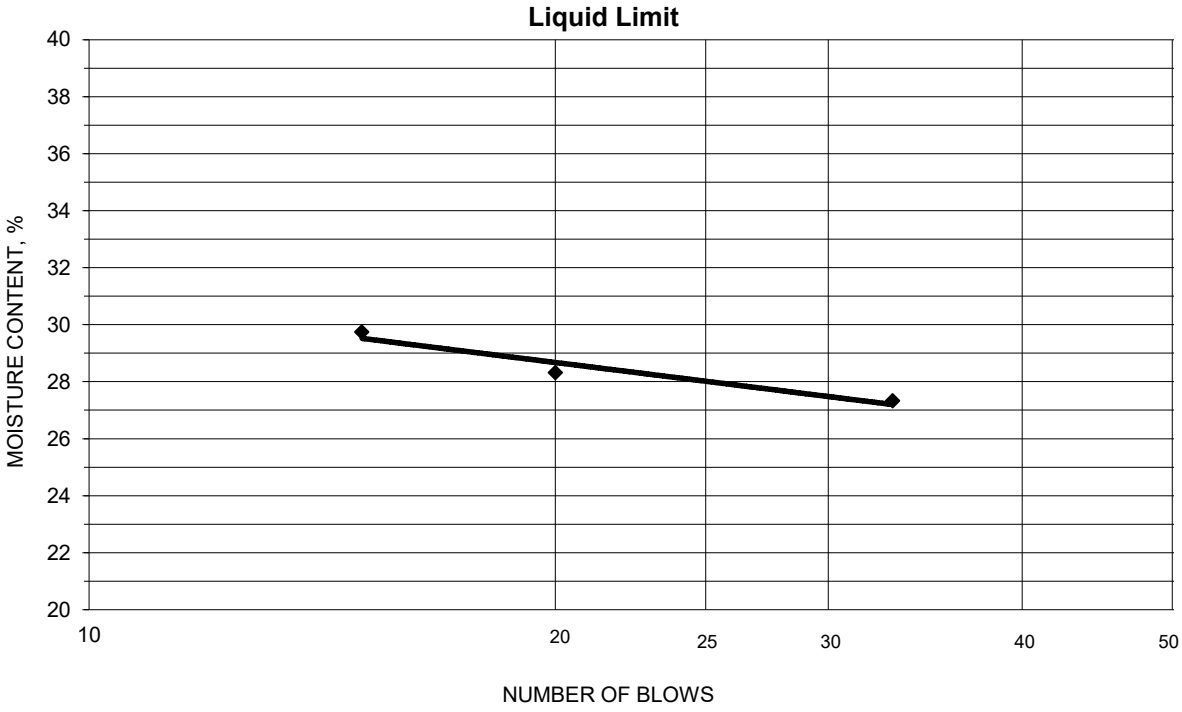
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.20, 5.0'-6.5'			Lab ID	1005
				% + No. 40	14
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-06-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.64	20.94	11.06	33	27.3	
23.84	20.98	10.88	20	28.3	
23.36	20.54	11.06	15	29.7	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.56	19.05	10.58	17.8	18	10
19.63	18.25	10.62	18.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.20, 12.5'-14.0'	Lab ID	1007
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.7
No. 4	4.75	96.2
No. 10	2	91.5
No. 40	0.425	82.9
No. 200	0.075	69.2
	0.02	48.4
	0.005	26.9
	0.002	17.3
estimated	0.001	11.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.8	8.5
Coarse Sand	4.7	8.6
Medium Sand	8.6	---
Fine Sand	13.7	13.7
Silt	42.3	51.9
Clay	26.9	17.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	15
Plasticity Index:	10
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.20, 12.5'-14.0'
Lab ID: 1007

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.7
No. 4	96.2
No. 10	91.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

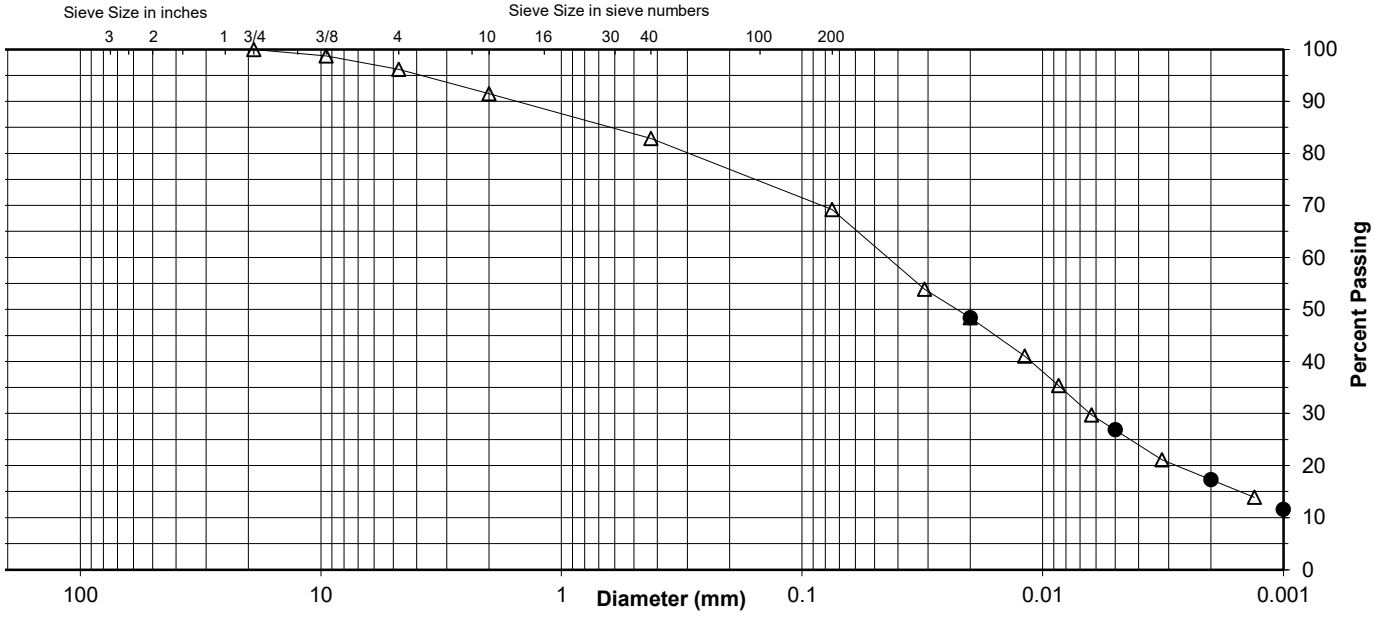
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	82.9
No. 200	69.2
0.02 mm	48.4
0.005 mm	26.9
0.002 mm	17.3
0.001 mm	11.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.8	4.7	8.6	13.7	42.3	26.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.5			8.6	13.7	51.9	17.3



Comments

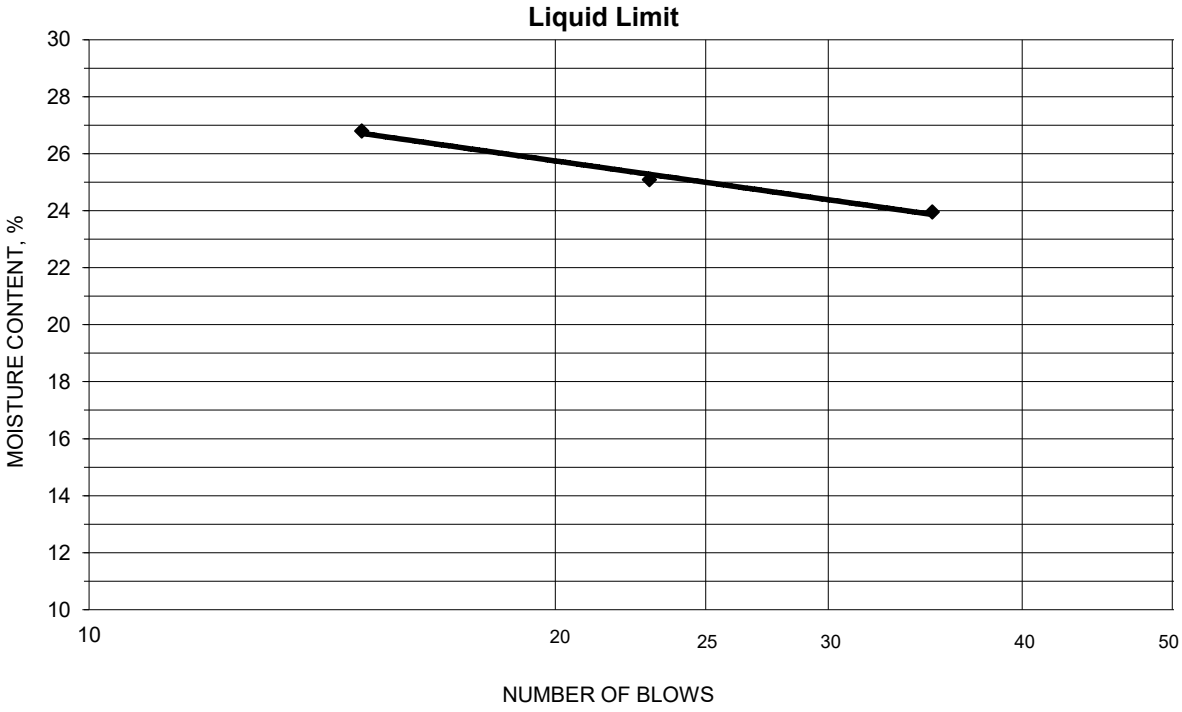
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.20, 12.5'-14.0'			Lab ID	1007
				% + No. 40	17
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-07-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
24.43	21.84	11.03	35	24.0	
24.05	21.43	10.99	23	25.1	
24.38	21.48	10.66	15	26.8	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.88	20.45	11.07	15.2	15	10
22.32	20.81	11.09	15.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.21, 5.0'-6.5'	Lab ID	1013
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.5
No. 4	4.75	95.9
No. 10	2	90.9
No. 40	0.425	81.5
No. 200	0.075	66.7
	0.02	55.3
	0.005	34.7
	0.002	28.2
estimated	0.001	24.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.1	9.1
Coarse Sand	5.0	9.4
Medium Sand	9.4	---
Fine Sand	14.8	14.8
Silt	32.0	38.5
Clay	34.7	28.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	19
Plasticity Index:	11
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.21, 5.0'-6.5'
Lab ID: 1013

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-29-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.5
No. 4	95.9
No. 10	90.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

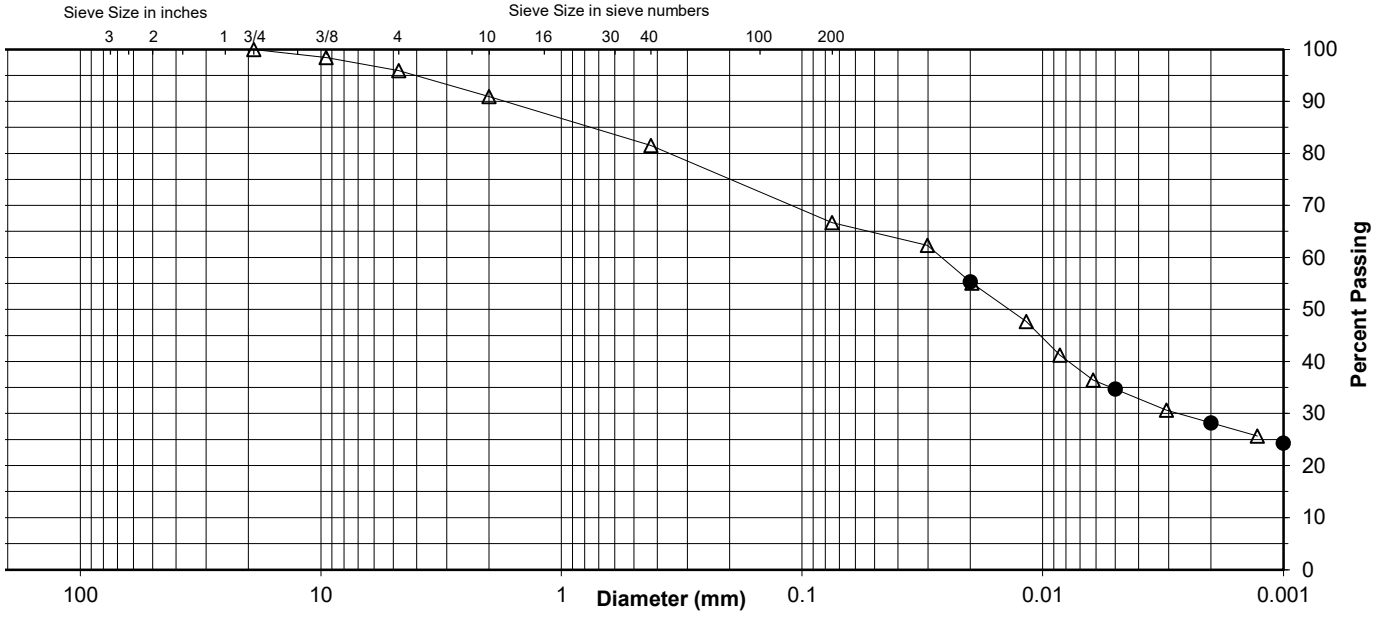
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	81.5
No. 200	66.7
0.02 mm	55.3
0.005 mm	34.7
0.002 mm	28.2
0.001 mm	24.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.1	5.0	9.4	14.8	32.0	34.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.1			9.4	14.8	38.5	28.2



Comments:

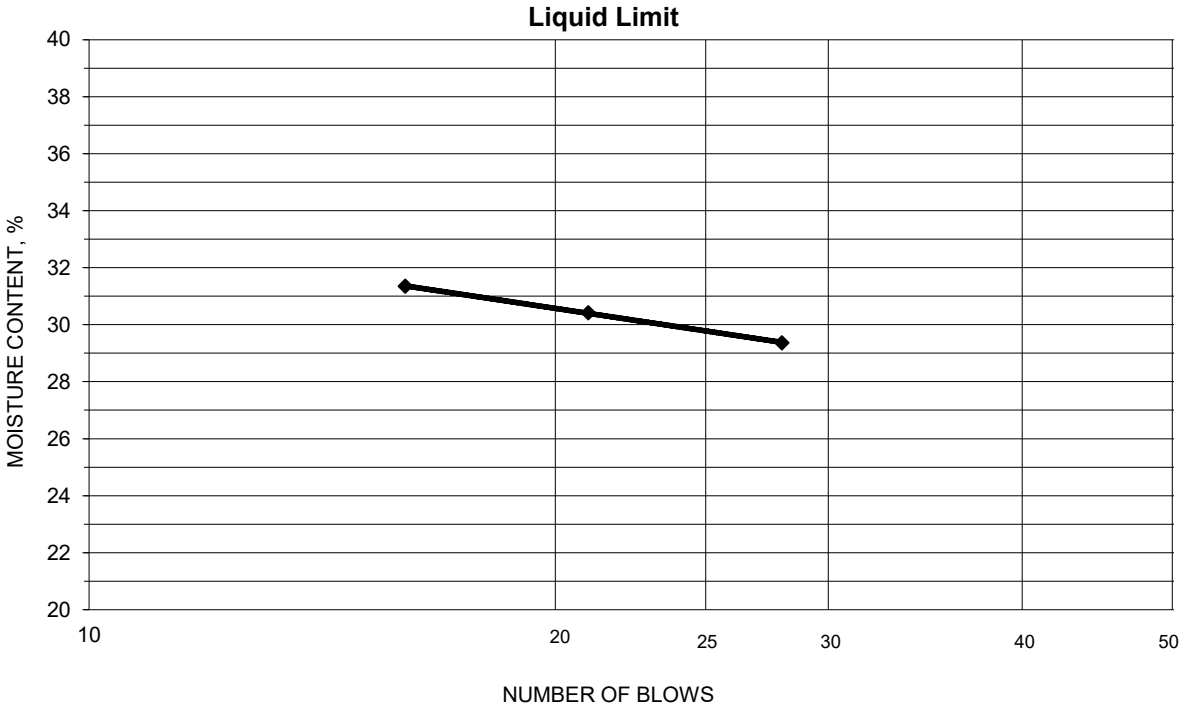
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.21, 5.0'-6.5'			Lab ID	1013
				% + No. 40	19
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-11-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
25.02	21.86	11.10	28	29.4	
25.27	21.96	11.08	21	30.4	
24.73	21.41	10.82	16	31.4	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.84	18.37	10.58	18.9	19	11
22.38	20.57	11.10	19.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.21, 7.5'-9.0'	Lab ID	1014
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 26.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	96.7
3/8"	9.5	94.5
No. 4	4.75	92.5
No. 10	2	90.8
No. 40	0.425	87.2
No. 200	0.075	45.8
	0.02	39.2
	0.005	26.7
	0.002	20.5
estimated	0.001	17.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.5	9.2
Coarse Sand	1.7	3.6
Medium Sand	3.6	---
Fine Sand	41.4	41.4
Silt	19.1	25.3
Clay	26.7	20.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	22
Plastic Limit:	16
Plasticity Index:	6
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand

AASHTO Classification: A-4 (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.21, 7.5'-9.0'	Lab ID	1014

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-22-2022
Date Received: 06-10-2022

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	96.7
3/8"	94.5
No. 4	92.5
No. 10	90.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

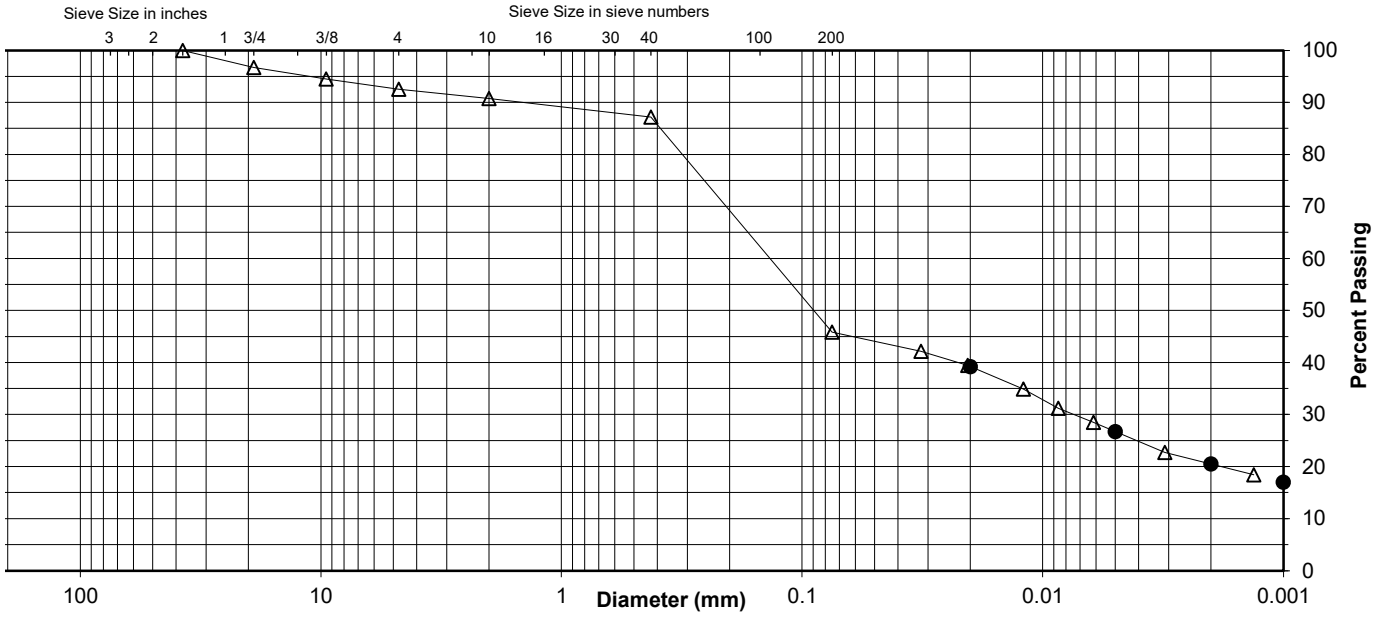
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	87.2
No. 200	45.8
0.02 mm	39.2
0.005 mm	26.7
0.002 mm	20.5
0.001 mm	17.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	3.3	4.2	1.7	3.6	41.4	19.1	26.7

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	9.2	3.6	41.4	25.3	20.5



Comments

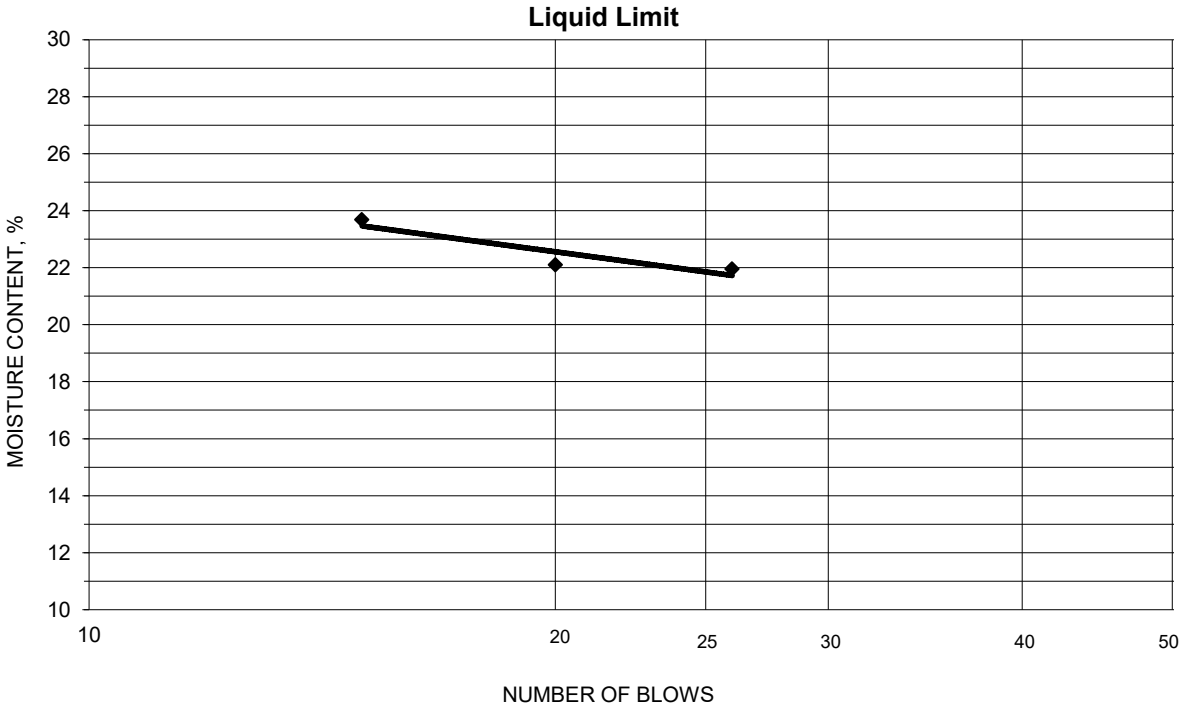
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.21, 7.5'-9.0'			Lab ID	1014
				% + No. 40	13
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-27-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
26.03	23.30	10.87	26	22.0	
24.79	22.21	10.54	20	22.1	
23.96	21.49	11.06	15	23.7	22



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.69	21.06	10.96	16.1	16	6
22.71	21.02	10.57	16.2		

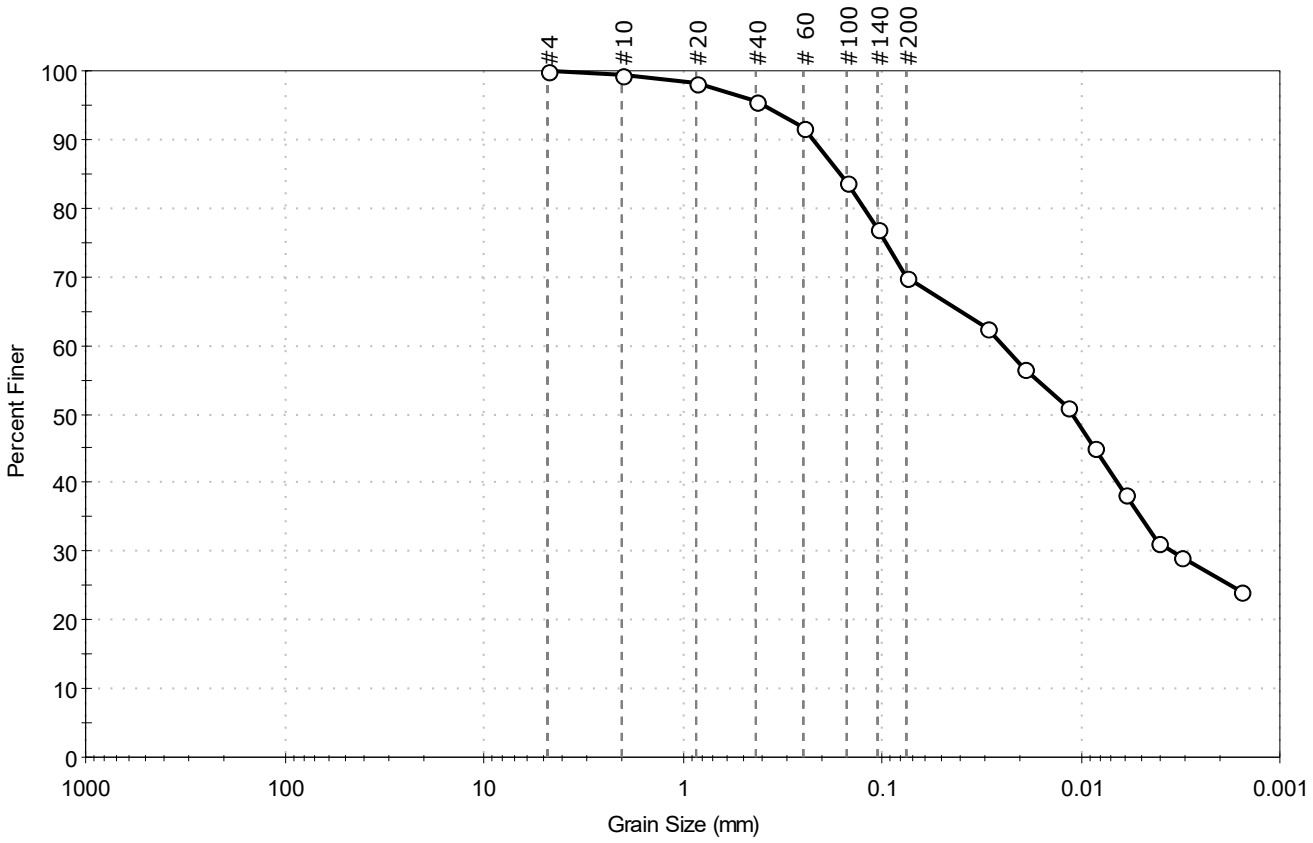
Remarks: _____

Reviewed By REL

GeoTesting EXPRESS

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.21	Sample Type:	tube	Tested By:	twh
Sample ID:	ST	Test Date:	08/17/22	Checked By:	MCM
Depth :	13.0-15.0	Test Id:	337260		
Test Comment:	---				
Visual Description:	Moist, greenish brown sandy clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	30.0	70.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	95		
# 60	0.25	92		
#100	0.15	84		
#140	0.11	77		
#200	0.075	70		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0300	62		
---	0.0192	57		
---	0.0118	51		
---	0.0085	45		
---	0.0060	38		
---	0.0040	31		
---	0.0031	29		
---	0.0016	24		

Coefficients

D_{85} = 0.1620 mm	D_{30} = 0.0035 mm
D_{60} = 0.0248 mm	D_{15} = N/A
D_{50} = 0.0112 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Sandy Lean CLAY (CL)

AASHTO Clayey Soils (A-6 (10))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

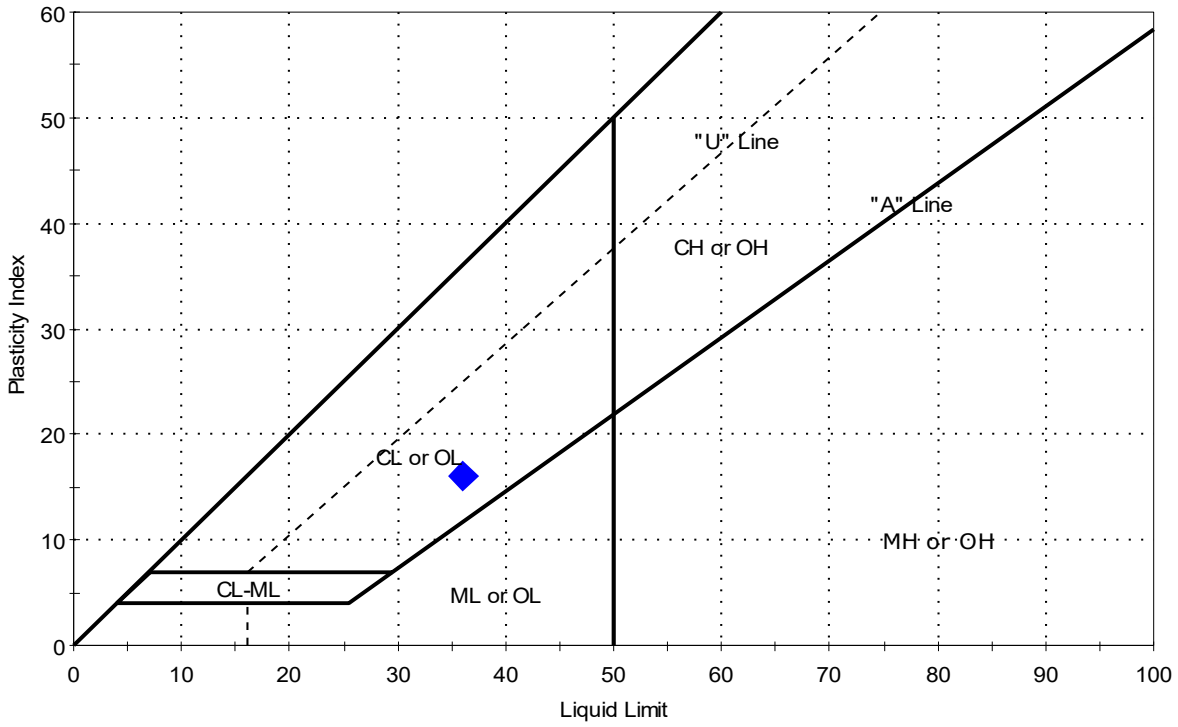
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Stantec Inc.				
Project:	Eagle Creek Flood Basin				
Location:	Hancock County			Project No:	GTX-315844
Boring ID:	B-4.21	Sample Type:	tube	Tested By:	jbh
Sample ID:	ST	Test Date:	08/15/22	Checked By:	MCM
Depth :	13.0-15.0	Test Id:	337261		
Test Comment:	---				
Visual Description:	Moist, greenish brown sandy clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	ST	B-4.21	13.0-15.0	26	36	20	16	0.4	Sandy Lean CLAY (CL)

Sample Prepared using the DRY method
5% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: MEDIUM

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.21, 15.0'-16.5'	Lab ID	1016
Sample Type	SPT	Date Received	6-10-22
		Date Reported	7-13-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 26.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	100.0
No. 10	2	99.9
No. 40	0.425	99.8
No. 200	0.075	98.5
	0.02	87.0
	0.005	58.0
	0.002	39.4
estimated	0.001	27.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.1
Coarse Sand	0.1	0.1
Medium Sand	0.1	---
Fine Sand	1.3	1.3
Silt	40.5	59.1
Clay	58.0	39.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	19
Plasticity Index:	13
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay

AASHTO Classification: A-6 (13)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.21, 15.0'-16.5'
Lab ID: 1016

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-24-2022
Date Received: 06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	100.0
No. 10	99.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

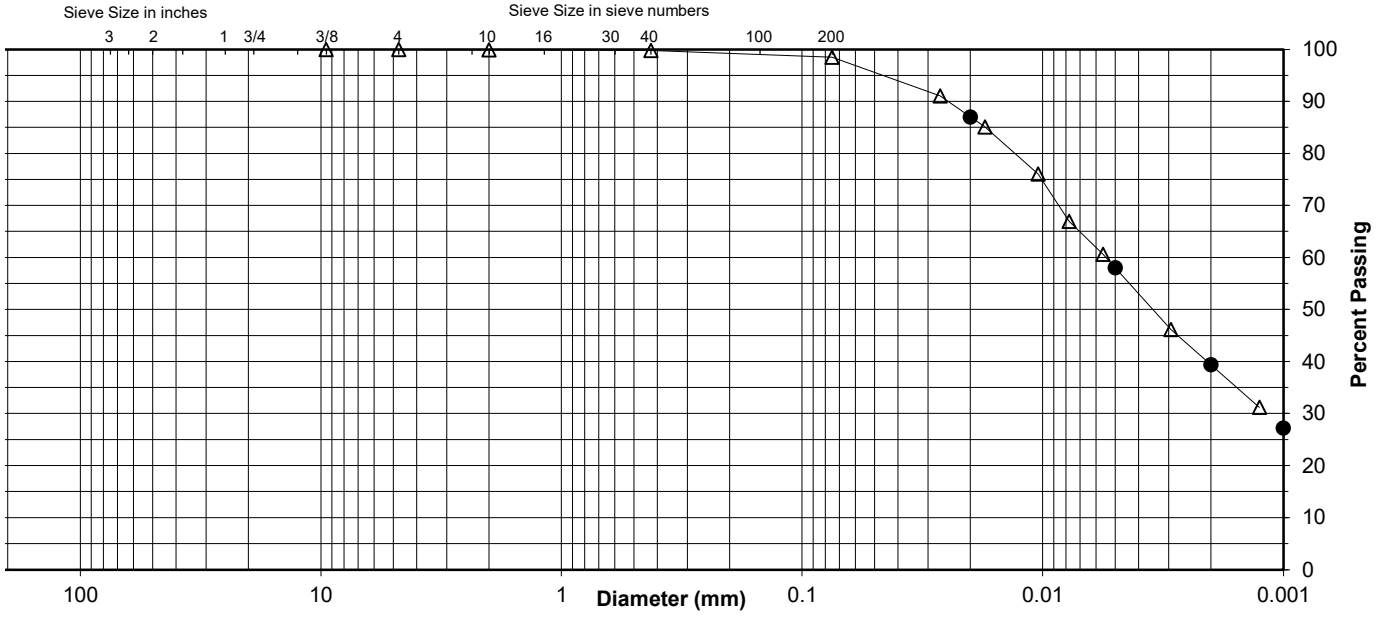
Specific Gravity: 2.7

Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	99.8
No. 200	98.5
0.02 mm	87.0
0.005 mm	58.0
0.002 mm	39.4
0.001 mm	27.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.1	0.1	1.3	40.5	58.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.1			0.1	1.3	59.1	39.4



Comments:

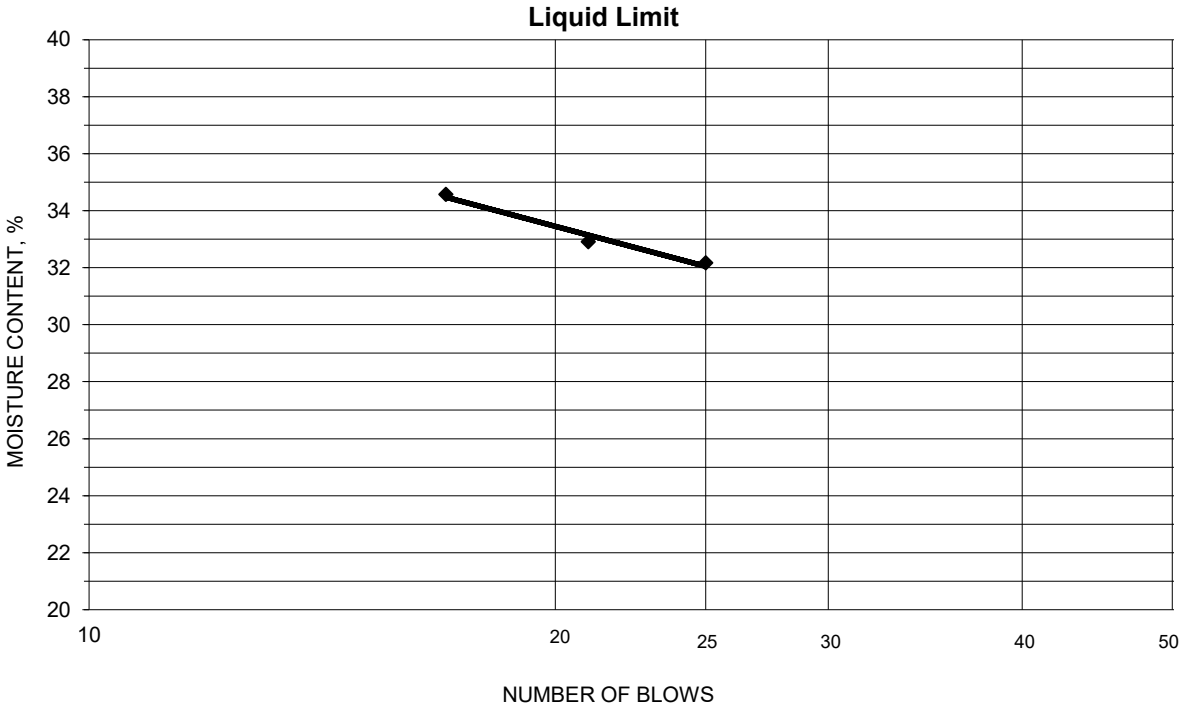
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.21, 15.0'-16.5'			Lab ID	1016
				% + No. 40	0
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	07-06-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.49	20.44	10.96	25	32.2	
22.74	19.84	11.03	21	32.9	
22.59	19.62	11.03	17	34.6	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
21.93	20.11	10.53	19.0	19	13
22.54	20.60	10.63	19.5		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.22, 2.5'-4.0'	Lab ID	1019
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.9
No. 10	2	94.1
No. 40	0.425	91.7
No. 200	0.075	82.0
	0.02	69.8
	0.005	46.9
	0.002	36.8
estimated	0.001	30.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.1	5.9
Coarse Sand	5.8	2.4
Medium Sand	2.4	---
Fine Sand	9.7	9.7
Silt	35.1	45.2
Clay	46.9	36.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	43
Plastic Limit:	23
Plasticity Index:	20
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (17)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.22, 2.5'-4.0'	Lab ID	1019

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-13-2022
Date Received	06-10-2022

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.9
No. 10	94.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

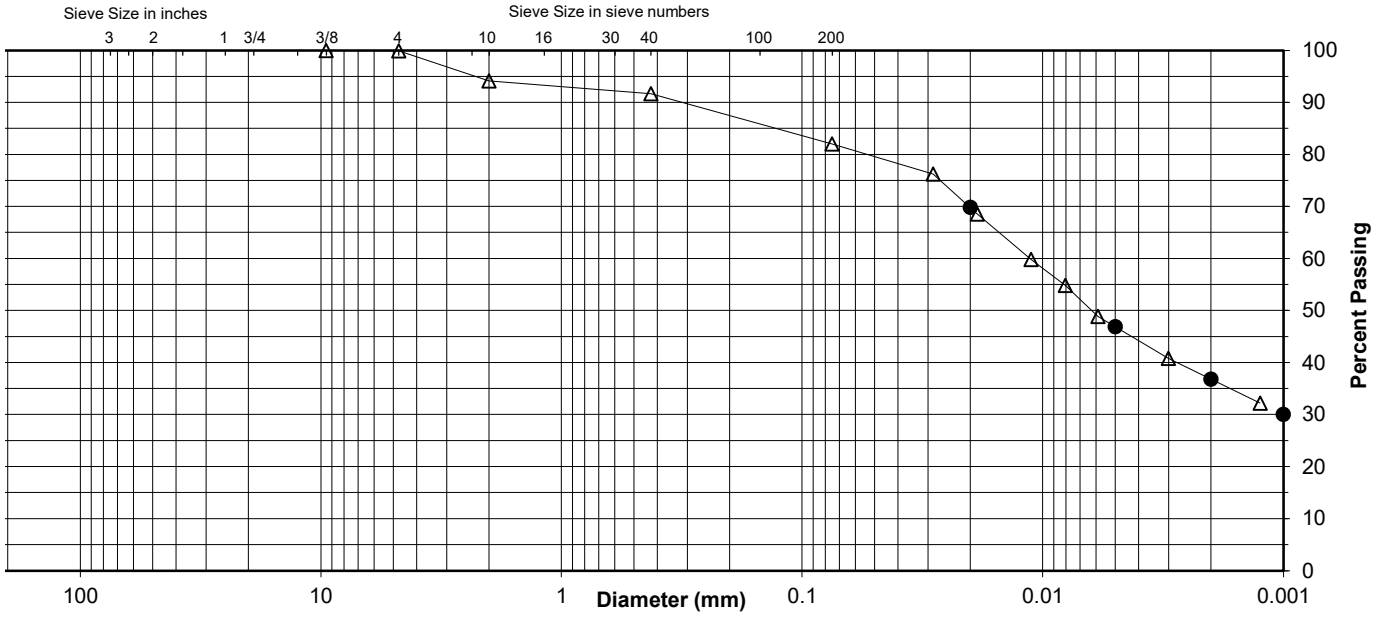
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	91.7
No. 200	82.0
0.02 mm	69.8
0.005 mm	46.9
0.002 mm	36.8
0.001 mm	30.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.1	5.8	2.4	9.7	35.1	46.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.9			2.4	9.7	45.2	36.8



Comments

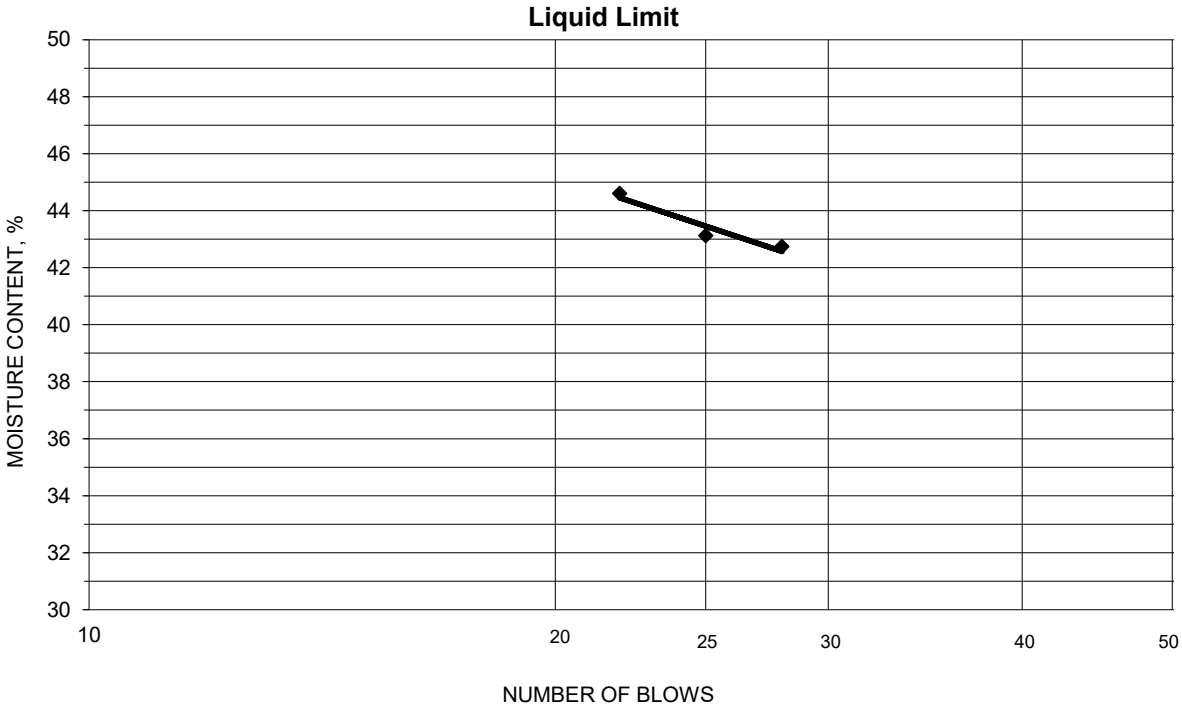
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.22, 2.5'-4.0'			Lab ID	1019
				% + No. 40	8
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.82	19.93	10.83	28	42.7	
22.58	18.97	10.60	25	43.1	
23.55	19.66	10.94	22	44.6	43



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.12	17.59	10.98	23.1	23	20
18.41	17.03	11.06	23.1		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.22, 7.5'-9.0'	Lab ID	1020
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 27.5

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	100.0
No. 40	0.425	98.4
No. 200	0.075	66.7
	0.02	48.8
	0.005	27.5
	0.002	20.7
estimated	0.001	16.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	1.6
Medium Sand	1.6	---
Fine Sand	31.7	31.7
Silt	39.2	46.0
Clay	27.5	20.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	21
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-4 (4)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.22, 7.5'-9.0'	Lab ID	1020

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	JP
Test Date	06-13-2022
Date Received	06-10-2022

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	100.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

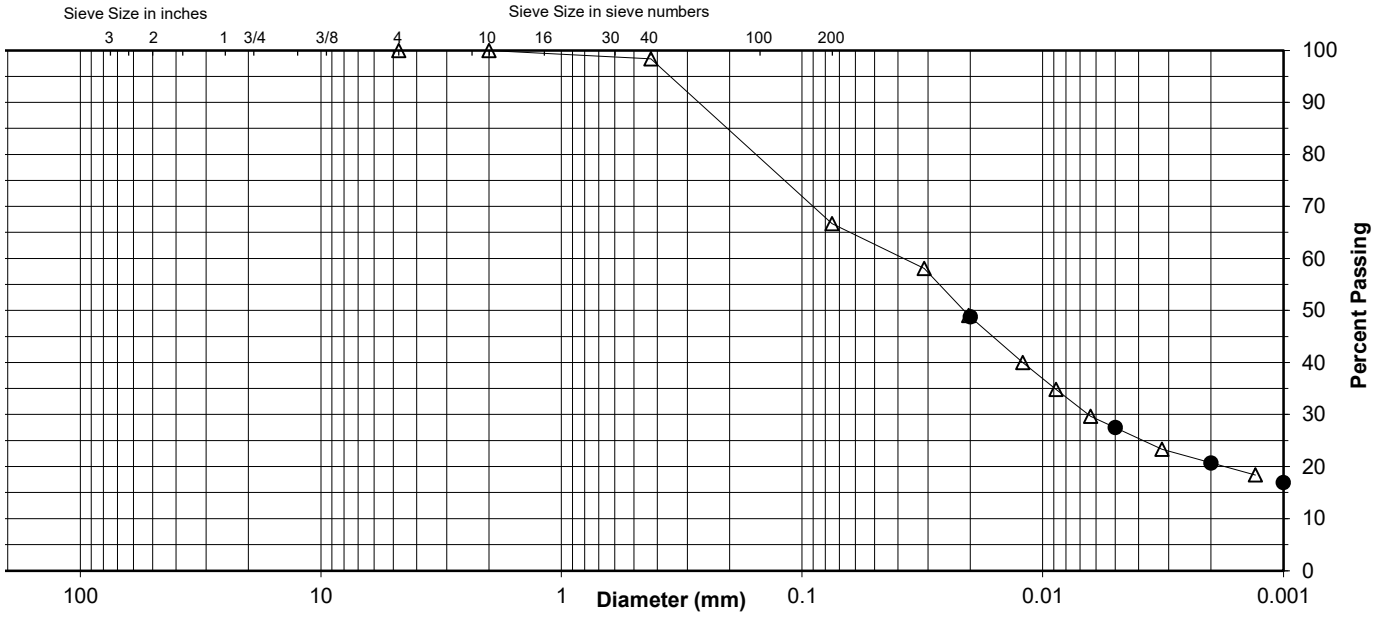
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	98.4
No. 200	66.7
0.02 mm	48.8
0.005 mm	27.5
0.002 mm	20.7
0.001 mm	16.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	1.6	31.7	39.2	27.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.0			1.6	31.7	46.0	20.7



Comments

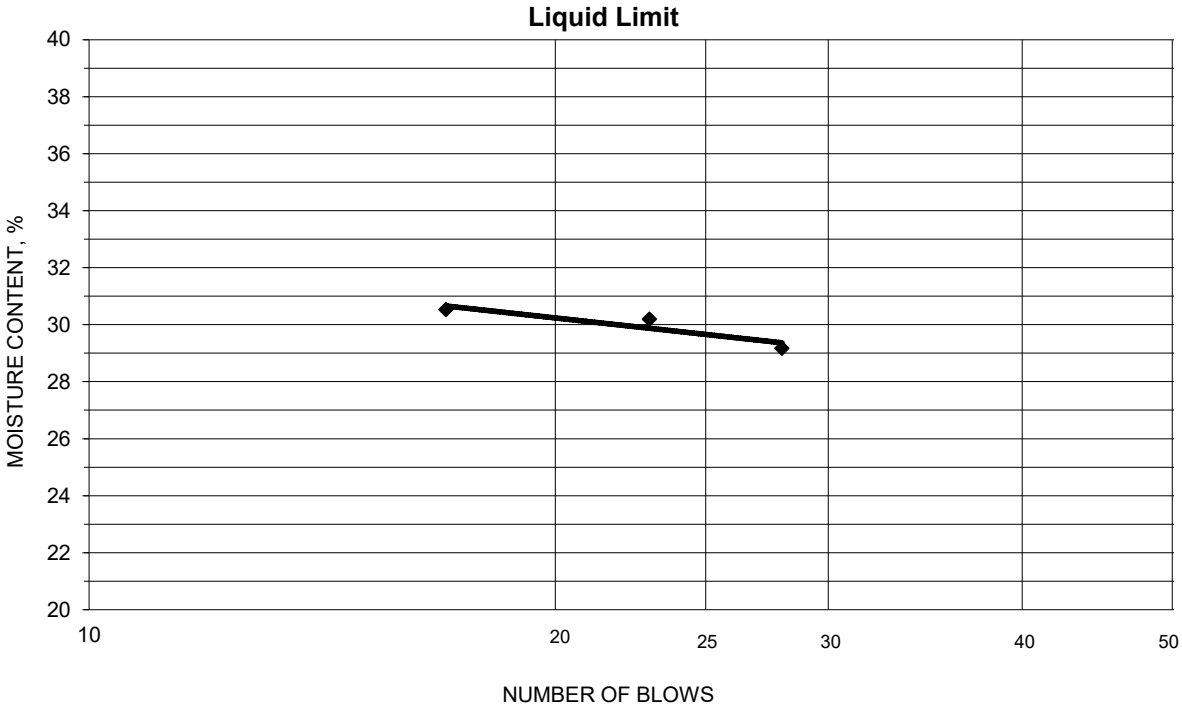
Reviewed By REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.22, 7.5'-9.0'			Lab ID	1020
				% + No. 40	2
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
23.68	20.83	11.06	28	29.2	
23.06	20.27	11.03	23	30.2	
22.40	19.64	10.60	17	30.5	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.54	18.94	11.02	20.2	21	9
21.65	19.80	11.07	21.2		

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	B-4.22, 10.0'-11.5'	Lab ID	1021
Sample Type	SPT	Date Received	6-10-22
		Date Reported	6-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.2

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	93.4
No. 4	4.75	83.7
No. 10	2	70.0
No. 40	0.425	35.1
No. 200	0.075	12.6
	0.02	10.0
	0.005	5.9
	0.002	4.6
estimated	0.001	4.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	16.3	30.0
Coarse Sand	13.7	34.9
Medium Sand	34.9	---
Fine Sand	22.5	22.5
Silt	6.7	8.0
Clay	5.9	4.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	NP
Plastic Limit:	NP
Plasticity Index:	NP
Activity Index:	N/A

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SM

Group Name: Silty sand with gravel

AASHTO Classification: A-1-b (0)

Comments:

Reviewed By REL

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name: Eagle Creek Flood Basin
Project Number: 173409690
Source: B-4.22, 10.0'-11.5'
Lab ID: 1021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method: ASTM D 422
Prepared using: ASTM D 421

Particle Shape: Angular
Particle Hardness: Hard and Durable

Tested By: JP
Test Date: 06-17-2022
Date Received: 06-10-2022

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	93.4
No. 4	83.7
No. 10	70.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity: 2.7

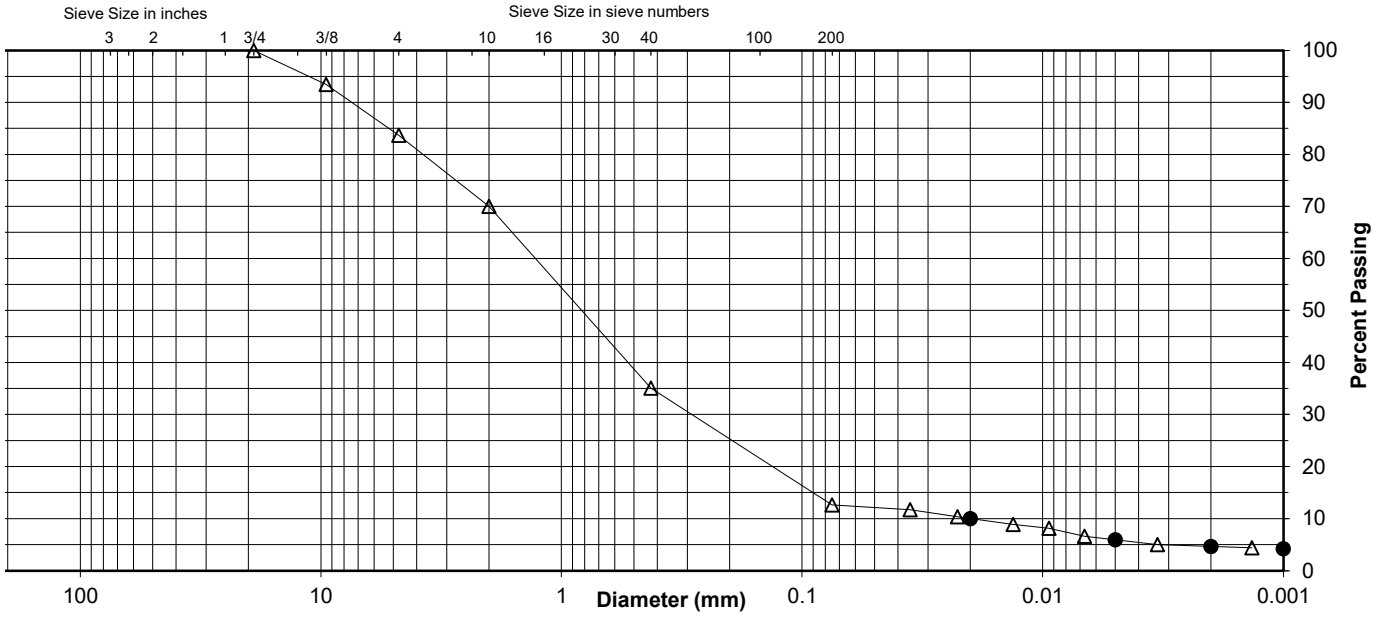
Dispersed using: Apparatus A - Mechanical, for 1 minute

No. 40	35.1
No. 200	12.6
0.02 mm	10.0
0.005 mm	5.9
0.002 mm	4.6
0.001 mm	4.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	16.3	13.7	34.9	22.5	6.7	5.9

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	30.0	34.9	22.5	8.0	4.6



Comments

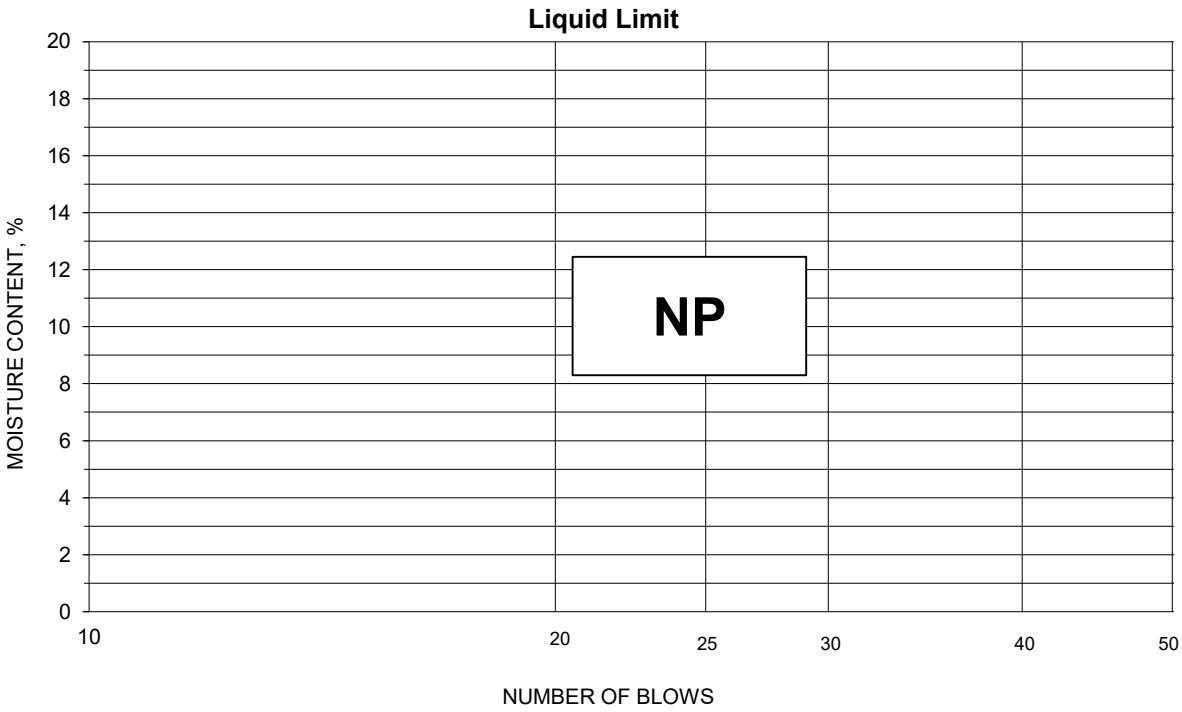
Reviewed By: REL

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	B-4.22, 10.0'-11.5'			Lab ID	1021
				% + No. 40	65
Tested By	JP	Test Method	ASTM D 4318 Method A	Date Received	06-10-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index

Remarks: _____

Reviewed By REL

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.6

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.9
No. 4	4.75	98.9
No. 10	2	97.9
No. 40	0.425	92.9
No. 200	0.075	77.3
	0.02	68.9
	0.005	52.3
	0.002	40.9
Estimated	0.001	34.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.1	2.1
Coarse Sand	1.0	5.0
Medium Sand	5.0	---
Fine Sand	15.6	15.6
Silt	25.0	36.4
Clay	52.3	40.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	43
Plastic Limit:	20
Plasticity Index:	23
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	103.7
Maximum Dry Density (kg/m^3):	1662
Optimum Moisture Content (%):	20.9
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-7-6 (17)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-21-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.9
No. 4	98.9
No. 10	97.9

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

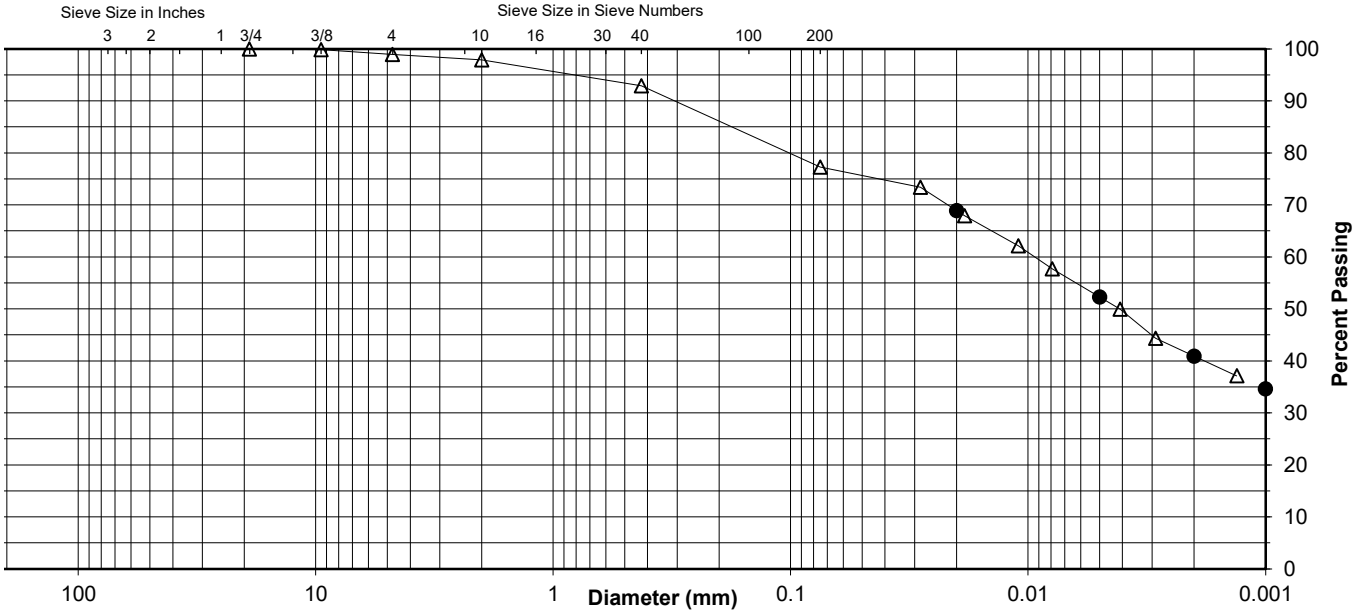
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	92.9
No. 200	77.3
0.02 mm	68.9
0.005 mm	52.3
0.002 mm	40.9
0.001 mm	34.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.1	1.0	5.0	15.6	25.0	52.3

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	2.1	5.0	15.6	36.4	40.9



Comments

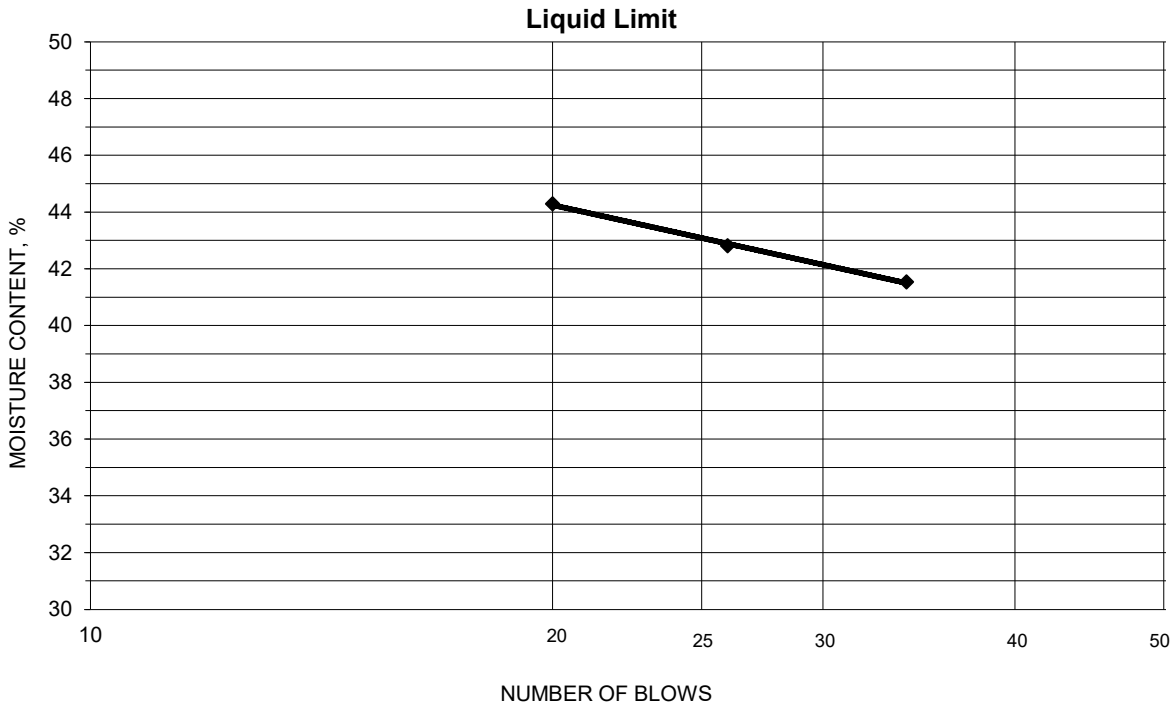
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'			Lab ID	1025
				% + No. 40	7
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-23-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.56	14.26	11.13	34	41.5	
15.99	14.71	11.72	26	42.8	
16.16	14.61	11.11	20	44.3	43



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.91	17.68	11.51	19.9	20	23
18.23	17.02	10.97	20.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1026
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.3
No. 4	4.75	93.8
No. 10	2	88.5
No. 40	0.425	78.7
No. 200	0.075	58.8
	0.02	48.8
	0.005	32.4
	0.002	24.5
Estimated	0.001	20.0

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	6.2	11.5
Coarse Sand	5.3	9.8
Medium Sand	9.8	---
Fine Sand	19.9	19.9
Silt	26.4	34.3
Clay	32.4	24.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	17
Plasticity Index:	11
Activity Index:	0.4

Moisture-Density Relationship

ASTM D 698 - Method B

Maximum Dry Density (lb/ft^3):	111.3
Maximum Dry Density (kg/m^3):	1783
Optimum Moisture Content (%):	16.8
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (4)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1026

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-21-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.3
No. 4	93.8
No. 10	88.5

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

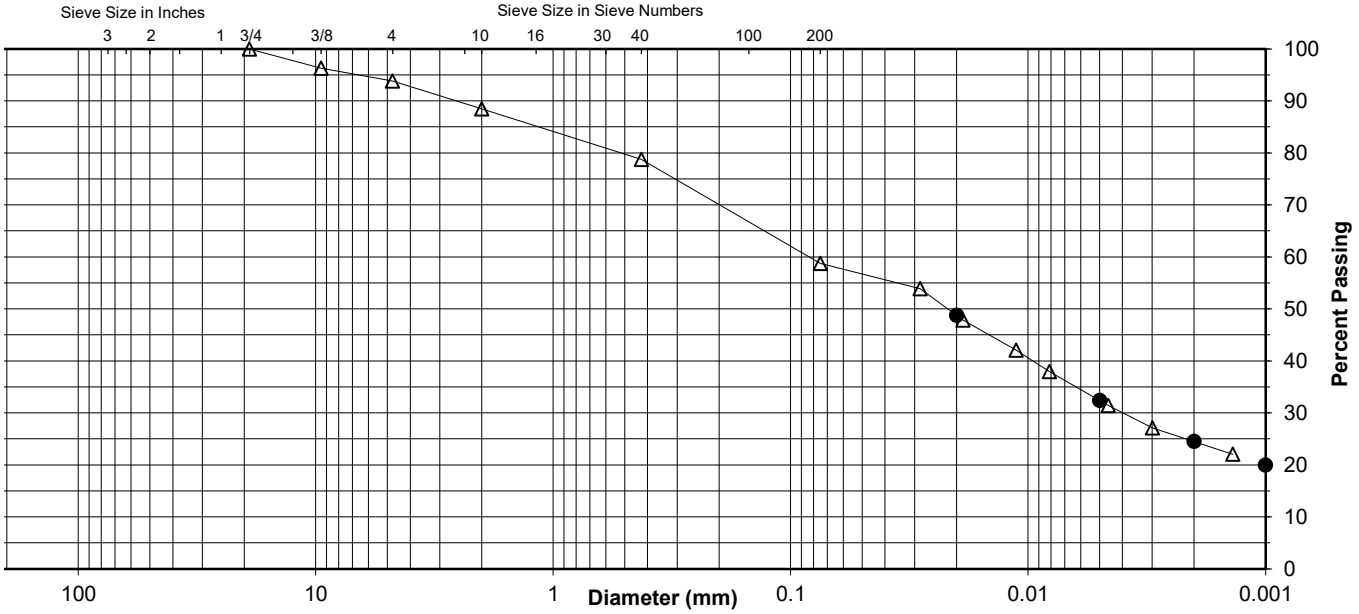
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	78.7
No. 200	58.8
0.02 mm	48.8
0.005 mm	32.4
0.002 mm	24.5
0.001 mm	20.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	6.2	5.3	9.8	19.9	26.4	32.4

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	11.5	9.8	19.9	34.3	24.5



Comments

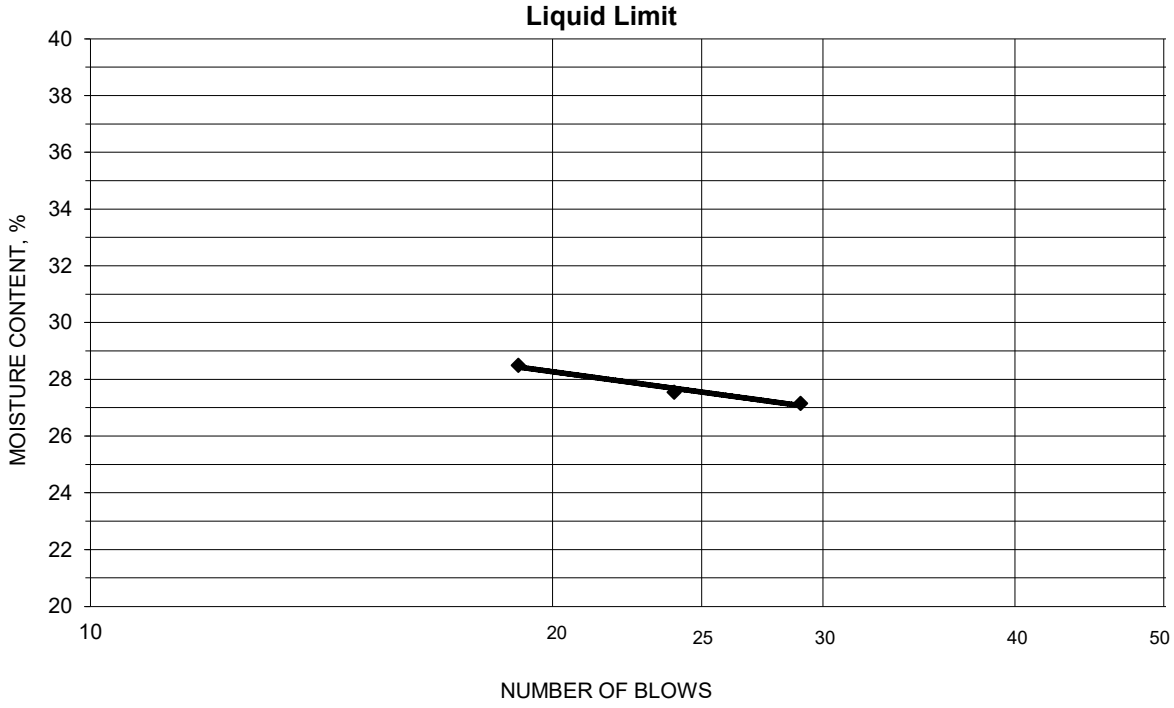
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'			Lab ID	1026
				% + No. 40	21
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-23-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.90	14.86	11.03	29	27.2	
14.91	14.07	11.02	24	27.5	
16.01	14.93	11.14	19	28.5	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.46	16.55	11.11	16.7	17	11
20.72	19.42	11.65	16.7		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.2-B, 2.5'-5.0'	Lab ID	1028
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-19-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.5
No. 4	4.75	98.1
No. 10	2	95.1
No. 40	0.425	86.6
No. 200	0.075	67.9
	0.02	60.5
	0.005	41.8
	0.002	32.2
Estimated	0.001	26.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.9	4.9
Coarse Sand	3.0	8.5
Medium Sand	8.5	---
Fine Sand	18.7	18.7
Silt	26.1	35.7
Clay	41.8	32.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	19
Plasticity Index:	15
Activity Index:	0.5

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	125.2
Maximum Dry Density (kg/m^3):	2005
Optimum Moisture Content (%):	10.9
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (8)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.2-B, 2.5'-5.0'	Lab ID	1028

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-22-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.5
No. 4	98.1
No. 10	95.1

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

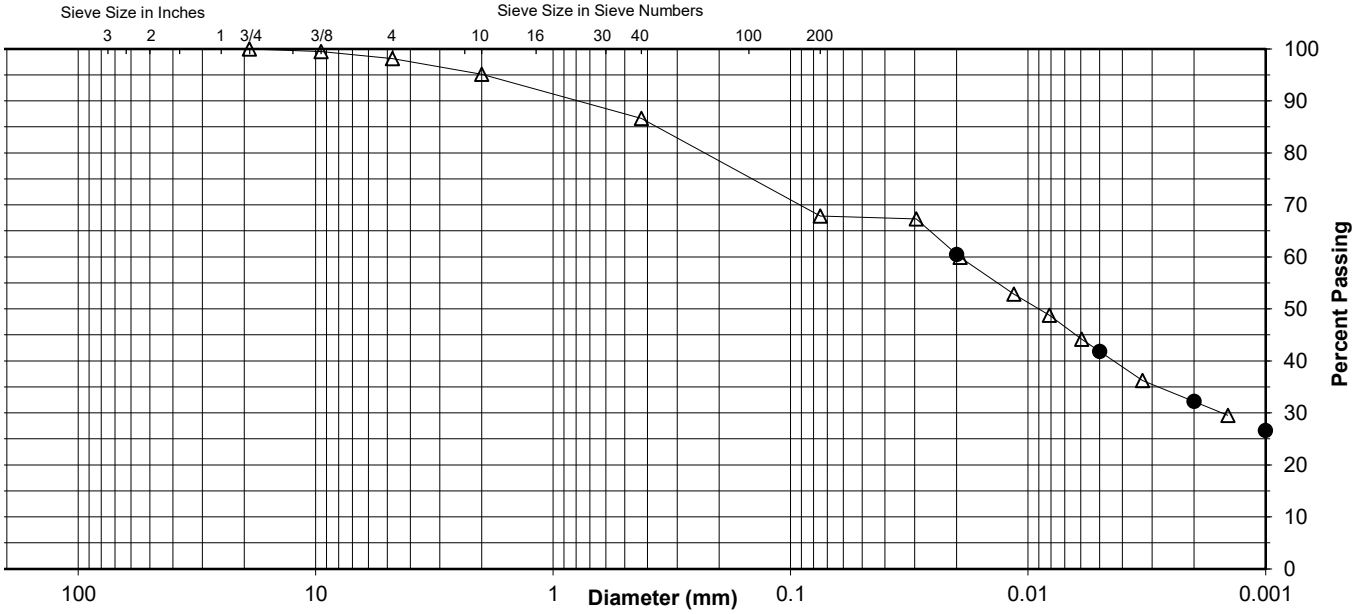
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	86.6
No. 200	67.9
0.02 mm	60.5
0.005 mm	41.8
0.002 mm	32.2
0.001 mm	26.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.9	3.0	8.5	18.7	26.1	41.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	4.9			8.5	18.7	35.7	32.2



Comments

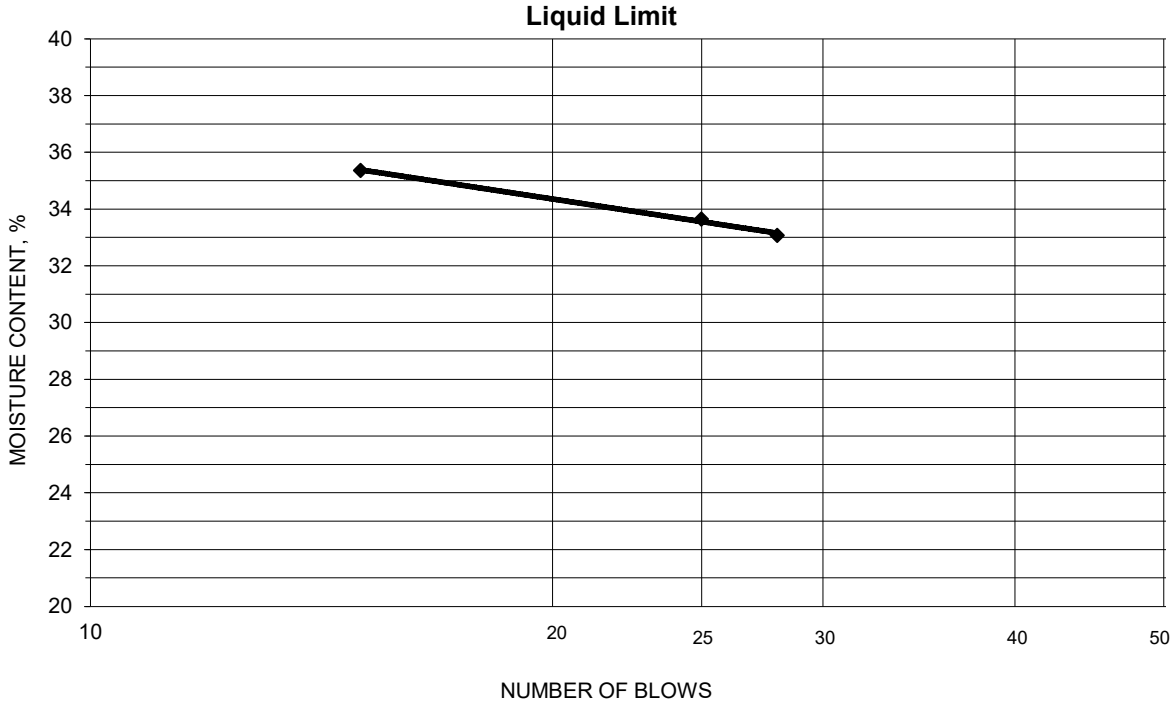
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.2-B, 2.5'-5.0'			Lab ID	1028
				% + No. 40	13
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-23-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.12	14.83	10.93	28	33.1	
15.29	14.23	11.08	25	33.7	
16.58	15.13	11.03	15	35.4	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.17	17.04	11.18	19.3	19	15
17.78	16.65	10.78	19.3		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.3-A, 2.5'-5.5'	Lab ID	1029
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-22-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 22.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	93.4
3/8"	9.5	89.7
No. 4	4.75	86.9
No. 10	2	83.5
No. 40	0.425	72.5
No. 200	0.075	53.4
	0.02	42.3
	0.005	28.8
	0.002	21.4
Estimated	0.001	16.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	13.1	16.5
Coarse Sand	3.4	11.0
Medium Sand	11.0	---
Fine Sand	19.1	19.1
Silt	24.6	32.0
Clay	28.8	21.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	20
Plasticity Index:	15
Activity Index:	0.7

Moisture-Density Relationship

ASTM D 698 - Method B

Maximum Dry Density (lb/ft^3):	116.6
Maximum Dry Density (kg/m^3):	1868
Optimum Moisture Content (%):	14.3
Over Size Correction %:	10.3

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.3-A, 2.5'-5.5'	Lab ID	1029

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-22-2022
Date Received	06-20-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	93.4
3/8"	89.7
No. 4	86.9
No. 10	83.5

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

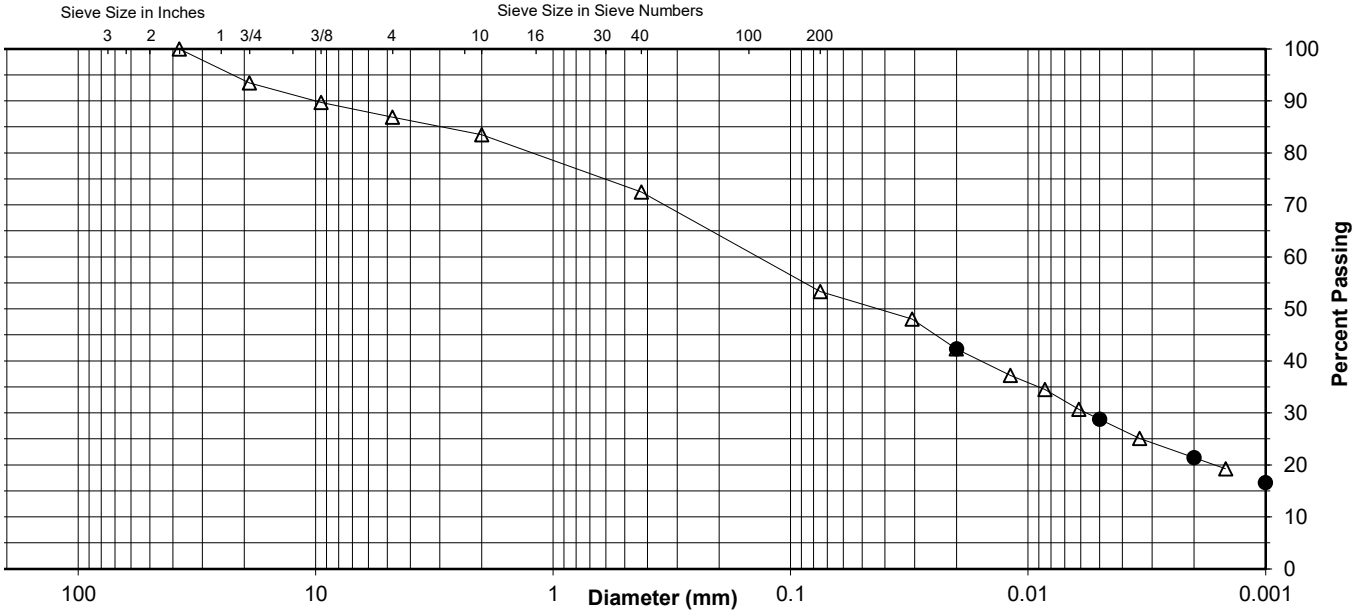
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	72.5
No. 200	53.4
0.02 mm	42.3
0.005 mm	28.8
0.002 mm	21.4
0.001 mm	16.6

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	6.6	6.5	3.4	11.0	19.1	24.6	28.8

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	16.5	11.0	19.1	32.0	21.4



Comments

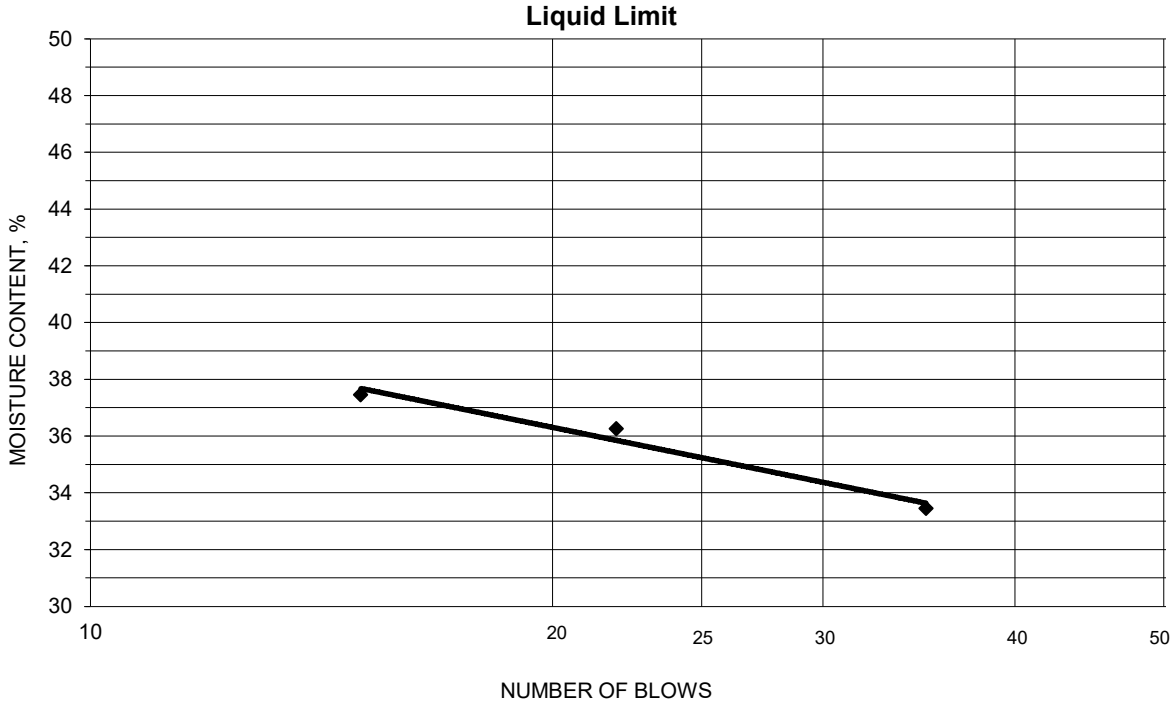
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.3-A, 2.5'-5.5'			Lab ID	1029
				% + No. 40	28
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-24-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
14.70	13.74	10.87	35	33.4	
17.16	15.59	11.26	22	36.3	
14.87	13.84	11.09	15	37.5	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.38	17.25	11.51	19.7	20	15
18.92	17.72	11.58	19.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.3-B, 2.5'-5.5'	Lab ID	1030
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7/221/22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 21.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.1
No. 4	4.75	96.7
No. 10	2	93.3
No. 40	0.425	81.5
No. 200	0.075	60.2
	0.02	46.3
	0.005	30.2
	0.002	21.6
Estimated	0.001	16.2

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.3	6.7
Coarse Sand	3.4	11.8
Medium Sand	11.8	---
Fine Sand	21.3	21.3
Silt	30.0	38.6
Clay	30.2	21.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	31
Plastic Limit:	18
Plasticity Index:	13
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	112.3
Maximum Dry Density (kg/m^3):	1800
Optimum Moisture Content (%):	16.3
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.3-B, 2.5'-5.5'	Lab ID	1030

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	MW
Test Date	06-22-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.1
No. 4	96.7
No. 10	93.3

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

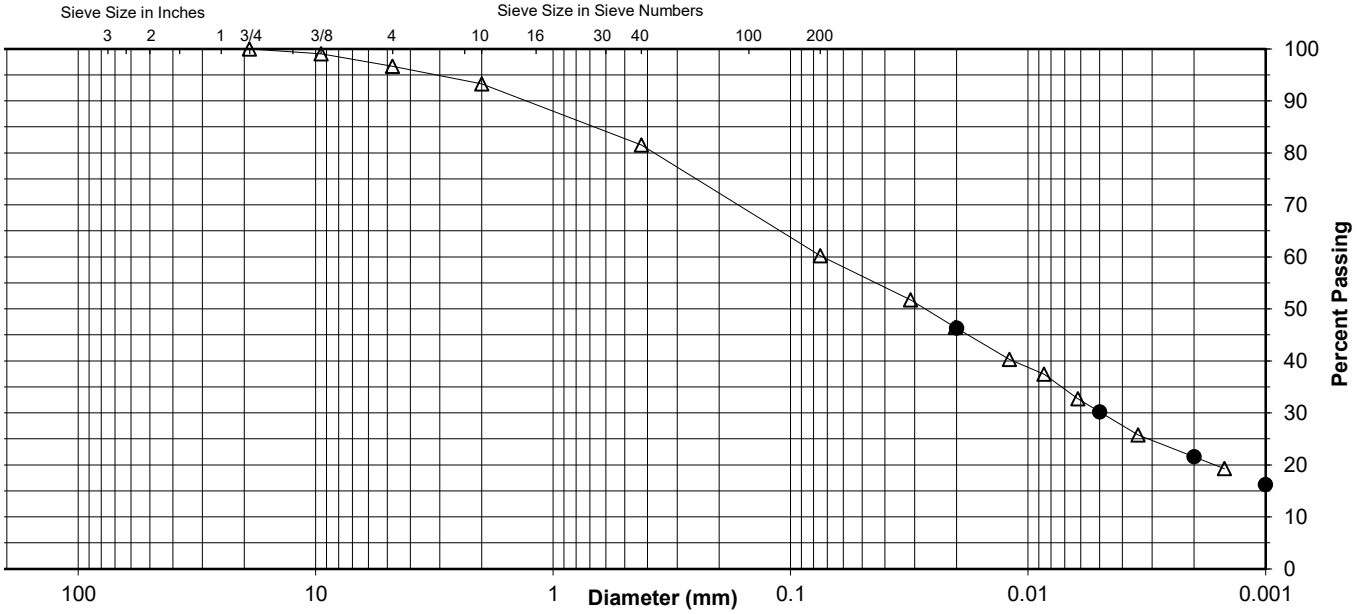
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	81.5
No. 200	60.2
0.02 mm	46.3
0.005 mm	30.2
0.002 mm	21.6
0.001 mm	16.2

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	3.3	3.4	11.8	21.3	30.0	30.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	6.7	11.8	21.3	38.6	21.6



Comments

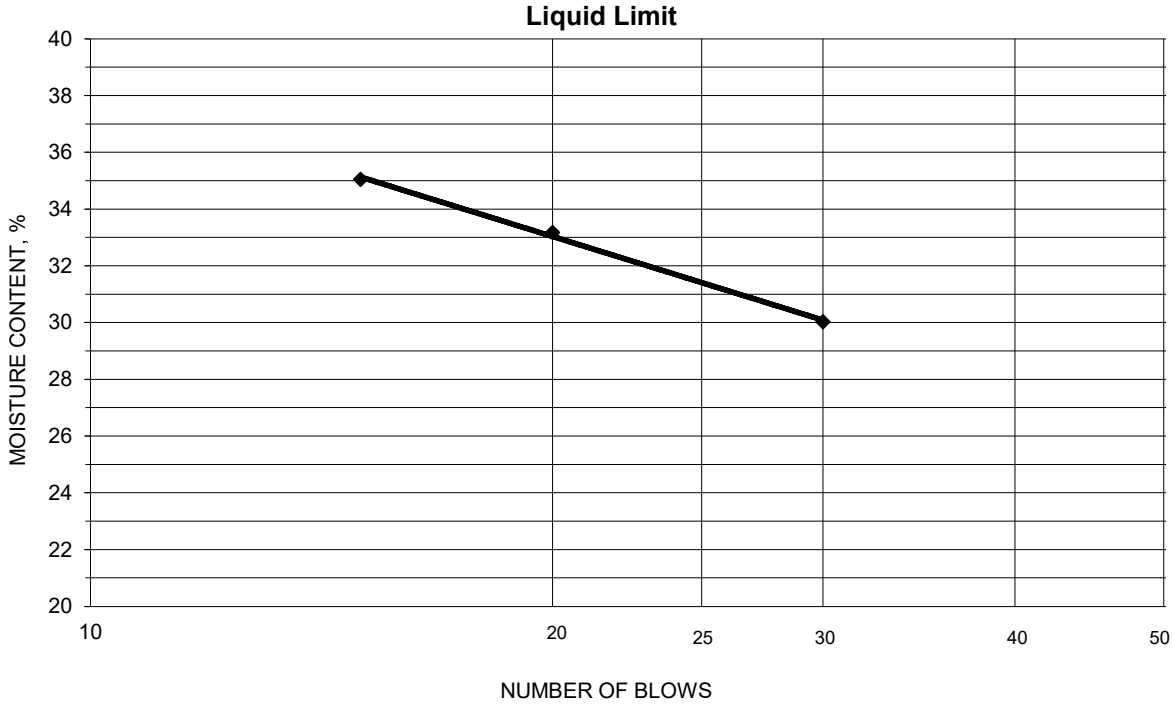
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.3-B, 2.5'-5.5'			Lab ID	1030
				% + No. 40	18
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-23-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.65	14.53	10.80	30	30.0	
16.54	15.17	11.04	20	33.2	
16.30	14.87	10.79	15	35.0	31



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.31	17.20	10.91	17.6	18	13
18.73	17.61	11.25	17.6		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.4-A, 2.0'-4.5'	Lab ID	1031
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 24.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.8
No. 4	4.75	99.1
No. 10	2	97.8
No. 40	0.425	92.5
No. 200	0.075	68.0
	0.02	49.7
	0.005	29.0
	0.002	20.2
Estimated	0.001	14.4

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.9	2.2
Coarse Sand	1.3	5.3
Medium Sand	5.3	---
Fine Sand	24.5	24.5
Silt	39.0	47.8
Clay	29.0	20.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	17
Plasticity Index:	12
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	106.6
Maximum Dry Density (kg/m^3):	1708
Optimum Moisture Content (%):	19.2
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (6)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.4-A, 2.0'-4.5'	Lab ID	1031

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-22-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	99.1
No. 10	97.8

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

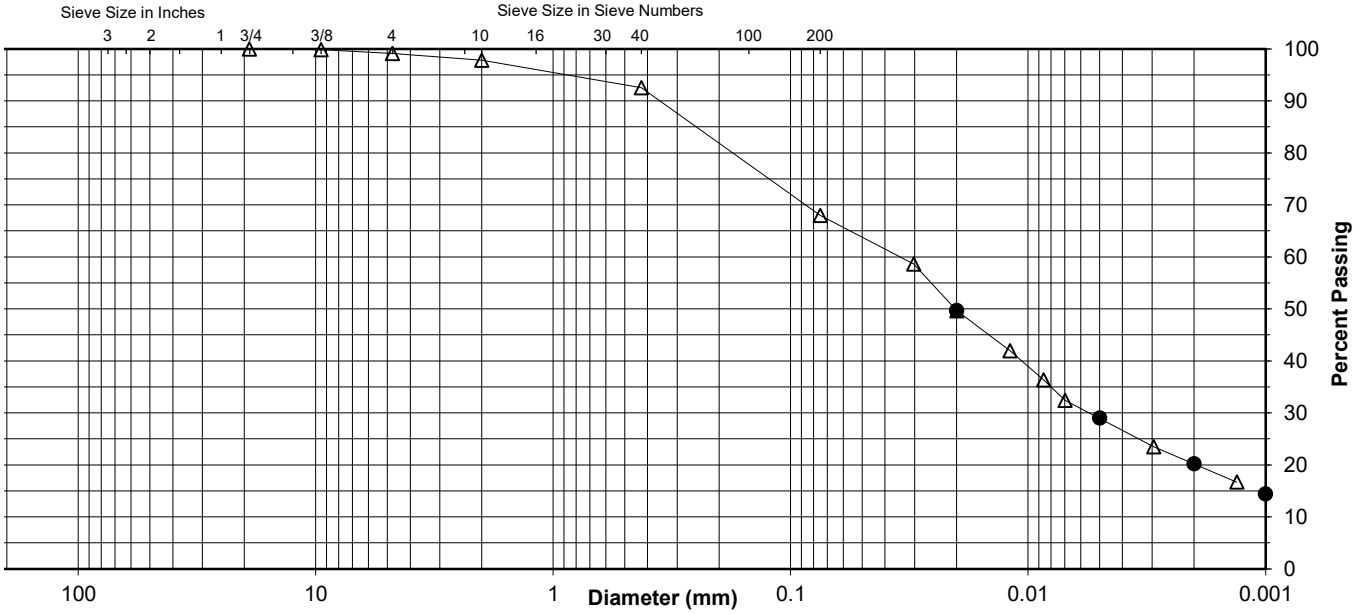
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	92.5
No. 200	68.0
0.02 mm	49.7
0.005 mm	29.0
0.002 mm	20.2
0.001 mm	14.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.9	1.3	5.3	24.5	39.0	29.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	2.2			5.3	24.5	47.8	20.2



Comments

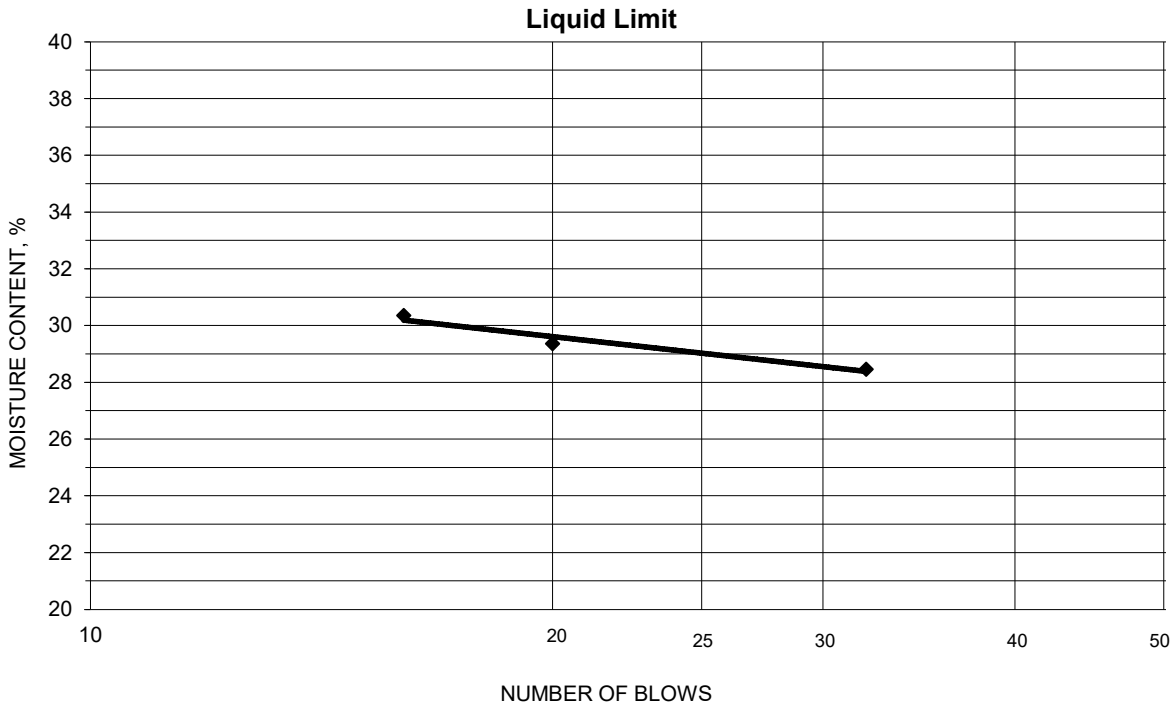
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.4-A, 2.0'-4.5'			Lab ID	1031
				% + No. 40	7
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-24-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.24	15.11	11.14	32	28.5	
15.69	14.58	10.80	20	29.4	
15.55	14.53	11.17	16	30.4	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.26	18.10	11.38	17.3	17	12
19.18	18.03	11.23	16.9		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.4-B, 2.0'-4.5'	Lab ID	1033
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 25.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.8
No. 10	2	98.9
No. 40	0.425	93.6
No. 200	0.075	68.9
	0.02	51.2
	0.005	31.5
	0.002	22.4
Estimated	0.001	16.3

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.2	1.1
Coarse Sand	0.9	5.3
Medium Sand	5.3	---
Fine Sand	24.7	24.7
Silt	37.4	46.5
Clay	31.5	22.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	31
Plastic Limit:	16
Plasticity Index:	15
Activity Index:	0.7

Moisture-Density Relationship

ASTM D 1557 - Method A

Maximum Dry Density (lb/ft^3):	120.7
Maximum Dry Density (kg/m^3):	1934
Optimum Moisture Content (%):	12.6
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-6 (8)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.4-B, 2.0'-4.5'	Lab ID	1033

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-22-2022
Date Received	06-20-2022

Maximum Particle Size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.8
No. 10	98.9

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

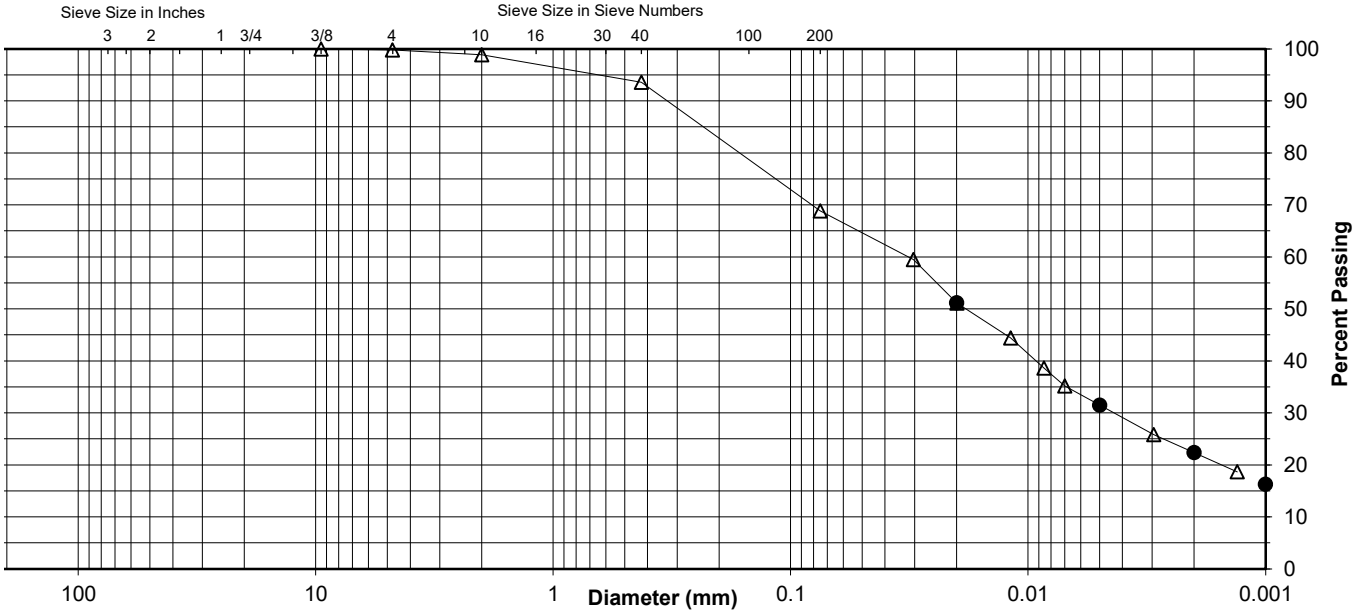
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	93.6
No. 200	68.9
0.02 mm	51.2
0.005 mm	31.5
0.002 mm	22.4
0.001 mm	16.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.2	0.9	5.3	24.7	37.4	31.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.1			5.3	24.7	46.5	22.4



Comments

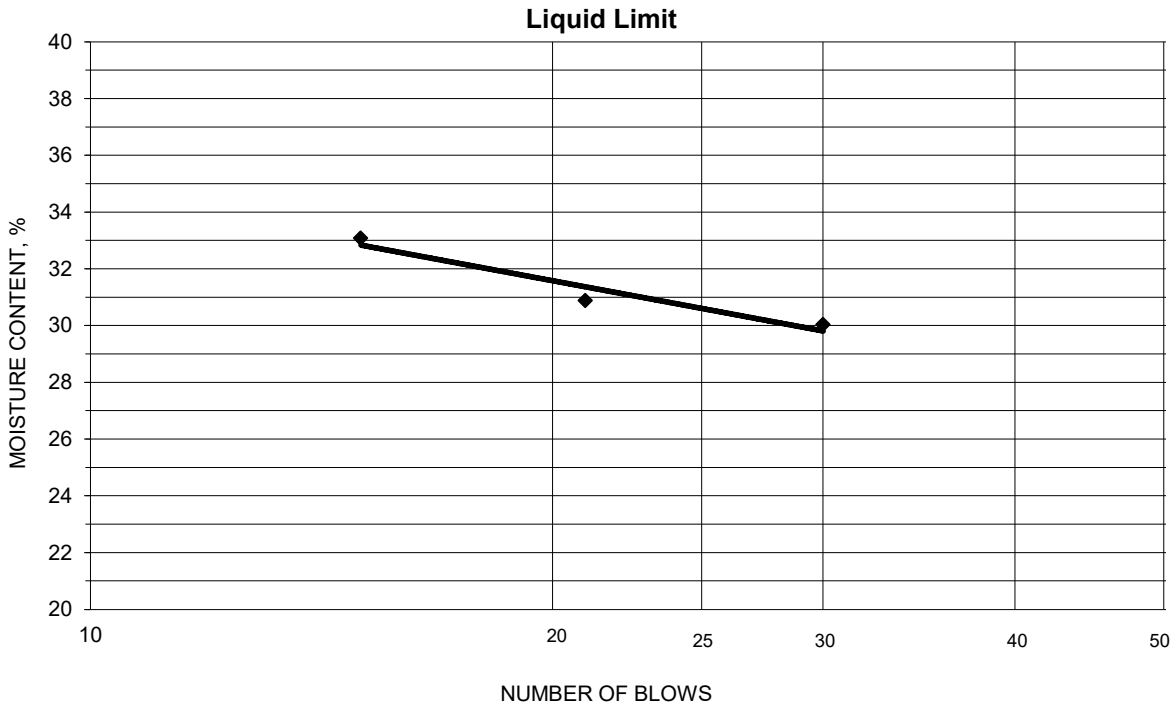
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.4-B, 2.0'-4.5'			Lab ID	1033
				% + No. 40	6
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-24-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.27	15.84	11.08	30	30.0	
16.75	15.36	10.86	21	30.9	
16.09	14.77	10.78	15	33.1	31



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.72	18.58	11.38	15.8	16	15
20.26	19.03	11.35	16.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.5-A, 2.0'-4.0'	Lab ID	1034
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 20.8

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.5
No. 4	4.75	97.9
No. 10	2	95.7
No. 40	0.425	89.5
No. 200	0.075	71.6
	0.02	56.0
	0.005	39.4
	0.002	27.5
Estimated	0.001	19.7

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.1	4.3
Coarse Sand	2.2	6.2
Medium Sand	6.2	---
Fine Sand	17.9	17.9
Silt	32.2	44.1
Clay	39.4	27.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	36
Plastic Limit:	19
Plasticity Index:	17
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	108.3
Maximum Dry Density (kg/m^3):	1735
Optimum Moisture Content (%):	17.9
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-6 (11)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.5-A, 2.0'-4.0'	Lab ID	1034

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-23-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.5
No. 4	97.9
No. 10	95.7

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

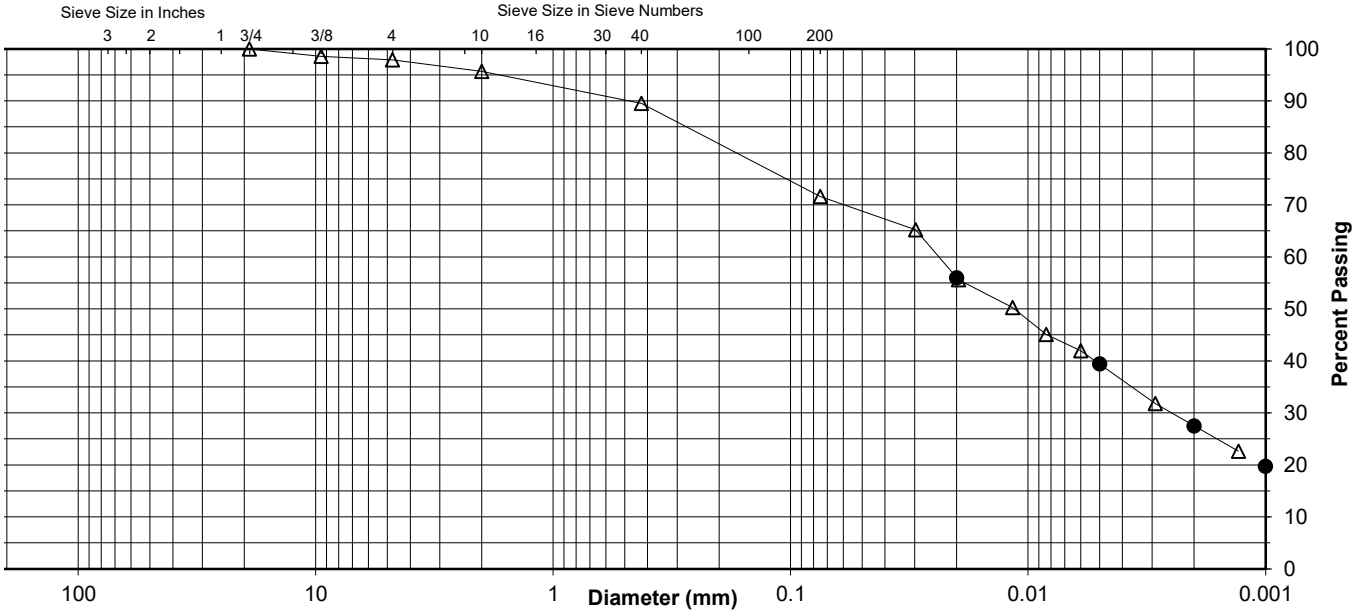
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	89.5
No. 200	71.6
0.02 mm	56.0
0.005 mm	39.4
0.002 mm	27.5
0.001 mm	19.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.1	2.2	6.2	17.9	32.2	39.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	4.3			6.2	17.9	44.1	27.5



Comments

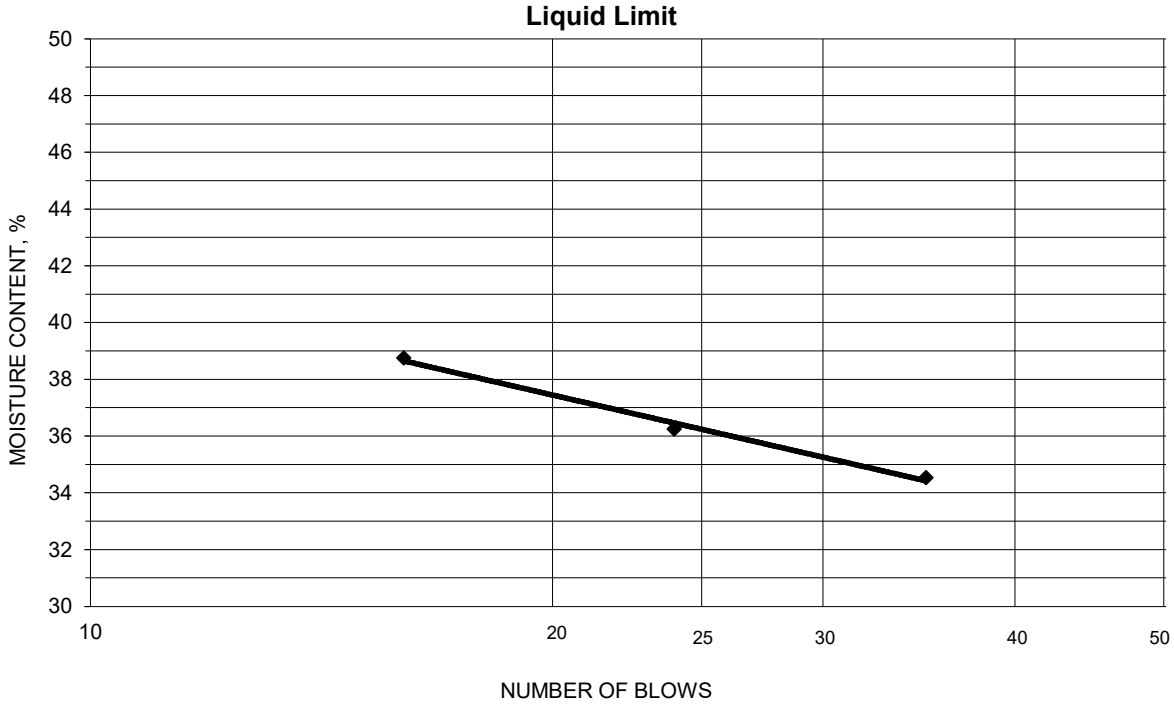
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.5-A, 2.0'-4.0'			Lab ID	1034
				% + No. 40	10
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-28-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.95	14.70	11.08	35	34.5	
15.39	14.19	10.88	24	36.3	
15.44	14.20	11.00	16	38.8	36



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.52	17.35	11.14	18.8	19	17
18.20	17.07	11.17	19.2		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.5-B, 2.0'-4.0'	Lab ID	1035
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-19-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.1

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.4
3/8"	9.5	97.4
No. 4	4.75	96.4
No. 10	2	94.7
No. 40	0.425	88.5
No. 200	0.075	72.2
	0.02	56.4
	0.005	38.4
	0.002	27.8
Estimated	0.001	19.7

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.6	5.3
Coarse Sand	1.7	6.2
Medium Sand	6.2	---
Fine Sand	16.3	16.3
Silt	33.8	44.4
Clay	38.4	27.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	36
Plastic Limit:	20
Plasticity Index:	16
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	109.2
Maximum Dry Density (kg/m^3):	1749
Optimum Moisture Content (%):	18.1
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (10)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.5-B, 2.0'-4.0'	Lab ID	1035

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-24-2022
Date Received	06-20-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.4
3/8"	97.4
No. 4	96.4
No. 10	94.7

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

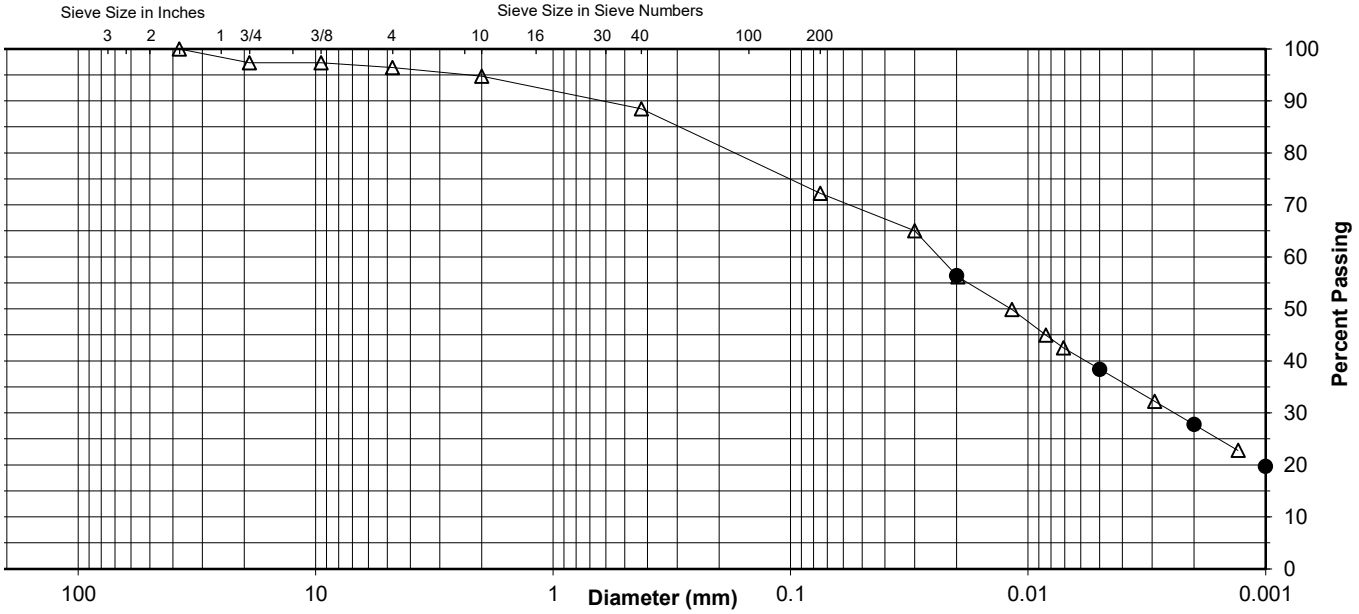
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	88.5
No. 200	72.2
0.02 mm	56.4
0.005 mm	38.4
0.002 mm	27.8
0.001 mm	19.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.6	1.0	1.7	6.2	16.3	33.8	38.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	5.3			6.2	16.3	44.4	27.8



Comments

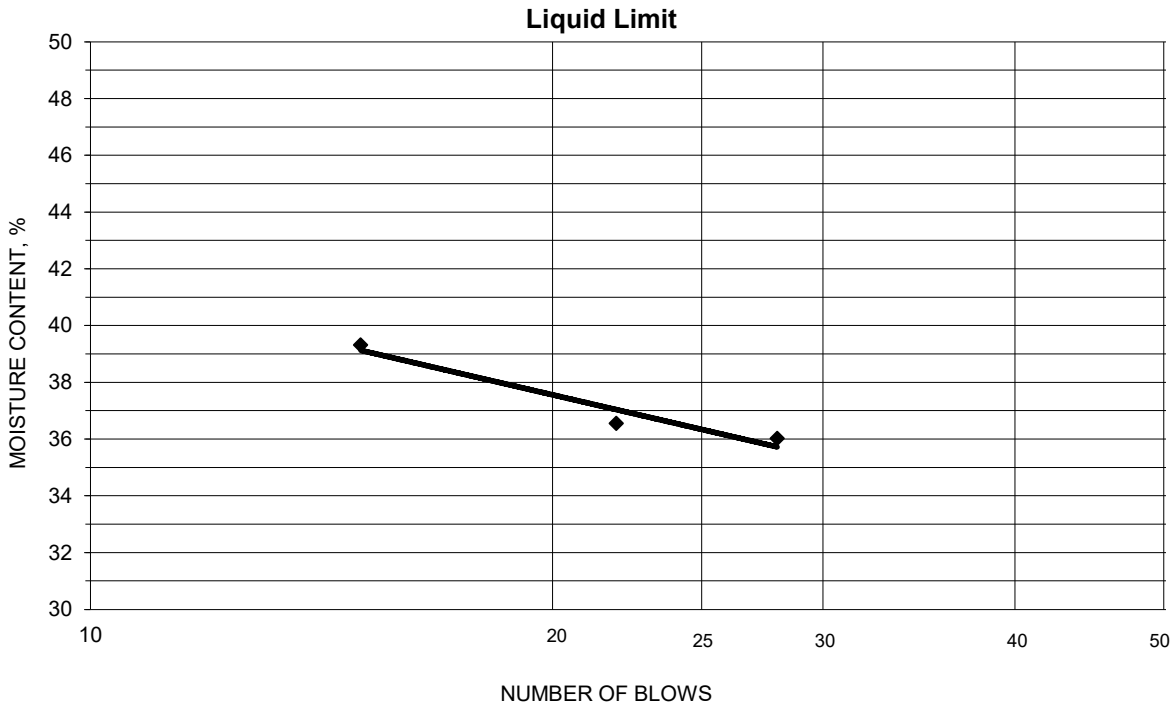
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.5-B, 2.0'-4.0'			Lab ID	1035
				% + No. 40	12
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	06-28-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.33	14.17	10.95	28	36.0	
15.67	14.42	11.00	22	36.5	
15.58	14.20	10.69	15	39.3	36



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.52	16.41	10.95	20.3	20	16
18.12	17.00	11.45	20.2		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-A, 1.5'-3.5'	Lab ID	1036
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.6
No. 4	4.75	96.2
No. 10	2	91.5
No. 40	0.425	78.4
No. 200	0.075	53.2
	0.02	38.0
	0.005	24.5
	0.002	17.4
Estimated	0.001	13.9

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.8	8.5
Coarse Sand	4.7	13.1
Medium Sand	13.1	---
Fine Sand	25.2	25.2
Silt	28.7	35.8
Clay	24.5	17.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	16
Plasticity Index:	12
Activity Index:	0.7

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	116.5
Maximum Dry Density (kg/m^3):	1866
Optimum Moisture Content (%):	14.8
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-A, 1.5'-3.5'	Lab ID	1036

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-29-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.6
No. 4	96.2
No. 10	91.5

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

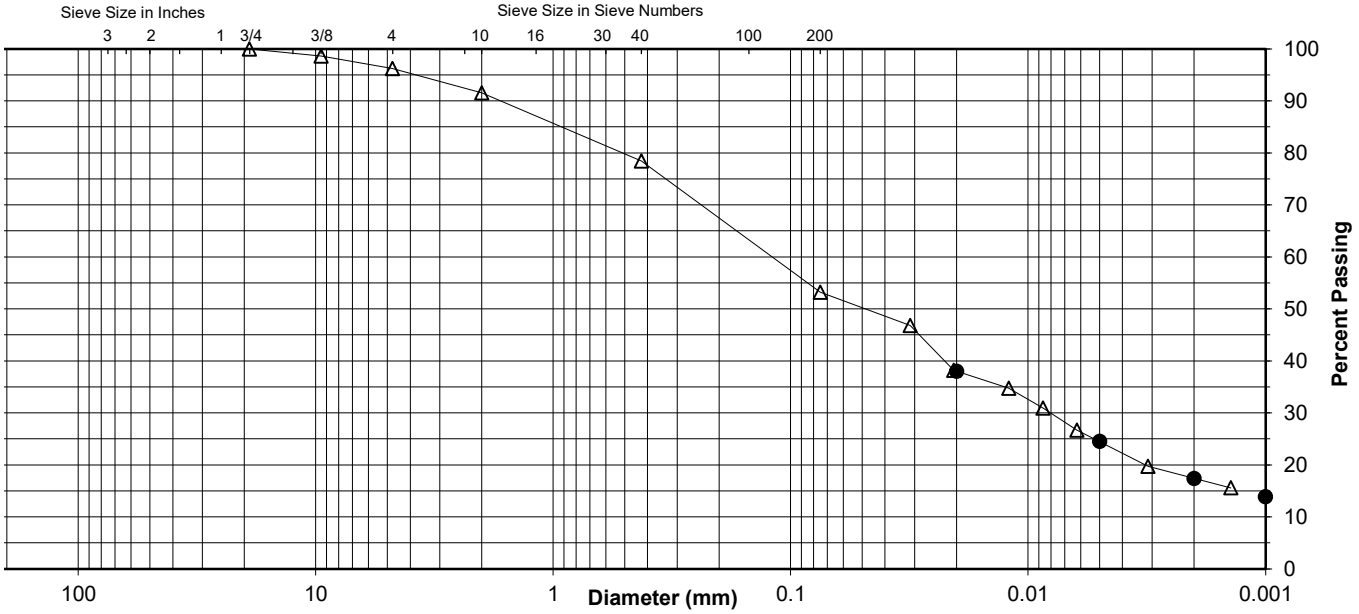
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	78.4
No. 200	53.2
0.02 mm	38.0
0.005 mm	24.5
0.002 mm	17.4
0.001 mm	13.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.8	4.7	13.1	25.2	28.7	24.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	8.5			13.1	25.2	35.8	17.4



Comments

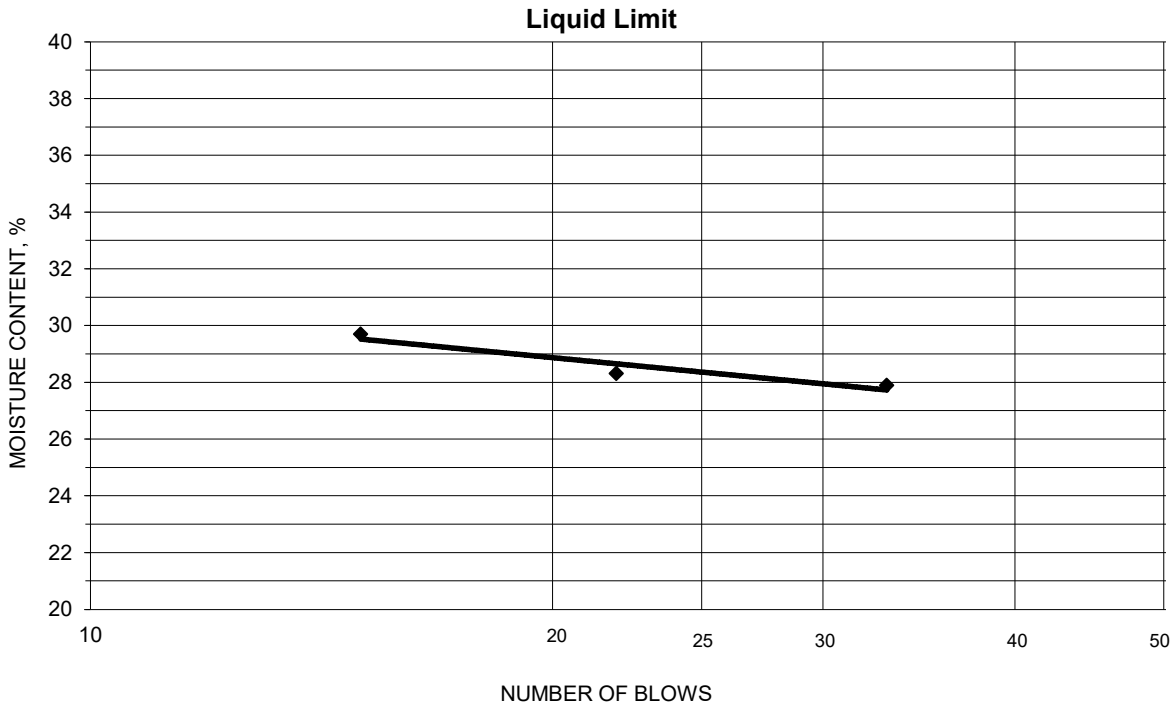
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.6-A, 1.5'-3.5'			Lab ID	1036
				% + No. 40	22
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.78	14.72	10.92	33	27.9	
16.54	15.28	10.83	22	28.3	
16.96	15.68	11.37	15	29.7	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.23	16.43	11.43	16.0	16	12
17.88	16.98	11.39	16.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-B, 1.5'-3.5'	Lab ID	1037
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 18.3

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.6
No. 4	4.75	96.8
No. 10	2	92.4
No. 40	0.425	80.8
No. 200	0.075	57.7
	0.02	42.3
	0.005	28.2
	0.002	21.2
Estimated	0.001	18.1

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.2	7.6
Coarse Sand	4.4	11.6
Medium Sand	11.6	---
Fine Sand	23.1	23.1
Silt	29.5	36.5
Clay	28.2	21.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	17
Plasticity Index:	12
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 698 - Method A

Maximum Dry Density (lb/ft^3):	114.9
Maximum Dry Density (kg/m^3):	1840
Optimum Moisture Content (%):	15.1
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (4)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-B, 1.5'-3.5'	Lab ID	1037

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-29-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.6
No. 4	96.8
No. 10	92.4

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

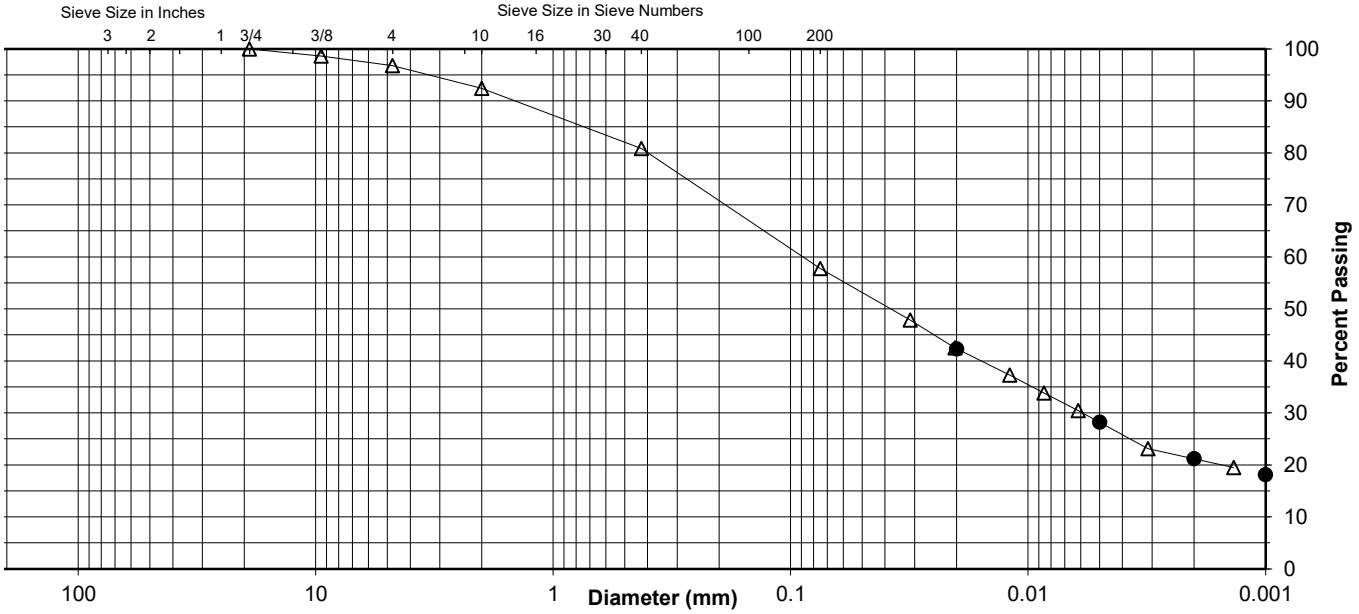
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	80.8
No. 200	57.7
0.02 mm	42.3
0.005 mm	28.2
0.002 mm	21.2
0.001 mm	18.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	3.2	4.4	11.6	23.1	29.5	28.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	7.6			11.6	23.1	36.5	21.2



Comments

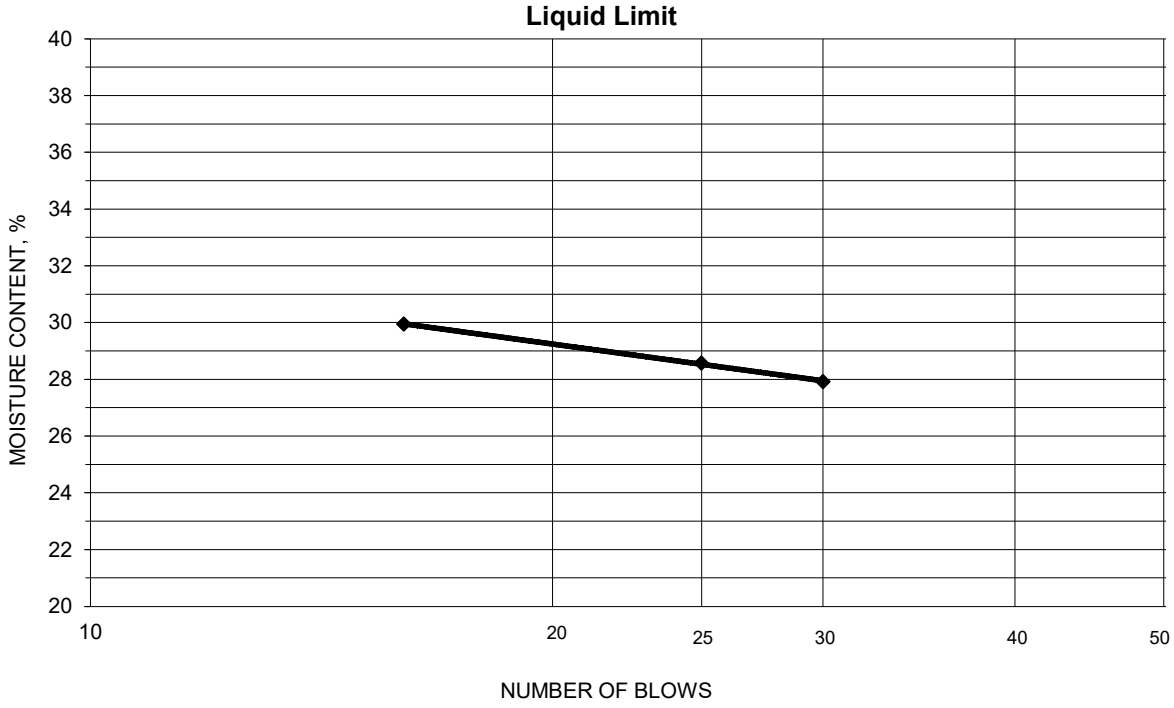
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.6-B, 1.5'-3.5'			Lab ID	1037
				% + No. 40	19
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.60	14.50	10.56	30	27.9	
14.24	13.48	10.82	25	28.6	
15.37	14.31	10.77	16	29.9	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.87	16.03	11.13	17.1	17	12
18.10	17.15	11.61	17.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-C, 1.5'-3.5'	Lab ID	1038
Sample Type	BULK	Date Received	6-20-22
		Date Reported	7-21-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.5
No. 4	4.75	96.0
No. 10	2	91.2
No. 40	0.425	78.1
No. 200	0.075	52.3
	0.02	38.0
	0.005	24.5
	0.002	18.1
Estimated	0.001	14.7

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.0	8.8
Coarse Sand	4.8	13.1
Medium Sand	13.1	---
Fine Sand	25.8	25.8
Silt	27.8	34.2
Clay	24.5	18.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	18
Plasticity Index:	11
Activity Index:	0.6

Moisture-Density Relationship

ASTM D 1557 - Method A

Maximum Dry Density (lb/ft^3):	125.6
Maximum Dry Density (kg/m^3):	2012
Optimum Moisture Content (%):	10.7
Over Size Correction %:	0.0

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay

AASHTO Classification: A-6 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Eagle Creek Flood Basin	Project Number	173409690
Source	TP-4.6-C, 1.5'-3.5'	Lab ID	1038

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-29-2022
Date Received	06-20-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.5
No. 4	96.0
No. 10	91.2

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

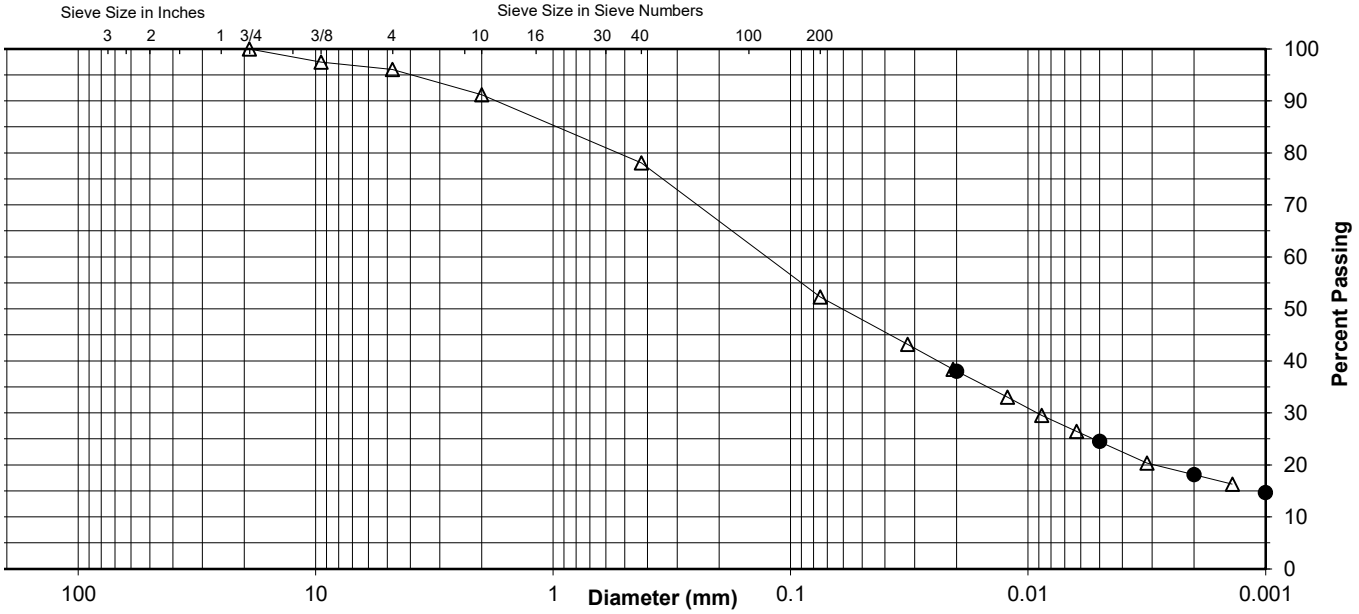
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	78.1
No. 200	52.3
0.02 mm	38.0
0.005 mm	24.5
0.002 mm	18.1
0.001 mm	14.7

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	4.0	4.8	13.1	25.8	27.8	24.5

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	8.8	13.1	25.8	34.2	18.1



Comments

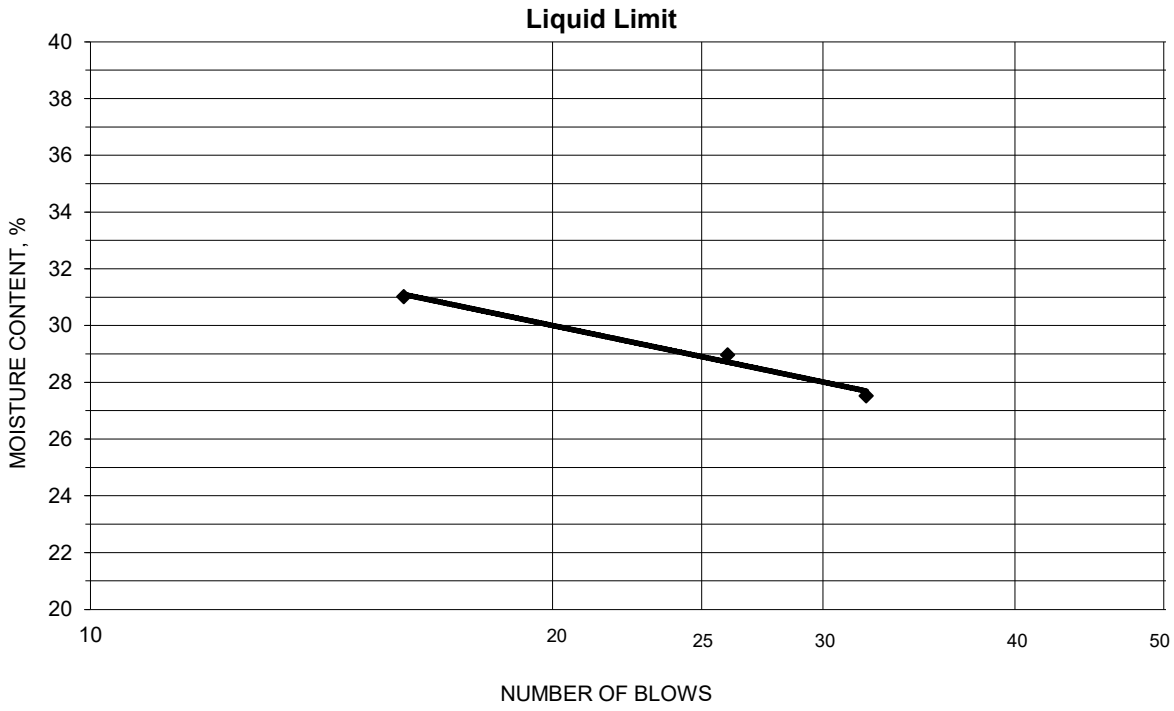
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.6-C, 1.5'-3.5'			Lab ID	1038
				% + No. 40	22
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-20-2022
Test Date	07-05-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.27	15.15	11.08	32	27.5	
15.38	14.43	11.15	26	29.0	
15.08	14.14	11.11	16	31.0	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.23	16.32	11.08	17.4	18	11
17.96	17.00	11.61	17.8		

Remarks: _____

Reviewed By RHB

Attachment E-2. Laboratory Testing Results

Consolidated-Undrained Triaxial Compression

Stantec

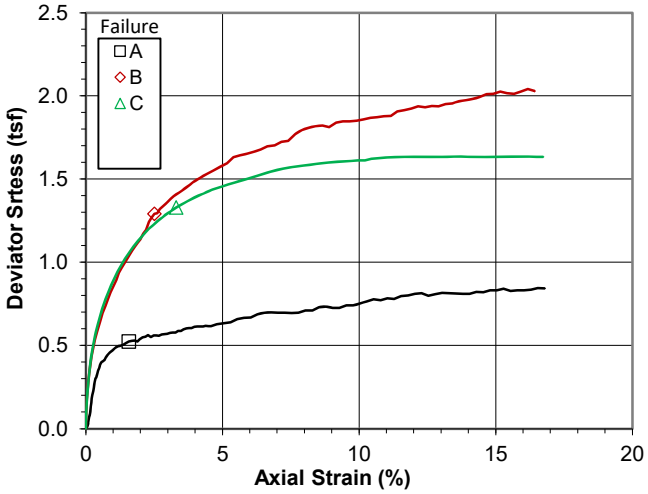
Consolidated Undrained Triaxial Compression

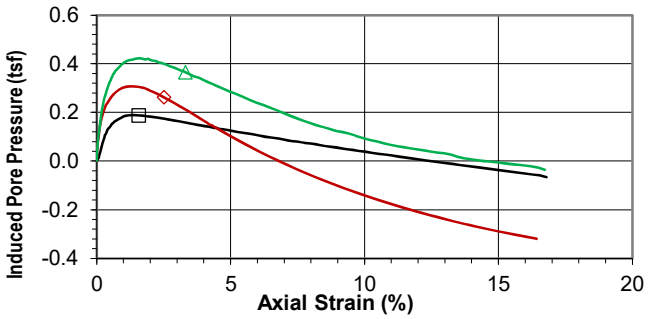
ASTM D 4767

Project Name Eagle Creek

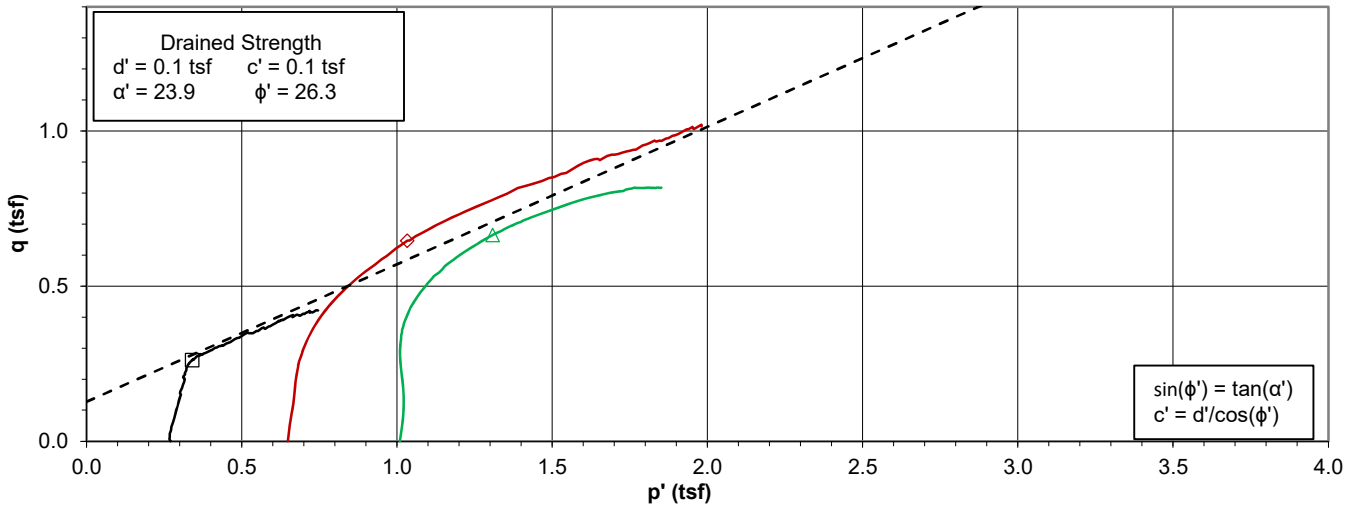
Project 173409690
Set ID 772

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	772A	B-3.44a, 2.0'-2.5'	Lean Clay (CL), brown, moist, firm	2.74	44	19	25
B	772B	B-3.44a, 2.5'-3.0'	Lean Clay (CL), brown, moist, firm	2.74	44	19	25
C	773	B-3.44a, 4.1'-4.6'	Lean Clay with Sand (CL), brown, moist, firm	2.75	32	19	13





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.756	5.765	5.762		
Average Diameter (in)	2.864	2.865	2.858		
Moist Unit Weight (pcf)	124.5	128.0	126.6		
Moisture Content (%)	23.1	23.0	24.2		
Dry Unit Weight (pcf)	101.2	104.0	101.9		
Void Ratio	0.688	0.642	0.682		
Degree of Saturation (%)	92.1	98.4	97.7		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	125.3	127.8	126.9		
Moisture Content (%)	26.3	23.9	25.0		
Dry Unit Weight (pcf)	99.3	103.2	101.5		
Void Ratio	0.720	0.655	0.688		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.271	0.648	1.009		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	1.571	2.508	3.312		
Deviator Stress (tsf)	0.523	1.291	1.329		
Induced Pore Press. (tsf)	0.188	0.262	0.365		
Minor Eff. Stress, σ_3' (tsf)	0.079	0.388	0.644		
Major Eff. Stress, σ_1' (tsf)	0.602	1.679	1.974		
Eff. Stress Ratio, σ_1'/σ_3'	7.643	4.328	3.064		
p' (tsf)	0.340	1.034	1.309		
q (tsf)	0.262	0.646	0.665		



Comments

Reviewed By KG

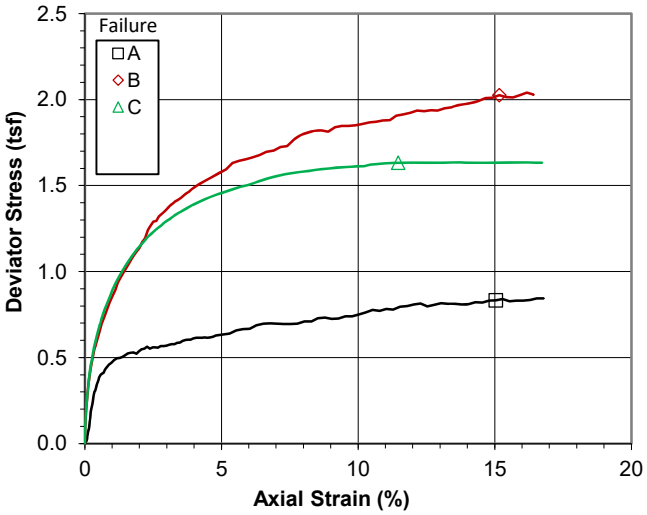
Consolidated Undrained Triaxial Compression

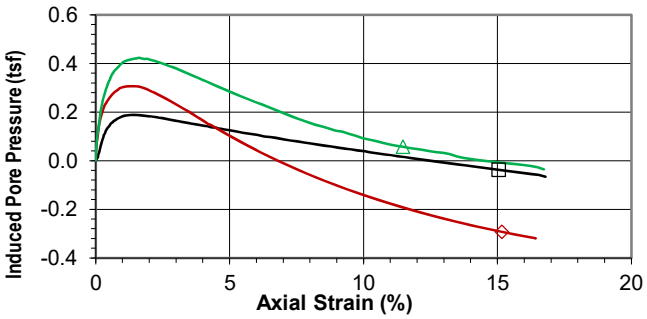
ASTM D 4767

Project Name Eagle Creek

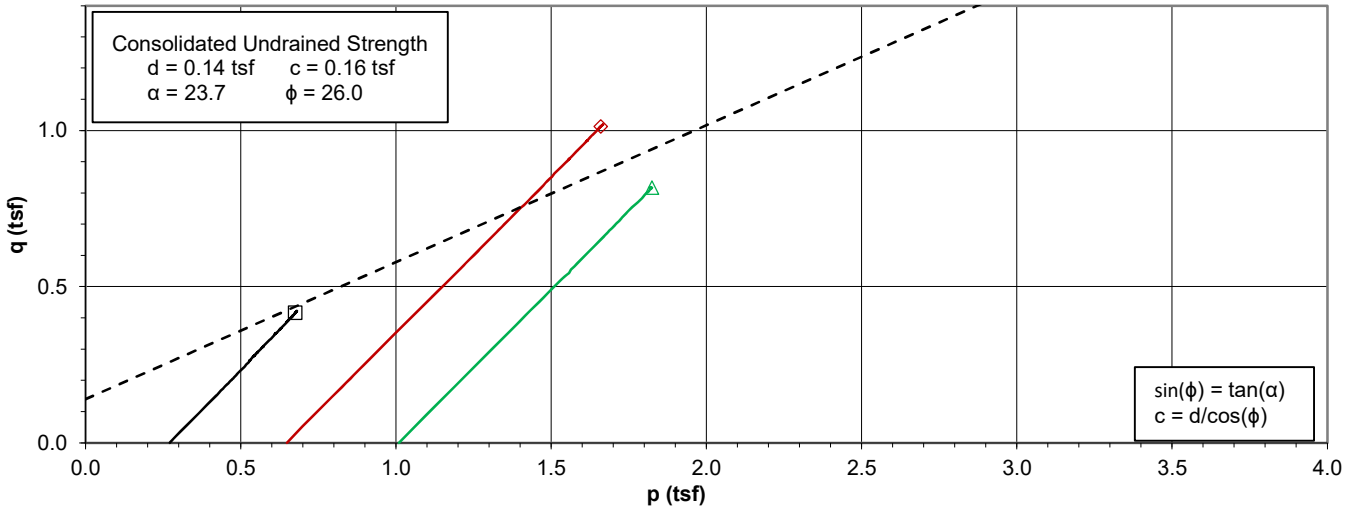
Project 173409690
Set ID 772

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	772A	B-3.44a, 2.0'-2.5'	Lean Clay (CL), brown, moist, firm	2.74	44	19	25
B	772B	B-3.44a, 2.5'-3.0'	Lean Clay (CL), brown, moist, firm	2.74	44	19	25
C	773	B-3.44a, 4.1'-4.6'	Lean Clay with Sand (CL), brown, moist, firm	2.75	32	19	13





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.756	5.765	5.762		
Average Diameter (in)	2.864	2.865	2.858		
Moist Unit Weight (pcf)	124.5	128.0	126.6		
Moisture Content (%)	23.1	23.0	24.2		
Dry Unit Weight (pcf)	101.2	104.0	101.9		
Void Ratio	0.688	0.642	0.682		
Degree of Saturation (%)	92.1	98.4	97.7		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	125.3	127.8	126.9		
Moisture Content (%)	26.3	23.9	25.0		
Dry Unit Weight (pcf)	99.3	103.2	101.5		
Void Ratio	0.720	0.655	0.688		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.271	0.648	1.009		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.042	15.166	11.473		
Deviator Stress (tsf)	0.832	2.025	1.633		
Min. Prin. Stress, σ_3 (tsf)	0.260	0.648	1.008		
Maj. Prin. Stress, σ_1 (tsf)	1.092	2.673	2.641		
p (tsf)	0.676	1.660	1.824		
q (tsf)	0.416	1.013	0.817		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.44a, 2.0'-2.5'	Lab ID	772A
Description	Lean Clay (CL), brown, moist, firm	Test ID	772-A
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	04/29/2021

Specific Gravity	2.74
ASTM D 854, Dry	
Liquid Limit	44
Plastic Limit	19
Plasticity Index	25
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	85
Nominal Consolidation Pressure (psi)	5

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	0.266
Time to 50% Consolidation (min)	1.32
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	125.3
Moisture Content (%)	26.3
Dry Unit Weight (pcf)	99.3
Void Ratio	0.720
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

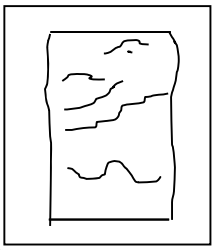
Axial Strain (%)	1.571
Deviator Stress (tsf)	0.523
Induced Pore Pressure (tsf)	0.188
Minor Effective Stress, σ_3' (tsf)	0.079
Major Effective Stress, σ_1' (tsf)	0.602
Eff. Principal Stress Ratio, σ_1'/σ_3'	7.643
p' (tsf)	0.340
q (tsf)	0.262

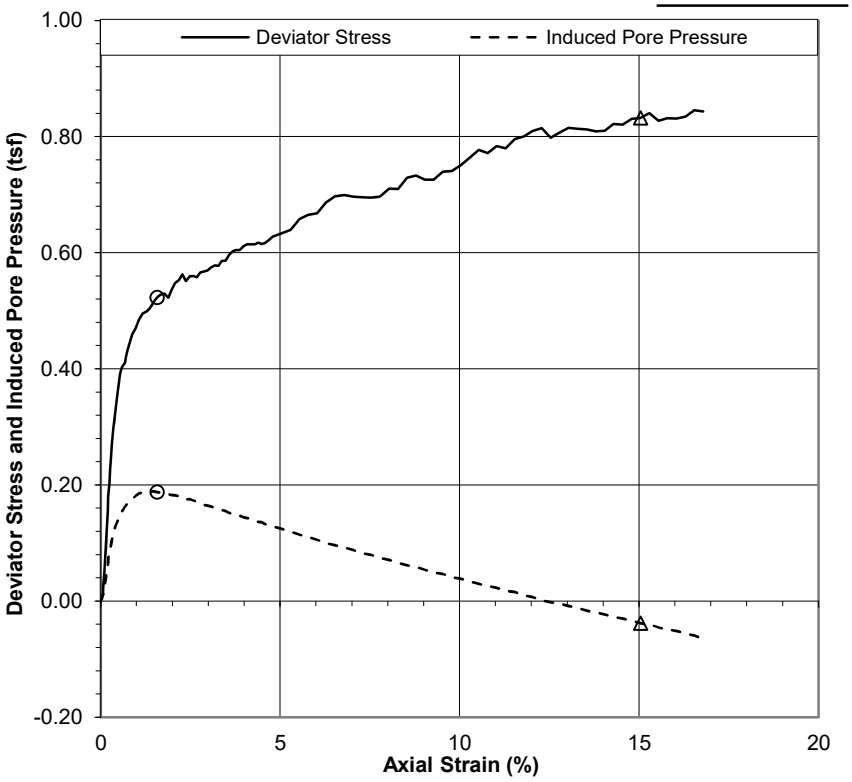
At Consolidated Undrained Failure

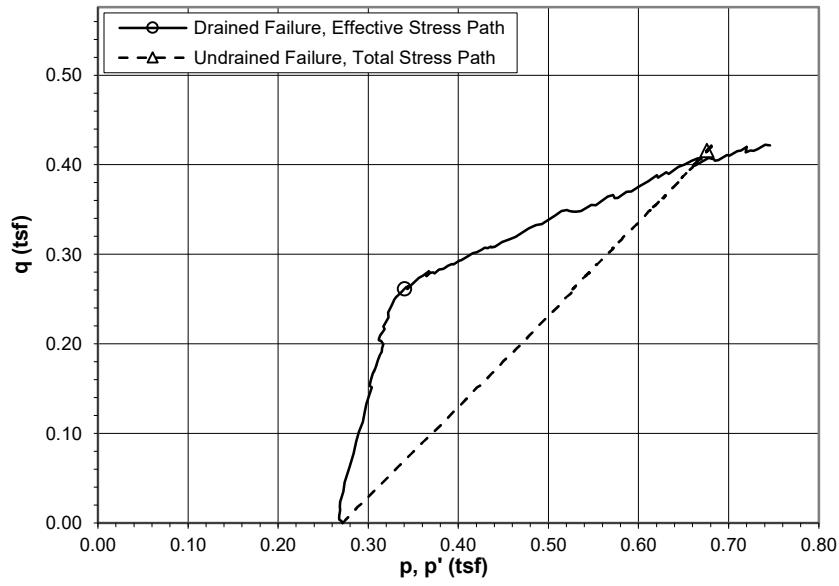
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.042
Deviator Stress (tsf)	0.832
Minor Principal Stress, σ_3 (tsf)	0.260
Major Principal Stress, σ_1 (tsf)	1.092
p (tsf)	0.676
q (tsf)	0.416

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.44a, 2.0'-2.5'
Description: Lean Clay (CL), brown, moist, firm

Project No.: 173409690
Lab ID: 772A
Test ID: 772-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	5.756	Calculated Height (in)	5.752
Average Diameter (in)	2.864	Calculated Diameter (in)	2.892
Calculated Area (in^2)	6.442	Calculated Area (in^2)	6.570
Moist Weight (lb)	2.672	Moist Weight (lb)	2.741
Moist Unit Weight (pcf)	124.5	Moist Unit Weight (pcf)	125.3
Moisture Content (%)	23.1	Moisture Content (%)	26.3
Dry Weight (lb)	2.171	Dry Weight (lb)	2.171
Dry Unit Weight (pcf)	101.2	Dry Unit Weight (pcf)	99.3
Void Ratio	0.688	Void Ratio	0.720
Degree of Saturation (%)	92.1	Degree of Saturation (%)	100.0

Specific Gravity: 2.74
ASTM D 854, Dry

Liquid Limit: 44
Plastic Limit: 19
Plasticity Index: 25
ASTM D 4318

Confining Stress
σ_3 (tsf): 0.271

Effective Consolidation Stress
σ_3' (tsf): 0.271

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.44a, 2.0'-2.5'								Lab ID: 772A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.570	0.000	0.000	6.211	0.000	0.271	0.271	0.271	0.271	0.271	0.000	1.000
0.2	0.4	0.001	0.02	6.572	0.004	0.004	6.213	0.003	0.275	0.272	0.269	0.273	0.271	0.002	1.014
0.5	0.7	0.002	0.04	6.573	0.008	0.008	6.218	0.007	0.279	0.272	0.264	0.275	0.268	0.004	1.029
0.7	1.4	0.004	0.07	6.575	0.016	0.016	6.222	0.011	0.287	0.276	0.260	0.279	0.268	0.008	1.060
1.0	2.6	0.005	0.08	6.576	0.029	0.029	6.227	0.016	0.299	0.283	0.254	0.285	0.269	0.014	1.113
1.2	3.3	0.005	0.09	6.576	0.036	0.036	6.230	0.020	0.306	0.287	0.250	0.288	0.268	0.018	1.145
1.5	4.4	0.006	0.10	6.577	0.048	0.047	6.236	0.026	0.318	0.293	0.245	0.295	0.269	0.024	1.193
1.8	6.4	0.007	0.12	6.578	0.071	0.070	6.244	0.033	0.341	0.308	0.237	0.306	0.273	0.035	1.296
2.0	8.3	0.009	0.15	6.580	0.091	0.091	6.253	0.042	0.361	0.319	0.228	0.316	0.274	0.045	1.398
2.3	11.6	0.010	0.17	6.582	0.127	0.126	6.265	0.054	0.397	0.343	0.216	0.334	0.280	0.063	1.584
2.5	14.2	0.011	0.20	6.583	0.156	0.155	6.275	0.064	0.426	0.361	0.206	0.348	0.284	0.078	1.754
2.8	16.6	0.012	0.21	6.584	0.182	0.181	6.285	0.074	0.452	0.377	0.196	0.361	0.287	0.091	1.925
3.0	18.5	0.014	0.24	6.586	0.202	0.202	6.293	0.082	0.473	0.390	0.188	0.372	0.289	0.101	2.072
3.3	20.7	0.015	0.27	6.588	0.226	0.226	6.300	0.090	0.497	0.407	0.181	0.384	0.294	0.113	2.245
3.5	22.8	0.017	0.29	6.590	0.249	0.248	6.309	0.098	0.519	0.420	0.172	0.395	0.296	0.124	2.444
3.8	24.4	0.018	0.31	6.591	0.267	0.266	6.316	0.105	0.537	0.431	0.165	0.403	0.298	0.133	2.614
4.0	26.2	0.019	0.33	6.592	0.286	0.286	6.322	0.112	0.556	0.444	0.158	0.413	0.301	0.143	2.805
4.3	27.8	0.021	0.36	6.594	0.303	0.303	6.327	0.117	0.572	0.455	0.153	0.421	0.304	0.151	2.982
4.5	28.2	0.022	0.38	6.595	0.308	0.307	6.333	0.122	0.577	0.455	0.148	0.424	0.301	0.153	3.070
4.8	29.4	0.023	0.40	6.597	0.321	0.320	6.338	0.127	0.590	0.463	0.143	0.430	0.303	0.160	3.235
5.0	30.7	0.024	0.43	6.598	0.335	0.334	6.342	0.132	0.604	0.472	0.138	0.437	0.305	0.167	3.418
5.3	32.0	0.026	0.45	6.600	0.349	0.348	6.346	0.135	0.618	0.482	0.135	0.444	0.308	0.174	3.582
5.5	33.2	0.028	0.48	6.602	0.362	0.361	6.350	0.139	0.630	0.491	0.130	0.450	0.310	0.181	3.786
5.8	34.3	0.029	0.50	6.603	0.374	0.373	6.354	0.143	0.642	0.499	0.126	0.456	0.313	0.186	3.951
6.0	35.2	0.030	0.52	6.605	0.384	0.382	6.356	0.146	0.652	0.506	0.124	0.461	0.315	0.191	4.088
6.3	35.9	0.031	0.54	6.606	0.392	0.390	6.360	0.149	0.660	0.511	0.120	0.465	0.315	0.195	4.249
6.5	36.8	0.033	0.57	6.608	0.401	0.400	6.364	0.153	0.670	0.517	0.117	0.470	0.317	0.200	4.420
6.8	37.1	0.035	0.60	6.610	0.405	0.403	6.366	0.156	0.673	0.517	0.114	0.471	0.315	0.202	4.541
7.0	37.5	0.036	0.63	6.612	0.408	0.406	6.369	0.158	0.676	0.518	0.111	0.473	0.314	0.203	4.650
7.3	37.6	0.038	0.65	6.613	0.410	0.408	6.372	0.161	0.678	0.516	0.108	0.473	0.312	0.204	4.785
7.5	37.9	0.039	0.68	6.615	0.413	0.411	6.374	0.163	0.681	0.518	0.106	0.475	0.312	0.206	4.865
7.8	38.6	0.040	0.70	6.617	0.420	0.419	6.376	0.165	0.688	0.523	0.104	0.479	0.313	0.209	5.031
8.0	39.4	0.042	0.72	6.618	0.428	0.426	6.377	0.167	0.696	0.529	0.103	0.483	0.316	0.213	5.150
8.3	40.0	0.043	0.75	6.620	0.435	0.433	6.379	0.168	0.703	0.535	0.102	0.486	0.318	0.216	5.257
8.5	40.5	0.045	0.78	6.622	0.440	0.438	6.381	0.171	0.707	0.536	0.098	0.488	0.317	0.219	5.486
9.5	42.4	0.050	0.88	6.628	0.461	0.459	6.386	0.175	0.727	0.552	0.093	0.498	0.322	0.229	5.934
10.5	43.5	0.056	0.97	6.635	0.472	0.470	6.392	0.182	0.739	0.557	0.087	0.504	0.322	0.235	6.398
11.5	44.9	0.062	1.07	6.641	0.487	0.484	6.396	0.186	0.753	0.568	0.083	0.511	0.326	0.242	6.805
12.5	46.0	0.067	1.17	6.648	0.498	0.495	6.398	0.187	0.763	0.576	0.081	0.515	0.328	0.248	7.136

Project: 173409690			Source: B-3.44a, 2.0'-2.5'								Lab ID: 772A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
13.5	46.4	0.074	1.28	6.656	0.502	0.499	6.399	0.188	0.766	0.578	0.079	0.517	0.329	0.249	7.279
14.5	46.9	0.079	1.37	6.662	0.507	0.504	6.399	0.188	0.772	0.583	0.079	0.519	0.331	0.252	7.388
15.5	47.9	0.084	1.47	6.668	0.517	0.513	6.400	0.189	0.782	0.592	0.079	0.525	0.335	0.257	7.510
16.5	48.8	0.090	1.57	6.675	0.527	0.523	6.399	0.188	0.790	0.602	0.079	0.528	0.340	0.262	7.643
17.5	49.4	0.097	1.68	6.682	0.532	0.528	6.398	0.187	0.795	0.608	0.080	0.531	0.344	0.264	7.627
18.5	49.6	0.103	1.78	6.689	0.534	0.530	6.396	0.186	0.796	0.611	0.081	0.531	0.346	0.265	7.541
19.6	49.0	0.108	1.88	6.696	0.527	0.522	6.394	0.184	0.788	0.604	0.082	0.527	0.343	0.261	7.389
20.5	50.3	0.113	1.97	6.702	0.541	0.536	6.393	0.183	0.801	0.618	0.082	0.533	0.350	0.268	7.520
21.5	51.5	0.120	2.08	6.710	0.553	0.548	6.393	0.182	0.812	0.630	0.083	0.539	0.356	0.274	7.633
22.6	52.0	0.126	2.18	6.717	0.558	0.553	6.391	0.181	0.818	0.637	0.085	0.542	0.361	0.276	7.526
23.5	53.0	0.131	2.28	6.724	0.568	0.562	6.389	0.179	0.827	0.649	0.086	0.546	0.368	0.281	7.515
24.5	52.0	0.137	2.38	6.730	0.557	0.551	6.386	0.175	0.815	0.640	0.089	0.540	0.364	0.276	7.203
25.6	52.9	0.143	2.48	6.737	0.565	0.559	6.386	0.175	0.824	0.649	0.090	0.545	0.369	0.280	7.237
26.5	53.0	0.148	2.58	6.744	0.566	0.560	6.384	0.173	0.825	0.652	0.092	0.546	0.372	0.280	7.066
27.6	52.9	0.154	2.68	6.751	0.564	0.558	6.381	0.171	0.823	0.652	0.095	0.544	0.374	0.279	6.890
28.6	53.7	0.160	2.78	6.758	0.572	0.566	6.379	0.169	0.830	0.662	0.096	0.548	0.379	0.283	6.907
29.6	54.0	0.166	2.88	6.765	0.575	0.568	6.376	0.166	0.833	0.667	0.099	0.549	0.383	0.284	6.717
30.6	54.2	0.171	2.98	6.772	0.576	0.569	6.375	0.165	0.834	0.670	0.100	0.549	0.385	0.285	6.678
31.6	54.8	0.177	3.08	6.779	0.582	0.574	6.374	0.163	0.839	0.676	0.101	0.552	0.389	0.287	6.667
32.6	55.2	0.183	3.18	6.786	0.585	0.578	6.371	0.161	0.842	0.682	0.104	0.553	0.393	0.289	6.571
33.6	55.2	0.189	3.28	6.793	0.585	0.578	6.370	0.159	0.843	0.683	0.106	0.554	0.395	0.289	6.457
34.6	56.1	0.194	3.38	6.800	0.594	0.586	6.367	0.157	0.851	0.694	0.108	0.558	0.401	0.293	6.414
35.6	56.2	0.200	3.48	6.807	0.595	0.586	6.366	0.155	0.852	0.696	0.110	0.558	0.403	0.293	6.338
36.6	57.2	0.206	3.58	6.814	0.605	0.596	6.362	0.152	0.861	0.709	0.113	0.563	0.411	0.298	6.287
37.6	57.9	0.212	3.68	6.821	0.611	0.602	6.361	0.151	0.868	0.717	0.115	0.566	0.416	0.301	6.260
38.6	58.2	0.217	3.78	6.828	0.613	0.604	6.359	0.148	0.869	0.721	0.117	0.567	0.419	0.302	6.182
39.6	58.3	0.223	3.87	6.835	0.614	0.605	6.357	0.147	0.870	0.723	0.118	0.567	0.420	0.302	6.116
40.6	59.0	0.229	3.98	6.843	0.620	0.611	6.355	0.144	0.876	0.732	0.121	0.571	0.427	0.305	6.048
41.6	59.4	0.235	4.08	6.850	0.624	0.614	6.354	0.143	0.879	0.736	0.122	0.572	0.429	0.307	6.050
42.6	59.5	0.241	4.19	6.857	0.624	0.614	6.352	0.141	0.879	0.737	0.123	0.572	0.430	0.307	5.994
43.6	59.5	0.247	4.29	6.865	0.624	0.614	6.349	0.138	0.878	0.740	0.126	0.571	0.433	0.307	5.890
44.6	59.9	0.252	4.39	6.872	0.628	0.617	6.347	0.137	0.882	0.745	0.128	0.573	0.436	0.309	5.829
45.6	59.8	0.258	4.49	6.879	0.626	0.615	6.347	0.136	0.880	0.744	0.129	0.572	0.436	0.308	5.770
46.6	60.0	0.264	4.58	6.886	0.627	0.616	6.343	0.133	0.881	0.749	0.132	0.573	0.440	0.308	5.665
47.6	60.6	0.270	4.69	6.893	0.633	0.621	6.341	0.131	0.886	0.755	0.133	0.575	0.444	0.311	5.656
48.6	61.2	0.276	4.79	6.901	0.639	0.627	6.340	0.129	0.892	0.762	0.135	0.578	0.449	0.314	5.646
51.1	62.0	0.290	5.04	6.919	0.645	0.633	6.335	0.125	0.898	0.773	0.140	0.581	0.457	0.317	5.523
53.6	62.8	0.305	5.29	6.938	0.652	0.639	6.330	0.119	0.902	0.783	0.144	0.583	0.464	0.320	5.437
56.1	64.8	0.319	5.54	6.956	0.671	0.658	6.325	0.114	0.922	0.808	0.149	0.593	0.478	0.329	5.402
58.6	65.8	0.333	5.79	6.974	0.679	0.665	6.321	0.111	0.930	0.819	0.154	0.597	0.486	0.333	5.330
61.1	66.2	0.347	6.04	6.992	0.682	0.668	6.316	0.106	0.932	0.826	0.159	0.598	0.493	0.334	5.209
63.6	68.3	0.361	6.28	7.011	0.702	0.687	6.310	0.100	0.951	0.851	0.164	0.607	0.508	0.343	5.180
66.1	69.6	0.376	6.53	7.030	0.712	0.697	6.307	0.096	0.960	0.863	0.166	0.611	0.515	0.348	5.194
68.6	70.0	0.390	6.79	7.049	0.715	0.699	6.303	0.093	0.963	0.870	0.171	0.613	0.521	0.350	5.088
71.1	70.0	0.404	7.03	7.067	0.713	0.697	6.298	0.088	0.959	0.871	0.175	0.611	0.523	0.348	4.986
73.6	70.2	0.419	7.28	7.086	0.713	0.696	6.293	0.083	0.958	0.875	0.180	0.610	0.528	0.348	4.866
76.1	70.4	0.433	7.53	7.105	0.713	0.695	6.290	0.080	0.959	0.879	0.184	0.611	0.532	0.348	4.773
78.6	70.8	0.447	7.78	7.125	0.715	0.697	6.285	0.074	0.959	0.885	0.188	0.611	0.536	0.348	4.703
81.1	72.4	0.462	8.04	7.144	0.730	0.711	6.282	0.071	0.974	0.903	0.192	0.619	0.547	0.355	4.696
83.6	72.6	0.477	8.29	7.164	0.729	0.710	6.277	0.066	0.974	0.907	0.198	0.619	0.553	0.355	4.587
86.2	74.8	0.491	8.53	7.183	0.750	0.729	6.272	0.062	0.992	0.930	0.201	0.627	0.566	0.365	4.625
88.6	75.4	0.505	8.79	7.203	0.754	0.733	6.269	0.059	0.997	0.938	0.205	0.631	0.572	0.366	4.568
91.1	74.9	0.520	9.03	7.223	0.747	0.725	6.265	0.054	0.990	0.936	0.211	0.628	0.573	0.363	4.442
93.6	75.2	0.534	9.28	7.242	0.748	0.726	6.260	0.049	0.989	0.940	0.214	0.626	0.577	0.363	4.389
96.2	76.9	0.548	9.54	7.263	0.763	0.740	6.257	0.046	1.003	0.957	0.217	0.633	0.587	0.370	4.409
98.6	77.3	0.563	9.78	7.283	0.764	0.741	6.252	0.041	1.004	0.962	0.222	0.633	0.592	0.370	4.339
101.1	78.6	0.577	10.04	7.304	0.775	0.751	6.249	0.039	1.014	0.976	0.224	0.639	0.600	0.376	4.347
103.6	80.1	0.591	10.28	7.323	0.788	0.763	6.245	0.034	1.027	0.992	0.229	0.645	0.611	0.381	4.325
106.1	81.8	0.606	10.54	7.344	0.802	0.777	6.240	0.030	1.038	1.009	0.232	0.650	0.620	0.388	4.349
108.7	81.5	0.620	10.78	7.364	0.797	0.771	6.237	0.027	1.034	1.007	0.236	0.648	0.621	0.386	4.273
111.1	83.0	0.634	11.03	7.385	0.810	0.783	6.234	0.023	1.046	1.022	0.239	0.654	0.631	0.392	4.275
113.7	83.0	0.649	11.29	7.406	0.807	0.780	6.228	0.018	1.041	1.023	0.244	0.651	0.634	0.390	4.197
116.2	84.9	0.664	11.54	7.427	0.823	0.796	6.226	0.016	1.058	1.042	0.247	0.660	0.644	0.398	4.225
118.7	85.7	0.678	11.80	7.449	0.828	0.800	6.221	0.010	1.061	1.051	0.251	0.661	0.651	0.400	4.190
121.2	87.0	0.692	12.04	7.469	0.838	0.809	6.218	0.007	1.071	1.064	0.255	0.667	0.660	0.405	4.174
123.7	87.8	0.707	12.29	7.491	0.844	0.814	6.212	0.002	1.075	1.074	0.259	0.668	0.666	0.407	4.144
126.2	86.4	0.721	12.54	7.512	0.828	0.798	6.209	-0.002	1.060	1.062	0.264	0.661	0.663	0.399	4.027
128.7	87.7	0.736	12.80	7.534	0.838	0.807	6.206	-0.004	1.070	1.075	0.267	0.666	0.671	0.404	4.023
131.2	88.8	0.750	13.04	7.556	0.846	0.815	6.202	-0.009	1.077	1.086	0.270	0.669	0.678	0.408	4.015

Project: 173409690			Source: B-3.44a, 2.0'-2.5'								Lab ID: 772A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
133.7	88.9	0.765	13.29	7.578	0.845	0.813	6.199	-0.012	1.076	1.088	0.275	0.670	0.681	0.407	3.959
136.2	89.2	0.779	13.55	7.600	0.845	0.812	6.194	-0.017	1.073	1.090	0.277	0.667	0.684	0.406	3.928
138.7	89.1	0.793	13.79	7.622	0.842	0.809	6.192	-0.019	1.070	1.089	0.280	0.666	0.685	0.404	3.888
141.2	89.6	0.808	14.05	7.644	0.844	0.810	6.187	-0.023	1.070	1.094	0.284	0.665	0.689	0.405	3.858
143.7	91.1	0.822	14.29	7.666	0.856	0.821	6.184	-0.027	1.082	1.109	0.288	0.671	0.698	0.411	3.856
146.2	91.3	0.837	14.54	7.688	0.855	0.820	6.180	-0.030	1.081	1.111	0.291	0.671	0.701	0.410	3.820
148.7	92.7	0.851	14.79	7.711	0.866	0.831	6.177	-0.033	1.091	1.125	0.294	0.676	0.710	0.415	3.822
151.2	93.2	0.865	15.04	7.733	0.868	0.832	6.173	-0.038	1.092	1.130	0.298	0.676	0.714	0.416	3.794
153.7	94.4	0.879	15.29	7.756	0.877	0.840	6.171	-0.040	1.101	1.140	0.300	0.681	0.720	0.420	3.798
156.2	93.4	0.894	15.55	7.780	0.865	0.827	6.165	-0.045	1.087	1.133	0.305	0.674	0.719	0.414	3.710
158.7	94.2	0.908	15.79	7.802	0.869	0.832	6.162	-0.049	1.091	1.140	0.308	0.675	0.724	0.416	3.697
161.2	94.5	0.923	16.04	7.826	0.869	0.831	6.159	-0.052	1.092	1.143	0.312	0.676	0.728	0.415	3.660
163.7	95.2	0.937	16.29	7.849	0.873	0.834	6.155	-0.056	1.094	1.149	0.315	0.677	0.732	0.417	3.649
166.2	96.7	0.951	16.54	7.873	0.885	0.845	6.152	-0.059	1.104	1.163	0.318	0.682	0.741	0.423	3.658
168.7	96.9	0.966	16.79	7.896	0.883	0.843	6.145	-0.066	1.102	1.168	0.325	0.680	0.746	0.422	3.598

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.44a, 2.5'-3.0'	Lab ID	772B
Description	Lean Clay (CL), brown, moist, firm	Test ID	772-B
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	04/29/2021

Specific Gravity	2.74
	ASTM D 854, Dry
Liquid Limit	44
Plastic Limit	19
Plasticity Index	25
	ASTM D 4318

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	0.649
Time to 50% Consolidation (min)	8.20
Actual Axial Strain Rate of Test (%/min)	0.037

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	127.8
Moisture Content (%)	23.9
Dry Unit Weight (pcf)	103.2
Void Ratio	0.655
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

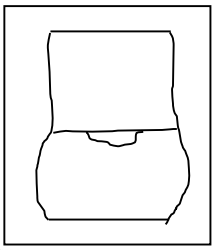
Axial Strain (%)	2.508
Deviator Stress (tsf)	1.291
Induced Pore Pressure (tsf)	0.262
Minor Effective Stress, σ_3' (tsf)	0.388
Major Effective Stress, σ_1' (tsf)	1.679
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.328
p' (tsf)	1.034
q (tsf)	0.646

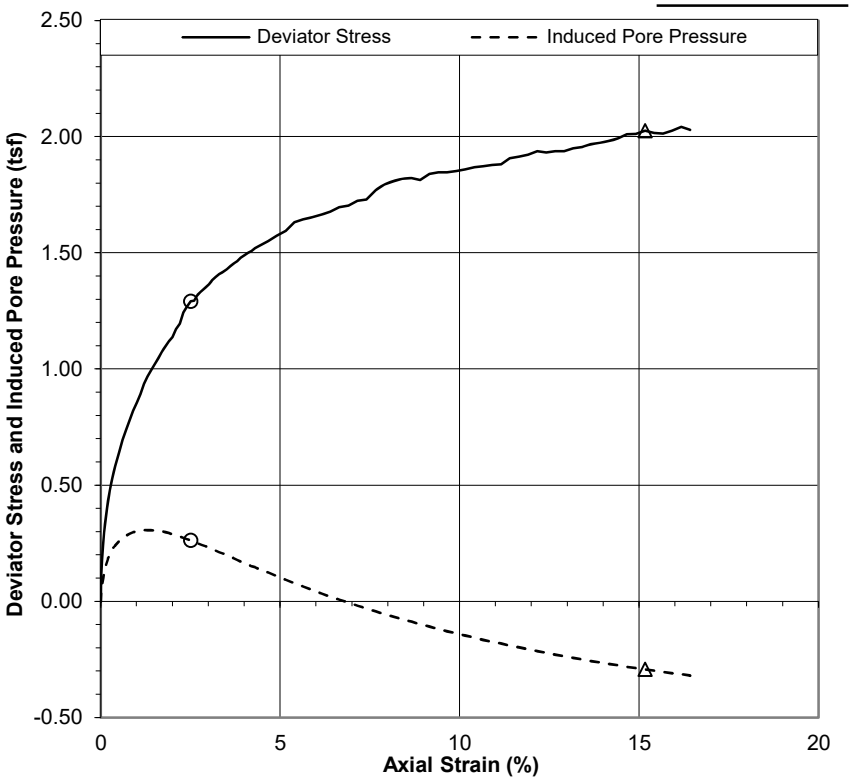
At Consolidated Undrained Failure

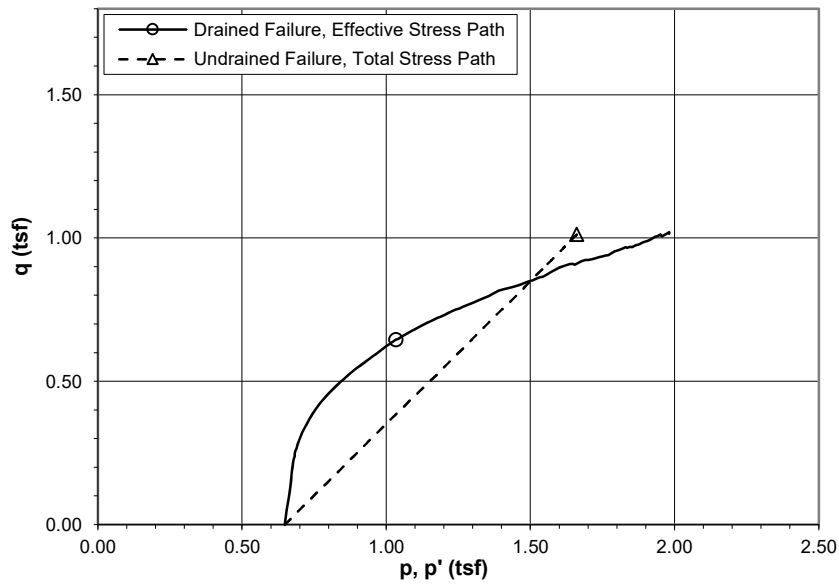
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.166
Deviator Stress (tsf)	2.025
Minor Principal Stress, σ_3 (tsf)	0.648
Major Principal Stress, σ_1 (tsf)	2.673
p (tsf)	1.660
q (tsf)	1.013

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
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Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 05/18/2021

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.44a, 2.5'-3.0'	Lab ID	772B
Description	Lean Clay (CL), brown, moist, firm	Test ID	772-B

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.765	Height (in)	5.749	Specific Gravity	2.74
Diameter (in)	2.865	Calculated Diameter (in)	2.881	ASTM D 854, Dry	
Area (in^2)	6.448	Calculated Area (in^2)	6.517	Liquid Limit	44
Moist Weight (lb)	2.752	Moist Weight (lb)	2.772	Plastic Limit	19
Moist Unit Weight (pcf)	128.0	Moist Unit Weight (pcf)	127.8	Plasticity Index	25
Moisture Content (%)	23.0	Moisture Content (%)	23.9	ASTM D 4318	
Dry Weight (lb)	2.237	Dry Weight (lb)	2.237		
Dry Unit Weight (pcf)	104.0	Dry Unit Weight (pcf)	103.2	Confining Stress	
Void Ratio	0.642	Void Ratio	0.655	σ_3 (tsf)	0.648
Degree of Saturation (%)	98.4	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.648

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.44a, 2.5'-3.0'								Lab ID: 772B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.517	0.000	0.000	5.840	0.000	0.648	0.648	0.648	0.648	0.648	0.000	1.000
0.7	9.5	0.001	0.02	6.518	0.105	0.105	5.884	0.044	0.752	0.708	0.603	0.700	0.655	0.053	1.174
1.4	16.4	0.002	0.04	6.520	0.181	0.181	5.916	0.076	0.828	0.752	0.571	0.738	0.661	0.090	1.317
2.0	21.9	0.004	0.07	6.521	0.241	0.241	5.941	0.101	0.888	0.787	0.546	0.768	0.666	0.121	1.442
2.7	26.0	0.005	0.09	6.523	0.287	0.287	5.962	0.122	0.934	0.812	0.526	0.791	0.669	0.143	1.545
3.4	29.4	0.007	0.11	6.524	0.324	0.324	5.978	0.139	0.971	0.833	0.509	0.809	0.671	0.162	1.637
4.1	32.3	0.008	0.14	6.526	0.356	0.356	5.993	0.154	1.004	0.850	0.494	0.826	0.672	0.178	1.720
4.8	34.9	0.009	0.16	6.527	0.385	0.384	6.006	0.167	1.032	0.865	0.481	0.840	0.673	0.192	1.799
5.5	37.3	0.011	0.19	6.529	0.412	0.411	6.018	0.178	1.059	0.881	0.470	0.853	0.676	0.206	1.875
6.1	39.5	0.012	0.21	6.530	0.435	0.435	6.027	0.188	1.083	0.895	0.460	0.865	0.677	0.217	1.946
6.8	41.6	0.014	0.24	6.532	0.458	0.458	6.036	0.196	1.105	0.909	0.451	0.876	0.680	0.229	2.015
7.5	43.4	0.015	0.26	6.534	0.479	0.478	6.044	0.204	1.125	0.921	0.443	0.887	0.682	0.239	2.078
8.2	45.0	0.016	0.28	6.535	0.496	0.496	6.052	0.212	1.143	0.931	0.435	0.895	0.683	0.248	2.139
8.9	46.7	0.018	0.31	6.537	0.515	0.514	6.059	0.219	1.162	0.942	0.428	0.905	0.685	0.257	2.200
9.6	48.6	0.019	0.33	6.538	0.535	0.534	6.065	0.226	1.182	0.956	0.422	0.915	0.689	0.267	2.268
10.2	50.2	0.020	0.36	6.540	0.552	0.551	6.071	0.232	1.199	0.968	0.416	0.924	0.692	0.276	2.325
10.9	51.6	0.023	0.39	6.542	0.568	0.567	6.077	0.237	1.214	0.977	0.410	0.931	0.694	0.284	2.383
11.6	53.0	0.023	0.41	6.543	0.583	0.582	6.082	0.242	1.230	0.988	0.405	0.938	0.697	0.291	2.437
14.3	58.3	0.030	0.52	6.551	0.641	0.640	6.099	0.259	1.287	1.028	0.388	0.967	0.708	0.320	2.649
17.1	63.4	0.035	0.62	6.557	0.696	0.694	6.112	0.272	1.342	1.069	0.375	0.995	0.722	0.347	2.851
19.8	67.4	0.041	0.71	6.564	0.739	0.737	6.122	0.283	1.385	1.102	0.365	1.016	0.733	0.369	3.023
22.5	71.3	0.047	0.81	6.570	0.781	0.779	6.131	0.291	1.427	1.136	0.357	1.038	0.747	0.390	3.184
25.3	75.1	0.052	0.90	6.576	0.822	0.820	6.138	0.298	1.469	1.170	0.351	1.059	0.760	0.410	3.338
28.0	78.5	0.058	1.01	6.583	0.859	0.857	6.142	0.303	1.505	1.203	0.346	1.077	0.774	0.428	3.475
30.7	81.9	0.064	1.11	6.590	0.895	0.892	6.145	0.306	1.541	1.236	0.344	1.095	0.790	0.446	3.596
33.4	86.1	0.070	1.21	6.597	0.939	0.937	6.147	0.307	1.586	1.279	0.343	1.118	0.811	0.468	3.734
36.2	89.0	0.075	1.31	6.603	0.971	0.968	6.146	0.307	1.617	1.311	0.343	1.134	0.827	0.484	3.821
38.9	91.5	0.081	1.41	6.610	0.996	0.993	6.146	0.306	1.643	1.337	0.344	1.146	0.840	0.497	3.889
41.6	93.8	0.086	1.50	6.616	1.020	1.017	6.145	0.306	1.667	1.361	0.345	1.159	0.853	0.508	3.950
44.4	96.5	0.092	1.61	6.623	1.049	1.046	6.144	0.305	1.697	1.392	0.346	1.174	0.869	0.523	4.018
47.1	99.0	0.098	1.70	6.630	1.076	1.072	6.142	0.302	1.722	1.420	0.348	1.187	0.884	0.536	4.076
49.8	101.5	0.104	1.80	6.637	1.101	1.097	6.138	0.299	1.747	1.448	0.352	1.199	0.900	0.548	4.116
52.5	103.5	0.109	1.90	6.643	1.122	1.117	6.134	0.294	1.768	1.474	0.356	1.209	0.915	0.559	4.135
55.3	105.4	0.115	2.00	6.650	1.141	1.137	6.129	0.289	1.787	1.498	0.361	1.218	0.929	0.568	4.148
58.0	108.8	0.121	2.10	6.657	1.176	1.171	6.124	0.285	1.821	1.537	0.365	1.236	0.951	0.586	4.205
60.7	111.0	0.127	2.20	6.664	1.199	1.194	6.119	0.279	1.844	1.565	0.371	1.247	0.968	0.597	4.221
63.5	115.6	0.133	2.31	6.671	1.248	1.242	6.113	0.274	1.893	1.619	0.376	1.271	0.998	0.621	4.300
66.2	118.1	0.138	2.41	6.678	1.273	1.267	6.107	0.268	1.917	1.649	0.382	1.283	1.016	0.634	4.315
68.9	120.4	0.144	2.51	6.684	1.297	1.291	6.102	0.262	1.942	1.679	0.388	1.296	1.034	0.646	4.328

Project: 173409690			Source: B-3.44a, 2.5'-3.0'								Lab ID: 772B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in²)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
71.6	120.9	0.150	2.61	6.692	1.301	1.294	6.096	0.256	1.944	1.688	0.394	1.297	1.041	0.647	4.286
74.4	123.4	0.156	2.71	6.698	1.327	1.320	6.090	0.250	1.970	1.720	0.400	1.310	1.060	0.660	4.304
77.1	124.9	0.162	2.81	6.705	1.342	1.335	6.083	0.243	1.985	1.741	0.407	1.317	1.074	0.667	4.282
79.8	126.5	0.168	2.92	6.713	1.357	1.350	6.077	0.237	2.000	1.763	0.413	1.325	1.088	0.675	4.270
82.6	128.0	0.173	3.02	6.719	1.372	1.365	6.071	0.231	2.015	1.784	0.419	1.332	1.101	0.682	4.256
85.3	129.8	0.179	3.11	6.726	1.389	1.382	6.064	0.225	2.032	1.807	0.425	1.341	1.116	0.691	4.247
88.0	131.2	0.184	3.21	6.733	1.403	1.396	6.058	0.218	2.046	1.827	0.432	1.348	1.129	0.698	4.233
90.8	132.6	0.190	3.31	6.740	1.416	1.408	6.052	0.212	2.058	1.846	0.438	1.354	1.142	0.704	4.215
93.5	133.6	0.196	3.41	6.747	1.426	1.418	6.046	0.206	2.068	1.862	0.444	1.359	1.153	0.709	4.194
96.2	134.8	0.202	3.52	6.754	1.437	1.429	6.039	0.200	2.079	1.879	0.450	1.364	1.165	0.714	4.172
98.9	136.2	0.208	3.61	6.761	1.451	1.442	6.033	0.193	2.092	1.899	0.457	1.371	1.178	0.721	4.158
101.7	137.3	0.213	3.70	6.767	1.461	1.452	6.026	0.186	2.102	1.916	0.463	1.376	1.189	0.726	4.134
104.4	138.5	0.219	3.80	6.774	1.472	1.463	6.019	0.179	2.113	1.934	0.471	1.381	1.202	0.732	4.110
107.1	140.1	0.225	3.91	6.782	1.488	1.478	6.012	0.172	2.128	1.956	0.477	1.388	1.217	0.739	4.096
109.9	141.3	0.230	4.00	6.789	1.498	1.489	6.005	0.165	2.139	1.973	0.485	1.394	1.229	0.744	4.073
112.6	142.6	0.236	4.11	6.796	1.510	1.501	5.998	0.158	2.150	1.992	0.491	1.399	1.241	0.750	4.056
115.3	143.4	0.242	4.20	6.803	1.518	1.508	5.991	0.151	2.158	2.007	0.499	1.404	1.253	0.754	4.023
118.0	144.7	0.247	4.30	6.810	1.530	1.519	5.986	0.147	2.171	2.024	0.505	1.411	1.264	0.760	4.010
120.8	145.6	0.253	4.40	6.817	1.538	1.528	5.980	0.140	2.180	2.039	0.512	1.416	1.275	0.764	3.986
127.6	148.2	0.268	4.67	6.836	1.561	1.550	5.964	0.124	2.202	2.078	0.528	1.427	1.303	0.775	3.937
134.4	150.9	0.282	4.91	6.853	1.586	1.574	5.948	0.108	2.226	2.117	0.543	1.439	1.330	0.787	3.896
141.2	153.3	0.297	5.16	6.872	1.607	1.594	5.933	0.093	2.246	2.152	0.558	1.448	1.355	0.797	3.857
148.0	157.4	0.311	5.40	6.889	1.645	1.632	5.918	0.078	2.283	2.205	0.574	1.468	1.389	0.816	3.845
154.9	158.9	0.324	5.64	6.907	1.657	1.643	5.904	0.064	2.295	2.231	0.588	1.474	1.409	0.822	3.796
161.7	160.4	0.340	5.91	6.926	1.667	1.653	5.889	0.049	2.304	2.255	0.602	1.478	1.428	0.826	3.746
168.5	161.9	0.354	6.15	6.944	1.679	1.664	5.873	0.033	2.314	2.281	0.616	1.482	1.448	0.832	3.701
175.3	163.6	0.368	6.40	6.962	1.692	1.677	5.860	0.020	2.327	2.307	0.630	1.489	1.469	0.838	3.661
182.2	165.9	0.382	6.65	6.981	1.711	1.696	5.848	0.008	2.346	2.338	0.642	1.498	1.490	0.848	3.640
189.0	167.2	0.397	6.91	7.000	1.719	1.703	5.835	-0.005	2.353	2.358	0.655	1.502	1.507	0.851	3.598
195.8	169.7	0.411	7.16	7.019	1.741	1.724	5.821	-0.018	2.373	2.391	0.667	1.511	1.529	0.862	3.584
202.6	170.8	0.426	7.41	7.038	1.747	1.730	5.809	-0.031	2.379	2.410	0.680	1.514	1.545	0.865	3.543
209.5	175.2	0.441	7.67	7.058	1.787	1.769	5.796	-0.043	2.419	2.462	0.693	1.534	1.578	0.884	3.552
216.3	178.2	0.455	7.91	7.076	1.813	1.794	5.785	-0.055	2.444	2.499	0.705	1.547	1.602	0.897	3.547
223.1	180.0	0.469	8.16	7.096	1.827	1.807	5.773	-0.066	2.457	2.523	0.716	1.553	1.620	0.904	3.523
229.9	181.7	0.483	8.40	7.115	1.839	1.818	5.763	-0.077	2.468	2.545	0.727	1.559	1.636	0.909	3.501
236.7	182.5	0.498	8.66	7.135	1.842	1.821	5.752	-0.088	2.470	2.558	0.737	1.560	1.647	0.910	3.471
243.5	182.2	0.512	8.90	7.154	1.834	1.813	5.742	-0.098	2.462	2.560	0.747	1.556	1.654	0.906	3.425
250.4	185.4	0.527	9.16	7.174	1.861	1.839	5.731	-0.109	2.488	2.597	0.758	1.569	1.677	0.919	3.426
257.2	186.8	0.541	9.41	7.194	1.869	1.847	5.720	-0.119	2.496	2.615	0.769	1.573	1.692	0.923	3.403
264.0	187.3	0.555	9.66	7.213	1.870	1.847	5.711	-0.129	2.495	2.624	0.778	1.572	1.701	0.923	3.375
270.8	188.4	0.570	9.91	7.234	1.875	1.851	5.702	-0.138	2.500	2.638	0.787	1.575	1.712	0.926	3.353
277.6	189.7	0.584	10.16	7.253	1.883	1.858	5.693	-0.147	2.508	2.654	0.796	1.579	1.725	0.929	3.334
284.5	191.2	0.599	10.42	7.274	1.893	1.868	5.683	-0.156	2.517	2.673	0.805	1.583	1.739	0.934	3.319
291.3	192.2	0.613	10.66	7.294	1.897	1.872	5.674	-0.165	2.520	2.686	0.814	1.584	1.750	0.936	3.300
298.1	193.5	0.627	10.91	7.315	1.904	1.878	5.666	-0.174	2.527	2.700	0.822	1.588	1.761	0.939	3.284
304.9	194.3	0.642	11.16	7.335	1.907	1.880	5.658	-0.182	2.529	2.711	0.831	1.589	1.771	0.940	3.264
311.8	197.5	0.655	11.40	7.355	1.934	1.906	5.650	-0.190	2.555	2.745	0.839	1.602	1.792	0.953	3.273
318.6	198.9	0.670	11.66	7.377	1.941	1.913	5.642	-0.198	2.562	2.760	0.847	1.606	1.803	0.957	3.260
325.4	200.5	0.685	11.91	7.398	1.951	1.923	5.634	-0.206	2.571	2.777	0.854	1.610	1.816	0.961	3.250
332.2	202.6	0.699	12.16	7.419	1.966	1.937	5.626	-0.214	2.585	2.798	0.862	1.616	1.830	0.968	3.247
339.0	202.7	0.714	12.42	7.441	1.962	1.932	5.619	-0.221	2.580	2.801	0.870	1.615	1.835	0.966	3.222
345.9	204.0	0.728	12.66	7.462	1.968	1.938	5.611	-0.229	2.586	2.815	0.877	1.617	1.846	0.969	3.209
352.7	204.5	0.742	12.91	7.483	1.967	1.936	5.604	-0.236	2.585	2.821	0.884	1.616	1.852	0.968	3.190
359.5	206.5	0.757	13.16	7.505	1.981	1.950	5.597	-0.243	2.598	2.841	0.891	1.623	1.866	0.975	3.188
366.3	207.7	0.771	13.41	7.526	1.987	1.955	5.589	-0.250	2.602	2.853	0.898	1.625	1.875	0.977	3.177
373.2	209.7	0.785	13.66	7.547	2.001	1.968	5.583	-0.257	2.615	2.872	0.904	1.631	1.888	0.984	3.176
380.0	211.0	0.800	13.91	7.570	2.007	1.973	5.577	-0.263	2.621	2.884	0.910	1.634	1.897	0.987	3.167
386.8	212.5	0.814	14.15	7.591	2.016	1.982	5.571	-0.269	2.630	2.898	0.917	1.639	1.907	0.991	3.162
393.6	214.4	0.829	14.41	7.614	2.027	1.993	5.565	-0.275	2.641	2.915	0.923	1.644	1.919	0.996	3.160
400.4	216.9	0.843	14.66	7.636	2.045	2.010	5.558	-0.281	2.657	2.938	0.928	1.652	1.933	1.005	3.165
407.3	217.7	0.857	14.91	7.659	2.047	2.011	5.553	-0.287	2.659	2.946	0.935	1.653	1.940	1.006	3.152
414.1	220.0	0.872	15.17	7.682	2.062	2.025	5.547	-0.292	2.673	2.965	0.940	1.660	1.953	1.013	3.155
420.9	219.6	0.886	15.42	7.705	2.052	2.015	5.541	-0.298	2.663	2.961	0.946	1.655	1.954	1.008	3.130
427.7	220.0	0.901	15.67	7.728	2.050	2.012	5.536	-0.303	2.660	2.963	0.951	1.653	1.957	1.006	3.117
434.5	222.2	0.915	15.92	7.751	2.064	2.026	5.531	-0.309	2.673	2.982	0.956	1.660	1.969	1.013	3.119
441.4	224.7	0.930	16.17	7.774	2.081	2.042	5.526	-0.314	2.689	3.003	0.961	1.668	1.982	1.021	3.126
448.2	224.1	0.944	16.42	7.797	2.069	2.030	5.521	-0.319	2.677	2.996	0.966	1.662	1.981	1.015	3.101
448.3	223.8	0.944	16.42	7.797	2.067	2.027	5.520	-0.320	2.675	2.995	0.967	1.661	1.981	1.014	3.096

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.44a, 4.1'-4.6'	Lab ID	773
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	772-C
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	04/30/2021

Specific Gravity	2.75
	ASTM D 854, Dry
Liquid Limit	32
Plastic Limit	19
Plasticity Index	13
	ASTM D 4318

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.009
Time to 50% Consolidation (min)	37.00
Actual Axial Strain Rate of Test (%/min)	0.008

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	126.9
Moisture Content (%)	25.0
Dry Unit Weight (pcf)	101.5
Void Ratio	0.688
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

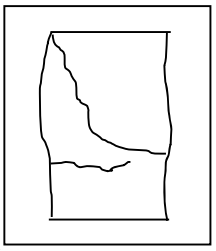
Axial Strain (%)	3.312
Deviator Stress (tsf)	1.329
Induced Pore Pressure (tsf)	0.365
Minor Effective Stress, σ_3' (tsf)	0.644
Major Effective Stress, σ_1' (tsf)	1.974
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.064
p' (tsf)	1.309
q (tsf)	0.665

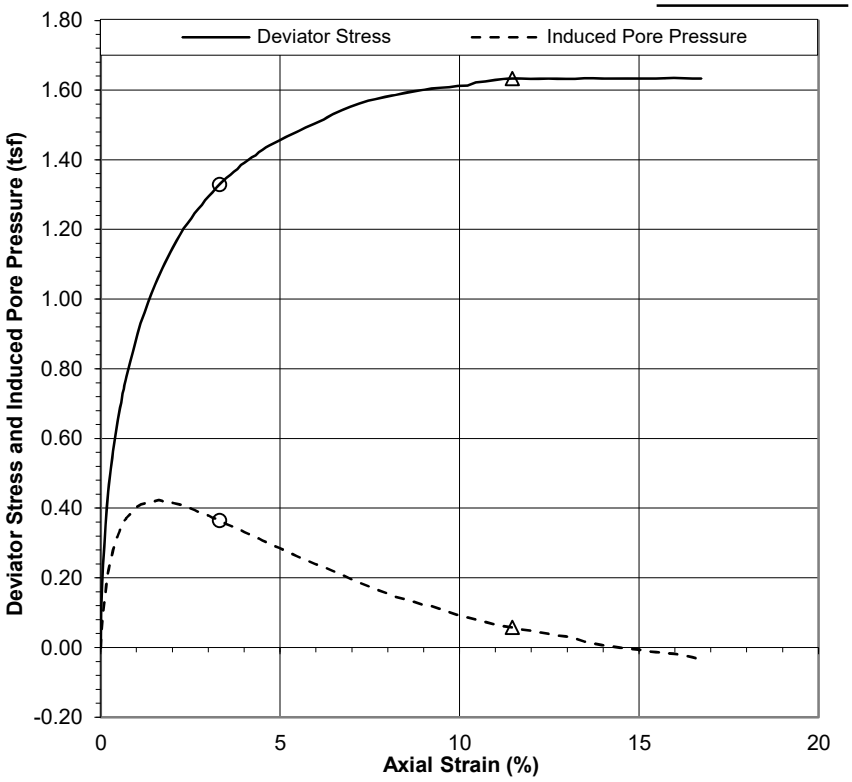
At Consolidated Undrained Failure

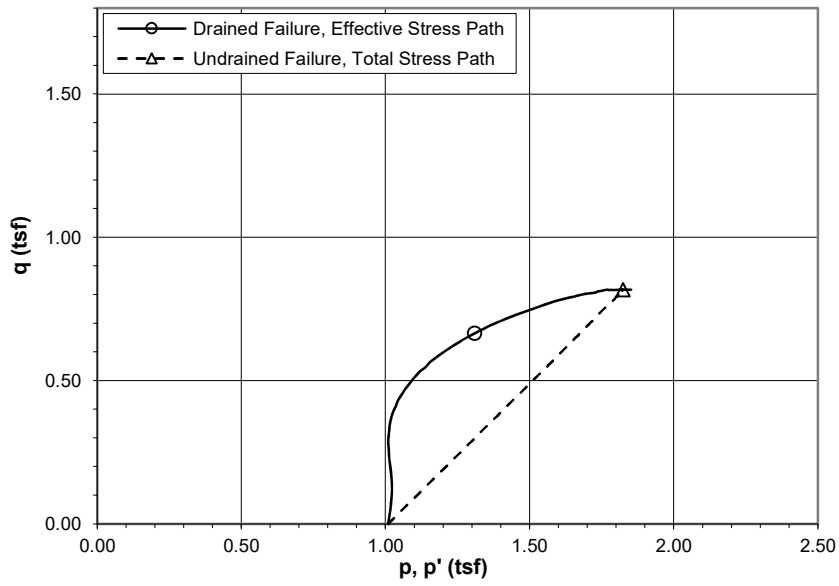
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	11.473
Deviator Stress (tsf)	1.633
Minor Principal Stress, σ_3 (tsf)	1.008
Major Principal Stress, σ_1 (tsf)	2.641
p (tsf)	1.824
q (tsf)	0.817

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.44a, 4.1'-4.6'
Description: Lean Clay with Sand (CL), brown, moist, firm

Project No.: 173409690
Lab ID: 773
Test ID: 772-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.762	Height (in)	5.731
Diameter (in)	2.858	Calculated Diameter (in)	2.871
Area (in^2)	6.414	Calculated Area (in^2)	6.473
Moist Weight (lb)	2.707	Moist Weight (lb)	2.725
Moist Unit Weight (pcf)	126.6	Moist Unit Weight (pcf)	126.9
Moisture Content (%)	24.2	Moisture Content (%)	25.0
Dry Weight (lb)	2.179	Dry Weight (lb)	2.179
Dry Unit Weight (pcf)	101.9	Dry Unit Weight (pcf)	101.5
Void Ratio	0.682	Void Ratio	0.688
Degree of Saturation (%)	97.7	Degree of Saturation (%)	100.0

Specific Gravity: 2.75
ASTM D 854, Dry

Liquid Limit: 32
Plastic Limit: 19
Plasticity Index: 13
ASTM D 4318

Confining Stress
σ_3 (tsf): 1.009

Effective Consolidation Stress
σ_3' (tsf): 1.009

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.44a, 4.1'-4.6'								Lab ID: 773		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.473	0.000	0.000	5.470	0.000	1.009	1.009	1.009	1.009	1.009	0.000	1.000
3.1	8.9	0.001	0.02	6.475	0.099	0.099	5.512	0.042	1.108	1.066	0.967	1.059	1.017	0.049	1.102
6.1	15.8	0.002	0.04	6.476	0.176	0.176	5.547	0.077	1.185	1.109	0.933	1.097	1.021	0.088	1.189
9.2	21.4	0.004	0.07	6.478	0.238	0.238	5.576	0.106	1.247	1.141	0.903	1.128	1.022	0.119	1.263
12.2	26.0	0.006	0.10	6.480	0.289	0.289	5.601	0.131	1.298	1.166	0.878	1.153	1.022	0.144	1.329
15.3	29.9	0.007	0.13	6.482	0.332	0.332	5.624	0.154	1.341	1.187	0.855	1.175	1.021	0.166	1.388
18.4	33.1	0.008	0.14	6.483	0.368	0.367	5.644	0.174	1.376	1.203	0.835	1.193	1.019	0.184	1.440
21.4	36.0	0.010	0.17	6.484	0.400	0.400	5.662	0.192	1.409	1.217	0.818	1.210	1.018	0.200	1.489
24.5	38.6	0.011	0.19	6.486	0.429	0.429	5.679	0.209	1.439	1.230	0.801	1.224	1.015	0.214	1.535
27.6	41.0	0.013	0.22	6.488	0.455	0.454	5.694	0.224	1.465	1.240	0.786	1.237	1.013	0.227	1.578
30.6	43.2	0.014	0.25	6.489	0.479	0.479	5.707	0.237	1.489	1.252	0.773	1.249	1.012	0.239	1.619
33.7	45.3	0.016	0.27	6.491	0.503	0.502	5.720	0.250	1.512	1.262	0.760	1.261	1.011	0.251	1.660
36.8	47.4	0.017	0.30	6.493	0.525	0.524	5.731	0.261	1.534	1.273	0.749	1.272	1.011	0.262	1.700
39.8	49.1	0.019	0.32	6.494	0.545	0.544	5.742	0.272	1.554	1.282	0.738	1.282	1.010	0.272	1.737
42.9	50.9	0.020	0.34	6.496	0.564	0.563	5.751	0.281	1.573	1.291	0.728	1.291	1.010	0.281	1.773
46.0	52.5	0.021	0.37	6.497	0.581	0.580	5.760	0.290	1.590	1.300	0.719	1.300	1.010	0.290	1.807
49.0	54.1	0.023	0.39	6.499	0.599	0.598	5.768	0.298	1.608	1.309	0.711	1.309	1.010	0.299	1.841
52.1	55.7	0.024	0.43	6.501	0.616	0.615	5.776	0.306	1.625	1.319	0.704	1.317	1.011	0.308	1.875
55.1	57.1	0.026	0.45	6.502	0.633	0.632	5.783	0.313	1.641	1.328	0.696	1.325	1.012	0.316	1.907
58.2	58.5	0.027	0.47	6.504	0.648	0.647	5.790	0.320	1.656	1.336	0.689	1.333	1.013	0.324	1.938
61.3	59.9	0.029	0.50	6.506	0.663	0.662	5.797	0.327	1.671	1.345	0.683	1.341	1.014	0.331	1.969
64.3	61.1	0.030	0.52	6.507	0.676	0.675	5.803	0.333	1.685	1.352	0.677	1.347	1.014	0.337	1.997
67.4	62.4	0.031	0.54	6.509	0.690	0.689	5.810	0.340	1.699	1.360	0.671	1.355	1.015	0.345	2.028
70.5	63.7	0.033	0.57	6.511	0.704	0.703	5.816	0.346	1.714	1.368	0.665	1.362	1.017	0.351	2.057
73.5	64.9	0.034	0.59	6.512	0.717	0.716	5.821	0.351	1.726	1.375	0.659	1.368	1.017	0.358	2.085
76.6	66.1	0.035	0.61	6.513	0.731	0.729	5.826	0.356	1.739	1.383	0.654	1.375	1.019	0.365	2.114
79.7	67.3	0.037	0.64	6.515	0.744	0.742	5.831	0.361	1.752	1.391	0.649	1.381	1.020	0.371	2.142
82.7	68.4	0.038	0.67	6.517	0.756	0.754	5.835	0.365	1.765	1.399	0.645	1.387	1.022	0.377	2.169
85.8	69.5	0.040	0.69	6.518	0.767	0.765	5.839	0.369	1.775	1.407	0.641	1.393	1.024	0.383	2.194
88.9	70.5	0.041	0.72	6.520	0.779	0.777	5.843	0.373	1.787	1.415	0.638	1.399	1.026	0.389	2.219
101.1	74.6	0.047	0.82	6.527	0.822	0.820	5.854	0.384	1.830	1.446	0.626	1.420	1.036	0.410	2.311
113.4	78.1	0.053	0.93	6.534	0.860	0.858	5.866	0.396	1.868	1.472	0.614	1.439	1.043	0.429	2.397
125.6	81.7	0.059	1.02	6.540	0.900	0.897	5.875	0.405	1.908	1.503	0.606	1.459	1.055	0.449	2.480
137.9	84.8	0.064	1.11	6.546	0.933	0.930	5.881	0.411	1.940	1.530	0.600	1.475	1.065	0.465	2.550
150.1	87.8	0.070	1.23	6.554	0.965	0.962	5.884	0.414	1.972	1.557	0.596	1.491	1.077	0.481	2.614
162.4	90.6	0.076	1.32	6.560	0.994	0.991	5.886	0.416	2.000	1.584	0.593	1.505	1.088	0.495	2.670
174.6	93.1	0.081	1.42	6.567	1.021	1.017	5.890	0.420	2.028	1.608	0.590	1.519	1.099	0.509	2.725
186.8	95.5	0.087	1.52	6.573	1.046	1.043	5.891	0.421	2.053	1.632	0.589	1.532	1.111	0.521	2.770
199.1	97.7	0.093	1.62	6.580	1.069	1.065	5.894	0.424	2.076	1.652	0.587	1.543	1.120	0.533	2.814

Project: 173409690			Source: B-3.44a, 4.1'-4.6'								Lab ID: 773		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
211.3	99.9	0.098	1.72	6.586	1.092	1.088	5.891	0.421	2.101	1.681	0.593	1.557	1.137	0.544	2.834
223.6	102.0	0.104	1.82	6.593	1.114	1.110	5.888	0.418	2.119	1.701	0.592	1.564	1.146	0.555	2.876
235.9	104.0	0.110	1.92	6.600	1.134	1.130	5.890	0.420	2.140	1.720	0.590	1.575	1.155	0.565	2.914
248.1	105.9	0.116	2.02	6.607	1.154	1.149	5.886	0.416	2.158	1.743	0.594	1.584	1.169	0.574	2.934
260.3	107.8	0.122	2.12	6.614	1.173	1.168	5.883	0.413	2.178	1.766	0.598	1.594	1.182	0.584	2.955
272.6	109.5	0.127	2.22	6.620	1.191	1.185	5.880	0.410	2.195	1.785	0.600	1.602	1.192	0.593	2.977
284.8	111.2	0.133	2.32	6.627	1.209	1.203	5.876	0.406	2.213	1.807	0.604	1.611	1.205	0.602	2.993
297.1	112.7	0.139	2.42	6.634	1.223	1.217	5.872	0.402	2.227	1.825	0.607	1.618	1.216	0.609	3.005
309.3	114.2	0.145	2.53	6.641	1.238	1.232	5.869	0.399	2.242	1.843	0.611	1.626	1.227	0.616	3.017
321.6	115.7	0.150	2.62	6.648	1.253	1.247	5.865	0.395	2.257	1.861	0.615	1.633	1.238	0.623	3.028
333.8	117.0	0.156	2.73	6.655	1.265	1.259	5.860	0.390	2.268	1.879	0.620	1.639	1.249	0.629	3.032
346.1	118.1	0.162	2.82	6.661	1.277	1.270	5.856	0.386	2.280	1.893	0.623	1.645	1.258	0.635	3.038
358.3	119.6	0.167	2.91	6.668	1.291	1.284	5.853	0.383	2.294	1.911	0.626	1.652	1.268	0.642	3.050
370.5	120.8	0.173	3.02	6.675	1.303	1.296	5.849	0.379	2.305	1.926	0.631	1.657	1.278	0.648	3.055
382.8	121.9	0.179	3.12	6.682	1.313	1.306	5.843	0.373	2.315	1.942	0.636	1.662	1.289	0.653	3.053
395.1	123.2	0.184	3.22	6.689	1.327	1.319	5.840	0.370	2.329	1.959	0.640	1.669	1.299	0.659	3.061
407.3	124.4	0.190	3.31	6.695	1.337	1.329	5.835	0.365	2.338	1.974	0.644	1.673	1.309	0.665	3.064
419.5	125.4	0.196	3.41	6.702	1.347	1.339	5.830	0.360	2.348	1.988	0.649	1.679	1.319	0.670	3.063
431.8	126.5	0.201	3.51	6.709	1.357	1.349	5.825	0.355	2.358	2.003	0.654	1.683	1.328	0.674	3.062
444.0	127.4	0.207	3.61	6.716	1.366	1.357	5.820	0.350	2.365	2.016	0.659	1.687	1.338	0.678	3.059
456.3	128.4	0.213	3.72	6.723	1.375	1.366	5.816	0.346	2.374	2.029	0.663	1.691	1.346	0.683	3.062
468.5	129.2	0.219	3.82	6.730	1.383	1.374	5.812	0.342	2.383	2.041	0.667	1.696	1.354	0.687	3.058
480.8	130.5	0.224	3.91	6.737	1.395	1.385	5.807	0.337	2.394	2.057	0.672	1.701	1.365	0.693	3.061
493.0	131.3	0.230	4.01	6.744	1.401	1.392	5.802	0.332	2.401	2.069	0.677	1.705	1.373	0.696	3.056
505.3	132.1	0.235	4.11	6.751	1.409	1.399	5.797	0.327	2.407	2.080	0.682	1.708	1.381	0.699	3.053
517.5	133.0	0.241	4.21	6.758	1.417	1.407	5.792	0.322	2.415	2.093	0.687	1.712	1.390	0.703	3.049
529.8	133.7	0.247	4.32	6.766	1.423	1.413	5.787	0.317	2.421	2.104	0.691	1.715	1.398	0.706	3.044
542.0	134.8	0.253	4.41	6.772	1.433	1.422	5.783	0.313	2.430	2.118	0.696	1.719	1.407	0.711	3.044
554.3	135.5	0.259	4.51	6.779	1.439	1.428	5.777	0.307	2.436	2.129	0.701	1.722	1.415	0.714	3.037
566.5	136.3	0.264	4.61	6.786	1.446	1.435	5.773	0.303	2.444	2.141	0.705	1.726	1.423	0.718	3.035
578.8	137.1	0.270	4.71	6.793	1.453	1.441	5.768	0.298	2.448	2.151	0.710	1.728	1.430	0.721	3.031
609.4	138.8	0.285	4.97	6.812	1.467	1.455	5.756	0.286	2.462	2.176	0.721	1.734	1.448	0.727	3.018
640.0	140.4	0.299	5.21	6.830	1.481	1.468	5.745	0.275	2.475	2.200	0.732	1.741	1.466	0.734	3.005
670.6	142.0	0.313	5.47	6.848	1.493	1.480	5.733	0.263	2.487	2.224	0.744	1.747	1.484	0.740	2.990
701.2	143.6	0.327	5.71	6.865	1.506	1.493	5.722	0.252	2.499	2.247	0.755	1.753	1.501	0.746	2.978
731.8	145.1	0.342	5.96	6.884	1.518	1.503	5.711	0.240	2.510	2.269	0.766	1.758	1.518	0.752	2.963
762.5	146.7	0.356	6.22	6.903	1.531	1.516	5.701	0.231	2.523	2.292	0.776	1.765	1.534	0.758	2.954
793.1	148.5	0.370	6.46	6.920	1.545	1.530	5.691	0.221	2.538	2.318	0.788	1.774	1.553	0.765	2.941
823.7	150.2	0.385	6.72	6.940	1.559	1.542	5.679	0.209	2.552	2.343	0.800	1.781	1.571	0.771	2.927
854.3	151.6	0.399	6.96	6.957	1.569	1.552	5.668	0.198	2.561	2.364	0.811	1.785	1.588	0.776	2.913
884.9	153.0	0.413	7.21	6.976	1.579	1.562	5.657	0.187	2.571	2.385	0.823	1.790	1.604	0.781	2.897
915.5	154.2	0.428	7.46	6.995	1.587	1.569	5.646	0.176	2.579	2.403	0.833	1.794	1.618	0.785	2.883
946.1	155.3	0.442	7.71	7.014	1.594	1.575	5.636	0.166	2.584	2.418	0.843	1.797	1.630	0.788	2.869
976.7	156.4	0.457	7.97	7.034	1.601	1.581	5.626	0.156	2.590	2.434	0.852	1.800	1.643	0.791	2.855
1007.4	157.2	0.470	8.21	7.052	1.605	1.585	5.616	0.146	2.593	2.446	0.861	1.800	1.654	0.793	2.841
1038.0	158.3	0.485	8.46	7.071	1.612	1.591	5.610	0.140	2.599	2.459	0.868	1.804	1.664	0.796	2.834
1068.6	159.2	0.499	8.70	7.090	1.617	1.596	5.603	0.133	2.603	2.470	0.874	1.805	1.672	0.798	2.826
1099.2	160.2	0.514	8.97	7.111	1.622	1.600	5.593	0.123	2.607	2.484	0.884	1.807	1.684	0.800	2.811
1129.8	161.1	0.528	9.21	7.130	1.627	1.604	5.589	0.119	2.613	2.493	0.889	1.810	1.691	0.802	2.806
1160.4	161.8	0.542	9.46	7.150	1.629	1.606	5.581	0.111	2.615	2.505	0.898	1.812	1.701	0.803	2.788
1191.1	162.5	0.557	9.71	7.170	1.631	1.608	5.572	0.102	2.616	2.515	0.907	1.812	1.711	0.804	2.774
1221.7	163.4	0.571	9.96	7.189	1.636	1.612	5.564	0.094	2.621	2.527	0.915	1.815	1.721	0.806	2.762
1252.3	164.0	0.586	10.22	7.210	1.637	1.613	5.556	0.086	2.620	2.534	0.922	1.814	1.728	0.806	2.749
1282.9	165.3	0.599	10.46	7.229	1.647	1.622	5.551	0.081	2.630	2.549	0.927	1.819	1.738	0.811	2.749
1313.5	166.3	0.615	10.72	7.251	1.651	1.625	5.544	0.074	2.633	2.560	0.935	1.821	1.747	0.813	2.739
1344.1	167.2	0.629	10.97	7.271	1.655	1.629	5.537	0.067	2.637	2.570	0.941	1.822	1.756	0.814	2.731
1374.8	168.0	0.643	11.22	7.291	1.659	1.632	5.532	0.061	2.640	2.578	0.947	1.824	1.762	0.816	2.724
1405.4	168.7	0.658	11.47	7.312	1.661	1.633	5.527	0.057	2.641	2.584	0.950	1.824	1.767	0.817	2.719
1436.0	169.2	0.671	11.72	7.333	1.662	1.633	5.522	0.052	2.640	2.588	0.955	1.823	1.771	0.817	2.711
1466.6	169.6	0.686	11.98	7.354	1.661	1.632	5.518	0.048	2.639	2.591	0.959	1.823	1.775	0.816	2.702
1497.2	170.2	0.700	12.21	7.374	1.662	1.632	5.515	0.044	2.640	2.595	0.963	1.824	1.779	0.816	2.695
1527.8	170.8	0.715	12.47	7.396	1.663	1.633	5.509	0.039	2.639	2.600	0.967	1.823	1.784	0.816	2.688
1558.4	171.3	0.729	12.72	7.417	1.663	1.632	5.505	0.035	2.639	2.604	0.972	1.823	1.788	0.816	2.679
1589.0	171.9	0.743	12.97	7.438	1.664	1.632	5.502	0.032	2.640	2.608	0.975	1.824	1.791	0.816	2.674
1619.7	172.4	0.758	13.22	7.460	1.664	1.632	5.497	0.027	2.641	2.614	0.982	1.824	1.798	0.816	2.663
1650.3	173.2	0.772	13.48	7.482	1.667	1.634	5.488	0.018	2.642	2.624	0.990	1.825	1.807	0.817	2.651
1680.9	173.8	0.787	13.73	7.503	1.667	1.634	5.482	0.012	2.641	2.629	0.995	1.824	1.812	0.817	2.642
1711.5	174.2	0.801	13.97	7.525	1.667	1.633	5.478	0.008	2.640	2.633	0.999	1.823	1.816	0.817	2.635
1742.1	174.8	0.815	14.23	7.547	1.667	1.633	5.474	0.004	2.640	2.636	1.003	1.823	1.820	0.817	2.628

Project: 173409690			Source: B-3.44a, 4.1'-4.6'								Lab ID: 773		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
1772.7	175.3	0.829	14.47	7.568	1.668	1.633	5.470	0.000	2.638	2.639	1.006	1.822	1.822	0.816	2.623
1803.3	176.0	0.844	14.73	7.592	1.669	1.633	5.468	-0.002	2.639	2.642	1.008	1.823	1.825	0.817	2.620
1834.0	176.6	0.859	14.99	7.614	1.669	1.633	5.464	-0.006	2.639	2.644	1.011	1.822	1.828	0.817	2.615
1864.6	177.1	0.872	15.22	7.636	1.670	1.633	5.460	-0.010	2.637	2.647	1.014	1.821	1.831	0.816	2.610
1895.2	177.7	0.887	15.48	7.659	1.670	1.633	5.458	-0.012	2.638	2.650	1.017	1.821	1.834	0.817	2.605
1925.8	178.4	0.901	15.72	7.681	1.672	1.634	5.455	-0.015	2.638	2.654	1.019	1.821	1.837	0.817	2.603
1956.4	179.1	0.916	15.98	7.704	1.674	1.635	5.453	-0.017	2.640	2.657	1.022	1.822	1.839	0.818	2.601
1987.0	179.6	0.930	16.23	7.728	1.673	1.634	5.448	-0.022	2.639	2.661	1.026	1.822	1.844	0.817	2.592
2017.7	180.1	0.945	16.49	7.751	1.673	1.633	5.443	-0.027	2.638	2.665	1.032	1.821	1.848	0.817	2.583
2048.1	180.7	0.959	16.73	7.774	1.674	1.633	5.434	-0.036	2.633	2.669	1.035	1.816	1.852	0.817	2.578

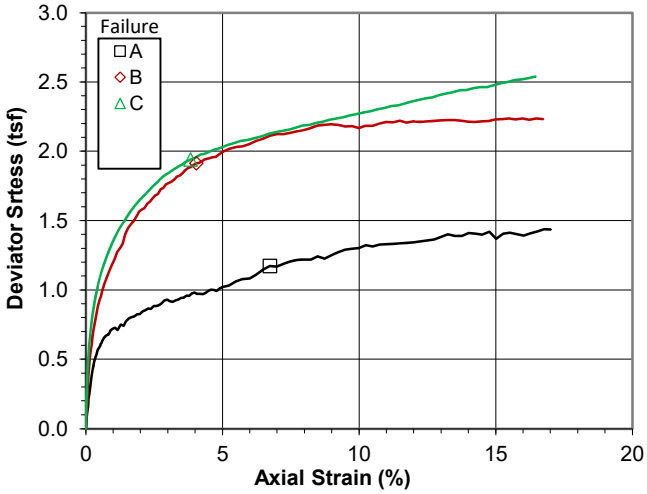
Consolidated Undrained Triaxial Compression

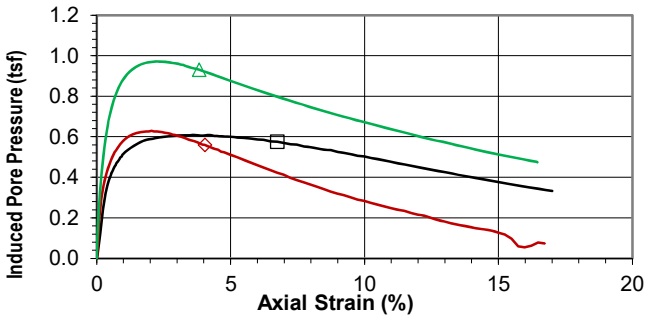
ASTM D 4767

Project Name Eagle Creek

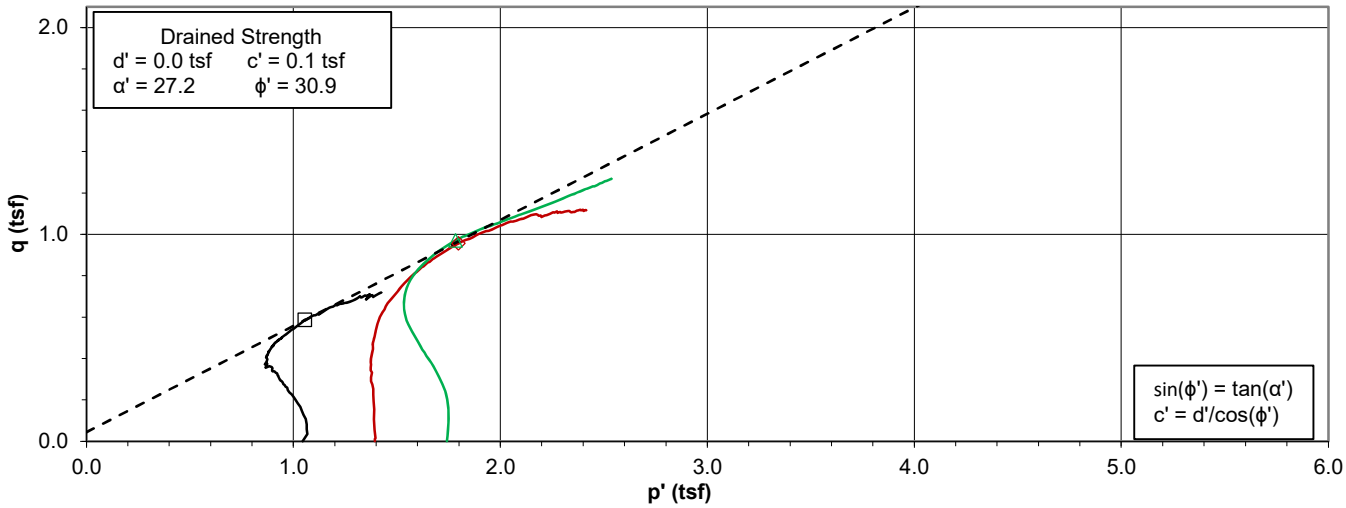
Project 173409690
Set ID 778

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	778A	B-3.45a, 4.2'-4.7'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30
B	778B	B-3.45a, 4.8'-5.3'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30
C	778C	B-3.45a, 5.4'-5.9'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.771	5.752	5.766		
Average Diameter (in)	2.872	2.872	2.873		
Moist Unit Weight (pcf)	120.2	124.6	131.3		
Moisture Content (%)	25.7	24.9	18.3		
Dry Unit Weight (pcf)	95.6	99.8	110.9		
Void Ratio	0.779	0.705	0.534		
Degree of Saturation (%)	90.2	96.2	93.8		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	125.1	126.7	134.1		
Moisture Content (%)	26.3	24.7	18.4		
Dry Unit Weight (pcf)	99.1	101.6	113.3		
Void Ratio	0.717	0.675	0.502		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	1.045	1.394	1.741		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	6.739	4.043	3.828		
Deviator Stress (tsf)	1.172	1.913	1.942		
Induced Pore Press. (tsf)	0.575	0.560	0.930		
Minor Eff. Stress, σ_3' (tsf)	0.469	0.841	0.813		
Major Eff. Stress, σ_1' (tsf)	1.642	2.754	2.755		
Eff. Stress Ratio, σ_1'/σ_3'	3.499	3.275	3.390		
p' (tsf)	1.055	1.797	1.784		
q (tsf)	0.586	0.957	0.971		



Comments

Reviewed By KG

Stantec

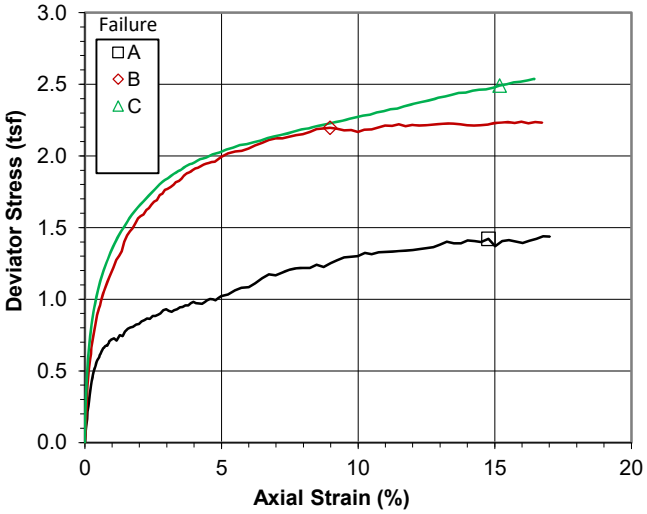
Consolidated Undrained Triaxial Compression

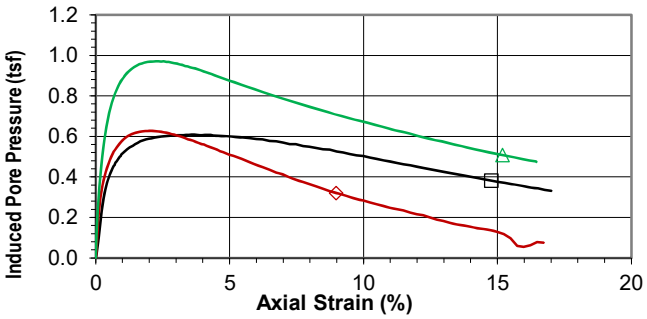
ASTM D 4767

Project Name Eagle Creek

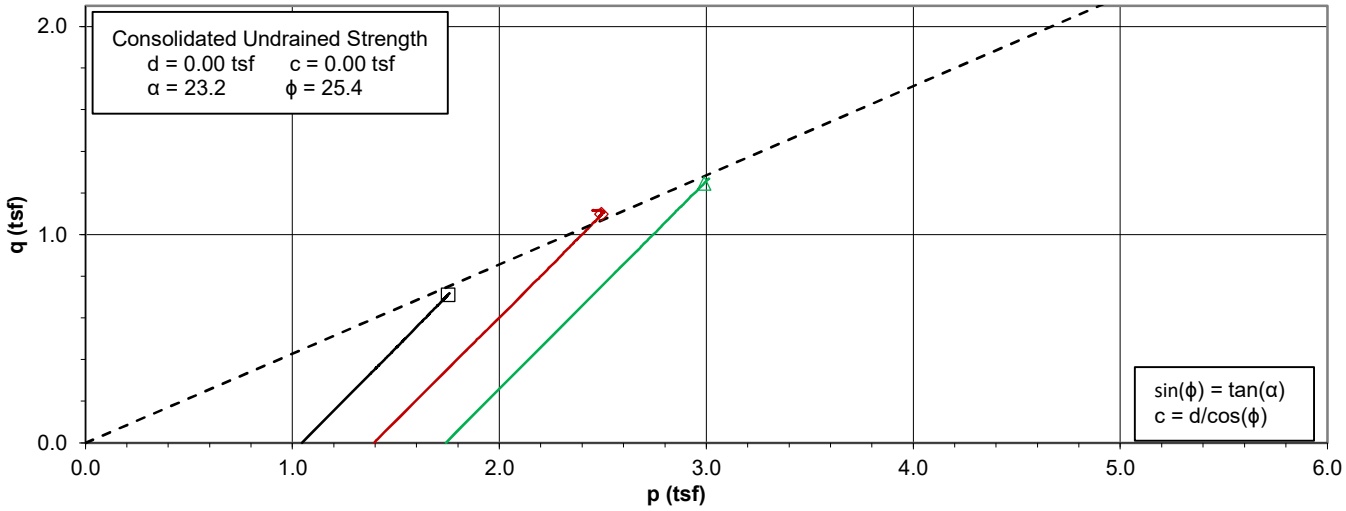
Project 173409690
Set ID 778

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	778A	B-3.45a, 4.2'-4.7'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30
B	778B	B-3.45a, 4.8'-5.3'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30
C	778C	B-3.45a, 5.4'-5.9'	Fat Clay (CH), brown, moist, firm	2.73	52	22	30





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.771	5.752	5.766		
Average Diameter (in)	2.872	2.872	2.873		
Moist Unit Weight (pcf)	120.2	124.6	131.3		
Moisture Content (%)	25.7	24.9	18.3		
Dry Unit Weight (pcf)	95.6	99.8	110.9		
Void Ratio	0.779	0.705	0.534		
Degree of Saturation (%)	90.2	96.2	93.8		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	125.1	126.7	134.1		
Moisture Content (%)	26.3	24.7	18.4		
Dry Unit Weight (pcf)	99.1	101.6	113.3		
Void Ratio	0.717	0.675	0.502		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	1.045	1.394	1.741		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	14.767	8.975	15.186		
Deviator Stress (tsf)	1.420	2.195	2.491		
Min. Prin. Stress, σ_3 (tsf)	1.042	1.396	1.743		
Maj. Prin. Stress, σ_1 (tsf)	2.462	3.591	4.234		
p (tsf)	1.752	2.493	2.989		
q (tsf)	0.710	1.098	1.245		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 4.2'-4.7'	Lab ID	778A
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-A
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/04/2021

Specific Gravity	2.73
ASTM D 854, Dry	
Liquid Limit	52
Plastic Limit	22
Plasticity Index	30
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	1.044
Time to 50% Consolidation (min)	18.00
Actual Axial Strain Rate of Test (%/min)	0.017

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	125.1
Moisture Content (%)	26.3
Dry Unit Weight (pcf)	99.1
Void Ratio	0.717
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

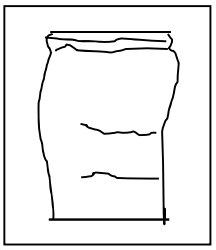
Axial Strain (%)	6.739
Deviator Stress (tsf)	1.172
Induced Pore Pressure (tsf)	0.575
Minor Effective Stress, σ_3' (tsf)	0.469
Major Effective Stress, σ_1' (tsf)	1.642
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.499
p' (tsf)	1.055
q (tsf)	0.586

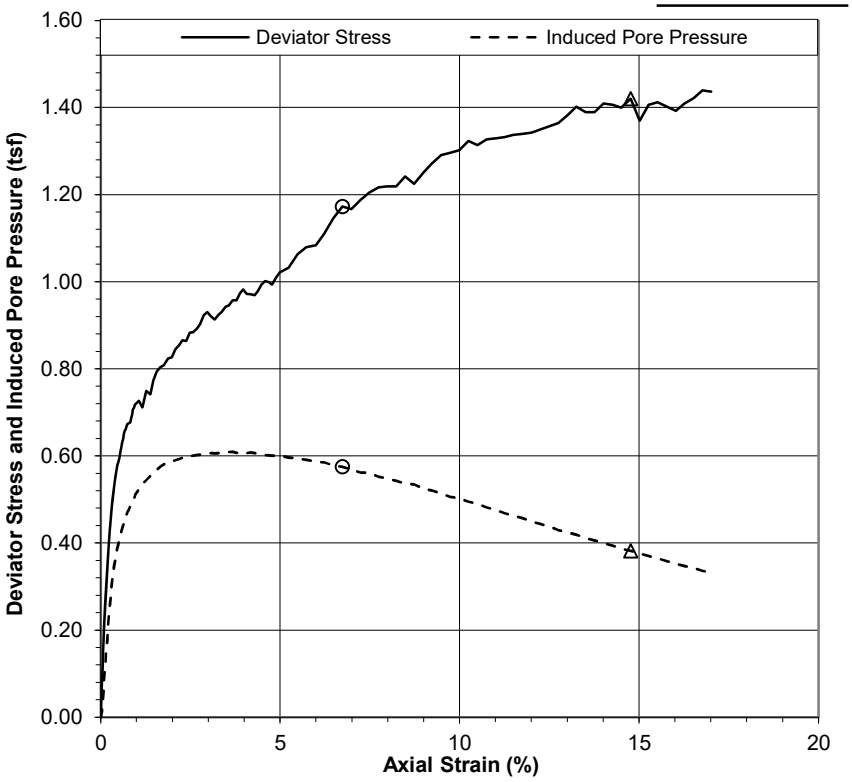
At Consolidated Undrained Failure

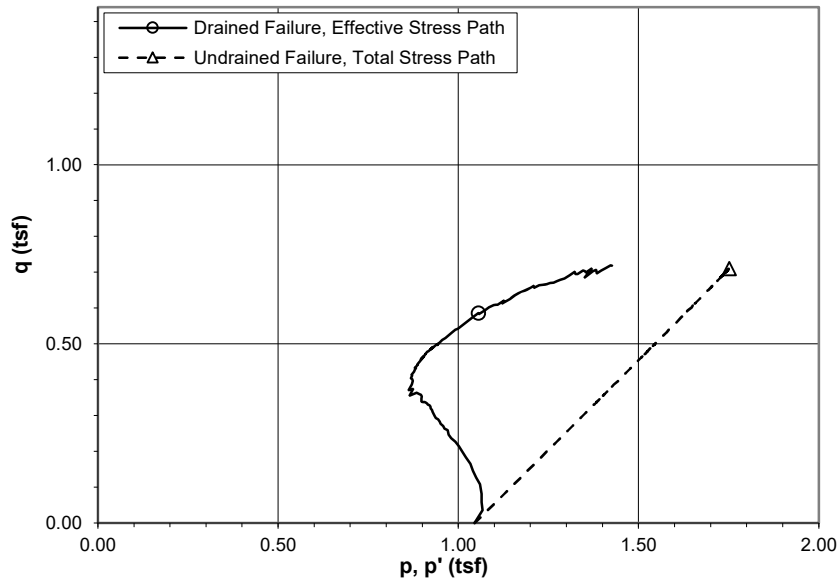
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	14.767
Deviator Stress (tsf)	1.420
Minor Principal Stress, σ_3 (tsf)	1.042
Major Principal Stress, σ_1 (tsf)	2.462
p (tsf)	1.752
q (tsf)	0.710

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 4.2'-4.7'	Lab ID	778A
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.771	Calculated Height (in)	5.688	Specific Gravity	2.73
Average Diameter (in)	2.872	Calculated Diameter (in)	2.843	ASTM D 854, Dry	
Calculated Area (in^2)	6.480	Calculated Area (in^2)	6.347	Liquid Limit	52
Moist Weight (lb)	2.602	Moist Weight (lb)	2.613	Plastic Limit	22
Moist Unit Weight (pcf)	120.2	Moist Unit Weight (pcf)	125.1	Plasticity Index	30
Moisture Content (%)	25.7	Moisture Content (%)	26.3	ASTM D 4318	
Dry Weight (lb)	2.069	Dry Weight (lb)	2.069		
Dry Unit Weight (pcf)	95.6	Dry Unit Weight (pcf)	99.1	Confining Stress	
Void Ratio	0.779	Void Ratio	0.717	σ_3 (tsf)	1.045
Degree of Saturation (%)	90.2	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.045

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.45a, 4.2'-4.7'								Lab ID: 778A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.347	0.000	0.000	5.437	0.000	1.045	1.045	1.045	1.045	1.045	0.000	1.000
1.5	6.3	0.002	0.03	6.349	0.071	0.071	5.450	0.014	1.116	1.103	1.032	1.081	1.067	0.035	1.069
3.0	10.2	0.003	0.06	6.351	0.116	0.116	5.475	0.038	1.161	1.123	1.007	1.103	1.065	0.058	1.115
4.5	14.4	0.005	0.08	6.352	0.164	0.163	5.499	0.062	1.209	1.146	0.983	1.127	1.065	0.082	1.166
6.0	19.0	0.006	0.10	6.353	0.216	0.215	5.530	0.093	1.261	1.168	0.952	1.153	1.060	0.108	1.226
7.5	22.5	0.007	0.13	6.355	0.255	0.254	5.560	0.123	1.300	1.176	0.922	1.173	1.049	0.127	1.276
9.0	25.7	0.009	0.15	6.357	0.291	0.291	5.587	0.150	1.336	1.186	0.896	1.191	1.041	0.145	1.325
10.5	29.3	0.010	0.18	6.359	0.332	0.331	5.614	0.178	1.377	1.199	0.868	1.211	1.034	0.166	1.382
12.0	32.4	0.011	0.20	6.360	0.367	0.366	5.644	0.207	1.412	1.205	0.838	1.229	1.022	0.183	1.437
13.5	35.3	0.013	0.23	6.362	0.400	0.399	5.671	0.234	1.445	1.210	0.811	1.245	1.010	0.200	1.493
15.0	38.0	0.014	0.25	6.363	0.429	0.429	5.695	0.259	1.474	1.216	0.787	1.260	1.001	0.214	1.545
16.5	40.2	0.016	0.28	6.365	0.454	0.454	5.717	0.280	1.499	1.219	0.765	1.272	0.992	0.227	1.593
18.0	41.9	0.017	0.30	6.366	0.474	0.473	5.738	0.301	1.518	1.217	0.744	1.282	0.981	0.236	1.636
19.5	43.7	0.018	0.32	6.368	0.494	0.493	5.755	0.319	1.539	1.220	0.727	1.292	0.974	0.247	1.678
21.0	45.8	0.020	0.35	6.369	0.518	0.517	5.770	0.334	1.563	1.229	0.712	1.304	0.970	0.259	1.727
22.5	46.7	0.021	0.38	6.371	0.528	0.527	5.784	0.347	1.572	1.225	0.698	1.309	0.962	0.264	1.755
24.0	48.0	0.023	0.40	6.372	0.543	0.542	5.795	0.359	1.587	1.229	0.687	1.316	0.958	0.271	1.789
25.5	49.1	0.024	0.42	6.374	0.554	0.553	5.808	0.371	1.599	1.228	0.675	1.322	0.951	0.277	1.820
27.0	50.3	0.025	0.44	6.375	0.568	0.567	5.817	0.381	1.612	1.231	0.665	1.329	0.948	0.283	1.853
28.5	51.4	0.027	0.47	6.377	0.581	0.579	5.827	0.391	1.625	1.234	0.654	1.335	0.944	0.290	1.885
30.0	52.0	0.028	0.50	6.379	0.587	0.586	5.837	0.400	1.631	1.231	0.645	1.338	0.938	0.293	1.909
31.5	53.1	0.030	0.53	6.381	0.599	0.598	5.847	0.410	1.644	1.233	0.635	1.345	0.934	0.299	1.941
33.0	54.0	0.031	0.55	6.382	0.610	0.608	5.855	0.418	1.654	1.236	0.627	1.350	0.931	0.304	1.970
34.5	55.0	0.033	0.57	6.383	0.621	0.619	5.863	0.427	1.665	1.238	0.619	1.355	0.928	0.310	2.000
36.0	56.1	0.034	0.60	6.385	0.633	0.631	5.870	0.434	1.677	1.243	0.611	1.361	0.927	0.316	2.033
37.5	56.8	0.036	0.63	6.387	0.641	0.639	5.878	0.442	1.685	1.243	0.604	1.365	0.924	0.320	2.058
39.0	57.8	0.037	0.65	6.388	0.651	0.650	5.884	0.448	1.695	1.247	0.598	1.371	0.923	0.325	2.087
40.5	58.6	0.038	0.68	6.390	0.660	0.658	5.891	0.454	1.704	1.249	0.591	1.375	0.920	0.329	2.113
42.0	58.9	0.040	0.70	6.392	0.663	0.661	5.896	0.460	1.706	1.247	0.585	1.376	0.916	0.331	2.130
43.5	59.4	0.041	0.72	6.393	0.669	0.667	5.902	0.466	1.713	1.247	0.580	1.379	0.913	0.334	2.151
45.0	59.9	0.043	0.75	6.395	0.674	0.673	5.908	0.471	1.718	1.247	0.574	1.382	0.910	0.336	2.171
46.6	60.2	0.044	0.78	6.397	0.677	0.675	5.913	0.477	1.721	1.244	0.569	1.383	0.907	0.338	2.186
48.1	60.2	0.046	0.80	6.398	0.678	0.676	5.918	0.482	1.721	1.240	0.564	1.383	0.902	0.338	2.199
49.6	60.3	0.047	0.83	6.400	0.679	0.677	5.922	0.486	1.722	1.236	0.559	1.383	0.897	0.338	2.210
51.1	61.2	0.048	0.85	6.402	0.689	0.686	5.928	0.491	1.732	1.241	0.554	1.389	0.898	0.343	2.238
52.6	62.0	0.050	0.88	6.403	0.697	0.695	5.932	0.496	1.741	1.245	0.550	1.393	0.897	0.348	2.264
54.1	63.0	0.051	0.90	6.405	0.708	0.706	5.937	0.500	1.752	1.252	0.546	1.399	0.899	0.353	2.295
55.6	63.5	0.053	0.93	6.407	0.713	0.711	5.940	0.503	1.757	1.254	0.542	1.401	0.898	0.356	2.312
57.1	63.9	0.054	0.95	6.408	0.718	0.716	5.944	0.508	1.761	1.254	0.538	1.403	0.896	0.358	2.332

Project: 173409690			Source: B-3.45a, 4.2'-4.7'								Lab ID: 778A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
58.6	64.1	0.055	0.96	6.409	0.720	0.718	5.948	0.511	1.763	1.252	0.535	1.404	0.893	0.359	2.343
64.6	65.0	0.061	1.07	6.415	0.729	0.727	5.961	0.524	1.772	1.247	0.521	1.408	0.884	0.363	2.395
70.6	63.7	0.066	1.17	6.422	0.714	0.711	5.973	0.536	1.756	1.220	0.509	1.401	0.865	0.355	2.396
76.6	67.2	0.073	1.28	6.429	0.752	0.749	5.982	0.545	1.795	1.249	0.500	1.420	0.875	0.375	2.498
82.6	66.6	0.079	1.38	6.436	0.745	0.741	5.991	0.554	1.787	1.232	0.491	1.416	0.862	0.371	2.511
88.6	69.5	0.084	1.47	6.442	0.776	0.773	5.997	0.561	1.818	1.257	0.484	1.432	0.871	0.386	2.595
94.6	71.4	0.089	1.57	6.448	0.798	0.794	6.005	0.569	1.840	1.271	0.477	1.443	0.874	0.397	2.664
100.6	72.4	0.095	1.66	6.454	0.808	0.804	6.012	0.576	1.849	1.274	0.470	1.447	0.872	0.402	2.709
106.6	72.9	0.100	1.77	6.461	0.813	0.808	6.018	0.581	1.854	1.273	0.464	1.449	0.868	0.404	2.741
112.6	74.4	0.107	1.88	6.468	0.828	0.823	6.022	0.585	1.869	1.284	0.460	1.457	0.872	0.412	2.788
118.6	74.8	0.113	1.98	6.475	0.831	0.827	6.024	0.588	1.872	1.284	0.457	1.458	0.871	0.413	2.808
124.6	76.5	0.118	2.08	6.482	0.850	0.845	6.027	0.590	1.890	1.300	0.455	1.468	0.877	0.422	2.858
130.6	77.4	0.124	2.18	6.489	0.859	0.853	6.029	0.593	1.899	1.306	0.453	1.472	0.879	0.427	2.886
136.6	78.6	0.129	2.28	6.495	0.871	0.866	6.033	0.596	1.911	1.315	0.449	1.478	0.882	0.433	2.926
142.6	78.5	0.136	2.38	6.502	0.870	0.864	6.034	0.598	1.909	1.311	0.448	1.477	0.879	0.432	2.930
148.6	80.4	0.141	2.48	6.508	0.889	0.883	6.036	0.600	1.928	1.329	0.446	1.487	0.887	0.442	2.982
154.6	80.6	0.147	2.58	6.515	0.890	0.884	6.037	0.601	1.929	1.328	0.444	1.487	0.886	0.442	2.989
160.6	81.4	0.153	2.68	6.522	0.898	0.892	6.039	0.602	1.937	1.335	0.443	1.491	0.889	0.446	3.012
166.6	82.4	0.158	2.77	6.528	0.909	0.902	6.040	0.603	1.947	1.344	0.442	1.496	0.893	0.451	3.039
172.6	84.4	0.163	2.87	6.535	0.930	0.923	6.041	0.604	1.969	1.364	0.441	1.507	0.903	0.462	3.095
178.6	85.2	0.169	2.97	6.542	0.937	0.930	6.042	0.606	1.976	1.370	0.440	1.511	0.905	0.465	3.115
184.6	84.3	0.175	3.08	6.549	0.927	0.920	6.043	0.606	1.965	1.359	0.439	1.505	0.899	0.460	3.095
190.6	83.9	0.181	3.18	6.555	0.921	0.913	6.043	0.606	1.958	1.352	0.439	1.502	0.896	0.457	3.081
196.6	84.9	0.186	3.28	6.562	0.932	0.924	6.043	0.606	1.969	1.362	0.439	1.507	0.900	0.462	3.106
202.6	85.7	0.192	3.37	6.568	0.939	0.931	6.044	0.607	1.976	1.369	0.438	1.511	0.904	0.466	3.126
208.7	86.9	0.198	3.48	6.576	0.951	0.943	6.044	0.607	1.988	1.380	0.438	1.516	0.909	0.471	3.154
214.7	87.2	0.203	3.57	6.582	0.954	0.945	6.046	0.609	1.991	1.382	0.436	1.518	0.909	0.473	3.166
220.7	88.4	0.209	3.68	6.590	0.966	0.957	6.046	0.609	2.002	1.393	0.436	1.524	0.914	0.479	3.196
226.7	88.6	0.215	3.78	6.597	0.967	0.957	6.044	0.607	2.002	1.395	0.437	1.523	0.916	0.479	3.189
232.7	90.2	0.221	3.88	6.603	0.983	0.974	6.042	0.606	2.018	1.412	0.439	1.531	0.925	0.487	3.220
238.7	91.0	0.226	3.98	6.610	0.992	0.982	6.042	0.606	2.027	1.421	0.439	1.536	0.930	0.491	3.237
244.7	90.2	0.232	4.07	6.616	0.982	0.972	6.043	0.607	2.017	1.410	0.439	1.531	0.925	0.486	3.215
250.7	90.3	0.238	4.18	6.624	0.981	0.971	6.045	0.608	2.017	1.408	0.437	1.531	0.923	0.485	3.220
256.7	90.2	0.244	4.29	6.632	0.979	0.969	6.043	0.607	2.014	1.407	0.438	1.530	0.923	0.485	3.210
262.7	91.2	0.250	4.39	6.638	0.989	0.978	6.041	0.604	2.023	1.419	0.440	1.534	0.929	0.489	3.222
268.7	92.6	0.255	4.48	6.645	1.004	0.993	6.040	0.603	2.038	1.434	0.441	1.541	0.938	0.496	3.249
274.7	93.5	0.260	4.58	6.651	1.012	1.001	6.039	0.602	2.046	1.444	0.443	1.546	0.944	0.501	3.260
280.7	93.5	0.266	4.68	6.659	1.011	0.999	6.038	0.602	2.045	1.443	0.443	1.545	0.943	0.500	3.254
286.7	93.0	0.272	4.78	6.665	1.005	0.993	6.037	0.601	2.039	1.438	0.444	1.542	0.941	0.497	3.235
292.7	94.6	0.278	4.89	6.673	1.021	1.009	6.038	0.601	2.054	1.453	0.444	1.550	0.949	0.504	3.270
298.7	95.9	0.284	4.99	6.680	1.034	1.021	6.037	0.601	2.067	1.466	0.445	1.556	0.956	0.511	3.296
313.7	97.2	0.298	5.24	6.698	1.045	1.032	6.033	0.597	2.077	1.480	0.448	1.561	0.964	0.516	3.305
328.7	100.4	0.312	5.49	6.716	1.076	1.063	6.031	0.594	2.108	1.514	0.451	1.576	0.982	0.531	3.358
343.7	102.2	0.326	5.73	6.733	1.093	1.079	6.028	0.591	2.123	1.532	0.453	1.584	0.992	0.539	3.383
358.7	103.0	0.341	6.00	6.752	1.098	1.084	6.023	0.587	2.128	1.541	0.457	1.586	0.999	0.542	3.370
373.7	105.8	0.354	6.23	6.769	1.125	1.110	6.022	0.585	2.155	1.570	0.460	1.600	1.015	0.555	3.415
388.7	109.6	0.369	6.49	6.787	1.162	1.146	6.014	0.578	2.190	1.612	0.466	1.617	1.039	0.573	3.461
403.7	112.4	0.383	6.74	6.806	1.189	1.172	6.012	0.575	2.217	1.642	0.469	1.631	1.055	0.586	3.499
418.7	112.2	0.397	6.99	6.824	1.184	1.167	6.006	0.570	2.210	1.641	0.474	1.627	1.057	0.583	3.463
433.7	114.6	0.412	7.24	6.843	1.206	1.188	5.999	0.562	2.231	1.669	0.481	1.637	1.075	0.594	3.471
448.7	116.5	0.425	7.47	6.860	1.223	1.204	5.998	0.562	2.249	1.687	0.483	1.647	1.085	0.602	3.495
463.7	118.1	0.440	7.74	6.880	1.236	1.217	5.989	0.552	2.259	1.707	0.490	1.651	1.098	0.608	3.483
478.7	118.6	0.454	7.98	6.897	1.238	1.219	5.985	0.548	2.262	1.714	0.495	1.653	1.104	0.609	3.462
493.7	119.0	0.468	8.23	6.916	1.239	1.219	5.980	0.543	2.261	1.718	0.499	1.652	1.109	0.610	3.442
508.7	121.6	0.483	8.49	6.935	1.262	1.241	5.973	0.537	2.284	1.747	0.506	1.663	1.127	0.621	3.454
523.7	120.3	0.497	8.74	6.954	1.246	1.225	5.971	0.535	2.269	1.734	0.509	1.656	1.121	0.612	3.406
538.7	123.3	0.512	9.00	6.974	1.273	1.251	5.961	0.525	2.293	1.769	0.518	1.668	1.143	0.625	3.415
553.7	125.7	0.525	9.23	6.993	1.294	1.272	5.957	0.521	2.315	1.794	0.522	1.679	1.158	0.636	3.434
568.7	128.0	0.540	9.50	7.013	1.314	1.291	5.950	0.513	2.333	1.820	0.529	1.688	1.174	0.645	3.440
583.7	128.9	0.554	9.74	7.032	1.320	1.296	5.943	0.506	2.339	1.832	0.536	1.690	1.184	0.648	3.418
598.7	129.9	0.568	10.00	7.052	1.326	1.302	5.940	0.503	2.345	1.842	0.540	1.694	1.191	0.651	3.410
613.7	132.4	0.583	10.25	7.072	1.348	1.323	5.931	0.495	2.365	1.870	0.547	1.704	1.209	0.661	3.417
628.7	131.9	0.597	10.49	7.091	1.339	1.313	5.926	0.490	2.357	1.867	0.554	1.700	1.210	0.657	3.372
643.7	133.7	0.612	10.76	7.112	1.353	1.327	5.918	0.482	2.370	1.888	0.561	1.706	1.225	0.664	3.364
658.7	134.3	0.625	10.99	7.131	1.356	1.329	5.913	0.476	2.372	1.896	0.567	1.707	1.231	0.665	3.345
673.7	135.0	0.640	11.26	7.152	1.359	1.332	5.905	0.468	2.375	1.906	0.575	1.709	1.240	0.666	3.318
688.7	136.0	0.654	11.50	7.171	1.365	1.337	5.899	0.463	2.380	1.918	0.580	1.712	1.249	0.669	3.304
703.7	136.6	0.668	11.75	7.192	1.368	1.339	5.894	0.458	2.382	1.924	0.585	1.712	1.255	0.670	3.289
718.7	137.4	0.683	12.01	7.213	1.372	1.342	5.886	0.449	2.385	1.936	0.593	1.714	1.265	0.671	3.262

Project: 173409690			Source: B-3.45a, 4.2'-4.7'								Lab ID: 778A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
733.7	138.6	0.697	12.25	7.233	1.380	1.350	5.880	0.443	2.392	1.949	0.599	1.718	1.274	0.675	3.252
748.7	139.8	0.711	12.51	7.254	1.387	1.357	5.875	0.438	2.400	1.961	0.604	1.721	1.283	0.679	3.246
763.7	141.0	0.725	12.76	7.275	1.395	1.364	5.867	0.430	2.406	1.976	0.612	1.724	1.294	0.682	3.229
778.7	143.3	0.740	13.01	7.296	1.414	1.382	5.861	0.425	2.424	2.000	0.618	1.733	1.309	0.691	3.238
793.7	145.7	0.754	13.25	7.317	1.434	1.402	5.856	0.419	2.443	2.024	0.622	1.743	1.323	0.701	3.253
808.8	144.9	0.768	13.51	7.338	1.422	1.389	5.848	0.412	2.431	2.020	0.630	1.736	1.325	0.695	3.204
823.8	145.4	0.782	13.76	7.359	1.423	1.389	5.843	0.406	2.432	2.026	0.636	1.737	1.331	0.695	3.183
838.8	148.0	0.797	14.01	7.381	1.443	1.409	5.837	0.400	2.451	2.051	0.642	1.747	1.346	0.705	3.196
853.8	148.2	0.811	14.27	7.403	1.441	1.406	5.830	0.394	2.448	2.055	0.648	1.745	1.352	0.703	3.169
868.8	147.9	0.825	14.51	7.424	1.435	1.399	5.824	0.388	2.441	2.053	0.654	1.741	1.354	0.700	3.140
883.8	150.6	0.840	14.77	7.447	1.456	1.420	5.818	0.382	2.462	2.080	0.660	1.752	1.370	0.710	3.152
898.8	145.8	0.854	15.02	7.469	1.406	1.369	5.812	0.376	2.411	2.035	0.665	1.726	1.350	0.685	3.058
913.8	150.2	0.869	15.27	7.491	1.444	1.406	5.807	0.370	2.448	2.077	0.671	1.744	1.374	0.703	3.096
928.8	151.3	0.883	15.52	7.513	1.450	1.412	5.801	0.365	2.454	2.089	0.676	1.747	1.383	0.706	3.088
958.8	150.3	0.911	16.03	7.558	1.432	1.393	5.789	0.353	2.433	2.080	0.688	1.736	1.384	0.696	3.025
973.8	152.5	0.925	16.27	7.580	1.448	1.409	5.784	0.347	2.449	2.101	0.692	1.744	1.397	0.704	3.034
988.8	154.4	0.940	16.52	7.603	1.462	1.422	5.780	0.343	2.462	2.119	0.697	1.751	1.408	0.711	3.040
1003.8	156.8	0.954	16.77	7.626	1.480	1.440	5.773	0.336	2.479	2.142	0.703	1.759	1.422	0.720	3.049
1018.2	157.0	0.968	17.01	7.648	1.478	1.436	5.768	0.332	2.476	2.144	0.708	1.758	1.426	0.718	3.029

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 4.8'-5.3'	Lab ID	778B
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-B
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/04/2021

Specific Gravity	2.73
ASTM D 854, Dry	
Liquid Limit	52
Plastic Limit	22
Plasticity Index	30
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	70
Nominal Consolidation Pressure (psi)	20

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.395
Time to 50% Consolidation (min)	28.50
Actual Axial Strain Rate of Test (%/min)	0.010

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	126.7
Moisture Content (%)	24.7
Dry Unit Weight (pcf)	101.6
Void Ratio	0.675
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

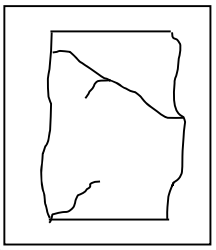
Axial Strain (%)	4.043
Deviator Stress (tsf)	1.913
Induced Pore Pressure (tsf)	0.560
Minor Effective Stress, σ_3' (tsf)	0.841
Major Effective Stress, σ_1' (tsf)	2.754
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.275
p' (tsf)	1.797
q (tsf)	0.957

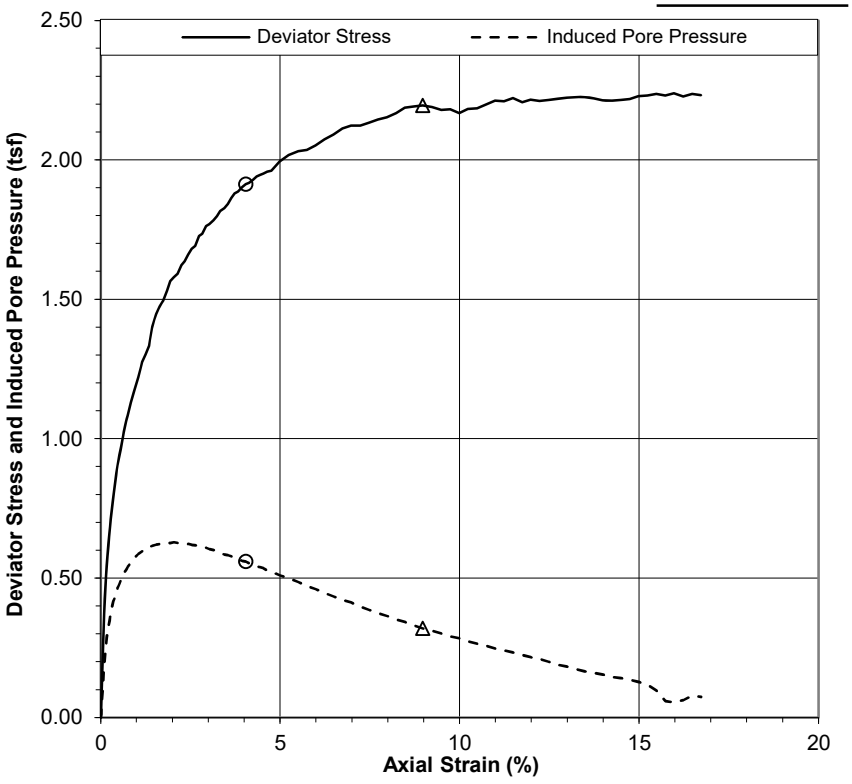
At Consolidated Undrained Failure

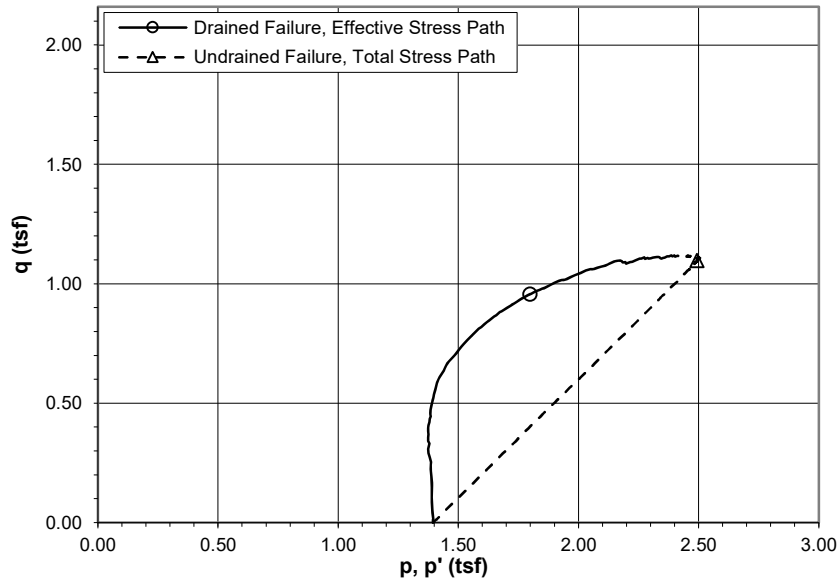
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	8.975
Deviator Stress (tsf)	2.195
Minor Principal Stress, σ_3 (tsf)	1.396
Major Principal Stress, σ_1 (tsf)	3.591
p (tsf)	2.493
q (tsf)	1.098

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 4.8'-5.3'	Lab ID	778B
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-B

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.752	Height (in)	5.705	Specific Gravity	2.73
Diameter (in)	2.872	Calculated Diameter (in)	2.858	ASTM D 854, Dry	
Area (in^2)	6.480	Calculated Area (in^2)	6.417	Liquid Limit	52
Moist Weight (lb)	2.687	Moist Weight (lb)	2.684	Plastic Limit	22
Moist Unit Weight (pcf)	124.6	Moist Unit Weight (pcf)	126.7	Plasticity Index	30
Moisture Content (%)	24.9	Moisture Content (%)	24.7	ASTM D 4318	
Dry Weight (lb)	2.152	Dry Weight (lb)	2.152		
Dry Unit Weight (pcf)	99.8	Dry Unit Weight (pcf)	101.6	Confining Stress	
Void Ratio	0.705	Void Ratio	0.675	σ_3 (tsf)	1.394
Degree of Saturation (%)	96.2	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.394

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.45a, 4.8'-5.3'								Lab ID: 778B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.417	0.000	0.000	5.089	0.000	1.394	1.394	1.394	1.394	1.394	0.000	1.000
2.4	2.2	0.001	0.01	6.418	0.025	0.024	5.101	0.012	1.419	1.407	1.382	1.407	1.394	0.012	1.018
4.7	2.7	0.001	0.02	6.418	0.031	0.030	5.104	0.015	1.426	1.411	1.381	1.411	1.396	0.015	1.022
7.1	9.8	0.002	0.03	6.419	0.110	0.110	5.146	0.057	1.505	1.447	1.337	1.450	1.392	0.055	1.082
9.5	18.8	0.003	0.06	6.421	0.211	0.211	5.200	0.112	1.606	1.495	1.283	1.501	1.389	0.106	1.164
11.9	27.6	0.004	0.08	6.422	0.309	0.309	5.248	0.160	1.704	1.545	1.236	1.550	1.390	0.154	1.250
14.3	34.6	0.006	0.10	6.424	0.388	0.388	5.290	0.201	1.783	1.582	1.194	1.589	1.388	0.194	1.325
16.7	40.1	0.007	0.13	6.425	0.449	0.449	5.322	0.233	1.843	1.610	1.161	1.619	1.386	0.224	1.386
19.1	45.1	0.008	0.15	6.427	0.505	0.505	5.350	0.261	1.900	1.639	1.134	1.648	1.386	0.253	1.446
21.4	48.9	0.009	0.16	6.428	0.548	0.548	5.376	0.287	1.943	1.656	1.108	1.669	1.382	0.274	1.494
23.8	51.9	0.011	0.20	6.430	0.581	0.580	5.398	0.309	1.975	1.666	1.085	1.685	1.376	0.290	1.535
26.2	55.2	0.013	0.22	6.431	0.617	0.617	5.418	0.330	2.013	1.683	1.066	1.705	1.375	0.308	1.579
28.6	59.2	0.014	0.24	6.433	0.663	0.662	5.436	0.348	2.058	1.710	1.048	1.727	1.379	0.331	1.631
31.0	61.2	0.015	0.26	6.434	0.685	0.684	5.454	0.365	2.081	1.716	1.032	1.739	1.374	0.342	1.663
33.3	63.7	0.016	0.29	6.435	0.713	0.712	5.467	0.378	2.108	1.730	1.017	1.752	1.374	0.356	1.700
35.7	66.3	0.018	0.31	6.437	0.741	0.741	5.481	0.392	2.138	1.746	1.005	1.767	1.375	0.370	1.737
38.1	68.6	0.019	0.33	6.438	0.767	0.767	5.493	0.404	2.162	1.758	0.991	1.779	1.374	0.383	1.773
40.5	70.7	0.020	0.35	6.440	0.791	0.790	5.505	0.417	2.186	1.769	0.980	1.791	1.375	0.395	1.806
42.9	72.9	0.022	0.38	6.441	0.815	0.814	5.515	0.426	2.209	1.783	0.969	1.802	1.376	0.407	1.840
45.3	75.3	0.023	0.40	6.443	0.842	0.841	5.526	0.437	2.237	1.800	0.959	1.817	1.379	0.420	1.877
47.6	77.8	0.025	0.43	6.445	0.869	0.868	5.537	0.448	2.264	1.816	0.948	1.830	1.382	0.434	1.916
50.0	79.7	0.026	0.45	6.446	0.891	0.890	5.545	0.457	2.286	1.830	0.940	1.842	1.385	0.445	1.946
52.4	81.1	0.027	0.47	6.447	0.906	0.905	5.553	0.465	2.301	1.837	0.932	1.849	1.384	0.452	1.971
54.8	82.6	0.028	0.49	6.449	0.923	0.922	5.561	0.472	2.318	1.845	0.924	1.857	1.384	0.461	1.998
57.2	84.0	0.030	0.52	6.451	0.938	0.937	5.570	0.481	2.333	1.852	0.915	1.865	1.384	0.468	2.023
59.6	85.6	0.031	0.55	6.453	0.955	0.954	5.578	0.490	2.352	1.862	0.908	1.875	1.385	0.477	2.051
61.9	87.5	0.033	0.58	6.454	0.976	0.974	5.586	0.497	2.372	1.875	0.901	1.885	1.388	0.487	2.082
64.3	89.1	0.034	0.60	6.456	0.994	0.993	5.591	0.503	2.388	1.886	0.893	1.892	1.389	0.496	2.112
66.7	90.8	0.036	0.63	6.458	1.012	1.011	5.600	0.511	2.408	1.897	0.886	1.903	1.392	0.505	2.140
69.1	92.1	0.037	0.65	6.459	1.027	1.025	5.606	0.518	2.423	1.906	0.880	1.911	1.393	0.513	2.165
71.5	93.6	0.038	0.67	6.460	1.044	1.042	5.613	0.525	2.441	1.916	0.874	1.920	1.395	0.521	2.192
73.9	95.0	0.040	0.70	6.462	1.059	1.057	5.617	0.529	2.454	1.926	0.869	1.926	1.397	0.529	2.217
76.2	96.3	0.042	0.73	6.464	1.073	1.071	5.623	0.534	2.469	1.935	0.863	1.933	1.399	0.536	2.241
78.6	97.4	0.043	0.75	6.466	1.085	1.083	5.629	0.541	2.482	1.941	0.858	1.940	1.400	0.542	2.263
88.2	101.8	0.048	0.85	6.472	1.132	1.130	5.646	0.558	2.529	1.971	0.841	1.963	1.406	0.565	2.345
97.7	105.8	0.054	0.95	6.478	1.176	1.174	5.662	0.573	2.572	1.999	0.825	1.985	1.412	0.587	2.423
107.2	110.1	0.060	1.05	6.485	1.222	1.220	5.675	0.587	2.619	2.032	0.813	2.009	1.422	0.610	2.501
116.7	115.1	0.066	1.15	6.492	1.277	1.274	5.686	0.597	2.673	2.076	0.802	2.036	1.439	0.637	2.588
126.2	117.8	0.071	1.25	6.498	1.305	1.302	5.694	0.605	2.703	2.098	0.795	2.052	1.447	0.651	2.637

Project: 173409690			Source: B-3.45a, 4.8'-5.3'								Lab ID: 778B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
135.8	120.8	0.077	1.35	6.505	1.337	1.333	5.702	0.613	2.734	2.121	0.788	2.068	1.455	0.667	2.692
145.3	127.1	0.082	1.45	6.511	1.406	1.402	5.705	0.616	2.802	2.186	0.784	2.101	1.485	0.701	2.789
154.8	131.3	0.088	1.55	6.518	1.450	1.447	5.709	0.620	2.846	2.226	0.779	2.123	1.503	0.723	2.856
164.3	133.9	0.094	1.65	6.525	1.478	1.474	5.711	0.623	2.873	2.250	0.776	2.136	1.513	0.737	2.899
173.9	136.0	0.099	1.74	6.531	1.499	1.495	5.713	0.624	2.894	2.270	0.775	2.147	1.522	0.747	2.928
183.4	139.4	0.106	1.85	6.538	1.536	1.531	5.714	0.626	2.930	2.304	0.773	2.164	1.538	0.766	2.981
192.9	142.7	0.111	1.94	6.544	1.570	1.565	5.715	0.626	2.965	2.339	0.773	2.182	1.556	0.783	3.024
202.4	144.1	0.117	2.04	6.551	1.584	1.579	5.718	0.629	2.981	2.352	0.773	2.191	1.562	0.790	3.044
212.0	145.4	0.122	2.14	6.558	1.597	1.591	5.715	0.626	2.990	2.364	0.773	2.195	1.568	0.796	3.060
221.5	148.4	0.129	2.25	6.565	1.628	1.623	5.715	0.627	3.023	2.396	0.773	2.211	1.585	0.811	3.098
231.0	149.8	0.134	2.35	6.571	1.642	1.636	5.713	0.624	3.037	2.413	0.777	2.219	1.595	0.818	3.105
240.5	152.2	0.139	2.44	6.577	1.666	1.660	5.712	0.623	3.062	2.438	0.778	2.231	1.608	0.830	3.133
250.1	154.3	0.145	2.54	6.584	1.688	1.681	5.708	0.620	3.081	2.461	0.779	2.240	1.620	0.841	3.157
259.6	155.4	0.151	2.64	6.591	1.697	1.691	5.707	0.618	3.092	2.474	0.783	2.246	1.628	0.846	3.161
269.1	158.9	0.156	2.74	6.598	1.734	1.727	5.704	0.615	3.128	2.513	0.786	2.264	1.649	0.863	3.198
278.6	159.8	0.162	2.83	6.604	1.742	1.735	5.699	0.610	3.136	2.525	0.790	2.268	1.658	0.868	3.196
288.2	162.4	0.167	2.93	6.611	1.769	1.762	5.698	0.609	3.163	2.554	0.792	2.282	1.673	0.881	3.225
297.7	163.3	0.173	3.03	6.618	1.777	1.769	5.693	0.604	3.169	2.565	0.795	2.284	1.680	0.885	3.224
307.2	164.7	0.179	3.14	6.625	1.790	1.783	5.690	0.601	3.182	2.581	0.799	2.291	1.690	0.891	3.231
316.8	166.3	0.185	3.24	6.632	1.806	1.798	5.685	0.596	3.198	2.602	0.804	2.299	1.703	0.899	3.237
326.3	168.2	0.190	3.33	6.638	1.825	1.817	5.680	0.591	3.218	2.627	0.810	2.309	1.718	0.908	3.243
335.8	169.3	0.196	3.44	6.646	1.835	1.826	5.674	0.585	3.224	2.638	0.812	2.311	1.725	0.913	3.249
345.3	170.9	0.202	3.54	6.653	1.850	1.841	5.671	0.582	3.241	2.659	0.818	2.320	1.738	0.921	3.252
354.9	173.1	0.208	3.64	6.659	1.872	1.863	5.667	0.578	3.263	2.684	0.821	2.331	1.753	0.931	3.268
364.4	174.8	0.213	3.73	6.666	1.889	1.880	5.662	0.573	3.279	2.706	0.826	2.339	1.766	0.940	3.275
373.9	175.7	0.219	3.83	6.673	1.896	1.887	5.656	0.568	3.285	2.717	0.830	2.342	1.774	0.943	3.272
383.4	177.4	0.225	3.95	6.681	1.912	1.902	5.650	0.562	3.300	2.739	0.836	2.349	1.787	0.951	3.275
393.0	178.6	0.231	4.04	6.687	1.923	1.913	5.649	0.560	3.314	2.754	0.841	2.358	1.797	0.957	3.275
402.5	179.1	0.236	4.13	6.694	1.927	1.917	5.643	0.554	3.316	2.762	0.845	2.357	1.803	0.958	3.268
412.0	180.4	0.242	4.24	6.701	1.938	1.928	5.638	0.549	3.326	2.777	0.849	2.362	1.813	0.964	3.269
421.5	181.8	0.248	4.35	6.709	1.951	1.940	5.631	0.542	3.338	2.796	0.856	2.368	1.826	0.970	3.266
431.1	182.5	0.253	4.44	6.715	1.957	1.946	5.628	0.539	3.347	2.807	0.861	2.374	1.834	0.973	3.259
440.6	183.1	0.259	4.53	6.722	1.961	1.950	5.624	0.535	3.351	2.815	0.865	2.376	1.840	0.975	3.254
450.1	184.0	0.265	4.64	6.729	1.969	1.958	5.616	0.527	3.355	2.828	0.870	2.376	1.849	0.979	3.249
459.6	184.5	0.272	4.76	6.738	1.972	1.960	5.611	0.523	3.360	2.837	0.876	2.379	1.857	0.980	3.237
483.5	188.1	0.285	4.99	6.754	2.006	1.994	5.599	0.510	3.392	2.882	0.888	2.396	1.885	0.997	3.244
507.3	190.9	0.299	5.24	6.772	2.030	2.017	5.588	0.500	3.419	2.919	0.902	2.410	1.911	1.008	3.236
531.1	192.8	0.314	5.51	6.791	2.044	2.031	5.575	0.486	3.431	2.945	0.915	2.416	1.930	1.015	3.220
554.9	193.7	0.328	5.75	6.808	2.049	2.035	5.561	0.472	3.433	2.961	0.926	2.416	1.944	1.017	3.197
578.7	195.9	0.341	5.98	6.825	2.066	2.052	5.550	0.461	3.452	2.991	0.939	2.426	1.965	1.026	3.184
602.5	198.6	0.356	6.24	6.844	2.089	2.074	5.536	0.447	3.472	3.025	0.951	2.435	1.988	1.037	3.181
626.3	200.7	0.370	6.49	6.862	2.106	2.090	5.524	0.435	3.490	3.055	0.964	2.445	2.010	1.045	3.167
650.1	203.4	0.385	6.74	6.881	2.128	2.112	5.510	0.422	3.509	3.088	0.975	2.453	2.032	1.056	3.165
673.9	205.0	0.398	6.98	6.898	2.140	2.123	5.501	0.412	3.524	3.111	0.988	2.462	2.050	1.062	3.149
697.8	205.6	0.413	7.23	6.917	2.140	2.123	5.486	0.398	3.521	3.123	1.000	2.459	2.062	1.061	3.122
721.6	207.2	0.427	7.48	6.936	2.151	2.133	5.475	0.387	3.533	3.146	1.013	2.466	2.079	1.067	3.106
745.4	209.0	0.441	7.73	6.954	2.164	2.145	5.464	0.375	3.542	3.167	1.022	2.470	2.095	1.072	3.098
769.2	210.4	0.455	7.98	6.973	2.172	2.153	5.453	0.364	3.552	3.188	1.035	2.476	2.112	1.076	3.079
793.0	212.4	0.470	8.24	6.993	2.187	2.167	5.441	0.352	3.564	3.211	1.044	2.480	2.128	1.084	3.075
816.8	214.9	0.484	8.48	7.011	2.207	2.187	5.431	0.343	3.585	3.242	1.055	2.491	2.149	1.093	3.072
840.6	216.1	0.499	8.74	7.031	2.212	2.191	5.418	0.330	3.588	3.259	1.068	2.493	2.163	1.096	3.053
864.4	217.1	0.512	8.97	7.050	2.217	2.195	5.409	0.320	3.591	3.271	1.075	2.493	2.173	1.098	3.041
888.2	217.2	0.527	9.23	7.070	2.212	2.189	5.401	0.312	3.587	3.275	1.086	2.493	2.181	1.095	3.016
912.1	216.9	0.541	9.49	7.090	2.202	2.179	5.390	0.301	3.575	3.274	1.095	2.486	2.185	1.090	2.990
935.9	217.7	0.556	9.74	7.110	2.205	2.181	5.379	0.291	3.577	3.287	1.105	2.487	2.196	1.091	2.973
959.7	217.0	0.570	9.99	7.129	2.192	2.167	5.372	0.284	3.565	3.281	1.114	2.481	2.197	1.084	2.946
983.5	219.1	0.584	10.23	7.148	2.207	2.182	5.363	0.274	3.580	3.305	1.123	2.489	2.214	1.091	2.943
1007.3	220.0	0.599	10.49	7.169	2.210	2.184	5.354	0.265	3.582	3.317	1.132	2.490	2.225	1.092	2.929
1031.1	222.1	0.613	10.74	7.189	2.225	2.199	5.346	0.257	3.596	3.339	1.140	2.497	2.239	1.099	2.928
1054.9	224.1	0.627	10.99	7.209	2.239	2.212	5.337	0.248	3.609	3.361	1.149	2.503	2.255	1.106	2.925
1078.8	224.6	0.641	11.24	7.230	2.237	2.210	5.330	0.241	3.607	3.366	1.157	2.502	2.261	1.105	2.910
1102.6	226.5	0.655	11.49	7.250	2.249	2.221	5.323	0.234	3.619	3.385	1.164	2.508	2.274	1.111	2.909
1126.4	225.7	0.670	11.74	7.271	2.235	2.207	5.313	0.224	3.603	3.379	1.172	2.500	2.276	1.103	2.883
1150.2	227.3	0.684	11.98	7.291	2.245	2.216	5.305	0.216	3.613	3.396	1.181	2.505	2.288	1.108	2.877
1174.0	227.5	0.698	12.23	7.311	2.241	2.211	5.299	0.211	3.608	3.398	1.186	2.503	2.292	1.106	2.864
1197.8	228.6	0.712	12.48	7.332	2.245	2.215	5.289	0.200	3.609	3.409	1.194	2.502	2.301	1.107	2.855
1221.6	229.8	0.727	12.74	7.354	2.250	2.219	5.278	0.189	3.609	3.419	1.201	2.499	2.310	1.109	2.848
1245.4	230.8	0.741	12.98	7.374	2.254	2.222	5.271	0.183	3.611	3.429	1.206	2.500	2.318	1.111	2.842
1269.2	231.8	0.755	13.23	7.396	2.257	2.225	5.262	0.174	3.613	3.439	1.214	2.501	2.327	1.112	2.832

Project: 173409690			Source: B-3.45a, 4.8'-5.3'								Lab ID: 778B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
1293.0	232.5	0.769	13.48	7.417	2.257	2.225	5.255	0.166	3.612	3.446	1.221	2.499	2.333	1.112	2.822
1316.9	232.9	0.784	13.74	7.439	2.254	2.220	5.249	0.160	3.607	3.447	1.227	2.497	2.337	1.110	2.810
1340.7	232.9	0.798	13.98	7.460	2.247	2.214	5.243	0.154	3.602	3.448	1.234	2.495	2.341	1.107	2.794
1364.5	233.5	0.812	14.24	7.483	2.247	2.212	5.234	0.146	3.597	3.451	1.239	2.491	2.345	1.106	2.785
1388.3	234.5	0.826	14.48	7.504	2.250	2.215	5.231	0.142	3.602	3.460	1.245	2.495	2.353	1.108	2.779
1412.1	235.6	0.841	14.74	7.527	2.253	2.218	5.225	0.136	3.604	3.467	1.249	2.495	2.358	1.109	2.775
1435.9	237.4	0.855	14.98	7.548	2.265	2.229	5.217	0.128	3.612	3.484	1.255	2.498	2.370	1.114	2.776
1459.7	238.4	0.869	15.24	7.571	2.268	2.231	5.206	0.118	3.610	3.492	1.261	2.495	2.377	1.115	2.769
1483.5	239.8	0.883	15.48	7.593	2.274	2.237	5.186	0.098	3.602	3.504	1.268	2.484	2.386	1.118	2.764
1507.3	240.0	0.898	15.74	7.615	2.269	2.231	5.148	0.059	3.564	3.505	1.275	2.449	2.390	1.115	2.750
1531.2	241.5	0.911	15.97	7.637	2.277	2.239	5.143	0.054	3.574	3.519	1.281	2.454	2.400	1.119	2.748
1555.0	241.1	0.926	16.23	7.660	2.266	2.227	5.151	0.062	3.577	3.515	1.288	2.464	2.401	1.114	2.730
1578.8	242.9	0.940	16.48	7.684	2.276	2.236	5.167	0.078	3.610	3.531	1.295	2.492	2.413	1.118	2.726
1602.5	243.2	0.954	16.73	7.706	2.272	2.232	5.163	0.074	3.606	3.531	1.300	2.490	2.416	1.116	2.717

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 5.4'-5.9'	Lab ID	778C
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-C
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	04/30/2021

Specific Gravity	2.73
ASTM D 854, Dry	
Liquid Limit	52
Plastic Limit	22
Plasticity Index	30
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	65
Nominal Consolidation Pressure (psi)	25

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.743
Time to 50% Consolidation (min)	6.00
Actual Axial Strain Rate of Test (%/min)	0.050

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	134.1
Moisture Content (%)	18.4
Dry Unit Weight (pcf)	113.3
Void Ratio	0.502
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

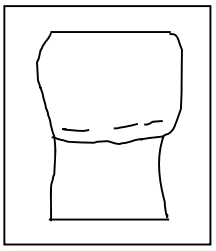
Axial Strain (%)	3.828
Deviator Stress (tsf)	1.942
Induced Pore Pressure (tsf)	0.930
Minor Effective Stress, σ_3' (tsf)	0.813
Major Effective Stress, σ_1' (tsf)	2.755
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.390
p' (tsf)	1.784
q (tsf)	0.971

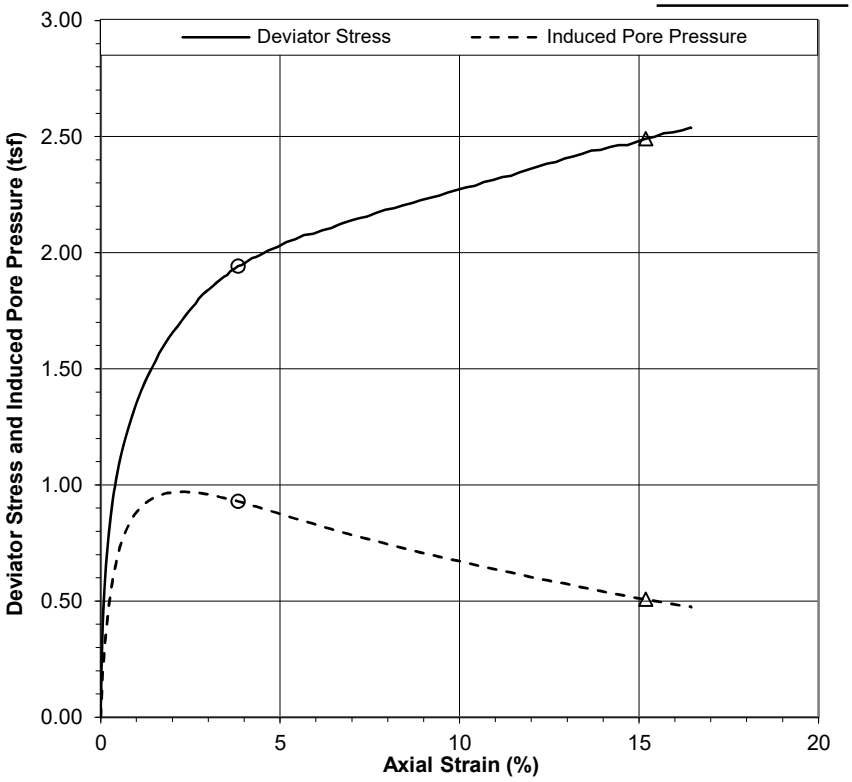
At Consolidated Undrained Failure

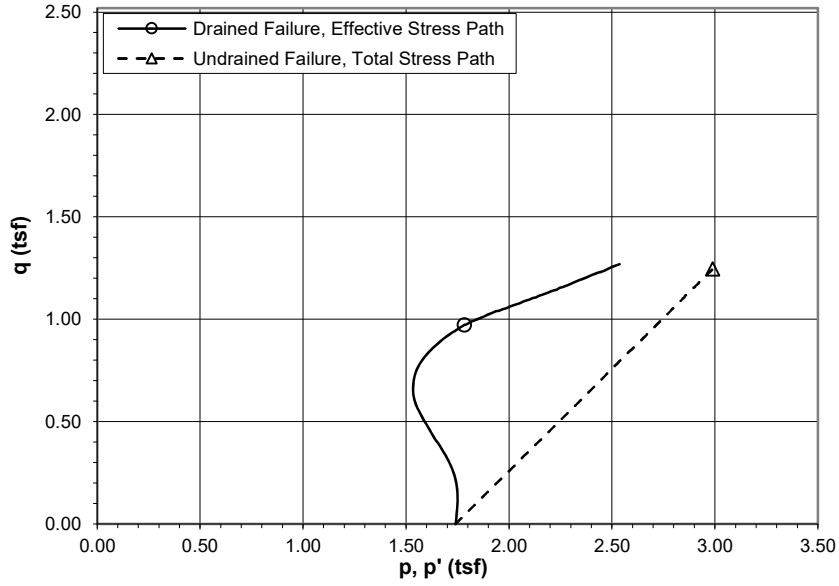
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.186
Deviator Stress (tsf)	2.491
Minor Principal Stress, σ_3 (tsf)	1.743
Major Principal Stress, σ_1 (tsf)	4.234
p (tsf)	2.989
q (tsf)	1.245

Failure Sketch







Comments Top 1/2 specimen CL, bottom 1/2 SM

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.45a, 5.4'-5.9'	Lab ID	778C
Description	Fat Clay (CH), brown, moist, firm	Test ID	778-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.766	Height (in)	5.702
Diameter (in)	2.873	Calculated Diameter (in)	2.859
Area (in^2)	6.483	Calculated Area (in^2)	6.420
Moist Weight (lb)	2.839	Moist Weight (lb)	2.841
Moist Unit Weight (pcf)	131.3	Moist Unit Weight (pcf)	134.1
Moisture Content (%)	18.3	Moisture Content (%)	18.4
Dry Weight (lb)	2.400	Dry Weight (lb)	2.400
Dry Unit Weight (pcf)	110.9	Dry Unit Weight (pcf)	113.3
Void Ratio	0.534	Void Ratio	0.502
Degree of Saturation (%)	93.8	Degree of Saturation (%)	100.0

Specific Gravity	2.73
	ASTM D 854, Dry
Liquid Limit	52
Plastic Limit	22
Plasticity Index	30
	ASTM D 4318
Confining Stress	
σ_3 (tsf)	1.741
Effective Consolidation Stress	
σ_3' (tsf)	1.741

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.45a, 5.4'-5.9'								Lab ID: 778C		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.420	0.000	0.000	4.748	0.000	1.741	1.741	1.741	1.741	1.741	0.000	1.000
0.5	4.6	0.001	0.01	6.420	0.051	0.051	4.769	0.021	1.791	1.770	1.719	1.766	1.745	0.026	1.030
1.0	9.0	0.001	0.01	6.421	0.101	0.101	4.792	0.044	1.841	1.797	1.696	1.790	1.746	0.050	1.059
1.5	15.9	0.001	0.02	6.421	0.179	0.179	4.829	0.081	1.919	1.838	1.659	1.829	1.749	0.089	1.108
2.0	27.2	0.002	0.04	6.423	0.305	0.305	4.891	0.143	2.045	1.902	1.598	1.893	1.750	0.152	1.191
2.5	36.0	0.004	0.06	6.424	0.403	0.403	4.948	0.200	2.144	1.945	1.541	1.943	1.743	0.202	1.262
3.0	43.3	0.005	0.08	6.425	0.485	0.485	4.998	0.250	2.226	1.976	1.491	1.983	1.733	0.242	1.325
3.5	49.3	0.006	0.10	6.426	0.553	0.552	5.045	0.297	2.293	1.996	1.444	2.017	1.720	0.276	1.383
4.0	54.6	0.008	0.13	6.428	0.611	0.611	5.089	0.341	2.352	2.012	1.401	2.047	1.706	0.305	1.436
4.5	59.5	0.009	0.16	6.430	0.667	0.666	5.130	0.382	2.407	2.026	1.359	2.074	1.692	0.333	1.490
5.0	63.7	0.010	0.18	6.431	0.713	0.713	5.167	0.418	2.454	2.036	1.323	2.098	1.679	0.356	1.539
5.5	67.6	0.012	0.21	6.433	0.756	0.756	5.200	0.452	2.497	2.045	1.289	2.119	1.667	0.378	1.586
6.0	70.9	0.013	0.23	6.434	0.793	0.792	5.231	0.483	2.533	2.050	1.258	2.137	1.654	0.396	1.630
6.5	73.8	0.015	0.25	6.436	0.826	0.825	5.260	0.512	2.567	2.055	1.230	2.154	1.642	0.412	1.671
7.0	76.8	0.016	0.28	6.438	0.859	0.858	5.286	0.538	2.600	2.062	1.204	2.171	1.633	0.429	1.713
7.5	79.4	0.017	0.30	6.439	0.888	0.887	5.311	0.562	2.629	2.066	1.179	2.185	1.623	0.444	1.753
8.0	82.1	0.018	0.32	6.441	0.918	0.917	5.333	0.585	2.659	2.074	1.157	2.201	1.615	0.459	1.793
8.5	84.4	0.020	0.35	6.442	0.943	0.942	5.354	0.606	2.684	2.078	1.136	2.213	1.607	0.471	1.829
9.0	86.8	0.021	0.37	6.444	0.970	0.969	5.374	0.625	2.711	2.085	1.116	2.226	1.601	0.484	1.868
9.5	88.8	0.023	0.40	6.445	0.992	0.991	5.392	0.644	2.732	2.088	1.098	2.237	1.593	0.495	1.903
10.0	90.7	0.024	0.42	6.447	1.013	1.012	5.409	0.661	2.753	2.092	1.081	2.247	1.586	0.506	1.936
10.5	92.4	0.025	0.44	6.448	1.032	1.031	5.426	0.677	2.773	2.096	1.065	2.258	1.580	0.516	1.968
12.5	99.3	0.031	0.54	6.454	1.107	1.106	5.481	0.733	2.848	2.115	1.009	2.295	1.562	0.553	2.096
14.5	105.1	0.036	0.64	6.461	1.171	1.169	5.529	0.781	2.912	2.131	0.962	2.327	1.546	0.585	2.215
16.5	110.6	0.042	0.74	6.468	1.231	1.230	5.566	0.818	2.972	2.155	0.925	2.358	1.540	0.615	2.329
18.5	115.2	0.048	0.84	6.474	1.281	1.279	5.596	0.848	3.022	2.174	0.895	2.382	1.534	0.640	2.430
20.5	119.6	0.053	0.94	6.481	1.329	1.327	5.621	0.873	3.070	2.197	0.870	2.406	1.534	0.663	2.524
22.5	123.5	0.059	1.04	6.487	1.371	1.369	5.639	0.891	3.111	2.220	0.851	2.426	1.536	0.684	2.607
24.5	127.2	0.065	1.14	6.494	1.411	1.408	5.657	0.909	3.150	2.241	0.833	2.446	1.537	0.704	2.690
26.6	130.6	0.071	1.24	6.500	1.447	1.444	5.670	0.922	3.186	2.264	0.820	2.464	1.542	0.722	2.761
28.5	133.7	0.076	1.34	6.507	1.480	1.476	5.681	0.933	3.218	2.285	0.809	2.480	1.547	0.738	2.825
30.5	136.5	0.082	1.44	6.514	1.509	1.505	5.691	0.943	3.247	2.305	0.799	2.494	1.552	0.753	2.883
32.6	139.4	0.088	1.54	6.520	1.539	1.535	5.698	0.950	3.276	2.327	0.792	2.509	1.559	0.768	2.940
34.5	142.4	0.093	1.63	6.526	1.570	1.567	5.705	0.956	3.309	2.352	0.786	2.525	1.569	0.783	2.993
36.5	144.8	0.099	1.73	6.533	1.595	1.591	5.709	0.960	3.332	2.372	0.781	2.537	1.576	0.796	3.038
38.6	147.2	0.104	1.83	6.540	1.621	1.616	5.713	0.965	3.359	2.394	0.777	2.551	1.585	0.808	3.080
40.5	149.6	0.110	1.93	6.546	1.645	1.640	5.716	0.967	3.381	2.414	0.774	2.561	1.594	0.820	3.120
42.6	151.7	0.116	2.04	6.553	1.667	1.662	5.717	0.969	3.404	2.436	0.774	2.573	1.605	0.831	3.148
44.6	153.8	0.122	2.14	6.560	1.688	1.683	5.718	0.969	3.424	2.454	0.772	2.582	1.613	0.841	3.180

Project: 173409690			Source: B-3.45a, 5.4'-5.9'								Lab ID: 778C		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
46.6	156.1	0.128	2.25	6.567	1.711	1.705	5.719	0.971	3.448	2.477	0.772	2.595	1.624	0.853	3.210
48.6	158.0	0.134	2.34	6.574	1.731	1.725	5.720	0.971	3.468	2.497	0.772	2.605	1.634	0.863	3.236
50.6	159.9	0.139	2.44	6.580	1.750	1.744	5.718	0.969	3.486	2.517	0.773	2.614	1.645	0.872	3.256
52.6	161.8	0.145	2.54	6.587	1.768	1.762	5.718	0.970	3.507	2.537	0.774	2.625	1.655	0.881	3.277
54.6	163.6	0.151	2.64	6.594	1.786	1.780	5.716	0.967	3.523	2.556	0.776	2.634	1.666	0.890	3.293
56.6	165.8	0.156	2.73	6.600	1.809	1.802	5.716	0.967	3.546	2.579	0.777	2.645	1.678	0.901	3.320
58.6	167.4	0.161	2.83	6.607	1.824	1.818	5.712	0.964	3.561	2.597	0.780	2.652	1.688	0.909	3.332
60.6	168.9	0.167	2.93	6.614	1.839	1.831	5.710	0.962	3.575	2.613	0.782	2.659	1.697	0.916	3.343
62.6	170.2	0.173	3.03	6.621	1.851	1.844	5.708	0.960	3.588	2.628	0.784	2.666	1.706	0.922	3.350
64.6	171.7	0.179	3.14	6.628	1.865	1.857	5.704	0.955	3.600	2.645	0.788	2.672	1.716	0.929	3.358
66.6	173.2	0.184	3.23	6.634	1.879	1.872	5.702	0.954	3.615	2.662	0.790	2.679	1.726	0.936	3.369
68.6	174.5	0.190	3.34	6.641	1.892	1.884	5.696	0.948	3.627	2.680	0.796	2.685	1.738	0.942	3.369
70.6	175.7	0.196	3.43	6.648	1.903	1.895	5.693	0.945	3.638	2.693	0.798	2.691	1.746	0.947	3.373
72.6	176.7	0.201	3.53	6.655	1.912	1.903	5.689	0.941	3.645	2.705	0.802	2.694	1.753	0.952	3.375
74.6	178.5	0.206	3.62	6.661	1.929	1.920	5.686	0.937	3.662	2.725	0.805	2.702	1.765	0.960	3.386
76.6	179.6	0.212	3.72	6.668	1.939	1.930	5.684	0.936	3.675	2.739	0.809	2.710	1.774	0.965	3.387
78.6	180.9	0.218	3.83	6.675	1.951	1.942	5.678	0.930	3.685	2.755	0.813	2.714	1.784	0.971	3.390
80.6	181.5	0.224	3.93	6.682	1.956	1.947	5.674	0.926	3.690	2.764	0.818	2.717	1.791	0.973	3.381
82.6	182.6	0.229	4.02	6.689	1.965	1.956	5.669	0.921	3.698	2.777	0.822	2.721	1.800	0.978	3.380
84.6	183.7	0.235	4.12	6.696	1.975	1.965	5.666	0.918	3.708	2.791	0.825	2.726	1.808	0.983	3.381
86.6	185.0	0.241	4.22	6.703	1.987	1.977	5.660	0.912	3.719	2.807	0.830	2.731	1.819	0.988	3.381
88.6	185.6	0.247	4.32	6.710	1.991	1.981	5.656	0.908	3.724	2.816	0.835	2.734	1.826	0.990	3.371
90.6	186.5	0.253	4.44	6.718	1.999	1.989	5.650	0.901	3.730	2.829	0.840	2.736	1.835	0.994	3.366
95.6	189.1	0.267	4.67	6.735	2.021	2.010	5.639	0.891	3.754	2.863	0.853	2.749	1.858	1.005	3.357
100.6	191.1	0.281	4.93	6.753	2.037	2.025	5.626	0.878	3.769	2.891	0.866	2.757	1.879	1.013	3.338
105.6	193.5	0.295	5.18	6.770	2.058	2.045	5.616	0.868	3.789	2.921	0.876	2.767	1.899	1.023	3.334
110.6	195.3	0.310	5.43	6.788	2.072	2.058	5.604	0.855	3.802	2.946	0.888	2.773	1.917	1.029	3.318
115.6	197.5	0.323	5.67	6.806	2.090	2.076	5.593	0.845	3.820	2.975	0.899	2.782	1.937	1.038	3.309
120.6	198.7	0.338	5.93	6.824	2.096	2.082	5.581	0.833	3.825	2.992	0.910	2.784	1.951	1.041	3.287
125.6	200.6	0.353	6.18	6.843	2.111	2.096	5.569	0.821	3.838	3.017	0.921	2.790	1.969	1.048	3.276
130.6	202.2	0.367	6.44	6.861	2.122	2.106	5.558	0.810	3.849	3.039	0.933	2.796	1.986	1.053	3.258
135.6	204.6	0.381	6.69	6.880	2.141	2.125	5.548	0.799	3.868	3.069	0.944	2.806	2.006	1.062	3.251
140.6	206.3	0.395	6.93	6.898	2.153	2.137	5.536	0.788	3.880	3.091	0.955	2.811	2.023	1.068	3.238
145.6	208.0	0.410	7.18	6.917	2.165	2.147	5.527	0.778	3.891	3.113	0.965	2.817	2.039	1.074	3.224
150.6	209.4	0.424	7.43	6.935	2.174	2.156	5.516	0.768	3.899	3.131	0.975	2.821	2.053	1.078	3.212
155.6	211.4	0.438	7.68	6.954	2.189	2.171	5.508	0.760	3.914	3.155	0.984	2.829	2.070	1.085	3.205
160.6	213.5	0.452	7.93	6.973	2.204	2.185	5.496	0.748	3.927	3.180	0.995	2.835	2.087	1.093	3.197
165.6	214.7	0.467	8.19	6.992	2.211	2.191	5.486	0.738	3.933	3.195	1.004	2.837	2.099	1.096	3.184
170.6	216.7	0.481	8.43	7.011	2.225	2.205	5.477	0.729	3.947	3.218	1.014	2.845	2.116	1.102	3.175
175.6	218.1	0.495	8.68	7.030	2.234	2.213	5.468	0.719	3.956	3.237	1.024	2.850	2.130	1.107	3.162
180.6	220.0	0.509	8.92	7.049	2.248	2.226	5.457	0.709	3.967	3.258	1.032	2.854	2.145	1.113	3.158
185.6	221.6	0.523	9.17	7.068	2.258	2.236	5.449	0.701	3.978	3.278	1.042	2.860	2.160	1.118	3.145
190.6	223.3	0.538	9.43	7.088	2.269	2.246	5.440	0.692	3.987	3.296	1.050	2.865	2.173	1.123	3.139
195.6	225.3	0.552	9.68	7.108	2.282	2.259	5.430	0.682	4.000	3.319	1.060	2.871	2.189	1.129	3.131
200.6	227.1	0.566	9.93	7.128	2.294	2.270	5.424	0.675	4.014	3.338	1.069	2.879	2.204	1.135	3.124
205.6	228.9	0.581	10.18	7.148	2.305	2.281	5.414	0.666	4.025	3.359	1.078	2.885	2.218	1.140	3.116
210.6	230.3	0.595	10.43	7.168	2.314	2.288	5.404	0.656	4.032	3.376	1.088	2.888	2.232	1.144	3.103
215.6	232.6	0.609	10.68	7.188	2.330	2.304	5.396	0.648	4.047	3.399	1.095	2.894	2.247	1.152	3.105
220.6	234.2	0.624	10.94	7.208	2.339	2.313	5.387	0.639	4.056	3.417	1.104	2.900	2.261	1.156	3.094
225.6	236.2	0.638	11.19	7.229	2.353	2.326	5.378	0.630	4.068	3.438	1.112	2.905	2.275	1.163	3.091
230.6	237.4	0.652	11.44	7.249	2.358	2.331	5.371	0.623	4.074	3.451	1.120	2.909	2.285	1.165	3.081
235.6	239.7	0.666	11.68	7.269	2.374	2.346	5.363	0.615	4.090	3.475	1.129	2.917	2.302	1.173	3.077
240.6	241.6	0.680	11.93	7.289	2.387	2.358	5.354	0.606	4.101	3.495	1.137	2.922	2.316	1.179	3.074
245.6	243.7	0.695	12.19	7.311	2.400	2.371	5.345	0.597	4.112	3.515	1.144	2.926	2.330	1.185	3.072
250.6	245.7	0.709	12.44	7.331	2.413	2.383	5.339	0.590	4.126	3.536	1.154	2.935	2.345	1.191	3.065
255.6	247.1	0.723	12.68	7.352	2.420	2.390	5.329	0.581	4.133	3.552	1.163	2.939	2.358	1.195	3.055
260.6	249.5	0.737	12.93	7.373	2.436	2.405	5.324	0.576	4.150	3.574	1.169	2.948	2.371	1.203	3.058
265.6	251.4	0.752	13.19	7.395	2.447	2.415	5.315	0.567	4.161	3.594	1.178	2.953	2.386	1.208	3.050
270.6	253.2	0.765	13.42	7.415	2.459	2.426	5.307	0.559	4.171	3.613	1.186	2.958	2.400	1.213	3.045
275.6	255.4	0.780	13.68	7.437	2.473	2.440	5.300	0.551	4.184	3.632	1.192	2.964	2.412	1.220	3.047
280.6	256.5	0.795	13.93	7.459	2.476	2.442	5.291	0.543	4.184	3.641	1.198	2.963	2.420	1.221	3.038
285.6	258.6	0.809	14.19	7.482	2.489	2.455	5.283	0.535	4.198	3.663	1.208	2.970	2.436	1.227	3.031
290.6	260.3	0.823	14.43	7.502	2.498	2.463	5.277	0.529	4.206	3.678	1.215	2.975	2.446	1.231	3.027
295.6	261.2	0.837	14.68	7.525	2.499	2.464	5.269	0.521	4.207	3.686	1.222	2.975	2.454	1.232	3.016
300.6	263.3	0.851	14.93	7.546	2.512	2.476	5.262	0.514	4.221	3.706	1.230	2.983	2.468	1.238	3.013
305.6	265.7	0.866	15.19	7.569	2.527	2.491	5.256	0.508	4.234	3.726	1.236	2.989	2.481	1.245	3.016
310.6	267.5	0.880	15.44	7.592	2.536	2.499	5.249	0.501	4.241	3.740	1.241	2.992	2.491	1.250	3.013
315.6	269.9	0.895	15.69	7.615	2.552	2.514	5.243	0.495	4.257	3.762	1.248	3.000	2.505	1.257	3.014
320.6	271.2	0.909	15.94	7.637	2.556	2.518	5.236	0.488	4.261	3.773	1.255	3.002	2.514	1.259	3.007

Project: 173409690			Source: B-3.45a, 5.4'-5.9'								Lab ID: 778C		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
325.6	272.9	0.923	16.19	7.660	2.565	2.526	5.229	0.481	4.268	3.787	1.261	3.005	2.524	1.263	3.003
330.6	275.3	0.938	16.45	7.683	2.579	2.540	5.224	0.476	4.284	3.808	1.268	3.014	2.538	1.270	3.003
330.8	274.8	0.938	16.45	7.684	2.575	2.535	5.222	0.473	4.279	3.805	1.270	3.011	2.537	1.268	2.997

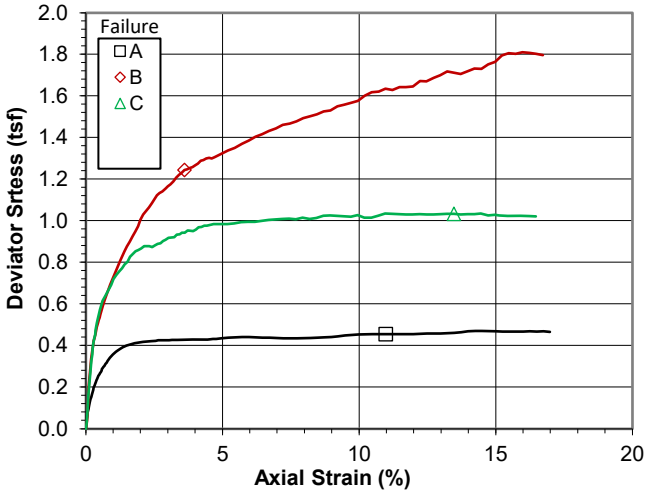
Consolidated Undrained Triaxial Compression

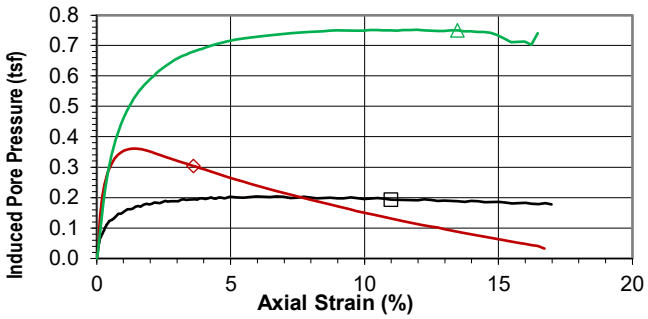
ASTM D 4767

Project Name Eagle Creek

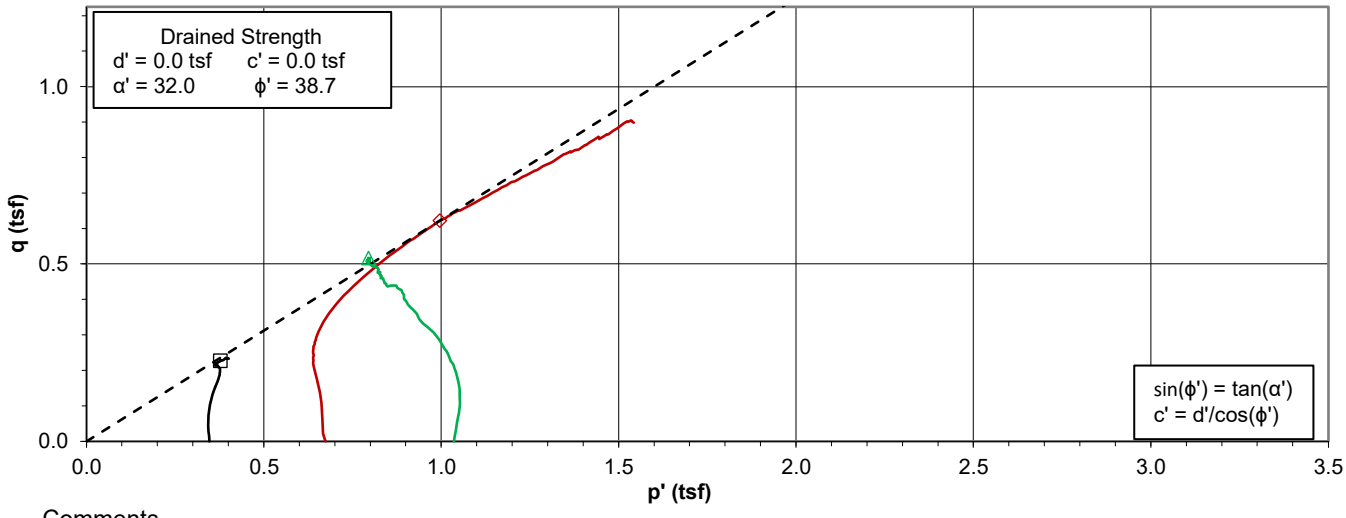
Project 173409690
Set ID 783

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	783A	B-3.48a, 2.1'-2.6'	Lean Clay with Sand (CL), gray, moist, firm	2.68	32	17	15
B	783B	B-3.48a, 2.6'-3.1'	Lean Clay with Sand (CL), gray, moist, firm	2.68	32	17	15
C	788A	B-3.50a, 2.2'-2.7'	Lean Clay with Sand (CL), gray, moist, firm	2.63			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.766	5.769	5.760		
Average Diameter (in)	2.836	2.887	2.842		
Moist Unit Weight (pcf)	115.5	124.7	100.4		
Moisture Content (%)	23.8	20.3	57.0		
Dry Unit Weight (pcf)	93.2	103.6	64.0		
Void Ratio	0.791	0.612	1.562		
Degree of Saturation (%)	80.7	88.9	95.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	122.0	128.8	108.8		
Moisture Content (%)	28.1	21.4	45.1		
Dry Unit Weight (pcf)	95.3	106.1	74.9		
Void Ratio	0.753	0.574	1.187		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.347	0.674	1.036		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	10.978	3.606	13.468		
Deviator Stress (tsf)	0.454	1.243	1.032		
Induced Pore Press. (tsf)	0.193	0.304	0.750		
Minor Eff. Stress, σ_3' (tsf)	0.151	0.374	0.279		
Major Eff. Stress, σ_1' (tsf)	0.604	1.618	1.311		
Eff. Stress Ratio, σ_1'/σ_3'	4.013	4.321	4.707		
p' (tsf)	0.377	0.996	0.795		
q (tsf)	0.227	0.622	0.516		



Comments

Reviewed By RJ

Stantec

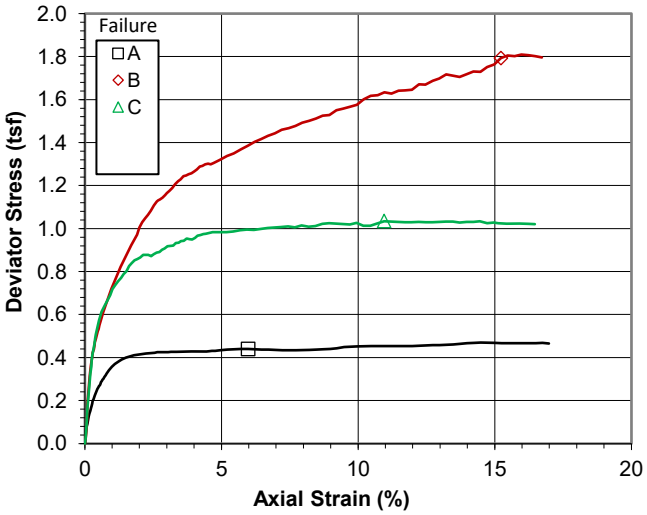
Consolidated Undrained Triaxial Compression

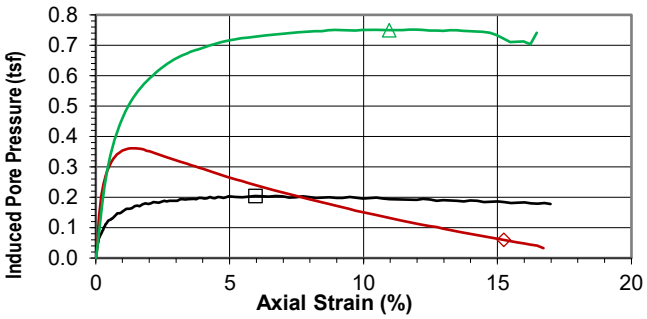
ASTM D 4767

Project Name Eagle Creek

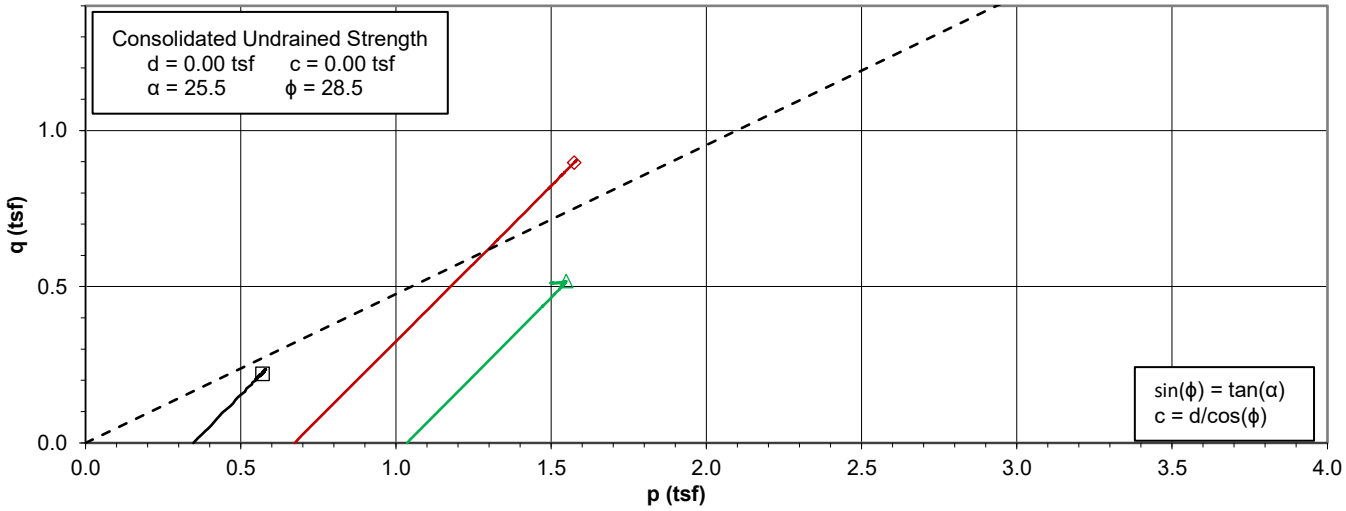
Project 173409690
Set ID 783

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	783A	B-3.48a, 2.1'-2.6'	Lean Clay with Sand (CL), gray, moist, firm	2.68	32	17	15
B	783B	B-3.48a, 2.6'-3.1'	Lean Clay with Sand (CL), gray, moist, firm	2.68	32	17	15
C	788A	B-3.50a, 2.2'-2.7'	Lean Clay with Sand (CL), gray, moist, firm	2.63			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.766	5.769	5.760		
Average Diameter (in)	2.836	2.887	2.842		
Moist Unit Weight (pcf)	115.5	124.7	100.4		
Moisture Content (%)	23.8	20.3	57.0		
Dry Unit Weight (pcf)	93.2	103.6	64.0		
Void Ratio	0.791	0.612	1.562		
Degree of Saturation (%)	80.7	88.9	95.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	122.0	128.8	108.8		
Moisture Content (%)	28.1	21.4	45.1		
Dry Unit Weight (pcf)	95.3	106.1	74.9		
Void Ratio	0.753	0.574	1.187		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.347	0.674	1.036		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	5.971	15.232	10.956		
Deviator Stress (tsf)	0.440	1.793	1.035		
Min. Prin. Stress, σ_3 (tsf)	0.350	0.678	1.032		
Maj. Prin. Stress, σ_1 (tsf)	0.791	2.471	2.066		
p (tsf)	0.571	1.574	1.549		
q (tsf)	0.220	0.897	0.517		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.48a, 2.1'-2.6'	Lab ID	783A
Description	Lean Clay with Sand (CL), gray, moist, firm	Test ID	783-A
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	04/30/2021

Specific Gravity	2.68
	ASTM D 854, Dry
Liquid Limit	32
Plastic Limit	17
Plasticity Index	15
	ASTM D 4318

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	85
Nominal Consolidation Pressure (psi)	5

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	0.347
Time to 50% Consolidation (min)	0.32
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	122.0
Moisture Content (%)	28.1
Dry Unit Weight (pcf)	95.3
Void Ratio	0.753
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

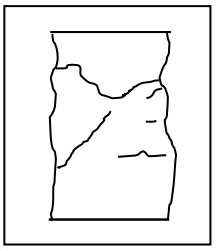
Axial Strain (%)	10.978
Deviator Stress (tsf)	0.454
Induced Pore Pressure (tsf)	0.193
Minor Effective Stress, σ_3' (tsf)	0.151
Major Effective Stress, σ_1' (tsf)	0.604
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.013
p' (tsf)	0.377
q (tsf)	0.227

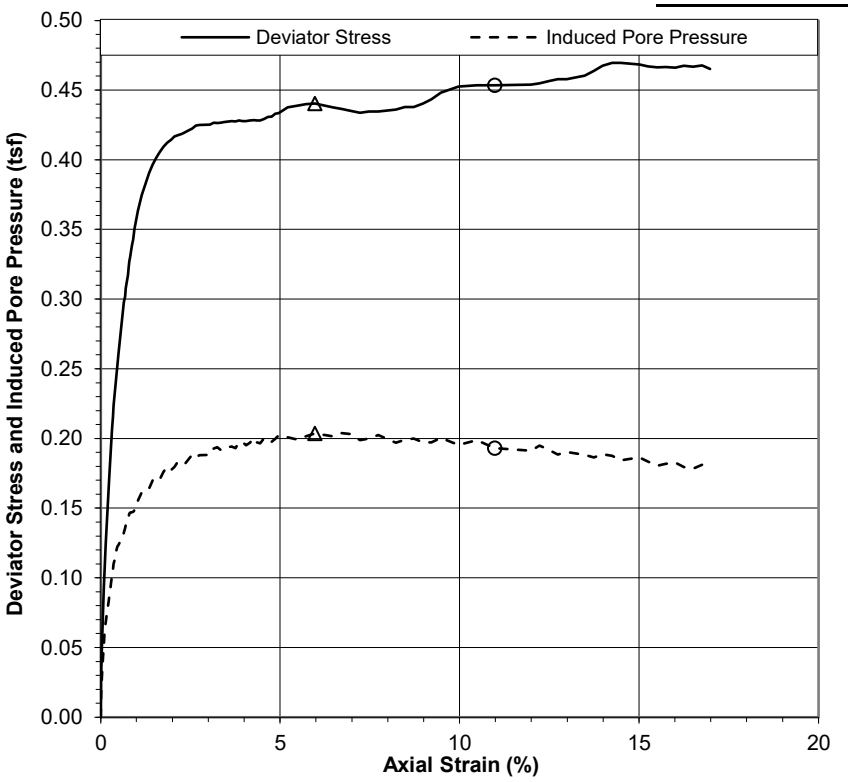
At Consolidated Undrained Failure

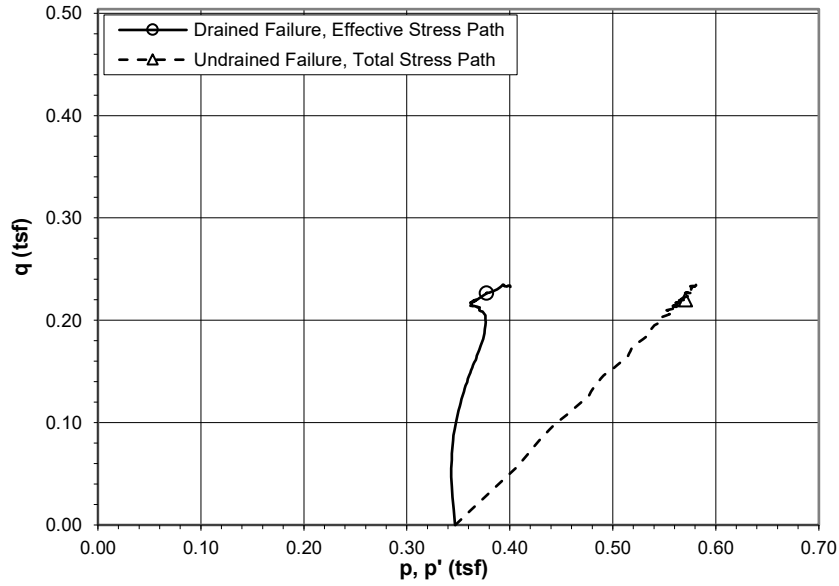
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	5.971
Deviator Stress (tsf)	0.440
Minor Principal Stress, σ_3 (tsf)	0.350
Major Principal Stress, σ_1 (tsf)	0.791
p (tsf)	0.571
q (tsf)	0.220

Failure Sketch







Comments

Reviewed RJ

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.48a, 2.1'-2.6'
Description: Lean Clay with Sand (CL), gray, moist, firm

Project No.: 173409690
Lab ID: 783A
Test ID: 783-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	5.766	Calculated Height (in)	5.736
Average Diameter (in)	2.836	Calculated Diameter (in)	2.813
Calculated Area (in^2)	6.317	Calculated Area (in^2)	6.216
Moist Weight (lb)	2.434	Moist Weight (lb)	2.518
Moist Unit Weight (pcf)	115.5	Moist Unit Weight (pcf)	122.0
Moisture Content (%)	23.8	Moisture Content (%)	28.1
Dry Weight (lb)	1.965	Dry Weight (lb)	1.965
Dry Unit Weight (pcf)	93.2	Dry Unit Weight (pcf)	95.3
Void Ratio	0.791	Void Ratio	0.753
Degree of Saturation (%)	80.7	Degree of Saturation (%)	100.0

Specific Gravity: 2.68
ASTM D 854, Dry

Liquid Limit: 32
Plastic Limit: 17
Plasticity Index: 15
ASTM D 4318

Confining Stress
σ_3 (tsf): 0.347

Effective Consolidation Stress
σ_3' (tsf): 0.347

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.48a, 2.1'-2.6'								Lab ID: 783A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.216	0.000	0.000	6.133	0.000	0.347	0.347	0.347	0.347	0.347	0.000	1.000
0.2	2.6	0.001	0.02	6.217	0.030	0.030	6.150	0.017	0.378	0.360	0.331	0.363	0.345	0.015	1.090
0.5	4.7	0.002	0.04	6.219	0.055	0.054	6.165	0.031	0.403	0.372	0.317	0.376	0.344	0.027	1.172
0.7	6.6	0.004	0.07	6.220	0.076	0.076	6.176	0.043	0.425	0.382	0.306	0.387	0.344	0.038	1.248
1.0	8.1	0.006	0.10	6.222	0.094	0.094	6.187	0.054	0.443	0.390	0.296	0.397	0.343	0.047	1.316
1.2	9.6	0.007	0.12	6.223	0.111	0.111	6.196	0.063	0.461	0.399	0.288	0.406	0.343	0.055	1.386
1.5	11.0	0.009	0.15	6.225	0.127	0.127	6.202	0.069	0.476	0.407	0.280	0.413	0.344	0.063	1.453
1.8	12.1	0.010	0.17	6.227	0.140	0.139	6.207	0.074	0.488	0.413	0.274	0.418	0.344	0.070	1.509
2.0	13.2	0.011	0.20	6.228	0.153	0.152	6.212	0.079	0.500	0.421	0.268	0.423	0.344	0.076	1.568
2.3	14.3	0.013	0.23	6.230	0.166	0.165	6.217	0.084	0.511	0.427	0.262	0.429	0.345	0.083	1.629
2.5	15.2	0.014	0.24	6.231	0.176	0.175	6.221	0.088	0.521	0.433	0.258	0.433	0.345	0.088	1.680
2.8	16.2	0.016	0.27	6.233	0.187	0.187	6.225	0.092	0.532	0.440	0.253	0.439	0.346	0.093	1.738
3.0	17.1	0.017	0.29	6.234	0.198	0.197	6.230	0.096	0.542	0.446	0.249	0.444	0.347	0.099	1.792
3.2	17.9	0.018	0.32	6.236	0.207	0.206	6.235	0.101	0.553	0.451	0.245	0.450	0.348	0.103	1.842
3.5	18.7	0.020	0.34	6.238	0.216	0.215	6.239	0.106	0.563	0.457	0.242	0.455	0.349	0.108	1.891
3.7	19.5	0.021	0.37	6.239	0.225	0.224	6.243	0.110	0.572	0.462	0.238	0.460	0.350	0.112	1.939
4.0	20.2	0.023	0.39	6.241	0.233	0.232	6.247	0.113	0.581	0.467	0.235	0.465	0.351	0.116	1.985
4.2	20.8	0.024	0.42	6.242	0.240	0.239	6.250	0.117	0.589	0.472	0.233	0.469	0.352	0.120	2.027
4.5	21.4	0.025	0.44	6.244	0.247	0.246	6.253	0.120	0.596	0.476	0.230	0.473	0.353	0.123	2.068
4.7	22.1	0.027	0.47	6.245	0.255	0.253	6.256	0.123	0.604	0.481	0.228	0.477	0.354	0.127	2.114
5.0	22.7	0.028	0.49	6.247	0.262	0.261	6.257	0.124	0.609	0.486	0.225	0.479	0.355	0.130	2.159
5.3	23.2	0.030	0.52	6.249	0.268	0.267	6.258	0.125	0.614	0.489	0.223	0.481	0.356	0.133	2.197
5.5	23.8	0.032	0.55	6.250	0.274	0.272	6.259	0.126	0.619	0.493	0.221	0.483	0.357	0.136	2.234
5.8	24.4	0.033	0.57	6.252	0.281	0.279	6.260	0.127	0.625	0.498	0.219	0.486	0.359	0.140	2.275
6.0	24.9	0.034	0.59	6.253	0.287	0.286	6.262	0.129	0.631	0.502	0.217	0.488	0.359	0.143	2.319
6.2	25.5	0.036	0.63	6.256	0.293	0.292	6.263	0.130	0.637	0.506	0.215	0.491	0.361	0.146	2.358
6.5	26.0	0.037	0.65	6.257	0.299	0.298	6.266	0.132	0.643	0.511	0.213	0.494	0.362	0.149	2.398
6.7	26.4	0.039	0.68	6.259	0.304	0.302	6.269	0.136	0.649	0.513	0.211	0.498	0.362	0.151	2.428
7.0	26.9	0.040	0.70	6.260	0.310	0.308	6.271	0.138	0.655	0.518	0.210	0.501	0.364	0.154	2.468
7.2	27.3	0.042	0.73	6.262	0.314	0.312	6.273	0.140	0.660	0.520	0.208	0.504	0.364	0.156	2.498
7.5	27.8	0.044	0.76	6.264	0.319	0.317	6.275	0.142	0.666	0.524	0.207	0.508	0.365	0.159	2.535
7.7	28.2	0.045	0.78	6.265	0.324	0.322	6.277	0.144	0.672	0.528	0.206	0.511	0.367	0.161	2.568
8.0	28.6	0.046	0.80	6.266	0.329	0.327	6.279	0.146	0.677	0.531	0.204	0.514	0.368	0.164	2.602
8.3	28.9	0.048	0.83	6.268	0.333	0.331	6.280	0.147	0.680	0.533	0.203	0.515	0.368	0.165	2.631
8.5	29.4	0.049	0.85	6.269	0.337	0.335	6.280	0.147	0.683	0.536	0.201	0.516	0.369	0.168	2.665
8.8	29.7	0.050	0.88	6.271	0.341	0.339	6.280	0.147	0.687	0.539	0.200	0.517	0.370	0.170	2.694
9.0	30.0	0.052	0.90	6.273	0.345	0.343	6.281	0.147	0.689	0.542	0.199	0.518	0.370	0.171	2.722
9.3	30.4	0.053	0.92	6.274	0.348	0.346	6.281	0.148	0.692	0.544	0.198	0.519	0.371	0.173	2.749
9.5	30.7	0.054	0.94	6.275	0.352	0.350	6.282	0.149	0.695	0.547	0.197	0.520	0.372	0.175	2.780

Project: 173409690			Source: B-3.48a, 2.1'-2.6'								Lab ID: 783A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
10.5	31.9	0.060	1.04	6.281	0.366	0.363	6.288	0.155	0.711	0.556	0.192	0.529	0.374	0.182	2.889
11.5	33.0	0.066	1.15	6.288	0.377	0.375	6.294	0.161	0.724	0.563	0.188	0.537	0.375	0.187	2.993
12.5	33.7	0.072	1.25	6.295	0.386	0.383	6.295	0.162	0.729	0.567	0.184	0.537	0.376	0.191	3.078
13.5	34.5	0.078	1.35	6.301	0.394	0.390	6.297	0.164	0.736	0.571	0.181	0.540	0.376	0.195	3.156
14.5	35.0	0.083	1.45	6.308	0.400	0.396	6.303	0.170	0.745	0.575	0.178	0.546	0.377	0.198	3.222
15.5	35.5	0.089	1.55	6.314	0.405	0.401	6.305	0.172	0.749	0.577	0.176	0.548	0.376	0.201	3.283
16.5	36.0	0.094	1.64	6.320	0.410	0.406	6.304	0.171	0.750	0.579	0.174	0.547	0.376	0.203	3.337
17.5	36.3	0.101	1.75	6.327	0.414	0.409	6.309	0.176	0.757	0.581	0.172	0.552	0.376	0.205	3.384
18.5	36.7	0.106	1.85	6.333	0.417	0.412	6.313	0.180	0.761	0.582	0.169	0.555	0.376	0.206	3.432
19.5	36.9	0.113	1.96	6.341	0.419	0.414	6.310	0.177	0.759	0.582	0.167	0.552	0.374	0.207	3.478
20.5	37.2	0.118	2.05	6.346	0.422	0.417	6.313	0.179	0.761	0.582	0.165	0.553	0.374	0.208	3.524
21.5	37.3	0.124	2.16	6.353	0.423	0.418	6.317	0.183	0.764	0.581	0.163	0.556	0.372	0.209	3.557
22.5	37.5	0.130	2.26	6.360	0.424	0.419	6.316	0.183	0.763	0.580	0.162	0.554	0.371	0.209	3.592
23.5	37.6	0.135	2.35	6.366	0.426	0.420	6.315	0.182	0.762	0.580	0.161	0.552	0.371	0.210	3.613
25.6	38.0	0.147	2.56	6.379	0.429	0.422	6.322	0.189	0.770	0.582	0.159	0.559	0.370	0.211	3.656
26.6	38.2	0.152	2.65	6.385	0.431	0.424	6.320	0.186	0.769	0.583	0.159	0.557	0.371	0.212	3.676
27.5	38.3	0.158	2.75	6.392	0.432	0.425	6.321	0.188	0.771	0.583	0.158	0.559	0.371	0.212	3.684
30.6	38.5	0.175	3.05	6.411	0.433	0.425	6.321	0.188	0.770	0.581	0.156	0.557	0.369	0.213	3.726
31.6	38.7	0.181	3.16	6.419	0.434	0.427	6.326	0.193	0.775	0.582	0.156	0.562	0.369	0.213	3.743
32.6	38.8	0.187	3.25	6.425	0.434	0.426	6.327	0.194	0.775	0.581	0.155	0.562	0.368	0.213	3.756
33.6	38.8	0.192	3.35	6.432	0.435	0.427	6.325	0.192	0.772	0.581	0.154	0.559	0.367	0.213	3.770
34.6	38.9	0.197	3.44	6.437	0.435	0.427	6.326	0.193	0.774	0.581	0.154	0.560	0.367	0.213	3.778
36.6	39.1	0.210	3.66	6.452	0.437	0.428	6.327	0.194	0.774	0.580	0.152	0.560	0.366	0.214	3.814
37.6	39.2	0.215	3.76	6.459	0.437	0.428	6.326	0.193	0.772	0.579	0.152	0.558	0.365	0.214	3.821
38.6	39.3	0.221	3.85	6.465	0.438	0.428	6.331	0.197	0.776	0.579	0.151	0.562	0.365	0.214	3.839
39.6	39.3	0.227	3.95	6.472	0.437	0.428	6.330	0.197	0.775	0.578	0.150	0.561	0.364	0.214	3.846
40.6	39.4	0.233	4.05	6.479	0.438	0.428	6.328	0.195	0.773	0.577	0.150	0.559	0.364	0.214	3.856
41.6	39.5	0.239	4.16	6.486	0.438	0.428	6.330	0.197	0.775	0.578	0.149	0.560	0.364	0.214	3.865
42.6	39.6	0.245	4.27	6.494	0.439	0.428	6.333	0.200	0.778	0.577	0.149	0.563	0.363	0.214	3.875
43.6	39.6	0.250	4.36	6.499	0.439	0.428	6.330	0.197	0.774	0.576	0.148	0.560	0.362	0.214	3.888
44.6	39.7	0.255	4.45	6.506	0.439	0.428	6.330	0.196	0.772	0.576	0.148	0.558	0.362	0.214	3.897
45.6	39.8	0.262	4.56	6.513	0.440	0.429	6.333	0.200	0.777	0.577	0.147	0.562	0.362	0.215	3.914
46.6	40.0	0.267	4.66	6.520	0.442	0.431	6.333	0.200	0.778	0.578	0.147	0.562	0.362	0.215	3.928
47.6	40.1	0.274	4.77	6.527	0.443	0.431	6.331	0.198	0.775	0.578	0.147	0.560	0.362	0.215	3.935
48.6	40.4	0.279	4.86	6.534	0.445	0.433	6.333	0.200	0.779	0.579	0.147	0.563	0.363	0.216	3.954
49.6	40.5	0.285	4.96	6.541	0.446	0.433	6.335	0.202	0.782	0.580	0.146	0.565	0.363	0.217	3.966
52.1	41.0	0.299	5.21	6.558	0.450	0.438	6.334	0.201	0.784	0.583	0.146	0.565	0.364	0.219	4.005
54.6	41.3	0.314	5.47	6.576	0.452	0.439	6.332	0.199	0.784	0.585	0.146	0.564	0.365	0.219	4.005
57.1	41.6	0.328	5.72	6.593	0.454	0.440	6.335	0.202	0.788	0.586	0.147	0.568	0.366	0.220	4.000
59.6	41.8	0.343	5.97	6.611	0.455	0.440	6.337	0.204	0.791	0.587	0.147	0.571	0.367	0.220	3.998
64.6	41.9	0.371	6.47	6.646	0.453	0.438	6.335	0.201	0.787	0.585	0.148	0.568	0.366	0.219	3.962
67.2	41.9	0.385	6.72	6.664	0.453	0.436	6.337	0.204	0.787	0.583	0.147	0.569	0.365	0.218	3.972
69.6	42.0	0.400	6.97	6.682	0.452	0.435	6.336	0.203	0.784	0.581	0.146	0.566	0.363	0.218	3.982
72.1	42.0	0.415	7.23	6.701	0.452	0.434	6.332	0.199	0.778	0.579	0.145	0.561	0.362	0.217	3.991
74.6	42.3	0.429	7.48	6.718	0.453	0.435	6.333	0.200	0.779	0.579	0.145	0.562	0.362	0.217	4.003
77.2	42.5	0.444	7.74	6.737	0.454	0.435	6.336	0.202	0.782	0.579	0.144	0.564	0.362	0.217	4.012
82.2	42.9	0.472	8.23	6.773	0.456	0.436	6.330	0.197	0.778	0.581	0.145	0.560	0.363	0.218	4.004
84.7	43.3	0.486	8.48	6.792	0.459	0.438	6.332	0.199	0.782	0.583	0.146	0.564	0.365	0.219	4.003
87.2	43.4	0.500	8.72	6.810	0.459	0.438	6.333	0.200	0.785	0.585	0.147	0.566	0.366	0.219	3.981
89.7	43.9	0.515	8.98	6.830	0.463	0.440	6.330	0.197	0.786	0.589	0.148	0.566	0.368	0.220	3.974
92.2	44.3	0.529	9.22	6.847	0.466	0.443	6.330	0.197	0.789	0.592	0.149	0.568	0.370	0.222	3.981
94.7	45.0	0.544	9.49	6.867	0.471	0.448	6.334	0.200	0.799	0.598	0.150	0.574	0.374	0.224	3.989
99.7	45.8	0.572	9.98	6.905	0.477	0.453	6.328	0.195	0.799	0.604	0.151	0.573	0.378	0.226	3.993
104.7	46.2	0.601	10.48	6.944	0.479	0.453	6.332	0.199	0.803	0.605	0.151	0.577	0.378	0.227	3.997
107.2	46.4	0.616	10.74	6.964	0.480	0.453	6.329	0.196	0.800	0.604	0.150	0.573	0.377	0.227	4.013
109.7	46.6	0.630	10.98	6.983	0.480	0.454	6.326	0.193	0.797	0.604	0.151	0.570	0.377	0.227	4.013
119.7	47.4	0.687	11.98	7.062	0.483	0.454	6.324	0.191	0.798	0.607	0.153	0.571	0.380	0.227	3.968
122.2	47.7	0.701	12.23	7.082	0.485	0.455	6.328	0.195	0.804	0.609	0.154	0.576	0.381	0.227	3.955
124.7	48.1	0.716	12.48	7.103	0.487	0.456	6.325	0.192	0.803	0.611	0.155	0.575	0.383	0.228	3.945
127.2	48.4	0.730	12.73	7.123	0.489	0.458	6.322	0.189	0.802	0.613	0.156	0.573	0.385	0.229	3.941
129.7	48.6	0.745	12.98	7.144	0.490	0.458	6.323	0.190	0.804	0.614	0.156	0.575	0.385	0.229	3.930
134.7	49.3	0.773	13.48	7.185	0.494	0.460	6.321	0.188	0.806	0.618	0.158	0.576	0.388	0.230	3.921
137.2	49.8	0.788	13.74	7.206	0.498	0.464	6.319	0.186	0.808	0.622	0.158	0.576	0.390	0.232	3.933
139.7	50.4	0.802	13.98	7.227	0.502	0.467	6.322	0.189	0.815	0.626	0.159	0.581	0.392	0.234	3.946
142.2	50.8	0.817	14.25	7.249	0.505	0.470	6.321	0.188	0.816	0.628	0.158	0.581	0.393	0.235	3.963
144.7	51.0	0.831	14.49	7.270	0.505	0.469	6.317	0.184	0.813	0.629	0.159	0.578	0.394	0.235	3.951
149.8	51.3	0.861	15.01	7.314	0.505	0.468	6.319	0.186	0.815	0.629	0.161	0.581	0.395	0.234	3.917
152.2	51.4	0.875	15.25	7.335	0.504	0.467	6.317	0.184	0.812	0.628	0.161	0.578	0.395	0.233	3.899
154.7	51.5	0.889	15.51	7.357	0.504	0.466	6.314	0.180	0.808	0.628	0.162	0.575	0.395	0.233	3.883

Project: 173409690			Source: B-3.48a, 2.1'-2.6'								Lab ID: 783A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
157.3	51.8	0.903	15.74	7.378	0.505	0.466	6.315	0.182	0.811	0.629	0.163	0.578	0.396	0.233	3.866
159.8	52.0	0.918	16.01	7.401	0.505	0.466	6.316	0.183	0.813	0.630	0.164	0.580	0.397	0.233	3.841
162.3	52.3	0.932	16.25	7.422	0.507	0.468	6.313	0.180	0.812	0.632	0.165	0.578	0.398	0.234	3.842
164.8	52.5	0.947	16.50	7.445	0.507	0.467	6.311	0.178	0.811	0.632	0.165	0.577	0.399	0.233	3.821
167.3	52.8	0.961	16.76	7.467	0.509	0.468	6.314	0.181	0.815	0.634	0.166	0.581	0.400	0.234	3.811
169.5	52.7	0.974	16.98	7.487	0.507	0.465	6.311	0.178	0.811	0.633	0.168	0.578	0.400	0.233	3.771

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.48a, 2.6'-3.1'	Lab ID	783B
Description	Lean Clay with Sand (CL), gray, moist, firm	Test ID	783-B
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/06/2021

Specific Gravity	2.68
ASTM D 854, Dry	
Liquid Limit	32
Plastic Limit	17
Plasticity Index	15
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	0.677
Time to 50% Consolidation (min)	1.17
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	128.8
Moisture Content (%)	21.4
Dry Unit Weight (pcf)	106.1
Void Ratio	0.574
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

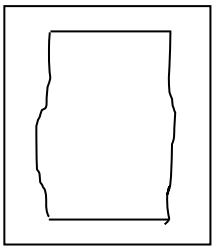
Axial Strain (%)	3.606
Deviator Stress (tsf)	1.243
Induced Pore Pressure (tsf)	0.304
Minor Effective Stress, σ_3' (tsf)	0.374
Major Effective Stress, σ_1' (tsf)	1.618
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.321
p' (tsf)	0.996
q (tsf)	0.622

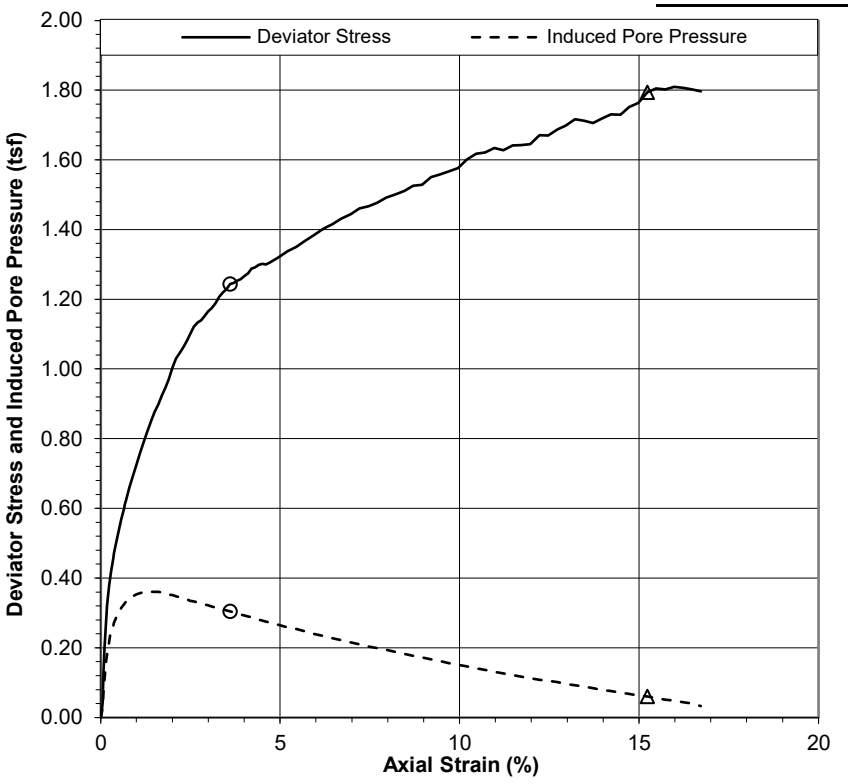
At Consolidated Undrained Failure

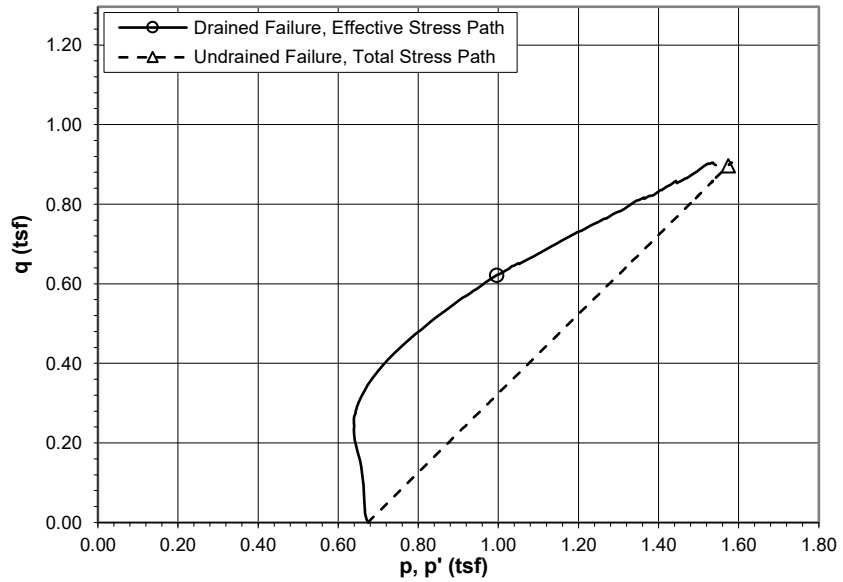
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.232
Deviator Stress (tsf)	1.793
Minor Principal Stress, σ_3 (tsf)	0.678
Major Principal Stress, σ_1 (tsf)	2.471
p (tsf)	1.574
q (tsf)	0.897

Failure Sketch







Comments

Reviewed RJ

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.48a, 2.6'-3.1'	Lab ID	783B
Description	Lean Clay with Sand (CL), gray, moist, firm	Test ID	783-B

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.769	Height (in)	5.735	Specific Gravity	2.68
Diameter (in)	2.887	Calculated Diameter (in)	2.861	ASTM D 854, Dry	
Area (in^2)	6.544	Calculated Area (in^2)	6.430	Liquid Limit	32
Moist Weight (lb)	2.723	Moist Weight (lb)	2.749	Plastic Limit	17
Moist Unit Weight (pcf)	124.7	Moist Unit Weight (pcf)	128.8	Plasticity Index	15
Moisture Content (%)	20.3	Moisture Content (%)	21.4	ASTM D 4318	
Dry Weight (lb)	2.264	Dry Weight (lb)	2.264		
Dry Unit Weight (pcf)	103.6	Dry Unit Weight (pcf)	106.1	Confining Stress	
Void Ratio	0.612	Void Ratio	0.574	σ_3 (tsf)	0.674
Degree of Saturation (%)	88.9	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.674

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.48a, 2.6'-3.1'								Lab ID: 783B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.430	0.000	0.000	5.812	0.000	0.674	0.674	0.674	0.674	0.674	0.000	1.000
0.2	1.7	0.002	0.03	6.432	0.019	0.019	5.825	0.013	0.693	0.680	0.661	0.684	0.671	0.009	1.029
0.5	4.0	0.003	0.06	6.434	0.045	0.045	5.842	0.030	0.719	0.689	0.645	0.697	0.667	0.022	1.069
0.8	10.9	0.005	0.08	6.435	0.122	0.122	5.882	0.070	0.796	0.726	0.604	0.735	0.665	0.061	1.202
1.0	16.9	0.006	0.10	6.437	0.189	0.189	5.917	0.105	0.862	0.758	0.569	0.768	0.663	0.094	1.332
1.3	21.4	0.007	0.13	6.438	0.240	0.239	5.945	0.133	0.913	0.780	0.541	0.794	0.660	0.120	1.443
1.5	25.1	0.009	0.15	6.440	0.280	0.280	5.969	0.157	0.955	0.798	0.517	0.815	0.658	0.140	1.541
1.8	28.1	0.010	0.18	6.442	0.314	0.313	5.989	0.177	0.988	0.811	0.498	0.831	0.654	0.157	1.630
2.0	30.5	0.011	0.20	6.443	0.341	0.341	6.006	0.194	1.015	0.821	0.480	0.845	0.650	0.170	1.710
2.3	32.7	0.013	0.23	6.445	0.366	0.365	6.022	0.210	1.039	0.829	0.465	0.857	0.647	0.182	1.786
2.5	34.7	0.014	0.25	6.446	0.387	0.386	6.035	0.223	1.061	0.838	0.452	0.867	0.645	0.193	1.856
2.8	36.3	0.015	0.27	6.448	0.405	0.405	6.047	0.235	1.080	0.845	0.440	0.877	0.643	0.202	1.920
3.1	37.9	0.017	0.29	6.449	0.423	0.422	6.057	0.245	1.097	0.852	0.430	0.886	0.641	0.211	1.982
3.3	39.4	0.019	0.33	6.452	0.440	0.439	6.066	0.254	1.113	0.859	0.420	0.894	0.639	0.220	2.046
3.6	40.9	0.020	0.35	6.453	0.457	0.456	6.075	0.263	1.130	0.868	0.412	0.903	0.640	0.228	2.106
3.8	42.3	0.021	0.37	6.454	0.471	0.470	6.083	0.271	1.145	0.874	0.403	0.910	0.639	0.235	2.166
4.0	43.6	0.023	0.40	6.456	0.486	0.486	6.090	0.278	1.161	0.883	0.398	0.918	0.640	0.243	2.221
4.3	44.7	0.024	0.43	6.458	0.499	0.498	6.097	0.285	1.173	0.888	0.390	0.924	0.639	0.249	2.275
4.5	45.8	0.026	0.45	6.459	0.510	0.509	6.103	0.291	1.184	0.894	0.384	0.930	0.639	0.255	2.325
4.8	46.9	0.027	0.47	6.461	0.523	0.522	6.108	0.296	1.197	0.901	0.379	0.936	0.640	0.261	2.378
5.1	48.0	0.029	0.50	6.463	0.535	0.534	6.113	0.301	1.208	0.907	0.373	0.941	0.640	0.267	2.431
5.3	49.3	0.030	0.53	6.464	0.549	0.548	6.118	0.306	1.223	0.917	0.369	0.949	0.643	0.274	2.485
5.6	50.3	0.032	0.56	6.466	0.560	0.559	6.123	0.310	1.233	0.923	0.364	0.954	0.644	0.279	2.533
5.8	51.3	0.033	0.58	6.468	0.572	0.570	6.126	0.314	1.245	0.931	0.361	0.960	0.646	0.285	2.581
6.1	52.3	0.035	0.61	6.469	0.582	0.581	6.131	0.319	1.256	0.937	0.356	0.965	0.647	0.290	2.629
6.3	53.3	0.036	0.63	6.471	0.593	0.591	6.134	0.322	1.266	0.945	0.353	0.971	0.649	0.296	2.675
6.6	54.1	0.038	0.65	6.473	0.602	0.600	6.137	0.325	1.276	0.951	0.351	0.976	0.651	0.300	2.711
6.8	55.1	0.039	0.68	6.474	0.612	0.611	6.141	0.328	1.286	0.957	0.347	0.981	0.652	0.305	2.762
7.1	56.0	0.040	0.70	6.476	0.622	0.621	6.143	0.331	1.296	0.966	0.345	0.986	0.655	0.310	2.799
8.1	59.5	0.046	0.80	6.482	0.661	0.659	6.152	0.340	1.334	0.994	0.335	1.005	0.665	0.329	2.967
9.1	62.6	0.051	0.89	6.488	0.694	0.692	6.160	0.348	1.368	1.020	0.328	1.022	0.674	0.346	3.110
10.1	65.5	0.057	1.00	6.495	0.726	0.724	6.165	0.353	1.400	1.047	0.323	1.038	0.685	0.362	3.243
11.1	68.9	0.063	1.10	6.502	0.763	0.760	6.169	0.357	1.436	1.079	0.319	1.056	0.699	0.380	3.380
12.1	71.7	0.069	1.20	6.509	0.793	0.790	6.171	0.359	1.465	1.106	0.316	1.070	0.711	0.395	3.498
13.1	74.4	0.075	1.30	6.515	0.823	0.819	6.173	0.361	1.495	1.135	0.315	1.086	0.725	0.410	3.600
14.1	77.3	0.081	1.41	6.522	0.853	0.850	6.173	0.361	1.526	1.165	0.315	1.101	0.740	0.425	3.697
15.1	79.8	0.086	1.50	6.528	0.880	0.876	6.173	0.361	1.552	1.191	0.315	1.114	0.753	0.438	3.779
16.1	81.9	0.093	1.61	6.536	0.903	0.899	6.172	0.360	1.575	1.215	0.316	1.126	0.766	0.449	3.843
17.1	84.4	0.098	1.71	6.542	0.929	0.925	6.171	0.358	1.601	1.243	0.318	1.139	0.780	0.462	3.907

Project: 173409690			Source: B-3.48a, 2.6'-3.1'								Lab ID: 783B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
18.1	86.5	0.104	1.81	6.549	0.951	0.946	6.169	0.357	1.623	1.266	0.320	1.150	0.793	0.473	3.959
19.1	88.9	0.109	1.91	6.555	0.976	0.972	6.165	0.353	1.647	1.295	0.323	1.161	0.809	0.486	4.009
20.1	91.9	0.115	2.00	6.561	1.009	1.004	6.163	0.351	1.680	1.329	0.325	1.178	0.827	0.502	4.088
21.1	94.4	0.121	2.10	6.568	1.035	1.030	6.160	0.348	1.706	1.358	0.328	1.191	0.843	0.515	4.136
22.1	96.1	0.127	2.21	6.575	1.052	1.047	6.157	0.345	1.723	1.378	0.331	1.200	0.855	0.523	4.159
23.1	97.7	0.133	2.32	6.583	1.069	1.063	6.154	0.342	1.739	1.398	0.334	1.208	0.866	0.532	4.181
24.1	99.6	0.138	2.41	6.589	1.088	1.083	6.151	0.339	1.759	1.420	0.338	1.218	0.879	0.541	4.207
25.1	101.3	0.143	2.49	6.595	1.106	1.100	6.147	0.335	1.776	1.441	0.341	1.226	0.891	0.550	4.222
26.1	103.4	0.149	2.60	6.602	1.128	1.122	6.145	0.333	1.799	1.466	0.344	1.238	0.905	0.561	4.256
27.1	104.5	0.155	2.70	6.609	1.139	1.132	6.142	0.330	1.809	1.479	0.347	1.243	0.913	0.566	4.265
28.1	105.4	0.161	2.81	6.616	1.147	1.140	6.139	0.327	1.817	1.490	0.350	1.247	0.920	0.570	4.255
29.1	106.7	0.167	2.91	6.623	1.160	1.153	6.136	0.324	1.831	1.507	0.354	1.254	0.930	0.577	4.260
30.1	107.9	0.172	3.00	6.629	1.172	1.165	6.134	0.322	1.841	1.520	0.355	1.259	0.937	0.582	4.280
31.1	109.0	0.178	3.10	6.636	1.182	1.175	6.130	0.318	1.852	1.534	0.359	1.265	0.947	0.587	4.270
32.1	110.3	0.183	3.20	6.643	1.196	1.188	6.127	0.315	1.865	1.550	0.362	1.271	0.956	0.594	4.283
33.1	112.2	0.189	3.30	6.650	1.215	1.207	6.125	0.312	1.884	1.572	0.365	1.281	0.969	0.603	4.303
34.1	113.5	0.196	3.41	6.657	1.228	1.220	6.122	0.310	1.898	1.588	0.368	1.288	0.978	0.610	4.313
35.1	114.6	0.201	3.51	6.664	1.238	1.229	6.119	0.307	1.907	1.600	0.371	1.293	0.986	0.615	4.313
36.1	116.0	0.207	3.61	6.671	1.252	1.243	6.116	0.304	1.922	1.618	0.374	1.300	0.996	0.622	4.321
37.1	116.4	0.213	3.71	6.678	1.255	1.246	6.114	0.302	1.924	1.622	0.376	1.301	0.999	0.623	4.312
38.1	117.2	0.218	3.80	6.684	1.262	1.253	6.110	0.298	1.931	1.632	0.379	1.304	1.006	0.626	4.301
39.1	117.7	0.224	3.90	6.692	1.267	1.257	6.107	0.295	1.936	1.640	0.383	1.307	1.012	0.629	4.284
40.1	118.8	0.230	4.01	6.699	1.277	1.267	6.105	0.293	1.945	1.652	0.385	1.311	1.018	0.633	4.292
41.1	119.6	0.235	4.10	6.705	1.284	1.274	6.102	0.290	1.953	1.663	0.389	1.316	1.026	0.637	4.279
42.1	121.0	0.241	4.21	6.713	1.298	1.288	6.100	0.288	1.965	1.678	0.390	1.321	1.034	0.644	4.304
43.1	121.5	0.247	4.31	6.720	1.302	1.291	6.097	0.284	1.970	1.685	0.394	1.324	1.039	0.646	4.280
44.1	122.3	0.253	4.41	6.727	1.309	1.299	6.093	0.281	1.976	1.695	0.396	1.327	1.046	0.649	4.275
45.1	122.8	0.259	4.51	6.734	1.313	1.302	6.090	0.278	1.979	1.701	0.400	1.328	1.050	0.651	4.258
46.1	122.7	0.264	4.61	6.741	1.310	1.299	6.087	0.275	1.977	1.702	0.402	1.327	1.052	0.650	4.229
47.1	123.4	0.270	4.71	6.748	1.316	1.305	6.085	0.273	1.982	1.710	0.405	1.330	1.057	0.652	4.223
49.6	125.2	0.284	4.95	6.765	1.332	1.320	6.078	0.266	1.997	1.731	0.411	1.337	1.071	0.660	4.211
52.1	127.2	0.299	5.21	6.783	1.350	1.338	6.071	0.259	2.016	1.757	0.420	1.347	1.088	0.669	4.187
54.6	128.8	0.313	5.45	6.801	1.363	1.350	6.066	0.254	2.028	1.775	0.425	1.353	1.100	0.675	4.179
57.1	131.0	0.328	5.72	6.820	1.382	1.369	6.058	0.246	2.046	1.800	0.431	1.362	1.116	0.684	4.174
59.6	132.9	0.342	5.96	6.838	1.400	1.385	6.052	0.240	2.063	1.824	0.439	1.371	1.131	0.693	4.159
62.1	135.0	0.356	6.21	6.856	1.418	1.403	6.046	0.234	2.081	1.847	0.444	1.379	1.146	0.701	4.157
64.6	136.7	0.371	6.46	6.874	1.431	1.416	6.040	0.228	2.094	1.866	0.450	1.386	1.158	0.708	4.144
67.2	138.5	0.384	6.70	6.892	1.447	1.431	6.034	0.222	2.109	1.887	0.456	1.393	1.171	0.716	4.139
69.6	140.2	0.400	6.97	6.912	1.460	1.443	6.028	0.216	2.121	1.905	0.462	1.399	1.184	0.722	4.125
72.1	142.2	0.413	7.21	6.930	1.477	1.460	6.022	0.210	2.138	1.928	0.468	1.408	1.198	0.730	4.123
74.6	143.3	0.428	7.47	6.949	1.485	1.467	6.016	0.204	2.145	1.941	0.474	1.412	1.208	0.733	4.092
77.1	144.7	0.442	7.70	6.967	1.496	1.477	6.011	0.199	2.155	1.956	0.479	1.416	1.218	0.739	4.083
79.7	146.6	0.456	7.96	6.986	1.511	1.492	6.006	0.194	2.170	1.976	0.484	1.424	1.230	0.746	4.081
82.1	148.0	0.471	8.21	7.006	1.521	1.501	6.000	0.188	2.179	1.991	0.490	1.428	1.240	0.750	4.064
84.6	149.4	0.485	8.46	7.025	1.532	1.511	5.994	0.182	2.189	2.006	0.495	1.433	1.251	0.756	4.053
87.2	151.3	0.499	8.71	7.044	1.546	1.525	5.989	0.177	2.204	2.026	0.501	1.441	1.264	0.763	4.046
89.7	152.1	0.513	8.95	7.063	1.550	1.529	5.984	0.172	2.207	2.035	0.506	1.443	1.271	0.764	4.020
92.2	154.7	0.528	9.21	7.082	1.572	1.550	5.979	0.167	2.228	2.061	0.511	1.453	1.286	0.775	4.033
94.7	155.9	0.542	9.45	7.101	1.580	1.557	5.974	0.162	2.235	2.073	0.516	1.457	1.294	0.779	4.020
97.2	157.3	0.557	9.71	7.122	1.590	1.566	5.968	0.156	2.244	2.089	0.522	1.461	1.305	0.783	4.000
99.7	158.7	0.571	9.96	7.141	1.600	1.576	5.963	0.151	2.254	2.103	0.527	1.466	1.315	0.788	3.993
102.2	161.6	0.586	10.21	7.161	1.625	1.600	5.958	0.146	2.278	2.132	0.531	1.478	1.331	0.800	4.013
104.7	163.9	0.600	10.46	7.182	1.643	1.618	5.953	0.141	2.295	2.154	0.536	1.486	1.345	0.809	4.019
107.2	164.7	0.614	10.71	7.202	1.647	1.621	5.948	0.136	2.298	2.162	0.541	1.488	1.351	0.810	3.996
109.7	166.6	0.629	10.97	7.223	1.661	1.634	5.943	0.131	2.312	2.181	0.547	1.495	1.364	0.817	3.989
112.2	166.5	0.644	11.22	7.243	1.655	1.628	5.939	0.127	2.306	2.179	0.551	1.492	1.365	0.814	3.954
114.7	168.4	0.658	11.48	7.264	1.669	1.642	5.934	0.122	2.320	2.198	0.556	1.499	1.377	0.821	3.952
117.2	169.0	0.672	11.71	7.284	1.671	1.642	5.930	0.117	2.320	2.202	0.560	1.498	1.381	0.821	3.933
119.7	169.8	0.686	11.97	7.304	1.674	1.645	5.925	0.113	2.323	2.210	0.565	1.500	1.387	0.823	3.914
122.2	173.0	0.701	12.22	7.326	1.701	1.671	5.920	0.108	2.349	2.241	0.570	1.513	1.405	0.836	3.933
124.7	173.5	0.715	12.47	7.346	1.700	1.670	5.917	0.105	2.348	2.243	0.573	1.513	1.408	0.835	3.914
127.2	175.8	0.730	12.73	7.368	1.718	1.687	5.914	0.102	2.365	2.263	0.576	1.521	1.420	0.843	3.928
129.7	177.5	0.743	12.96	7.388	1.730	1.698	5.908	0.096	2.376	2.279	0.581	1.526	1.430	0.849	3.923
132.2	179.9	0.758	13.22	7.410	1.748	1.716	5.904	0.092	2.394	2.302	0.585	1.536	1.443	0.858	3.934
134.7	180.0	0.773	13.47	7.432	1.744	1.711	5.900	0.088	2.389	2.301	0.589	1.533	1.445	0.856	3.905
137.2	179.9	0.787	13.72	7.453	1.738	1.705	5.896	0.084	2.382	2.298	0.593	1.530	1.446	0.853	3.876
139.7	182.0	0.802	13.98	7.475	1.753	1.719	5.891	0.079	2.396	2.318	0.599	1.537	1.458	0.859	3.872
142.2	183.8	0.816	14.22	7.496	1.765	1.731	5.888	0.075	2.408	2.333	0.602	1.543	1.468	0.865	3.874
144.7	184.3	0.831	14.48	7.519	1.764	1.729	5.884	0.071	2.406	2.335	0.606	1.542	1.470	0.865	3.856

Project: 173409690			Source: B-3.48a, 2.6'-3.1'								Lab ID: 783B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
147.2	187.1	0.845	14.73	7.541	1.787	1.751	5.879	0.067	2.428	2.361	0.610	1.553	1.485	0.876	3.872
149.7	189.0	0.860	14.99	7.564	1.799	1.763	5.875	0.063	2.441	2.378	0.614	1.559	1.496	0.882	3.870
152.2	192.8	0.874	15.23	7.586	1.830	1.793	5.872	0.060	2.471	2.411	0.618	1.574	1.515	0.897	3.903
154.7	194.6	0.888	15.48	7.608	1.842	1.804	5.868	0.056	2.482	2.426	0.622	1.580	1.524	0.902	3.903
157.2	195.0	0.903	15.74	7.631	1.840	1.802	5.864	0.052	2.480	2.429	0.626	1.579	1.528	0.901	3.877
159.7	196.5	0.916	15.98	7.653	1.849	1.810	5.860	0.048	2.487	2.439	0.629	1.582	1.534	0.905	3.876
162.2	196.8	0.931	16.23	7.676	1.846	1.807	5.856	0.044	2.484	2.440	0.634	1.581	1.537	0.903	3.851
164.7	196.9	0.945	16.48	7.699	1.842	1.802	5.853	0.040	2.479	2.439	0.637	1.578	1.538	0.901	3.830
167.0	196.9	0.959	16.71	7.721	1.836	1.796	5.845	0.033	2.473	2.441	0.645	1.575	1.543	0.898	3.786

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.50a, 2.2'-2.7'	Lab ID	788A
Description	Lean Clay with Sand (CL), gray, moist, firm	Test ID	783-C
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/05/2021

Specific Gravity	2.63
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.97
Measured Effective Consol. Stress (tsf)	1.032
Time to 50% Consolidation (min)	6.70
Actual Axial Strain Rate of Test (%/min)	0.045

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	108.8
Moisture Content (%)	45.1
Dry Unit Weight (pcf)	74.9
Void Ratio	1.187
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

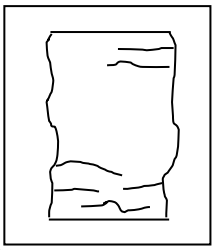
Axial Strain (%)	13.468
Deviator Stress (tsf)	1.032
Induced Pore Pressure (tsf)	0.750
Minor Effective Stress, σ_3' (tsf)	0.279
Major Effective Stress, σ_1' (tsf)	1.311
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.707
p' (tsf)	0.795
q (tsf)	0.516

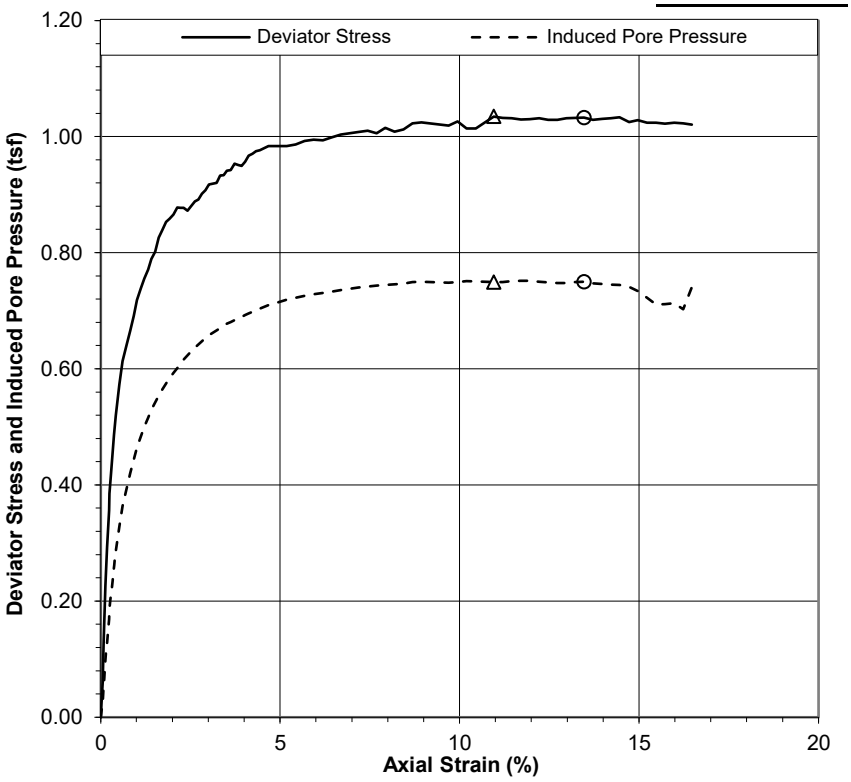
At Consolidated Undrained Failure

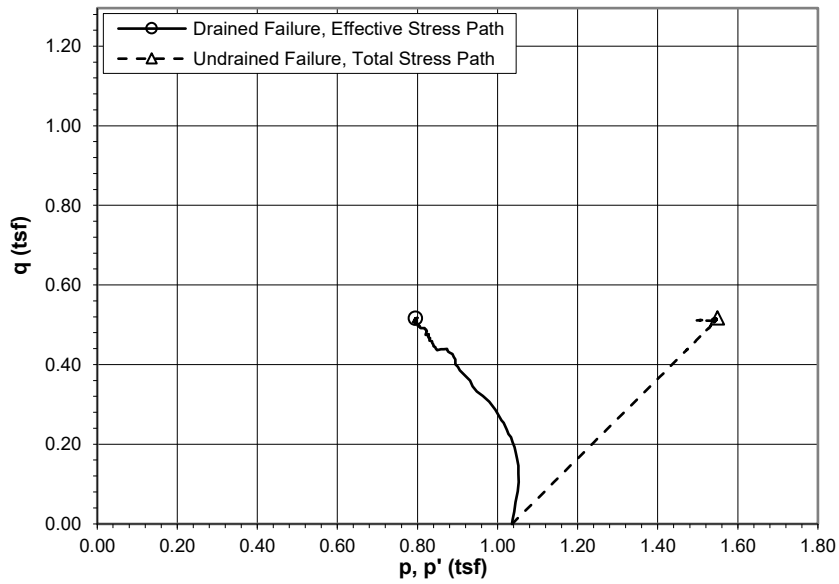
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	10.956
Deviator Stress (tsf)	1.035
Minor Principal Stress, σ_3 (tsf)	1.032
Major Principal Stress, σ_1 (tsf)	2.066
p (tsf)	1.549
q (tsf)	0.517

Failure Sketch







Comments

Reviewed RJ

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.50a, 2.2'-2.7'
Description: Lean Clay with Sand (CL), gray, moist, firm

Project No.: 173409690
Lab ID: 788A
Test ID: 783-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.760	Height (in)	5.548
Diameter (in)	2.842	Calculated Diameter (in)	2.675
Area (in^2)	6.345	Calculated Area (in^2)	5.622
Moist Weight (lb)	2.124	Moist Weight (lb)	1.963
Moist Unit Weight (pcf)	100.4	Moist Unit Weight (pcf)	108.8
Moisture Content (%)	57.0	Moisture Content (%)	45.1
Dry Weight (lb)	1.353	Dry Weight (lb)	1.353
Dry Unit Weight (pcf)	64.0	Dry Unit Weight (pcf)	74.9
Void Ratio	1.562	Void Ratio	1.187
Degree of Saturation (%)	95.9	Degree of Saturation (%)	100.0

Specific Gravity: 2.63
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 1.036

Effective Consolidation Stress
σ_3' (tsf): 1.036

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.50a, 2.2'-2.7'								Lab ID: 788A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	5.622	0.000	0.000	5.445	0.000	1.036	1.036	1.036	1.036	1.036	0.000	1.000
0.6	1.7	0.002	0.03	5.623	0.022	0.022	5.454	0.010	1.059	1.049	1.027	1.047	1.038	0.011	1.022
1.1	4.7	0.003	0.06	5.625	0.060	0.060	5.470	0.025	1.097	1.072	1.011	1.067	1.042	0.030	1.060
1.7	8.5	0.004	0.08	5.626	0.109	0.109	5.490	0.046	1.146	1.100	0.991	1.091	1.045	0.055	1.110
2.3	12.8	0.006	0.10	5.628	0.164	0.163	5.512	0.067	1.200	1.132	0.969	1.118	1.051	0.082	1.169
2.8	16.4	0.007	0.12	5.629	0.210	0.209	5.533	0.089	1.245	1.157	0.948	1.141	1.052	0.105	1.221
3.4	19.7	0.008	0.15	5.630	0.251	0.251	5.554	0.110	1.287	1.178	0.927	1.162	1.052	0.125	1.271
4.0	22.8	0.010	0.18	5.632	0.292	0.291	5.575	0.130	1.327	1.197	0.906	1.182	1.052	0.146	1.321
4.5	25.6	0.012	0.21	5.634	0.327	0.326	5.595	0.150	1.362	1.212	0.886	1.199	1.049	0.163	1.368
5.1	27.9	0.013	0.23	5.635	0.356	0.356	5.613	0.169	1.392	1.224	0.868	1.214	1.046	0.178	1.410
5.7	30.2	0.014	0.25	5.636	0.386	0.385	5.631	0.187	1.422	1.235	0.850	1.229	1.042	0.193	1.453
6.2	32.2	0.015	0.28	5.637	0.411	0.410	5.648	0.203	1.446	1.243	0.833	1.241	1.038	0.205	1.492
6.8	34.1	0.017	0.31	5.639	0.435	0.434	5.664	0.219	1.470	1.251	0.816	1.253	1.034	0.217	1.532
7.3	35.5	0.019	0.34	5.641	0.453	0.452	5.679	0.235	1.488	1.253	0.801	1.262	1.027	0.226	1.564
7.9	37.1	0.020	0.35	5.642	0.473	0.472	5.693	0.249	1.508	1.260	0.787	1.272	1.023	0.236	1.600
8.5	38.4	0.021	0.38	5.643	0.490	0.489	5.706	0.261	1.525	1.264	0.775	1.281	1.019	0.245	1.631
9.0	39.8	0.022	0.40	5.645	0.508	0.507	5.719	0.274	1.543	1.269	0.762	1.290	1.015	0.254	1.666
9.6	40.9	0.024	0.42	5.646	0.521	0.520	5.731	0.286	1.556	1.270	0.750	1.296	1.010	0.260	1.694
11.8	45.1	0.029	0.52	5.651	0.574	0.573	5.773	0.328	1.609	1.281	0.708	1.323	0.994	0.286	1.810
14.1	48.3	0.034	0.61	5.657	0.615	0.613	5.808	0.364	1.650	1.286	0.672	1.343	0.979	0.307	1.912
16.3	50.6	0.040	0.73	5.663	0.644	0.642	5.839	0.394	1.678	1.284	0.642	1.357	0.963	0.321	1.999
18.5	52.6	0.046	0.83	5.669	0.668	0.665	5.865	0.420	1.701	1.281	0.616	1.369	0.948	0.333	2.081
20.8	54.6	0.051	0.93	5.675	0.693	0.691	5.888	0.444	1.727	1.283	0.592	1.381	0.938	0.345	2.166
23.0	56.9	0.056	1.02	5.680	0.721	0.719	5.909	0.464	1.755	1.290	0.572	1.396	0.931	0.359	2.257
25.3	58.5	0.062	1.12	5.685	0.741	0.738	5.928	0.483	1.774	1.291	0.553	1.405	0.922	0.369	2.335
27.5	60.0	0.068	1.22	5.691	0.759	0.755	5.945	0.500	1.792	1.291	0.536	1.414	0.913	0.378	2.410
29.7	61.3	0.073	1.32	5.697	0.774	0.771	5.960	0.516	1.807	1.291	0.521	1.421	0.906	0.385	2.481
32.0	62.8	0.079	1.42	5.703	0.793	0.789	5.974	0.529	1.825	1.295	0.506	1.430	0.901	0.394	2.558
34.2	63.9	0.085	1.53	5.709	0.806	0.802	5.987	0.542	1.837	1.295	0.494	1.437	0.895	0.401	2.623
36.5	65.9	0.090	1.62	5.714	0.830	0.826	5.998	0.554	1.861	1.308	0.482	1.449	0.895	0.413	2.713
38.7	67.0	0.095	1.72	5.720	0.843	0.839	6.009	0.564	1.874	1.310	0.471	1.455	0.891	0.419	2.779
40.9	68.2	0.101	1.82	5.726	0.857	0.853	6.019	0.574	1.888	1.314	0.461	1.462	0.888	0.426	2.849
43.2	68.8	0.107	1.92	5.732	0.864	0.859	6.028	0.584	1.894	1.311	0.452	1.465	0.881	0.429	2.900
45.4	69.4	0.113	2.03	5.738	0.871	0.866	6.037	0.593	1.901	1.309	0.443	1.469	0.876	0.433	2.953
47.7	70.5	0.119	2.14	5.745	0.883	0.878	6.045	0.601	1.914	1.313	0.435	1.475	0.874	0.439	3.019
49.9	70.5	0.123	2.23	5.750	0.883	0.877	6.053	0.609	1.913	1.304	0.427	1.474	0.866	0.439	3.054
52.1	70.6	0.129	2.32	5.755	0.883	0.877	6.060	0.616	1.913	1.297	0.420	1.474	0.859	0.439	3.088
54.4	70.3	0.134	2.42	5.762	0.878	0.872	6.067	0.623	1.908	1.285	0.413	1.472	0.849	0.436	3.113
56.6	71.0	0.140	2.52	5.767	0.886	0.880	6.075	0.630	1.916	1.286	0.406	1.476	0.846	0.440	3.169

Project: 173409690			Source: B-3.50a, 2.2'-2.7'								Lab ID: 788A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
58.9	71.8	0.146	2.63	5.774	0.895	0.888	6.081	0.636	1.924	1.288	0.400	1.480	0.844	0.444	3.220
61.1	72.1	0.151	2.73	5.780	0.899	0.892	6.087	0.642	1.928	1.286	0.394	1.482	0.840	0.446	3.261
63.3	73.0	0.157	2.83	5.785	0.909	0.901	6.092	0.647	1.937	1.290	0.389	1.487	0.839	0.451	3.319
65.6	73.6	0.162	2.92	5.791	0.915	0.908	6.098	0.653	1.944	1.291	0.383	1.490	0.837	0.454	3.369
67.8	74.5	0.168	3.02	5.797	0.925	0.918	6.103	0.658	1.953	1.295	0.378	1.495	0.837	0.459	3.428
72.3	74.9	0.179	3.23	5.810	0.928	0.920	6.111	0.666	1.956	1.290	0.370	1.496	0.830	0.460	3.490
74.6	76.0	0.185	3.33	5.816	0.941	0.933	6.115	0.670	1.969	1.298	0.365	1.502	0.832	0.466	3.552
76.8	76.2	0.190	3.43	5.822	0.943	0.934	6.118	0.674	1.969	1.295	0.361	1.502	0.828	0.467	3.583
79.0	76.9	0.195	3.52	5.827	0.950	0.941	6.122	0.678	1.977	1.299	0.358	1.506	0.828	0.471	3.631
81.3	77.1	0.201	3.63	5.833	0.952	0.942	6.125	0.681	1.978	1.297	0.355	1.507	0.826	0.471	3.657
83.5	78.1	0.207	3.73	5.840	0.963	0.953	6.128	0.684	1.988	1.305	0.352	1.512	0.828	0.477	3.711
85.8	78.0	0.213	3.83	5.846	0.961	0.951	6.131	0.686	1.986	1.299	0.349	1.510	0.824	0.475	3.727
88.0	78.0	0.218	3.93	5.852	0.959	0.949	6.134	0.689	1.984	1.295	0.346	1.510	0.821	0.475	3.743
90.2	78.7	0.224	4.03	5.858	0.967	0.957	6.137	0.692	1.992	1.299	0.343	1.513	0.821	0.478	3.789
92.5	79.6	0.229	4.13	5.864	0.978	0.967	6.140	0.695	2.002	1.307	0.340	1.519	0.824	0.484	3.844
94.7	80.0	0.235	4.23	5.870	0.981	0.970	6.143	0.698	2.005	1.307	0.337	1.520	0.822	0.485	3.879
97.0	80.5	0.240	4.33	5.877	0.986	0.975	6.145	0.701	2.010	1.309	0.334	1.523	0.822	0.487	3.916
99.2	80.7	0.246	4.44	5.883	0.988	0.976	6.148	0.704	2.012	1.308	0.332	1.523	0.820	0.488	3.944
104.8	81.6	0.259	4.67	5.898	0.996	0.984	6.154	0.710	2.020	1.310	0.326	1.528	0.818	0.492	4.015
110.4	81.8	0.273	4.93	5.913	0.996	0.983	6.159	0.714	2.019	1.305	0.321	1.527	0.813	0.492	4.060
116.0	82.1	0.288	5.18	5.929	0.997	0.984	6.164	0.719	2.019	1.300	0.316	1.527	0.808	0.492	4.109
121.6	82.6	0.301	5.43	5.945	1.000	0.986	6.167	0.723	2.022	1.299	0.313	1.529	0.806	0.493	4.150
127.2	83.4	0.316	5.69	5.961	1.007	0.993	6.170	0.726	2.028	1.302	0.310	1.532	0.806	0.496	4.205
132.8	83.8	0.329	5.94	5.977	1.010	0.994	6.173	0.728	2.030	1.302	0.307	1.533	0.804	0.497	4.238
138.4	84.0	0.344	6.19	5.993	1.009	0.993	6.175	0.730	2.028	1.298	0.305	1.532	0.801	0.497	4.259
144.0	84.7	0.357	6.44	6.009	1.015	0.998	6.177	0.733	2.033	1.301	0.303	1.534	0.802	0.499	4.299
149.6	85.4	0.371	6.69	6.025	1.021	1.003	6.180	0.735	2.039	1.303	0.300	1.537	0.802	0.502	4.345
160.8	86.3	0.398	7.18	6.057	1.026	1.008	6.184	0.740	2.043	1.303	0.295	1.539	0.799	0.504	4.415
166.4	86.8	0.413	7.44	6.074	1.029	1.010	6.186	0.742	2.045	1.303	0.293	1.540	0.798	0.505	4.446
172.0	86.7	0.427	7.69	6.090	1.026	1.006	6.188	0.743	2.041	1.297	0.292	1.538	0.795	0.503	4.447
177.6	87.8	0.440	7.93	6.106	1.035	1.015	6.189	0.744	2.049	1.305	0.290	1.542	0.798	0.507	4.496
183.2	87.6	0.454	8.19	6.123	1.030	1.009	6.190	0.746	2.043	1.297	0.289	1.539	0.793	0.504	4.492
188.8	88.2	0.468	8.44	6.140	1.034	1.012	6.191	0.747	2.047	1.300	0.288	1.541	0.794	0.506	4.514
194.4	89.4	0.482	8.69	6.157	1.045	1.023	6.194	0.749	2.057	1.308	0.286	1.546	0.797	0.511	4.578
200.0	89.8	0.496	8.94	6.174	1.047	1.024	6.194	0.750	2.058	1.309	0.284	1.546	0.796	0.512	4.605
216.8	90.3	0.538	9.70	6.226	1.044	1.019	6.193	0.748	2.052	1.304	0.285	1.543	0.795	0.509	4.575
222.4	91.2	0.552	9.95	6.243	1.052	1.026	6.194	0.749	2.059	1.310	0.284	1.546	0.797	0.513	4.610
228.0	90.4	0.566	10.20	6.260	1.040	1.014	6.196	0.751	2.047	1.296	0.282	1.541	0.789	0.507	4.590
233.6	90.7	0.580	10.45	6.278	1.041	1.014	6.195	0.751	2.047	1.296	0.282	1.540	0.789	0.507	4.589
239.2	91.9	0.593	10.69	6.295	1.051	1.024	6.195	0.750	2.055	1.305	0.282	1.544	0.794	0.512	4.634
244.8	93.2	0.608	10.96	6.314	1.063	1.035	6.194	0.749	2.066	1.317	0.282	1.549	0.800	0.517	4.666
250.4	93.3	0.622	11.21	6.331	1.061	1.032	6.194	0.749	2.063	1.314	0.282	1.547	0.798	0.516	4.654
256.0	93.6	0.635	11.45	6.349	1.061	1.032	6.195	0.751	2.063	1.312	0.281	1.547	0.797	0.516	4.671
261.6	93.7	0.650	11.71	6.368	1.060	1.029	6.196	0.752	2.061	1.309	0.280	1.546	0.794	0.515	4.681
267.2	94.1	0.663	11.95	6.385	1.061	1.030	6.196	0.752	2.061	1.309	0.279	1.546	0.794	0.515	4.686
272.8	94.6	0.678	12.22	6.404	1.063	1.032	6.195	0.750	2.062	1.312	0.280	1.546	0.796	0.516	4.679
278.4	94.7	0.692	12.47	6.423	1.061	1.029	6.193	0.749	2.058	1.310	0.281	1.544	0.795	0.514	4.665
284.0	95.0	0.706	12.73	6.442	1.062	1.029	6.192	0.748	2.058	1.310	0.281	1.543	0.796	0.514	4.659
289.6	95.5	0.720	12.97	6.460	1.065	1.031	6.192	0.748	2.060	1.312	0.281	1.544	0.797	0.516	4.669
295.2	95.9	0.733	13.22	6.478	1.066	1.032	6.194	0.749	2.061	1.312	0.280	1.545	0.796	0.516	4.689
300.8	96.3	0.747	13.47	6.497	1.067	1.032	6.194	0.750	2.061	1.311	0.279	1.544	0.795	0.516	4.707
306.4	96.3	0.761	13.72	6.516	1.064	1.029	6.192	0.747	2.055	1.308	0.279	1.541	0.794	0.514	4.681
312.0	96.8	0.775	13.97	6.535	1.066	1.030	6.191	0.746	2.057	1.310	0.280	1.541	0.795	0.515	4.679
317.6	97.2	0.789	14.22	6.554	1.068	1.031	6.189	0.745	2.057	1.312	0.280	1.541	0.796	0.516	4.680
323.2	97.7	0.802	14.46	6.572	1.071	1.033	6.189	0.744	2.058	1.314	0.280	1.541	0.797	0.517	4.686
328.8	97.3	0.817	14.73	6.593	1.063	1.025	6.186	0.741	2.047	1.306	0.281	1.534	0.793	0.512	4.650
334.4	98.0	0.830	14.97	6.611	1.067	1.028	6.178	0.734	2.043	1.309	0.281	1.529	0.795	0.514	4.659
340.0	97.9	0.845	15.22	6.631	1.063	1.024	6.167	0.722	2.028	1.305	0.282	1.516	0.793	0.512	4.637
345.6	98.3	0.858	15.47	6.651	1.064	1.024	6.155	0.711	2.016	1.306	0.282	1.505	0.794	0.512	4.632
351.2	98.5	0.873	15.73	6.671	1.063	1.022	6.156	0.711	2.016	1.305	0.282	1.505	0.794	0.511	4.620
356.8	99.0	0.887	15.98	6.691	1.065	1.024	6.158	0.713	2.020	1.307	0.283	1.508	0.795	0.512	4.621
362.4	99.2	0.900	16.23	6.711	1.064	1.022	6.147	0.702	2.008	1.305	0.283	1.497	0.794	0.511	4.613
367.6	99.4	0.914	16.47	6.730	1.063	1.021	6.185	0.741	2.046	1.306	0.285	1.536	0.795	0.510	4.583

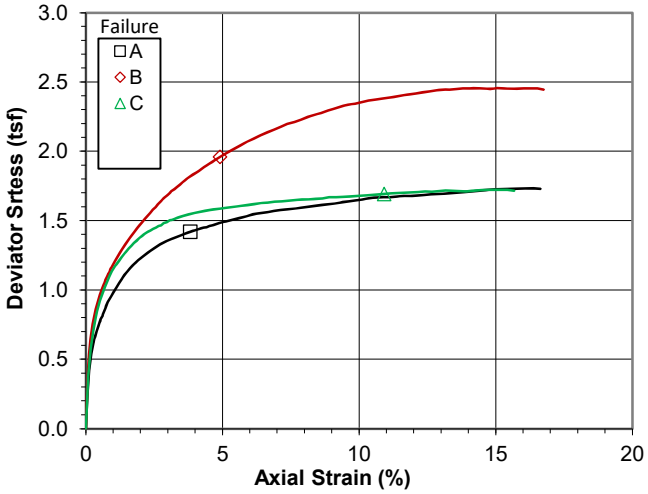
Consolidated Undrained Triaxial Compression

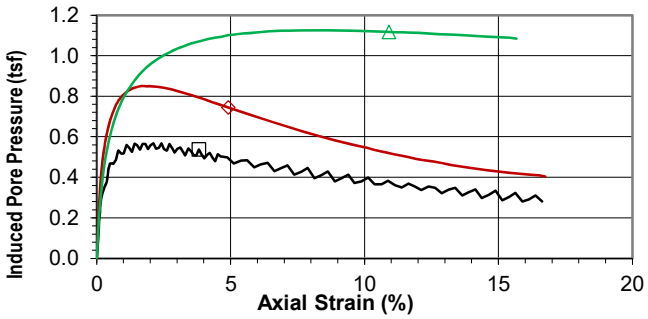
ASTM D 4767

Project Name Eagle Creek

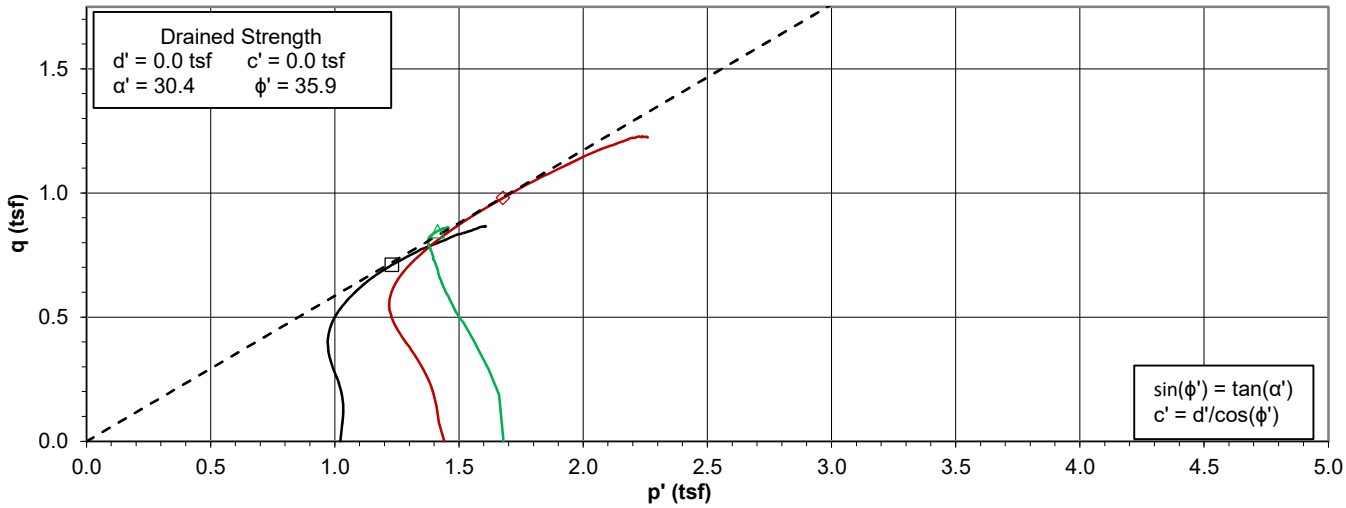
Project 173409690
Set ID 792

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	792A	B-3.51a, 2.3'-2.8'	Sandy Lean Clay (CL), brown, moist, firm	2.71	29	15	14
B	792B	B-3.51a, 2.8'-3.3'	Sandy Lean Clay (CL), brown, moist, firm	2.71	29	15	14
C	798	B-3.53a, 0.4'-0.9'	Lean Clay (CL), brown, moist, firm, organics	2.63			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.755	5.737	5.770		
Average Diameter (in)	2.837	2.839	2.861		
Moist Unit Weight (pcf)	129.0	132.0	109.0		
Moisture Content (%)	20.2	18.9	34.6		
Dry Unit Weight (pcf)	107.3	111.1	81.0		
Void Ratio	0.574	0.520	1.024		
Degree of Saturation (%)	95.4	98.3	88.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	130.1	133.7	117.7		
Moisture Content (%)	21.1	18.2	31.7		
Dry Unit Weight (pcf)	107.4	113.1	89.3		
Void Ratio	0.572	0.492	0.834		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	1.022	1.441	1.679		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	3.819	4.913	10.915		
Deviator Stress (tsf)	1.421	1.961	1.693		
Induced Pore Press. (tsf)	0.537	0.744	1.117		
Minor Eff. Stress, σ_3' (tsf)	0.520	0.697	0.567		
Major Eff. Stress, σ_1' (tsf)	1.940	2.658	2.260		
Eff. Stress Ratio, σ_1'/σ_3'	3.733	3.812	3.984		
p' (tsf)	1.230	1.677	1.414		
q (tsf)	0.710	0.980	0.846		



Comments

Reviewed By KG

Stantec

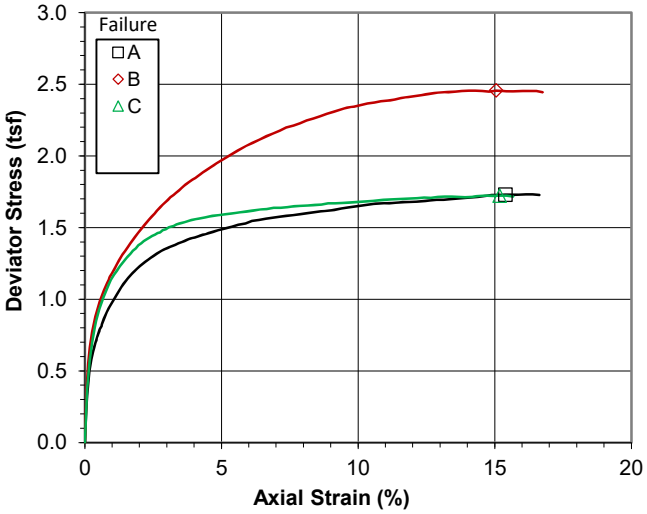
Consolidated Undrained Triaxial Compression

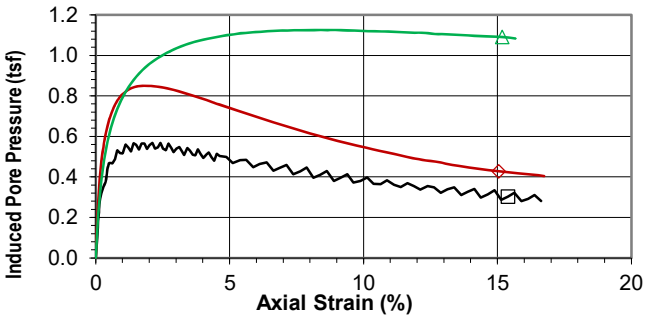
ASTM D 4767

Project Name Eagle Creek

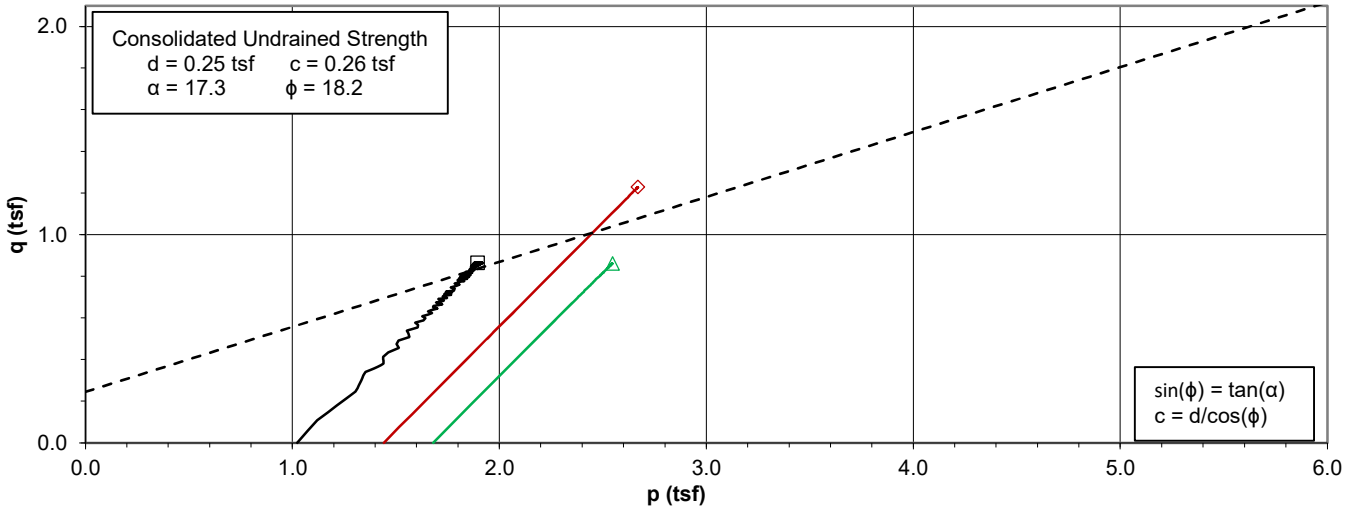
Project 173409690
Set ID 792

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	792A	B-3.51a, 2.3'-2.8'	Sandy Lean Clay (CL), brown, moist, firm	2.71	29	15	14
B	792B	B-3.51a, 2.8'-3.3'	Sandy Lean Clay (CL), brown, moist, firm	2.71	29	15	14
C	798	B-3.53a, 0.4'-0.9'	Lean Clay (CL), brown, moist, firm, organics	2.63			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.755	5.737	5.770		
Average Diameter (in)	2.837	2.839	2.861		
Moist Unit Weight (pcf)	129.0	132.0	109.0		
Moisture Content (%)	20.2	18.9	34.6		
Dry Unit Weight (pcf)	107.3	111.1	81.0		
Void Ratio	0.574	0.520	1.024		
Degree of Saturation (%)	95.4	98.3	88.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	130.1	133.7	117.7		
Moisture Content (%)	21.1	18.2	31.7		
Dry Unit Weight (pcf)	107.4	113.1	89.3		
Void Ratio	0.572	0.492	0.834		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	1.022	1.441	1.679		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.393	15.046	15.181		
Deviator Stress (tsf)	1.730	2.457	1.723		
Min. Prin. Stress, σ_3 (tsf)	1.030	1.441	1.685		
Maj. Prin. Stress, σ_1 (tsf)	2.759	3.898	3.408		
p (tsf)	1.895	2.669	2.547		
q (tsf)	0.865	1.228	0.861		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.51a, 2.3'-2.8'	Lab ID	792A
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	792-A
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/06/2021

Specific Gravity	2.71
	ASTM D 854, Dry
Liquid Limit	29
Plastic Limit	15
Plasticity Index	14
	ASTM D 4318

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.035
Time to 50% Consolidation (min)	3.30
Actual Axial Strain Rate of Test (%/min)	0.091

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	130.1
Moisture Content (%)	21.1
Dry Unit Weight (pcf)	107.4
Void Ratio	0.572
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

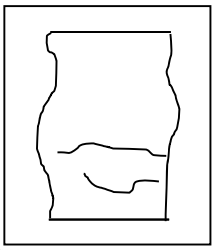
Axial Strain (%)	3.819
Deviator Stress (tsf)	1.421
Induced Pore Pressure (tsf)	0.537
Minor Effective Stress, σ_3' (tsf)	0.520
Major Effective Stress, σ_1' (tsf)	1.940
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.733
p' (tsf)	1.230
q (tsf)	0.710

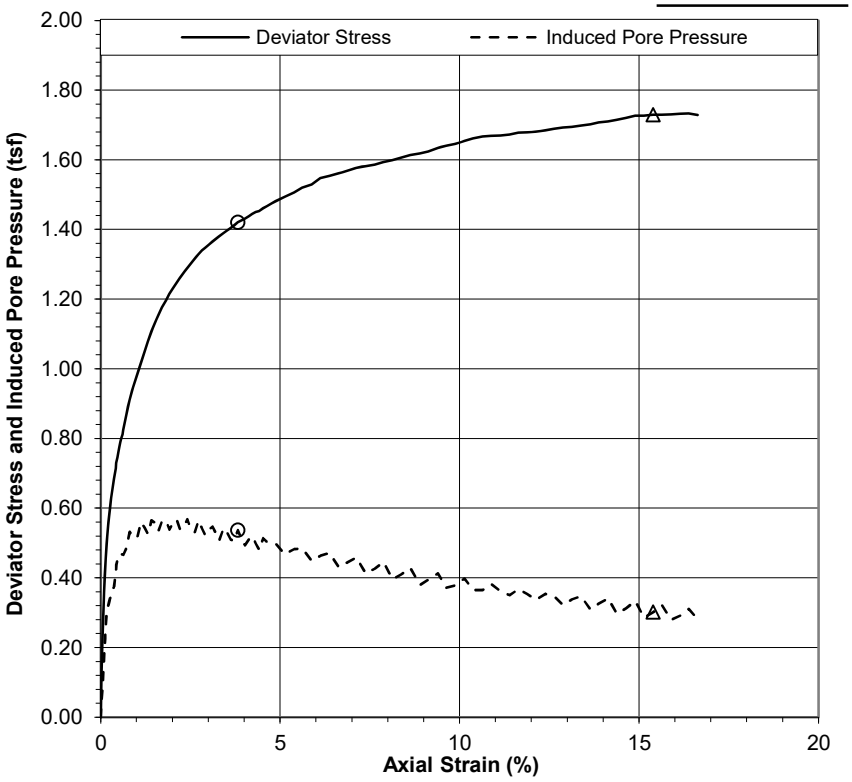
At Consolidated Undrained Failure

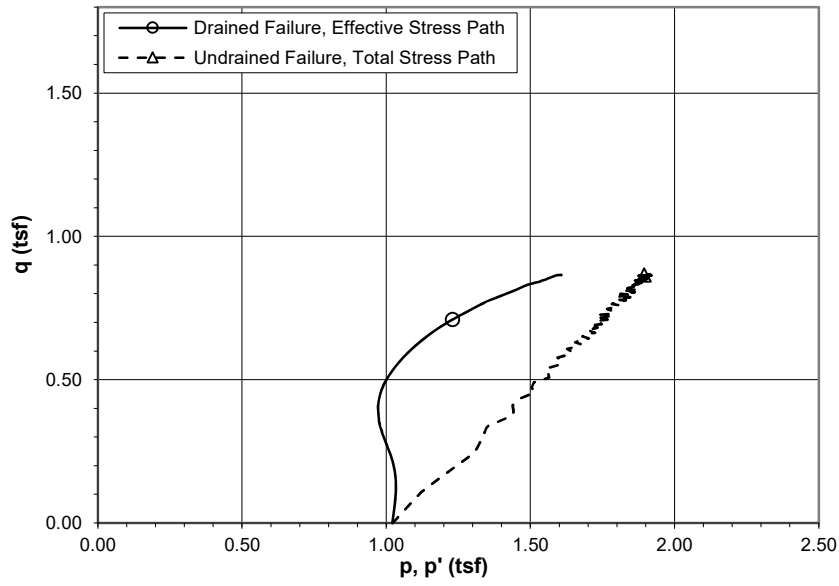
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.393
Deviator Stress (tsf)	1.730
Minor Principal Stress, σ_3 (tsf)	1.030
Major Principal Stress, σ_1 (tsf)	2.759
p (tsf)	1.895
q (tsf)	0.865

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.51a, 2.3'-2.8'	Lab ID	792A
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	792-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.755	Calculated Height (in)	5.701	Specific Gravity	2.71
Average Diameter (in)	2.837	Calculated Diameter (in)	2.849	ASTM D 854, Dry	
Calculated Area (in^2)	6.322	Calculated Area (in^2)	6.373	Liquid Limit	29
Moist Weight (lb)	2.715	Moist Weight (lb)	2.735	Plastic Limit	15
Moist Unit Weight (pcf)	129.0	Moist Unit Weight (pcf)	130.1	Plasticity Index	14
Moisture Content (%)	20.2	Moisture Content (%)	21.1	ASTM D 4318	
Dry Weight (lb)	2.259	Dry Weight (lb)	2.259		
Dry Unit Weight (pcf)	107.3	Dry Unit Weight (pcf)	107.4	Confining Stress	
Void Ratio	0.574	Void Ratio	0.572	σ_3 (tsf)	1.022
Degree of Saturation (%)	95.4	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.022

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.51a, 2.3'-2.8'								Lab ID: 792A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.373	0.000	0.000	5.433	0.000	1.022	1.022	1.022	1.022	1.022	0.000	1.000
0.3	10.3	0.001	0.02	6.375	0.117	0.117	5.480	0.046	1.133	1.087	0.970	1.075	1.028	0.058	1.120
0.5	19.3	0.003	0.05	6.376	0.218	0.217	5.521	0.087	1.230	1.142	0.925	1.121	1.033	0.109	1.235
0.8	26.1	0.004	0.07	6.378	0.295	0.294	5.572	0.139	1.319	1.181	0.886	1.172	1.034	0.147	1.332
1.1	31.7	0.005	0.09	6.379	0.357	0.357	5.618	0.185	1.393	1.209	0.852	1.215	1.030	0.179	1.419
1.4	36.3	0.007	0.12	6.381	0.410	0.410	5.659	0.226	1.455	1.230	0.820	1.251	1.025	0.205	1.500
1.7	40.2	0.008	0.14	6.382	0.454	0.453	5.694	0.261	1.506	1.246	0.792	1.280	1.019	0.227	1.572
1.9	43.5	0.009	0.16	6.384	0.491	0.491	5.725	0.292	1.550	1.258	0.767	1.304	1.013	0.245	1.639
2.2	46.4	0.011	0.19	6.385	0.523	0.522	5.741	0.308	1.575	1.267	0.745	1.314	1.006	0.261	1.701
2.5	48.9	0.012	0.21	6.387	0.552	0.551	5.754	0.321	1.597	1.276	0.725	1.322	1.001	0.276	1.760
2.8	51.2	0.014	0.24	6.389	0.577	0.577	5.766	0.333	1.616	1.284	0.707	1.328	0.995	0.288	1.816
3.1	53.3	0.015	0.26	6.390	0.601	0.600	5.776	0.342	1.634	1.291	0.691	1.333	0.991	0.300	1.869
3.3	55.4	0.016	0.29	6.392	0.624	0.623	5.784	0.351	1.650	1.299	0.676	1.338	0.987	0.312	1.923
3.6	57.4	0.018	0.31	6.393	0.646	0.645	5.792	0.359	1.666	1.307	0.662	1.343	0.984	0.323	1.976
3.9	58.9	0.019	0.34	6.395	0.663	0.662	5.800	0.366	1.678	1.312	0.649	1.347	0.980	0.331	2.020
4.1	60.6	0.021	0.37	6.397	0.682	0.681	5.809	0.376	1.694	1.319	0.638	1.354	0.978	0.340	2.068
4.4	62.2	0.023	0.40	6.399	0.699	0.698	5.833	0.400	1.726	1.326	0.628	1.377	0.977	0.349	2.113
4.7	63.6	0.024	0.42	6.400	0.716	0.715	5.854	0.421	1.753	1.332	0.618	1.396	0.975	0.357	2.157
5.0	65.0	0.025	0.44	6.401	0.731	0.730	5.871	0.438	1.778	1.339	0.609	1.412	0.974	0.365	2.199
5.3	66.4	0.027	0.47	6.404	0.747	0.746	5.887	0.454	1.800	1.346	0.600	1.427	0.973	0.373	2.242
5.5	67.8	0.028	0.50	6.405	0.763	0.762	5.901	0.468	1.821	1.354	0.592	1.441	0.973	0.381	2.286
5.8	69.1	0.030	0.53	6.407	0.777	0.776	5.901	0.468	1.828	1.360	0.584	1.440	0.972	0.388	2.327
6.1	70.4	0.031	0.55	6.408	0.791	0.790	5.901	0.468	1.835	1.367	0.577	1.440	0.972	0.395	2.367
6.4	71.4	0.033	0.57	6.410	0.802	0.801	5.901	0.468	1.840	1.372	0.571	1.439	0.971	0.400	2.403
6.6	72.4	0.035	0.61	6.412	0.813	0.812	5.900	0.467	1.844	1.377	0.565	1.438	0.971	0.406	2.437
6.9	73.6	0.036	0.63	6.413	0.826	0.824	5.900	0.466	1.850	1.384	0.560	1.438	0.972	0.412	2.473
8.0	77.6	0.041	0.72	6.419	0.871	0.869	5.921	0.487	1.898	1.410	0.542	1.463	0.976	0.434	2.605
9.1	81.5	0.046	0.81	6.425	0.913	0.911	5.966	0.532	1.969	1.437	0.526	1.514	0.982	0.456	2.732
10.2	84.8	0.052	0.91	6.432	0.950	0.948	5.950	0.517	1.978	1.461	0.513	1.504	0.987	0.474	2.846
11.3	88.1	0.058	1.01	6.438	0.985	0.982	5.950	0.516	2.003	1.487	0.505	1.512	0.996	0.491	2.947
12.4	91.2	0.064	1.12	6.445	1.019	1.016	5.993	0.560	2.073	1.514	0.498	1.565	1.006	0.508	3.041
13.5	94.3	0.070	1.22	6.452	1.052	1.049	5.977	0.544	2.085	1.541	0.492	1.560	1.016	0.525	3.134
14.6	97.0	0.075	1.32	6.458	1.082	1.078	5.959	0.526	2.091	1.566	0.487	1.552	1.027	0.539	3.212
15.7	99.7	0.081	1.41	6.465	1.111	1.108	5.999	0.566	2.159	1.593	0.485	1.605	1.039	0.554	3.283
16.8	102.0	0.086	1.51	6.471	1.135	1.132	5.991	0.558	2.172	1.614	0.483	1.607	1.048	0.566	3.345
17.9	104.2	0.092	1.61	6.478	1.158	1.154	5.969	0.535	2.171	1.636	0.481	1.594	1.058	0.577	3.398
19.1	106.3	0.098	1.71	6.484	1.181	1.177	5.997	0.564	2.222	1.658	0.482	1.634	1.070	0.588	3.443
20.2	108.3	0.104	1.82	6.492	1.201	1.197	5.997	0.564	2.242	1.678	0.481	1.643	1.079	0.598	3.488
21.3	110.0	0.109	1.91	6.498	1.219	1.215	5.972	0.539	2.234	1.696	0.481	1.627	1.088	0.607	3.525

Project: 173409690			Source: B-3.51a, 2.3'-2.8'								Lab ID: 792A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
22.4	111.6	0.115	2.01	6.504	1.236	1.231	5.991	0.557	2.271	1.713	0.483	1.655	1.098	0.615	3.551
23.5	113.3	0.121	2.12	6.511	1.253	1.247	6.001	0.567	2.298	1.731	0.483	1.674	1.107	0.624	3.581
24.6	114.7	0.126	2.21	6.517	1.267	1.261	5.973	0.540	2.286	1.746	0.484	1.655	1.115	0.631	3.604
25.7	116.1	0.132	2.32	6.524	1.281	1.275	5.979	0.545	2.307	1.762	0.487	1.670	1.125	0.638	3.619
26.8	117.5	0.138	2.42	6.531	1.295	1.290	6.002	0.569	2.347	1.778	0.488	1.702	1.133	0.645	3.641
27.9	118.8	0.143	2.51	6.538	1.308	1.302	5.973	0.540	2.331	1.791	0.490	1.680	1.141	0.651	3.659
29.0	120.1	0.149	2.62	6.545	1.322	1.315	5.965	0.531	2.339	1.808	0.492	1.681	1.150	0.658	3.671
30.1	121.5	0.155	2.72	6.551	1.335	1.329	5.998	0.565	2.388	1.824	0.495	1.724	1.159	0.664	3.686
31.2	122.7	0.161	2.82	6.558	1.347	1.340	5.975	0.542	2.378	1.836	0.496	1.708	1.166	0.670	3.701
32.3	123.5	0.166	2.91	6.564	1.354	1.347	5.956	0.522	2.367	1.845	0.498	1.694	1.171	0.673	3.705
33.4	124.5	0.172	3.02	6.572	1.364	1.357	5.973	0.540	2.398	1.858	0.501	1.720	1.179	0.678	3.708
34.5	125.5	0.178	3.12	6.579	1.373	1.365	5.980	0.547	2.416	1.869	0.503	1.733	1.186	0.683	3.714
35.6	126.3	0.183	3.22	6.585	1.381	1.373	5.959	0.526	2.404	1.877	0.505	1.717	1.191	0.686	3.719
36.7	127.1	0.188	3.31	6.591	1.388	1.380	5.941	0.508	2.395	1.887	0.507	1.705	1.197	0.690	3.722
37.8	128.1	0.195	3.42	6.599	1.398	1.390	5.976	0.542	2.442	1.900	0.510	1.747	1.205	0.695	3.725
38.9	128.9	0.201	3.52	6.606	1.405	1.397	5.964	0.530	2.438	1.908	0.512	1.740	1.210	0.698	3.730
40.0	129.8	0.206	3.62	6.613	1.413	1.404	5.943	0.510	2.428	1.919	0.514	1.726	1.216	0.702	3.731
41.1	130.6	0.212	3.72	6.619	1.421	1.412	5.940	0.507	2.436	1.929	0.517	1.730	1.223	0.706	3.730
42.2	131.6	0.218	3.82	6.626	1.430	1.421	5.970	0.537	2.478	1.940	0.520	1.767	1.230	0.710	3.733
43.4	132.2	0.223	3.91	6.633	1.435	1.425	5.947	0.514	2.462	1.948	0.522	1.749	1.235	0.713	3.730
44.4	132.8	0.229	4.02	6.640	1.440	1.431	5.927	0.494	2.450	1.956	0.525	1.734	1.240	0.715	3.725
45.5	133.7	0.236	4.13	6.648	1.448	1.438	5.945	0.512	2.477	1.966	0.528	1.758	1.247	0.719	3.724
46.7	134.5	0.241	4.22	6.654	1.455	1.445	5.953	0.520	2.494	1.974	0.530	1.772	1.252	0.722	3.727
47.8	135.1	0.246	4.32	6.661	1.460	1.450	5.932	0.499	2.480	1.982	0.532	1.755	1.257	0.725	3.726
48.9	135.5	0.252	4.42	6.668	1.463	1.453	5.913	0.480	2.467	1.987	0.535	1.741	1.261	0.726	3.718
50.0	136.5	0.258	4.52	6.675	1.472	1.462	5.947	0.514	2.513	1.999	0.538	1.782	1.268	0.731	3.718
51.1	137.1	0.264	4.63	6.683	1.478	1.466	5.936	0.503	2.509	2.006	0.540	1.776	1.273	0.733	3.718
53.8	138.9	0.278	4.88	6.700	1.493	1.481	5.932	0.499	2.526	2.027	0.546	1.785	1.286	0.741	3.713
56.6	140.5	0.292	5.12	6.717	1.505	1.493	5.901	0.468	2.512	2.044	0.551	1.766	1.297	0.747	3.710
59.3	142.2	0.307	5.39	6.736	1.520	1.507	5.916	0.483	2.547	2.064	0.557	1.793	1.310	0.753	3.704
62.1	143.8	0.320	5.62	6.752	1.533	1.520	5.918	0.484	2.569	2.084	0.564	1.809	1.324	0.760	3.692
64.8	145.2	0.335	5.88	6.771	1.544	1.529	5.882	0.449	2.547	2.099	0.569	1.783	1.334	0.765	3.687
67.6	147.3	0.349	6.12	6.789	1.562	1.547	5.897	0.464	2.586	2.122	0.575	1.813	1.349	0.774	3.690
70.3	148.4	0.364	6.38	6.807	1.569	1.554	5.905	0.472	2.607	2.136	0.582	1.831	1.359	0.777	3.669
73.1	149.5	0.378	6.63	6.826	1.577	1.561	5.863	0.430	2.578	2.148	0.587	1.798	1.367	0.781	3.661
75.8	150.7	0.392	6.88	6.844	1.585	1.569	5.878	0.445	2.606	2.161	0.592	1.821	1.376	0.784	3.649
78.6	151.9	0.406	7.13	6.862	1.594	1.576	5.892	0.459	2.634	2.174	0.598	1.845	1.386	0.788	3.636
81.4	152.8	0.420	7.38	6.881	1.599	1.581	5.846	0.413	2.596	2.184	0.602	1.806	1.393	0.791	3.626
84.1	153.7	0.435	7.64	6.900	1.604	1.586	5.861	0.427	2.620	2.193	0.607	1.827	1.400	0.793	3.612
86.9	155.0	0.449	7.88	6.918	1.613	1.594	5.879	0.446	2.652	2.205	0.612	1.855	1.409	0.797	3.604
89.6	156.0	0.463	8.13	6.937	1.619	1.599	5.830	0.396	2.611	2.215	0.616	1.812	1.416	0.800	3.596
92.4	157.1	0.478	8.38	6.956	1.626	1.606	5.844	0.411	2.638	2.227	0.621	1.835	1.424	0.803	3.586
95.1	158.3	0.492	8.63	6.975	1.634	1.613	5.862	0.429	2.668	2.240	0.626	1.862	1.433	0.807	3.575
97.9	159.3	0.507	8.89	6.995	1.640	1.618	5.813	0.380	2.629	2.249	0.631	1.820	1.440	0.809	3.565
100.6	160.3	0.520	9.12	7.013	1.646	1.623	5.828	0.394	2.653	2.258	0.635	1.841	1.447	0.812	3.557
103.4	161.8	0.535	9.39	7.034	1.656	1.633	5.846	0.413	2.686	2.273	0.640	1.869	1.456	0.817	3.553
106.1	162.9	0.549	9.63	7.052	1.663	1.640	5.805	0.372	2.656	2.284	0.644	1.836	1.464	0.820	3.547
108.9	164.0	0.563	9.88	7.072	1.670	1.646	5.813	0.379	2.674	2.294	0.648	1.851	1.471	0.823	3.539
111.7	165.3	0.578	10.13	7.092	1.678	1.654	5.831	0.398	2.704	2.307	0.653	1.878	1.480	0.827	3.533
114.4	166.6	0.592	10.38	7.111	1.686	1.661	5.799	0.365	2.685	2.320	0.658	1.854	1.489	0.831	3.523
117.2	167.6	0.606	10.64	7.132	1.692	1.666	5.798	0.365	2.694	2.330	0.663	1.861	1.496	0.833	3.513
119.9	168.3	0.620	10.87	7.151	1.695	1.668	5.816	0.383	2.718	2.335	0.667	1.884	1.501	0.834	3.502
122.7	169.0	0.635	11.14	7.173	1.697	1.670	5.795	0.361	2.702	2.340	0.671	1.867	1.505	0.835	3.489
125.4	169.8	0.649	11.39	7.192	1.700	1.673	5.784	0.350	2.696	2.346	0.673	1.860	1.509	0.836	3.486
128.2	170.9	0.663	11.64	7.212	1.706	1.678	5.802	0.368	2.723	2.355	0.677	1.884	1.516	0.839	3.478
130.9	171.6	0.677	11.88	7.233	1.708	1.679	5.788	0.355	2.715	2.360	0.681	1.876	1.521	0.839	3.464
133.7	172.2	0.691	12.12	7.252	1.710	1.680	5.770	0.337	2.702	2.365	0.684	1.861	1.525	0.840	3.455
136.4	173.2	0.706	12.39	7.275	1.714	1.684	5.788	0.354	2.727	2.373	0.689	1.885	1.531	0.842	3.446
139.2	174.2	0.720	12.63	7.294	1.720	1.689	5.782	0.348	2.730	2.382	0.693	1.886	1.537	0.845	3.439
141.9	175.2	0.734	12.88	7.315	1.724	1.693	5.755	0.322	2.709	2.387	0.695	1.863	1.541	0.846	3.437
144.7	175.9	0.748	13.13	7.336	1.726	1.694	5.772	0.339	2.732	2.393	0.699	1.885	1.546	0.847	3.424
147.4	176.8	0.763	13.38	7.358	1.730	1.698	5.781	0.348	2.749	2.401	0.703	1.900	1.552	0.849	3.414
150.2	177.9	0.778	13.64	7.380	1.735	1.702	5.743	0.310	2.717	2.407	0.705	1.866	1.556	0.851	3.414
152.9	179.0	0.791	13.88	7.401	1.741	1.707	5.760	0.326	2.743	2.416	0.709	1.889	1.563	0.854	3.409
155.7	179.9	0.806	14.14	7.423	1.745	1.710	5.774	0.341	2.764	2.423	0.713	1.909	1.568	0.855	3.400
158.5	180.8	0.820	14.38	7.444	1.749	1.714	5.731	0.298	2.727	2.429	0.715	1.870	1.572	0.857	3.398
161.2	182.1	0.834	14.64	7.466	1.756	1.720	5.747	0.313	2.752	2.438	0.718	1.892	1.578	0.860	3.395
164.0	183.4	0.849	14.89	7.488	1.763	1.727	5.767	0.334	2.783	2.449	0.722	1.920	1.586	0.863	3.391
166.7	183.9	0.863	15.14	7.510	1.764	1.727	5.719	0.286	2.738	2.452	0.725	1.875	1.589	0.863	3.381

Project: 173409690			Source: B-3.51a, 2.3'-2.8'								Lab ID: 792A		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
169.5	184.9	0.877	15.39	7.533	1.767	1.730	5.736	0.302	2.759	2.457	0.728	1.895	1.592	0.865	3.377
172.2	185.4	0.891	15.63	7.554	1.767	1.729	5.756	0.322	2.783	2.461	0.732	1.919	1.596	0.865	3.364
175.0	186.1	0.906	15.89	7.577	1.769	1.730	5.713	0.280	2.744	2.464	0.734	1.879	1.599	0.865	3.355
177.7	187.0	0.920	16.14	7.600	1.772	1.733	5.725	0.292	2.761	2.469	0.737	1.895	1.603	0.866	3.352
180.5	187.6	0.934	16.39	7.622	1.772	1.733	5.744	0.311	2.784	2.473	0.740	1.917	1.606	0.866	3.341
183.1	187.8	0.948	16.63	7.645	1.768	1.728	5.714	0.280	2.752	2.472	0.744	1.888	1.608	0.864	3.323

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.51a, 2.8'-3.3'	Lab ID	792B
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	792-B
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/07/2021

Specific Gravity	2.71
	ASTM D 854, Dry
Liquid Limit	29
Plastic Limit	15
Plasticity Index	14
	ASTM D 4318

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	70
Nominal Consolidation Pressure (psi)	20

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.441
Time to 50% Consolidation (min)	5.10
Actual Axial Strain Rate of Test (%/min)	0.058

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	133.7
Moisture Content (%)	18.2
Dry Unit Weight (pcf)	113.1
Void Ratio	0.492
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

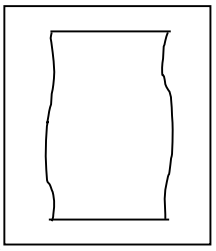
Axial Strain (%)	4.913
Deviator Stress (tsf)	1.961
Induced Pore Pressure (tsf)	0.744
Minor Effective Stress, σ_3' (tsf)	0.697
Major Effective Stress, σ_1' (tsf)	2.658
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.812
p' (tsf)	1.677
q (tsf)	0.980

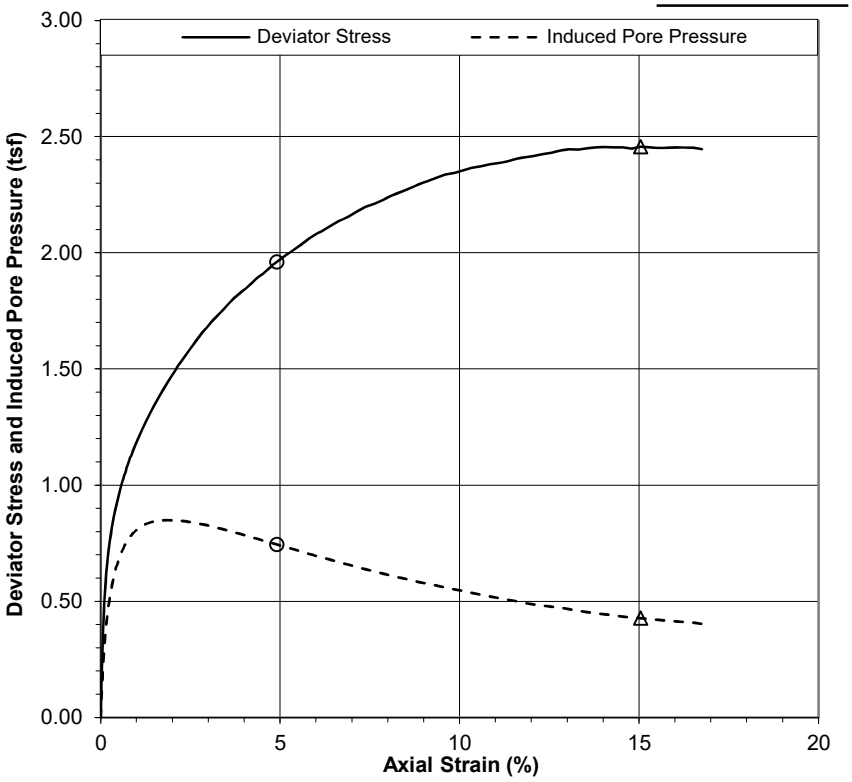
At Consolidated Undrained Failure

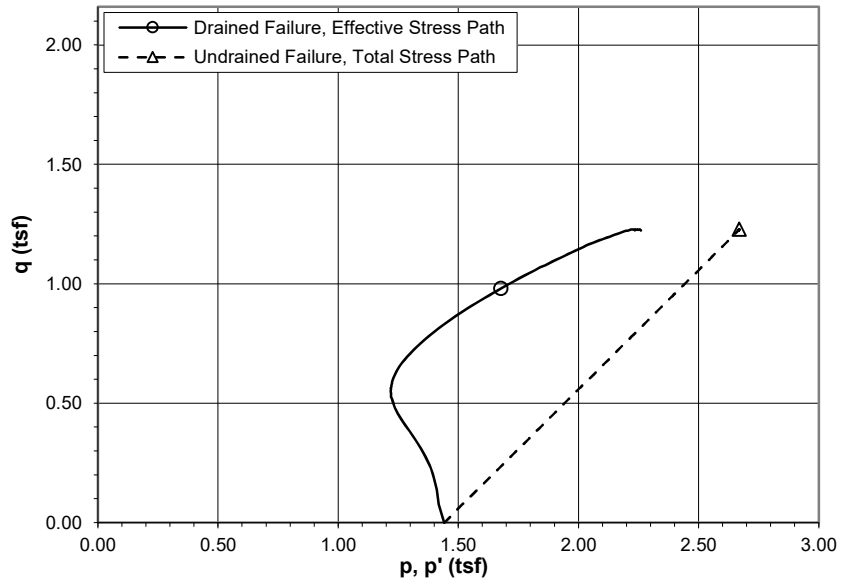
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.046
Deviator Stress (tsf)	2.457
Minor Principal Stress, σ_3 (tsf)	1.441
Major Principal Stress, σ_1 (tsf)	3.898
p (tsf)	2.669
q (tsf)	1.228

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.51a, 2.8'-3.3'	Lab ID	792B
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	792-B

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.737	Height (in)	5.678	Specific Gravity	2.71
Diameter (in)	2.839	Calculated Diameter (in)	2.828	ASTM D 854, Dry	
Area (in^2)	6.330	Calculated Area (in^2)	6.280	Liquid Limit	29
Moist Weight (lb)	2.775	Moist Weight (lb)	2.759	Plastic Limit	15
Moist Unit Weight (pcf)	132.0	Moist Unit Weight (pcf)	133.7	Plasticity Index	14
Moisture Content (%)	18.9	Moisture Content (%)	18.2	ASTM D 4318	
Dry Weight (lb)	2.335	Dry Weight (lb)	2.335		
Dry Unit Weight (pcf)	111.1	Dry Unit Weight (pcf)	113.1	Confining Stress	
Void Ratio	0.520	Void Ratio	0.492	σ_3 (tsf)	1.441
Degree of Saturation (%)	98.3	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.441

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.51a, 2.8'-3.3'								Lab ID: 792B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.280	0.000	0.000	5.044	0.000	1.441	1.441	1.441	1.441	1.441	0.000	1.000
0.4	13.2	0.001	0.02	6.282	0.151	0.151	5.141	0.098	1.592	1.494	1.343	1.516	1.419	0.076	1.113
0.9	24.1	0.003	0.05	6.283	0.276	0.276	5.212	0.169	1.717	1.548	1.272	1.579	1.410	0.138	1.217
1.3	32.6	0.004	0.07	6.284	0.374	0.374	5.274	0.230	1.815	1.585	1.211	1.628	1.398	0.187	1.309
1.7	39.9	0.005	0.09	6.286	0.457	0.456	5.327	0.283	1.897	1.614	1.158	1.669	1.386	0.228	1.394
2.1	45.4	0.007	0.12	6.287	0.520	0.520	5.374	0.330	1.961	1.631	1.111	1.701	1.371	0.260	1.468
2.6	50.2	0.008	0.14	6.289	0.574	0.574	5.414	0.370	2.015	1.645	1.071	1.728	1.358	0.287	1.536
3.0	54.4	0.009	0.16	6.290	0.622	0.622	5.452	0.408	2.063	1.655	1.033	1.752	1.344	0.311	1.602
3.4	57.9	0.010	0.18	6.292	0.663	0.663	5.484	0.441	2.104	1.663	1.000	1.772	1.332	0.331	1.662
3.8	61.1	0.011	0.20	6.293	0.699	0.699	5.515	0.471	2.140	1.669	0.970	1.791	1.319	0.349	1.721
4.3	64.2	0.013	0.24	6.295	0.734	0.733	5.543	0.500	2.175	1.675	0.942	1.808	1.308	0.367	1.779
4.7	66.8	0.015	0.26	6.296	0.764	0.764	5.567	0.523	2.204	1.681	0.917	1.822	1.299	0.382	1.833
5.1	69.1	0.017	0.29	6.298	0.789	0.789	5.590	0.546	2.230	1.683	0.895	1.835	1.289	0.394	1.882
5.6	71.2	0.017	0.31	6.299	0.814	0.813	5.611	0.567	2.254	1.687	0.874	1.847	1.280	0.407	1.931
6.0	73.2	0.019	0.33	6.301	0.837	0.836	5.630	0.587	2.277	1.690	0.854	1.859	1.272	0.418	1.979
6.4	75.1	0.021	0.36	6.303	0.858	0.857	5.648	0.604	2.298	1.694	0.837	1.869	1.265	0.428	2.024
6.8	76.8	0.022	0.39	6.304	0.877	0.876	5.663	0.620	2.317	1.697	0.821	1.879	1.259	0.438	2.068
7.3	78.6	0.023	0.41	6.306	0.897	0.896	5.679	0.635	2.337	1.702	0.806	1.889	1.254	0.448	2.112
7.7	80.1	0.025	0.44	6.307	0.914	0.913	5.693	0.649	2.354	1.705	0.792	1.898	1.248	0.456	2.153
8.1	81.6	0.026	0.47	6.309	0.931	0.930	5.706	0.662	2.371	1.709	0.779	1.906	1.244	0.465	2.195
8.6	83.0	0.027	0.48	6.311	0.947	0.945	5.718	0.674	2.386	1.713	0.767	1.914	1.240	0.473	2.232
9.0	84.3	0.029	0.51	6.312	0.961	0.960	5.729	0.685	2.401	1.716	0.756	1.921	1.236	0.480	2.270
9.4	85.7	0.031	0.54	6.314	0.978	0.976	5.739	0.695	2.417	1.722	0.746	1.929	1.234	0.488	2.309
9.8	87.0	0.032	0.56	6.315	0.991	0.990	5.749	0.705	2.430	1.725	0.735	1.935	1.230	0.495	2.346
10.3	88.3	0.033	0.58	6.317	1.006	1.005	5.758	0.715	2.446	1.731	0.726	1.943	1.229	0.502	2.383
10.7	89.4	0.035	0.61	6.319	1.019	1.018	5.767	0.723	2.459	1.736	0.718	1.950	1.227	0.509	2.417
11.1	90.6	0.036	0.64	6.320	1.032	1.030	5.775	0.731	2.471	1.740	0.710	1.956	1.225	0.515	2.451
11.6	91.6	0.037	0.66	6.321	1.043	1.042	5.783	0.739	2.483	1.744	0.702	1.962	1.223	0.521	2.484
12.0	92.4	0.039	0.69	6.323	1.053	1.051	5.790	0.746	2.492	1.746	0.695	1.967	1.220	0.525	2.512
12.4	93.5	0.040	0.71	6.325	1.065	1.063	5.796	0.752	2.504	1.752	0.689	1.972	1.220	0.532	2.544
12.8	94.5	0.041	0.72	6.325	1.076	1.074	5.802	0.758	2.515	1.757	0.683	1.978	1.220	0.537	2.573
13.3	95.6	0.043	0.75	6.328	1.088	1.086	5.808	0.764	2.527	1.762	0.677	1.984	1.220	0.543	2.605
13.7	96.5	0.044	0.78	6.329	1.098	1.096	5.814	0.770	2.537	1.767	0.671	1.988	1.219	0.548	2.635
14.1	97.5	0.045	0.80	6.331	1.108	1.106	5.819	0.775	2.548	1.772	0.666	1.994	1.219	0.553	2.662
14.6	98.5	0.047	0.82	6.332	1.120	1.118	5.824	0.780	2.559	1.778	0.660	2.000	1.219	0.559	2.692
15.0	99.2	0.048	0.85	6.334	1.128	1.126	5.828	0.784	2.566	1.782	0.656	2.003	1.219	0.563	2.715
15.4	100.3	0.050	0.88	6.336	1.140	1.137	5.833	0.789	2.579	1.790	0.652	2.010	1.221	0.569	2.744
15.8	101.1	0.051	0.90	6.337	1.149	1.147	5.837	0.793	2.588	1.795	0.647	2.014	1.221	0.574	2.772
16.3	102.1	0.052	0.92	6.338	1.159	1.157	5.841	0.797	2.598	1.801	0.644	2.019	1.222	0.579	2.797

Project: 173409690			Source: B-3.51a, 2.8'-3.3'								Lab ID: 792B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
16.7	102.9	0.054	0.95	6.340	1.169	1.167	5.845	0.801	2.608	1.807	0.640	2.025	1.223	0.583	2.823
17.1	103.7	0.055	0.98	6.342	1.178	1.175	5.849	0.805	2.617	1.812	0.636	2.029	1.224	0.588	2.847
18.8	106.9	0.061	1.08	6.348	1.212	1.210	5.861	0.817	2.651	1.834	0.624	2.046	1.229	0.605	2.938
20.5	110.1	0.067	1.18	6.355	1.247	1.244	5.871	0.827	2.686	1.859	0.615	2.064	1.237	0.622	3.023
22.2	113.0	0.072	1.27	6.361	1.279	1.276	5.879	0.835	2.718	1.883	0.607	2.080	1.245	0.638	3.101
23.9	115.9	0.078	1.37	6.367	1.310	1.307	5.884	0.840	2.749	1.909	0.602	2.095	1.255	0.653	3.172
25.6	118.5	0.083	1.47	6.374	1.339	1.335	5.888	0.844	2.776	1.932	0.597	2.109	1.265	0.667	3.236
27.3	121.2	0.089	1.57	6.380	1.368	1.364	5.891	0.847	2.806	1.959	0.594	2.124	1.277	0.682	3.295
29.0	123.6	0.095	1.67	6.387	1.394	1.390	5.893	0.849	2.832	1.982	0.593	2.137	1.287	0.695	3.346
30.8	126.1	0.100	1.77	6.393	1.420	1.416	5.894	0.850	2.858	2.008	0.592	2.149	1.300	0.708	3.394
32.4	128.6	0.106	1.87	6.400	1.447	1.442	5.894	0.850	2.883	2.033	0.591	2.162	1.312	0.721	3.441
34.1	130.8	0.111	1.96	6.406	1.470	1.465	5.893	0.849	2.906	2.057	0.592	2.174	1.324	0.733	3.477
35.8	133.1	0.117	2.06	6.412	1.495	1.490	5.893	0.849	2.931	2.082	0.592	2.186	1.337	0.745	3.518
37.5	135.3	0.122	2.16	6.418	1.518	1.513	5.892	0.848	2.954	2.106	0.593	2.197	1.349	0.756	3.552
39.2	137.5	0.128	2.26	6.425	1.541	1.536	5.890	0.847	2.977	2.130	0.595	2.209	1.362	0.768	3.582
40.9	139.6	0.134	2.36	6.432	1.562	1.556	5.889	0.845	2.997	2.153	0.596	2.219	1.374	0.778	3.611
42.6	141.7	0.139	2.45	6.438	1.584	1.578	5.886	0.843	3.020	2.177	0.599	2.230	1.388	0.789	3.637
44.3	143.6	0.145	2.56	6.445	1.604	1.598	5.884	0.840	3.039	2.199	0.601	2.240	1.400	0.799	3.660
46.0	145.8	0.151	2.66	6.451	1.627	1.621	5.881	0.837	3.062	2.224	0.604	2.251	1.414	0.810	3.684
47.7	147.8	0.156	2.76	6.458	1.648	1.641	5.878	0.834	3.083	2.248	0.607	2.262	1.428	0.821	3.702
49.5	149.7	0.162	2.85	6.464	1.668	1.661	5.875	0.831	3.102	2.271	0.610	2.272	1.441	0.830	3.721
51.2	151.4	0.168	2.95	6.471	1.685	1.677	5.872	0.828	3.119	2.291	0.614	2.280	1.452	0.839	3.734
52.9	153.1	0.173	3.05	6.477	1.702	1.694	5.868	0.824	3.136	2.311	0.617	2.288	1.464	0.847	3.746
54.6	154.8	0.178	3.13	6.483	1.720	1.712	5.864	0.821	3.153	2.332	0.621	2.297	1.476	0.856	3.759
56.3	156.4	0.184	3.24	6.491	1.734	1.726	5.861	0.817	3.168	2.351	0.624	2.305	1.488	0.863	3.765
58.0	158.1	0.189	3.34	6.497	1.752	1.744	5.857	0.813	3.185	2.372	0.628	2.313	1.500	0.872	3.775
59.7	159.7	0.196	3.44	6.504	1.768	1.759	5.853	0.809	3.201	2.392	0.633	2.322	1.512	0.880	3.781
61.4	161.4	0.201	3.54	6.511	1.785	1.777	5.849	0.805	3.218	2.413	0.636	2.330	1.524	0.888	3.793
63.1	163.0	0.206	3.63	6.517	1.800	1.792	5.845	0.801	3.233	2.432	0.641	2.338	1.536	0.896	3.797
64.8	164.5	0.212	3.73	6.523	1.815	1.806	5.841	0.797	3.248	2.451	0.644	2.345	1.548	0.903	3.803
66.5	165.8	0.217	3.82	6.529	1.829	1.819	5.836	0.792	3.261	2.468	0.649	2.351	1.559	0.910	3.803
68.2	167.4	0.223	3.93	6.537	1.843	1.834	5.832	0.789	3.276	2.487	0.653	2.359	1.570	0.917	3.807
69.9	168.7	0.230	4.05	6.545	1.855	1.846	5.827	0.783	3.287	2.503	0.657	2.364	1.580	0.923	3.807
71.6	170.0	0.235	4.14	6.551	1.869	1.859	5.823	0.779	3.300	2.521	0.663	2.371	1.592	0.929	3.805
73.3	171.5	0.240	4.23	6.558	1.883	1.872	5.818	0.775	3.313	2.539	0.667	2.377	1.603	0.936	3.809
75.0	172.9	0.246	4.32	6.564	1.897	1.886	5.814	0.770	3.328	2.558	0.672	2.385	1.615	0.943	3.808
76.7	174.2	0.251	4.42	6.570	1.909	1.898	5.810	0.766	3.340	2.574	0.676	2.391	1.625	0.949	3.808
78.4	175.5	0.257	4.52	6.577	1.921	1.910	5.805	0.761	3.351	2.590	0.680	2.396	1.635	0.955	3.808
80.1	176.9	0.263	4.63	6.585	1.935	1.923	5.801	0.757	3.365	2.608	0.684	2.403	1.646	0.962	3.811
81.8	178.3	0.268	4.72	6.591	1.947	1.936	5.797	0.753	3.377	2.624	0.689	2.409	1.656	0.968	3.811
83.5	179.7	0.273	4.81	6.598	1.961	1.949	5.793	0.749	3.391	2.642	0.693	2.416	1.668	0.974	3.812
85.2	180.9	0.279	4.91	6.605	1.973	1.961	5.788	0.744	3.402	2.658	0.697	2.422	1.677	0.980	3.812
89.4	184.1	0.293	5.16	6.622	2.002	1.989	5.778	0.734	3.431	2.697	0.708	2.436	1.703	0.995	3.809
93.7	187.1	0.307	5.41	6.639	2.029	2.016	5.766	0.722	3.458	2.735	0.719	2.450	1.727	1.008	3.803
97.9	190.2	0.321	5.66	6.657	2.058	2.044	5.755	0.712	3.485	2.774	0.730	2.464	1.752	1.022	3.799
102.2	193.3	0.335	5.90	6.674	2.085	2.071	5.745	0.701	3.512	2.812	0.741	2.477	1.776	1.035	3.794
106.5	195.8	0.349	6.15	6.691	2.107	2.091	5.734	0.690	3.533	2.843	0.752	2.488	1.798	1.046	3.782
110.7	198.5	0.363	6.40	6.710	2.130	2.115	5.724	0.680	3.557	2.877	0.762	2.500	1.820	1.057	3.774
114.9	201.2	0.377	6.64	6.727	2.154	2.137	5.713	0.669	3.579	2.910	0.772	2.511	1.841	1.069	3.767
119.2	203.5	0.391	6.89	6.745	2.172	2.155	5.702	0.658	3.597	2.939	0.784	2.519	1.861	1.077	3.749
123.4	206.1	0.405	7.14	6.763	2.194	2.177	5.692	0.648	3.618	2.971	0.794	2.530	1.882	1.088	3.743
127.7	208.6	0.419	7.37	6.780	2.216	2.198	5.682	0.639	3.640	3.001	0.804	2.541	1.902	1.099	3.735
131.9	210.6	0.434	7.64	6.799	2.231	2.212	5.672	0.628	3.654	3.025	0.813	2.548	1.919	1.106	3.719
136.2	212.8	0.447	7.88	6.817	2.248	2.228	5.663	0.619	3.670	3.051	0.823	2.556	1.937	1.114	3.707
140.4	215.2	0.461	8.12	6.835	2.267	2.247	5.654	0.610	3.689	3.078	0.831	2.565	1.955	1.124	3.703
144.7	217.2	0.475	8.37	6.853	2.282	2.262	5.645	0.601	3.704	3.102	0.840	2.573	1.971	1.131	3.691
148.9	219.3	0.489	8.62	6.872	2.298	2.277	5.636	0.592	3.718	3.126	0.849	2.580	1.988	1.138	3.681
153.2	221.7	0.503	8.86	6.891	2.316	2.295	5.628	0.584	3.737	3.153	0.858	2.590	2.006	1.147	3.673
157.4	223.6	0.517	9.10	6.909	2.330	2.308	5.620	0.576	3.750	3.174	0.866	2.596	2.020	1.154	3.665
161.7	225.8	0.531	9.36	6.929	2.346	2.323	5.611	0.568	3.765	3.197	0.874	2.603	2.036	1.162	3.658
165.9	227.7	0.545	9.60	6.947	2.360	2.337	5.604	0.560	3.778	3.219	0.882	2.610	2.050	1.168	3.649
170.2	229.1	0.560	9.86	6.967	2.367	2.343	5.596	0.552	3.785	3.233	0.890	2.614	2.061	1.172	3.634
174.4	230.8	0.573	10.10	6.985	2.379	2.354	5.589	0.545	3.796	3.252	0.897	2.619	2.075	1.177	3.623
178.7	232.6	0.587	10.34	7.005	2.391	2.366	5.580	0.536	3.807	3.271	0.905	2.624	2.088	1.183	3.614
182.9	234.0	0.602	10.60	7.025	2.399	2.373	5.573	0.529	3.814	3.285	0.913	2.628	2.099	1.186	3.600
187.2	235.5	0.615	10.84	7.043	2.407	2.381	5.565	0.521	3.821	3.300	0.919	2.631	2.109	1.190	3.590
191.4	236.8	0.629	11.09	7.063	2.414	2.387	5.558	0.515	3.827	3.313	0.926	2.634	2.120	1.193	3.576
195.7	238.1	0.643	11.33	7.082	2.421	2.393	5.552	0.508	3.834	3.326	0.933	2.637	2.130	1.197	3.565
200.0	239.9	0.657	11.58	7.102	2.432	2.404	5.545	0.501	3.844	3.344	0.940	2.643	2.142	1.202	3.557

Project: 173409690			Source: B-3.51a, 2.8'-3.3'								Lab ID: 792B		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
204.2	241.3	0.672	11.83	7.122	2.439	2.411	5.537	0.493	3.851	3.358	0.948	2.646	2.153	1.205	3.544
208.4	242.7	0.685	12.07	7.142	2.446	2.417	5.531	0.487	3.857	3.371	0.954	2.649	2.162	1.208	3.534
212.7	244.2	0.700	12.33	7.163	2.455	2.425	5.526	0.482	3.866	3.384	0.959	2.654	2.172	1.212	3.528
217.0	245.5	0.713	12.56	7.182	2.461	2.430	5.522	0.478	3.872	3.395	0.964	2.657	2.180	1.215	3.520
221.2	247.2	0.727	12.81	7.202	2.471	2.440	5.517	0.473	3.882	3.409	0.969	2.662	2.189	1.220	3.517
225.5	248.5	0.741	13.06	7.223	2.477	2.445	5.510	0.466	3.885	3.420	0.975	2.663	2.197	1.222	3.507
229.7	249.1	0.756	13.31	7.244	2.476	2.443	5.503	0.459	3.885	3.426	0.982	2.663	2.204	1.222	3.488
234.0	250.5	0.770	13.56	7.265	2.482	2.449	5.498	0.454	3.891	3.437	0.988	2.666	2.213	1.225	3.479
238.2	251.7	0.784	13.80	7.286	2.487	2.453	5.493	0.449	3.895	3.446	0.992	2.668	2.219	1.227	3.472
242.5	252.6	0.798	14.06	7.307	2.489	2.454	5.488	0.444	3.896	3.452	0.998	2.669	2.225	1.227	3.460
246.7	253.3	0.812	14.29	7.327	2.489	2.454	5.484	0.440	3.896	3.456	1.002	2.669	2.229	1.227	3.450
251.0	254.1	0.826	14.55	7.349	2.489	2.454	5.479	0.435	3.895	3.460	1.006	2.668	2.233	1.227	3.439
255.2	254.3	0.840	14.80	7.371	2.484	2.448	5.475	0.431	3.889	3.457	1.010	2.665	2.233	1.224	3.424
259.5	256.0	0.854	15.05	7.392	2.494	2.457	5.472	0.428	3.898	3.470	1.013	2.669	2.242	1.228	3.425
263.7	256.5	0.868	15.29	7.414	2.491	2.454	5.468	0.424	3.895	3.471	1.017	2.668	2.244	1.227	3.413
268.0	257.1	0.882	15.54	7.435	2.489	2.451	5.464	0.421	3.893	3.472	1.020	2.667	2.246	1.226	3.402
272.2	257.9	0.896	15.78	7.457	2.490	2.452	5.461	0.417	3.892	3.475	1.023	2.666	2.249	1.226	3.396
276.5	258.9	0.910	16.02	7.478	2.493	2.453	5.458	0.414	3.894	3.480	1.026	2.667	2.253	1.227	3.390
280.7	259.7	0.924	16.28	7.501	2.493	2.453	5.456	0.412	3.894	3.482	1.029	2.667	2.256	1.226	3.383
285.0	260.5	0.938	16.53	7.523	2.493	2.453	5.453	0.409	3.894	3.485	1.032	2.667	2.258	1.226	3.376
289.0	260.5	0.951	16.75	7.544	2.486	2.445	5.447	0.403	3.885	3.482	1.037	2.663	2.259	1.222	3.358

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.53a, 0.4'-0.9'	Lab ID	798
Description	Lean Clay (CL), brown, moist, firm, organics	Test ID	792-C
Specimen Type	Intact		
Preparation	Wet Mounting	Date Received	04/14/2021
		Date Tested	05/06/2021

Specific Gravity	2.63
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	65
Nominal Consolidation Pressure (psi)	25

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	1.683
Time to 50% Consolidation (min)	1.02
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	117.7
Moisture Content (%)	31.7
Dry Unit Weight (pcf)	89.3
Void Ratio	0.834
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

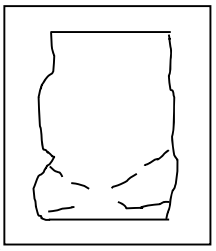
Axial Strain (%)	10.915
Deviator Stress (tsf)	1.693
Induced Pore Pressure (tsf)	1.117
Minor Effective Stress, σ_3' (tsf)	0.567
Major Effective Stress, σ_1' (tsf)	2.260
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.984
p' (tsf)	1.414
q (tsf)	0.846

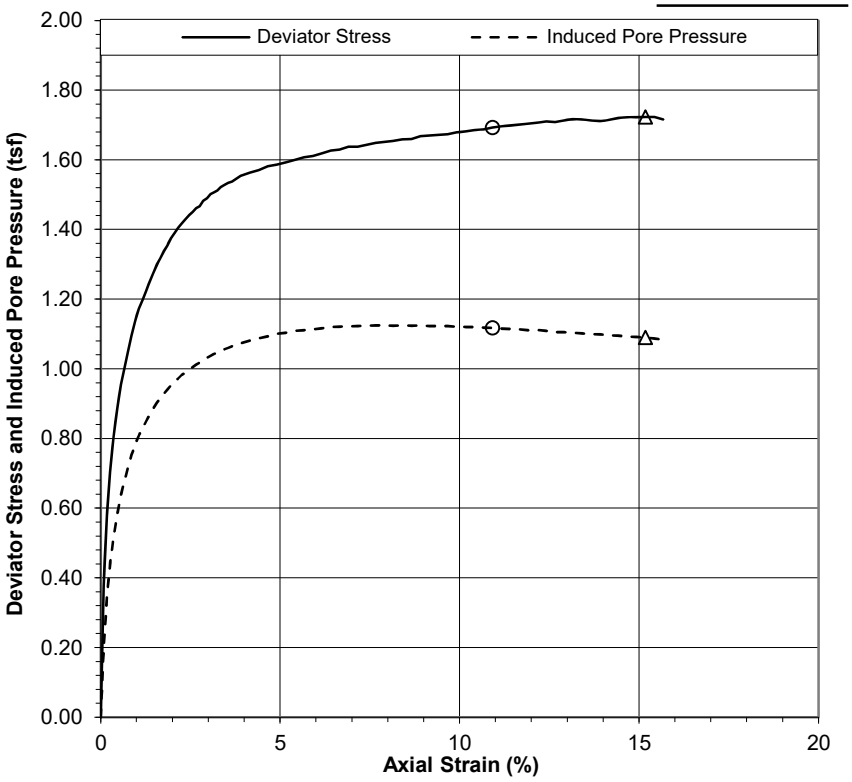
At Consolidated Undrained Failure

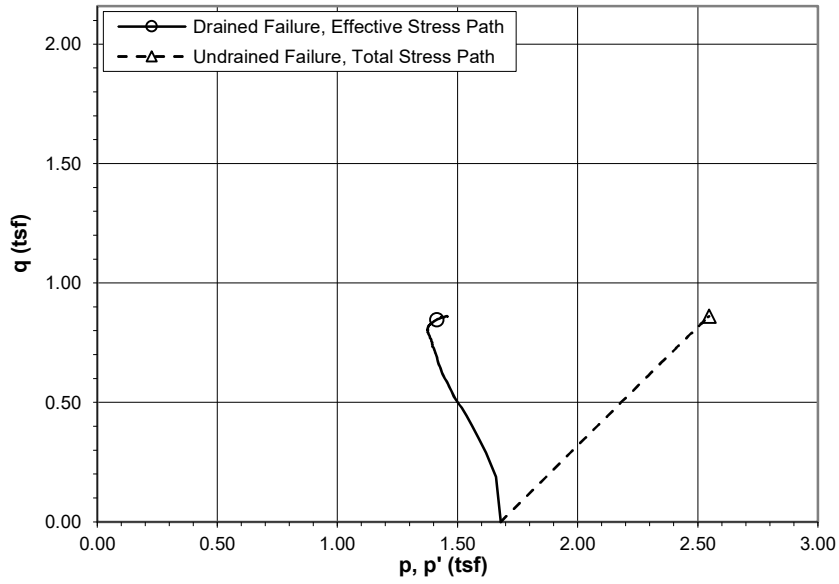
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.181
Deviator Stress (tsf)	1.723
Minor Principal Stress, σ_3 (tsf)	1.685
Major Principal Stress, σ_1 (tsf)	3.408
p (tsf)	2.547
q (tsf)	0.861

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.53a, 0.4'-0.9'
Description: Lean Clay (CL), brown, moist, firm, organics

Project No.: 173409690
Lab ID: 798
Test ID: 792-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.770	Height (in)	5.656
Diameter (in)	2.861	Calculated Diameter (in)	2.751
Area (in^2)	6.426	Calculated Area (in^2)	5.943
Moist Weight (lb)	2.339	Moist Weight (lb)	2.289
Moist Unit Weight (pcf)	109.0	Moist Unit Weight (pcf)	117.7
Moisture Content (%)	34.6	Moisture Content (%)	31.7
Dry Weight (lb)	1.738	Dry Weight (lb)	1.738
Dry Unit Weight (pcf)	81.0	Dry Unit Weight (pcf)	89.3
Void Ratio	1.024	Void Ratio	0.834
Degree of Saturation (%)	88.9	Degree of Saturation (%)	100.0

Specific Gravity: 2.63
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 1.679

Effective Consolidation Stress
σ_3' (tsf): 1.679

Moisture contents obtained using partial specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.53a, 0.4'-0.9'								Lab ID: 798		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	5.943	0.000	0.000	4.806	0.000	1.679	1.679	1.679	1.679	1.679	0.000	1.000
1.0	31.1	0.005	0.09	5.948	0.376	0.376	5.013	0.207	2.056	1.849	1.473	1.868	1.661	0.188	1.255
2.0	47.7	0.010	0.18	5.954	0.577	0.576	5.154	0.348	2.255	1.908	1.331	1.967	1.619	0.288	1.433
3.0	58.3	0.015	0.27	5.959	0.704	0.704	5.250	0.444	2.383	1.939	1.235	2.031	1.587	0.352	1.570
4.0	66.8	0.021	0.37	5.965	0.807	0.806	5.329	0.523	2.486	1.963	1.157	2.083	1.560	0.403	1.696
5.0	73.8	0.026	0.47	5.971	0.890	0.889	5.394	0.588	2.569	1.982	1.093	2.125	1.537	0.445	1.814
6.0	79.4	0.032	0.57	5.977	0.956	0.955	5.446	0.640	2.635	1.995	1.040	2.158	1.518	0.477	1.918
7.0	83.8	0.038	0.67	5.983	1.009	1.007	5.490	0.684	2.686	2.002	0.996	2.183	1.499	0.503	2.011
8.0	87.5	0.043	0.76	5.989	1.052	1.050	5.526	0.720	2.729	2.009	0.960	2.205	1.485	0.525	2.094
9.0	91.4	0.049	0.86	5.995	1.098	1.096	5.560	0.754	2.776	2.022	0.927	2.228	1.475	0.548	2.182
10.0	94.9	0.054	0.96	6.001	1.138	1.136	5.589	0.783	2.816	2.032	0.896	2.248	1.464	0.568	2.267
11.0	98.0	0.060	1.07	6.007	1.175	1.172	5.616	0.810	2.853	2.043	0.871	2.267	1.457	0.586	2.346
12.0	100.4	0.066	1.17	6.014	1.202	1.199	5.638	0.832	2.879	2.047	0.848	2.279	1.448	0.599	2.413
13.0	102.6	0.072	1.27	6.019	1.227	1.224	5.657	0.851	2.904	2.054	0.830	2.292	1.442	0.612	2.475
14.0	105.0	0.077	1.37	6.025	1.254	1.251	5.675	0.869	2.930	2.061	0.810	2.305	1.435	0.625	2.544
15.0	107.1	0.083	1.47	6.032	1.279	1.275	5.693	0.887	2.955	2.068	0.793	2.318	1.431	0.637	2.607
16.0	109.3	0.089	1.57	6.038	1.303	1.299	5.710	0.904	2.980	2.076	0.777	2.330	1.427	0.650	2.672
17.0	110.9	0.094	1.67	6.044	1.321	1.317	5.723	0.917	2.998	2.081	0.764	2.339	1.422	0.659	2.725
18.0	112.8	0.100	1.76	6.050	1.342	1.338	5.736	0.930	3.018	2.088	0.750	2.349	1.419	0.669	2.784
19.1	114.3	0.105	1.86	6.056	1.358	1.354	5.748	0.942	3.035	2.093	0.739	2.358	1.416	0.677	2.831
20.0	116.3	0.111	1.96	6.062	1.381	1.376	5.760	0.954	3.057	2.103	0.727	2.369	1.415	0.688	2.892
21.0	117.6	0.117	2.06	6.068	1.396	1.390	5.770	0.964	3.071	2.108	0.717	2.376	1.413	0.695	2.938
22.0	119.0	0.122	2.16	6.075	1.411	1.405	5.780	0.974	3.086	2.113	0.707	2.384	1.410	0.703	2.986
23.1	120.1	0.128	2.26	6.080	1.422	1.416	5.789	0.983	3.098	2.115	0.699	2.390	1.407	0.708	3.026
24.0	121.4	0.134	2.36	6.087	1.436	1.430	5.796	0.990	3.112	2.121	0.691	2.397	1.406	0.715	3.068
25.0	122.4	0.139	2.46	6.093	1.447	1.440	5.804	0.998	3.122	2.124	0.683	2.402	1.404	0.720	3.108
26.1	123.4	0.145	2.56	6.100	1.457	1.450	5.812	1.006	3.133	2.127	0.677	2.408	1.402	0.725	3.144
27.1	124.5	0.151	2.67	6.106	1.468	1.461	5.819	1.013	3.142	2.129	0.668	2.412	1.399	0.731	3.186
28.1	125.1	0.156	2.76	6.112	1.473	1.466	5.825	1.019	3.147	2.129	0.662	2.414	1.395	0.733	3.214
29.1	126.6	0.161	2.85	6.118	1.490	1.482	5.832	1.026	3.164	2.138	0.656	2.423	1.397	0.741	3.261
30.1	127.3	0.168	2.96	6.125	1.497	1.489	5.838	1.032	3.171	2.139	0.650	2.426	1.394	0.745	3.292
31.1	128.5	0.174	3.07	6.131	1.509	1.501	5.843	1.037	3.183	2.146	0.644	2.432	1.395	0.751	3.331
32.1	129.0	0.178	3.15	6.137	1.514	1.506	5.849	1.043	3.188	2.146	0.640	2.435	1.393	0.753	3.355
33.1	129.7	0.184	3.25	6.143	1.520	1.512	5.852	1.046	3.194	2.148	0.636	2.438	1.392	0.756	3.377
34.1	130.7	0.190	3.35	6.149	1.530	1.522	5.859	1.053	3.204	2.152	0.630	2.444	1.391	0.761	3.415
35.1	131.4	0.195	3.45	6.156	1.537	1.528	5.863	1.057	3.211	2.154	0.626	2.447	1.390	0.764	3.442
36.1	132.0	0.201	3.55	6.162	1.542	1.534	5.867	1.061	3.216	2.155	0.621	2.449	1.388	0.767	3.468
37.1	132.5	0.207	3.66	6.169	1.546	1.537	5.871	1.065	3.220	2.155	0.618	2.451	1.386	0.768	3.488
39.6	134.3	0.221	3.90	6.184	1.563	1.553	5.879	1.073	3.235	2.162	0.608	2.458	1.385	0.777	3.554

Project: 173409690			Source: B-3.53a, 0.4'-0.9'								Lab ID: 798		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
42.1	135.5	0.235	4.16	6.201	1.574	1.563	5.887	1.081	3.245	2.163	0.600	2.463	1.382	0.782	3.604
44.6	136.6	0.249	4.41	6.217	1.582	1.571	5.894	1.088	3.252	2.164	0.593	2.467	1.379	0.785	3.648
47.1	137.9	0.264	4.66	6.234	1.593	1.581	5.900	1.094	3.264	2.170	0.589	2.473	1.380	0.791	3.685
49.6	138.8	0.278	4.91	6.250	1.598	1.586	5.907	1.101	3.270	2.169	0.583	2.477	1.376	0.793	3.722
52.1	139.7	0.292	5.16	6.267	1.606	1.593	5.910	1.104	3.276	2.172	0.580	2.480	1.376	0.796	3.747
54.6	140.8	0.306	5.42	6.283	1.614	1.600	5.915	1.109	3.283	2.174	0.574	2.483	1.374	0.800	3.787
57.1	141.9	0.320	5.67	6.300	1.621	1.607	5.917	1.111	3.292	2.181	0.574	2.488	1.377	0.804	3.802
59.6	142.6	0.335	5.92	6.317	1.626	1.611	5.920	1.114	3.294	2.180	0.569	2.488	1.374	0.806	3.832
62.1	143.7	0.348	6.16	6.333	1.634	1.618	5.923	1.116	3.302	2.186	0.567	2.493	1.376	0.809	3.854
64.6	144.9	0.363	6.41	6.351	1.643	1.627	5.926	1.120	3.310	2.190	0.564	2.497	1.377	0.813	3.887
67.1	145.5	0.377	6.66	6.367	1.646	1.629	5.927	1.121	3.312	2.191	0.563	2.498	1.377	0.814	3.895
69.6	146.7	0.391	6.91	6.384	1.654	1.637	5.928	1.122	3.322	2.199	0.562	2.503	1.381	0.819	3.912
72.1	147.2	0.405	7.17	6.402	1.656	1.638	5.929	1.123	3.321	2.198	0.560	2.502	1.379	0.819	3.924
74.6	148.2	0.419	7.41	6.419	1.662	1.643	5.930	1.124	3.327	2.203	0.559	2.505	1.381	0.822	3.938
77.1	149.1	0.434	7.67	6.437	1.668	1.648	5.931	1.125	3.333	2.208	0.560	2.509	1.384	0.824	3.944
79.6	149.8	0.447	7.91	6.453	1.671	1.651	5.931	1.125	3.335	2.210	0.558	2.509	1.384	0.826	3.957
82.1	150.4	0.461	8.15	6.470	1.674	1.654	5.930	1.124	3.338	2.214	0.560	2.511	1.387	0.827	3.951
84.6	151.3	0.475	8.41	6.489	1.679	1.658	5.931	1.125	3.342	2.217	0.559	2.513	1.388	0.829	3.967
87.1	151.9	0.490	8.66	6.507	1.681	1.659	5.930	1.124	3.343	2.219	0.559	2.513	1.389	0.830	3.968
89.6	153.2	0.504	8.91	6.524	1.691	1.668	5.931	1.125	3.352	2.227	0.559	2.518	1.393	0.834	3.984
92.1	153.8	0.518	9.16	6.542	1.692	1.669	5.929	1.123	3.353	2.230	0.561	2.519	1.395	0.835	3.976
94.6	154.5	0.532	9.41	6.561	1.695	1.672	5.929	1.123	3.356	2.233	0.562	2.520	1.397	0.836	3.976
97.1	155.1	0.547	9.67	6.579	1.698	1.674	5.929	1.123	3.358	2.235	0.562	2.521	1.399	0.837	3.979
99.6	156.1	0.561	9.92	6.597	1.704	1.679	5.927	1.121	3.363	2.242	0.563	2.523	1.402	0.840	3.983
102.1	156.8	0.575	10.17	6.616	1.707	1.681	5.926	1.120	3.365	2.245	0.564	2.524	1.404	0.841	3.981
104.6	157.7	0.589	10.42	6.634	1.712	1.686	5.926	1.120	3.371	2.251	0.565	2.528	1.408	0.843	3.983
107.1	158.4	0.604	10.67	6.653	1.714	1.687	5.924	1.118	3.371	2.253	0.566	2.527	1.409	0.843	3.983
109.6	159.4	0.617	10.91	6.671	1.720	1.693	5.923	1.117	3.378	2.260	0.567	2.531	1.414	0.846	3.984
112.1	160.2	0.632	11.17	6.690	1.724	1.696	5.921	1.115	3.381	2.265	0.569	2.532	1.417	0.848	3.982
114.6	160.9	0.645	11.41	6.709	1.726	1.698	5.921	1.115	3.383	2.268	0.570	2.534	1.419	0.849	3.978
117.1	161.7	0.660	11.66	6.728	1.730	1.701	5.920	1.114	3.387	2.273	0.572	2.536	1.422	0.851	3.975
119.6	162.4	0.674	11.91	6.747	1.733	1.703	5.917	1.111	3.388	2.277	0.574	2.537	1.425	0.852	3.969
122.1	163.2	0.688	12.16	6.766	1.736	1.706	5.918	1.112	3.393	2.281	0.575	2.540	1.428	0.853	3.966
124.7	164.1	0.702	12.41	6.785	1.741	1.710	5.916	1.109	3.395	2.285	0.575	2.540	1.430	0.855	3.972
127.1	164.5	0.716	12.66	6.805	1.740	1.708	5.912	1.106	3.392	2.286	0.578	2.538	1.432	0.854	3.955
129.6	165.5	0.731	12.92	6.825	1.746	1.713	5.912	1.106	3.396	2.291	0.578	2.540	1.434	0.857	3.964
132.2	166.3	0.745	13.17	6.844	1.749	1.716	5.910	1.104	3.400	2.296	0.580	2.542	1.438	0.858	3.958
134.7	166.7	0.759	13.42	6.865	1.749	1.715	5.908	1.102	3.399	2.297	0.582	2.542	1.440	0.858	3.947
137.2	167.1	0.773	13.67	6.884	1.747	1.713	5.907	1.101	3.396	2.296	0.583	2.540	1.439	0.856	3.939
139.7	167.4	0.787	13.92	6.904	1.746	1.711	5.905	1.099	3.396	2.296	0.585	2.540	1.441	0.856	3.925
142.2	168.3	0.801	14.17	6.924	1.750	1.715	5.902	1.096	3.399	2.303	0.588	2.541	1.445	0.857	3.917
144.7	169.4	0.816	14.42	6.945	1.756	1.720	5.901	1.095	3.404	2.309	0.589	2.544	1.449	0.860	3.919
147.2	170.2	0.830	14.68	6.966	1.759	1.722	5.899	1.093	3.408	2.315	0.593	2.547	1.454	0.861	3.904
149.7	170.7	0.844	14.92	6.986	1.759	1.722	5.898	1.092	3.406	2.315	0.593	2.546	1.454	0.861	3.903
152.2	171.4	0.859	15.18	7.007	1.761	1.723	5.896	1.090	3.408	2.318	0.595	2.547	1.457	0.861	3.895
154.7	172.0	0.873	15.43	7.027	1.762	1.723	5.894	1.088	3.408	2.321	0.597	2.547	1.459	0.862	3.884
157.1	171.8	0.887	15.67	7.048	1.755	1.716	5.889	1.083	3.400	2.317	0.601	2.542	1.459	0.858	3.854

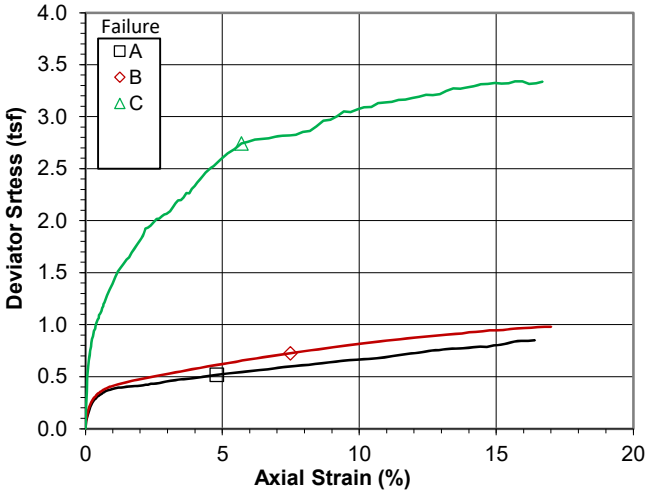
Consolidated Undrained Triaxial Compression

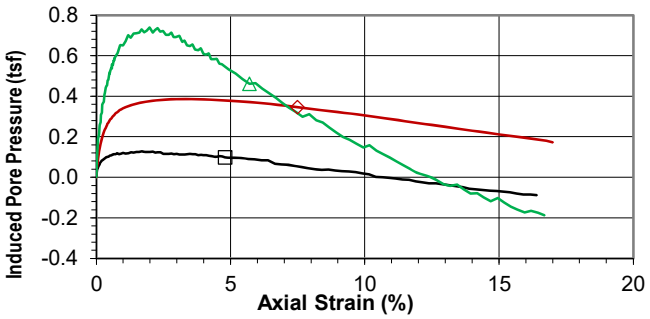
ASTM D 4767

Project Name Eagle Creek

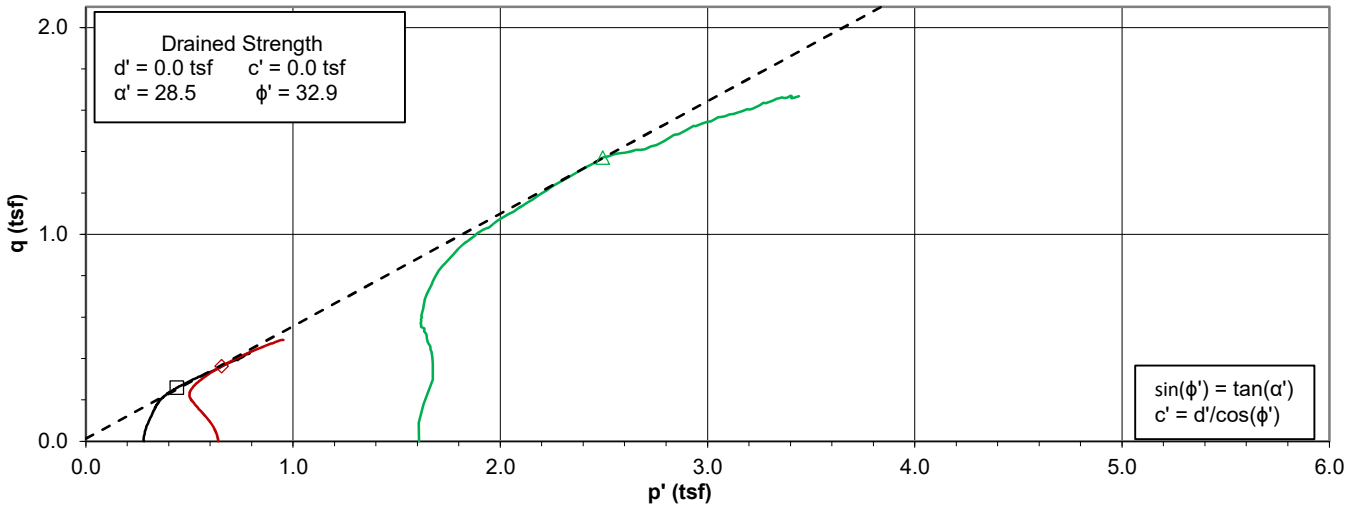
Project 173409690
Set ID 433

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			
B	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			
C	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.046	5.980	5.668		
Average Diameter (in)	2.888	2.897	2.898		
Moist Unit Weight (pcf)	128.4	126.6	130.5		
Moisture Content (%)	17.3	17.3	17.7		
Dry Unit Weight (pcf)	109.5	107.9	111.0		
Void Ratio	0.565	0.588	0.545		
Degree of Saturation (%)	84.1	80.8	89.2		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	132.0	132.7	135.6		
Moisture Content (%)	20.6	20.0	17.8		
Dry Unit Weight (pcf)	109.5	110.6	115.1		
Void Ratio	0.565	0.549	0.488		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.281	0.640	1.608		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	4.800	7.487	5.699		
Deviator Stress (tsf)	0.517	0.725	2.741		
Induced Pore Press. (tsf)	0.097	0.346	0.462		
Minor Eff. Stress, σ_3' (tsf)	0.180	0.292	1.124		
Major Eff. Stress, σ_1' (tsf)	0.698	1.017	3.865		
Eff. Stress Ratio, σ_1'/σ_3'	3.871	3.479	3.439		
p' (tsf)	0.439	0.655	2.494		
q (tsf)	0.259	0.362	1.371		



Comments

Reviewed By KG

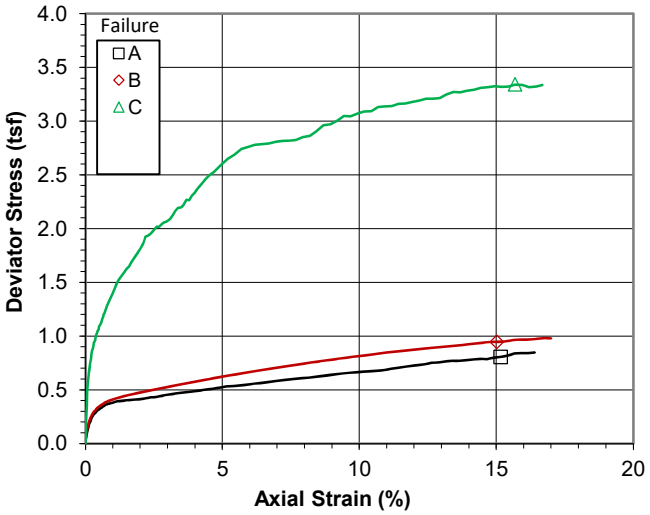
Consolidated Undrained Triaxial Compression

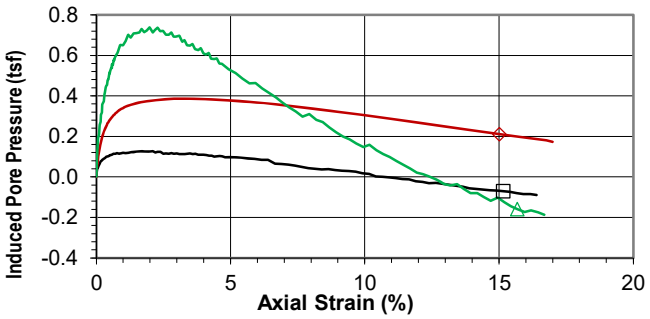
ASTM D 4767

Project Name Eagle Creek

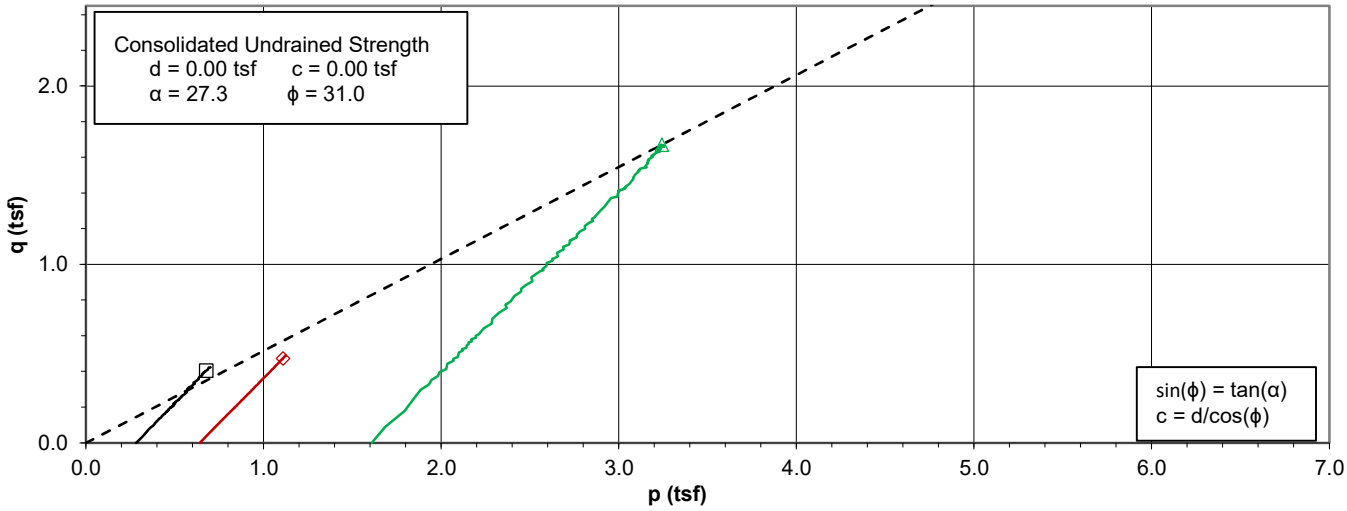
Project 173409690
Set ID 433

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			
B	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			
C	433	B-3.72, 5.0'-10.0'	Lean Clay (CL), brown	2.75			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.046	5.980	5.668		
Average Diameter (in)	2.888	2.897	2.898		
Moist Unit Weight (pcf)	128.4	126.6	130.5		
Moisture Content (%)	17.3	17.3	17.7		
Dry Unit Weight (pcf)	109.5	107.9	111.0		
Void Ratio	0.565	0.588	0.545		
Degree of Saturation (%)	84.1	80.8	89.2		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	132.0	132.7	135.6		
Moisture Content (%)	20.6	20.0	17.8		
Dry Unit Weight (pcf)	109.5	110.6	115.1		
Void Ratio	0.565	0.549	0.488		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.281	0.640	1.608		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.154	15.016	15.680		
Deviator Stress (tsf)	0.807	0.946	3.341		
Min. Prin. Stress, σ_3 (tsf)	0.274	0.636	1.573		
Maj. Prin. Stress, σ_1 (tsf)	1.081	1.582	4.913		
p (tsf)	0.678	1.109	3.243		
q (tsf)	0.403	0.473	1.670		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.72, 5.0'-10.0'	Lab ID	433
Description	Lean Clay (CL), brown	Test ID	433-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	02/08/2021
		Date Tested	04/07/2021

Specific Gravity	2.75
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	85
Nominal Consolidation Pressure (psi)	5

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	0.278
Time to 50% Consolidation (min)	4.70
Actual Axial Strain Rate of Test (%/min)	0.064

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	132.0
Moisture Content (%)	20.6
Dry Unit Weight (pcf)	109.5
Void Ratio	0.565
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

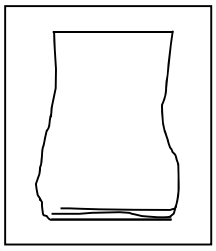
Axial Strain (%)	4.800
Deviator Stress (tsf)	0.517
Induced Pore Pressure (tsf)	0.097
Minor Effective Stress, σ_3' (tsf)	0.180
Major Effective Stress, σ_1' (tsf)	0.698
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.871
p' (tsf)	0.439
q (tsf)	0.259

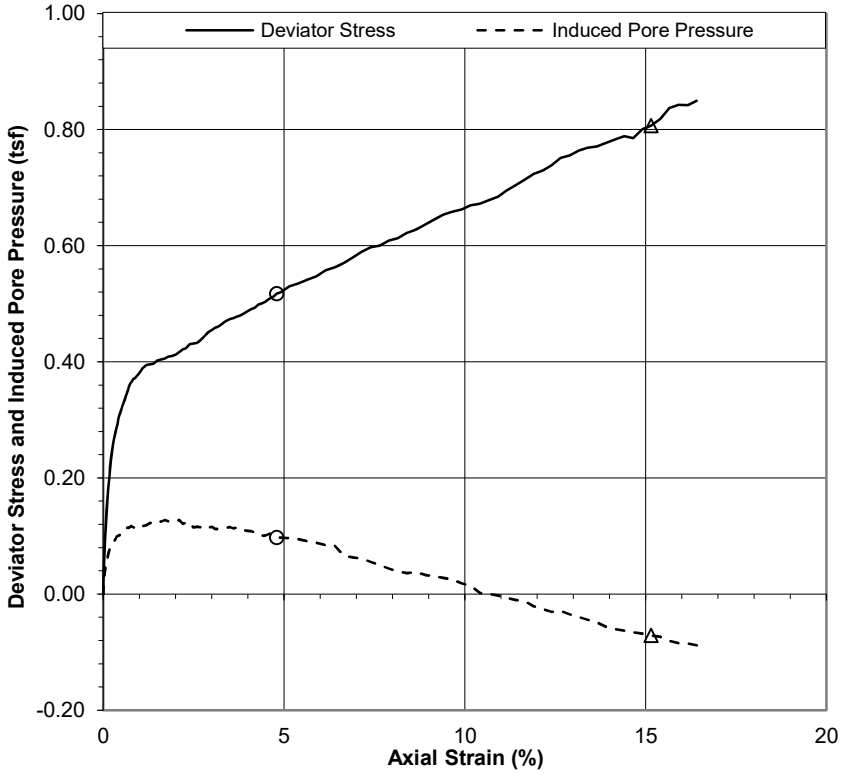
At Consolidated Undrained Failure

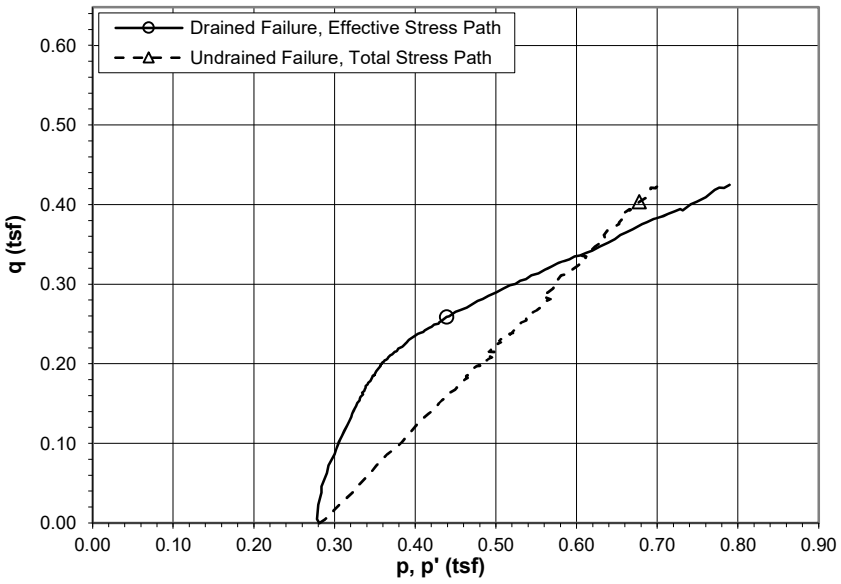
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.154
Deviator Stress (tsf)	0.807
Minor Principal Stress, σ_3 (tsf)	0.274
Major Principal Stress, σ_1 (tsf)	1.081
p (tsf)	0.678
q (tsf)	0.403

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.72, 5.0'-10.0'
Description: Lean Clay (CL), brown

Project No.: 173409690
Lab ID: 433
Test ID: 433-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	6.046	Calculated Height (in)	6.039
Average Diameter (in)	2.888	Calculated Diameter (in)	2.890
Calculated Area (in^2)	6.549	Calculated Area (in^2)	6.559
Moist Weight (lb)	2.943	Moist Weight (lb)	3.025
Moist Unit Weight (pcf)	128.4	Moist Unit Weight (pcf)	132.0
Moisture Content (%)	17.3	Moisture Content (%)	20.6
Dry Weight (lb)	2.509	Dry Weight (lb)	2.509
Dry Unit Weight (pcf)	109.5	Dry Unit Weight (pcf)	109.5
Void Ratio	0.565	Void Ratio	0.565
Degree of Saturation (%)	84.1	Degree of Saturation (%)	100.0

Specific Gravity: 2.75
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 0.281

Effective Consolidation Stress
σ_3' (tsf): 0.281

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.559	0.000	0.000	6.199	0.000	0.281	0.281	0.281	0.281	0.281	0.000	1.000
0.4	0.9	0.000	0.00	6.560	0.009	0.009	6.209	0.010	0.293	0.283	0.273	0.288	0.278	0.005	1.034
0.8	4.2	0.001	0.02	6.561	0.046	0.046	6.225	0.026	0.329	0.303	0.257	0.306	0.280	0.023	1.178
1.2	6.9	0.002	0.03	6.562	0.076	0.076	6.237	0.038	0.360	0.322	0.246	0.322	0.284	0.038	1.309
1.6	8.3	0.003	0.05	6.563	0.091	0.091	6.243	0.044	0.373	0.330	0.238	0.328	0.284	0.046	1.383
2.0	11.5	0.005	0.08	6.564	0.126	0.126	6.253	0.053	0.407	0.353	0.228	0.344	0.291	0.063	1.551
2.4	13.2	0.006	0.10	6.566	0.145	0.145	6.258	0.059	0.424	0.365	0.220	0.352	0.293	0.072	1.657
2.8	15.8	0.008	0.13	6.568	0.173	0.173	6.264	0.065	0.452	0.387	0.214	0.365	0.300	0.086	1.807
3.2	17.3	0.009	0.15	6.569	0.190	0.189	6.272	0.073	0.471	0.397	0.208	0.376	0.303	0.095	1.908
3.6	18.6	0.011	0.18	6.571	0.204	0.204	6.277	0.078	0.485	0.407	0.203	0.383	0.305	0.102	2.000
4.0	20.0	0.012	0.19	6.572	0.219	0.218	6.279	0.080	0.499	0.419	0.200	0.390	0.309	0.109	2.090
4.4	21.2	0.013	0.22	6.574	0.232	0.231	6.283	0.083	0.511	0.428	0.196	0.395	0.312	0.116	2.178
4.7	22.5	0.014	0.24	6.575	0.247	0.246	6.285	0.085	0.525	0.439	0.193	0.401	0.316	0.123	2.276
5.1	23.4	0.016	0.26	6.577	0.256	0.256	6.288	0.089	0.535	0.446	0.190	0.407	0.318	0.128	2.344
5.5	24.4	0.018	0.29	6.579	0.267	0.266	6.290	0.091	0.544	0.454	0.187	0.411	0.321	0.133	2.421
5.9	25.2	0.020	0.33	6.581	0.276	0.275	6.294	0.094	0.554	0.459	0.185	0.416	0.322	0.137	2.490
6.3	25.9	0.021	0.35	6.583	0.283	0.282	6.296	0.097	0.562	0.465	0.183	0.421	0.324	0.141	2.545
6.7	26.4	0.023	0.37	6.584	0.288	0.287	6.299	0.100	0.569	0.469	0.182	0.425	0.325	0.144	2.583
7.1	26.9	0.024	0.40	6.586	0.295	0.294	6.299	0.100	0.573	0.473	0.180	0.427	0.327	0.147	2.634
7.5	27.7	0.025	0.42	6.587	0.302	0.301	6.300	0.101	0.580	0.479	0.178	0.430	0.328	0.151	2.696
7.9	28.3	0.027	0.45	6.589	0.309	0.308	6.301	0.101	0.586	0.485	0.177	0.433	0.331	0.154	2.736
8.3	28.8	0.029	0.48	6.591	0.314	0.313	6.303	0.104	0.592	0.488	0.175	0.436	0.332	0.157	2.788
8.7	29.1	0.030	0.50	6.592	0.318	0.317	6.305	0.105	0.596	0.491	0.174	0.438	0.332	0.158	2.821
9.1	29.7	0.032	0.52	6.594	0.324	0.323	6.307	0.107	0.604	0.497	0.174	0.443	0.335	0.161	2.856
9.5	30.1	0.033	0.55	6.596	0.329	0.327	6.307	0.108	0.606	0.498	0.171	0.443	0.334	0.164	2.916
9.9	30.5	0.035	0.58	6.597	0.333	0.332	6.308	0.109	0.612	0.503	0.171	0.446	0.337	0.166	2.935
10.3	30.9	0.036	0.60	6.599	0.337	0.335	6.311	0.112	0.617	0.505	0.170	0.449	0.337	0.168	2.974
10.7	31.3	0.037	0.62	6.600	0.342	0.340	6.312	0.113	0.621	0.509	0.168	0.451	0.339	0.170	3.020
11.1	31.7	0.039	0.64	6.602	0.346	0.344	6.313	0.114	0.625	0.511	0.166	0.453	0.338	0.172	3.069
11.4	32.1	0.040	0.67	6.603	0.350	0.348	6.314	0.114	0.629	0.515	0.167	0.455	0.341	0.174	3.087
11.8	32.4	0.042	0.69	6.605	0.353	0.352	6.314	0.115	0.632	0.518	0.166	0.457	0.342	0.176	3.119
12.2	32.9	0.043	0.71	6.606	0.359	0.357	6.314	0.114	0.637	0.523	0.166	0.459	0.345	0.178	3.149
12.6	33.4	0.045	0.74	6.609	0.364	0.362	6.316	0.116	0.643	0.527	0.165	0.462	0.346	0.181	3.195
13.0	33.7	0.046	0.77	6.610	0.367	0.365	6.317	0.118	0.647	0.529	0.164	0.465	0.346	0.182	3.224
13.4	33.8	0.048	0.80	6.612	0.368	0.366	6.316	0.116	0.646	0.530	0.164	0.463	0.347	0.183	3.235
13.8	34.1	0.050	0.82	6.614	0.371	0.369	6.315	0.116	0.648	0.532	0.163	0.463	0.347	0.185	3.270
14.2	34.3	0.051	0.85	6.616	0.373	0.371	6.314	0.114	0.650	0.535	0.164	0.464	0.350	0.186	3.260
14.6	34.3	0.053	0.88	6.617	0.373	0.371	6.315	0.116	0.650	0.535	0.163	0.465	0.349	0.186	3.272
15.0	34.5	0.054	0.90	6.619	0.375	0.373	6.316	0.116	0.653	0.536	0.163	0.466	0.350	0.187	3.287

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
16.6	35.3	0.060	1.00	6.626	0.383	0.381	6.319	0.120	0.662	0.542	0.161	0.471	0.352	0.190	3.363
18.1	36.1	0.066	1.09	6.632	0.392	0.389	6.317	0.117	0.667	0.549	0.160	0.472	0.355	0.195	3.430
19.7	36.7	0.072	1.20	6.639	0.398	0.395	6.318	0.119	0.673	0.555	0.160	0.476	0.357	0.197	3.469
21.3	36.8	0.078	1.30	6.646	0.399	0.396	6.322	0.123	0.678	0.555	0.159	0.480	0.357	0.198	3.481
22.8	36.9	0.084	1.39	6.652	0.400	0.397	6.321	0.122	0.677	0.555	0.159	0.478	0.357	0.198	3.501
24.4	37.5	0.090	1.49	6.659	0.406	0.402	6.325	0.126	0.686	0.560	0.158	0.485	0.359	0.201	3.548
25.9	37.8	0.096	1.60	6.666	0.408	0.404	6.324	0.125	0.687	0.562	0.158	0.485	0.360	0.202	3.557
27.5	37.9	0.102	1.70	6.673	0.409	0.405	6.327	0.128	0.692	0.564	0.159	0.489	0.361	0.203	3.553
29.1	38.3	0.109	1.80	6.680	0.413	0.409	6.325	0.126	0.692	0.566	0.158	0.488	0.362	0.204	3.587
30.7	38.5	0.115	1.90	6.686	0.414	0.410	6.325	0.125	0.694	0.569	0.159	0.489	0.364	0.205	3.572
32.2	38.8	0.121	2.00	6.693	0.417	0.412	6.324	0.125	0.697	0.572	0.159	0.491	0.365	0.206	3.588
33.8	39.2	0.127	2.10	6.700	0.421	0.416	6.327	0.128	0.703	0.575	0.159	0.495	0.367	0.208	3.624
35.4	39.8	0.133	2.20	6.707	0.427	0.422	6.321	0.121	0.701	0.580	0.158	0.490	0.369	0.211	3.665
36.9	40.0	0.138	2.28	6.713	0.429	0.423	6.322	0.123	0.706	0.583	0.160	0.495	0.372	0.212	3.649
38.5	40.7	0.145	2.39	6.720	0.436	0.430	6.323	0.124	0.713	0.590	0.160	0.498	0.375	0.215	3.695
40.1	40.8	0.151	2.49	6.727	0.437	0.431	6.314	0.115	0.707	0.592	0.161	0.491	0.376	0.216	3.685
41.6	41.1	0.157	2.59	6.734	0.439	0.433	6.315	0.116	0.710	0.594	0.161	0.493	0.377	0.216	3.688
43.2	41.6	0.163	2.70	6.741	0.444	0.438	6.314	0.115	0.713	0.598	0.160	0.494	0.379	0.219	3.738
44.8	42.2	0.169	2.80	6.748	0.450	0.443	6.317	0.117	0.723	0.606	0.163	0.502	0.384	0.222	3.728
46.3	42.9	0.175	2.89	6.755	0.457	0.451	6.313	0.114	0.727	0.613	0.162	0.502	0.388	0.225	3.775
47.9	43.3	0.181	3.00	6.762	0.462	0.454	6.315	0.116	0.733	0.617	0.163	0.506	0.390	0.227	3.794
49.5	43.8	0.187	3.09	6.769	0.466	0.458	6.312	0.113	0.733	0.621	0.162	0.504	0.392	0.229	3.823
51.0	44.1	0.193	3.20	6.776	0.469	0.461	6.312	0.112	0.736	0.623	0.162	0.505	0.393	0.230	3.843
52.6	44.6	0.199	3.30	6.783	0.473	0.465	6.312	0.113	0.742	0.629	0.163	0.509	0.396	0.233	3.848
54.2	45.1	0.205	3.39	6.789	0.478	0.470	6.313	0.114	0.748	0.634	0.164	0.513	0.399	0.235	3.860
55.7	45.5	0.211	3.49	6.797	0.482	0.474	6.315	0.115	0.754	0.639	0.165	0.518	0.402	0.237	3.861
57.3	45.7	0.217	3.60	6.804	0.484	0.475	6.313	0.113	0.754	0.641	0.166	0.517	0.403	0.237	3.863
58.9	46.0	0.223	3.69	6.811	0.487	0.478	6.314	0.114	0.760	0.646	0.168	0.521	0.407	0.239	3.851
60.4	46.3	0.230	3.80	6.819	0.489	0.480	6.309	0.110	0.760	0.650	0.170	0.520	0.410	0.240	3.821
62.0	46.7	0.236	3.90	6.826	0.493	0.484	6.310	0.110	0.764	0.654	0.170	0.522	0.412	0.242	3.846
63.6	47.1	0.241	3.99	6.832	0.497	0.487	6.308	0.109	0.767	0.658	0.171	0.524	0.415	0.244	3.849
65.2	47.5	0.247	4.10	6.840	0.500	0.491	6.308	0.109	0.771	0.663	0.172	0.526	0.417	0.245	3.850
66.7	47.8	0.253	4.20	6.847	0.503	0.493	6.305	0.105	0.772	0.667	0.174	0.526	0.420	0.246	3.838
68.3	48.4	0.259	4.29	6.854	0.509	0.499	6.304	0.105	0.778	0.673	0.174	0.528	0.423	0.249	3.864
69.9	48.7	0.266	4.40	6.861	0.511	0.501	6.300	0.101	0.780	0.679	0.179	0.530	0.429	0.250	3.805
71.4	49.1	0.271	4.49	6.868	0.515	0.504	6.301	0.102	0.783	0.682	0.178	0.531	0.430	0.252	3.829
73.0	49.6	0.278	4.60	6.876	0.520	0.509	6.303	0.104	0.791	0.688	0.179	0.537	0.433	0.254	3.841
74.6	50.0	0.284	4.70	6.883	0.523	0.512	6.301	0.102	0.794	0.691	0.179	0.538	0.435	0.256	3.854
76.1	50.6	0.290	4.80	6.890	0.529	0.517	6.297	0.097	0.795	0.698	0.180	0.536	0.439	0.259	3.871
77.7	50.9	0.296	4.90	6.898	0.531	0.520	6.297	0.097	0.799	0.702	0.182	0.539	0.442	0.260	3.850
81.6	52.1	0.311	5.15	6.916	0.543	0.530	6.296	0.097	0.812	0.715	0.185	0.547	0.450	0.265	3.867
85.5	52.8	0.326	5.40	6.934	0.548	0.535	6.294	0.095	0.818	0.723	0.188	0.550	0.456	0.267	3.841
89.5	53.6	0.341	5.65	6.952	0.555	0.541	6.290	0.091	0.825	0.734	0.193	0.555	0.464	0.271	3.804
93.4	54.3	0.356	5.89	6.970	0.561	0.547	6.288	0.089	0.831	0.743	0.195	0.558	0.469	0.274	3.799
97.3	55.6	0.372	6.16	6.990	0.572	0.558	6.284	0.084	0.841	0.756	0.198	0.562	0.477	0.279	3.810
101.2	56.3	0.386	6.40	7.008	0.578	0.563	6.283	0.084	0.849	0.765	0.203	0.568	0.484	0.281	3.779
105.1	57.2	0.402	6.66	7.027	0.586	0.570	6.265	0.066	0.842	0.776	0.206	0.557	0.491	0.285	3.772
109.0	58.3	0.417	6.90	7.046	0.596	0.580	6.263	0.063	0.854	0.791	0.211	0.564	0.501	0.290	3.748
113.0	59.5	0.432	7.16	7.065	0.606	0.589	6.260	0.061	0.865	0.804	0.215	0.571	0.510	0.295	3.743
116.9	60.5	0.447	7.40	7.083	0.615	0.597	6.255	0.055	0.872	0.816	0.219	0.573	0.517	0.299	3.729
120.8	61.0	0.462	7.65	7.103	0.619	0.600	6.249	0.050	0.874	0.824	0.224	0.574	0.524	0.300	3.681
124.7	62.1	0.477	7.90	7.122	0.628	0.609	6.243	0.044	0.878	0.834	0.226	0.574	0.530	0.304	3.697
128.6	62.7	0.492	8.15	7.141	0.632	0.613	6.239	0.040	0.883	0.844	0.231	0.577	0.537	0.306	3.655
132.5	63.9	0.507	8.40	7.161	0.642	0.622	6.236	0.036	0.892	0.855	0.233	0.581	0.544	0.311	3.672
136.5	64.6	0.522	8.64	7.180	0.648	0.627	6.237	0.038	0.905	0.867	0.239	0.591	0.553	0.314	3.624
140.4	65.8	0.538	8.90	7.200	0.658	0.637	6.232	0.033	0.912	0.879	0.243	0.594	0.561	0.318	3.621
144.3	66.8	0.553	9.15	7.220	0.666	0.645	6.230	0.031	0.922	0.892	0.247	0.600	0.569	0.322	3.610
148.2	68.0	0.568	9.41	7.240	0.676	0.653	6.227	0.028	0.933	0.904	0.251	0.606	0.578	0.327	3.601
152.1	68.7	0.583	9.66	7.261	0.681	0.658	6.225	0.026	0.940	0.914	0.256	0.611	0.585	0.329	3.571
156.0	69.4	0.599	9.91	7.281	0.686	0.662	6.218	0.019	0.941	0.922	0.260	0.610	0.591	0.331	3.544
160.0	70.3	0.613	10.16	7.301	0.694	0.669	6.214	0.014	0.947	0.932	0.263	0.612	0.597	0.335	3.548
163.9	70.9	0.629	10.42	7.322	0.697	0.672	6.201	0.002	0.943	0.940	0.268	0.606	0.604	0.336	3.507
167.8	71.8	0.644	10.66	7.342	0.704	0.678	6.200	0.000	0.951	0.951	0.273	0.612	0.612	0.339	3.489
171.7	72.7	0.660	10.92	7.364	0.711	0.684	6.197	-0.002	0.959	0.961	0.277	0.617	0.619	0.342	3.471
175.6	74.0	0.674	11.16	7.383	0.722	0.695	6.193	-0.006	0.970	0.976	0.281	0.622	0.629	0.347	3.470
179.5	75.2	0.689	11.41	7.404	0.731	0.704	6.189	-0.010	0.981	0.991	0.287	0.629	0.639	0.352	3.453
183.4	76.4	0.704	11.66	7.425	0.741	0.713	6.187	-0.012	0.992	1.004	0.291	0.636	0.648	0.357	3.452
187.4	77.7	0.719	11.91	7.446	0.752	0.723	6.178	-0.021	0.995	1.016	0.293	0.633	0.654	0.362	3.471
191.3	78.7	0.734	12.16	7.467	0.759	0.730	6.174	-0.025	1.001	1.026	0.297	0.636	0.661	0.365	3.461

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
195.2	79.9	0.749	12.40	7.488	0.768	0.738	6.169	-0.030	1.009	1.039	0.301	0.639	0.670	0.369	3.456
199.1	81.5	0.764	12.65	7.509	0.781	0.751	6.170	-0.029	1.028	1.057	0.306	0.652	0.681	0.376	3.458
203.0	82.3	0.779	12.90	7.531	0.787	0.756	6.165	-0.035	1.030	1.065	0.310	0.653	0.687	0.378	3.441
207.0	83.4	0.794	13.15	7.553	0.795	0.764	6.160	-0.039	1.038	1.077	0.314	0.656	0.696	0.382	3.434
210.9	84.2	0.809	13.40	7.574	0.801	0.769	6.155	-0.044	1.044	1.088	0.319	0.659	0.703	0.384	3.408
214.8	84.8	0.825	13.66	7.597	0.804	0.771	6.151	-0.048	1.045	1.093	0.322	0.659	0.708	0.386	3.394
218.7	85.7	0.839	13.90	7.618	0.810	0.777	6.143	-0.056	1.046	1.102	0.325	0.657	0.713	0.388	3.389
222.6	86.7	0.855	14.16	7.641	0.817	0.783	6.139	-0.060	1.053	1.113	0.330	0.661	0.722	0.392	3.373
226.5	87.6	0.870	14.41	7.664	0.823	0.789	6.136	-0.063	1.060	1.123	0.334	0.665	0.728	0.394	3.361
230.5	87.6	0.885	14.66	7.686	0.820	0.785	6.133	-0.066	1.058	1.124	0.339	0.666	0.732	0.393	3.317
234.4	89.5	0.901	14.91	7.709	0.836	0.800	6.131	-0.068	1.074	1.142	0.341	0.674	0.742	0.400	3.345
238.3	90.5	0.915	15.15	7.731	0.843	0.807	6.128	-0.071	1.081	1.152	0.345	0.678	0.749	0.403	3.336
242.2	92.1	0.930	15.41	7.754	0.855	0.818	6.126	-0.073	1.096	1.169	0.351	0.687	0.760	0.409	3.332
246.1	94.5	0.946	15.66	7.777	0.874	0.837	6.119	-0.080	1.109	1.190	0.353	0.691	0.771	0.418	3.372
250.0	95.4	0.961	15.91	7.801	0.881	0.843	6.115	-0.085	1.113	1.198	0.355	0.692	0.777	0.421	3.371
253.9	95.7	0.976	16.16	7.824	0.881	0.842	6.114	-0.085	1.119	1.204	0.362	0.698	0.783	0.421	3.329
257.9	96.9	0.991	16.41	7.847	0.889	0.850	6.111	-0.088	1.127	1.215	0.365	0.702	0.790	0.425	3.331

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.72, 5.0'-10.0'	Lab ID	433
Description	Lean Clay (CL), brown	Test ID	433-B
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	02/08/2021
		Date Tested	04/07/2021

Specific Gravity	2.75
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	0.639
Time to 50% Consolidation (min)	3.20
Actual Axial Strain Rate of Test (%/min)	0.094

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	132.7
Moisture Content (%)	20.0
Dry Unit Weight (pcf)	110.6
Void Ratio	0.549
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

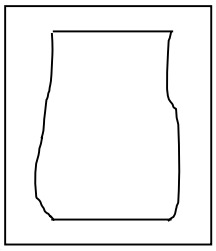
Axial Strain (%)	7.487
Deviator Stress (tsf)	0.725
Induced Pore Pressure (tsf)	0.346
Minor Effective Stress, σ_3' (tsf)	0.292
Major Effective Stress, σ_1' (tsf)	1.017
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.479
p' (tsf)	0.655
q (tsf)	0.362

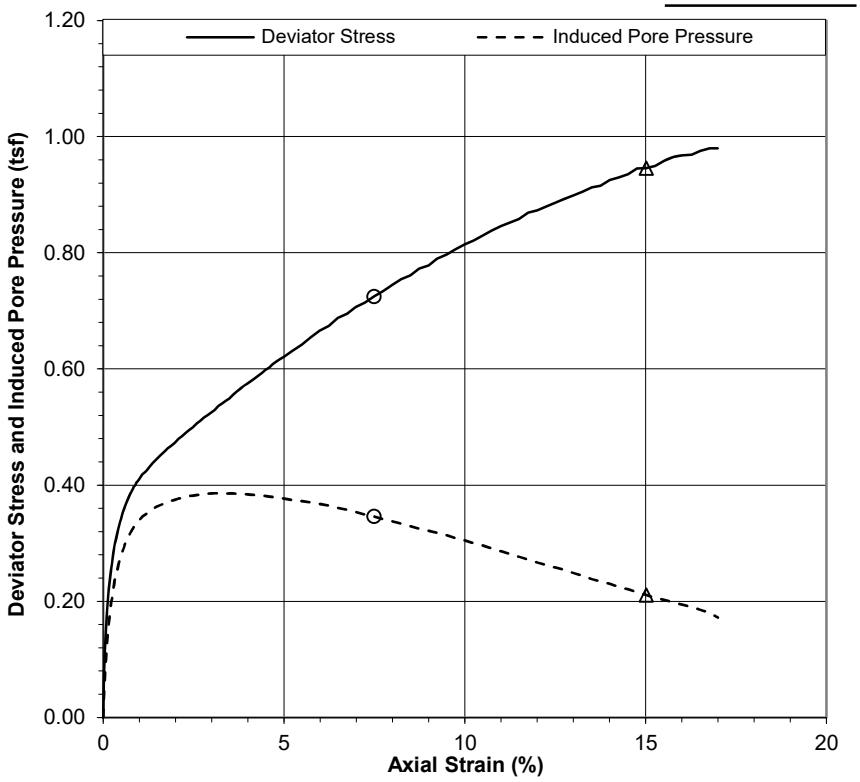
At Consolidated Undrained Failure

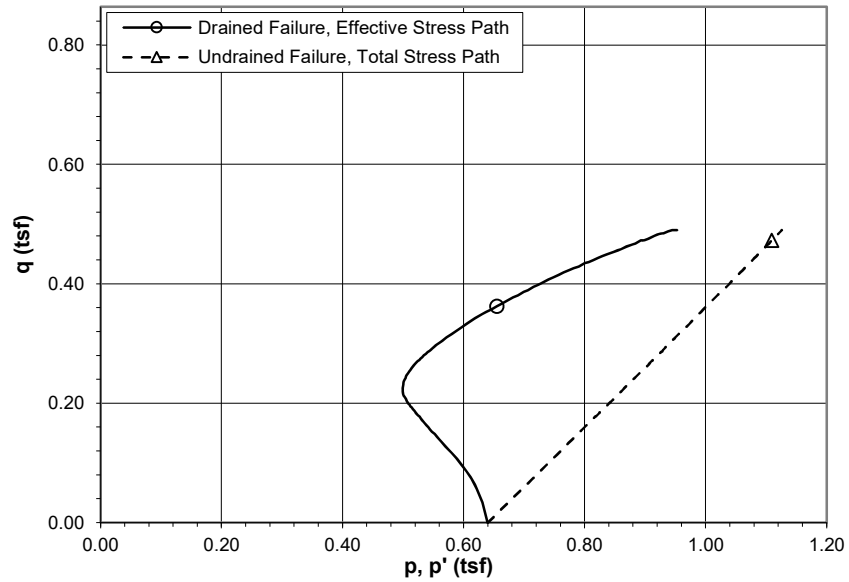
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.016
Deviator Stress (tsf)	0.946
Minor Principal Stress, σ_3 (tsf)	0.636
Major Principal Stress, σ_1 (tsf)	1.582
p (tsf)	1.109
q (tsf)	0.473

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.72, 5.0'-10.0'
Description: Lean Clay (CL), brown

Project No.: 173409690
Lab ID: 433
Test ID: 433-B

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.980	Height (in)	5.959
Diameter (in)	2.897	Calculated Diameter (in)	2.866
Area (in^2)	6.592	Calculated Area (in^2)	6.452
Moist Weight (lb)	2.887	Moist Weight (lb)	2.953
Moist Unit Weight (pcf)	126.6	Moist Unit Weight (pcf)	132.7
Moisture Content (%)	17.3	Moisture Content (%)	20.0
Dry Weight (lb)	2.462	Dry Weight (lb)	2.462
Dry Unit Weight (pcf)	107.9	Dry Unit Weight (pcf)	110.6
Void Ratio	0.588	Void Ratio	0.549
Degree of Saturation (%)	80.8	Degree of Saturation (%)	100.0

Specific Gravity: 2.75
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 0.640

Effective Consolidation Stress
σ_3' (tsf): 0.640

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.452	0.000	0.000	5.842	0.000	0.640	0.640	0.640	0.640	0.640	0.000	1.000
0.3	6.0	0.001	0.02	6.453	0.067	0.067	5.884	0.042	0.707	0.665	0.597	0.673	0.631	0.034	1.112
0.5	10.2	0.003	0.05	6.455	0.114	0.114	5.917	0.075	0.754	0.678	0.565	0.697	0.622	0.057	1.202
0.8	13.2	0.004	0.07	6.456	0.147	0.147	5.942	0.100	0.787	0.687	0.540	0.714	0.613	0.073	1.272
1.1	15.5	0.006	0.10	6.458	0.173	0.173	5.963	0.121	0.813	0.691	0.519	0.726	0.605	0.086	1.333
1.4	17.5	0.007	0.12	6.459	0.195	0.194	5.983	0.141	0.834	0.694	0.499	0.737	0.596	0.097	1.389
1.6	19.1	0.009	0.14	6.461	0.213	0.213	5.999	0.157	0.853	0.696	0.483	0.747	0.590	0.107	1.441
1.9	20.6	0.010	0.17	6.463	0.229	0.229	6.014	0.172	0.869	0.697	0.468	0.755	0.582	0.114	1.489
2.1	21.8	0.012	0.20	6.464	0.243	0.243	6.028	0.186	0.883	0.697	0.454	0.762	0.576	0.121	1.534
2.4	23.0	0.013	0.22	6.466	0.256	0.255	6.040	0.198	0.896	0.698	0.442	0.768	0.570	0.128	1.577
2.7	24.0	0.015	0.25	6.468	0.267	0.266	6.050	0.208	0.906	0.698	0.432	0.773	0.565	0.133	1.617
3.0	25.0	0.016	0.27	6.469	0.278	0.277	6.061	0.219	0.918	0.699	0.422	0.779	0.560	0.139	1.658
3.2	25.9	0.017	0.29	6.471	0.288	0.288	6.069	0.228	0.928	0.700	0.412	0.784	0.556	0.144	1.698
3.5	26.7	0.019	0.31	6.472	0.298	0.297	6.078	0.236	0.937	0.701	0.404	0.788	0.552	0.148	1.735
3.8	27.5	0.021	0.35	6.474	0.305	0.304	6.086	0.244	0.944	0.700	0.396	0.792	0.548	0.152	1.769
4.0	28.1	0.022	0.38	6.476	0.312	0.312	6.093	0.251	0.951	0.700	0.389	0.795	0.544	0.156	1.802
4.3	28.8	0.024	0.40	6.477	0.320	0.319	6.100	0.258	0.959	0.701	0.382	0.799	0.542	0.160	1.836
4.6	29.4	0.025	0.42	6.479	0.326	0.325	6.106	0.264	0.965	0.701	0.376	0.803	0.539	0.163	1.865
4.8	29.9	0.027	0.45	6.481	0.333	0.332	6.111	0.269	0.971	0.702	0.371	0.806	0.536	0.166	1.895
5.1	30.5	0.028	0.47	6.482	0.339	0.338	6.117	0.275	0.977	0.703	0.365	0.808	0.534	0.169	1.924
5.4	31.0	0.030	0.50	6.484	0.344	0.342	6.122	0.280	0.983	0.702	0.360	0.811	0.531	0.171	1.952
5.7	31.6	0.031	0.52	6.486	0.350	0.349	6.127	0.285	0.989	0.704	0.355	0.815	0.529	0.175	1.984
5.9	32.0	0.033	0.55	6.487	0.356	0.354	6.132	0.290	0.994	0.705	0.350	0.817	0.527	0.177	2.012
6.2	32.4	0.034	0.58	6.489	0.360	0.358	6.136	0.294	0.999	0.705	0.346	0.819	0.525	0.179	2.035
6.4	32.8	0.036	0.60	6.491	0.364	0.362	6.140	0.298	1.002	0.705	0.342	0.821	0.524	0.181	2.058
6.7	33.2	0.037	0.63	6.492	0.368	0.367	6.144	0.302	1.007	0.705	0.338	0.824	0.521	0.183	2.086
7.0	33.6	0.039	0.65	6.494	0.373	0.371	6.147	0.305	1.011	0.706	0.334	0.825	0.520	0.186	2.111
7.3	34.0	0.041	0.68	6.496	0.377	0.375	6.151	0.309	1.015	0.706	0.331	0.828	0.519	0.187	2.131
7.5	34.3	0.042	0.70	6.497	0.380	0.379	6.154	0.312	1.019	0.706	0.328	0.830	0.517	0.189	2.155
7.8	34.7	0.043	0.73	6.499	0.384	0.383	6.158	0.316	1.022	0.707	0.324	0.831	0.516	0.191	2.181
8.1	35.0	0.045	0.76	6.501	0.388	0.386	6.161	0.319	1.026	0.707	0.322	0.833	0.514	0.193	2.199
8.3	35.2	0.046	0.78	6.502	0.390	0.388	6.163	0.321	1.028	0.707	0.319	0.834	0.513	0.194	2.218
8.6	35.5	0.048	0.80	6.504	0.393	0.391	6.166	0.324	1.031	0.707	0.316	0.835	0.512	0.196	2.238
8.9	35.8	0.049	0.83	6.505	0.396	0.394	6.168	0.326	1.034	0.708	0.314	0.837	0.511	0.197	2.253
9.2	36.0	0.050	0.85	6.507	0.399	0.397	6.170	0.328	1.037	0.709	0.312	0.839	0.510	0.198	2.272
9.4	36.3	0.052	0.87	6.509	0.401	0.399	6.173	0.331	1.039	0.708	0.309	0.840	0.509	0.200	2.291
9.7	36.5	0.054	0.90	6.510	0.404	0.402	6.175	0.333	1.043	0.709	0.307	0.842	0.508	0.201	2.308
9.9	36.8	0.055	0.93	6.512	0.407	0.405	6.177	0.335	1.045	0.709	0.305	0.842	0.507	0.202	2.327
10.2	37.0	0.057	0.95	6.514	0.409	0.406	6.179	0.337	1.047	0.710	0.303	0.844	0.506	0.203	2.341

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
10.5	37.2	0.059	0.98	6.516	0.411	0.409	6.181	0.339	1.049	0.710	0.302	0.845	0.506	0.204	2.356
11.6	38.1	0.065	1.08	6.522	0.421	0.418	6.188	0.346	1.059	0.713	0.294	0.850	0.504	0.209	2.421
12.6	38.7	0.071	1.19	6.529	0.427	0.424	6.193	0.351	1.064	0.713	0.289	0.852	0.501	0.212	2.466
13.7	39.5	0.076	1.28	6.535	0.435	0.432	6.198	0.356	1.072	0.716	0.284	0.856	0.500	0.216	2.518
14.8	40.1	0.082	1.37	6.541	0.441	0.438	6.202	0.360	1.079	0.719	0.281	0.860	0.500	0.219	2.560
15.8	40.8	0.088	1.48	6.549	0.449	0.445	6.205	0.363	1.085	0.722	0.277	0.863	0.500	0.222	2.605
16.9	41.4	0.094	1.58	6.555	0.455	0.451	6.208	0.366	1.091	0.725	0.274	0.865	0.499	0.226	2.650
18.0	42.1	0.101	1.69	6.563	0.461	0.457	6.211	0.369	1.097	0.729	0.271	0.869	0.500	0.229	2.686
19.1	42.7	0.107	1.79	6.569	0.468	0.464	6.213	0.371	1.104	0.732	0.269	0.872	0.501	0.232	2.724
20.1	43.1	0.112	1.88	6.575	0.472	0.468	6.215	0.373	1.108	0.734	0.267	0.874	0.501	0.234	2.754
21.2	43.7	0.118	1.98	6.582	0.478	0.473	6.217	0.375	1.113	0.738	0.265	0.876	0.501	0.236	2.786
22.3	44.3	0.124	2.08	6.589	0.484	0.479	6.219	0.377	1.119	0.742	0.263	0.879	0.503	0.240	2.824
23.3	44.8	0.130	2.18	6.596	0.490	0.484	6.220	0.378	1.124	0.746	0.262	0.882	0.504	0.242	2.848
24.4	45.4	0.136	2.29	6.603	0.495	0.490	6.222	0.380	1.130	0.750	0.260	0.885	0.505	0.245	2.886
25.5	46.0	0.142	2.38	6.609	0.501	0.495	6.223	0.381	1.135	0.754	0.259	0.888	0.506	0.247	2.913
26.6	46.4	0.148	2.48	6.616	0.505	0.499	6.224	0.382	1.140	0.758	0.258	0.890	0.508	0.250	2.936
27.6	47.1	0.154	2.59	6.623	0.512	0.506	6.225	0.383	1.146	0.763	0.257	0.893	0.510	0.253	2.970
28.7	47.7	0.160	2.69	6.630	0.517	0.511	6.226	0.384	1.151	0.768	0.257	0.896	0.512	0.255	2.990
29.8	48.2	0.166	2.79	6.636	0.523	0.516	6.227	0.385	1.157	0.772	0.256	0.899	0.514	0.258	3.019
30.8	48.7	0.172	2.89	6.644	0.527	0.520	6.227	0.385	1.161	0.775	0.255	0.901	0.515	0.260	3.040
31.9	49.1	0.178	2.98	6.650	0.532	0.525	6.228	0.386	1.165	0.779	0.254	0.903	0.517	0.262	3.062
33.0	49.6	0.184	3.08	6.657	0.536	0.529	6.228	0.386	1.169	0.783	0.254	0.905	0.519	0.264	3.081
34.0	50.4	0.190	3.19	6.664	0.544	0.537	6.228	0.386	1.177	0.791	0.254	0.909	0.522	0.268	3.111
35.1	50.9	0.196	3.29	6.671	0.549	0.541	6.228	0.386	1.181	0.795	0.254	0.911	0.525	0.270	3.128
36.2	51.3	0.202	3.39	6.678	0.553	0.545	6.227	0.385	1.185	0.800	0.255	0.913	0.527	0.273	3.140
37.3	51.8	0.208	3.49	6.685	0.558	0.549	6.228	0.386	1.189	0.803	0.254	0.915	0.529	0.275	3.160
38.3	52.3	0.213	3.58	6.691	0.563	0.555	6.228	0.386	1.195	0.809	0.255	0.918	0.532	0.277	3.179
39.4	53.0	0.220	3.68	6.698	0.569	0.561	6.228	0.386	1.201	0.815	0.254	0.920	0.535	0.280	3.203
40.5	53.5	0.226	3.79	6.706	0.574	0.565	6.227	0.385	1.206	0.820	0.255	0.923	0.538	0.283	3.217
41.5	54.1	0.232	3.89	6.713	0.580	0.571	6.227	0.385	1.211	0.826	0.255	0.926	0.541	0.285	3.235
42.6	54.5	0.238	3.99	6.720	0.584	0.575	6.226	0.384	1.215	0.831	0.256	0.928	0.544	0.287	3.241
43.7	55.0	0.243	4.08	6.726	0.589	0.579	6.226	0.384	1.219	0.835	0.257	0.930	0.546	0.289	3.255
44.7	55.5	0.249	4.18	6.733	0.593	0.583	6.225	0.383	1.223	0.840	0.257	0.931	0.548	0.292	3.272
45.8	56.0	0.255	4.28	6.740	0.598	0.588	6.224	0.382	1.228	0.845	0.257	0.934	0.551	0.294	3.287
46.9	56.6	0.262	4.39	6.748	0.604	0.593	6.224	0.382	1.233	0.851	0.257	0.936	0.554	0.297	3.306
47.9	57.1	0.267	4.48	6.754	0.609	0.598	6.224	0.382	1.238	0.856	0.258	0.939	0.557	0.299	3.315
49.0	57.6	0.274	4.59	6.762	0.613	0.602	6.223	0.381	1.242	0.861	0.259	0.941	0.560	0.301	3.326
50.1	58.2	0.279	4.69	6.769	0.619	0.608	6.222	0.380	1.248	0.868	0.260	0.944	0.564	0.304	3.339
51.2	58.7	0.285	4.78	6.776	0.624	0.612	6.221	0.379	1.252	0.873	0.261	0.946	0.567	0.306	3.348
52.2	59.2	0.291	4.89	6.783	0.629	0.617	6.220	0.378	1.256	0.878	0.261	0.948	0.569	0.308	3.364
53.3	59.6	0.297	4.99	6.790	0.632	0.620	6.219	0.377	1.260	0.882	0.262	0.949	0.572	0.310	3.368
56.0	60.9	0.312	5.24	6.808	0.644	0.631	6.216	0.375	1.271	0.896	0.265	0.955	0.580	0.316	3.385
58.6	62.1	0.327	5.49	6.826	0.655	0.641	6.215	0.373	1.281	0.908	0.267	0.960	0.587	0.321	3.404
61.3	63.5	0.342	5.73	6.844	0.668	0.654	6.212	0.371	1.294	0.924	0.269	0.967	0.597	0.327	3.428
64.0	64.8	0.356	5.98	6.862	0.680	0.666	6.210	0.368	1.306	0.938	0.272	0.973	0.605	0.333	3.444
66.7	65.9	0.372	6.24	6.881	0.689	0.674	6.207	0.365	1.313	0.948	0.274	0.976	0.611	0.337	3.458
69.3	67.4	0.387	6.49	6.899	0.703	0.688	6.203	0.361	1.327	0.965	0.278	0.983	0.622	0.344	3.477
72.0	68.4	0.402	6.74	6.918	0.712	0.695	6.200	0.358	1.334	0.976	0.281	0.986	0.629	0.348	3.475
74.7	69.7	0.416	6.99	6.936	0.723	0.706	6.196	0.354	1.345	0.992	0.285	0.992	0.638	0.353	3.478
77.3	70.7	0.432	7.24	6.955	0.732	0.714	6.192	0.350	1.353	1.003	0.289	0.996	0.646	0.357	3.472
80.0	72.0	0.446	7.49	6.974	0.743	0.725	6.188	0.346	1.363	1.017	0.292	1.001	0.655	0.362	3.479
82.7	73.1	0.461	7.74	6.993	0.753	0.734	6.184	0.342	1.373	1.031	0.297	1.006	0.664	0.367	3.469
85.4	74.4	0.476	7.99	7.012	0.764	0.744	6.180	0.338	1.383	1.045	0.300	1.010	0.672	0.372	3.479
88.0	75.6	0.491	8.24	7.031	0.774	0.754	6.176	0.334	1.393	1.059	0.305	1.016	0.682	0.377	3.474
90.7	76.6	0.506	8.50	7.051	0.782	0.761	6.171	0.329	1.400	1.071	0.309	1.019	0.690	0.381	3.462
93.4	78.0	0.521	8.74	7.069	0.794	0.773	6.167	0.325	1.411	1.086	0.313	1.025	0.700	0.386	3.468
96.0	78.8	0.536	9.00	7.090	0.800	0.778	6.164	0.322	1.417	1.096	0.317	1.028	0.706	0.389	3.454
98.7	80.2	0.550	9.23	7.108	0.812	0.790	6.160	0.318	1.429	1.111	0.321	1.034	0.716	0.395	3.463
101.4	81.2	0.566	9.50	7.129	0.820	0.797	6.156	0.314	1.436	1.122	0.325	1.037	0.723	0.398	3.452
104.1	82.3	0.580	9.74	7.147	0.829	0.806	6.151	0.309	1.444	1.135	0.330	1.042	0.732	0.403	3.444
106.7	83.5	0.596	10.00	7.168	0.838	0.814	6.147	0.305	1.453	1.148	0.333	1.045	0.740	0.407	3.443
109.4	84.4	0.611	10.25	7.188	0.846	0.821	6.142	0.300	1.459	1.159	0.338	1.048	0.748	0.410	3.431
112.1	85.6	0.626	10.50	7.209	0.855	0.830	6.138	0.296	1.468	1.172	0.342	1.053	0.757	0.415	3.426
114.8	86.8	0.640	10.74	7.228	0.864	0.838	6.133	0.291	1.476	1.185	0.347	1.057	0.766	0.419	3.419
117.4	87.9	0.655	11.00	7.249	0.873	0.846	6.128	0.286	1.484	1.198	0.352	1.061	0.775	0.423	3.406
120.1	88.7	0.670	11.25	7.269	0.879	0.852	6.124	0.282	1.490	1.208	0.356	1.064	0.782	0.426	3.393
122.8	89.7	0.685	11.50	7.290	0.886	0.858	6.119	0.277	1.496	1.219	0.361	1.067	0.790	0.429	3.375
125.4	91.1	0.700	11.75	7.311	0.897	0.869	6.114	0.272	1.507	1.235	0.366	1.072	0.800	0.435	3.375
128.1	91.8	0.715	12.00	7.331	0.902	0.873	6.109	0.267	1.510	1.243	0.370	1.074	0.807	0.436	3.357

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
130.8	92.8	0.730	12.25	7.353	0.909	0.879	6.105	0.263	1.517	1.254	0.375	1.077	0.814	0.440	3.347
133.5	93.8	0.745	12.50	7.374	0.916	0.886	6.100	0.258	1.523	1.265	0.379	1.080	0.822	0.443	3.338
136.1	94.8	0.760	12.75	7.395	0.923	0.893	6.096	0.254	1.530	1.276	0.383	1.084	0.830	0.446	3.328
138.8	95.8	0.775	13.01	7.416	0.930	0.899	6.091	0.249	1.536	1.287	0.388	1.087	0.838	0.450	3.315
141.5	96.8	0.790	13.25	7.437	0.937	0.905	6.086	0.244	1.542	1.298	0.393	1.089	0.845	0.452	3.302
144.2	97.9	0.805	13.51	7.460	0.945	0.912	6.081	0.239	1.549	1.310	0.398	1.093	0.854	0.456	3.293
146.8	98.6	0.819	13.75	7.480	0.949	0.916	6.077	0.235	1.552	1.318	0.402	1.095	0.860	0.458	3.276
149.5	99.9	0.835	14.01	7.503	0.959	0.925	6.072	0.230	1.562	1.332	0.407	1.099	0.869	0.463	3.275
152.2	100.7	0.849	14.25	7.524	0.964	0.930	6.067	0.225	1.566	1.341	0.411	1.102	0.876	0.465	3.259
154.8	101.7	0.865	14.51	7.547	0.970	0.935	6.063	0.221	1.572	1.351	0.416	1.104	0.884	0.468	3.247
157.5	103.1	0.880	14.76	7.569	0.981	0.945	6.058	0.216	1.581	1.366	0.420	1.109	0.893	0.473	3.249
160.2	103.5	0.895	15.02	7.592	0.982	0.946	6.053	0.211	1.582	1.371	0.426	1.109	0.898	0.473	3.222
162.9	104.3	0.910	15.27	7.614	0.986	0.949	6.049	0.207	1.585	1.379	0.430	1.111	0.904	0.475	3.209
165.5	105.6	0.925	15.52	7.636	0.996	0.958	6.045	0.203	1.595	1.392	0.434	1.116	0.913	0.479	3.209
168.2	106.7	0.940	15.77	7.660	1.003	0.965	6.041	0.199	1.601	1.402	0.437	1.119	0.920	0.482	3.205
170.9	107.4	0.954	16.01	7.681	1.006	0.968	6.036	0.194	1.604	1.410	0.442	1.120	0.926	0.484	3.189
173.5	107.9	0.970	16.27	7.706	1.008	0.969	6.032	0.190	1.605	1.415	0.446	1.121	0.930	0.484	3.172
176.2	109.0	0.984	16.51	7.728	1.015	0.975	6.027	0.185	1.611	1.425	0.450	1.123	0.938	0.488	3.167
178.9	109.8	0.999	16.77	7.751	1.020	0.980	6.023	0.181	1.615	1.435	0.455	1.125	0.945	0.490	3.154
181.4	110.2	1.013	17.00	7.773	1.021	0.980	6.014	0.172	1.616	1.443	0.463	1.125	0.953	0.490	3.116

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.72, 5.0'-10.0'	Lab ID	433
Description	Lean Clay (CL), brown	Test ID	433-C
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	02/08/2021
		Date Tested	04/08/2021

Specific Gravity	2.75
	ASTM D 854, Dry
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.596
Time to 50% Consolidation (min)	32.00
Actual Axial Strain Rate of Test (%/min)	0.009

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	135.6
Moisture Content (%)	17.8
Dry Unit Weight (pcf)	115.1
Void Ratio	0.488
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

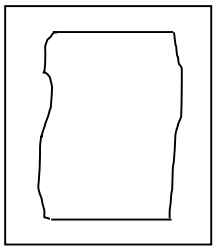
Axial Strain (%)	5.699
Deviator Stress (tsf)	2.741
Induced Pore Pressure (tsf)	0.462
Minor Effective Stress, σ_3' (tsf)	1.124
Major Effective Stress, σ_1' (tsf)	3.865
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.439
p' (tsf)	2.494
q (tsf)	1.371

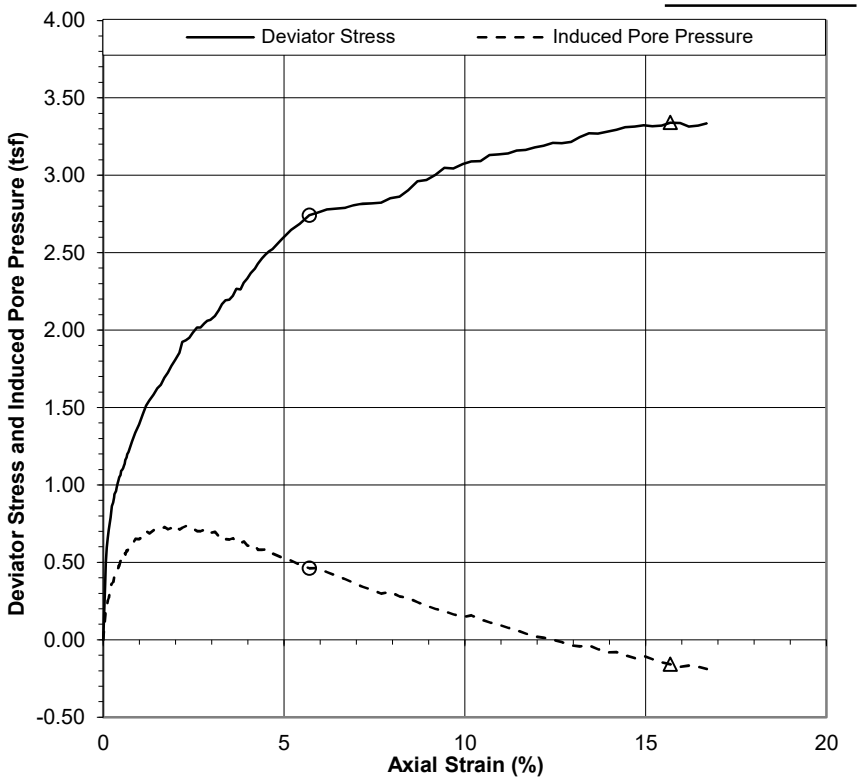
At Consolidated Undrained Failure

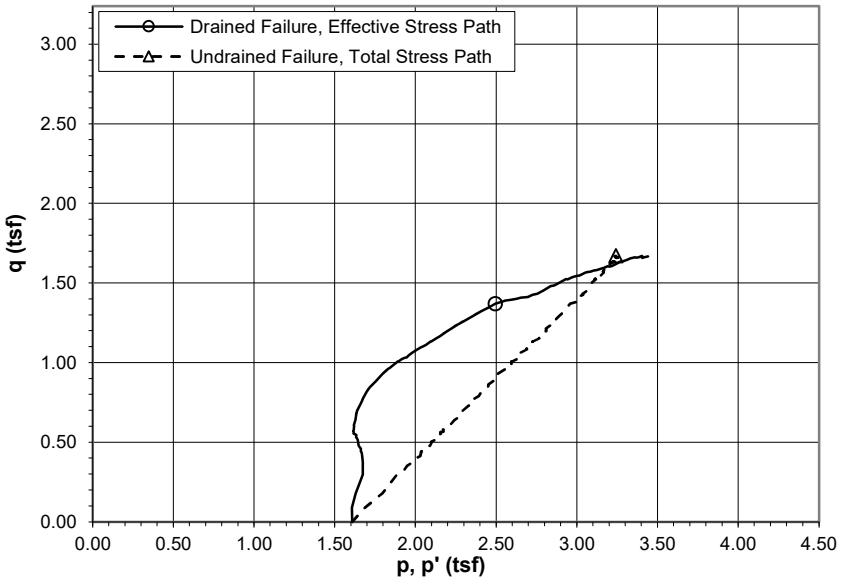
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.680
Deviator Stress (tsf)	3.341
Minor Principal Stress, σ_3 (tsf)	1.573
Major Principal Stress, σ_1 (tsf)	4.913
p (tsf)	3.243
q (tsf)	1.670

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 04/13/2021

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek
Source: B-3.72, 5.0'-10.0'
Description: Lean Clay (CL), brown

Project No.: 173409690
Lab ID: 433
Test ID: 433-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.668	Height (in)	5.619
Diameter (in)	2.898	Calculated Diameter (in)	2.857
Area (in^2)	6.596	Calculated Area (in^2)	6.411
Moist Weight (lb)	2.824	Moist Weight (lb)	2.827
Moist Unit Weight (pcf)	130.5	Moist Unit Weight (pcf)	135.6
Moisture Content (%)	17.7	Moisture Content (%)	17.8
Dry Weight (lb)	2.401	Dry Weight (lb)	2.401
Dry Unit Weight (pcf)	111.0	Dry Unit Weight (pcf)	115.1
Void Ratio	0.545	Void Ratio	0.488
Degree of Saturation (%)	89.2	Degree of Saturation (%)	100.0

Specific Gravity: 2.75
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 1.608

Effective Consolidation Stress
σ_3' (tsf): 1.608

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

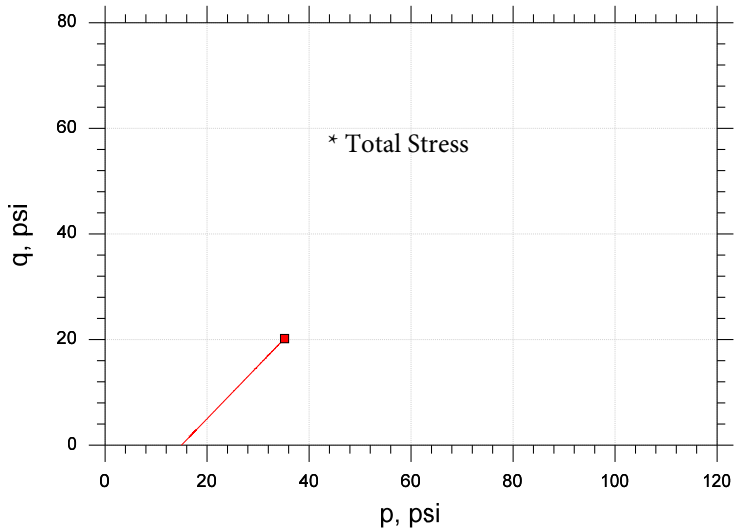
Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.411	0.000	0.000	4.854	0.000	1.608	1.608	1.608	1.608	1.608	0.000	1.000
2.7	15.8	0.001	0.02	6.413	0.177	0.177	4.933	0.079	1.774	1.694	1.518	1.685	1.606	0.088	1.116
5.4	31.9	0.003	0.05	6.415	0.358	0.358	5.019	0.165	1.973	1.808	1.451	1.794	1.630	0.179	1.247
8.1	44.2	0.004	0.07	6.416	0.496	0.496	5.045	0.191	2.096	1.904	1.408	1.848	1.656	0.248	1.352
10.7	53.0	0.006	0.10	6.418	0.595	0.595	5.065	0.211	2.182	1.971	1.377	1.885	1.674	0.297	1.432
13.4	58.4	0.007	0.13	6.420	0.655	0.655	5.111	0.257	2.259	2.002	1.347	1.931	1.675	0.328	1.486
16.1	63.0	0.009	0.16	6.422	0.706	0.706	5.126	0.272	2.300	2.028	1.322	1.947	1.675	0.353	1.534
18.8	66.8	0.010	0.18	6.423	0.749	0.749	5.162	0.308	2.356	2.049	1.300	1.982	1.674	0.374	1.576
21.5	70.4	0.011	0.20	6.425	0.789	0.789	5.172	0.318	2.385	2.067	1.278	1.991	1.672	0.394	1.617
24.1	73.7	0.012	0.22	6.426	0.826	0.826	5.212	0.358	2.442	2.084	1.258	2.029	1.671	0.413	1.656
26.8	77.1	0.013	0.24	6.427	0.864	0.863	5.218	0.364	2.465	2.100	1.237	2.033	1.668	0.432	1.698
29.5	79.2	0.016	0.28	6.429	0.887	0.887	5.227	0.373	2.479	2.106	1.220	2.036	1.663	0.443	1.727
32.2	82.2	0.017	0.30	6.431	0.921	0.920	5.262	0.408	2.530	2.121	1.201	2.070	1.661	0.460	1.766
34.9	84.1	0.018	0.32	6.432	0.941	0.940	5.268	0.414	2.538	2.125	1.184	2.068	1.654	0.470	1.794
37.5	85.9	0.020	0.35	6.434	0.961	0.960	5.296	0.442	2.572	2.129	1.169	2.091	1.649	0.480	1.822
40.2	88.0	0.021	0.37	6.436	0.985	0.984	5.304	0.450	2.589	2.139	1.155	2.097	1.647	0.492	1.852
42.9	90.3	0.022	0.40	6.437	1.010	1.009	5.308	0.454	2.603	2.150	1.140	2.098	1.645	0.505	1.885
45.6	92.5	0.024	0.43	6.439	1.034	1.033	5.333	0.479	2.639	2.160	1.127	2.122	1.643	0.516	1.917
48.3	93.9	0.025	0.45	6.440	1.050	1.048	5.334	0.480	2.642	2.163	1.114	2.118	1.638	0.524	1.941
50.9	95.3	0.027	0.48	6.442	1.065	1.063	5.364	0.510	2.675	2.165	1.101	2.143	1.633	0.532	1.965
53.6	97.8	0.028	0.50	6.443	1.093	1.091	5.363	0.509	2.689	2.180	1.088	2.143	1.634	0.546	2.003
56.3	98.4	0.029	0.52	6.445	1.099	1.098	5.378	0.524	2.698	2.175	1.077	2.149	1.626	0.549	2.020
59.0	99.3	0.031	0.55	6.447	1.108	1.107	5.392	0.538	2.709	2.170	1.063	2.155	1.617	0.554	2.041
61.7	101.0	0.032	0.58	6.449	1.127	1.126	5.389	0.535	2.717	2.182	1.056	2.154	1.619	0.563	2.066
64.3	101.9	0.033	0.59	6.450	1.138	1.136	5.413	0.559	2.742	2.183	1.047	2.174	1.615	0.568	2.085
67.0	104.1	0.035	0.62	6.451	1.162	1.160	5.406	0.552	2.750	2.199	1.038	2.170	1.618	0.580	2.118
69.7	105.6	0.036	0.65	6.453	1.178	1.177	5.432	0.578	2.784	2.206	1.029	2.196	1.618	0.588	2.143
72.4	107.5	0.037	0.66	6.454	1.200	1.198	5.428	0.574	2.794	2.220	1.022	2.195	1.621	0.599	2.172
75.1	108.8	0.039	0.70	6.456	1.214	1.212	5.446	0.592	2.817	2.225	1.013	2.211	1.619	0.606	2.197
85.8	115.2	0.045	0.80	6.463	1.283	1.281	5.467	0.613	2.881	2.268	0.987	2.241	1.628	0.641	2.298
96.5	120.3	0.050	0.89	6.469	1.339	1.337	5.506	0.652	2.952	2.300	0.964	2.284	1.632	0.668	2.387
107.2	125.3	0.056	0.99	6.476	1.393	1.391	5.504	0.650	2.985	2.334	0.943	2.289	1.639	0.696	2.475
117.9	131.6	0.062	1.10	6.482	1.461	1.459	5.525	0.671	3.055	2.384	0.925	2.326	1.655	0.729	2.577
128.7	136.5	0.067	1.18	6.488	1.515	1.512	5.555	0.701	3.125	2.423	0.911	2.369	1.667	0.756	2.659
139.4	139.7	0.072	1.28	6.495	1.549	1.546	5.542	0.688	3.135	2.448	0.902	2.363	1.675	0.773	2.714
150.1	143.1	0.078	1.39	6.502	1.585	1.582	5.562	0.708	3.182	2.474	0.893	2.392	1.684	0.791	2.772
160.8	147.2	0.084	1.50	6.509	1.628	1.624	5.564	0.710	3.218	2.508	0.884	2.406	1.696	0.812	2.838
171.5	149.4	0.090	1.60	6.516	1.651	1.647	5.567	0.713	3.238	2.525	0.878	2.414	1.701	0.824	2.877
182.2	153.7	0.095	1.69	6.522	1.697	1.692	5.583	0.730	3.296	2.566	0.874	2.450	1.720	0.846	2.937

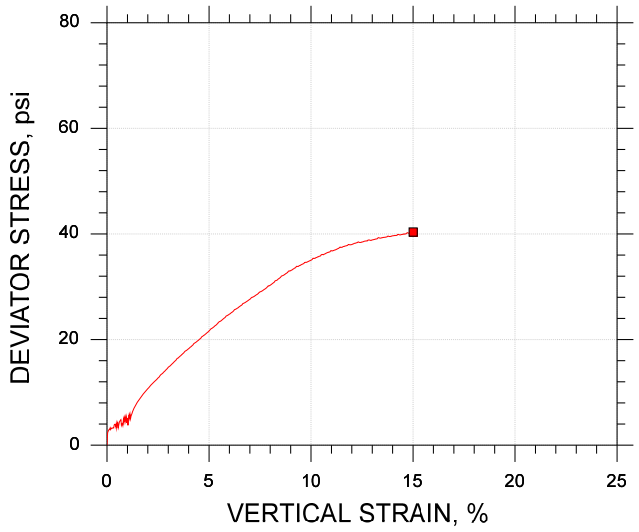
Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
192.9	156.8	0.100	1.79	6.528	1.730	1.726	5.569	0.715	3.314	2.598	0.873	2.451	1.736	0.863	2.977
203.7	160.9	0.106	1.88	6.535	1.773	1.768	5.577	0.723	3.363	2.640	0.872	2.479	1.756	0.884	3.028
214.4	164.8	0.112	1.99	6.542	1.814	1.809	5.593	0.740	3.418	2.678	0.870	2.513	1.774	0.904	3.080
225.1	169.1	0.118	2.10	6.549	1.859	1.854	5.567	0.713	3.435	2.721	0.868	2.508	1.795	0.927	3.137
235.8	175.6	0.123	2.19	6.555	1.929	1.924	5.580	0.726	3.520	2.794	0.870	2.558	1.832	0.962	3.211
246.5	176.7	0.129	2.29	6.562	1.939	1.933	5.590	0.736	3.543	2.807	0.874	2.576	1.840	0.967	3.212
257.2	178.5	0.134	2.38	6.568	1.956	1.951	5.573	0.719	3.547	2.828	0.877	2.571	1.852	0.975	3.224
268.0	181.6	0.139	2.48	6.575	1.989	1.983	5.575	0.721	3.585	2.864	0.882	2.594	1.873	0.991	3.249
278.7	184.9	0.146	2.60	6.582	2.022	2.016	5.556	0.702	3.602	2.900	0.884	2.594	1.892	1.008	3.281
289.4	185.2	0.151	2.70	6.589	2.024	2.017	5.556	0.702	3.607	2.905	0.887	2.598	1.896	1.009	3.274
300.1	187.8	0.157	2.80	6.596	2.050	2.043	5.567	0.713	3.650	2.937	0.894	2.629	1.915	1.022	3.286
310.8	189.4	0.162	2.88	6.602	2.066	2.059	5.546	0.692	3.655	2.963	0.904	2.626	1.934	1.030	3.277
321.5	190.2	0.167	2.97	6.608	2.073	2.066	5.546	0.692	3.670	2.978	0.912	2.637	1.945	1.033	3.265
332.2	192.7	0.174	3.09	6.616	2.098	2.090	5.551	0.697	3.702	3.005	0.914	2.657	1.960	1.045	3.286
343.0	196.5	0.180	3.20	6.623	2.136	2.129	5.521	0.667	3.716	3.048	0.920	2.651	1.984	1.064	3.315
353.7	200.3	0.185	3.29	6.629	2.175	2.168	5.529	0.675	3.774	3.100	0.932	2.691	2.016	1.084	3.325
364.4	202.9	0.190	3.38	6.636	2.201	2.193	5.504	0.650	3.782	3.132	0.940	2.686	2.036	1.096	3.334
375.1	203.5	0.196	3.49	6.644	2.206	2.197	5.502	0.648	3.787	3.140	0.942	2.689	2.041	1.099	3.332
385.8	205.9	0.201	3.59	6.650	2.229	2.221	5.510	0.656	3.830	3.175	0.954	2.720	2.064	1.110	3.328
396.6	210.3	0.207	3.68	6.657	2.275	2.266	5.485	0.631	3.859	3.228	0.962	2.726	2.095	1.133	3.355
407.3	210.3	0.213	3.79	6.664	2.272	2.263	5.480	0.626	3.856	3.230	0.966	2.724	2.098	1.132	3.342
418.0	214.6	0.219	3.89	6.671	2.316	2.306	5.490	0.636	3.920	3.283	0.977	2.766	2.130	1.153	3.361
428.7	217.3	0.224	3.99	6.678	2.343	2.334	5.464	0.610	3.931	3.321	0.987	2.764	2.154	1.167	3.364
439.4	220.8	0.230	4.09	6.685	2.378	2.368	5.458	0.605	3.965	3.361	0.993	2.781	2.177	1.184	3.385
450.1	223.8	0.236	4.20	6.692	2.407	2.397	5.466	0.612	4.009	3.397	1.000	2.810	2.199	1.199	3.397
460.8	226.8	0.240	4.28	6.698	2.438	2.428	5.437	0.583	4.022	3.439	1.011	2.808	2.225	1.214	3.402
471.5	230.3	0.247	4.39	6.706	2.473	2.462	5.436	0.582	4.061	3.479	1.017	2.830	2.248	1.231	3.421
482.3	232.9	0.252	4.49	6.713	2.498	2.487	5.439	0.585	4.100	3.515	1.027	2.856	2.271	1.244	3.421
493.0	235.1	0.258	4.59	6.720	2.519	2.508	5.414	0.560	4.104	3.543	1.035	2.849	2.289	1.254	3.423
503.7	236.7	0.263	4.69	6.727	2.534	2.522	5.411	0.557	4.122	3.564	1.042	2.861	2.303	1.261	3.420
530.5	243.3	0.277	4.93	6.744	2.598	2.586	5.386	0.532	4.183	3.651	1.066	2.890	2.359	1.293	3.426
557.3	249.8	0.292	5.19	6.763	2.660	2.647	5.366	0.512	4.245	3.733	1.086	2.921	2.409	1.324	3.438
584.1	254.3	0.305	5.44	6.780	2.700	2.687	5.339	0.485	4.279	3.794	1.107	2.936	2.450	1.344	3.428
610.8	260.2	0.320	5.70	6.799	2.755	2.741	5.316	0.462	4.327	3.865	1.124	2.956	2.494	1.371	3.439
637.6	262.5	0.333	5.93	6.816	2.773	2.758	5.318	0.464	4.372	3.908	1.149	2.993	2.529	1.379	3.400
664.4	265.3	0.347	6.18	6.834	2.795	2.780	5.291	0.437	4.385	3.948	1.168	2.995	2.558	1.390	3.380
718.0	267.8	0.376	6.69	6.871	2.806	2.790	5.246	0.392	4.389	3.997	1.207	2.994	2.602	1.395	3.312
744.8	270.0	0.390	6.94	6.889	2.822	2.805	5.221	0.367	4.402	4.035	1.230	2.999	2.633	1.403	3.280
771.6	271.9	0.403	7.18	6.907	2.834	2.817	5.197	0.343	4.406	4.063	1.246	2.998	2.655	1.408	3.260
798.4	272.8	0.418	7.43	6.926	2.836	2.818	5.177	0.323	4.409	4.087	1.269	3.000	2.678	1.409	3.221
825.2	274.1	0.432	7.68	6.945	2.842	2.823	5.152	0.298	4.408	4.110	1.286	2.996	2.698	1.412	3.195
851.9	277.7	0.446	7.94	6.964	2.871	2.851	5.164	0.310	4.464	4.154	1.302	3.038	2.728	1.426	3.190
878.7	279.6	0.460	8.20	6.984	2.882	2.863	5.135	0.281	4.466	4.185	1.323	3.035	2.754	1.431	3.164
905.5	284.4	0.474	8.43	7.002	2.924	2.904	5.124	0.270	4.514	4.244	1.340	3.062	2.792	1.452	3.167
932.3	290.8	0.488	8.69	7.022	2.982	2.961	5.098	0.244	4.563	4.319	1.358	3.082	2.838	1.480	3.180
959.1	292.5	0.502	8.94	7.041	2.991	2.969	5.075	0.221	4.566	4.345	1.376	3.081	2.861	1.485	3.157
985.9	296.6	0.516	9.18	7.060	3.025	3.003	5.054	0.200	4.594	4.395	1.392	3.093	2.893	1.502	3.158
1012.7	302.0	0.530	9.43	7.079	3.071	3.048	5.039	0.185	4.641	4.456	1.408	3.117	2.932	1.524	3.165
1039.5	302.4	0.544	9.68	7.099	3.068	3.044	5.019	0.165	4.630	4.465	1.421	3.108	2.943	1.522	3.143
1066.3	306.1	0.559	9.95	7.120	3.096	3.072	5.002	0.148	4.656	4.509	1.437	3.120	2.973	1.536	3.138
1093.0	308.7	0.572	10.18	7.138	3.114	3.089	5.012	0.158	4.703	4.545	1.456	3.159	3.001	1.545	3.122
1119.8	309.9	0.586	10.44	7.159	3.117	3.092	4.986	0.132	4.694	4.562	1.470	3.148	3.016	1.546	3.103
1146.6	314.7	0.600	10.68	7.178	3.157	3.131	4.967	0.113	4.730	4.617	1.486	3.165	3.052	1.565	3.107
1173.4	316.1	0.614	10.93	7.198	3.162	3.135	4.952	0.098	4.733	4.635	1.499	3.165	3.067	1.568	3.092
1200.2	317.6	0.629	11.19	7.219	3.168	3.141	4.931	0.078	4.732	4.654	1.513	3.161	3.084	1.570	3.075
1227.0	320.4	0.642	11.43	7.239	3.187	3.159	4.914	0.061	4.747	4.687	1.528	3.168	3.107	1.580	3.068
1253.8	321.8	0.656	11.68	7.260	3.191	3.163	4.895	0.041	4.746	4.705	1.542	3.165	3.124	1.582	3.051
1280.6	324.4	0.671	11.93	7.280	3.208	3.179	4.876	0.022	4.758	4.736	1.557	3.169	3.147	1.590	3.041
1307.3	326.5	0.684	12.18	7.301	3.220	3.191	4.867	0.013	4.776	4.762	1.571	3.180	3.167	1.595	3.030
1334.1	329.4	0.699	12.43	7.322	3.239	3.209	4.855	0.001	4.797	4.796	1.586	3.192	3.191	1.605	3.023
1360.9	330.2	0.712	12.68	7.342	3.238	3.207	4.840	-0.014	4.792	4.806	1.599	3.188	3.203	1.603	3.005
1387.7	332.0	0.727	12.94	7.364	3.246	3.215	4.819	-0.035	4.791	4.826	1.611	3.183	3.218	1.607	2.996
1414.5	336.2	0.740	13.18	7.385	3.278	3.246	4.812	-0.042	4.832	4.874	1.628	3.209	3.251	1.623	2.993
1441.3	339.8	0.755	13.44	7.407	3.303	3.270	4.818	-0.036	4.869	4.905	1.635	3.234	3.270	1.635	3.000
1468.0	340.6	0.769	13.69	7.428	3.302	3.269	4.794	-0.060	4.857	4.916	1.647	3.222	3.282	1.634	2.984
1494.8	343.1	0.783	13.94	7.450	3.316	3.282	4.773	-0.080	4.860	4.940	1.658	3.219	3.299	1.641	2.979
1521.6	345.3	0.798	14.20	7.472	3.327	3.293	4.775	-0.079	4.883	4.963	1.670	3.237	3.316	1.646	2.972
1548.4	348.1	0.811	14.44	7.493	3.345	3.310	4.755	-0.099	4.891	4.990	1.679	3.236	3.334	1.655	2.971
1575.2	349.8	0.826	14.70	7.516	3.351	3.315	4.736	-0.118	4.883	5.001	1.686	3.225	3.344	1.658	2.966

Project: 173409690			Source: B-3.72, 5.0'-10.0'								Lab ID: 433		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
1602.0	351.7	0.840	14.95	7.538	3.359	3.323	4.751	-0.103	4.917	5.020	1.698	3.256	3.359	1.661	2.957
1628.8	352.1	0.854	15.19	7.560	3.354	3.317	4.729	-0.125	4.903	5.028	1.711	3.245	3.370	1.658	2.938
1655.6	353.7	0.868	15.45	7.583	3.358	3.321	4.709	-0.145	4.898	5.043	1.723	3.238	3.383	1.660	2.928
1682.4	356.8	0.881	15.68	7.604	3.379	3.341	4.696	-0.158	4.913	5.072	1.731	3.243	3.401	1.670	2.930
1709.2	357.7	0.896	15.95	7.628	3.376	3.338	4.680	-0.174	4.902	5.075	1.738	3.233	3.407	1.669	2.920
1735.9	356.4	0.910	16.20	7.651	3.354	3.314	4.688	-0.166	4.896	5.061	1.747	3.239	3.404	1.657	2.897
1762.7	358.1	0.925	16.45	7.674	3.360	3.320	4.679	-0.175	4.903	5.078	1.757	3.243	3.418	1.660	2.889
1789.5	360.8	0.938	16.69	7.696	3.376	3.336	4.666	-0.187	4.922	5.109	1.774	3.254	3.442	1.668	2.880

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.2	
Preparation: intact	
Description: Moist, gray sandy clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 40	Plastic Limit: 22
Plasticity Index: 18	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

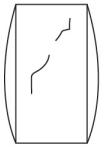




Symbol		■			
Sample ID		ST			
Depth, ft		8.0-8.5 ft			
Test Number		CU-1			
Initial	Height, in	5.850			
	Diameter, in	2.830			
	Moisture Content (from Cuttings), %	14.2			
	Dry Density, pcf	121.			
	Saturation (Wet Method), %	97.2			
	Void Ratio	0.395			
Before Shear	Moisture Content, %	14.0			
	Dry Density, pcf	122.			
	Cross-sectional Area (Method A), in²	6.244			
	Saturation, %	100.0			
	Void Ratio	0.377			
	Back Pressure, psi	79.00			
Vertical Effective Consolidation Stress, psi		14.97			
Horizontal Effective Consolidation Stress, psi		14.98			
Vertical Strain after Consolidation, %		0.5246			
Volumetric Strain after Consolidation, %		1.244			
Time to 50% Consolidation, min		20.25			
Shear Strength, psi		20.18			
Strain at Failure, %		15.0			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		40.36			
Effective Minor Principal Stress at Failure, psi		22.44			
Effective Major Principal Stress at Failure, psi		62.80			
B-Value		0.96			

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

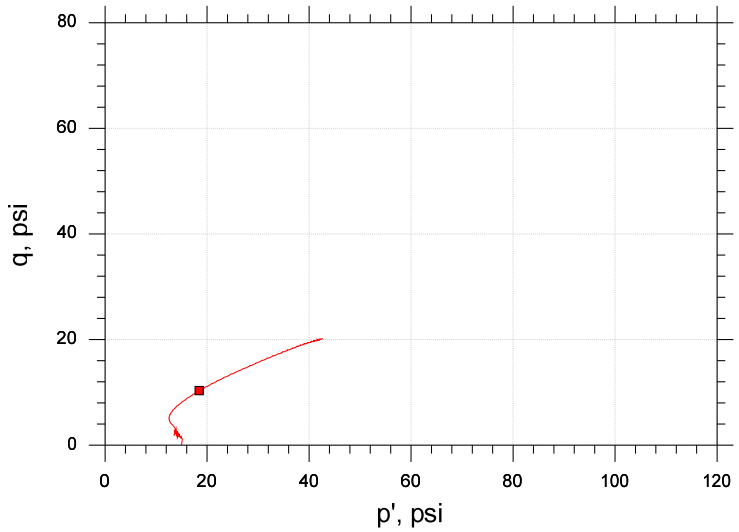
Remarks:

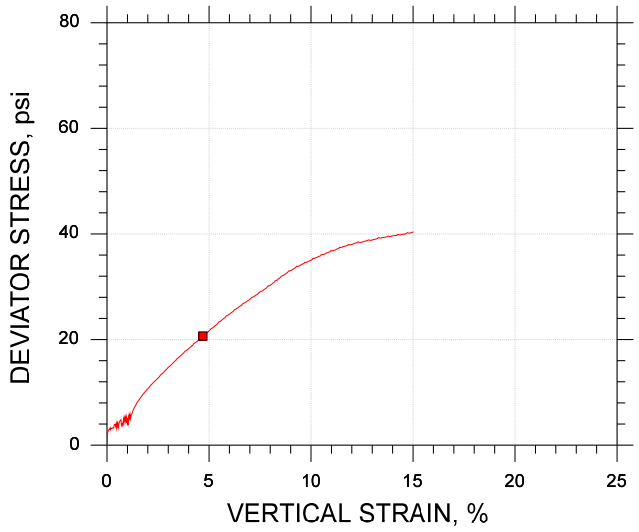


System D

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.2	
Preparation: intact	
Description: Moist, gray sandy clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 40	Plastic Limit: 22
Plasticity Index: 18	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





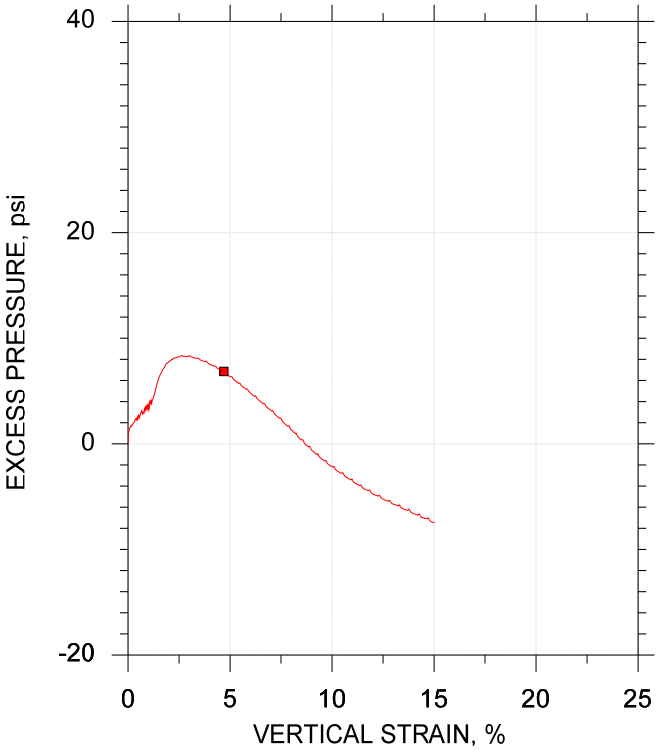
Symbol		■			
Sample ID		ST			
Depth, ft		8.0-8.5 ft			
Test Number		CU-1			
Initial	Height, in	5.850			
	Diameter, in	2.830			
	Moisture Content (from Cuttings), %	14.2			
	Dry Density, pcf	121.			
	Saturation (Wet Method), %	97.2			
	Void Ratio	0.395			
Before Shear	Moisture Content, %	14.0			
	Dry Density, pcf	122.			
	Cross-sectional Area (Method A), in²	6.244			
	Saturation, %	100.0			
	Void Ratio	0.377			
	Back Pressure, psi	79.00			
Vertical Effective Consolidation Stress, psi		14.97			
Horizontal Effective Consolidation Stress, psi		14.98			
Vertical Strain after Consolidation, %		0.5246			
Volumetric Strain after Consolidation, %		1.244			
Time to 50% Consolidation, min		20.25			
Shear Strength, psi		10.33			
Strain at Failure, %		4.70			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		20.67			
Effective Minor Principal Stress at Failure, psi		8.099			
Effective Major Principal Stress at Failure, psi		28.76			
B-Value		0.96			

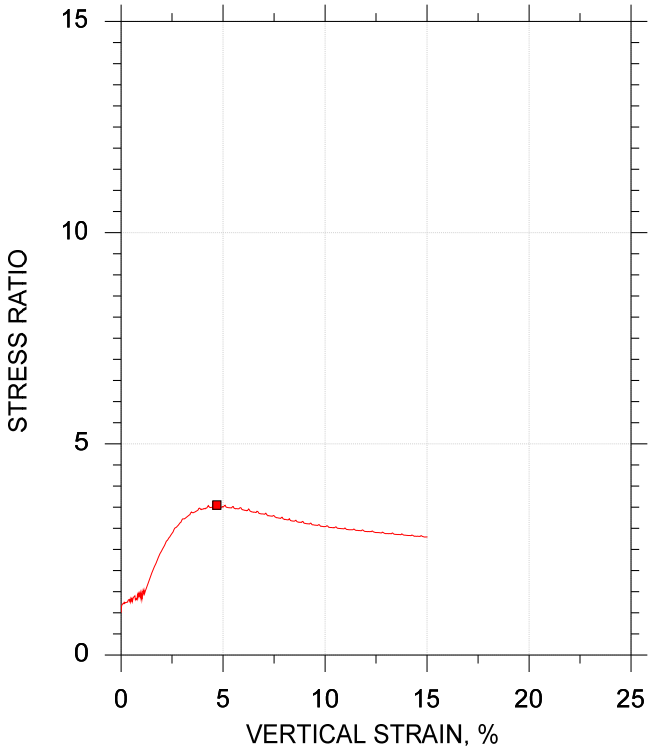
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

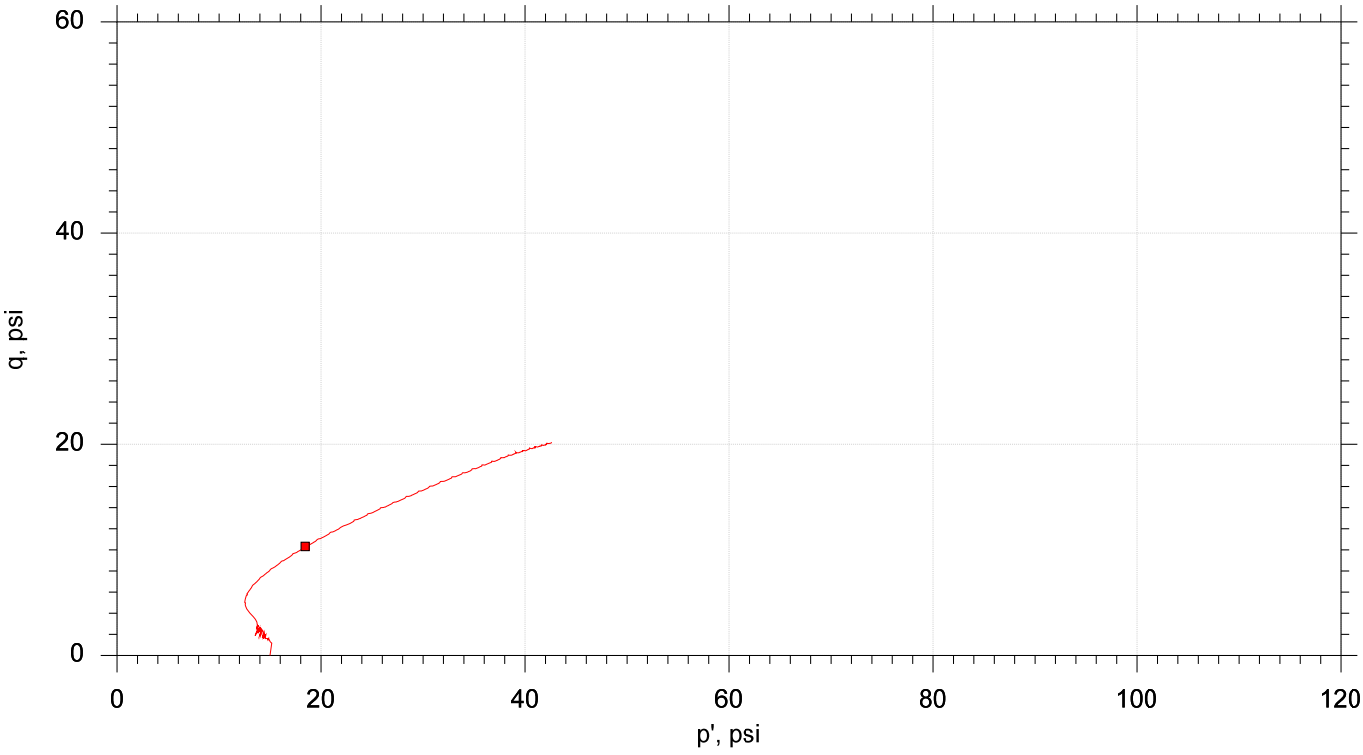
Remarks:

System D

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







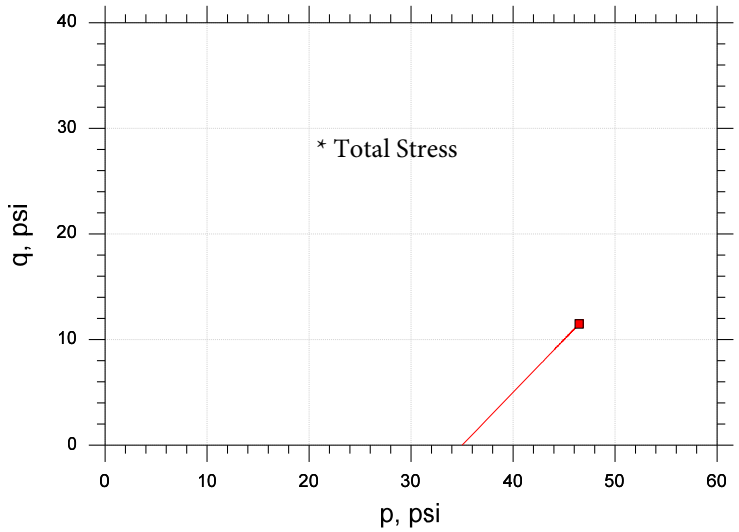
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	ST	CU-1	8.0-8.5 ft	jm	8/16/22	mcm	9/9/22	315844-CU-1m.dat

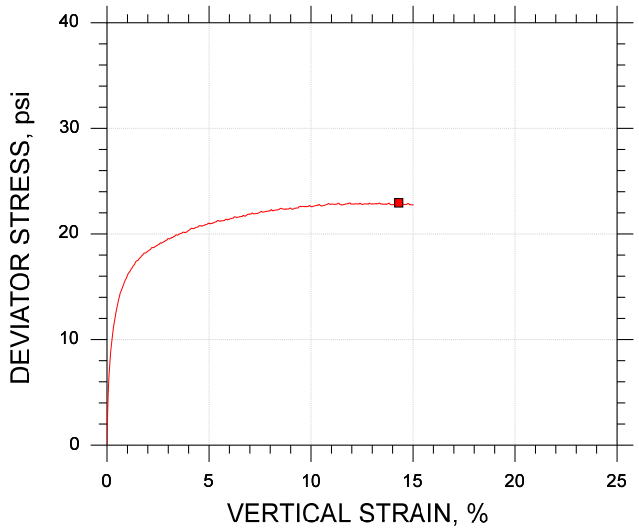
GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Sample Type: intact	
Description: Moist, gray sandy clay		
Remarks: System D		

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.7	
Preparation: intact	
Description: Moist, greenish brown clayey sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 24	Plastic Limit: 16
Plasticity Index: 8	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

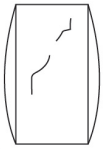




Symbol		■			
Sample ID		ST			
Depth, ft		7.5-8.0 ft			
Test Number		CU-2			
Initial	Height, in	6.180			
	Diameter, in	2.850			
	Moisture Content (from Cuttings), %	30.0			
	Dry Density, pcf	92.3			
	Saturation (Wet Method), %	98.1			
	Void Ratio	0.826			
Before Shear	Moisture Content, %	29.6			
	Dry Density, pcf	93.7			
	Cross-sectional Area (Method A), in²	6.497			
	Saturation, %	100.0			
	Void Ratio	0.799			
	Back Pressure, psi	41.00			
Vertical Effective Consolidation Stress, psi		34.92			
Horizontal Effective Consolidation Stress, psi		35.00			
Vertical Strain after Consolidation, %		2.890			
Volumetric Strain after Consolidation, %		0.3987			
Time to 50% Consolidation, min		0.3600			
Shear Strength, psi		11.47			
Strain at Failure, %		14.3			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		22.94			
Effective Minor Principal Stress at Failure, psi		12.57			
Effective Major Principal Stress at Failure, psi		35.52			
B-Value		0.96			

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Remarks:

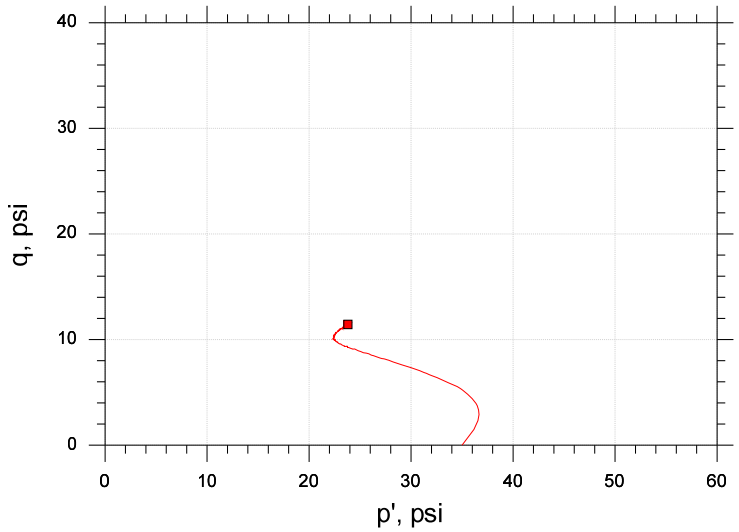


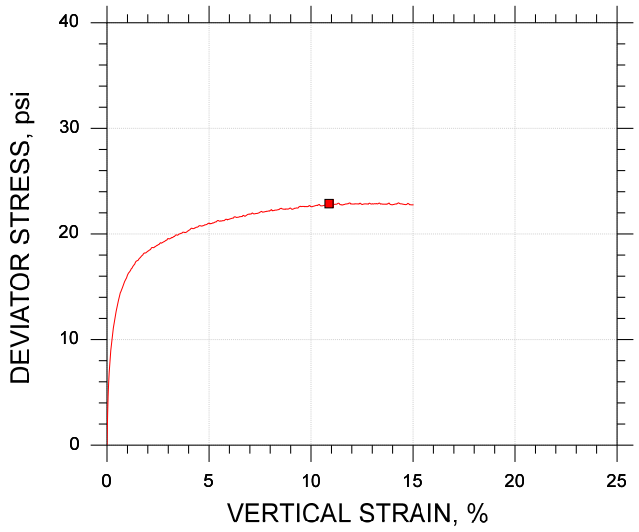
System A

GeoTesting EXPRESS

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.7	
Preparation: intact	
Description: Moist, greenish brown clayey sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 24	Plastic Limit: 16
Plasticity Index: 8	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

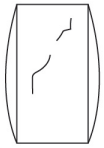




Symbol		■			
Sample ID		ST			
Depth, ft		7.5-8.0 ft			
Test Number		CU-2			
Initial	Height, in	6.180			
	Diameter, in	2.850			
	Moisture Content (from Cuttings), %	30.0			
	Dry Density, pcf	92.3			
	Saturation (Wet Method), %	98.1			
	Void Ratio	0.826			
Before Shear	Moisture Content, %	29.6			
	Dry Density, pcf	93.7			
	Cross-sectional Area (Method A), in²	6.497			
	Saturation, %	100.0			
	Void Ratio	0.799			
	Back Pressure, psi	41.00			
Vertical Effective Consolidation Stress, psi		34.92			
Horizontal Effective Consolidation Stress, psi		35.00			
Vertical Strain after Consolidation, %		2.890			
Volumetric Strain after Consolidation, %		0.3987			
Time to 50% Consolidation, min		0.3600			
Shear Strength, psi		11.43			
Strain at Failure, %		10.9			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		22.86			
Effective Minor Principal Stress at Failure, psi		12.37			
Effective Major Principal Stress at Failure, psi		35.23			
B-Value		0.96			

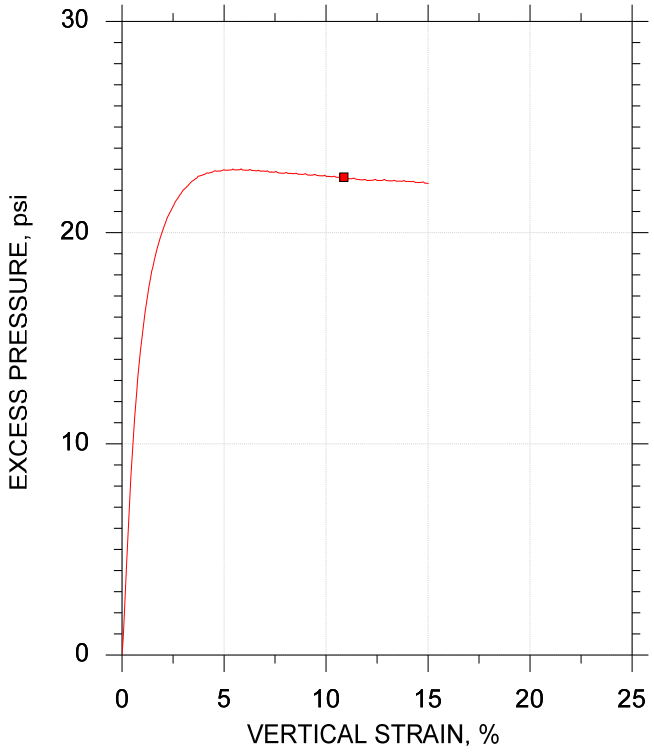
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

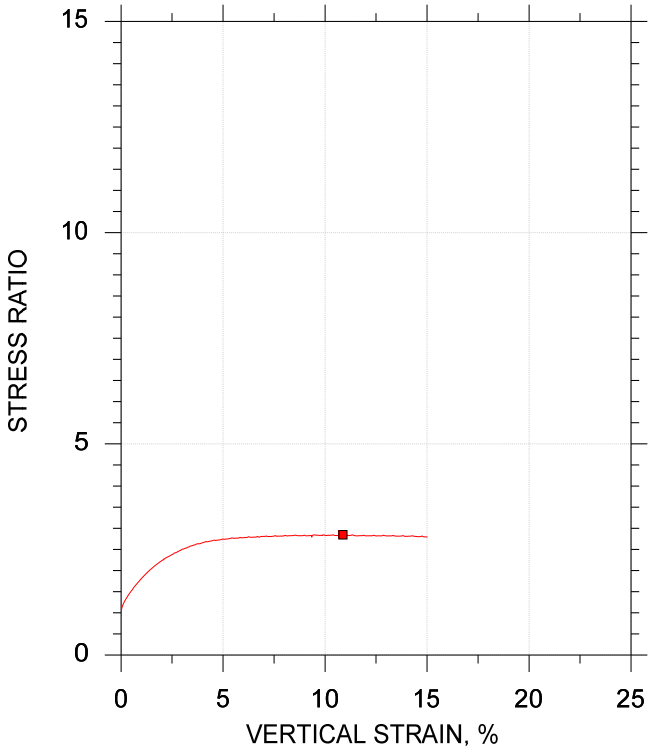
Remarks:

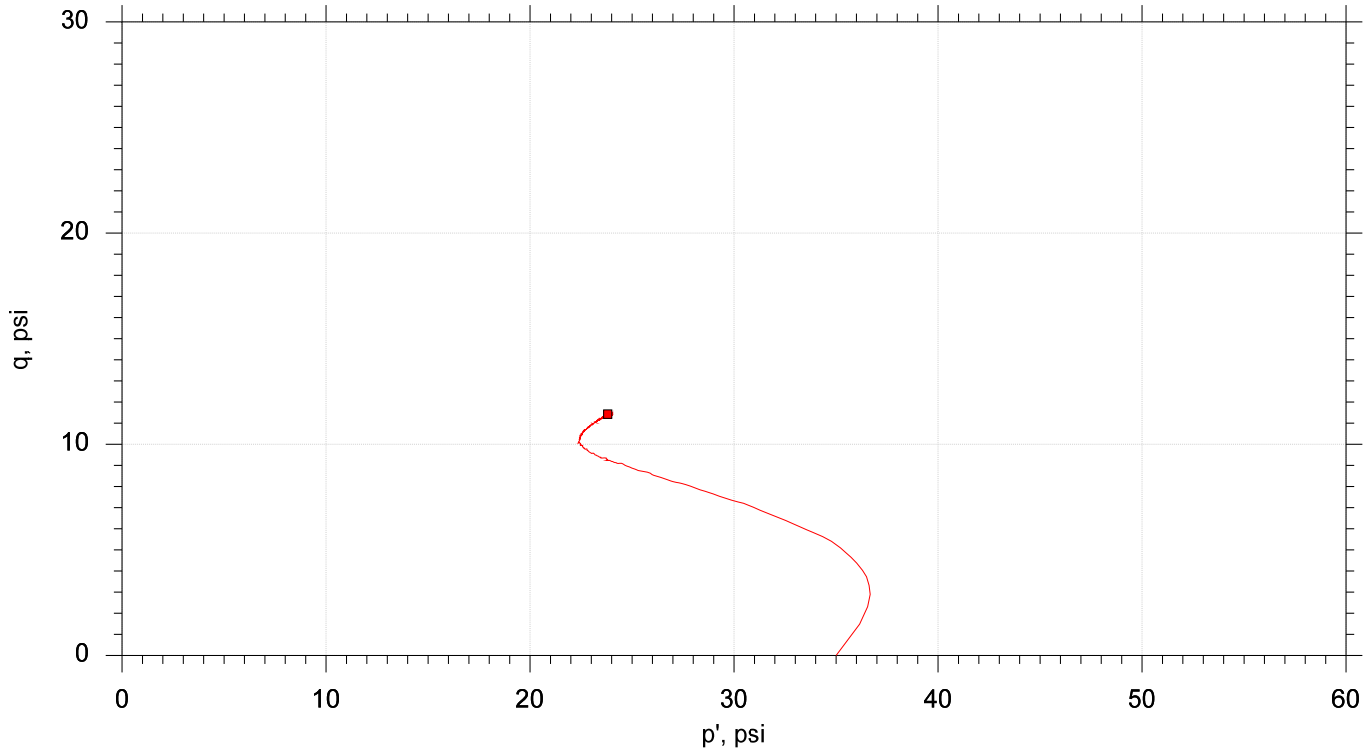


System A

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







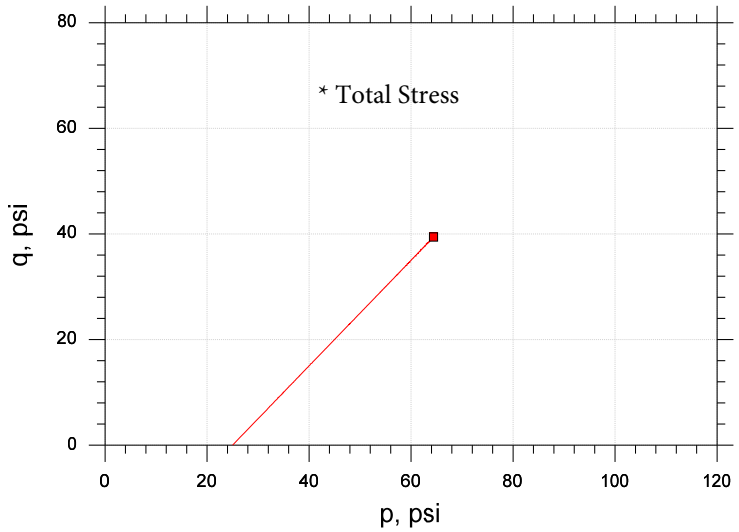
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	ST	CU-2	7.5-8.0 ft	jm	8/16/22	mcm	9/9/22	315844-CU-2m.dat

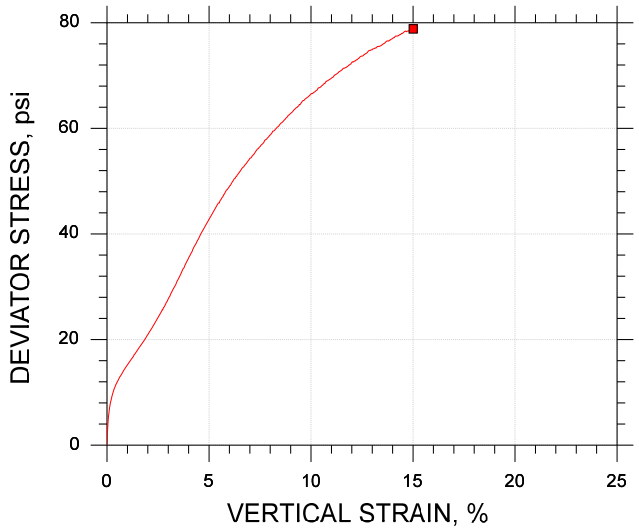
GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.7	Sample Type: intact	
Description: Moist, greenish brown clayey sand		
Remarks: System A		

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.10	
Preparation: intact	
Description: Moist, dark greenish brown clay with sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 24	Plastic Limit: 16
Plasticity Index: 8	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

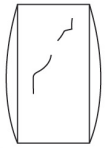




Symbol		■			
Sample ID		ST			
Depth, ft		8.4-8.9 ft			
Test Number		CU-3			
Initial	Height, in	6.070			
	Diameter, in	2.820			
	Moisture Content (from Cuttings), %	14.1			
	Dry Density, pcf	117.			
	Saturation (Wet Method), %	86.1			
	Void Ratio	0.444			
Before Shear	Moisture Content, %	13.7			
	Dry Density, pcf	123.			
	Cross-sectional Area (Method A), in²	6.058			
	Saturation, %	100.0			
	Void Ratio	0.369			
	Back Pressure, psi	115.0			
Vertical Effective Consolidation Stress, psi		24.96			
Horizontal Effective Consolidation Stress, psi		25.00			
Vertical Strain after Consolidation, %		1.498			
Volumetric Strain after Consolidation, %		3.059			
Time to 50% Consolidation, min		51.84			
Shear Strength, psi		39.42			
Strain at Failure, %		15.0			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		78.84			
Effective Minor Principal Stress at Failure, psi		40.63			
Effective Major Principal Stress at Failure, psi		119.5			
B-Value		0.95			

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

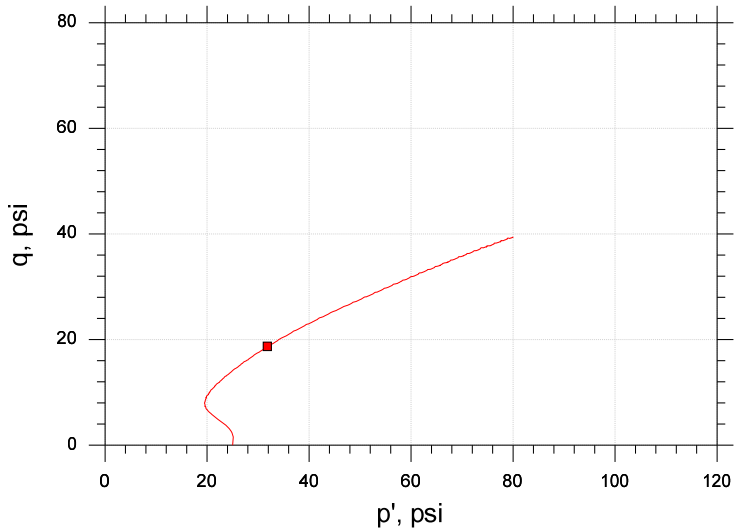
Remarks:

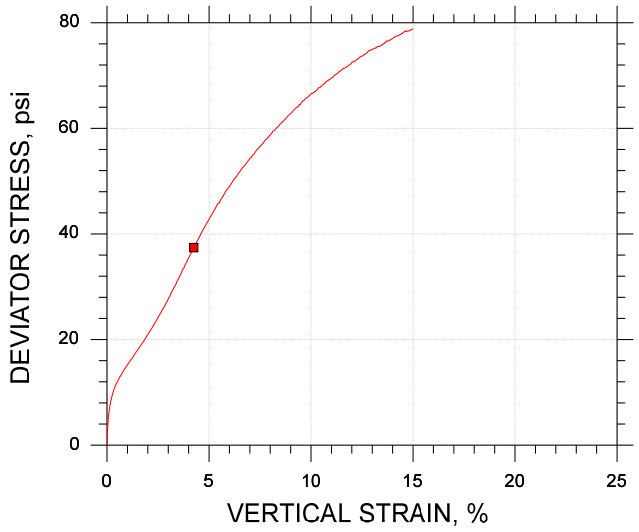


System G

Client: Stantec, Inc.	
Project Name: Eagle Creek Flood Basin	
Project Location: Hancock County	
Project Number: GTX-315844	
Tested By: jm	Checked By: mcm
Boring ID: B-4.10	
Preparation: intact	
Description: Moist, dark greenish brown clay with sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: 24	Plastic Limit: 16
Plasticity Index: 8	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

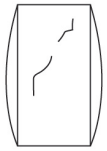




Symbol		■			
Sample ID		ST			
Depth, ft		8.4-8.9 ft			
Test Number		CU-3			
Initial	Height, in	6.070			
	Diameter, in	2.820			
	Moisture Content (from Cuttings), %	14.1			
	Dry Density, pcf	117.			
	Saturation (Wet Method), %	86.1			
	Void Ratio	0.444			
Before Shear	Moisture Content, %	13.7			
	Dry Density, pcf	123.			
	Cross-sectional Area (Method A), in²	6.058			
	Saturation, %	100.0			
	Void Ratio	0.369			
	Back Pressure, psi	115.0			
Vertical Effective Consolidation Stress, psi		24.96			
Horizontal Effective Consolidation Stress, psi		25.00			
Vertical Strain after Consolidation, %		1.498			
Volumetric Strain after Consolidation, %		3.059			
Time to 50% Consolidation, min		51.84			
Shear Strength, psi		18.70			
Strain at Failure, %		4.25			
Strain Rate, %/min		0.01600			
Deviator Stress at Failure, psi		37.40			
Effective Minor Principal Stress at Failure, psi		13.12			
Effective Major Principal Stress at Failure, psi		50.52			
B-Value		0.95			

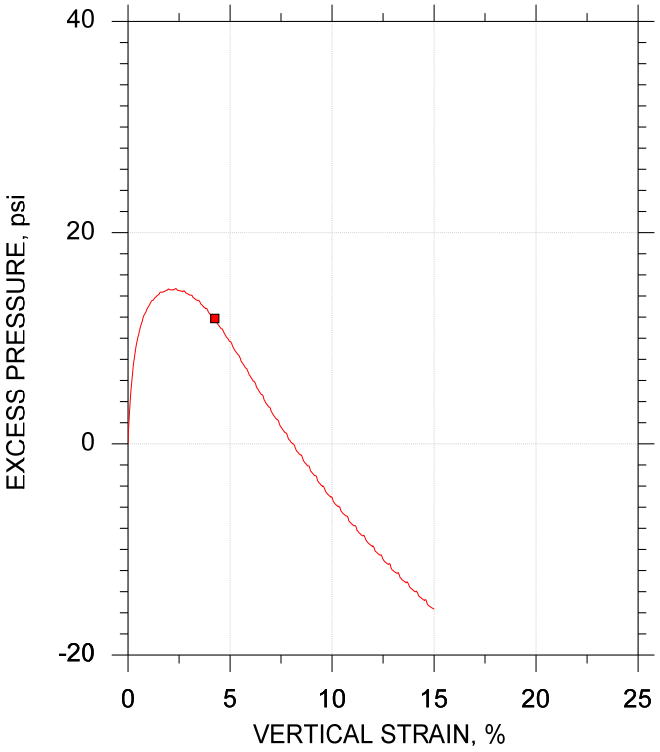
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

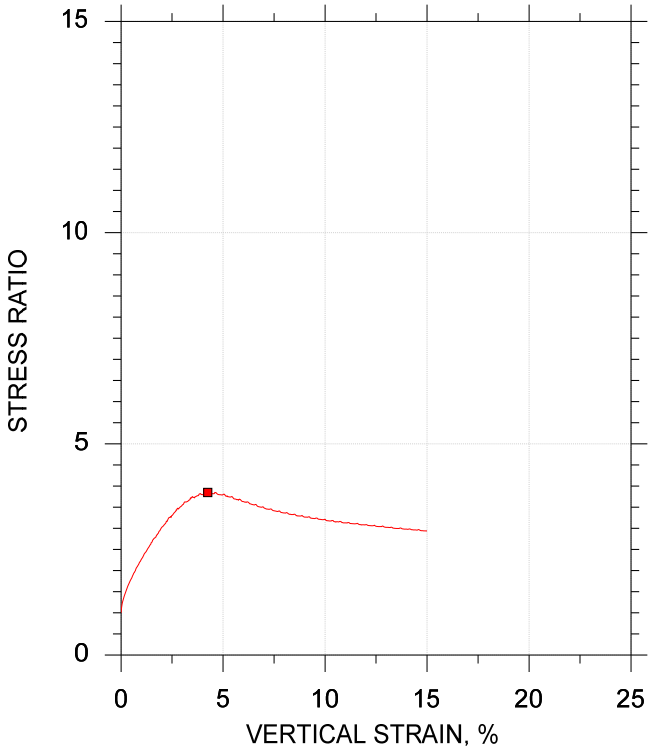
Remarks:

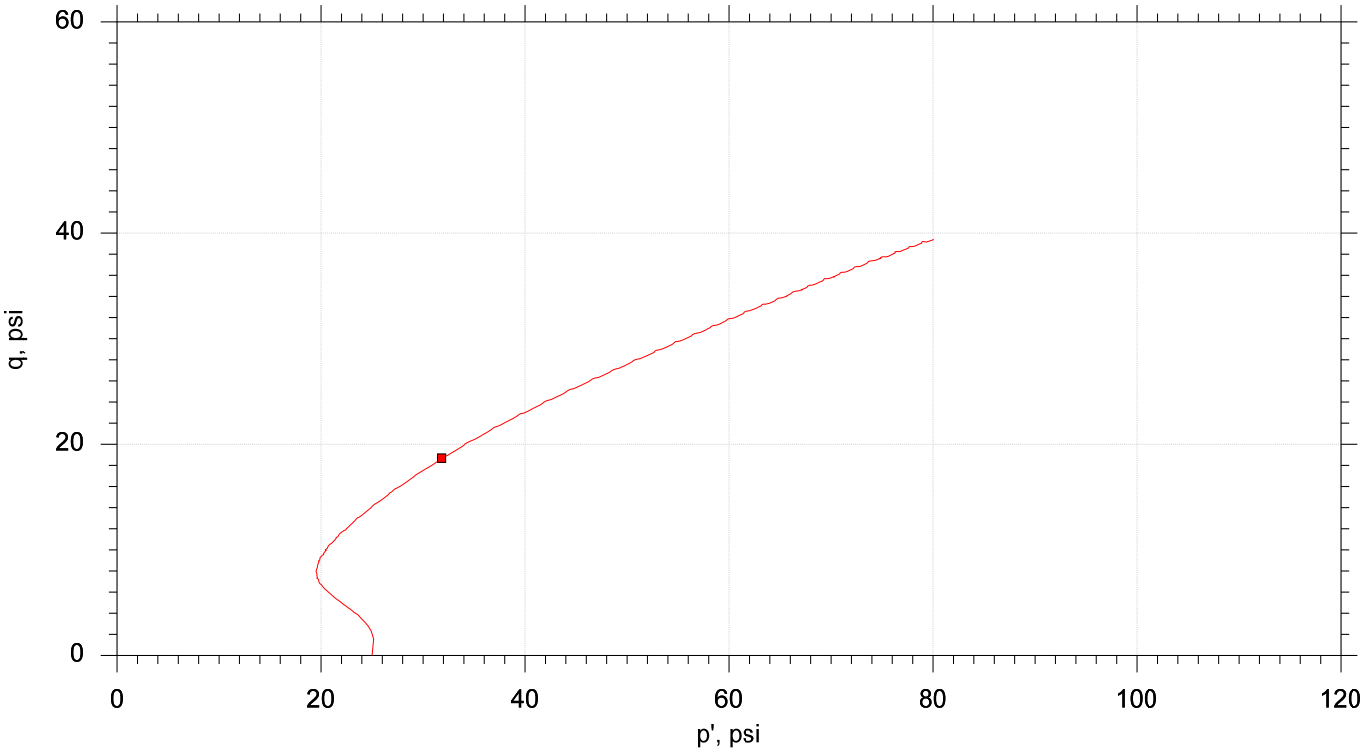


System G

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	ST	CU-3	8.4-8.9 ft	jm	8/16/22	mcm	9/9/22	315844-CU-3m.dat

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Sample Type: intact	
Description: Moist, dark greenish brown clay with sand		
Remarks: System G		

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1025-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	08/18/2022

Specific Gravity	2.75
ASTM D 854, Dry	
Liquid Limit	43
Plastic Limit	20
Plasticity Index	23
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	85
Nominal Consolidation Pressure (psi)	5

Saturation / Consolidation Results

Pore Pressure Parameter B	.95
Measured Effective Consol. Stress (tsf)	0.504
Time to 50% Consolidation (min)	4.50
Actual Axial Strain Rate of Test (%/min)	0.067

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	129.7
Moisture Content (%)	22.5
Dry Unit Weight (pcf)	105.9
Void Ratio	0.618
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

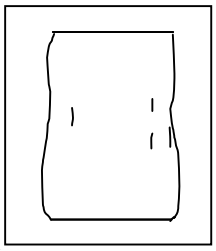
Axial Strain (%)	3.711
Deviator Stress (tsf)	1.108
Induced Pore Pressure (tsf)	0.205
Minor Effective Stress, σ_3' (tsf)	0.296
Major Effective Stress, σ_1' (tsf)	1.404
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.743
p' (tsf)	0.850
q (tsf)	0.554

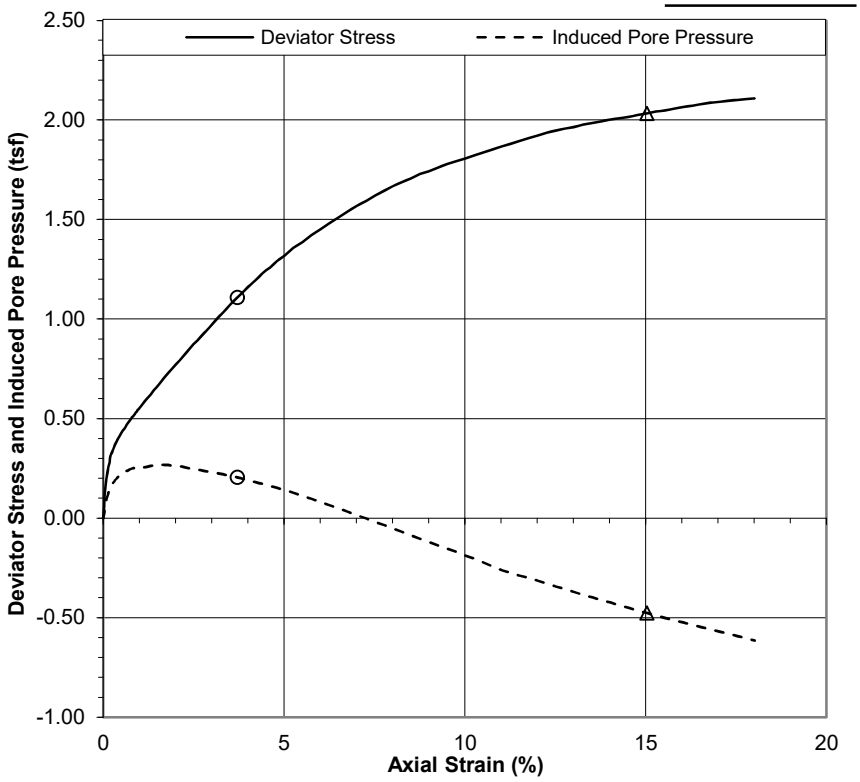
At Consolidated Undrained Failure

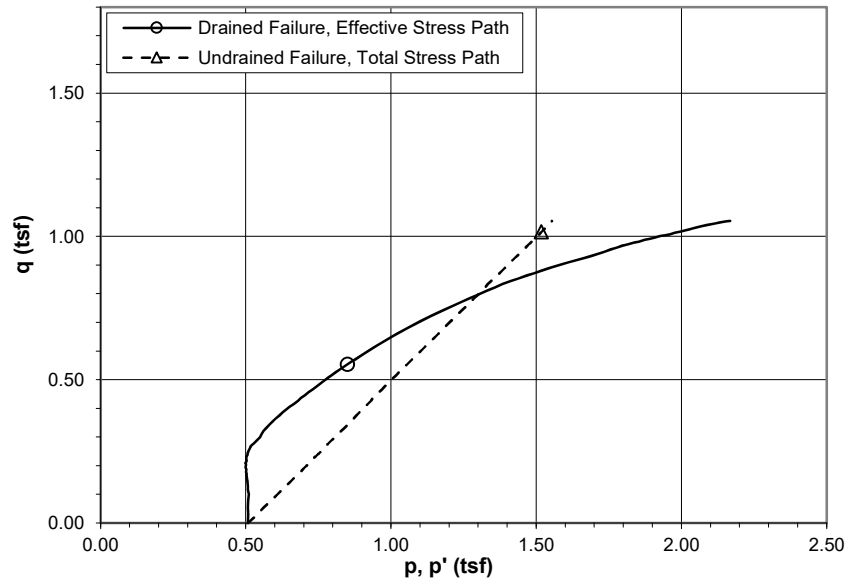
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.039
Deviator Stress (tsf)	2.032
Minor Principal Stress, σ_3 (tsf)	0.502
Major Principal Stress, σ_1 (tsf)	2.534
p (tsf)	1.518
q (tsf)	1.016

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 08/25/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1025-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.750	Calculated Height (in)	5.739	Specific Gravity	2.75
Average Diameter (in)	2.859	Calculated Diameter (in)	2.916	ASTM D 854, Dry	
Calculated Area (in^2)	6.421	Calculated Area (in^2)	6.680	Liquid Limit	43
Moist Weight (lb)	2.804	Moist Weight (lb)	2.877	Plastic Limit	20
Moist Unit Weight (pcf)	131.2	Moist Unit Weight (pcf)	129.7	Plasticity Index	23
Moisture Content (%)	19.4	Moisture Content (%)	22.5	ASTM D 4318	
Dry Weight (lb)	2.349	Dry Weight (lb)	2.349		
Dry Unit Weight (pcf)	109.9	Dry Unit Weight (pcf)	105.9	Confining Stress	
Void Ratio	0.559	Void Ratio	0.618	σ_3 (tsf)	0.508
Degree of Saturation (%)	95.3	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.508

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.1-A, 2.5'-5.0'								Lab ID: 1025		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.680	0.000	0.000	6.024	0.000	0.508	0.508	0.508	0.508	0.508	0.000	1.000
0.4	5.4	0.002	0.03	6.681	0.058	0.058	6.053	0.029	0.567	0.538	0.480	0.538	0.509	0.029	1.121
0.8	10.3	0.002	0.04	6.682	0.111	0.111	6.080	0.056	0.619	0.563	0.452	0.563	0.507	0.055	1.246
1.1	14.7	0.004	0.06	6.684	0.159	0.159	6.103	0.079	0.667	0.588	0.430	0.588	0.509	0.079	1.369
1.5	18.6	0.005	0.09	6.686	0.201	0.200	6.122	0.098	0.709	0.611	0.411	0.609	0.511	0.100	1.488
1.9	21.6	0.007	0.12	6.688	0.233	0.232	6.140	0.116	0.740	0.624	0.392	0.624	0.508	0.116	1.593
2.3	24.0	0.008	0.14	6.689	0.259	0.258	6.154	0.130	0.767	0.637	0.379	0.638	0.508	0.129	1.682
2.7	26.0	0.010	0.18	6.692	0.280	0.280	6.166	0.143	0.788	0.646	0.366	0.649	0.506	0.140	1.764
3.0	27.9	0.011	0.19	6.692	0.300	0.300	6.177	0.153	0.808	0.656	0.356	0.658	0.506	0.150	1.844
3.4	29.4	0.012	0.21	6.694	0.316	0.315	6.186	0.163	0.824	0.662	0.346	0.666	0.504	0.158	1.912
3.8	30.8	0.014	0.25	6.696	0.331	0.331	6.195	0.171	0.840	0.669	0.338	0.675	0.503	0.165	1.978
4.2	32.2	0.016	0.27	6.698	0.347	0.346	6.203	0.179	0.855	0.676	0.330	0.682	0.503	0.173	2.048
4.6	33.1	0.017	0.30	6.700	0.356	0.355	6.208	0.185	0.864	0.679	0.324	0.686	0.501	0.177	2.096
4.9	34.3	0.018	0.32	6.701	0.368	0.367	6.214	0.190	0.876	0.686	0.318	0.692	0.502	0.184	2.153
5.3	35.1	0.020	0.34	6.703	0.377	0.376	6.219	0.195	0.885	0.690	0.314	0.697	0.502	0.188	2.199
5.7	35.9	0.021	0.37	6.705	0.385	0.385	6.224	0.201	0.893	0.692	0.308	0.701	0.500	0.192	2.249
6.1	36.6	0.023	0.39	6.706	0.393	0.392	6.229	0.206	0.901	0.695	0.303	0.704	0.499	0.196	2.297
6.4	37.6	0.024	0.43	6.708	0.403	0.402	6.233	0.209	0.911	0.702	0.299	0.710	0.500	0.201	2.344
6.8	38.5	0.026	0.45	6.710	0.413	0.412	6.237	0.214	0.920	0.707	0.295	0.714	0.501	0.206	2.398
7.2	38.9	0.027	0.47	6.711	0.418	0.417	6.241	0.218	0.925	0.708	0.291	0.717	0.499	0.208	2.432
7.6	39.7	0.028	0.49	6.713	0.425	0.424	6.242	0.218	0.932	0.713	0.289	0.719	0.501	0.212	2.468
8.0	40.4	0.030	0.52	6.714	0.433	0.432	6.243	0.220	0.939	0.719	0.287	0.723	0.503	0.216	2.502
8.3	41.2	0.031	0.54	6.716	0.442	0.440	6.249	0.225	0.948	0.723	0.283	0.728	0.503	0.220	2.559
8.7	41.7	0.033	0.58	6.719	0.447	0.446	6.252	0.228	0.953	0.725	0.279	0.731	0.502	0.223	2.596
9.1	42.3	0.034	0.60	6.720	0.453	0.452	6.255	0.232	0.959	0.728	0.276	0.734	0.502	0.226	2.636
9.5	43.0	0.036	0.62	6.721	0.461	0.459	6.258	0.235	0.967	0.732	0.273	0.737	0.502	0.230	2.682
9.9	43.6	0.037	0.64	6.723	0.467	0.466	6.261	0.237	0.974	0.737	0.271	0.741	0.504	0.233	2.720
10.2	44.5	0.039	0.67	6.725	0.477	0.475	6.263	0.239	0.983	0.743	0.268	0.745	0.506	0.237	2.769
10.6	45.1	0.040	0.70	6.727	0.482	0.481	6.265	0.242	0.989	0.747	0.266	0.748	0.506	0.240	2.808
11.0	45.7	0.042	0.73	6.729	0.490	0.488	6.268	0.245	0.996	0.751	0.263	0.752	0.507	0.244	2.854
11.4	46.4	0.043	0.75	6.730	0.496	0.494	6.270	0.246	1.003	0.756	0.262	0.755	0.509	0.247	2.889
11.7	46.8	0.044	0.77	6.732	0.501	0.499	6.272	0.248	1.007	0.758	0.259	0.757	0.509	0.249	2.924
12.1	47.6	0.046	0.80	6.733	0.509	0.507	6.274	0.250	1.015	0.765	0.258	0.762	0.511	0.254	2.967
12.5	47.9	0.047	0.82	6.735	0.512	0.510	6.275	0.251	1.018	0.767	0.257	0.763	0.512	0.255	2.989
12.9	48.5	0.049	0.85	6.737	0.518	0.516	6.276	0.252	1.023	0.771	0.254	0.765	0.513	0.258	3.028
13.3	49.2	0.050	0.88	6.739	0.526	0.524	6.278	0.254	1.031	0.777	0.253	0.769	0.515	0.262	3.067
13.6	49.9	0.052	0.90	6.740	0.533	0.531	6.280	0.256	1.038	0.782	0.251	0.773	0.517	0.265	3.114
14.0	50.2	0.053	0.93	6.742	0.536	0.534	6.281	0.258	1.041	0.784	0.250	0.774	0.517	0.267	3.140
14.4	51.0	0.054	0.95	6.744	0.545	0.542	6.282	0.258	1.050	0.792	0.249	0.779	0.521	0.271	3.174

Project: 173409690			Source: TP-4.1-A, 2.5'-5.0'								Lab ID: 1025		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
14.8	51.3	0.056	0.97	6.745	0.548	0.546	6.281	0.257	1.052	0.795	0.250	0.779	0.522	0.273	3.186
15.1	52.0	0.058	1.00	6.747	0.555	0.553	6.279	0.256	1.060	0.804	0.251	0.783	0.528	0.276	3.200
16.7	54.2	0.063	1.10	6.754	0.578	0.575	6.279	0.255	1.082	0.827	0.251	0.794	0.539	0.288	3.291
18.2	56.6	0.069	1.21	6.761	0.602	0.600	6.282	0.258	1.107	0.849	0.249	0.807	0.549	0.300	3.404
19.7	58.6	0.075	1.31	6.768	0.623	0.620	6.286	0.263	1.128	0.865	0.245	0.818	0.555	0.310	3.529
21.2	60.8	0.081	1.40	6.775	0.646	0.643	6.290	0.266	1.150	0.883	0.241	0.828	0.562	0.321	3.671
22.7	62.8	0.087	1.51	6.782	0.667	0.663	6.291	0.268	1.170	0.903	0.239	0.839	0.571	0.332	3.769
24.2	65.1	0.092	1.61	6.789	0.690	0.686	6.292	0.268	1.193	0.925	0.238	0.850	0.582	0.343	3.878
25.7	67.2	0.098	1.70	6.795	0.712	0.708	6.292	0.268	1.215	0.946	0.238	0.861	0.592	0.354	3.972
27.2	69.2	0.103	1.80	6.802	0.733	0.728	6.292	0.268	1.235	0.967	0.238	0.871	0.603	0.364	4.055
28.7	71.4	0.110	1.91	6.810	0.755	0.751	6.287	0.263	1.255	0.992	0.241	0.880	0.616	0.375	4.115
30.2	73.6	0.115	2.01	6.816	0.778	0.773	6.286	0.263	1.277	1.014	0.242	0.891	0.628	0.386	4.200
31.7	75.4	0.121	2.10	6.823	0.795	0.790	6.284	0.261	1.295	1.034	0.244	0.900	0.639	0.395	4.241
33.2	77.5	0.127	2.21	6.830	0.817	0.812	6.282	0.259	1.316	1.057	0.245	0.910	0.651	0.406	4.308
34.7	79.3	0.132	2.30	6.837	0.835	0.830	6.277	0.253	1.334	1.081	0.251	0.919	0.666	0.415	4.301
36.2	81.6	0.138	2.40	6.844	0.859	0.853	6.273	0.250	1.357	1.108	0.254	0.931	0.681	0.427	4.354
37.7	83.6	0.144	2.50	6.851	0.879	0.873	6.271	0.247	1.374	1.127	0.254	0.937	0.690	0.437	4.443
39.2	85.5	0.149	2.60	6.858	0.898	0.892	6.268	0.245	1.394	1.150	0.258	0.948	0.704	0.446	4.459
40.7	87.6	0.155	2.70	6.865	0.919	0.913	6.264	0.241	1.414	1.174	0.261	0.958	0.717	0.456	4.497
42.2	89.6	0.161	2.80	6.872	0.939	0.932	6.262	0.238	1.434	1.196	0.264	0.968	0.730	0.466	4.535
43.7	91.6	0.167	2.91	6.880	0.958	0.951	6.258	0.234	1.453	1.219	0.268	0.977	0.743	0.476	4.554
45.3	93.8	0.173	3.01	6.887	0.981	0.973	6.254	0.231	1.475	1.245	0.271	0.989	0.758	0.487	4.589
46.8	95.9	0.179	3.11	6.894	1.001	0.994	6.251	0.228	1.496	1.268	0.274	0.999	0.771	0.497	4.627
48.3	97.8	0.184	3.21	6.901	1.020	1.013	6.248	0.224	1.514	1.290	0.277	1.008	0.783	0.506	4.659
49.8	99.7	0.190	3.31	6.908	1.039	1.031	6.244	0.221	1.533	1.312	0.281	1.017	0.797	0.516	4.668
51.3	101.7	0.195	3.41	6.915	1.059	1.051	6.241	0.217	1.552	1.335	0.284	1.027	0.810	0.525	4.697
52.8	103.8	0.201	3.51	6.922	1.080	1.072	6.237	0.213	1.573	1.360	0.289	1.037	0.824	0.536	4.713
54.3	105.7	0.207	3.60	6.929	1.098	1.090	6.233	0.209	1.591	1.382	0.292	1.046	0.837	0.545	4.730
55.8	107.6	0.213	3.71	6.937	1.117	1.108	6.229	0.205	1.609	1.404	0.296	1.055	0.850	0.554	4.743
57.3	109.4	0.219	3.81	6.944	1.134	1.125	6.224	0.200	1.626	1.426	0.301	1.064	0.863	0.562	4.736
58.8	111.1	0.224	3.90	6.951	1.151	1.142	6.218	0.195	1.643	1.448	0.306	1.072	0.877	0.571	4.725
60.3	113.2	0.230	4.00	6.958	1.171	1.161	6.214	0.191	1.663	1.472	0.311	1.082	0.892	0.581	4.736
61.8	114.9	0.236	4.11	6.966	1.188	1.178	6.209	0.186	1.680	1.494	0.316	1.091	0.905	0.589	4.729
63.3	116.6	0.241	4.21	6.973	1.204	1.194	6.205	0.182	1.696	1.514	0.320	1.099	0.917	0.597	4.729
64.8	118.4	0.247	4.31	6.981	1.221	1.211	6.200	0.177	1.713	1.536	0.325	1.107	0.931	0.605	4.725
66.3	120.3	0.253	4.40	6.987	1.240	1.229	6.196	0.172	1.730	1.558	0.329	1.115	0.943	0.615	4.740
67.8	121.9	0.259	4.51	6.995	1.255	1.244	6.191	0.167	1.746	1.579	0.335	1.124	0.957	0.622	4.719
69.3	123.5	0.265	4.61	7.002	1.270	1.259	6.186	0.162	1.760	1.598	0.339	1.131	0.968	0.629	4.711
70.8	125.2	0.270	4.71	7.010	1.286	1.275	6.181	0.157	1.776	1.618	0.344	1.139	0.981	0.637	4.707
72.3	127.0	0.276	4.81	7.017	1.303	1.292	6.176	0.152	1.793	1.641	0.349	1.147	0.995	0.646	4.697
73.8	128.4	0.282	4.92	7.025	1.316	1.304	6.170	0.147	1.806	1.659	0.355	1.154	1.007	0.652	4.672
75.3	129.8	0.287	5.01	7.032	1.329	1.317	6.165	0.142	1.819	1.677	0.360	1.160	1.019	0.659	4.658
79.1	134.2	0.302	5.26	7.051	1.370	1.358	6.151	0.127	1.859	1.732	0.374	1.181	1.053	0.679	4.628
82.9	137.4	0.316	5.51	7.069	1.399	1.386	6.136	0.112	1.887	1.775	0.389	1.194	1.082	0.693	4.564
86.6	141.2	0.331	5.76	7.088	1.435	1.421	6.121	0.097	1.922	1.825	0.403	1.211	1.114	0.711	4.522
90.4	144.7	0.345	6.01	7.107	1.466	1.451	6.105	0.082	1.951	1.870	0.418	1.226	1.144	0.726	4.469
94.1	148.1	0.359	6.26	7.126	1.497	1.482	6.089	0.065	1.983	1.918	0.436	1.242	1.177	0.741	4.400
97.9	151.4	0.373	6.51	7.145	1.526	1.510	6.073	0.050	2.012	1.963	0.452	1.257	1.208	0.755	4.338
101.6	154.7	0.388	6.76	7.164	1.555	1.539	6.056	0.033	2.041	2.008	0.469	1.272	1.239	0.769	4.278
105.4	158.1	0.402	7.01	7.183	1.584	1.568	6.039	0.015	2.069	2.054	0.486	1.286	1.270	0.784	4.224
109.1	161.0	0.417	7.27	7.203	1.610	1.592	6.024	0.000	2.094	2.094	0.502	1.298	1.298	0.796	4.171
112.9	164.2	0.431	7.51	7.222	1.637	1.619	6.006	-0.018	2.120	2.137	0.519	1.310	1.328	0.809	4.121
116.6	167.2	0.446	7.77	7.242	1.662	1.643	5.990	-0.034	2.145	2.179	0.536	1.324	1.358	0.822	4.067
120.4	170.0	0.460	8.01	7.261	1.686	1.667	5.972	-0.052	2.167	2.218	0.551	1.333	1.385	0.834	4.023
124.1	172.6	0.474	8.26	7.281	1.707	1.688	5.955	-0.069	2.188	2.256	0.569	1.344	1.413	0.844	3.967
127.9	175.1	0.489	8.51	7.301	1.727	1.707	5.937	-0.086	2.207	2.293	0.587	1.354	1.440	0.853	3.909
131.6	177.8	0.503	8.76	7.321	1.749	1.728	5.920	-0.104	2.229	2.333	0.605	1.365	1.469	0.864	3.859
135.4	179.8	0.517	9.00	7.341	1.763	1.742	5.904	-0.120	2.244	2.364	0.621	1.373	1.493	0.871	3.803
139.1	182.4	0.532	9.27	7.362	1.784	1.762	5.887	-0.137	2.263	2.400	0.638	1.382	1.519	0.881	3.760
142.9	184.6	0.546	9.51	7.382	1.801	1.778	5.871	-0.153	2.279	2.432	0.654	1.390	1.543	0.889	3.720
146.6	186.8	0.561	9.77	7.403	1.817	1.794	5.854	-0.169	2.296	2.465	0.671	1.399	1.568	0.897	3.673
150.4	188.6	0.575	10.01	7.423	1.829	1.806	5.836	-0.187	2.306	2.494	0.688	1.404	1.591	0.903	3.624
154.1	190.9	0.589	10.27	7.444	1.846	1.822	5.820	-0.204	2.323	2.527	0.705	1.412	1.616	0.911	3.585
157.9	192.9	0.603	10.52	7.465	1.861	1.836	5.802	-0.222	2.337	2.559	0.723	1.419	1.641	0.918	3.539
161.6	195.0	0.618	10.77	7.486	1.876	1.850	5.781	-0.243	2.352	2.594	0.744	1.427	1.669	0.925	3.486
165.4	197.3	0.632	11.01	7.507	1.893	1.867	5.763	-0.261	2.368	2.629	0.763	1.435	1.696	0.933	3.448
169.2	199.4	0.647	11.27	7.528	1.907	1.880	5.750	-0.274	2.382	2.656	0.775	1.442	1.716	0.940	3.425
172.9	201.5	0.661	11.52	7.549	1.922	1.894	5.735	-0.288	2.396	2.684	0.790	1.448	1.737	0.947	3.399
176.7	203.7	0.676	11.77	7.571	1.937	1.909	5.724	-0.300	2.411	2.711	0.802	1.456	1.756	0.955	3.382

Project: 173409690			Source: TP-4.1-A, 2.5'-5.0'								Lab ID: 1025		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
180.4	205.6	0.690	12.02	7.592	1.950	1.921	5.710	-0.314	2.423	2.737	0.816	1.463	1.776	0.961	3.356
184.2	207.9	0.704	12.27	7.614	1.965	1.936	5.696	-0.328	2.437	2.765	0.829	1.469	1.797	0.968	3.337
187.9	209.5	0.718	12.51	7.635	1.976	1.946	5.681	-0.342	2.447	2.790	0.844	1.474	1.817	0.973	3.307
191.7	211.3	0.733	12.77	7.658	1.987	1.957	5.668	-0.356	2.459	2.814	0.858	1.480	1.836	0.978	3.282
195.4	212.7	0.747	13.02	7.680	1.995	1.964	5.653	-0.370	2.465	2.836	0.872	1.484	1.854	0.982	3.252
199.2	214.7	0.761	13.27	7.701	2.007	1.976	5.640	-0.384	2.477	2.862	0.886	1.489	1.874	0.988	3.231
202.9	216.3	0.776	13.52	7.724	2.016	1.984	5.626	-0.397	2.486	2.883	0.899	1.494	1.891	0.992	3.206
206.7	217.9	0.790	13.77	7.747	2.025	1.992	5.613	-0.411	2.494	2.905	0.913	1.498	1.909	0.996	3.182
210.4	219.7	0.805	14.03	7.770	2.036	2.003	5.600	-0.424	2.505	2.929	0.926	1.503	1.927	1.001	3.163
214.2	221.0	0.819	14.28	7.792	2.042	2.008	5.586	-0.438	2.510	2.947	0.939	1.506	1.943	1.004	3.137
218.0	222.5	0.834	14.53	7.815	2.049	2.015	5.573	-0.451	2.518	2.968	0.953	1.510	1.961	1.007	3.113
221.7	224.3	0.848	14.77	7.837	2.060	2.025	5.561	-0.463	2.527	2.990	0.965	1.514	1.977	1.013	3.100
225.5	225.8	0.863	15.04	7.862	2.068	2.032	5.547	-0.476	2.534	3.010	0.978	1.518	1.994	1.016	3.079
229.2	227.5	0.877	15.28	7.885	2.078	2.042	5.535	-0.489	2.543	3.032	0.990	1.522	2.011	1.021	3.062
233.0	228.9	0.891	15.53	7.908	2.084	2.047	5.523	-0.501	2.548	3.049	1.002	1.524	2.026	1.024	3.043
236.7	230.7	0.906	15.79	7.932	2.094	2.057	5.511	-0.513	2.558	3.071	1.014	1.530	2.043	1.028	3.028
240.5	232.4	0.920	16.03	7.955	2.103	2.065	5.500	-0.524	2.565	3.089	1.024	1.532	2.056	1.033	3.018
244.2	233.9	0.935	16.29	7.980	2.111	2.072	5.487	-0.536	2.572	3.108	1.036	1.536	2.072	1.036	2.999
248.0	235.4	0.949	16.54	8.003	2.118	2.079	5.476	-0.547	2.578	3.126	1.047	1.539	2.086	1.039	2.985
251.8	237.1	0.963	16.78	8.027	2.126	2.087	5.465	-0.559	2.588	3.147	1.061	1.545	2.104	1.043	2.967
255.5	238.4	0.978	17.04	8.052	2.132	2.091	5.453	-0.570	2.592	3.162	1.071	1.547	2.117	1.046	2.952
259.3	239.8	0.992	17.29	8.076	2.138	2.097	5.443	-0.581	2.598	3.179	1.082	1.550	2.131	1.049	2.938
263.0	241.0	1.006	17.54	8.100	2.143	2.101	5.431	-0.592	2.602	3.194	1.093	1.551	2.144	1.050	2.922
266.8	242.4	1.021	17.79	8.126	2.148	2.105	5.420	-0.603	2.606	3.209	1.104	1.553	2.156	1.053	2.908
270.1	243.4	1.033	18.01	8.147	2.151	2.109	5.409	-0.615	2.608	3.223	1.114	1.554	2.168	1.054	2.893

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1026
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1026-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	08/18/2022

Specific Gravity	2.72
ASTM D 854, Dry	
Liquid Limit	28
Plastic Limit	17
Plasticity Index	11
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	0.817
Time to 50% Consolidation (min)	24.00
Actual Axial Strain Rate of Test (%/min)	0.013

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	131.4
Moisture Content (%)	20.3
Dry Unit Weight (pcf)	109.2
Void Ratio	0.552
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

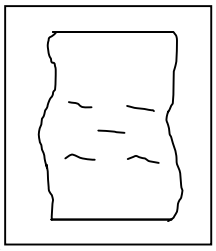
Axial Strain (%)	4.713
Deviator Stress (tsf)	0.843
Induced Pore Pressure (tsf)	0.475
Minor Effective Stress, σ_3' (tsf)	0.339
Major Effective Stress, σ_1' (tsf)	1.182
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.490
p' (tsf)	0.760
q (tsf)	0.422

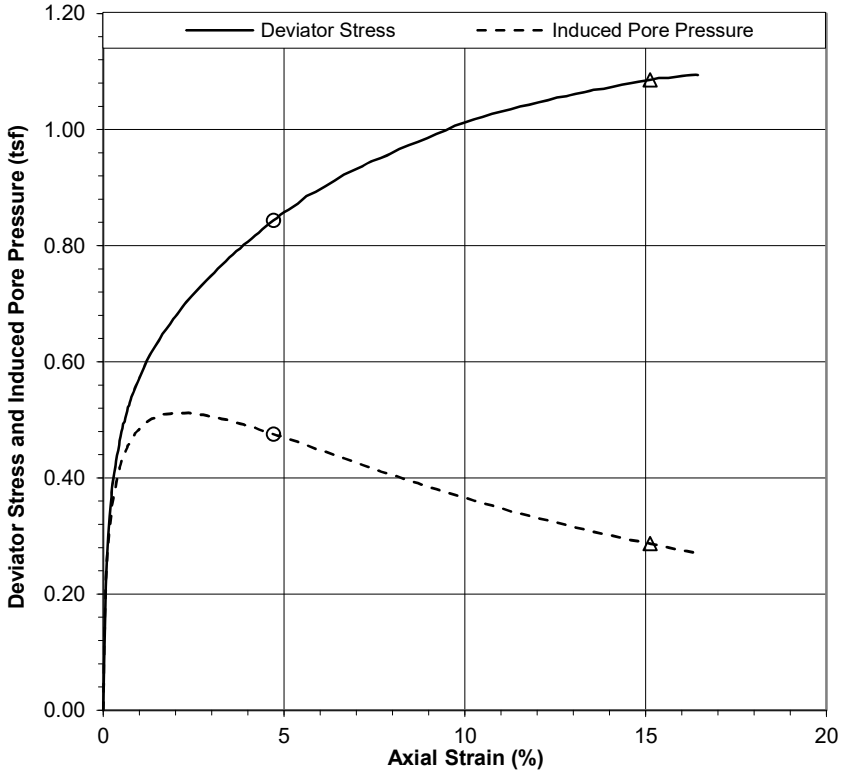
At Consolidated Undrained Failure

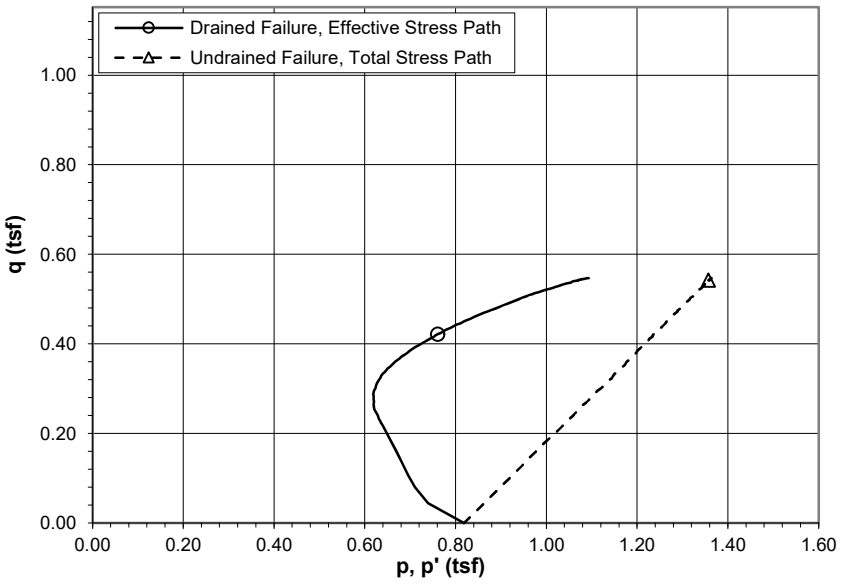
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.121
Deviator Stress (tsf)	1.085
Minor Principal Stress, σ_3 (tsf)	0.815
Major Principal Stress, σ_1 (tsf)	1.900
p (tsf)	1.357
q (tsf)	0.543

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
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Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 08/25/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1026
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1026-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.764	Calculated Height (in)	5.518	Specific Gravity	2.72
Average Diameter (in)	2.884	Calculated Diameter (in)	2.903	ASTM D 854, Dry	
Calculated Area (in^2)	6.534	Calculated Area (in^2)	6.619	Liquid Limit	28
Moist Weight (lb)	2.794	Moist Weight (lb)	2.777	Plastic Limit	17
Moist Unit Weight (pcf)	128.2	Moist Unit Weight (pcf)	131.4	Plasticity Index	11
Moisture Content (%)	21.0	Moisture Content (%)	20.3	ASTM D 4318	
Dry Weight (lb)	2.308	Dry Weight (lb)	2.308		
Dry Unit Weight (pcf)	105.9	Dry Unit Weight (pcf)	109.2	Confining Stress	
Void Ratio	0.600	Void Ratio	0.552	σ_3 (tsf)	0.818
Degree of Saturation (%)	95.3	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.818

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.2-A, 2.5'-5.0'								Lab ID: 1026		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.619	0.000	0.000	5.670	0.000	0.818	0.818	0.818	0.818	0.818	0.000	1.000
2.0	8.1	0.001	0.02	6.621	0.088	0.088	5.794	0.124	0.907	0.783	0.695	0.863	0.739	0.044	1.127
4.0	14.7	0.003	0.05	6.623	0.160	0.160	5.858	0.188	0.978	0.790	0.631	0.898	0.710	0.080	1.253
6.0	19.6	0.004	0.07	6.624	0.213	0.213	5.899	0.229	1.031	0.803	0.590	0.925	0.696	0.106	1.361
8.0	23.3	0.006	0.10	6.626	0.253	0.253	5.928	0.258	1.071	0.813	0.559	0.944	0.686	0.127	1.453
10.0	26.3	0.007	0.13	6.628	0.286	0.285	5.951	0.281	1.102	0.821	0.536	0.959	0.678	0.143	1.533
12.0	28.8	0.009	0.16	6.630	0.312	0.312	5.971	0.301	1.128	0.828	0.516	0.973	0.672	0.156	1.604
14.0	30.7	0.010	0.18	6.631	0.333	0.333	5.986	0.316	1.149	0.833	0.500	0.983	0.667	0.166	1.666
16.0	32.4	0.011	0.21	6.633	0.352	0.351	6.001	0.331	1.168	0.837	0.486	0.992	0.661	0.176	1.723
18.0	33.9	0.013	0.24	6.635	0.368	0.367	6.014	0.344	1.184	0.840	0.473	1.000	0.657	0.184	1.776
20.0	35.3	0.013	0.24	6.635	0.383	0.383	6.025	0.355	1.200	0.845	0.462	1.009	0.654	0.191	1.828
22.0	36.5	0.015	0.27	6.637	0.396	0.396	6.035	0.365	1.213	0.848	0.452	1.015	0.650	0.198	1.875
24.0	37.7	0.017	0.31	6.640	0.409	0.408	6.045	0.375	1.226	0.851	0.443	1.022	0.647	0.204	1.921
26.0	38.7	0.018	0.33	6.641	0.420	0.419	6.054	0.384	1.237	0.853	0.434	1.028	0.644	0.209	1.964
28.0	39.7	0.020	0.35	6.643	0.430	0.429	6.062	0.392	1.247	0.856	0.426	1.033	0.641	0.215	2.006
30.0	40.6	0.021	0.39	6.645	0.440	0.439	6.069	0.399	1.257	0.858	0.419	1.038	0.638	0.220	2.049
32.0	41.4	0.023	0.42	6.647	0.449	0.448	6.076	0.406	1.266	0.859	0.412	1.042	0.636	0.224	2.086
34.0	42.3	0.024	0.44	6.648	0.458	0.457	6.083	0.413	1.275	0.862	0.405	1.047	0.634	0.228	2.127
36.0	42.9	0.025	0.45	6.649	0.465	0.464	6.089	0.419	1.282	0.863	0.400	1.050	0.631	0.232	2.161
38.0	43.6	0.027	0.48	6.651	0.472	0.471	6.094	0.424	1.289	0.865	0.395	1.054	0.630	0.235	2.194
40.0	44.5	0.028	0.51	6.653	0.481	0.480	6.100	0.430	1.299	0.869	0.389	1.059	0.629	0.240	2.235
42.0	45.0	0.030	0.54	6.655	0.487	0.486	6.104	0.434	1.304	0.870	0.384	1.061	0.627	0.243	2.264
44.0	45.7	0.030	0.55	6.656	0.494	0.493	6.109	0.439	1.311	0.872	0.379	1.065	0.625	0.247	2.301
46.0	46.1	0.033	0.59	6.659	0.498	0.497	6.112	0.442	1.314	0.872	0.375	1.066	0.624	0.248	2.324
48.0	46.7	0.034	0.61	6.660	0.505	0.503	6.116	0.446	1.320	0.874	0.371	1.068	0.622	0.252	2.357
50.0	47.2	0.035	0.63	6.661	0.510	0.509	6.120	0.450	1.325	0.876	0.367	1.071	0.621	0.254	2.388
52.0	47.8	0.037	0.66	6.663	0.517	0.515	6.123	0.453	1.331	0.878	0.363	1.073	0.620	0.258	2.420
54.0	48.4	0.038	0.69	6.665	0.523	0.522	6.126	0.456	1.337	0.881	0.359	1.077	0.620	0.261	2.451
56.0	48.8	0.040	0.72	6.667	0.527	0.525	6.129	0.459	1.341	0.882	0.357	1.079	0.620	0.263	2.471
58.0	49.2	0.041	0.74	6.668	0.532	0.530	6.132	0.462	1.347	0.884	0.354	1.082	0.619	0.265	2.495
60.0	49.7	0.042	0.77	6.670	0.537	0.535	6.135	0.465	1.353	0.887	0.352	1.085	0.620	0.267	2.518
62.0	50.1	0.043	0.78	6.672	0.541	0.539	6.138	0.468	1.357	0.890	0.350	1.088	0.620	0.270	2.539
64.0	50.6	0.045	0.82	6.674	0.546	0.544	6.141	0.471	1.363	0.892	0.348	1.091	0.620	0.272	2.564
66.0	51.1	0.047	0.85	6.676	0.551	0.549	6.143	0.473	1.367	0.894	0.346	1.093	0.620	0.274	2.588
68.0	51.5	0.048	0.87	6.677	0.556	0.554	6.146	0.476	1.372	0.897	0.343	1.096	0.620	0.277	2.614
70.0	51.8	0.049	0.89	6.679	0.559	0.556	6.148	0.478	1.376	0.898	0.341	1.097	0.620	0.278	2.630
72.0	52.2	0.051	0.92	6.681	0.562	0.560	6.150	0.480	1.379	0.900	0.340	1.099	0.620	0.280	2.649
74.0	52.6	0.052	0.95	6.683	0.566	0.564	6.152	0.482	1.383	0.901	0.337	1.101	0.619	0.282	2.673
76.0	53.0	0.054	0.98	6.685	0.571	0.569	6.153	0.483	1.387	0.904	0.335	1.103	0.619	0.284	2.696

Project: 173409690			Source: TP-4.2-A, 2.5'-5.0'								Lab ID: 1026		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
78.0	53.4	0.055	1.00	6.686	0.575	0.572	6.155	0.485	1.390	0.905	0.333	1.104	0.619	0.286	2.720
80.0	53.7	0.057	1.03	6.688	0.578	0.576	6.156	0.486	1.393	0.906	0.331	1.105	0.619	0.288	2.741
88.0	55.1	0.062	1.13	6.695	0.592	0.590	6.162	0.492	1.407	0.915	0.325	1.112	0.620	0.295	2.813
96.0	56.4	0.067	1.22	6.701	0.606	0.604	6.167	0.497	1.423	0.925	0.322	1.121	0.624	0.302	2.875
104.0	57.7	0.073	1.33	6.708	0.619	0.616	6.172	0.502	1.435	0.933	0.317	1.127	0.625	0.308	2.941
112.0	58.7	0.079	1.43	6.715	0.630	0.626	6.173	0.503	1.444	0.940	0.314	1.130	0.627	0.313	2.995
120.0	59.7	0.085	1.54	6.723	0.640	0.636	6.176	0.506	1.455	0.948	0.312	1.137	0.630	0.318	3.038
128.0	60.9	0.091	1.64	6.730	0.652	0.648	6.179	0.509	1.468	0.958	0.310	1.144	0.634	0.324	3.087
136.0	61.8	0.096	1.74	6.737	0.660	0.656	6.180	0.510	1.474	0.964	0.308	1.146	0.636	0.328	3.130
144.0	62.7	0.102	1.85	6.744	0.670	0.665	6.181	0.511	1.482	0.972	0.306	1.150	0.639	0.333	3.171
152.0	63.6	0.107	1.94	6.750	0.678	0.674	6.182	0.512	1.493	0.981	0.307	1.156	0.644	0.337	3.194
160.0	64.4	0.113	2.05	6.758	0.686	0.682	6.182	0.512	1.500	0.988	0.306	1.159	0.647	0.341	3.226
168.0	65.4	0.119	2.15	6.765	0.696	0.691	6.182	0.512	1.508	0.996	0.305	1.162	0.650	0.345	3.266
176.1	66.2	0.124	2.25	6.771	0.704	0.699	6.182	0.512	1.517	1.005	0.306	1.168	0.656	0.350	3.282
184.1	67.1	0.130	2.36	6.779	0.713	0.707	6.182	0.512	1.527	1.014	0.307	1.173	0.661	0.354	3.302
192.1	67.8	0.135	2.45	6.786	0.720	0.714	6.181	0.511	1.531	1.020	0.306	1.175	0.663	0.357	3.329
200.1	68.6	0.141	2.56	6.793	0.727	0.721	6.180	0.510	1.537	1.027	0.306	1.177	0.667	0.360	3.355
208.1	69.3	0.147	2.66	6.800	0.734	0.728	6.179	0.509	1.545	1.036	0.308	1.181	0.672	0.364	3.360
216.1	70.0	0.152	2.76	6.807	0.741	0.734	6.179	0.509	1.553	1.044	0.310	1.186	0.677	0.367	3.370
224.1	70.8	0.159	2.88	6.815	0.749	0.742	6.178	0.508	1.558	1.051	0.309	1.188	0.680	0.371	3.399
232.1	71.5	0.164	2.97	6.822	0.755	0.748	6.176	0.506	1.564	1.058	0.310	1.190	0.684	0.374	3.411
240.1	72.1	0.169	3.07	6.829	0.761	0.753	6.175	0.505	1.571	1.066	0.312	1.194	0.689	0.377	3.411
248.1	72.9	0.175	3.17	6.836	0.768	0.760	6.173	0.503	1.578	1.074	0.314	1.198	0.694	0.380	3.422
256.1	73.6	0.181	3.27	6.843	0.774	0.766	6.172	0.502	1.582	1.080	0.314	1.199	0.697	0.383	3.441
264.1	74.3	0.187	3.39	6.851	0.781	0.773	6.171	0.501	1.589	1.088	0.315	1.202	0.701	0.387	3.457
272.1	75.1	0.192	3.49	6.858	0.788	0.780	6.169	0.499	1.596	1.097	0.317	1.206	0.707	0.390	3.458
280.1	75.6	0.198	3.59	6.866	0.793	0.784	6.167	0.497	1.601	1.104	0.319	1.209	0.711	0.392	3.457
288.1	76.3	0.203	3.69	6.873	0.799	0.790	6.165	0.495	1.606	1.111	0.321	1.211	0.716	0.395	3.466
296.1	76.8	0.209	3.79	6.880	0.804	0.795	6.164	0.494	1.611	1.117	0.322	1.214	0.720	0.398	3.466
304.1	77.5	0.214	3.89	6.887	0.811	0.801	6.162	0.492	1.618	1.126	0.324	1.217	0.725	0.401	3.470
312.1	78.1	0.221	4.00	6.895	0.816	0.806	6.159	0.489	1.621	1.132	0.326	1.218	0.729	0.403	3.475
320.1	78.8	0.226	4.10	6.902	0.822	0.812	6.158	0.488	1.629	1.141	0.329	1.223	0.735	0.406	3.471
328.1	79.4	0.232	4.20	6.910	0.827	0.817	6.156	0.486	1.634	1.148	0.330	1.225	0.739	0.409	3.475
336.1	80.0	0.237	4.30	6.917	0.832	0.822	6.154	0.484	1.637	1.153	0.331	1.226	0.742	0.411	3.484
344.1	80.6	0.243	4.40	6.924	0.839	0.828	6.152	0.482	1.643	1.162	0.334	1.229	0.748	0.414	3.482
352.1	81.3	0.249	4.51	6.932	0.844	0.834	6.150	0.480	1.651	1.171	0.337	1.234	0.754	0.417	3.475
360.1	81.9	0.254	4.61	6.939	0.849	0.838	6.148	0.478	1.654	1.176	0.337	1.235	0.757	0.419	3.485
368.1	82.4	0.260	4.71	6.947	0.855	0.843	6.145	0.475	1.657	1.182	0.339	1.236	0.760	0.422	3.490
376.1	83.0	0.265	4.81	6.954	0.859	0.848	6.143	0.473	1.663	1.190	0.342	1.239	0.766	0.424	3.477
384.1	83.6	0.271	4.91	6.961	0.865	0.853	6.142	0.472	1.670	1.198	0.345	1.243	0.771	0.427	3.475
392.1	84.2	0.277	5.01	6.968	0.870	0.858	6.140	0.470	1.674	1.204	0.346	1.245	0.775	0.429	3.478
400.1	84.7	0.283	5.12	6.977	0.874	0.862	6.137	0.467	1.676	1.209	0.347	1.245	0.778	0.431	3.483
420.1	86.0	0.297	5.38	6.996	0.885	0.872	6.132	0.462	1.688	1.226	0.353	1.252	0.790	0.436	3.469
440.1	87.6	0.310	5.63	7.014	0.899	0.885	6.127	0.457	1.702	1.245	0.359	1.259	0.802	0.443	3.464
460.1	88.5	0.324	5.88	7.033	0.906	0.892	6.120	0.450	1.708	1.258	0.365	1.262	0.811	0.446	3.445
480.1	89.8	0.339	6.15	7.053	0.917	0.902	6.115	0.445	1.716	1.271	0.369	1.265	0.820	0.451	3.446
500.1	91.1	0.353	6.40	7.072	0.927	0.912	6.110	0.440	1.729	1.289	0.377	1.273	0.833	0.456	3.422
520.1	92.4	0.367	6.65	7.091	0.938	0.922	6.104	0.434	1.738	1.304	0.381	1.277	0.843	0.461	3.418
540.1	93.4	0.382	6.92	7.111	0.946	0.930	6.098	0.428	1.744	1.315	0.386	1.279	0.851	0.465	3.410
560.1	94.5	0.396	7.17	7.131	0.954	0.937	6.093	0.423	1.752	1.329	0.393	1.284	0.861	0.468	3.387
580.1	95.6	0.409	7.41	7.149	0.963	0.945	6.088	0.418	1.761	1.343	0.398	1.288	0.871	0.472	3.373
600.2	96.5	0.424	7.68	7.170	0.969	0.951	6.081	0.411	1.765	1.353	0.402	1.289	0.878	0.476	3.363
620.1	97.6	0.438	7.94	7.190	0.977	0.958	6.076	0.406	1.773	1.367	0.409	1.294	0.888	0.479	3.343
640.1	98.7	0.452	8.19	7.209	0.986	0.967	6.071	0.401	1.783	1.381	0.415	1.300	0.898	0.483	3.330
660.2	99.7	0.466	8.45	7.230	0.993	0.973	6.066	0.396	1.787	1.392	0.419	1.301	0.905	0.487	3.324
680.2	100.6	0.480	8.70	7.250	0.999	0.979	6.061	0.391	1.794	1.404	0.425	1.305	0.914	0.489	3.303
700.2	101.7	0.495	8.96	7.271	1.007	0.985	6.055	0.385	1.799	1.414	0.428	1.306	0.921	0.493	3.301
720.2	102.7	0.508	9.21	7.291	1.014	0.992	6.051	0.381	1.807	1.426	0.434	1.311	0.930	0.496	3.287
740.2	103.7	0.523	9.47	7.312	1.021	0.999	6.045	0.376	1.815	1.439	0.441	1.315	0.940	0.499	3.266
760.2	104.9	0.537	9.73	7.332	1.030	1.007	6.041	0.371	1.820	1.450	0.443	1.317	0.946	0.503	3.273
780.2	105.7	0.550	9.97	7.352	1.035	1.012	6.037	0.367	1.828	1.461	0.450	1.322	0.956	0.506	3.249
800.2	106.7	0.565	10.24	7.375	1.042	1.017	6.032	0.362	1.831	1.470	0.452	1.322	0.961	0.509	3.249
820.2	107.5	0.579	10.49	7.395	1.046	1.021	6.027	0.357	1.837	1.480	0.459	1.326	0.969	0.511	3.227
840.2	108.4	0.593	10.76	7.417	1.052	1.027	6.022	0.352	1.842	1.490	0.463	1.329	0.976	0.513	3.219
860.2	109.2	0.607	11.01	7.438	1.057	1.031	6.018	0.348	1.846	1.498	0.467	1.331	0.983	0.516	3.207
880.2	110.0	0.622	11.27	7.460	1.062	1.035	6.013	0.343	1.848	1.506	0.471	1.331	0.988	0.517	3.197
900.2	110.9	0.636	11.53	7.482	1.067	1.040	6.008	0.339	1.854	1.515	0.476	1.334	0.995	0.520	3.186
920.2	111.6	0.650	11.78	7.503	1.071	1.043	6.005	0.335	1.858	1.523	0.480	1.336	1.002	0.521	3.171
940.2	112.4	0.664	12.04	7.525	1.075	1.047	6.001	0.331	1.862	1.532	0.485	1.339	1.008	0.523	3.159

Project: 173409690			Source: TP-4.2-A, 2.5'-5.0'								Lab ID: 1026		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
960.2	113.1	0.678	12.29	7.547	1.079	1.050	5.997	0.327	1.867	1.540	0.490	1.342	1.015	0.525	3.142
980.2	114.1	0.693	12.55	7.569	1.085	1.055	5.993	0.323	1.872	1.549	0.493	1.344	1.021	0.528	3.139
1000.2	114.7	0.707	12.81	7.592	1.088	1.057	5.989	0.319	1.874	1.555	0.497	1.345	1.026	0.529	3.127
1020.2	115.5	0.720	13.06	7.613	1.092	1.061	5.985	0.315	1.877	1.563	0.501	1.347	1.032	0.531	3.117
1040.2	116.3	0.735	13.32	7.637	1.096	1.064	5.981	0.311	1.879	1.568	0.504	1.347	1.036	0.532	3.114
1060.2	117.1	0.748	13.56	7.658	1.101	1.068	5.977	0.307	1.885	1.578	0.509	1.351	1.044	0.534	3.098
1080.2	117.7	0.764	13.84	7.682	1.103	1.070	5.974	0.304	1.884	1.581	0.511	1.349	1.046	0.535	3.096
1100.2	118.5	0.777	14.08	7.704	1.107	1.074	5.971	0.301	1.891	1.590	0.517	1.354	1.054	0.537	3.077
1120.2	119.3	0.791	14.34	7.728	1.111	1.077	5.967	0.297	1.892	1.595	0.518	1.353	1.057	0.539	3.079
1140.2	120.0	0.806	14.60	7.751	1.115	1.080	5.963	0.293	1.894	1.601	0.521	1.354	1.061	0.540	3.072
1160.2	120.7	0.820	14.85	7.774	1.118	1.083	5.961	0.291	1.903	1.612	0.529	1.361	1.070	0.541	3.047
1180.2	121.4	0.834	15.12	7.798	1.121	1.085	5.957	0.287	1.900	1.613	0.528	1.357	1.070	0.543	3.057
1200.2	122.2	0.848	15.36	7.821	1.125	1.089	5.954	0.284	1.906	1.622	0.533	1.362	1.078	0.544	3.041
1220.2	122.7	0.862	15.63	7.845	1.126	1.089	5.950	0.280	1.903	1.623	0.535	1.359	1.079	0.544	3.036
1240.2	123.3	0.876	15.87	7.868	1.129	1.091	5.947	0.277	1.907	1.630	0.539	1.361	1.085	0.545	3.023
1260.2	124.1	0.890	16.13	7.893	1.132	1.093	5.944	0.274	1.909	1.635	0.542	1.363	1.088	0.547	3.019
1280.2	124.7	0.905	16.39	7.917	1.134	1.095	5.941	0.271	1.911	1.640	0.545	1.363	1.092	0.547	3.008
1284.6	124.7	0.907	16.44	7.922	1.133	1.094	5.940	0.270	1.910	1.640	0.547	1.363	1.093	0.547	3.001

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.3-A, 2.5'-5.5'	Lab ID	1029
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1029-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	08/17/2022

Specific Gravity	2.70
ASTM D 854, Dry	
Liquid Limit	35
Plastic Limit	20
Plasticity Index	15
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	0.819
Time to 50% Consolidation (min)	30.00
Actual Axial Strain Rate of Test (%/min)	0.010

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	134.4
Moisture Content (%)	17.4
Dry Unit Weight (pcf)	114.5
Void Ratio	0.469
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

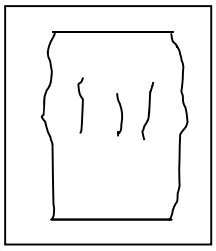
Axial Strain (%)	3.369
Deviator Stress (tsf)	1.464
Induced Pore Pressure (tsf)	0.325
Minor Effective Stress, σ_3' (tsf)	0.495
Major Effective Stress, σ_1' (tsf)	1.958
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.960
p' (tsf)	1.226
q (tsf)	0.732

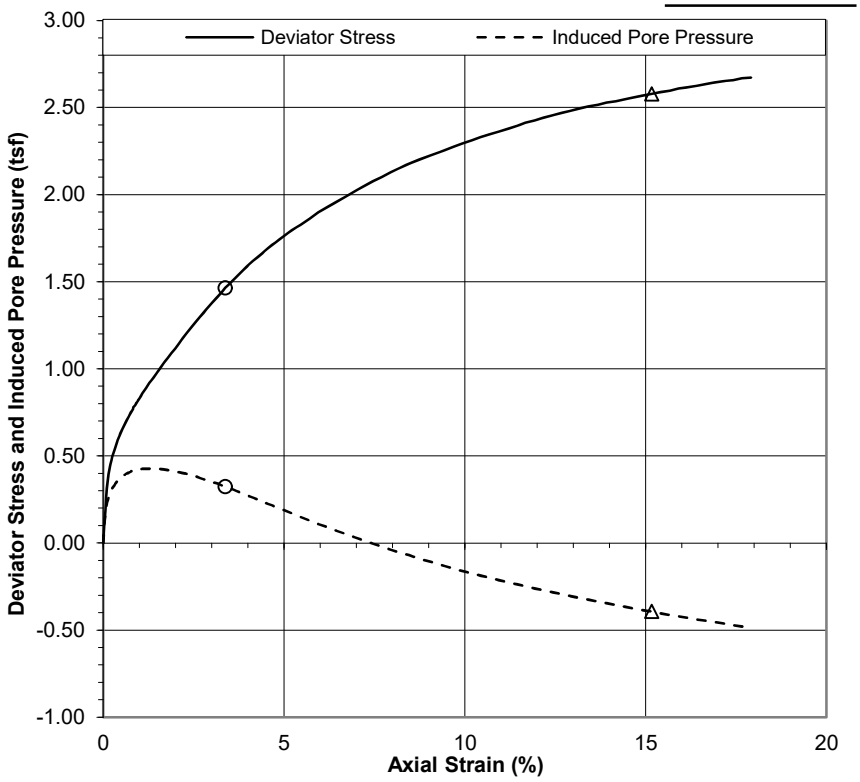
At Consolidated Undrained Failure

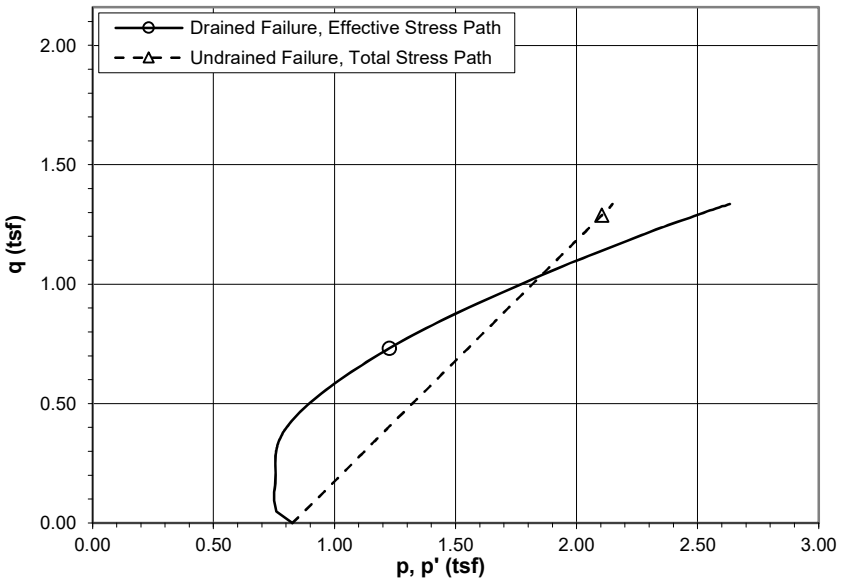
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.167
Deviator Stress (tsf)	2.578
Minor Principal Stress, σ_3 (tsf)	0.815
Major Principal Stress, σ_1 (tsf)	3.393
p (tsf)	2.104
q (tsf)	1.289

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.3-A, 2.5'-5.5'	Lab ID	1029
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1029-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	5.766	Calculated Height (in)	5.669
Average Diameter (in)	2.871	Calculated Diameter (in)	2.938
Calculated Area (in^2)	6.475	Calculated Area (in^2)	6.779
Moist Weight (lb)	2.913	Moist Weight (lb)	2.990
Moist Unit Weight (pcf)	134.8	Moist Unit Weight (pcf)	134.4
Moisture Content (%)	14.3	Moisture Content (%)	17.4
Dry Weight (lb)	2.547	Dry Weight (lb)	2.547
Dry Unit Weight (pcf)	117.9	Dry Unit Weight (pcf)	114.5
Void Ratio	0.427	Void Ratio	0.469
Degree of Saturation (%)	90.7	Degree of Saturation (%)	100.0

Specific Gravity	2.70
	ASTM D 854, Dry
Liquid Limit	35
Plastic Limit	20
Plasticity Index	15
	ASTM D 4318
Confining Stress	
σ_3 (tsf)	0.825
Effective Consolidation Stress	
σ_3' (tsf)	0.825

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.3-A, 2.5'-5.5'								Lab ID: 1029		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.779	0.000	0.000	5.666	0.000	0.825	0.825	0.825	0.825	0.825	0.000	1.000
2.5	9.1	0.002	0.03	6.781	0.097	0.097	5.780	0.114	0.922	0.809	0.712	0.874	0.760	0.048	1.136
5.0	17.8	0.003	0.06	6.783	0.189	0.188	5.835	0.169	1.014	0.845	0.656	0.920	0.750	0.094	1.287
7.5	24.5	0.004	0.08	6.785	0.260	0.260	5.871	0.204	1.086	0.881	0.621	0.956	0.751	0.130	1.419
10.0	30.2	0.006	0.10	6.786	0.320	0.320	5.897	0.231	1.145	0.914	0.594	0.985	0.754	0.160	1.539
12.5	34.4	0.007	0.13	6.788	0.365	0.365	5.918	0.251	1.190	0.938	0.574	1.007	0.756	0.182	1.635
15.0	37.7	0.009	0.15	6.790	0.400	0.399	5.934	0.268	1.224	0.956	0.557	1.024	0.757	0.200	1.716
17.5	40.5	0.010	0.18	6.791	0.429	0.429	5.949	0.282	1.254	0.971	0.543	1.039	0.757	0.214	1.791
20.0	42.9	0.011	0.20	6.793	0.455	0.455	5.961	0.295	1.279	0.984	0.529	1.051	0.756	0.227	1.859
22.5	45.0	0.013	0.23	6.795	0.476	0.476	5.972	0.306	1.300	0.994	0.518	1.062	0.756	0.238	1.918
25.0	46.8	0.014	0.25	6.796	0.496	0.496	5.983	0.316	1.320	1.004	0.508	1.072	0.756	0.248	1.976
27.5	48.6	0.016	0.28	6.799	0.515	0.514	5.992	0.325	1.339	1.013	0.499	1.081	0.756	0.257	2.032
30.0	50.3	0.017	0.31	6.800	0.533	0.532	6.000	0.333	1.356	1.022	0.490	1.090	0.756	0.266	2.085
32.5	51.7	0.019	0.33	6.801	0.548	0.547	6.007	0.341	1.371	1.030	0.483	1.097	0.756	0.273	2.132
35.0	53.1	0.020	0.35	6.803	0.562	0.561	6.014	0.348	1.385	1.037	0.476	1.104	0.756	0.281	2.180
37.5	54.6	0.022	0.38	6.805	0.578	0.577	6.021	0.354	1.400	1.046	0.469	1.112	0.757	0.288	2.230
40.0	55.9	0.023	0.40	6.807	0.591	0.590	6.026	0.360	1.414	1.053	0.463	1.118	0.758	0.295	2.274
42.6	57.1	0.024	0.43	6.808	0.604	0.603	6.032	0.366	1.426	1.060	0.458	1.125	0.759	0.301	2.318
45.1	58.4	0.026	0.45	6.810	0.617	0.616	6.037	0.371	1.439	1.069	0.452	1.131	0.760	0.308	2.362
47.5	59.5	0.027	0.47	6.811	0.629	0.628	6.042	0.375	1.451	1.076	0.447	1.137	0.762	0.314	2.404
50.0	60.7	0.029	0.51	6.814	0.641	0.640	6.046	0.380	1.463	1.083	0.443	1.143	0.763	0.320	2.443
52.6	61.7	0.030	0.52	6.815	0.652	0.650	6.050	0.384	1.473	1.090	0.439	1.148	0.764	0.325	2.481
55.1	62.7	0.031	0.55	6.816	0.662	0.661	6.053	0.387	1.483	1.096	0.436	1.153	0.766	0.330	2.516
57.6	63.7	0.032	0.57	6.818	0.673	0.671	6.057	0.390	1.494	1.103	0.432	1.158	0.767	0.336	2.554
60.0	64.7	0.034	0.60	6.820	0.684	0.682	6.060	0.394	1.505	1.111	0.429	1.163	0.770	0.341	2.591
62.5	65.8	0.035	0.62	6.821	0.694	0.693	6.063	0.397	1.515	1.118	0.426	1.169	0.772	0.346	2.627
65.1	66.8	0.037	0.65	6.823	0.705	0.703	6.066	0.400	1.525	1.126	0.422	1.174	0.774	0.352	2.666
67.6	67.7	0.038	0.67	6.825	0.714	0.713	6.069	0.402	1.535	1.133	0.420	1.179	0.776	0.356	2.696
70.1	68.5	0.040	0.70	6.827	0.723	0.721	6.070	0.404	1.543	1.139	0.418	1.182	0.778	0.361	2.725
72.6	69.5	0.041	0.72	6.828	0.733	0.731	6.073	0.407	1.553	1.146	0.415	1.188	0.781	0.366	2.759
75.1	70.4	0.042	0.74	6.830	0.742	0.741	6.076	0.409	1.562	1.153	0.413	1.192	0.783	0.370	2.795
77.6	71.3	0.043	0.77	6.832	0.751	0.750	6.078	0.412	1.572	1.160	0.410	1.197	0.785	0.375	2.827
80.1	72.2	0.045	0.80	6.834	0.761	0.759	6.080	0.414	1.581	1.168	0.408	1.202	0.788	0.380	2.859
82.6	73.2	0.047	0.82	6.835	0.771	0.769	6.082	0.415	1.591	1.176	0.407	1.206	0.791	0.384	2.892
85.1	74.2	0.047	0.84	6.836	0.781	0.779	6.083	0.417	1.601	1.184	0.405	1.211	0.794	0.390	2.925
87.6	74.8	0.049	0.87	6.839	0.788	0.786	6.084	0.418	1.608	1.190	0.404	1.215	0.797	0.393	2.946
90.1	75.7	0.051	0.90	6.841	0.797	0.795	6.084	0.418	1.616	1.198	0.403	1.219	0.801	0.397	2.971
92.6	76.6	0.052	0.92	6.842	0.806	0.804	6.086	0.419	1.625	1.206	0.402	1.223	0.804	0.402	2.999
95.1	77.4	0.054	0.95	6.844	0.814	0.812	6.086	0.420	1.633	1.213	0.401	1.227	0.807	0.406	3.022

Project: 173409690			Source: TP-4.3-A, 2.5'-5.5'								Lab ID: 1029		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
97.6	78.2	0.055	0.97	6.845	0.822	0.820	6.087	0.421	1.641	1.220	0.400	1.231	0.810	0.410	3.048
100.1	79.0	0.057	1.00	6.848	0.831	0.828	6.088	0.422	1.649	1.227	0.399	1.235	0.813	0.414	3.076
110.1	82.0	0.061	1.08	6.853	0.861	0.858	6.093	0.426	1.680	1.253	0.395	1.250	0.824	0.429	3.174
120.1	85.0	0.067	1.19	6.861	0.892	0.890	6.093	0.427	1.710	1.284	0.394	1.265	0.839	0.445	3.259
130.1	87.9	0.072	1.28	6.867	0.922	0.919	6.094	0.427	1.740	1.312	0.394	1.280	0.853	0.459	3.335
140.1	91.0	0.079	1.39	6.875	0.953	0.949	6.095	0.428	1.770	1.341	0.392	1.295	0.867	0.475	3.421
150.1	93.7	0.084	1.49	6.882	0.981	0.977	6.093	0.427	1.797	1.371	0.394	1.309	0.882	0.489	3.481
160.1	96.5	0.090	1.59	6.889	1.009	1.005	6.091	0.425	1.826	1.401	0.396	1.323	0.898	0.503	3.540
170.1	99.3	0.095	1.68	6.895	1.037	1.033	6.089	0.423	1.853	1.430	0.397	1.337	0.914	0.516	3.600
180.1	102.1	0.101	1.78	6.902	1.065	1.060	6.085	0.419	1.881	1.461	0.401	1.350	0.931	0.530	3.643
190.1	104.9	0.107	1.88	6.909	1.094	1.089	6.083	0.417	1.910	1.493	0.404	1.365	0.948	0.545	3.698
200.1	107.6	0.113	1.99	6.917	1.121	1.116	6.079	0.413	1.936	1.523	0.407	1.378	0.965	0.558	3.740
210.1	110.3	0.118	2.09	6.924	1.148	1.143	6.074	0.407	1.963	1.555	0.413	1.391	0.984	0.571	3.770
220.1	112.9	0.123	2.18	6.930	1.173	1.168	6.070	0.404	1.988	1.585	0.417	1.404	1.001	0.584	3.804
230.1	115.7	0.129	2.28	6.937	1.201	1.196	6.066	0.400	2.016	1.616	0.421	1.418	1.018	0.598	3.844
240.1	118.5	0.134	2.37	6.944	1.228	1.223	6.059	0.393	2.043	1.650	0.427	1.431	1.039	0.611	3.862
250.2	121.0	0.141	2.48	6.952	1.254	1.248	6.053	0.387	2.068	1.681	0.433	1.444	1.057	0.624	3.880
260.2	123.6	0.146	2.58	6.959	1.279	1.273	6.048	0.382	2.093	1.711	0.438	1.456	1.074	0.636	3.907
270.2	126.1	0.152	2.68	6.966	1.304	1.298	6.041	0.374	2.117	1.743	0.446	1.469	1.094	0.649	3.912
280.2	128.7	0.158	2.78	6.973	1.328	1.322	6.033	0.367	2.141	1.775	0.453	1.481	1.114	0.661	3.919
290.1	131.3	0.163	2.88	6.980	1.354	1.347	6.028	0.362	2.167	1.805	0.458	1.493	1.132	0.674	3.942
300.1	133.7	0.168	2.97	6.986	1.378	1.371	6.020	0.354	2.191	1.837	0.466	1.505	1.151	0.686	3.943
310.2	136.0	0.174	3.08	6.994	1.400	1.393	6.013	0.346	2.212	1.866	0.473	1.516	1.169	0.696	3.944
320.2	138.6	0.180	3.18	7.002	1.425	1.417	6.006	0.340	2.237	1.897	0.480	1.528	1.188	0.709	3.956
330.2	140.9	0.186	3.28	7.009	1.447	1.439	5.998	0.331	2.258	1.927	0.488	1.539	1.207	0.720	3.951
340.2	143.4	0.191	3.37	7.016	1.472	1.464	5.991	0.325	2.283	1.958	0.495	1.551	1.226	0.732	3.960
350.2	145.5	0.197	3.47	7.023	1.491	1.483	5.982	0.316	2.302	1.987	0.503	1.560	1.245	0.742	3.948
360.2	147.9	0.203	3.58	7.031	1.514	1.506	5.975	0.308	2.325	2.016	0.511	1.572	1.263	0.753	3.949
370.2	150.0	0.208	3.67	7.038	1.535	1.526	5.966	0.300	2.345	2.045	0.519	1.581	1.282	0.763	3.942
380.2	152.3	0.214	3.78	7.045	1.557	1.548	5.957	0.291	2.366	2.075	0.527	1.592	1.301	0.774	3.937
390.2	154.4	0.220	3.87	7.052	1.576	1.567	5.950	0.284	2.385	2.101	0.534	1.602	1.318	0.784	3.933
400.2	156.5	0.225	3.97	7.060	1.596	1.586	5.941	0.274	2.404	2.130	0.543	1.611	1.337	0.793	3.920
410.2	158.5	0.231	4.07	7.067	1.615	1.606	5.933	0.266	2.424	2.157	0.552	1.621	1.355	0.803	3.911
420.2	160.4	0.236	4.17	7.074	1.633	1.623	5.925	0.259	2.441	2.182	0.559	1.630	1.371	0.811	3.902
430.2	162.3	0.242	4.27	7.081	1.650	1.640	5.916	0.250	2.457	2.208	0.568	1.637	1.388	0.820	3.887
440.2	164.2	0.248	4.37	7.089	1.668	1.657	5.909	0.242	2.476	2.233	0.576	1.647	1.405	0.829	3.878
450.2	166.2	0.253	4.46	7.096	1.686	1.676	5.899	0.233	2.493	2.260	0.585	1.656	1.423	0.838	3.866
460.2	168.0	0.259	4.56	7.103	1.703	1.692	5.891	0.224	2.510	2.286	0.593	1.664	1.440	0.846	3.852
470.2	170.0	0.264	4.66	7.111	1.721	1.710	5.884	0.217	2.528	2.311	0.601	1.673	1.456	0.855	3.847
480.2	171.7	0.270	4.77	7.119	1.737	1.725	5.874	0.207	2.543	2.336	0.610	1.680	1.473	0.863	3.827
490.2	173.5	0.276	4.87	7.126	1.753	1.741	5.866	0.200	2.559	2.360	0.618	1.689	1.489	0.871	3.816
500.2	175.2	0.282	4.97	7.134	1.768	1.757	5.858	0.192	2.575	2.383	0.626	1.696	1.505	0.878	3.805
525.2	179.5	0.295	5.21	7.152	1.807	1.795	5.837	0.171	2.612	2.441	0.647	1.715	1.544	0.897	3.776
550.2	183.2	0.310	5.47	7.171	1.839	1.826	5.816	0.150	2.644	2.494	0.668	1.730	1.581	0.913	3.736
575.2	187.2	0.324	5.71	7.190	1.874	1.861	5.796	0.130	2.679	2.549	0.688	1.748	1.618	0.931	3.707
600.2	191.4	0.337	5.95	7.208	1.912	1.898	5.776	0.110	2.715	2.605	0.707	1.766	1.656	0.949	3.683
625.2	195.2	0.352	6.21	7.228	1.945	1.930	5.756	0.090	2.747	2.657	0.727	1.782	1.692	0.965	3.655
650.2	198.8	0.366	6.46	7.247	1.975	1.959	5.737	0.071	2.776	2.706	0.746	1.796	1.726	0.980	3.626
675.2	202.3	0.380	6.71	7.267	2.004	1.988	5.718	0.051	2.805	2.754	0.765	1.811	1.759	0.994	3.598
700.2	205.8	0.394	6.94	7.285	2.034	2.018	5.699	0.033	2.834	2.801	0.784	1.825	1.792	1.009	3.575
725.2	209.4	0.408	7.20	7.305	2.064	2.047	5.681	0.015	2.863	2.848	0.801	1.839	1.825	1.024	3.555
750.2	212.9	0.422	7.45	7.325	2.093	2.076	5.664	-0.002	2.892	2.894	0.819	1.854	1.856	1.038	3.535
775.2	216.1	0.437	7.70	7.345	2.118	2.100	5.646	-0.020	2.916	2.936	0.836	1.866	1.886	1.050	3.511
800.2	219.6	0.451	7.95	7.365	2.147	2.128	5.629	-0.038	2.944	2.982	0.854	1.880	1.918	1.064	3.493
825.2	222.6	0.464	8.19	7.384	2.171	2.152	5.612	-0.055	2.967	3.022	0.870	1.891	1.946	1.076	3.473
850.2	226.0	0.479	8.45	7.405	2.197	2.177	5.596	-0.070	2.993	3.063	0.886	1.905	1.975	1.089	3.458
875.2	228.8	0.493	8.70	7.425	2.219	2.198	5.580	-0.086	3.014	3.100	0.902	1.915	2.001	1.099	3.437
900.2	231.4	0.507	8.95	7.446	2.238	2.217	5.564	-0.102	3.032	3.134	0.917	1.924	2.026	1.108	3.417
925.2	234.2	0.521	9.20	7.466	2.258	2.237	5.551	-0.116	3.052	3.168	0.931	1.934	2.050	1.118	3.401
950.2	236.8	0.535	9.44	7.486	2.277	2.255	5.535	-0.132	3.071	3.202	0.947	1.943	2.075	1.127	3.381
975.2	239.6	0.550	9.70	7.507	2.298	2.275	5.521	-0.146	3.091	3.236	0.961	1.953	2.099	1.138	3.368
1000.2	242.2	0.563	9.93	7.527	2.317	2.294	5.506	-0.161	3.108	3.269	0.975	1.962	2.122	1.147	3.351
1025.2	244.8	0.578	10.19	7.549	2.335	2.311	5.492	-0.174	3.126	3.300	0.989	1.970	2.144	1.156	3.337
1050.2	247.5	0.592	10.44	7.569	2.354	2.330	5.479	-0.187	3.145	3.332	1.002	1.980	2.167	1.165	3.326
1075.2	250.0	0.606	10.69	7.591	2.372	2.347	5.467	-0.199	3.161	3.361	1.014	1.988	2.188	1.173	3.314
1100.2	252.4	0.620	10.94	7.612	2.387	2.361	5.454	-0.213	3.176	3.388	1.027	1.995	2.208	1.181	3.299
1125.2	254.9	0.634	11.18	7.633	2.405	2.378	5.442	-0.225	3.194	3.418	1.040	2.005	2.229	1.189	3.287
1150.3	257.5	0.649	11.44	7.655	2.422	2.395	5.430	-0.237	3.210	3.447	1.052	2.013	2.250	1.198	3.277
1175.3	260.1	0.662	11.68	7.676	2.440	2.412	5.419	-0.248	3.228	3.476	1.063	2.022	2.270	1.206	3.268

Project: 173409690			Source: TP-4.3-A, 2.5'-5.5'								Lab ID: 1029		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
1200.2	262.3	0.676	11.93	7.698	2.454	2.425	5.406	-0.260	3.240	3.501	1.075	2.028	2.288	1.213	3.256
1225.2	264.8	0.690	12.18	7.719	2.470	2.441	5.395	-0.271	3.257	3.528	1.087	2.036	2.308	1.221	3.246
1250.3	267.0	0.704	12.43	7.741	2.484	2.454	5.384	-0.283	3.270	3.553	1.098	2.043	2.325	1.227	3.235
1275.3	269.6	0.719	12.68	7.764	2.500	2.470	5.373	-0.294	3.285	3.579	1.109	2.050	2.344	1.235	3.228
1300.3	271.5	0.733	12.93	7.786	2.510	2.480	5.361	-0.305	3.295	3.600	1.120	2.055	2.360	1.240	3.214
1325.2	274.0	0.747	13.18	7.808	2.527	2.496	5.352	-0.315	3.311	3.626	1.130	2.063	2.378	1.248	3.209
1350.2	276.0	0.761	13.42	7.830	2.538	2.506	5.342	-0.324	3.322	3.646	1.140	2.069	2.393	1.253	3.199
1375.3	277.9	0.775	13.68	7.853	2.548	2.516	5.330	-0.336	3.331	3.667	1.151	2.073	2.409	1.258	3.187
1400.3	280.1	0.789	13.92	7.876	2.561	2.528	5.321	-0.345	3.343	3.689	1.161	2.079	2.425	1.264	3.178
1425.3	281.9	0.804	14.18	7.899	2.569	2.536	5.312	-0.355	3.351	3.706	1.170	2.083	2.438	1.268	3.167
1450.3	283.8	0.817	14.42	7.921	2.580	2.546	5.301	-0.365	3.361	3.726	1.180	2.088	2.453	1.273	3.157
1475.3	286.0	0.831	14.67	7.944	2.592	2.557	5.291	-0.376	3.372	3.748	1.190	2.093	2.469	1.279	3.149
1500.3	288.2	0.846	14.92	7.968	2.604	2.569	5.282	-0.385	3.384	3.769	1.200	2.099	2.484	1.284	3.141
1525.3	290.1	0.860	15.17	7.991	2.613	2.578	5.273	-0.393	3.393	3.786	1.208	2.104	2.497	1.289	3.134
1550.3	292.2	0.874	15.42	8.015	2.624	2.588	5.264	-0.403	3.403	3.805	1.217	2.109	2.511	1.294	3.126
1575.3	294.1	0.888	15.67	8.039	2.634	2.597	5.254	-0.412	3.411	3.823	1.226	2.112	2.525	1.298	3.118
1600.3	296.4	0.902	15.92	8.062	2.647	2.609	5.246	-0.420	3.423	3.843	1.234	2.119	2.539	1.305	3.115
1625.3	298.2	0.917	16.17	8.087	2.655	2.617	5.237	-0.429	3.431	3.860	1.243	2.122	2.552	1.309	3.105
1650.3	299.9	0.930	16.41	8.110	2.663	2.624	5.229	-0.438	3.438	3.876	1.251	2.126	2.563	1.312	3.098
1675.3	302.1	0.945	16.67	8.135	2.674	2.634	5.221	-0.445	3.448	3.893	1.259	2.131	2.576	1.317	3.092
1700.3	304.1	0.959	16.91	8.159	2.683	2.643	5.213	-0.453	3.458	3.911	1.268	2.136	2.589	1.322	3.085
1725.3	306.0	0.973	17.17	8.185	2.692	2.652	5.204	-0.462	3.466	3.928	1.276	2.140	2.602	1.326	3.078
1750.3	307.6	0.988	17.43	8.210	2.698	2.657	5.195	-0.471	3.470	3.941	1.284	2.142	2.613	1.328	3.069
1775.3	309.7	1.001	17.67	8.234	2.709	2.667	5.187	-0.479	3.479	3.958	1.291	2.146	2.625	1.334	3.065
1799.9	311.3	1.016	17.92	8.259	2.714	2.672	5.180	-0.487	3.484	3.970	1.298	2.148	2.634	1.336	3.058

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.4-A, 2.0'-4.5'	Lab ID	1031
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1031-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	08/02/2022

Specific Gravity	2.65
ASTM D 854, Dry	
Liquid Limit	29
Plastic Limit	17
Plasticity Index	12
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	70
Nominal Consolidation Pressure (psi)	20

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	1.333
Time to 50% Consolidation (min)	9.90
Actual Axial Strain Rate of Test (%/min)	0.030

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	128.3
Moisture Content (%)	21.1
Dry Unit Weight (pcf)	106.0
Void Ratio	0.558
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

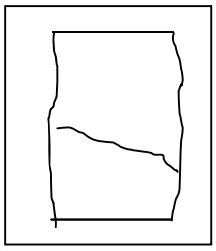
Axial Strain (%)	6.964
Deviator Stress (tsf)	1.585
Induced Pore Pressure (tsf)	0.630
Minor Effective Stress, σ_3' (tsf)	0.703
Major Effective Stress, σ_1' (tsf)	2.288
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.254
p' (tsf)	1.496
q (tsf)	0.792

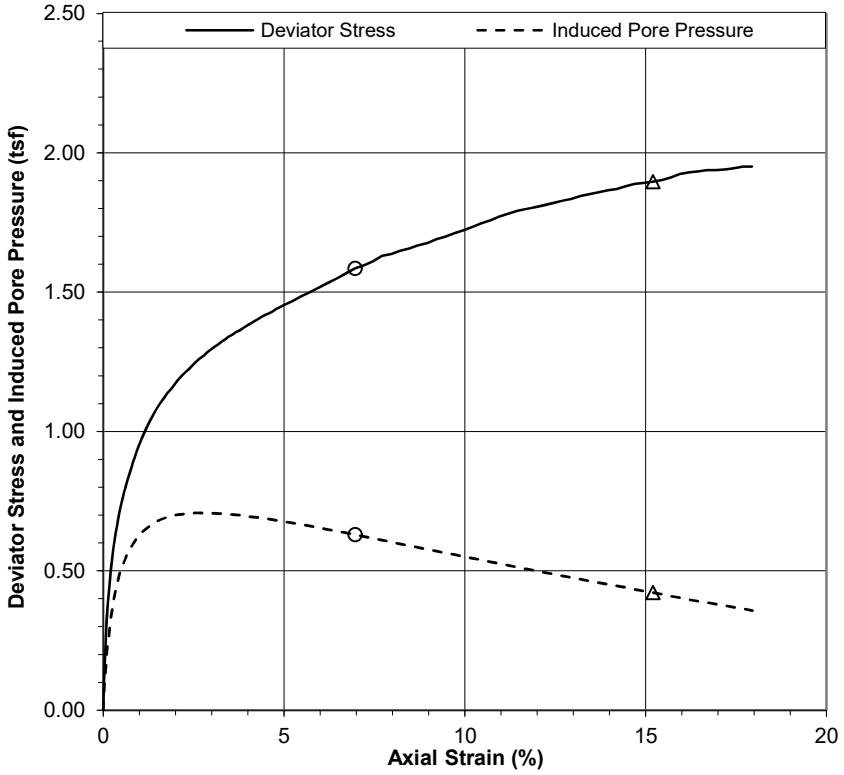
At Consolidated Undrained Failure

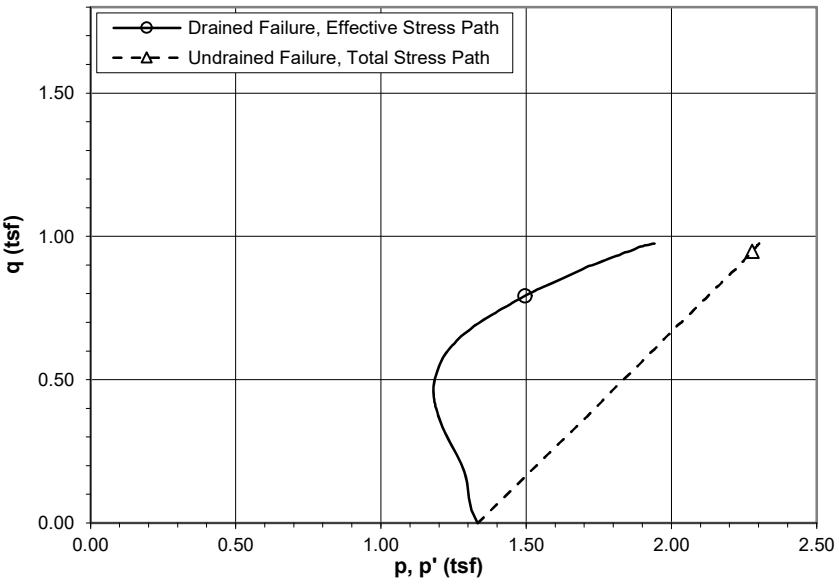
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.201
Deviator Stress (tsf)	1.896
Minor Principal Stress, σ_3 (tsf)	1.330
Major Principal Stress, σ_1 (tsf)	3.226
p (tsf)	2.278
q (tsf)	0.948

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.4-A, 2.0'-4.5'	Lab ID	1031
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1031-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.757	Calculated Height (in)	5.664	Specific Gravity	2.65
Average Diameter (in)	2.879	Calculated Diameter (in)	2.903	ASTM D 854, Dry	
Calculated Area (in^2)	6.508	Calculated Area (in^2)	6.620	Liquid Limit	29
Moist Weight (lb)	2.748	Moist Weight (lb)	2.784	Plastic Limit	17
Moist Unit Weight (pcf)	126.7	Moist Unit Weight (pcf)	128.3	Plasticity Index	12
Moisture Content (%)	19.5	Moisture Content (%)	21.1	ASTM D 4318	
Dry Weight (lb)	2.300	Dry Weight (lb)	2.300		
Dry Unit Weight (pcf)	106.1	Dry Unit Weight (pcf)	106.0	Confining Stress	
Void Ratio	0.557	Void Ratio	0.558	σ_3 (tsf)	1.333
Degree of Saturation (%)	92.7	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.333

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.4-A, 2.0'-4.5'								Lab ID: 1031		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.620	0.000	0.000	5.145	0.000	1.333	1.333	1.333	1.333	1.333	0.000	1.000
0.8	8.2	0.001	0.02	6.621	0.089	0.089	5.211	0.066	1.422	1.356	1.267	1.378	1.312	0.045	1.070
1.7	16.1	0.003	0.05	6.623	0.175	0.175	5.263	0.118	1.508	1.391	1.216	1.421	1.303	0.087	1.144
2.5	23.2	0.004	0.08	6.625	0.252	0.252	5.307	0.162	1.586	1.424	1.172	1.460	1.298	0.126	1.215
3.3	29.0	0.005	0.09	6.626	0.315	0.315	5.344	0.199	1.649	1.450	1.135	1.491	1.293	0.157	1.277
4.2	33.7	0.007	0.12	6.628	0.366	0.366	5.376	0.231	1.700	1.469	1.103	1.517	1.286	0.183	1.332
5.0	37.7	0.009	0.15	6.630	0.410	0.410	5.407	0.261	1.744	1.482	1.073	1.539	1.278	0.205	1.382
5.9	41.1	0.010	0.17	6.631	0.446	0.446	5.433	0.288	1.780	1.492	1.046	1.557	1.269	0.223	1.426
6.7	44.3	0.011	0.20	6.633	0.480	0.480	5.459	0.314	1.814	1.500	1.020	1.574	1.260	0.240	1.471
7.5	47.0	0.012	0.22	6.634	0.510	0.509	5.482	0.337	1.844	1.507	0.998	1.590	1.253	0.255	1.511
8.4	49.5	0.014	0.25	6.636	0.537	0.536	5.503	0.358	1.871	1.513	0.977	1.603	1.245	0.268	1.549
9.2	51.8	0.015	0.27	6.637	0.562	0.562	5.523	0.378	1.897	1.519	0.957	1.616	1.238	0.281	1.587
10.0	54.0	0.016	0.29	6.639	0.586	0.585	5.541	0.396	1.920	1.524	0.939	1.628	1.232	0.292	1.623
10.9	56.1	0.018	0.31	6.640	0.608	0.607	5.557	0.412	1.943	1.531	0.923	1.639	1.227	0.304	1.658
11.7	58.0	0.019	0.34	6.642	0.629	0.628	5.574	0.429	1.964	1.535	0.907	1.650	1.221	0.314	1.693
12.5	59.9	0.021	0.36	6.644	0.649	0.648	5.588	0.443	1.984	1.541	0.893	1.660	1.217	0.324	1.726
13.3	61.6	0.022	0.39	6.645	0.667	0.666	5.601	0.456	2.002	1.546	0.880	1.669	1.213	0.333	1.757
14.2	63.2	0.023	0.41	6.647	0.685	0.684	5.614	0.468	2.020	1.551	0.868	1.678	1.209	0.342	1.788
15.0	64.8	0.025	0.44	6.649	0.702	0.701	5.626	0.481	2.037	1.556	0.855	1.687	1.206	0.350	1.819
15.8	66.3	0.026	0.46	6.650	0.718	0.717	5.637	0.492	2.053	1.561	0.845	1.695	1.203	0.358	1.848
16.7	67.7	0.028	0.49	6.652	0.733	0.732	5.647	0.502	2.068	1.566	0.835	1.702	1.201	0.366	1.877
17.5	69.1	0.029	0.52	6.654	0.748	0.747	5.658	0.513	2.084	1.571	0.824	1.710	1.197	0.373	1.906
18.4	70.4	0.031	0.54	6.656	0.762	0.761	5.666	0.521	2.097	1.576	0.815	1.717	1.196	0.380	1.933
19.2	71.9	0.032	0.56	6.657	0.778	0.777	5.676	0.531	2.113	1.582	0.806	1.725	1.194	0.388	1.964
20.0	73.2	0.034	0.60	6.659	0.792	0.790	5.685	0.540	2.127	1.587	0.797	1.732	1.192	0.395	1.991
20.9	74.2	0.035	0.62	6.661	0.802	0.800	5.692	0.547	2.137	1.590	0.790	1.737	1.190	0.400	2.013
21.7	75.3	0.036	0.64	6.662	0.814	0.812	5.700	0.555	2.148	1.594	0.782	1.742	1.188	0.406	2.039
22.5	76.5	0.038	0.68	6.665	0.827	0.825	5.706	0.561	2.161	1.600	0.775	1.748	1.187	0.412	2.065
23.3	77.5	0.039	0.69	6.666	0.837	0.836	5.713	0.568	2.171	1.604	0.768	1.754	1.186	0.418	2.088
24.2	78.5	0.041	0.73	6.668	0.848	0.846	5.719	0.574	2.182	1.607	0.761	1.759	1.184	0.423	2.112
25.0	79.5	0.043	0.75	6.670	0.859	0.857	5.725	0.580	2.192	1.612	0.755	1.764	1.184	0.428	2.134
25.8	80.6	0.044	0.78	6.671	0.870	0.868	5.731	0.586	2.203	1.617	0.749	1.769	1.183	0.434	2.158
26.7	81.5	0.045	0.80	6.673	0.879	0.877	5.736	0.591	2.212	1.621	0.744	1.773	1.182	0.439	2.179
27.5	82.4	0.046	0.82	6.674	0.889	0.887	5.742	0.597	2.222	1.625	0.738	1.778	1.182	0.444	2.202
28.4	83.3	0.048	0.84	6.676	0.899	0.897	5.746	0.601	2.231	1.630	0.733	1.783	1.182	0.448	2.223
29.2	84.2	0.049	0.87	6.678	0.908	0.906	5.751	0.606	2.240	1.634	0.728	1.787	1.181	0.453	2.244
30.0	85.3	0.051	0.90	6.679	0.920	0.918	5.757	0.611	2.251	1.640	0.722	1.793	1.181	0.459	2.270
30.9	86.1	0.052	0.92	6.681	0.928	0.926	5.761	0.616	2.259	1.644	0.718	1.796	1.181	0.463	2.290
31.7	86.8	0.053	0.94	6.682	0.935	0.933	5.764	0.619	2.266	1.647	0.714	1.800	1.180	0.466	2.306

Project: 173409690			Source: TP-4.4-A, 2.0'-4.5'								Lab ID: 1031		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
32.5	87.6	0.054	0.95	6.683	0.944	0.942	5.768	0.623	2.275	1.652	0.710	1.804	1.181	0.471	2.326
33.4	88.4	0.056	0.99	6.686	0.952	0.950	5.772	0.627	2.283	1.656	0.706	1.808	1.181	0.475	2.344
36.7	91.6	0.062	1.09	6.692	0.985	0.983	5.786	0.641	2.316	1.675	0.692	1.825	1.183	0.491	2.420
40.0	94.3	0.067	1.19	6.699	1.013	1.010	5.797	0.652	2.344	1.691	0.681	1.839	1.186	0.505	2.483
43.4	96.8	0.073	1.29	6.706	1.040	1.037	5.807	0.662	2.371	1.709	0.672	1.853	1.190	0.518	2.543
46.7	99.1	0.078	1.39	6.713	1.063	1.059	5.816	0.671	2.395	1.724	0.664	1.865	1.194	0.530	2.595
50.0	101.3	0.084	1.48	6.719	1.086	1.082	5.824	0.679	2.418	1.740	0.657	1.877	1.198	0.541	2.647
53.4	103.2	0.089	1.57	6.726	1.105	1.101	5.829	0.684	2.437	1.752	0.651	1.886	1.202	0.551	2.692
56.7	105.3	0.096	1.69	6.733	1.126	1.122	5.835	0.690	2.456	1.767	0.645	1.895	1.206	0.561	2.739
60.0	106.9	0.101	1.78	6.740	1.142	1.138	5.839	0.694	2.472	1.778	0.640	1.903	1.209	0.569	2.777
63.4	108.7	0.107	1.89	6.747	1.159	1.155	5.842	0.697	2.488	1.791	0.636	1.911	1.214	0.577	2.815
66.7	110.4	0.113	1.99	6.754	1.177	1.172	5.845	0.700	2.505	1.805	0.633	1.919	1.219	0.586	2.850
70.0	111.9	0.118	2.08	6.760	1.192	1.187	5.847	0.702	2.520	1.819	0.631	1.927	1.225	0.594	2.880
73.4	113.3	0.124	2.18	6.767	1.206	1.201	5.849	0.704	2.534	1.830	0.630	1.934	1.230	0.600	2.907
76.7	114.6	0.129	2.28	6.774	1.218	1.213	5.851	0.706	2.547	1.841	0.628	1.940	1.234	0.606	2.932
80.0	115.9	0.135	2.38	6.781	1.231	1.225	5.852	0.707	2.560	1.853	0.628	1.947	1.240	0.613	2.951
83.4	117.3	0.141	2.48	6.788	1.244	1.238	5.853	0.708	2.573	1.865	0.627	1.954	1.246	0.619	2.975
86.7	118.6	0.146	2.58	6.795	1.257	1.251	5.853	0.708	2.586	1.877	0.627	1.960	1.252	0.625	2.996
90.0	119.7	0.151	2.67	6.801	1.267	1.261	5.853	0.708	2.595	1.887	0.626	1.965	1.257	0.631	3.014
93.4	120.9	0.157	2.78	6.809	1.278	1.272	5.853	0.708	2.605	1.897	0.625	1.969	1.261	0.636	3.035
96.7	122.2	0.163	2.88	6.816	1.291	1.284	5.853	0.708	2.616	1.908	0.624	1.974	1.266	0.642	3.056
100.0	123.2	0.169	2.98	6.823	1.301	1.293	5.852	0.707	2.625	1.918	0.624	1.978	1.271	0.647	3.071
103.4	124.4	0.174	3.08	6.830	1.311	1.304	5.852	0.707	2.635	1.928	0.625	1.983	1.276	0.652	3.087
106.7	125.4	0.180	3.18	6.837	1.321	1.313	5.851	0.706	2.645	1.939	0.626	1.988	1.282	0.657	3.098
110.1	126.4	0.185	3.27	6.844	1.330	1.322	5.850	0.705	2.655	1.949	0.627	1.994	1.288	0.661	3.109
113.4	127.4	0.191	3.37	6.851	1.338	1.330	5.850	0.705	2.664	1.959	0.629	1.999	1.294	0.665	3.116
116.7	128.3	0.196	3.46	6.857	1.348	1.339	5.849	0.704	2.674	1.970	0.631	2.004	1.301	0.670	3.123
120.1	129.3	0.203	3.58	6.865	1.356	1.347	5.847	0.702	2.681	1.979	0.632	2.008	1.305	0.674	3.132
123.4	130.4	0.208	3.68	6.872	1.366	1.357	5.847	0.702	2.690	1.989	0.632	2.012	1.310	0.679	3.149
126.7	131.1	0.214	3.78	6.879	1.372	1.363	5.845	0.700	2.695	1.995	0.632	2.014	1.314	0.681	3.155
130.1	132.1	0.220	3.88	6.887	1.381	1.372	5.843	0.698	2.703	2.005	0.633	2.017	1.319	0.686	3.166
133.4	133.0	0.225	3.98	6.894	1.389	1.379	5.842	0.697	2.710	2.014	0.634	2.021	1.324	0.690	3.174
136.7	133.8	0.231	4.07	6.900	1.396	1.386	5.840	0.695	2.718	2.024	0.637	2.025	1.330	0.693	3.176
140.0	134.8	0.236	4.17	6.908	1.405	1.395	5.838	0.693	2.727	2.034	0.639	2.030	1.337	0.697	3.182
143.4	135.8	0.242	4.28	6.915	1.413	1.403	5.837	0.692	2.737	2.045	0.642	2.035	1.343	0.702	3.187
146.7	136.7	0.248	4.37	6.922	1.422	1.411	5.836	0.691	2.745	2.054	0.643	2.039	1.348	0.706	3.195
150.0	137.4	0.253	4.47	6.930	1.428	1.417	5.833	0.688	2.750	2.062	0.645	2.042	1.354	0.709	3.197
153.4	138.2	0.259	4.58	6.937	1.435	1.424	5.831	0.686	2.756	2.070	0.647	2.045	1.358	0.712	3.202
156.7	139.1	0.265	4.68	6.945	1.442	1.431	5.829	0.683	2.763	2.080	0.649	2.048	1.364	0.715	3.204
160.0	140.0	0.271	4.78	6.952	1.450	1.439	5.827	0.682	2.771	2.089	0.650	2.052	1.370	0.719	3.212
163.4	140.8	0.276	4.88	6.959	1.457	1.445	5.825	0.680	2.777	2.098	0.653	2.055	1.375	0.723	3.214
166.7	141.7	0.282	4.97	6.966	1.464	1.453	5.822	0.677	2.785	2.108	0.655	2.059	1.381	0.726	3.217
175.1	143.6	0.296	5.22	6.984	1.480	1.468	5.817	0.672	2.801	2.129	0.661	2.067	1.395	0.734	3.219
183.4	145.7	0.310	5.48	7.003	1.498	1.485	5.812	0.667	2.817	2.150	0.666	2.075	1.408	0.742	3.231
191.7	147.6	0.324	5.72	7.021	1.514	1.500	5.806	0.661	2.833	2.173	0.672	2.083	1.422	0.750	3.231
200.1	149.6	0.338	5.97	7.040	1.530	1.516	5.800	0.655	2.850	2.195	0.679	2.092	1.437	0.758	3.232
208.4	151.8	0.352	6.22	7.059	1.549	1.534	5.794	0.649	2.866	2.217	0.684	2.099	1.451	0.767	3.244
216.7	153.8	0.366	6.47	7.077	1.564	1.549	5.787	0.642	2.881	2.239	0.690	2.106	1.464	0.774	3.246
225.1	156.1	0.380	6.72	7.096	1.584	1.568	5.782	0.637	2.902	2.265	0.697	2.118	1.481	0.784	3.250
233.4	158.3	0.394	6.96	7.115	1.602	1.585	5.775	0.630	2.918	2.288	0.703	2.126	1.496	0.792	3.254
241.7	159.9	0.409	7.22	7.135	1.614	1.597	5.768	0.623	2.928	2.306	0.709	2.130	1.507	0.798	3.252
250.1	161.8	0.423	7.46	7.154	1.629	1.611	5.762	0.617	2.944	2.327	0.716	2.138	1.521	0.805	3.250
258.4	164.2	0.437	7.71	7.173	1.649	1.630	5.756	0.611	2.965	2.354	0.724	2.150	1.539	0.815	3.252
266.7	165.5	0.452	7.97	7.193	1.656	1.637	5.748	0.603	2.970	2.367	0.729	2.151	1.548	0.819	3.245
275.1	167.0	0.465	8.21	7.212	1.667	1.648	5.742	0.597	2.980	2.383	0.735	2.156	1.559	0.824	3.241
283.4	168.4	0.479	8.46	7.232	1.676	1.656	5.736	0.591	2.990	2.399	0.743	2.162	1.571	0.828	3.229
291.7	170.0	0.493	8.71	7.251	1.688	1.667	5.729	0.584	3.001	2.417	0.749	2.167	1.583	0.834	3.225
300.1	171.4	0.508	8.97	7.272	1.697	1.676	5.723	0.578	3.008	2.431	0.755	2.171	1.593	0.838	3.219
308.4	173.4	0.522	9.21	7.291	1.712	1.690	5.716	0.571	3.022	2.451	0.761	2.177	1.606	0.845	3.222
316.7	174.8	0.536	9.46	7.311	1.721	1.699	5.710	0.565	3.031	2.467	0.768	2.182	1.617	0.849	3.212
325.1	176.6	0.550	9.72	7.332	1.734	1.711	5.704	0.559	3.045	2.486	0.775	2.189	1.630	0.856	3.209
333.4	178.2	0.564	9.96	7.352	1.745	1.722	5.697	0.552	3.055	2.503	0.782	2.195	1.642	0.861	3.203
341.7	180.1	0.579	10.22	7.373	1.758	1.734	5.690	0.545	3.067	2.521	0.788	2.200	1.654	0.867	3.202
350.1	181.9	0.593	10.46	7.393	1.772	1.747	5.684	0.539	3.079	2.540	0.793	2.206	1.667	0.873	3.202
358.4	183.6	0.607	10.71	7.414	1.783	1.758	5.678	0.533	3.091	2.558	0.800	2.212	1.679	0.879	3.196
366.8	185.6	0.621	10.95	7.434	1.797	1.771	5.672	0.527	3.106	2.579	0.808	2.221	1.694	0.886	3.191
375.1	187.3	0.635	11.21	7.455	1.809	1.782	5.665	0.520	3.115	2.595	0.813	2.224	1.704	0.891	3.192
383.4	189.0	0.649	11.46	7.477	1.820	1.792	5.658	0.513	3.124	2.611	0.818	2.228	1.714	0.896	3.190
391.8	190.2	0.663	11.70	7.497	1.826	1.799	5.652	0.507	3.132	2.625	0.826	2.233	1.726	0.899	3.176

Project: 173409690			Source: TP-4.4-A, 2.0'-4.5'								Lab ID: 1031		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
400.1	191.4	0.677	11.95	7.518	1.833	1.804	5.646	0.501	3.139	2.638	0.833	2.237	1.735	0.902	3.166
408.4	192.7	0.691	12.20	7.539	1.841	1.812	5.640	0.495	3.144	2.649	0.838	2.238	1.744	0.906	3.162
416.8	194.2	0.705	12.45	7.561	1.849	1.819	5.633	0.488	3.152	2.663	0.844	2.242	1.754	0.910	3.155
425.1	195.7	0.720	12.71	7.583	1.859	1.828	5.627	0.482	3.162	2.680	0.852	2.248	1.766	0.914	3.147
433.4	197.0	0.734	12.95	7.604	1.866	1.835	5.621	0.476	3.167	2.691	0.857	2.250	1.774	0.917	3.141
441.8	198.7	0.748	13.20	7.626	1.876	1.845	5.615	0.470	3.176	2.706	0.861	2.254	1.784	0.922	3.142
450.1	200.1	0.762	13.45	7.648	1.884	1.852	5.609	0.464	3.183	2.719	0.867	2.257	1.793	0.926	3.135
458.5	201.4	0.776	13.71	7.671	1.891	1.858	5.603	0.458	3.189	2.731	0.873	2.260	1.802	0.929	3.128
466.8	202.9	0.790	13.95	7.693	1.899	1.865	5.597	0.452	3.197	2.745	0.880	2.264	1.812	0.933	3.120
475.1	204.0	0.804	14.20	7.715	1.904	1.870	5.591	0.446	3.201	2.755	0.885	2.266	1.820	0.935	3.112
483.5	205.7	0.819	14.46	7.738	1.914	1.880	5.585	0.440	3.211	2.770	0.890	2.271	1.830	0.940	3.111
491.8	207.3	0.833	14.70	7.760	1.924	1.889	5.579	0.434	3.219	2.785	0.896	2.275	1.841	0.944	3.107
500.1	208.4	0.847	14.95	7.783	1.927	1.892	5.573	0.428	3.222	2.794	0.902	2.276	1.848	0.946	3.097
508.5	209.5	0.861	15.20	7.806	1.932	1.896	5.568	0.423	3.226	2.804	0.907	2.278	1.856	0.948	3.089
516.8	210.9	0.875	15.45	7.829	1.939	1.903	5.561	0.416	3.232	2.816	0.913	2.281	1.864	0.951	3.084
525.1	212.5	0.889	15.70	7.853	1.948	1.911	5.555	0.410	3.240	2.830	0.919	2.284	1.874	0.955	3.080
533.5	214.6	0.903	15.95	7.875	1.962	1.924	5.549	0.404	3.252	2.848	0.924	2.290	1.886	0.962	3.082
541.8	216.0	0.918	16.21	7.900	1.969	1.930	5.542	0.397	3.257	2.860	0.930	2.292	1.895	0.965	3.076
550.1	217.0	0.932	16.45	7.923	1.972	1.933	5.536	0.391	3.259	2.868	0.936	2.293	1.902	0.966	3.066
558.5	218.2	0.946	16.70	7.947	1.977	1.937	5.532	0.386	3.264	2.878	0.940	2.296	1.909	0.969	3.060
566.8	219.0	0.960	16.95	7.970	1.978	1.938	5.526	0.381	3.265	2.884	0.946	2.296	1.915	0.969	3.049
575.1	220.0	0.974	17.20	7.994	1.981	1.940	5.520	0.375	3.267	2.891	0.951	2.297	1.921	0.970	3.039
583.5	221.2	0.989	17.45	8.019	1.986	1.944	5.515	0.370	3.271	2.901	0.957	2.299	1.929	0.972	3.032
591.8	222.6	1.002	17.69	8.043	1.993	1.951	5.510	0.364	3.277	2.912	0.961	2.301	1.937	0.975	3.029
599.9	223.3	1.017	17.95	8.067	1.993	1.950	5.503	0.358	3.276	2.918	0.967	2.301	1.942	0.975	3.017

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.5-B, 2.0'-4.0'	Lab ID	1035
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1035-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	08/01/2022

Specific Gravity	2.64
ASTM D 854, Dry	
Liquid Limit	36
Plastic Limit	20
Plasticity Index	16
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	70
Nominal Consolidation Pressure (psi)	20

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	1.351
Time to 50% Consolidation (min)	46.00
Actual Axial Strain Rate of Test (%/min)	0.006

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	129.9
Moisture Content (%)	19.4
Dry Unit Weight (pcf)	108.8
Void Ratio	0.512
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

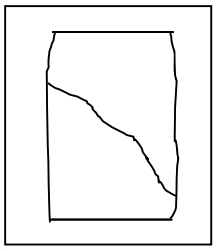
Axial Strain (%)	4.721
Deviator Stress (tsf)	1.643
Induced Pore Pressure (tsf)	0.628
Minor Effective Stress, σ_3' (tsf)	0.724
Major Effective Stress, σ_1' (tsf)	2.367
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.269
p' (tsf)	1.546
q (tsf)	0.821

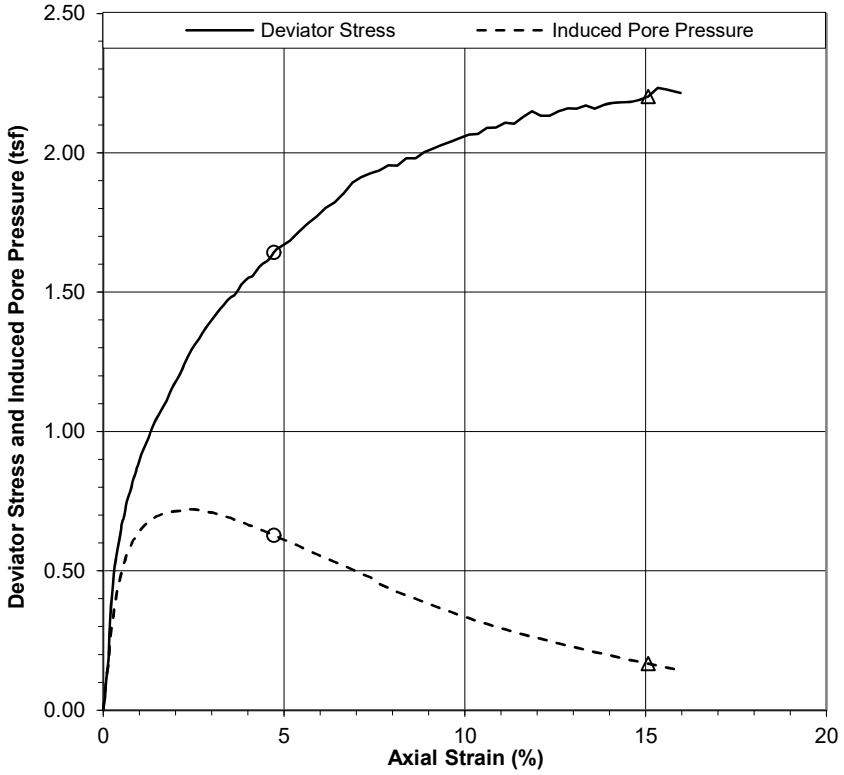
At Consolidated Undrained Failure

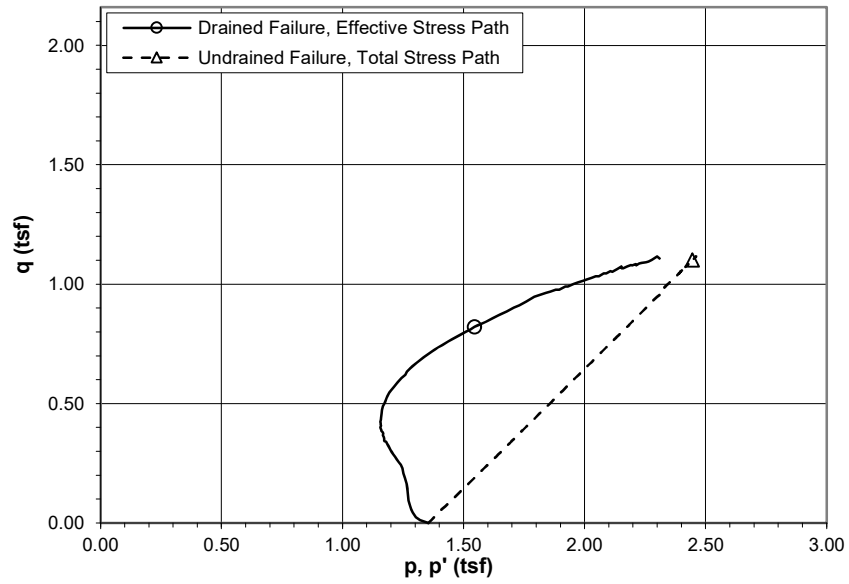
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.073
Deviator Stress (tsf)	2.202
Minor Principal Stress, σ_3 (tsf)	1.344
Major Principal Stress, σ_1 (tsf)	3.546
p (tsf)	2.445
q (tsf)	1.101

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
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Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 08/25/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.5-B, 2.0'-4.0'	Lab ID	1035
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1035-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.763	Calculated Height (in)	5.663	Specific Gravity	2.64
Average Diameter (in)	2.881	Calculated Diameter (in)	2.901	ASTM D 854, Dry	
Calculated Area (in^2)	6.520	Calculated Area (in^2)	6.609	Liquid Limit	36
Moist Weight (lb)	2.810	Moist Weight (lb)	2.813	Plastic Limit	20
Moist Unit Weight (pcf)	129.2	Moist Unit Weight (pcf)	129.9	Plasticity Index	16
Moisture Content (%)	19.3	Moisture Content (%)	19.4	ASTM D 4318	
Dry Weight (lb)	2.356	Dry Weight (lb)	2.356		
Dry Unit Weight (pcf)	108.3	Dry Unit Weight (pcf)	108.8	Confining Stress	
Void Ratio	0.519	Void Ratio	0.512	σ_3 (tsf)	1.354
Degree of Saturation (%)	98.2	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	1.354

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.5-B, 2.0'-4.0'								Lab ID: 1035		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.609	0.000	0.000	5.137	0.000	1.354	1.354	1.354	1.354	1.354	0.000	1.000
3.8	2.2	0.002	0.03	6.611	0.023	0.023	5.182	0.046	1.378	1.332	1.309	1.366	1.321	0.012	1.018
7.7	4.4	0.003	0.05	6.612	0.048	0.048	5.211	0.075	1.402	1.327	1.279	1.378	1.303	0.024	1.037
11.6	8.2	0.004	0.07	6.614	0.089	0.089	5.245	0.109	1.444	1.335	1.246	1.399	1.290	0.045	1.072
15.4	10.8	0.005	0.09	6.615	0.118	0.117	5.264	0.128	1.469	1.342	1.224	1.411	1.283	0.059	1.096
19.2	13.2	0.007	0.12	6.617	0.144	0.143	5.282	0.146	1.497	1.351	1.208	1.425	1.280	0.072	1.119
23.1	17.3	0.008	0.15	6.618	0.188	0.188	5.312	0.176	1.542	1.366	1.178	1.448	1.272	0.094	1.160
27.0	24.6	0.010	0.17	6.620	0.268	0.267	5.356	0.220	1.622	1.403	1.136	1.489	1.269	0.134	1.235
30.8	30.5	0.011	0.20	6.622	0.331	0.331	5.391	0.254	1.685	1.431	1.100	1.520	1.265	0.165	1.301
34.6	34.5	0.012	0.22	6.623	0.376	0.375	5.421	0.284	1.730	1.446	1.071	1.543	1.259	0.188	1.350
38.5	38.2	0.014	0.25	6.625	0.416	0.415	5.448	0.311	1.770	1.459	1.044	1.562	1.251	0.207	1.398
42.3	42.2	0.016	0.28	6.627	0.459	0.458	5.472	0.335	1.812	1.477	1.019	1.583	1.248	0.229	1.450
46.2	45.0	0.017	0.30	6.628	0.489	0.488	5.495	0.358	1.843	1.485	0.997	1.599	1.241	0.244	1.490
50.0	47.1	0.018	0.32	6.630	0.512	0.511	5.515	0.379	1.866	1.488	0.977	1.611	1.232	0.256	1.523
53.9	49.3	0.020	0.35	6.632	0.535	0.534	5.535	0.399	1.889	1.491	0.956	1.622	1.223	0.267	1.559
57.7	51.2	0.021	0.37	6.633	0.556	0.555	5.553	0.416	1.911	1.495	0.940	1.634	1.218	0.277	1.590
61.6	53.1	0.022	0.39	6.635	0.576	0.575	5.570	0.433	1.930	1.497	0.922	1.643	1.209	0.287	1.623
65.4	54.9	0.024	0.42	6.637	0.596	0.595	5.586	0.449	1.951	1.502	0.907	1.654	1.205	0.297	1.656
69.3	56.3	0.025	0.45	6.638	0.611	0.610	5.600	0.464	1.966	1.502	0.892	1.661	1.197	0.305	1.684
73.1	58.2	0.027	0.47	6.640	0.631	0.630	5.614	0.477	1.987	1.510	0.879	1.672	1.195	0.315	1.717
77.0	60.0	0.028	0.49	6.642	0.650	0.649	5.627	0.491	2.003	1.513	0.864	1.679	1.188	0.325	1.751
80.8	61.4	0.029	0.51	6.643	0.666	0.665	5.639	0.503	2.020	1.517	0.852	1.687	1.185	0.332	1.780
84.7	63.0	0.030	0.54	6.644	0.683	0.682	5.651	0.515	2.036	1.522	0.840	1.695	1.181	0.341	1.812
88.5	63.3	0.032	0.56	6.646	0.686	0.685	5.661	0.525	2.040	1.515	0.830	1.697	1.172	0.342	1.825
92.4	65.2	0.034	0.59	6.648	0.707	0.705	5.672	0.535	2.060	1.525	0.820	1.707	1.172	0.353	1.860
96.2	66.4	0.035	0.61	6.650	0.719	0.718	5.681	0.544	2.074	1.530	0.812	1.715	1.171	0.359	1.884
100.1	68.0	0.036	0.63	6.651	0.736	0.735	5.690	0.554	2.089	1.535	0.800	1.721	1.168	0.367	1.919
103.9	69.5	0.037	0.66	6.652	0.752	0.750	5.698	0.562	2.106	1.544	0.794	1.731	1.169	0.375	1.945
107.8	70.5	0.039	0.69	6.654	0.763	0.761	5.706	0.570	2.116	1.547	0.786	1.736	1.166	0.380	1.969
111.6	71.5	0.040	0.71	6.656	0.773	0.771	5.715	0.578	2.125	1.547	0.775	1.739	1.161	0.386	1.995
115.5	72.3	0.042	0.73	6.658	0.782	0.781	5.722	0.585	2.135	1.550	0.769	1.745	1.160	0.390	2.014
119.3	73.4	0.043	0.76	6.659	0.793	0.791	5.728	0.591	2.145	1.554	0.763	1.749	1.158	0.396	2.038
123.2	74.4	0.045	0.79	6.661	0.804	0.802	5.735	0.599	2.156	1.558	0.756	1.755	1.157	0.401	2.061
127.0	75.5	0.045	0.80	6.662	0.816	0.814	5.741	0.604	2.169	1.565	0.751	1.762	1.158	0.407	2.083
130.9	76.6	0.047	0.83	6.664	0.828	0.826	5.747	0.610	2.181	1.571	0.745	1.769	1.158	0.413	2.107
134.7	77.7	0.049	0.86	6.666	0.839	0.837	5.752	0.616	2.192	1.576	0.740	1.774	1.158	0.418	2.131
138.6	78.6	0.050	0.89	6.668	0.849	0.847	5.758	0.622	2.201	1.579	0.733	1.778	1.156	0.423	2.156
142.4	79.7	0.052	0.91	6.669	0.860	0.858	5.763	0.626	2.213	1.587	0.729	1.784	1.158	0.429	2.178
146.3	80.8	0.053	0.93	6.671	0.872	0.870	5.768	0.631	2.225	1.594	0.725	1.791	1.159	0.435	2.200

Project: 173409690			Source: TP-4.5-B, 2.0'-4.0'								Lab ID: 1035		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
150.1	81.5	0.054	0.96	6.673	0.879	0.877	5.772	0.635	2.232	1.597	0.720	1.794	1.158	0.438	2.218
165.5	85.4	0.060	1.06	6.679	0.921	0.919	5.789	0.652	2.273	1.621	0.702	1.814	1.162	0.459	2.308
180.9	88.2	0.065	1.15	6.685	0.950	0.947	5.803	0.666	2.302	1.636	0.689	1.829	1.163	0.473	2.374
196.3	91.2	0.071	1.26	6.693	0.981	0.978	5.814	0.678	2.333	1.656	0.678	1.844	1.167	0.489	2.443
211.7	94.6	0.077	1.36	6.700	1.017	1.014	5.823	0.686	2.369	1.683	0.669	1.862	1.176	0.507	2.515
227.0	97.6	0.083	1.46	6.707	1.048	1.044	5.832	0.695	2.399	1.704	0.660	1.877	1.182	0.522	2.583
242.4	99.7	0.088	1.56	6.713	1.069	1.065	5.837	0.701	2.420	1.720	0.654	1.887	1.187	0.533	2.629
257.8	102.0	0.094	1.66	6.720	1.093	1.089	5.843	0.706	2.443	1.737	0.648	1.898	1.192	0.544	2.680
273.2	104.0	0.099	1.76	6.727	1.114	1.109	5.847	0.710	2.465	1.755	0.645	1.910	1.200	0.555	2.720
288.6	107.1	0.105	1.85	6.734	1.145	1.140	5.848	0.712	2.495	1.783	0.642	1.925	1.213	0.570	2.775
304.0	109.7	0.110	1.95	6.740	1.172	1.167	5.851	0.714	2.521	1.807	0.640	1.938	1.224	0.584	2.824
319.4	111.7	0.116	2.05	6.747	1.192	1.187	5.852	0.715	2.540	1.825	0.638	1.947	1.231	0.593	2.860
334.8	114.3	0.122	2.15	6.754	1.218	1.213	5.853	0.716	2.567	1.851	0.638	1.961	1.244	0.607	2.902
350.1	117.0	0.127	2.24	6.760	1.246	1.240	5.852	0.716	2.595	1.879	0.639	1.974	1.259	0.620	2.942
365.5	119.6	0.132	2.34	6.767	1.273	1.267	5.857	0.721	2.621	1.900	0.632	1.987	1.266	0.634	3.004
380.9	122.2	0.138	2.44	6.774	1.299	1.293	5.858	0.721	2.647	1.926	0.633	2.000	1.279	0.647	3.045
396.3	124.3	0.144	2.54	6.781	1.320	1.314	5.857	0.721	2.667	1.946	0.632	2.010	1.289	0.657	3.077
411.7	126.2	0.150	2.64	6.788	1.338	1.332	5.855	0.718	2.685	1.967	0.635	2.019	1.301	0.666	3.098
427.1	128.1	0.155	2.73	6.794	1.358	1.351	5.854	0.717	2.705	1.988	0.636	2.030	1.312	0.676	3.123
442.5	130.3	0.161	2.85	6.802	1.379	1.373	5.851	0.714	2.726	2.012	0.639	2.040	1.326	0.686	3.147
457.8	131.9	0.166	2.93	6.808	1.394	1.387	5.847	0.711	2.740	2.030	0.642	2.047	1.336	0.694	3.160
473.2	133.8	0.172	3.04	6.816	1.414	1.406	5.845	0.709	2.760	2.051	0.645	2.057	1.348	0.703	3.182
488.6	135.7	0.178	3.14	6.823	1.432	1.425	5.841	0.705	2.779	2.074	0.649	2.066	1.362	0.712	3.195
504.0	137.4	0.184	3.24	6.830	1.448	1.441	5.837	0.701	2.794	2.093	0.653	2.074	1.373	0.720	3.207
519.4	138.9	0.189	3.34	6.837	1.463	1.455	5.834	0.697	2.808	2.110	0.656	2.080	1.383	0.727	3.218
534.7	140.5	0.195	3.43	6.844	1.479	1.470	5.830	0.693	2.823	2.130	0.659	2.088	1.394	0.735	3.231
550.2	141.8	0.200	3.53	6.851	1.490	1.482	5.826	0.689	2.835	2.146	0.664	2.094	1.405	0.741	3.232
565.5	142.6	0.206	3.63	6.858	1.498	1.489	5.820	0.684	2.842	2.158	0.669	2.097	1.413	0.744	3.225
580.9	144.5	0.211	3.72	6.864	1.515	1.506	5.817	0.681	2.859	2.179	0.672	2.106	1.426	0.753	3.241
596.3	146.6	0.217	3.83	6.872	1.537	1.527	5.811	0.675	2.881	2.206	0.678	2.117	1.442	0.764	3.251
611.7	148.2	0.223	3.93	6.879	1.551	1.542	5.806	0.670	2.894	2.224	0.682	2.123	1.453	0.771	3.260
627.1	149.4	0.228	4.02	6.885	1.562	1.552	5.801	0.665	2.906	2.241	0.689	2.130	1.465	0.776	3.255
642.5	149.9	0.234	4.12	6.893	1.566	1.556	5.797	0.661	2.909	2.248	0.692	2.131	1.470	0.778	3.249
657.9	151.8	0.239	4.22	6.900	1.584	1.574	5.791	0.655	2.927	2.272	0.698	2.140	1.485	0.787	3.254
673.2	153.6	0.245	4.32	6.907	1.601	1.591	5.786	0.650	2.944	2.295	0.704	2.149	1.500	0.795	3.259
688.6	154.9	0.250	4.42	6.914	1.613	1.603	5.781	0.645	2.957	2.312	0.709	2.155	1.510	0.801	3.260
704.0	155.9	0.256	4.52	6.922	1.622	1.611	5.776	0.639	2.964	2.324	0.713	2.158	1.519	0.805	3.258
719.4	157.0	0.261	4.61	6.928	1.631	1.620	5.771	0.635	2.974	2.339	0.719	2.164	1.529	0.810	3.255
734.8	159.4	0.267	4.72	6.936	1.654	1.643	5.765	0.628	2.995	2.367	0.724	2.174	1.546	0.821	3.269
750.2	160.8	0.273	4.82	6.943	1.667	1.656	5.760	0.623	3.010	2.386	0.730	2.182	1.558	0.828	3.267
765.6	161.7	0.278	4.92	6.950	1.676	1.664	5.753	0.616	3.017	2.401	0.737	2.185	1.569	0.832	3.257
804.0	164.1	0.292	5.16	6.968	1.696	1.683	5.740	0.603	3.036	2.433	0.750	2.195	1.591	0.842	3.246
842.5	167.7	0.306	5.41	6.987	1.729	1.716	5.726	0.589	3.068	2.478	0.763	2.210	1.621	0.858	3.249
880.9	171.2	0.320	5.65	7.005	1.760	1.746	5.711	0.574	3.099	2.525	0.778	2.226	1.652	0.873	3.243
919.4	174.1	0.334	5.91	7.023	1.785	1.771	5.696	0.560	3.123	2.563	0.793	2.238	1.678	0.885	3.234
957.9	177.7	0.348	6.15	7.042	1.817	1.802	5.683	0.546	3.155	2.609	0.806	2.254	1.707	0.901	3.236
996.3	180.1	0.362	6.40	7.060	1.837	1.822	5.669	0.533	3.174	2.641	0.819	2.263	1.730	0.911	3.224
1034.8	183.9	0.377	6.66	7.080	1.871	1.855	5.656	0.519	3.205	2.686	0.832	2.278	1.759	0.927	3.231
1073.3	188.3	0.390	6.89	7.098	1.910	1.893	5.642	0.505	3.245	2.740	0.846	2.298	1.793	0.947	3.238
1111.7	190.7	0.404	7.14	7.117	1.930	1.913	5.627	0.490	3.267	2.777	0.864	2.311	1.820	0.956	3.215
1150.2	192.6	0.418	7.39	7.136	1.943	1.926	5.613	0.477	3.279	2.802	0.877	2.316	1.840	0.963	3.197
1188.7	194.3	0.432	7.64	7.155	1.955	1.937	5.589	0.453	3.280	2.827	0.890	2.311	1.859	0.968	3.176
1227.1	196.6	0.447	7.89	7.175	1.973	1.955	5.576	0.439	3.298	2.858	0.904	2.320	1.881	0.977	3.162
1265.6	197.2	0.461	8.14	7.194	1.974	1.954	5.562	0.425	3.297	2.872	0.918	2.320	1.895	0.977	3.128
1304.0	200.3	0.475	8.38	7.213	2.000	1.980	5.548	0.412	3.323	2.911	0.931	2.333	1.921	0.990	3.126
1342.5	201.1	0.489	8.64	7.234	2.001	1.981	5.537	0.401	3.322	2.921	0.941	2.332	1.931	0.990	3.105
1381.0	203.8	0.503	8.88	7.252	2.023	2.002	5.525	0.388	3.345	2.956	0.954	2.344	1.955	1.001	3.098
1419.4	205.6	0.516	9.12	7.272	2.036	2.014	5.513	0.376	3.357	2.981	0.967	2.350	1.974	1.007	3.083
1457.9	207.6	0.531	9.37	7.292	2.050	2.028	5.500	0.364	3.371	3.008	0.980	2.357	1.994	1.014	3.070
1496.4	209.4	0.545	9.62	7.312	2.062	2.039	5.489	0.353	3.382	3.029	0.989	2.362	2.009	1.020	3.061
1534.8	211.4	0.558	9.86	7.332	2.076	2.053	5.478	0.341	3.396	3.055	1.002	2.370	2.028	1.026	3.048
1573.3	213.3	0.573	10.11	7.352	2.089	2.065	5.467	0.331	3.409	3.079	1.014	2.377	2.046	1.033	3.037
1611.7	214.2	0.587	10.36	7.373	2.092	2.067	5.456	0.319	3.412	3.092	1.025	2.378	2.059	1.034	3.016
1650.2	217.1	0.601	10.61	7.393	2.114	2.089	5.446	0.309	3.433	3.123	1.034	2.388	2.079	1.045	3.020
1688.7	217.9	0.615	10.86	7.414	2.116	2.090	5.436	0.299	3.434	3.135	1.045	2.389	2.090	1.045	3.001
1727.1	220.4	0.629	11.12	7.435	2.134	2.108	5.427	0.291	3.451	3.160	1.052	2.397	2.106	1.054	3.003
1765.6	220.7	0.644	11.37	7.456	2.131	2.104	5.417	0.281	3.447	3.166	1.062	2.395	2.114	1.052	2.980
1804.1	223.9	0.658	11.61	7.477	2.156	2.128	5.408	0.272	3.472	3.200	1.071	2.407	2.136	1.064	2.986
1842.5	226.7	0.671	11.86	7.498	2.177	2.148	5.400	0.264	3.491	3.227	1.079	2.416	2.153	1.074	2.992

Project: 173409690			Source: TP-4.5-B, 2.0'-4.0'								Lab ID: 1035		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
1881.0	225.8	0.685	12.10	7.519	2.162	2.133	5.394	0.257	3.476	3.219	1.086	2.409	2.152	1.067	2.965
1919.4	226.4	0.699	12.35	7.539	2.162	2.133	5.385	0.249	3.475	3.226	1.094	2.409	2.160	1.066	2.950
1957.9	228.8	0.713	12.59	7.561	2.179	2.149	5.377	0.240	3.492	3.252	1.103	2.418	2.178	1.074	2.947
1996.4	230.7	0.728	12.85	7.583	2.190	2.160	5.368	0.231	3.503	3.272	1.112	2.423	2.192	1.080	2.943
2034.8	231.2	0.741	13.09	7.604	2.189	2.158	5.361	0.225	3.501	3.276	1.118	2.422	2.197	1.079	2.930
2073.3	233.1	0.756	13.34	7.626	2.201	2.169	5.353	0.217	3.513	3.296	1.127	2.428	2.212	1.085	2.925
2111.8	232.7	0.770	13.59	7.648	2.190	2.158	5.345	0.209	3.501	3.292	1.134	2.422	2.213	1.079	2.903
2150.2	235.0	0.784	13.85	7.671	2.205	2.172	5.340	0.203	3.515	3.312	1.140	2.429	2.226	1.086	2.906
2188.7	236.4	0.798	14.09	7.692	2.212	2.179	5.331	0.195	3.522	3.327	1.148	2.433	2.238	1.089	2.898
2227.1	237.4	0.812	14.33	7.714	2.215	2.181	5.323	0.187	3.525	3.338	1.157	2.434	2.247	1.091	2.886
2265.6	238.3	0.826	14.59	7.737	2.217	2.183	5.317	0.180	3.527	3.347	1.164	2.435	2.255	1.091	2.875
2304.1	239.9	0.840	14.84	7.760	2.226	2.190	5.310	0.174	3.534	3.360	1.169	2.438	2.264	1.095	2.873
2342.5	241.8	0.854	15.07	7.782	2.238	2.202	5.304	0.167	3.546	3.379	1.177	2.445	2.278	1.101	2.871
2381.0	246.1	0.869	15.34	7.806	2.270	2.234	5.297	0.160	3.577	3.417	1.183	2.460	2.300	1.117	2.888
2419.5	246.1	0.882	15.58	7.828	2.264	2.227	5.290	0.153	3.570	3.416	1.190	2.456	2.303	1.113	2.871
2457.9	246.1	0.896	15.83	7.851	2.257	2.219	5.283	0.146	3.563	3.417	1.197	2.453	2.307	1.110	2.854
2480.3	246.0	0.904	15.97	7.864	2.252	2.214	5.278	0.142	3.558	3.416	1.202	2.451	2.309	1.107	2.842

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-A, 1.5'-3.5'	Lab ID	1036
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1036-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	06/20/2022
		Date Tested	07/29/2022

Specific Gravity	2.65
ASTM D 854, Dry	
Liquid Limit	28
Plastic Limit	16
Plasticity Index	12
ASTM D 4318	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	75
Nominal Consolidation Pressure (psi)	15

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	0.923
Time to 50% Consolidation (min)	
Actual Axial Strain Rate of Test (%/min)	0.035

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	135.6
Moisture Content (%)	15.2
Dry Unit Weight (pcf)	117.8
Void Ratio	0.402
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

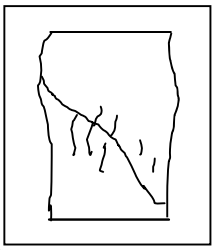
Axial Strain (%)	3.131
Deviator Stress (tsf)	1.552
Induced Pore Pressure (tsf)	0.411
Minor Effective Stress, σ_3' (tsf)	0.511
Major Effective Stress, σ_1' (tsf)	2.063
Eff. Principal Stress Ratio, σ_1'/σ_3'	4.035
p' (tsf)	1.287
q (tsf)	0.776

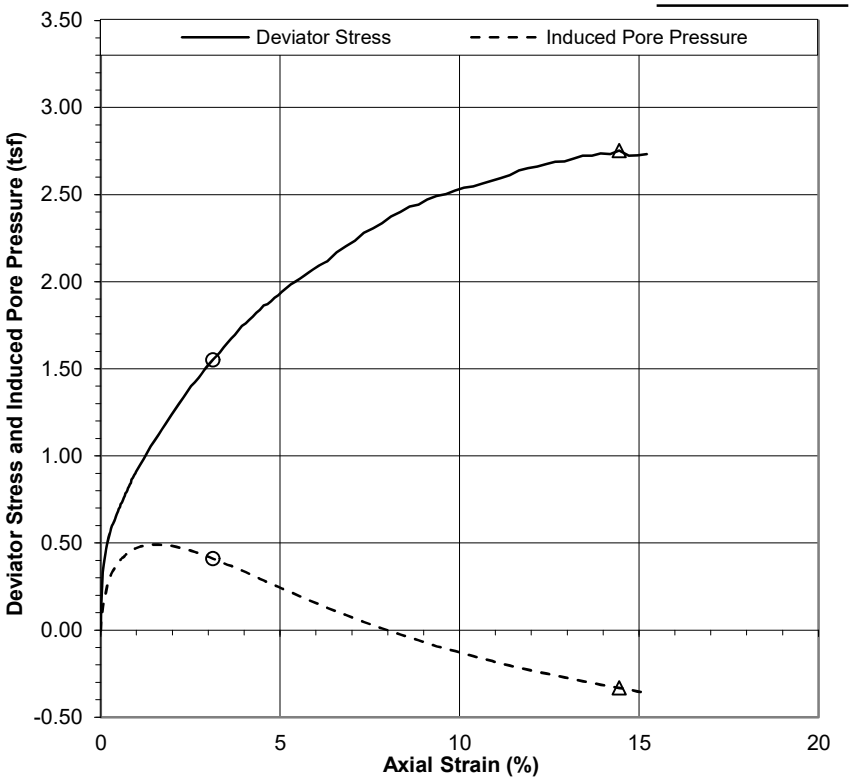
At Consolidated Undrained Failure

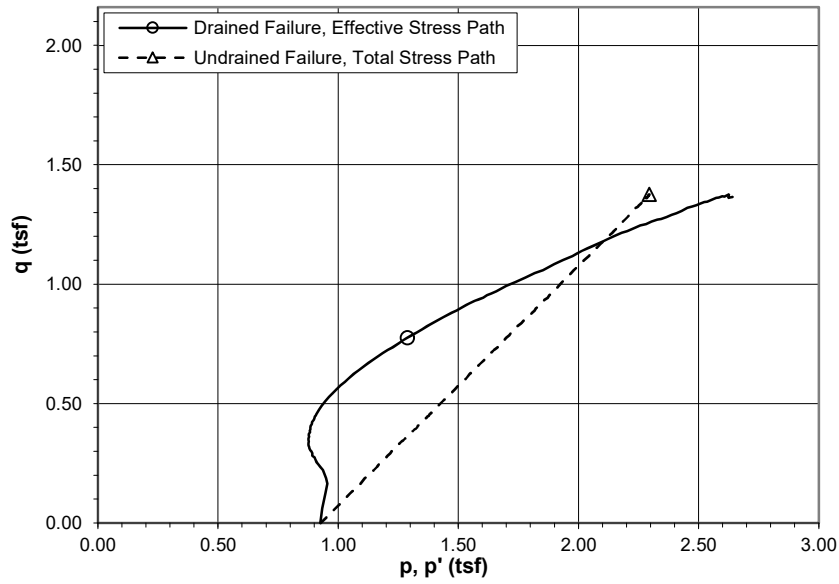
Failure Criterion: 15% Axial Strain

Axial Strain (%)	14.452
Deviator Stress (tsf)	2.753
Minor Principal Stress, σ_3 (tsf)	0.918
Major Principal Stress, σ_1 (tsf)	3.671
p (tsf)	2.295
q (tsf)	1.376

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Eagle Creek Flood Basin
Source: TP-4.6-A, 1.5'-3.5'
Description: Lean Clay with Sand (CL), brown, moist, firm

Project No.: 173409690
Lab ID: 1036
Test ID: 1036-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	5.753	Calculated Height (in)	5.657
Average Diameter (in)	2.886	Calculated Diameter (in)	2.903
Calculated Area (in^2)	6.540	Calculated Area (in^2)	6.617
Moist Weight (lb)	2.930	Moist Weight (lb)	2.938
Moist Unit Weight (pcf)	134.6	Moist Unit Weight (pcf)	135.6
Moisture Content (%)	14.9	Moisture Content (%)	15.2
Dry Weight (lb)	2.551	Dry Weight (lb)	2.551
Dry Unit Weight (pcf)	117.2	Dry Unit Weight (pcf)	117.8
Void Ratio	0.409	Void Ratio	0.402
Degree of Saturation (%)	96.3	Degree of Saturation (%)	100.0

Specific Gravity: 2.65
ASTM D 854, Dry

Liquid Limit: 28
Plastic Limit: 16
Plasticity Index: 12
ASTM D 4318

Confining Stress
σ_3 (tsf): 0.926

Effective Consolidation Stress
σ_3' (tsf): 0.926

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690			Source: TP-4.6-A, 1.5'-3.5'								Lab ID: 1036		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.617	0.000	0.000	5.566	0.000	0.926	0.926	0.926	0.926	0.926	0.000	1.000
0.7	11.4	0.001	0.01	6.618	0.124	0.124	5.620	0.054	1.050	0.996	0.872	0.988	0.934	0.062	1.143
1.5	22.9	0.002	0.04	6.619	0.250	0.250	5.669	0.103	1.174	1.072	0.822	1.050	0.947	0.125	1.303
2.2	30.4	0.004	0.06	6.621	0.331	0.331	5.703	0.136	1.257	1.121	0.790	1.092	0.955	0.165	1.419
2.9	34.5	0.005	0.09	6.623	0.375	0.375	5.727	0.161	1.297	1.137	0.762	1.110	0.950	0.187	1.491
3.6	37.8	0.006	0.11	6.624	0.411	0.411	5.754	0.188	1.336	1.148	0.738	1.131	0.943	0.205	1.557
4.3	41.0	0.008	0.14	6.626	0.446	0.446	5.778	0.212	1.370	1.159	0.713	1.148	0.936	0.223	1.625
5.0	43.1	0.009	0.16	6.627	0.468	0.468	5.800	0.233	1.393	1.160	0.692	1.160	0.926	0.234	1.676
5.8	45.1	0.010	0.18	6.629	0.490	0.490	5.817	0.251	1.413	1.162	0.673	1.168	0.918	0.245	1.728
6.5	47.0	0.011	0.20	6.630	0.510	0.510	5.834	0.268	1.432	1.164	0.654	1.177	0.909	0.255	1.779
7.2	49.0	0.013	0.22	6.632	0.532	0.531	5.850	0.284	1.455	1.171	0.640	1.189	0.905	0.265	1.830
7.9	50.7	0.014	0.24	6.633	0.550	0.550	5.865	0.298	1.474	1.176	0.626	1.199	0.901	0.275	1.878
8.6	52.0	0.015	0.27	6.635	0.564	0.563	5.877	0.311	1.485	1.175	0.611	1.204	0.893	0.282	1.921
9.4	53.9	0.017	0.29	6.636	0.584	0.584	5.889	0.323	1.507	1.185	0.601	1.215	0.893	0.292	1.971
10.1	55.3	0.018	0.32	6.638	0.600	0.599	5.899	0.333	1.521	1.188	0.589	1.222	0.889	0.300	2.017
10.8	56.2	0.020	0.35	6.640	0.610	0.609	5.910	0.343	1.532	1.189	0.580	1.228	0.884	0.304	2.049
11.5	57.8	0.021	0.38	6.642	0.626	0.626	5.920	0.354	1.547	1.193	0.568	1.234	0.881	0.313	2.102
12.2	59.0	0.023	0.40	6.644	0.640	0.639	5.928	0.362	1.560	1.198	0.559	1.241	0.879	0.319	2.143
13.0	60.2	0.024	0.43	6.645	0.652	0.651	5.938	0.371	1.574	1.202	0.551	1.248	0.876	0.326	2.183
13.7	61.6	0.026	0.45	6.647	0.667	0.666	5.945	0.379	1.588	1.209	0.543	1.255	0.876	0.333	2.226
14.4	63.2	0.027	0.48	6.649	0.684	0.683	5.952	0.386	1.605	1.219	0.536	1.263	0.877	0.342	2.276
15.1	64.3	0.029	0.51	6.651	0.696	0.695	5.961	0.395	1.618	1.224	0.529	1.271	0.876	0.347	2.314
15.9	65.4	0.030	0.54	6.653	0.708	0.707	5.967	0.401	1.630	1.229	0.522	1.277	0.876	0.353	2.353
16.6	66.9	0.032	0.56	6.654	0.724	0.722	5.974	0.407	1.648	1.240	0.518	1.286	0.879	0.361	2.394
17.3	67.8	0.033	0.59	6.656	0.733	0.732	5.980	0.414	1.658	1.244	0.512	1.292	0.878	0.366	2.428
18.0	69.1	0.035	0.62	6.658	0.747	0.745	5.985	0.419	1.670	1.251	0.505	1.297	0.878	0.373	2.475
18.7	70.5	0.037	0.65	6.660	0.762	0.760	5.989	0.422	1.686	1.264	0.503	1.306	0.883	0.380	2.511
19.4	71.5	0.038	0.67	6.662	0.773	0.771	5.995	0.428	1.696	1.268	0.497	1.310	0.882	0.386	2.553
20.2	72.9	0.039	0.69	6.663	0.788	0.786	5.999	0.433	1.710	1.278	0.492	1.317	0.885	0.393	2.599
20.9	73.4	0.041	0.72	6.665	0.793	0.791	6.004	0.438	1.718	1.280	0.489	1.322	0.884	0.396	2.619
21.6	74.4	0.042	0.74	6.667	0.804	0.802	6.009	0.442	1.728	1.286	0.484	1.327	0.885	0.401	2.658
22.3	75.7	0.043	0.76	6.668	0.817	0.815	6.011	0.445	1.738	1.293	0.478	1.331	0.886	0.408	2.705
23.1	76.6	0.045	0.79	6.670	0.826	0.824	6.016	0.450	1.752	1.302	0.477	1.339	0.890	0.412	2.727
23.8	77.7	0.046	0.81	6.671	0.839	0.837	6.019	0.453	1.763	1.310	0.473	1.344	0.892	0.419	2.769
24.5	78.4	0.048	0.84	6.673	0.846	0.844	6.023	0.457	1.770	1.314	0.470	1.349	0.892	0.422	2.797
25.2	80.4	0.049	0.87	6.675	0.867	0.865	6.025	0.458	1.790	1.332	0.467	1.357	0.899	0.433	2.854
25.9	81.1	0.051	0.89	6.676	0.875	0.873	6.027	0.461	1.798	1.337	0.464	1.361	0.901	0.436	2.880
26.7	82.0	0.052	0.91	6.678	0.884	0.882	6.031	0.465	1.807	1.342	0.460	1.366	0.901	0.441	2.915
27.4	83.0	0.053	0.94	6.680	0.894	0.892	6.033	0.467	1.817	1.350	0.457	1.371	0.904	0.446	2.950

Project: 173409690			Source: TP-4.6-A, 1.5'-3.5'								Lab ID: 1036		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
28.1	83.7	0.055	0.97	6.682	0.902	0.900	6.036	0.470	1.827	1.357	0.457	1.377	0.907	0.450	2.971
28.8	84.6	0.056	0.99	6.683	0.911	0.909	6.038	0.471	1.834	1.362	0.453	1.379	0.908	0.454	3.004
31.7	88.4	0.062	1.10	6.690	0.951	0.948	6.047	0.480	1.875	1.395	0.446	1.401	0.920	0.474	3.126
34.5	91.5	0.068	1.20	6.698	0.984	0.981	6.050	0.484	1.905	1.421	0.440	1.414	0.930	0.491	3.231
37.4	95.2	0.073	1.29	6.704	1.022	1.019	6.055	0.488	1.943	1.455	0.436	1.433	0.945	0.510	3.341
40.3	98.7	0.079	1.40	6.711	1.059	1.055	6.058	0.492	1.981	1.489	0.434	1.453	0.961	0.528	3.434
43.1	101.7	0.085	1.51	6.718	1.090	1.086	6.058	0.492	2.012	1.520	0.434	1.469	0.977	0.543	3.503
46.0	105.0	0.091	1.61	6.725	1.124	1.120	6.058	0.491	2.045	1.553	0.433	1.485	0.993	0.560	3.586
48.8	108.2	0.097	1.71	6.732	1.157	1.153	6.057	0.490	2.076	1.586	0.433	1.500	1.010	0.576	3.660
51.7	111.1	0.102	1.81	6.739	1.187	1.183	6.056	0.490	2.109	1.619	0.437	1.518	1.028	0.591	3.708
54.6	114.2	0.108	1.91	6.746	1.219	1.215	6.053	0.487	2.140	1.653	0.439	1.533	1.046	0.607	3.769
57.4	117.4	0.114	2.01	6.752	1.252	1.248	6.049	0.482	2.170	1.688	0.441	1.547	1.064	0.624	3.831
60.3	120.2	0.119	2.11	6.759	1.281	1.276	6.045	0.479	2.200	1.721	0.445	1.562	1.083	0.638	3.864
63.1	123.2	0.125	2.21	6.766	1.312	1.306	6.039	0.473	2.228	1.756	0.450	1.575	1.103	0.653	3.905
66.0	126.1	0.130	2.31	6.773	1.340	1.335	6.035	0.469	2.258	1.789	0.455	1.591	1.122	0.667	3.936
68.9	129.4	0.137	2.41	6.781	1.374	1.368	6.028	0.462	2.293	1.832	0.463	1.609	1.147	0.684	3.955
71.7	132.6	0.143	2.52	6.788	1.406	1.400	6.022	0.456	2.324	1.868	0.468	1.624	1.168	0.700	3.989
74.6	134.9	0.149	2.63	6.795	1.430	1.423	6.016	0.449	2.346	1.896	0.473	1.634	1.185	0.712	4.008
77.4	137.5	0.155	2.73	6.803	1.456	1.449	6.007	0.441	2.373	1.932	0.483	1.648	1.207	0.725	4.003
80.3	139.8	0.160	2.83	6.809	1.478	1.472	6.001	0.435	2.398	1.963	0.492	1.662	1.227	0.736	3.994
83.2	143.1	0.166	2.93	6.816	1.512	1.505	5.993	0.427	2.432	2.005	0.500	1.680	1.253	0.752	4.008
86.0	145.6	0.171	3.03	6.823	1.537	1.529	5.986	0.420	2.454	2.034	0.505	1.690	1.270	0.765	4.028
88.9	148.0	0.177	3.13	6.831	1.560	1.552	5.977	0.411	2.474	2.063	0.511	1.698	1.287	0.776	4.035
91.7	150.0	0.182	3.22	6.837	1.580	1.572	5.970	0.403	2.497	2.094	0.522	1.711	1.308	0.786	4.013
94.6	152.2	0.188	3.32	6.844	1.602	1.594	5.959	0.392	2.516	2.124	0.530	1.719	1.327	0.797	4.008
97.5	155.2	0.194	3.43	6.852	1.630	1.622	5.952	0.386	2.546	2.161	0.538	1.735	1.349	0.811	4.014
100.3	157.7	0.200	3.53	6.859	1.656	1.647	5.943	0.376	2.568	2.192	0.545	1.745	1.369	0.824	4.022
103.2	160.5	0.206	3.64	6.867	1.683	1.674	5.935	0.369	2.600	2.231	0.557	1.763	1.394	0.837	4.008
106.0	162.6	0.212	3.74	6.874	1.703	1.694	5.925	0.359	2.617	2.259	0.564	1.770	1.412	0.847	4.002
108.9	165.2	0.217	3.84	6.881	1.729	1.720	5.917	0.350	2.644	2.294	0.574	1.784	1.434	0.860	3.996
111.8	167.9	0.223	3.94	6.888	1.755	1.746	5.908	0.342	2.672	2.330	0.585	1.799	1.457	0.873	3.986
114.6	169.6	0.229	4.04	6.896	1.771	1.761	5.900	0.334	2.686	2.352	0.591	1.806	1.472	0.881	3.979
117.5	171.5	0.234	4.14	6.902	1.789	1.779	5.890	0.324	2.706	2.382	0.603	1.816	1.493	0.890	3.951
120.4	173.6	0.240	4.24	6.910	1.809	1.799	5.880	0.314	2.722	2.408	0.609	1.822	1.509	0.899	3.952
123.2	176.0	0.246	4.34	6.917	1.832	1.821	5.872	0.305	2.747	2.441	0.620	1.836	1.531	0.911	3.938
126.1	177.8	0.251	4.44	6.924	1.849	1.838	5.861	0.295	2.759	2.465	0.626	1.840	1.545	0.919	3.936
128.9	180.5	0.257	4.54	6.932	1.875	1.864	5.852	0.286	2.787	2.502	0.638	1.856	1.570	0.932	3.921
131.8	181.4	0.263	4.65	6.939	1.882	1.871	5.841	0.275	2.794	2.519	0.649	1.859	1.584	0.935	3.885
134.7	183.1	0.268	4.74	6.946	1.898	1.887	5.834	0.268	2.815	2.547	0.660	1.871	1.603	0.943	3.858
137.5	185.5	0.274	4.85	6.954	1.920	1.909	5.824	0.258	2.832	2.575	0.666	1.878	1.620	0.954	3.866
140.4	187.0	0.280	4.95	6.962	1.934	1.923	5.816	0.249	2.847	2.598	0.676	1.886	1.637	0.961	3.846
143.2	189.0	0.286	5.05	6.969	1.953	1.941	5.806	0.240	2.868	2.628	0.687	1.898	1.658	0.971	3.825
150.4	193.8	0.300	5.30	6.987	1.997	1.985	5.783	0.217	2.909	2.692	0.707	1.916	1.699	0.992	3.808
157.5	197.7	0.314	5.56	7.006	2.032	2.018	5.759	0.193	2.941	2.748	0.729	1.932	1.739	1.009	3.767
164.7	201.9	0.329	5.81	7.025	2.069	2.055	5.738	0.172	2.979	2.807	0.752	1.951	1.780	1.028	3.734
171.8	206.1	0.344	6.08	7.045	2.106	2.092	5.717	0.150	3.015	2.864	0.773	1.969	1.819	1.046	3.707
179.0	209.3	0.358	6.32	7.063	2.133	2.118	5.694	0.127	3.039	2.911	0.793	1.980	1.852	1.059	3.669
186.1	214.8	0.372	6.58	7.083	2.184	2.168	5.674	0.108	3.091	2.983	0.815	2.007	1.899	1.084	3.661
193.3	218.9	0.387	6.83	7.102	2.219	2.203	5.653	0.087	3.125	3.038	0.835	2.023	1.937	1.101	3.637
200.4	222.8	0.401	7.09	7.121	2.253	2.236	5.633	0.066	3.159	3.093	0.857	2.041	1.975	1.118	3.609
207.6	227.9	0.415	7.33	7.140	2.298	2.281	5.614	0.048	3.203	3.155	0.874	2.062	2.015	1.140	3.608
214.7	231.2	0.430	7.59	7.161	2.325	2.307	5.595	0.029	3.230	3.201	0.894	2.077	2.048	1.153	3.579
221.9	234.8	0.443	7.84	7.180	2.354	2.336	5.577	0.011	3.259	3.248	0.912	2.091	2.080	1.168	3.560
229.0	239.4	0.458	8.09	7.199	2.394	2.375	5.559	-0.007	3.297	3.304	0.930	2.110	2.117	1.187	3.555
236.2	242.7	0.472	8.35	7.220	2.420	2.401	5.542	-0.024	3.323	3.347	0.947	2.122	2.147	1.200	3.536
243.3	246.5	0.487	8.61	7.240	2.452	2.431	5.525	-0.041	3.355	3.396	0.965	2.140	2.181	1.216	3.519
250.5	248.5	0.501	8.86	7.260	2.464	2.443	5.508	-0.058	3.367	3.425	0.982	2.145	2.204	1.222	3.488
257.6	252.0	0.515	9.10	7.279	2.493	2.471	5.493	-0.073	3.395	3.469	0.998	2.160	2.233	1.235	3.476
264.8	254.9	0.529	9.36	7.300	2.514	2.491	5.474	-0.092	3.411	3.503	1.012	2.165	2.257	1.246	3.463
271.9	256.9	0.544	9.62	7.322	2.526	2.504	5.460	-0.106	3.427	3.533	1.030	2.175	2.281	1.252	3.432
279.1	259.7	0.559	9.88	7.342	2.547	2.524	5.446	-0.120	3.446	3.566	1.043	2.184	2.304	1.262	3.420
286.2	262.1	0.573	10.13	7.363	2.563	2.539	5.431	-0.135	3.462	3.597	1.058	2.192	2.328	1.270	3.400
293.3	263.6	0.587	10.38	7.383	2.571	2.546	5.417	-0.149	3.468	3.617	1.071	2.195	2.344	1.273	3.378
300.5	266.2	0.602	10.64	7.405	2.588	2.563	5.403	-0.163	3.485	3.648	1.085	2.203	2.367	1.281	3.361
307.6	268.8	0.617	10.90	7.427	2.606	2.580	5.389	-0.177	3.501	3.678	1.098	2.211	2.388	1.290	3.349
314.8	271.1	0.631	11.15	7.447	2.621	2.595	5.375	-0.191	3.514	3.706	1.111	2.217	2.409	1.297	3.335
321.9	273.7	0.645	11.40	7.468	2.639	2.612	5.364	-0.202	3.533	3.735	1.124	2.227	2.429	1.306	3.325
329.1	277.4	0.659	11.66	7.490	2.667	2.639	5.350	-0.216	3.558	3.773	1.134	2.238	2.454	1.320	3.327
336.2	279.6	0.674	11.91	7.512	2.680	2.651	5.340	-0.226	3.572	3.799	1.147	2.247	2.473	1.326	3.311

Project: 173409690			Source: TP-4.6-A, 1.5'-3.5'								Lab ID: 1036		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
343.4	281.4	0.688	12.17	7.534	2.689	2.660	5.327	-0.239	3.581	3.821	1.160	2.251	2.490	1.330	3.293
350.5	283.9	0.703	12.42	7.555	2.705	2.675	5.318	-0.249	3.596	3.845	1.169	2.258	2.507	1.338	3.288
357.7	286.0	0.716	12.66	7.576	2.718	2.688	5.306	-0.261	3.608	3.868	1.181	2.264	2.524	1.344	3.277
364.8	287.1	0.731	12.92	7.599	2.720	2.689	5.296	-0.271	3.610	3.881	1.191	2.265	2.536	1.345	3.258
372.0	289.9	0.746	13.18	7.621	2.738	2.707	5.285	-0.281	3.627	3.908	1.201	2.273	2.555	1.354	3.254
379.1	292.6	0.760	13.43	7.643	2.756	2.724	5.274	-0.293	3.642	3.935	1.211	2.281	2.573	1.362	3.249
386.3	293.5	0.774	13.69	7.666	2.757	2.724	5.265	-0.302	3.644	3.946	1.222	2.282	2.584	1.362	3.229
393.4	295.7	0.788	13.93	7.688	2.769	2.736	5.254	-0.313	3.654	3.967	1.231	2.286	2.599	1.368	3.223
400.6	296.3	0.803	14.20	7.712	2.766	2.733	5.245	-0.322	3.652	3.974	1.242	2.286	2.608	1.366	3.201
407.7	299.4	0.818	14.45	7.735	2.787	2.753	5.235	-0.331	3.671	4.003	1.250	2.295	2.626	1.376	3.203
414.9	297.2	0.832	14.71	7.758	2.759	2.724	5.227	-0.339	3.646	3.985	1.262	2.284	2.623	1.362	3.159
422.0	298.4	0.846	14.96	7.781	2.761	2.726	5.215	-0.351	3.641	3.992	1.267	2.278	2.629	1.363	3.152
429.2	300.0	0.861	15.22	7.804	2.768	2.732	5.208	-0.358	3.649	4.008	1.276	2.283	2.642	1.366	3.141

Attachment E-2. Laboratory Testing Results

Unconsolidated-Undrained Triaxial Compression

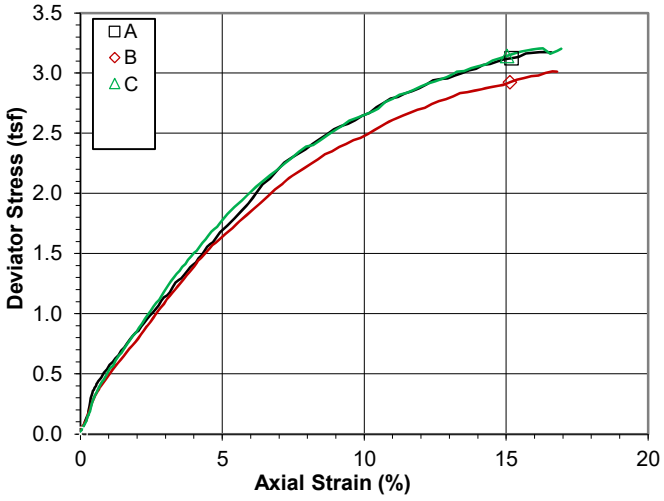
Unconsolidated Undrained Triaxial Compression

ASTM D 2850

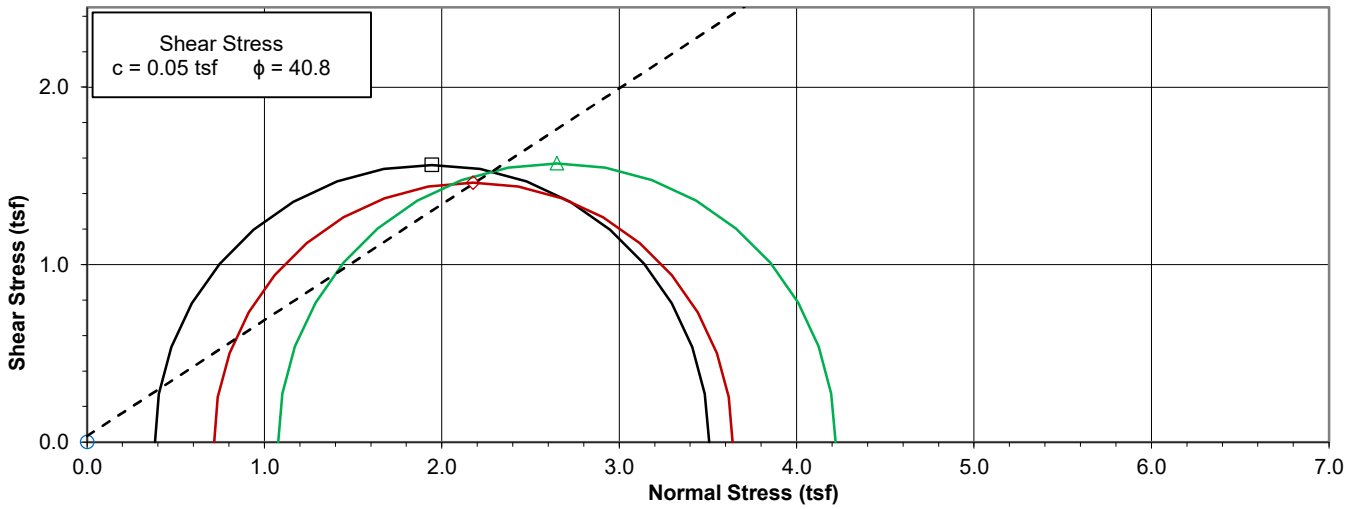
Project Name Eagle Creek

Project 173409690
Set ID 435

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	435	B-3.74, 8.0'-10.0'	Lean Clay (CL), dark brown	2.66			
B	435	B-3.74, 8.0'-10.0'	Lean Clay (CL), dark brown	2.66			
C	435	B-3.74, 8.0'-10.0'	Lean Clay (CL), dark brown	2.66			



Specimen	A	B	C	D	E
	Initial Specimen Conditions				
Average Height (in)	5.756	5.745	5.737	0.000	0.000
Average Diameter (in)	2.878	2.873	2.879		
Moist Unit Weight (pcf)	137.8	136.3	136.5		
Moisture Content (%)	14.5	14.8	14.7		
Dry Unit Weight (pcf)	120.4	118.8	119.0		
Void Ratio	0.377	0.396	0.392		
Degree of Saturation (%)	102.2	99.1	99.5		
	Confined Specimen Conditions				
Moist Unit Weight (pcf)	137.7	136.6	140.4		
Moisture Content (%)	14.5	14.8	14.7		
Dry Unit Weight (pcf)	120.3	119.0	122.4		
Degree of Saturation (%)	102.0	99.9	110.3		
Void Ratio	0.378	0.393	0.354		
Cell Pressure, σ_3 (tsf)	0.378	0.718	1.081	0.000	0.000
	At Unconsolidated Undrained Failure				
Failure Criterion	15% Axial Strain				
Axial Strain (%)	15.192	15.136	15.032	0.000	0.000
Deviator Stress (tsf)	3.124	2.924	3.142	0.000	0.000
Minor Principal Stress, σ_3 (tsf)	0.382	0.715	1.077	0.000	0.000
Major Principal Stress, σ_1 (tsf)	3.506	3.639	4.219	0.000	0.000
Undrained Shear Strength, S_u (tsf)	1.562	1.462	1.571	0.000	0.000



Comments

Reviewed By KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.74, 8.0'-10.0'
Description Lean Clay (CL), dark brown
Specimen Type Compacted

Project No. 173409690
Lab ID 435
Test ID 435-A

Date Received 02/08/2021
Date Tested 04/05/2021

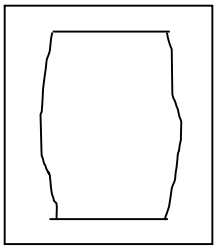
Specific Gravity 2.66
ASTM D 854, Dry

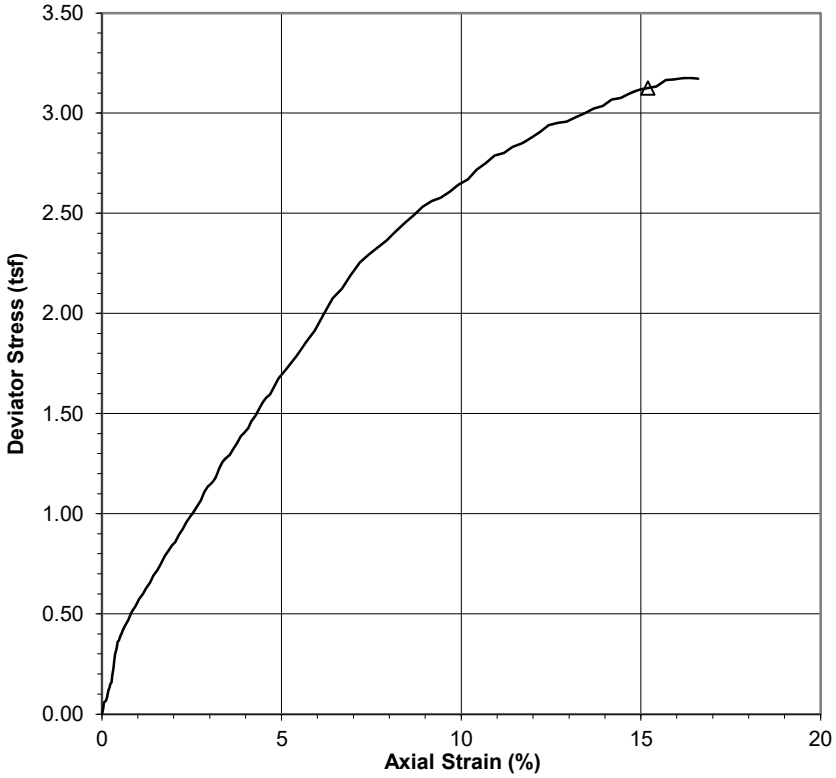
Liquid Limit
Plastic Limit
Plasticity Index

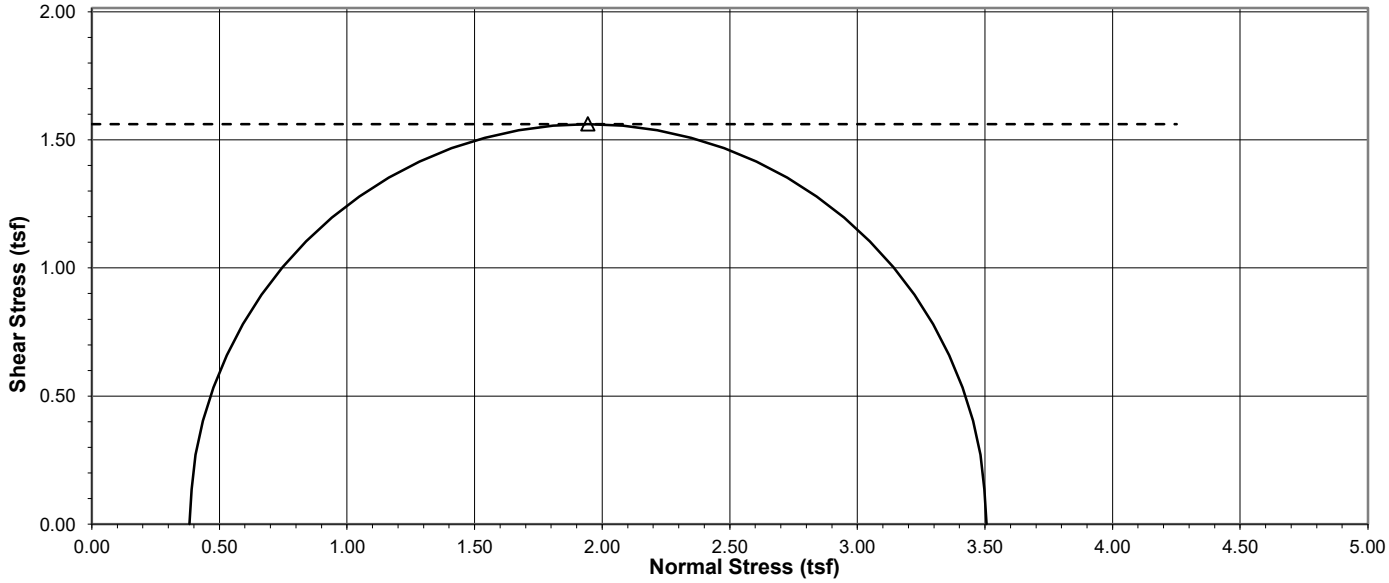
Target Test Parameters
Nominal Chamber Pressure (psi) 5
Actual Axial Strain Rate of Test (%/min) 1.000

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.19
Deviator Stress (tsf) 3.124
Minor Principal Stress, σ_3 (tsf) 0.382
Major Principal Stress, σ_1 (tsf) 3.506
Undrained Shear Strength, S_u (tsf) 1.562

Failure Sketch







Comments

Reviewed KG

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Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 04/13/2021

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.74, 8.0'-10.0'
Description Lean Clay (CL), dark brown

Project No. 173409690
Lab ID 435
Test ID 435-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.756	Calculated Height (in)	5.757
Average Diameter (in)	2.878	Calculated Diameter (in)	2.878
Calculated Area (in^2)	6.505	Calculated Area (in^2)	6.507
Moist Weight (lb)	2.986	Moist Weight (lb)	2.986
Moist Unit Weight (pcf)	137.8	Moist Unit Weight (pcf)	137.7
Moisture Content (%)	14.5	Moisture Content (%)	14.5
Dry Weight (lb)	2.609	Dry Weight (lb)	2.609
Dry Unit Weight (pcf)	120.4	Dry Unit Weight (pcf)	120.3
Void Ratio	0.377	Void Ratio	0.378
Degree of Saturation (%)	102.2	Degree of Saturation (%)	102.0

Specific Gravity 2.66
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 0.378

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 435**
Source: B-3.74, 8.0'-10.0' **Test ID: 435-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.507	0.000	0.000	0.378	0.378
0.0	2.4	0.002	0.03	6.509	0.027	0.027	0.405	0.378
0.1	5.1	0.003	0.06	6.510	0.056	0.056	0.434	0.377
0.1	5.6	0.005	0.09	6.513	0.062	0.062	0.439	0.377
0.1	5.9	0.006	0.11	6.514	0.065	0.065	0.442	0.377
0.1	7.6	0.008	0.14	6.516	0.084	0.083	0.461	0.377
0.1	9.2	0.009	0.16	6.517	0.101	0.101	0.478	0.377
0.2	10.6	0.011	0.18	6.519	0.117	0.116	0.493	0.377
0.2	12.2	0.012	0.22	6.521	0.135	0.135	0.511	0.377
0.2	13.5	0.014	0.24	6.522	0.149	0.148	0.525	0.377
0.2	14.4	0.016	0.27	6.524	0.159	0.159	0.536	0.377
0.3	17.4	0.017	0.29	6.526	0.192	0.191	0.568	0.377
0.3	20.9	0.019	0.32	6.528	0.230	0.229	0.606	0.377
0.3	23.8	0.020	0.34	6.529	0.262	0.261	0.638	0.376
0.4	27.2	0.021	0.37	6.531	0.299	0.299	0.675	0.376
0.4	29.2	0.023	0.40	6.533	0.322	0.321	0.697	0.376
0.4	30.9	0.024	0.42	6.534	0.340	0.339	0.716	0.377
0.4	32.8	0.025	0.44	6.536	0.361	0.360	0.737	0.376
0.5	33.5	0.027	0.48	6.538	0.369	0.368	0.744	0.377
0.5	34.9	0.029	0.50	6.539	0.384	0.383	0.759	0.377
0.5	36.0	0.031	0.53	6.542	0.396	0.395	0.772	0.377
0.5	36.7	0.032	0.55	6.543	0.404	0.403	0.780	0.377
0.6	37.8	0.033	0.57	6.544	0.416	0.414	0.791	0.377
0.6	38.9	0.035	0.61	6.547	0.428	0.427	0.804	0.377
0.6	39.7	0.036	0.63	6.548	0.437	0.435	0.812	0.377
0.7	42.8	0.042	0.73	6.555	0.470	0.468	0.845	0.377
0.8	46.6	0.048	0.83	6.561	0.512	0.510	0.887	0.377
0.9	49.3	0.054	0.94	6.568	0.541	0.538	0.916	0.377
1.0	52.7	0.059	1.03	6.575	0.577	0.574	0.952	0.378
1.1	55.1	0.066	1.14	6.582	0.603	0.600	0.978	0.378
1.2	57.8	0.071	1.23	6.588	0.632	0.629	1.007	0.378
1.3	60.3	0.077	1.34	6.595	0.659	0.656	1.033	0.378
1.4	63.7	0.083	1.44	6.602	0.695	0.691	1.070	0.379
1.5	66.3	0.089	1.54	6.609	0.722	0.718	1.096	0.378
1.6	69.2	0.094	1.64	6.615	0.754	0.750	1.128	0.378
1.7	72.9	0.101	1.75	6.623	0.792	0.788	1.166	0.378
1.8	75.3	0.106	1.84	6.629	0.818	0.814	1.192	0.378
1.9	78.0	0.112	1.95	6.636	0.846	0.842	1.220	0.378
2.0	79.6	0.118	2.04	6.643	0.863	0.858	1.236	0.378

Source: B-3.74, 8.0'-10.0'							Test ID: 435-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
2.1	83.0	0.123	2.14	6.649	0.899	0.894	1.272	0.378
2.2	85.7	0.130	2.25	6.657	0.927	0.922	1.301	0.379
2.3	89.0	0.135	2.35	6.663	0.962	0.956	1.335	0.379
2.4	91.7	0.141	2.45	6.670	0.990	0.984	1.363	0.379
2.5	94.0	0.147	2.55	6.677	1.014	1.007	1.386	0.379
2.7	97.0	0.153	2.65	6.684	1.044	1.038	1.416	0.378
2.7	99.7	0.158	2.75	6.691	1.073	1.066	1.444	0.378
2.8	103.7	0.164	2.86	6.698	1.115	1.108	1.487	0.378
2.9	106.4	0.170	2.95	6.705	1.143	1.135	1.514	0.378
3.1	108.2	0.176	3.06	6.712	1.161	1.153	1.532	0.379
3.1	110.4	0.182	3.15	6.719	1.184	1.176	1.555	0.379
3.2	115.0	0.188	3.26	6.726	1.231	1.223	1.602	0.379
3.3	118.5	0.193	3.36	6.733	1.267	1.259	1.638	0.379
3.4	120.6	0.199	3.46	6.740	1.289	1.280	1.659	0.379
3.5	121.9	0.205	3.56	6.747	1.301	1.292	1.671	0.379
3.6	125.0	0.211	3.67	6.754	1.333	1.324	1.703	0.379
3.7	127.7	0.217	3.76	6.761	1.360	1.351	1.730	0.379
3.8	131.3	0.223	3.87	6.769	1.396	1.387	1.766	0.379
4.0	133.1	0.228	3.96	6.775	1.415	1.405	1.784	0.379
4.1	135.3	0.234	4.07	6.783	1.436	1.426	1.805	0.379
4.2	138.8	0.240	4.17	6.790	1.471	1.461	1.841	0.379
4.3	141.4	0.246	4.27	6.797	1.497	1.487	1.867	0.379
4.4	144.7	0.251	4.37	6.804	1.531	1.520	1.900	0.379
4.5	148.2	0.258	4.47	6.812	1.566	1.555	1.935	0.380
4.6	150.6	0.263	4.57	6.818	1.590	1.579	1.958	0.379
4.7	152.3	0.269	4.68	6.826	1.606	1.595	1.974	0.379
4.9	160.4	0.283	4.92	6.844	1.687	1.675	2.054	0.379
5.2	166.3	0.298	5.18	6.862	1.744	1.732	2.111	0.379
5.4	172.3	0.312	5.42	6.880	1.803	1.790	2.169	0.379
5.7	179.0	0.327	5.68	6.899	1.869	1.855	2.234	0.379
5.9	185.3	0.341	5.92	6.917	1.929	1.914	2.294	0.379
6.2	194.0	0.356	6.18	6.935	2.014	1.999	2.378	0.379
6.4	201.9	0.370	6.42	6.954	2.091	2.075	2.455	0.379
6.7	207.3	0.385	6.68	6.973	2.140	2.124	2.504	0.380
6.9	214.3	0.399	6.92	6.991	2.207	2.191	2.570	0.379
7.2	221.2	0.413	7.18	7.010	2.272	2.255	2.634	0.379
7.4	225.5	0.427	7.42	7.029	2.310	2.292	2.671	0.379
7.7	229.9	0.442	7.68	7.048	2.348	2.330	2.708	0.378
7.9	234.0	0.456	7.93	7.067	2.384	2.365	2.744	0.378
8.2	239.1	0.471	8.18	7.087	2.429	2.409	2.788	0.379
8.4	243.9	0.485	8.43	7.106	2.471	2.451	2.830	0.379
8.7	248.5	0.500	8.68	7.125	2.511	2.490	2.869	0.379
8.9	253.3	0.514	8.93	7.145	2.553	2.532	2.910	0.379
9.2	257.0	0.529	9.18	7.165	2.583	2.560	2.939	0.379
9.4	259.4	0.543	9.43	7.184	2.600	2.577	2.953	0.375
9.7	263.2	0.557	9.68	7.204	2.631	2.607	2.981	0.373
9.9	267.6	0.571	9.93	7.224	2.667	2.643	3.017	0.373
10.2	270.9	0.586	10.18	7.245	2.692	2.668	3.041	0.373
10.4	276.7	0.600	10.43	7.264	2.743	2.717	3.091	0.374
10.7	280.8	0.615	10.68	7.285	2.776	2.750	3.123	0.374
10.9	285.6	0.629	10.93	7.305	2.815	2.789	3.162	0.373
11.2	287.8	0.644	11.19	7.326	2.828	2.801	3.175	0.373
11.4	291.7	0.658	11.43	7.347	2.859	2.831	3.205	0.373
11.7	294.4	0.673	11.69	7.368	2.877	2.849	3.223	0.373
11.9	297.8	0.687	11.93	7.388	2.902	2.874	3.247	0.373
12.2	301.9	0.702	12.19	7.410	2.934	2.904	3.277	0.373
12.4	306.5	0.716	12.43	7.431	2.969	2.940	3.312	0.373
12.7	308.6	0.730	12.69	7.452	2.982	2.951	3.324	0.373
12.9	310.1	0.745	12.93	7.473	2.988	2.957	3.330	0.373
13.2	313.5	0.759	13.19	7.495	3.011	2.979	3.352	0.373
13.4	316.5	0.773	13.43	7.517	3.032	2.999	3.373	0.373
13.7	320.0	0.788	13.69	7.539	3.056	3.023	3.396	0.373
13.9	322.2	0.802	13.93	7.560	3.068	3.035	3.408	0.373
14.2	326.6	0.817	14.19	7.583	3.101	3.067	3.440	0.373
14.4	328.5	0.831	14.43	7.605	3.110	3.075	3.449	0.374
14.7	331.8	0.846	14.69	7.627	3.132	3.097	3.474	0.377
14.9	334.8	0.860	14.94	7.649	3.151	3.115	3.493	0.378
15.2	336.8	0.875	15.19	7.672	3.161	3.124	3.506	0.382
15.4	338.8	0.889	15.44	7.695	3.171	3.134	3.518	0.384

Source: B-3.74, 8.0'-10.0'							Test ID: 435-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
15.7	343.3	0.903	15.69	7.718	3.202	3.165	3.548	0.383
15.9	344.8	0.917	15.94	7.740	3.207	3.169	3.551	0.382
16.2	346.5	0.932	16.19	7.764	3.213	3.175	3.556	0.381
16.5	347.8	0.946	16.44	7.787	3.216	3.176	3.557	0.381
16.6	348.0	0.956	16.60	7.802	3.212	3.172	3.553	0.381

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek
Source: B-3.74, 8.0'-10.0'
Description: Lean Clay (CL), dark brown
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 435
Test ID: 435-B

Date Received: 02/08/2021
Date Tested: 04/05/2021

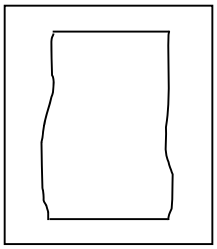
Specific Gravity: 2.66
ASTM D 854, Dry

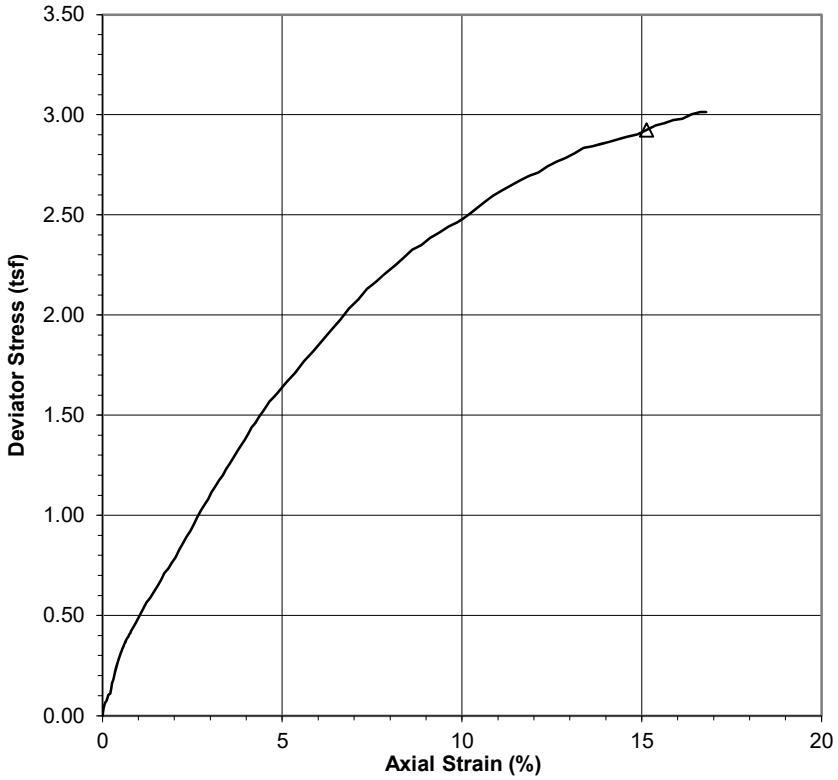
Liquid Limit:
Plastic Limit:
Plasticity Index:

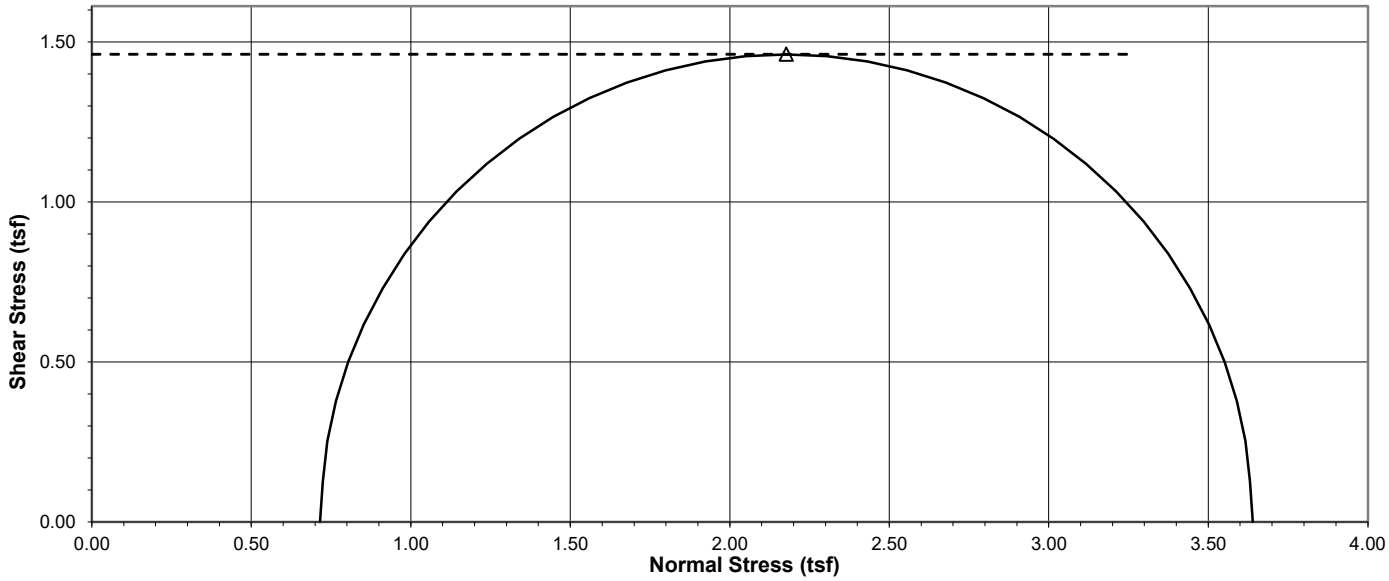
Target Test Parameters
Nominal Chamber Pressure (psi): 10
Actual Axial Strain Rate of Test (%/min): 1.000

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.14
Deviator Stress (tsf): 2.924
Minor Principal Stress, σ_3 (tsf): 0.715
Major Principal Stress, σ_1 (tsf): 3.639
Undrained Shear Strength, S_u (tsf): 1.462

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.74, 8.0'-10.0'	Lab ID	435
Description	Lean Clay (CL), dark brown	Test ID	435-B

Initial Specimen Conditions		Confined Specimen Conditions		
Average Height (in)	5.745	Calculated Height (in)	5.741	Specific Gravity 2.66
Average Diameter (in)	2.873	Calculated Diameter (in)	2.870	ASTM D 854, Dry
Calculated Area (in^2)	6.481	Calculated Area (in^2)	6.471	Liquid Limit
Moist Weight (lb)	2.936	Moist Weight (lb)	2.936	Plastic Limit
Moist Unit Weight (pcf)	136.3	Moist Unit Weight (pcf)	136.6	Plasticity Index
Moisture Content (%)	14.8	Moisture Content (%)	14.8	
Dry Weight (lb)	2.559	Dry Weight (lb)	2.559	
Dry Unit Weight (pcf)	118.8	Dry Unit Weight (pcf)	119.0	Confining Pressure
Void Ratio	0.396	Void Ratio	0.393	σ_3 (tsf) 0.718
Degree of Saturation (%)	99.1	Degree of Saturation (%)	99.9	

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 435**
Source: B-3.74, 8.0'-10.0' **Test ID: 435-B**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.471	0.000	0.000	0.718	0.718
0.0	3.2	0.002	0.03	6.474	0.035	0.035	0.753	0.718
0.1	5.0	0.003	0.05	6.475	0.055	0.055	0.773	0.718
0.1	6.0	0.005	0.08	6.477	0.067	0.067	0.785	0.718
0.1	6.5	0.006	0.11	6.478	0.072	0.072	0.790	0.718
0.1	7.9	0.008	0.14	6.480	0.087	0.087	0.805	0.718
0.2	9.2	0.009	0.16	6.482	0.102	0.102	0.820	0.718
0.2	9.7	0.011	0.19	6.484	0.107	0.107	0.825	0.718
0.2	9.9	0.012	0.21	6.485	0.110	0.109	0.827	0.718
0.2	12.2	0.014	0.24	6.487	0.136	0.135	0.853	0.718
0.3	15.0	0.015	0.27	6.489	0.166	0.165	0.883	0.718
0.3	16.0	0.017	0.30	6.491	0.177	0.177	0.894	0.718
0.3	17.5	0.018	0.32	6.492	0.194	0.193	0.911	0.718
0.4	19.8	0.020	0.35	6.494	0.220	0.219	0.937	0.718
0.4	21.5	0.021	0.37	6.496	0.239	0.238	0.956	0.718
0.4	23.1	0.023	0.40	6.498	0.256	0.255	0.972	0.718
0.4	24.4	0.024	0.43	6.499	0.270	0.269	0.987	0.718
0.5	25.9	0.026	0.46	6.501	0.287	0.286	1.003	0.718
0.5	27.1	0.028	0.48	6.503	0.300	0.299	1.016	0.718
0.5	28.4	0.029	0.51	6.505	0.314	0.313	1.031	0.718
0.5	29.5	0.031	0.53	6.506	0.326	0.325	1.043	0.718
0.6	30.4	0.032	0.55	6.508	0.336	0.335	1.053	0.718
0.6	31.5	0.034	0.59	6.510	0.348	0.347	1.064	0.717
0.6	32.5	0.035	0.61	6.511	0.360	0.358	1.076	0.718
0.6	33.5	0.037	0.64	6.513	0.370	0.368	1.086	0.718
0.7	34.4	0.038	0.66	6.515	0.380	0.379	1.096	0.717
0.7	35.2	0.039	0.69	6.516	0.389	0.387	1.105	0.718
0.7	35.9	0.041	0.72	6.518	0.396	0.395	1.112	0.718
0.7	36.8	0.042	0.74	6.520	0.406	0.405	1.122	0.718
0.8	37.6	0.044	0.77	6.522	0.415	0.413	1.133	0.720
0.8	38.4	0.046	0.79	6.523	0.424	0.422	1.139	0.718
0.8	39.2	0.047	0.82	6.525	0.432	0.430	1.148	0.718
0.9	42.0	0.053	0.92	6.532	0.463	0.461	1.179	0.718
1.0	45.4	0.059	1.03	6.539	0.499	0.497	1.215	0.718
1.1	48.4	0.064	1.12	6.545	0.533	0.530	1.247	0.717
1.2	51.6	0.070	1.22	6.551	0.567	0.564	1.282	0.717
1.3	53.9	0.076	1.33	6.559	0.592	0.589	1.306	0.718
1.4	56.6	0.082	1.42	6.565	0.621	0.617	1.335	0.717
1.5	59.4	0.088	1.53	6.572	0.651	0.647	1.365	0.717

Source: B-3.74, 8.0'-10.0'							Test ID: 435-B	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.6	62.3	0.093	1.63	6.579	0.682	0.678	1.395	0.717
1.7	65.4	0.099	1.72	6.585	0.715	0.711	1.428	0.717
1.8	67.7	0.105	1.83	6.592	0.739	0.735	1.452	0.717
1.9	70.3	0.111	1.93	6.599	0.768	0.763	1.480	0.717
2.0	73.0	0.117	2.03	6.606	0.795	0.790	1.508	0.717
2.1	76.4	0.122	2.13	6.612	0.832	0.827	1.544	0.717
2.2	79.5	0.128	2.24	6.620	0.865	0.860	1.577	0.717
2.3	82.6	0.134	2.33	6.626	0.897	0.892	1.609	0.717
2.4	85.3	0.140	2.44	6.633	0.926	0.920	1.638	0.717
2.5	88.5	0.146	2.53	6.640	0.960	0.954	1.671	0.717
2.6	91.7	0.151	2.63	6.646	0.993	0.987	1.704	0.717
2.7	95.4	0.157	2.74	6.654	1.032	1.025	1.742	0.717
2.8	98.0	0.163	2.84	6.660	1.059	1.052	1.769	0.717
2.9	100.8	0.169	2.94	6.668	1.088	1.081	1.798	0.717
3.0	104.2	0.174	3.04	6.674	1.124	1.116	1.833	0.717
3.1	107.1	0.181	3.14	6.682	1.154	1.146	1.863	0.717
3.2	109.8	0.186	3.24	6.688	1.182	1.175	1.891	0.717
3.4	112.4	0.192	3.35	6.696	1.208	1.200	1.917	0.717
3.4	115.3	0.198	3.44	6.702	1.239	1.231	1.948	0.717
3.6	118.1	0.204	3.55	6.710	1.268	1.259	1.976	0.717
3.7	121.0	0.209	3.64	6.716	1.297	1.289	2.005	0.717
3.8	124.1	0.215	3.75	6.724	1.329	1.320	2.037	0.717
3.8	126.8	0.221	3.85	6.730	1.357	1.347	2.064	0.717
4.0	129.7	0.227	3.95	6.738	1.386	1.376	2.093	0.717
4.1	132.6	0.233	4.05	6.745	1.416	1.406	2.123	0.717
4.2	136.0	0.238	4.15	6.751	1.450	1.440	2.156	0.717
4.3	138.2	0.244	4.25	6.759	1.472	1.462	2.179	0.716
4.4	140.9	0.250	4.35	6.766	1.499	1.489	2.205	0.716
4.5	143.7	0.256	4.46	6.773	1.528	1.517	2.234	0.716
4.6	146.3	0.261	4.55	6.780	1.554	1.543	2.259	0.717
4.7	149.0	0.267	4.65	6.787	1.581	1.570	2.286	0.717
4.7	151.0	0.273	4.76	6.795	1.600	1.588	2.305	0.716
4.9	153.0	0.279	4.85	6.802	1.620	1.608	2.324	0.716
5.1	158.8	0.293	5.11	6.820	1.676	1.664	2.380	0.716
5.4	163.6	0.307	5.35	6.838	1.723	1.710	2.426	0.716
5.6	169.9	0.322	5.61	6.856	1.784	1.771	2.487	0.716
5.9	175.0	0.336	5.86	6.874	1.833	1.818	2.535	0.716
6.1	180.6	0.351	6.11	6.893	1.886	1.872	2.588	0.716
6.4	186.2	0.365	6.36	6.911	1.940	1.924	2.640	0.716
6.6	191.8	0.380	6.61	6.930	1.993	1.977	2.693	0.716
6.9	197.7	0.394	6.86	6.948	2.048	2.032	2.748	0.716
7.1	202.7	0.408	7.11	6.967	2.095	2.078	2.794	0.716
7.4	208.3	0.422	7.36	6.986	2.147	2.129	2.845	0.716
7.6	212.6	0.437	7.62	7.005	2.186	2.167	2.883	0.716
7.9	217.1	0.451	7.86	7.024	2.225	2.206	2.922	0.716
8.1	221.5	0.466	8.12	7.043	2.265	2.245	2.961	0.716
8.4	226.0	0.480	8.36	7.062	2.304	2.284	2.999	0.716
8.6	230.9	0.495	8.62	7.082	2.347	2.326	3.042	0.716
8.9	233.8	0.509	8.86	7.101	2.371	2.349	3.065	0.716
9.1	238.1	0.524	9.12	7.121	2.408	2.386	3.101	0.716
9.4	241.3	0.538	9.37	7.140	2.433	2.410	3.126	0.716
9.6	245.1	0.552	9.62	7.160	2.464	2.441	3.157	0.716
9.9	247.8	0.567	9.87	7.180	2.485	2.461	3.177	0.716
10.1	251.7	0.581	10.12	7.200	2.517	2.492	3.208	0.716
10.4	256.0	0.595	10.37	7.220	2.553	2.528	3.244	0.716
10.6	260.4	0.610	10.63	7.241	2.589	2.563	3.279	0.715
10.9	264.4	0.624	10.87	7.261	2.622	2.596	3.311	0.715
11.1	267.9	0.639	11.13	7.282	2.649	2.623	3.338	0.715
11.4	271.2	0.653	11.37	7.302	2.674	2.647	3.362	0.716
11.6	274.7	0.668	11.63	7.323	2.700	2.672	3.388	0.715
11.9	277.8	0.682	11.87	7.343	2.723	2.695	3.410	0.715
12.1	280.3	0.696	12.13	7.365	2.740	2.711	3.426	0.715
12.4	284.3	0.710	12.38	7.386	2.771	2.742	3.457	0.716
12.6	287.7	0.725	12.63	7.407	2.796	2.766	3.481	0.715
12.9	290.3	0.739	12.88	7.428	2.814	2.783	3.513	0.730
13.1	293.8	0.754	13.13	7.450	2.839	2.808	3.523	0.715
13.4	297.4	0.768	13.38	7.471	2.866	2.834	3.550	0.715
13.6	299.1	0.783	13.63	7.493	2.874	2.842	3.557	0.715
13.9	301.5	0.797	13.88	7.514	2.888	2.855	3.570	0.715

Source: B-3.74, 8.0'-10.0'							Test ID: 435-B	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
14.1	303.6	0.812	14.14	7.537	2.900	2.866	3.581	0.715
14.4	305.8	0.826	14.38	7.558	2.913	2.879	3.594	0.715
14.6	308.3	0.840	14.64	7.581	2.928	2.893	3.608	0.715
14.9	310.1	0.854	14.88	7.603	2.937	2.901	3.616	0.715
15.1	313.5	0.869	15.14	7.626	2.960	2.924	3.639	0.715
15.4	316.8	0.883	15.38	7.648	2.983	2.945	3.660	0.714
15.6	319.1	0.897	15.63	7.670	2.995	2.958	3.672	0.714
15.9	321.9	0.912	15.89	7.694	3.012	2.974	3.689	0.715
16.1	323.4	0.926	16.13	7.716	3.018	2.979	3.694	0.715
16.4	326.9	0.941	16.39	7.740	3.041	3.001	3.716	0.715
16.6	329.3	0.955	16.63	7.763	3.054	3.014	3.729	0.714
16.8	329.8	0.964	16.79	7.777	3.053	3.013	3.728	0.716

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.74, 8.0'-10.0'
Description Lean Clay (CL), dark brown
Specimen Type Compacted

Project No. 173409690
Lab ID 435
Test ID 435-C

Date Received 02/08/2021
Date Tested 04/05/2021

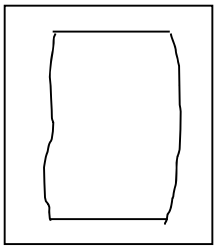
Specific Gravity 2.66
ASTM D 854, Dry

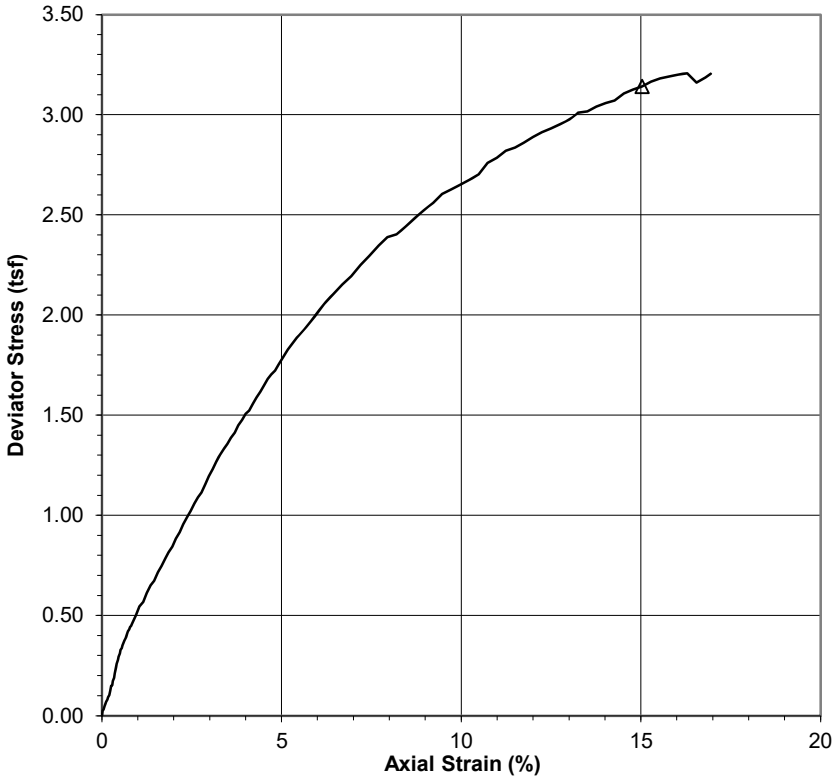
Liquid Limit
Plastic Limit
Plasticity Index

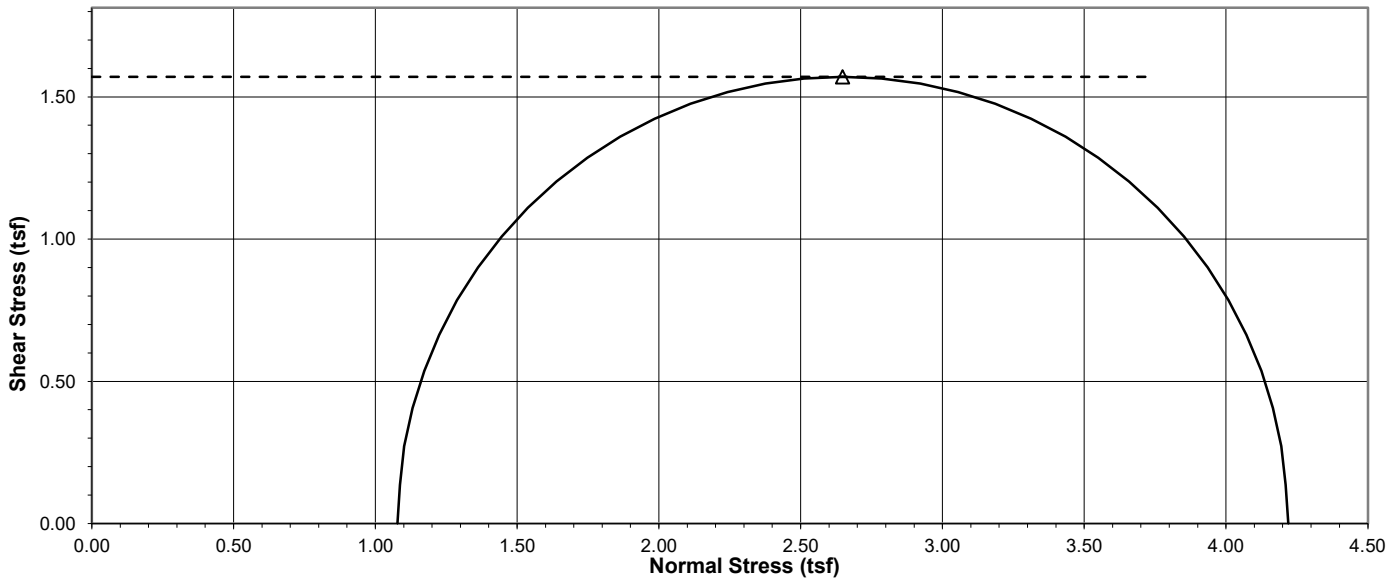
Target Test Parameters
Nominal Chamber Pressure (psi) 15
Actual Axial Strain Rate of Test (%/min) 1.009

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.03
Deviator Stress (tsf) 3.142
Minor Principal Stress, σ_3 (tsf) 1.077
Major Principal Stress, σ_1 (tsf) 4.219
Undrained Shear Strength, S_u (tsf) 1.571

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.74, 8.0'-10.0'	Lab ID	435
Description	Lean Clay (CL), dark brown	Test ID	435-C

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.737	Calculated Height (in)	5.684	Specific Gravity	2.66
Average Diameter (in)	2.879	Calculated Diameter (in)	2.852		ASTM D 854, Dry
Calculated Area (in^2)	6.509	Calculated Area (in^2)	6.388	Liquid Limit	
Moist Weight (lb)	2.950	Moist Weight (lb)	2.950	Plastic Limit	
Moist Unit Weight (pcf)	136.5	Moist Unit Weight (pcf)	140.4	Plasticity Index	
Moisture Content (%)	14.7	Moisture Content (%)	14.7		
Dry Weight (lb)	2.572	Dry Weight (lb)	2.572		
Dry Unit Weight (pcf)	119.0	Dry Unit Weight (pcf)	122.4	Confining Pressure	
Void Ratio	0.392	Void Ratio	0.354	σ_3 (tsf)	1.081
Degree of Saturation (%)	99.5	Degree of Saturation (%)	110.3		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 435**
Source: B-3.74, 8.0'-10.0' **Test ID: 435-C**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.388	0.000	0.000	1.081	1.081
0.0	2.1	0.001	0.02	6.390	0.024	0.024	1.104	1.080
0.1	2.8	0.002	0.04	6.391	0.031	0.031	1.112	1.081
0.1	4.2	0.004	0.08	6.393	0.047	0.047	1.127	1.081
0.1	5.2	0.006	0.10	6.395	0.059	0.059	1.140	1.081
0.1	6.1	0.007	0.12	6.396	0.069	0.069	1.149	1.081
0.2	7.2	0.009	0.15	6.398	0.081	0.081	1.161	1.080
0.2	8.1	0.010	0.18	6.400	0.091	0.091	1.172	1.081
0.2	9.2	0.012	0.21	6.402	0.104	0.103	1.184	1.081
0.2	11.2	0.013	0.23	6.403	0.126	0.125	1.205	1.080
0.3	13.5	0.015	0.26	6.405	0.151	0.151	1.231	1.080
0.3	13.5	0.016	0.28	6.406	0.152	0.151	1.232	1.081
0.3	15.4	0.017	0.31	6.408	0.173	0.173	1.253	1.080
0.3	16.9	0.019	0.34	6.410	0.190	0.189	1.269	1.080
0.4	19.0	0.021	0.36	6.411	0.213	0.212	1.292	1.080
0.4	21.5	0.022	0.39	6.414	0.242	0.241	1.321	1.080
0.4	23.1	0.024	0.41	6.415	0.260	0.259	1.339	1.080
0.4	24.9	0.025	0.45	6.417	0.280	0.279	1.358	1.080
0.5	26.4	0.027	0.47	6.418	0.296	0.295	1.375	1.080
0.5	27.7	0.028	0.50	6.420	0.311	0.310	1.390	1.080
0.5	29.4	0.030	0.52	6.422	0.330	0.328	1.408	1.080
0.6	30.2	0.031	0.55	6.424	0.339	0.338	1.417	1.080
0.6	31.3	0.033	0.58	6.425	0.351	0.350	1.430	1.080
0.6	32.8	0.035	0.61	6.427	0.367	0.366	1.446	1.080
0.6	33.6	0.036	0.63	6.429	0.376	0.374	1.454	1.080
0.7	34.5	0.037	0.65	6.430	0.386	0.385	1.464	1.080
0.7	35.9	0.039	0.69	6.432	0.402	0.400	1.480	1.080
0.7	36.9	0.040	0.71	6.434	0.413	0.411	1.491	1.080
0.7	37.8	0.041	0.73	6.435	0.422	0.421	1.500	1.080
0.8	38.7	0.043	0.76	6.437	0.433	0.431	1.511	1.080
0.8	39.8	0.045	0.78	6.439	0.445	0.443	1.522	1.080
0.8	40.2	0.046	0.82	6.441	0.449	0.447	1.527	1.080
0.8	41.3	0.048	0.84	6.442	0.461	0.459	1.539	1.080
0.9	45.0	0.054	0.94	6.449	0.503	0.500	1.580	1.080
1.0	49.1	0.059	1.04	6.456	0.548	0.545	1.625	1.080
1.1	51.2	0.065	1.15	6.463	0.570	0.567	1.647	1.080
1.2	55.3	0.071	1.25	6.469	0.616	0.613	1.693	1.080
1.3	58.9	0.077	1.35	6.476	0.654	0.651	1.731	1.080
1.4	60.9	0.082	1.45	6.482	0.676	0.673	1.753	1.080

Source: B-3.74, 8.0'-10.0'							Test ID: 435-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.5	64.9	0.089	1.56	6.489	0.720	0.717	1.797	1.080
1.6	67.7	0.094	1.65	6.496	0.751	0.747	1.827	1.080
1.7	71.3	0.100	1.76	6.503	0.789	0.785	1.865	1.080
1.8	74.1	0.106	1.86	6.509	0.820	0.816	1.896	1.080
2.0	76.8	0.112	1.97	6.516	0.849	0.844	1.924	1.080
2.1	80.5	0.117	2.06	6.523	0.888	0.883	1.963	1.080
2.1	83.5	0.123	2.17	6.530	0.921	0.915	1.995	1.080
2.3	87.3	0.129	2.27	6.537	0.962	0.956	2.036	1.080
2.4	90.5	0.135	2.37	6.544	0.996	0.990	2.070	1.080
2.5	93.4	0.141	2.47	6.550	1.027	1.021	2.101	1.080
2.5	97.0	0.147	2.58	6.557	1.065	1.059	2.139	1.080
2.7	100.0	0.152	2.68	6.564	1.097	1.090	2.170	1.080
2.8	102.3	0.158	2.77	6.571	1.121	1.114	2.194	1.080
2.9	106.2	0.164	2.88	6.578	1.162	1.155	2.235	1.080
3.0	110.0	0.169	2.98	6.585	1.203	1.196	2.275	1.080
3.1	113.4	0.175	3.09	6.592	1.238	1.231	2.311	1.080
3.2	116.8	0.181	3.18	6.598	1.274	1.267	2.347	1.080
3.3	120.1	0.187	3.29	6.606	1.310	1.302	2.381	1.080
3.4	122.9	0.193	3.39	6.612	1.338	1.330	2.410	1.080
3.5	125.5	0.199	3.50	6.620	1.365	1.357	2.437	1.080
3.6	128.5	0.204	3.59	6.626	1.396	1.388	2.467	1.079
3.7	130.9	0.210	3.70	6.634	1.421	1.412	2.492	1.080
3.8	134.5	0.216	3.80	6.640	1.458	1.449	2.528	1.080
3.9	137.2	0.222	3.90	6.648	1.486	1.477	2.557	1.080
4.0	140.2	0.227	4.00	6.655	1.516	1.507	2.587	1.080
4.1	141.8	0.233	4.10	6.661	1.533	1.523	2.603	1.080
4.2	145.3	0.239	4.21	6.669	1.568	1.558	2.638	1.080
4.3	148.2	0.245	4.30	6.676	1.599	1.588	2.668	1.080
4.4	151.1	0.251	4.41	6.683	1.628	1.618	2.697	1.080
4.5	154.1	0.256	4.51	6.690	1.659	1.648	2.728	1.080
4.6	157.4	0.262	4.61	6.697	1.693	1.681	2.761	1.080
4.7	159.7	0.268	4.71	6.704	1.715	1.704	2.784	1.080
4.8	161.7	0.274	4.82	6.712	1.734	1.723	2.803	1.080
4.9	164.7	0.279	4.92	6.719	1.765	1.753	2.833	1.080
5.1	172.2	0.294	5.17	6.737	1.840	1.828	2.908	1.080
5.4	178.2	0.308	5.42	6.755	1.900	1.887	2.965	1.078
5.6	183.7	0.323	5.68	6.773	1.953	1.939	3.018	1.079
5.9	189.3	0.337	5.93	6.791	2.007	1.992	3.071	1.079
6.1	195.8	0.352	6.19	6.810	2.070	2.055	3.134	1.079
6.4	200.9	0.366	6.43	6.827	2.119	2.103	3.182	1.079
6.6	206.2	0.380	6.69	6.846	2.168	2.152	3.231	1.079
6.9	210.8	0.394	6.94	6.864	2.211	2.194	3.273	1.079
7.1	216.7	0.409	7.20	6.884	2.267	2.249	3.329	1.079
7.4	221.6	0.423	7.44	6.902	2.312	2.294	3.373	1.079
7.6	227.3	0.438	7.70	6.921	2.365	2.346	3.425	1.079
7.9	232.1	0.452	7.95	6.940	2.408	2.389	3.467	1.078
8.1	234.2	0.466	8.21	6.959	2.423	2.403	3.481	1.078
8.4	238.6	0.481	8.45	6.978	2.462	2.441	3.519	1.078
8.6	243.5	0.495	8.71	6.998	2.505	2.484	3.568	1.083
8.9	247.9	0.509	8.96	7.017	2.544	2.522	3.600	1.078
9.1	252.4	0.524	9.22	7.037	2.583	2.560	3.637	1.077
9.4	257.5	0.538	9.47	7.057	2.627	2.604	3.682	1.077
9.6	260.4	0.553	9.72	7.076	2.650	2.626	3.704	1.077
9.9	263.6	0.567	9.98	7.096	2.674	2.650	3.727	1.077
10.1	266.8	0.581	10.23	7.116	2.700	2.675	3.752	1.077
10.4	270.3	0.596	10.48	7.137	2.727	2.702	3.779	1.077
10.7	276.9	0.610	10.73	7.156	2.786	2.760	3.837	1.078
10.9	280.3	0.625	10.99	7.177	2.812	2.785	3.862	1.077
11.2	284.6	0.639	11.24	7.197	2.847	2.820	3.897	1.078
11.4	287.1	0.653	11.50	7.218	2.864	2.836	3.914	1.077
11.6	290.4	0.667	11.74	7.238	2.889	2.860	3.937	1.077
11.9	294.2	0.682	12.00	7.260	2.918	2.889	3.966	1.077
12.2	297.5	0.696	12.25	7.280	2.942	2.912	3.990	1.077
12.4	300.3	0.711	12.50	7.301	2.961	2.931	4.009	1.078
12.7	303.3	0.725	12.75	7.322	2.983	2.952	4.029	1.077
12.9	306.9	0.740	13.01	7.344	3.009	2.977	4.054	1.077
13.2	311.2	0.754	13.26	7.365	3.043	3.011	4.088	1.078
13.4	312.8	0.768	13.52	7.387	3.049	3.016	4.094	1.077
13.7	316.3	0.782	13.76	7.408	3.074	3.041	4.118	1.077

Source: B-3.74, 8.0'-10.0'							Test ID: 435-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
13.9	319.0	0.797	14.02	7.430	3.092	3.058	4.135	1.078
14.2	321.3	0.811	14.27	7.451	3.105	3.070	4.147	1.077
14.4	326.0	0.826	14.53	7.474	3.141	3.106	4.183	1.078
14.7	329.0	0.840	14.77	7.496	3.161	3.125	4.202	1.077
14.9	331.9	0.854	15.03	7.518	3.178	3.142	4.219	1.077
15.2	335.3	0.869	15.28	7.540	3.201	3.164	4.242	1.077
15.4	338.1	0.883	15.54	7.563	3.218	3.181	4.258	1.077
15.7	340.1	0.897	15.78	7.586	3.228	3.190	4.267	1.077
15.9	342.3	0.912	16.04	7.609	3.239	3.200	4.278	1.078
16.2	344.1	0.926	16.29	7.631	3.247	3.207	4.285	1.077
16.4	340.3	0.941	16.55	7.655	3.200	3.160	4.238	1.077
16.7	344.1	0.955	16.79	7.678	3.227	3.186	4.263	1.077
16.8	346.7	0.963	16.95	7.692	3.246	3.205	4.283	1.078

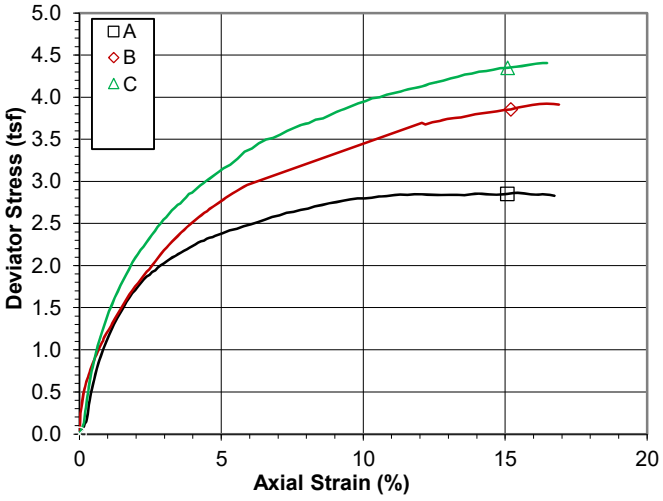
Unconsolidated Undrained Triaxial Compression

ASTM D 2850

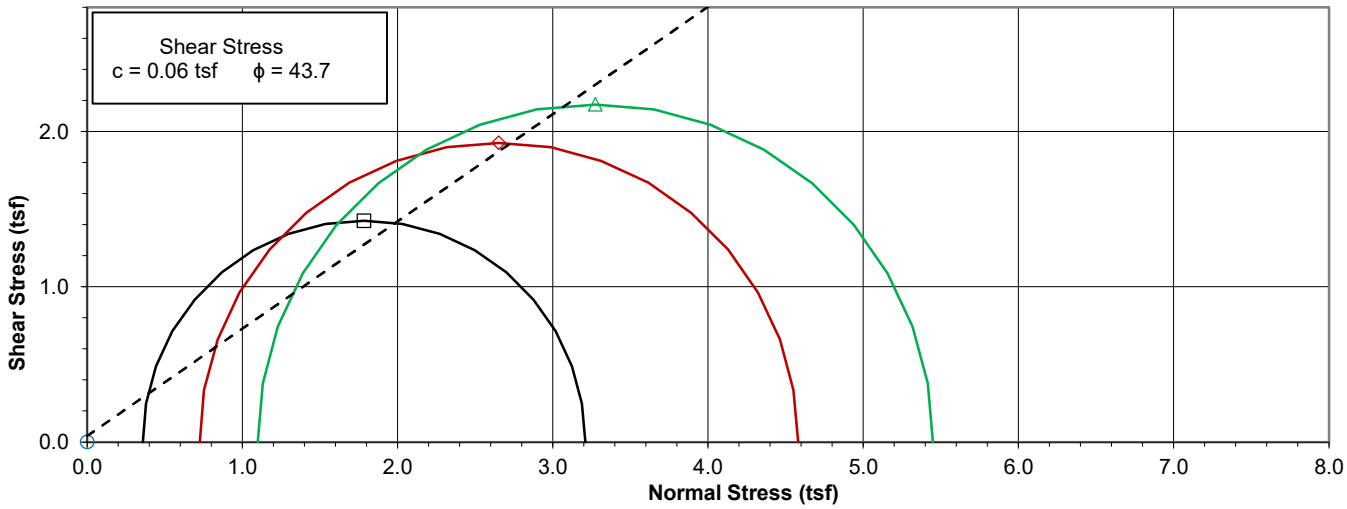
Project Name Eagle Creek

Project 173409690
Set ID 437

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	437	B-3.76, 4.0'-10.0'	Lean Clay (CL), dark brown	2.75			
B	437	B-3.76, 4.0'-10.0'	Lean Clay (CL), dark brown	2.75			
C	437	B-3.76, 4.0'-10.0'	Lean Clay (CL), dark brown	2.75			



Specimen	A	B	C	D	E
	Initial Specimen Conditions				
Average Height (in)	5.759	5.756	5.762	0.000	0.000
Average Diameter (in)	2.867	2.885	2.880		
Moist Unit Weight (pcf)	131.9	135.3	135.4		
Moisture Content (%)	14.7	15.1	14.6		
Dry Unit Weight (pcf)	115.0	117.6	118.1		
Void Ratio	0.490	0.457	0.450		
Degree of Saturation (%)	82.6	90.8	89.4		
	Confined Specimen Conditions				
Moist Unit Weight (pcf)	132.6	136.8	135.4		
Moisture Content (%)	14.7	15.1	14.6		
Dry Unit Weight (pcf)	115.6	118.8	118.1		
Degree of Saturation (%)	83.9	93.9	89.2		
Void Ratio	0.482	0.442	0.451		
Cell Pressure, σ_3 (tsf)	0.359	0.717	1.104	0.000	0.000
	At Unconsolidated Undrained Failure				
Failure Criterion	15% Axial Strain				
Axial Strain (%)	15.072	15.204	15.081	0.000	0.000
Deviator Stress (tsf)	2.851	3.855	4.350	0.000	0.000
Minor Principal Stress, σ_3 (tsf)	0.359	0.725	1.099	0.000	0.000
Major Principal Stress, σ_1 (tsf)	3.210	4.580	5.449	0.000	0.000
Undrained Shear Strength, S_u (tsf)	1.426	1.928	2.175	0.000	0.000



Comments

Reviewed By KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.76, 4.0'-10.0'
Description Lean Clay (CL), dark brown
Specimen Type Compacted

Project No. 173409690
Lab ID 437
Test ID 437-A

Date Received 02/08/2021
Date Tested 04/05/2021

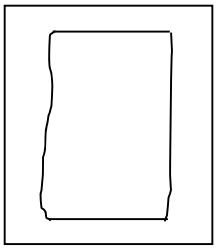
Specific Gravity 2.75
ASTM D 854, Dry

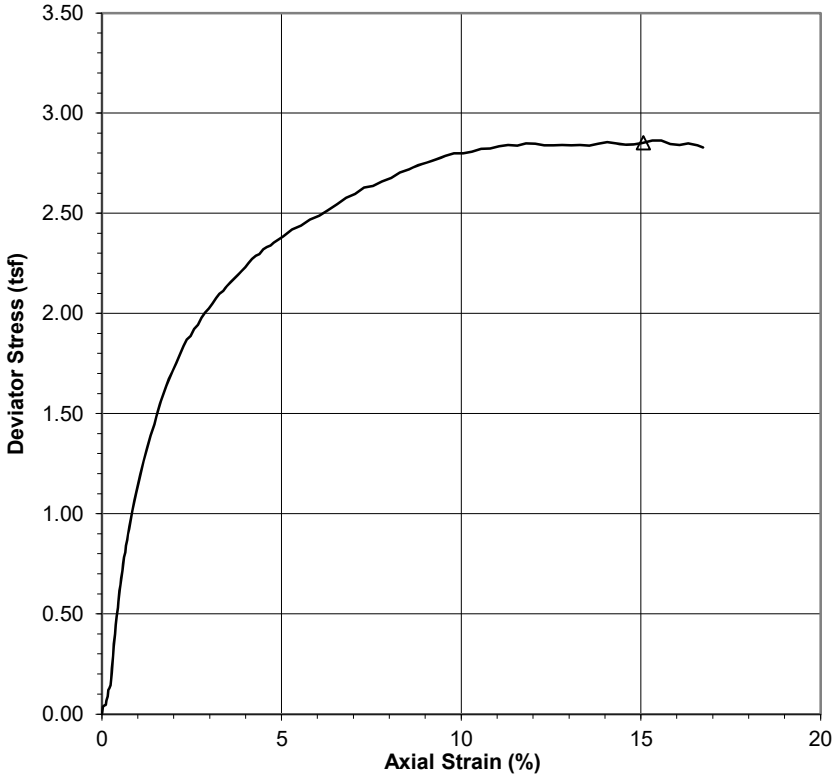
Liquid Limit
Plastic Limit
Plasticity Index

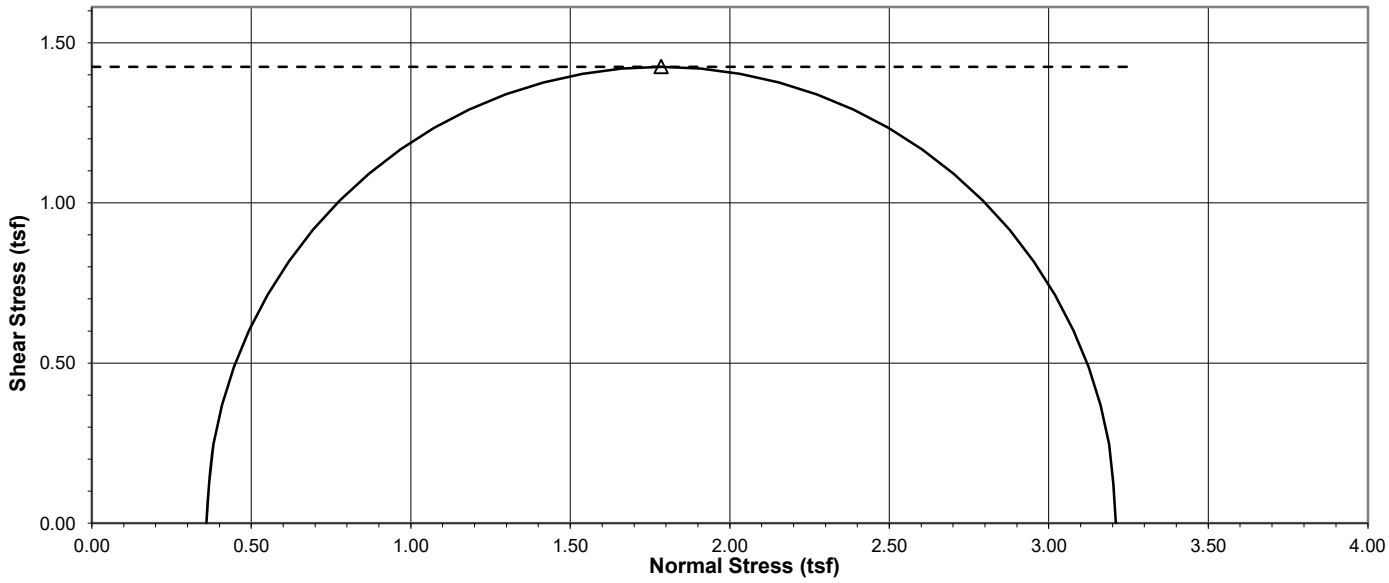
Target Test Parameters
Nominal Chamber Pressure (psi) 5
Actual Axial Strain Rate of Test (%/min) 1.000

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.07
Deviator Stress (tsf) 2.851
Minor Principal Stress, σ_3 (tsf) 0.359
Major Principal Stress, σ_1 (tsf) 3.210
Undrained Shear Strength, S_u (tsf) 1.426

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.76, 4.0'-10.0'	Lab ID	437
Description	Lean Clay (CL), dark brown	Test ID	437-A

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.759	Calculated Height (in)	5.749	Specific Gravity	2.75
Average Diameter (in)	2.867	Calculated Diameter (in)	2.862		ASTM D 854, Dry
Calculated Area (in^2)	6.454	Calculated Area (in^2)	6.431	Liquid Limit	
Moist Weight (lb)	2.838	Moist Weight (lb)	2.838	Plastic Limit	
Moist Unit Weight (pcf)	131.9	Moist Unit Weight (pcf)	132.6	Plasticity Index	
Moisture Content (%)	14.7	Moisture Content (%)	14.7		
Dry Weight (lb)	2.474	Dry Weight (lb)	2.474		
Dry Unit Weight (pcf)	115.0	Dry Unit Weight (pcf)	115.6	Confining Pressure	
Void Ratio	0.490	Void Ratio	0.482	σ_3 (tsf)	0.359
Degree of Saturation (%)	82.6	Degree of Saturation (%)	83.9		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 437**
Source: B-3.76, 4.0'-10.0' **Test ID: 437-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.431	0.000	0.000	0.359	0.359
0.0	3.3	0.002	0.03	6.433	0.037	0.037	0.396	0.359
0.1	3.7	0.003	0.06	6.435	0.041	0.041	0.400	0.359
0.1	3.9	0.004	0.08	6.436	0.043	0.043	0.402	0.359
0.1	4.1	0.006	0.11	6.438	0.046	0.046	0.404	0.359
0.1	6.1	0.008	0.13	6.440	0.068	0.068	0.427	0.359
0.2	7.9	0.009	0.16	6.442	0.088	0.088	0.446	0.358
0.2	10.8	0.011	0.18	6.443	0.120	0.120	0.478	0.358
0.2	11.5	0.012	0.21	6.444	0.128	0.128	0.488	0.361
0.2	13.0	0.014	0.24	6.447	0.145	0.145	0.503	0.358
0.3	15.6	0.015	0.26	6.448	0.175	0.174	0.532	0.358
0.3	20.5	0.016	0.28	6.449	0.229	0.228	0.586	0.358
0.3	26.0	0.018	0.32	6.452	0.290	0.289	0.646	0.357
0.3	31.5	0.019	0.34	6.453	0.352	0.351	0.708	0.357
0.4	35.9	0.021	0.37	6.455	0.400	0.399	0.756	0.357
0.4	39.9	0.022	0.39	6.456	0.445	0.444	0.801	0.357
0.4	43.9	0.024	0.41	6.458	0.489	0.488	0.845	0.357
0.4	47.7	0.026	0.44	6.460	0.532	0.531	0.887	0.356
0.5	51.4	0.027	0.47	6.461	0.573	0.572	0.928	0.356
0.5	54.5	0.028	0.49	6.463	0.607	0.606	0.962	0.356
0.5	58.0	0.030	0.52	6.465	0.645	0.644	1.001	0.356
0.5	60.9	0.031	0.54	6.466	0.678	0.677	1.034	0.356
0.6	64.4	0.033	0.57	6.468	0.716	0.715	1.072	0.357
0.6	67.4	0.034	0.59	6.470	0.750	0.749	1.106	0.357
0.6	70.5	0.035	0.62	6.471	0.785	0.783	1.140	0.357
0.6	72.7	0.037	0.65	6.473	0.809	0.807	1.164	0.357
0.7	75.7	0.039	0.67	6.475	0.842	0.840	1.197	0.357
0.7	78.4	0.040	0.70	6.477	0.871	0.869	1.227	0.358
0.7	80.9	0.042	0.72	6.478	0.900	0.898	1.255	0.358
0.7	83.4	0.043	0.76	6.480	0.926	0.924	1.283	0.358
0.8	91.7	0.049	0.85	6.486	1.018	1.016	1.375	0.358
1.0	99.8	0.055	0.96	6.493	1.107	1.105	1.463	0.358
1.1	106.7	0.061	1.05	6.500	1.182	1.180	1.538	0.358
1.1	114.4	0.067	1.16	6.507	1.266	1.263	1.622	0.358
1.2	120.3	0.072	1.26	6.513	1.329	1.326	1.685	0.358
1.4	126.1	0.078	1.35	6.519	1.393	1.389	1.748	0.358
1.5	131.4	0.084	1.46	6.527	1.449	1.446	1.805	0.359
1.5	137.2	0.089	1.56	6.533	1.512	1.508	1.867	0.359
1.6	143.0	0.096	1.66	6.540	1.575	1.571	1.929	0.359

Source: B-3.76, 4.0'-10.0'							Test ID: 437-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.8	147.7	0.101	1.76	6.546	1.624	1.620	1.979	0.359
1.9	152.6	0.107	1.87	6.553	1.677	1.673	2.031	0.359
2.0	156.1	0.113	1.96	6.560	1.713	1.708	2.067	0.359
2.1	160.2	0.119	2.07	6.567	1.756	1.751	2.110	0.359
2.2	164.2	0.124	2.16	6.573	1.799	1.793	2.152	0.359
2.3	168.4	0.131	2.27	6.581	1.843	1.837	2.196	0.359
2.4	171.6	0.136	2.37	6.587	1.876	1.870	2.229	0.359
2.5	173.4	0.142	2.47	6.594	1.894	1.888	2.246	0.359
2.6	176.7	0.148	2.57	6.601	1.928	1.922	2.281	0.359
2.7	178.9	0.154	2.68	6.608	1.950	1.943	2.302	0.359
2.8	182.3	0.159	2.77	6.615	1.984	1.977	2.336	0.359
2.9	184.9	0.165	2.87	6.621	2.010	2.003	2.362	0.359
3.0	187.0	0.171	2.98	6.628	2.031	2.024	2.383	0.359
3.1	189.5	0.177	3.07	6.635	2.056	2.049	2.408	0.359
3.2	192.3	0.183	3.18	6.642	2.085	2.077	2.436	0.359
3.3	194.5	0.188	3.27	6.649	2.106	2.098	2.456	0.359
3.4	196.0	0.194	3.38	6.656	2.120	2.112	2.470	0.359
3.5	198.5	0.200	3.48	6.663	2.145	2.136	2.495	0.358
3.6	200.5	0.206	3.58	6.670	2.164	2.156	2.514	0.359
3.7	202.3	0.212	3.68	6.677	2.182	2.173	2.532	0.359
3.8	204.4	0.218	3.79	6.684	2.201	2.192	2.551	0.359
3.9	206.3	0.223	3.88	6.691	2.220	2.211	2.569	0.359
4.0	208.4	0.229	3.99	6.698	2.240	2.231	2.589	0.359
4.1	210.6	0.235	4.08	6.705	2.262	2.252	2.611	0.359
4.2	212.7	0.240	4.18	6.712	2.282	2.272	2.631	0.359
4.3	214.5	0.247	4.29	6.719	2.298	2.288	2.646	0.359
4.4	215.5	0.252	4.38	6.726	2.307	2.296	2.655	0.359
4.5	218.0	0.258	4.49	6.734	2.331	2.320	2.679	0.359
4.6	219.2	0.264	4.59	6.740	2.342	2.331	2.689	0.359
4.7	220.2	0.270	4.69	6.748	2.350	2.338	2.698	0.359
4.8	221.8	0.275	4.79	6.755	2.365	2.353	2.711	0.358
5.0	225.3	0.290	5.04	6.773	2.395	2.383	2.742	0.359
5.3	229.4	0.304	5.29	6.790	2.432	2.419	2.778	0.358
5.5	231.8	0.319	5.54	6.809	2.451	2.438	2.796	0.358
5.8	235.3	0.333	5.79	6.826	2.482	2.468	2.826	0.358
6.0	237.9	0.348	6.05	6.845	2.503	2.488	2.847	0.358
6.3	241.2	0.362	6.29	6.863	2.530	2.515	2.873	0.358
6.5	244.8	0.376	6.55	6.882	2.561	2.546	2.904	0.359
6.8	248.5	0.391	6.79	6.900	2.593	2.577	2.935	0.359
7.1	251.1	0.405	7.05	6.919	2.613	2.596	2.954	0.358
7.3	254.9	0.419	7.29	6.937	2.645	2.628	2.987	0.359
7.6	256.5	0.434	7.55	6.956	2.654	2.636	2.995	0.358
7.8	259.4	0.448	7.79	6.975	2.678	2.659	3.018	0.359
8.0	261.9	0.463	8.05	6.994	2.696	2.677	3.035	0.358
8.3	265.2	0.477	8.29	7.013	2.723	2.703	3.062	0.359
8.5	267.6	0.492	8.55	7.033	2.739	2.719	3.077	0.359
8.8	270.4	0.506	8.80	7.051	2.760	2.739	3.098	0.359
9.0	272.5	0.520	9.05	7.071	2.775	2.753	3.111	0.358
9.3	274.9	0.535	9.30	7.091	2.792	2.769	3.128	0.359
9.6	277.5	0.549	9.55	7.111	2.810	2.787	3.146	0.359
9.8	279.6	0.563	9.80	7.130	2.823	2.799	3.158	0.358
10.1	280.4	0.578	10.06	7.150	2.823	2.799	3.157	0.358
10.3	282.0	0.592	10.30	7.170	2.831	2.807	3.165	0.358
10.6	284.3	0.607	10.56	7.190	2.847	2.822	3.180	0.358
10.8	285.3	0.621	10.80	7.210	2.850	2.823	3.182	0.358
11.0	287.4	0.636	11.06	7.231	2.861	2.835	3.193	0.358
11.3	288.9	0.650	11.30	7.251	2.869	2.841	3.200	0.359
11.5	289.4	0.665	11.56	7.272	2.866	2.838	3.196	0.359
11.8	291.3	0.679	11.81	7.292	2.877	2.848	3.207	0.359
12.0	292.1	0.694	12.06	7.313	2.876	2.847	3.206	0.359
12.3	292.2	0.708	12.31	7.334	2.868	2.839	3.197	0.359
12.6	293.1	0.722	12.56	7.355	2.869	2.839	3.198	0.359
12.8	294.2	0.736	12.81	7.376	2.872	2.841	3.199	0.359
13.1	295.0	0.751	13.06	7.398	2.871	2.839	3.198	0.359
13.3	295.9	0.765	13.31	7.419	2.872	2.840	3.199	0.359
13.6	296.5	0.780	13.57	7.441	2.870	2.837	3.196	0.359
13.8	298.6	0.794	13.81	7.462	2.881	2.847	3.206	0.359
14.1	300.3	0.809	14.07	7.484	2.889	2.855	3.215	0.359
14.3	300.5	0.823	14.31	7.505	2.883	2.848	3.208	0.359

Source: B-3.76, 4.0'-10.0'							Test ID: 437-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
14.6	300.9	0.838	14.57	7.528	2.878	2.843	3.202	0.359
14.8	302.0	0.852	14.82	7.550	2.880	2.844	3.203	0.359
15.1	303.7	0.866	15.07	7.572	2.888	2.851	3.210	0.359
15.3	305.8	0.881	15.32	7.594	2.900	2.863	3.221	0.359
15.6	306.9	0.895	15.57	7.617	2.901	2.863	3.222	0.359
15.8	306.1	0.909	15.82	7.640	2.884	2.846	3.205	0.359
16.1	306.5	0.924	16.07	7.663	2.880	2.841	3.200	0.359
16.3	308.2	0.938	16.32	7.685	2.888	2.848	3.208	0.359
16.6	308.2	0.953	16.57	7.709	2.878	2.838	3.198	0.359
16.7	307.7	0.962	16.73	7.724	2.868	2.828	3.187	0.359

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.76, 4.0'-10.0'
Description Lean Clay (CL), dark brown
Specimen Type Compacted

Project No. 173409690
Lab ID 437
Test ID 437-B

Date Received 02/08/2021
Date Tested 04/05/2021

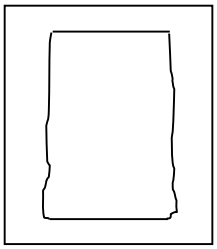
Specific Gravity 2.75
ASTM D 854, Dry

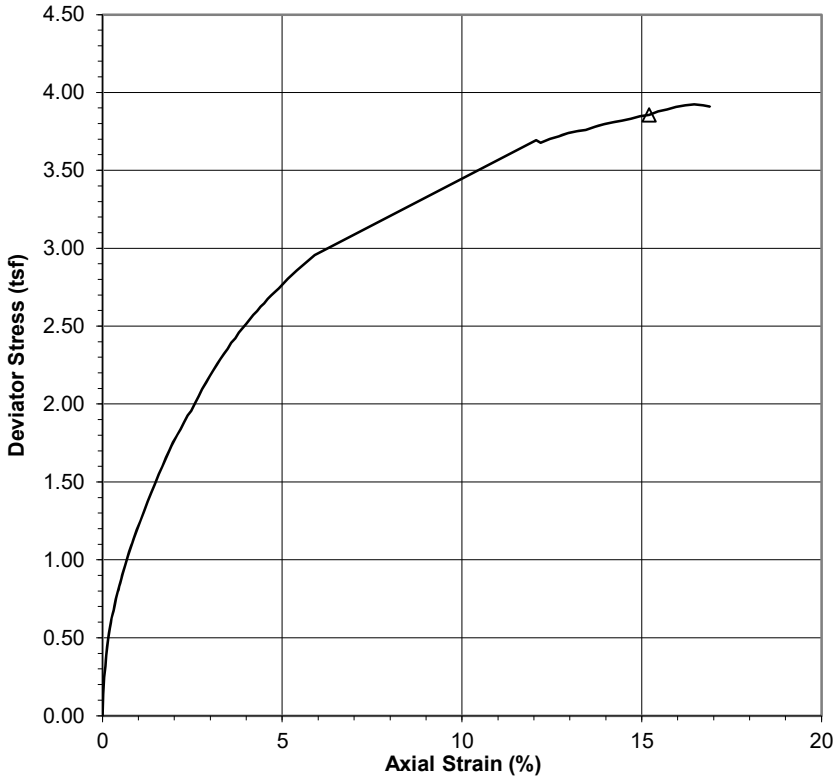
Liquid Limit
Plastic Limit
Plasticity Index

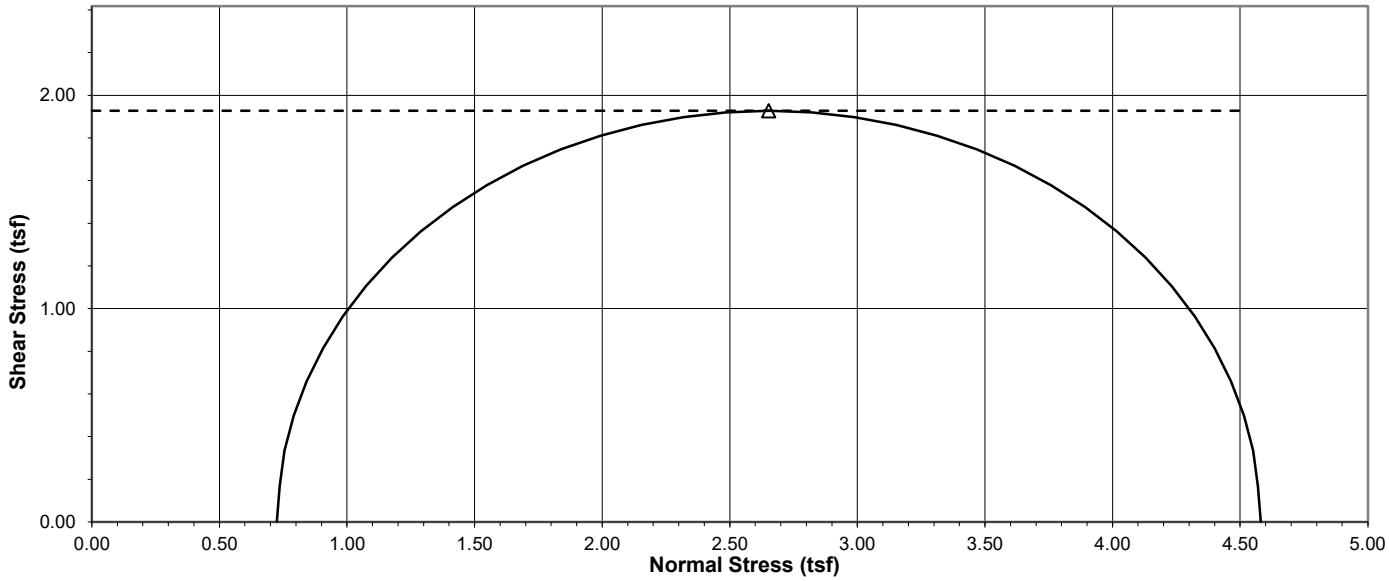
Target Test Parameters
Nominal Chamber Pressure (psi) 10
Actual Axial Strain Rate of Test (%/min) 1.004

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.20
Deviator Stress (tsf) 3.855
Minor Principal Stress, σ_3 (tsf) 0.725
Major Principal Stress, σ_1 (tsf) 4.580
Undrained Shear Strength, S_u (tsf) 1.928

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.76, 4.0'-10.0'	Lab ID	437
Description	Lean Clay (CL), dark brown	Test ID	437-B

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.756	Calculated Height (in)	5.736	Specific Gravity	2.75
Average Diameter (in)	2.885	Calculated Diameter (in)	2.874		ASTM D 854, Dry
Calculated Area (in^2)	6.535	Calculated Area (in^2)	6.489	Liquid Limit	
Moist Weight (lb)	2.946	Moist Weight (lb)	2.946	Plastic Limit	
Moist Unit Weight (pcf)	135.3	Moist Unit Weight (pcf)	136.8	Plasticity Index	
Moisture Content (%)	15.1	Moisture Content (%)	15.1		
Dry Weight (lb)	2.560	Dry Weight (lb)	2.560		
Dry Unit Weight (pcf)	117.6	Dry Unit Weight (pcf)	118.8	Confining Pressure	
Void Ratio	0.457	Void Ratio	0.442	σ_3 (tsf)	0.717
Degree of Saturation (%)	90.8	Degree of Saturation (%)	93.9		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 437**
Source: B-3.76, 4.0'-10.0' **Test ID: 437-B**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.489	0.000	0.000	0.717	0.717
0.0	12.5	0.001	0.02	6.491	0.139	0.139	0.855	0.717
0.1	22.3	0.003	0.04	6.492	0.248	0.247	0.963	0.716
0.1	28.6	0.004	0.08	6.494	0.317	0.317	1.032	0.715
0.1	34.3	0.006	0.10	6.496	0.381	0.380	1.096	0.715
0.1	40.2	0.008	0.13	6.498	0.446	0.446	1.160	0.715
0.2	44.5	0.009	0.15	6.499	0.493	0.492	1.207	0.715
0.2	47.7	0.010	0.18	6.501	0.528	0.528	1.242	0.714
0.2	50.8	0.012	0.21	6.503	0.563	0.562	1.276	0.714
0.2	54.0	0.013	0.23	6.504	0.597	0.597	1.311	0.714
0.3	56.6	0.015	0.25	6.506	0.627	0.626	1.340	0.714
0.3	59.4	0.017	0.29	6.508	0.657	0.657	1.370	0.713
0.3	61.3	0.018	0.31	6.510	0.678	0.678	1.391	0.713
0.3	63.7	0.019	0.33	6.511	0.704	0.703	1.416	0.713
0.4	66.6	0.021	0.37	6.513	0.736	0.735	1.447	0.712
0.4	69.1	0.022	0.39	6.515	0.763	0.762	1.475	0.712
0.4	71.5	0.024	0.41	6.516	0.791	0.790	1.501	0.712
0.5	73.2	0.026	0.45	6.518	0.809	0.808	1.520	0.712
0.5	75.3	0.027	0.47	6.520	0.831	0.830	1.542	0.712
0.5	76.9	0.028	0.49	6.521	0.849	0.848	1.560	0.712
0.5	79.8	0.030	0.52	6.523	0.880	0.879	1.591	0.712
0.6	81.6	0.031	0.55	6.525	0.901	0.900	1.612	0.713
0.6	83.5	0.033	0.57	6.526	0.921	0.920	1.634	0.714
0.6	85.3	0.035	0.60	6.529	0.941	0.940	1.653	0.714
0.6	87.0	0.036	0.62	6.530	0.960	0.958	1.672	0.714
0.6	88.7	0.037	0.65	6.531	0.978	0.977	1.690	0.714
0.7	91.0	0.039	0.68	6.534	1.003	1.001	1.715	0.714
0.7	93.0	0.040	0.70	6.535	1.025	1.023	1.738	0.715
0.7	94.5	0.041	0.72	6.537	1.041	1.039	1.754	0.715
0.7	96.4	0.043	0.76	6.539	1.061	1.059	1.776	0.716
0.8	98.0	0.045	0.78	6.540	1.079	1.077	1.793	0.716
0.8	99.5	0.046	0.80	6.542	1.095	1.093	1.809	0.716
0.8	100.9	0.048	0.83	6.544	1.110	1.108	1.824	0.716
0.8	102.7	0.049	0.86	6.545	1.130	1.128	1.844	0.716
1.0	108.8	0.055	0.95	6.552	1.196	1.193	1.911	0.717
1.1	114.3	0.061	1.06	6.559	1.255	1.252	1.970	0.718
1.2	120.0	0.067	1.16	6.565	1.316	1.313	2.030	0.717
1.3	125.7	0.072	1.26	6.572	1.377	1.374	2.091	0.717
1.4	130.9	0.078	1.36	6.578	1.433	1.430	2.147	0.717

Source: B-3.76, 4.0'-10.0'							Test ID: 437-B	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.5	136.0	0.084	1.46	6.585	1.486	1.483	2.199	0.716
1.6	142.3	0.090	1.57	6.593	1.554	1.550	2.267	0.716
1.7	146.9	0.096	1.67	6.599	1.603	1.599	2.316	0.716
1.8	152.3	0.101	1.76	6.606	1.660	1.655	2.372	0.716
1.9	156.7	0.107	1.86	6.612	1.707	1.702	2.418	0.716
2.0	161.7	0.113	1.96	6.619	1.759	1.754	2.470	0.716
2.1	165.3	0.118	2.06	6.626	1.797	1.792	2.507	0.716
2.2	169.8	0.125	2.17	6.633	1.843	1.838	2.554	0.716
2.3	174.2	0.130	2.27	6.640	1.889	1.883	2.599	0.716
2.4	178.4	0.136	2.37	6.647	1.933	1.927	2.643	0.715
2.5	181.2	0.142	2.47	6.653	1.961	1.955	2.671	0.716
2.6	186.1	0.148	2.58	6.661	2.012	2.006	2.721	0.716
2.7	190.3	0.153	2.68	6.668	2.055	2.049	2.765	0.716
2.8	194.9	0.159	2.77	6.674	2.103	2.096	2.812	0.716
2.9	199.2	0.165	2.88	6.682	2.146	2.139	2.855	0.716
3.0	203.2	0.171	2.98	6.689	2.187	2.180	2.896	0.716
3.1	206.9	0.177	3.08	6.695	2.225	2.218	2.933	0.715
3.2	210.2	0.182	3.18	6.702	2.258	2.251	2.967	0.716
3.3	214.1	0.188	3.28	6.709	2.297	2.290	3.006	0.716
3.4	217.5	0.194	3.39	6.717	2.332	2.324	3.040	0.716
3.5	220.7	0.200	3.49	6.724	2.363	2.355	3.070	0.715
3.6	224.6	0.206	3.58	6.730	2.402	2.394	3.111	0.717
3.7	227.5	0.212	3.69	6.738	2.431	2.422	3.139	0.717
3.8	231.2	0.217	3.79	6.745	2.468	2.459	3.176	0.717
3.9	234.1	0.223	3.89	6.752	2.496	2.487	3.205	0.719
4.0	237.0	0.229	4.00	6.759	2.524	2.514	3.233	0.719
4.1	240.0	0.235	4.10	6.766	2.554	2.544	3.263	0.719
4.2	243.0	0.241	4.19	6.773	2.583	2.572	3.291	0.719
4.3	245.4	0.247	4.30	6.781	2.606	2.596	3.315	0.719
4.4	248.5	0.252	4.40	6.788	2.636	2.625	3.345	0.719
4.5	250.8	0.258	4.50	6.795	2.657	2.646	3.365	0.719
4.6	253.7	0.264	4.60	6.802	2.685	2.674	3.393	0.719
4.7	256.1	0.269	4.70	6.809	2.708	2.696	3.416	0.719
4.8	258.9	0.276	4.81	6.817	2.734	2.723	3.442	0.719
4.9	261.1	0.281	4.91	6.824	2.755	2.743	3.462	0.720
5.1	267.6	0.296	5.16	6.842	2.816	2.804	3.524	0.720
5.4	273.5	0.310	5.41	6.860	2.871	2.858	3.578	0.720
5.6	279.1	0.324	5.66	6.878	2.921	2.908	3.628	0.721
5.9	284.6	0.339	5.91	6.897	2.971	2.957	3.677	0.721
12.0	381.5	0.692	12.06	7.379	3.723	3.694	4.419	0.725
12.2	380.4	0.699	12.19	7.390	3.707	3.677	4.403	0.726
12.4	384.1	0.714	12.44	7.411	3.732	3.702	4.429	0.727
12.7	387.1	0.728	12.69	7.433	3.749	3.719	4.447	0.728
12.9	390.3	0.743	12.94	7.454	3.770	3.739	4.467	0.728
13.1	392.7	0.757	13.20	7.476	3.782	3.750	4.479	0.728
13.4	394.9	0.771	13.45	7.497	3.792	3.760	4.489	0.729
13.6	398.1	0.786	13.70	7.519	3.812	3.779	4.508	0.729
13.9	401.0	0.800	13.95	7.541	3.829	3.795	4.524	0.729
14.1	403.6	0.814	14.20	7.563	3.842	3.808	4.537	0.729
14.4	406.0	0.829	14.45	7.586	3.854	3.819	4.548	0.729
14.6	408.4	0.843	14.70	7.608	3.865	3.830	4.558	0.728
14.9	411.6	0.858	14.95	7.630	3.884	3.848	4.577	0.729
15.2	413.6	0.872	15.20	7.653	3.892	3.855	4.580	0.725
15.4	417.3	0.886	15.45	7.675	3.914	3.877	4.603	0.726
15.7	420.0	0.901	15.71	7.698	3.928	3.890	4.617	0.727
15.9	423.1	0.915	15.96	7.721	3.946	3.907	4.635	0.728
16.2	425.5	0.930	16.21	7.745	3.956	3.917	4.646	0.728
16.4	427.6	0.944	16.46	7.768	3.964	3.924	4.653	0.729
16.6	428.2	0.959	16.71	7.791	3.957	3.917	4.642	0.725
16.8	428.4	0.969	16.90	7.809	3.950	3.910	4.637	0.727

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.76, 4.0'-10.0'
Description Lean Clay (CL), dark brown
Specimen Type Compacted

Project No. 173409690
Lab ID 437
Test ID 437-C

Date Received 02/08/2021
Date Tested 04/05/2021

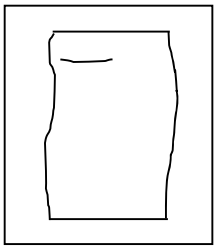
Specific Gravity 2.75
ASTM D 854, Dry

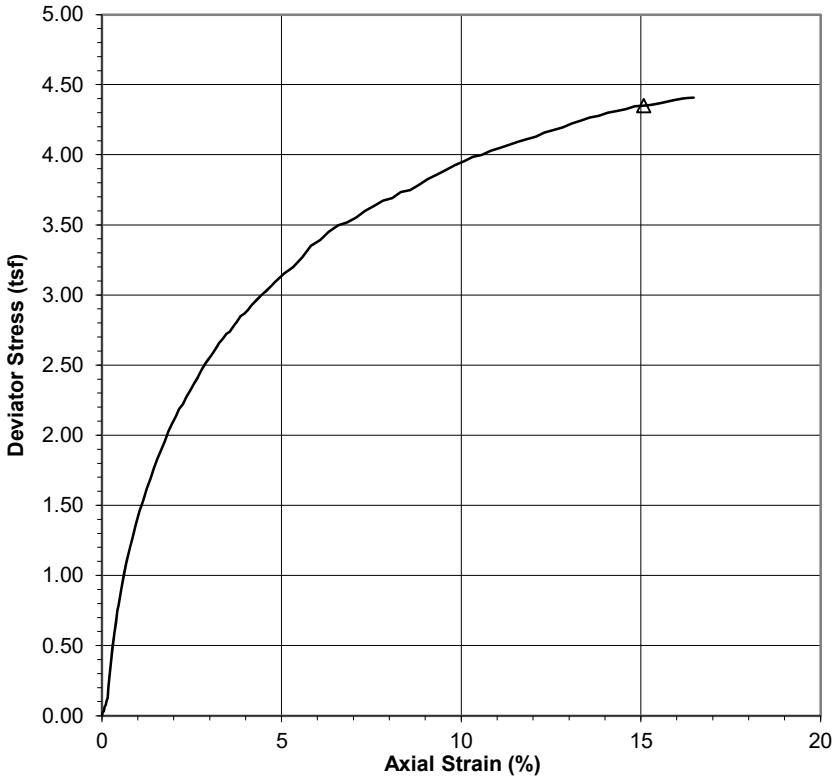
Liquid Limit
Plastic Limit
Plasticity Index

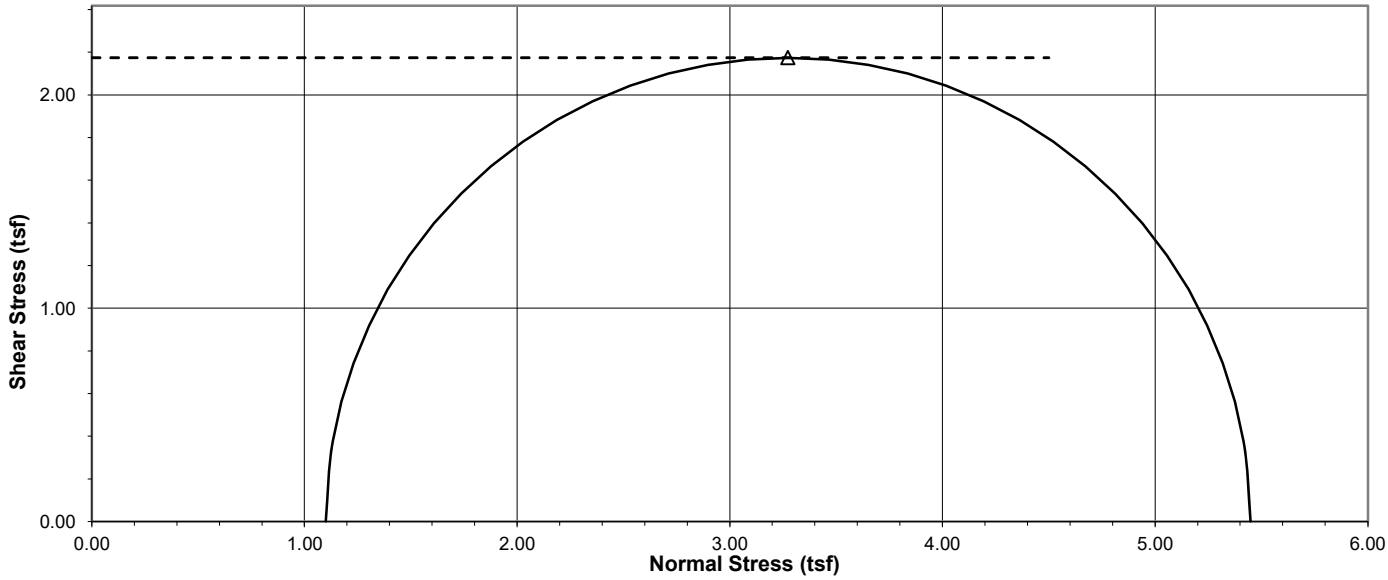
Target Test Parameters
Nominal Chamber Pressure (psi) 15
Actual Axial Strain Rate of Test (%/min) 0.998

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.08
Deviator Stress (tsf) 4.350
Minor Principal Stress, σ_3 (tsf) 1.099
Major Principal Stress, σ_1 (tsf) 5.449
Undrained Shear Strength, S_u (tsf) 2.175

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.76, 4.0'-10.0'	Lab ID	437
Description	Lean Clay (CL), dark brown	Test ID	437-C

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.762	Calculated Height (in)	5.763	Specific Gravity	2.75
Average Diameter (in)	2.880	Calculated Diameter (in)	2.881		ASTM D 854, Dry
Calculated Area (in^2)	6.515	Calculated Area (in^2)	6.517	Liquid Limit	
Moist Weight (lb)	2.942	Moist Weight (lb)	2.942	Plastic Limit	
Moist Unit Weight (pcf)	135.4	Moist Unit Weight (pcf)	135.4	Plasticity Index	
Moisture Content (%)	14.6	Moisture Content (%)	14.6		
Dry Weight (lb)	2.567	Dry Weight (lb)	2.567		
Dry Unit Weight (pcf)	118.1	Dry Unit Weight (pcf)	118.1	Confining Pressure	
Void Ratio	0.450	Void Ratio	0.451	σ_3 (tsf)	1.104
Degree of Saturation (%)	89.4	Degree of Saturation (%)	89.2		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 437**
Source: B-3.76, 4.0'-10.0' **Test ID: 437-C**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.517	0.000	0.000	1.104	1.104
0.0	1.8	0.001	0.02	6.519	0.020	0.020	1.124	1.104
0.1	2.9	0.003	0.06	6.521	0.032	0.032	1.136	1.104
0.1	5.5	0.004	0.08	6.522	0.061	0.061	1.165	1.104
0.1	7.1	0.006	0.11	6.525	0.079	0.079	1.183	1.104
0.1	9.1	0.007	0.13	6.526	0.101	0.101	1.204	1.104
0.2	11.6	0.009	0.16	6.528	0.128	0.128	1.232	1.104
0.2	18.0	0.011	0.18	6.529	0.199	0.198	1.302	1.103
0.2	24.3	0.012	0.20	6.531	0.268	0.267	1.370	1.103
0.2	30.4	0.014	0.24	6.533	0.335	0.334	1.437	1.103
0.3	36.1	0.015	0.26	6.534	0.398	0.397	1.500	1.103
0.3	41.2	0.016	0.28	6.536	0.454	0.453	1.556	1.103
0.3	46.5	0.018	0.31	6.538	0.512	0.511	1.614	1.103
0.3	51.0	0.019	0.34	6.539	0.561	0.560	1.663	1.103
0.4	55.7	0.021	0.36	6.541	0.613	0.612	1.716	1.104
0.4	60.3	0.023	0.39	6.543	0.664	0.663	1.767	1.104
0.4	64.4	0.024	0.41	6.544	0.708	0.707	1.812	1.105
0.5	68.0	0.025	0.43	6.546	0.748	0.747	1.852	1.105
0.5	71.7	0.027	0.47	6.548	0.789	0.788	1.892	1.105
0.5	75.5	0.028	0.49	6.549	0.830	0.829	1.935	1.105
0.5	79.2	0.030	0.52	6.552	0.870	0.869	1.975	1.106
0.5	82.9	0.031	0.54	6.553	0.911	0.909	2.016	1.106
0.6	95.7	0.037	0.65	6.560	1.050	1.049	2.156	1.107
0.7	105.6	0.043	0.74	6.566	1.158	1.156	2.264	1.108
0.8	115.5	0.049	0.85	6.573	1.266	1.264	2.372	1.108
1.0	124.9	0.055	0.95	6.580	1.367	1.364	2.473	1.108
1.0	133.4	0.060	1.04	6.586	1.459	1.456	2.565	1.108
1.1	140.7	0.066	1.15	6.593	1.537	1.534	2.643	1.109
1.2	148.5	0.072	1.25	6.600	1.621	1.618	2.726	1.109
1.4	155.5	0.078	1.35	6.607	1.694	1.691	2.800	1.109
1.5	162.1	0.084	1.45	6.613	1.765	1.762	2.871	1.109
1.6	168.6	0.089	1.55	6.620	1.834	1.830	2.938	1.108
1.7	174.7	0.095	1.65	6.627	1.898	1.894	3.002	1.108
1.8	180.5	0.101	1.75	6.633	1.959	1.955	3.062	1.108
1.9	187.7	0.107	1.86	6.641	2.035	2.030	3.139	1.108
2.0	192.7	0.112	1.95	6.647	2.087	2.082	3.191	1.109
2.1	197.7	0.119	2.06	6.654	2.139	2.134	3.242	1.108
2.2	202.7	0.124	2.15	6.661	2.191	2.186	3.293	1.107
2.3	206.3	0.130	2.26	6.668	2.227	2.222	3.329	1.107

Source: B-3.76, 4.0'-10.0'							Test ID: 437-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
2.4	211.4	0.136	2.36	6.675	2.280	2.275	3.381	1.106
2.5	215.8	0.142	2.46	6.682	2.325	2.319	3.426	1.107
2.6	220.4	0.147	2.56	6.688	2.372	2.366	3.473	1.107
2.7	224.6	0.153	2.66	6.696	2.415	2.409	3.516	1.107
2.8	229.5	0.159	2.76	6.702	2.465	2.458	3.565	1.106
2.9	233.8	0.165	2.86	6.710	2.509	2.502	3.608	1.106
3.0	237.7	0.171	2.96	6.716	2.548	2.541	3.647	1.105
3.1	240.8	0.176	3.06	6.723	2.579	2.571	3.677	1.105
3.2	245.2	0.182	3.16	6.730	2.623	2.615	3.721	1.106
3.3	249.3	0.188	3.26	6.737	2.664	2.656	3.763	1.107
3.4	252.6	0.194	3.37	6.745	2.697	2.688	3.795	1.106
3.5	256.0	0.200	3.46	6.751	2.730	2.722	3.828	1.106
3.6	257.8	0.205	3.56	6.758	2.746	2.738	3.843	1.105
3.7	262.0	0.211	3.67	6.766	2.788	2.779	3.886	1.107
3.8	265.1	0.217	3.76	6.772	2.818	2.809	3.915	1.106
3.9	269.1	0.222	3.86	6.779	2.858	2.849	3.954	1.105
4.0	271.1	0.229	3.97	6.787	2.876	2.867	3.972	1.105
4.1	273.8	0.234	4.06	6.794	2.902	2.892	3.998	1.105
4.2	277.5	0.240	4.17	6.801	2.938	2.928	4.033	1.105
4.3	280.2	0.246	4.27	6.808	2.963	2.953	4.057	1.104
4.4	283.2	0.252	4.37	6.815	2.992	2.981	4.085	1.104
4.5	286.0	0.258	4.47	6.822	3.018	3.008	4.112	1.104
4.6	288.1	0.264	4.58	6.830	3.037	3.026	4.131	1.105
4.8	295.1	0.278	4.82	6.847	3.103	3.092	4.195	1.103
5.1	301.9	0.292	5.07	6.866	3.166	3.154	4.256	1.102
5.3	307.0	0.307	5.32	6.884	3.211	3.198	4.301	1.103
5.6	314.5	0.321	5.57	6.902	3.281	3.267	4.368	1.101
5.8	323.4	0.335	5.82	6.920	3.364	3.350	4.453	1.102
6.1	328.2	0.350	6.08	6.939	3.406	3.391	4.492	1.100
6.3	334.9	0.364	6.32	6.957	3.466	3.451	4.553	1.102
6.6	340.3	0.379	6.58	6.976	3.512	3.496	4.597	1.101
6.8	343.2	0.393	6.82	6.994	3.533	3.517	4.617	1.100
7.1	347.7	0.408	7.08	7.014	3.569	3.552	4.653	1.101
7.3	353.2	0.422	7.32	7.032	3.617	3.599	4.700	1.101
7.6	357.9	0.437	7.58	7.052	3.654	3.636	4.737	1.100
7.9	362.4	0.451	7.82	7.070	3.691	3.672	4.771	1.099
8.1	365.3	0.465	8.08	7.090	3.710	3.690	4.790	1.100
8.3	370.6	0.480	8.32	7.109	3.753	3.733	4.832	1.099
8.6	373.1	0.494	8.58	7.129	3.768	3.747	4.847	1.100
8.8	377.8	0.508	8.82	7.148	3.805	3.784	4.883	1.099
9.1	383.2	0.523	9.08	7.168	3.849	3.827	4.926	1.098
9.3	387.2	0.537	9.32	7.187	3.879	3.857	4.956	1.100
9.6	391.9	0.552	9.58	7.208	3.915	3.892	4.992	1.100
9.8	396.3	0.566	9.82	7.227	3.949	3.925	5.024	1.099
10.1	400.4	0.581	10.08	7.248	3.977	3.953	5.052	1.099
10.3	404.8	0.595	10.32	7.268	4.011	3.986	5.084	1.098
10.6	407.4	0.610	10.58	7.288	4.025	3.999	5.099	1.099
10.9	411.5	0.624	10.82	7.308	4.054	4.028	5.126	1.098
11.1	414.8	0.638	11.08	7.329	4.075	4.048	5.147	1.099
11.4	418.1	0.652	11.32	7.349	4.096	4.068	5.167	1.099
11.6	421.8	0.667	11.58	7.371	4.120	4.093	5.190	1.097
11.8	424.8	0.681	11.82	7.391	4.138	4.110	5.208	1.098
12.1	428.0	0.696	12.08	7.413	4.158	4.129	5.227	1.098
12.3	432.5	0.710	12.32	7.433	4.189	4.159	5.258	1.098
12.6	435.7	0.725	12.58	7.455	4.207	4.177	5.275	1.098
12.9	438.8	0.739	12.82	7.476	4.226	4.195	5.292	1.097
13.1	443.1	0.754	13.08	7.498	4.255	4.223	5.322	1.099
13.4	446.4	0.768	13.32	7.519	4.275	4.243	5.342	1.099
13.6	450.3	0.783	13.58	7.542	4.299	4.266	5.363	1.097
13.9	452.9	0.797	13.83	7.563	4.311	4.278	5.377	1.099
14.1	456.7	0.811	14.08	7.586	4.335	4.301	5.399	1.098
14.4	459.2	0.826	14.33	7.607	4.346	4.312	5.410	1.098
14.6	462.0	0.840	14.58	7.630	4.360	4.325	5.423	1.098
14.9	465.6	0.854	14.83	7.652	4.381	4.346	5.443	1.098
15.1	467.5	0.869	15.08	7.675	4.386	4.350	5.449	1.099
15.4	469.8	0.883	15.32	7.697	4.395	4.358	5.456	1.098
15.6	472.4	0.898	15.58	7.720	4.405	4.368	5.466	1.098
15.9	475.5	0.912	15.83	7.743	4.422	4.384	5.483	1.099
16.1	478.6	0.927	16.08	7.766	4.437	4.398	5.498	1.100

Source: B-3.76, 4.0'-10.0'							Test ID: 437-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
16.4	480.7	0.941	16.33	7.789	4.443	4.404	5.504	1.099
16.5	482.0	0.949	16.48	7.803	4.448	4.408	5.509	1.101

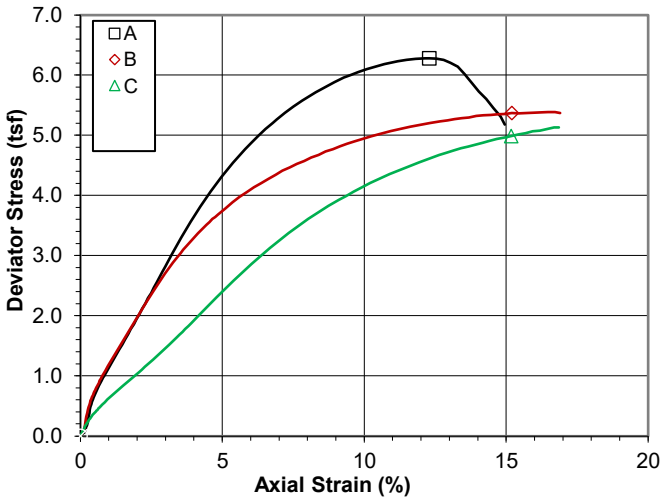
Unconsolidated Undrained Triaxial Compression

ASTM D 2850

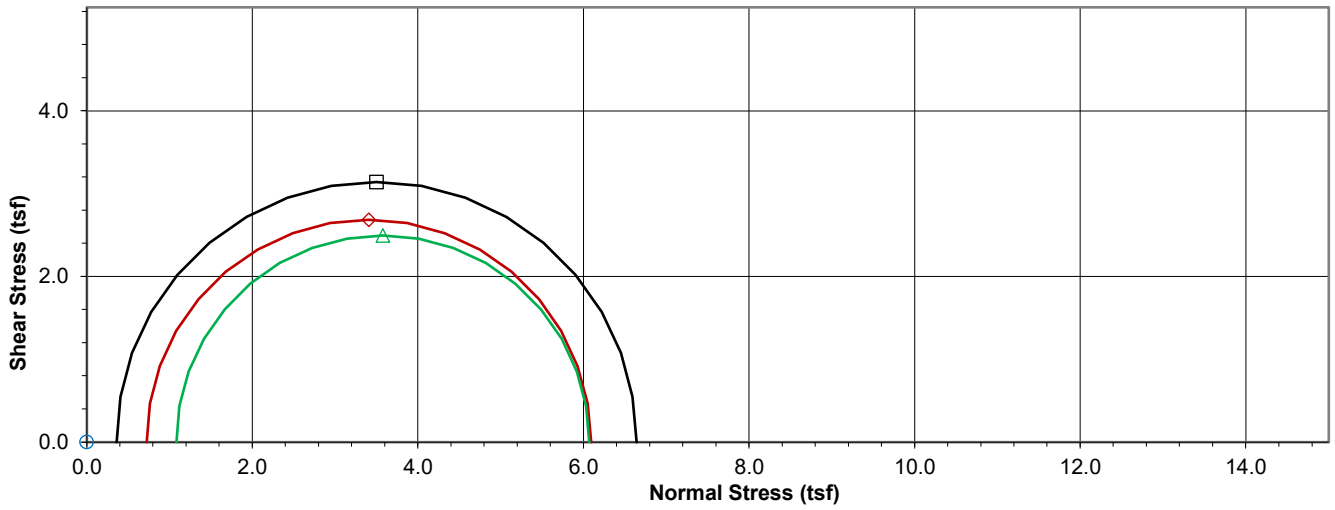
Project Name Eagle Creek

Project 173409690
Set ID 768

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	768	B-3.80, 5.0'-10.0'	Lean Clay with Sand (CL), brown, moist, firm	2.72			
B	768	B-3.80, 5.0'-10.0'	Lean Clay with Sand (CL), brown, moist, firm	2.72			
C	768	B-3.80, 5.0'-10.0'	Lean Clay with Sand (CL), brown, moist, firm	2.72			



Specimen	A	B	C	D	E
	Initial Specimen Conditions				
Average Height (in)	5.772	5.752	5.754	0.000	0.000
Average Diameter (in)	2.882	2.875	2.870		
Moist Unit Weight (pcf)	138.1	138.7	135.5		
Moisture Content (%)	13.2	13.8	13.8		
Dry Unit Weight (pcf)	122.0	121.9	119.0		
Void Ratio	0.390	0.390	0.424		
Degree of Saturation (%)	92.3	96.0	88.7		
	Confined Specimen Conditions				
Moist Unit Weight (pcf)	138.5	142.1	138.8		
Moisture Content (%)	13.2	13.8	13.8		
Dry Unit Weight (pcf)	122.3	124.9	122.0		
Degree of Saturation (%)	93.2	104.9	96.5		
Void Ratio	0.386	0.357	0.390		
Cell Pressure, σ_3 (tsf)	0.359	0.722	1.084	0.000	0.000
	At Unconsolidated Undrained Failure				
Failure Criterion	15% Axial Strain				
Axial Strain (%)	12.292	15.203	15.178	0.000	0.000
Deviator Stress (tsf)	6.281	5.369	4.988	0.000	0.000
Minor Principal Stress, σ_3 (tsf)	0.360	0.723	1.083	0.000	0.000
Major Principal Stress, σ_1 (tsf)	6.641	6.091	6.070	0.000	0.000
Undrained Shear Strength, S_u (tsf)	3.141	2.684	2.494	0.000	0.000



Comments

Reviewed By RJ

Template: tmp_uu_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 09/22/2021

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm
Specimen Type Compacted

Project No. 173409690
Lab ID 768
Test ID 768-A

Date Received 04/14/2021
Date Tested 05/16/2021

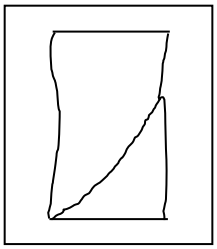
Specific Gravity 2.72
ASTM D 854, Dry

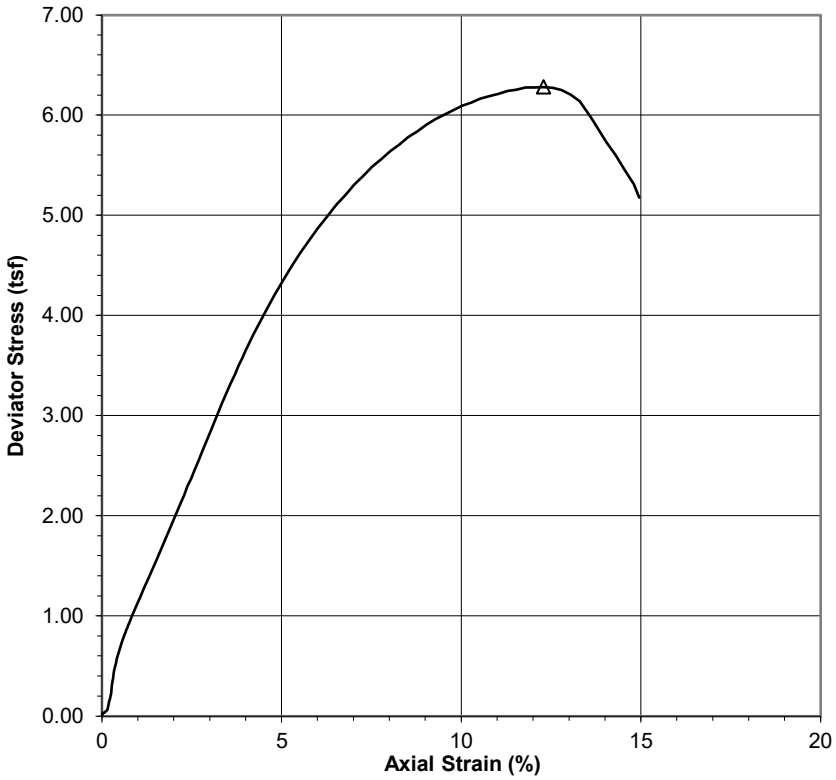
Liquid Limit
Plastic Limit
Plasticity Index

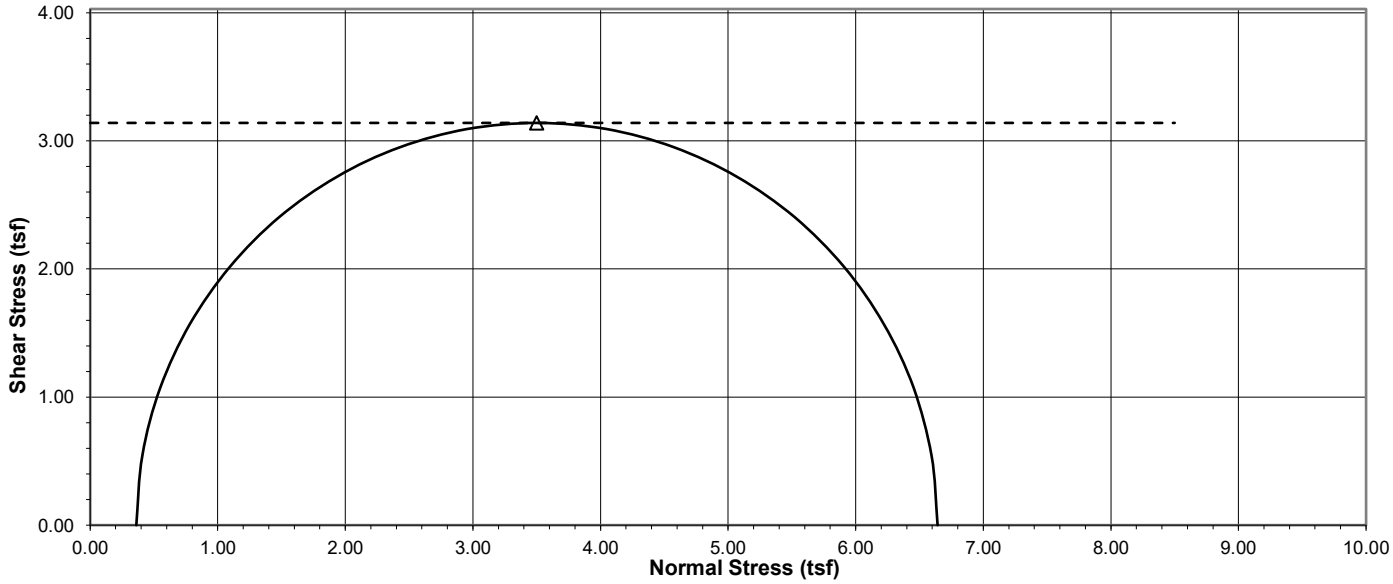
Target Test Parameters
Nominal Chamber Pressure (psi) 5
Actual Axial Strain Rate of Test (%/min) 1.000

At Unconsolidated Undrained Failure
Failure Criterion: Peak Deviator Stress
Axial Strain (%) 12.29
Deviator Stress (tsf) 6.281
Minor Principal Stress, σ_3 (tsf) 0.360
Major Principal Stress, σ_1 (tsf) 6.641
Undrained Shear Strength, S_u (tsf) 3.141

Failure Sketch







Comments

Reviewed RJ

Template: tmp_uu_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 09/22/2021

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm

Project No. 173409690
Lab ID 768
Test ID 768-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.772	Calculated Height (in)	5.767
Average Diameter (in)	2.882	Calculated Diameter (in)	2.880
Calculated Area (in^2)	6.523	Calculated Area (in^2)	6.512
Moist Weight (lb)	3.009	Moist Weight (lb)	3.009
Moist Unit Weight (pcf)	138.1	Moist Unit Weight (pcf)	138.5
Moisture Content (%)	13.2	Moisture Content (%)	13.2
Dry Weight (lb)	2.658	Dry Weight (lb)	2.658
Dry Unit Weight (pcf)	122.0	Dry Unit Weight (pcf)	122.3
Void Ratio	0.390	Void Ratio	0.386
Degree of Saturation (%)	92.3	Degree of Saturation (%)	93.2

Specific Gravity 2.72
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 0.359

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 768**
Source: B-3.80, 5.0'-10.0' **Test ID: 768-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.512	0.000	0.000	0.359	0.359
0.0	2.6	0.001	0.02	6.514	0.029	0.029	0.388	0.359
0.1	2.9	0.003	0.05	6.516	0.032	0.031	0.390	0.359
0.1	3.1	0.004	0.08	6.517	0.034	0.034	0.393	0.359
0.1	4.2	0.006	0.10	6.519	0.047	0.047	0.406	0.359
0.1	4.7	0.008	0.13	6.521	0.052	0.051	0.410	0.359
0.2	5.6	0.009	0.15	6.522	0.061	0.061	0.420	0.359
0.2	8.3	0.010	0.17	6.524	0.091	0.091	0.450	0.359
0.2	14.0	0.012	0.21	6.526	0.154	0.154	0.512	0.359
0.2	15.6	0.013	0.23	6.527	0.172	0.171	0.530	0.359
0.3	21.1	0.015	0.26	6.529	0.232	0.232	0.590	0.359
0.3	28.2	0.016	0.28	6.531	0.311	0.310	0.669	0.359
0.3	34.6	0.018	0.31	6.533	0.381	0.380	0.739	0.359
0.4	39.8	0.019	0.34	6.534	0.438	0.438	0.796	0.359
0.4	44.0	0.021	0.36	6.536	0.485	0.484	0.843	0.359
0.4	48.0	0.023	0.39	6.538	0.529	0.528	0.887	0.359
0.4	51.7	0.024	0.41	6.539	0.569	0.569	0.927	0.359
0.5	55.1	0.026	0.44	6.541	0.606	0.605	0.964	0.358
0.5	58.1	0.027	0.47	6.543	0.639	0.638	0.996	0.359
0.5	61.1	0.029	0.50	6.545	0.672	0.671	1.029	0.358
0.5	63.7	0.030	0.52	6.546	0.701	0.700	1.058	0.359
0.6	66.6	0.032	0.55	6.548	0.732	0.731	1.089	0.358
0.6	69.0	0.033	0.57	6.550	0.759	0.757	1.116	0.358
0.6	71.7	0.035	0.60	6.552	0.788	0.787	1.145	0.358
0.6	74.0	0.036	0.63	6.553	0.812	0.811	1.169	0.358
0.7	76.3	0.038	0.66	6.555	0.838	0.836	1.194	0.358
0.7	78.6	0.039	0.68	6.557	0.863	0.861	1.220	0.358
0.7	80.8	0.041	0.71	6.559	0.887	0.885	1.243	0.358
0.7	83.0	0.042	0.73	6.560	0.911	0.909	1.265	0.356
0.8	85.2	0.044	0.76	6.562	0.935	0.933	1.290	0.357
0.8	87.2	0.045	0.79	6.564	0.957	0.955	1.313	0.358
0.8	89.0	0.047	0.81	6.565	0.976	0.974	1.332	0.358
0.8	90.9	0.048	0.84	6.567	0.997	0.995	1.353	0.358
0.9	93.0	0.050	0.86	6.569	1.020	1.018	1.375	0.358
0.9	95.2	0.052	0.89	6.571	1.044	1.041	1.399	0.358
0.9	97.1	0.053	0.91	6.572	1.064	1.062	1.420	0.358
1.0	99.3	0.055	0.95	6.574	1.088	1.086	1.444	0.358
1.0	101.4	0.056	0.97	6.576	1.110	1.108	1.466	0.358
1.1	108.9	0.062	1.07	6.583	1.191	1.188	1.546	0.358

Source: B-3.80, 5.0'-10.0'							Test ID: 768-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.2	116.9	0.067	1.17	6.589	1.278	1.275	1.633	0.358
1.3	124.7	0.074	1.28	6.596	1.361	1.358	1.716	0.358
1.4	132.2	0.079	1.37	6.603	1.442	1.439	1.796	0.358
1.5	139.9	0.085	1.48	6.610	1.524	1.520	1.878	0.358
1.6	147.8	0.091	1.57	6.616	1.608	1.604	1.962	0.358
1.7	156.1	0.097	1.68	6.623	1.697	1.693	2.050	0.358
1.8	164.0	0.102	1.78	6.630	1.781	1.776	2.134	0.358
1.9	171.9	0.109	1.88	6.637	1.864	1.860	2.218	0.358
2.0	179.6	0.114	1.98	6.644	1.947	1.942	2.300	0.358
2.1	188.1	0.120	2.09	6.651	2.036	2.031	2.389	0.358
2.2	196.3	0.126	2.18	6.657	2.123	2.118	2.475	0.358
2.3	204.6	0.132	2.29	6.665	2.211	2.205	2.563	0.358
2.4	213.1	0.137	2.38	6.671	2.300	2.294	2.652	0.358
2.5	220.6	0.144	2.49	6.678	2.379	2.373	2.731	0.358
2.6	229.2	0.149	2.59	6.685	2.468	2.462	2.820	0.358
2.7	237.6	0.155	2.69	6.692	2.556	2.549	2.907	0.358
2.8	246.3	0.161	2.79	6.699	2.647	2.641	2.998	0.358
2.9	254.9	0.167	2.90	6.706	2.737	2.730	3.087	0.357
3.0	263.3	0.172	2.99	6.713	2.824	2.817	3.175	0.358
3.1	272.1	0.179	3.10	6.720	2.915	2.908	3.265	0.357
3.2	280.7	0.184	3.19	6.727	3.004	2.996	3.354	0.357
3.3	289.2	0.190	3.30	6.734	3.092	3.084	3.441	0.357
3.4	297.1	0.196	3.40	6.741	3.173	3.165	3.522	0.357
3.5	305.8	0.202	3.50	6.749	3.262	3.254	3.611	0.357
3.6	313.9	0.208	3.60	6.755	3.345	3.337	3.694	0.357
3.7	321.5	0.214	3.71	6.763	3.423	3.414	3.772	0.358
3.8	329.7	0.219	3.80	6.769	3.507	3.498	3.855	0.358
3.9	337.0	0.225	3.91	6.777	3.580	3.571	3.928	0.357
4.0	345.1	0.231	4.00	6.784	3.663	3.653	4.011	0.358
4.1	352.4	0.237	4.11	6.791	3.737	3.727	4.084	0.357
4.2	359.9	0.243	4.21	6.798	3.812	3.802	4.160	0.358
4.3	367.3	0.249	4.31	6.806	3.886	3.876	4.233	0.358
4.4	374.1	0.254	4.41	6.812	3.954	3.943	4.301	0.358
4.5	381.0	0.260	4.52	6.820	4.022	4.011	4.369	0.358
4.6	388.2	0.266	4.61	6.827	4.094	4.083	4.442	0.359
4.7	394.6	0.272	4.72	6.835	4.157	4.146	4.504	0.358
4.8	401.0	0.278	4.81	6.841	4.220	4.209	4.566	0.358
4.9	407.5	0.284	4.92	6.849	4.284	4.272	4.630	0.358
5.0	413.7	0.289	5.02	6.856	4.345	4.332	4.691	0.358
5.3	429.5	0.304	5.27	6.875	4.498	4.486	4.844	0.358
5.5	443.6	0.318	5.52	6.893	4.633	4.620	4.978	0.358
5.8	457.6	0.333	5.78	6.911	4.767	4.753	5.111	0.358
6.0	470.6	0.347	6.02	6.929	4.890	4.875	5.234	0.358
6.3	482.9	0.362	6.28	6.948	5.004	4.989	5.347	0.358
6.5	495.2	0.376	6.52	6.966	5.118	5.102	5.460	0.358
6.8	506.4	0.391	6.78	6.986	5.220	5.203	5.562	0.359
7.0	517.6	0.405	7.02	7.004	5.321	5.304	5.662	0.358
7.3	527.8	0.420	7.28	7.023	5.411	5.393	5.752	0.358
7.5	538.1	0.434	7.52	7.042	5.502	5.484	5.842	0.358
7.8	547.2	0.449	7.78	7.061	5.579	5.561	5.919	0.358
8.0	556.6	0.463	8.02	7.080	5.660	5.641	6.000	0.358
8.3	564.8	0.478	8.28	7.100	5.727	5.707	6.067	0.359
8.5	573.6	0.492	8.53	7.119	5.802	5.781	6.140	0.359
8.8	581.1	0.507	8.78	7.139	5.860	5.839	6.198	0.358
9.0	588.8	0.521	9.03	7.158	5.922	5.901	6.259	0.359
9.3	596.4	0.535	9.28	7.179	5.982	5.960	6.319	0.359
9.5	602.5	0.550	9.53	7.198	6.026	6.003	6.362	0.358
9.8	608.7	0.564	9.78	7.218	6.072	6.048	6.407	0.359
10.0	614.9	0.578	10.03	7.238	6.116	6.092	6.451	0.359
10.3	620.2	0.593	10.29	7.259	6.151	6.127	6.487	0.360
10.5	625.7	0.607	10.53	7.279	6.190	6.164	6.523	0.359
10.8	630.1	0.622	10.79	7.300	6.215	6.189	6.549	0.360
11.0	634.3	0.636	11.03	7.320	6.239	6.212	6.572	0.359
11.3	639.1	0.651	11.29	7.341	6.268	6.241	6.599	0.358
11.5	642.2	0.665	11.53	7.361	6.282	6.254	6.613	0.359
11.8	646.3	0.680	11.79	7.383	6.304	6.275	6.634	0.359
12.0	648.2	0.694	12.04	7.403	6.305	6.276	6.635	0.359
12.3	650.8	0.709	12.29	7.425	6.311	6.281	6.641	0.360
12.5	651.7	0.723	12.54	7.446	6.302	6.272	6.632	0.360

Source: B-3.80, 5.0'-10.0'							Test ID: 768-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.8	651.4	0.738	12.79	7.468	6.281	6.250	6.610	0.360
13.0	648.8	0.752	13.04	7.489	6.238	6.207	6.567	0.360
13.3	643.7	0.767	13.30	7.511	6.170	6.138	6.499	0.360
13.5	632.4	0.781	13.54	7.532	6.045	6.013	6.372	0.360
13.6	627.8	0.786	13.64	7.540	5.995	5.962	6.322	0.360
13.8	619.2	0.796	13.80	7.554	5.902	5.869	6.228	0.360
14.0	605.9	0.810	14.04	7.576	5.759	5.725	6.085	0.360
14.3	594.7	0.825	14.30	7.599	5.635	5.601	5.961	0.360
14.6	581.0	0.839	14.54	7.620	5.489	5.454	5.815	0.361
14.8	567.4	0.854	14.80	7.643	5.345	5.309	5.670	0.361
15.0	554.3	0.862	14.95	7.657	5.212	5.176	5.537	0.361

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm
Specimen Type Compacted

Project No. 173409690
Lab ID 768
Test ID 768-B

Date Received 04/14/2021
Date Tested 05/16/2021

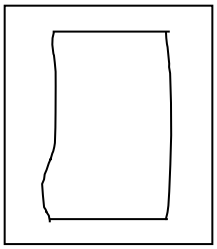
Specific Gravity 2.72
ASTM D 854, Dry

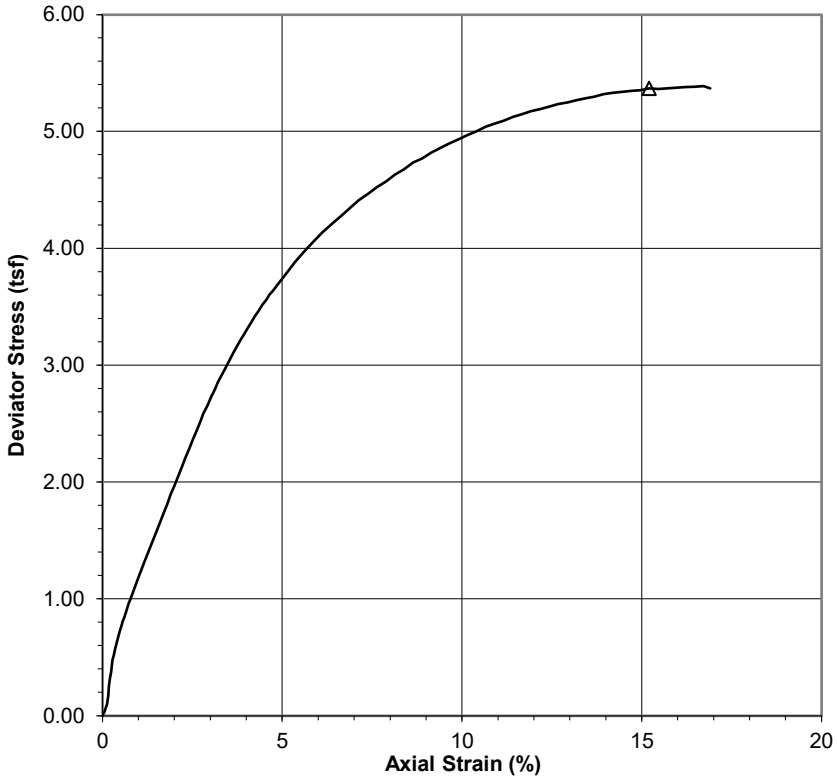
Liquid Limit
Plastic Limit
Plasticity Index

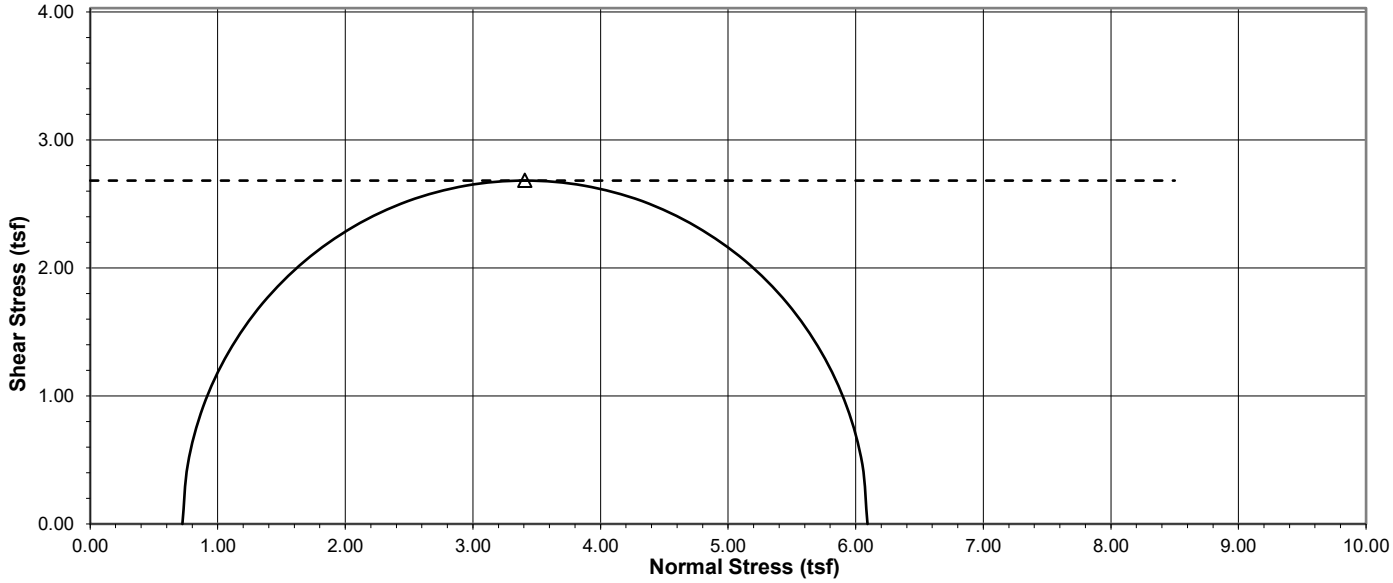
Target Test Parameters
Nominal Chamber Pressure (psi) 10
Actual Axial Strain Rate of Test (%/min) 1.008

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.20
Deviator Stress (tsf) 5.369
Minor Principal Stress, σ_3 (tsf) 0.723
Major Principal Stress, σ_1 (tsf) 6.091
Undrained Shear Strength, S_u (tsf) 2.684

Failure Sketch







Comments

Reviewed RJ

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm

Project No. 173409690
Lab ID 768
Test ID 768-B

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.752	Calculated Height (in)	5.706
Average Diameter (in)	2.875	Calculated Diameter (in)	2.852
Calculated Area (in^2)	6.492	Calculated Area (in^2)	6.388
Moist Weight (lb)	2.997	Moist Weight (lb)	2.997
Moist Unit Weight (pcf)	138.7	Moist Unit Weight (pcf)	142.1
Moisture Content (%)	13.8	Moisture Content (%)	13.8
Dry Weight (lb)	2.634	Dry Weight (lb)	2.634
Dry Unit Weight (pcf)	121.9	Dry Unit Weight (pcf)	124.9
Void Ratio	0.390	Void Ratio	0.357
Degree of Saturation (%)	96.0	Degree of Saturation (%)	104.9

Specific Gravity 2.72
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 0.722

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 768**
Source: B-3.80, 5.0'-10.0' **Test ID: 768-B**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.388	0.000	0.000	0.722	0.722
0.0	1.2	0.001	0.02	6.389	0.014	0.014	0.736	0.722
0.1	2.8	0.003	0.06	6.391	0.031	0.031	0.753	0.722
0.1	4.6	0.004	0.08	6.392	0.052	0.051	0.773	0.722
0.1	7.3	0.006	0.11	6.395	0.082	0.082	0.803	0.722
0.1	8.7	0.007	0.13	6.396	0.098	0.098	0.819	0.721
0.2	15.5	0.009	0.16	6.398	0.174	0.174	0.895	0.721
0.2	22.6	0.010	0.18	6.399	0.255	0.254	0.976	0.721
0.2	28.3	0.012	0.21	6.401	0.319	0.318	1.040	0.722
0.2	33.5	0.014	0.24	6.403	0.377	0.376	1.098	0.722
0.3	38.2	0.015	0.26	6.404	0.429	0.429	1.150	0.721
0.3	42.4	0.016	0.28	6.406	0.477	0.476	1.198	0.722
0.3	46.0	0.018	0.32	6.408	0.517	0.516	1.238	0.721
0.3	49.3	0.019	0.34	6.409	0.553	0.552	1.274	0.722
0.4	52.1	0.020	0.36	6.411	0.585	0.584	1.306	0.721
0.4	55.0	0.022	0.39	6.413	0.617	0.616	1.338	0.721
0.4	57.8	0.024	0.41	6.414	0.649	0.648	1.369	0.722
0.4	60.6	0.025	0.45	6.416	0.680	0.679	1.400	0.722
0.5	63.3	0.027	0.47	6.418	0.710	0.709	1.431	0.722
0.5	65.7	0.028	0.49	6.419	0.737	0.736	1.457	0.722
0.5	67.8	0.030	0.52	6.421	0.761	0.759	1.481	0.722
0.5	70.3	0.031	0.54	6.422	0.788	0.787	1.508	0.722
0.6	72.4	0.032	0.57	6.424	0.811	0.810	1.532	0.722
0.6	74.5	0.034	0.60	6.426	0.835	0.833	1.555	0.722
0.6	76.8	0.035	0.62	6.427	0.861	0.859	1.581	0.722
0.7	79.2	0.037	0.65	6.430	0.887	0.885	1.607	0.722
0.7	81.4	0.039	0.67	6.431	0.912	0.910	1.632	0.722
0.7	83.5	0.040	0.70	6.432	0.934	0.933	1.654	0.722
0.7	85.5	0.042	0.73	6.435	0.957	0.955	1.677	0.722
0.8	87.8	0.043	0.75	6.436	0.982	0.980	1.702	0.721
0.8	89.9	0.045	0.78	6.438	1.005	1.003	1.725	0.721
0.9	97.2	0.050	0.88	6.444	1.086	1.084	1.806	0.722
1.0	104.8	0.056	0.98	6.451	1.169	1.167	1.889	0.721
1.1	112.4	0.062	1.09	6.458	1.253	1.251	1.972	0.722
1.2	120.0	0.068	1.19	6.464	1.336	1.333	2.055	0.722
1.3	127.3	0.074	1.29	6.471	1.416	1.413	2.134	0.721
1.4	134.7	0.079	1.39	6.478	1.497	1.493	2.215	0.721
1.5	141.5	0.085	1.50	6.485	1.571	1.567	2.289	0.722
1.6	149.2	0.091	1.59	6.491	1.655	1.651	2.373	0.722

Source: B-3.80, 5.0'-10.0'							Test ID: 768-B	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.7	156.8	0.097	1.70	6.498	1.737	1.733	2.455	0.722
1.8	163.8	0.103	1.80	6.504	1.813	1.809	2.531	0.722
1.9	171.7	0.108	1.89	6.511	1.899	1.895	2.617	0.722
2.0	178.7	0.114	2.00	6.518	1.974	1.969	2.690	0.721
2.1	185.9	0.120	2.10	6.525	2.051	2.046	2.767	0.721
2.2	193.5	0.126	2.21	6.532	2.133	2.128	2.848	0.720
2.3	201.0	0.131	2.30	6.538	2.213	2.208	2.928	0.720
2.4	208.2	0.138	2.41	6.545	2.290	2.284	3.004	0.720
2.5	215.4	0.143	2.51	6.552	2.367	2.360	3.081	0.720
2.6	222.7	0.149	2.62	6.559	2.445	2.438	3.158	0.720
2.7	229.7	0.155	2.71	6.566	2.518	2.512	3.233	0.721
2.8	236.8	0.160	2.81	6.572	2.594	2.587	3.308	0.721
2.9	243.2	0.167	2.92	6.580	2.661	2.654	3.376	0.722
3.0	250.0	0.172	3.02	6.586	2.733	2.726	3.448	0.722
3.1	256.4	0.178	3.12	6.593	2.800	2.792	3.514	0.722
3.2	262.5	0.184	3.22	6.600	2.863	2.856	3.578	0.723
3.3	268.2	0.190	3.33	6.607	2.923	2.915	3.638	0.723
3.4	274.1	0.195	3.42	6.614	2.984	2.976	3.698	0.722
3.5	280.4	0.201	3.53	6.621	3.049	3.041	3.763	0.722
3.6	285.9	0.207	3.63	6.628	3.106	3.097	3.819	0.722
3.7	291.7	0.213	3.74	6.635	3.166	3.156	3.879	0.723
3.8	296.8	0.219	3.83	6.642	3.217	3.208	3.931	0.723
3.9	302.2	0.225	3.94	6.650	3.272	3.263	3.985	0.722
4.0	307.3	0.230	4.04	6.656	3.324	3.315	4.037	0.723
4.1	312.5	0.236	4.14	6.664	3.377	3.367	4.090	0.723
4.2	317.6	0.242	4.24	6.670	3.429	3.418	4.141	0.723
4.3	322.4	0.248	4.35	6.678	3.476	3.466	4.189	0.723
4.4	327.3	0.254	4.44	6.685	3.525	3.514	4.237	0.723
4.5	331.6	0.260	4.55	6.692	3.568	3.556	4.280	0.724
4.6	336.5	0.265	4.65	6.699	3.617	3.605	4.328	0.723
4.7	339.9	0.271	4.75	6.706	3.650	3.638	4.361	0.723
4.8	344.4	0.277	4.86	6.714	3.693	3.681	4.404	0.722
5.1	354.6	0.291	5.10	6.731	3.793	3.780	4.503	0.723
5.3	365.3	0.306	5.36	6.749	3.897	3.884	4.606	0.722
5.6	374.6	0.320	5.61	6.767	3.986	3.972	4.695	0.723
5.8	383.6	0.335	5.87	6.786	4.070	4.056	4.779	0.723
6.1	391.9	0.349	6.11	6.803	4.147	4.133	4.856	0.723
6.3	399.8	0.364	6.37	6.822	4.219	4.204	4.926	0.723
6.6	407.3	0.378	6.62	6.840	4.287	4.271	4.995	0.724
6.8	415.1	0.392	6.88	6.859	4.357	4.341	5.063	0.723
7.1	422.9	0.406	7.12	6.877	4.427	4.410	5.133	0.723
7.3	429.4	0.421	7.38	6.896	4.483	4.465	5.188	0.724
7.6	436.1	0.435	7.63	6.915	4.540	4.522	5.245	0.723
7.8	442.2	0.450	7.88	6.934	4.591	4.572	5.295	0.723
8.1	449.0	0.464	8.13	6.953	4.649	4.629	5.353	0.724
8.3	454.6	0.479	8.39	6.973	4.694	4.674	5.397	0.723
8.6	461.5	0.493	8.64	6.991	4.752	4.731	5.455	0.723
8.8	466.3	0.508	8.89	7.011	4.789	4.767	5.492	0.724
9.1	472.5	0.522	9.14	7.030	4.839	4.817	5.541	0.724
9.3	478.0	0.536	9.40	7.050	4.882	4.859	5.582	0.723
9.6	483.1	0.550	9.65	7.070	4.920	4.897	5.620	0.723
9.8	488.0	0.565	9.91	7.090	4.956	4.932	5.654	0.723
10.1	492.9	0.579	10.15	7.109	4.991	4.967	5.691	0.724
10.3	497.8	0.594	10.41	7.130	5.027	5.001	5.725	0.723
10.6	502.9	0.608	10.66	7.149	5.064	5.038	5.761	0.723
10.8	507.2	0.623	10.91	7.170	5.094	5.067	5.790	0.723
11.1	511.2	0.637	11.16	7.190	5.119	5.092	5.816	0.723
11.3	515.9	0.652	11.42	7.211	5.152	5.124	5.847	0.724
11.6	519.8	0.666	11.67	7.231	5.175	5.147	5.870	0.723
11.8	524.0	0.680	11.93	7.252	5.202	5.173	5.896	0.724
12.1	527.3	0.695	12.17	7.273	5.220	5.191	5.914	0.723
12.3	531.1	0.709	12.43	7.294	5.242	5.212	5.935	0.723
12.6	534.7	0.723	12.68	7.315	5.263	5.233	5.956	0.723
12.8	537.9	0.738	12.94	7.337	5.278	5.247	5.970	0.723
13.1	541.4	0.752	13.18	7.357	5.298	5.266	5.989	0.723
13.3	544.7	0.767	13.44	7.379	5.315	5.282	6.005	0.723
13.6	547.8	0.781	13.69	7.400	5.329	5.296	6.019	0.723
13.8	551.9	0.796	13.94	7.423	5.354	5.320	6.043	0.723
14.1	554.6	0.810	14.19	7.444	5.364	5.330	6.053	0.723

Source: B-3.80, 5.0'-10.0'							Test ID: 768-B	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
14.3	557.3	0.824	14.45	7.466	5.374	5.339	6.062	0.724
14.6	559.8	0.839	14.70	7.488	5.383	5.347	6.070	0.723
14.8	562.1	0.853	14.96	7.511	5.388	5.352	6.075	0.723
15.1	565.5	0.867	15.20	7.533	5.405	5.369	6.091	0.723
15.3	566.7	0.882	15.46	7.556	5.400	5.363	6.086	0.723
15.6	569.0	0.896	15.71	7.578	5.406	5.368	6.090	0.722
15.8	571.4	0.911	15.97	7.601	5.413	5.374	6.097	0.723
16.1	573.7	0.925	16.21	7.624	5.418	5.379	6.101	0.723
16.3	575.9	0.940	16.47	7.647	5.423	5.383	6.105	0.722
16.6	578.4	0.954	16.72	7.670	5.430	5.389	6.112	0.723
16.8	577.5	0.964	16.90	7.687	5.410	5.369	6.092	0.724

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm
Specimen Type Compacted

Project No. 173409690
Lab ID 768
Test ID 768-C

Date Received 04/14/2021
Date Tested 05/16/2021

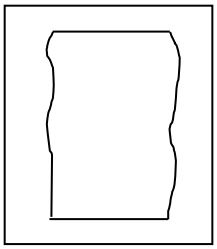
Specific Gravity 2.72
ASTM D 854, Dry

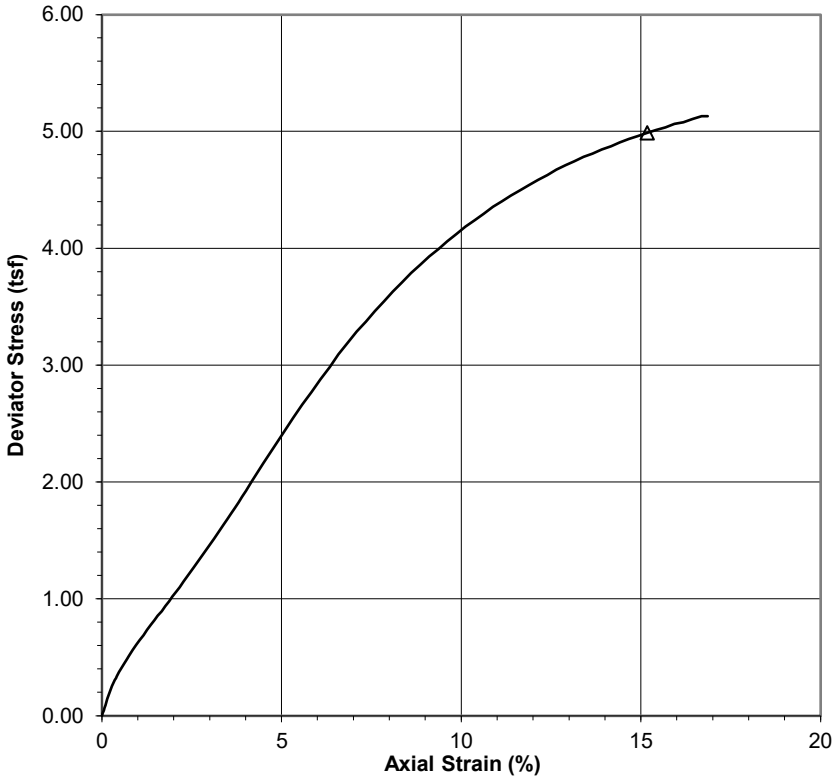
Liquid Limit
Plastic Limit
Plasticity Index

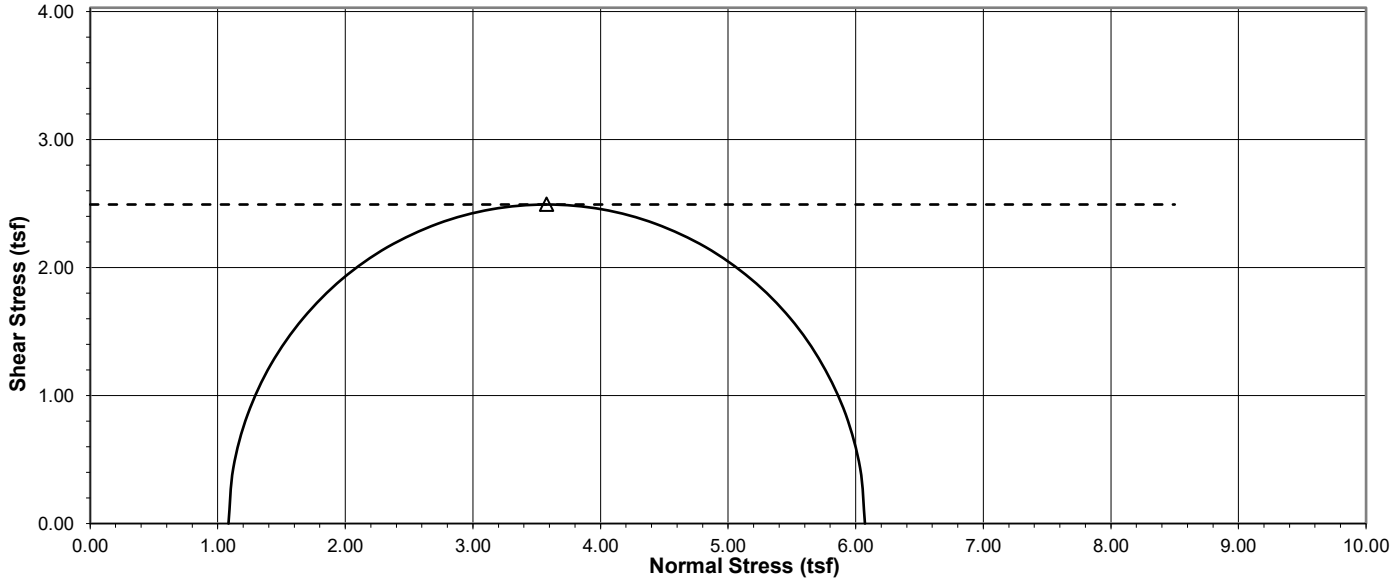
Target Test Parameters
Nominal Chamber Pressure (psi) 15
Actual Axial Strain Rate of Test (%/min) 1.007

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%) 15.18
Deviator Stress (tsf) 4.988
Minor Principal Stress, σ_3 (tsf) 1.083
Major Principal Stress, σ_1 (tsf) 6.070
Undrained Shear Strength, S_u (tsf) 2.494

Failure Sketch







Comments

Reviewed RJ

Template: tmp_uu_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 09/22/2021

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'
Description Lean Clay with Sand (CL), brown, moist, firm

Project No. 173409690
Lab ID 768
Test ID 768-C

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.754	Calculated Height (in)	5.708
Average Diameter (in)	2.870	Calculated Diameter (in)	2.847
Calculated Area (in^2)	6.468	Calculated Area (in^2)	6.364
Moist Weight (lb)	2.918	Moist Weight (lb)	2.918
Moist Unit Weight (pcf)	135.5	Moist Unit Weight (pcf)	138.8
Moisture Content (%)	13.8	Moisture Content (%)	13.8
Dry Weight (lb)	2.564	Dry Weight (lb)	2.564
Dry Unit Weight (pcf)	119.0	Dry Unit Weight (pcf)	122.0
Void Ratio	0.424	Void Ratio	0.390
Degree of Saturation (%)	88.7	Degree of Saturation (%)	96.5

Specific Gravity 2.72
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 1.084

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

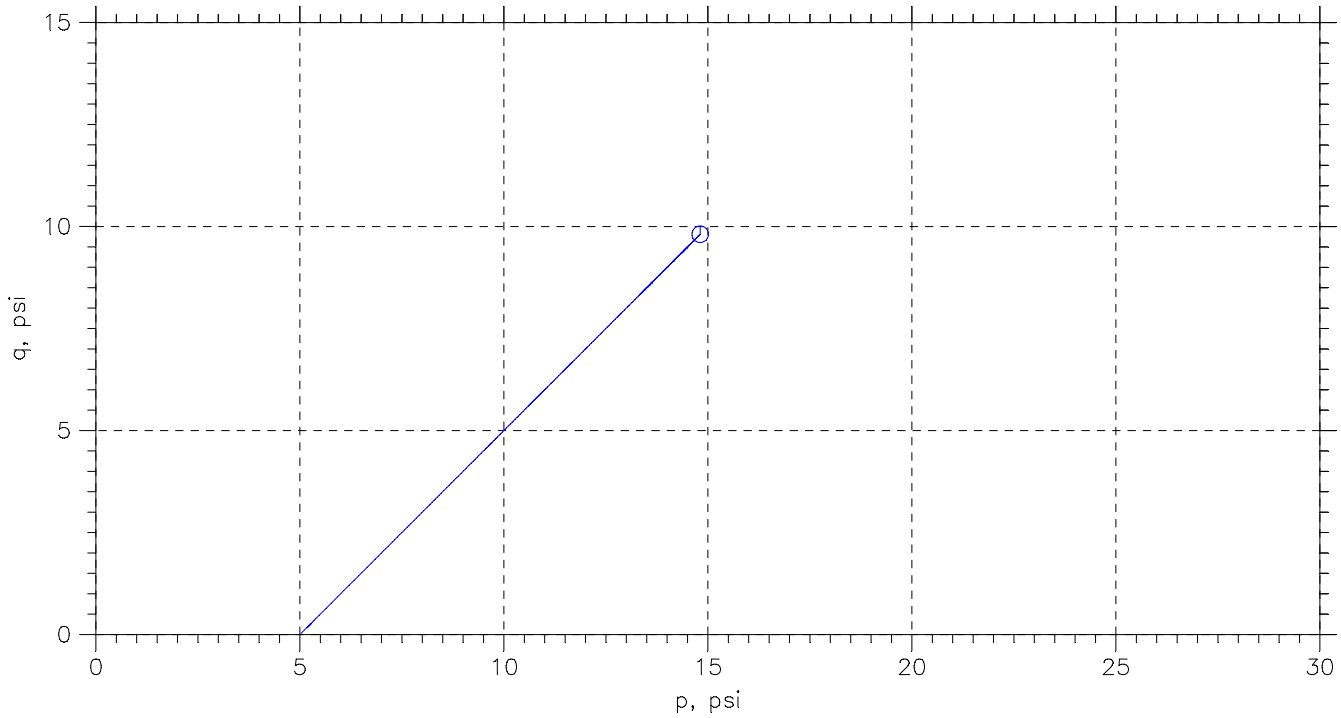
Project: 173409690 **Lab ID: 768**
Source: B-3.80, 5.0'-10.0' **Test ID: 768-C**

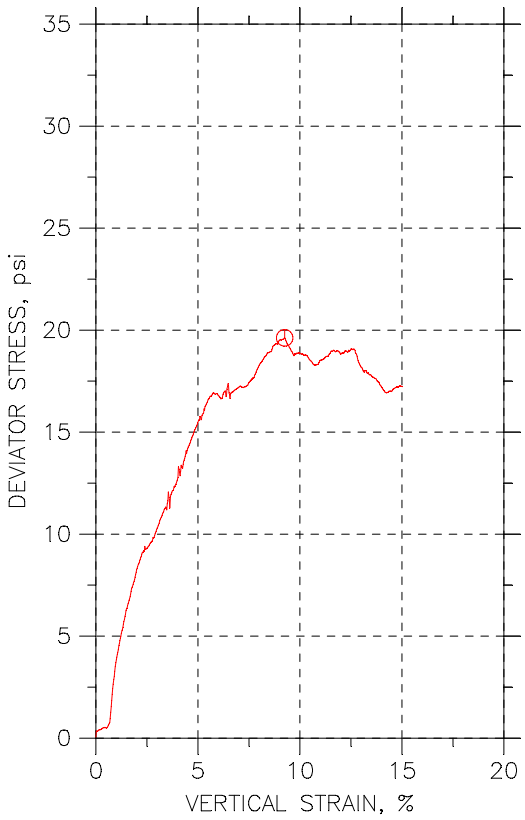
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.364	0.000	0.000	1.084	1.084
0.0	1.8	0.001	0.02	6.365	0.020	0.020	1.103	1.083
0.1	3.9	0.003	0.05	6.367	0.044	0.044	1.127	1.083
0.1	6.0	0.004	0.08	6.369	0.067	0.067	1.150	1.083
0.1	7.8	0.006	0.10	6.370	0.089	0.088	1.172	1.083
0.1	9.8	0.007	0.13	6.372	0.111	0.111	1.194	1.083
0.2	12.7	0.009	0.15	6.374	0.143	0.143	1.226	1.083
0.2	15.1	0.010	0.17	6.375	0.171	0.170	1.254	1.083
0.2	17.2	0.012	0.21	6.377	0.194	0.194	1.277	1.083
0.2	18.8	0.013	0.23	6.379	0.213	0.212	1.295	1.083
0.3	20.5	0.015	0.26	6.381	0.231	0.231	1.314	1.083
0.3	22.5	0.016	0.28	6.382	0.254	0.253	1.337	1.083
0.3	24.2	0.017	0.30	6.383	0.273	0.272	1.355	1.083
0.3	25.7	0.019	0.34	6.386	0.290	0.289	1.372	1.083
0.4	27.1	0.021	0.36	6.387	0.305	0.304	1.387	1.083
0.4	28.5	0.022	0.39	6.389	0.321	0.320	1.403	1.083
0.4	29.9	0.024	0.41	6.390	0.337	0.336	1.418	1.083
0.5	31.2	0.025	0.43	6.392	0.351	0.350	1.433	1.083
0.5	32.6	0.027	0.47	6.394	0.367	0.366	1.449	1.083
0.5	33.7	0.028	0.49	6.395	0.380	0.379	1.461	1.083
0.5	34.9	0.029	0.51	6.397	0.393	0.391	1.474	1.083
0.6	36.2	0.031	0.55	6.399	0.407	0.406	1.489	1.083
0.6	37.4	0.032	0.57	6.400	0.421	0.419	1.502	1.083
0.6	38.6	0.034	0.60	6.402	0.434	0.432	1.515	1.083
0.6	39.8	0.035	0.62	6.404	0.447	0.446	1.528	1.083
0.7	41.0	0.037	0.64	6.405	0.461	0.459	1.542	1.083
0.7	42.2	0.039	0.68	6.407	0.474	0.472	1.555	1.083
0.7	43.2	0.040	0.70	6.409	0.485	0.484	1.566	1.083
0.7	44.4	0.042	0.73	6.411	0.498	0.497	1.579	1.083
0.7	45.7	0.043	0.75	6.412	0.513	0.511	1.594	1.083
0.8	50.2	0.049	0.86	6.419	0.563	0.561	1.644	1.083
1.0	54.3	0.054	0.95	6.425	0.608	0.606	1.688	1.082
1.1	58.1	0.060	1.05	6.431	0.651	0.648	1.730	1.082
1.2	61.9	0.066	1.16	6.439	0.692	0.689	1.772	1.082
1.2	66.1	0.072	1.26	6.445	0.739	0.736	1.818	1.082
1.4	70.0	0.078	1.36	6.452	0.781	0.778	1.861	1.082
1.5	73.5	0.083	1.46	6.458	0.819	0.816	1.898	1.082
1.6	77.2	0.089	1.56	6.465	0.859	0.856	1.938	1.082
1.7	80.6	0.095	1.67	6.472	0.897	0.893	1.975	1.082

Source: B-3.80, 5.0'-10.0'							Test ID: 768-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.8	84.8	0.101	1.76	6.478	0.943	0.938	2.021	1.082
1.9	88.6	0.107	1.87	6.485	0.984	0.979	2.061	1.082
2.0	92.4	0.112	1.97	6.492	1.025	1.020	2.102	1.082
2.1	96.1	0.118	2.07	6.499	1.065	1.060	2.143	1.083
2.2	99.8	0.124	2.17	6.505	1.105	1.100	2.182	1.082
2.3	104.3	0.130	2.28	6.512	1.153	1.148	2.230	1.082
2.4	108.1	0.135	2.37	6.519	1.194	1.188	2.271	1.082
2.5	112.3	0.142	2.48	6.526	1.239	1.233	2.316	1.082
2.6	116.3	0.147	2.58	6.532	1.282	1.276	2.358	1.082
2.7	120.5	0.153	2.67	6.539	1.327	1.321	2.403	1.082
2.8	124.7	0.159	2.78	6.546	1.372	1.365	2.448	1.083
2.9	129.0	0.164	2.88	6.553	1.417	1.410	2.492	1.082
3.0	133.0	0.171	2.99	6.560	1.460	1.453	2.535	1.083
3.1	137.2	0.176	3.08	6.566	1.505	1.497	2.579	1.082
3.2	141.8	0.182	3.19	6.574	1.553	1.546	2.628	1.083
3.3	146.0	0.188	3.29	6.580	1.597	1.589	2.672	1.083
3.4	150.5	0.194	3.40	6.588	1.645	1.637	2.719	1.082
3.5	154.9	0.199	3.49	6.594	1.691	1.683	2.767	1.084
3.6	159.5	0.205	3.60	6.601	1.740	1.731	2.814	1.082
3.7	163.7	0.211	3.70	6.608	1.784	1.775	2.857	1.082
3.8	168.5	0.217	3.80	6.615	1.834	1.825	2.907	1.082
3.9	173.3	0.223	3.90	6.622	1.884	1.875	2.957	1.082
4.0	178.1	0.229	4.01	6.630	1.934	1.924	3.006	1.082
4.1	182.8	0.234	4.10	6.636	1.983	1.974	3.055	1.082
4.2	187.5	0.240	4.21	6.644	2.032	2.021	3.104	1.082
4.3	192.5	0.246	4.31	6.650	2.084	2.074	3.155	1.082
4.4	197.2	0.252	4.41	6.658	2.132	2.122	3.203	1.082
4.5	201.9	0.258	4.51	6.665	2.181	2.171	3.252	1.082
4.6	206.3	0.264	4.62	6.672	2.226	2.215	3.297	1.082
4.7	210.8	0.269	4.72	6.679	2.272	2.261	3.343	1.082
4.8	216.0	0.275	4.82	6.686	2.326	2.314	3.396	1.082
5.1	227.5	0.289	5.07	6.704	2.443	2.431	3.513	1.082
5.3	239.2	0.304	5.33	6.722	2.562	2.549	3.630	1.082
5.5	250.5	0.318	5.58	6.740	2.676	2.662	3.745	1.083
5.8	261.4	0.333	5.83	6.758	2.785	2.771	3.852	1.082
6.0	272.4	0.347	6.08	6.776	2.895	2.880	3.962	1.082
6.3	283.0	0.362	6.34	6.795	2.999	2.984	4.066	1.082
6.6	294.1	0.376	6.59	6.813	3.108	3.092	4.175	1.083
6.8	304.3	0.391	6.84	6.832	3.207	3.190	4.273	1.082
7.1	314.4	0.405	7.09	6.850	3.304	3.287	4.369	1.082
7.3	323.5	0.419	7.35	6.869	3.391	3.373	4.455	1.082
7.6	333.0	0.433	7.59	6.887	3.481	3.463	4.545	1.082
7.8	342.1	0.448	7.85	6.906	3.567	3.548	4.630	1.083
8.1	351.0	0.462	8.10	6.925	3.650	3.630	4.713	1.083
8.3	359.6	0.477	8.36	6.944	3.728	3.708	4.791	1.083
8.5	368.2	0.491	8.61	6.963	3.808	3.787	4.869	1.082
8.8	376.4	0.506	8.86	6.983	3.882	3.860	4.943	1.083
9.0	384.2	0.520	9.11	7.002	3.951	3.929	5.011	1.082
9.3	391.6	0.535	9.37	7.022	4.016	3.993	5.075	1.082
9.6	399.3	0.549	9.62	7.041	4.083	4.059	5.143	1.083
9.8	406.6	0.564	9.87	7.061	4.146	4.122	5.204	1.082
10.1	414.1	0.578	10.12	7.080	4.211	4.186	5.268	1.082
10.3	420.7	0.592	10.38	7.101	4.266	4.241	5.323	1.083
10.6	427.4	0.606	10.63	7.120	4.321	4.295	5.378	1.082
10.8	434.4	0.621	10.88	7.141	4.380	4.354	5.436	1.082
11.1	440.4	0.635	11.13	7.161	4.428	4.401	5.483	1.082
11.3	446.7	0.650	11.39	7.182	4.478	4.451	5.533	1.082
11.6	452.4	0.664	11.63	7.202	4.523	4.494	5.577	1.083
11.8	458.3	0.679	11.89	7.223	4.569	4.540	5.623	1.083
12.1	464.3	0.693	12.14	7.243	4.615	4.586	5.669	1.083
12.3	469.8	0.708	12.40	7.264	4.656	4.626	5.708	1.082
12.6	476.0	0.722	12.64	7.285	4.704	4.674	5.756	1.082
12.8	481.1	0.736	12.90	7.307	4.741	4.710	5.791	1.082
13.1	486.1	0.751	13.15	7.327	4.777	4.745	5.828	1.083
13.3	491.5	0.765	13.41	7.349	4.816	4.783	5.866	1.083
13.6	495.6	0.779	13.65	7.370	4.842	4.809	5.892	1.083
13.8	500.9	0.794	13.91	7.392	4.878	4.845	5.927	1.082
14.1	505.2	0.809	14.17	7.414	4.906	4.872	5.954	1.083
14.3	510.2	0.823	14.41	7.436	4.941	4.906	5.988	1.082

Source: B-3.80, 5.0'-10.0'							Test ID: 768-C	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
14.6	514.9	0.837	14.67	7.458	4.971	4.935	6.018	1.082
14.8	519.2	0.852	14.92	7.480	4.997	4.961	6.044	1.083
15.1	523.6	0.866	15.18	7.503	5.025	4.988	6.070	1.083
15.3	527.9	0.880	15.42	7.525	5.051	5.013	6.096	1.082
15.6	531.8	0.895	15.68	7.548	5.073	5.035	6.117	1.082
15.8	536.6	0.909	15.93	7.570	5.104	5.065	6.148	1.083
16.1	539.7	0.924	16.19	7.593	5.117	5.078	6.161	1.083
16.3	544.1	0.938	16.43	7.615	5.144	5.104	6.187	1.083
16.6	548.8	0.953	16.69	7.639	5.173	5.132	6.214	1.082
16.7	549.6	0.962	16.85	7.654	5.170	5.129	6.212	1.083

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-1			
Depth	3.7-4.2			
Tested by	cag			
Test Date	8/17/22			
Checked by	mcm			
Check Date	8/26/22			
Diameter, in	2.84			
Height, in	5.86			
Water Content, %	23.3			
Dry Density, pcf	99.59			
Saturation, %	90.8			
Void Ratio	0.692			
Confining Stress, psi	5			
Undrained Strength, psi	9.81			
Max. Dev. Stress, psi	19.62			
Strain at Failure, %	9.25			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	45			
Plastic Limit	19			
Plasticity Index	26			

GeoTesting EXPRESS

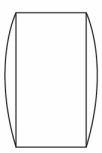
Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.11

Sample Type: intact

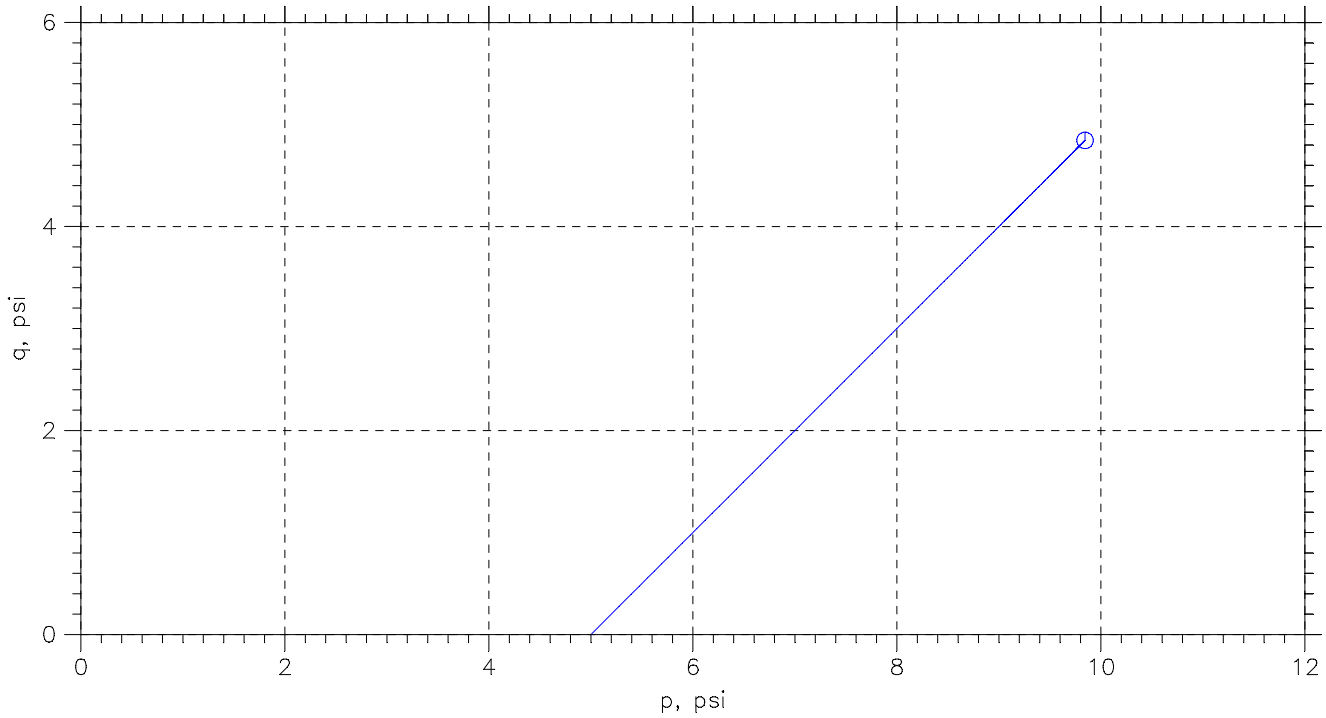


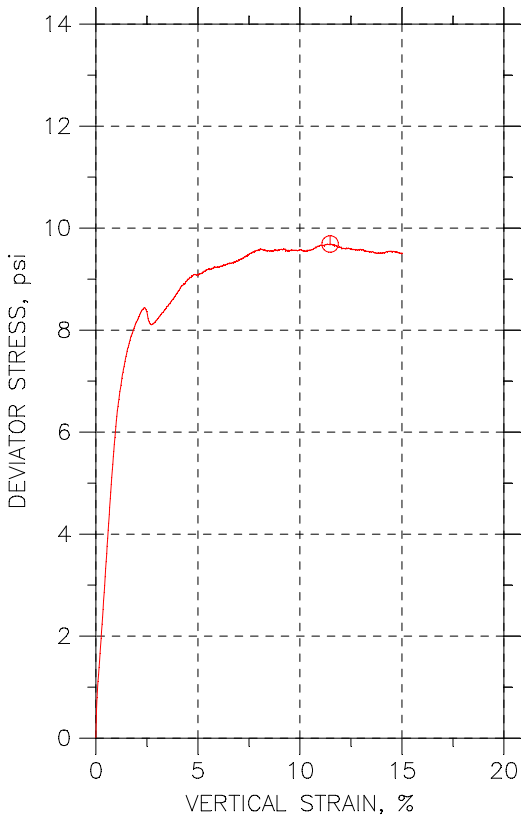
Description: Moist, greenish brown clay

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-2			
Depth	5.2-5.7			
Tested by	cag			
Test Date	8/17/22			
Checked by	mcm			
Check Date	8/26/22			
Diameter, in	2.82			
Height, in	6.11			
Water Content, %	25.9			
Dry Density, pcf	99.72			
Saturation, %	101.3			
Void Ratio	0.69			
Confining Stress, psi	5			
Undrained Strength, psi	4.844			
Max. Dev. Stress, psi	9.689			
Strain at Failure, %	11.5			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	31			
Plastic Limit	16			
Plasticity Index	15			

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.12

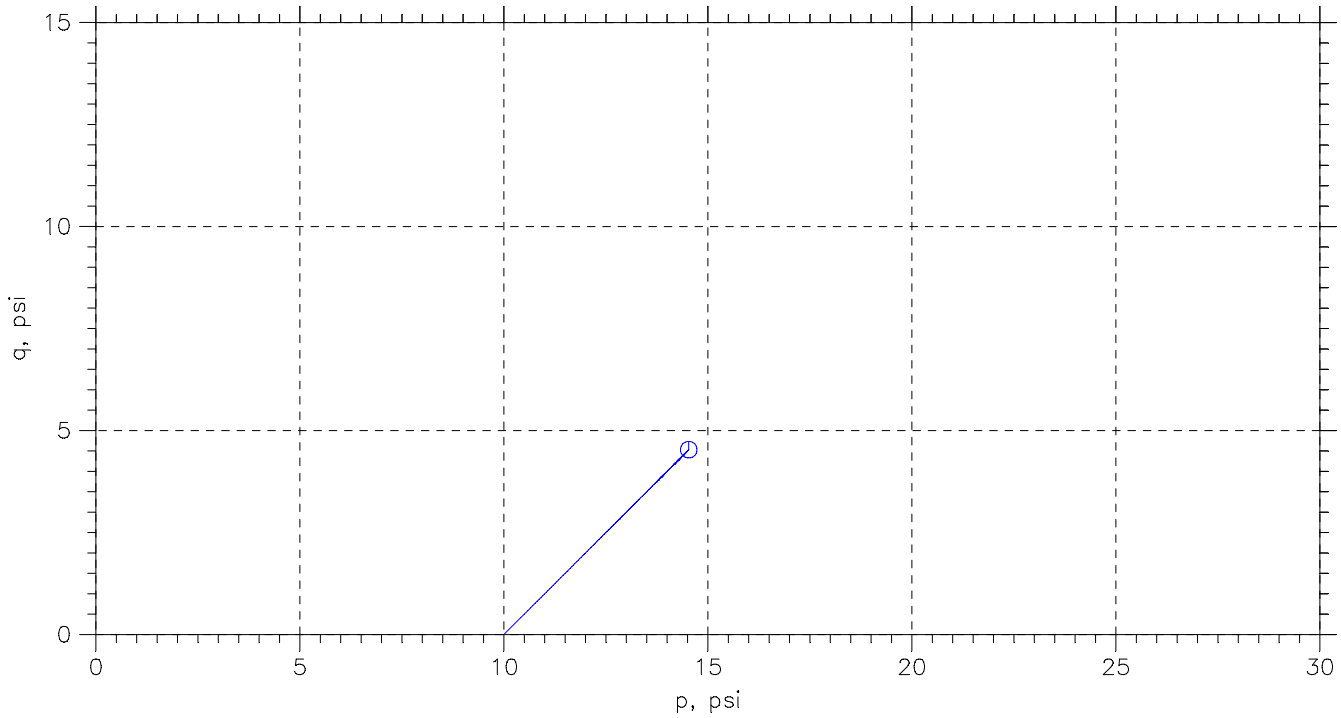
Sample Type: intact

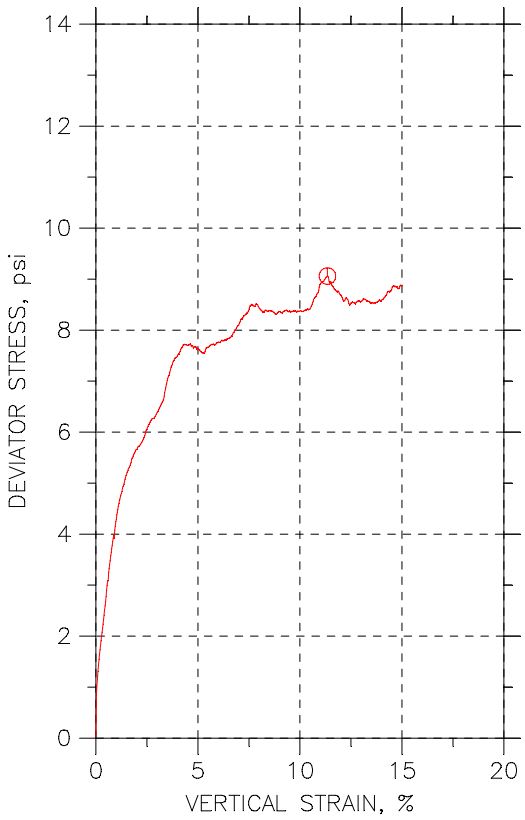
Description: Moist, greenish brown sandy clay

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-3			
Depth	7.3-7.8			
Tested by	cag			
Test Date	8/17/22			
Checked by	mcm			
Check Date	8/26/22			
Diameter, in	2.81			
Height, in	6.05			
Water Content, %	27.4			
Dry Density, pcf	96.43			
Saturation, %	101.3			
Void Ratio	0.716			
Confining Stress, psi	10			
Undrained Strength, psi	4.53			
Max. Dev. Stress, psi	9.06			
Strain at Failure, %	11.3			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.65			
Liquid Limit	41			
Plastic Limit	19			
Plasticity Index	22			

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.12A

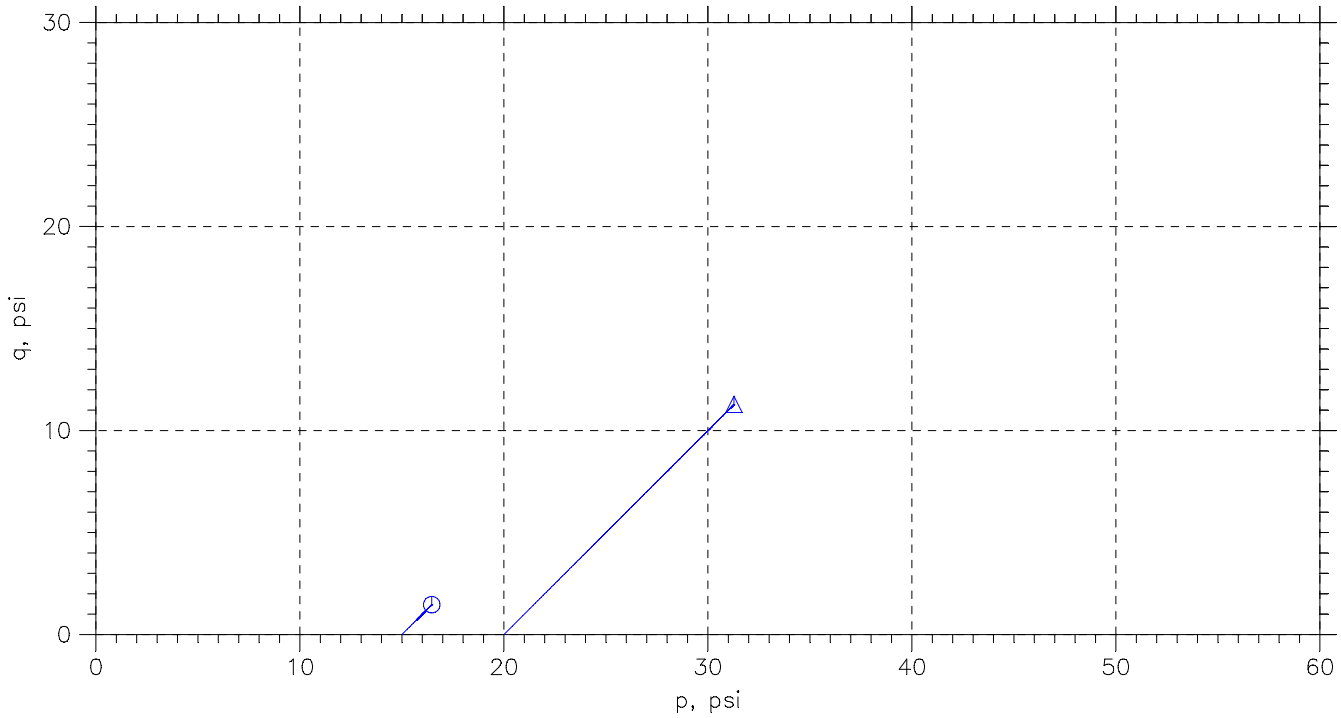
Sample Type: intact

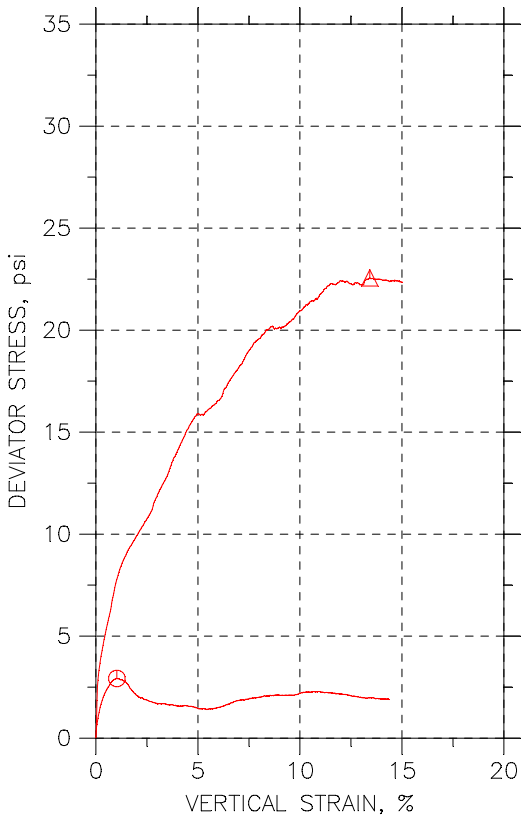
Description: Moist, greenish brown clay with sand

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲	△		
Sample No.	ST	ST		
Test No.	UU-4-1	UU-4-2		
Depth	13.8-14.3	14.3-14.8		
Tested by	cag	cag		
Test Date	8/17/22	8/17/22		
Checked by	mcm	mcm		
Check Date	8/26/22	8/26/22		
Diameter, in	2.81	2.8		
Height, in	5.89	5.87		
Water Content, %	12.4	19.9		
Dry Density, pcf	118.8	108.1		
Saturation, %	84.0	99.6		
Void Ratio	0.393	0.53		
Confining Stress, psi	15	20		
Undrained Strength, psi	1.462	11.28		
Max. Dev. Stress, psi	2.925	22.56		
Strain at Failure, %	1.03	13.4		
Strain Rate, %/min	1	1		
Estimated Specific Gravity	2.65	2.65		
Liquid Limit	27	27		
Plastic Limit	16	16		
Plasticity Index	11	11		

GeoTesting EXPRESS

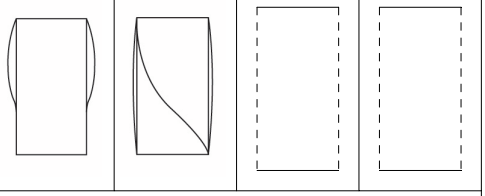
Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.12A

Sample Type: intact

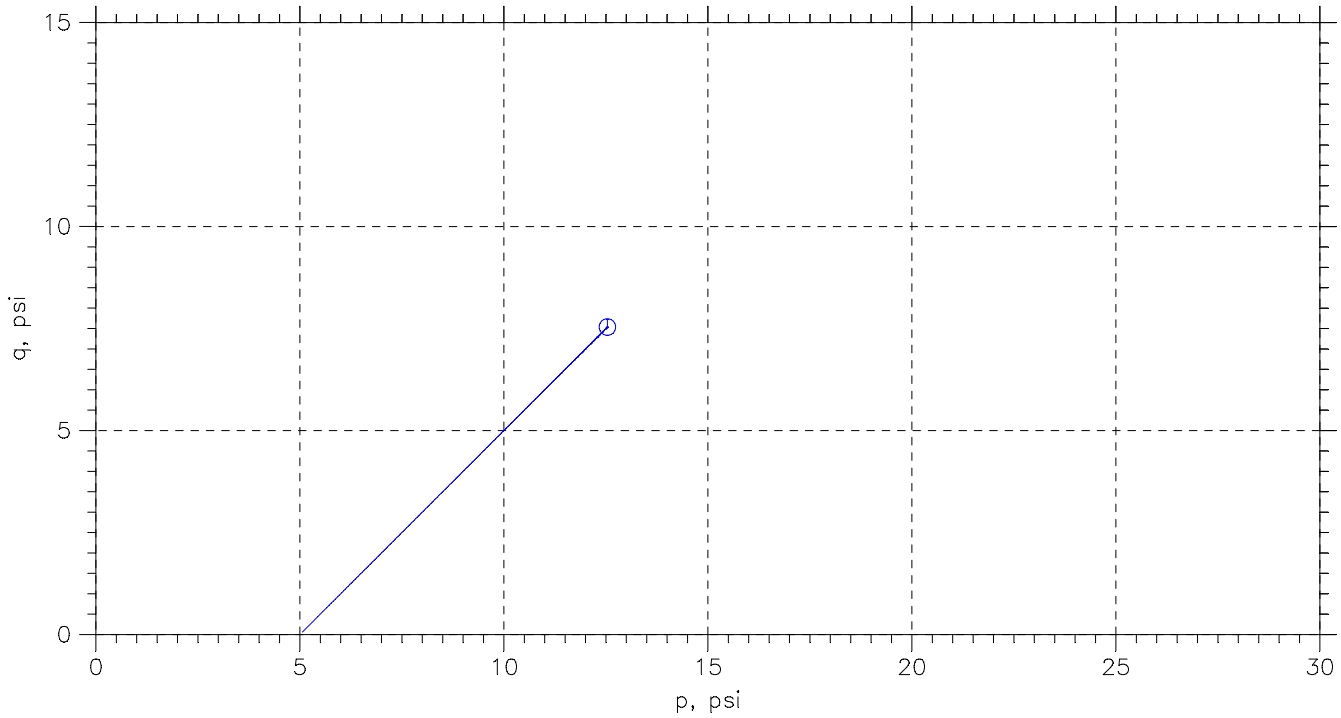


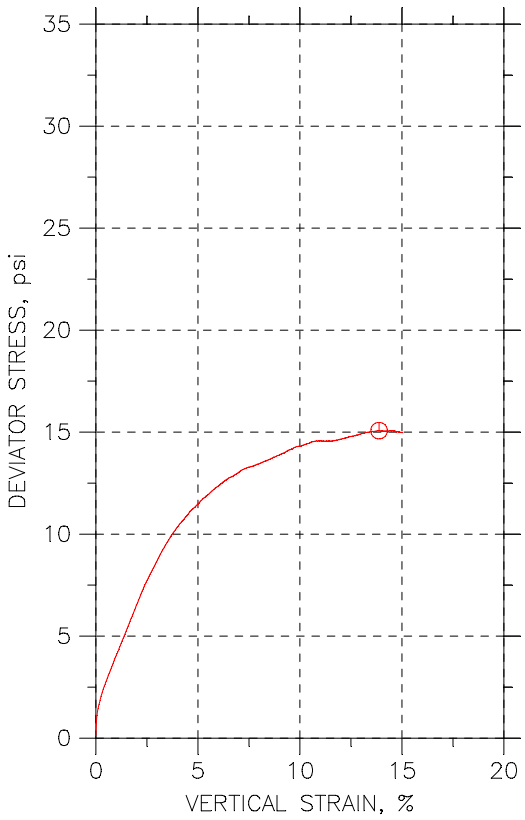
Description: Moist, dark gray clayey sand

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-5			
Depth	2.8-3.3			
Tested by	cag			
Test Date	8/17/22			
Checked by	mcm			
Check Date	8/29/22			
Diameter, in	2.84			
Height, in	6.08			
Water Content, %	22.5			
Dry Density, pcf	102.5			
Saturation, %	94.1			
Void Ratio	0.645			
Confining Stress, psi	5			
Undrained Strength, psi	7.537			
Max. Dev. Stress, psi	15.07			
Strain at Failure, %	13.9			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	43			
Plastic Limit	21			
Plasticity Index	22			

GeoTesting EXPRESS

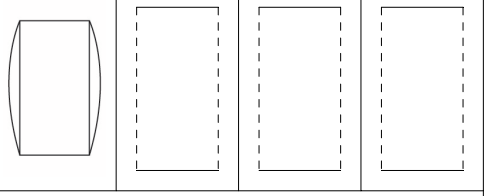
Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.13

Sample Type: intact

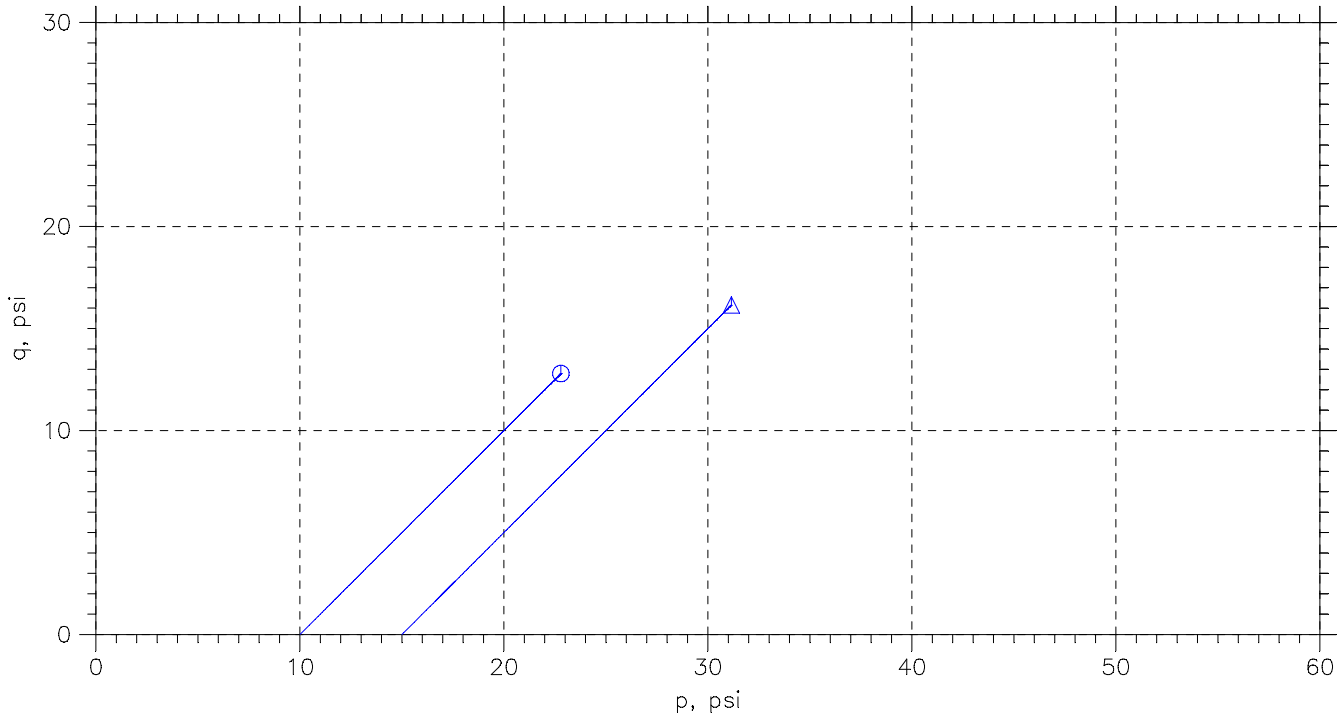


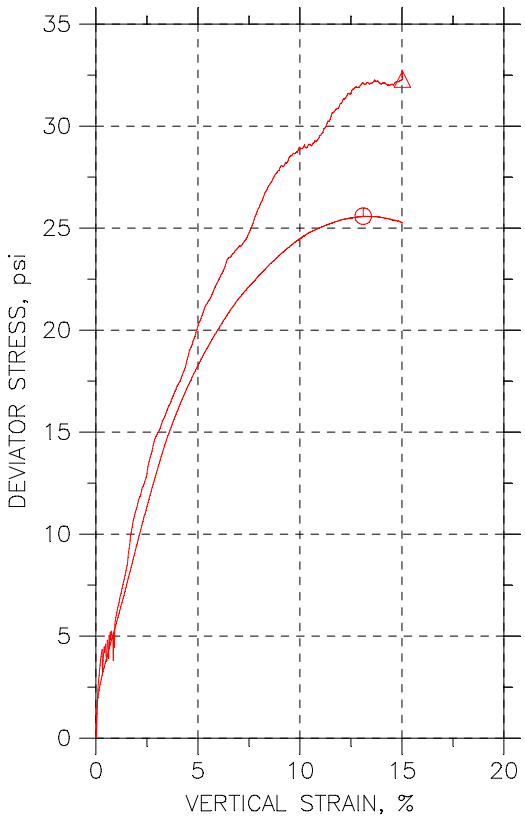
Description: Moist, dark brown clay with sand

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲	△		
Sample No.	ST	ST		
Test No.	UU-6-1	UU-6-2		
Depth	12.4-12.9	12.9-13.4		
Tested by	cag	cag		
Test Date	8/18/22	8/18/22		
Checked by	mcm	mcm		
Check Date	8/29/22	8/29/22		
Diameter, in	2.81	2.81		
Height, in	6.07	5.84		
Water Content, %	23.9	22.2		
Dry Density, pcf	101.1	104.1		
Saturation, %	96.9	97.0		
Void Ratio	0.667	0.619		
Confining Stress, psi	10	15		
Undrained Strength, psi	12.79	16.15		
Max. Dev. Stress, psi	25.59	32.3		
Strain at Failure, %	13.1	15		
Strain Rate, %/min	1	1		
Estimated Specific Gravity	2.7	2.7		
Liquid Limit	27	27		
Plastic Limit	15	15		
Plasticity Index	12	12		

GeoTesting EXPRESS

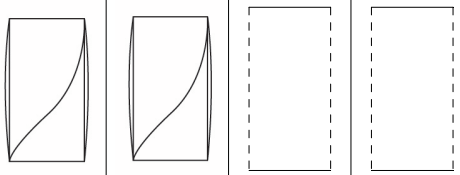
Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.14

Sample Type: intact

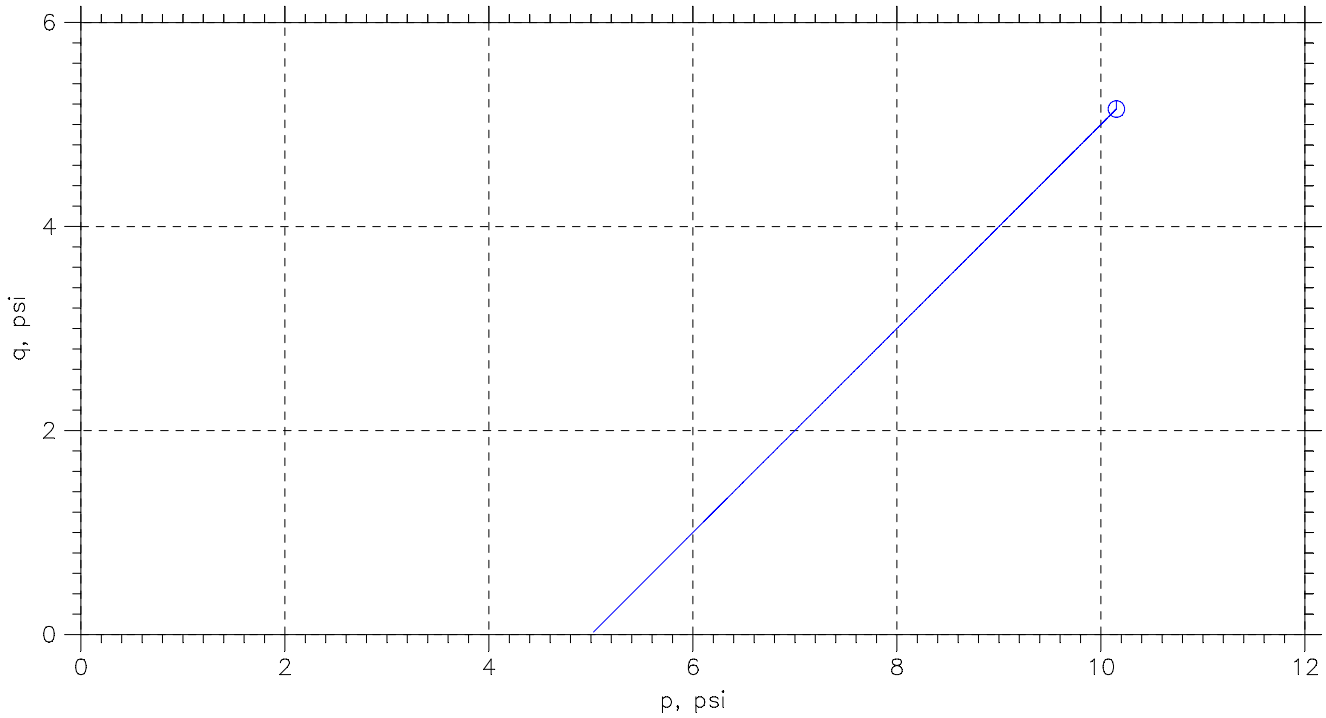


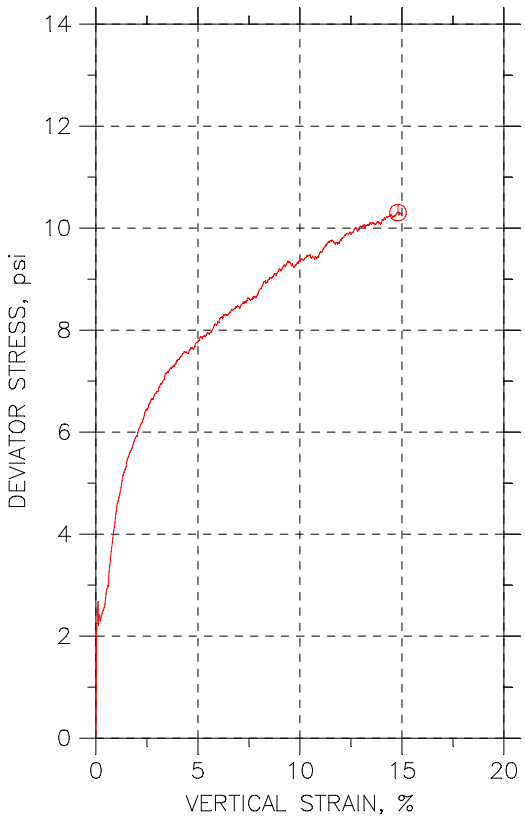
Description: Moist, dark gray sandy clay

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-7			
Depth	5.8-6.3			
Tested by	cag			
Test Date	8/18/22			
Checked by	mcm			
Check Date	8/29/22			
Diameter, in	2.83			
Height, in	6.02			
Water Content, %	21.3			
Dry Density, pcf	101.6			
Saturation, %	87.2			
Void Ratio	0.659			
Confining Stress, psi	5			
Undrained Strength, psi	5.152			
Max. Dev. Stress, psi	10.3			
Strain at Failure, %	14.8			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	42			
Plastic Limit	22			
Plasticity Index	20			

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.16

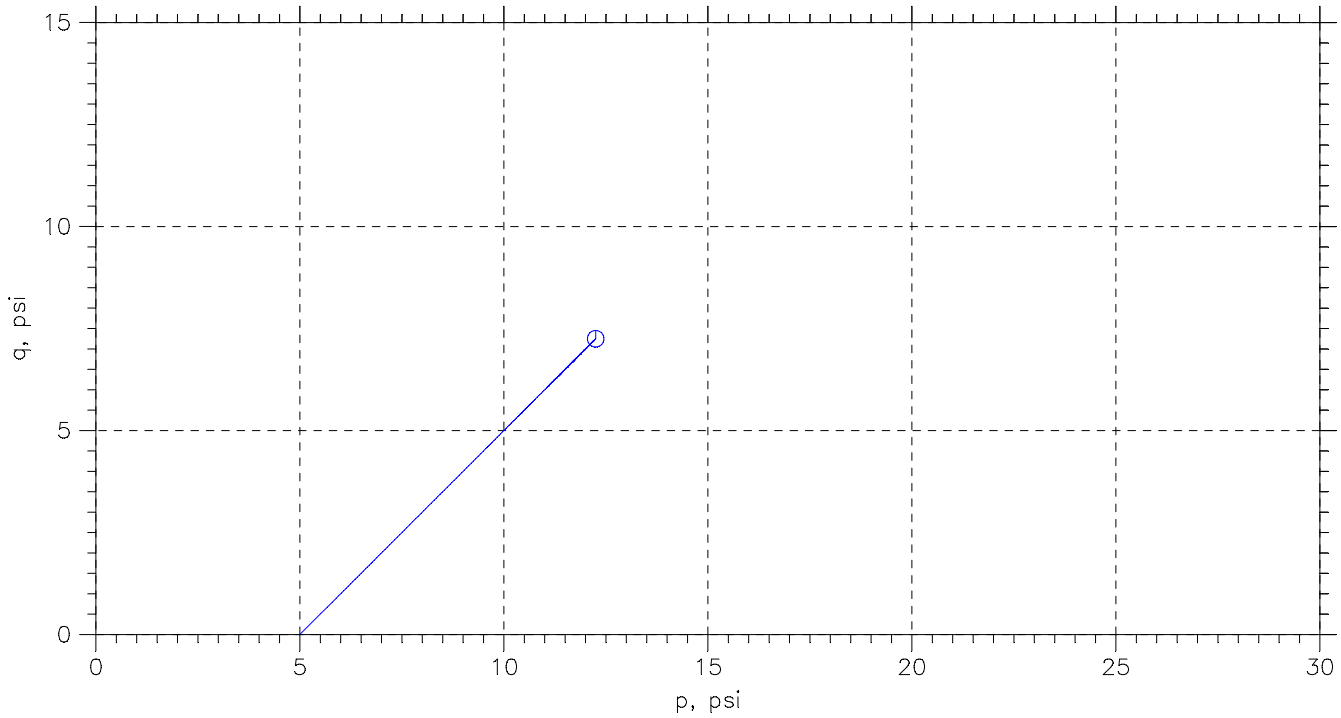
Sample Type: intact

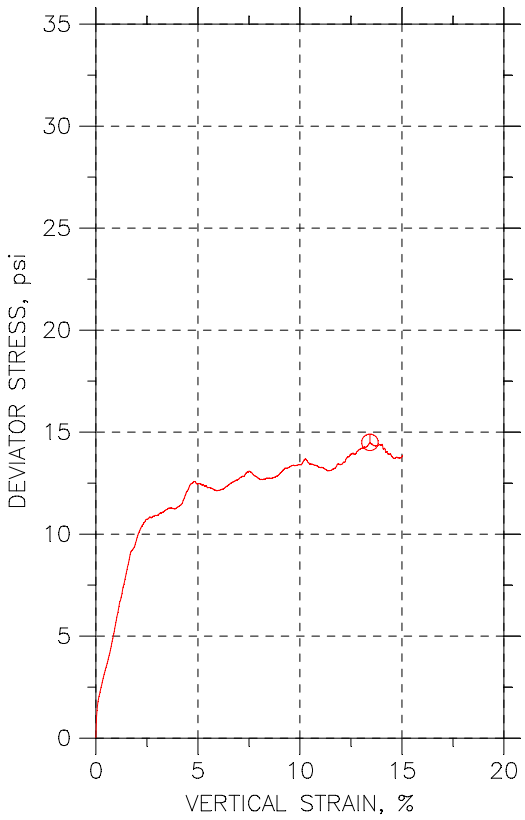
Description: Moist, grayish brown clay

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-8			
Depth	1.5-2.0			
Tested by	cag			
Test Date	8/18/22			
Checked by	mcm			
Check Date	8/29/22			
Diameter, in	2.83			
Height, in	6.22			
Water Content, %	26.6			
Dry Density, pcf	89.01			
Saturation, %	80.5			
Void Ratio	0.894			
Confining Stress, psi	5			
Undrained Strength, psi	7.249			
Max. Dev. Stress, psi	14.5			
Strain at Failure, %	13.4			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	46			
Plastic Limit	22			
Plasticity Index	24			

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.16A

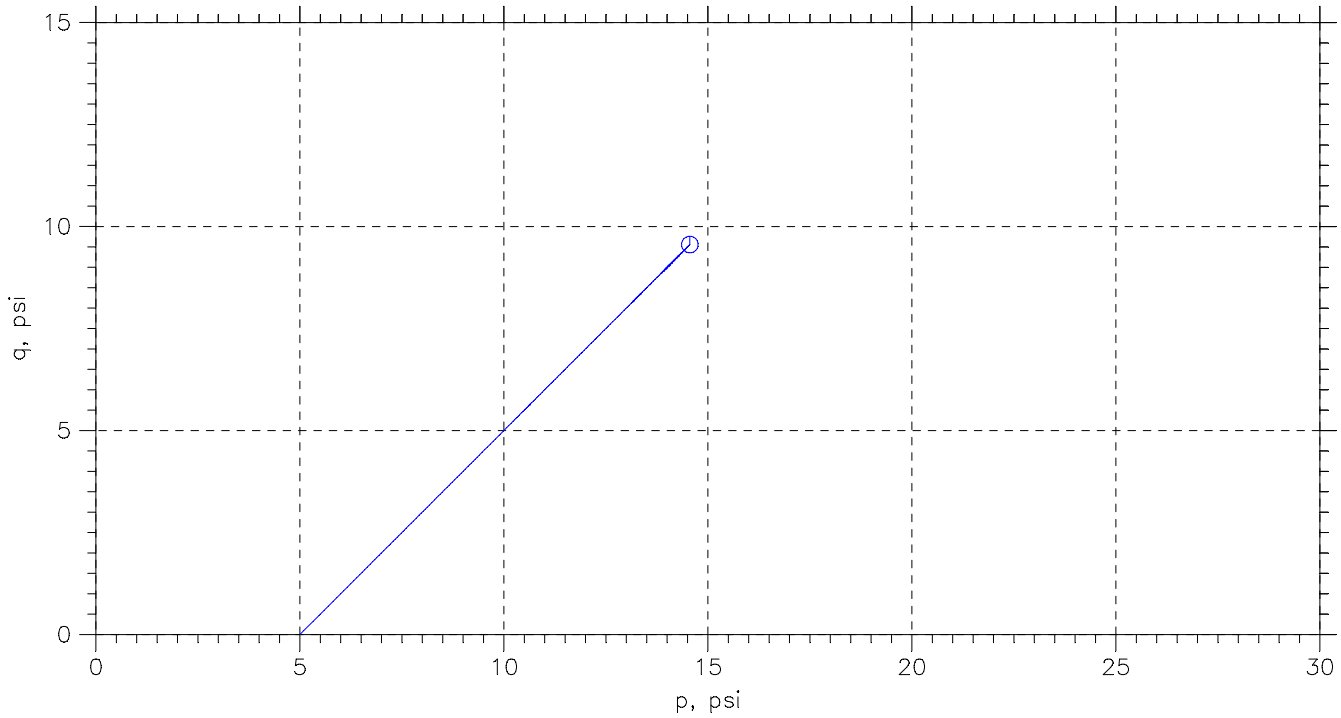
Sample Type: intact

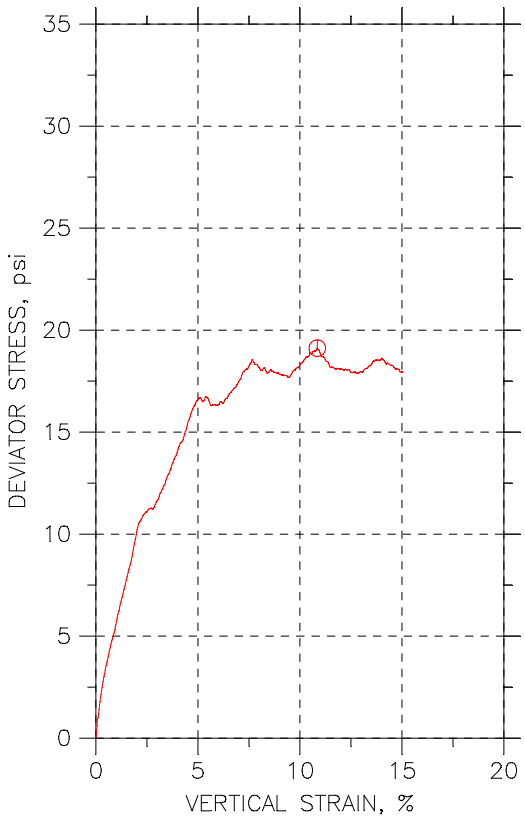
Description: Moist, dark brown clay

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲			
Sample No.	ST			
Test No.	UU-9			
Depth	3.5-4.0			
Tested by	cag			
Test Date	8/22/22			
Checked by	mcm			
Check Date	8/29/22			
Diameter, in	2.81			
Height, in	6.24			
Water Content, %	21.8			
Dry Density, pcf	105.4			
Saturation, %	98.4			
Void Ratio	0.599			
Confining Stress, psi	5			
Undrained Strength, psi	9.557			
Max. Dev. Stress, psi	19.11			
Strain at Failure, %	10.9			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	43			
Plastic Limit	20			
Plasticity Index	23			

GeoTesting EXPRESS

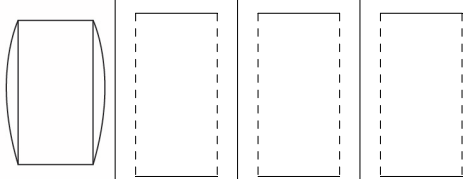
Project: Eagle Creek Flood Basin

Location: Hancock County

Project No.: GTX-315844

Boring No.: B-4.17

Sample Type: intact

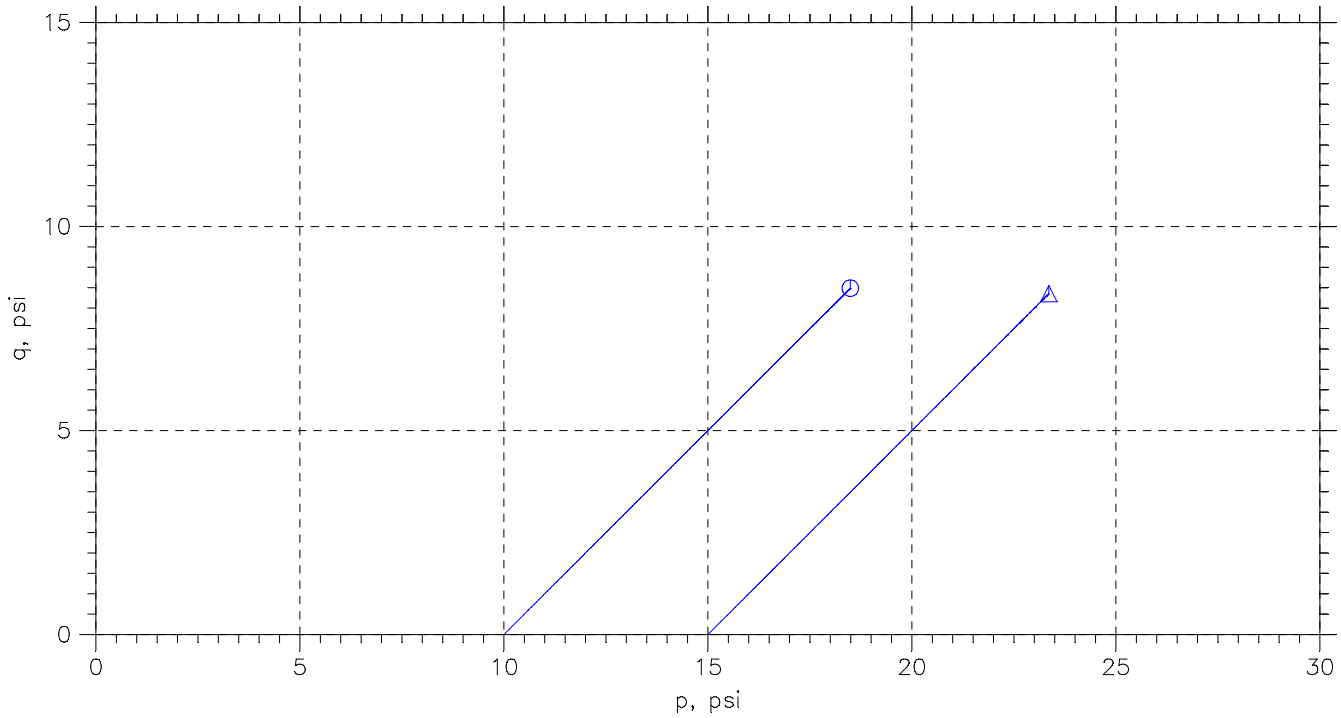


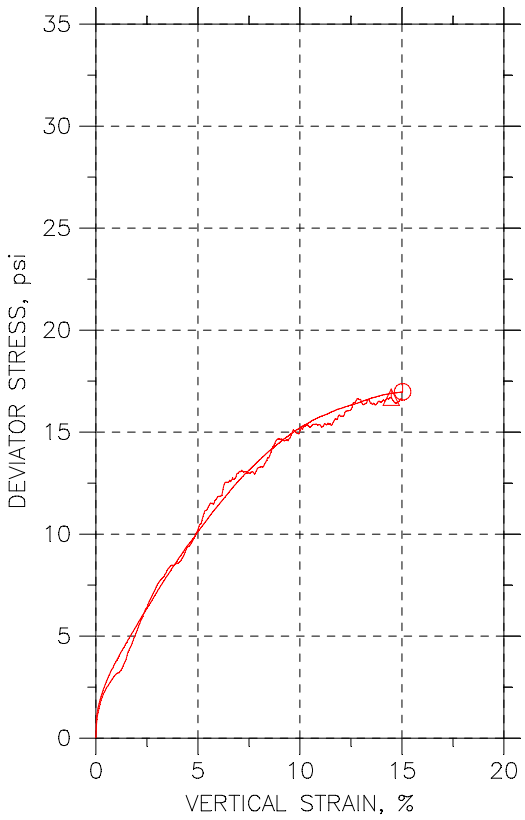
Description: Moist, dark brown clay with sand

Remarks: System C

Phase calculations based on start and end of test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲	△		
Sample No.	ST	ST		
Test No.	UU-10-1	UU-10-2		
Depth	14.0-14.5	14.5-15.0		
Tested by	cag	cag		
Test Date	8/22/22	8/22/22		
Checked by	mcm	mcm		
Check Date	8/29/22	8/29/22		
Diameter, in	2.82	2.79		
Height, in	5.77	6.01		
Water Content, %	21.8	16.2		
Dry Density, pcf	105.6	114.4		
Saturation, %	98.6	92.2		
Void Ratio	0.596	0.473		
Confining Stress, psi	10	15		
Undrained Strength, psi	8.489	8.355		
Max. Dev. Stress, psi	16.98	16.71		
Strain at Failure, %	15	14.5		
Strain Rate, %/min	1	1		
Estimated Specific Gravity	2.7	2.7		
Liquid Limit	36	36		
Plastic Limit	20	20		
Plasticity Index	16	16		

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin

Location: Hancock County

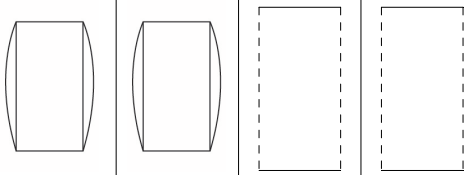
Project No.: GTX-315844

Boring No.: B-4.21

Sample Type: intact

Description: Moist, greenish brown sandy clay

Remarks: System C



Phase calculations based on start and end of test.

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1025-A
Specimen Type	Compacted		
		Date Received	06/20/2022
		Date Tested	08/10/2022

Specific Gravity	2.75	Liquid Limit	43
ASTM D 854, Dry		Plastic Limit	20
		Plasticity Index	23
		ASTM D 4318	

Target Test Parameters

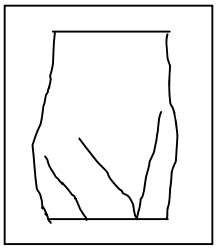
Nominal Chamber Pressure (psi)	25
Actual Axial Strain Rate of Test (%/min)	1.006

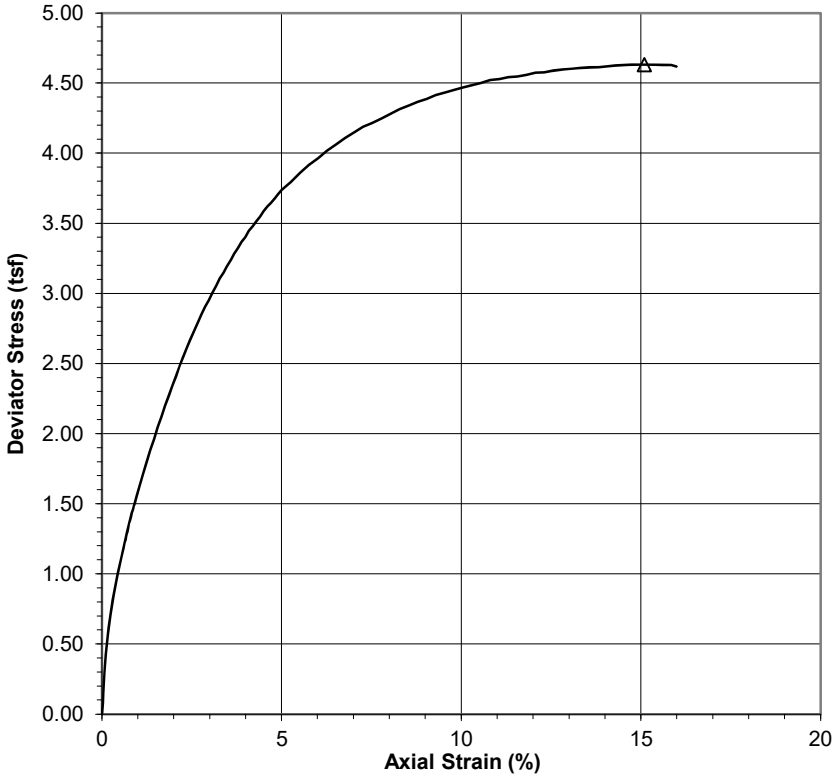
At Unconsolidated Undrained Failure

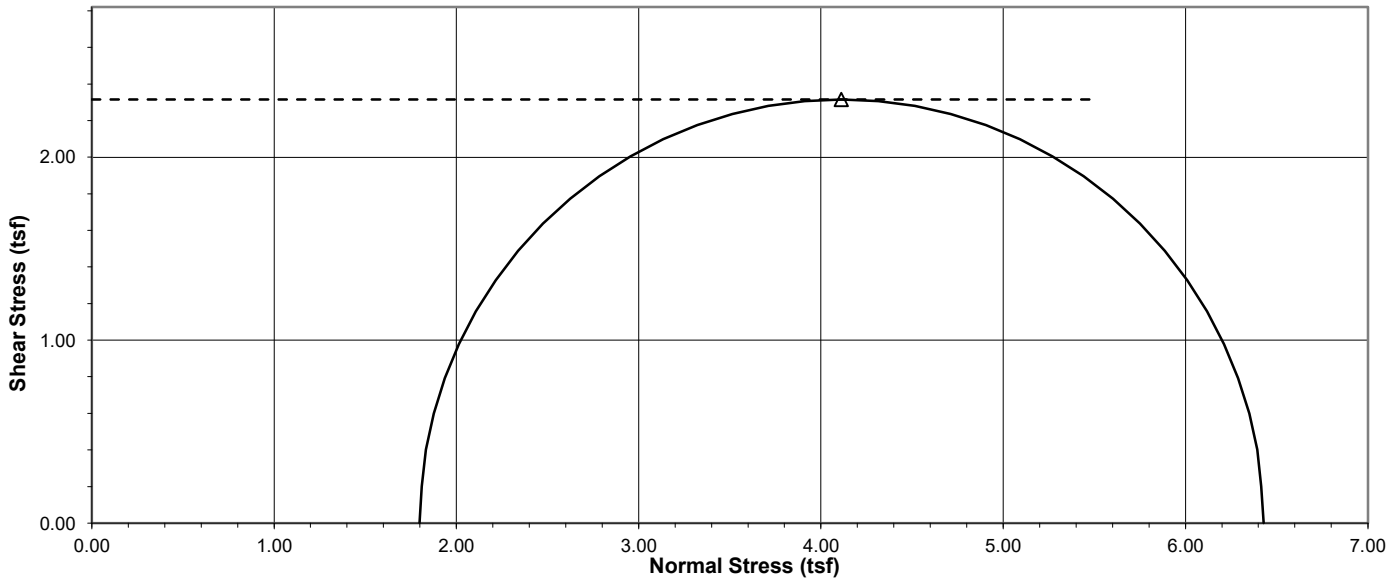
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.09
Deviator Stress (tsf)	4.632
Minor Principal Stress, σ_3 (tsf)	1.796
Major Principal Stress, σ_1 (tsf)	6.428
Undrained Shear Strength, S_u (tsf)	2.316

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'	Lab ID	1025
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1025-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.777	Calculated Height (in)	5.752
Average Diameter (in)	2.890	Calculated Diameter (in)	2.878
Calculated Area (in^2)	6.561	Calculated Area (in^2)	6.504
Moist Weight (lb)	2.816	Moist Weight (lb)	2.816
Moist Unit Weight (pcf)	128.4	Moist Unit Weight (pcf)	130.1
Moisture Content (%)	20.2	Moisture Content (%)	20.2
Dry Weight (lb)	2.342	Dry Weight (lb)	2.342
Dry Unit Weight (pcf)	106.8	Dry Unit Weight (pcf)	108.2
Void Ratio	0.605	Void Ratio	0.584
Degree of Saturation (%)	92.0	Degree of Saturation (%)	95.3

Specific Gravity	2.75
	ASTM D 854, Dry
Liquid Limit	43
Plastic Limit	20
Plasticity Index	23
	ASTM D 4318
Confining Pressure	
σ_3 (tsf)	1.801

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1025**
Source: TP-4.1-A, 2.5'-5.0' **Test ID: 1025-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.504	0.000	0.000	1.801	1.801
0.0	7.0	0.002	0.03	6.506	0.078	0.078	1.878	1.801
0.0	19.1	0.003	0.05	6.508	0.211	0.211	2.012	1.801
0.1	30.1	0.005	0.09	6.510	0.332	0.332	2.133	1.800
0.1	38.5	0.006	0.11	6.511	0.426	0.425	2.226	1.800
0.1	45.0	0.008	0.14	6.513	0.498	0.497	2.298	1.800
0.1	50.8	0.009	0.16	6.515	0.562	0.561	2.362	1.800
0.2	55.8	0.011	0.19	6.517	0.617	0.616	2.416	1.800
0.2	60.2	0.012	0.21	6.518	0.665	0.665	2.465	1.800
0.2	64.6	0.014	0.25	6.520	0.713	0.712	2.513	1.800
0.2	68.5	0.015	0.27	6.522	0.756	0.755	2.556	1.800
0.3	72.2	0.017	0.29	6.523	0.797	0.797	2.597	1.800
0.3	75.9	0.019	0.32	6.525	0.837	0.837	2.637	1.800
0.3	79.4	0.020	0.34	6.527	0.876	0.875	2.676	1.801
0.4	82.4	0.021	0.37	6.528	0.909	0.908	2.708	1.800
0.4	85.6	0.023	0.40	6.530	0.943	0.942	2.742	1.800
0.4	88.5	0.024	0.42	6.532	0.975	0.974	2.774	1.800
0.4	91.3	0.025	0.44	6.533	1.007	1.005	2.805	1.800
0.5	94.3	0.027	0.48	6.535	1.038	1.037	2.837	1.800
0.5	97.1	0.029	0.50	6.537	1.070	1.068	2.868	1.800
0.5	100.0	0.030	0.53	6.539	1.101	1.099	2.899	1.800
0.5	102.6	0.032	0.55	6.540	1.130	1.129	2.929	1.800
0.6	105.6	0.034	0.58	6.542	1.162	1.160	2.960	1.800
0.6	108.2	0.035	0.60	6.544	1.190	1.189	2.989	1.800
0.6	110.7	0.036	0.63	6.545	1.218	1.216	3.016	1.800
0.6	113.3	0.038	0.66	6.547	1.246	1.244	3.045	1.800
0.7	116.0	0.039	0.68	6.549	1.275	1.274	3.074	1.800
0.7	118.8	0.041	0.71	6.551	1.305	1.303	3.103	1.800
0.7	121.0	0.042	0.73	6.552	1.330	1.328	3.128	1.800
0.7	123.8	0.043	0.75	6.554	1.360	1.358	3.158	1.800
0.8	126.1	0.045	0.79	6.556	1.385	1.383	3.183	1.800
0.8	128.5	0.047	0.81	6.557	1.411	1.409	3.209	1.800
0.8	130.8	0.048	0.83	6.559	1.436	1.434	3.233	1.800
0.8	133.1	0.050	0.87	6.561	1.460	1.458	3.258	1.800
0.9	135.3	0.051	0.89	6.563	1.485	1.483	3.283	1.800
0.9	137.5	0.053	0.92	6.565	1.508	1.506	3.306	1.800
0.9	139.3	0.054	0.94	6.566	1.528	1.526	3.326	1.800
1.0	148.4	0.060	1.05	6.573	1.626	1.623	3.423	1.800
1.1	156.5	0.066	1.14	6.580	1.713	1.710	3.505	1.795

Source: TP-4.1-A, 2.5'-5.0'							Test ID: 1025-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.2	164.9	0.072	1.25	6.587	1.803	1.800	3.596	1.796
1.3	172.8	0.078	1.35	6.593	1.887	1.883	3.679	1.795
1.4	180.2	0.084	1.46	6.600	1.966	1.962	3.757	1.795
1.5	188.1	0.089	1.55	6.607	2.049	2.046	3.843	1.797
1.6	195.1	0.095	1.66	6.614	2.124	2.120	3.915	1.795
1.7	202.6	0.101	1.76	6.621	2.203	2.199	3.994	1.795
1.8	209.2	0.107	1.86	6.628	2.273	2.269	4.064	1.796
1.9	216.3	0.113	1.96	6.634	2.347	2.342	4.138	1.795
2.0	222.9	0.119	2.06	6.641	2.416	2.411	4.207	1.796
2.1	229.5	0.124	2.16	6.648	2.486	2.480	4.276	1.795
2.2	236.0	0.130	2.27	6.655	2.553	2.547	4.343	1.796
2.3	242.2	0.136	2.36	6.662	2.617	2.612	4.407	1.795
2.4	248.3	0.142	2.47	6.669	2.681	2.675	4.470	1.795
2.5	253.9	0.148	2.57	6.676	2.739	2.733	4.528	1.795
2.6	259.9	0.154	2.67	6.683	2.800	2.794	4.589	1.795
2.7	265.5	0.159	2.77	6.690	2.858	2.851	4.647	1.796
2.8	270.8	0.165	2.87	6.696	2.911	2.904	4.700	1.795
2.9	275.5	0.171	2.98	6.704	2.959	2.951	4.747	1.796
3.1	280.6	0.177	3.07	6.711	3.011	3.004	4.799	1.796
3.1	285.6	0.183	3.18	6.718	3.061	3.053	4.849	1.795
3.2	290.9	0.188	3.28	6.725	3.115	3.107	4.902	1.795
3.3	295.1	0.195	3.38	6.732	3.157	3.148	4.944	1.795
3.4	299.4	0.200	3.48	6.739	3.199	3.190	4.985	1.795
3.5	304.3	0.206	3.59	6.746	3.248	3.239	5.034	1.795
3.6	308.7	0.212	3.68	6.753	3.291	3.283	5.078	1.795
3.8	312.9	0.218	3.79	6.761	3.332	3.323	5.118	1.795
3.9	317.3	0.224	3.89	6.767	3.376	3.367	5.162	1.795
4.0	321.0	0.230	3.99	6.775	3.411	3.401	5.197	1.795
4.1	325.4	0.235	4.09	6.782	3.455	3.445	5.240	1.795
4.2	329.0	0.241	4.20	6.789	3.489	3.479	5.274	1.795
4.3	332.6	0.247	4.29	6.796	3.524	3.514	5.310	1.796
4.4	336.1	0.253	4.40	6.804	3.557	3.546	5.341	1.795
4.5	340.1	0.259	4.50	6.811	3.596	3.585	5.380	1.795
4.6	343.7	0.265	4.60	6.818	3.630	3.619	5.414	1.795
4.7	346.6	0.270	4.70	6.825	3.657	3.646	5.441	1.796
4.8	350.1	0.277	4.81	6.833	3.690	3.678	5.473	1.795
4.9	353.2	0.282	4.90	6.840	3.718	3.706	5.501	1.795
5.0	356.6	0.288	5.01	6.847	3.750	3.738	5.533	1.796
5.2	363.0	0.302	5.26	6.865	3.807	3.794	5.590	1.795
5.5	370.3	0.317	5.52	6.884	3.873	3.860	5.655	1.796
5.7	376.7	0.331	5.76	6.902	3.929	3.916	5.711	1.796
6.0	382.5	0.346	6.02	6.921	3.979	3.965	5.760	1.795
6.2	388.6	0.360	6.26	6.939	4.032	4.017	5.812	1.795
6.5	394.0	0.375	6.52	6.958	4.077	4.062	5.857	1.795
6.7	399.6	0.389	6.77	6.977	4.124	4.108	5.903	1.795
7.0	404.9	0.404	7.03	6.996	4.167	4.150	5.945	1.795
7.2	409.7	0.418	7.27	7.014	4.205	4.187	5.983	1.795
7.5	413.6	0.433	7.53	7.034	4.234	4.215	6.011	1.795
7.7	417.8	0.448	7.78	7.053	4.265	4.247	6.042	1.795
8.0	422.2	0.462	8.03	7.072	4.298	4.279	6.075	1.796
8.2	426.8	0.477	8.29	7.092	4.333	4.313	6.108	1.796
8.5	430.5	0.491	8.53	7.111	4.359	4.338	6.134	1.796
8.7	434.4	0.506	8.79	7.131	4.386	4.365	6.161	1.796
9.0	437.8	0.520	9.04	7.151	4.408	4.387	6.182	1.795
9.2	441.8	0.535	9.29	7.171	4.436	4.413	6.209	1.795
9.5	444.9	0.549	9.55	7.191	4.455	4.432	6.228	1.796
9.7	448.1	0.564	9.80	7.211	4.474	4.451	6.247	1.796
10.0	451.3	0.578	10.06	7.231	4.494	4.469	6.265	1.796
10.2	454.2	0.593	10.30	7.251	4.510	4.485	6.281	1.796
10.5	457.2	0.607	10.56	7.272	4.526	4.501	6.296	1.795
10.7	460.5	0.621	10.80	7.292	4.547	4.521	6.316	1.796
11.0	462.6	0.636	11.06	7.313	4.554	4.528	6.324	1.796
11.3	465.3	0.650	11.31	7.334	4.568	4.541	6.337	1.796
11.5	467.2	0.665	11.56	7.355	4.573	4.546	6.341	1.795
11.7	469.9	0.679	11.81	7.375	4.587	4.559	6.355	1.796
12.0	472.8	0.694	12.07	7.397	4.602	4.573	6.369	1.796
12.2	474.5	0.708	12.31	7.418	4.606	4.576	6.372	1.796
12.5	477.4	0.723	12.57	7.440	4.620	4.590	6.385	1.796
12.7	479.4	0.737	12.82	7.461	4.626	4.595	6.391	1.796

Source: TP-4.1-A, 2.5'-5.0'							Test ID: 1025-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
13.0	481.5	0.752	13.08	7.483	4.633	4.602	6.398	1.796
13.2	483.5	0.766	13.32	7.504	4.639	4.607	6.403	1.795
13.5	485.5	0.781	13.58	7.526	4.645	4.612	6.408	1.796
13.7	487.1	0.795	13.83	7.548	4.646	4.613	6.409	1.796
14.0	489.3	0.810	14.08	7.571	4.654	4.620	6.416	1.796
14.2	491.3	0.824	14.33	7.592	4.660	4.625	6.421	1.796
14.5	493.5	0.839	14.59	7.615	4.666	4.631	6.427	1.796
14.8	494.9	0.853	14.84	7.637	4.666	4.630	6.427	1.796
15.0	496.7	0.868	15.09	7.661	4.668	4.632	6.428	1.796
15.2	498.0	0.882	15.34	7.683	4.667	4.630	6.426	1.796
15.5	499.5	0.897	15.60	7.706	4.666	4.629	6.425	1.796
15.7	501.0	0.911	15.84	7.729	4.668	4.630	6.426	1.797
15.9	500.6	0.920	15.99	7.743	4.656	4.617	6.413	1.796

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.2-A, 2.5'-5.0'
Description: Sandy Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1026
Test ID: 1026-A

Date Received: 06/20/2022
Date Tested: 08/09/2022

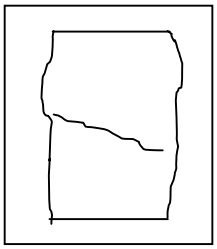
Specific Gravity: 2.72
ASTM D 854, Dry

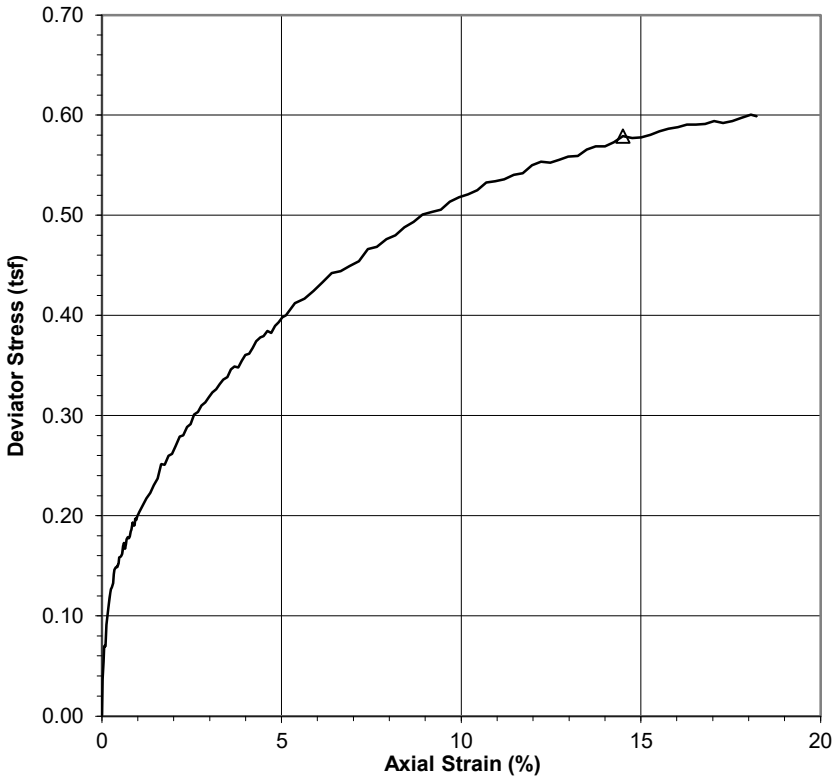
Liquid Limit: 28
Plastic Limit: 17
Plasticity Index: 11
ASTM D 4318

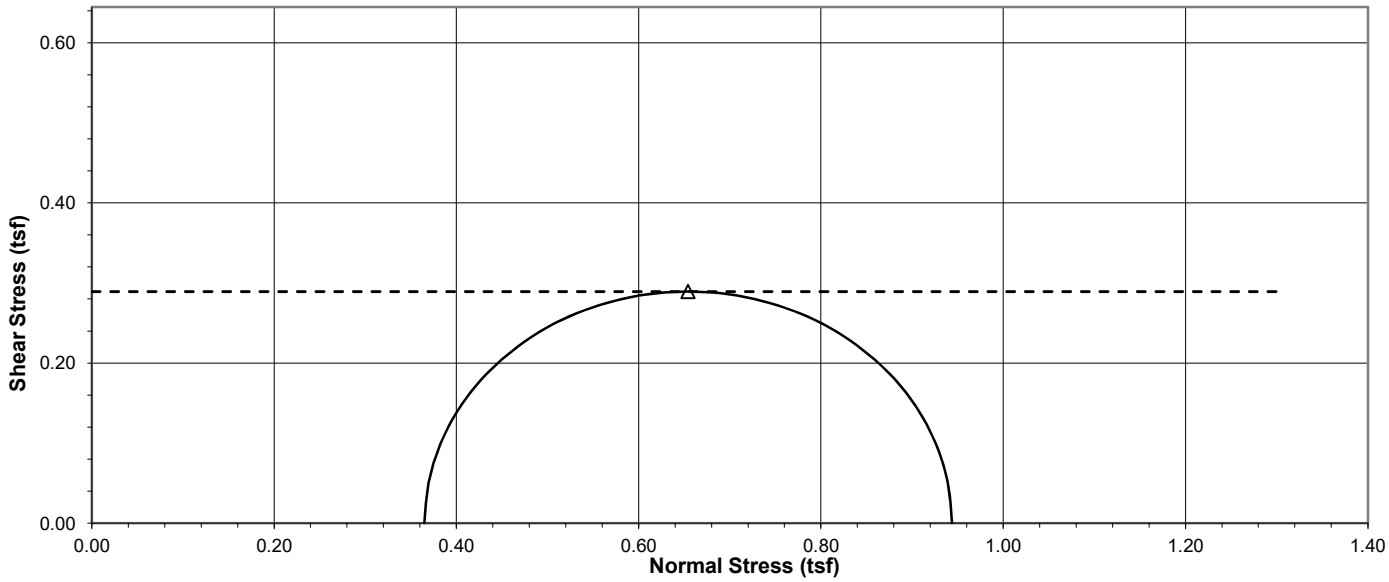
Target Test Parameters
Nominal Chamber Pressure (psi): 5
Actual Axial Strain Rate of Test (%/min): 1.010

At Unconsolidated Undrained Failure
Failure Criterion: Peak Deviator Stress
Axial Strain (%): 14.50
Deviator Stress (tsf): 0.579
Minor Principal Stress, σ_3 (tsf): 0.365
Major Principal Stress, σ_1 (tsf): 0.944
Undrained Shear Strength, S_u (tsf): 0.289

Failure Sketch







Comments

Reviewed KG

Template: tmp_uu_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 08/25/2022

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1026
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1026-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.740	Calculated Height (in)	5.677
Average Diameter (in)	2.869	Calculated Diameter (in)	2.837
Calculated Area (in^2)	6.465	Calculated Area (in^2)	6.322
Moist Weight (lb)	2.739	Moist Weight (lb)	2.739
Moist Unit Weight (pcf)	127.6	Moist Unit Weight (pcf)	131.9
Moisture Content (%)	30.3	Moisture Content (%)	30.3
Dry Weight (lb)	2.102	Dry Weight (lb)	2.102
Dry Unit Weight (pcf)	97.9	Dry Unit Weight (pcf)	101.2
Void Ratio	0.731	Void Ratio	0.674
Degree of Saturation (%)	112.7	Degree of Saturation (%)	122.2

Specific Gravity 2.72
ASTM D 854, Dry

Liquid Limit 28
Plastic Limit 17
Plasticity Index 11
ASTM D 4318

Confining Pressure
σ_3 (tsf) 0.366

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1026**
Source: TP-4.2-A, 2.5'-5.0' **Test ID: 1026-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.322	0.000	0.000	0.366	0.366
0.0	3.2	0.001	0.02	6.324	0.037	0.037	0.404	0.367
0.1	4.8	0.003	0.05	6.325	0.054	0.054	0.421	0.367
0.1	6.2	0.004	0.07	6.326	0.070	0.070	0.436	0.367
0.1	6.1	0.006	0.10	6.329	0.070	0.070	0.436	0.367
0.1	8.0	0.007	0.12	6.330	0.091	0.091	0.457	0.366
0.2	8.6	0.008	0.15	6.331	0.097	0.097	0.463	0.366
0.2	9.6	0.010	0.18	6.333	0.109	0.108	0.475	0.367
0.2	10.0	0.011	0.20	6.335	0.114	0.113	0.480	0.367
0.2	10.9	0.013	0.23	6.337	0.124	0.123	0.490	0.366
0.2	11.2	0.014	0.26	6.338	0.127	0.127	0.494	0.368
0.3	11.4	0.016	0.28	6.340	0.129	0.129	0.496	0.367
0.3	11.7	0.018	0.31	6.342	0.133	0.133	0.500	0.367
0.3	12.5	0.019	0.33	6.343	0.142	0.142	0.508	0.366
0.3	12.9	0.020	0.35	6.344	0.147	0.146	0.512	0.366
0.4	13.2	0.022	0.39	6.347	0.149	0.148	0.515	0.366
0.4	13.2	0.023	0.41	6.348	0.150	0.149	0.515	0.366
0.4	13.2	0.024	0.43	6.349	0.150	0.149	0.515	0.367
0.5	13.6	0.026	0.47	6.352	0.154	0.152	0.519	0.366
0.5	14.1	0.028	0.49	6.353	0.160	0.159	0.525	0.367
0.5	14.1	0.029	0.52	6.355	0.160	0.159	0.525	0.366
0.5	14.2	0.031	0.54	6.356	0.161	0.160	0.527	0.367
0.6	14.4	0.032	0.56	6.358	0.163	0.162	0.528	0.366
0.6	15.1	0.034	0.59	6.360	0.171	0.170	0.537	0.367
0.6	15.4	0.035	0.62	6.361	0.175	0.173	0.540	0.367
0.6	14.9	0.037	0.65	6.363	0.168	0.167	0.534	0.367
0.7	15.3	0.038	0.67	6.365	0.173	0.172	0.539	0.367
0.7	15.8	0.039	0.69	6.366	0.178	0.177	0.543	0.367
0.7	16.0	0.041	0.73	6.368	0.181	0.179	0.546	0.367
0.7	15.8	0.042	0.75	6.370	0.179	0.177	0.544	0.367
0.8	16.0	0.044	0.78	6.372	0.181	0.179	0.546	0.367
0.8	16.5	0.045	0.80	6.373	0.187	0.185	0.552	0.367
0.8	16.6	0.047	0.82	6.375	0.188	0.186	0.553	0.367
0.8	17.3	0.049	0.86	6.377	0.195	0.193	0.560	0.367
0.9	17.1	0.050	0.88	6.378	0.193	0.191	0.558	0.367
0.9	17.0	0.052	0.91	6.380	0.192	0.190	0.557	0.367
0.9	17.7	0.053	0.93	6.382	0.199	0.197	0.564	0.367
1.0	17.6	0.054	0.95	6.383	0.198	0.196	0.563	0.367
1.0	18.0	0.056	0.99	6.385	0.203	0.200	0.567	0.366

Source: TP-4.2-A, 2.5'-5.0'							Test ID: 1026-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.0	18.0	0.057	1.01	6.387	0.203	0.201	0.568	0.367
1.0	18.3	0.059	1.03	6.388	0.206	0.203	0.571	0.367
1.1	19.0	0.065	1.14	6.395	0.213	0.211	0.577	0.366
1.2	19.6	0.070	1.24	6.401	0.220	0.217	0.585	0.367
1.3	20.1	0.077	1.35	6.408	0.226	0.223	0.590	0.367
1.4	20.9	0.082	1.45	6.415	0.234	0.231	0.598	0.367
1.5	21.5	0.088	1.55	6.422	0.241	0.237	0.605	0.367
1.6	22.8	0.094	1.65	6.428	0.256	0.251	0.618	0.366
1.7	22.8	0.099	1.75	6.435	0.255	0.251	0.617	0.366
1.8	23.6	0.106	1.86	6.442	0.264	0.260	0.626	0.366
1.9	23.9	0.111	1.96	6.448	0.267	0.262	0.628	0.366
2.0	24.6	0.117	2.06	6.455	0.274	0.269	0.636	0.367
2.1	25.5	0.123	2.16	6.462	0.284	0.279	0.646	0.367
2.2	25.7	0.128	2.26	6.468	0.286	0.280	0.647	0.367
2.4	26.5	0.135	2.37	6.475	0.294	0.289	0.656	0.367
2.4	26.8	0.140	2.47	6.482	0.297	0.291	0.658	0.367
2.5	27.7	0.146	2.56	6.488	0.307	0.301	0.668	0.367
2.7	28.0	0.152	2.67	6.496	0.310	0.304	0.670	0.367
2.8	28.6	0.157	2.77	6.502	0.317	0.310	0.676	0.366
2.8	28.9	0.163	2.88	6.509	0.320	0.313	0.680	0.367
2.9	29.5	0.169	2.98	6.516	0.326	0.318	0.684	0.366
3.1	29.9	0.175	3.08	6.523	0.331	0.323	0.690	0.367
3.2	30.3	0.181	3.19	6.530	0.334	0.326	0.693	0.367
3.2	30.8	0.186	3.28	6.537	0.339	0.331	0.697	0.366
3.3	31.3	0.192	3.38	6.543	0.344	0.336	0.703	0.367
3.4	31.6	0.198	3.49	6.551	0.347	0.338	0.705	0.366
3.6	32.3	0.204	3.59	6.557	0.355	0.346	0.713	0.367
3.7	32.6	0.209	3.69	6.564	0.358	0.349	0.716	0.367
3.7	32.6	0.216	3.80	6.572	0.357	0.348	0.714	0.366
3.8	33.3	0.221	3.89	6.578	0.364	0.355	0.721	0.367
4.0	33.9	0.227	3.99	6.585	0.370	0.361	0.728	0.367
4.1	34.0	0.233	4.10	6.592	0.372	0.362	0.728	0.367
4.1	34.6	0.238	4.20	6.599	0.378	0.367	0.733	0.365
4.2	35.3	0.244	4.30	6.606	0.385	0.374	0.741	0.366
4.4	35.7	0.250	4.41	6.614	0.389	0.378	0.744	0.366
4.5	35.9	0.256	4.50	6.620	0.390	0.379	0.745	0.366
4.6	36.4	0.262	4.61	6.628	0.396	0.385	0.751	0.367
4.7	36.3	0.267	4.71	6.634	0.394	0.382	0.749	0.366
4.8	37.0	0.273	4.82	6.642	0.401	0.389	0.756	0.367
4.9	37.4	0.279	4.92	6.649	0.405	0.393	0.759	0.366
5.0	38.0	0.285	5.02	6.656	0.411	0.398	0.765	0.366
5.1	38.2	0.291	5.12	6.663	0.412	0.400	0.766	0.366
5.3	39.5	0.305	5.37	6.681	0.425	0.412	0.779	0.366
5.6	40.0	0.320	5.64	6.700	0.430	0.417	0.783	0.366
5.8	40.9	0.334	5.89	6.717	0.439	0.424	0.790	0.365
6.1	41.9	0.348	6.13	6.735	0.448	0.433	0.799	0.366
6.3	43.0	0.363	6.39	6.754	0.458	0.442	0.808	0.366
6.6	43.3	0.377	6.64	6.772	0.460	0.444	0.810	0.365
6.8	44.0	0.391	6.89	6.790	0.466	0.449	0.815	0.366
7.1	44.6	0.406	7.15	6.809	0.472	0.454	0.820	0.366
7.3	45.9	0.420	7.40	6.828	0.484	0.466	0.832	0.366
7.6	46.3	0.435	7.65	6.846	0.487	0.469	0.834	0.366
7.8	47.2	0.449	7.92	6.865	0.495	0.476	0.842	0.365
8.1	47.8	0.464	8.17	6.884	0.500	0.480	0.846	0.366
8.3	48.7	0.478	8.41	6.903	0.508	0.488	0.854	0.366
8.6	49.5	0.492	8.68	6.923	0.514	0.493	0.859	0.366
8.8	50.4	0.506	8.92	6.941	0.523	0.501	0.866	0.366
9.1	50.8	0.521	9.18	6.961	0.526	0.503	0.869	0.366
9.3	51.2	0.535	9.43	6.980	0.528	0.505	0.871	0.365
9.6	52.2	0.550	9.68	7.000	0.537	0.513	0.879	0.365
9.8	52.9	0.564	9.94	7.020	0.542	0.518	0.883	0.365
10.1	53.3	0.579	10.19	7.039	0.546	0.521	0.886	0.365
10.3	54.0	0.593	10.45	7.060	0.551	0.525	0.890	0.365
10.6	54.9	0.607	10.70	7.080	0.559	0.533	0.897	0.365
10.8	55.3	0.622	10.95	7.099	0.561	0.534	0.900	0.366
11.1	55.7	0.636	11.20	7.119	0.563	0.536	0.901	0.365
11.3	56.4	0.651	11.46	7.141	0.568	0.540	0.906	0.365
11.6	56.7	0.665	11.71	7.161	0.570	0.542	0.906	0.364
11.8	57.8	0.680	11.97	7.182	0.579	0.550	0.915	0.365

Source: TP-4.2-A, 2.5'-5.0'							Test ID: 1026-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.1	58.4	0.694	12.22	7.202	0.583	0.554	0.919	0.365
12.3	58.5	0.708	12.48	7.224	0.583	0.553	0.917	0.365
12.6	59.0	0.723	12.73	7.244	0.586	0.555	0.920	0.365
12.8	59.6	0.737	12.98	7.265	0.590	0.559	0.924	0.365
13.1	59.9	0.752	13.24	7.287	0.592	0.559	0.924	0.365
13.3	60.7	0.766	13.49	7.308	0.598	0.566	0.931	0.365
13.6	61.3	0.780	13.74	7.329	0.602	0.569	0.934	0.365
13.9	61.6	0.795	14.00	7.351	0.603	0.569	0.934	0.365
14.1	62.2	0.809	14.25	7.373	0.608	0.573	0.938	0.365
14.4	63.1	0.823	14.50	7.394	0.614	0.579	0.944	0.365
14.6	63.1	0.838	14.76	7.417	0.613	0.577	0.942	0.365
14.9	63.5	0.852	15.01	7.439	0.614	0.578	0.943	0.365
15.1	64.0	0.867	15.27	7.461	0.617	0.580	0.945	0.365
15.3	64.6	0.881	15.52	7.483	0.622	0.584	0.948	0.365
15.6	65.1	0.895	15.77	7.506	0.625	0.586	0.951	0.365
15.8	65.6	0.910	16.03	7.529	0.627	0.588	0.953	0.365
16.1	66.1	0.924	16.28	7.551	0.630	0.590	0.955	0.365
16.3	66.3	0.938	16.53	7.574	0.631	0.590	0.955	0.365
16.6	66.7	0.953	16.79	7.598	0.632	0.591	0.956	0.365
16.8	67.3	0.967	17.04	7.621	0.635	0.594	0.958	0.364
17.1	67.3	0.981	17.29	7.643	0.634	0.592	0.956	0.364
17.4	67.8	0.996	17.55	7.668	0.637	0.594	0.959	0.365
17.6	68.4	1.010	17.80	7.691	0.641	0.597	0.962	0.365
17.9	69.1	1.025	18.06	7.715	0.645	0.601	0.965	0.365
18.0	69.1	1.034	18.22	7.731	0.643	0.599	0.964	0.365

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.2-A, 2.5'-5.0'
Description: Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1027
Test ID: 1027-A

Date Received: 06/20/2022
Date Tested: 08/09/2022

Specific Gravity: 2.72
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

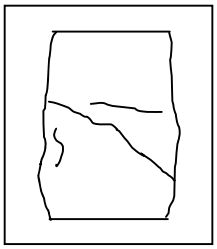
Target Test Parameters

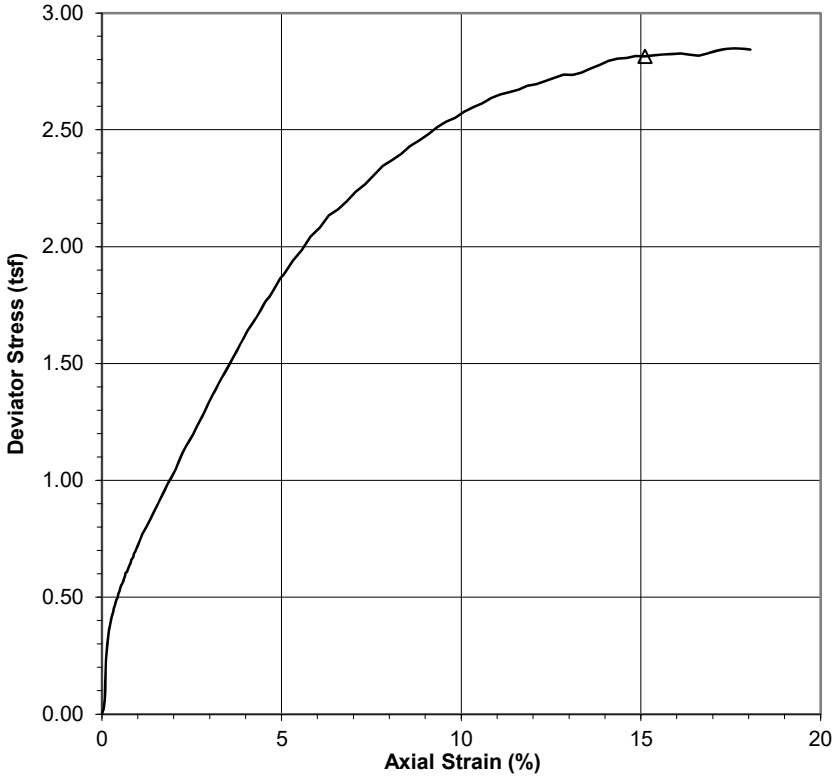
Nominal Chamber Pressure (psi): 5
Actual Axial Strain Rate of Test (%/min): 1.002

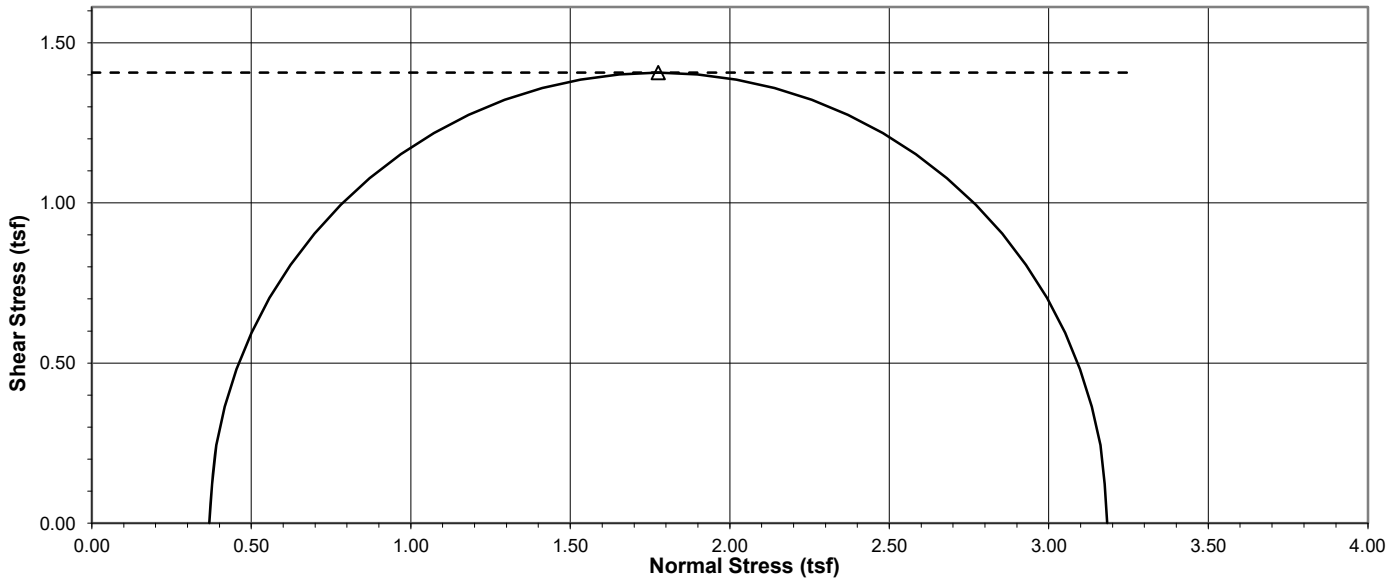
At Unconsolidated Undrained Failure

Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.11
Deviator Stress (tsf): 2.814
Minor Principal Stress, σ_3 (tsf): 0.368
Major Principal Stress, σ_1 (tsf): 3.183
Undrained Shear Strength, S_u (tsf): 1.407

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'	Lab ID	1027
Description	Lean Clay (CL), brown, moist, firm	Test ID	1027-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.761	Calculated Height (in)	5.748
Average Diameter (in)	2.877	Calculated Diameter (in)	2.870
Calculated Area (in^2)	6.501	Calculated Area (in^2)	6.471
Moist Weight (lb)	2.879	Moist Weight (lb)	2.879
Moist Unit Weight (pcf)	132.9	Moist Unit Weight (pcf)	133.8
Moisture Content (%)	17.5	Moisture Content (%)	17.5
Dry Weight (lb)	2.451	Dry Weight (lb)	2.451
Dry Unit Weight (pcf)	113.1	Dry Unit Weight (pcf)	113.9
Void Ratio	0.499	Void Ratio	0.488
Degree of Saturation (%)	95.2	Degree of Saturation (%)	97.2

Specific Gravity 2.72
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 0.370

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1027**
Source: TP-4.2-A, 2.5'-5.0' **Test ID: 1027-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.471	0.000	0.000	0.370	0.370
0.0	1.2	0.002	0.03	6.473	0.014	0.014	0.384	0.370
0.1	1.6	0.003	0.05	6.475	0.018	0.018	0.388	0.370
0.1	5.9	0.005	0.08	6.477	0.066	0.066	0.435	0.369
0.1	14.6	0.006	0.10	6.478	0.163	0.162	0.531	0.369
0.1	21.9	0.007	0.12	6.479	0.243	0.243	0.612	0.369
0.2	26.8	0.009	0.16	6.482	0.298	0.297	0.667	0.370
0.2	30.3	0.010	0.18	6.483	0.337	0.337	0.707	0.370
0.2	32.5	0.011	0.20	6.484	0.361	0.360	0.730	0.370
0.2	34.9	0.013	0.23	6.487	0.388	0.387	0.757	0.369
0.3	36.1	0.015	0.26	6.488	0.401	0.400	0.769	0.370
0.3	37.8	0.016	0.28	6.489	0.420	0.419	0.789	0.370
0.3	39.4	0.018	0.31	6.492	0.437	0.436	0.806	0.370
0.3	40.9	0.019	0.33	6.493	0.453	0.453	0.821	0.369
0.4	41.9	0.021	0.36	6.495	0.465	0.464	0.833	0.369
0.4	43.2	0.022	0.38	6.496	0.479	0.478	0.847	0.370
0.4	44.2	0.023	0.41	6.498	0.490	0.489	0.858	0.369
0.4	45.0	0.025	0.44	6.500	0.499	0.498	0.867	0.369
0.5	46.5	0.026	0.46	6.501	0.514	0.513	0.883	0.370
0.5	47.7	0.028	0.49	6.503	0.528	0.527	0.896	0.369
0.5	48.6	0.030	0.51	6.505	0.538	0.536	0.906	0.369
0.6	49.9	0.031	0.54	6.506	0.552	0.551	0.921	0.370
0.6	50.7	0.033	0.57	6.509	0.561	0.559	0.929	0.370
0.6	51.4	0.034	0.59	6.510	0.568	0.567	0.936	0.369
0.6	52.5	0.036	0.62	6.512	0.581	0.579	0.949	0.370
0.7	53.6	0.037	0.64	6.513	0.592	0.590	0.959	0.369
0.7	54.9	0.038	0.66	6.515	0.607	0.605	0.973	0.369
0.7	55.1	0.040	0.70	6.517	0.608	0.607	0.977	0.370
0.7	56.2	0.041	0.72	6.518	0.620	0.619	0.988	0.369
0.8	56.9	0.043	0.74	6.520	0.629	0.627	0.997	0.370
0.8	58.1	0.045	0.78	6.522	0.642	0.640	1.009	0.369
0.8	58.6	0.046	0.80	6.523	0.646	0.644	1.014	0.370
0.8	60.0	0.047	0.82	6.525	0.663	0.661	1.030	0.369
0.8	60.5	0.049	0.85	6.527	0.667	0.665	1.035	0.370
0.9	61.2	0.050	0.87	6.528	0.675	0.673	1.042	0.369
0.9	62.5	0.051	0.89	6.530	0.689	0.687	1.056	0.369
0.9	63.3	0.053	0.93	6.532	0.697	0.695	1.064	0.369
1.0	64.0	0.055	0.95	6.534	0.705	0.703	1.072	0.369
1.0	64.7	0.056	0.97	6.535	0.713	0.711	1.080	0.369

Source: TP-4.2-A, 2.5'-5.0'							Test ID: 1027-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.0	65.9	0.058	1.01	6.537	0.725	0.723	1.092	0.369
1.0	66.7	0.059	1.03	6.539	0.734	0.732	1.101	0.369
1.1	70.2	0.065	1.12	6.545	0.772	0.769	1.139	0.370
1.2	73.0	0.071	1.23	6.552	0.802	0.799	1.168	0.370
1.3	75.7	0.076	1.33	6.559	0.831	0.827	1.197	0.369
1.4	78.9	0.082	1.43	6.566	0.865	0.862	1.232	0.370
1.5	81.7	0.088	1.53	6.572	0.896	0.892	1.262	0.370
1.6	84.3	0.094	1.63	6.579	0.923	0.919	1.288	0.369
1.7	87.6	0.100	1.74	6.586	0.957	0.953	1.322	0.369
1.8	90.6	0.105	1.83	6.592	0.990	0.985	1.355	0.369
1.9	93.0	0.111	1.93	6.599	1.015	1.010	1.380	0.369
2.0	96.1	0.117	2.04	6.606	1.047	1.042	1.411	0.369
2.1	99.4	0.123	2.13	6.613	1.082	1.077	1.445	0.368
2.2	102.7	0.128	2.23	6.619	1.117	1.112	1.481	0.369
2.3	105.9	0.134	2.34	6.626	1.151	1.145	1.514	0.368
2.4	108.1	0.140	2.43	6.633	1.174	1.168	1.537	0.368
2.5	111.0	0.146	2.54	6.640	1.204	1.197	1.566	0.369
2.6	114.0	0.152	2.64	6.647	1.235	1.229	1.597	0.369
2.7	116.8	0.157	2.74	6.654	1.263	1.257	1.626	0.369
2.8	119.9	0.163	2.84	6.661	1.296	1.289	1.657	0.369
2.9	123.1	0.169	2.94	6.668	1.329	1.322	1.691	0.369
3.0	126.1	0.175	3.04	6.674	1.360	1.353	1.722	0.369
3.1	128.9	0.181	3.15	6.682	1.389	1.381	1.751	0.369
3.3	132.1	0.186	3.24	6.688	1.422	1.414	1.783	0.369
3.4	134.8	0.192	3.34	6.695	1.449	1.441	1.810	0.369
3.4	137.4	0.198	3.45	6.703	1.476	1.467	1.836	0.369
3.6	140.0	0.204	3.55	6.710	1.502	1.494	1.863	0.369
3.7	142.8	0.210	3.64	6.716	1.531	1.522	1.891	0.369
3.8	145.8	0.216	3.75	6.724	1.561	1.552	1.920	0.368
3.8	148.8	0.221	3.85	6.731	1.592	1.583	1.951	0.368
4.0	151.5	0.227	3.95	6.737	1.619	1.609	1.978	0.368
4.1	154.7	0.233	4.06	6.745	1.651	1.641	2.010	0.368
4.2	156.8	0.239	4.15	6.752	1.672	1.662	2.031	0.369
4.2	159.2	0.244	4.25	6.759	1.696	1.685	2.053	0.368
4.4	161.7	0.251	4.36	6.766	1.721	1.710	2.079	0.368
4.5	164.6	0.256	4.46	6.773	1.750	1.739	2.107	0.368
4.6	167.3	0.262	4.55	6.780	1.777	1.766	2.135	0.369
4.7	169.3	0.268	4.66	6.788	1.796	1.785	2.154	0.369
4.7	171.9	0.273	4.76	6.795	1.821	1.810	2.179	0.369
4.9	174.5	0.279	4.85	6.802	1.847	1.835	2.204	0.369
5.0	177.4	0.285	4.96	6.809	1.876	1.864	2.233	0.369
5.1	179.2	0.291	5.06	6.816	1.892	1.880	2.249	0.369
5.3	185.4	0.306	5.32	6.835	1.953	1.940	2.309	0.369
5.5	190.2	0.320	5.56	6.853	1.998	1.985	2.353	0.368
5.8	196.3	0.334	5.81	6.871	2.057	2.043	2.411	0.368
6.0	200.6	0.349	6.07	6.890	2.096	2.082	2.450	0.368
6.3	206.2	0.363	6.32	6.908	2.149	2.134	2.502	0.368
6.6	209.3	0.378	6.57	6.927	2.175	2.160	2.528	0.368
6.8	213.2	0.392	6.82	6.945	2.210	2.194	2.562	0.368
7.1	217.8	0.406	7.07	6.964	2.252	2.235	2.603	0.369
7.3	221.6	0.421	7.33	6.983	2.285	2.267	2.636	0.369
7.6	226.1	0.435	7.57	7.002	2.325	2.307	2.675	0.368
7.8	230.5	0.449	7.82	7.020	2.364	2.345	2.714	0.369
8.1	233.7	0.464	8.08	7.040	2.391	2.371	2.740	0.369
8.3	237.0	0.479	8.33	7.059	2.417	2.397	2.765	0.368
8.6	240.9	0.493	8.57	7.078	2.450	2.429	2.798	0.368
8.8	244.1	0.508	8.83	7.098	2.476	2.454	2.823	0.368
9.1	247.4	0.522	9.08	7.118	2.502	2.481	2.849	0.368
9.3	251.2	0.537	9.33	7.138	2.534	2.511	2.879	0.368
9.6	254.2	0.551	9.58	7.157	2.557	2.534	2.902	0.368
9.8	256.7	0.565	9.83	7.177	2.576	2.552	2.921	0.369
10.1	260.0	0.580	10.09	7.198	2.601	2.577	2.945	0.368
10.3	262.8	0.594	10.34	7.217	2.622	2.597	2.965	0.368
10.6	265.1	0.608	10.58	7.237	2.638	2.612	2.980	0.368
10.8	268.3	0.623	10.84	7.258	2.662	2.636	3.004	0.368
11.1	270.7	0.637	11.09	7.279	2.678	2.651	3.020	0.368
11.3	272.6	0.652	11.34	7.299	2.689	2.661	3.029	0.368
11.6	274.5	0.666	11.59	7.320	2.700	2.672	3.040	0.368
11.8	277.0	0.681	11.84	7.341	2.717	2.688	3.056	0.368

Source: TP-4.2-A, 2.5'-5.0'							Test ID: 1027-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.1	278.5	0.695	12.09	7.361	2.724	2.695	3.063	0.368
12.3	280.8	0.710	12.35	7.383	2.739	2.709	3.076	0.367
12.6	283.1	0.724	12.59	7.404	2.753	2.723	3.091	0.368
12.8	285.4	0.739	12.85	7.426	2.767	2.736	3.104	0.368
13.1	286.0	0.753	13.10	7.447	2.766	2.734	3.102	0.368
13.3	288.0	0.767	13.35	7.468	2.777	2.745	3.113	0.368
13.6	290.7	0.782	13.60	7.491	2.794	2.762	3.129	0.368
13.8	293.2	0.796	13.85	7.512	2.810	2.777	3.145	0.368
14.1	296.0	0.810	14.10	7.534	2.828	2.795	3.163	0.368
14.3	297.9	0.825	14.36	7.556	2.839	2.804	3.173	0.369
14.6	299.1	0.840	14.61	7.578	2.842	2.807	3.175	0.369
14.8	301.0	0.854	14.85	7.600	2.852	2.816	3.184	0.368
15.1	301.8	0.869	15.11	7.623	2.851	2.814	3.183	0.368
15.3	303.2	0.883	15.36	7.646	2.855	2.818	3.186	0.368
15.6	304.6	0.897	15.61	7.668	2.860	2.823	3.190	0.368
15.8	305.8	0.912	15.86	7.692	2.862	2.824	3.192	0.368
16.1	307.0	0.926	16.11	7.714	2.865	2.827	3.195	0.369
16.3	307.4	0.941	16.37	7.738	2.861	2.821	3.189	0.368
16.6	307.9	0.955	16.61	7.761	2.857	2.817	3.185	0.368
16.8	309.9	0.969	16.86	7.784	2.867	2.826	3.194	0.368
17.1	312.3	0.984	17.12	7.808	2.880	2.839	3.207	0.368
17.3	314.0	0.998	17.37	7.832	2.887	2.845	3.214	0.369
17.6	315.4	1.012	17.61	7.855	2.891	2.848	3.217	0.368
17.8	316.2	1.027	17.87	7.880	2.889	2.846	3.214	0.368
18.0	316.6	1.038	18.05	7.897	2.886	2.843	3.211	0.368

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.3-B, 2.5'-5.5'
Description: Sandy Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1030
Test ID: 1030-A

Date Received: 06/20/2022
Date Tested: 08/16/2022

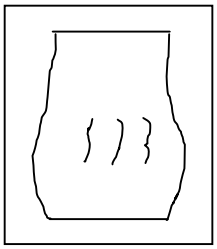
Specific Gravity: 2.71
ASTM D 854, Dry

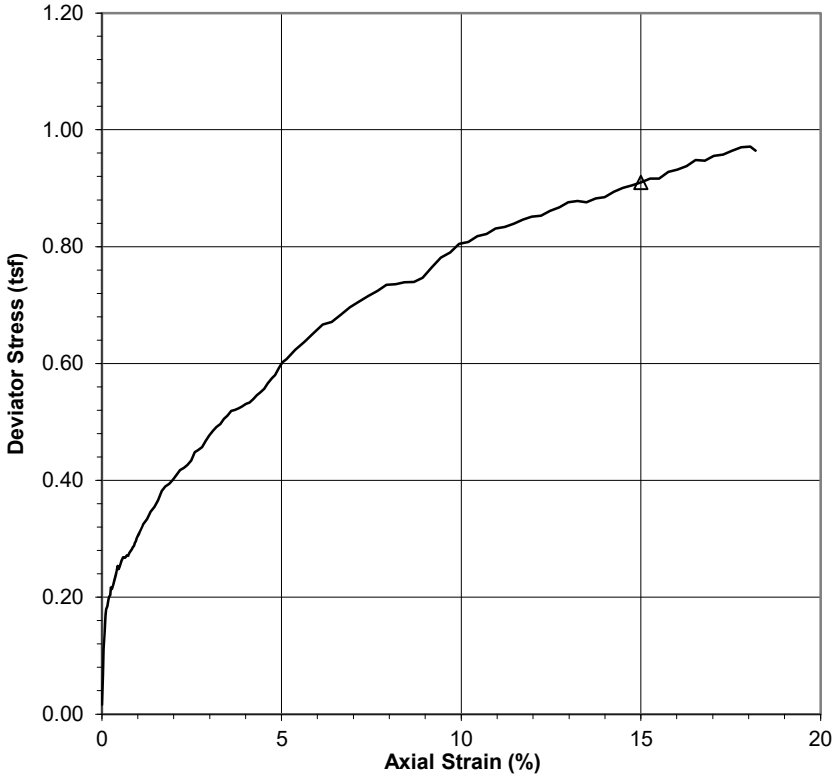
Liquid Limit: 31
Plastic Limit: 18
Plasticity Index: 13
ASTM D 4318

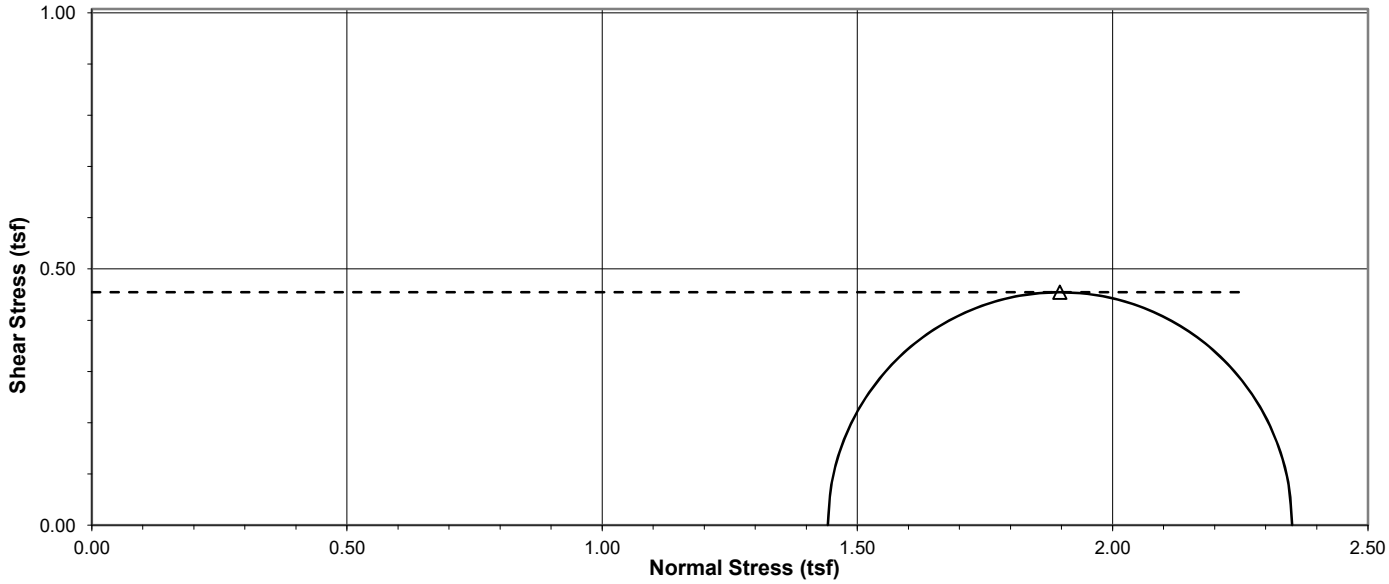
Target Test Parameters
Nominal Chamber Pressure (psi): 20
Actual Axial Strain Rate of Test (%/min): 1.011

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.00
Deviator Stress (tsf): 0.910
Minor Principal Stress, σ_3 (tsf): 1.442
Major Principal Stress, σ_1 (tsf): 2.352
Undrained Shear Strength, S_u (tsf): 0.455

Failure Sketch







Comments

Reviewed KG

Template: tmp_uu_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 08/25/2022

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.3-B, 2.5'-5.5'	Lab ID	1030
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1030-A

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.747	Calculated Height (in)	5.700	Specific Gravity	2.71
Average Diameter (in)	2.892	Calculated Diameter (in)	2.868	ASTM D 854, Dry	
Calculated Area (in^2)	6.567	Calculated Area (in^2)	6.459	Liquid Limit	31
Moist Weight (lb)	2.823	Moist Weight (lb)	2.823	Plastic Limit	18
Moist Unit Weight (pcf)	129.2	Moist Unit Weight (pcf)	132.5	Plasticity Index	13
Moisture Content (%)	19.2	Moisture Content (%)	19.2	ASTM D 4318	
Dry Weight (lb)	2.368	Dry Weight (lb)	2.368		
Dry Unit Weight (pcf)	108.4	Dry Unit Weight (pcf)	111.1	Confining Pressure	
Void Ratio	0.558	Void Ratio	0.519	σ_3 (tsf)	1.443
Degree of Saturation (%)	93.3	Degree of Saturation (%)	100.1		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1030**
Source: TP-4.3-B, 2.5'-5.5' **Test ID: 1030-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	1.4	0.000	0.00	6.459	0.016	0.016	1.459	1.443
0.0	5.8	0.001	0.03	6.461	0.065	0.065	1.508	1.443
0.1	10.0	0.003	0.05	6.463	0.111	0.111	1.554	1.443
0.1	13.2	0.005	0.08	6.465	0.147	0.146	1.590	1.443
0.1	15.1	0.006	0.10	6.466	0.168	0.168	1.611	1.443
0.1	16.1	0.007	0.12	6.467	0.179	0.179	1.622	1.443
0.1	16.6	0.009	0.16	6.470	0.185	0.185	1.628	1.443
0.2	17.6	0.010	0.18	6.471	0.195	0.195	1.638	1.443
0.2	18.0	0.011	0.20	6.472	0.201	0.200	1.644	1.443
0.2	18.4	0.013	0.23	6.475	0.204	0.204	1.647	1.443
0.2	19.6	0.015	0.26	6.476	0.218	0.217	1.660	1.443
0.3	19.3	0.016	0.28	6.477	0.215	0.214	1.657	1.443
0.3	19.9	0.018	0.31	6.480	0.221	0.220	1.664	1.443
0.3	20.4	0.019	0.33	6.481	0.226	0.226	1.669	1.444
0.3	20.9	0.020	0.35	6.482	0.232	0.232	1.674	1.443
0.4	21.4	0.022	0.39	6.485	0.238	0.237	1.680	1.443
0.4	22.2	0.023	0.41	6.486	0.246	0.245	1.689	1.443
0.4	22.9	0.025	0.44	6.488	0.255	0.254	1.697	1.443
0.5	22.4	0.026	0.46	6.490	0.249	0.248	1.691	1.443
0.5	22.9	0.028	0.50	6.492	0.254	0.253	1.696	1.444
0.5	23.3	0.029	0.52	6.493	0.258	0.257	1.700	1.443
0.5	23.8	0.031	0.55	6.495	0.264	0.263	1.706	1.443
0.6	24.1	0.033	0.57	6.496	0.267	0.266	1.709	1.443
0.6	24.4	0.034	0.59	6.498	0.270	0.268	1.712	1.443
0.6	24.3	0.036	0.63	6.500	0.269	0.268	1.711	1.443
0.6	24.3	0.037	0.65	6.502	0.269	0.267	1.710	1.443
0.7	24.6	0.039	0.68	6.504	0.272	0.270	1.714	1.443
0.7	24.7	0.040	0.70	6.505	0.273	0.272	1.715	1.443
0.7	24.6	0.042	0.73	6.507	0.273	0.271	1.714	1.443
0.7	25.0	0.043	0.76	6.509	0.277	0.275	1.719	1.443
0.8	25.3	0.045	0.79	6.511	0.280	0.278	1.721	1.443
0.8	25.5	0.046	0.81	6.512	0.282	0.280	1.723	1.443
0.8	25.8	0.048	0.84	6.514	0.285	0.283	1.726	1.443
0.8	26.1	0.049	0.86	6.516	0.288	0.286	1.729	1.443
0.9	26.3	0.051	0.90	6.518	0.290	0.288	1.731	1.443
0.9	26.7	0.052	0.92	6.519	0.295	0.293	1.737	1.444
0.9	27.0	0.054	0.95	6.521	0.298	0.296	1.739	1.443
1.0	27.5	0.055	0.97	6.523	0.304	0.302	1.745	1.443
1.0	27.8	0.057	1.00	6.525	0.307	0.304	1.748	1.443

Source: TP-4.3-B, 2.5'-5.5'							Test ID: 1030-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.0	28.1	0.058	1.02	6.526	0.310	0.307	1.751	1.443
1.0	28.5	0.060	1.06	6.528	0.314	0.312	1.755	1.443
1.1	29.7	0.066	1.15	6.535	0.328	0.325	1.768	1.443
1.2	30.6	0.072	1.26	6.542	0.337	0.334	1.777	1.443
1.4	31.8	0.077	1.36	6.548	0.350	0.346	1.790	1.443
1.4	32.6	0.083	1.46	6.555	0.358	0.354	1.798	1.443
1.5	33.7	0.089	1.56	6.562	0.369	0.366	1.808	1.443
1.6	35.2	0.095	1.67	6.569	0.386	0.382	1.826	1.444
1.8	36.0	0.101	1.77	6.576	0.394	0.390	1.833	1.443
1.9	36.4	0.107	1.87	6.583	0.399	0.394	1.837	1.443
1.9	37.1	0.112	1.97	6.589	0.405	0.401	1.844	1.443
2.0	37.9	0.118	2.08	6.597	0.414	0.409	1.852	1.443
2.1	38.8	0.124	2.18	6.603	0.423	0.417	1.860	1.443
2.3	39.2	0.130	2.28	6.610	0.427	0.421	1.865	1.443
2.3	39.7	0.136	2.38	6.617	0.432	0.427	1.870	1.444
2.5	40.5	0.142	2.49	6.624	0.440	0.434	1.877	1.443
2.6	41.9	0.147	2.59	6.631	0.454	0.448	1.892	1.443
2.7	42.3	0.153	2.68	6.638	0.458	0.452	1.895	1.443
2.8	42.8	0.159	2.79	6.645	0.464	0.457	1.900	1.443
2.9	43.8	0.165	2.89	6.652	0.474	0.467	1.910	1.443
3.0	44.7	0.170	2.99	6.658	0.484	0.477	1.920	1.443
3.1	45.6	0.176	3.09	6.666	0.492	0.485	1.929	1.444
3.2	46.2	0.182	3.19	6.672	0.499	0.491	1.934	1.443
3.3	46.8	0.188	3.30	6.680	0.504	0.496	1.939	1.443
3.4	47.6	0.194	3.40	6.687	0.513	0.505	1.948	1.443
3.5	48.3	0.199	3.49	6.693	0.519	0.511	1.953	1.443
3.6	49.1	0.205	3.60	6.701	0.528	0.519	1.962	1.443
3.7	49.3	0.211	3.70	6.708	0.529	0.520	1.963	1.443
3.8	49.6	0.217	3.81	6.715	0.532	0.523	1.965	1.442
3.9	50.0	0.223	3.90	6.722	0.536	0.527	1.968	1.442
4.0	50.5	0.229	4.01	6.729	0.540	0.531	1.972	1.441
4.1	50.8	0.234	4.11	6.736	0.543	0.533	1.976	1.443
4.2	51.5	0.240	4.22	6.744	0.549	0.539	1.982	1.443
4.3	52.1	0.246	4.31	6.751	0.556	0.546	1.989	1.443
4.4	52.7	0.251	4.41	6.758	0.561	0.551	1.993	1.443
4.5	53.3	0.258	4.52	6.765	0.568	0.557	1.998	1.441
4.6	54.3	0.263	4.62	6.772	0.577	0.566	2.009	1.443
4.7	55.2	0.269	4.73	6.780	0.586	0.575	2.017	1.443
4.8	55.8	0.275	4.82	6.787	0.592	0.580	2.022	1.442
4.9	57.1	0.281	4.93	6.795	0.605	0.593	2.035	1.442
5.0	58.0	0.287	5.03	6.802	0.614	0.602	2.045	1.443
5.1	58.6	0.293	5.14	6.809	0.620	0.608	2.050	1.443
5.3	60.4	0.307	5.38	6.827	0.637	0.624	2.067	1.443
5.6	61.8	0.322	5.64	6.846	0.650	0.637	2.080	1.443
5.8	63.5	0.336	5.89	6.864	0.666	0.652	2.095	1.443
6.1	65.1	0.351	6.15	6.883	0.681	0.666	2.109	1.443
6.3	65.8	0.365	6.40	6.901	0.687	0.671	2.114	1.443
6.6	67.3	0.379	6.66	6.920	0.700	0.684	2.127	1.443
6.8	68.7	0.394	6.91	6.939	0.713	0.696	2.138	1.442
7.1	69.9	0.408	7.16	6.958	0.723	0.706	2.148	1.442
7.3	71.1	0.422	7.41	6.976	0.733	0.716	2.158	1.442
7.6	72.2	0.437	7.67	6.996	0.743	0.724	2.167	1.442
7.8	73.4	0.451	7.92	7.015	0.754	0.735	2.177	1.443
8.1	73.8	0.466	8.17	7.034	0.756	0.736	2.178	1.443
8.3	74.4	0.480	8.42	7.053	0.759	0.739	2.182	1.443
8.6	74.7	0.495	8.68	7.074	0.760	0.740	2.182	1.442
8.8	75.7	0.509	8.93	7.093	0.768	0.746	2.189	1.443
9.1	77.7	0.524	9.19	7.113	0.787	0.765	2.206	1.442
9.3	79.6	0.538	9.44	7.132	0.804	0.781	2.222	1.441
9.6	80.8	0.553	9.69	7.153	0.813	0.790	2.232	1.442
9.8	82.5	0.567	9.94	7.173	0.828	0.805	2.246	1.442
10.1	83.2	0.581	10.20	7.193	0.832	0.808	2.250	1.442
10.3	84.5	0.596	10.45	7.213	0.843	0.818	2.259	1.441
10.6	85.2	0.610	10.71	7.234	0.848	0.822	2.263	1.441
10.9	86.4	0.624	10.95	7.254	0.858	0.831	2.273	1.441
11.1	87.0	0.639	11.21	7.275	0.861	0.834	2.275	1.442
11.4	87.8	0.653	11.46	7.296	0.867	0.839	2.280	1.441
11.6	88.9	0.668	11.72	7.317	0.874	0.846	2.288	1.441
11.8	89.7	0.682	11.97	7.337	0.880	0.851	2.294	1.442

Source: TP-4.3-B, 2.5'-5.5'							Test ID: 1030-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.1	90.2	0.697	12.22	7.359	0.882	0.853	2.295	1.442
12.3	91.3	0.711	12.47	7.380	0.891	0.861	2.303	1.442
12.6	92.3	0.726	12.73	7.402	0.898	0.867	2.309	1.442
12.8	93.5	0.740	12.98	7.423	0.907	0.876	2.317	1.442
13.1	94.1	0.755	13.24	7.445	0.910	0.878	2.319	1.441
13.3	94.2	0.769	13.48	7.466	0.908	0.876	2.317	1.441
13.6	95.3	0.783	13.74	7.489	0.916	0.883	2.324	1.441
13.9	95.8	0.797	13.99	7.510	0.918	0.885	2.326	1.441
14.1	97.1	0.812	14.25	7.533	0.928	0.894	2.336	1.442
14.4	98.2	0.826	14.50	7.555	0.936	0.901	2.342	1.441
14.6	99.0	0.841	14.75	7.577	0.940	0.905	2.347	1.442
14.8	99.8	0.855	15.00	7.599	0.946	0.910	2.352	1.442
15.1	100.9	0.870	15.26	7.623	0.953	0.916	2.358	1.442
15.3	101.3	0.884	15.51	7.645	0.954	0.917	2.358	1.442
15.6	102.9	0.899	15.77	7.669	0.966	0.928	2.369	1.441
15.8	103.7	0.913	16.02	7.691	0.970	0.932	2.373	1.442
16.1	104.7	0.928	16.27	7.715	0.977	0.938	2.380	1.442
16.3	106.2	0.942	16.52	7.738	0.988	0.948	2.390	1.442
16.6	106.5	0.956	16.78	7.762	0.988	0.947	2.389	1.442
16.8	107.7	0.971	17.03	7.785	0.996	0.955	2.397	1.441
17.1	108.4	0.985	17.29	7.809	0.999	0.958	2.399	1.442
17.4	109.5	0.999	17.53	7.833	1.006	0.964	2.405	1.441
17.6	110.5	1.014	17.79	7.858	1.013	0.970	2.411	1.441
17.9	111.1	1.028	18.04	7.881	1.015	0.971	2.413	1.441
18.0	110.5	1.037	18.19	7.896	1.008	0.964	2.405	1.441

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.4-A, 2.0'-4.5'
Description: Sandy Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1031
Test ID: 1031-A

Date Received: 06/20/2022
Date Tested: 08/10/2022

Specific Gravity: 2.65
ASTM D 854, Dry

Liquid Limit: 29
Plastic Limit: 17
Plasticity Index: 12
ASTM D 4318

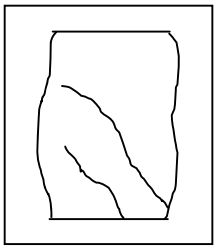
Target Test Parameters

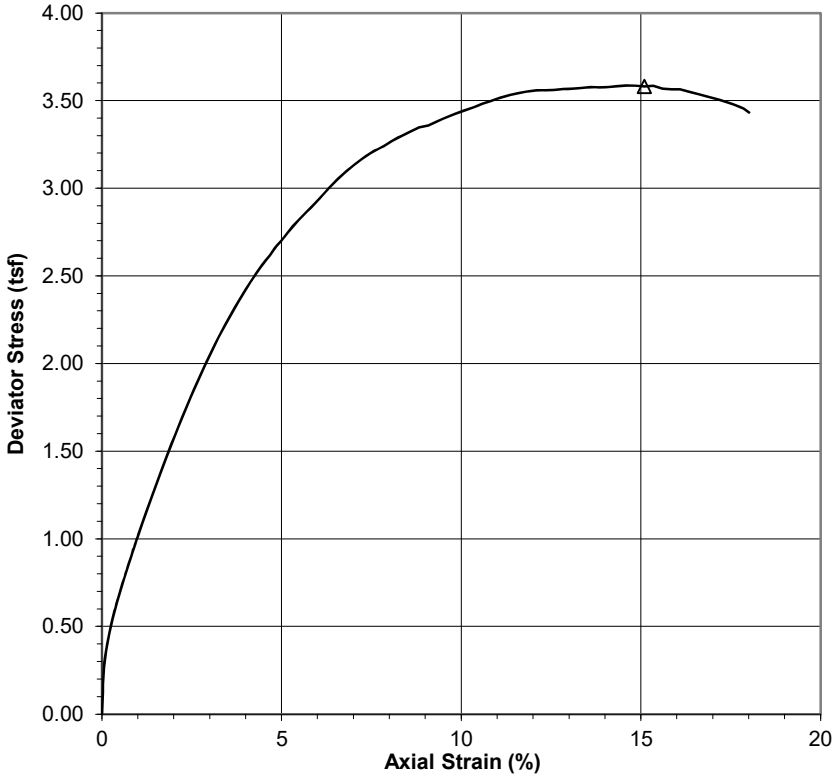
Nominal Chamber Pressure (psi): 10
Actual Axial Strain Rate of Test (%/min): 1.001

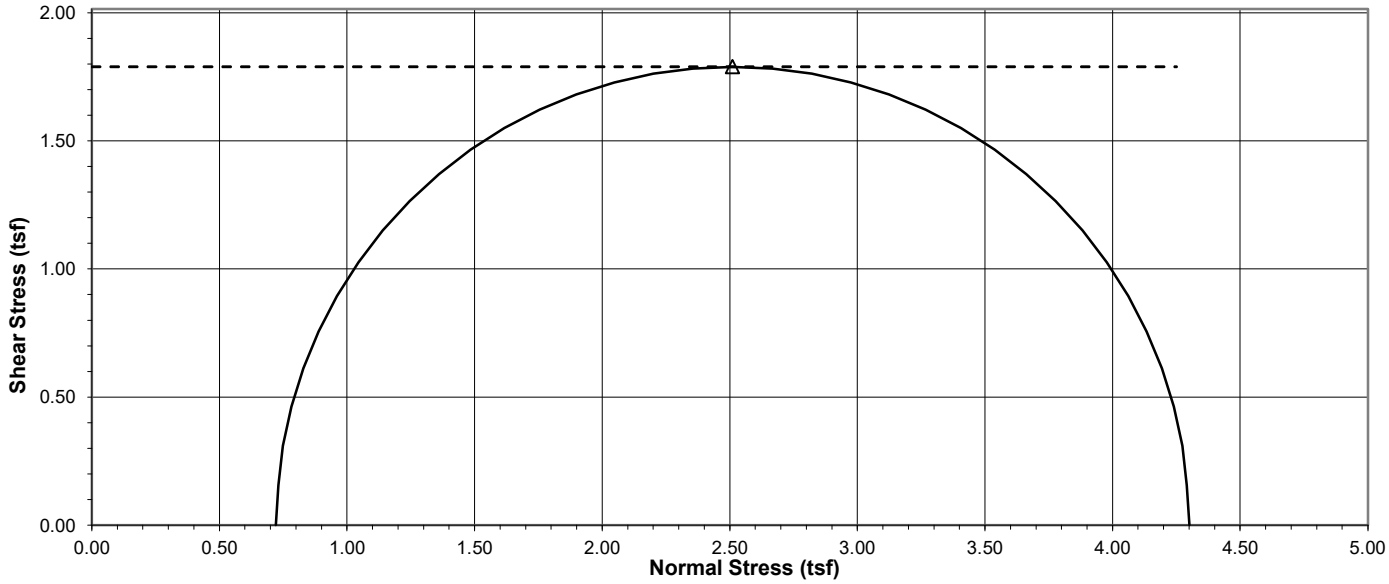
At Unconsolidated Undrained Failure

Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.10
Deviator Stress (tsf): 3.580
Minor Principal Stress, σ_3 (tsf): 0.721
Major Principal Stress, σ_1 (tsf): 4.300
Undrained Shear Strength, S_u (tsf): 1.790

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.4-A, 2.0'-4.5'	Lab ID	1031
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1031-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.754	Calculated Height (in)	5.749
Average Diameter (in)	2.871	Calculated Diameter (in)	2.869
Calculated Area (in^2)	6.475	Calculated Area (in^2)	6.464
Moist Weight (lb)	2.843	Moist Weight (lb)	2.843
Moist Unit Weight (pcf)	131.9	Moist Unit Weight (pcf)	132.2
Moisture Content (%)	19.2	Moisture Content (%)	19.2
Dry Weight (lb)	2.386	Dry Weight (lb)	2.386
Dry Unit Weight (pcf)	110.7	Dry Unit Weight (pcf)	110.9
Void Ratio	0.492	Void Ratio	0.488
Degree of Saturation (%)	103.2	Degree of Saturation (%)	104.1

Specific Gravity	2.65
	ASTM D 854, Dry
Liquid Limit	29
Plastic Limit	17
Plasticity Index	12
	ASTM D 4318
Confining Pressure	
σ_3 (tsf)	0.720

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1031**
Source: TP-4.4-A, 2.0'-4.5' **Test ID: 1031-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.464	0.000	0.000	0.720	0.720
0.0	11.1	0.001	0.03	6.466	0.124	0.124	0.844	0.720
0.1	19.9	0.003	0.05	6.467	0.222	0.221	0.942	0.721
0.1	25.8	0.004	0.07	6.468	0.287	0.287	1.007	0.721
0.1	30.0	0.006	0.10	6.471	0.334	0.333	1.054	0.720
0.1	33.4	0.007	0.12	6.472	0.371	0.371	1.091	0.720
0.2	36.1	0.008	0.14	6.473	0.401	0.401	1.121	0.720
0.2	38.6	0.010	0.18	6.476	0.429	0.429	1.149	0.720
0.2	41.1	0.011	0.20	6.477	0.456	0.456	1.176	0.721
0.2	43.3	0.013	0.23	6.479	0.481	0.480	1.201	0.720
0.3	45.2	0.014	0.25	6.480	0.503	0.502	1.223	0.721
0.3	47.3	0.016	0.27	6.482	0.526	0.525	1.245	0.720
0.3	49.3	0.018	0.31	6.484	0.547	0.547	1.267	0.720
0.3	51.4	0.019	0.33	6.485	0.570	0.569	1.290	0.721
0.4	53.1	0.020	0.35	6.487	0.590	0.589	1.310	0.721
0.4	55.0	0.022	0.38	6.489	0.610	0.609	1.330	0.721
0.4	56.8	0.023	0.41	6.490	0.630	0.629	1.350	0.721
0.4	58.4	0.025	0.43	6.492	0.648	0.647	1.368	0.721
0.5	60.0	0.026	0.46	6.494	0.665	0.664	1.384	0.720
0.5	61.8	0.028	0.48	6.495	0.685	0.683	1.404	0.721
0.5	63.3	0.029	0.51	6.497	0.702	0.701	1.421	0.720
0.5	64.8	0.031	0.53	6.499	0.718	0.717	1.438	0.721
0.6	66.4	0.032	0.56	6.500	0.735	0.734	1.454	0.720
0.6	68.0	0.034	0.59	6.502	0.753	0.752	1.472	0.720
0.6	69.6	0.035	0.61	6.504	0.771	0.770	1.490	0.721
0.6	71.1	0.037	0.64	6.506	0.787	0.786	1.507	0.721
0.7	72.8	0.038	0.66	6.507	0.806	0.804	1.525	0.721
0.7	74.4	0.040	0.70	6.509	0.823	0.822	1.542	0.721
0.7	75.9	0.041	0.72	6.511	0.839	0.837	1.559	0.721
0.7	77.5	0.042	0.74	6.512	0.857	0.855	1.576	0.720
0.8	78.9	0.044	0.77	6.514	0.872	0.870	1.590	0.720
0.8	80.4	0.046	0.79	6.516	0.889	0.887	1.608	0.721
0.8	81.9	0.047	0.82	6.518	0.904	0.902	1.623	0.720
0.8	83.5	0.049	0.85	6.519	0.922	0.920	1.640	0.720
0.9	85.0	0.050	0.87	6.521	0.939	0.936	1.657	0.720
0.9	86.2	0.052	0.90	6.523	0.952	0.950	1.670	0.721
0.9	87.8	0.053	0.92	6.524	0.969	0.967	1.687	0.720
1.0	89.0	0.054	0.94	6.526	0.983	0.980	1.701	0.721
1.0	90.8	0.056	0.98	6.528	1.001	0.999	1.720	0.721

Source: TP-4.4-A, 2.0'-4.5'							Test ID: 1031-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.0	92.0	0.057	1.00	6.529	1.014	1.012	1.732	0.720
1.0	93.4	0.059	1.02	6.531	1.029	1.027	1.747	0.720
1.1	98.8	0.065	1.13	6.538	1.089	1.086	1.807	0.721
1.2	104.4	0.070	1.22	6.544	1.149	1.146	1.867	0.721
1.3	109.8	0.077	1.33	6.551	1.207	1.204	1.924	0.720
1.4	115.4	0.082	1.43	6.558	1.267	1.264	1.984	0.720
1.5	120.7	0.088	1.54	6.565	1.323	1.320	2.041	0.721
1.6	125.9	0.094	1.63	6.571	1.379	1.375	2.096	0.721
1.7	131.2	0.099	1.73	6.578	1.436	1.432	2.153	0.721
1.8	136.2	0.106	1.84	6.585	1.490	1.485	2.206	0.720
1.9	141.6	0.111	1.93	6.591	1.547	1.542	2.263	0.721
2.0	146.4	0.117	2.04	6.599	1.597	1.593	2.313	0.721
2.1	151.2	0.123	2.14	6.605	1.648	1.643	2.363	0.720
2.2	156.1	0.128	2.23	6.612	1.700	1.695	2.415	0.720
2.3	161.1	0.135	2.34	6.619	1.752	1.746	2.467	0.720
2.4	165.6	0.140	2.44	6.626	1.799	1.794	2.514	0.720
2.5	170.2	0.146	2.55	6.633	1.848	1.842	2.563	0.721
2.6	174.5	0.152	2.64	6.639	1.892	1.886	2.606	0.721
2.7	178.8	0.157	2.74	6.646	1.937	1.931	2.651	0.720
2.8	183.4	0.164	2.85	6.653	1.985	1.978	2.699	0.721
2.9	187.7	0.169	2.94	6.660	2.030	2.022	2.743	0.720
3.1	192.0	0.175	3.05	6.667	2.073	2.066	2.786	0.720
3.2	196.0	0.181	3.15	6.674	2.114	2.107	2.827	0.720
3.3	200.1	0.186	3.24	6.681	2.157	2.149	2.870	0.721
3.4	204.1	0.193	3.35	6.688	2.198	2.190	2.910	0.720
3.4	207.9	0.198	3.45	6.695	2.236	2.227	2.947	0.720
3.6	211.5	0.204	3.55	6.702	2.273	2.264	2.984	0.720
3.7	215.3	0.210	3.65	6.709	2.311	2.302	3.022	0.720
3.8	218.7	0.215	3.75	6.716	2.345	2.336	3.055	0.720
3.8	222.4	0.222	3.86	6.723	2.381	2.372	3.092	0.720
4.0	225.8	0.227	3.95	6.730	2.415	2.406	3.126	0.720
4.1	229.2	0.233	4.06	6.737	2.449	2.440	3.160	0.720
4.2	232.3	0.239	4.16	6.744	2.480	2.470	3.190	0.720
4.2	235.6	0.245	4.26	6.752	2.512	2.502	3.222	0.720
4.4	238.8	0.251	4.36	6.759	2.544	2.534	3.255	0.721
4.5	241.9	0.257	4.47	6.766	2.574	2.563	3.284	0.721
4.6	244.5	0.262	4.56	6.773	2.600	2.589	3.309	0.721
4.7	247.3	0.268	4.67	6.781	2.625	2.614	3.335	0.721
4.8	250.3	0.274	4.77	6.787	2.655	2.644	3.364	0.720
4.9	253.1	0.280	4.86	6.794	2.682	2.671	3.391	0.720
5.0	255.8	0.286	4.97	6.802	2.708	2.696	3.416	0.720
5.1	258.2	0.291	5.07	6.809	2.730	2.718	3.438	0.720
5.3	265.1	0.305	5.31	6.827	2.796	2.783	3.503	0.721
5.6	271.1	0.320	5.57	6.845	2.851	2.838	3.559	0.721
5.8	276.6	0.334	5.82	6.863	2.902	2.888	3.609	0.721
6.1	282.6	0.349	6.07	6.881	2.957	2.943	3.663	0.720
6.3	289.1	0.364	6.32	6.900	3.017	3.001	3.722	0.721
6.6	294.8	0.378	6.57	6.919	3.068	3.052	3.773	0.721
6.8	300.3	0.393	6.83	6.938	3.117	3.100	3.820	0.720
7.1	305.1	0.407	7.07	6.956	3.158	3.141	3.861	0.720
7.3	309.8	0.421	7.33	6.975	3.198	3.180	3.901	0.721
7.6	313.9	0.436	7.58	6.994	3.231	3.213	3.934	0.721
7.8	317.4	0.450	7.83	7.014	3.259	3.240	3.960	0.721
8.1	321.3	0.465	8.08	7.032	3.290	3.270	3.991	0.721
8.3	325.0	0.479	8.34	7.052	3.318	3.298	4.018	0.720
8.6	328.4	0.494	8.58	7.071	3.344	3.323	4.044	0.721
8.8	331.6	0.508	8.83	7.090	3.368	3.346	4.067	0.721
9.1	333.7	0.523	9.09	7.110	3.379	3.357	4.077	0.720
9.3	337.1	0.537	9.34	7.130	3.404	3.381	4.102	0.720
9.6	340.2	0.551	9.58	7.149	3.426	3.403	4.123	0.720
9.8	343.5	0.566	9.84	7.169	3.449	3.426	4.146	0.720
10.1	346.3	0.580	10.09	7.189	3.469	3.444	4.165	0.721
10.3	349.0	0.594	10.33	7.209	3.486	3.461	4.181	0.721
10.6	352.2	0.609	10.59	7.230	3.507	3.482	4.202	0.721
10.8	355.0	0.623	10.84	7.250	3.525	3.499	4.220	0.721
11.1	357.7	0.637	11.09	7.270	3.542	3.516	4.236	0.720
11.3	360.3	0.652	11.34	7.291	3.558	3.531	4.251	0.720
11.6	362.6	0.666	11.59	7.312	3.570	3.543	4.263	0.720
11.8	364.5	0.681	11.84	7.332	3.579	3.551	4.272	0.721

Source: TP-4.4-A, 2.0'-4.5'							Test ID: 1031-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.1	366.3	0.695	12.10	7.353	3.587	3.558	4.278	0.720
12.3	367.5	0.710	12.34	7.374	3.589	3.559	4.279	0.720
12.6	368.8	0.724	12.59	7.395	3.591	3.560	4.281	0.721
12.8	370.6	0.739	12.85	7.417	3.597	3.566	4.286	0.720
13.1	371.8	0.753	13.09	7.438	3.599	3.568	4.288	0.720
13.3	373.4	0.767	13.34	7.459	3.604	3.572	4.292	0.720
13.6	375.0	0.782	13.60	7.481	3.609	3.577	4.296	0.720
13.8	376.0	0.796	13.84	7.503	3.608	3.575	4.295	0.720
14.1	377.3	0.811	14.10	7.525	3.610	3.576	4.296	0.720
14.3	379.2	0.825	14.35	7.547	3.618	3.583	4.303	0.720
14.6	380.7	0.839	14.59	7.568	3.621	3.586	4.306	0.720
14.8	381.6	0.854	14.85	7.591	3.619	3.584	4.303	0.720
15.1	382.4	0.868	15.10	7.613	3.616	3.580	4.300	0.721
15.4	383.9	0.882	15.34	7.636	3.620	3.583	4.303	0.720
15.6	383.5	0.897	15.60	7.659	3.605	3.568	4.288	0.720
15.9	384.3	0.911	15.85	7.682	3.603	3.564	4.284	0.720
16.1	385.4	0.925	16.10	7.704	3.602	3.563	4.284	0.721
16.4	385.3	0.940	16.35	7.728	3.590	3.550	4.271	0.721
16.6	385.0	0.954	16.60	7.750	3.577	3.537	4.258	0.721
16.8	384.6	0.969	16.86	7.774	3.562	3.521	4.242	0.721
17.1	384.5	0.983	17.10	7.797	3.550	3.509	4.230	0.721
17.4	384.0	0.998	17.36	7.822	3.535	3.493	4.213	0.720
17.6	383.4	1.012	17.60	7.845	3.518	3.476	4.197	0.721
17.9	382.3	1.027	17.86	7.870	3.498	3.455	4.176	0.721
18.0	380.3	1.035	18.01	7.884	3.473	3.430	4.151	0.721

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.4-A, 2.0'-4.5'
Description: Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1032
Test ID: 1032-A

Date Received: 06/20/2022
Date Tested: 08/10/2022

Specific Gravity: 2.65
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

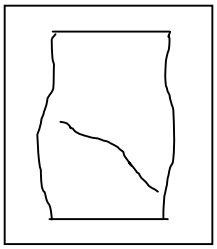
Target Test Parameters

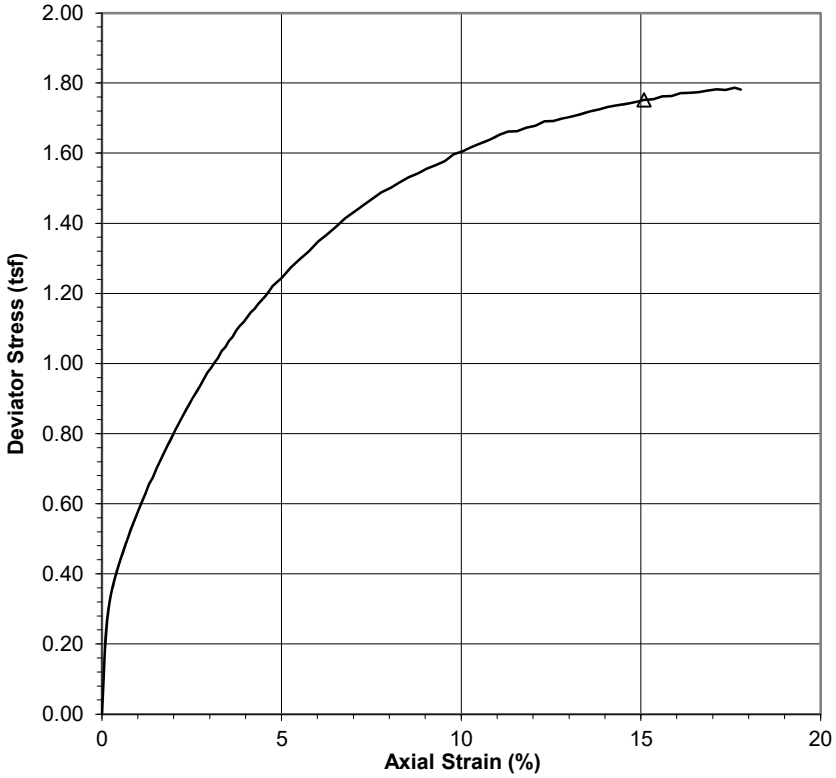
Nominal Chamber Pressure (psi): 15
Actual Axial Strain Rate of Test (%/min): 1.006

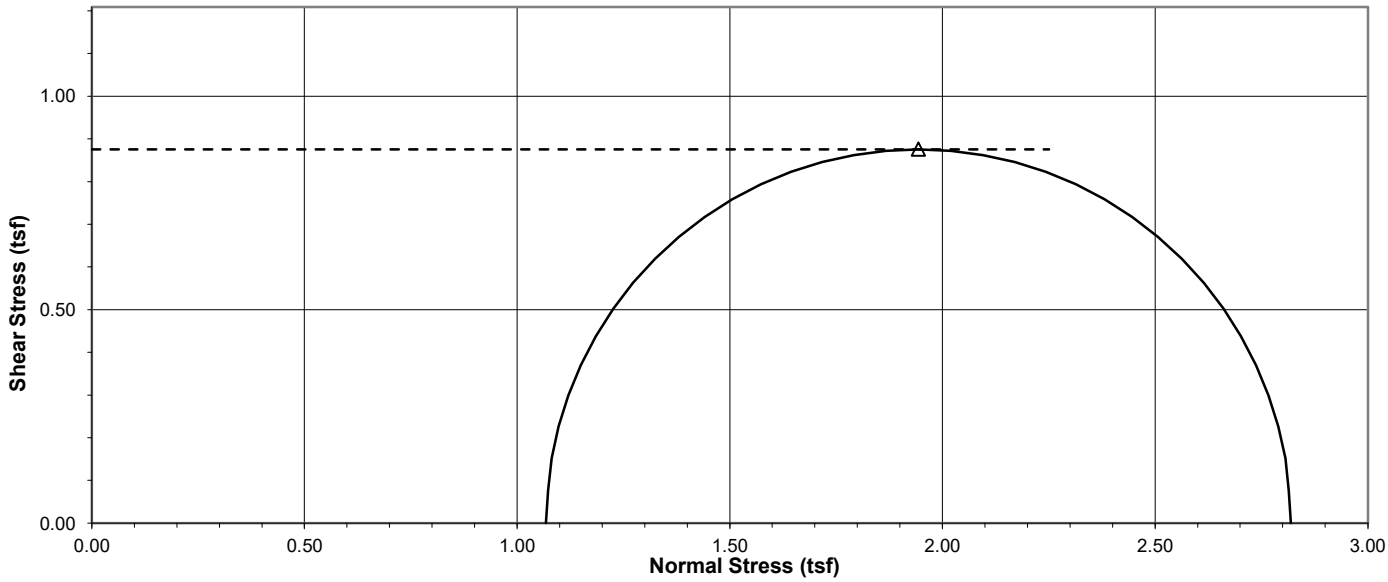
At Unconsolidated Undrained Failure

Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.09
Deviator Stress (tsf): 1.752
Minor Principal Stress, σ_3 (tsf): 1.067
Major Principal Stress, σ_1 (tsf): 2.819
Undrained Shear Strength, S_u (tsf): 0.876

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name Eagle Creek Flood Basin
Source TP-4.4-A, 2.0'-4.5'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 1032
Test ID 1032-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.757	Calculated Height (in)	5.720
Average Diameter (in)	2.869	Calculated Diameter (in)	2.851
Calculated Area (in^2)	6.465	Calculated Area (in^2)	6.382
Moist Weight (lb)	2.733	Moist Weight (lb)	2.733
Moist Unit Weight (pcf)	126.9	Moist Unit Weight (pcf)	129.4
Moisture Content (%)	21.9	Moisture Content (%)	21.9
Dry Weight (lb)	2.242	Dry Weight (lb)	2.242
Dry Unit Weight (pcf)	104.1	Dry Unit Weight (pcf)	106.1
Void Ratio	0.586	Void Ratio	0.556
Degree of Saturation (%)	98.9	Degree of Saturation (%)	104.3

Specific Gravity 2.65
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Pressure
σ_3 (tsf) 1.069

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1032**
Source: TP-4.4-A, 2.0'-4.5' **Test ID: 1032-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.382	0.000	0.000	1.069	1.069
0.0	5.0	0.002	0.03	6.384	0.056	0.056	1.125	1.069
0.1	10.5	0.003	0.05	6.386	0.118	0.118	1.187	1.069
0.1	15.0	0.004	0.07	6.387	0.169	0.169	1.238	1.069
0.1	19.2	0.006	0.11	6.389	0.216	0.216	1.285	1.069
0.1	22.5	0.007	0.13	6.390	0.253	0.253	1.322	1.069
0.2	24.8	0.009	0.16	6.392	0.280	0.279	1.349	1.070
0.2	26.6	0.010	0.18	6.394	0.299	0.299	1.368	1.070
0.2	28.2	0.012	0.20	6.395	0.318	0.317	1.387	1.070
0.2	29.3	0.014	0.24	6.397	0.330	0.329	1.398	1.069
0.3	30.8	0.015	0.26	6.399	0.347	0.346	1.416	1.069
0.3	31.6	0.016	0.28	6.400	0.355	0.354	1.423	1.069
0.3	32.7	0.018	0.31	6.402	0.367	0.367	1.436	1.069
0.3	33.9	0.019	0.34	6.404	0.381	0.380	1.450	1.070
0.4	34.5	0.020	0.36	6.405	0.388	0.387	1.456	1.069
0.4	35.6	0.022	0.39	6.407	0.400	0.399	1.468	1.069
0.4	36.3	0.024	0.41	6.409	0.408	0.407	1.477	1.070
0.5	37.2	0.025	0.44	6.411	0.418	0.417	1.486	1.070
0.5	37.9	0.027	0.47	6.412	0.425	0.424	1.494	1.069
0.5	38.6	0.028	0.49	6.413	0.433	0.432	1.501	1.069
0.5	39.4	0.030	0.52	6.416	0.442	0.441	1.511	1.069
0.6	40.2	0.031	0.54	6.417	0.451	0.450	1.519	1.069
0.6	40.9	0.033	0.57	6.419	0.458	0.457	1.527	1.070
0.6	41.5	0.034	0.60	6.420	0.465	0.464	1.533	1.069
0.6	42.3	0.035	0.62	6.422	0.474	0.473	1.542	1.069
0.7	43.1	0.037	0.65	6.424	0.483	0.481	1.551	1.070
0.7	43.7	0.038	0.67	6.425	0.489	0.488	1.556	1.068
0.7	44.4	0.040	0.70	6.427	0.498	0.496	1.565	1.070
0.8	47.3	0.046	0.80	6.434	0.529	0.527	1.596	1.069
0.9	49.7	0.052	0.91	6.441	0.555	0.553	1.621	1.068
1.0	52.1	0.058	1.01	6.447	0.582	0.579	1.647	1.068
1.1	54.4	0.063	1.10	6.453	0.606	0.604	1.672	1.069
1.2	56.8	0.069	1.21	6.461	0.633	0.630	1.698	1.068
1.3	59.1	0.075	1.31	6.467	0.659	0.655	1.724	1.069
1.4	61.0	0.081	1.42	6.474	0.678	0.675	1.743	1.069
1.5	63.3	0.087	1.51	6.480	0.703	0.700	1.768	1.068
1.6	65.2	0.092	1.61	6.487	0.724	0.720	1.788	1.068
1.7	67.4	0.098	1.72	6.494	0.748	0.743	1.812	1.068
1.8	69.4	0.104	1.82	6.500	0.768	0.764	1.832	1.068

Source: TP-4.4-A, 2.0'-4.5'							Test ID: 1032-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.9	71.1	0.109	1.91	6.507	0.787	0.782	1.851	1.068
2.0	73.4	0.116	2.02	6.514	0.811	0.806	1.874	1.068
2.1	75.2	0.121	2.12	6.520	0.830	0.825	1.893	1.068
2.2	77.0	0.127	2.22	6.527	0.850	0.844	1.912	1.068
2.3	79.0	0.133	2.33	6.534	0.870	0.865	1.933	1.068
2.4	80.6	0.139	2.42	6.541	0.888	0.882	1.950	1.068
2.5	82.5	0.144	2.52	6.547	0.907	0.901	1.970	1.068
2.6	84.1	0.150	2.63	6.554	0.924	0.918	1.986	1.069
2.7	85.8	0.156	2.73	6.561	0.942	0.935	2.003	1.068
2.8	87.6	0.161	2.82	6.567	0.960	0.953	2.022	1.069
2.9	89.5	0.168	2.93	6.575	0.980	0.973	2.041	1.068
3.0	90.8	0.173	3.03	6.581	0.993	0.986	2.055	1.069
3.1	92.4	0.179	3.14	6.589	1.010	1.003	2.071	1.068
3.2	93.8	0.185	3.23	6.595	1.024	1.016	2.084	1.068
3.3	95.7	0.190	3.33	6.602	1.043	1.035	2.103	1.068
3.4	96.9	0.197	3.44	6.609	1.056	1.047	2.116	1.068
3.5	98.6	0.202	3.54	6.616	1.073	1.065	2.133	1.068
3.6	99.7	0.208	3.63	6.623	1.084	1.076	2.144	1.068
3.7	101.6	0.214	3.74	6.630	1.103	1.094	2.162	1.068
3.8	103.0	0.220	3.84	6.637	1.117	1.108	2.176	1.068
3.9	104.1	0.226	3.94	6.644	1.128	1.118	2.188	1.069
4.0	105.5	0.231	4.04	6.651	1.142	1.132	2.200	1.068
4.1	106.8	0.237	4.14	6.658	1.155	1.145	2.213	1.068
4.2	108.0	0.243	4.25	6.665	1.167	1.156	2.225	1.068
4.3	109.3	0.248	4.34	6.672	1.180	1.169	2.237	1.068
4.4	110.6	0.255	4.45	6.680	1.192	1.181	2.250	1.069
4.5	111.7	0.260	4.55	6.686	1.203	1.192	2.261	1.069
4.6	113.2	0.266	4.66	6.694	1.218	1.207	2.275	1.069
4.7	114.6	0.272	4.75	6.701	1.232	1.220	2.288	1.068
5.0	117.2	0.287	5.01	6.719	1.256	1.244	2.312	1.068
5.2	120.3	0.301	5.26	6.736	1.286	1.273	2.341	1.067
5.5	123.0	0.315	5.51	6.754	1.311	1.297	2.365	1.068
5.7	125.5	0.330	5.77	6.773	1.334	1.320	2.387	1.067
6.0	128.5	0.344	6.02	6.791	1.362	1.347	2.415	1.068
6.2	130.7	0.358	6.26	6.809	1.383	1.367	2.435	1.067
6.5	133.4	0.373	6.52	6.827	1.407	1.391	2.459	1.068
6.7	136.0	0.387	6.77	6.846	1.430	1.414	2.482	1.068
7.0	138.2	0.401	7.02	6.864	1.450	1.433	2.501	1.068
7.2	140.4	0.416	7.28	6.883	1.469	1.451	2.519	1.068
7.5	142.6	0.431	7.53	6.902	1.488	1.470	2.538	1.068
7.7	144.9	0.445	7.77	6.920	1.507	1.488	2.556	1.067
8.0	146.5	0.460	8.03	6.940	1.520	1.501	2.569	1.068
8.3	148.5	0.474	8.28	6.958	1.536	1.516	2.584	1.068
8.5	150.4	0.488	8.53	6.977	1.552	1.531	2.599	1.068
8.8	152.0	0.503	8.79	6.997	1.564	1.542	2.610	1.068
9.0	153.7	0.517	9.04	7.016	1.577	1.555	2.623	1.068
9.3	155.2	0.531	9.29	7.035	1.588	1.566	2.633	1.068
9.5	156.8	0.546	9.55	7.056	1.600	1.577	2.645	1.068
9.8	159.2	0.560	9.79	7.075	1.620	1.596	2.663	1.067
10.0	160.6	0.575	10.05	7.095	1.630	1.606	2.673	1.068
10.3	162.4	0.589	10.30	7.115	1.643	1.618	2.685	1.067
10.5	163.9	0.604	10.55	7.135	1.654	1.629	2.696	1.068
10.7	165.5	0.618	10.80	7.155	1.665	1.639	2.707	1.067
11.0	167.3	0.633	11.06	7.176	1.679	1.652	2.720	1.068
11.3	168.8	0.647	11.31	7.196	1.689	1.661	2.729	1.067
11.5	169.5	0.661	11.56	7.216	1.691	1.663	2.729	1.067
11.8	171.0	0.676	11.82	7.237	1.701	1.672	2.739	1.067
12.0	172.1	0.690	12.06	7.257	1.708	1.678	2.745	1.067
12.3	174.0	0.705	12.32	7.279	1.721	1.691	2.758	1.068
12.5	174.6	0.719	12.57	7.300	1.722	1.692	2.759	1.067
12.8	175.9	0.733	12.81	7.320	1.730	1.699	2.765	1.066
13.0	177.0	0.748	13.07	7.342	1.736	1.704	2.771	1.067
13.3	178.2	0.762	13.32	7.363	1.743	1.711	2.778	1.067
13.5	179.7	0.777	13.58	7.385	1.752	1.719	2.786	1.067
13.8	180.9	0.791	13.83	7.406	1.758	1.725	2.792	1.068
14.0	182.2	0.806	14.08	7.428	1.766	1.732	2.799	1.067
14.3	183.3	0.820	14.33	7.450	1.771	1.736	2.803	1.067
14.5	184.3	0.834	14.58	7.472	1.776	1.740	2.807	1.067
14.8	185.4	0.849	14.84	7.494	1.782	1.746	2.813	1.067

Source: TP-4.4-A, 2.0'-4.5'							Test ID: 1032-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
15.0	186.7	0.863	15.09	7.516	1.788	1.752	2.819	1.067
15.3	187.5	0.878	15.35	7.539	1.791	1.754	2.822	1.068
15.5	189.0	0.892	15.59	7.561	1.799	1.762	2.829	1.068
15.8	189.7	0.907	15.85	7.584	1.801	1.763	2.829	1.067
16.0	191.2	0.921	16.10	7.607	1.810	1.771	2.838	1.068
16.3	192.0	0.936	16.36	7.630	1.812	1.772	2.839	1.067
16.5	192.8	0.950	16.61	7.653	1.814	1.774	2.841	1.068
16.8	193.9	0.964	16.85	7.676	1.819	1.778	2.844	1.066
17.0	195.0	0.979	17.11	7.700	1.824	1.782	2.850	1.068
17.3	195.4	0.993	17.36	7.723	1.822	1.780	2.847	1.067
17.5	196.8	1.007	17.61	7.746	1.830	1.787	2.853	1.067
17.7	196.7	1.017	17.78	7.763	1.825	1.781	2.849	1.067

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.5-A, 2.0'-4.0'
Description: Lean Clay with Sand (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1034
Test ID: 1034-A

Date Received: 06/20/2022
Date Tested: 08/09/2022

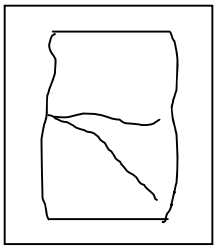
Specific Gravity: 2.71
ASTM D 854, Dry

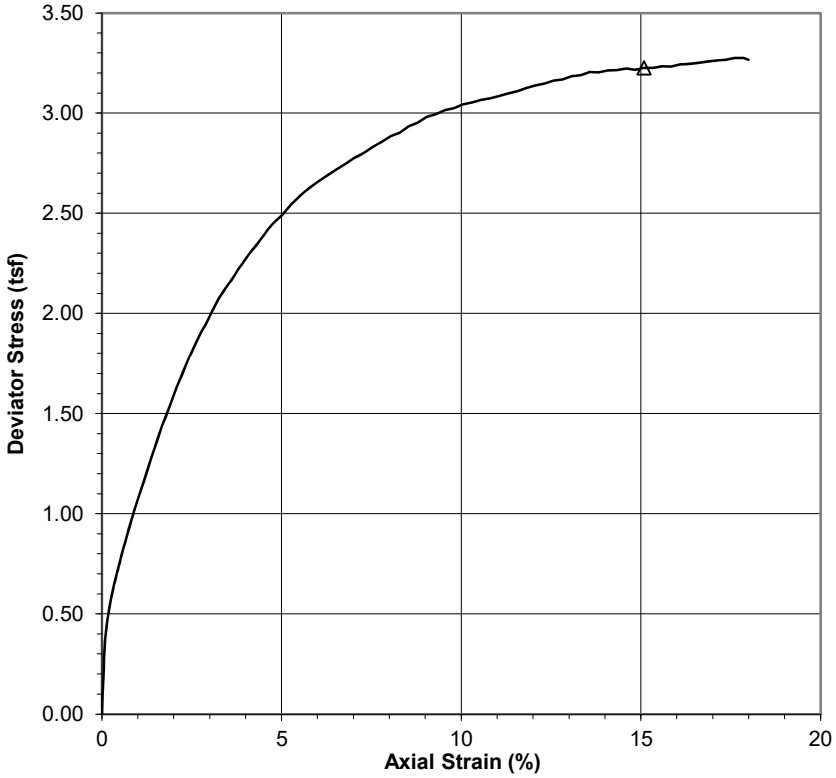
Liquid Limit: 36
Plastic Limit: 19
Plasticity Index: 17
ASTM D 4318

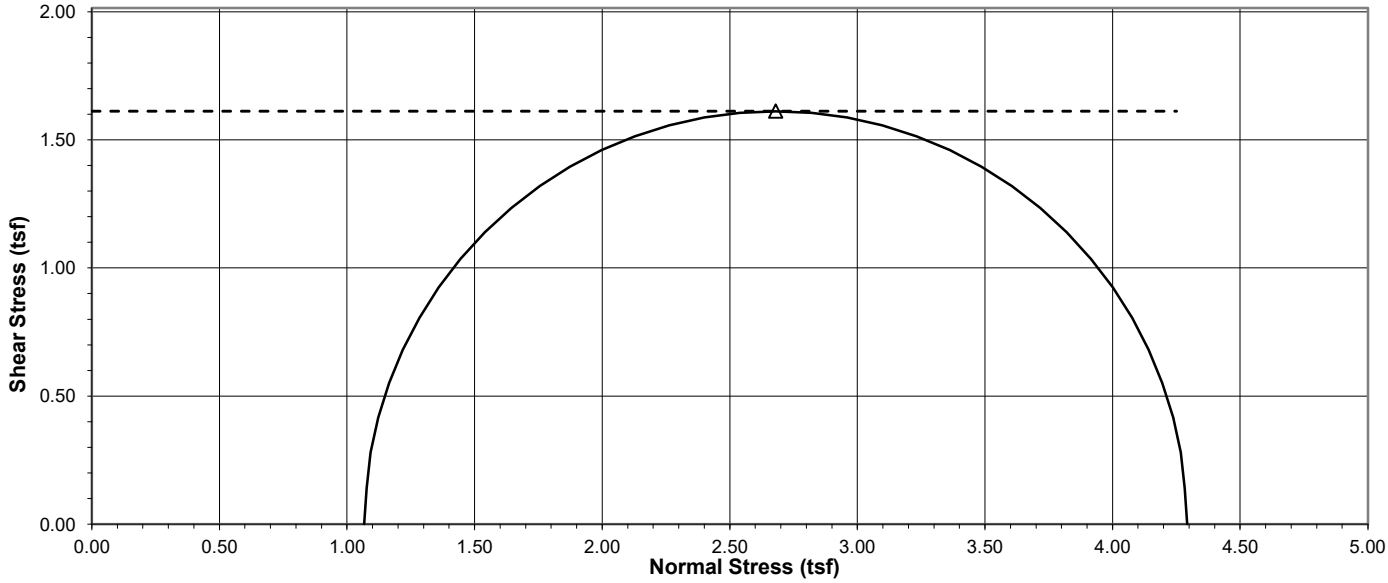
Target Test Parameters
Nominal Chamber Pressure (psi): 15
Actual Axial Strain Rate of Test (%/min): 1.003

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.09
Deviator Stress (tsf): 3.225
Minor Principal Stress, σ_3 (tsf): 1.067
Major Principal Stress, σ_1 (tsf): 4.292
Undrained Shear Strength, S_u (tsf): 1.612

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.5-A, 2.0'-4.0'	Lab ID	1034
Description	Lean Clay with Sand (CL), brown, moist, firm	Test ID	1034-A

Initial Specimen Conditions		Confined Specimen Conditions			
Average Height (in)	5.772	Calculated Height (in)	5.751	Specific Gravity	2.71
Average Diameter (in)	2.883	Calculated Diameter (in)	2.872	ASTM D 854, Dry	
Calculated Area (in^2)	6.528	Calculated Area (in^2)	6.480	Liquid Limit	36
Moist Weight (lb)	2.844	Moist Weight (lb)	2.844	Plastic Limit	19
Moist Unit Weight (pcf)	130.4	Moist Unit Weight (pcf)	131.9	Plasticity Index	17
Moisture Content (%)	18.4	Moisture Content (%)	18.4	ASTM D 4318	
Dry Weight (lb)	2.402	Dry Weight (lb)	2.402		
Dry Unit Weight (pcf)	110.2	Dry Unit Weight (pcf)	111.4	Confining Pressure	
Void Ratio	0.533	Void Ratio	0.516	σ_3 (tsf)	1.069
Degree of Saturation (%)	93.5	Degree of Saturation (%)	96.5		

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1034**
Source: TP-4.5-A, 2.0'-4.0' **Test ID: 1034-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.480	0.000	0.000	1.069	1.069
0.0	8.8	0.001	0.02	6.482	0.098	0.098	1.166	1.068
0.1	20.6	0.003	0.05	6.484	0.229	0.229	1.297	1.068
0.1	29.5	0.004	0.08	6.485	0.328	0.328	1.396	1.068
0.1	35.1	0.006	0.10	6.487	0.390	0.390	1.458	1.068
0.1	39.2	0.008	0.13	6.489	0.435	0.435	1.503	1.068
0.2	42.3	0.009	0.15	6.490	0.469	0.469	1.537	1.068
0.2	45.2	0.011	0.18	6.492	0.501	0.501	1.569	1.068
0.2	47.8	0.012	0.20	6.494	0.530	0.529	1.598	1.068
0.2	50.3	0.014	0.24	6.496	0.557	0.557	1.625	1.068
0.3	52.5	0.015	0.26	6.497	0.582	0.581	1.651	1.070
0.3	54.7	0.017	0.29	6.499	0.605	0.605	1.674	1.069
0.3	56.3	0.018	0.31	6.501	0.624	0.623	1.692	1.069
0.3	58.2	0.019	0.33	6.502	0.645	0.644	1.713	1.069
0.4	60.0	0.021	0.37	6.504	0.664	0.663	1.732	1.069
0.4	61.7	0.022	0.39	6.506	0.683	0.682	1.750	1.068
0.4	63.5	0.024	0.41	6.507	0.703	0.702	1.770	1.068
0.5	65.1	0.026	0.45	6.509	0.720	0.719	1.787	1.068
0.5	66.8	0.027	0.47	6.511	0.739	0.737	1.806	1.069
0.5	68.6	0.029	0.50	6.513	0.758	0.757	1.825	1.068
0.5	70.5	0.030	0.52	6.514	0.779	0.777	1.846	1.069
0.6	72.0	0.032	0.55	6.516	0.796	0.795	1.863	1.069
0.6	73.6	0.033	0.57	6.518	0.813	0.812	1.880	1.068
0.6	75.1	0.034	0.60	6.519	0.830	0.828	1.897	1.069
0.6	76.6	0.036	0.63	6.521	0.845	0.844	1.913	1.069
0.7	78.1	0.037	0.65	6.523	0.862	0.860	1.929	1.068
0.7	79.7	0.039	0.68	6.525	0.879	0.877	1.945	1.068
0.7	81.2	0.040	0.70	6.526	0.895	0.894	1.962	1.068
0.7	82.6	0.042	0.72	6.528	0.911	0.910	1.978	1.069
0.7	84.1	0.044	0.76	6.530	0.927	0.926	1.995	1.069
0.8	85.7	0.045	0.78	6.531	0.945	0.943	2.012	1.069
0.8	87.1	0.047	0.81	6.533	0.960	0.958	2.027	1.069
0.8	88.7	0.048	0.83	6.535	0.977	0.975	2.044	1.069
0.9	89.9	0.049	0.85	6.536	0.990	0.988	2.057	1.069
0.9	91.6	0.051	0.89	6.538	1.008	1.006	2.075	1.069
0.9	93.0	0.052	0.91	6.540	1.024	1.022	2.090	1.068
0.9	94.2	0.054	0.93	6.541	1.037	1.035	2.104	1.069
1.0	95.6	0.055	0.97	6.544	1.052	1.050	2.118	1.069
1.1	100.8	0.061	1.06	6.550	1.108	1.105	2.173	1.068

Source: TP-4.5-A, 2.0'-4.0'							Test ID: 1034-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.2	106.0	0.067	1.17	6.557	1.164	1.161	2.229	1.068
1.3	111.1	0.073	1.27	6.563	1.219	1.216	2.283	1.067
1.4	116.6	0.078	1.36	6.570	1.278	1.274	2.342	1.067
1.5	121.8	0.085	1.47	6.577	1.333	1.330	2.397	1.068
1.6	126.7	0.090	1.57	6.584	1.385	1.381	2.449	1.068
1.7	132.0	0.096	1.67	6.590	1.443	1.439	2.507	1.068
1.8	136.1	0.102	1.78	6.598	1.485	1.481	2.549	1.069
1.9	140.7	0.108	1.87	6.604	1.534	1.530	2.597	1.067
2.0	145.6	0.114	1.98	6.611	1.586	1.581	2.649	1.068
2.1	150.2	0.119	2.08	6.618	1.634	1.629	2.697	1.068
2.2	154.3	0.125	2.17	6.624	1.677	1.671	2.739	1.068
2.3	158.6	0.131	2.28	6.632	1.722	1.717	2.785	1.068
2.4	163.0	0.137	2.38	6.638	1.768	1.763	2.831	1.068
2.5	166.5	0.143	2.48	6.645	1.804	1.798	2.865	1.067
2.6	170.5	0.149	2.59	6.653	1.845	1.839	2.906	1.067
2.7	174.3	0.154	2.69	6.659	1.884	1.878	2.946	1.068
2.8	177.6	0.160	2.78	6.666	1.919	1.912	2.980	1.068
2.9	180.8	0.166	2.89	6.673	1.951	1.944	3.012	1.068
3.0	184.3	0.172	2.99	6.680	1.987	1.980	3.048	1.068
3.1	188.0	0.177	3.08	6.687	2.024	2.017	3.085	1.068
3.2	191.6	0.184	3.19	6.694	2.060	2.053	3.121	1.068
3.3	194.7	0.189	3.29	6.701	2.092	2.085	3.152	1.067
3.4	197.6	0.195	3.40	6.708	2.121	2.112	3.180	1.068
3.5	200.3	0.201	3.49	6.715	2.148	2.139	3.207	1.068
3.6	202.8	0.207	3.60	6.722	2.172	2.164	3.231	1.067
3.7	205.7	0.213	3.70	6.729	2.200	2.192	3.259	1.068
3.8	208.7	0.218	3.80	6.736	2.231	2.221	3.289	1.068
3.9	211.3	0.224	3.90	6.744	2.257	2.247	3.315	1.068
4.0	213.9	0.230	4.00	6.750	2.281	2.271	3.339	1.067
4.1	216.6	0.236	4.10	6.757	2.308	2.298	3.366	1.068
4.2	219.0	0.242	4.21	6.765	2.331	2.320	3.388	1.067
4.3	221.1	0.247	4.30	6.772	2.350	2.340	3.408	1.068
4.4	223.8	0.253	4.40	6.779	2.377	2.366	3.434	1.067
4.5	226.3	0.259	4.51	6.786	2.401	2.390	3.458	1.068
4.6	228.9	0.265	4.61	6.793	2.426	2.415	3.482	1.067
4.7	231.2	0.270	4.70	6.800	2.448	2.436	3.504	1.067
4.8	233.5	0.277	4.81	6.808	2.469	2.457	3.525	1.068
4.9	235.2	0.282	4.91	6.815	2.485	2.473	3.541	1.068
5.0	237.2	0.288	5.02	6.823	2.503	2.491	3.558	1.067
5.3	242.9	0.303	5.26	6.840	2.557	2.544	3.612	1.068
5.5	247.8	0.318	5.52	6.859	2.601	2.587	3.655	1.068
5.8	252.3	0.332	5.77	6.877	2.641	2.627	3.695	1.068
6.0	255.8	0.346	6.02	6.895	2.671	2.657	3.725	1.068
6.3	259.7	0.361	6.28	6.914	2.704	2.689	3.758	1.069
6.5	263.1	0.375	6.52	6.933	2.733	2.717	3.785	1.068
6.8	266.7	0.390	6.78	6.952	2.762	2.746	3.813	1.067
7.0	270.4	0.404	7.03	6.970	2.793	2.776	3.843	1.067
7.3	273.6	0.419	7.29	6.990	2.818	2.801	3.869	1.068
7.5	277.2	0.433	7.53	7.008	2.848	2.830	3.898	1.068
7.8	280.5	0.447	7.78	7.027	2.874	2.856	3.923	1.067
8.0	284.3	0.462	8.04	7.047	2.905	2.886	3.954	1.068
8.3	286.7	0.477	8.29	7.066	2.922	2.902	3.970	1.068
8.5	290.7	0.491	8.54	7.085	2.954	2.933	4.002	1.068
8.8	293.4	0.506	8.79	7.105	2.973	2.952	4.019	1.068
9.0	297.1	0.520	9.04	7.125	3.002	2.981	4.049	1.068
9.3	299.2	0.534	9.29	7.144	3.016	2.993	4.061	1.067
9.5	302.3	0.549	9.55	7.165	3.038	3.015	4.084	1.069
9.8	304.2	0.563	9.80	7.184	3.049	3.025	4.093	1.068
10.0	306.9	0.578	10.04	7.204	3.067	3.043	4.110	1.067
10.3	308.9	0.593	10.30	7.225	3.078	3.054	4.121	1.068
10.5	311.0	0.607	10.55	7.245	3.091	3.065	4.134	1.068
10.8	312.8	0.622	10.81	7.266	3.100	3.074	4.141	1.067
11.0	315.0	0.636	11.06	7.286	3.112	3.086	4.153	1.067
11.3	317.1	0.650	11.31	7.306	3.125	3.098	4.166	1.068
11.5	319.2	0.665	11.56	7.328	3.137	3.109	4.176	1.067
11.8	321.9	0.679	11.81	7.348	3.154	3.126	4.193	1.068
12.0	324.1	0.693	12.06	7.369	3.167	3.138	4.206	1.068
12.3	326.2	0.708	12.32	7.391	3.178	3.148	4.214	1.066
12.5	328.5	0.723	12.57	7.412	3.191	3.161	4.228	1.067

Source: TP-4.5-A, 2.0'-4.0'							Test ID: 1034-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.8	330.3	0.737	12.82	7.434	3.199	3.168	4.235	1.067
13.0	332.9	0.752	13.07	7.455	3.215	3.184	4.250	1.067
13.3	334.6	0.766	13.33	7.477	3.222	3.190	4.258	1.069
13.5	337.1	0.781	13.58	7.498	3.237	3.204	4.271	1.067
13.8	338.0	0.795	13.82	7.520	3.236	3.203	4.270	1.067
14.0	340.2	0.810	14.08	7.543	3.247	3.213	4.280	1.066
14.3	341.4	0.824	14.33	7.564	3.249	3.215	4.282	1.067
14.5	343.2	0.839	14.59	7.587	3.257	3.222	4.289	1.067
14.8	343.7	0.853	14.84	7.609	3.252	3.217	4.284	1.068
15.0	345.7	0.867	15.09	7.632	3.261	3.225	4.292	1.067
15.3	346.8	0.882	15.34	7.655	3.262	3.225	4.293	1.068
15.5	348.8	0.897	15.59	7.677	3.271	3.233	4.301	1.067
15.8	349.7	0.911	15.84	7.700	3.270	3.232	4.299	1.067
16.1	352.1	0.926	16.10	7.724	3.283	3.244	4.310	1.066
16.3	353.6	0.940	16.35	7.747	3.286	3.247	4.314	1.067
16.6	355.0	0.954	16.59	7.770	3.290	3.250	4.316	1.066
16.8	357.0	0.969	16.85	7.794	3.298	3.258	4.325	1.067
17.1	358.7	0.983	17.10	7.817	3.304	3.263	4.329	1.066
17.3	360.2	0.998	17.35	7.841	3.308	3.266	4.332	1.066
17.6	362.4	1.012	17.61	7.865	3.318	3.275	4.342	1.067
17.8	363.6	1.027	17.85	7.889	3.318	3.275	4.342	1.067
17.9	363.2	1.035	17.99	7.902	3.309	3.266	4.333	1.067

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-A, 1.5'-3.5'	Lab ID	1036
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1036-A
Specimen Type	Compacted		
		Date Received	06/20/2022
		Date Tested	07/29/2022

Specific Gravity	2.65	Liquid Limit	28
ASTM D 854, Dry		Plastic Limit	16
		Plasticity Index	12
		ASTM D 4318	

Target Test Parameters

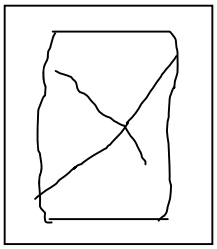
Nominal Chamber Pressure (psi)	20
Actual Axial Strain Rate of Test (%/min)	1.002

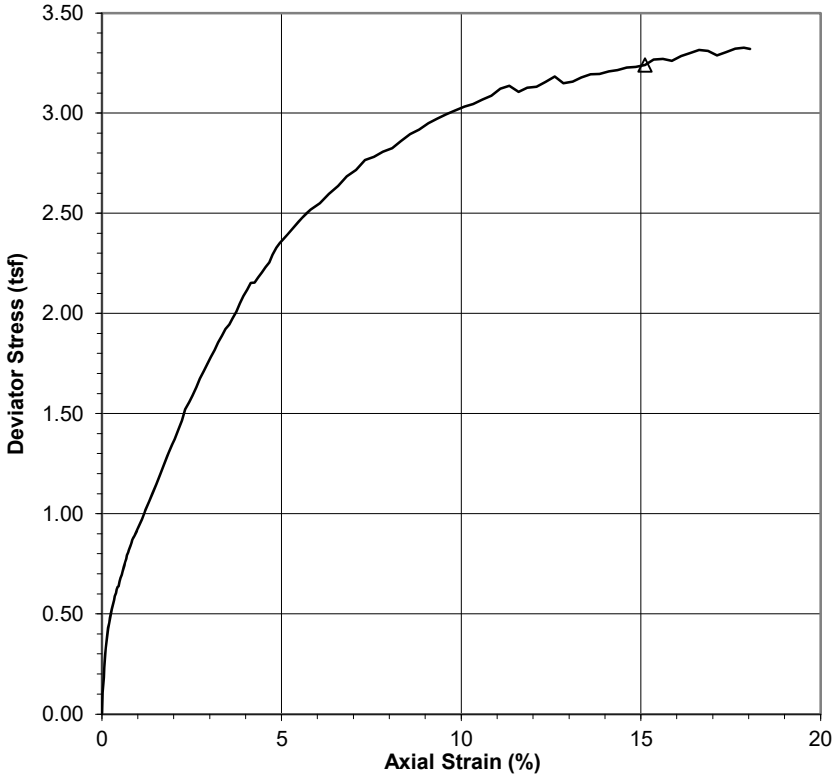
At Unconsolidated Undrained Failure

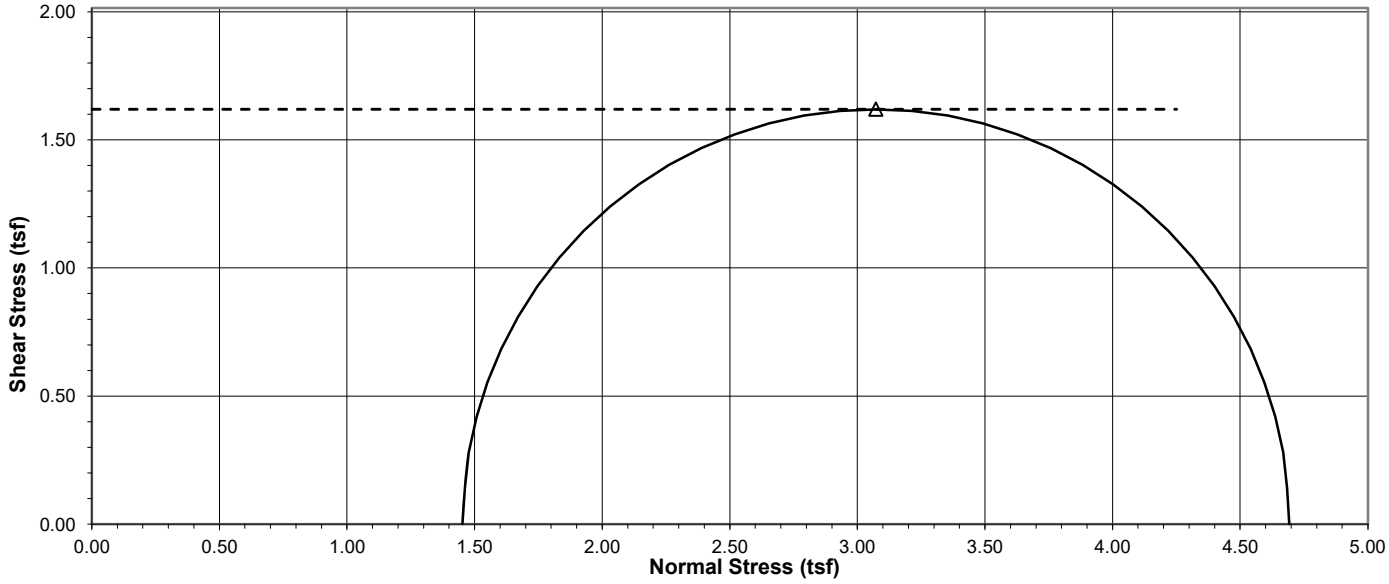
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.11
Deviator Stress (tsf)	3.240
Minor Principal Stress, σ_3 (tsf)	1.452
Major Principal Stress, σ_1 (tsf)	4.692
Undrained Shear Strength, S_u (tsf)	1.620

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-A, 1.5'-3.5'	Lab ID	1036
Description	Sandy Lean Clay (CL), brown, moist, firm	Test ID	1036-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.753	Calculated Height (in)	5.686
Average Diameter (in)	2.890	Calculated Diameter (in)	2.856
Calculated Area (in^2)	6.559	Calculated Area (in^2)	6.405
Moist Weight (lb)	2.933	Moist Weight (lb)	2.933
Moist Unit Weight (pcf)	134.3	Moist Unit Weight (pcf)	139.2
Moisture Content (%)	15.0	Moisture Content (%)	15.0
Dry Weight (lb)	2.551	Dry Weight (lb)	2.551
Dry Unit Weight (pcf)	116.9	Dry Unit Weight (pcf)	121.1
Void Ratio	0.413	Void Ratio	0.364
Degree of Saturation (%)	95.9	Degree of Saturation (%)	108.9

Specific Gravity	2.65
	ASTM D 854, Dry
Liquid Limit	28
Plastic Limit	16
Plasticity Index	12
	ASTM D 4318
Confining Pressure	
σ_3 (tsf)	1.456

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1036**
Source: TP-4.6-A, 1.5'-3.5' **Test ID: 1036-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.405	0.000	0.000	1.456	1.456
0.0	9.5	0.001	0.02	6.407	0.107	0.107	1.562	1.455
0.1	16.3	0.003	0.05	6.409	0.183	0.183	1.638	1.455
0.1	22.5	0.004	0.08	6.410	0.252	0.252	1.707	1.454
0.1	27.8	0.005	0.10	6.411	0.312	0.311	1.766	1.455
0.1	32.1	0.007	0.13	6.414	0.360	0.360	1.814	1.454
0.2	35.6	0.009	0.15	6.415	0.400	0.400	1.854	1.455
0.2	38.4	0.010	0.17	6.416	0.430	0.430	1.884	1.454
0.2	40.7	0.012	0.21	6.419	0.457	0.456	1.910	1.454
0.2	43.0	0.013	0.23	6.420	0.482	0.482	1.935	1.453
0.3	45.1	0.014	0.25	6.421	0.505	0.505	1.958	1.453
0.3	47.0	0.016	0.28	6.424	0.527	0.526	1.978	1.453
0.3	48.9	0.017	0.30	6.425	0.548	0.547	1.999	1.452
0.3	50.9	0.019	0.34	6.427	0.570	0.569	2.021	1.452
0.4	52.6	0.020	0.36	6.428	0.589	0.588	2.040	1.452
0.4	54.1	0.022	0.39	6.430	0.606	0.605	2.056	1.451
0.4	55.6	0.023	0.41	6.432	0.622	0.621	2.074	1.452
0.4	56.8	0.025	0.44	6.434	0.636	0.635	2.086	1.452
0.5	57.2	0.026	0.46	6.435	0.640	0.639	2.090	1.452
0.5	59.2	0.028	0.50	6.437	0.662	0.661	2.113	1.452
0.5	60.8	0.029	0.52	6.439	0.680	0.679	2.131	1.452
0.6	62.3	0.031	0.55	6.441	0.697	0.695	2.148	1.452
0.6	63.6	0.032	0.57	6.442	0.711	0.710	2.162	1.453
0.6	65.0	0.034	0.60	6.444	0.726	0.724	2.177	1.453
0.6	66.6	0.036	0.62	6.446	0.744	0.742	2.195	1.453
0.7	68.0	0.037	0.65	6.447	0.759	0.758	2.210	1.452
0.7	69.6	0.039	0.68	6.449	0.778	0.776	2.228	1.452
0.7	71.1	0.040	0.70	6.450	0.794	0.792	2.245	1.453
0.7	72.5	0.042	0.73	6.453	0.809	0.807	2.259	1.452
0.8	73.6	0.043	0.75	6.454	0.821	0.819	2.271	1.452
0.8	74.6	0.044	0.77	6.455	0.833	0.831	2.283	1.452
0.8	75.9	0.046	0.81	6.458	0.846	0.844	2.296	1.452
0.8	77.2	0.047	0.83	6.459	0.861	0.859	2.309	1.451
0.9	78.3	0.048	0.85	6.460	0.873	0.871	2.321	1.451
0.9	79.4	0.050	0.89	6.462	0.885	0.883	2.333	1.450
0.9	80.0	0.052	0.91	6.464	0.892	0.889	2.339	1.450
0.9	80.9	0.053	0.93	6.465	0.901	0.899	2.349	1.450
1.0	81.8	0.055	0.96	6.468	0.911	0.909	2.359	1.450
1.0	83.0	0.056	0.98	6.469	0.923	0.921	2.370	1.450

Source: TP-4.6-A, 1.5'-3.5'							Test ID: 1036-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.0	83.9	0.057	1.01	6.470	0.933	0.931	2.380	1.450
1.1	87.6	0.063	1.11	6.477	0.974	0.971	2.421	1.450
1.2	92.1	0.069	1.21	6.484	1.023	1.020	2.470	1.450
1.3	96.1	0.075	1.32	6.491	1.065	1.062	2.511	1.449
1.4	99.9	0.080	1.41	6.497	1.107	1.103	2.551	1.448
1.5	104.0	0.086	1.52	6.504	1.151	1.147	2.595	1.448
1.6	108.2	0.092	1.62	6.510	1.197	1.193	2.641	1.448
1.7	112.8	0.098	1.72	6.518	1.246	1.241	2.690	1.448
1.8	117.1	0.103	1.82	6.524	1.292	1.288	2.736	1.448
1.9	121.2	0.109	1.93	6.531	1.337	1.332	2.780	1.448
2.0	125.0	0.115	2.02	6.537	1.376	1.371	2.818	1.447
2.1	129.6	0.121	2.13	6.545	1.426	1.420	2.867	1.446
2.2	133.8	0.127	2.23	6.551	1.471	1.465	2.913	1.447
2.3	139.1	0.132	2.32	6.558	1.528	1.522	2.969	1.447
2.4	142.7	0.138	2.43	6.565	1.565	1.559	3.006	1.447
2.5	145.7	0.144	2.53	6.571	1.596	1.590	3.037	1.447
2.6	149.6	0.150	2.63	6.579	1.638	1.631	3.077	1.446
2.7	153.7	0.155	2.73	6.585	1.681	1.674	3.120	1.446
2.8	157.4	0.161	2.84	6.592	1.719	1.712	3.158	1.446
2.9	160.7	0.167	2.93	6.599	1.753	1.746	3.192	1.447
3.0	164.1	0.172	3.03	6.605	1.789	1.781	3.228	1.447
3.1	167.6	0.178	3.14	6.613	1.824	1.817	3.263	1.447
3.2	171.3	0.184	3.23	6.619	1.863	1.855	3.301	1.446
3.3	174.6	0.190	3.34	6.627	1.897	1.889	3.335	1.446
3.4	177.9	0.195	3.44	6.633	1.931	1.923	3.367	1.445
3.5	180.2	0.201	3.54	6.641	1.954	1.945	3.391	1.446
3.6	183.2	0.207	3.64	6.647	1.984	1.976	3.422	1.446
3.7	186.4	0.213	3.75	6.655	2.017	2.008	3.455	1.447
3.8	190.5	0.218	3.84	6.661	2.059	2.050	3.497	1.447
3.9	194.1	0.224	3.94	6.668	2.096	2.086	3.533	1.447
4.0	197.4	0.230	4.05	6.676	2.129	2.119	3.565	1.446
4.1	200.6	0.236	4.14	6.682	2.162	2.152	3.597	1.446
4.2	201.1	0.242	4.25	6.690	2.164	2.154	3.600	1.446
4.3	203.6	0.247	4.35	6.696	2.189	2.179	3.625	1.446
4.4	206.2	0.253	4.45	6.704	2.215	2.204	3.650	1.446
4.5	208.8	0.259	4.55	6.711	2.241	2.230	3.676	1.446
4.7	211.5	0.265	4.66	6.718	2.266	2.255	3.701	1.446
4.8	215.2	0.270	4.75	6.725	2.304	2.293	3.739	1.447
4.9	218.7	0.276	4.86	6.733	2.339	2.327	3.774	1.447
5.0	221.3	0.282	4.96	6.739	2.364	2.352	3.799	1.447
5.1	223.5	0.288	5.06	6.747	2.385	2.373	3.820	1.447
5.3	228.9	0.302	5.31	6.764	2.436	2.423	3.871	1.448
5.6	234.6	0.316	5.57	6.783	2.490	2.476	3.925	1.448
5.8	239.2	0.330	5.81	6.800	2.533	2.519	3.967	1.448
6.1	243.0	0.345	6.07	6.819	2.565	2.551	3.998	1.448
6.3	248.0	0.359	6.31	6.837	2.612	2.596	4.044	1.448
6.6	252.5	0.374	6.57	6.856	2.652	2.636	4.083	1.447
6.8	257.8	0.388	6.82	6.874	2.700	2.684	4.130	1.446
7.1	261.6	0.402	7.07	6.893	2.733	2.716	4.164	1.448
7.3	267.1	0.416	7.32	6.911	2.783	2.765	4.213	1.448
7.6	269.6	0.431	7.58	6.930	2.801	2.782	4.229	1.446
7.8	272.7	0.445	7.82	6.949	2.826	2.807	4.254	1.447
8.1	275.3	0.459	8.08	6.968	2.844	2.825	4.272	1.447
8.3	279.5	0.473	8.32	6.987	2.881	2.861	4.308	1.447
8.6	283.8	0.488	8.58	7.006	2.916	2.896	4.343	1.447
8.8	286.7	0.502	8.83	7.025	2.938	2.917	4.365	1.448
9.1	290.8	0.516	9.08	7.045	2.972	2.950	4.399	1.449
9.3	293.8	0.530	9.33	7.064	2.994	2.972	4.421	1.449
9.6	296.9	0.545	9.59	7.084	3.017	2.994	4.443	1.449
9.8	299.6	0.559	9.83	7.104	3.037	3.013	4.462	1.448
10.1	302.4	0.574	10.09	7.124	3.056	3.032	4.481	1.449
10.3	304.6	0.588	10.33	7.144	3.070	3.045	4.494	1.449
10.6	307.7	0.602	10.59	7.164	3.092	3.067	4.516	1.449
10.8	310.6	0.616	10.84	7.184	3.113	3.087	4.537	1.450
11.1	315.1	0.631	11.09	7.204	3.149	3.122	4.572	1.450
11.3	317.4	0.645	11.34	7.224	3.163	3.136	4.586	1.450
11.6	315.4	0.659	11.59	7.245	3.134	3.106	4.557	1.450
11.8	318.3	0.673	11.84	7.266	3.155	3.126	4.577	1.451
12.1	319.9	0.688	12.10	7.287	3.161	3.131	4.582	1.450

Source: TP-4.6-A, 1.5'-3.5'							Test ID: 1036-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.3	323.3	0.702	12.34	7.307	3.186	3.156	4.607	1.451
12.6	327.1	0.716	12.60	7.329	3.214	3.183	4.634	1.451
12.8	324.5	0.730	12.84	7.349	3.179	3.148	4.599	1.451
13.1	326.5	0.745	13.10	7.371	3.189	3.158	4.608	1.450
13.3	329.6	0.759	13.35	7.392	3.210	3.178	4.629	1.450
13.6	332.2	0.773	13.60	7.414	3.226	3.194	4.645	1.451
13.8	333.4	0.787	13.85	7.435	3.229	3.195	4.646	1.451
14.1	335.8	0.802	14.11	7.457	3.242	3.208	4.659	1.452
14.3	337.5	0.816	14.35	7.479	3.249	3.214	4.666	1.452
14.6	339.9	0.831	14.61	7.501	3.263	3.228	4.679	1.452
14.8	341.3	0.845	14.86	7.523	3.266	3.230	4.683	1.452
15.1	343.4	0.859	15.11	7.546	3.277	3.240	4.692	1.452
15.3	347.2	0.873	15.36	7.568	3.304	3.266	4.719	1.453
15.6	348.8	0.888	15.62	7.591	3.308	3.271	4.724	1.453
15.8	348.7	0.902	15.86	7.613	3.298	3.260	4.713	1.453
16.1	352.5	0.916	16.12	7.636	3.324	3.285	4.738	1.453
16.3	355.1	0.930	16.36	7.658	3.338	3.299	4.752	1.453
16.6	358.0	0.945	16.62	7.682	3.355	3.315	4.768	1.453
16.8	358.6	0.959	16.87	7.705	3.351	3.310	4.763	1.453
17.1	357.3	0.974	17.12	7.729	3.329	3.288	4.741	1.453
17.3	360.3	0.987	17.37	7.752	3.347	3.305	4.758	1.453
17.6	363.3	1.002	17.62	7.776	3.364	3.321	4.774	1.453
17.8	365.1	1.016	17.87	7.799	3.371	3.328	4.781	1.453
18.0	365.1	1.026	18.04	7.815	3.364	3.320	4.774	1.454

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.6-B, 1.5'-3.5'
Description: Sandy Lean Clay (CL), brown, moist, firm
Specimen Type: Compacted

Project No.: 173409690
Lab ID: 1037
Test ID: 1037-A

Date Received: 06/20/2022
Date Tested: 08/08/2022

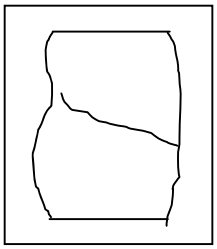
Specific Gravity: 2.77
ASTM D 854, Dry

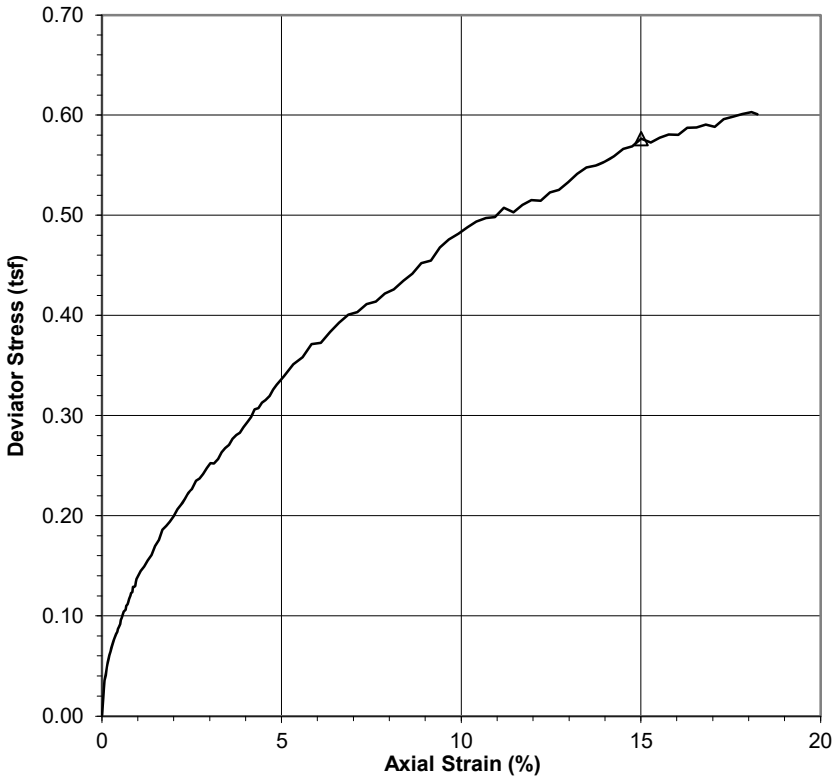
Liquid Limit: 29
Plastic Limit: 17
Plasticity Index: 12
ASTM D 4318

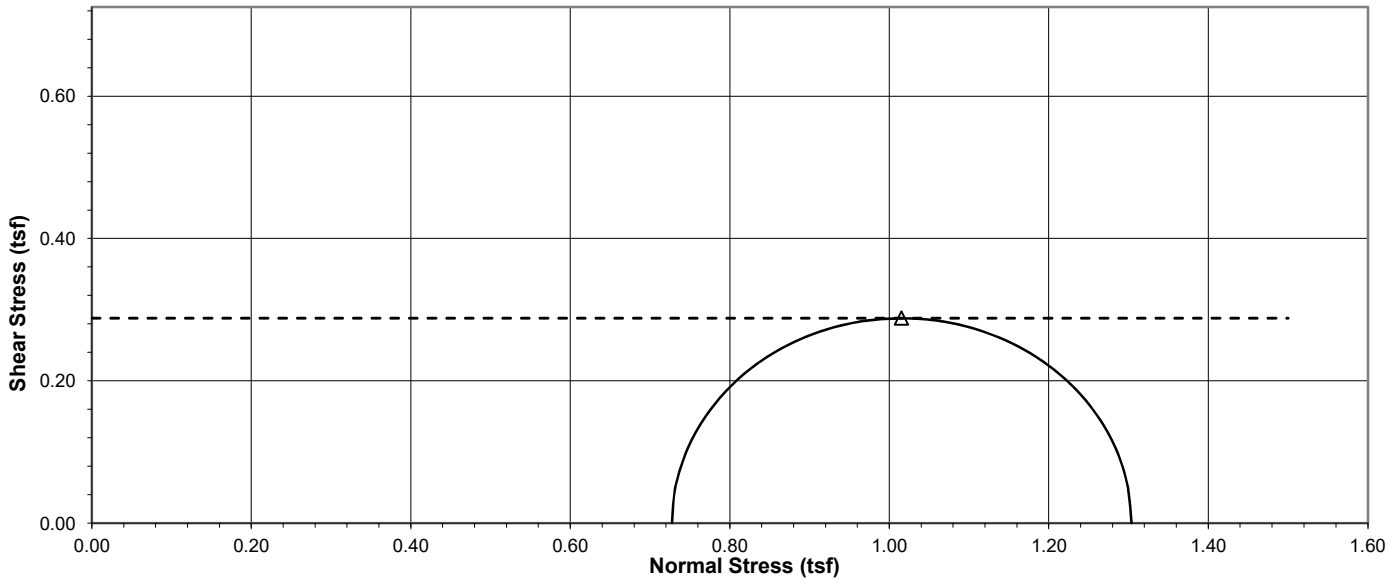
Target Test Parameters
Nominal Chamber Pressure (psi): 10
Actual Axial Strain Rate of Test (%/min): 1.017

At Unconsolidated Undrained Failure
Failure Criterion: 15% Axial Strain
Axial Strain (%): 15.01
Deviator Stress (tsf): 0.576
Minor Principal Stress, σ_3 (tsf): 0.727
Major Principal Stress, σ_1 (tsf): 1.304
Undrained Shear Strength, S_u (tsf): 0.288

Failure Sketch







Comments

Reviewed KG

Stantec

Unconsolidated Undrained Triaxial Compression

ASTM D 2850

Project Name: Eagle Creek Flood Basin
Source: TP-4.6-B, 1.5'-3.5'
Description: Sandy Lean Clay (CL), brown, moist, firm

Project No.: 173409690
Lab ID: 1037
Test ID: 1037-A

Initial Specimen Conditions		Confined Specimen Conditions	
Average Height (in)	5.778	Calculated Height (in)	5.653
Average Diameter (in)	2.881	Calculated Diameter (in)	2.817
Calculated Area (in^2)	6.519	Calculated Area (in^2)	6.234
Moist Weight (lb)	2.798	Moist Weight (lb)	2.798
Moist Unit Weight (pcf)	128.4	Moist Unit Weight (pcf)	137.2
Moisture Content (%)	19.1	Moisture Content (%)	19.1
Dry Weight (lb)	2.350	Dry Weight (lb)	2.350
Dry Unit Weight (pcf)	107.8	Dry Unit Weight (pcf)	115.2
Void Ratio	0.601	Void Ratio	0.498
Degree of Saturation (%)	87.8	Degree of Saturation (%)	106.0

Specific Gravity: 2.77
ASTM D 854, Dry

Liquid Limit: 29
Plastic Limit: 17
Plasticity Index: 12
ASTM D 4318

Confining Pressure
σ_3 (tsf): 0.727

Moisture contents obtained using whole specimen.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 173409690 **Lab ID: 1037**
Source: TP-4.6-B, 1.5'-3.5' **Test ID: 1037-A**

Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
0.0	0.0	0.000	0.00	6.234	0.000	0.000	0.727	0.727
0.0	1.5	0.002	0.03	6.236	0.018	0.018	0.744	0.726
0.1	2.4	0.003	0.06	6.237	0.028	0.027	0.754	0.727
0.1	3.1	0.004	0.08	6.239	0.036	0.036	0.762	0.727
0.1	3.6	0.006	0.11	6.241	0.041	0.041	0.768	0.727
0.1	4.3	0.008	0.13	6.242	0.049	0.049	0.775	0.726
0.2	4.5	0.009	0.16	6.244	0.052	0.052	0.778	0.727
0.2	5.0	0.011	0.19	6.246	0.058	0.057	0.784	0.727
0.2	5.3	0.012	0.21	6.247	0.061	0.060	0.788	0.727
0.2	5.7	0.014	0.24	6.249	0.065	0.065	0.792	0.727
0.3	5.9	0.015	0.26	6.250	0.068	0.068	0.795	0.727
0.3	6.2	0.016	0.29	6.252	0.072	0.071	0.798	0.726
0.3	6.5	0.018	0.32	6.254	0.075	0.074	0.801	0.727
0.3	6.7	0.019	0.34	6.255	0.078	0.077	0.803	0.726
0.4	7.1	0.021	0.37	6.257	0.082	0.081	0.807	0.727
0.4	7.2	0.022	0.40	6.259	0.083	0.082	0.809	0.727
0.4	7.4	0.024	0.43	6.261	0.085	0.084	0.810	0.726
0.5	7.6	0.025	0.45	6.262	0.088	0.087	0.814	0.727
0.5	7.8	0.027	0.47	6.263	0.090	0.089	0.816	0.727
0.5	8.1	0.029	0.51	6.266	0.093	0.092	0.818	0.726
0.5	8.5	0.030	0.53	6.267	0.097	0.096	0.823	0.727
0.5	8.7	0.031	0.55	6.268	0.100	0.098	0.825	0.727
0.6	9.0	0.033	0.59	6.271	0.103	0.101	0.827	0.726
0.6	9.2	0.034	0.61	6.272	0.106	0.104	0.831	0.727
0.6	9.3	0.036	0.64	6.274	0.107	0.105	0.833	0.727
0.6	9.4	0.037	0.66	6.275	0.108	0.106	0.833	0.727
0.7	9.7	0.039	0.68	6.277	0.112	0.110	0.838	0.728
0.7	9.9	0.040	0.72	6.279	0.113	0.111	0.839	0.727
0.7	10.0	0.042	0.74	6.280	0.115	0.113	0.840	0.727
0.7	10.4	0.043	0.76	6.282	0.119	0.117	0.843	0.726
0.8	10.7	0.045	0.79	6.284	0.122	0.120	0.848	0.727
0.8	10.9	0.046	0.82	6.285	0.125	0.123	0.850	0.727
0.8	11.0	0.048	0.85	6.287	0.126	0.124	0.851	0.727
0.8	11.5	0.049	0.87	6.288	0.131	0.129	0.857	0.728
0.9	11.4	0.050	0.89	6.290	0.131	0.129	0.856	0.727
0.9	11.5	0.052	0.92	6.292	0.132	0.130	0.858	0.728
0.9	11.9	0.054	0.95	6.293	0.136	0.134	0.861	0.727
1.0	12.2	0.055	0.97	6.295	0.139	0.137	0.865	0.728
1.1	12.9	0.061	1.08	6.302	0.147	0.145	0.873	0.728

Source: TP-4.6-B, 1.5'-3.5'							Test ID: 1037-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
1.2	13.3	0.066	1.18	6.308	0.152	0.149	0.876	0.727
1.3	13.9	0.072	1.27	6.314	0.158	0.155	0.882	0.727
1.4	14.4	0.078	1.38	6.321	0.164	0.161	0.888	0.727
1.5	15.2	0.084	1.48	6.328	0.173	0.170	0.897	0.727
1.6	15.8	0.090	1.59	6.335	0.180	0.176	0.903	0.727
1.7	16.8	0.095	1.69	6.341	0.190	0.186	0.913	0.727
1.8	17.1	0.102	1.80	6.348	0.194	0.190	0.916	0.726
1.9	17.5	0.107	1.89	6.354	0.199	0.194	0.920	0.725
2.0	18.1	0.113	1.99	6.361	0.204	0.200	0.926	0.726
2.1	18.7	0.119	2.10	6.368	0.212	0.207	0.934	0.727
2.2	19.2	0.125	2.20	6.374	0.216	0.211	0.938	0.727
2.3	19.7	0.131	2.31	6.381	0.222	0.217	0.944	0.727
2.4	20.3	0.136	2.41	6.388	0.229	0.223	0.950	0.727
2.5	20.7	0.142	2.51	6.394	0.233	0.226	0.953	0.727
2.6	21.5	0.148	2.62	6.402	0.241	0.235	0.961	0.726
2.7	21.7	0.154	2.72	6.408	0.244	0.237	0.964	0.727
2.8	22.1	0.159	2.82	6.414	0.249	0.242	0.968	0.726
2.9	22.7	0.165	2.93	6.422	0.255	0.248	0.974	0.726
3.0	23.2	0.171	3.02	6.428	0.260	0.253	0.979	0.727
3.1	23.2	0.177	3.12	6.435	0.260	0.252	0.979	0.727
3.2	23.7	0.183	3.23	6.442	0.265	0.257	0.982	0.725
3.3	24.3	0.188	3.33	6.449	0.272	0.263	0.989	0.726
3.4	24.7	0.194	3.43	6.455	0.276	0.268	0.993	0.726
3.5	25.1	0.200	3.54	6.463	0.279	0.271	0.998	0.727
3.6	25.7	0.206	3.64	6.469	0.286	0.277	1.003	0.726
3.7	26.1	0.212	3.75	6.476	0.290	0.281	1.007	0.726
3.8	26.3	0.217	3.84	6.483	0.292	0.283	1.009	0.726
3.9	26.9	0.223	3.94	6.490	0.298	0.288	1.015	0.727
4.0	27.4	0.229	4.05	6.497	0.304	0.294	1.020	0.726
4.1	27.9	0.235	4.15	6.504	0.309	0.298	1.025	0.726
4.2	28.6	0.240	4.25	6.510	0.317	0.306	1.032	0.726
4.3	28.8	0.246	4.36	6.518	0.318	0.308	1.033	0.726
4.4	29.3	0.252	4.46	6.525	0.324	0.313	1.039	0.726
4.5	29.6	0.258	4.56	6.531	0.327	0.315	1.041	0.726
4.6	30.1	0.264	4.67	6.539	0.331	0.319	1.045	0.726
4.7	30.7	0.269	4.76	6.546	0.338	0.326	1.053	0.728
4.8	31.2	0.275	4.86	6.552	0.343	0.331	1.059	0.728
4.9	31.7	0.281	4.97	6.560	0.348	0.335	1.063	0.727
5.0	32.1	0.287	5.07	6.567	0.352	0.339	1.066	0.727
5.3	33.3	0.301	5.33	6.585	0.364	0.351	1.078	0.727
5.5	34.1	0.316	5.58	6.603	0.372	0.358	1.085	0.727
5.7	35.4	0.330	5.84	6.620	0.386	0.371	1.099	0.728
6.0	35.7	0.345	6.10	6.639	0.388	0.373	1.100	0.728
6.2	36.9	0.359	6.35	6.656	0.399	0.384	1.110	0.727
6.5	37.9	0.373	6.60	6.674	0.409	0.393	1.120	0.727
6.7	38.8	0.388	6.86	6.693	0.418	0.401	1.128	0.728
7.0	39.2	0.402	7.11	6.711	0.421	0.403	1.131	0.727
7.2	40.1	0.416	7.36	6.729	0.429	0.411	1.139	0.728
7.5	40.5	0.431	7.63	6.748	0.433	0.414	1.142	0.728
7.7	41.5	0.445	7.88	6.767	0.441	0.422	1.150	0.728
8.0	42.0	0.460	8.13	6.785	0.446	0.426	1.154	0.728
8.3	43.0	0.474	8.39	6.805	0.455	0.435	1.163	0.728
8.5	43.9	0.489	8.64	6.823	0.463	0.442	1.170	0.728
8.7	45.0	0.503	8.89	6.842	0.474	0.452	1.180	0.728
9.0	45.5	0.518	9.16	6.862	0.477	0.455	1.182	0.727
9.2	46.9	0.532	9.41	6.881	0.491	0.468	1.195	0.727
9.5	47.9	0.546	9.66	6.900	0.499	0.476	1.203	0.727
9.7	48.6	0.561	9.92	6.920	0.506	0.481	1.208	0.727
10.0	49.4	0.575	10.17	6.940	0.513	0.488	1.215	0.727
10.2	50.2	0.589	10.42	6.959	0.519	0.494	1.221	0.728
10.5	50.7	0.604	10.69	6.980	0.523	0.497	1.225	0.727
10.7	51.0	0.618	10.94	7.000	0.525	0.498	1.226	0.728
11.0	52.1	0.633	11.19	7.019	0.535	0.507	1.235	0.727
11.3	51.9	0.647	11.45	7.040	0.531	0.503	1.230	0.727
11.5	52.8	0.662	11.70	7.060	0.539	0.510	1.238	0.727
11.8	53.5	0.676	11.95	7.080	0.544	0.515	1.243	0.728
12.0	53.7	0.691	12.22	7.101	0.544	0.515	1.242	0.727
12.3	54.7	0.705	12.47	7.122	0.553	0.523	1.250	0.728
12.5	55.2	0.719	12.72	7.142	0.557	0.525	1.253	0.727

Source: TP-4.6-B, 1.5'-3.5'							Test ID: 1037-A	
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	σ_1 (tsf)	Chamber Pressure σ_3 (tsf)
12.8	56.2	0.734	12.98	7.164	0.565	0.533	1.261	0.728
13.0	57.3	0.748	13.23	7.184	0.574	0.541	1.269	0.728
13.3	58.1	0.762	13.48	7.205	0.581	0.548	1.275	0.727
13.5	58.6	0.777	13.74	7.227	0.583	0.550	1.277	0.727
13.8	59.2	0.791	14.00	7.248	0.588	0.553	1.281	0.727
14.0	60.0	0.805	14.25	7.270	0.594	0.559	1.286	0.727
14.3	60.9	0.820	14.51	7.292	0.602	0.566	1.294	0.727
14.5	61.5	0.834	14.76	7.313	0.605	0.569	1.296	0.727
14.8	62.5	0.849	15.01	7.335	0.613	0.576	1.304	0.727
15.0	62.3	0.864	15.27	7.358	0.610	0.573	1.300	0.727
15.3	63.1	0.878	15.53	7.380	0.616	0.578	1.305	0.727
15.5	63.7	0.892	15.78	7.402	0.619	0.580	1.308	0.727
15.8	63.9	0.907	16.04	7.425	0.620	0.580	1.308	0.728
16.0	64.9	0.921	16.29	7.447	0.627	0.587	1.315	0.727
16.3	65.2	0.935	16.54	7.470	0.628	0.588	1.315	0.727
16.5	65.8	0.950	16.81	7.493	0.632	0.591	1.318	0.728
16.8	65.8	0.964	17.06	7.516	0.630	0.588	1.315	0.727
17.0	66.8	0.978	17.31	7.539	0.638	0.596	1.323	0.727
17.3	67.4	0.993	17.57	7.563	0.641	0.598	1.325	0.727
17.5	67.9	1.008	17.82	7.586	0.645	0.601	1.328	0.727
17.8	68.4	1.022	18.08	7.610	0.647	0.603	1.330	0.727
17.9	68.4	1.032	18.25	7.625	0.645	0.601	1.328	0.727

Attachment E-2. Laboratory Testing Results

Unconfined Compression

Stantec

Unconfined Compressive Strength of Cohesive Soil

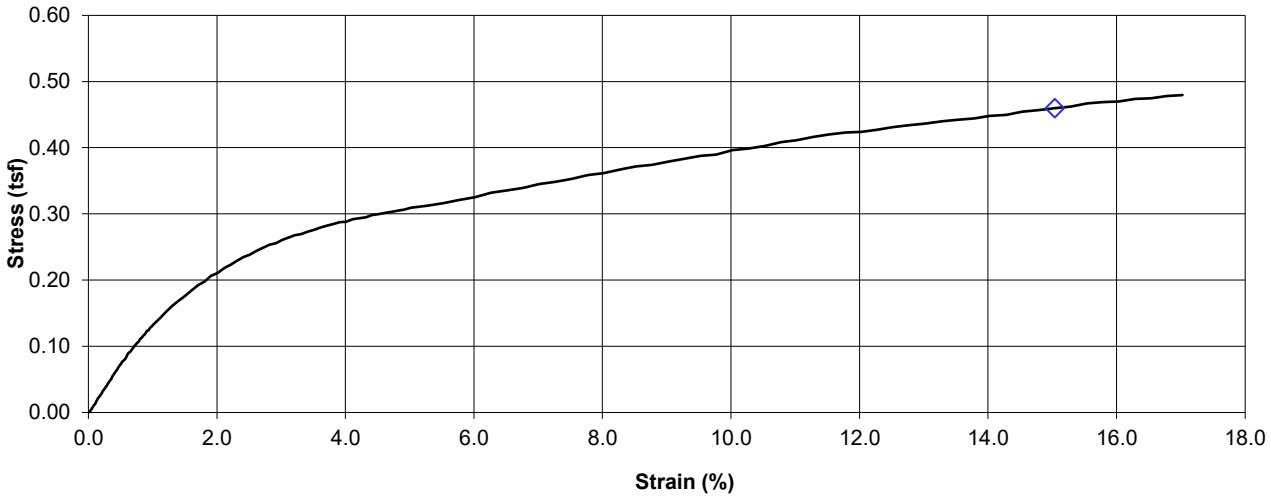
ASTM D 2166

Project Name Eagle Creek | Project Number 173409690
Source B-3.43a, 4.0'-6.0' | Lab ID 444
Visual Description Lean Clay with Sand (CL), brown, moist, soft to firm
Recovered 0.5'
Test Interval 4.0' - 4.5'

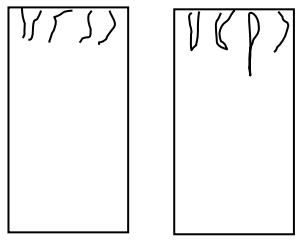
Specimen Type: Undisturbed | LL 41 | PL 19 | PI 22 | Date Extruded 35-21
Date Tested 03/05/2021

Initial Wet Density (pcf)	120.9		
Initial Moisture Content (%)	27.7	Initial MC Taken	After Test, From Center of Specimen
Initial Dry Density (pcf)	94.7		
At Test Moisture Content (%)	N/A	At Test MC Taken	N/A
At Test Dry Density (pcf)	N/A		
Specific Gravity	N/A		
Degree of Saturation (%)	N/A	Unconfined Compressive Strength (tsf)	0.46
Average Height (in)	5.759	Undrained Shear Strength (tsf)	0.23
Average Diameter (in)	2.872	Strain at Maximum Stress (%)	15.0
Height to Diameter Ratio	2.0	Strain rate to failure (% / min.)	1.00

Stress vs. Strain



Failure Sketch



Pocket Penetrometer Reading (tsf) N/A
Torvane Reading (kg/cm^2) N/A

Comments

Reviewed By RJ

Template: tmp_uc_input.xlsm
Version: 20170217
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 03/18/2021

Attachment E-2. Laboratory Testing Results

Direct Shear

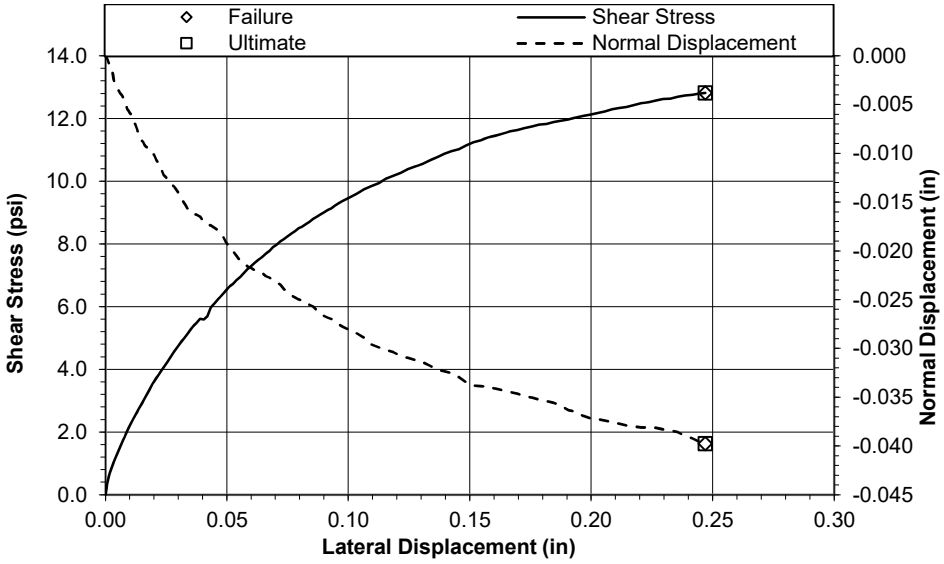
Stantec

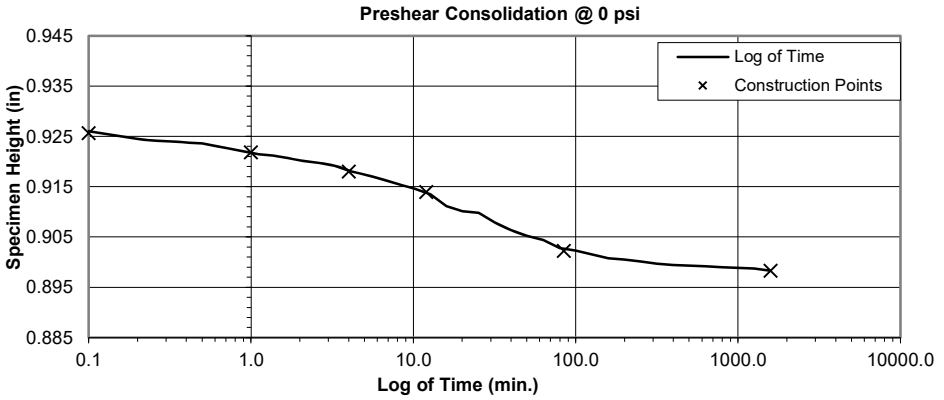
Direct Shear of Soils Under Consolidated Drained Conditions

ASTM D 3080

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.43a, 8.0'-8.5'	Lab ID	446C
Visual Description	Lean Clay with Sand (CL), brown and black, wet, very soft	Test ID	446-C
Specimen Type	Intact	Gs 2.61	LL
Prepared	Using Cutting Ring	ASTM D 854, A	PL
Preparation Date	04/19/2021		PI

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	0.999	Height (in)	0.898
Diameter (in)	2.500	Diameter (in)	2.500
Wet Weight (lb)	0.3238	Wet Weight (lb)	0.3259
Wet Unit Weight (pcf)	114.2	Wet Unit Weight (pcf)	127.7
Moisture Content (%)	24.1	Moisture Content (%)	24.9
Dry Weight (lb)	0.2610	Dry Weight (lb)	0.2610
Dry Unit Weight (pcf)	92.0	Dry Unit Weight (pcf)	102.3
Void Ratio	0.771	Void Ratio	0.593
Degree of Saturation (%)	81.5	Degree of Saturation (%)	109.5
		Preshear Normal Stress (psi)	20.0





Shear Test Date	04/22/2021
Shear Rate (in/min)	0.00042

At Failure Shear Stress*	
Shear Stress (psi)	12.8
Normal Stress (psi)	22.9
Shear Displace. (in)	0.247
Normal Displace. (in)	-0.040

At Ultimate Shear Stress**	
Shear Stress (psi)	12.8
Normal Stress (psi)	22.9
Shear Displace. (in)	0.247
Normal Displace. (in)	-0.040

Failure Sketch

Preshear Consolidation

	Time (min)	Height (in)
@ t_0	0.0	0.9256
@ t_1	1.0	0.9218
@ t_2	4.0	0.9180
@ t_{50}	12.0	0.9139
@ t_{100}	84.5	0.9022
@ t_{max}	1585.1	0.8983

*Failure Stress Criterion: Maximum shear stress or 10% lateral displacement.

**Ultimate Stress Criterion: Minimum shear stress at lateral displacement greater than or equal to failure displacement.

Reviewed By KG

Stantec

Direct Shear of Soils Under Consolidated Drained Conditions

ASTM D 3080

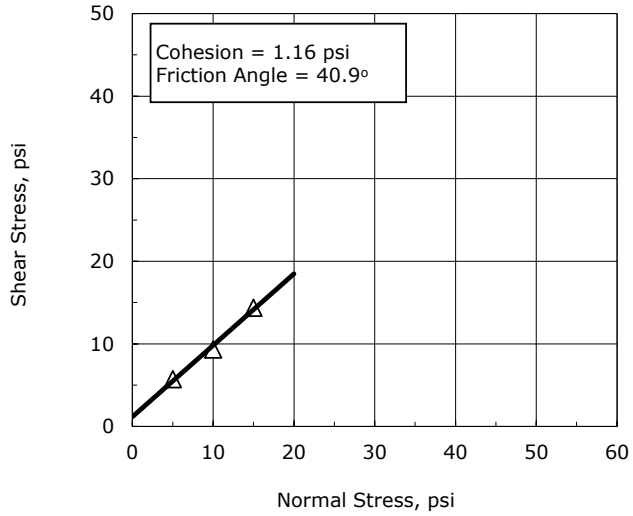
Project Name	Eagle Creek	Project No.	173409690
Source	B-3.43a, 8.0'-8.5'	Lab ID	446C
Visual Description	Lean Clay with Sand (CL), brown and black, wet, very soft	Test ID	446-C

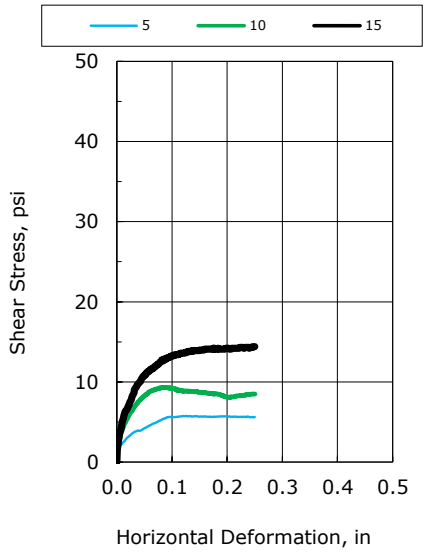
Time (min)	Normal Reading (in)	Lateral Reading (in)	Lateral Load (lbf)	Normal Load (lbf)	Normal Displace. (in)	Lateral Displace. (in)	Percent Displace. (%)	Corrected Area (in^2)	Shear Stress (psi)	Normal Stress (psi)
0.00	0.5728	0.003	0.0	98.1	0.0000	0.000	0.000	4.909	0.0	20.0
1.09	0.5730	0.004	0.9	98.2	-0.0002	0.000	0.018	4.908	0.2	20.0
2.29	0.5732	0.004	1.9	98.1	-0.0004	0.001	0.038	4.906	0.4	20.0
3.51	0.5736	0.005	2.9	97.9	-0.0008	0.001	0.058	4.905	0.6	20.0
4.71	0.5739	0.005	3.6	98.1	-0.0011	0.002	0.078	4.904	0.7	20.0
5.91	0.5743	0.006	4.1	98.2	-0.0015	0.002	0.099	4.903	0.8	20.0
7.11	0.5746	0.006	4.6	98.1	-0.0018	0.003	0.118	4.901	0.9	20.0
8.31	0.5753	0.007	5.1	97.7	-0.0025	0.003	0.139	4.900	1.0	19.9
9.51	0.5756	0.007	5.6	97.9	-0.0028	0.004	0.159	4.899	1.1	20.0
10.71	0.5759	0.008	6.0	97.9	-0.0030	0.004	0.179	4.898	1.2	20.0
11.91	0.5762	0.008	6.5	98.2	-0.0034	0.005	0.199	4.896	1.3	20.0
13.11	0.5764	0.009	6.9	98.1	-0.0036	0.005	0.219	4.895	1.4	20.0
14.33	0.5766	0.009	7.3	98.1	-0.0038	0.006	0.239	4.894	1.5	20.0
15.53	0.5768	0.010	7.8	97.8	-0.0040	0.006	0.259	4.893	1.6	20.0
16.73	0.5769	0.010	8.2	97.9	-0.0041	0.007	0.279	4.891	1.7	20.0
17.93	0.5773	0.011	8.7	98.1	-0.0045	0.007	0.299	4.890	1.8	20.1
19.13	0.5776	0.011	9.0	98.0	-0.0048	0.008	0.319	4.889	1.8	20.1
20.33	0.5779	0.012	9.5	98.4	-0.0050	0.008	0.339	4.888	1.9	20.1
21.53	0.5782	0.012	9.9	97.7	-0.0054	0.009	0.359	4.886	2.0	20.0
22.73	0.5784	0.013	10.3	97.8	-0.0056	0.009	0.379	4.885	2.1	20.0
23.93	0.5787	0.013	10.7	98.0	-0.0058	0.010	0.399	4.884	2.2	20.1
25.13	0.5788	0.014	11.1	98.0	-0.0060	0.010	0.419	4.883	2.3	20.1
26.33	0.5791	0.014	11.4	98.2	-0.0063	0.011	0.439	4.881	2.3	20.1
27.53	0.5794	0.015	11.8	97.8	-0.0066	0.011	0.459	4.880	2.4	20.0
28.73	0.5797	0.015	12.1	98.1	-0.0069	0.012	0.479	4.879	2.5	20.1
29.93	0.5800	0.016	12.5	98.1	-0.0071	0.012	0.499	4.878	2.6	20.1
31.13	0.5803	0.016	12.8	98.1	-0.0075	0.013	0.519	4.876	2.6	20.1
32.34	0.5807	0.017	13.1	98.1	-0.0079	0.013	0.539	4.875	2.7	20.1
33.54	0.5810	0.017	13.5	98.2	-0.0082	0.014	0.559	4.874	2.8	20.2
34.74	0.5813	0.018	13.8	98.0	-0.0084	0.014	0.580	4.873	2.8	20.1
35.94	0.5815	0.018	14.1	97.7	-0.0087	0.015	0.600	4.871	2.9	20.1
37.14	0.5816	0.019	14.5	98.1	-0.0088	0.015	0.620	4.870	3.0	20.1
38.34	0.5819	0.019	14.8	98.0	-0.0091	0.016	0.640	4.869	3.0	20.1
39.54	0.5821	0.020	15.1	98.4	-0.0093	0.016	0.660	4.868	3.1	20.2
40.74	0.5822	0.020	15.5	98.1	-0.0094	0.017	0.680	4.866	3.2	20.2
41.94	0.5823	0.021	15.8	97.8	-0.0095	0.017	0.700	4.865	3.3	20.1
43.14	0.5823	0.021	16.2	97.9	-0.0095	0.018	0.720	4.864	3.3	20.1
44.34	0.5825	0.022	16.5	98.1	-0.0097	0.018	0.740	4.862	3.4	20.2
45.54	0.5826	0.022	16.8	98.2	-0.0098	0.019	0.760	4.861	3.5	20.2
46.74	0.5827	0.023	17.2	98.1	-0.0099	0.019	0.780	4.860	3.5	20.2
47.94	0.5830	0.023	17.5	98.2	-0.0102	0.020	0.800	4.859	3.6	20.2
49.14	0.5832	0.024	17.8	97.9	-0.0104	0.020	0.820	4.857	3.7	20.2
50.34	0.5835	0.024	18.1	98.1	-0.0107	0.021	0.840	4.856	3.7	20.2
51.54	0.5837	0.025	18.3	98.1	-0.0109	0.021	0.860	4.855	3.8	20.2
52.74	0.5839	0.025	18.6	97.8	-0.0111	0.022	0.880	4.854	3.8	20.2
53.94	0.5841	0.026	18.9	97.9	-0.0113	0.023	0.900	4.852	3.9	20.2
57.54	0.5850	0.027	19.7	97.8	-0.0122	0.024	0.960	4.849	4.1	20.2
61.14	0.5854	0.029	20.5	97.6	-0.0126	0.026	1.020	4.845	4.2	20.1
64.74	0.5859	0.030	21.3	98.2	-0.0131	0.027	1.080	4.841	4.4	20.3
68.34	0.5863	0.032	22.2	98.0	-0.0135	0.029	1.140	4.837	4.6	20.3
71.94	0.5868	0.033	22.9	97.8	-0.0140	0.030	1.200	4.834	4.7	20.2
75.54	0.5875	0.035	23.7	98.0	-0.0147	0.032	1.260	4.830	4.9	20.3
79.13	0.5881	0.036	24.4	98.1	-0.0153	0.033	1.320	4.826	5.0	20.3
82.74	0.5888	0.038	25.1	97.8	-0.0160	0.035	1.380	4.822	5.2	20.3
86.34	0.5890	0.039	25.8	98.1	-0.0162	0.036	1.440	4.819	5.4	20.4
89.93	0.5891	0.041	26.4	98.0	-0.0163	0.038	1.500	4.815	5.5	20.4
93.53	0.5893	0.042	27.0	98.0	-0.0165	0.039	1.560	4.811	5.6	20.4
97.13	0.5899	0.044	26.9	98.0	-0.0171	0.041	1.620	4.807	5.6	20.4
100.73	0.5901	0.045	27.3	98.5	-0.0173	0.042	1.681	4.804	5.7	20.5
104.33	0.5902	0.047	28.7	98.2	-0.0174	0.044	1.741	4.800	6.0	20.4
107.93	0.5905	0.048	29.3	97.8	-0.0177	0.045	1.801	4.796	6.1	20.4
111.53	0.5907	0.050	29.9	98.0	-0.0179	0.047	1.861	4.792	6.2	20.5
115.13	0.5912	0.051	30.5	97.9	-0.0184	0.048	1.921	4.789	6.4	20.5
118.73	0.5919	0.053	31.1	98.0	-0.0191	0.050	1.981	4.785	6.5	20.5
122.33	0.5924	0.054	31.7	98.1	-0.0196	0.051	2.041	4.781	6.6	20.5
125.93	0.5928	0.056	32.1	98.1	-0.0200	0.053	2.101	4.777	6.7	20.5
129.53	0.5933	0.057	32.7	98.0	-0.0205	0.054	2.161	4.774	6.8	20.5
133.13	0.5938	0.059	33.1	98.1	-0.0210	0.056	2.221	4.770	6.9	20.6
136.73	0.5940	0.060	33.7	97.9	-0.0212	0.057	2.281	4.766	7.1	20.5
140.33	0.5944	0.062	34.3	97.8	-0.0216	0.059	2.341	4.762	7.2	20.5
143.93	0.5946	0.063	34.7	98.0	-0.0218	0.060	2.401	4.759	7.3	20.6
147.51	0.5948	0.065	35.2	98.4	-0.0220	0.062	2.461	4.755	7.4	20.7

Time (min)	Normal Reading (in)	Lateral Reading (in)	Lateral Load (lbf)	Normal Load (lbf)	Normal Displace. (in)	Lateral Displace. (in)	Percent Displace. (%)	Corrected Area (in^2)	Shear Stress (psi)	Normal Stress (psi)
151.11	0.5949	0.066	35.6	97.9	-0.0221	0.063	2.521	4.751	7.5	20.6
154.71	0.5951	0.068	36.0	98.1	-0.0223	0.065	2.581	4.747	7.6	20.7
158.31	0.5954	0.069	36.5	98.1	-0.0226	0.066	2.641	4.744	7.7	20.7
161.91	0.5955	0.071	36.8	98.0	-0.0227	0.068	2.701	4.740	7.8	20.7
165.51	0.5958	0.072	37.4	98.1	-0.0230	0.069	2.761	4.736	7.9	20.7
169.11	0.5960	0.074	37.8	98.0	-0.0232	0.071	2.821	4.732	8.0	20.7
172.71	0.5963	0.075	38.2	97.8	-0.0235	0.072	2.881	4.729	8.1	20.7
176.31	0.5967	0.077	38.5	98.0	-0.0239	0.074	2.941	4.725	8.2	20.7
179.91	0.5971	0.078	38.9	98.0	-0.0243	0.075	3.001	4.721	8.2	20.7
183.51	0.5973	0.080	39.3	98.2	-0.0245	0.077	3.061	4.717	8.3	20.8
187.11	0.5976	0.081	39.6	98.2	-0.0248	0.078	3.121	4.714	8.4	20.8
190.71	0.5978	0.083	40.0	98.0	-0.0250	0.080	3.182	4.710	8.5	20.8
194.31	0.5979	0.084	40.2	98.0	-0.0251	0.081	3.242	4.706	8.6	20.8
197.91	0.5982	0.086	40.6	98.0	-0.0254	0.083	3.302	4.702	8.6	20.8
201.49	0.5983	0.087	40.9	98.1	-0.0255	0.084	3.362	4.699	8.7	20.9
205.09	0.5985	0.089	41.3	98.0	-0.0257	0.086	3.422	4.695	8.8	20.9
208.69	0.5989	0.090	41.6	97.9	-0.0261	0.087	3.482	4.691	8.9	20.9
212.29	0.5992	0.092	41.9	98.0	-0.0264	0.089	3.542	4.687	8.9	20.9
215.89	0.5995	0.093	42.2	98.0	-0.0267	0.090	3.602	4.684	9.0	20.9
219.49	0.5996	0.095	42.5	98.0	-0.0268	0.092	3.662	4.680	9.1	20.9
223.09	0.5998	0.096	42.7	98.0	-0.0270	0.093	3.722	4.676	9.1	21.0
226.69	0.6000	0.098	43.1	98.1	-0.0272	0.095	3.782	4.672	9.2	21.0
230.29	0.6003	0.099	43.4	98.1	-0.0275	0.096	3.842	4.669	9.3	21.0
233.88	0.6006	0.101	43.7	98.1	-0.0278	0.098	3.902	4.665	9.4	21.0
241.08	0.6009	0.104	44.1	98.0	-0.0281	0.101	4.022	4.657	9.5	21.0
248.28	0.6013	0.107	44.7	97.9	-0.0285	0.104	4.142	4.650	9.6	21.0
255.48	0.6017	0.110	45.2	97.9	-0.0289	0.107	4.262	4.642	9.7	21.1
262.66	0.6024	0.113	45.6	98.4	-0.0296	0.110	4.382	4.635	9.8	21.2
269.86	0.6027	0.116	46.0	98.2	-0.0299	0.113	4.502	4.627	9.9	21.2
277.06	0.6030	0.119	46.6	97.9	-0.0301	0.116	4.622	4.620	10.1	21.2
284.26	0.6032	0.122	46.9	98.0	-0.0304	0.119	4.742	4.612	10.2	21.3
291.44	0.6036	0.125	47.3	98.0	-0.0308	0.122	4.862	4.605	10.3	21.3
298.64	0.6038	0.128	47.7	97.9	-0.0310	0.125	4.982	4.597	10.4	21.3
305.84	0.6040	0.131	48.1	98.2	-0.0312	0.128	5.102	4.590	10.5	21.4
313.04	0.6042	0.134	48.4	98.1	-0.0314	0.131	5.222	4.582	10.6	21.4
320.24	0.6046	0.137	48.8	98.2	-0.0317	0.134	5.343	4.575	10.7	21.5
327.43	0.6050	0.140	49.2	98.2	-0.0322	0.137	5.463	4.567	10.8	21.5
334.63	0.6052	0.143	49.6	98.3	-0.0324	0.140	5.583	4.560	10.9	21.6
341.83	0.6053	0.146	49.9	98.0	-0.0325	0.143	5.703	4.553	11.0	21.5
349.03	0.6058	0.149	50.1	98.4	-0.0329	0.146	5.823	4.545	11.0	21.6
356.23	0.6063	0.152	50.6	98.1	-0.0335	0.149	5.943	4.538	11.1	21.6
363.43	0.6066	0.155	50.9	98.0	-0.0338	0.152	6.063	4.530	11.2	21.6
370.61	0.6067	0.158	51.1	98.0	-0.0339	0.155	6.183	4.523	11.3	21.7
377.81	0.6067	0.161	51.4	98.0	-0.0339	0.158	6.303	4.515	11.4	21.7
385.01	0.6069	0.164	51.6	98.9	-0.0341	0.161	6.423	4.508	11.4	21.9
392.21	0.6071	0.167	51.9	98.2	-0.0343	0.164	6.543	4.500	11.5	21.8
399.39	0.6072	0.170	52.1	98.2	-0.0344	0.167	6.663	4.493	11.6	21.9
406.59	0.6075	0.173	52.2	98.1	-0.0346	0.170	6.783	4.485	11.6	21.9
413.79	0.6076	0.176	52.3	97.9	-0.0348	0.173	6.903	4.478	11.7	21.9
420.99	0.6079	0.179	52.5	98.1	-0.0350	0.176	7.023	4.470	11.7	22.0
428.18	0.6081	0.182	52.7	98.6	-0.0352	0.179	7.143	4.463	11.8	22.1
435.38	0.6082	0.185	52.7	98.1	-0.0354	0.182	7.264	4.455	11.8	22.0
442.58	0.6084	0.188	52.9	98.2	-0.0356	0.185	7.384	4.448	11.9	22.1
449.78	0.6087	0.191	53.0	98.2	-0.0359	0.188	7.504	4.440	11.9	22.1
456.98	0.6091	0.194	53.1	97.9	-0.0363	0.191	7.624	4.433	12.0	22.1
464.18	0.6093	0.197	53.2	98.4	-0.0365	0.194	7.744	4.425	12.0	22.2
471.36	0.6097	0.200	53.4	98.1	-0.0369	0.197	7.864	4.418	12.1	22.2
478.56	0.6099	0.203	53.4	98.2	-0.0371	0.200	7.984	4.410	12.1	22.3
485.76	0.6100	0.206	53.6	98.0	-0.0372	0.203	8.104	4.403	12.2	22.3
492.96	0.6102	0.209	53.7	98.2	-0.0374	0.206	8.224	4.395	12.2	22.3
500.16	0.6104	0.212	53.9	98.0	-0.0375	0.209	8.344	4.388	12.3	22.3
507.34	0.6105	0.215	54.0	98.0	-0.0377	0.212	8.464	4.380	12.3	22.4
514.54	0.6107	0.218	54.1	98.5	-0.0379	0.215	8.584	4.373	12.4	22.5
521.74	0.6108	0.221	54.2	98.3	-0.0380	0.218	8.704	4.365	12.4	22.5
528.93	0.6109	0.224	54.4	98.1	-0.0381	0.221	8.824	4.358	12.5	22.5
536.13	0.6109	0.227	54.4	98.2	-0.0381	0.224	8.944	4.350	12.5	22.6
543.33	0.6109	0.230	54.6	98.2	-0.0381	0.227	9.064	4.343	12.6	22.6
550.53	0.6111	0.233	54.7	98.0	-0.0383	0.230	9.184	4.336	12.6	22.6
557.71	0.6112	0.236	54.7	98.2	-0.0384	0.233	9.305	4.328	12.6	22.7
564.91	0.6114	0.239	54.8	98.1	-0.0386	0.236	9.424	4.321	12.7	22.7
572.11	0.6118	0.242	54.9	98.0	-0.0390	0.239	9.545	4.313	12.7	22.7
579.31	0.6120	0.245	54.9	98.0	-0.0392	0.242	9.665	4.306	12.8	22.8
586.51	0.6124	0.248	55.0	97.8	-0.0396	0.245	9.785	4.298	12.8	22.8
592.26	0.6126	0.250	55.0	98.3	-0.0398	0.247	9.881	4.292	12.8	22.9

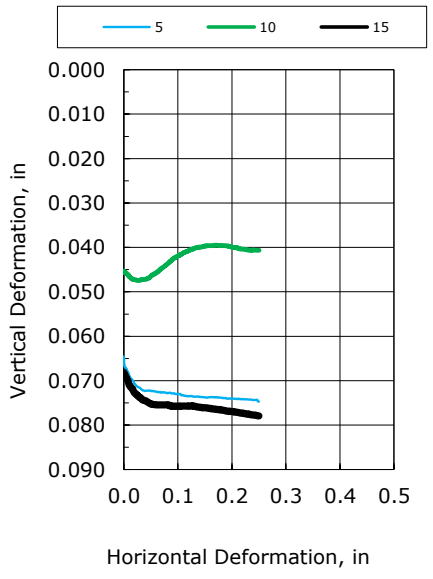
Client:	Stantec Inc.
Project Name:	Eagle Creek
Project Location:	---
GTX #:	313553
Test Date:	04/30/21
Tested By:	mp
Checked By:	njh
Boring ID:	B3.48A
Sample ID:	---
Depth, ft:	4.1-4.7
Visual Description:	Moist, gray sandy clay with organics

Direct Shear Test of Soils Under Consolidated Drained Conditions by ASTM D3080





Test No.:	DS-1	DS-2	DS-3
Initial Diameter, in:	2.5	2.5	2.5
Initial Height, in:	1.0	1.0	1.0
Initial Mass, grams:	137	163	157
Initial Dry Density, pcf:	78.5	101.6	101.8
Initial Moisture Content, %:	35.5	24.4	19.8
Initial Bulk Density, pcf:	106.4	126.4	121.9
Initial Degree of Saturation:	83.7	99.9	81.4
Initial Void Ratio:	1.15	0.66	0.66
Final Dry Density, pcf:	84.9	105.9	110.4
Final Moisture Content, %:	37.6	19.1	21.0
Final Bulk Density, pcf:	116.8	126.2	133.6
Normal Stress, psi:	5.0	10	15
Maximum Shear Stress, psi:	5.7	9.3	14
Shear Rate, in/min:	0.0004	0.0004	0.0004



Sample Type:	Intact
Estimated Specific Gravity:	2.70
Liquid Limit:	---
Plastic Limit:	---
Plasticity Index:	---
% Passing #200 sieve:	---
Soil Classification:	---
Group Symbol:	---

Notes:

Moisture content obtained before shear from sample trimmings

Moisture Content determined by ASTM D2216

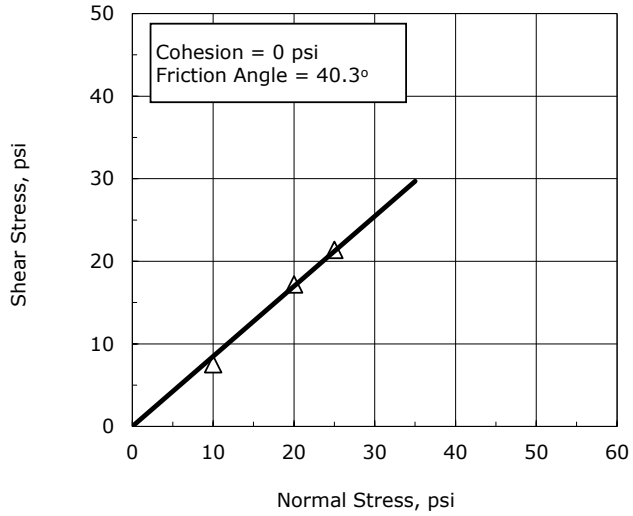
Extruded from tube, cut, trimmed and placed into apparatus at the as-received density and moisture content

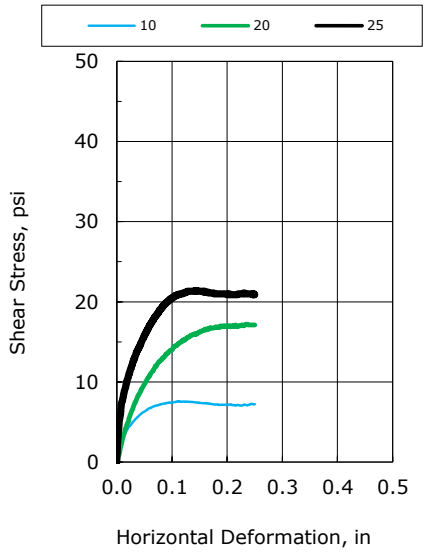
Values for cohesion and friction angle determined from best-fit straight line to the data for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site-specific conditions.

"---" indicates testing required to determine these values was not requested.

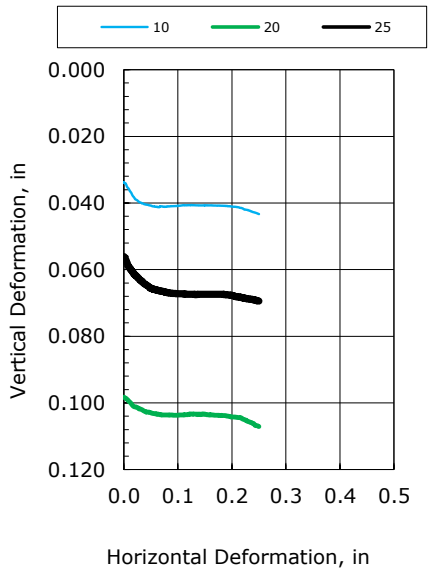
Client:	Stantec Inc.
Project Name:	Eagle Creek
Project Location:	---
GTX #:	313553
Test Date:	05/03/21
Tested By:	md
Checked By:	njh
Boring ID:	B-3.48, B-3.49, B-3.50, B-3.51, B-3.52, B-3.53
Sample ID:	53
Depth, ft:	COMP
Visual Description:	Wet, gray sand

Direct Shear Test of Soils Under Consolidated Drained Conditions by ASTM D3080





Test No.:	DS-4	DS-5	DS-6
Initial Diameter, in:	2.5	2.5	2.5
Initial Height, in:	1.0	1.0	1.0
Initial Mass, grams:	177	177	177
Initial Dry Density, pcf:	109.6	109.6	109.6
Initial Moisture Content, %:	21.8	21.8	21.8
Initial Bulk Density, pcf:	133.5	133.5	133.5
Initial Degree of Saturation:	99.7	99.7	99.7
Initial Void Ratio:	0.62	0.62	0.62
Final Dry Density, pcf:	114.4	122.3	117.5
Final Moisture Content, %:	17.0	16.6	17.0
Final Bulk Density, pcf:	133.9	142.6	137.5
Normal Stress, psi:	10	20	25
Maximum Shear Stress, psi:	7.6	17	21
Shear Rate, in/min:	0.0004	0.0004	0.0004



Sample Type:	reconstituted
Estimated Specific Gravity:	2.85
Liquid Limit:	---
Plastic Limit:	---
Plasticity Index:	---
% Passing #200 sieve:	---
Soil Classification:	---
Group Symbol:	---

Notes:

Material greater than #5 sieve screened out of sample prior to testing

Moisture content obtained before shear from sample trimmings

Moisture Content determined by ASTM D2216

Target Compaction: 110 pcf at the 25%. Values specified by client.

Values for cohesion and friction angle determined from best-fit straight line to the data for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site-specific conditions.

"---" indicates testing required to determine these values was not requested.

Attachment E-2. Laboratory Testing Results

Falling Head Hydraulic Conductivity

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.43a, 9.1'-9.4'			Test ID	446
Description	Silty, Clayey Sand with Gravel (SC-SM), gray, moist, firm			Prepared By	JMB
		Specific Gravity	2.65 ASTM D854-A	Date	3-5-21
Specimen	Undisturbed	LL	18		
Preparation	Trimmed in a trimming ring	PL	13	Maximum Dry Density (pcf)	
Permeant	De-aired Tap Water	PI	5	Percent of Maximum	

Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)	
Height (in.)	2.5281	2.4979	2.4751	Chamber	55
Diameter (in.)	2.7817		2.7803	Influent	42
Moisture Content (%)	14.2		13.2	Effluent	40
Dry Unit Weight (pcf)	120.7		123.4		
Void Ratio	0.371		0.341		
Degree of Saturation (%)	101.3		102.5		

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
3-10-21	8:18	71.0	19.10	4.74	0	---	---	---	---
3-10-21	9:21	71.0	19.00	4.84	3.78E+03	2.0E-10	2.0E-08	1.9E-10	1.9E-08
3-10-21	10:18	71.0	18.91	4.94	3.42E+03	2.1E-10	2.1E-08	2.0E-10	2.0E-08
3-10-21	11:04	71.0	18.83	5.02	2.76E+03	2.1E-10	2.1E-08	2.1E-10	2.1E-08
3-10-21	12:33	71.0	18.68	5.18	5.34E+03	2.2E-10	2.2E-08	2.1E-10	2.1E-08

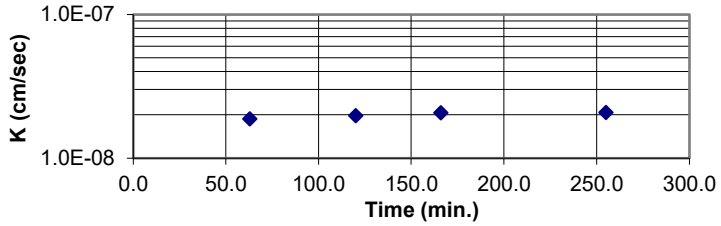
Applied Head Difference (psi): 2

Back Pressure Saturated to (psi): 40

Maximum Effective Consolidation Stress (psi): 15

Minimum Effective Consolidation Stress (psi): 13

Corrected Permeability vs. Time



A gradient of approximately 21.9 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	2.00E-10	cm/s	2.00E-08
Average Hydraulic Conductivity @ 20° C (last run)	m/s	2.00E-10	cm/s	2.00E-08

Comments

Reviewed By RJ

Template: tmp_fhp_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 09/22/2021

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.45a, 11.8'-12.0'			Test ID	781
Description	Poorly Graded Sand with Silt (SP-SM), gray, moist, firm			Prepared By	JMB
		Specific Gravity	2.75 ASTM D854, Dry	Date	5-5-21
Specimen	Undisturbed	LL			
Preparation	Trimmed in a trimming ring	PL		Maximum Dry Density (pcf)	
Permeant	De-aired Tap Water	PI		Percent of Maximum	

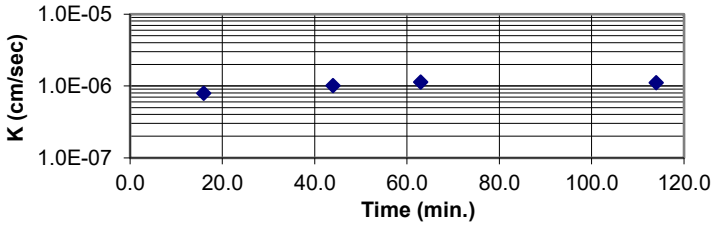
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 19 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4963	2.3974	2.4035	Chamber	45		
Diameter (in.)	2.8213		2.7687	Influent	20.25		
Moisture Content (%)	17.6		15.2	Effluent	20	Applied Head Difference (psi)	0.25
Dry Unit Weight (pcf)	112.5		121.3			Back Pressure Saturated to (psi)	20
Void Ratio	0.526		0.415			Maximum Effective Consolidation Stress (psi)	25
Degree of Saturation (%)	92.1		100.7			Minimum Effective Consolidation Stress (psi)	24.75

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
5-6-21	9:21	72.0	20.90	2.76	0	---	---	---	---
5-6-21	9:37	72.0	20.80	2.86	9.60E+02	8.4E-09	8.4E-07	7.9E-09	7.9E-07
5-6-21	10:05	72.0	20.60	3.10	1.68E+03	1.1E-08	1.1E-06	1.0E-08	1.0E-06
5-6-21	10:24	72.0	20.40	3.23	1.14E+03	1.2E-08	1.2E-06	1.1E-08	1.1E-06
5-6-21	11:15	72.0	20.02	3.70	3.06E+03	1.2E-08	1.2E-06	1.1E-08	1.1E-06

Corrected Permeability vs. Time



A gradient of approximately 2.8 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	1.01E-08	cm/s	1.01E-06
Average Hydraulic Conductivity @ 20° C (last run)	m/s	1.01E-08	cm/s	1.01E-06

Comments

Reviewed By RJ

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.49a, 0.6'-0.9'			Test ID	785
Description	Lean Clay (CL), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.64 ASTM D854, Dry	Date	5-3-21
Specimen	Undisturbed	LL			
Preparation	Trimmed in a trimming ring	PL		Maximum Dry Density (pcf)	
Permeant	De-aired Tap Water	PI		Percent of Maximum	

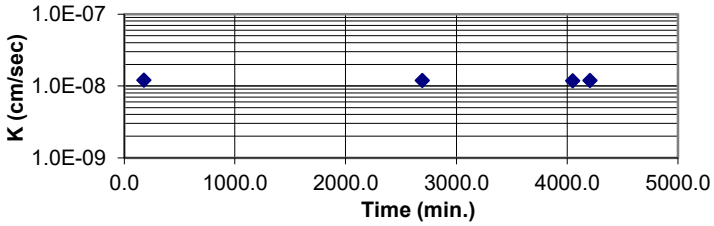
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 19 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.9609	2.3244	2.3256	Chamber	60		
Diameter (in.)	2.7677		2.6952	Influent	41.5		
Moisture Content (%)	41.6		36.7	Effluent	40	Applied Head Difference (psi)	1.5
Dry Unit Weight (pcf)	63.6		85.4			Back Pressure Saturated to (psi)	40
Void Ratio	1.591		0.930			Maximum Effective Consolidation Stress (psi)	20
Degree of Saturation (%)	69.0		104.3			Minimum Effective Consolidation Stress (psi)	18.5

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
5-7-21	12:04	72.0	19.96	3.44	0	---	---	---	---
5-7-21	15:02	72.0	19.86	3.64	1.07E+04	1.3E-10	1.3E-08	1.2E-10	1.2E-08
5-9-21	8:55	72.0	17.86	5.64	1.51E+05	1.3E-10	1.3E-08	1.2E-10	1.2E-08
5-10-21	7:35	72.0	16.92	6.73	8.16E+04	1.2E-10	1.2E-08	1.2E-10	1.2E-08
5-10-21	10:10	72.0	16.88	6.92	9.30E+03	1.3E-10	1.3E-08	1.2E-10	1.2E-08

Corrected Permeability vs. Time



A gradient of approximately 14 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	1.19E-10	cm/s	1.19E-08
Average Hydraulic Conductivity @ 20° C (last run)	m/s	1.19E-10	cm/s	1.19E-08

Comments

Reviewed By KG

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

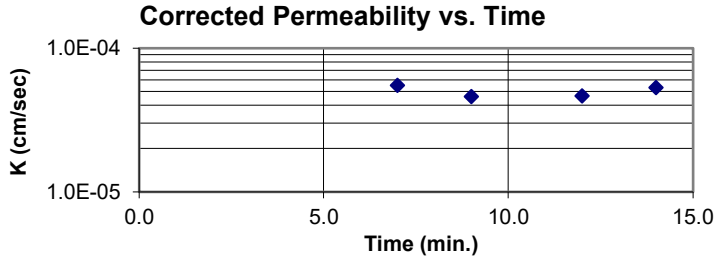
Project Name	Eagle Creek			Project No.	173409690
Source	B-3.51a, 5.4'-5.6'			Test ID	793
Description	Clayey Sand (SC), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.71 ASTM D854, Dry	Date	5-5-21
Specimen	Undisturbed	LL			
Preparation	Trimmed in a trimming ring	PL		Maximum Dry Density (pcf)	
Permeant	De-aired Tap Water	PI		Percent of Maximum	

Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4923	2.5536	2.4882	Chamber	25		
Diameter (in.)	2.8023		2.7301	Influent	15.25		
Moisture Content (%)	16.2		19.4	Effluent	15	Applied Head Difference (psi)	0.25
Dry Unit Weight (pcf)	103.1		108.8			Back Pressure Saturated to (psi)	15
Void Ratio	0.641		0.555			Maximum Effective Consolidation Stress (psi)	10
Degree of Saturation (%)	68.6		95.0			Minimum Effective Consolidation Stress (psi)	9.75

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
5-6-21	8:55	72.0	17.42	7.42	0	---	---	---	---
5-6-21	9:02	72.0	15.70	9.18	4.20E+02	5.8E-07	5.8E-05	5.5E-07	5.5E-05
5-6-21	9:04	72.0	15.30	9.50	1.20E+02	4.9E-07	4.9E-05	4.6E-07	4.6E-05
5-6-21	9:07	72.0	14.80	10.02	1.80E+02	4.9E-07	4.9E-05	4.7E-07	4.7E-05
5-6-21	9:09	72.0	14.32	10.26	1.20E+02	5.6E-07	5.6E-05	5.3E-07	5.3E-05



A gradient of approximately 2.8 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	5.01E-07	cm/s	5.01E-05
Average Hydraulic Conductivity @ 20° C (last run)	m/s	5.01E-07	cm/s	5.01E-05

Comments

Reviewed By RJ

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.52a, 1.0'-1.2'			Test ID	796
Description	Sandy Lean Clay (CL), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.68 ASTM D854, Dry	Date	5-6-21
Specimen	Undisturbed	LL			
Preparation	Trimmed in a trimming ring	PL		Maximum Dry Density (pcf)	
Permeant	De-aired Tap Water	PI		Percent of Maximum	

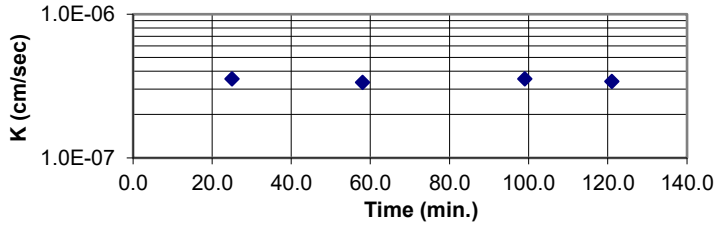
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 19 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4953	2.4781	2.4300	Chamber	45		
Diameter (in.)	2.7848		2.7387	Influent	35.5		
Moisture Content (%)	38.8		37.4	Effluent	35	Applied Head Difference (psi)	0.5
Dry Unit Weight (pcf)	78.2		83.0			Back Pressure Saturated to (psi)	35
Void Ratio	1.140		1.015			Maximum Effective Consolidation Stress (psi)	10
Degree of Saturation (%)	91.3		98.8			Minimum Effective Consolidation Stress (psi)	9.5

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
5-10-21	14:57	72.0	13.86	10.90	0	---	---	---	---
5-10-21	15:22	72.0	13.70	11.10	1.50E+03	3.7E-09	3.7E-07	3.5E-09	3.5E-07
5-10-21	15:55	72.0	13.48	11.32	1.98E+03	3.5E-09	3.5E-07	3.4E-09	3.4E-07
5-10-21	16:36	72.0	13.20	11.60	2.46E+03	3.7E-09	3.7E-07	3.5E-09	3.5E-07
5-10-21	16:58	72.0	13.06	11.74	1.32E+03	3.6E-09	3.6E-07	3.4E-09	3.4E-07

Corrected Permeability vs. Time



A gradient of approximately 5.5 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	3.46E-09	cm/s	3.46E-07
Average Hydraulic Conductivity @ 20° C (last run)	m/s	3.46E-09	cm/s	3.46E-07

Comments

Reviewed By RJ

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.76, 4.0'-10.0'			Test ID	437
Description	Lean Clay (CL), dark brown			Prepared By	JMB
		Specific Gravity	2.73 ASTM D854-A	Date	4-2-21
Specimen	Compacted Std. 0" Spacer	LL			
Preparation	Standard Effort, -3/8" material.	PL		Maximum Dry Density (pcf)	114.1
Permeant	De-aired Tap Water	PI		Percent of Maximum	101.1

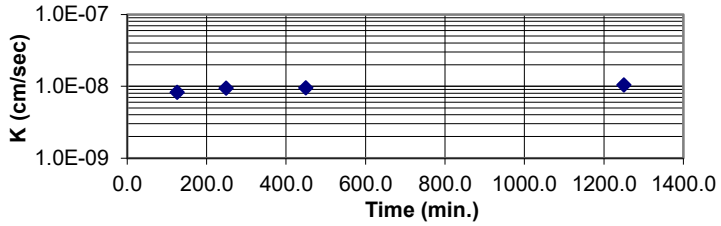
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.5106	2.4880	2.4640	Chamber	50		
Diameter (in.)	2.7840		2.7892	Influent	42		
Moisture Content (%)	15.6		16.2	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	115.4		117.2			Back Pressure Saturated to (psi)	40
Void Ratio	0.477		0.455			Maximum Effective Consolidation Stress (psi)	10
Degree of Saturation (%)	89.0		97.0			Minimum Effective Consolidation Stress (psi)	8

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
4-7-21	10:50	70.0	20.38	4.00	0	---	---	---	---
4-7-21	12:56	70.0	20.30	4.10	7.56E+03	8.5E-11	8.5E-09	8.2E-11	8.2E-09
4-7-21	14:59	70.0	20.20	4.20	7.38E+03	9.7E-11	9.7E-09	9.4E-11	9.4E-09
4-7-21	18:20	70.0	20.05	4.38	1.21E+04	9.8E-11	9.8E-09	9.5E-11	9.5E-09
4-8-21	7:40	70.0	19.45	5.20	4.80E+04	1.1E-10	1.1E-08	1.0E-10	1.0E-08

Corrected Permeability vs. Time



A gradient of approximately 22.1 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	9.41E-11	cm/s	9.41E-09
Average Hydraulic Conductivity @ 20° C (last run)	m/s	9.41E-11	cm/s	9.41E-09

Comments

Reviewed By KG

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.83, 5.0'-8.5'			Test ID	442
Description	Lean Clay (CL), dark brown			Prepared By	JMB
		Specific Gravity	2.67 ASTM D854-A	Date	4-2-21
Specimen	Compacted Std. 0" Spacer	LL			
Preparation	Standard Effort, -3/8" material.	PL		Maximum Dry Density (pcf)	114.5
Permeant	De-aired Tap Water	PI		Percent of Maximum	101.6

Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

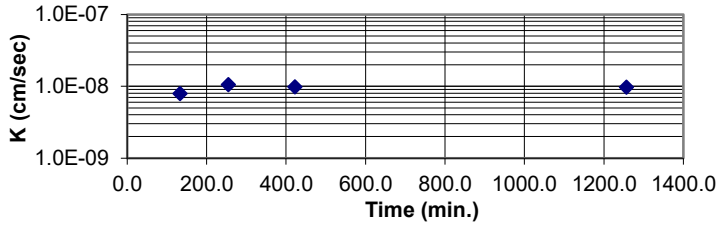
	Initial Specimen Data	After Consolidation Data	After Test Data
Height (in.)	2.5350	2.5125	2.4925
Diameter (in.)	2.7807		2.7854
Moisture Content (%)	15.2		15.8
Dry Unit Weight (pcf)	116.3		117.9
Void Ratio	0.433		0.414
Degree of Saturation (%)	93.9		102.2

Final Pressures (psi)	
Chamber	50
Influent	42
Effluent	40

Applied Head Difference (psi)	2
Back Pressure Saturated to (psi)	40
Maximum Effective Consolidation Stress (psi)	10
Minimum Effective Consolidation Stress (psi)	8

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
4-7-21	10:43	70.0	20.30	4.10	0	---	---	---	---
4-7-21	12:56	70.0	20.20	4.18	7.98E+03	8.1E-11	8.1E-09	7.9E-11	7.9E-09
4-7-21	14:58	70.0	20.06	4.26	7.32E+03	1.1E-10	1.1E-08	1.1E-10	1.1E-08
4-7-21	17:45	70.0	19.92	4.40	1.00E+04	1.0E-10	1.0E-08	9.8E-11	9.8E-09
4-8-21	7:40	70.0	19.24	5.08	5.01E+04	9.9E-11	9.9E-09	9.7E-11	9.7E-09

Corrected Permeability vs. Time



A gradient of approximately 21.8 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	9.48E-11	cm/s	9.48E-09
Average Hydraulic Conductivity @ 20° C (last run)	m/s	9.48E-11	cm/s	9.48E-09

Comments

Reviewed By KG

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek			Project No.	173409690
Source	B-3.48, B-3.49, B-3.50, B-3.51, B-3.52, B-3.53 SPT Composite from various depths			Test ID	839
Description	Silty Sand (SM), gray			Prepared By	JMB/KG
		Specific Gravity	2.64 Estimated	Date	5-11-21
Specimen	Compacted	LL			
Preparation	Compacted in a trimming ring	PL		Maximum Dry Density (pcf)	110
Permeant	De-aired Tap Water	PI		Percent of Maximum	102.0

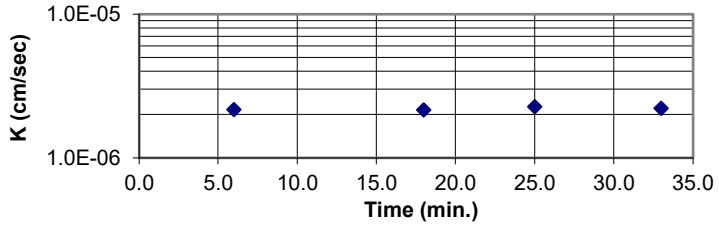
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 19 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	1.3718	1.0978	1.2304	Chamber	40		
Diameter (in.)	2.7882		2.7793	Influent	20.25		
Moisture Content (%)	15.5		11.1	Effluent	20	Applied Head Difference (psi)	0.25
Dry Unit Weight (pcf)	112.2		125.9			Back Pressure Saturated to (psi)	20
Void Ratio	0.468		0.309			Maximum Effective Consolidation Stress (psi)	20
Degree of Saturation (%)	87.3		95.0			Minimum Effective Consolidation Stress (psi)	19.75

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
5-11-21	14:09	73.0	21.68	4.12	0	---	---	---	---
5-11-21	14:15	73.0	21.50	4.30	3.60E+02	2.3E-08	2.3E-06	2.2E-08	2.2E-06
5-11-21	14:27	73.0	21.12	4.62	7.20E+02	2.3E-08	2.3E-06	2.2E-08	2.2E-06
5-11-21	14:34	73.0	20.96	4.88	4.20E+02	2.4E-08	2.4E-06	2.3E-08	2.3E-06
5-11-21	14:42	73.0	20.74	5.12	4.80E+02	2.4E-08	2.4E-06	2.2E-08	2.2E-06

Corrected Permeability vs. Time



A gradient of approximately 5 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	2.20E-08	cm/s	2.20E-06
Average Hydraulic Conductivity @ 20° C (last run)	m/s	2.20E-08	cm/s	2.20E-06

Comments: Sample compacted at as received moisture content. Material was free draining.

Reviewed By: RJ

Client:	Stantec, Inc		
Project Name:	Eagle Creek Flood Basin		
Project Location:	Hancock, County		
GTX #:	315844		
Start Date:	8/17/2022	Tested By:	jm
End Date:	8/19/2022	Checked By:	mcm
Boring	B-4.15	Test #:	K1
Sample #:	ST		
Depth:	13.7-13.9		
Visual Description:	Moist, dark gray sandy silt		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Increasing Tailwater

Sample Type:	Intact	Permeant Fluid:	de-aired tap water
Orientation:	Vertical	Cell #:	P3

Sample Preparation: Test specimen was extruded from shelby tube, wiehged and dimensioned, then placed in the permeameter at the "as received" moisture content and density.

Parameter	Initial	Final
Height, in	2.58	2.56
Diameter, in	2.81	2.81
Area, in^2	6.20	6.20
Volume, in^3	16.0	15.9
Mass, g	545	552
Bulk Density, pcf	129	132
Moisture Content, %	17.0	18.5
Dry Density, pcf	110.6	111.5
Degree of Saturation, %	---	98

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90	Pressure Increment, psi:	9.6
Sample Pressure, psi:	80	B Coefficient:	0.96

FLOW DATA

Date	Trial #	Pressure, psi		Head readings			Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R_t	Permeability K @ 20 °C, cm/sec
		Cell	Sample	H_1	H_2	H_1-H_2						
8/18	3	90	80	55.3	54.9	0.4	60	8.5	1.6E-06	21	0.976	1.6E-06
8/18	4	90	80	54.9	54.5	0.4	60	8.4	1.6E-06	21	0.976	1.6E-06
8/18	5	90	80	54.5	54.1	0.4	60	8.4	1.6E-06	21	0.976	1.6E-06
8/18	6	90	80	54.1	53.7	0.4	60	8.3	1.6E-06	21	0.976	1.6E-06

PERMEABILITY AT 20° C: 1.6 x 10^{-6} cm/sec (@ 10 psi effective stress)

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

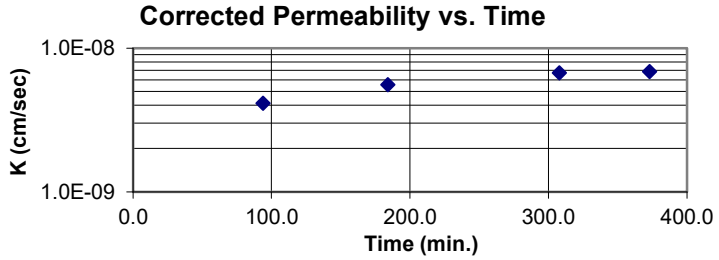
Project Name	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'			Test ID	1025
Description	Lean Clay with Sand (CL), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.75 ASTM D854, Dry	Date	8-18-22
Specimen	Compacted	LL	43		
Preparation	Standard Effort, -3/8" material.	PL	20	Maximum Dry Density (pcf)	103.7
Permeant	De-aired Tap Water	PI	23	Percent of Maximum	106.7

Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.5961	2.6201	2.6090	Chamber	55		
Diameter (in.)	2.8733		2.9140	Influent	42		
Moisture Content (%)	18.7		21.6	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	110.6		107.0			Back Pressure Saturated to (psi)	40
Void Ratio	0.552		0.604			Maximum Effective Consolidation Stress (psi)	15
Degree of Saturation (%)	93.3		98.1			Minimum Effective Consolidation Stress (psi)	13

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
8-20-22	8:54	72.0	21.42	5.01	0	---	---	---	---
8-20-22	10:28	72.0	21.40	5.06	5.64E+03	4.4E-11	4.4E-09	4.1E-11	4.1E-09
8-20-22	11:58	72.0	21.36	5.11	5.40E+03	5.9E-11	5.9E-09	5.6E-11	5.6E-09
8-20-22	14:02	72.0	21.30	5.20	7.44E+03	7.1E-11	7.1E-09	6.7E-11	6.7E-09
8-20-22	15:07	72.0	21.24	5.22	3.90E+03	7.2E-11	7.2E-09	6.9E-11	6.9E-09



A gradient of approximately 21.3 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	5.82E-11	cm/s	5.82E-09
Average Hydraulic Conductivity @ 20° C (last run)	m/s	5.82E-11	cm/s	5.82E-09

Comments

Reviewed By KG

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.3-A, 2.5'-5.5'			Test ID	1029
Description	Sandy Lean Clay (CL), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.7 ASTM D854, Dry	Date	8-15-22
Specimen	Compacted	LL	35		
Preparation	Standard Effort, -3/8" material.	PL	20	Maximum Dry Density (pcf)	113.8
Permeant	De-aired Tap Water	PI	15	Percent of Maximum	109.3

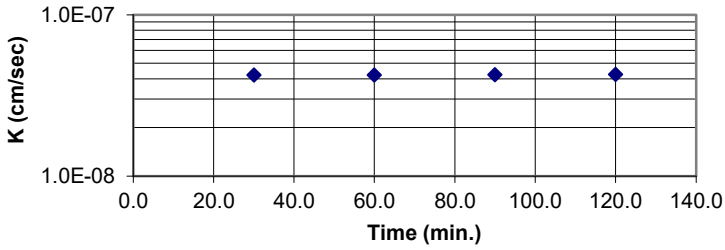
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.7663	2.7789	2.7449	Chamber	45		
Diameter (in.)	2.8403		2.8182	Influent	42		
Moisture Content (%)	7.2		11.8	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	124.4		127.3			Back Pressure Saturated to (psi)	40
Void Ratio	0.355		0.324			Maximum Effective Consolidation Stress (psi)	5
Degree of Saturation (%)	54.7		98.3			Minimum Effective Consolidation Stress (psi)	3

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
8-20-22	9:58	72.0	17.96	4.72	0	---	---	---	---
8-20-22	10:28	72.0	17.86	4.82	1.80E+03	4.5E-10	4.5E-08	4.2E-10	4.2E-08
8-20-22	10:58	72.0	17.76	4.92	1.80E+03	4.5E-10	4.5E-08	4.3E-10	4.3E-08
8-20-22	11:28	72.0	17.66	5.02	1.80E+03	4.5E-10	4.5E-08	4.3E-10	4.3E-08
8-20-22	11:58	72.0	17.56	5.12	1.80E+03	4.5E-10	4.5E-08	4.3E-10	4.3E-08

Corrected Permeability vs. Time



A gradient of approximately 20 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	4.26E-10	cm/s	4.26E-08
Average Hydraulic Conductivity @ 20° C (last run)	m/s	4.26E-10	cm/s	4.26E-08

Comments

Reviewed By KG

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Eagle Creek Flood Basin			Project No.	173409690
Source	TP-4.5-A, 2.0'-4.0'			Test ID	1034
Description	Lean Clay with Sand (CL), brown, moist, firm			Prepared By	JMB
		Specific Gravity	2.71 ASTM D854, Dry	Date	8-1-22
Specimen	Compacted	LL	36		
Preparation	Standard Effort, -No.4 material.	PL	19	Maximum Dry Density (pcf)	108.3
Permeant	De-aired Tap Water	PI	17	Percent of Maximum	100.9

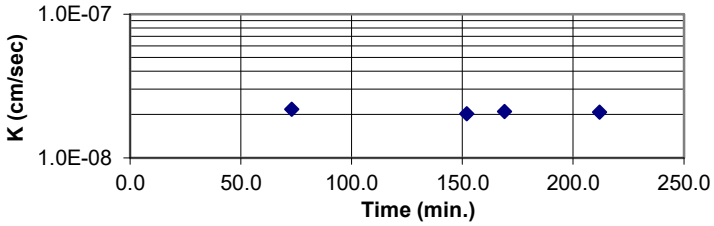
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.5526	2.5619	2.5208	Chamber	50		
Diameter (in.)	2.8627		2.8826	Influent	41		
Moisture Content (%)	19.2		20.6	Effluent	40	Applied Head Difference (psi)	1
Dry Unit Weight (pcf)	109.3		109.1			Back Pressure Saturated to (psi)	40
Void Ratio	0.548		0.550			Maximum Effective Consolidation Stress (psi)	10
Degree of Saturation (%)	95.1		101.5			Minimum Effective Consolidation Stress (psi)	9

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
8-4-22	11:43	73.0	19.80	4.02	0	---	---	---	---
8-4-22	12:56	73.0	19.70	4.10	4.38E+03	2.3E-10	2.3E-08	2.2E-10	2.2E-08
8-4-22	14:15	73.0	19.62	4.20	4.74E+03	2.2E-10	2.2E-08	2.0E-10	2.0E-08
8-4-22	14:32	73.0	19.60	4.22	1.02E+03	2.2E-10	2.2E-08	2.1E-10	2.1E-08
8-4-22	15:15	73.0	19.56	4.28	2.58E+03	2.2E-10	2.2E-08	2.1E-10	2.1E-08

Corrected Permeability vs. Time



A gradient of approximately 10.8 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	2.09E-10	cm/s	2.09E-08
Average Hydraulic Conductivity @ 20° C (last run)	m/s	2.09E-10	cm/s	2.09E-08

Comments

Reviewed By KG

Attachment E-2. Laboratory Testing Results

Consolidation

Stantec

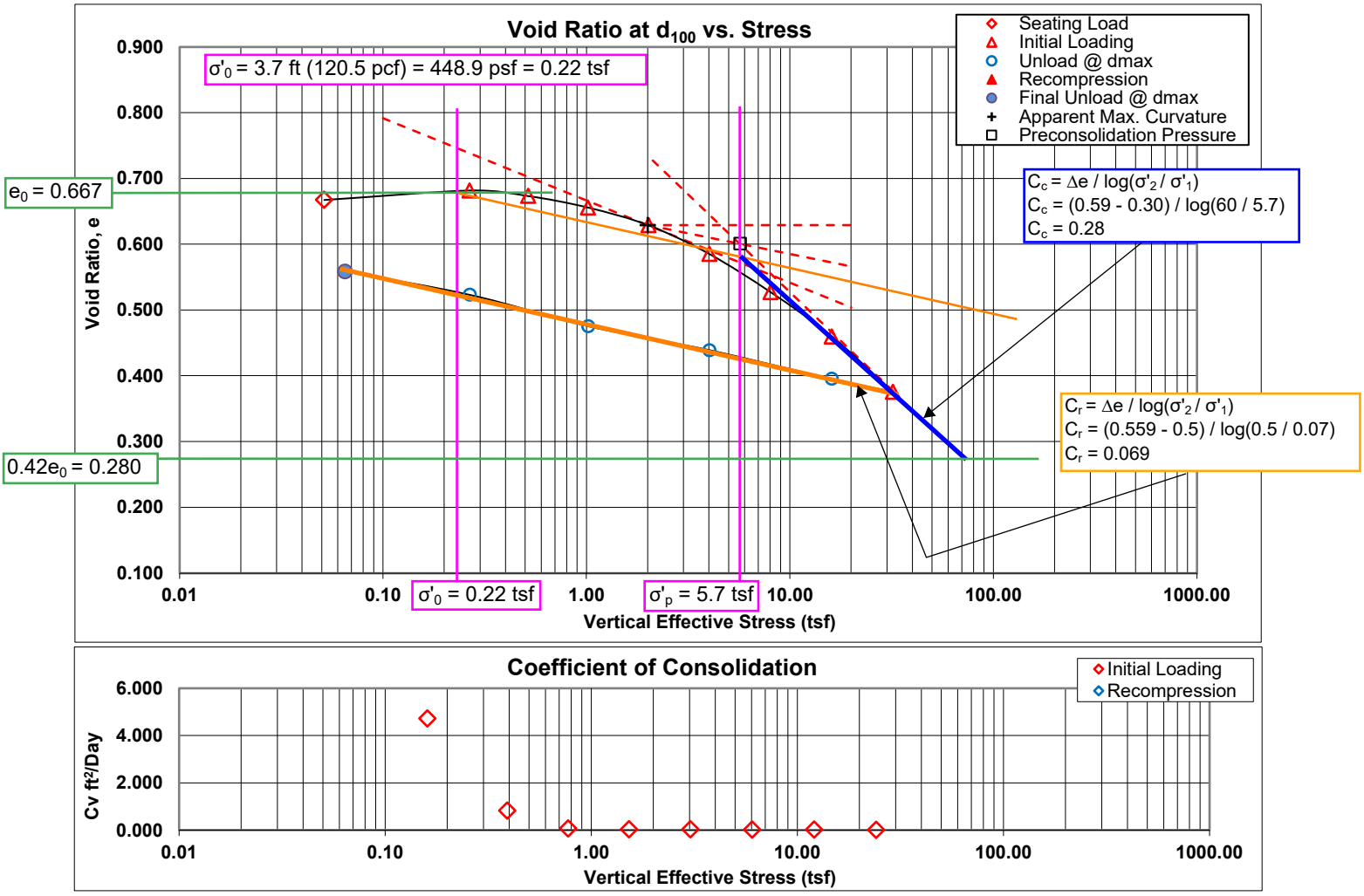
One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.43a, 3.6'-3.8'	Lab ID	443
Description	Lean Clay (CL), brown, moist, firm	Date Received	02/08/2021
Specimen Type	Undisturbed		

LL	N/A	Specific Gravity	2.65	ASTM D 854, Dry	Prepared: Using Cutting Ring
PL	N/A				Test Method: B - for 240 min.
PI	N/A				Test Condition: Inundated at 0.05 tsf

Initial Specimen Conditions		Final Specimen Conditions	
Moisture Content (%)	23.8	Moisture Content (%)	21.0
Dry Unit Weight (pcf)	99.0	Dry Unit Weight (pcf)	105.9
Void Ratio	0.667	Void Ratio	0.559
Degree of Saturation (%)	94.5	Degree of Saturation (%)	99.8
Initial Specimen Height (in)	1.0350	Final Specimen Height (in)	0.9675
Equivalent Height of Solids (in)	0.621	Preconsolidation Pressure* (tsf)	5.7
		Void Ratio @ Preconsolidation Pressure	0.601



Comments

Reviewed By KG

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name: Eagle Creek
Source: B-3.43a, 3.6'-3.8'
Description: Lean Clay (CL), brown, moist, firm
Specimen Type: Undisturbed

Project No.: 173409690
Lab ID: 443
Date Received: 02/08/2021

Load Increment tsf σ_v	Specimen Height (in) @ d_0	Specimen Height (in) @ d_{100}	Void Ratio e @ d_{100}	Specimen Height (in) @ d_{max}	Void Ratio e @ d_{max}	Load At Cv tsf	Specimen Height (in) @ d_{50}	Fitting Time** (min) @ t_{50}	Fitting Time** (min) @ t_{90}	Cv ft^2/day
0.05	1.0350	----	----	----	----	----	----	----	----	----
0.27	1.0456	1.0438	0.682	1.0439	0.682	0.16	1.0447		0.5	4.722
0.52	1.0402	1.0387	0.673	1.0381	0.672	0.39	1.0394		2.8	0.831
1.02	1.0312	1.0277	0.656	1.0258	0.653	0.77	1.0295		30.3	0.074
2.02	1.0187	1.0110	0.629	1.0091	0.626	1.52	1.0149		67.2	0.032
4.03	0.9997	0.9839	0.585	0.9827	0.583	3.02	0.9918		54.8	0.038
8.03	0.9750	0.9479	0.527	0.9450	0.522	6.03	0.9615		72.3	0.027
16.07	0.9350	0.9061	0.460	0.9036	0.456	12.05	0.9205		74.0	0.024
32.08	0.8858	0.8538	0.376	0.8515	0.372	24.07	0.8698		98.0	0.016
16.06	0.8567			0.8661	0.395					
4.03	0.8728			0.8931	0.439					
1.02	0.8969			0.9158	0.475					
0.27	0.9186			0.9454	0.523					
0.07	0.9489			0.9675	0.559					

Testing Details:

Consolidation Press ID: CON-9
Trimming Ring ID: GS-82

Initial MC from Trimmings (%): 21.9
Final Differential Height (in): -0.079

Test Start Date: 03/08/2021
Technician: JMB

Test End Date: 03/15/2021
Technician: JMB

When available, all other tests performed in association with this specimen are reported separately.
* When presented, The preconsolidation pressure evaluated using the Cassagrande Method, as per ASTM D 2435.
** Cv Computation Methods:

@ t_{50}, Cv calculated using Log Time Method.

@ t_{90}, Cv calculated using Square Root of Time Method.

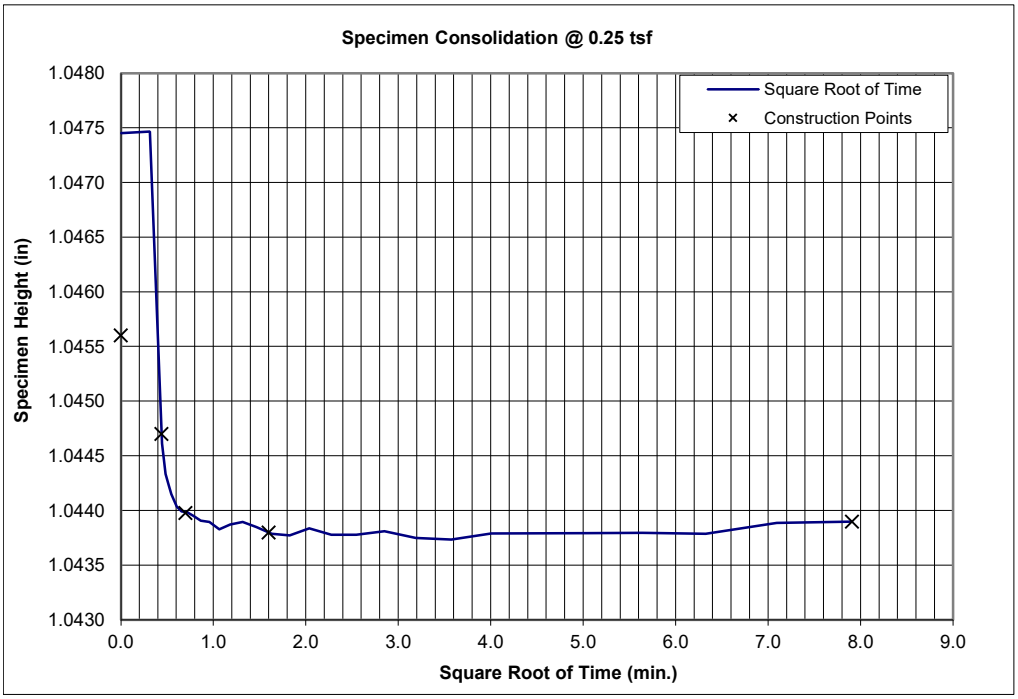
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name	Eagle Creek
Source	B-3.43a, 3.6'-3.8'
Description	Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	0.25
Actual Load (tsf)	0.27
Cycle	Load
Start Date	03/08/2021
Start Time	14:56
End Date	03/08/2021
End Time	15:59



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	1.0456
@ t_{50}	0.2	1.0447
@ t_{90}	0.5	1.0440
@ t_{100}	2.6	1.0438
@ t_{max}	62.5	1.0439

Square Root of Time (min)	Spec. Height (in)
0.00	1.0474
0.32	1.0475
0.45	1.0446
0.48	1.0443
0.52	1.0442
0.55	1.0441
0.61	1.0440
0.66	1.0440
0.72	1.0440
0.79	1.0440
0.87	1.0439
0.96	1.0439
1.06	1.0438
1.18	1.0439
1.32	1.0439
1.47	1.0438
1.63	1.0438
1.83	1.0438
2.04	1.0438
2.28	1.0438
2.55	1.0438
2.85	1.0438
3.19	1.0437
3.58	1.0437
4.01	1.0438
4.5	1.0438

Square Root of Time (min)	Spec. Height (in)
5.03	1.0438
5.64	1.0438
6.33	1.0438
7.09	1.0439
7.91	1.0439

Square Root of Time (min)	Spec. Height (in)

Square Root of Time (min)	Spec. Height (in)

Comments

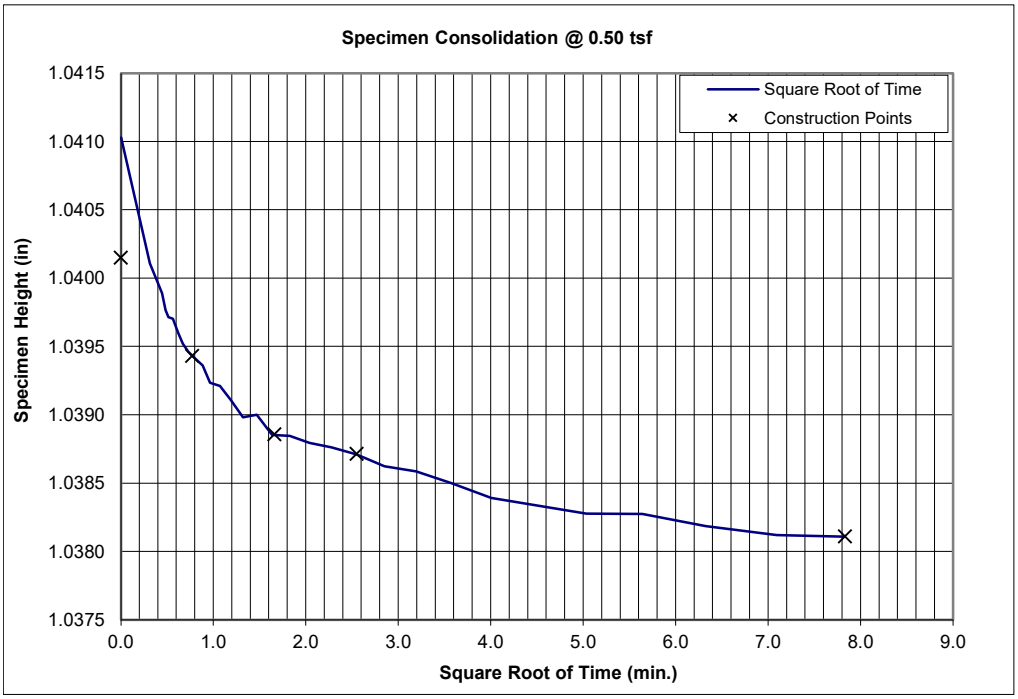
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	0.5
Actual Load (tsf)	0.52
Cycle	Load
Start Date	03/08/2021
Start Time	15:59
End Date	03/08/2021
End Time	17:00



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	1.0402
@ t_{50}	0.6	1.0394
@ t_{90}	2.8	1.0389
@ t_{100}	6.5	1.0387
@ t_{max}	61.3	1.0381

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	1.0410	5.03	1.0383				
0.32	1.0401	5.64	1.0383				
0.45	1.0399	6.33	1.0382				
0.48	1.0398	7.09	1.0381				
0.52	1.0397	7.83	1.0381				
0.56	1.0397						
0.62	1.0396						
0.67	1.0395						
0.73	1.0395						
0.80	1.0394						
0.89	1.0394						
0.97	1.0392						
1.07	1.0392						
1.19	1.0391						
1.32	1.0390						
1.47	1.0390						
1.64	1.0389						
1.83	1.0388						
2.04	1.0388						
2.28	1.0388						
2.55	1.0387						
2.85	1.0386						
3.19	1.0386						
3.58	1.0385						
4.01	1.0384						
4.5	1.0383						

Comments

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One Dimensional Consolidation of Soils Using Incremental Loading

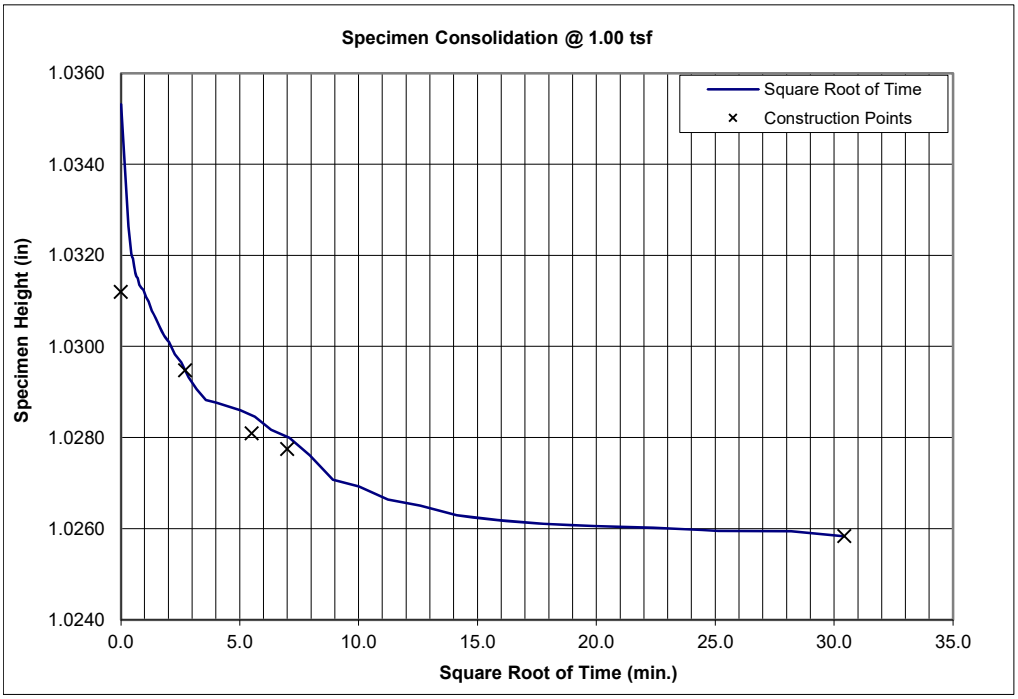
ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 443
Nominal Load (tsf) 1
Actual Load (tsf) 1.02
Cycle Load

Start Date 03/08/2021
Start Time 17:00

End Date 03/09/2021
End Time 8:26



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	1.0312
@ t_{50}	7.3	1.0295
@ t_{90}	30.3	1.0281
@ t_{100}	49.0	1.0277
@ t_{max}	926.0	1.0258

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	1.0353	5.03	1.0286				
0.32	1.0326	5.64	1.0285				
0.45	1.0320	6.32	1.0282				
0.48	1.0320	7.09	1.0280				
0.52	1.0319	7.96	1.0276				
0.56	1.0318	8.92	1.0271				
0.61	1.0316	10.01	1.0269				
0.66	1.0315	11.23	1.0266				
0.72	1.0315	12.60	1.0265				
0.79	1.0314	14.13	1.0263				
0.87	1.0313	15.86	1.0262				
0.96	1.0312	17.79	1.0261				
1.06	1.0311	19.96	1.0261				
1.18	1.0310	22.39	1.0260				
1.31	1.0308	25.12	1.0260				
1.46	1.0306	28.19	1.0259				
1.63	1.0304	30.43	1.0258				
1.82	1.0302						
2.04	1.0301						
2.28	1.0298						
2.54	1.0297						
2.85	1.0293						
3.19	1.0291						
3.57	1.0288						
4.00	1.0288						
4.5	1.0286						

Comments

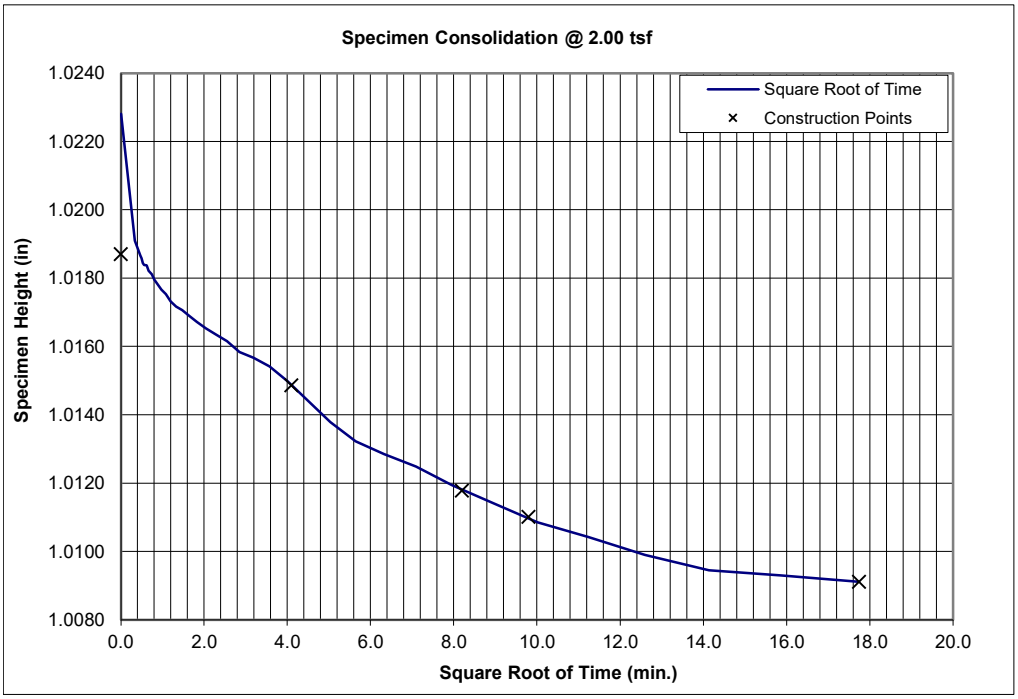
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name	Eagle Creek
Source	B-3.43a, 3.6'-3.8'
Description	Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	2
Actual Load (tsf)	2.02
Cycle	Load
Start Date	03/09/2021
Start Time	8:26
End Date	03/09/2021
End Time	13:41



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	1.0187
@ t_{50}	16.8	1.0149
@ t_{90}	67.2	1.0118
@ t_{100}	96.0	1.0110
@ t_{max}	314.7	1.0091

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	1.0228	5.03	1.0138				
0.34	1.0191	5.64	1.0132				
0.47	1.0187	6.33	1.0128				
0.50	1.0186	7.10	1.0125				
0.53	1.0184	7.96	1.0119				
0.56	1.0184	8.93	1.0114				
0.62	1.0184	10.01	1.0109				
0.67	1.0182	11.23	1.0104				
0.74	1.0181	12.60	1.0099				
0.81	1.0180	14.13	1.0094				
0.89	1.0178	15.86	1.0093				
0.97	1.0177	17.74	1.0091				
1.08	1.0175						
1.20	1.0173						
1.33	1.0172						
1.48	1.0171						
1.64	1.0169						
1.83	1.0167						
2.04	1.0165						
2.28	1.0164						
2.55	1.0162						
2.85	1.0158						
3.19	1.0157						
3.58	1.0154						
4.01	1.0150						
4.5	1.0145						

Comments

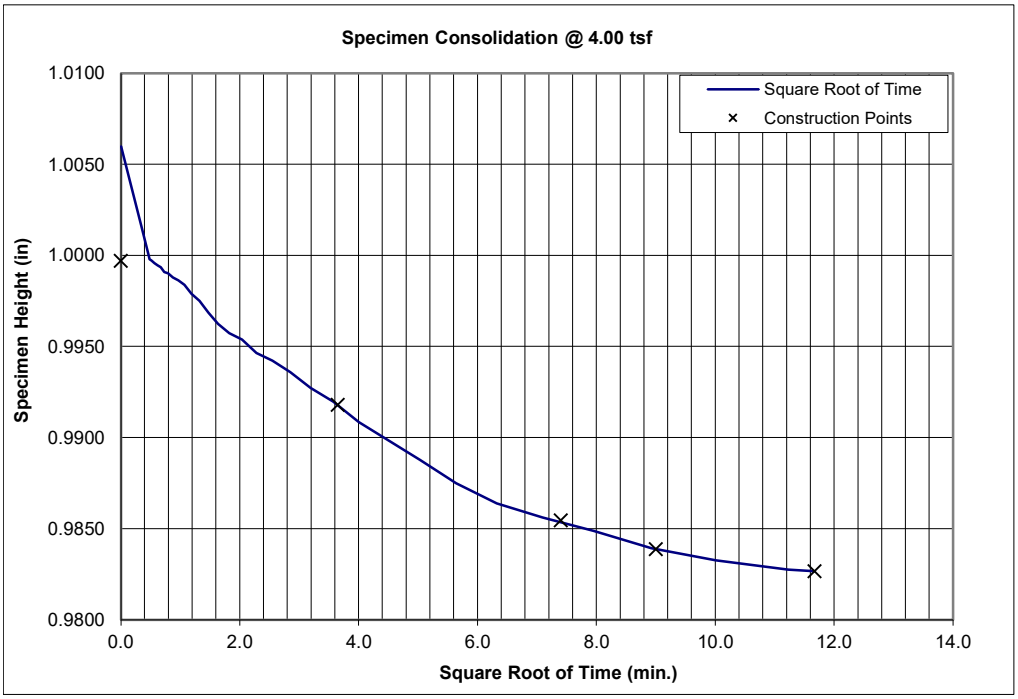
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name	Eagle Creek
Source	B-3.43a, 3.6'-3.8'
Description	Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	4
Actual Load (tsf)	4.03
Cycle	Load
Start Date	03/09/2021
Start Time	13:41
End Date	03/09/2021
End Time	15:57



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9997
@ t_{50}	13.3	0.9918
@ t_{90}	54.8	0.9855
@ t_{100}	81.0	0.9839
@ t_{max}	136.2	0.9827

Square Root of Time (min)	Spec. Height (in)
0.00	1.0060
0.34	1.0016
0.47	1.0000
0.48	0.9998
0.52	0.9997
0.56	0.9996
0.62	0.9995
0.67	0.9993
0.73	0.9991
0.80	0.9990
0.88	0.9988
0.97	0.9986
1.07	0.9984
1.19	0.9979
1.32	0.9975
1.47	0.9969
1.64	0.9962
1.83	0.9957
2.04	0.9954
2.28	0.9946
2.55	0.9942
2.85	0.9936
3.19	0.9927
3.58	0.9920
4.01	0.9909
4.5	0.9897

Square Root of Time (min)	Spec. Height (in)
5.03	0.9888
5.64	0.9875
6.33	0.9864
7.09	0.9856
7.96	0.9849
8.93	0.9839
10.01	0.9833
11.23	0.9827
11.67	0.9827

Square Root of Time (min)	Spec. Height (in)

Square Root of Time (min)	Spec. Height (in)

Comments

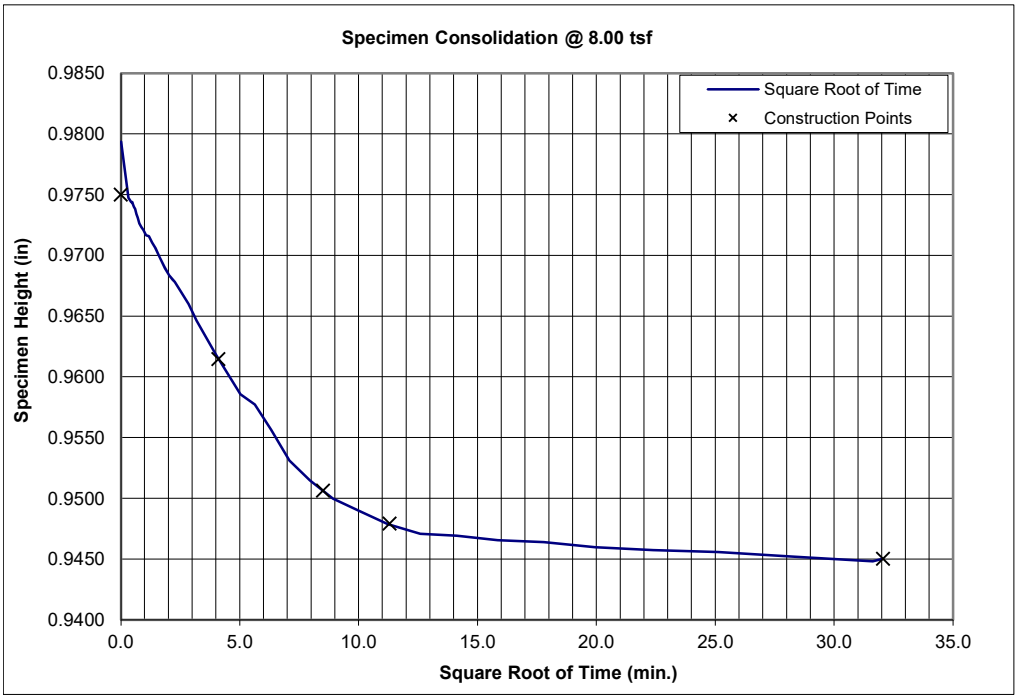
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	8
Actual Load (tsf)	8.03
Cycle	Load
Start Date	03/09/2021
Start Time	15:57
End Date	03/10/2021
End Time	9:05



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9750
@ t_{50}	16.8	0.9615
@ t_{90}	72.3	0.9506
@ t_{100}	127.7	0.9479
@ t_{max}	1027.4	0.9450

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.9794	5.03	0.9585				
0.32	0.9747	5.64	0.9577				
0.45	0.9744	6.33	0.9556				
0.48	0.9744	7.09	0.9531				
0.52	0.9742	7.96	0.9515				
0.55	0.9740	8.92	0.9500				
0.61	0.9738	10.01	0.9490				
0.66	0.9734	11.23	0.9479				
0.72	0.9731	12.60	0.9471				
0.79	0.9726	14.13	0.9469				
0.87	0.9723	15.86	0.9466				
0.96	0.9721	17.79	0.9464				
1.06	0.9716	19.96	0.9460				
1.18	0.9716	22.39	0.9457				
1.32	0.9711	25.12	0.9456				
1.47	0.9706	28.19	0.9452				
1.63	0.9699	31.63	0.9448				
1.83	0.9691	32.05	0.9450				
2.04	0.9684						
2.28	0.9678						
2.55	0.9670						
2.85	0.9660						
3.19	0.9646						
3.58	0.9633						
4.01	0.9618						
4.5	0.9606						

Comments

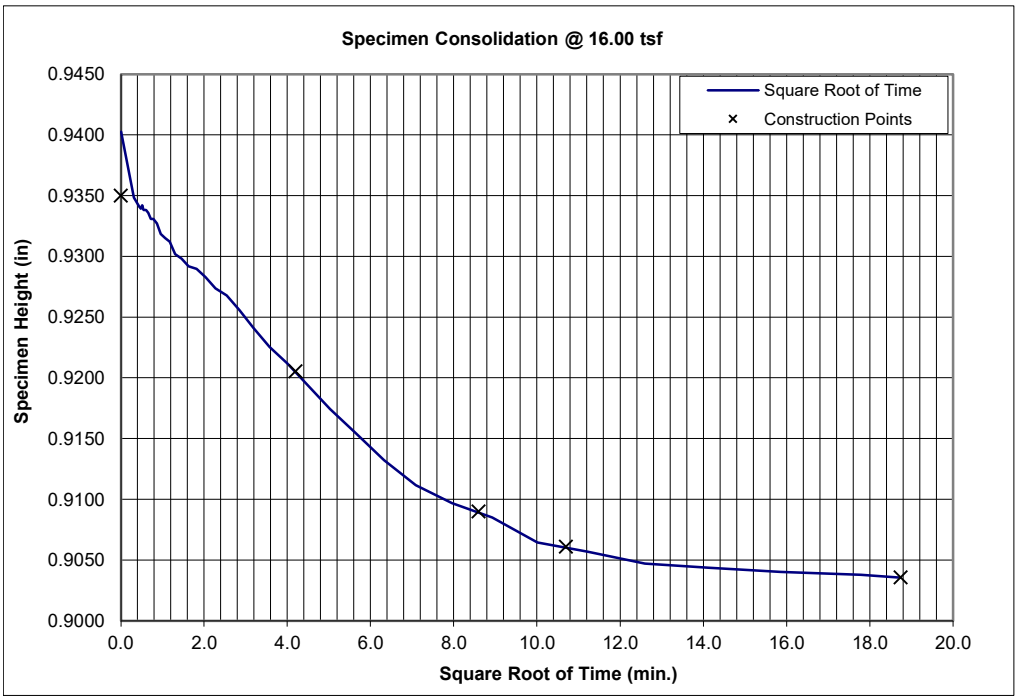
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	16
Actual Load (tsf)	16.07
Cycle	Load
Start Date	03/10/2021
Start Time	9:05
End Date	03/10/2021
End Time	14:56



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9350
@ t_{50}	17.6	0.9205
@ t_{90}	74.0	0.9090
@ t_{100}	114.5	0.9061
@ t_{max}	351.3	0.9036

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.9403	5.03	0.9174				
0.32	0.9348	5.64	0.9155				
0.45	0.9341	6.33	0.9132				
0.48	0.9339	7.09	0.9111				
0.52	0.9342	7.96	0.9097				
0.55	0.9338	8.92	0.9085				
0.61	0.9338	10.01	0.9064				
0.66	0.9336	11.23	0.9057				
0.72	0.9331	12.60	0.9047				
0.79	0.9331	14.13	0.9044				
0.87	0.9327	15.86	0.9040				
0.96	0.9318	17.79	0.9038				
1.06	0.9315	18.74	0.9036				
1.18	0.9312						
1.31	0.9302						
1.46	0.9298						
1.63	0.9292						
1.82	0.9290						
2.04	0.9283						
2.28	0.9274						
2.55	0.9268						
2.85	0.9256						
3.19	0.9241						
3.57	0.9225						
4.00	0.9212						
4.5	0.9195						

Comments

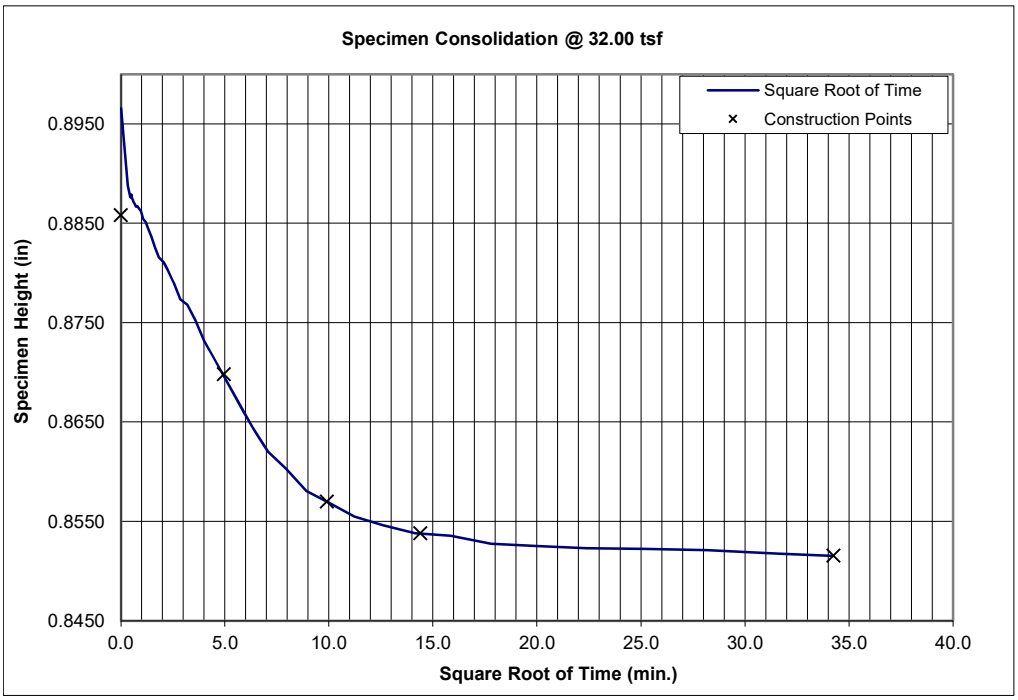
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	32
Actual Load (tsf)	32.08
Cycle	Load
Start Date	03/10/2021
Start Time	14:56
End Date	03/11/2021
End Time	10:29



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8858
@ t_{50}	24.5	0.8698
@ t_{90}	98.0	0.8570
@ t_{100}	207.4	0.8538
@ t_{max}	1172.8	0.8515

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8966	5.03	0.8693				
0.34	0.8888	5.64	0.8670				
0.47	0.8876	6.33	0.8645				
0.50	0.8879	7.10	0.8620				
0.53	0.8875	7.96	0.8603				
0.58	0.8873	8.93	0.8580				
0.62	0.8871	10.01	0.8569				
0.68	0.8869	11.23	0.8555				
0.74	0.8866	12.60	0.8546				
0.81	0.8867	14.14	0.8538				
0.89	0.8864	15.86	0.8536				
0.97	0.8862	17.79	0.8528				
1.08	0.8854	19.96	0.8525				
1.20	0.8851	22.39	0.8523				
1.33	0.8844	25.12	0.8522				
1.47	0.8836	28.19	0.8521				
1.64	0.8826	31.63	0.8517				
1.83	0.8816	34.25	0.8515				
2.04	0.8811						
2.28	0.8802						
2.55	0.8790						
2.85	0.8773						
3.19	0.8768						
3.58	0.8752						
4.01	0.8731						
4.5	0.8712						

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

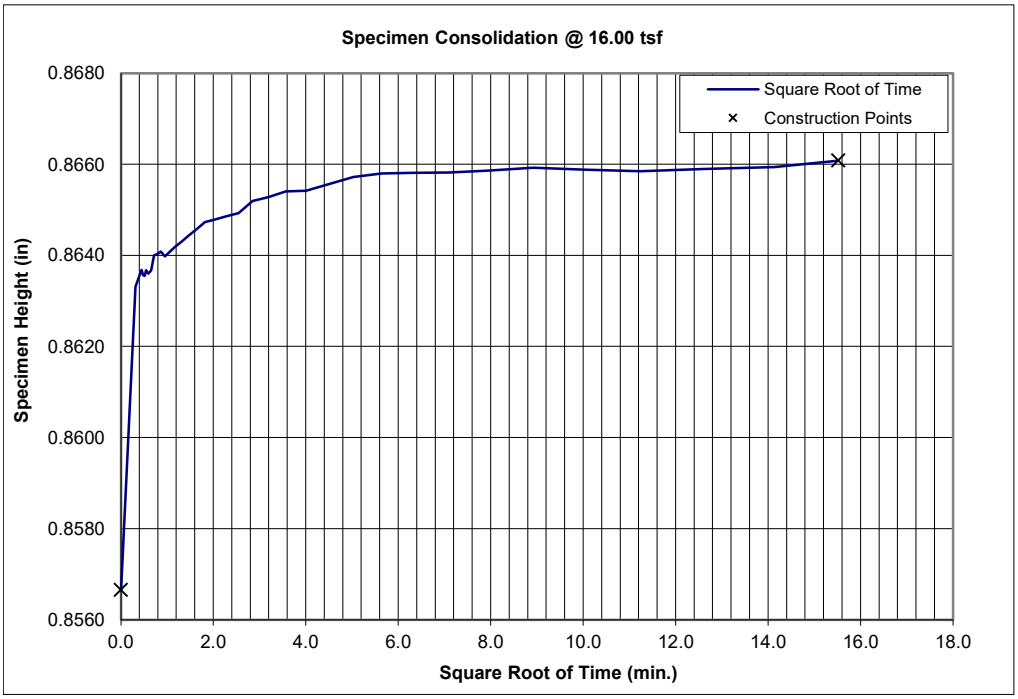
ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 443
Nominal Load (tsf) 16
Actual Load (tsf) 16.06
Cycle Unload

Start Date 03/11/2021
Start Time 10:29

End Date 03/11/2021
End Time 14:30



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8567
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	240.8	0.8661

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8567	5.03	0.8657				
0.32	0.8633	5.64	0.8658				
0.45	0.8637	6.32	0.8658				
0.48	0.8636	7.09	0.8658				
0.52	0.8636	7.96	0.8659				
0.55	0.8637	8.92	0.8659				
0.59	0.8636	10.01	0.8659				
0.66	0.8637	11.23	0.8658				
0.72	0.8640	12.60	0.8659				
0.79	0.8640	14.13	0.8659				
0.87	0.8641	15.52	0.8661				
0.96	0.8640						
1.06	0.8641						
1.18	0.8642						
1.31	0.8643						
1.46	0.8644						
1.63	0.8646						
1.82	0.8647						
2.04	0.8648						
2.28	0.8649						
2.55	0.8649						
2.85	0.8652						
3.19	0.8653						
3.57	0.8654						
4.00	0.8654						
4.5	0.8656						

Comments

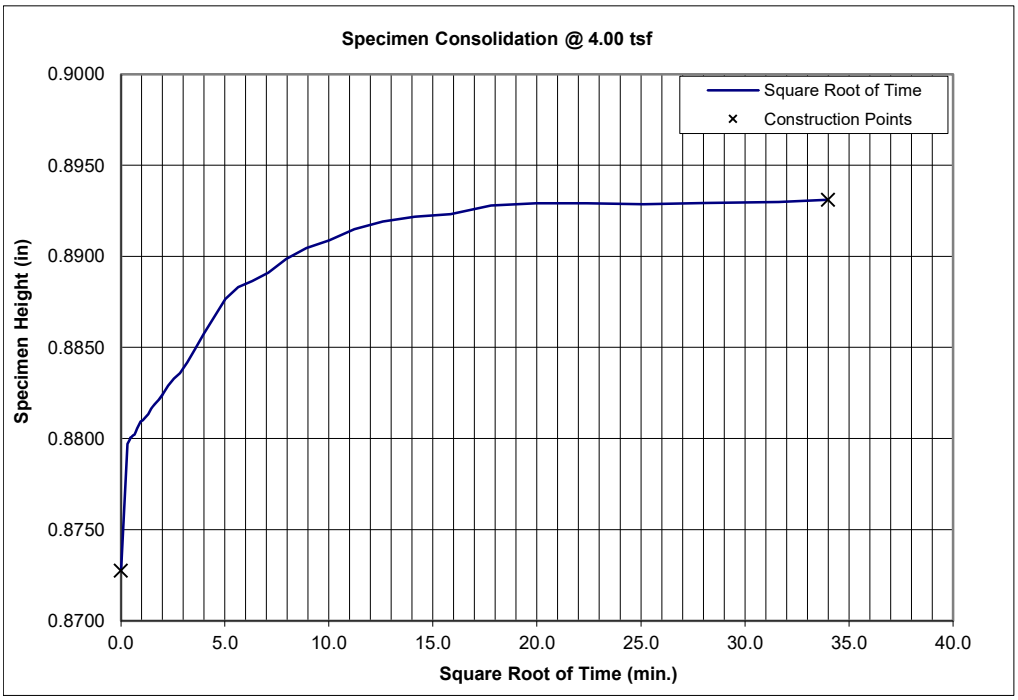
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	4
Actual Load (tsf)	4.03
Cycle	Unload
Start Date	03/11/2021
Start Time	14:30
End Date	03/12/2021
End Time	9:45



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8728
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	1155.7	0.8931

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8728	5.03	0.8877				
0.32	0.8797	5.64	0.8883				
0.45	0.8800	6.32	0.8886				
0.47	0.8801	7.09	0.8891				
0.50	0.8801	7.96	0.8899				
0.55	0.8801	8.92	0.8905				
0.61	0.8802	10.01	0.8909				
0.66	0.8802	11.23	0.8915				
0.72	0.8804	12.60	0.8919				
0.79	0.8806	14.13	0.8922				
0.87	0.8807	15.86	0.8923				
0.96	0.8809	17.79	0.8928				
1.06	0.8810	19.96	0.8929				
1.18	0.8812	22.39	0.8929				
1.32	0.8813	25.12	0.8929				
1.47	0.8816	28.19	0.8929				
1.63	0.8819	31.63	0.8930				
1.82	0.8821	34.00	0.8931				
2.04	0.8825						
2.28	0.8829						
2.55	0.8833						
2.85	0.8836						
3.19	0.8842						
3.57	0.8849						
4.00	0.8858						
4.5	0.8866						

Comments

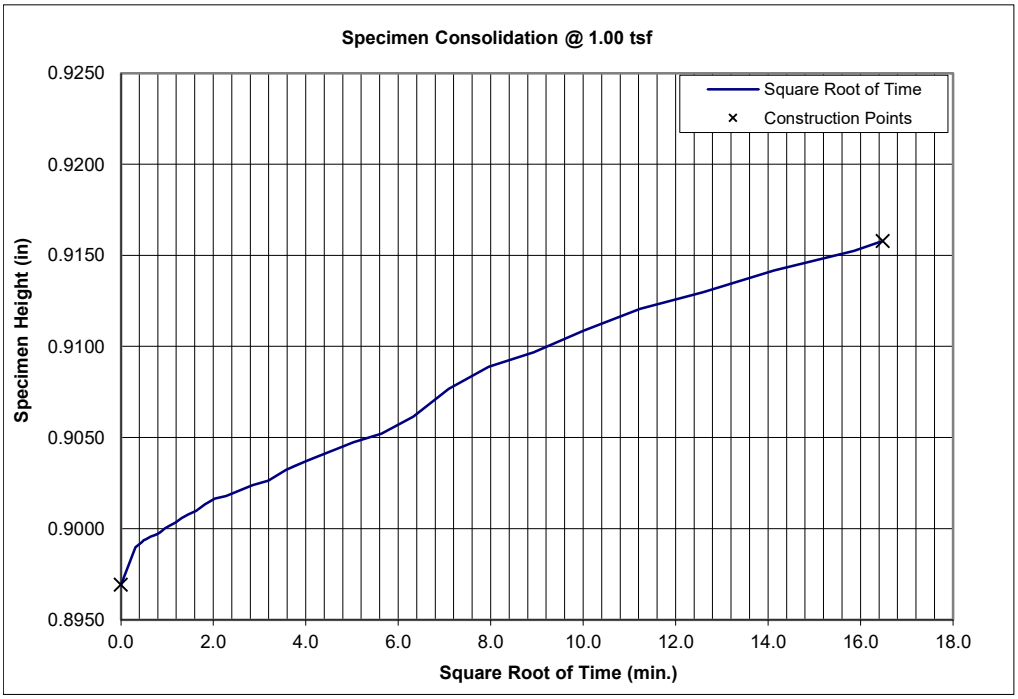
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	1
Actual Load (tsf)	1.02
Cycle	Unload
Start Date	03/12/2021
Start Time	9:45
End Date	03/12/2021
End Time	14:17



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8969
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	271.5	0.9158

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8969	5.03	0.9047				
0.32	0.8990	5.64	0.9052				
0.45	0.8992	6.33	0.9061				
0.47	0.8993	7.10	0.9077				
0.50	0.8994	7.96	0.9089				
0.55	0.8994	8.93	0.9097				
0.59	0.8995	10.01	0.9109				
0.65	0.8996	11.23	0.9121				
0.72	0.8996	12.60	0.9130				
0.79	0.8997	14.13	0.9142				
0.87	0.8998	15.86	0.9152				
0.96	0.9000	16.48	0.9158				
1.06	0.9002						
1.18	0.9003						
1.32	0.9006						
1.47	0.9008						
1.63	0.9010						
1.82	0.9013						
2.04	0.9016						
2.28	0.9018						
2.55	0.9021						
2.85	0.9024						
3.19	0.9026						
3.58	0.9032						
4.01	0.9037						
4.5	0.9042						

Comments

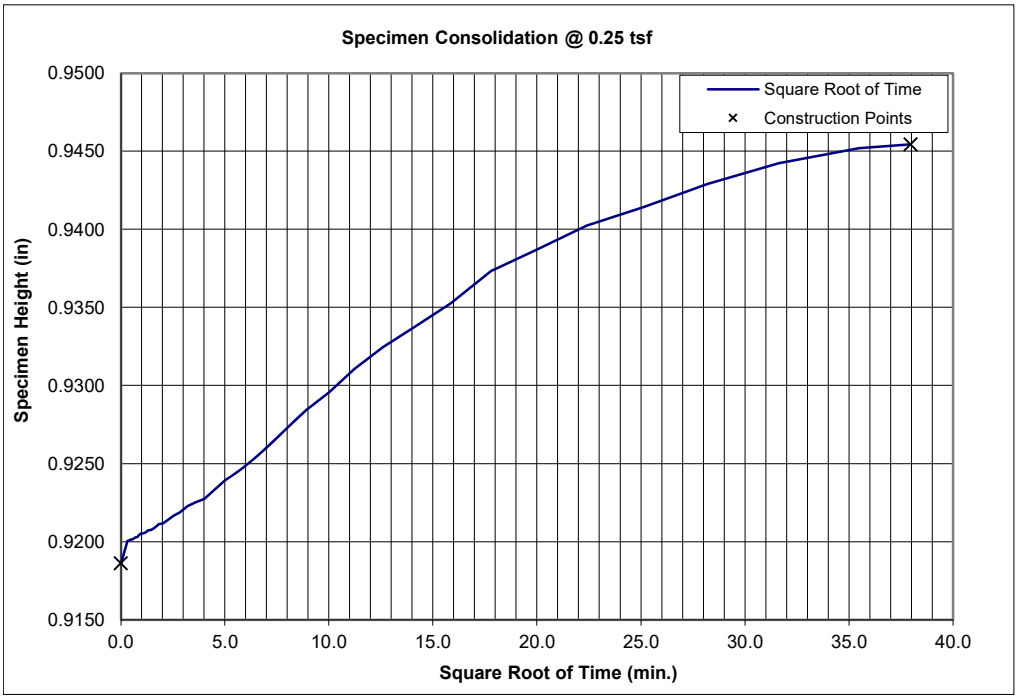
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	0.25
Actual Load (tsf)	0.27
Cycle	Unload
Start Date	03/12/2021
Start Time	14:17
End Date	03/13/2021
End Time	14:17



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9186
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	1440.3	0.9454

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.9186	5.03	0.9239				
0.32	0.9200	5.64	0.9245				
0.45	0.9201	6.33	0.9252				
0.47	0.9201	7.09	0.9261				
0.52	0.9201	7.96	0.9272				
0.56	0.9202	8.93	0.9284				
0.61	0.9202	10.01	0.9296				
0.66	0.9202	11.23	0.9310				
0.72	0.9203	12.60	0.9325				
0.80	0.9203	14.13	0.9338				
0.88	0.9204	15.86	0.9352				
0.97	0.9205	17.79	0.9373				
1.06	0.9205	19.96	0.9387				
1.18	0.9206	22.39	0.9402				
1.32	0.9207	25.12	0.9414				
1.47	0.9207	28.19	0.9429				
1.63	0.9209	31.63	0.9442				
1.83	0.9211	35.49	0.9452				
2.04	0.9212	37.95	0.9454				
2.28	0.9214						
2.55	0.9217						
2.85	0.9219						
3.19	0.9223						
3.58	0.9225						
4.01	0.9227						
4.5	0.9233						

Comments

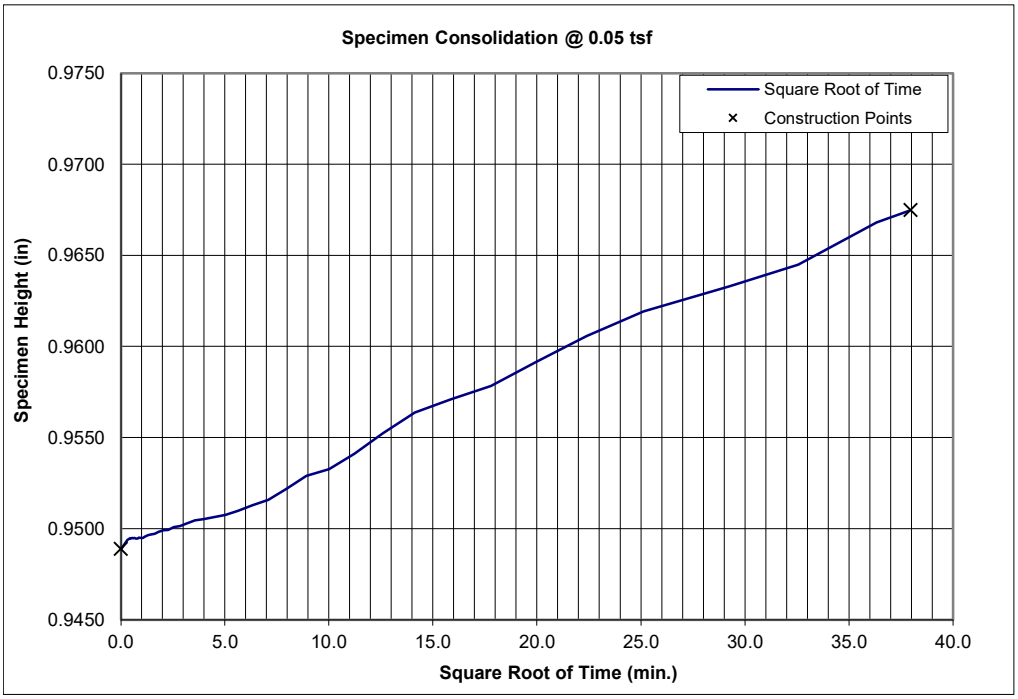
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.43a, 3.6'-3.8'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	443
Nominal Load (tsf)	0.05
Actual Load (tsf)	0.07
Cycle	Final
Start Date	03/13/2021
Start Time	14:17
End Date	03/14/2021
End Time	14:17



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9489
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	1440.2	0.9675

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.9489	5.03	0.9508				
0.32	0.9494	5.64	0.9510				
0.45	0.9495	6.33	0.9513				
0.47	0.9495	7.09	0.9516				
0.50	0.9495	7.96	0.9522				
0.55	0.9495	8.92	0.9529				
0.59	0.9495	10.01	0.9533				
0.66	0.9495	11.23	0.9541				
0.72	0.9494	12.60	0.9552				
0.80	0.9495	14.13	0.9564				
0.88	0.9495	15.86	0.9571				
0.97	0.9495	17.79	0.9578				
1.06	0.9495	19.96	0.9591				
1.18	0.9496	22.39	0.9606				
1.32	0.9496	25.12	0.9619				
1.47	0.9497	29.23	0.9633				
1.63	0.9497	32.56	0.9645				
1.82	0.9498	36.32	0.9668				
2.04	0.9499	37.95	0.9675				
2.28	0.9499						
2.55	0.9501						
2.85	0.9501						
3.19	0.9503						
3.57	0.9504						
4.00	0.9505						
4.5	0.9506						

Comments

Stantec

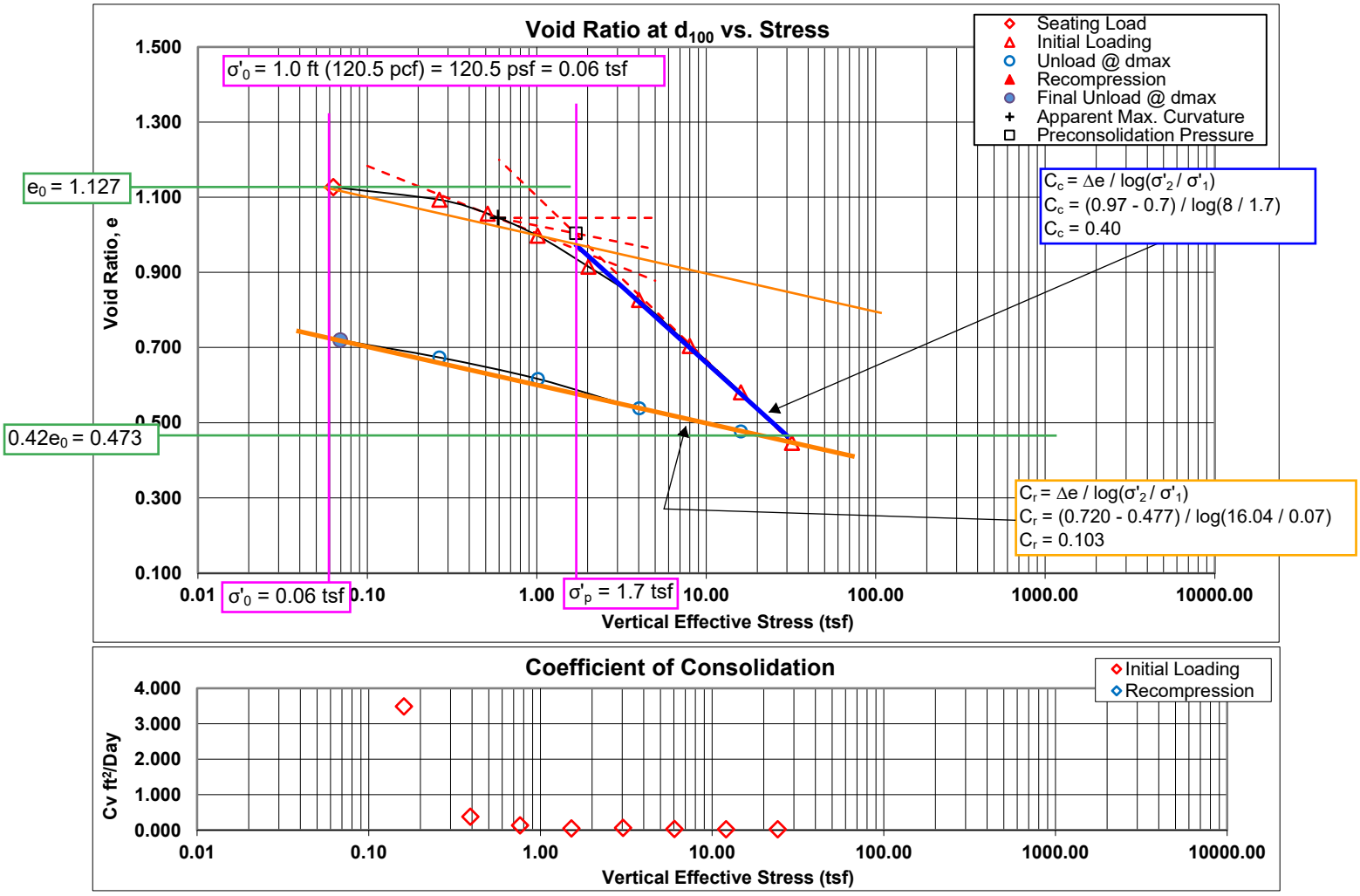
One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name	Eagle Creek	Project No.	173409690
Source	B-3.49a, 0.9'-1.1'	Lab ID	785
Description	Lean Clay (CL), brown, moist, firm	Date Received	04/14/2021
Specimen Type	Undisturbed		

LL	N/A	Specific Gravity	2.64	ASTM D 854, Dry	Prepared: Using Cutting Ring
PL	N/A				Test Method: B - for 120 min.
PI	N/A				Test Condition: Inundated at 0.05 tsf

Initial Specimen Conditions		Final Specimen Conditions	
Moisture Content (%)	39.0	Moisture Content (%)	29.5
Dry Unit Weight (pcf)	77.3	Dry Unit Weight (pcf)	95.6
Void Ratio	1.127	Void Ratio	0.720
Degree of Saturation (%)	91.3	Degree of Saturation (%)	108.2
Initial Specimen Height (in)	1.0133	Final Specimen Height (in)	0.8193
Equivalent Height of Solids (in)	0.476	Preconsolidation Pressure* (tsf)	1.7
		Void Ratio @ Preconsolidation Pressure	1.004



Comments

Reviewed By KG

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name: Eagle Creek
Source: B-3.49a, 0.9'-1.1'
Description: Lean Clay (CL), brown, moist, firm
Specimen Type: Undisturbed

Project No.: 173409690
Lab ID: 785
Date Received: 04/14/2021

Load Increment tsf σ_v	Specimen Height (in) @ d_0	Specimen Height (in) @ d_{100}	Void Ratio e @ d_{100}	Specimen Height (in) @ d_{max}	Void Ratio e @ d_{max}	Load At Cv tsf	Specimen Height (in) @ d_{50}	Fitting Time** (min) @ t_{50}	Fitting Time** (min) @ t_{90}	Cv ft^2/day
0.06	1.0133	----	----	----	----	----	----	----	----	----
0.27	1.0046	0.9973	1.093	0.9931	1.084	0.16	1.0009		0.6	3.491
0.51	0.9868	0.9796	1.056	0.9745	1.045	0.39	0.9832		5.4	0.381
1.01	0.9650	0.9516	0.997	0.9459	0.985	0.76	0.9583		14.5	0.134
2.02	0.9323	0.9125	0.915	0.9024	0.894	1.51	0.9224		36.0	0.050
4.02	0.8925	0.8702	0.826	0.8647	0.815	3.02	0.8814		27.0	0.061
8.01	0.8515	0.8120	0.704	0.8060	0.692	6.02	0.8317		47.6	0.031
16.03	0.7900	0.7530	0.581	0.7431	0.560	12.02	0.7715		58.5	0.022
32.05	0.7263	0.6892	0.447	0.6855	0.439	24.04	0.7078		52.6	0.020
16.04	0.6927			0.7037	0.477					
4.02	0.7102			0.7331	0.539					
1.02	0.7374			0.7702	0.617					
0.27	0.7721			0.7974	0.674					
0.07	0.7998			0.8193	0.720					

Testing Details:

Consolidation Press ID: CON-10
Trimming Ring ID: GS-84

Initial MC from Trimmings (%): 39.0
Final Differential Height (in): -0.324

Test Start Date: 05/03/2021
Technician: JMB

Test End Date: 05/09/2021
Technician: JMB

When available, all other tests performed in association with this specimen are reported separately.
* When presented, The preconsolidation pressure evaluated using the Cassagrande Method, as per ASTM D 2435.
** Cv Computation Methods:

@ t_{50}, Cv calculated using Log Time Method.

@ t_{90}, Cv calculated using Square Root of Time Method.

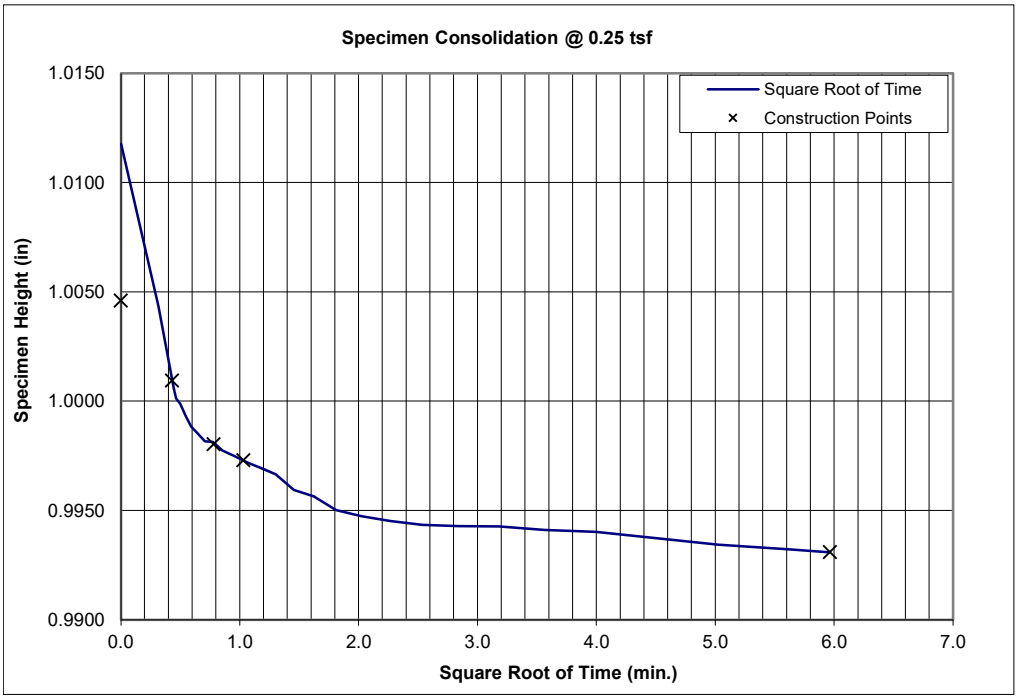
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	0.25
Actual Load (tsf)	0.27
Cycle	Load
Start Date	05/03/2021
Start Time	10:23
End Date	05/03/2021
End Time	10:59



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	1.0046
@ t_{50}	0.2	1.0009
@ t_{90}	0.6	0.9980
@ t_{100}	1.1	0.9973
@ t_{max}	35.6	0.9931

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	1.0118	5.02	0.9934				
0.32	1.0043	5.63	0.9932				
0.45	1.0006	5.96	0.9931				
0.47	1.0001						
0.50	0.9999						
0.55	0.9993						
0.59	0.9988						
0.65	0.9985						
0.71	0.9982						
0.77	0.9981						
0.86	0.9977						
0.95	0.9975						
1.06	0.9972						
1.17	0.9970						
1.30	0.9966						
1.45	0.9959						
1.62	0.9956						
1.81	0.9950						
2.02	0.9947						
2.27	0.9945						
2.54	0.9943						
2.84	0.9943						
3.18	0.9943						
3.57	0.9941						
4.00	0.9940						
4.5	0.9937						

Comments

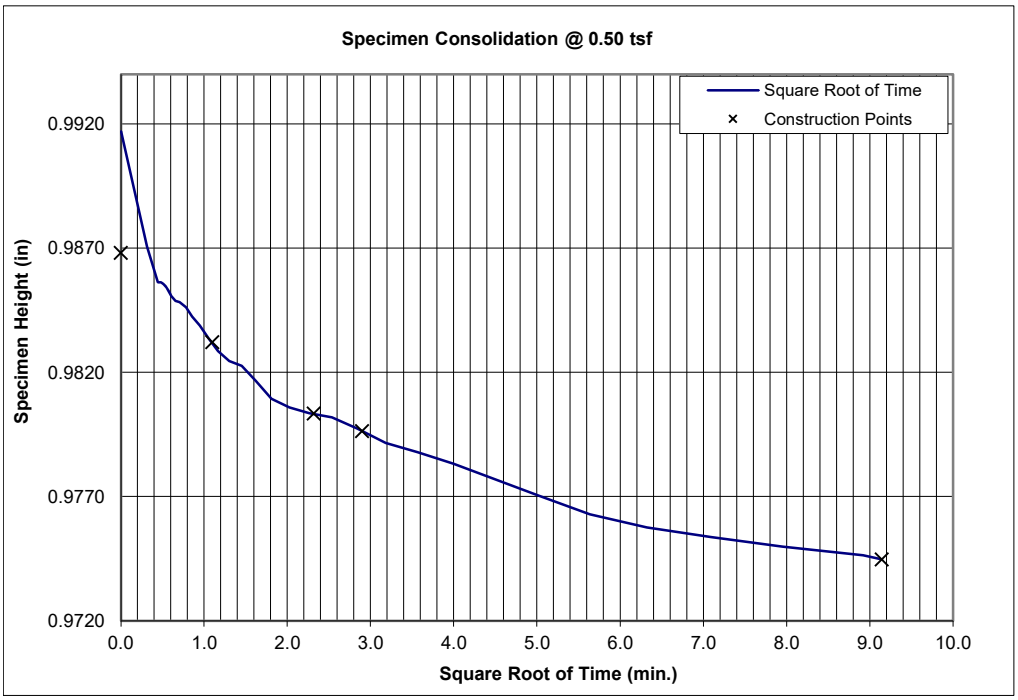
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	0.5
Actual Load (tsf)	0.51
Cycle	Load
Start Date	05/03/2021
Start Time	10:59
End Date	05/03/2021
End Time	12:23



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9868
@ t_{50}	1.2	0.9832
@ t_{90}	5.4	0.9803
@ t_{100}	8.4	0.9796
@ t_{max}	83.6	0.9745

Square Root of Time (min)	Spec. Height (in)
0.00	0.9917
0.32	0.9871
0.45	0.9856
0.48	0.9856
0.52	0.9855
0.55	0.9854
0.61	0.9851
0.66	0.9849
0.71	0.9848
0.79	0.9846
0.86	0.9842
0.95	0.9839
1.06	0.9834
1.17	0.9828
1.30	0.9825
1.45	0.9823
1.62	0.9817
1.81	0.9809
2.02	0.9806
2.27	0.9804
2.54	0.9802
2.84	0.9797
3.18	0.9792
3.57	0.9788
4.00	0.9783
4.5	0.9775

Square Root of Time (min)	Spec. Height (in)
5.02	0.9770
5.63	0.9763
6.32	0.9757
7.09	0.9754
7.95	0.9750
8.92	0.9746
9.14	0.9745

Square Root of Time (min)	Spec. Height (in)

Square Root of Time (min)	Spec. Height (in)

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

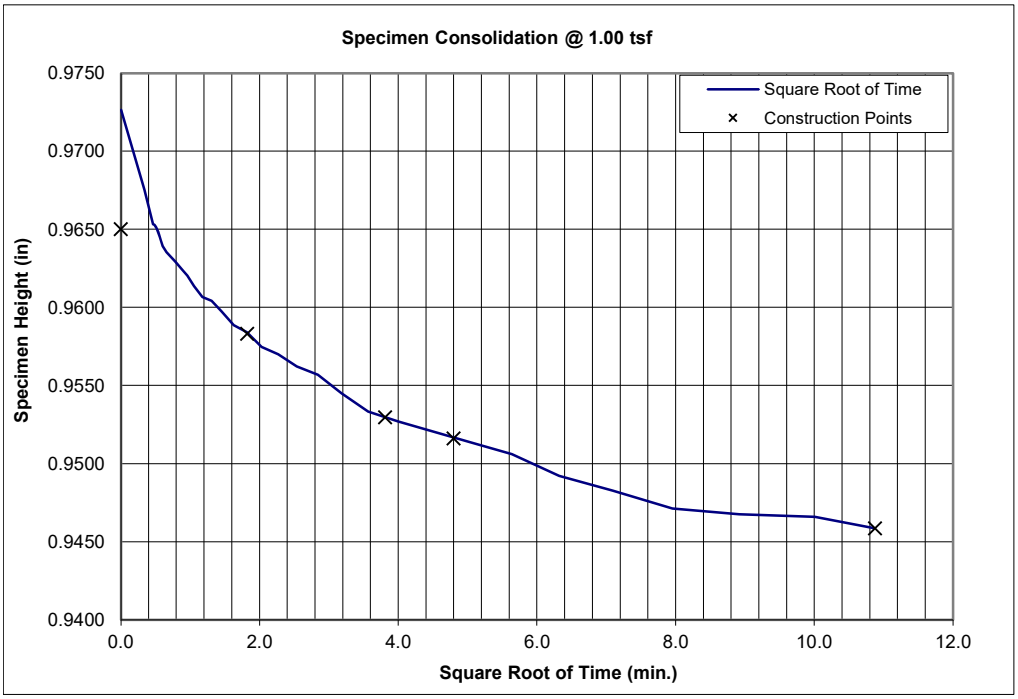
ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 785
Nominal Load (tsf) 1
Actual Load (tsf) 1.01
Cycle Load

Start Date 05/03/2021
Start Time 12:23

End Date 05/03/2021
End Time 14:21



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9650
@ t_{50}	3.3	0.9583
@ t_{90}	14.5	0.9530
@ t_{100}	23.0	0.9516
@ t_{max}	118.2	0.9459

Square Root of Time (min)	Spec. Height (in)
0.00	0.9727
0.34	0.9675
0.47	0.9653
0.48	0.9653
0.52	0.9651
0.56	0.9645
0.61	0.9639
0.66	0.9635
0.72	0.9632
0.79	0.9629
0.87	0.9625
0.96	0.9620
1.06	0.9614
1.18	0.9607
1.31	0.9604
1.45	0.9597
1.63	0.9589
1.82	0.9584
2.03	0.9575
2.27	0.9570
2.54	0.9562
2.84	0.9557
3.18	0.9545
3.57	0.9533
4.00	0.9527
4.5	0.9519

Square Root of Time (min)	Spec. Height (in)
5.03	0.9514
5.64	0.9506
6.32	0.9492
7.09	0.9483
7.95	0.9471
8.92	0.9468
10.01	0.9466
10.87	0.9459

Square Root of Time (min)	Spec. Height (in)

Square Root of Time (min)	Spec. Height (in)

Comments

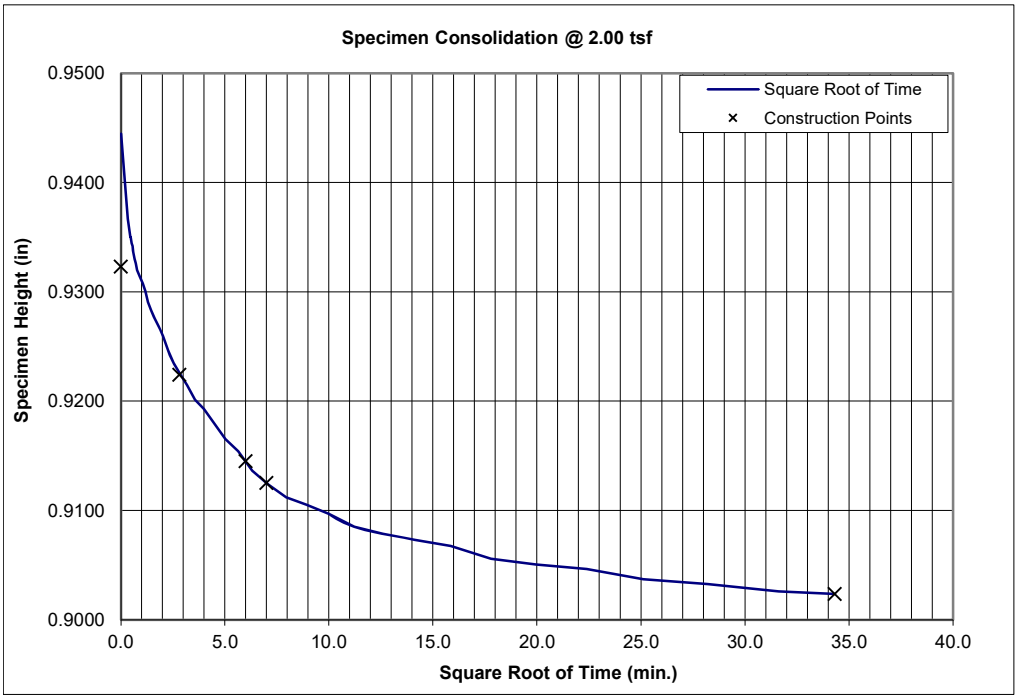
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	2
Actual Load (tsf)	2.02
Cycle	Load
Start Date	05/03/2021
Start Time	14:21
End Date	05/04/2021
End Time	9:59



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.9323
@ t_{50}	8.0	0.9224
@ t_{90}	36.0	0.9145
@ t_{100}	49.0	0.9125
@ t_{max}	1177.7	0.9024

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.9445	5.03	0.9165				
0.34	0.9367	5.64	0.9154				
0.47	0.9350	6.32	0.9136				
0.48	0.9350	7.09	0.9124				
0.52	0.9344	7.95	0.9112				
0.56	0.9342	8.92	0.9105				
0.61	0.9336	10.01	0.9097				
0.66	0.9330	11.23	0.9085				
0.72	0.9326	12.60	0.9079				
0.79	0.9320	14.13	0.9073				
0.87	0.9316	15.85	0.9067				
0.96	0.9312	17.79	0.9056				
1.06	0.9308	19.96	0.9050				
1.18	0.9300	22.39	0.9047				
1.31	0.9290	25.12	0.9037				
1.45	0.9283	28.19	0.9033				
1.63	0.9276	31.63	0.9026				
1.82	0.9268	34.32	0.9024				
2.03	0.9260						
2.27	0.9246						
2.54	0.9235						
2.84	0.9225						
3.18	0.9215						
3.57	0.9201						
4.00	0.9193						
4.5	0.9175						

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

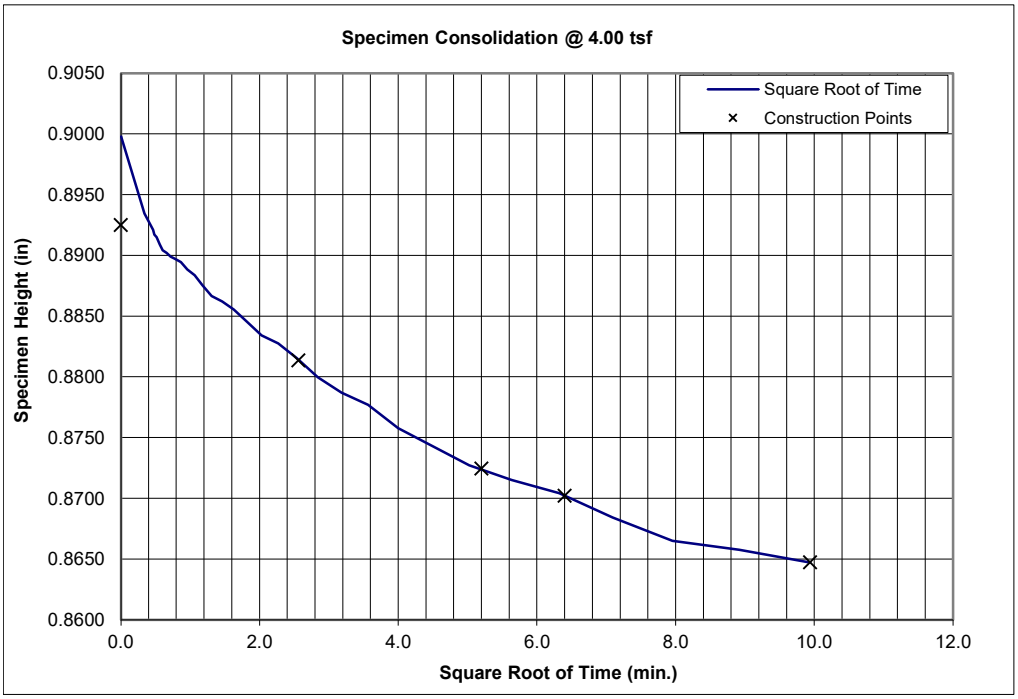
ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 785
Nominal Load (tsf) 4
Actual Load (tsf) 4.02
Cycle Load

Start Date 05/04/2021
Start Time 9:59

End Date 05/04/2021
End Time 11:37



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8925
@ t_{50}	6.6	0.8814
@ t_{90}	27.0	0.8724
@ t_{100}	41.0	0.8702
@ t_{max}	98.8	0.8647

Square Root of Time (min)	Spec. Height (in)
0.00	0.8998
0.34	0.8935
0.47	0.8921
0.48	0.8917
0.52	0.8915
0.56	0.8909
0.61	0.8904
0.66	0.8902
0.72	0.8899
0.79	0.8897
0.87	0.8894
0.96	0.8888
1.06	0.8884
1.18	0.8875
1.31	0.8867
1.46	0.8862
1.63	0.8855
1.82	0.8845
2.03	0.8834
2.27	0.8827
2.54	0.8815
2.84	0.8800
3.18	0.8787
3.57	0.8777
4.00	0.8758
4.5	0.8744
5.03	0.8727
5.64	0.8715
6.32	0.8704
7.09	0.8684
7.95	0.8665
8.92	0.8658
9.94	0.8647

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

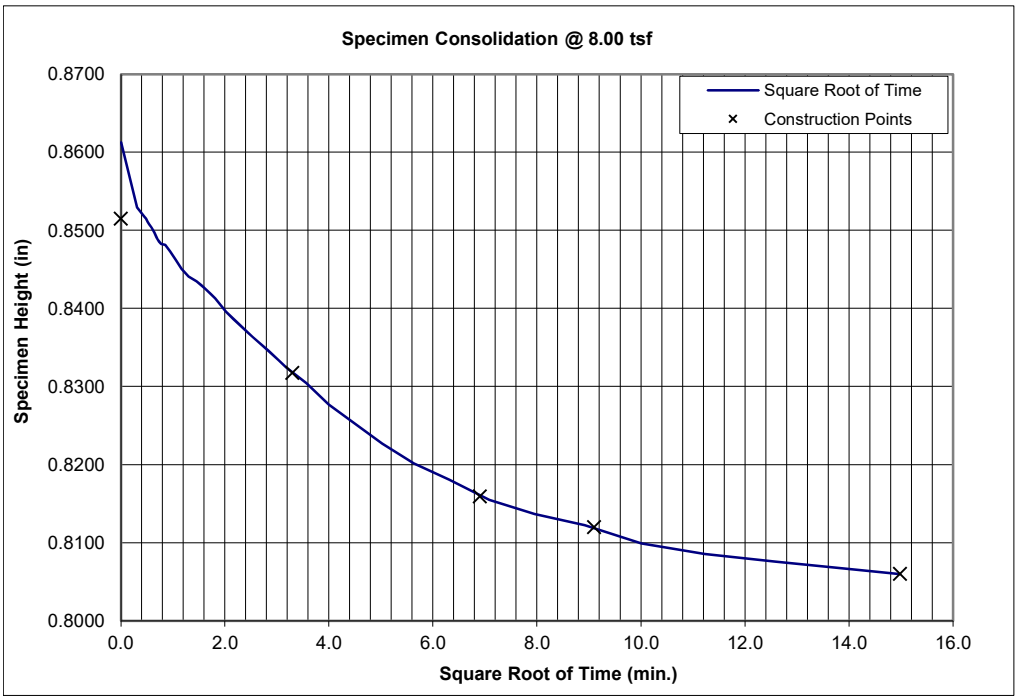
ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 785
Nominal Load (tsf) 8
Actual Load (tsf) 8.01
Cycle Load

Start Date 05/04/2021
Start Time 11:37

End Date 05/04/2021
End Time 15:22



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.8515
@ t_{50}	10.9	0.8317
@ t_{90}	47.6	0.8159
@ t_{100}	82.8	0.8120
@ t_{max}	224.4	0.8060

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8613	5.02	0.8227				
0.32	0.8529	5.63	0.8201				
0.45	0.8518	6.32	0.8180				
0.48	0.8515	7.09	0.8155				
0.52	0.8511	7.95	0.8137				
0.55	0.8508	8.92	0.8123				
0.59	0.8503	10.01	0.8099				
0.65	0.8497	11.23	0.8085				
0.71	0.8488	12.59	0.8075				
0.77	0.8482	14.13	0.8065				
0.86	0.8481	14.98	0.8060				
0.95	0.8473						
1.06	0.8462						
1.17	0.8451						
1.30	0.8441						
1.45	0.8435						
1.62	0.8425						
1.81	0.8413						
2.02	0.8396						
2.27	0.8380						
2.54	0.8363						
2.84	0.8346						
3.18	0.8324						
3.57	0.8304						
4.00	0.8277						
4.5	0.8254						

Comments

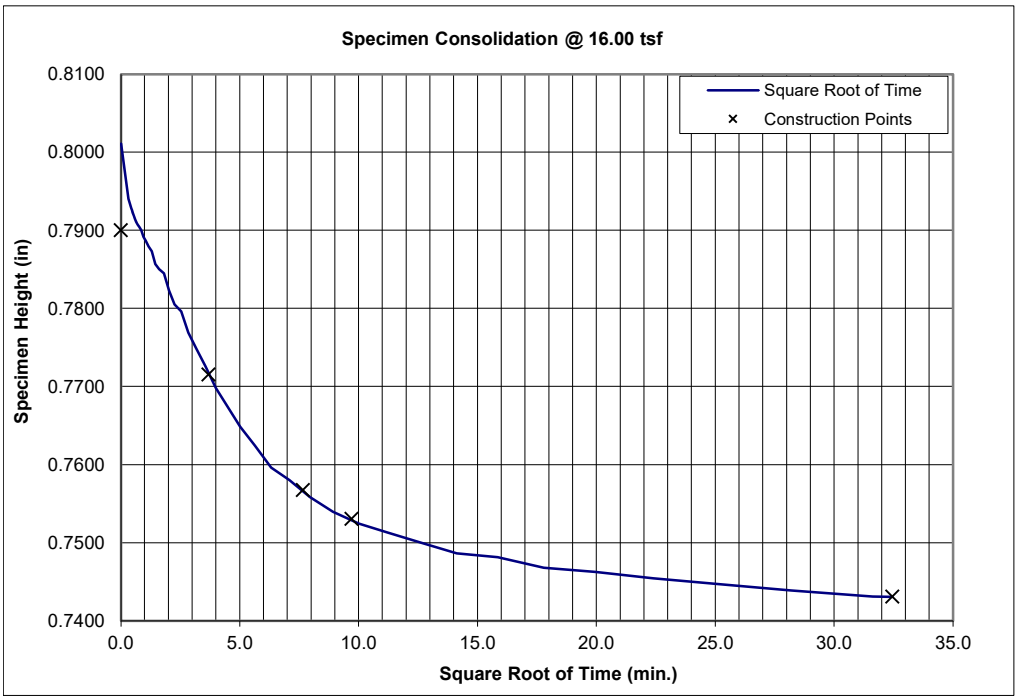
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	16
Actual Load (tsf)	16.03
Cycle	Load
Start Date	05/04/2021
Start Time	15:22
End Date	05/05/2021
End Time	8:55



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7900
@ t_{50}	13.6	0.7715
@ t_{90}	58.5	0.7567
@ t_{100}	94.1	0.7530
@ t_{max}	1052.8	0.7431

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.8012	5.02	0.7649				
0.32	0.7940	5.63	0.7624				
0.45	0.7928	6.32	0.7596				
0.47	0.7926	7.09	0.7580				
0.50	0.7923	7.95	0.7558				
0.55	0.7918	8.92	0.7540				
0.59	0.7915	10.01	0.7525				
0.65	0.7911	11.23	0.7513				
0.71	0.7907	12.59	0.7500				
0.77	0.7904	14.13	0.7486				
0.86	0.7900	15.85	0.7482				
0.95	0.7892	17.79	0.7468				
1.05	0.7887	19.96	0.7463				
1.17	0.7879	22.39	0.7454				
1.30	0.7873	25.12	0.7447				
1.45	0.7857	28.19	0.7439				
1.62	0.7850	31.63	0.7431				
1.81	0.7845	32.45	0.7431				
2.02	0.7823						
2.27	0.7805						
2.54	0.7796						
2.84	0.7769						
3.18	0.7749						
3.57	0.7726						
4.00	0.7698						
4.5	0.7676						

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

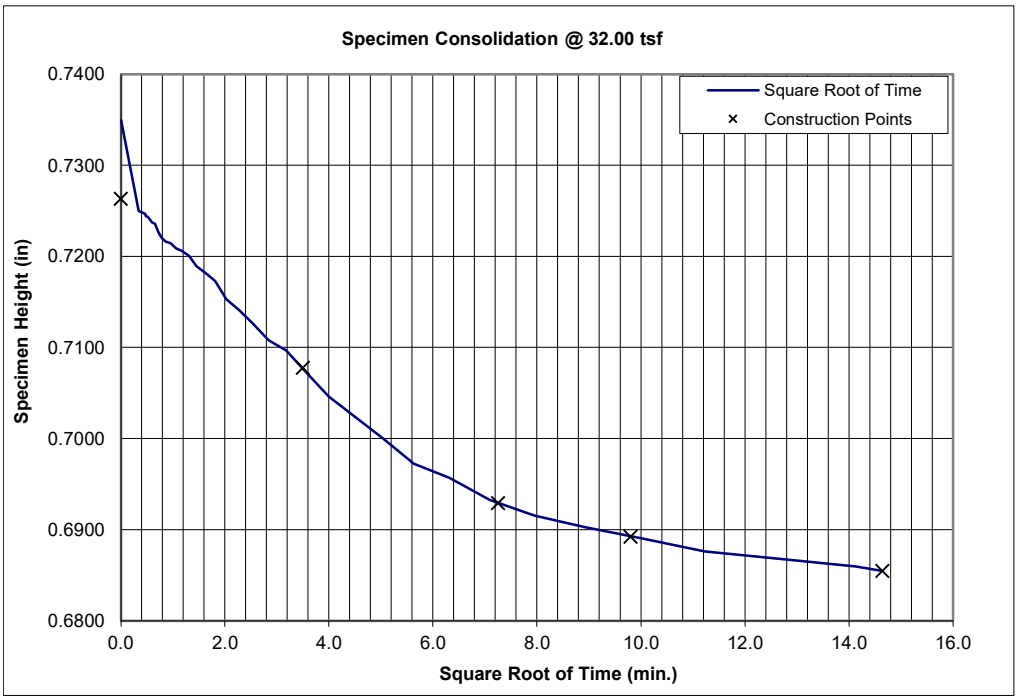
ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 785
Nominal Load (tsf) 32
Actual Load (tsf) 32.05
Cycle Load

Start Date 05/05/2021
Start Time 8:55

End Date 05/05/2021
End Time 12:29



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7263
@ t_{50}	12.3	0.7078
@ t_{90}	52.6	0.6929
@ t_{100}	96.0	0.6892
@ t_{max}	214.3	0.6855

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.7350	5.03	0.7001				
0.34	0.7250	5.64	0.6972				
0.47	0.7247	6.32	0.6957				
0.48	0.7244	7.09	0.6933				
0.52	0.7244	7.95	0.6916				
0.56	0.7240	8.92	0.6903				
0.61	0.7237	10.01	0.6890				
0.66	0.7236	11.23	0.6876				
0.72	0.7227	12.60	0.6868				
0.79	0.7220	14.13	0.6860				
0.87	0.7216	14.64	0.6855				
0.96	0.7214						
1.06	0.7209						
1.18	0.7206						
1.31	0.7201						
1.46	0.7189						
1.63	0.7182						
1.82	0.7173						
2.03	0.7153						
2.27	0.7141						
2.54	0.7126						
2.84	0.7108						
3.18	0.7097						
3.57	0.7072						
4.00	0.7046						
4.5	0.7028						

Comments

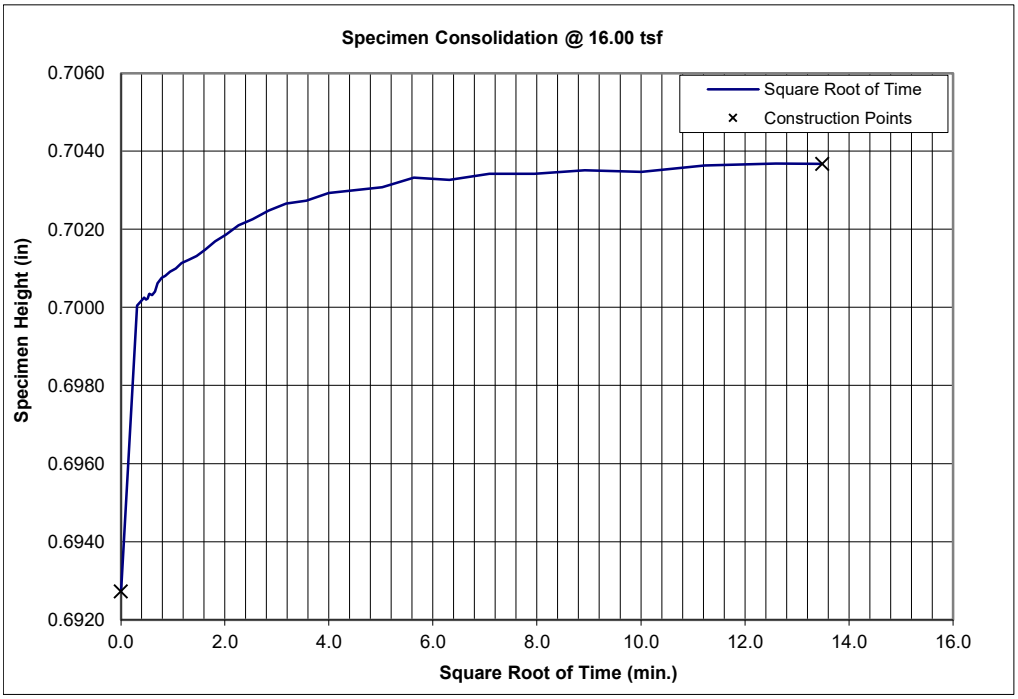
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	16
Actual Load (tsf)	16.04
Cycle	Unload
Start Date	05/05/2021
Start Time	12:29
End Date	05/05/2021
End Time	15:31



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.6927
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	181.8	0.7037

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.6927	5.02	0.7031				
0.32	0.7000	5.64	0.7033				
0.45	0.7003	6.32	0.7033				
0.48	0.7002	7.09	0.7034				
0.52	0.7002	7.95	0.7034				
0.55	0.7003	8.92	0.7035				
0.61	0.7003	10.01	0.7035				
0.66	0.7004	11.23	0.7036				
0.71	0.7006	12.59	0.7037				
0.79	0.7008	13.48	0.7037				
0.86	0.7008						
0.95	0.7009						
1.06	0.7010						
1.17	0.7011						
1.30	0.7012						
1.45	0.7013						
1.62	0.7015						
1.81	0.7017						
2.02	0.7019						
2.27	0.7021						
2.54	0.7023						
2.84	0.7025						
3.18	0.7027						
3.57	0.7027						
4.00	0.7029						
4.5	0.7030						

Comments

Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

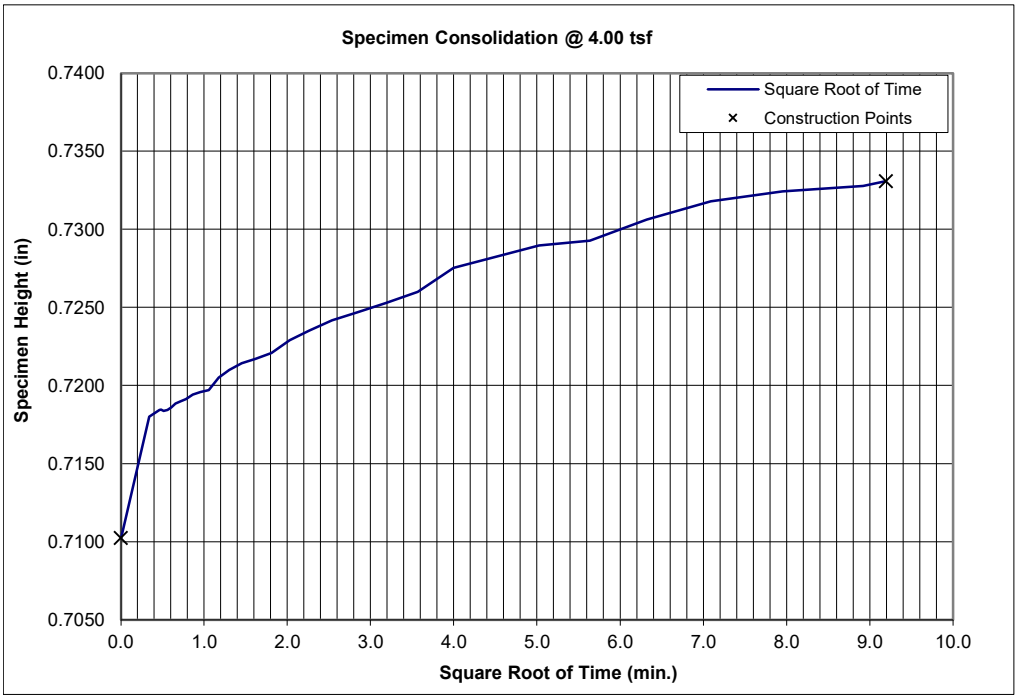
ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No. 173409690
Lab ID 785
Nominal Load (tsf) 4
Actual Load (tsf) 4.02
Cycle Unload

Start Date 05/05/2021
Start Time 15:31

End Date 05/05/2021
End Time 16:55



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7102
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	84.5	0.7331

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.7102	5.03	0.7290				
0.34	0.7180	5.64	0.7293				
0.47	0.7184	6.32	0.7306				
0.48	0.7184	7.09	0.7318				
0.52	0.7184	7.95	0.7324				
0.56	0.7184	8.92	0.7328				
0.61	0.7186	9.19	0.7331				
0.66	0.7189						
0.72	0.7190						
0.79	0.7191						
0.87	0.7194						
0.96	0.7196						
1.06	0.7197						
1.18	0.7205						
1.30	0.7210						
1.45	0.7214						
1.62	0.7217						
1.81	0.7221						
2.03	0.7229						
2.27	0.7235						
2.54	0.7242						
2.84	0.7247						
3.18	0.7253						
3.57	0.7260						
4.00	0.7275						
4.5	0.7281						

Comments

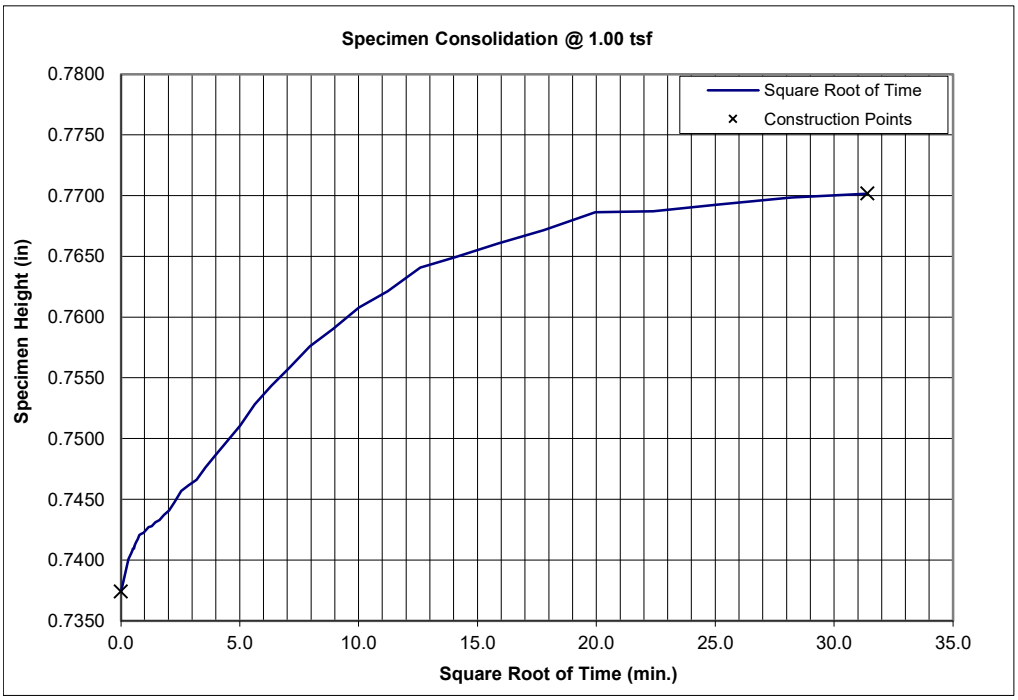
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	1
Actual Load (tsf)	1.02
Cycle	Unload
Start Date	05/05/2021
Start Time	16:55
End Date	05/06/2021
End Time	9:21



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7374
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	985.9	0.7702

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.7374	5.02	0.7511				
0.32	0.7401	5.63	0.7528				
0.45	0.7406	6.32	0.7543				
0.48	0.7407	7.09	0.7558				
0.52	0.7409	7.95	0.7576				
0.55	0.7409	8.92	0.7590				
0.59	0.7412	10.01	0.7608				
0.65	0.7415	11.23	0.7621				
0.71	0.7417	12.59	0.7641				
0.79	0.7420	14.13	0.7650				
0.86	0.7421	15.85	0.7661				
0.95	0.7422	17.79	0.7672				
1.06	0.7425	19.96	0.7686				
1.18	0.7427	22.39	0.7687				
1.30	0.7428	25.12	0.7693				
1.45	0.7431	28.19	0.7698				
1.62	0.7433	31.40	0.7702				
1.81	0.7437						
2.02	0.7441						
2.27	0.7448						
2.54	0.7457						
2.84	0.7461						
3.18	0.7466						
3.57	0.7476						
4.00	0.7487						
4.5	0.7498						

Comments

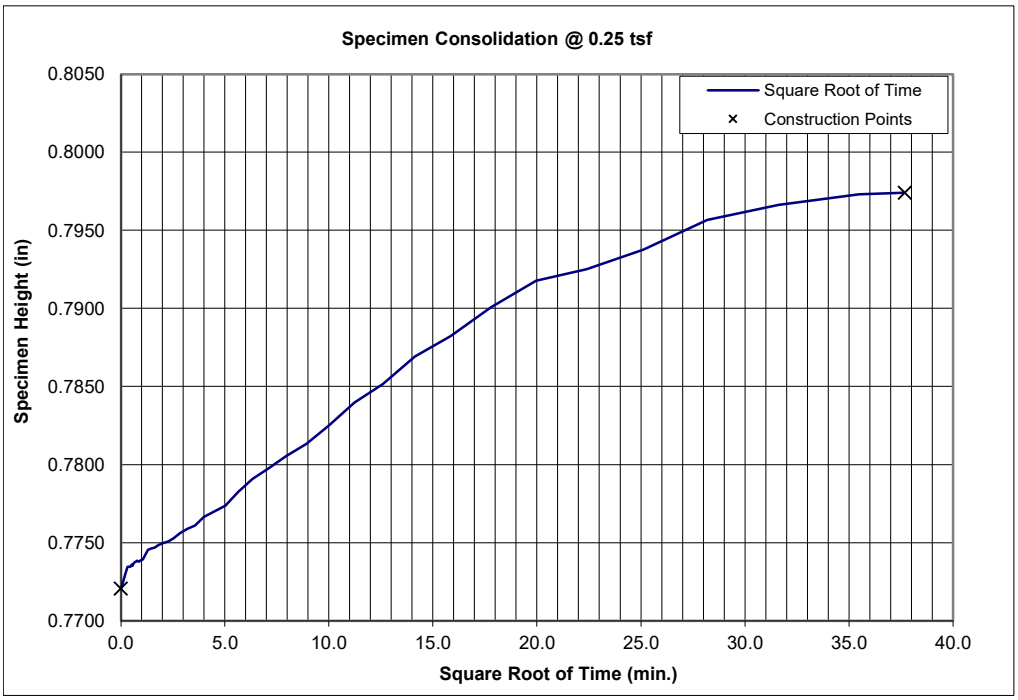
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	0.25
Actual Load (tsf)	0.27
Cycle	Unload
Start Date	05/06/2021
Start Time	9:21
End Date	05/07/2021
End Time	9:01



Time VS Deformation Results

	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7721
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	1419.6	0.7974

Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.7721	5.02	0.7774				
0.32	0.7735	5.64	0.7782				
0.45	0.7734	6.32	0.7791				
0.48	0.7735	7.09	0.7797				
0.52	0.7736	7.95	0.7805				
0.56	0.7735	8.92	0.7813				
0.61	0.7736	10.01	0.7825				
0.66	0.7737	11.23	0.7840				
0.72	0.7738	12.59	0.7851				
0.79	0.7738	14.13	0.7869				
0.87	0.7738	15.85	0.7882				
0.96	0.7739	17.79	0.7901				
1.06	0.7739	19.96	0.7918				
1.18	0.7742	22.39	0.7925				
1.31	0.7745	25.12	0.7938				
1.45	0.7746	28.19	0.7957				
1.62	0.7747	31.63	0.7966				
1.82	0.7748	35.48	0.7973				
2.03	0.7750	37.68	0.7974				
2.27	0.7751						
2.54	0.7753						
2.84	0.7756						
3.18	0.7759						
3.57	0.7761						
4.00	0.7767						
4.5	0.7770						

Comments

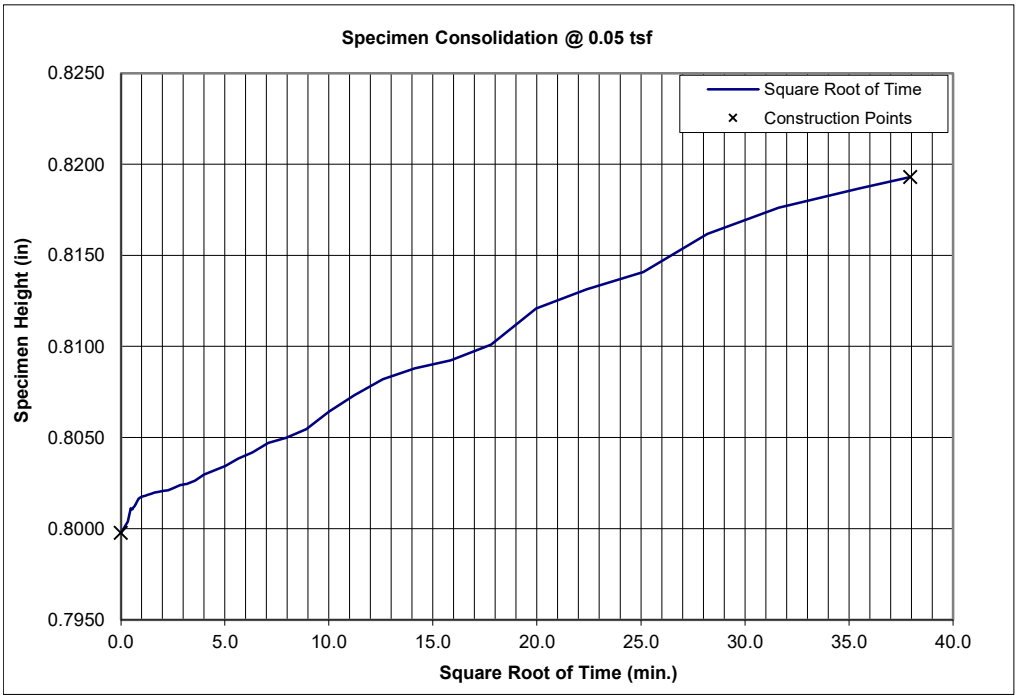
Stantec

One Dimensional Consolidation of Soils Using Incremental Loading

ASTM D 2435

Project Name Eagle Creek
Source B-3.49a, 0.9'-1.1'
Description Lean Clay (CL), brown, moist, firm

Project No.	173409690
Lab ID	785
Nominal Load (tsf)	0.05
Actual Load (tsf)	0.07
Cycle	Final
Start Date	05/07/2021
Start Time	9:01
End Date	05/08/2021
End Time	9:01



Time VS Deformation Results

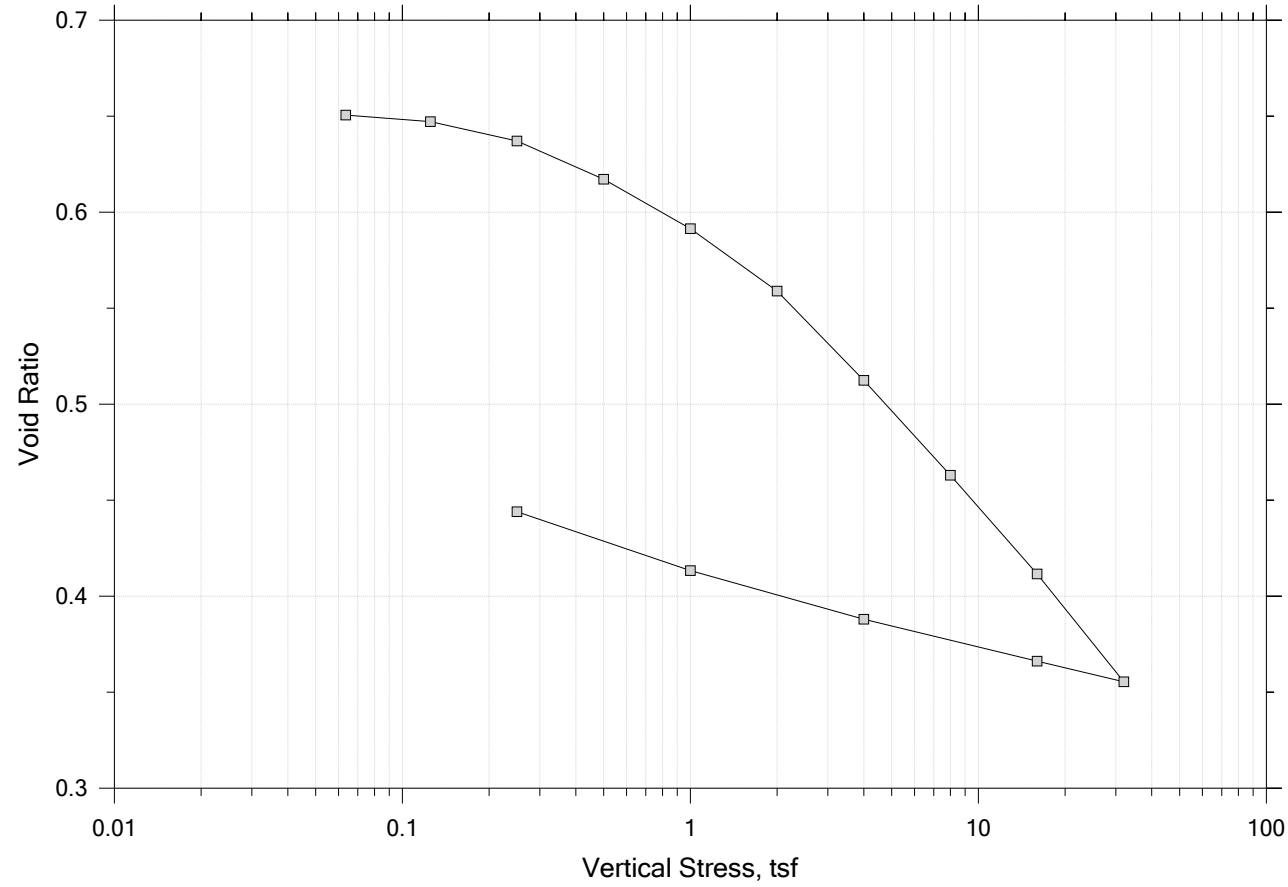
	Elapsed Time (min)	Spec. Height (in)
@ t_0	0.0	0.7998
@ t_{50}		
@ t_{90}		
@ t_{100}		
@ t_{max}	1440.2	0.8193

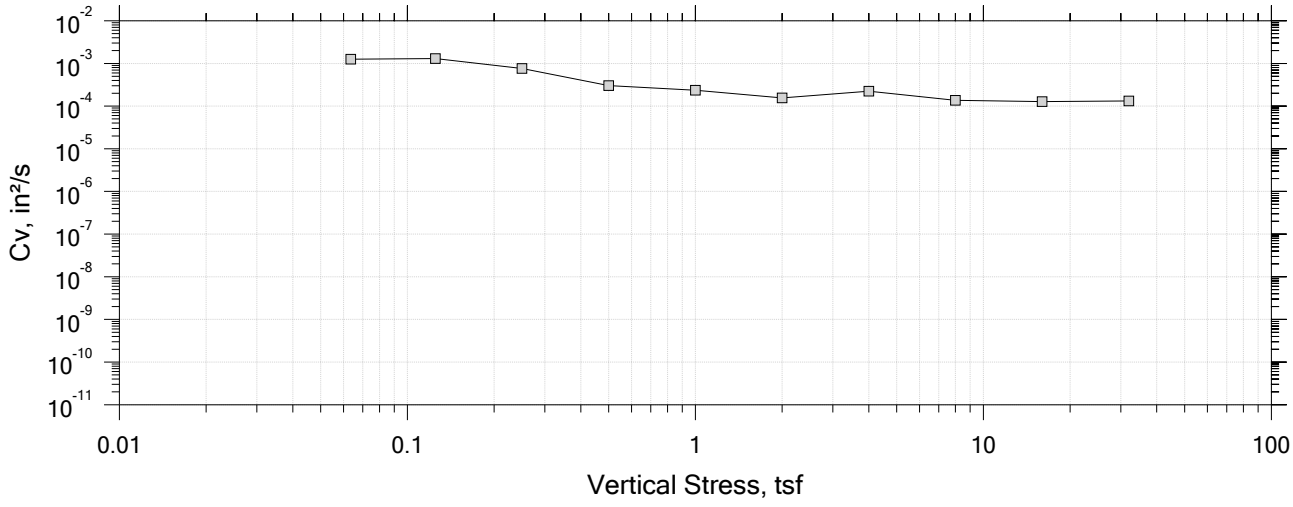
Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)	Square Root of Time (min)	Spec. Height (in)
0.00	0.7998	5.02	0.8034				
0.34	0.8004	5.64	0.8038				
0.47	0.8010	6.32	0.8042				
0.48	0.8011	7.09	0.8047				
0.52	0.8010	7.95	0.8050				
0.56	0.8011	8.92	0.8055				
0.61	0.8012	10.01	0.8064				
0.66	0.8012	11.23	0.8073				
0.72	0.8013	12.59	0.8082				
0.79	0.8015	14.13	0.8088				
0.87	0.8017	15.85	0.8092				
0.96	0.8017	17.79	0.8101				
1.06	0.8018	19.96	0.8121				
1.18	0.8018	22.39	0.8131				
1.31	0.8019	25.12	0.8141				
1.45	0.8019	28.19	0.8162				
1.62	0.8020	31.63	0.8176				
1.81	0.8020	35.48	0.8187				
2.03	0.8021	37.95	0.8193				
2.27	0.8021						
2.54	0.8022						
2.84	0.8024						
3.18	0.8024						
3.57	0.8026						
4.00	0.8030						
4.5	0.8031						

Comments

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

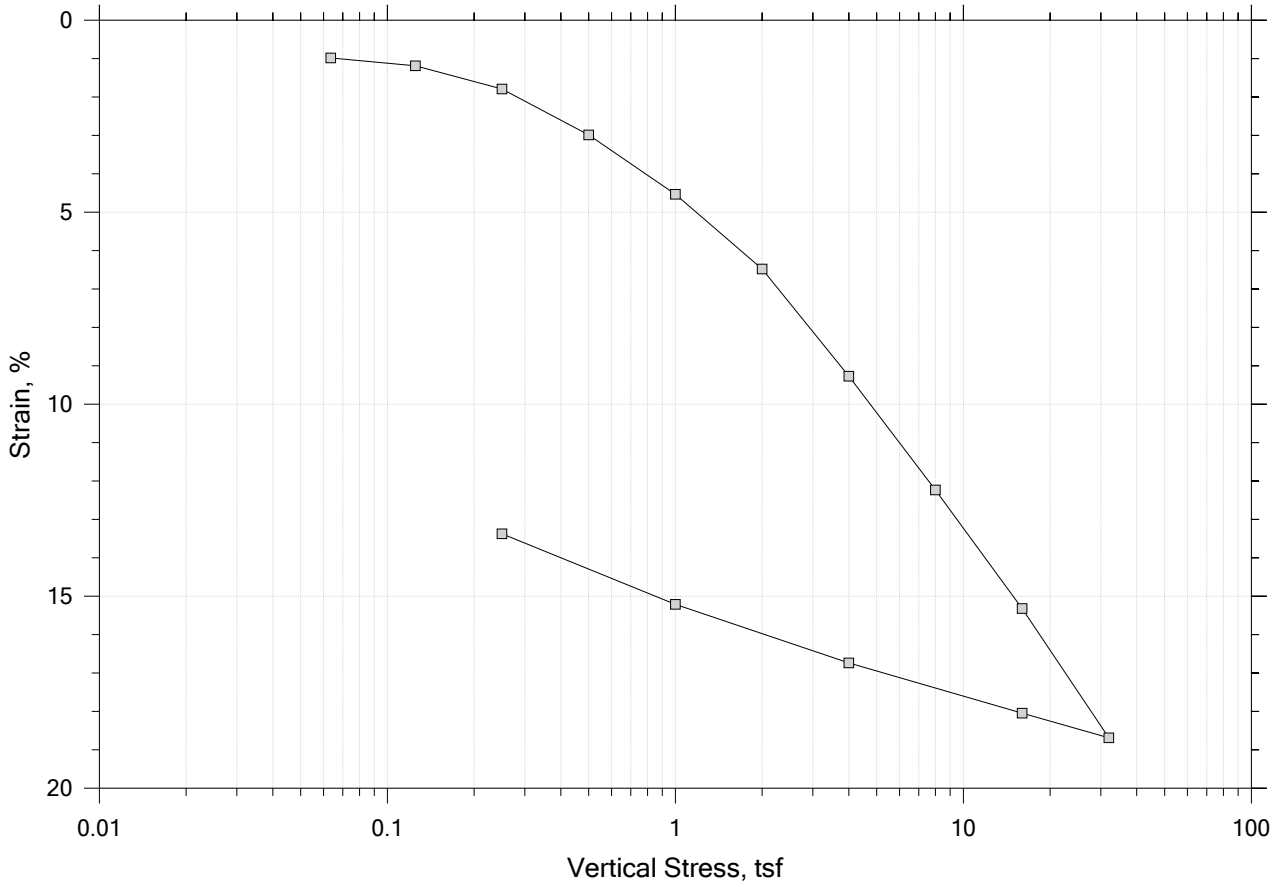


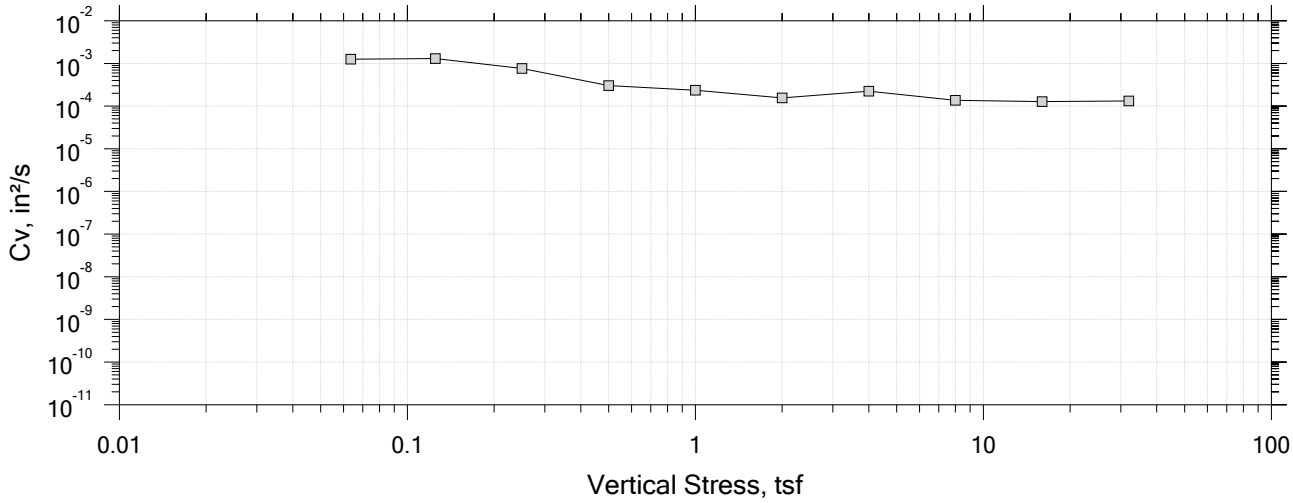


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

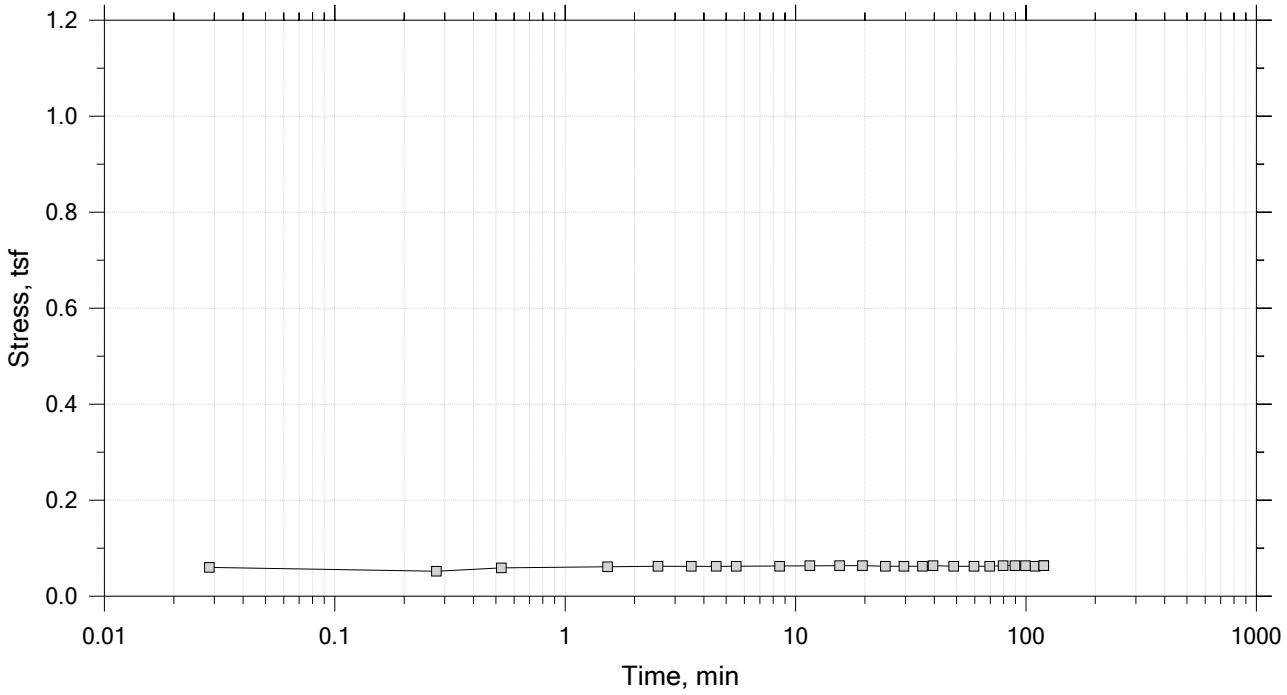


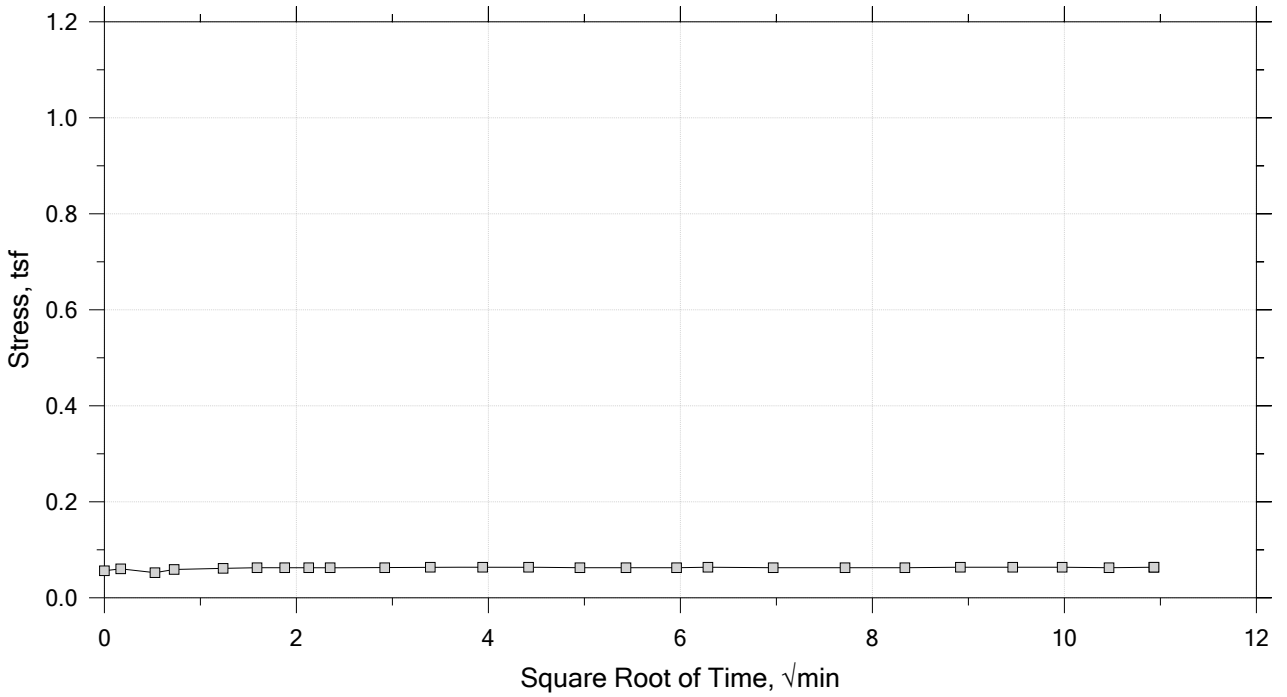


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0636 tsf





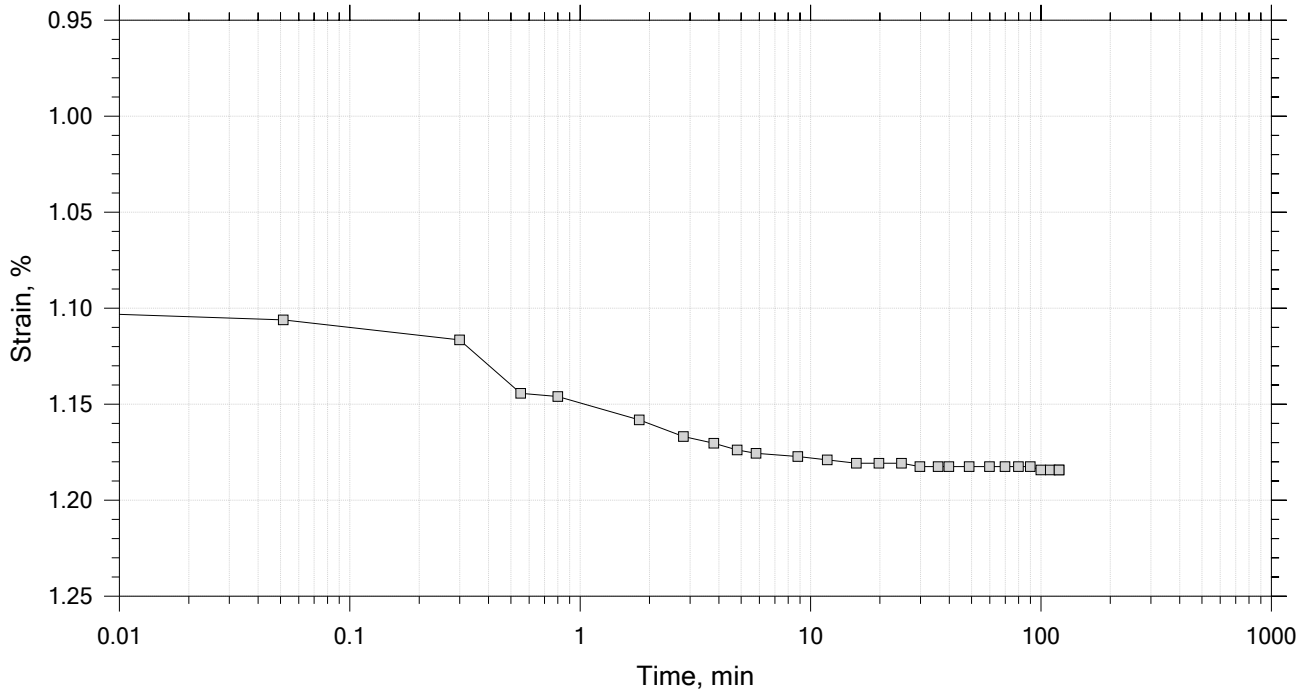
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

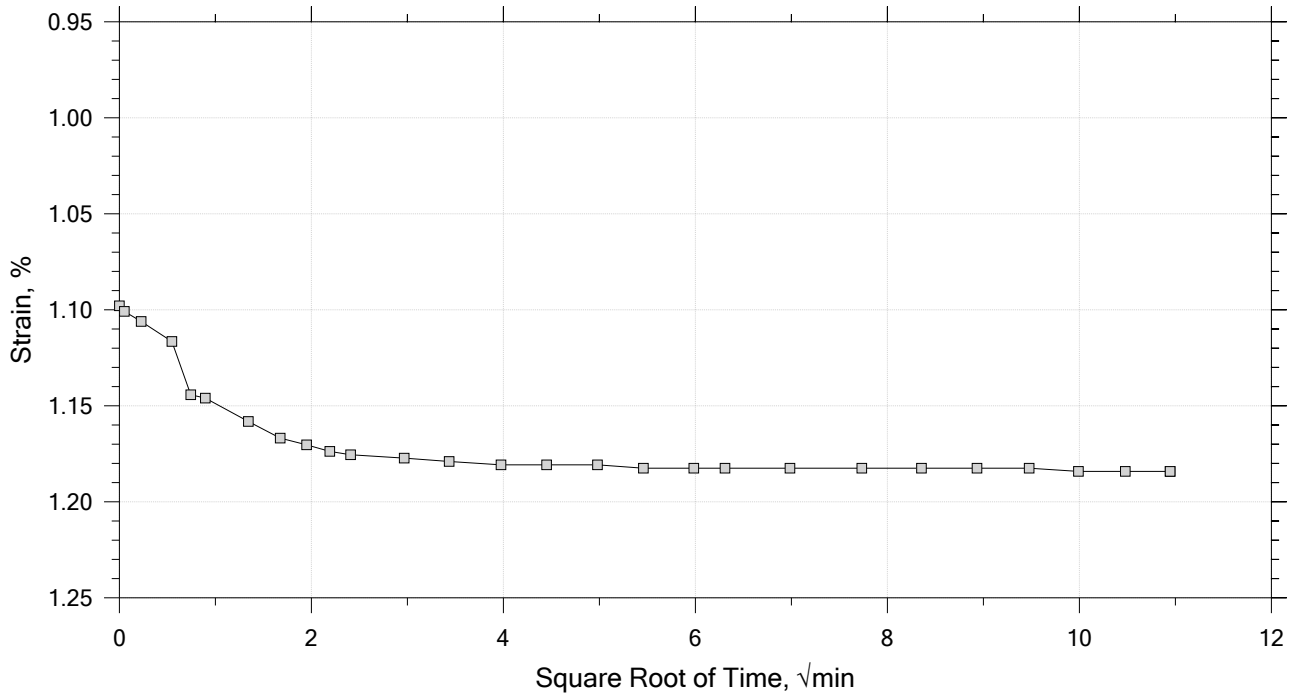
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

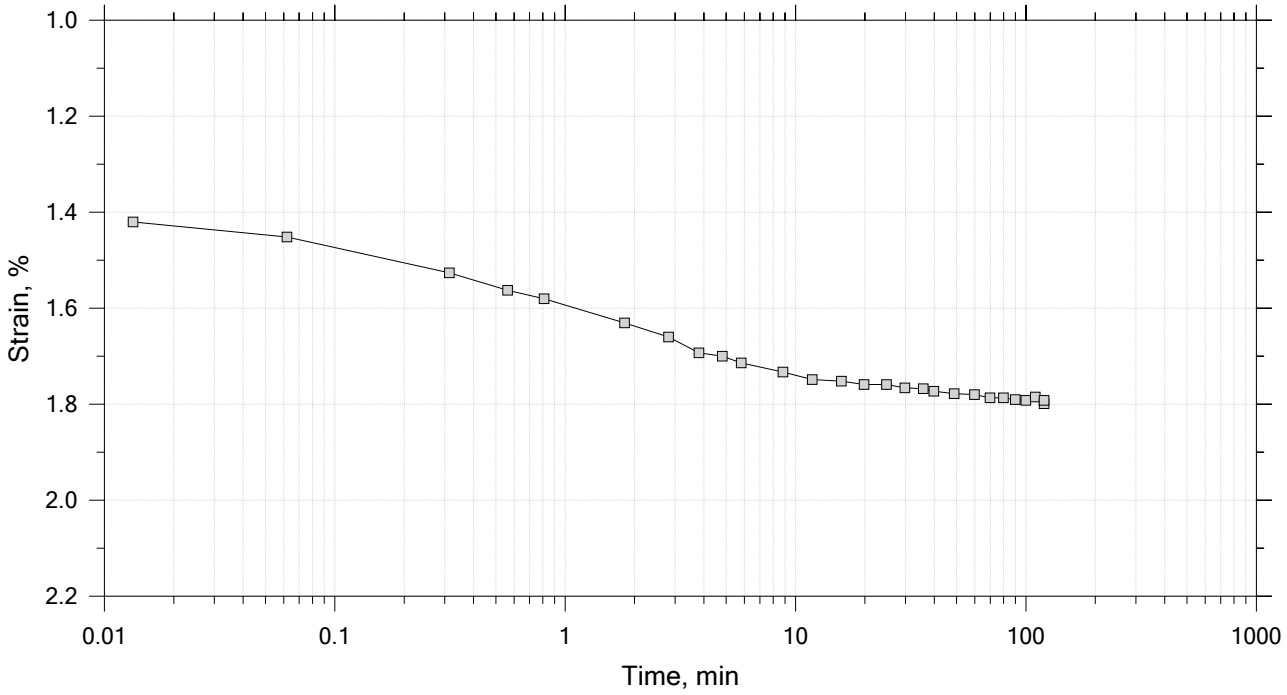


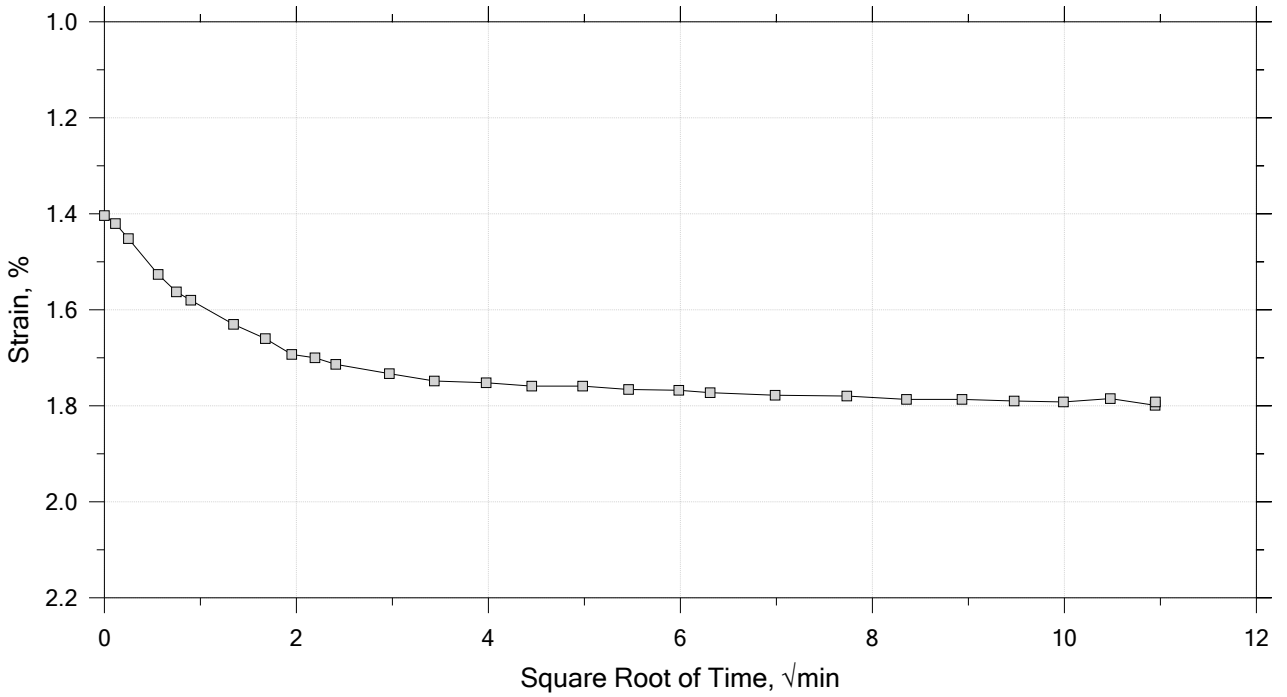


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





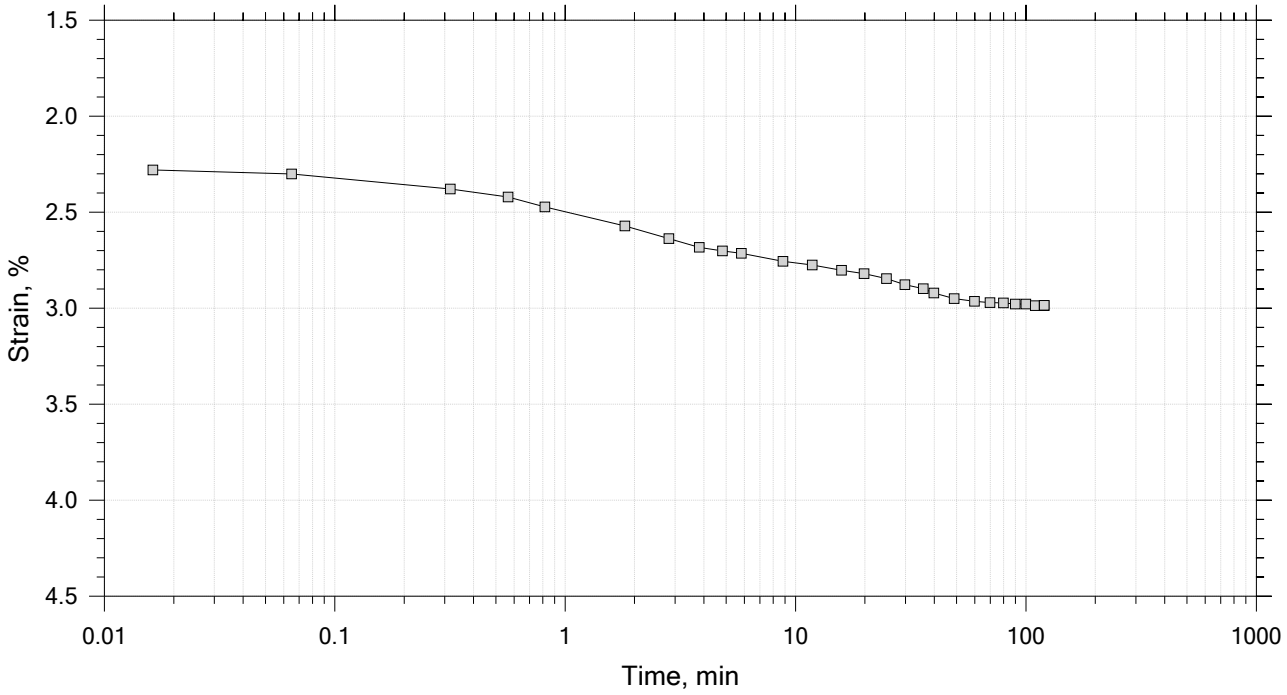
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

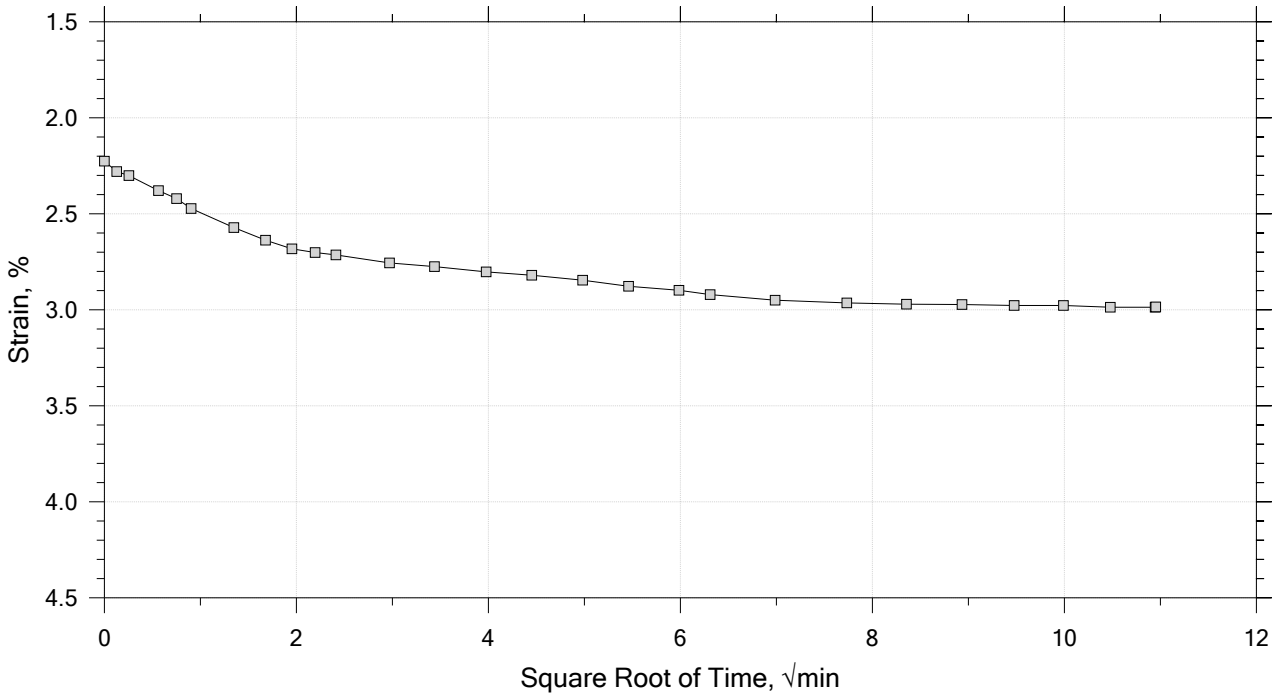
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





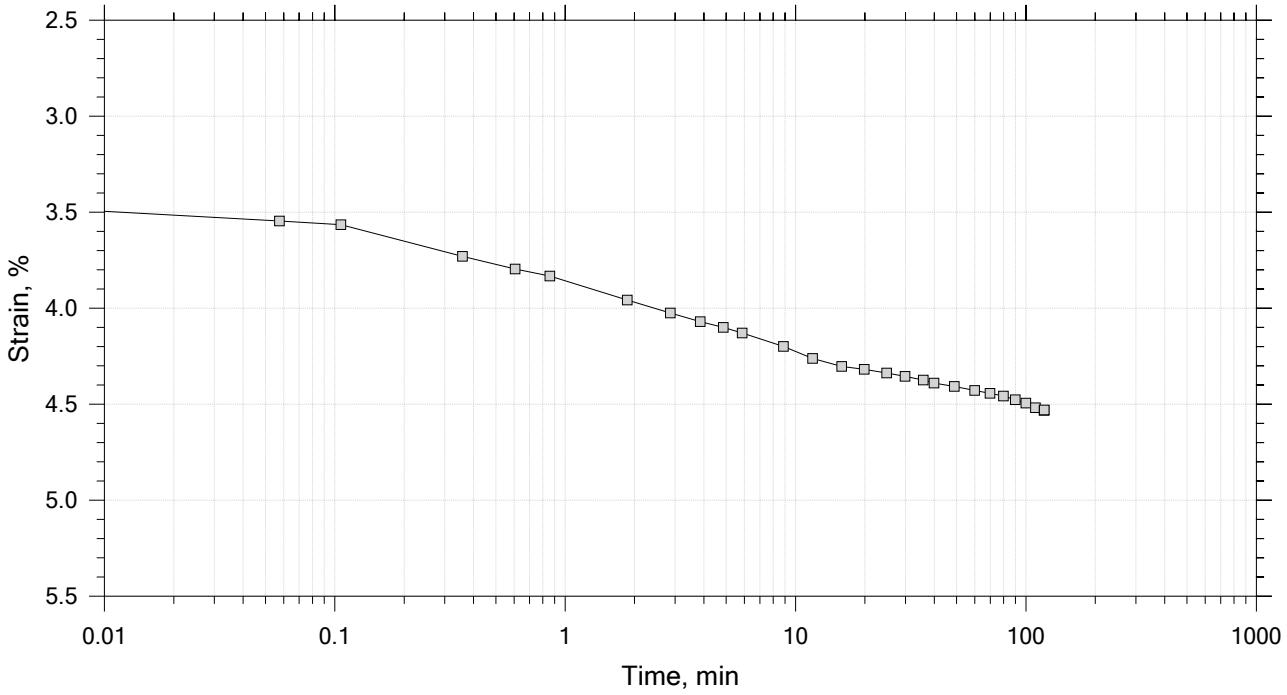
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

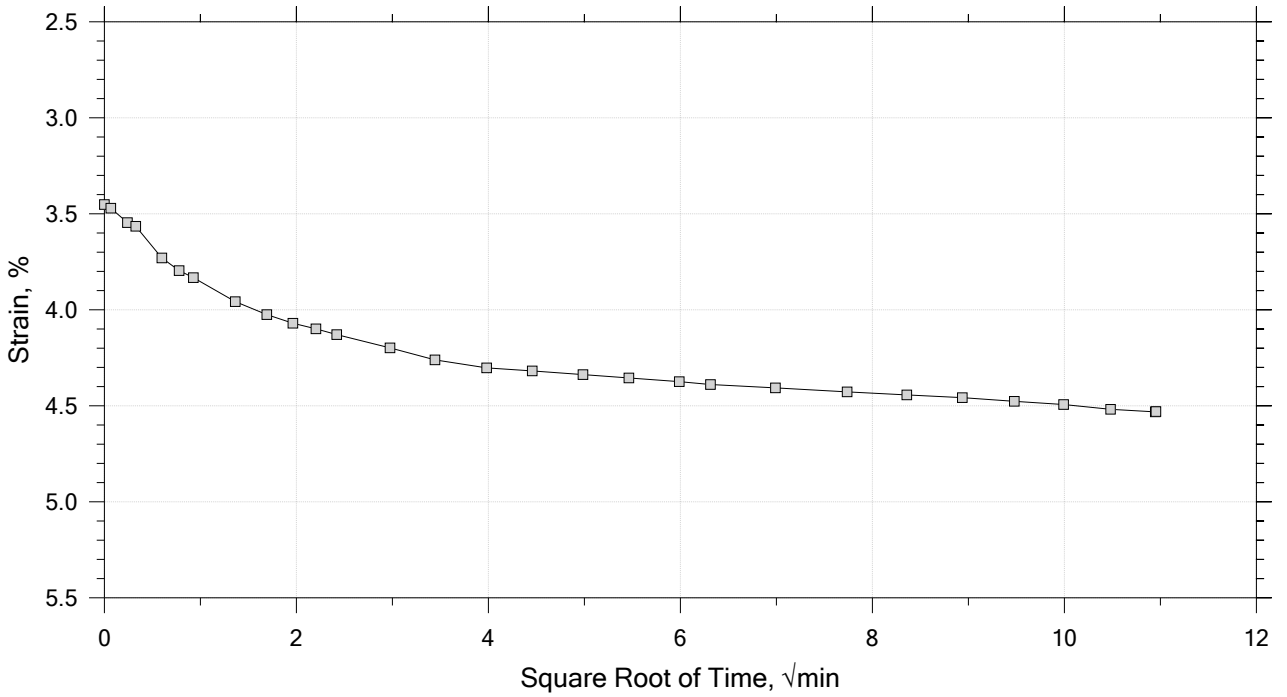
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





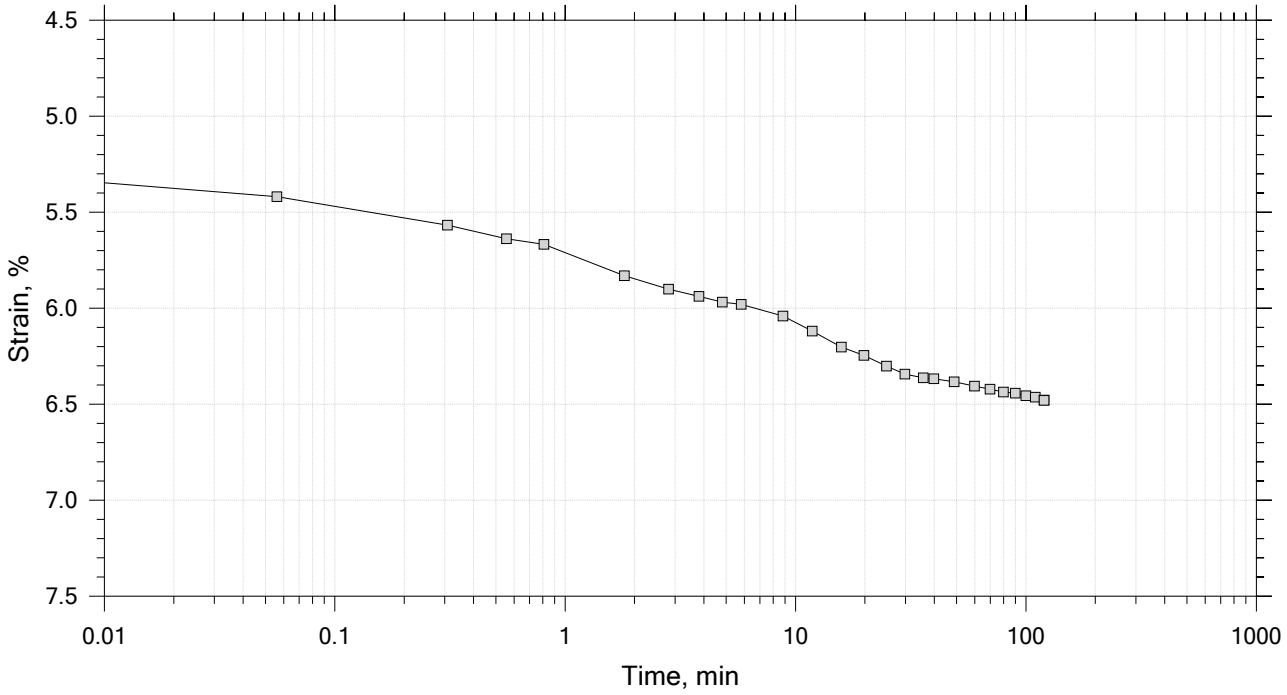
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

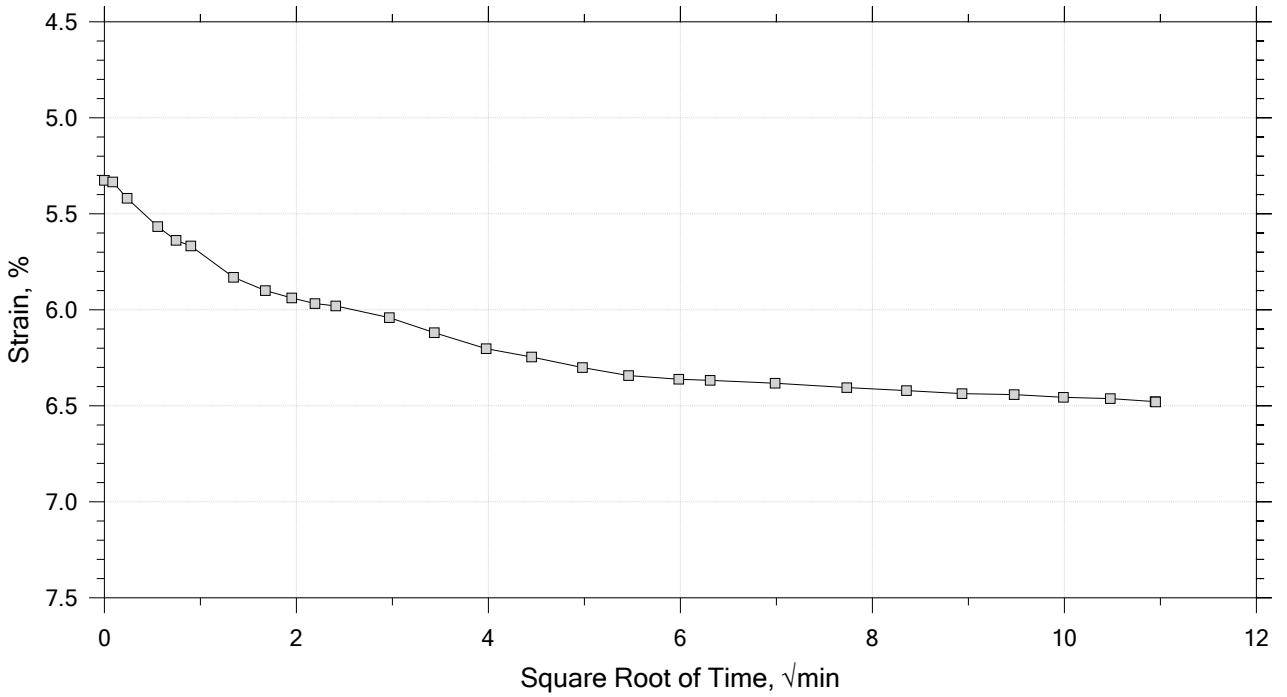
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





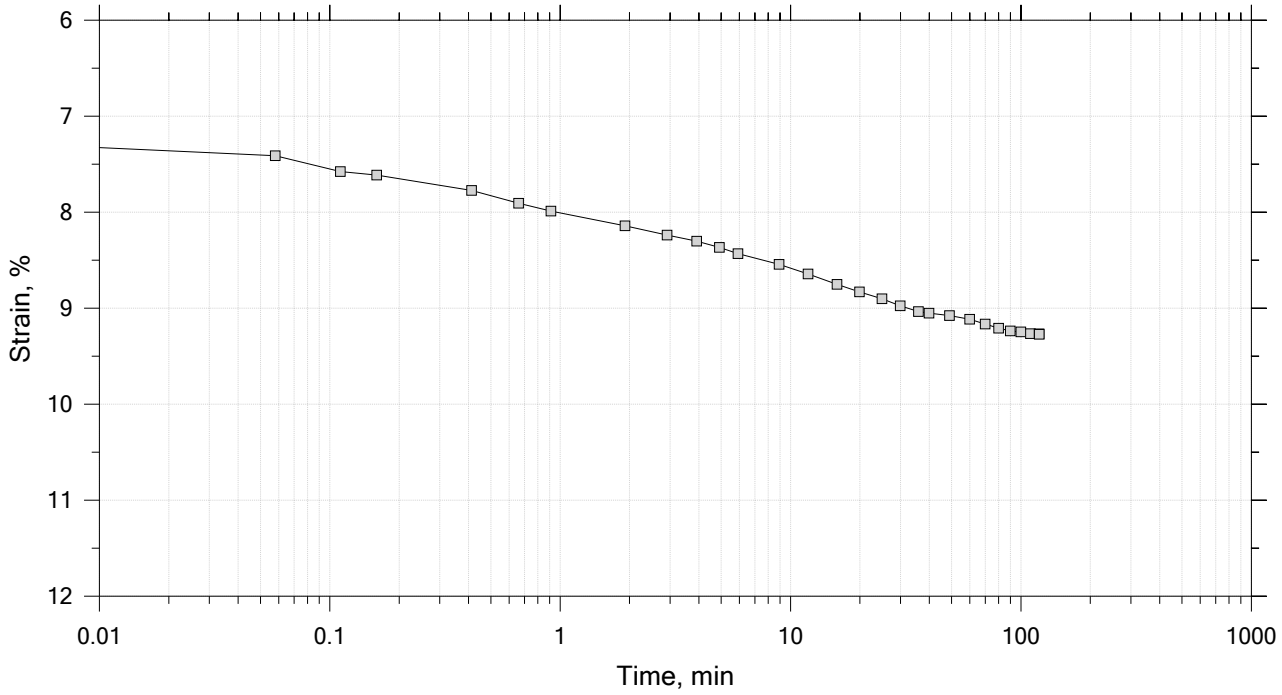
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

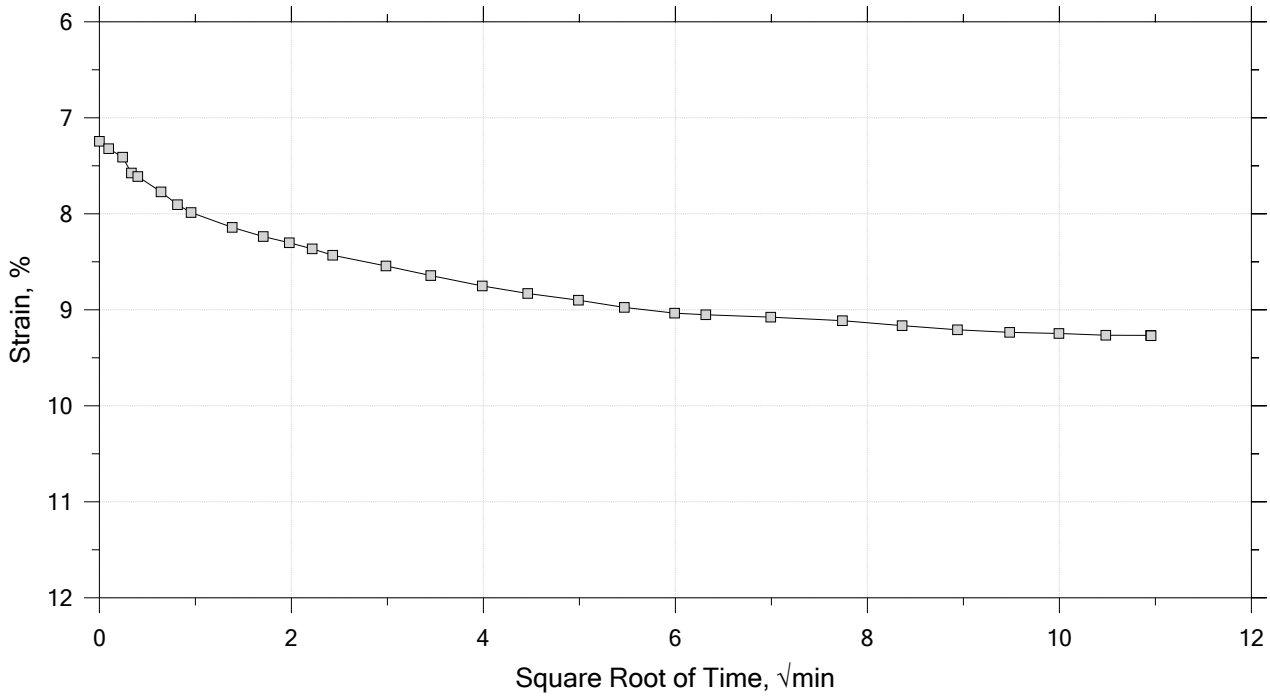
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





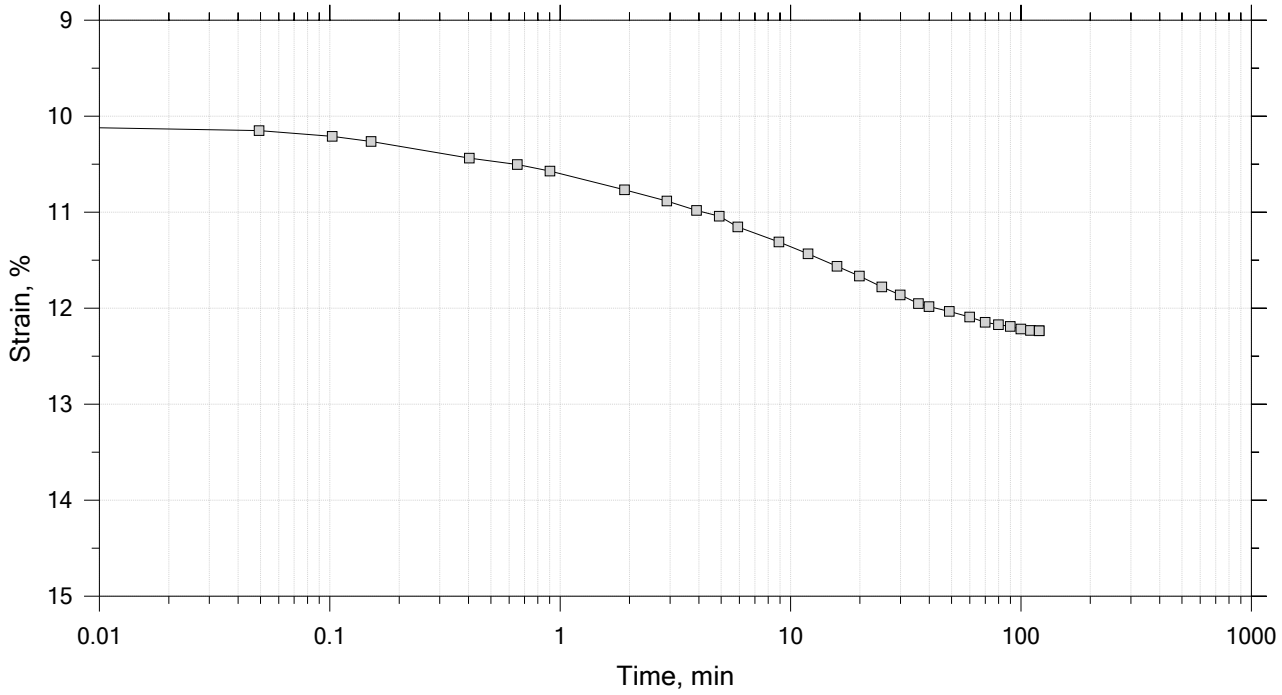
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

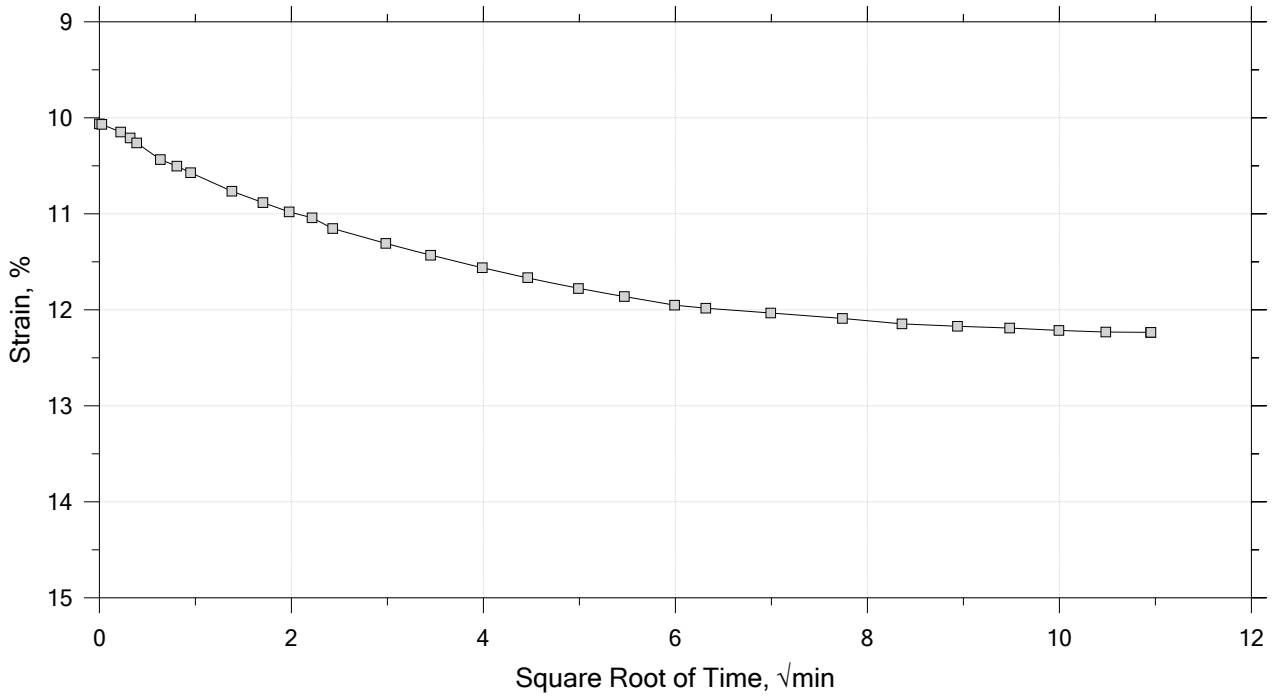
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

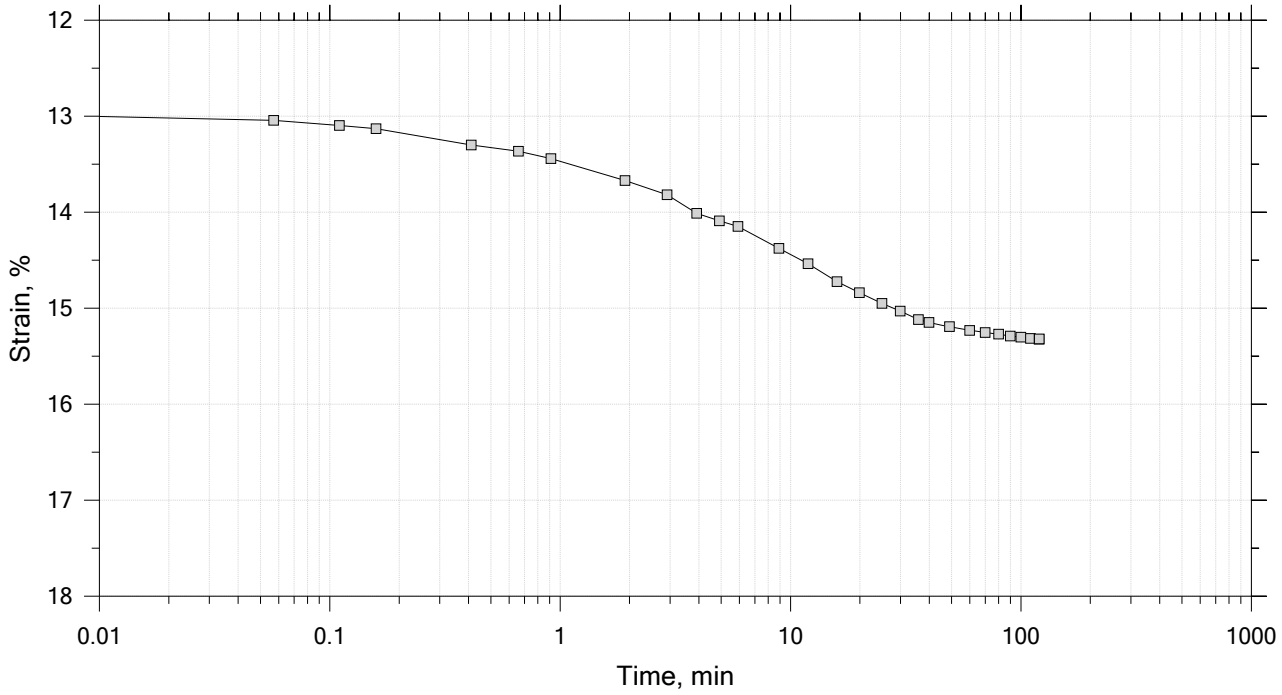


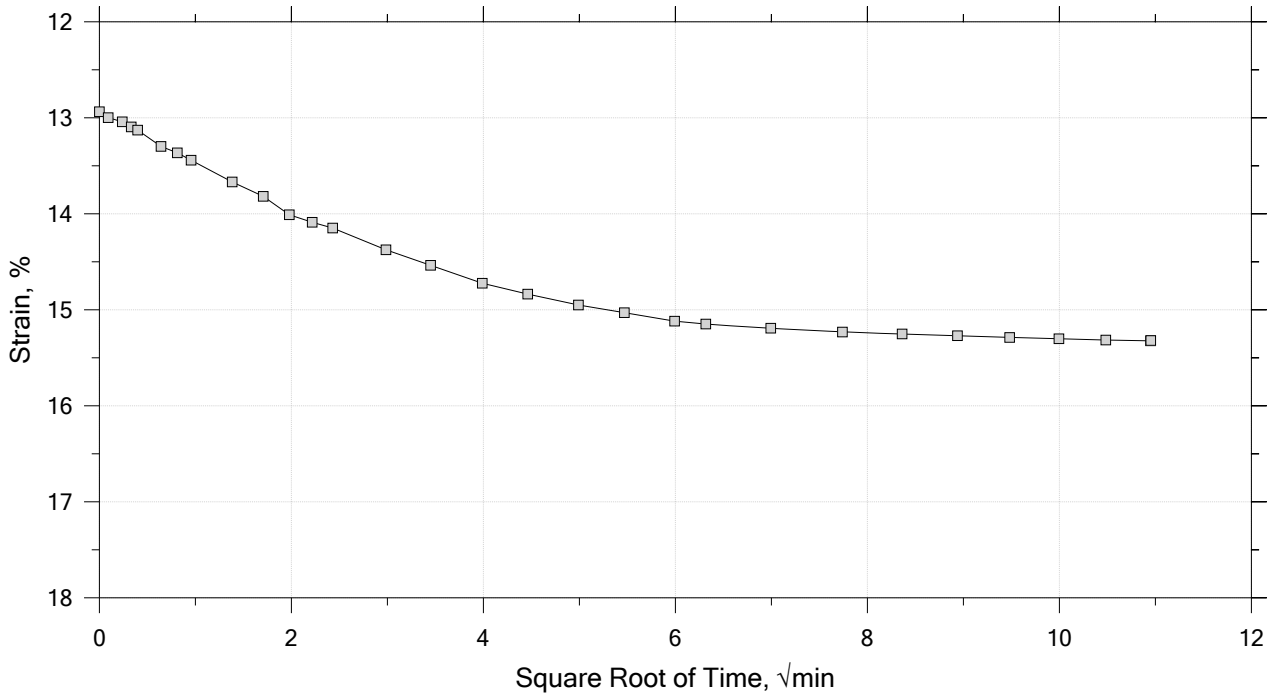


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

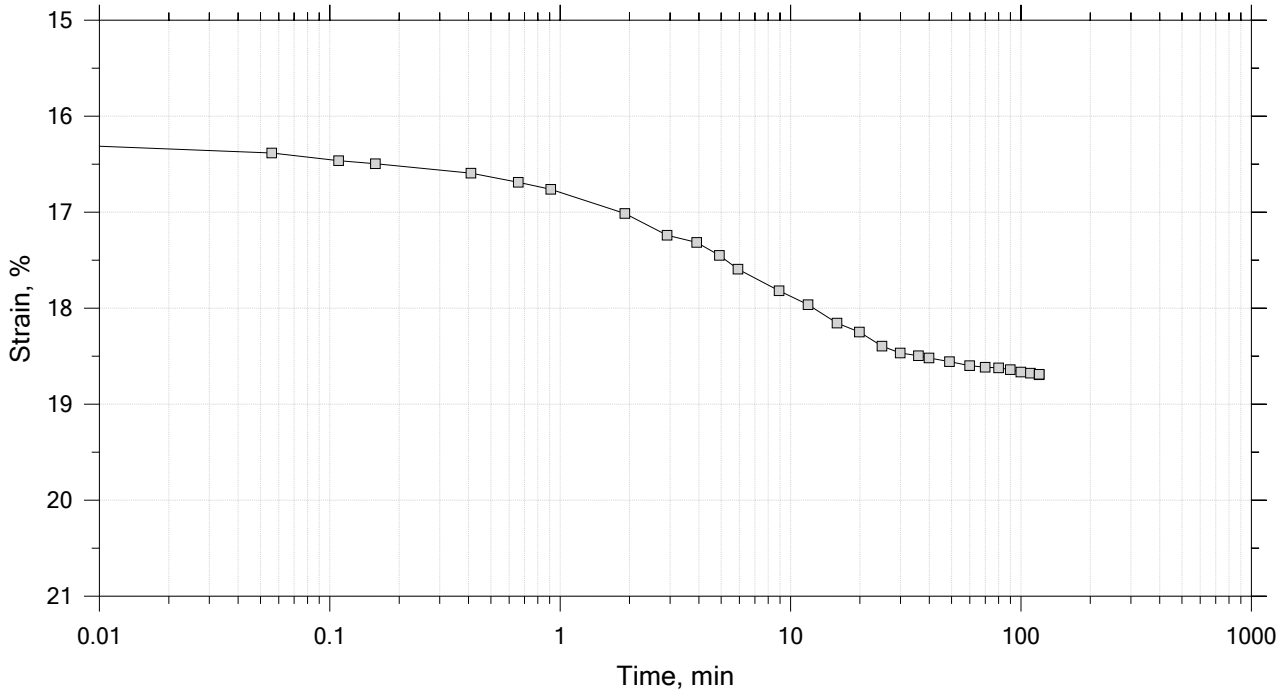


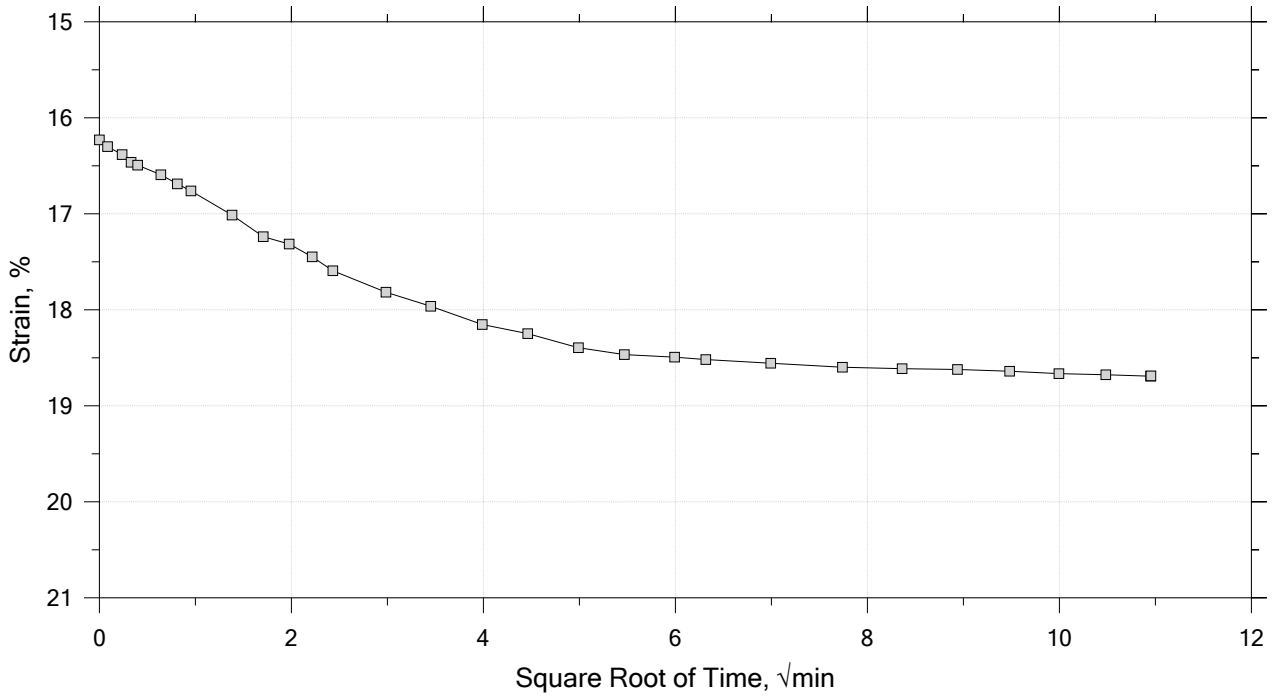


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

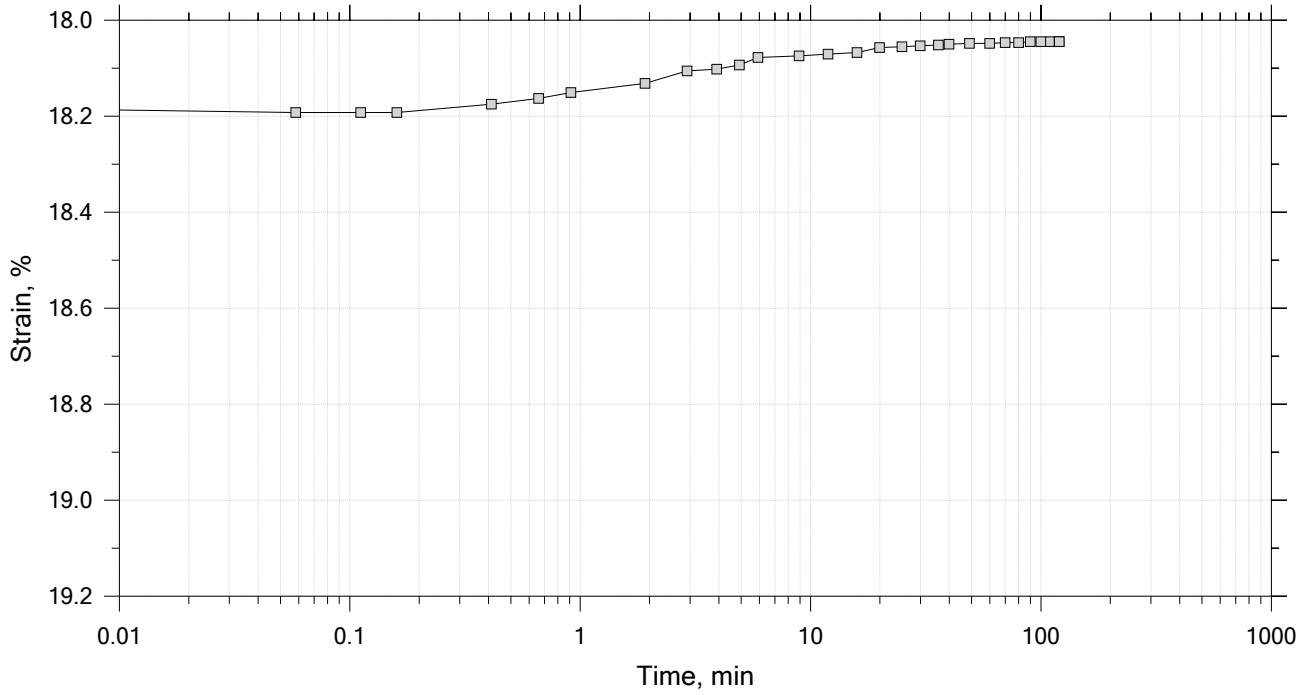


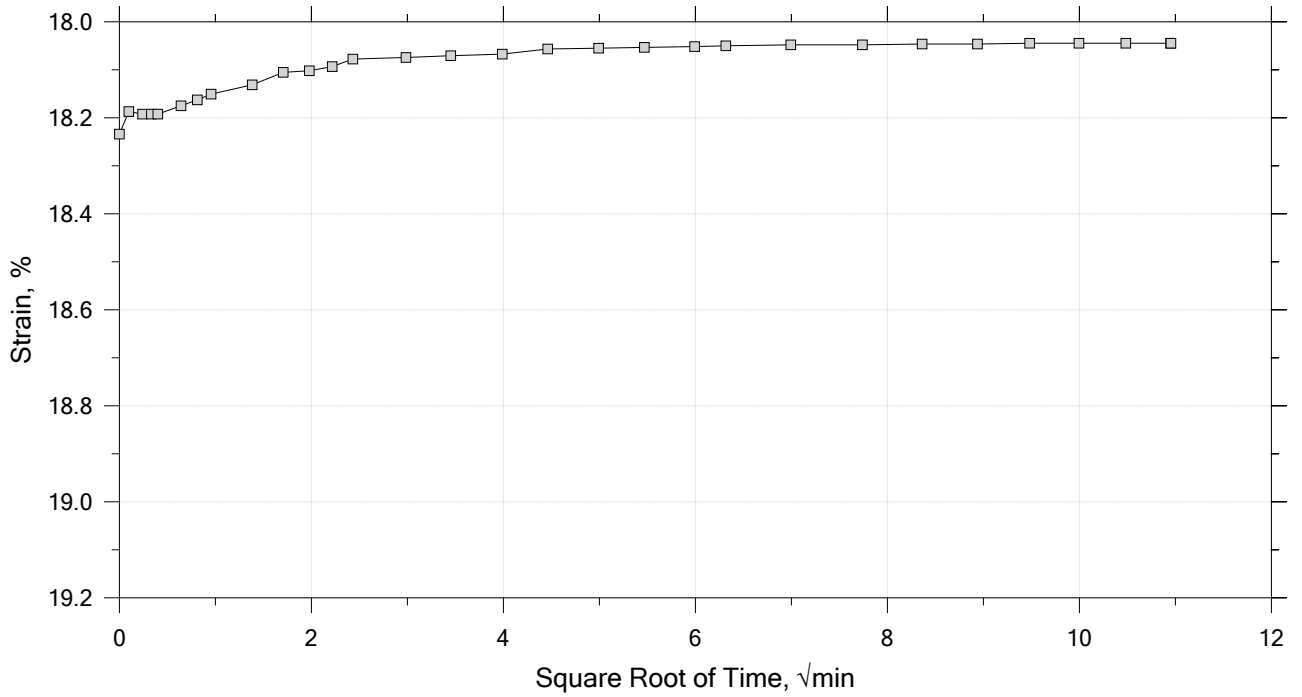


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

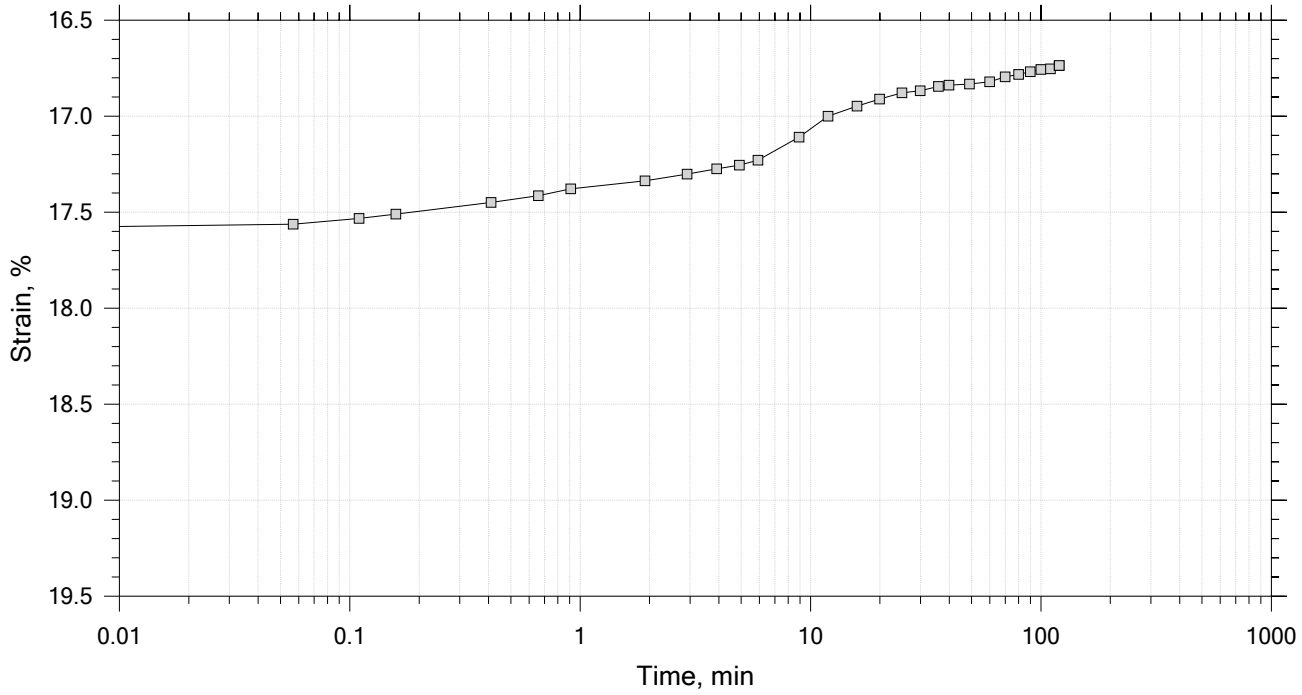


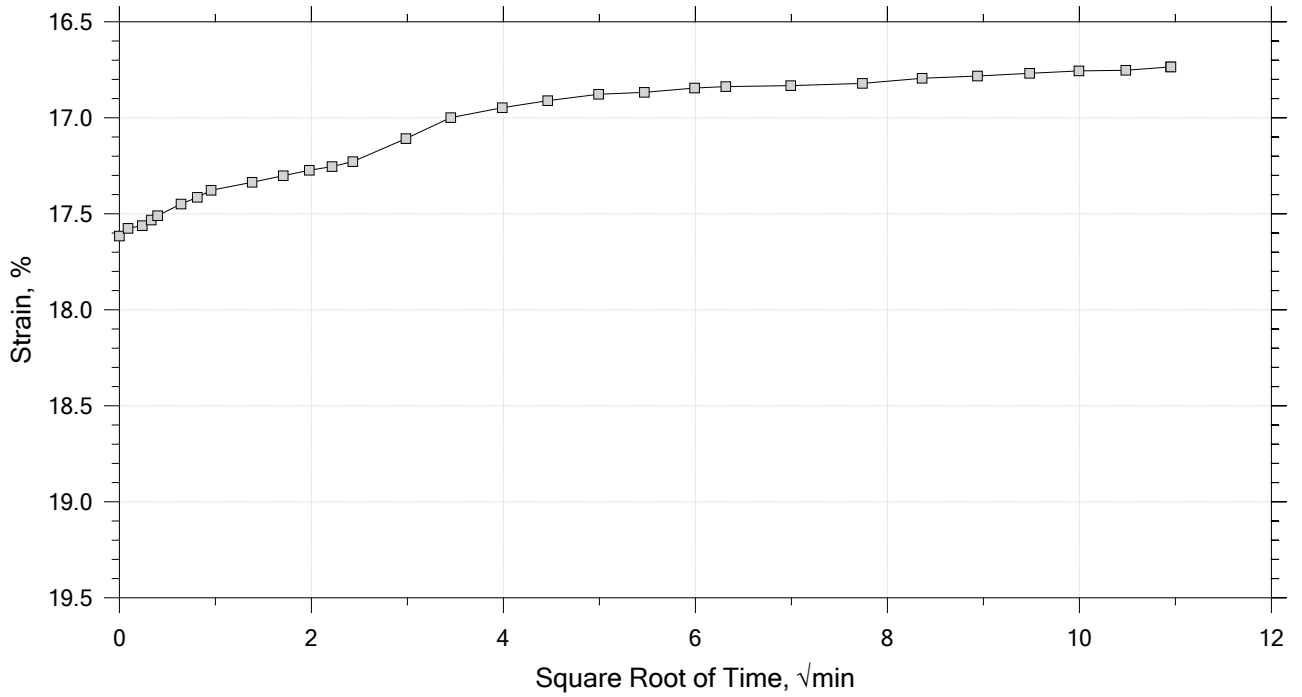


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





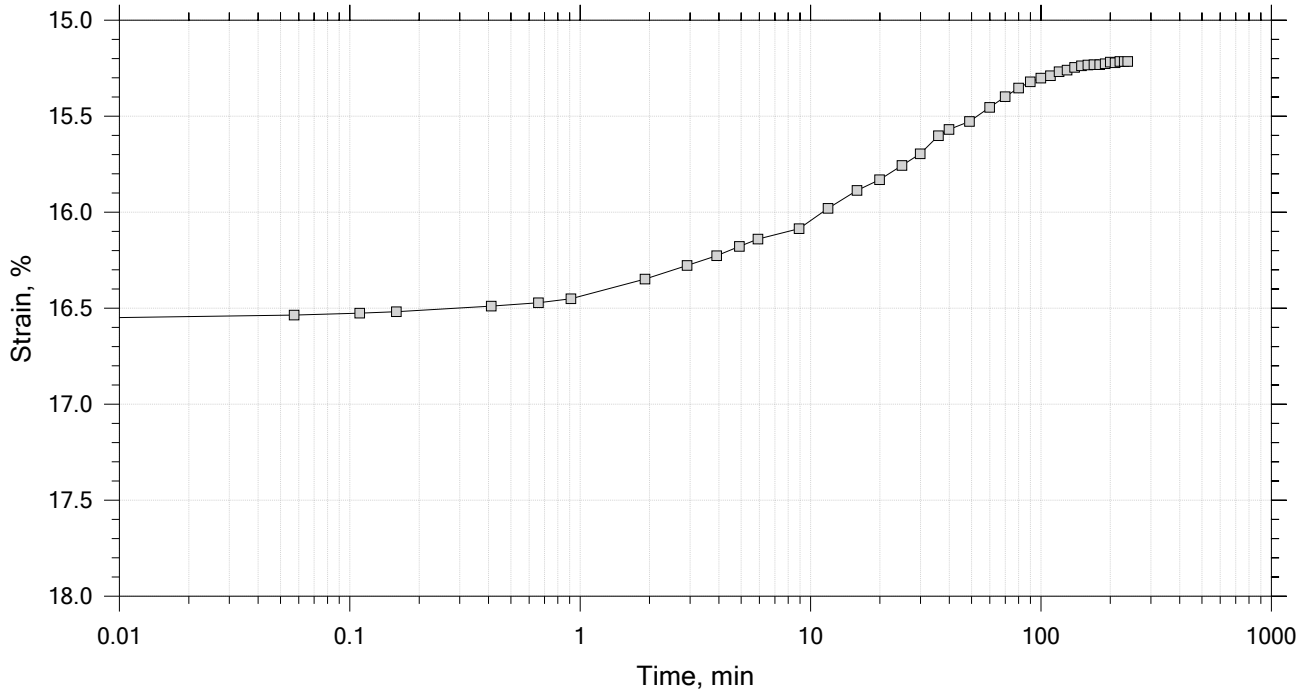
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

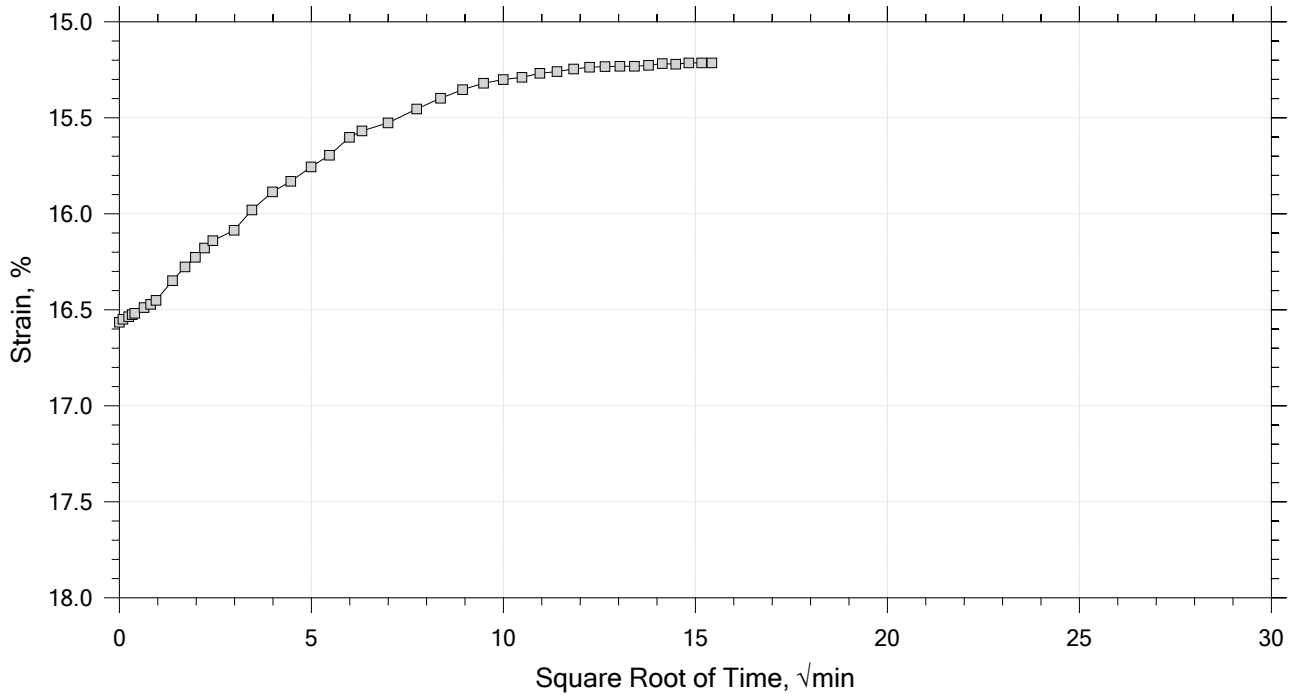
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

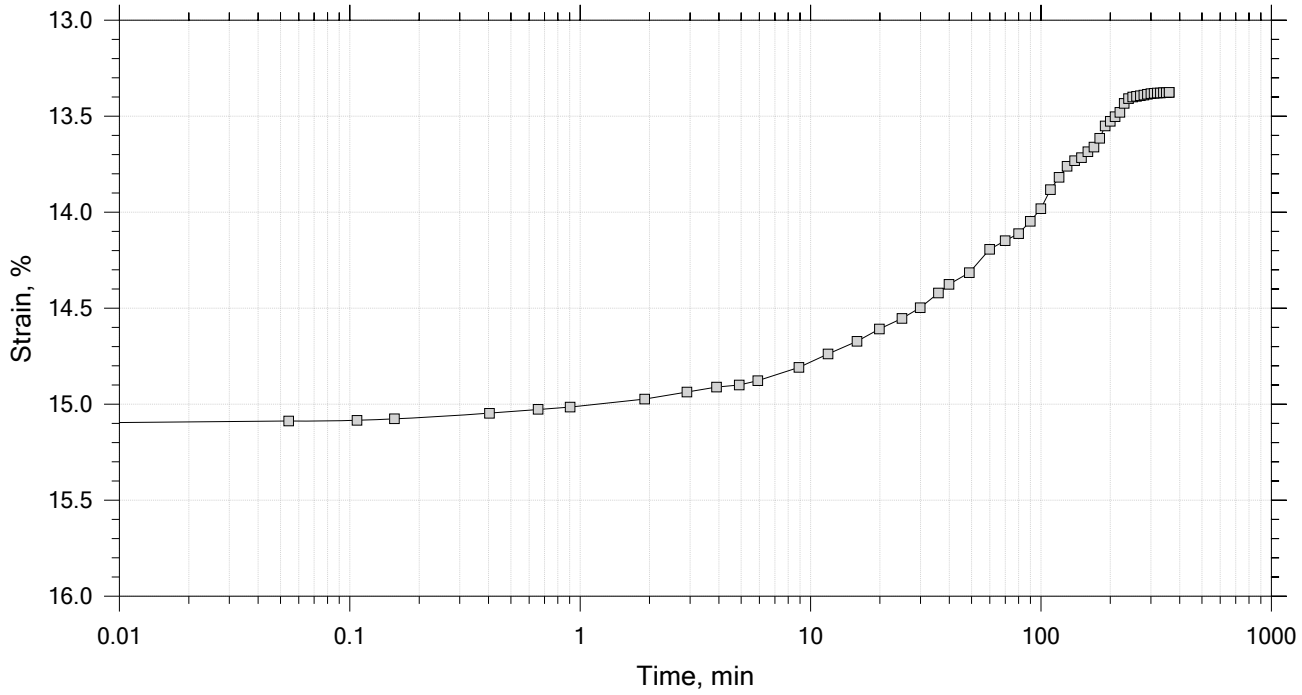


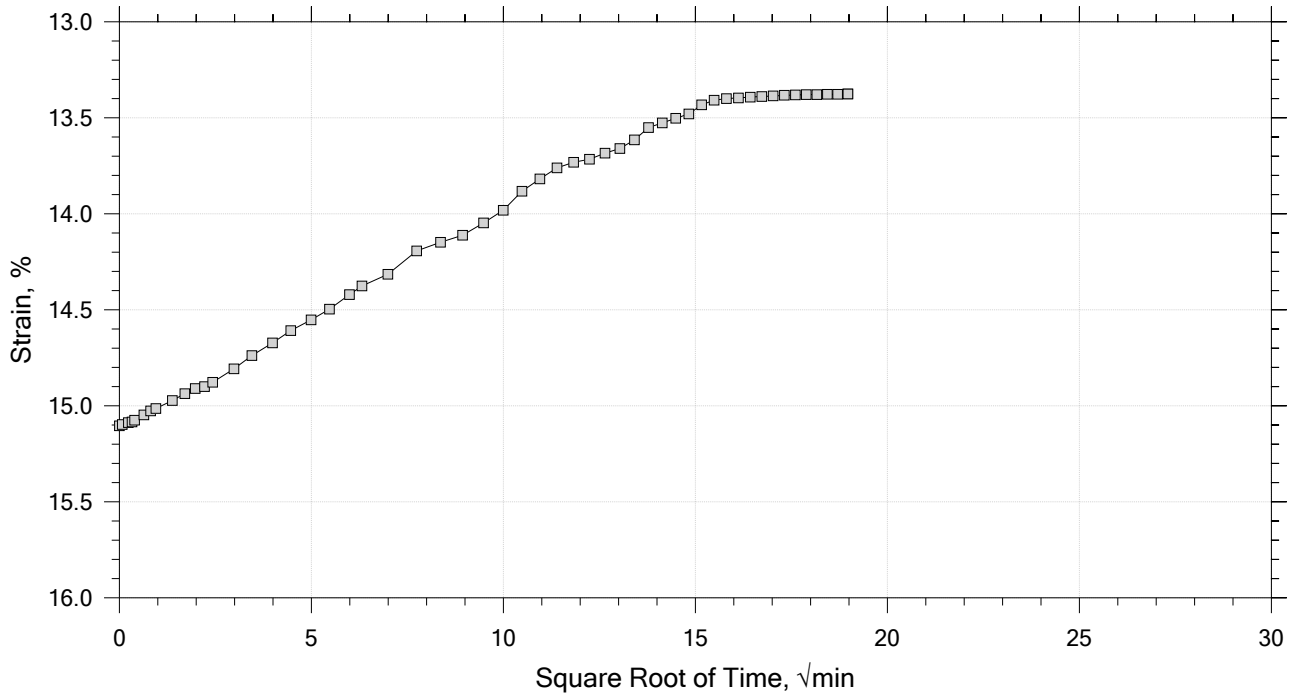


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
Test No.: IP-1-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
Test No.: IP-1-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.80	Liquid Limit: 34
Initial Height: 1.00 in	Initial Void Ratio: 0.667	Plastic Limit: 20
Final Height: 0.87 in	Final Void Ratio: 0.444	Plasticity Index: 14

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E0593	RING		E2717
Mass Container, gm	8.26	108.39	108.39	8.35
Mass Container + Wet Soil, gm	318.13	269.49	264.78	163.9
Mass Container + Dry Soil, gm	268.46	243.35	243.35	142.59
Mass Dry Soil, gm	260.2	134.96	134.96	134.24
Water Content, %	19.09	19.36	15.87	15.87
Void Ratio	---	0.67	0.44	---
Degree of Saturation, %	---	81.20	100.00	---
Dry Unit Weight, pcf	---	104.74	120.92	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

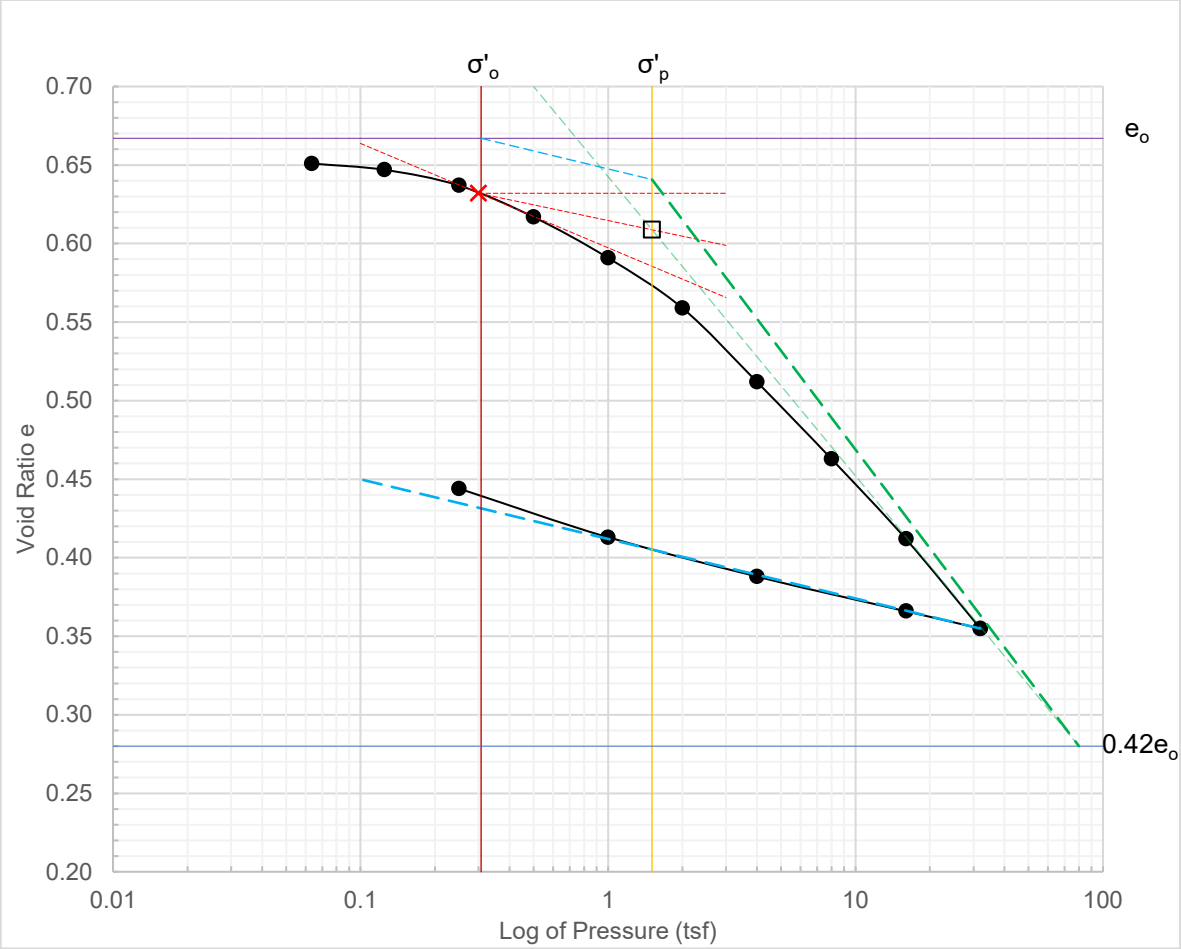
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0636	0.009828	0.651	0.983	2.779	1.26e-03	1.55e-01	3.64e-03
2	0.125	0.01184	0.647	1.18	2.651	1.30e-03	3.28e-02	8.01e-04
3	0.250	0.01792	0.637	1.79	4.516	7.59e-04	4.86e-02	6.91e-04
4	0.500	0.02985	0.617	2.98	11.115	3.03e-04	4.77e-02	2.71e-04
5	1.00	0.04530	0.591	4.53	13.927	2.35e-04	3.09e-02	1.36e-04
6	2.00	0.06480	0.559	6.48	20.262	1.56e-04	1.95e-02	5.69e-05
7	4.00	0.09271	0.512	9.27	13.422	2.23e-04	1.40e-02	5.84e-05
8	8.00	0.1223	0.463	12.2	20.515	1.37e-04	7.41e-03	1.90e-05
9	16.0	0.1532	0.412	15.3	20.679	1.27e-04	3.86e-03	9.18e-06
10	32.0	0.1869	0.355	18.7	18.412	1.32e-04	2.11e-03	5.21e-06
11	16.0	0.1804	0.366	18.0	9.197	2.56e-04	4.03e-04	1.93e-06
12	4.00	0.1674	0.388	16.7	28.741	8.39e-05	1.09e-03	1.71e-06
13	1.00	0.1521	0.413	15.2	59.937	4.16e-05	5.07e-03	3.95e-06
14	0.250	0.1338	0.444	13.4	315.815	8.22e-06	2.45e-02	3.77e-06

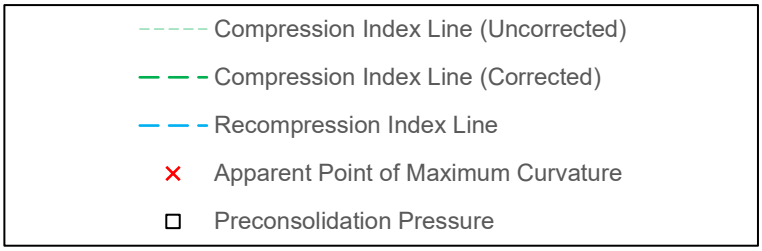
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: 8/19/22
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.1-5.2
	Test No.: IP-1-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0636 tsf		
	Displacement at End of Increment		

Boring: B-4.1

Depth: 5.1'-5.2'

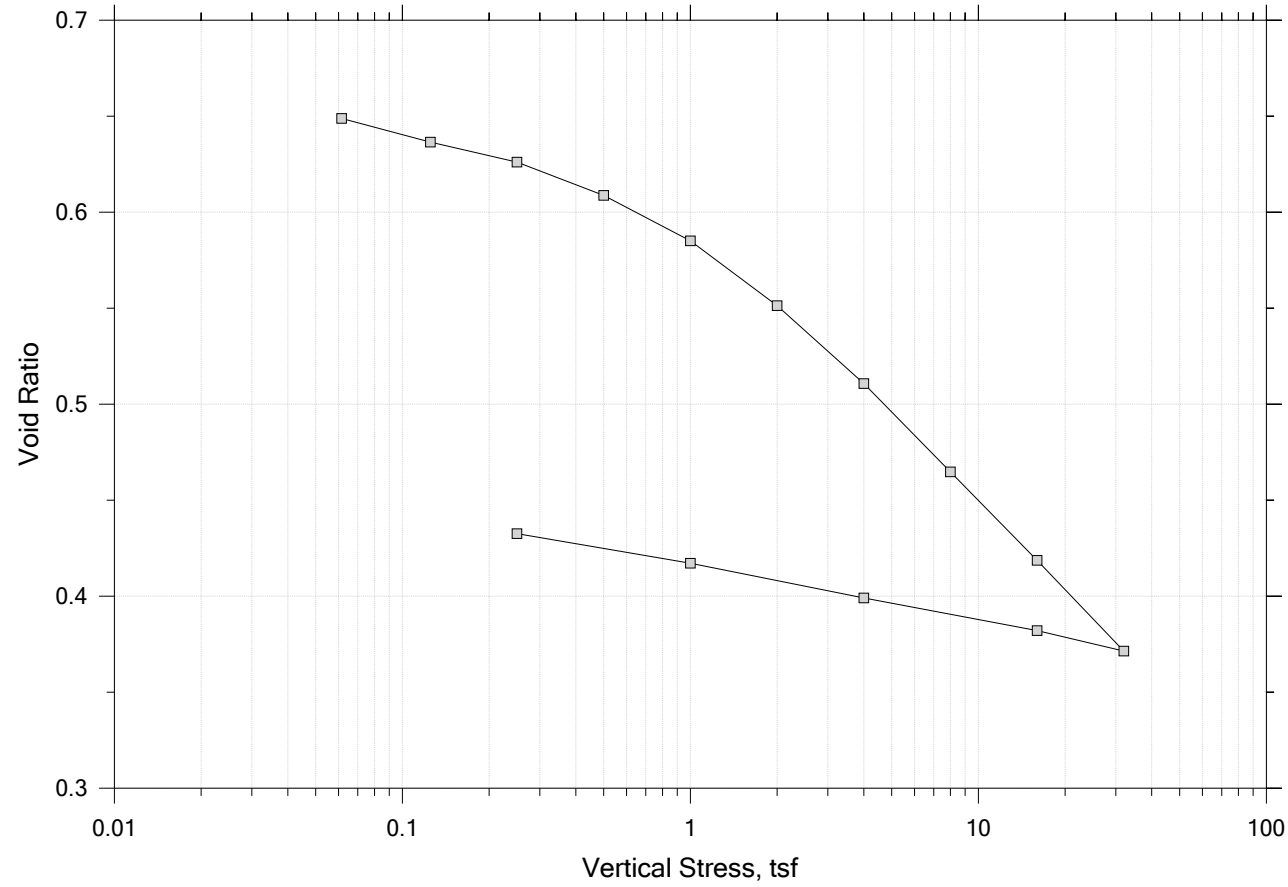
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.31
Preconsolidation Pressure, σ'_p (tsf) = 1.51
Compression Index, C_c = 0.21
Recompression Index, C_r = 0.038

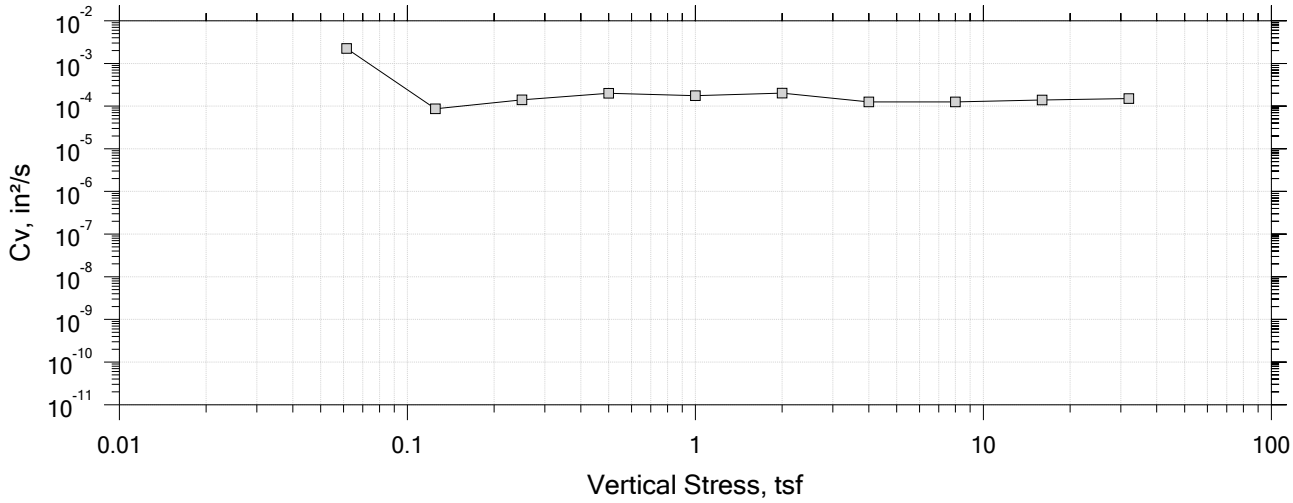




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

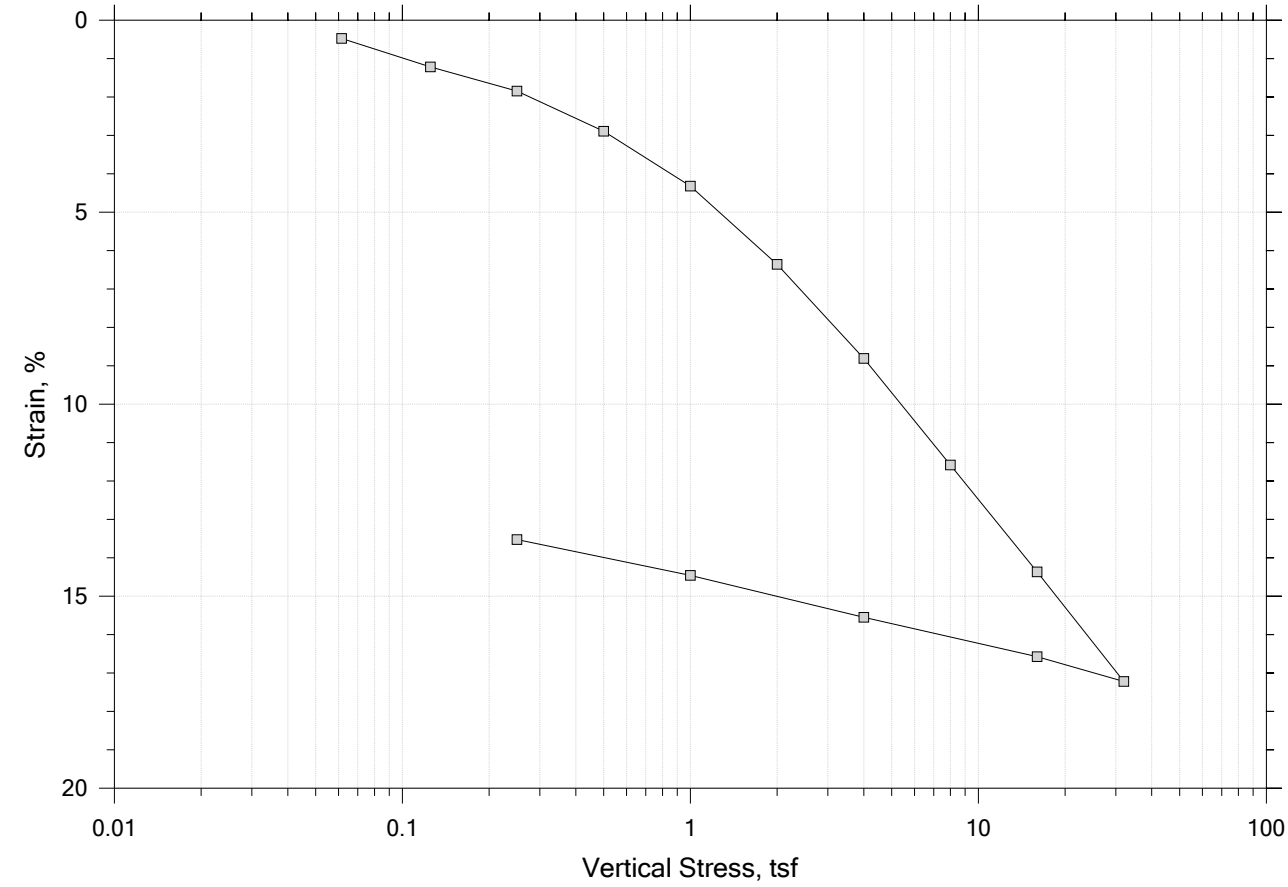


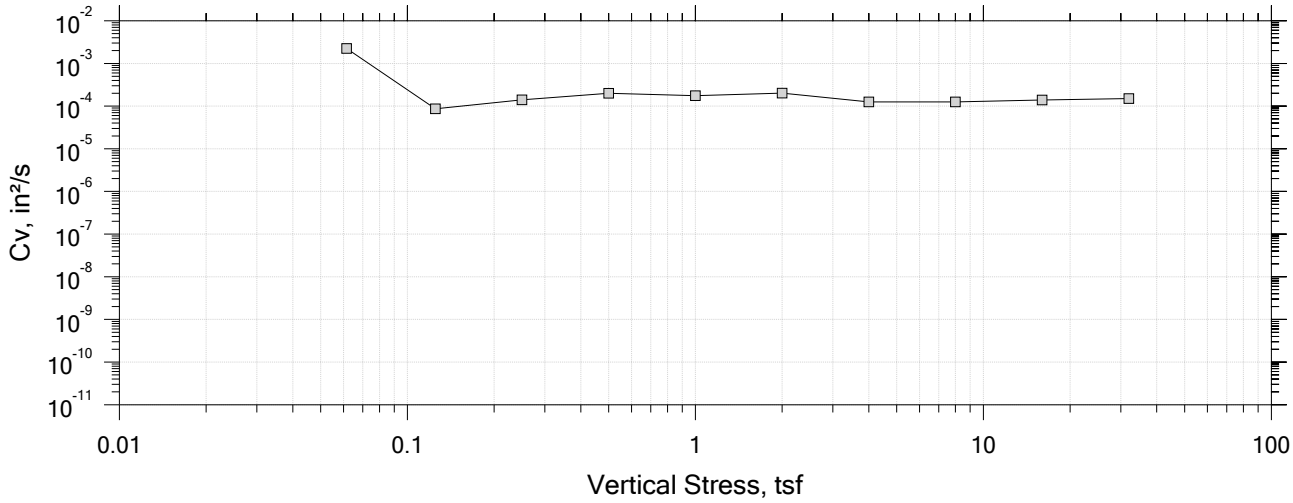


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

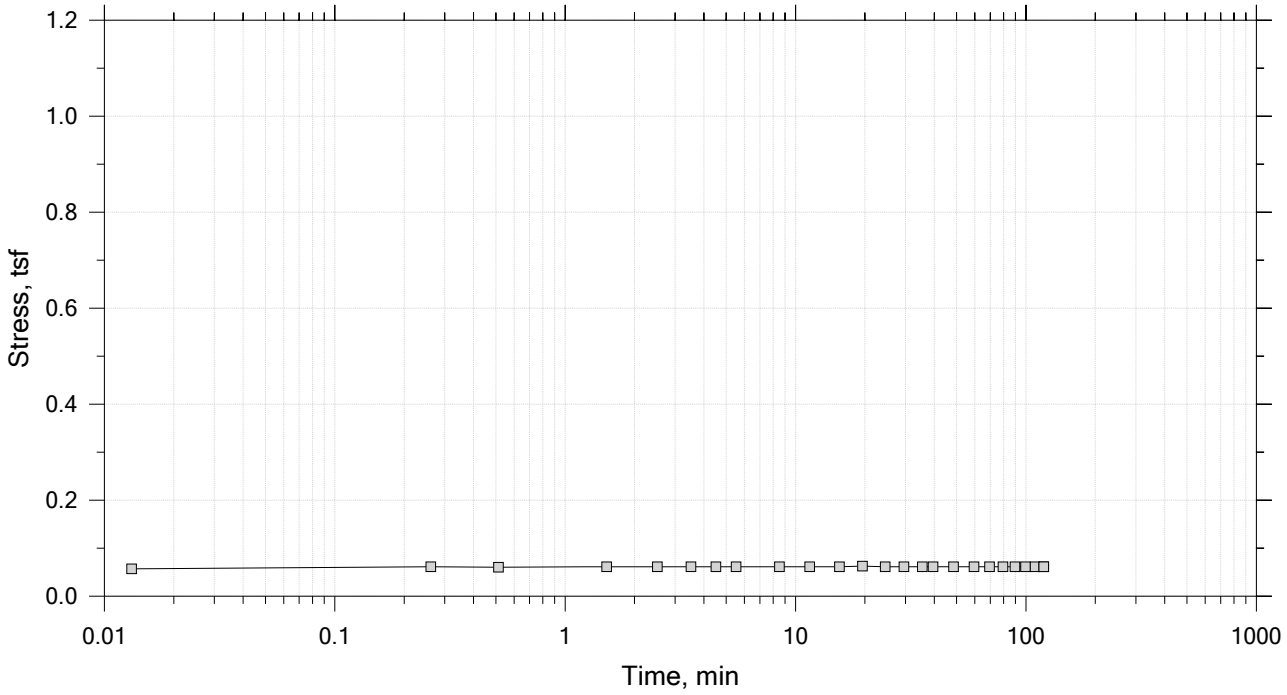


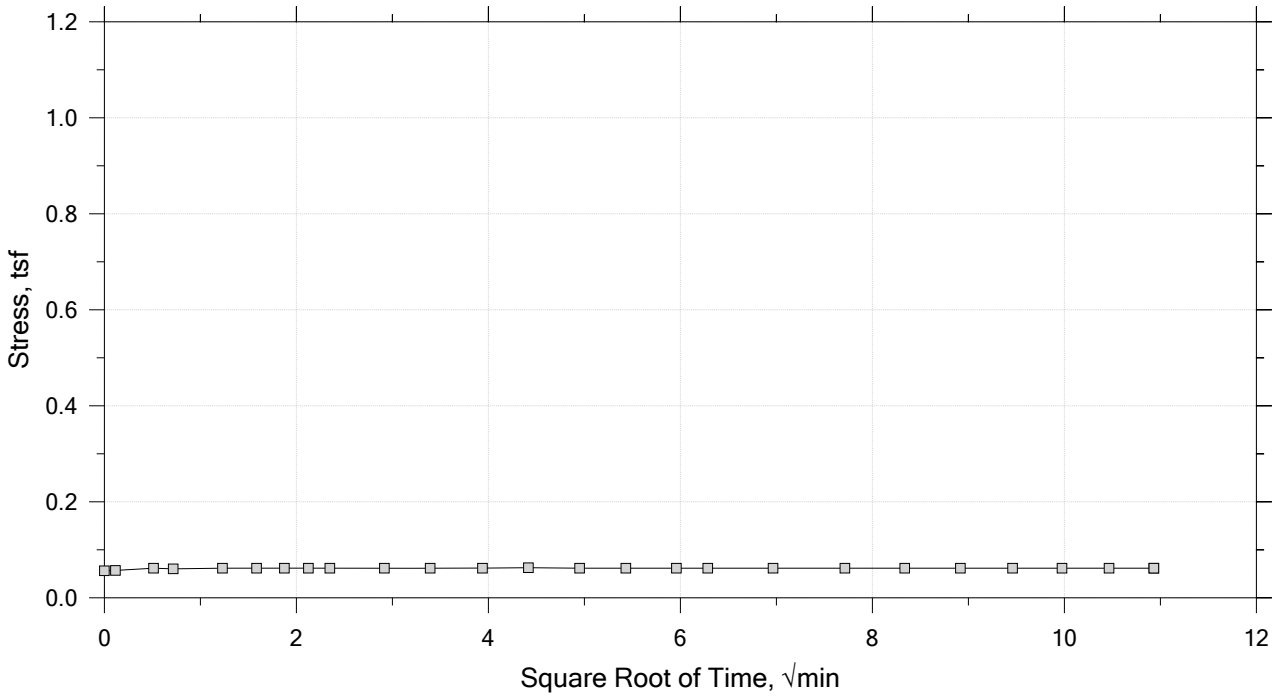


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0615 tsf

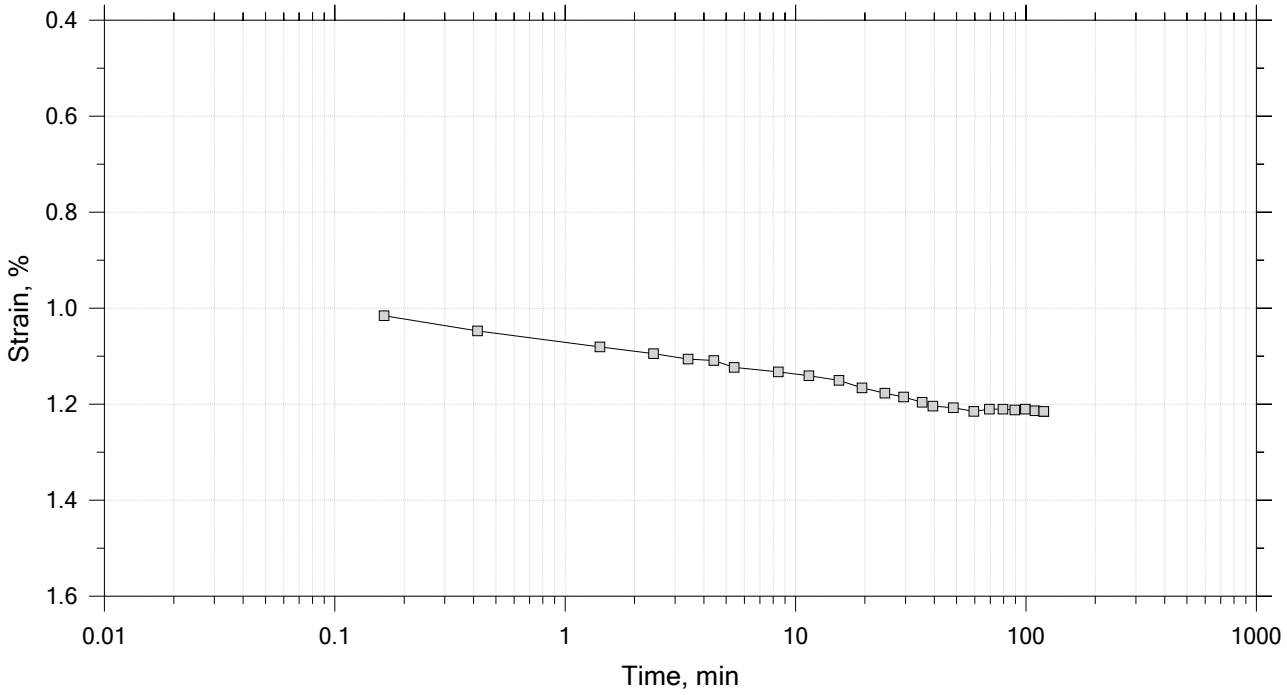


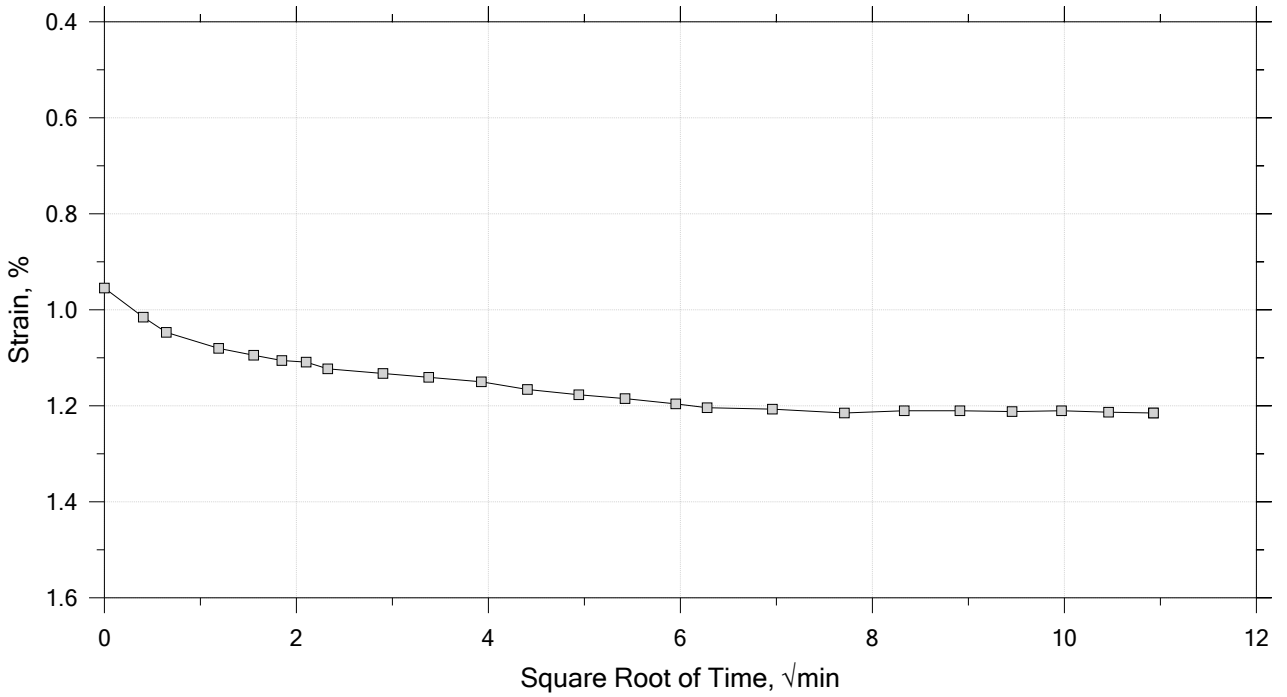


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

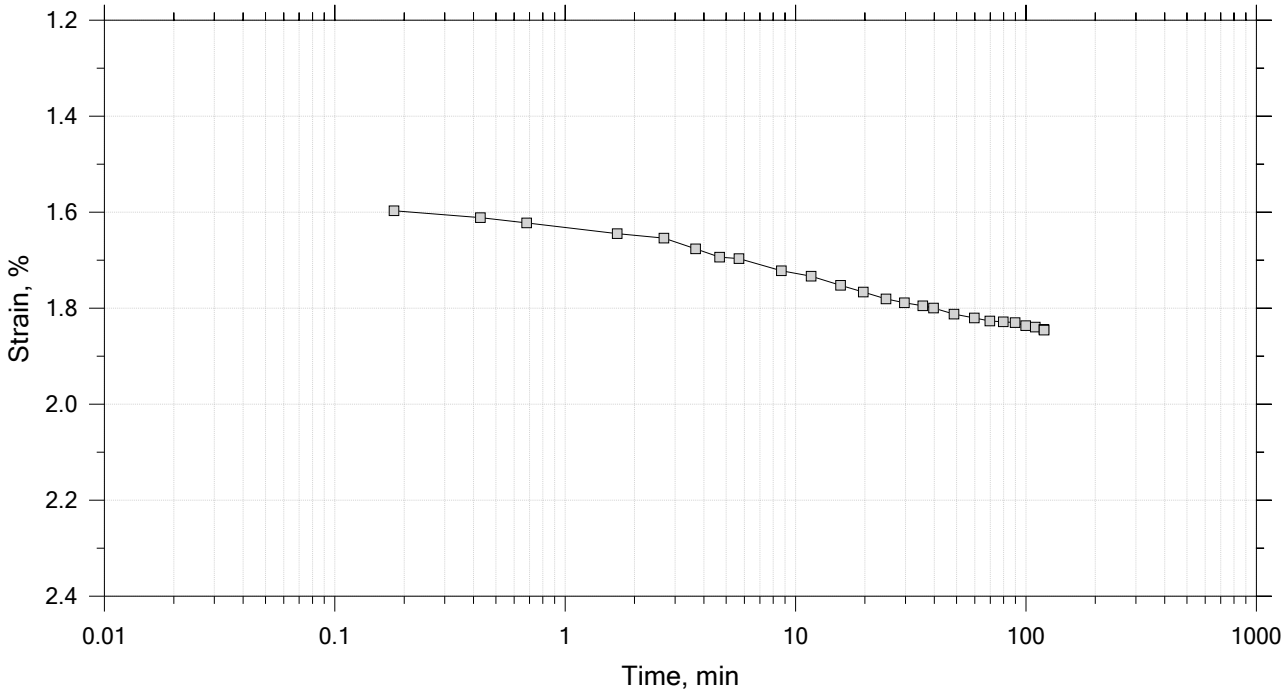


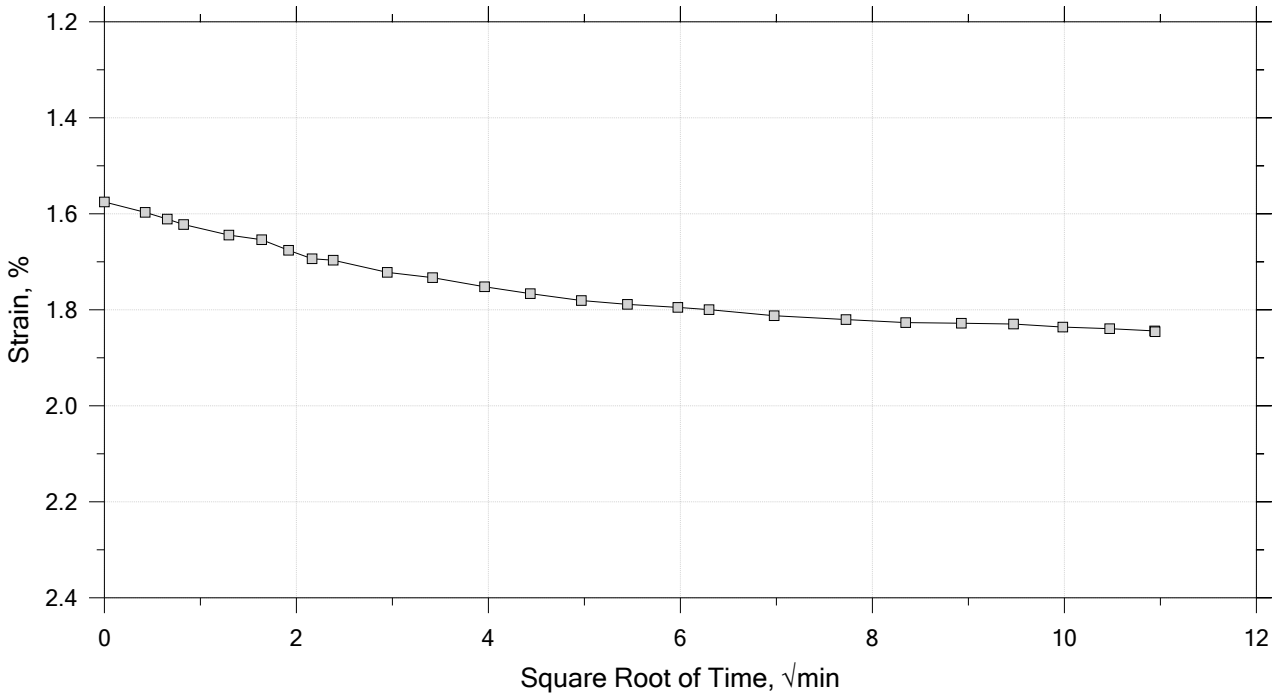


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





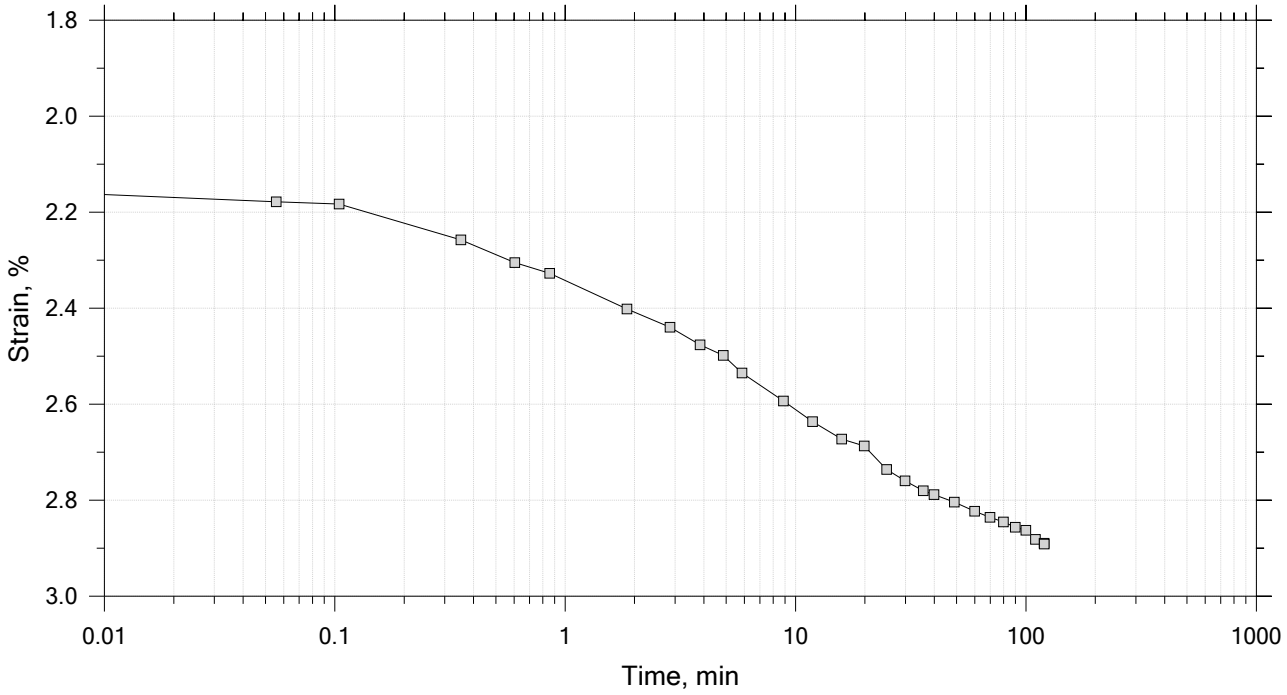
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

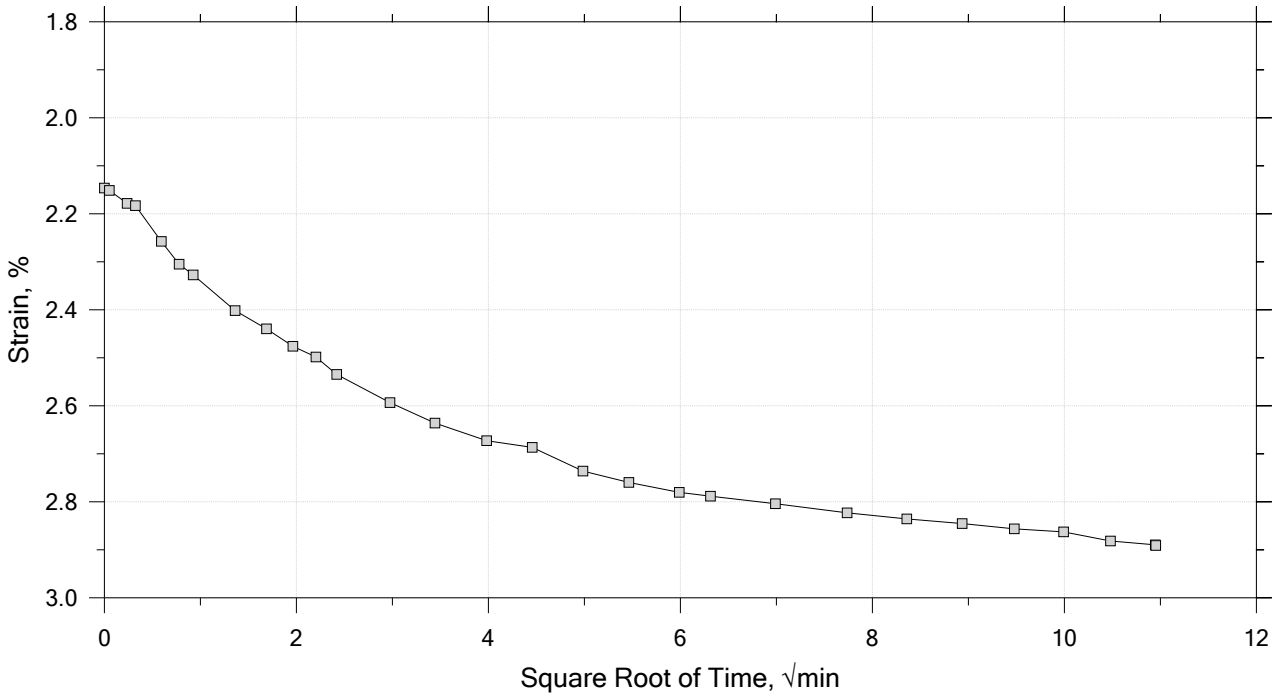
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf

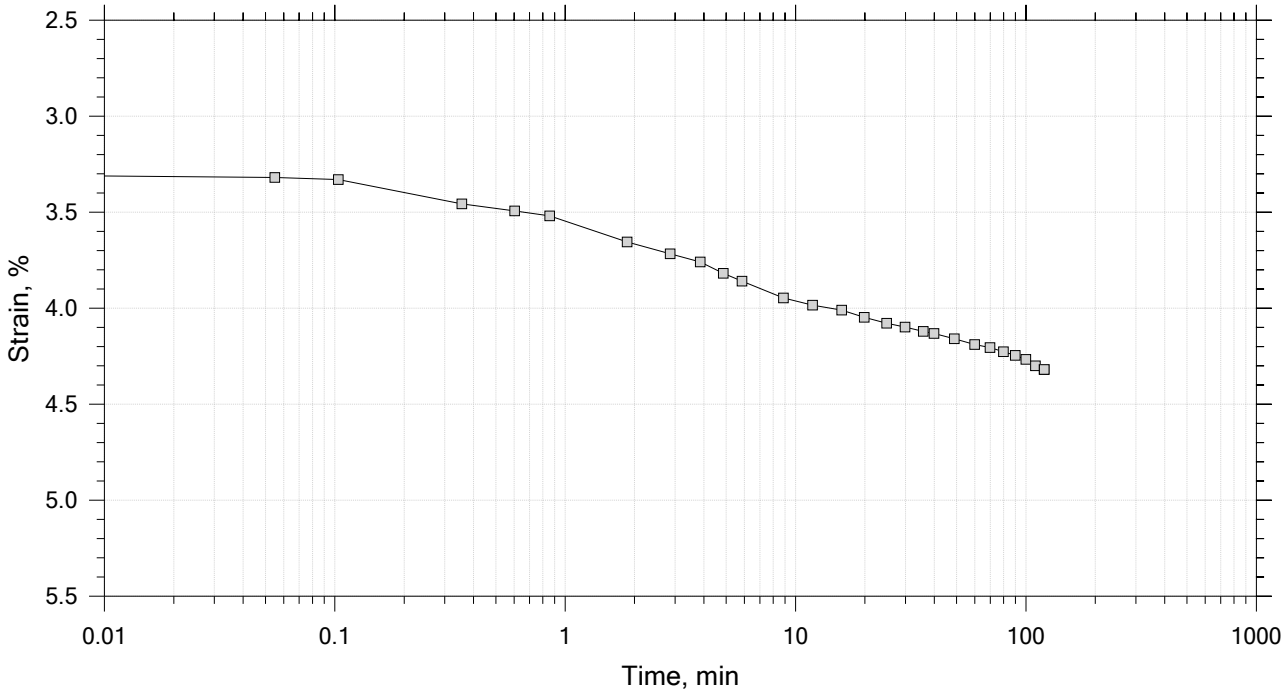


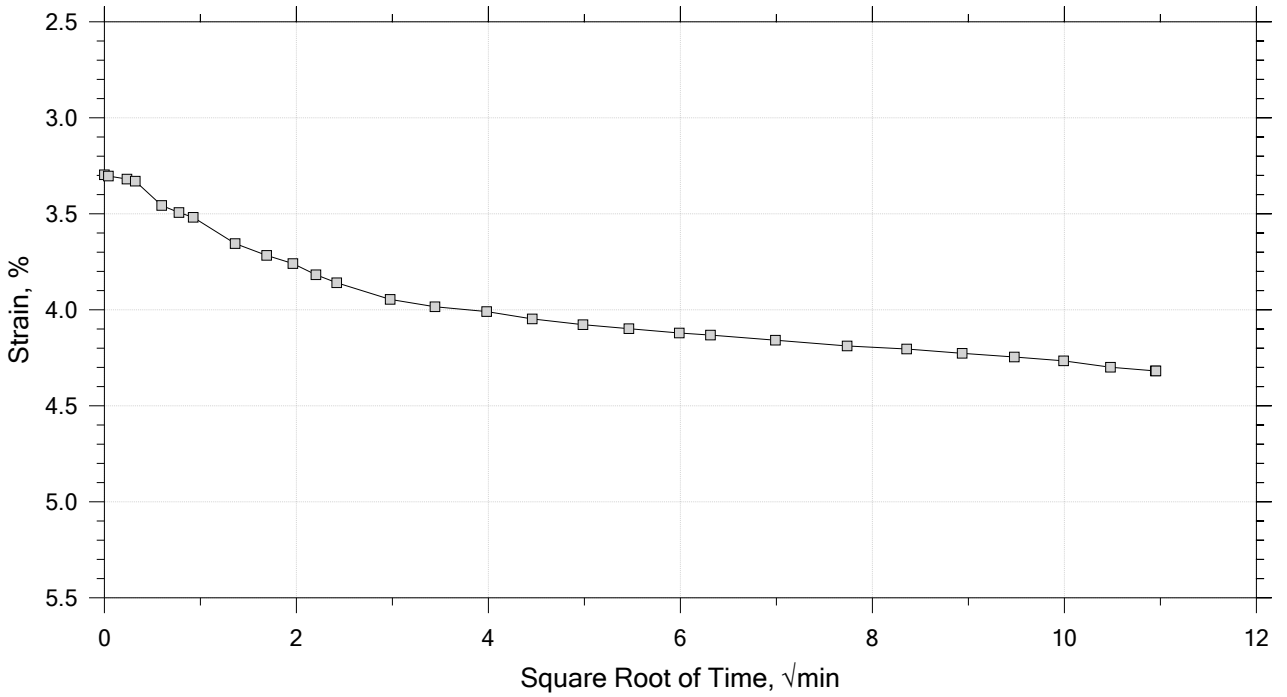


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





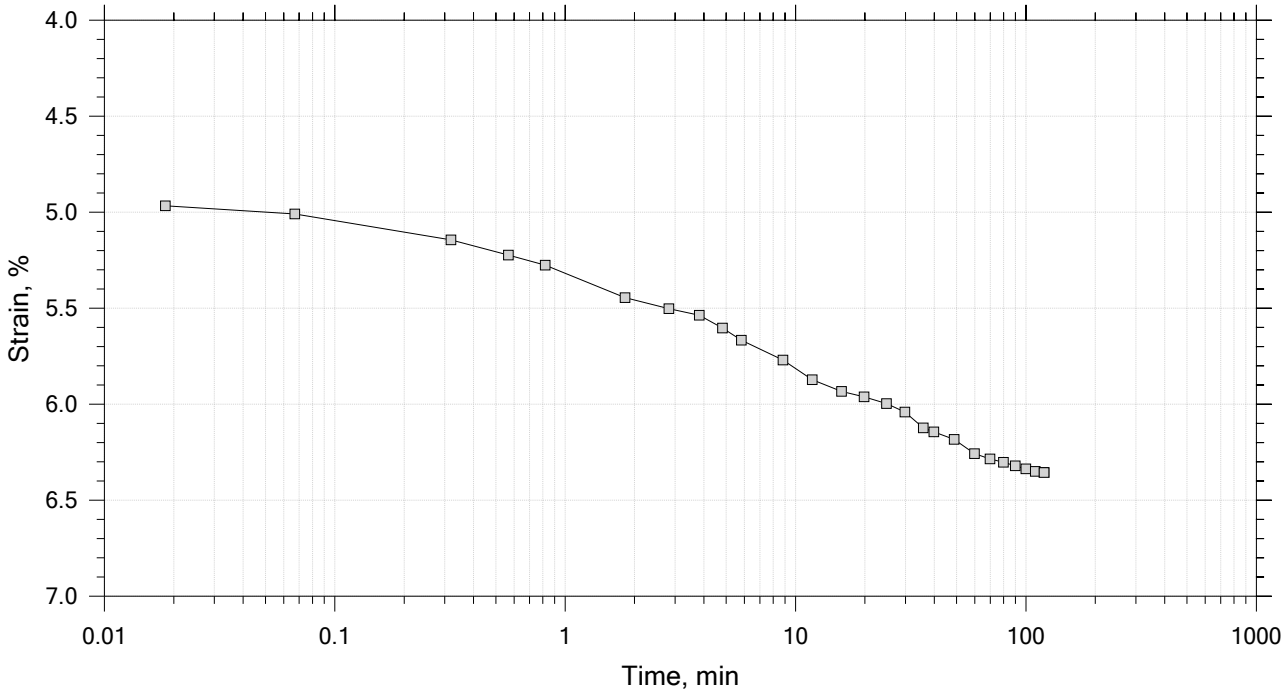
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

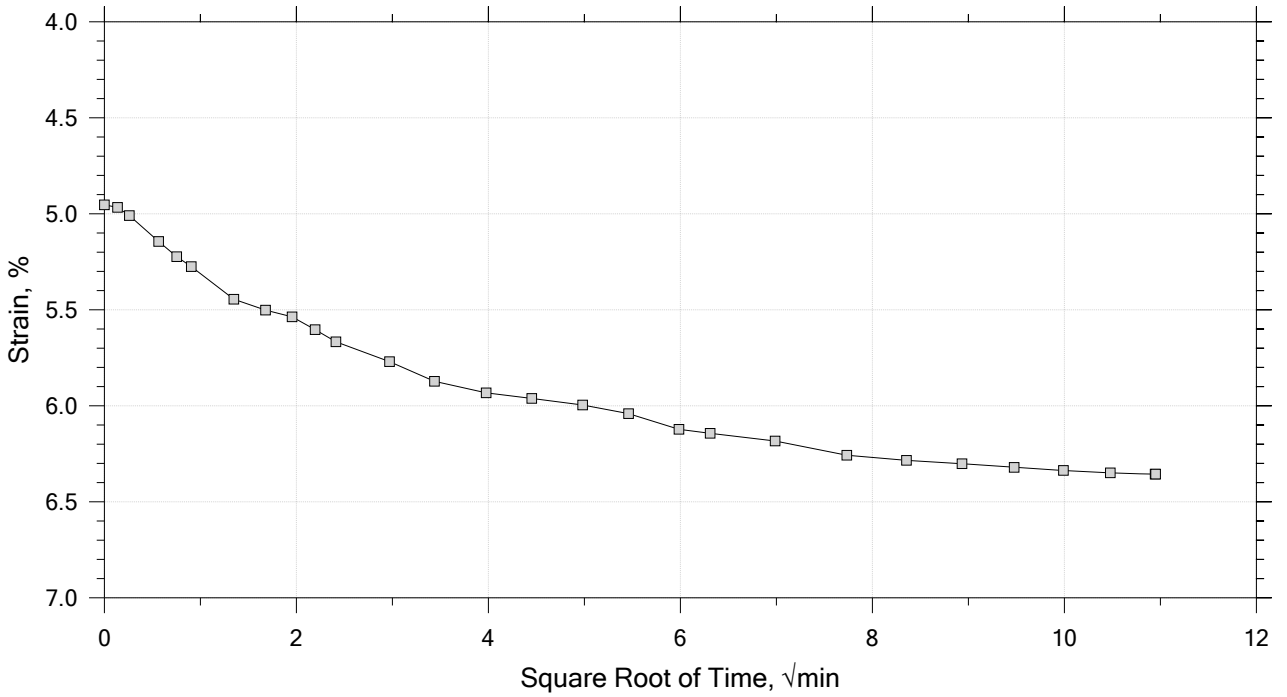
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





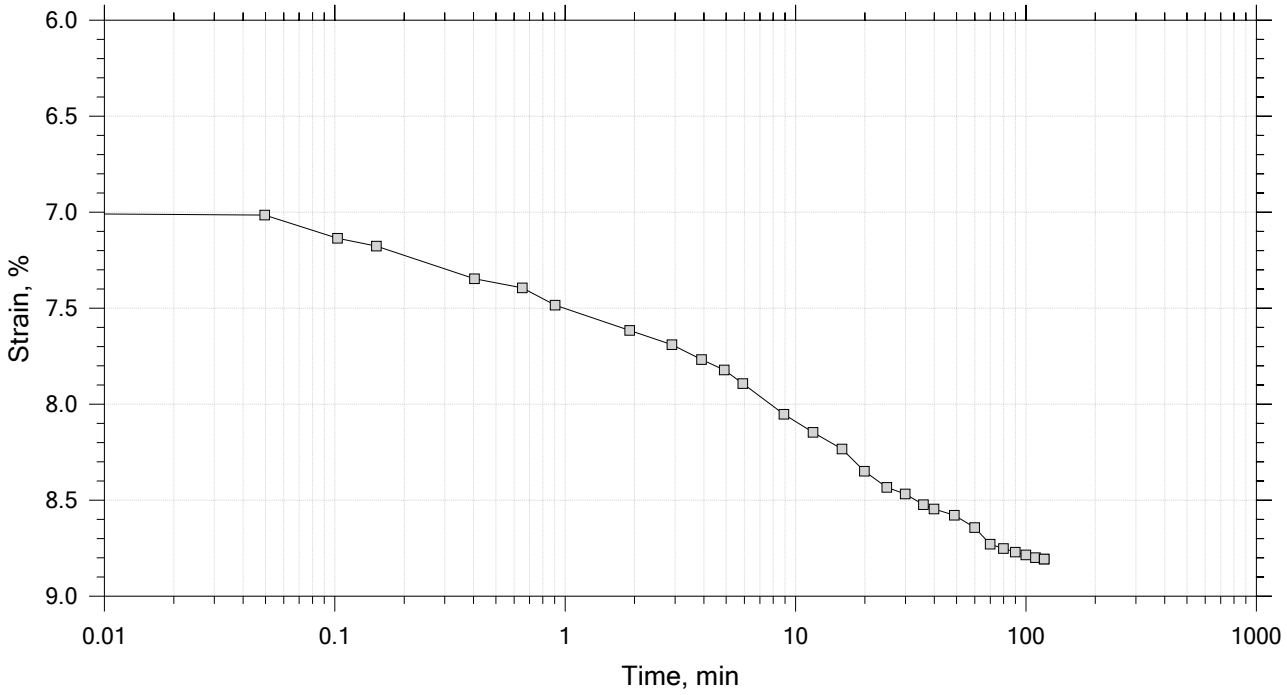
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

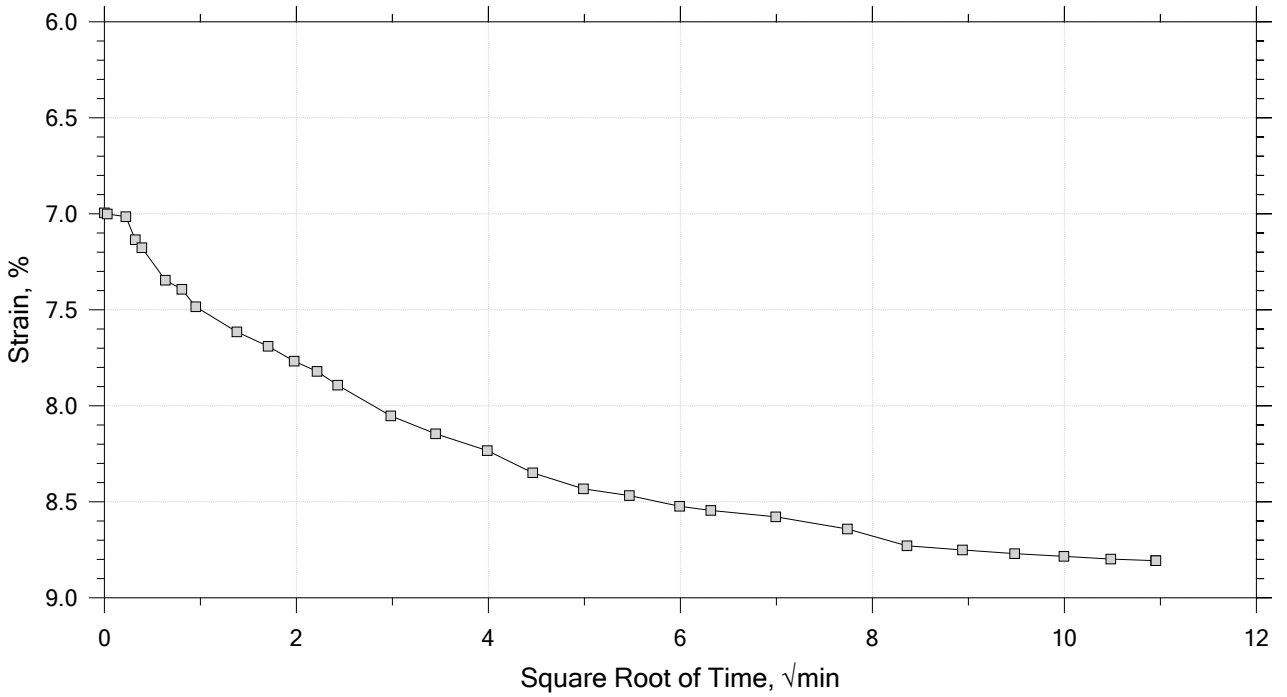
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





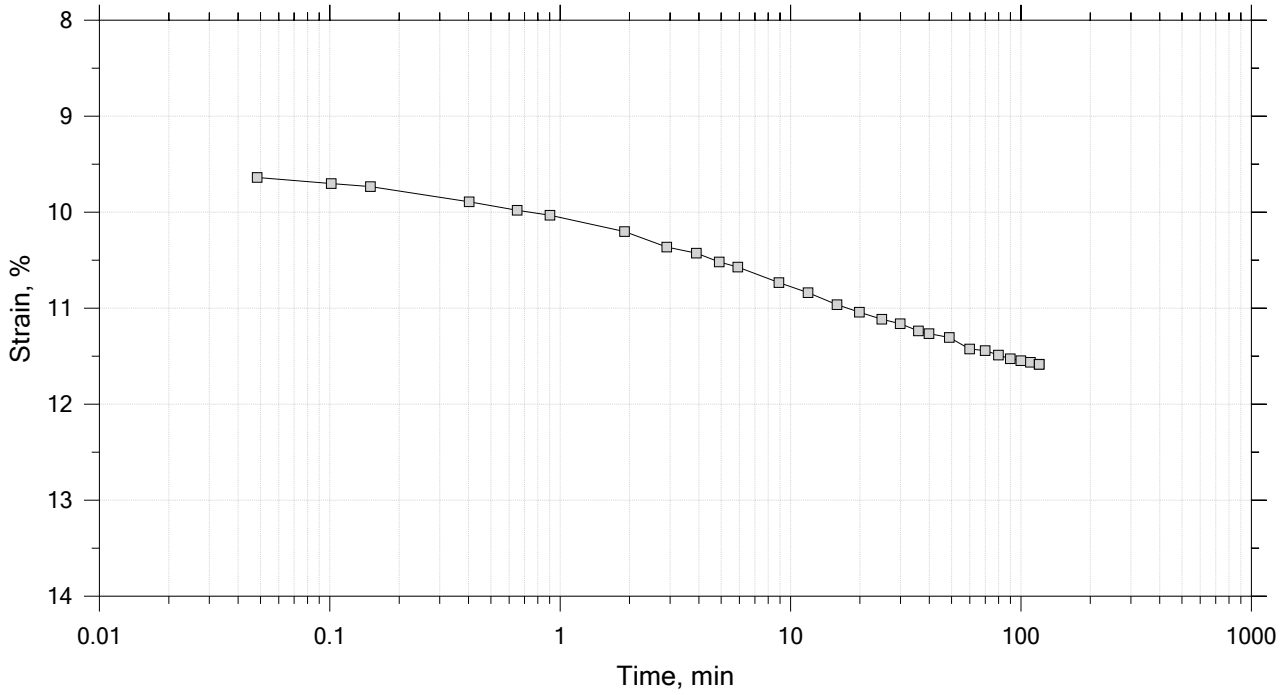
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

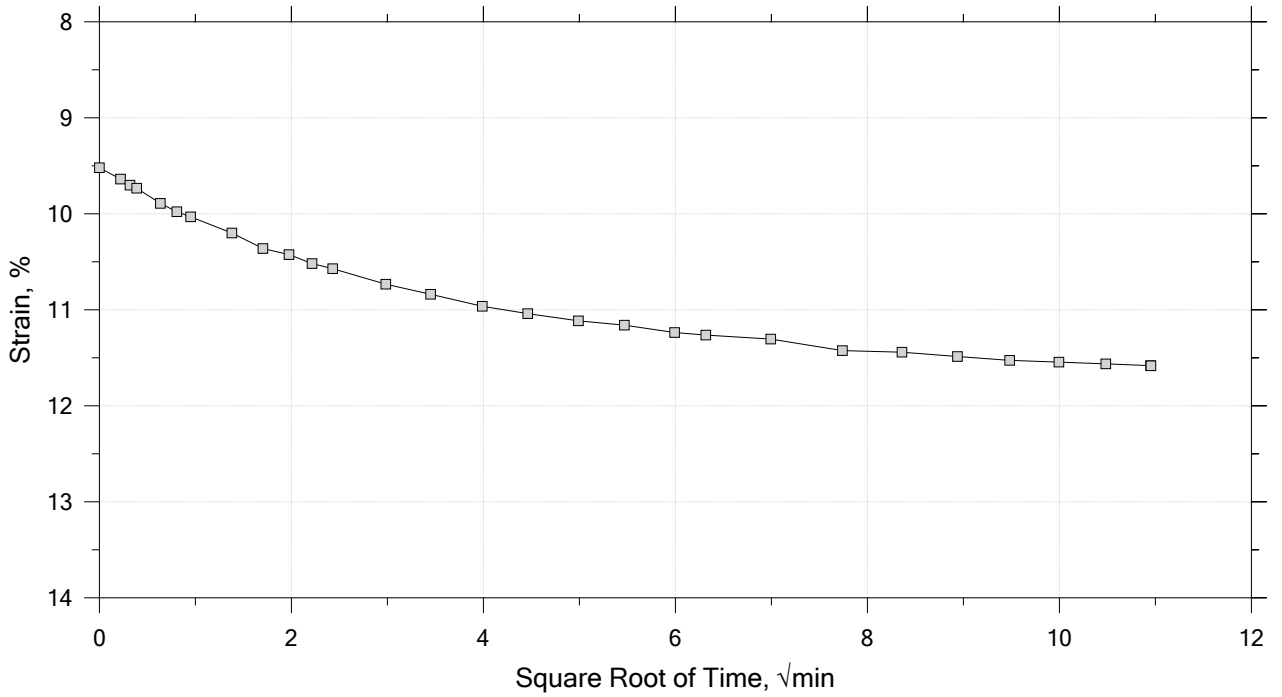
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





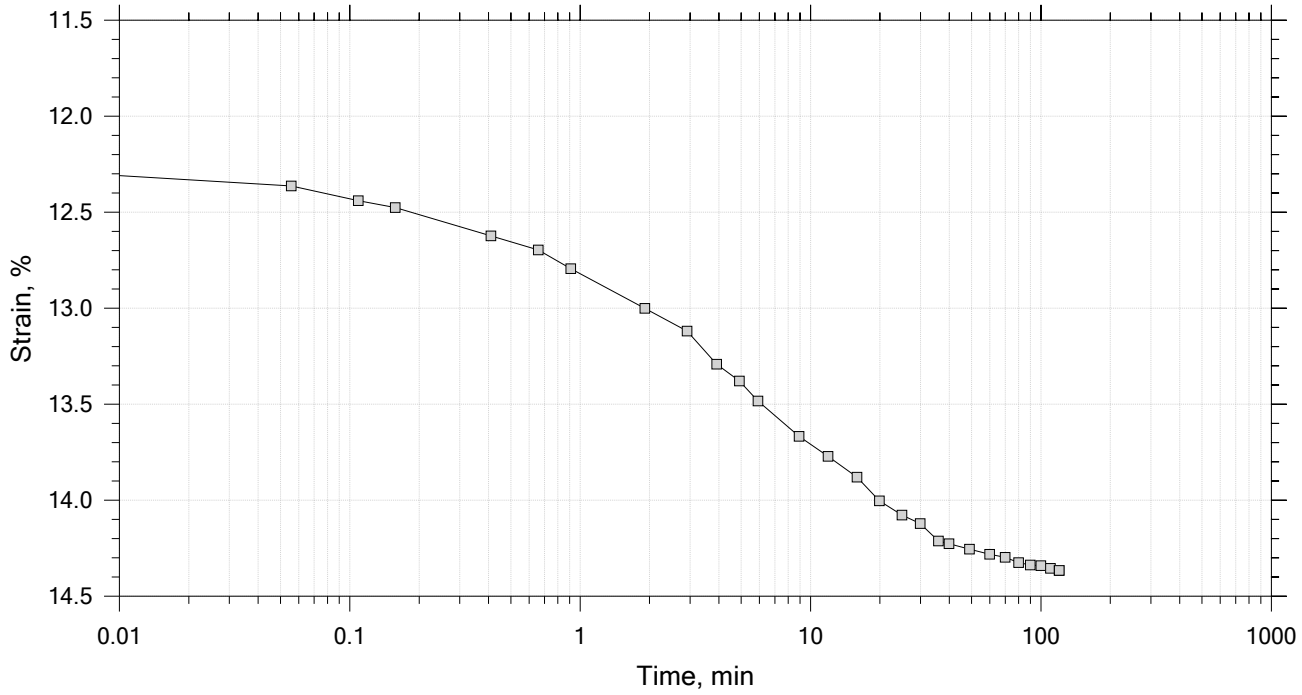
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

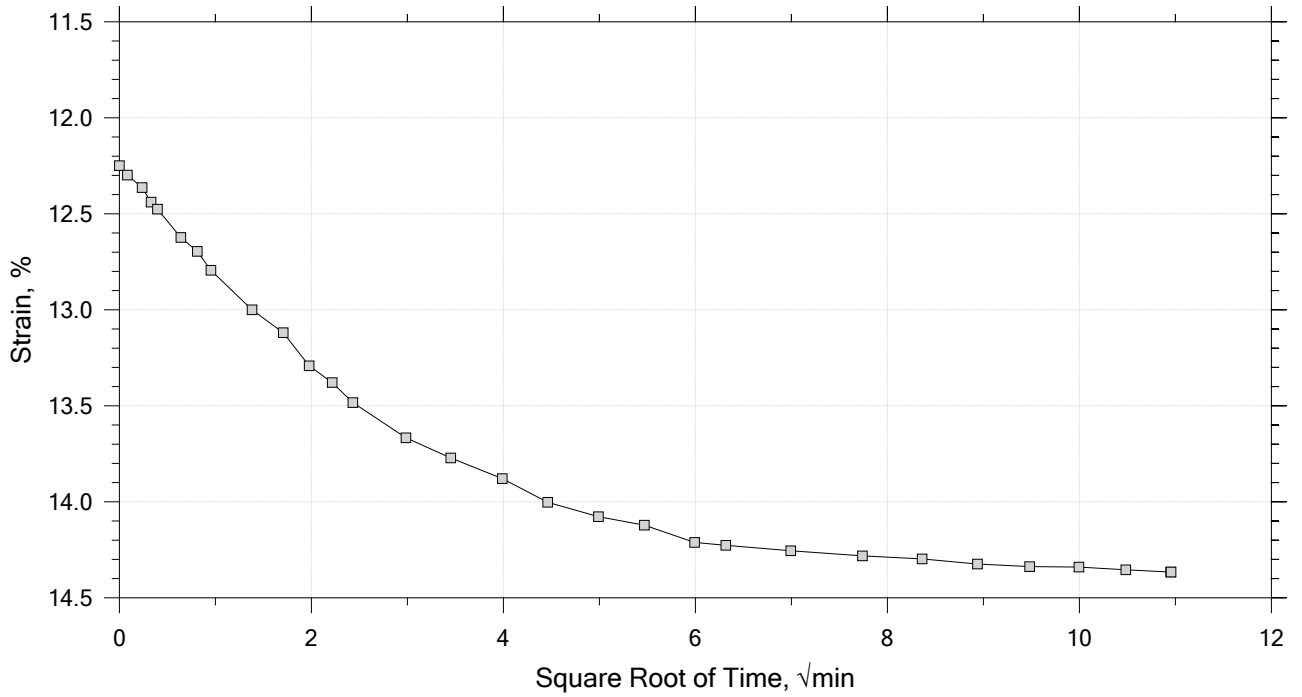
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf





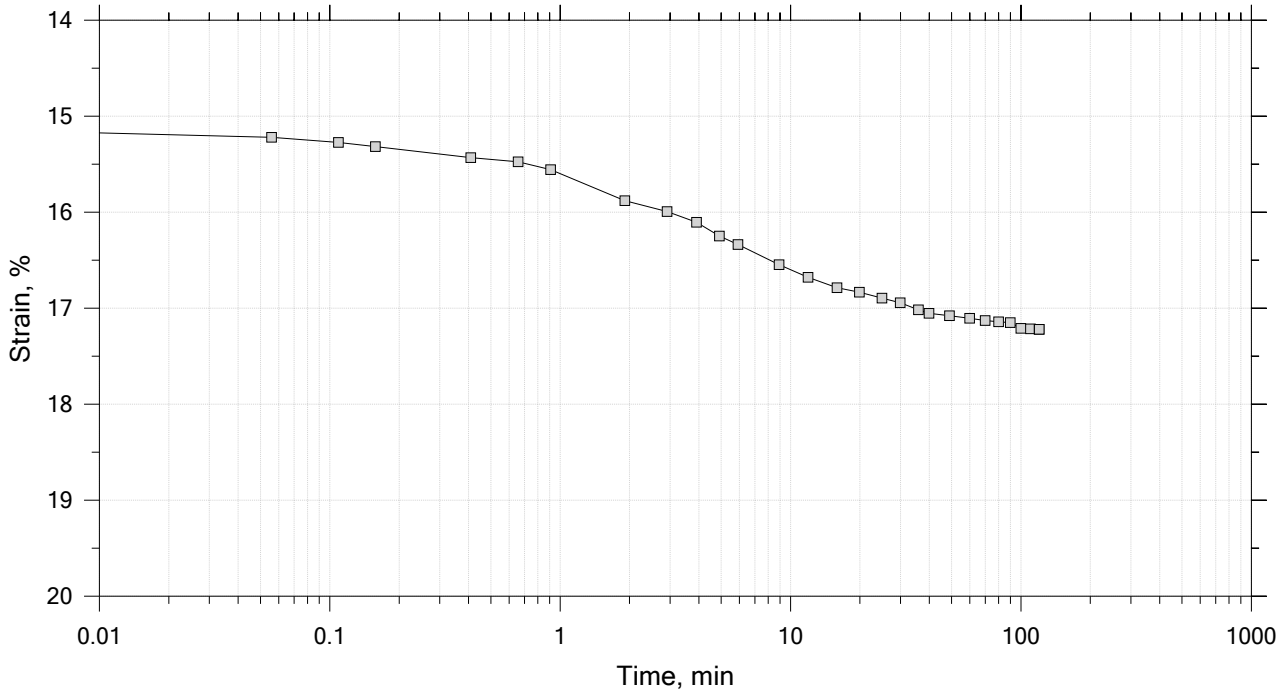
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

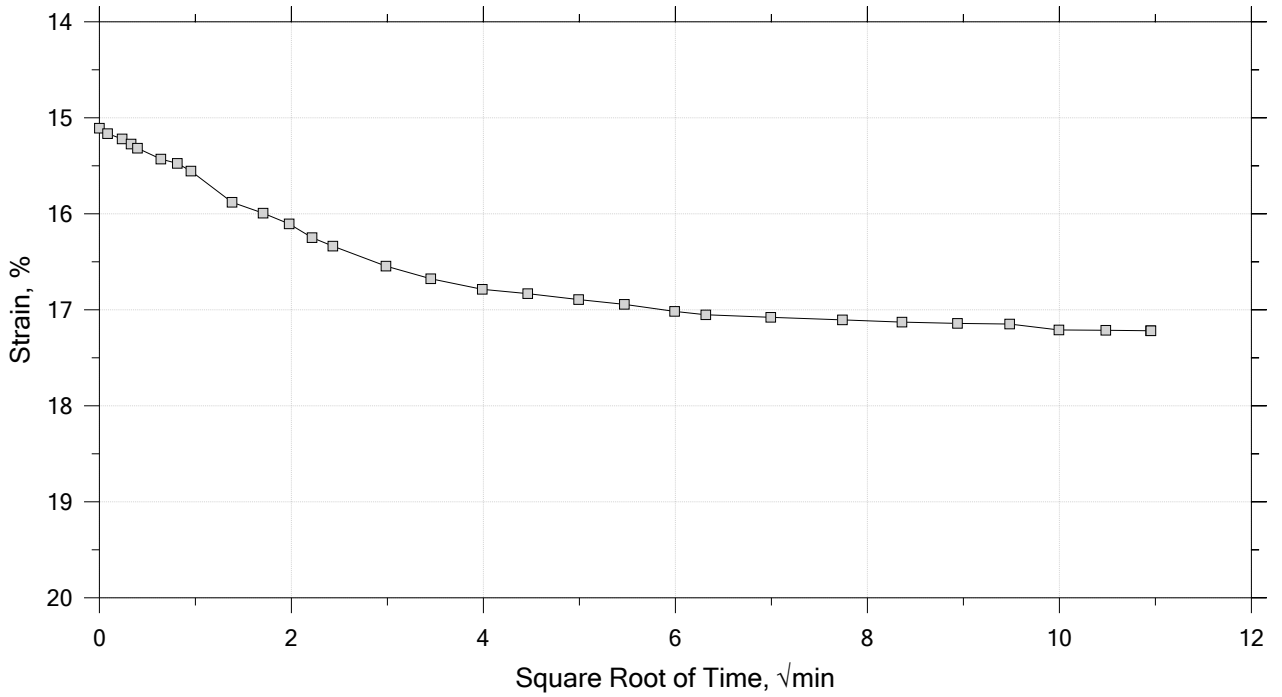
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14

Constant Load Step

Stress: 32 tsf

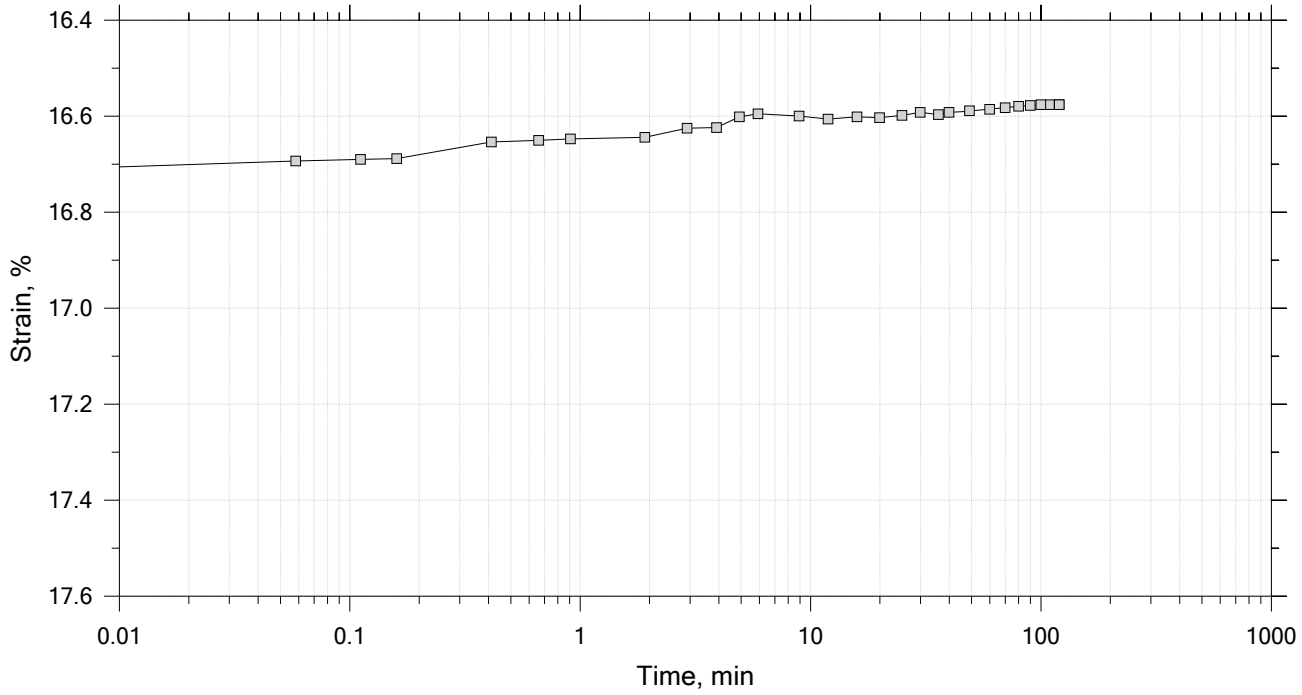


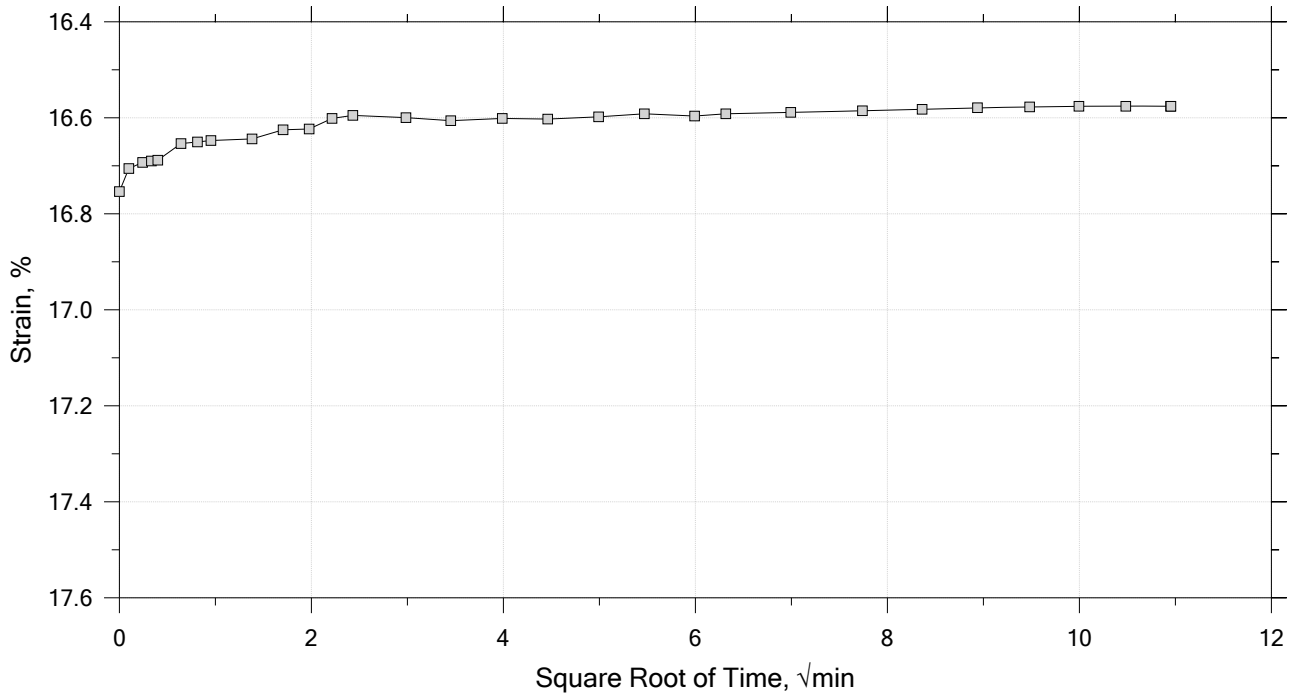


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

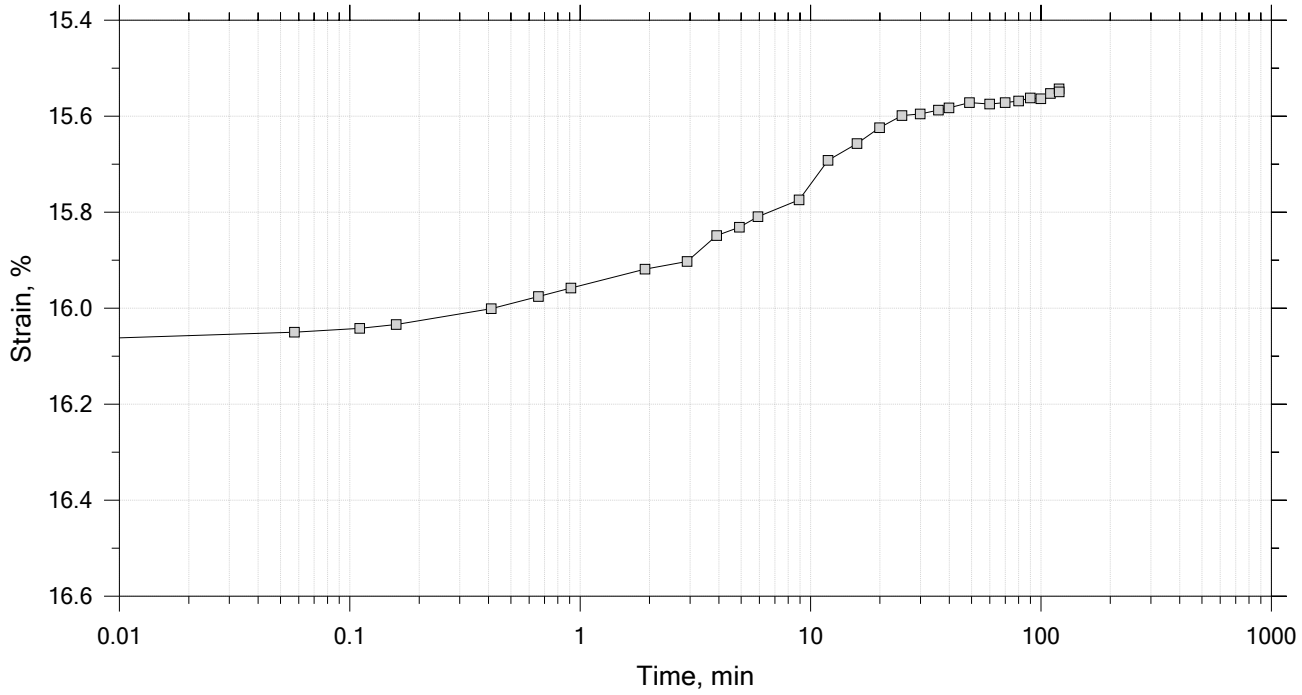


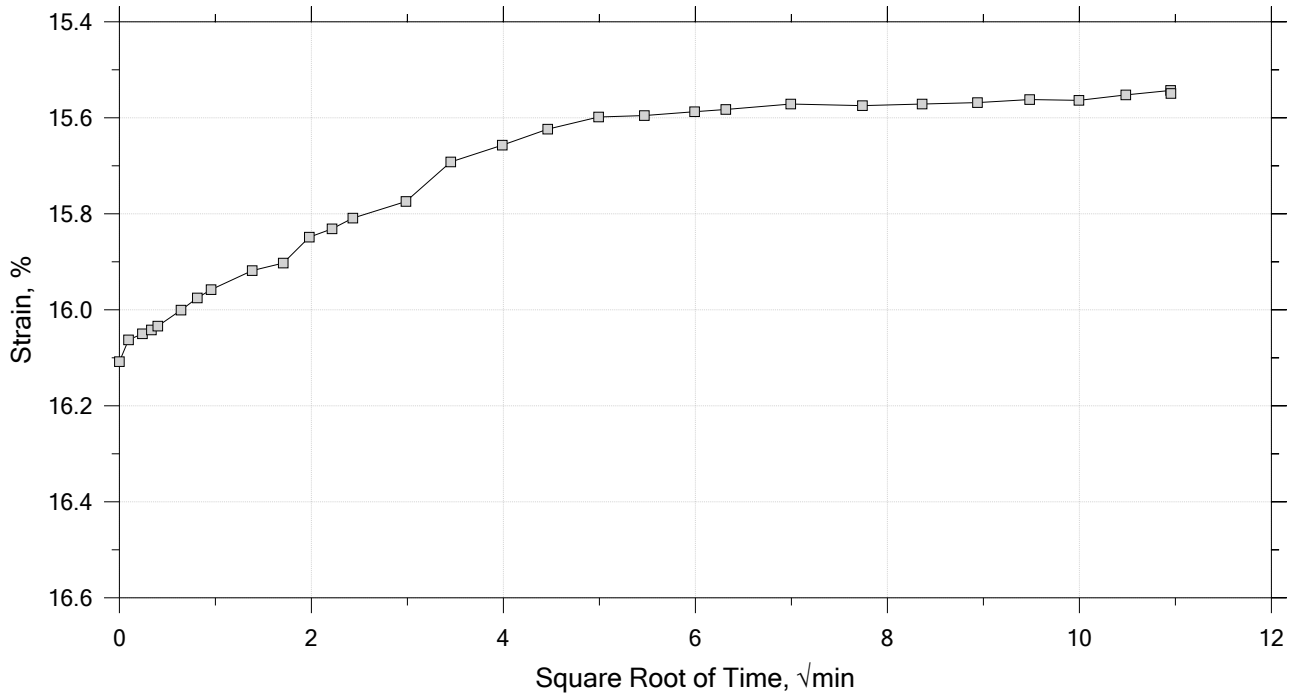


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

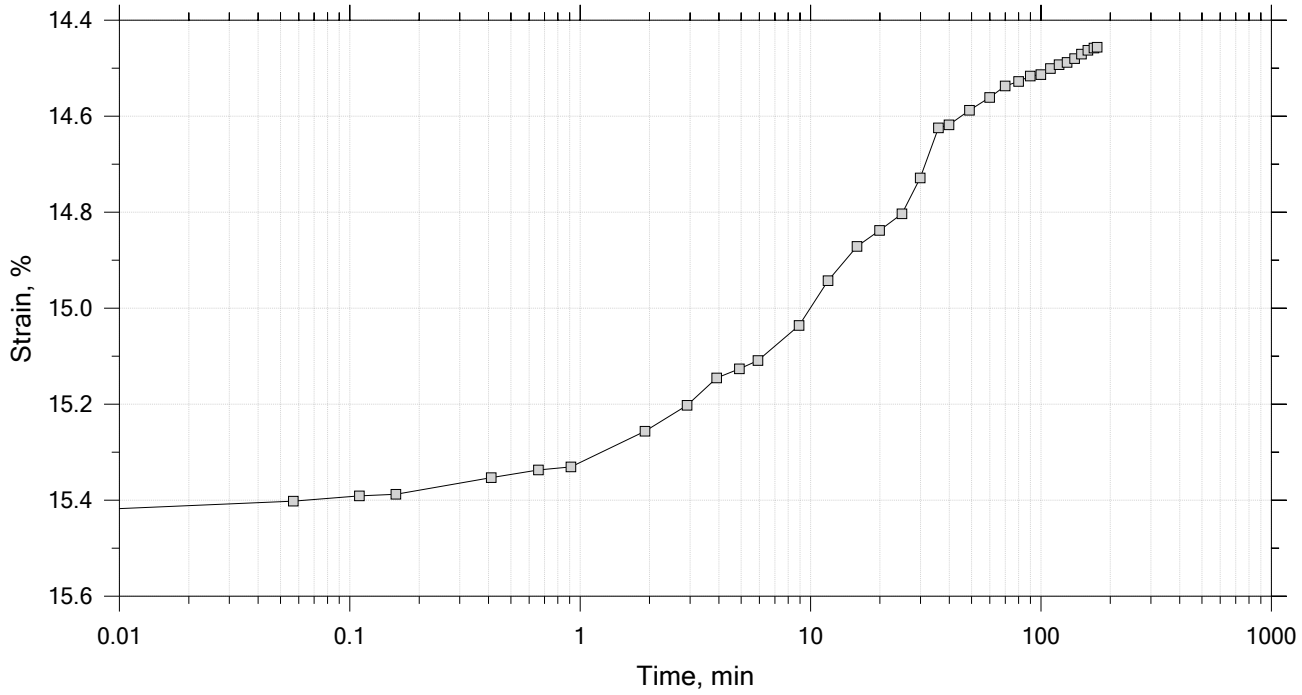


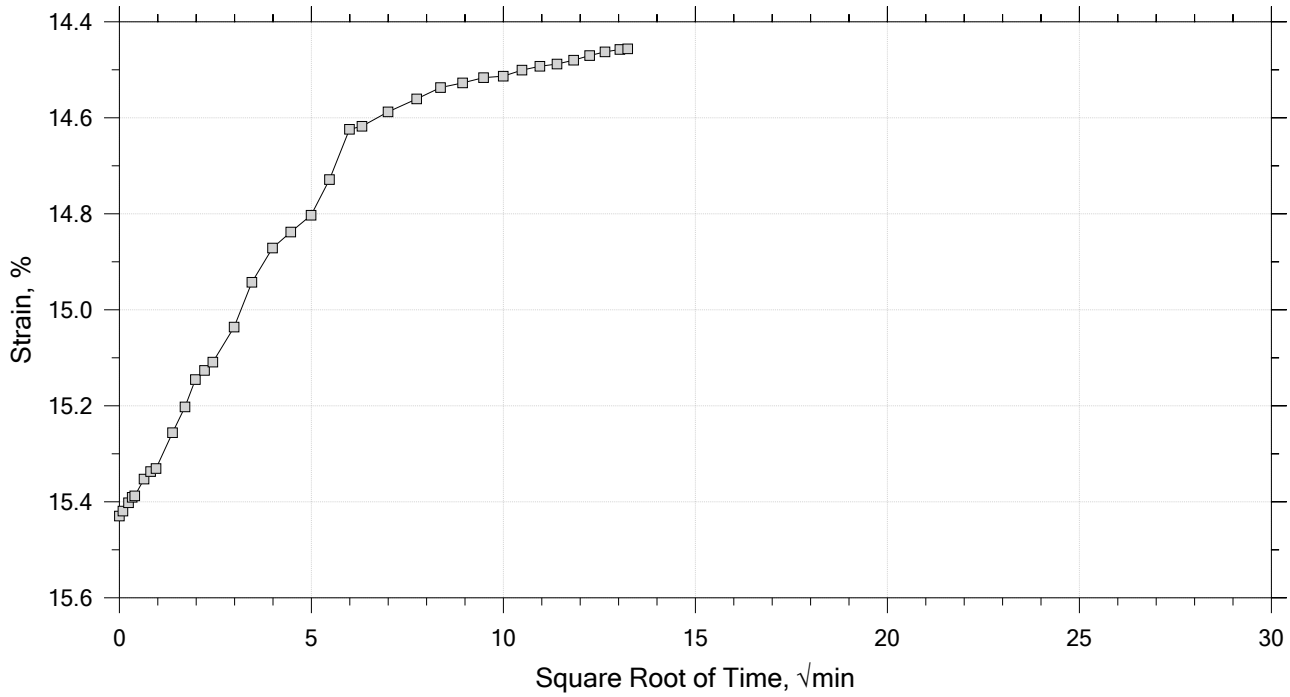


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.1	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
Test No.: IP-1-2	Sample Type: intact	Elevation: ---
Description: Moist, light brown clay with sand		
Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

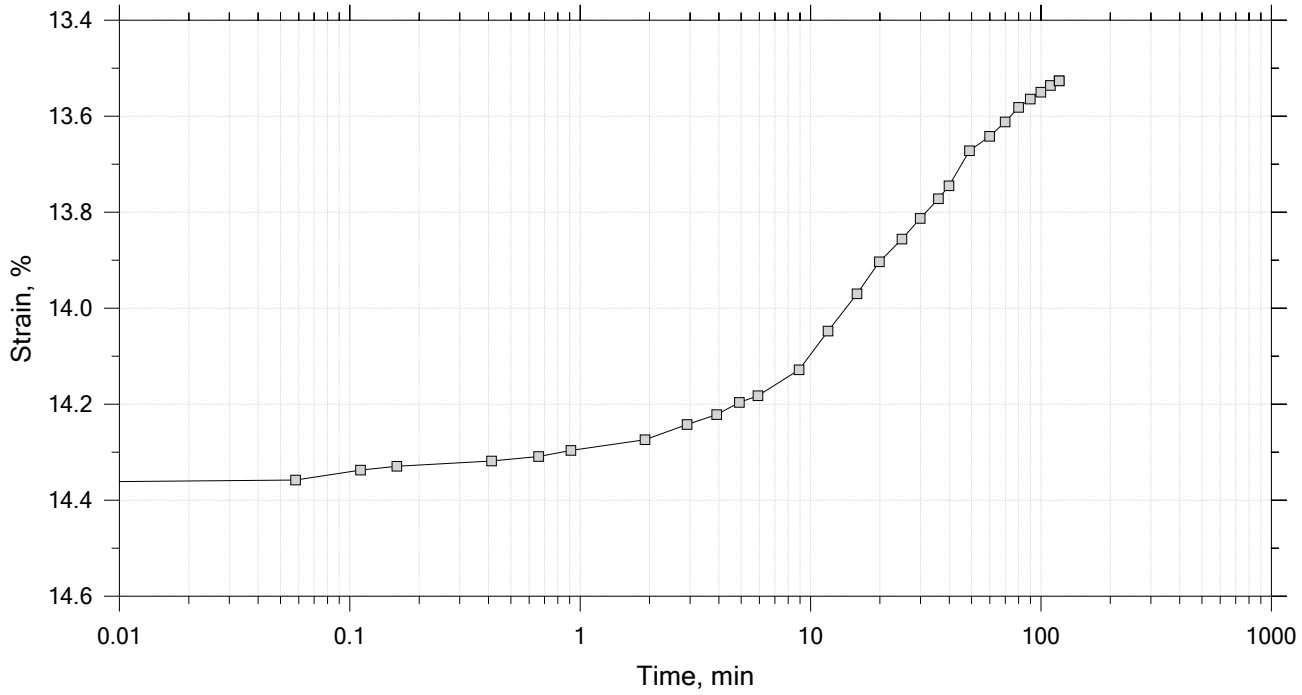


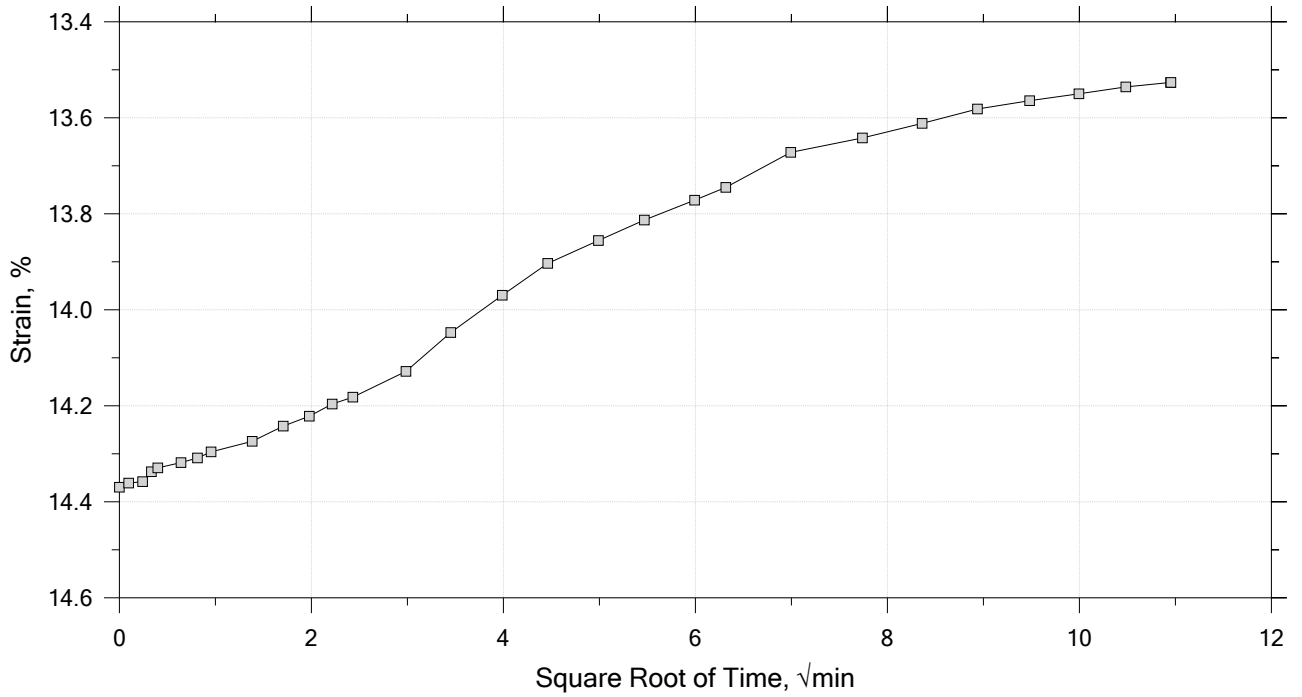


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.79	Liquid Limit: 34
Initial Height: 1.00 in	Initial Void Ratio: 0.657	Plastic Limit: 20
Final Height: 0.86 in	Final Void Ratio: 0.433	Plasticity Index: 14

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E4314	RING		E2019
Mass Container, gm	8.15	108.39	108.39	8.59
Mass Container + Wet Soil, gm	269.17	268.38	264.78	160.41
Mass Container + Dry Soil, gm	226.89	243.78	243.78	140.02
Mass Dry Soil, gm	218.74	135.39	135.39	131.43
Water Content, %	19.33	18.17	15.51	15.51
Void Ratio	---	0.66	0.43	---
Degree of Saturation, %	---	77.17	100.00	---
Dry Unit Weight, pcf	---	105.07	121.51	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

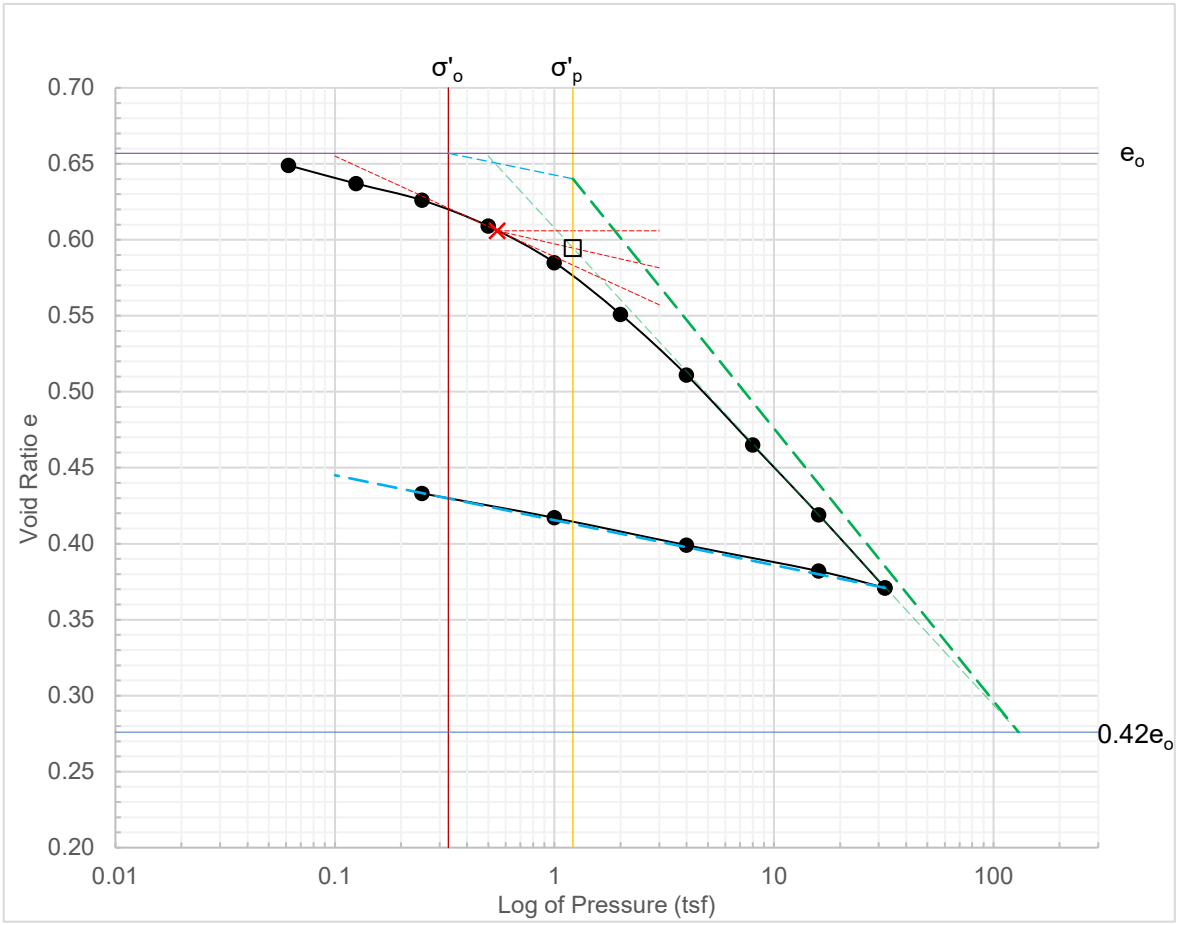
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0615	0.004721	0.649	0.472	1.566	2.25e-03	7.67e-02	3.23e-03
2	0.125	0.01215	0.637	1.22	40.193	8.64e-05	1.17e-01	1.89e-04
3	0.250	0.01846	0.626	1.85	24.516	1.40e-04	5.04e-02	1.32e-04
4	0.500	0.02891	0.609	2.89	16.825	2.00e-04	4.18e-02	1.57e-04
5	1.00	0.04319	0.585	4.32	18.650	1.76e-04	2.85e-02	9.41e-05
6	2.00	0.06356	0.551	6.36	15.733	2.01e-04	2.04e-02	7.68e-05
7	4.00	0.08807	0.511	8.81	24.084	1.25e-04	1.23e-02	2.88e-05
8	8.00	0.1158	0.465	11.6	22.742	1.25e-04	6.94e-03	1.63e-05
9	16.0	0.1437	0.419	14.4	19.171	1.40e-04	3.48e-03	9.09e-06
10	32.0	0.1722	0.371	17.2	16.602	1.51e-04	1.78e-03	5.04e-06
11	16.0	0.1658	0.382	16.6	5.047	4.84e-04	4.02e-04	3.64e-06
12	4.00	0.1555	0.399	15.5	28.622	8.70e-05	8.55e-04	1.39e-06
13	1.00	0.1446	0.417	14.5	60.039	4.25e-05	3.64e-03	2.90e-06
14	0.250	0.1353	0.433	13.5	88.381	2.96e-05	1.24e-02	6.87e-06

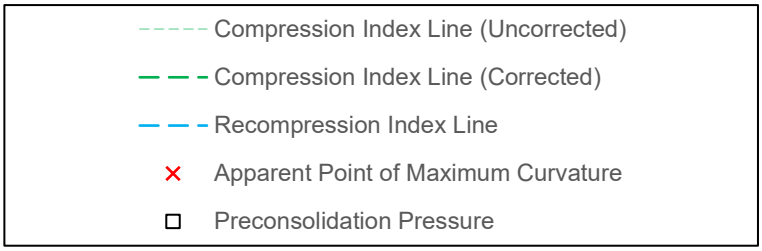
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.1	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 5.4-5.5
	Test No.: IP-1-2	Sample Type: intact	Elevation: ---
	Description: Moist, light brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0615 tsf		
	Displacement at End of Increment		

Boring: B-4.1

Depth: 5.4'-5.5'

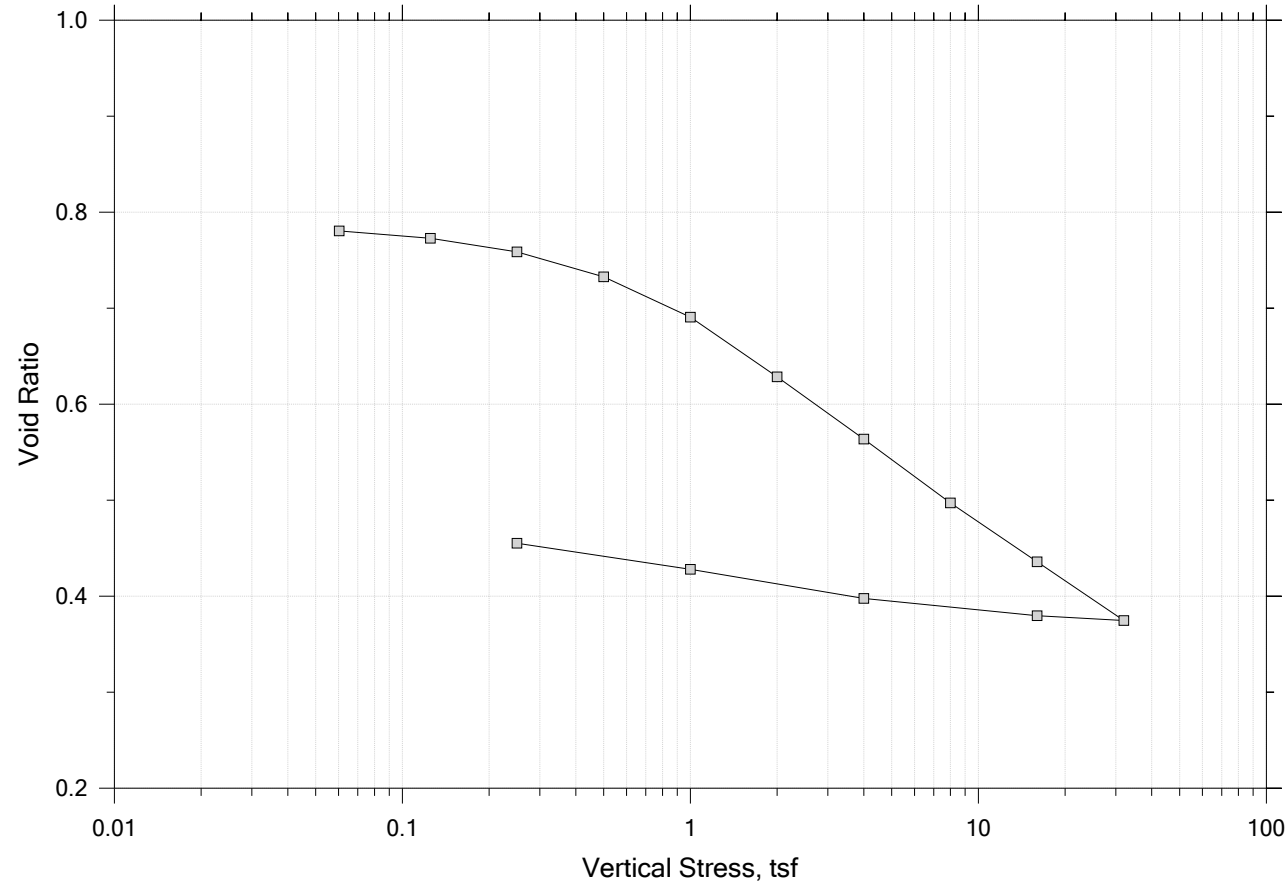
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.33
Preconsolidation Pressure, σ'_p (tsf) = 1.21
Compression Index, C_c = 0.18
Recompression Index, C_r = 0.030

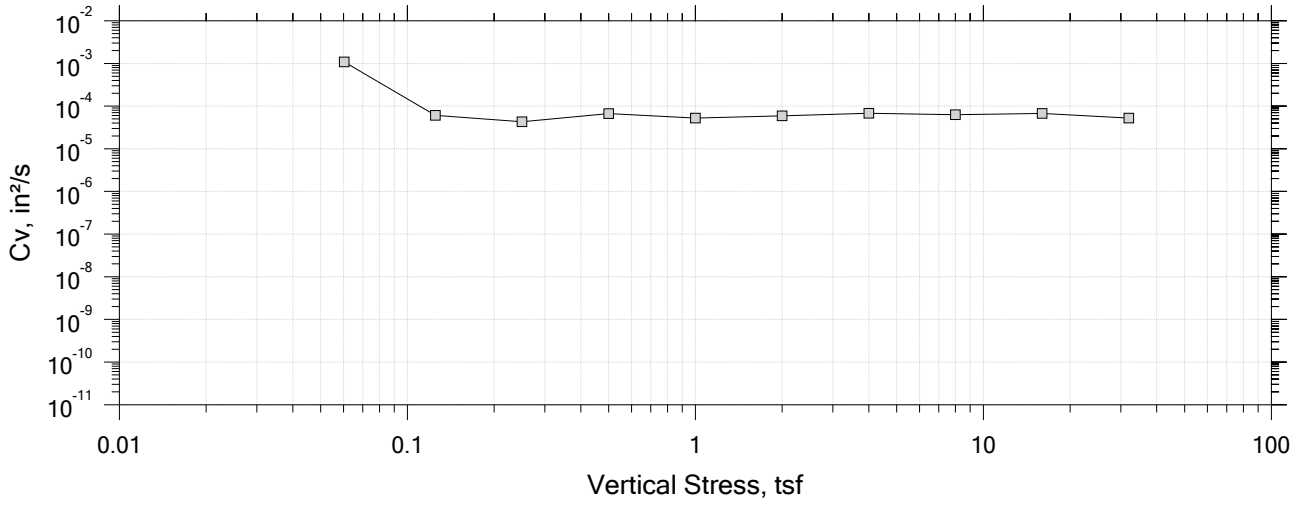




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

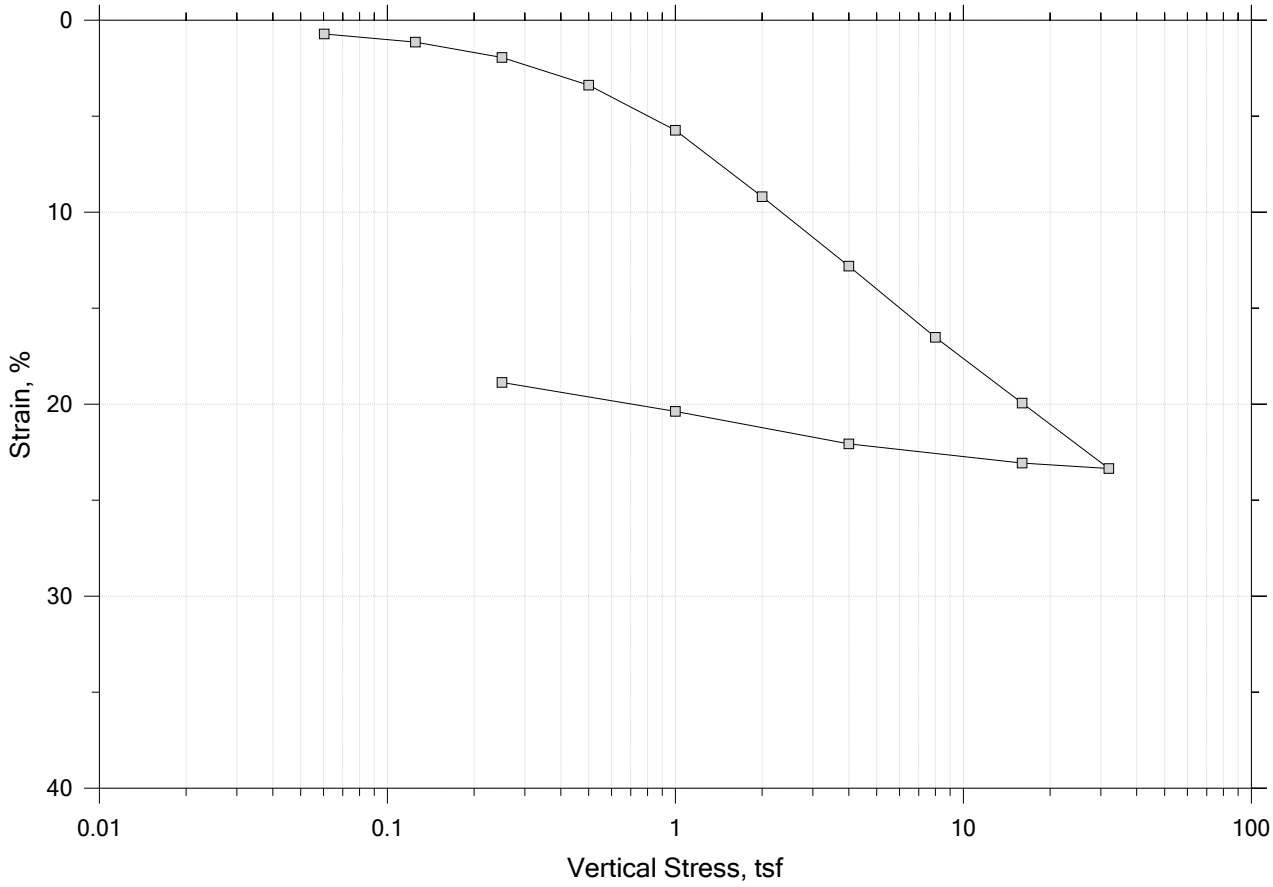


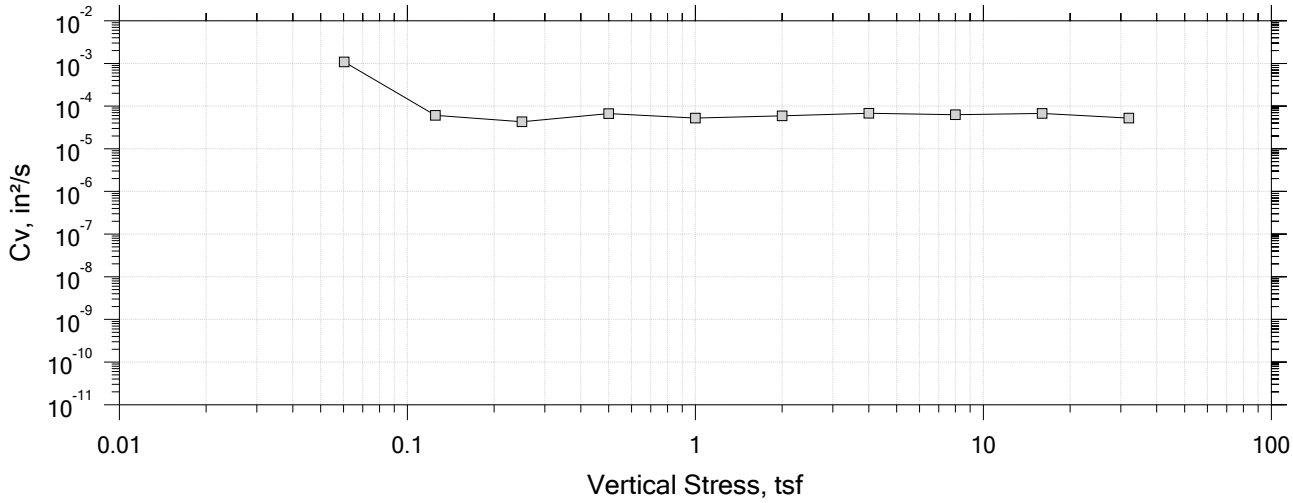


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

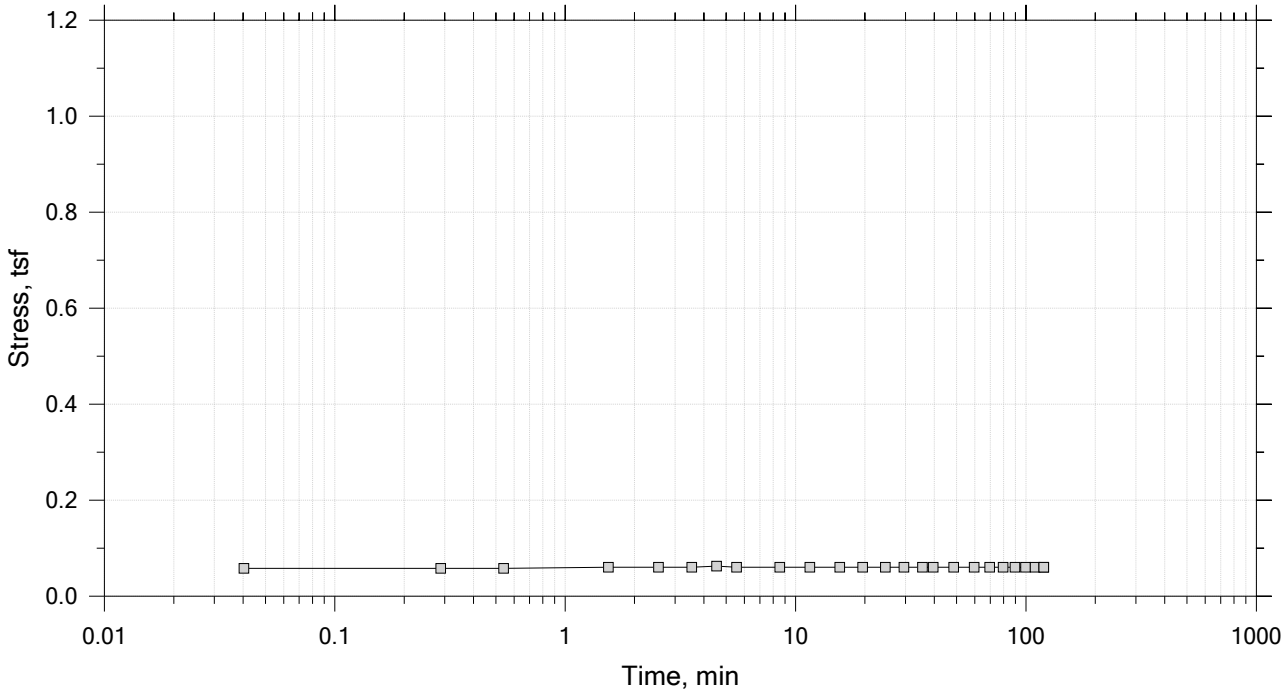


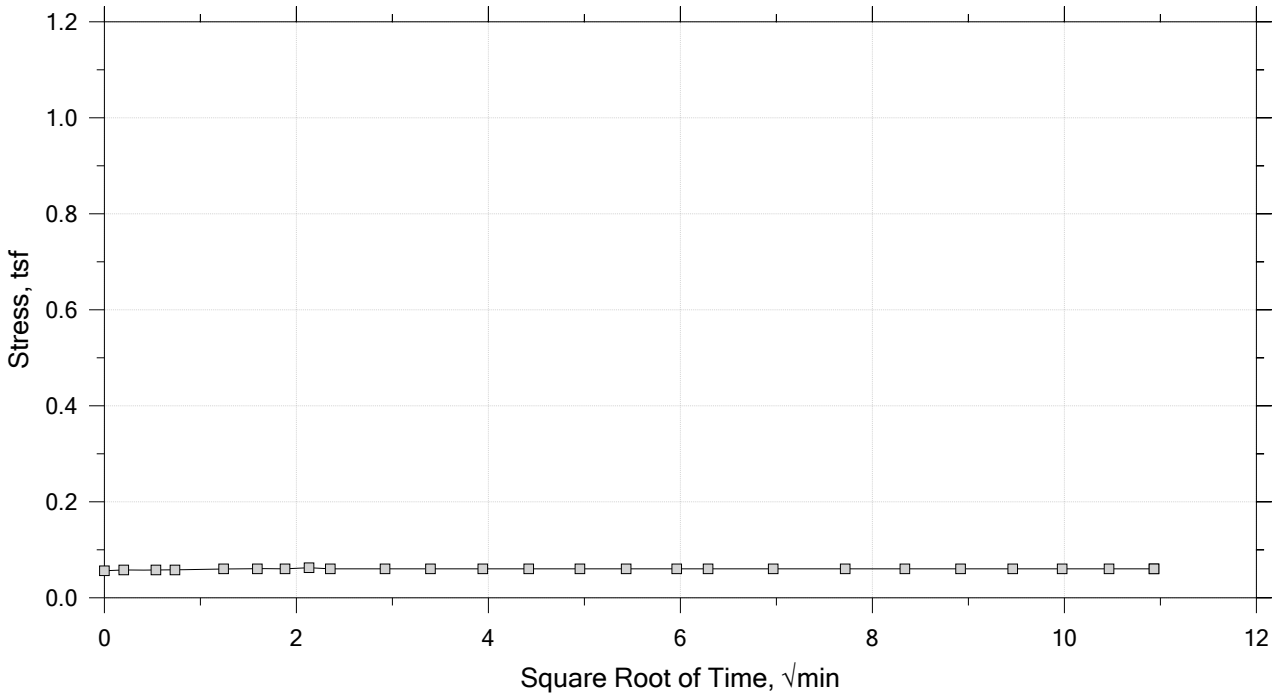


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0603 tsf

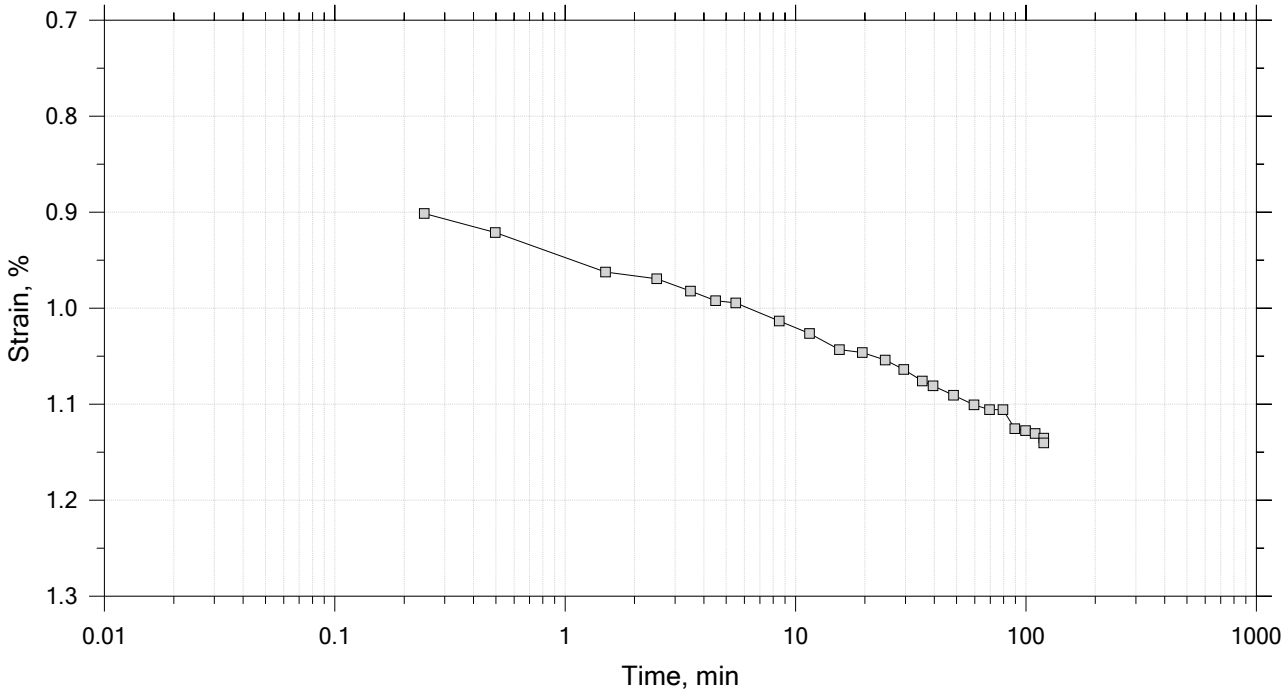


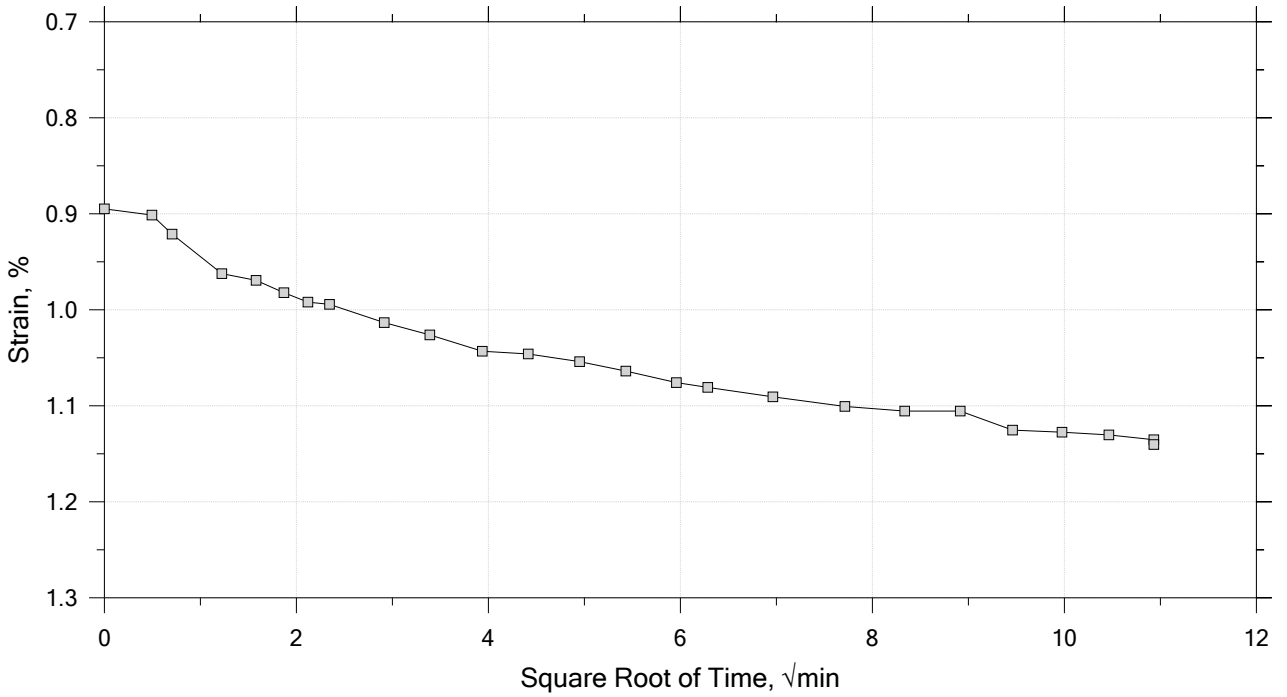


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

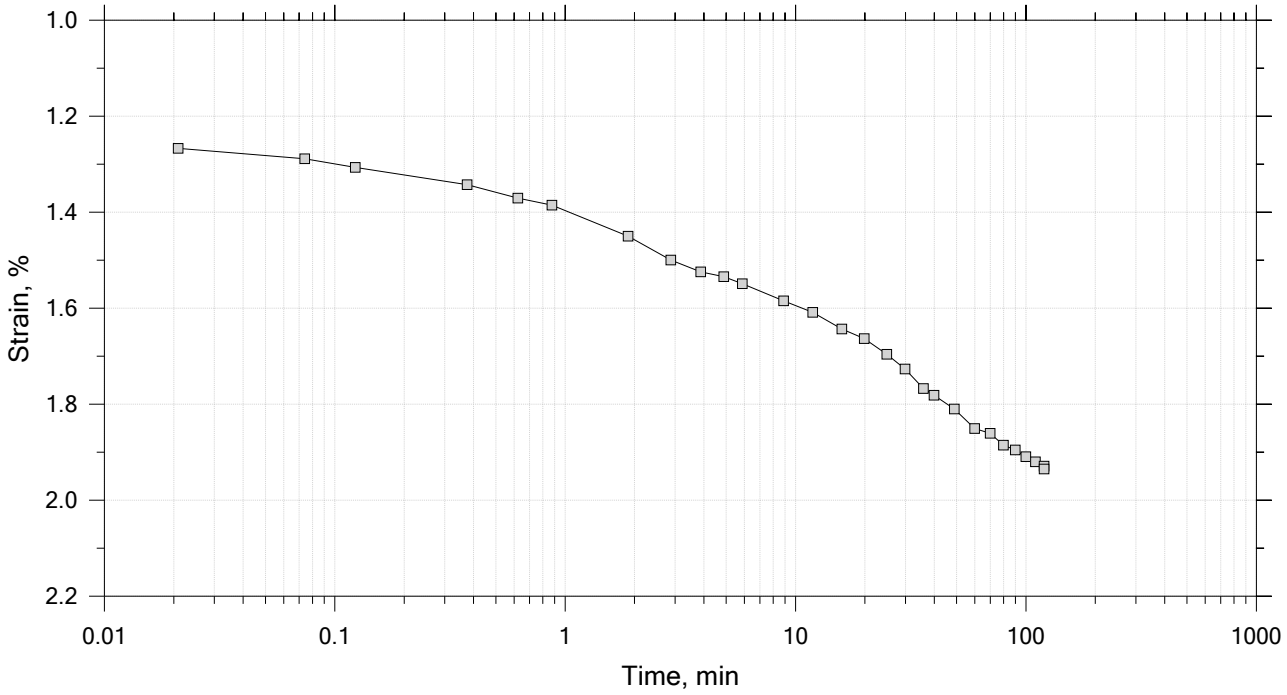


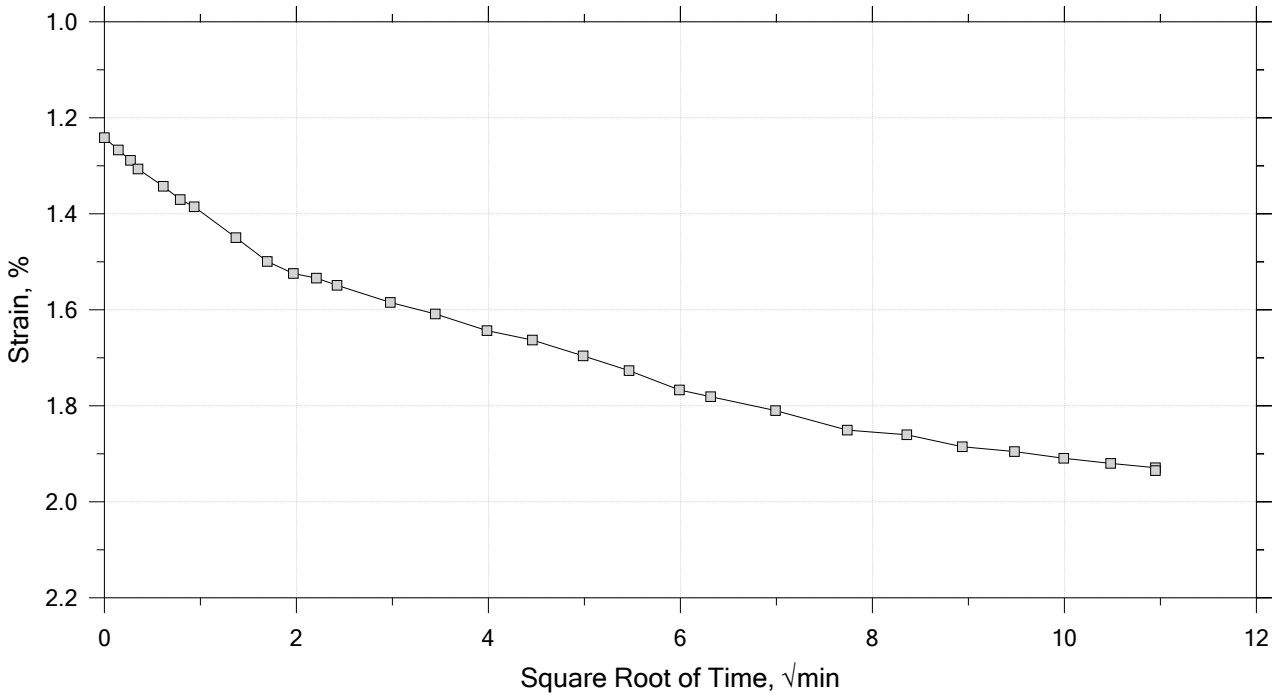


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

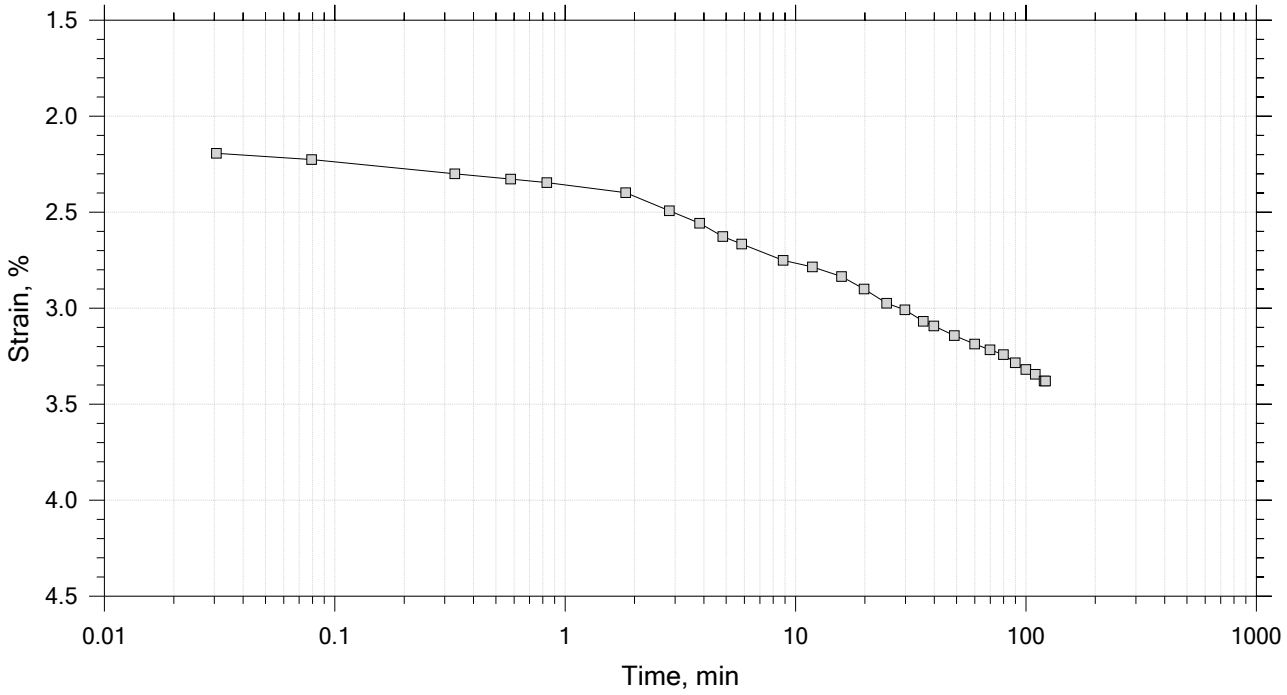


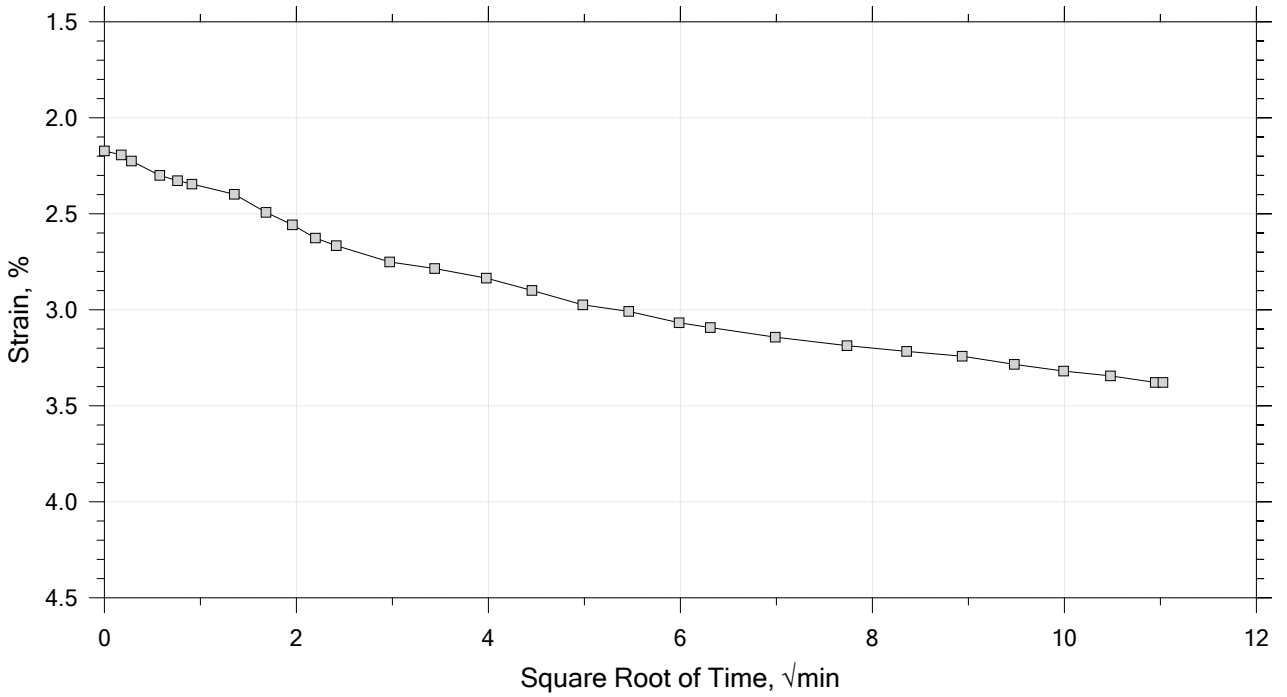


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





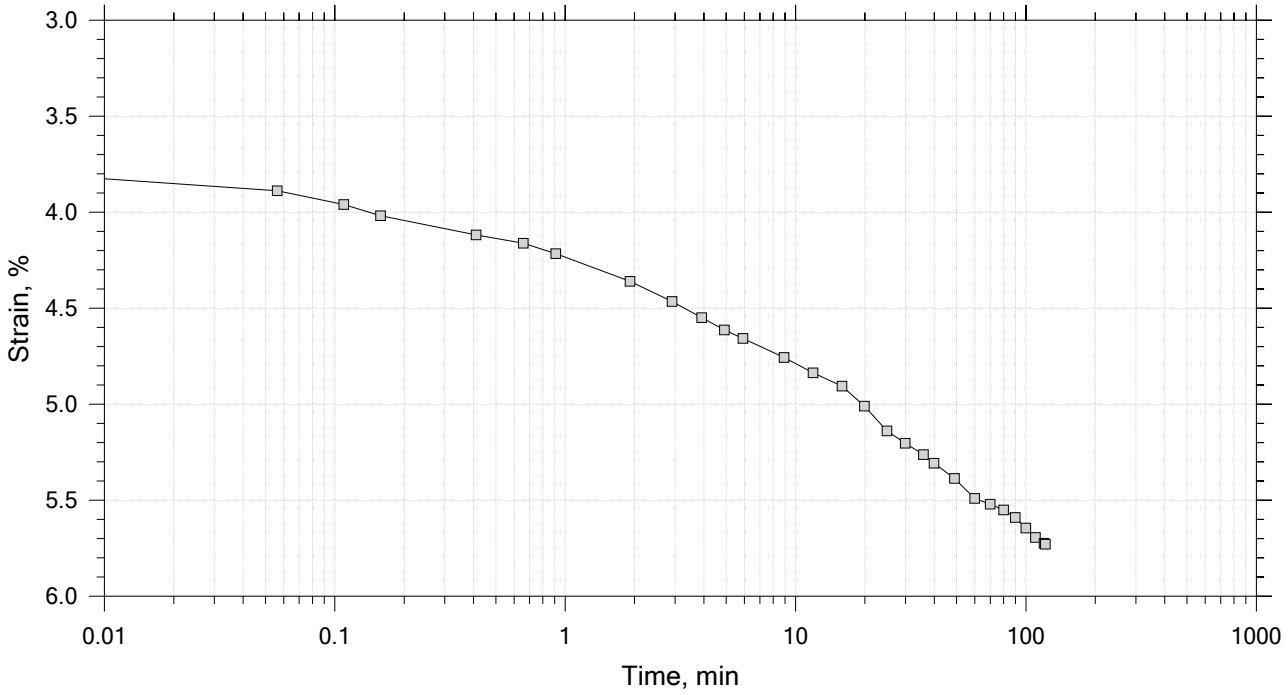
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

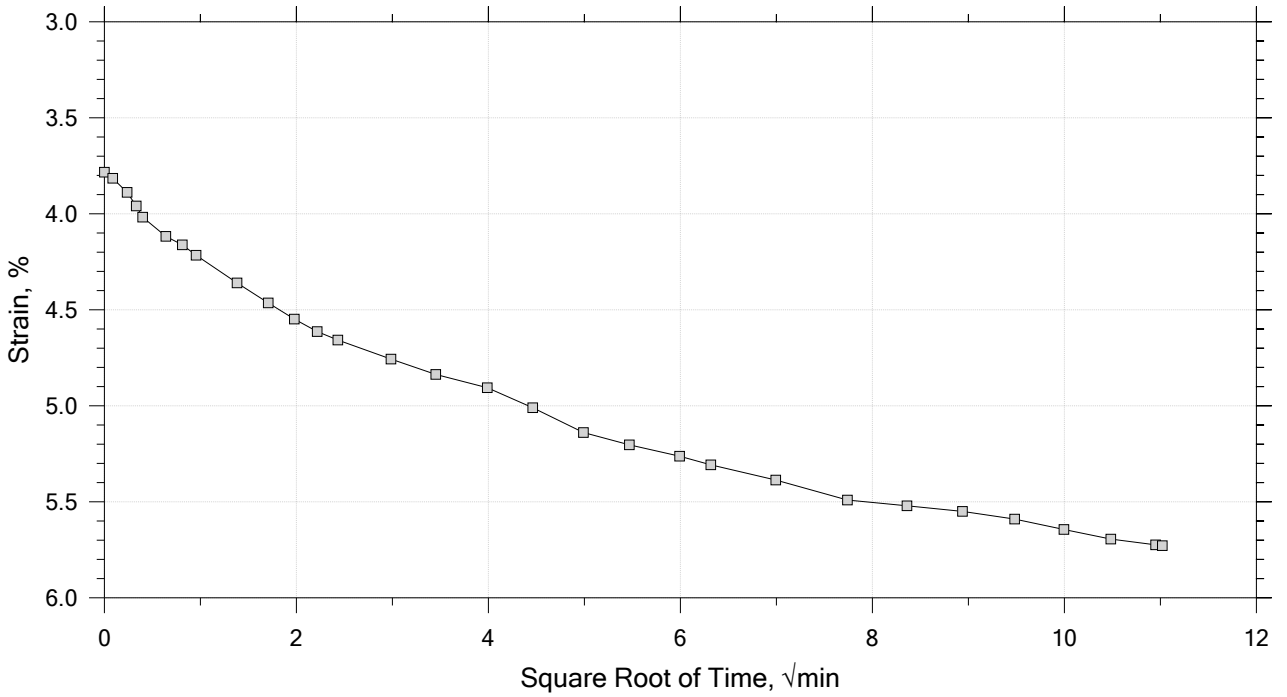
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf

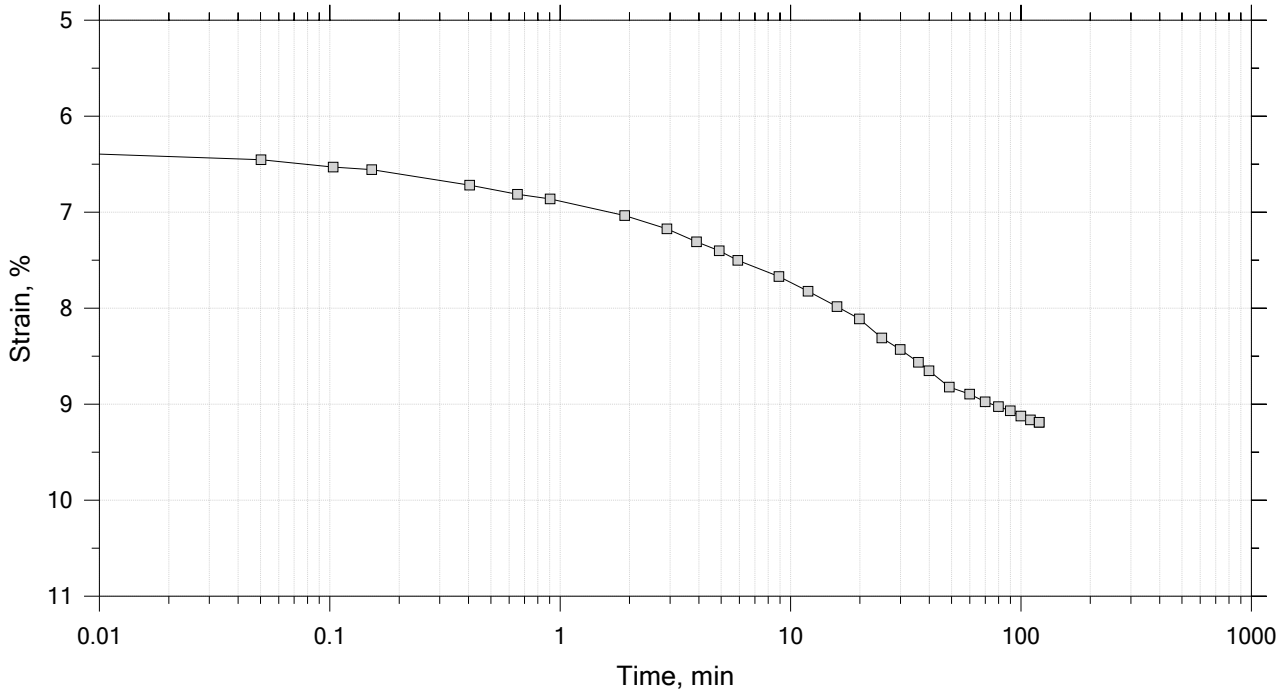


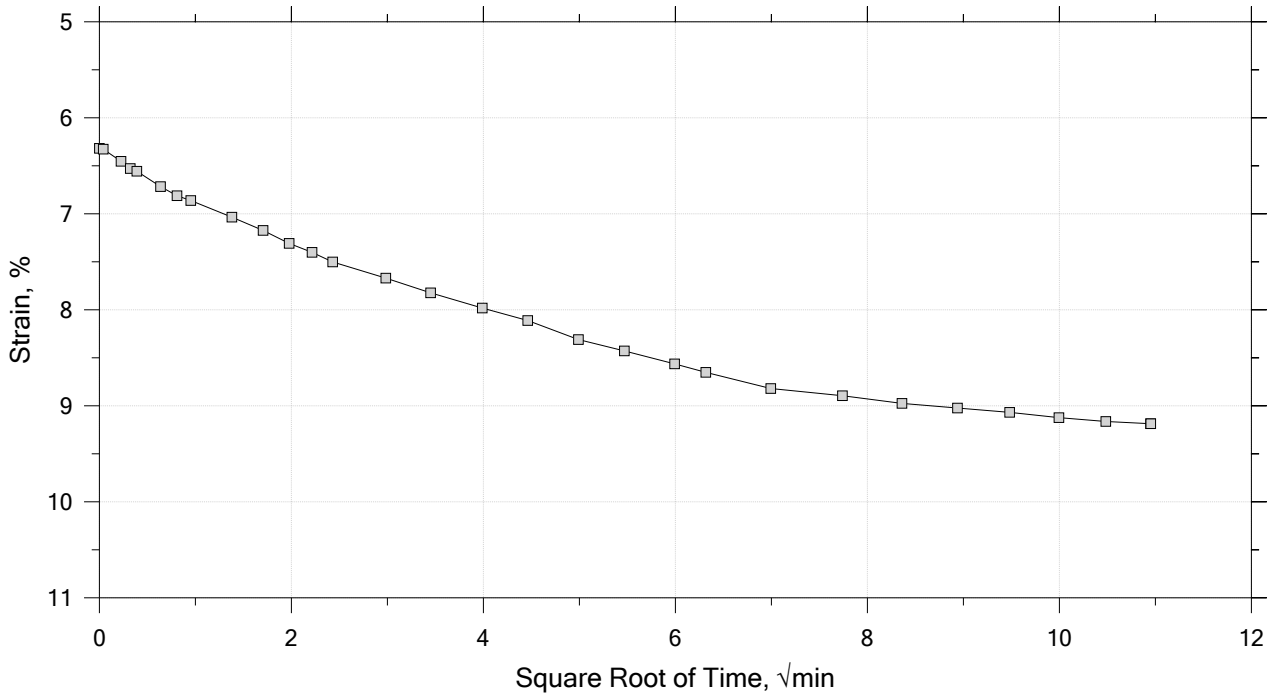


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14
Constant Load Step
Stress: 2 tsf





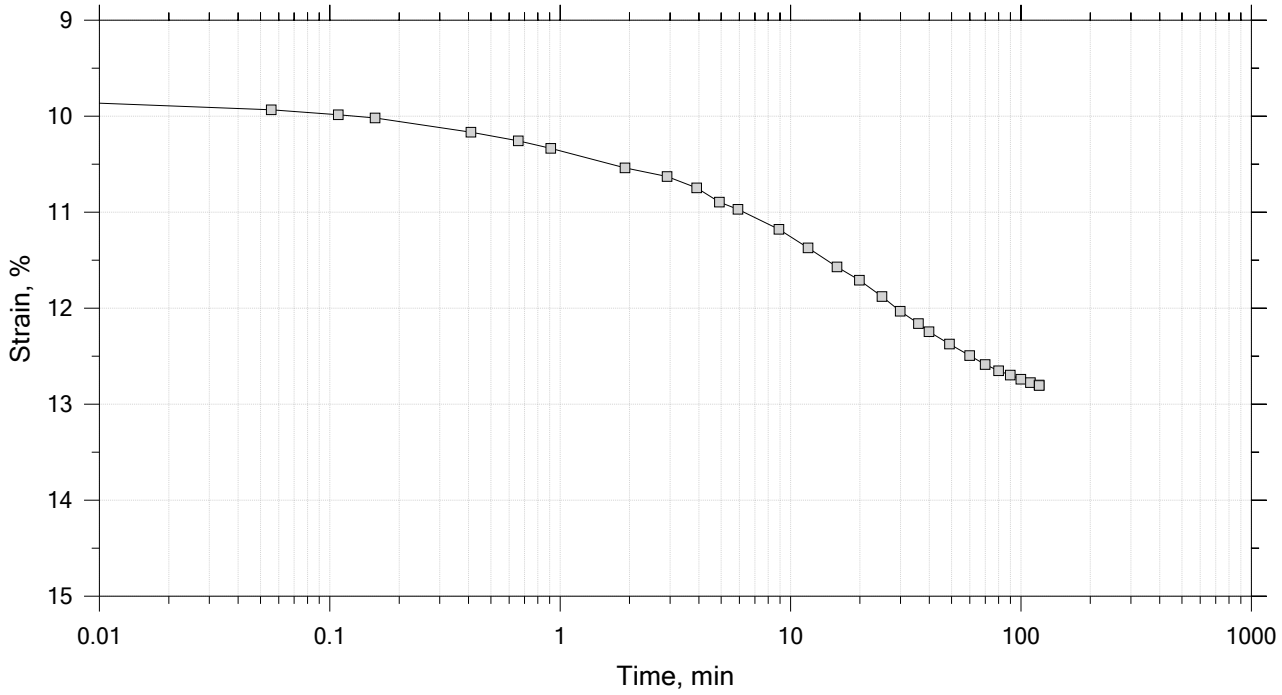
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

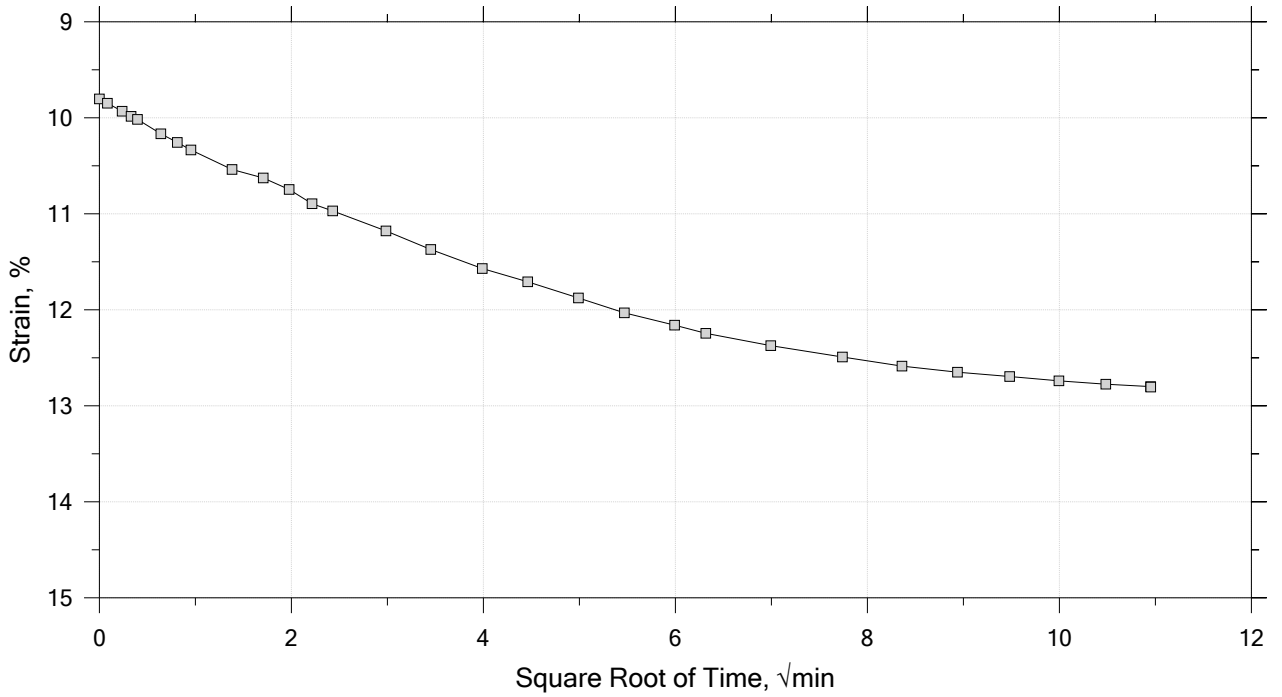
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





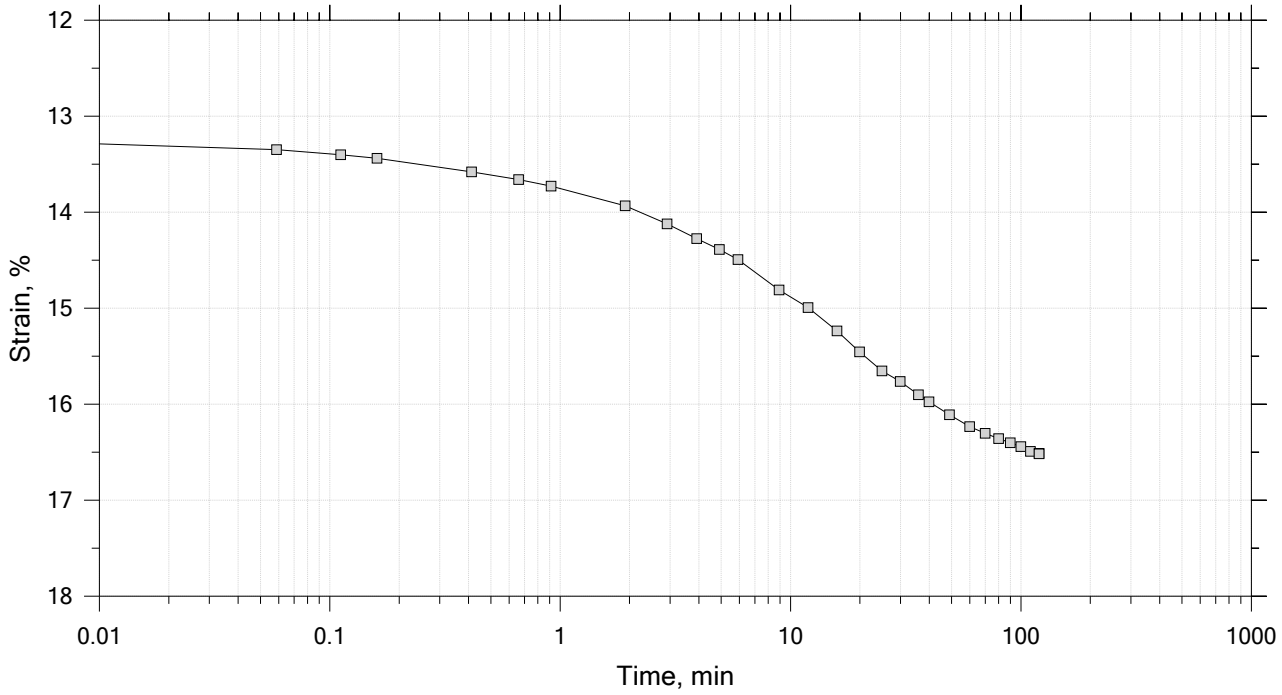
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

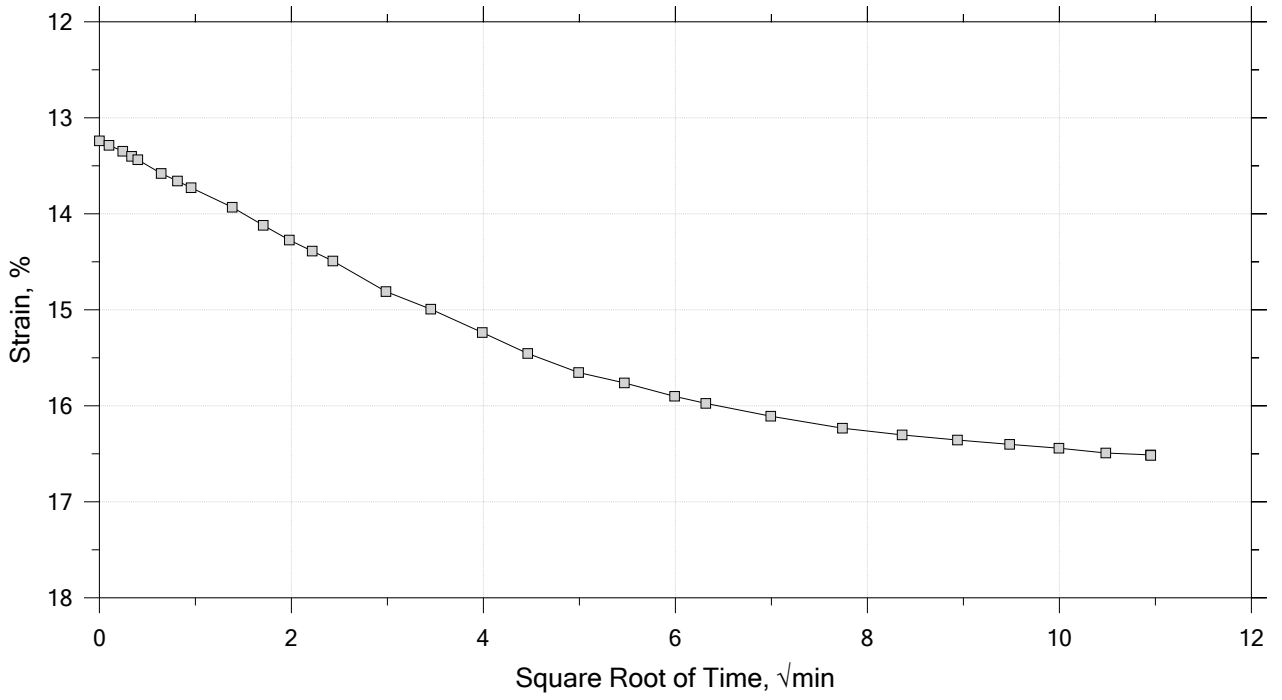
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

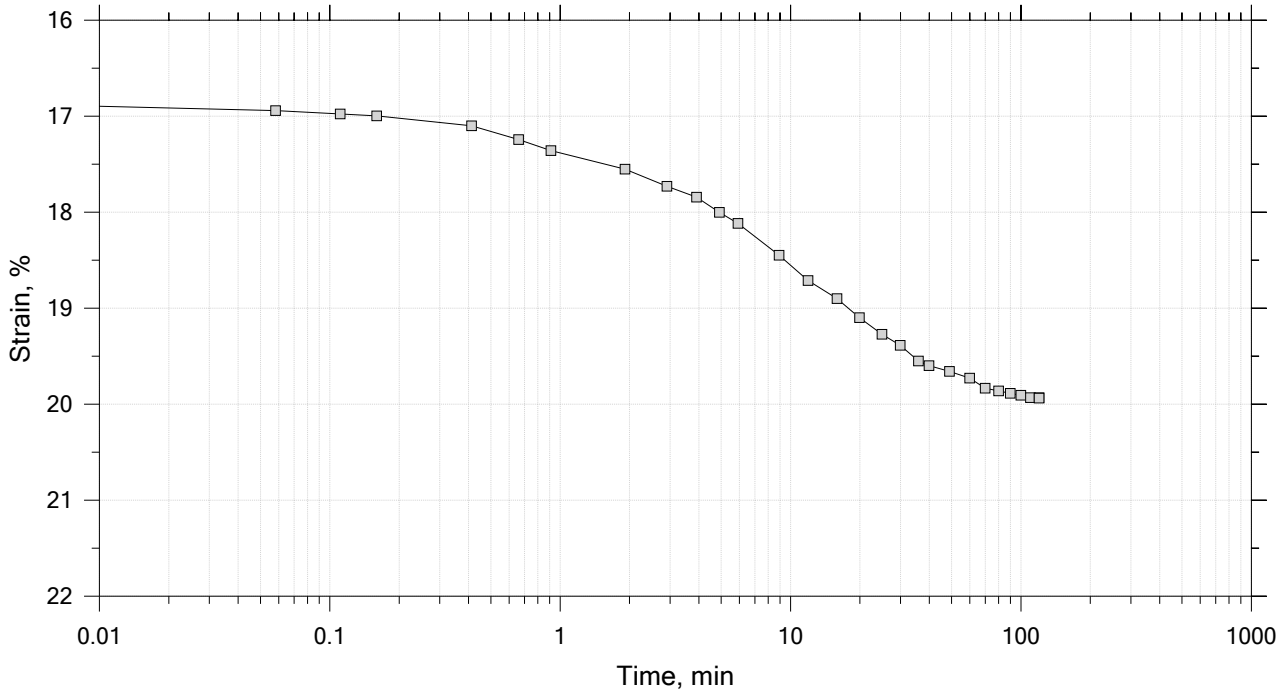


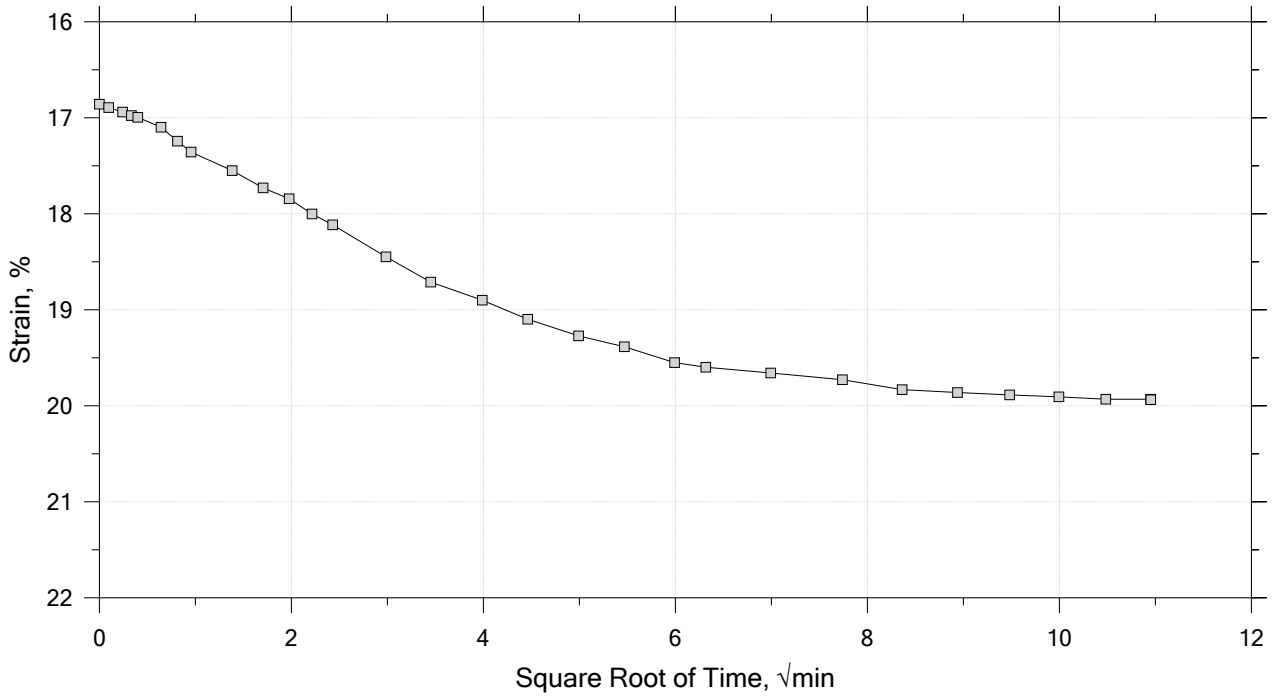


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf





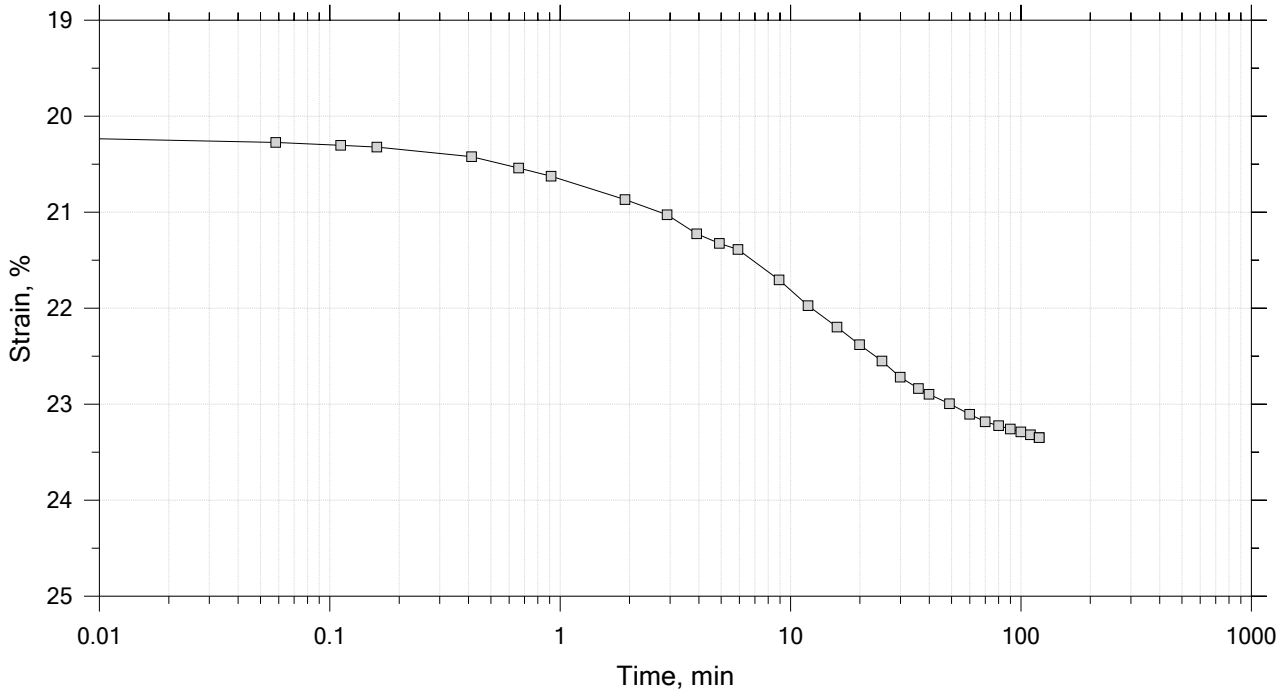
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

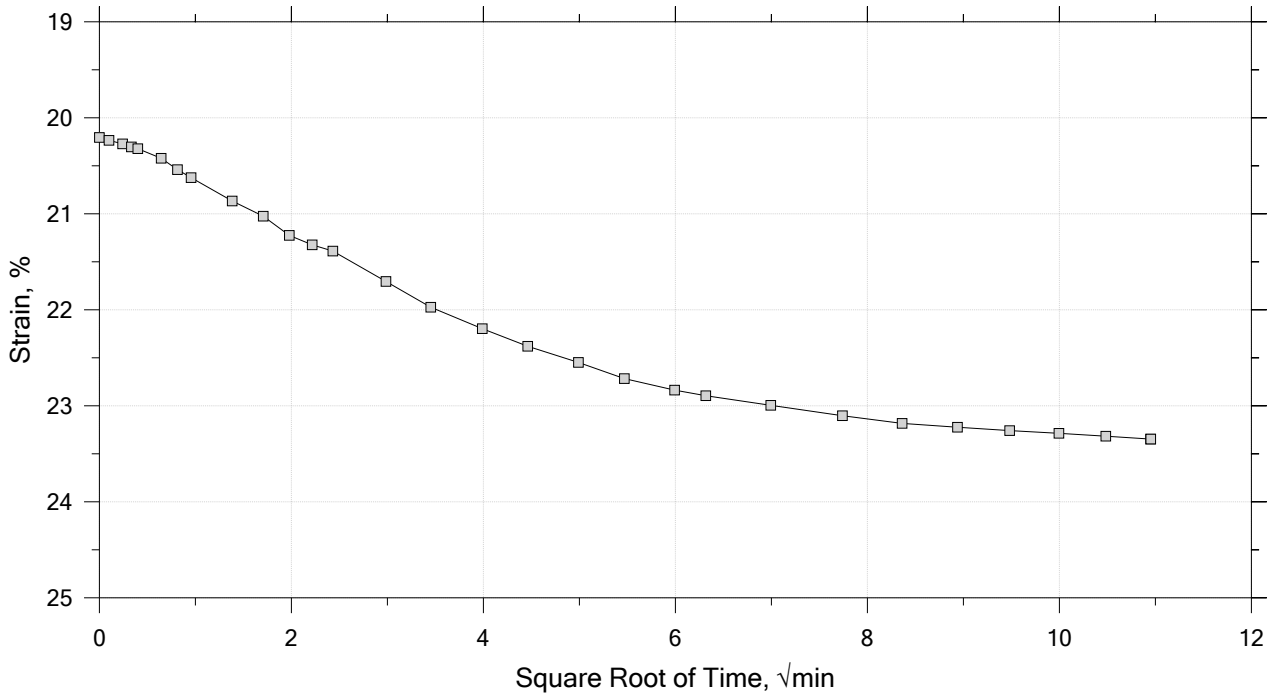
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14

Constant Load Step

Stress: 32 tsf

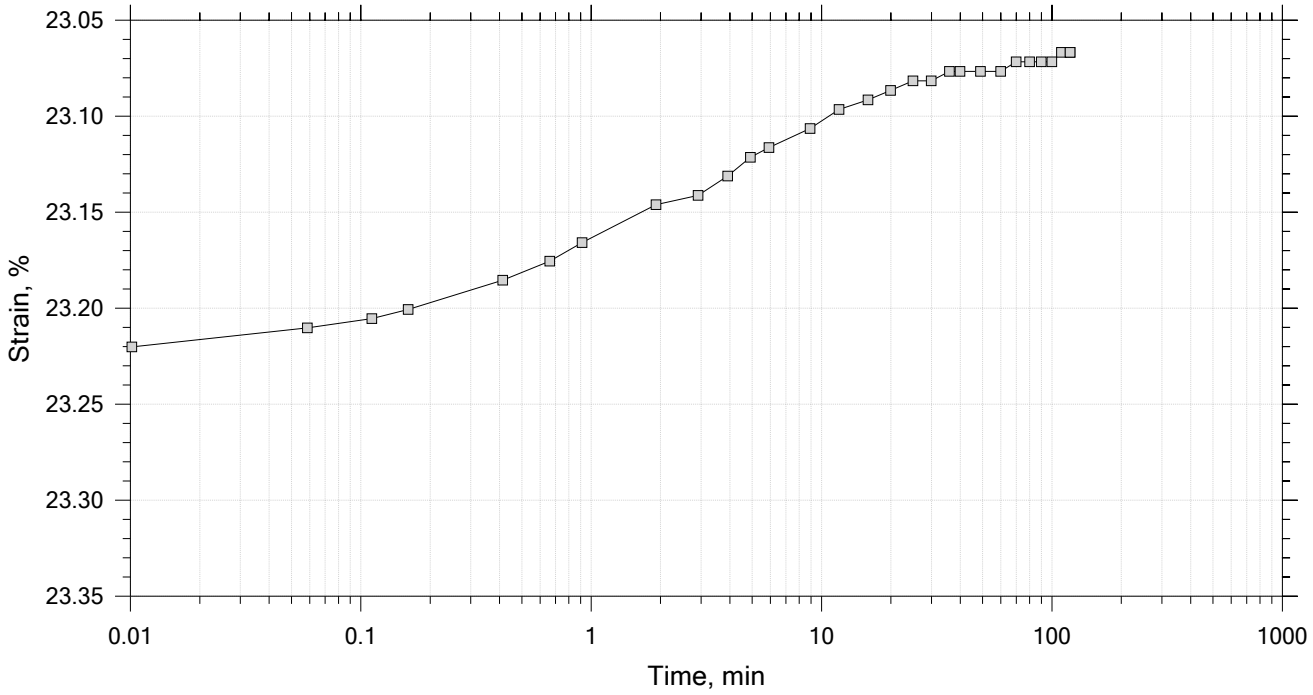


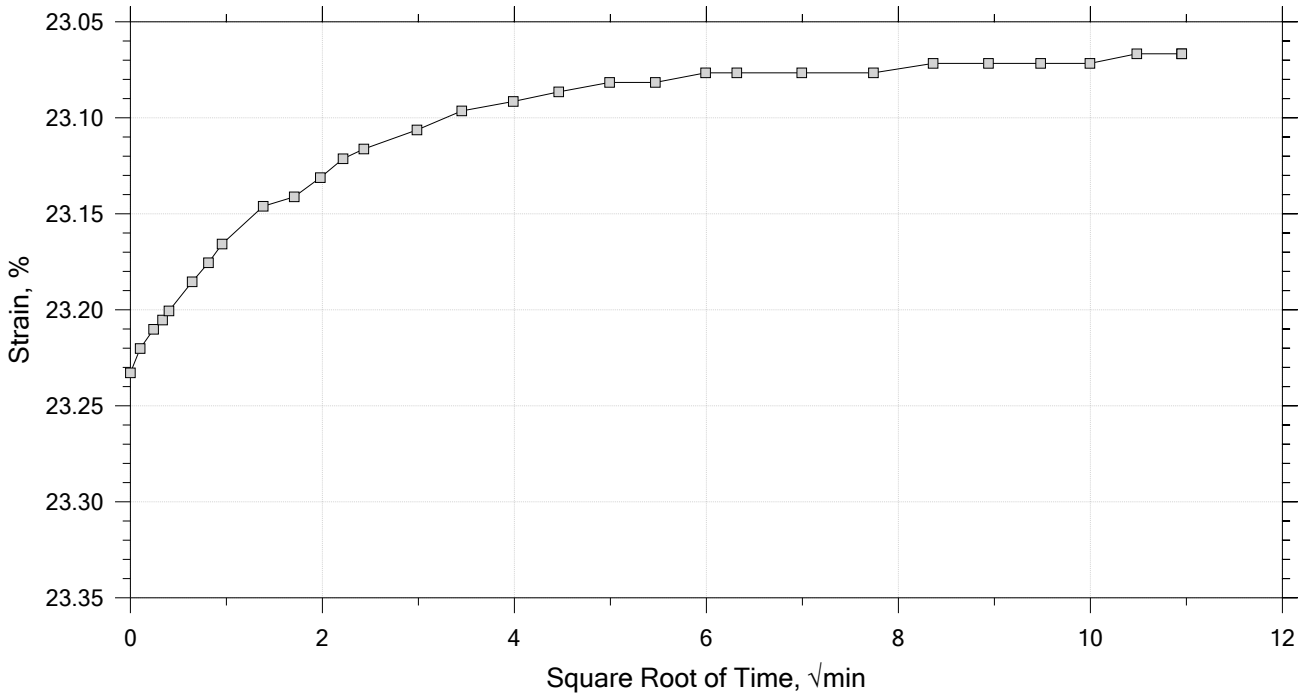


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

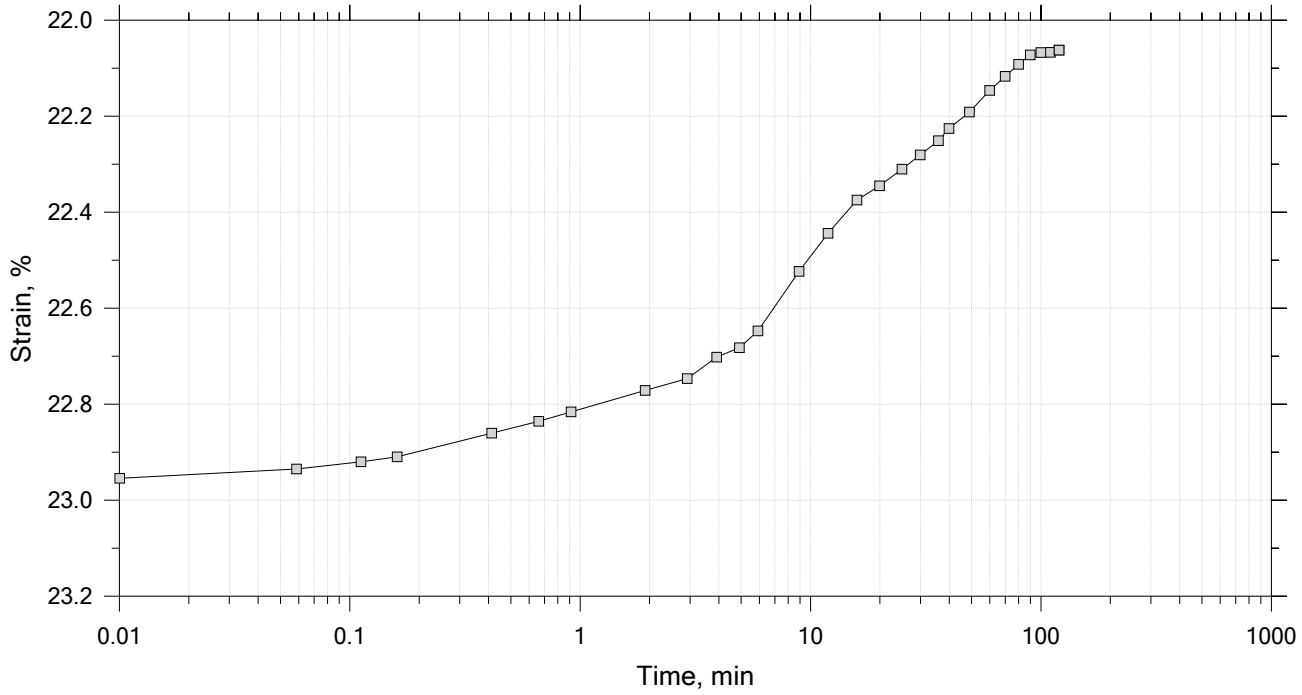


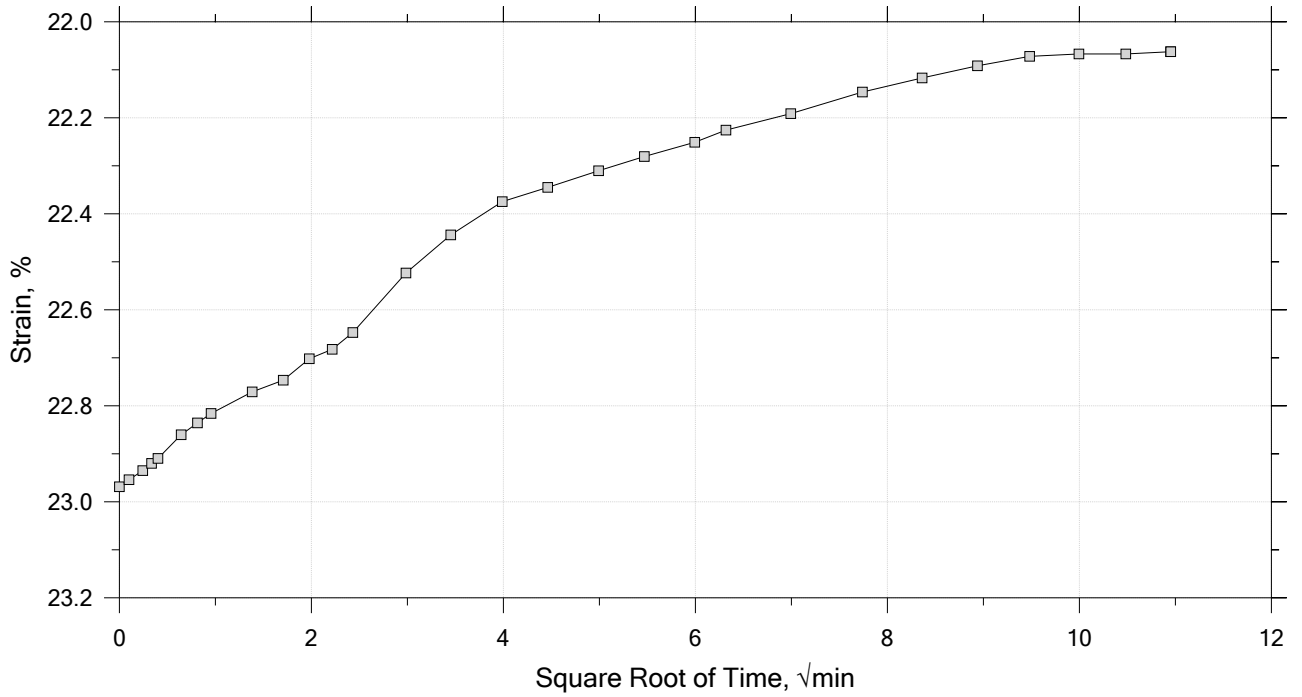


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
Test No.: IP-2-1	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





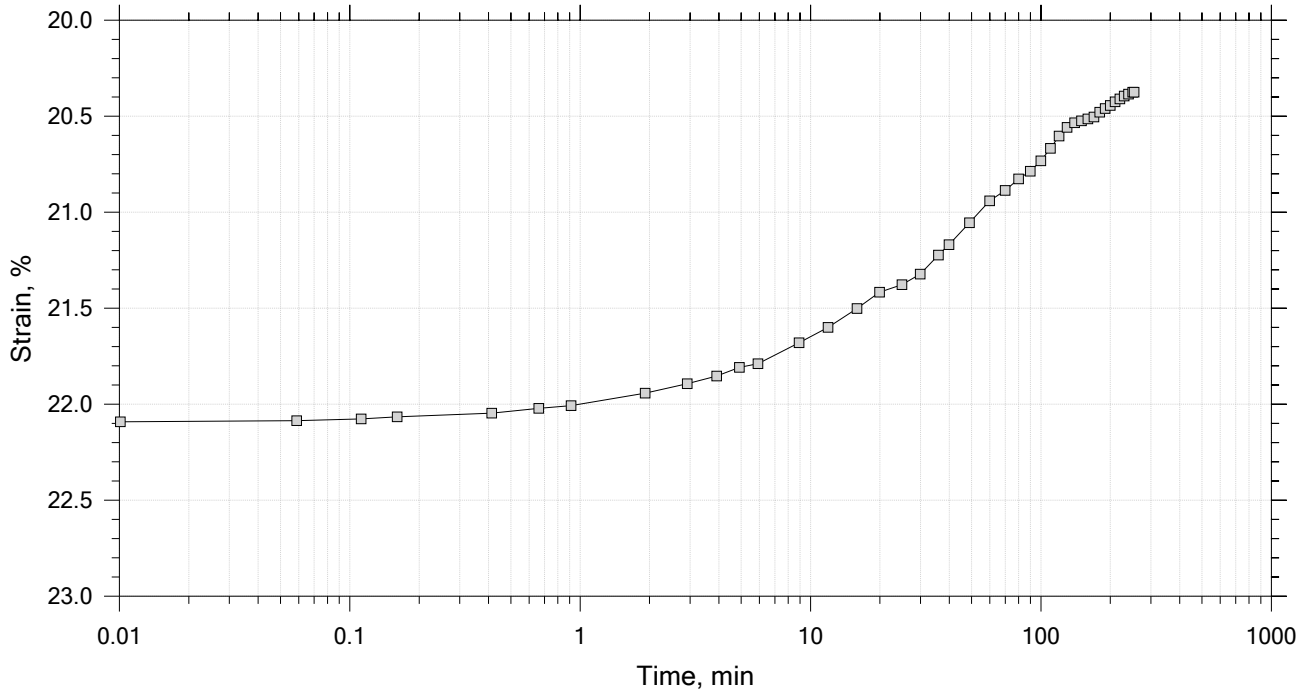
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

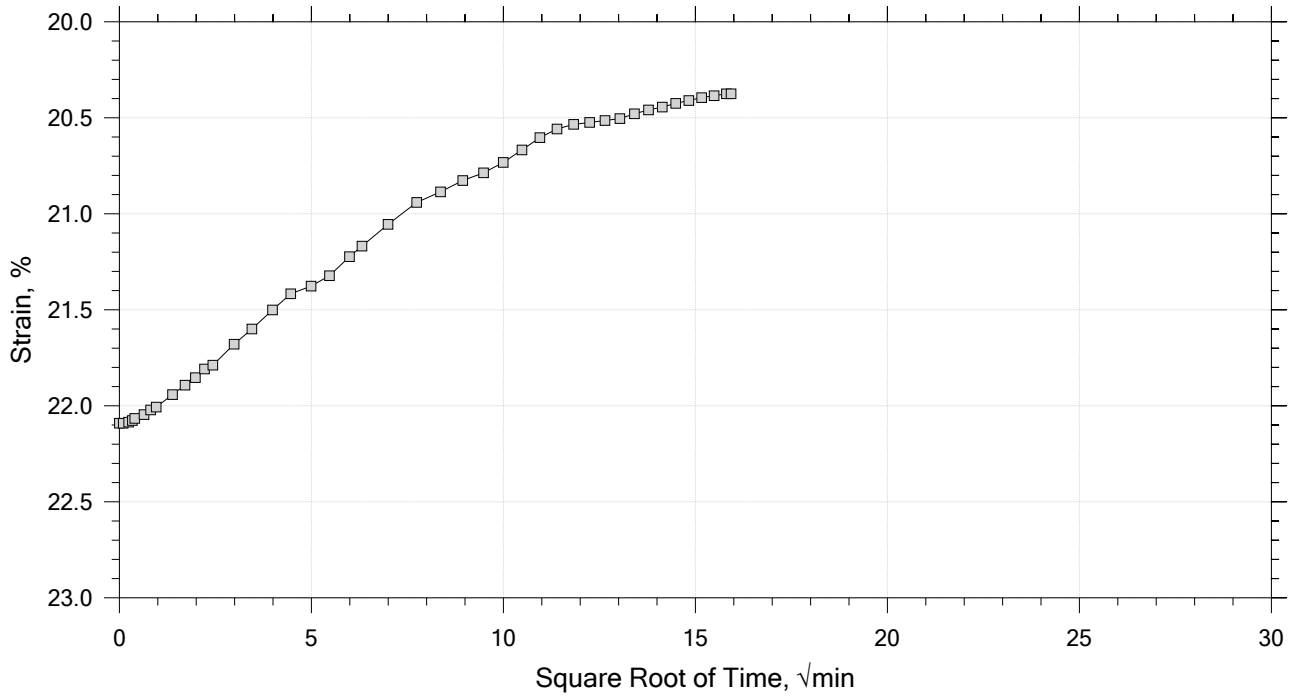
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

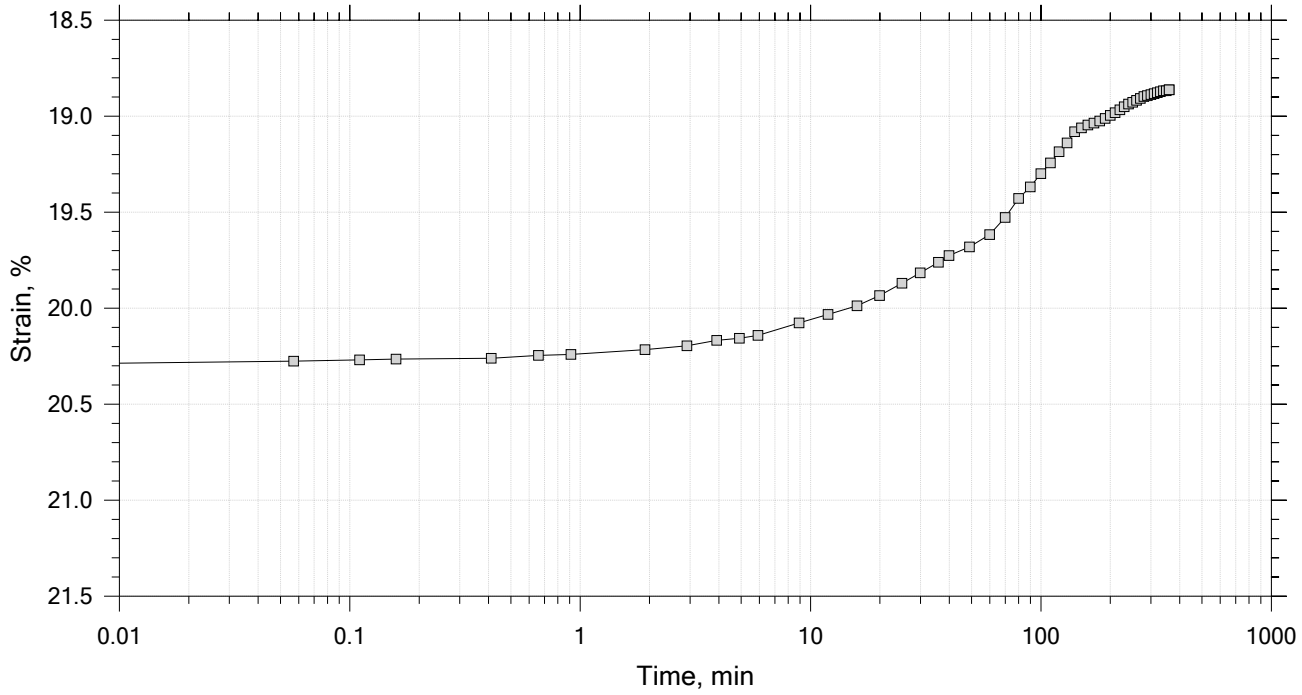


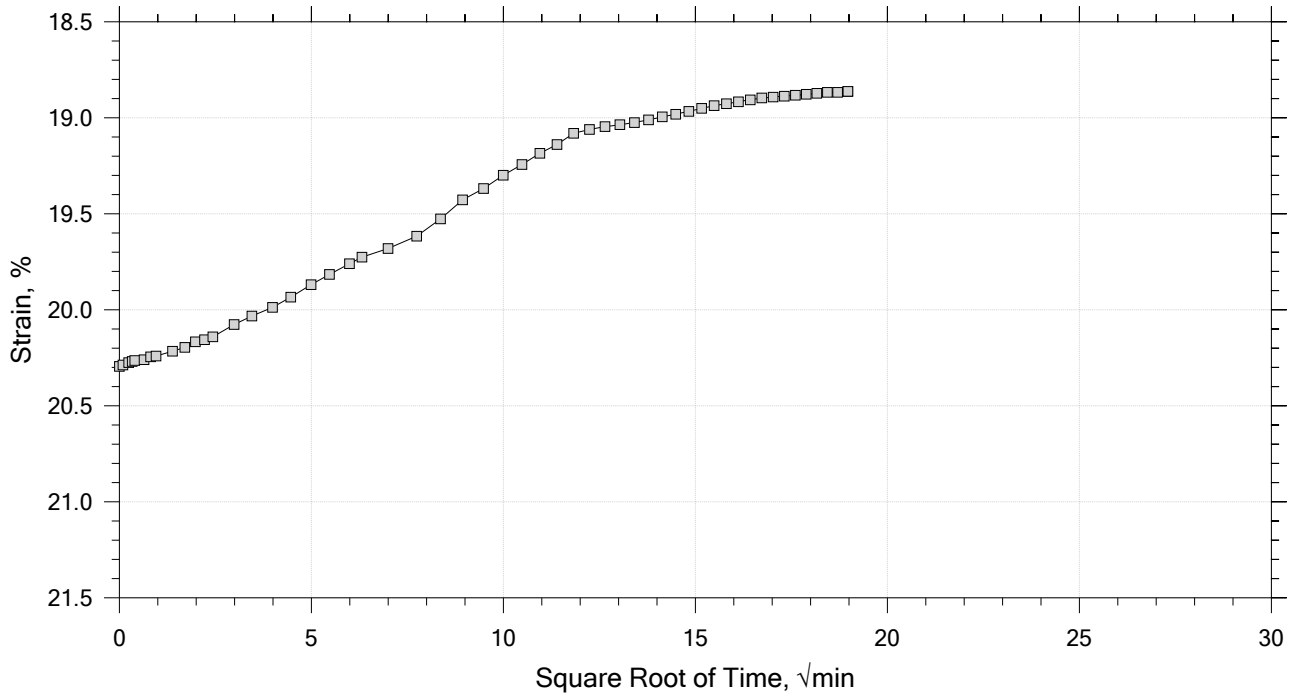


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.72	Liquid Limit: 40
Initial Height: 1.00 in	Initial Void Ratio: 0.793	Plastic Limit: 22
Final Height: 0.81 in	Final Void Ratio: 0.455	Plasticity Index: 18

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E4334	RING		E3027
Mass Container, gm	8.24	109.38	109.38	8.51
Mass Container + Wet Soil, gm	270.76	262.4	251.73	150.63
Mass Container + Dry Soil, gm	218.88	231.32	231.32	130.25
Mass Dry Soil, gm	210.64	121.94	121.94	121.74
Water Content, %	24.63	25.49	16.74	16.74
Void Ratio	---	0.79	0.46	---
Degree of Saturation, %	---	87.35	100.00	---
Dry Unit Weight, pcf	---	94.633	116.63	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

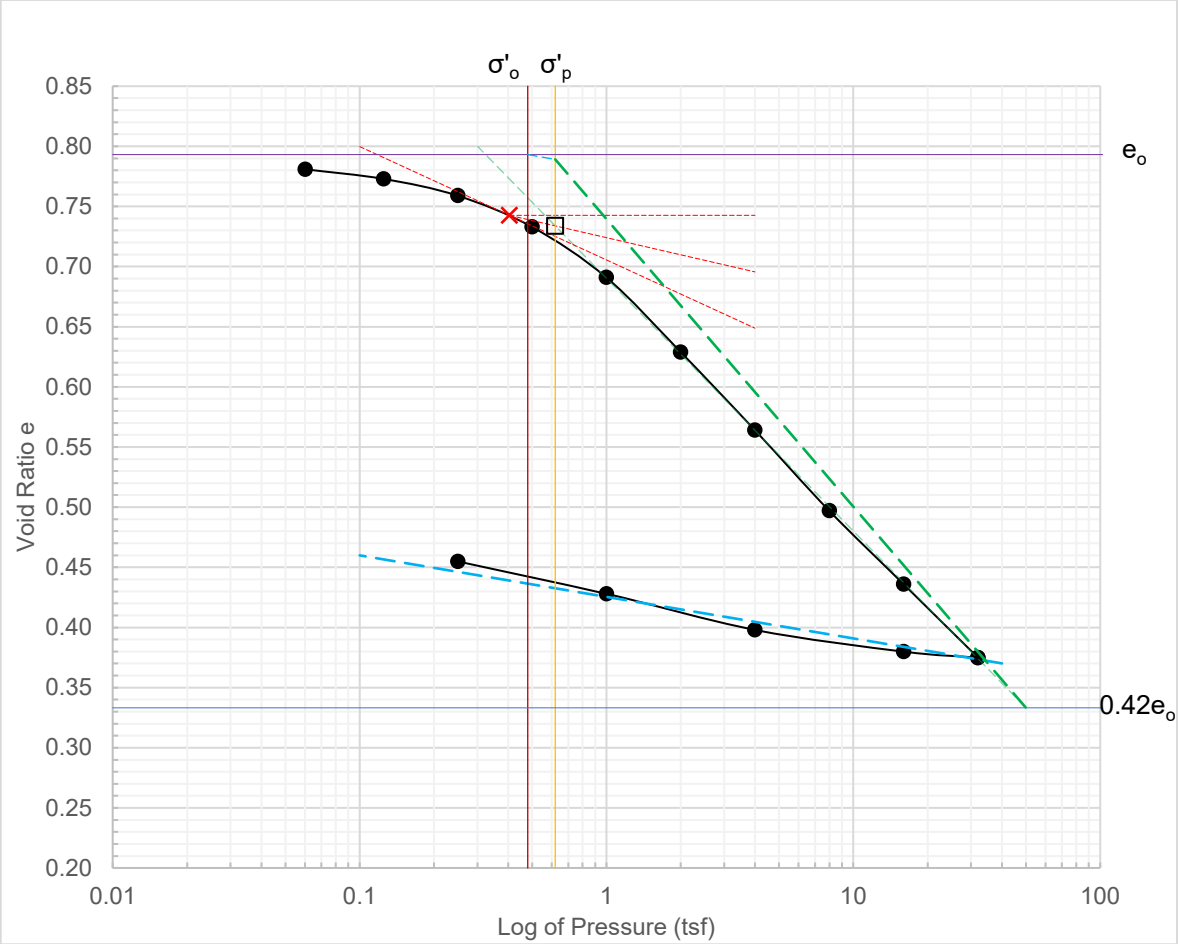
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0603	0.007148	0.781	0.715	3.219	1.09e-03	1.19e-01	2.42e-03
2	0.125	0.01140	0.773	1.14	56.942	6.09e-05	6.58e-02	7.50e-05
3	0.250	0.01935	0.759	1.93	79.887	4.29e-05	6.36e-02	5.11e-05
4	0.500	0.03379	0.733	3.38	50.361	6.65e-05	5.78e-02	7.19e-05
5	1.00	0.05729	0.691	5.73	61.620	5.22e-05	4.70e-02	4.60e-05
6	2.00	0.09188	0.629	9.19	51.135	5.92e-05	3.46e-02	3.83e-05
7	4.00	0.1281	0.564	12.8	41.137	6.80e-05	1.81e-02	2.30e-05
8	8.00	0.1652	0.497	16.5	41.039	6.27e-05	9.28e-03	1.09e-05
9	16.0	0.1994	0.436	19.9	34.994	6.75e-05	4.27e-03	5.41e-06
10	32.0	0.2335	0.375	23.3	41.539	5.22e-05	2.13e-03	2.09e-06
11	16.0	0.2307	0.380	23.1	7.916	2.63e-04	1.75e-04	8.65e-07
12	4.00	0.2206	0.398	22.1	33.407	6.34e-05	8.37e-04	9.94e-07
13	1.00	0.2038	0.428	20.4	168.634	1.30e-05	5.62e-03	1.37e-06
14	0.250	0.1886	0.455	18.9	267.356	8.54e-06	2.02e-02	3.23e-06

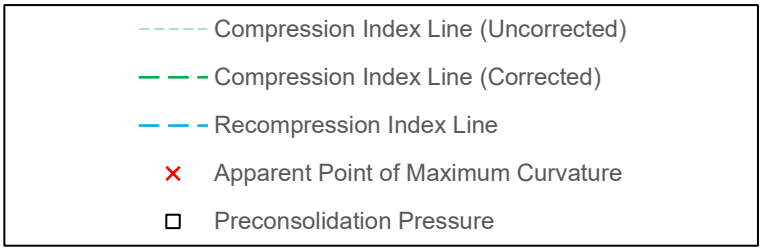
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.6-7.7
	Test No.: IP-2-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0603 tsf		
	Displacement at End of Increment		

Boring: B-4.2

Depth: 7.6'-7.7'

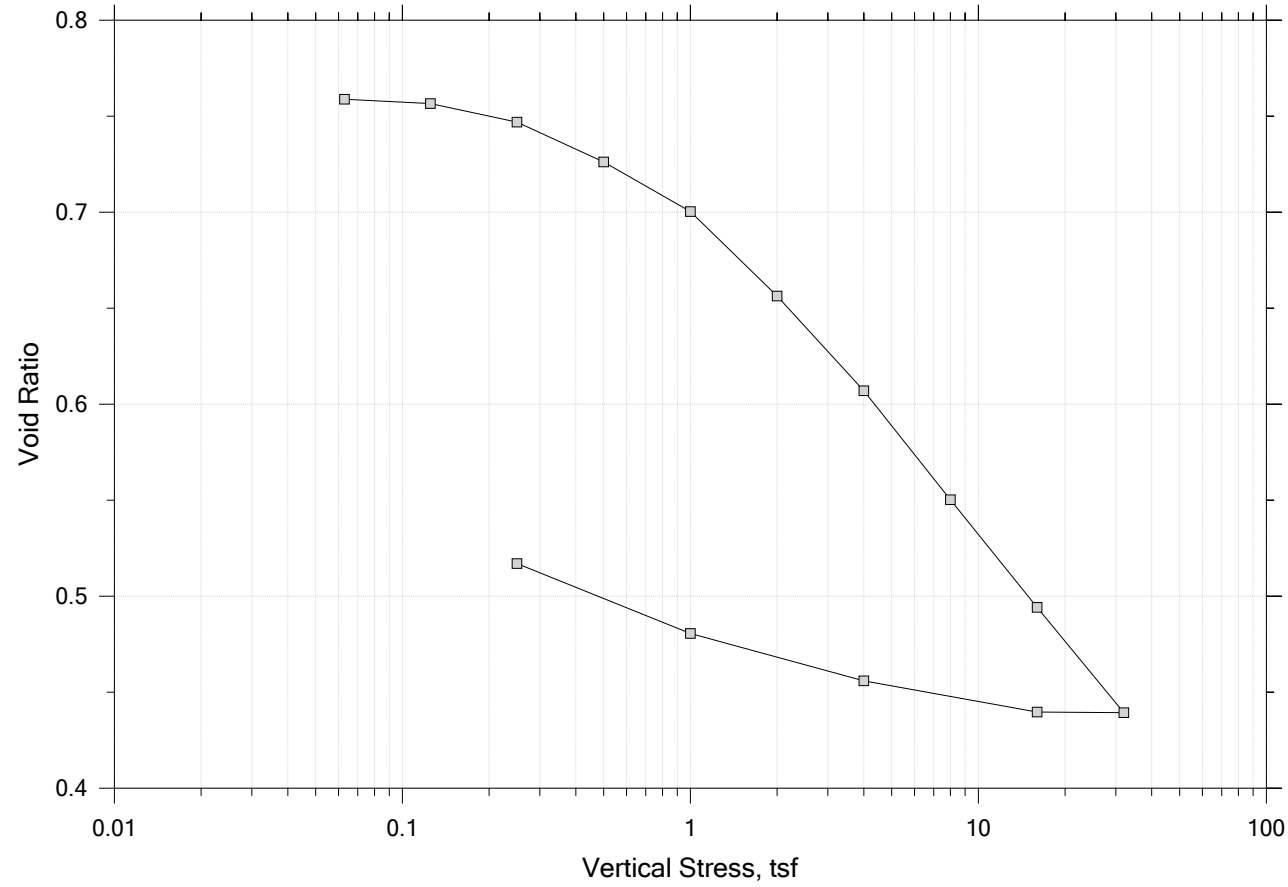
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.48
Preconsolidation Pressure, σ'_p (tsf) = 0.62
Compression Index, C_c = 0.24
Recompression Index, C_r = 0.035

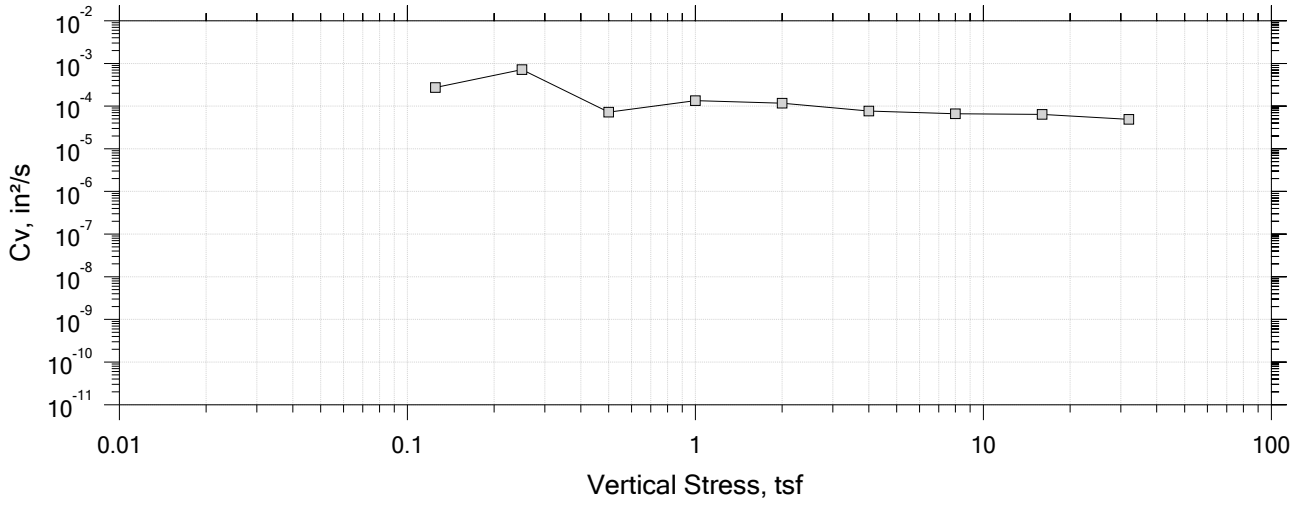




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

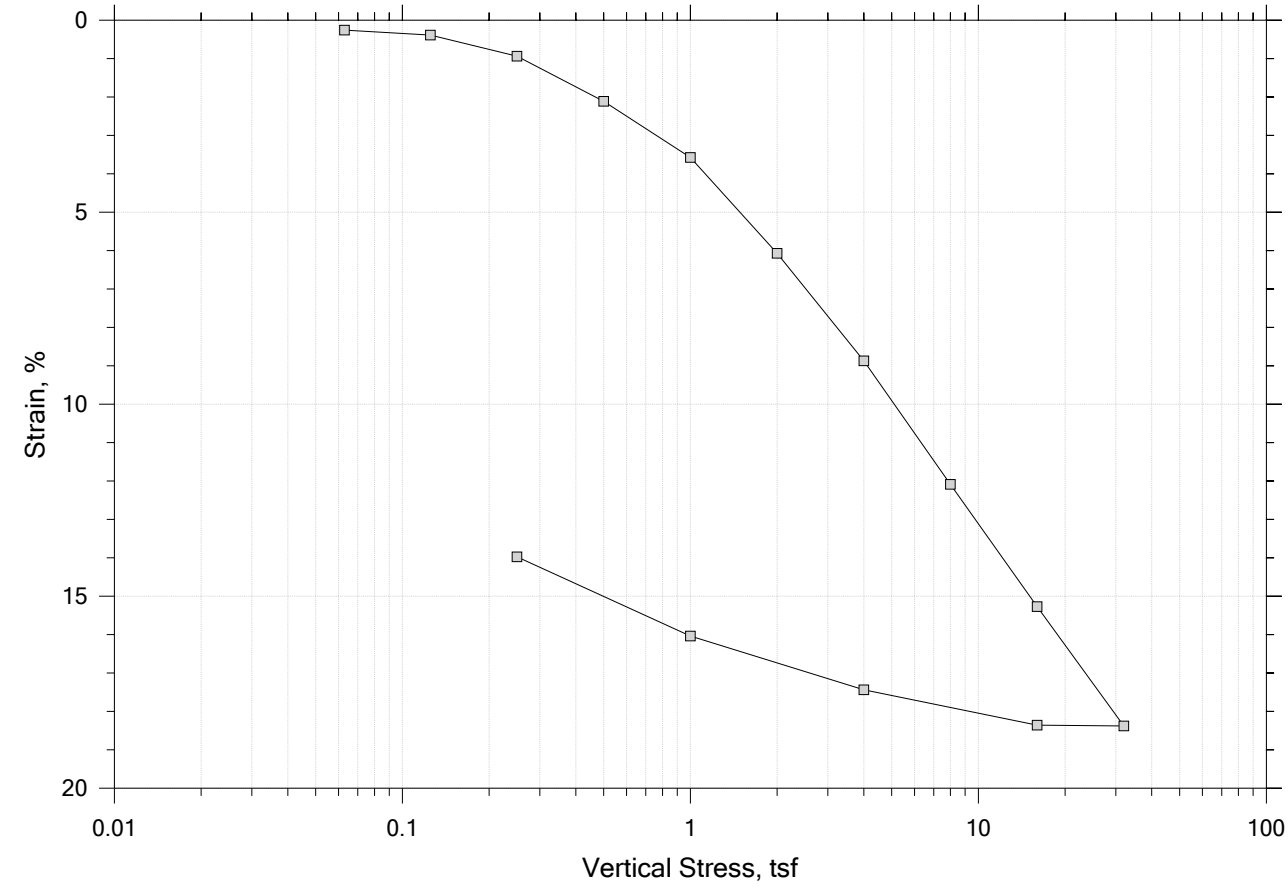


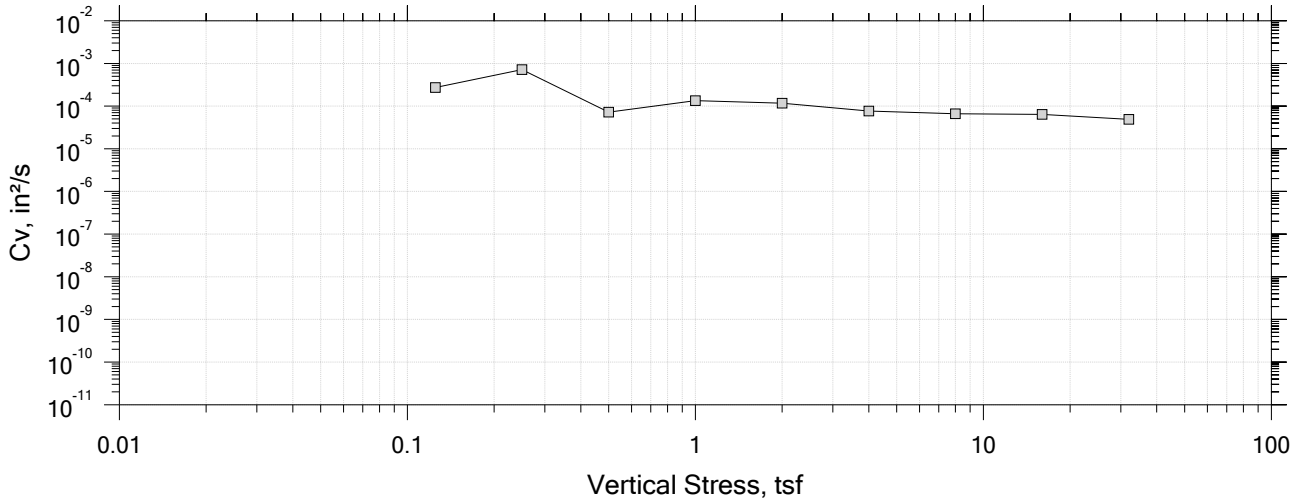


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

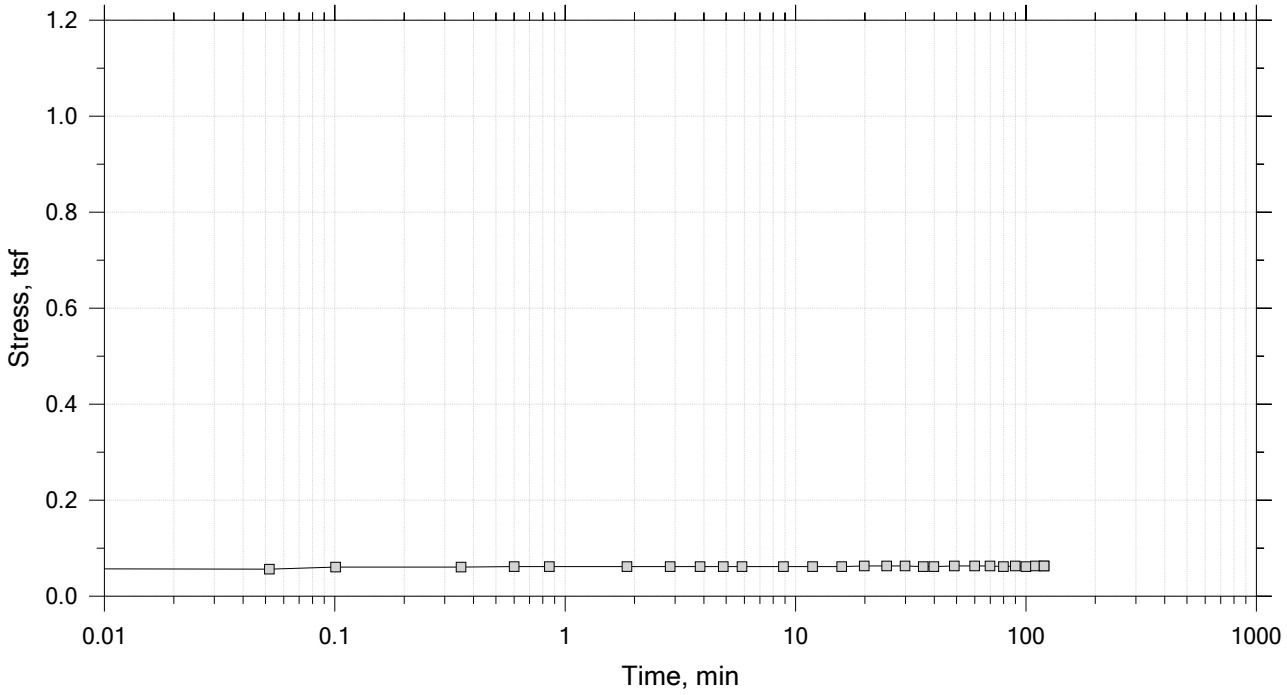


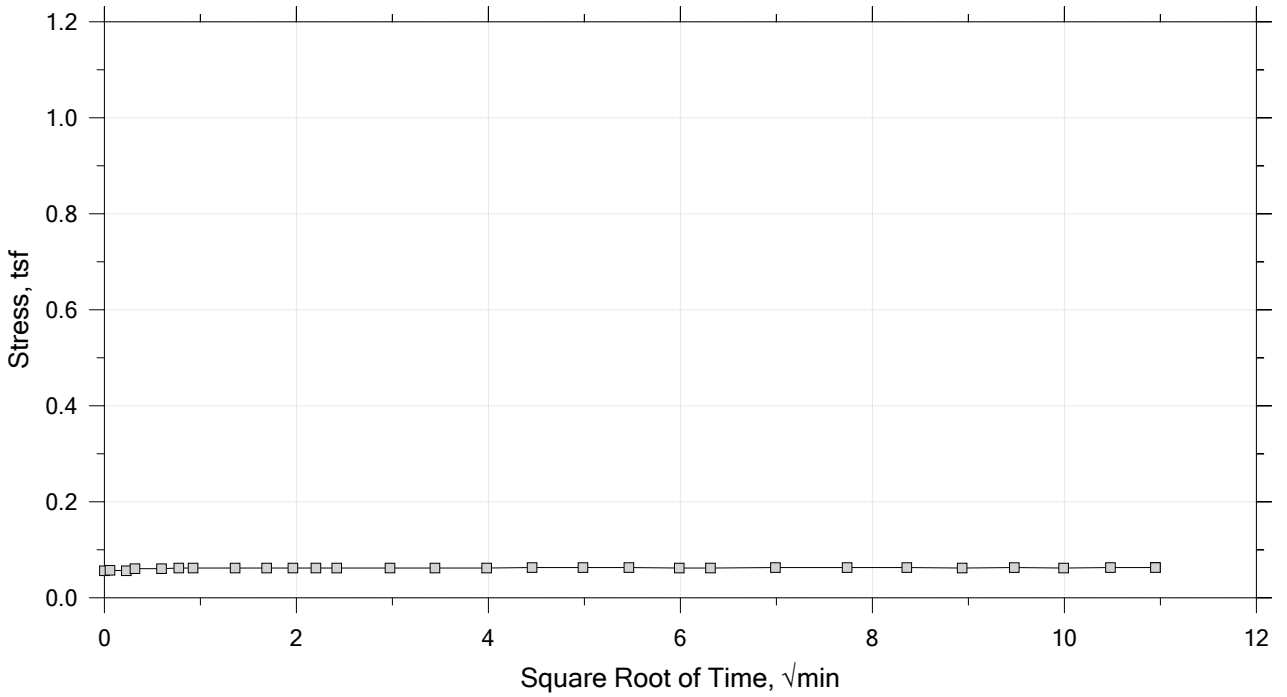


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0629 tsf

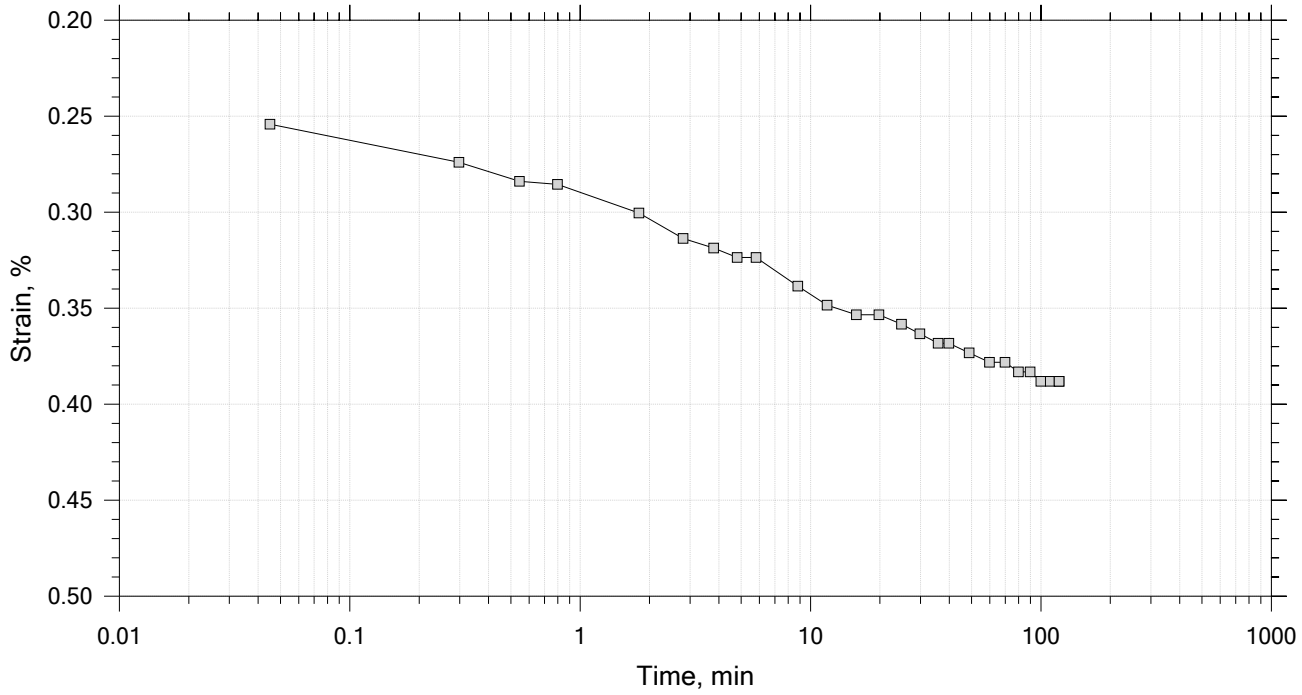


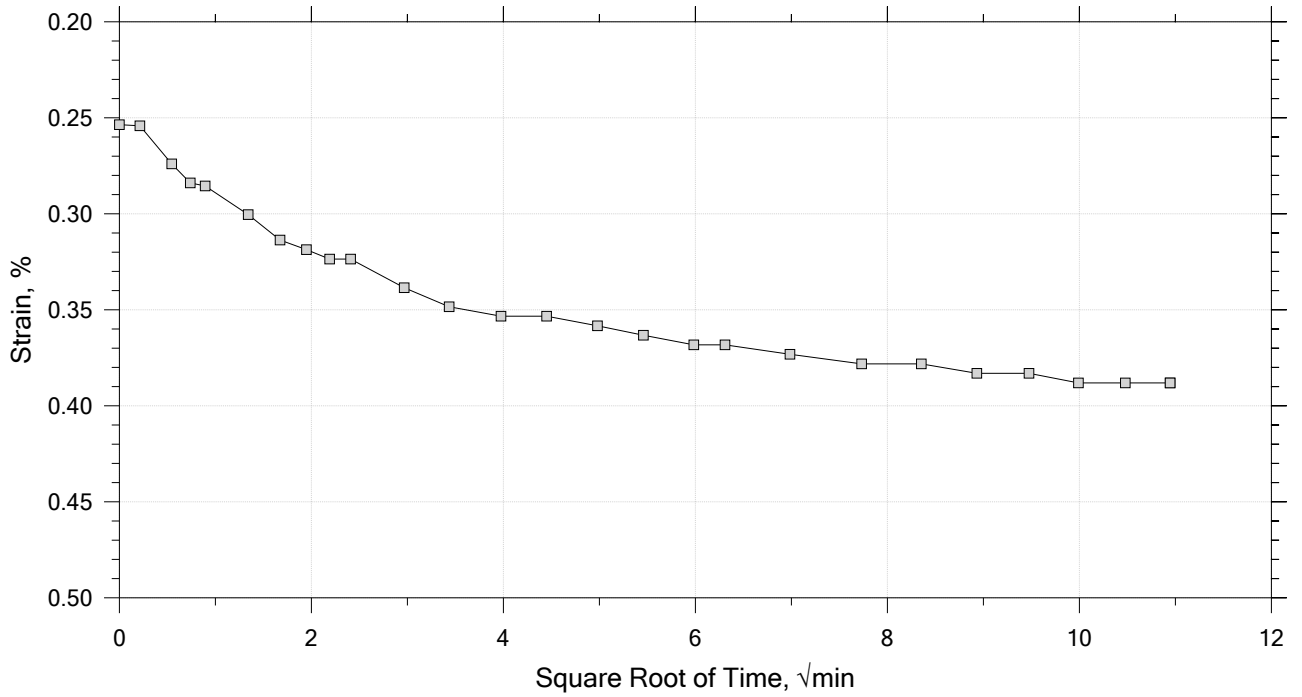


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

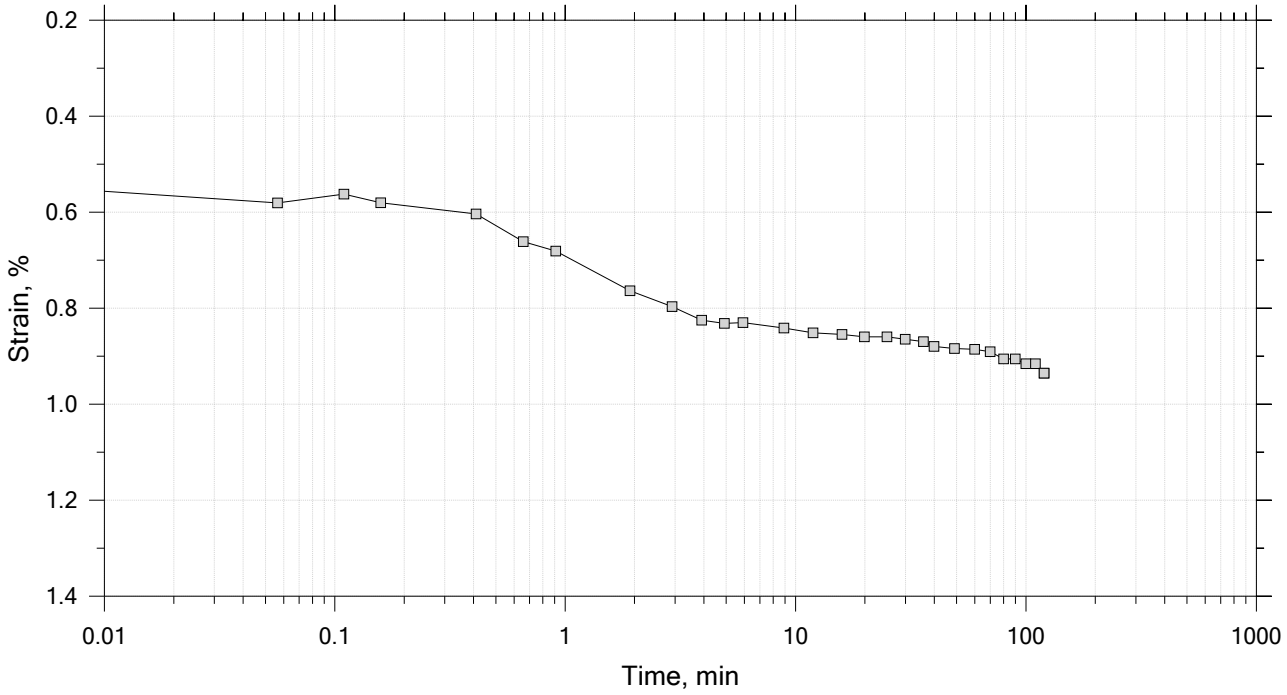


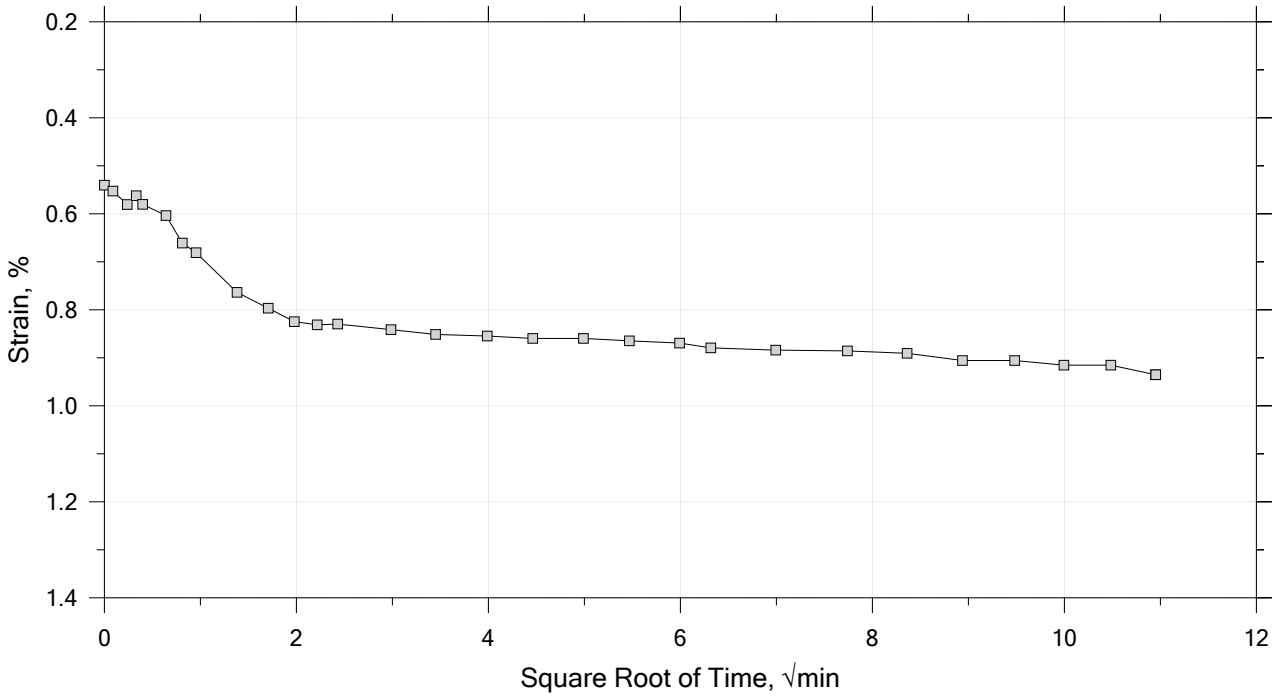


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

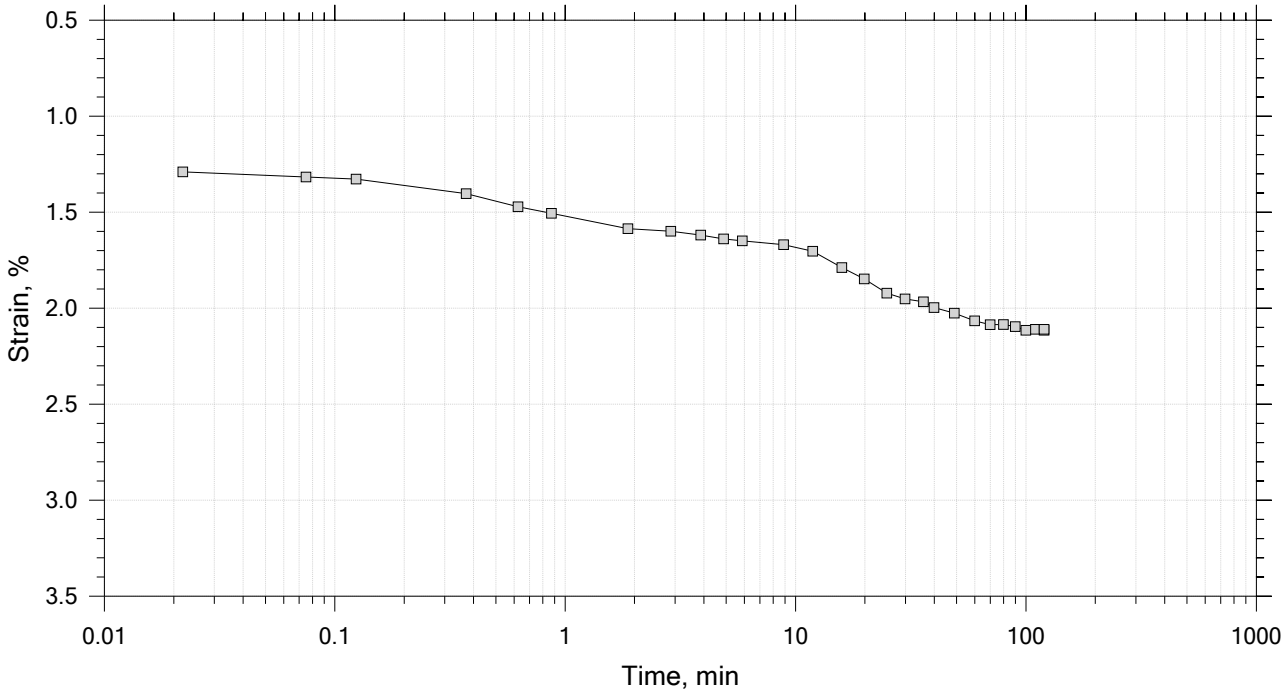


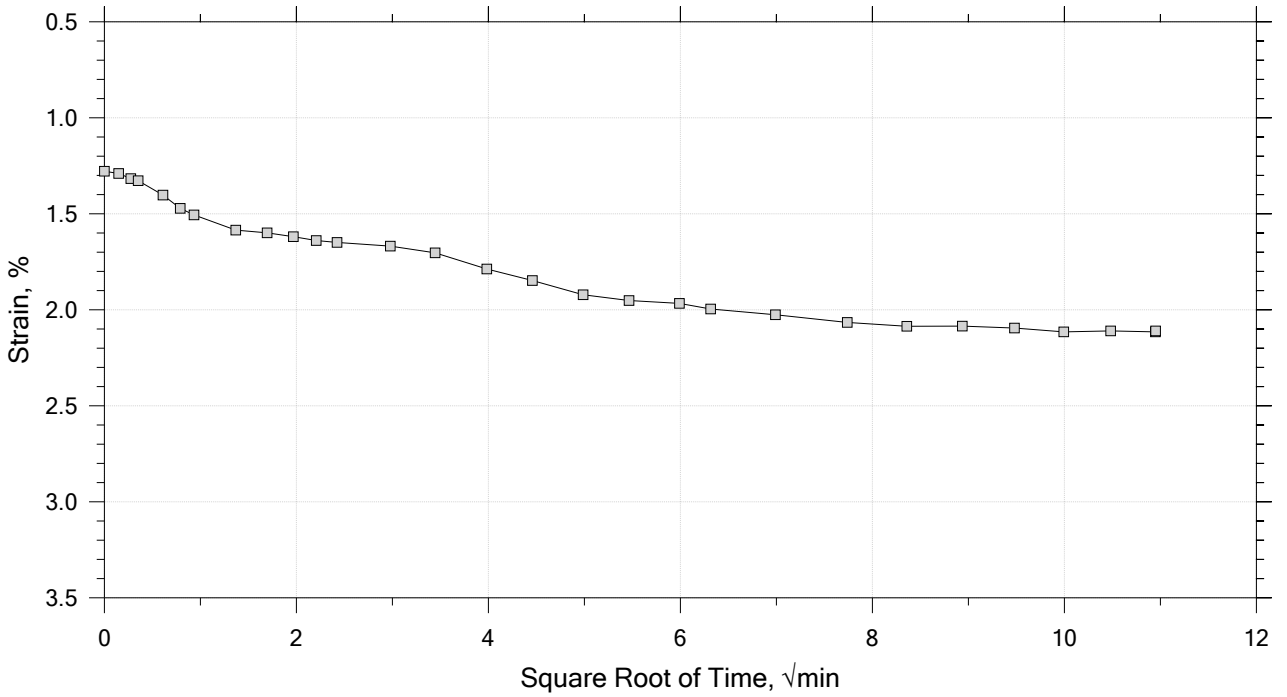


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





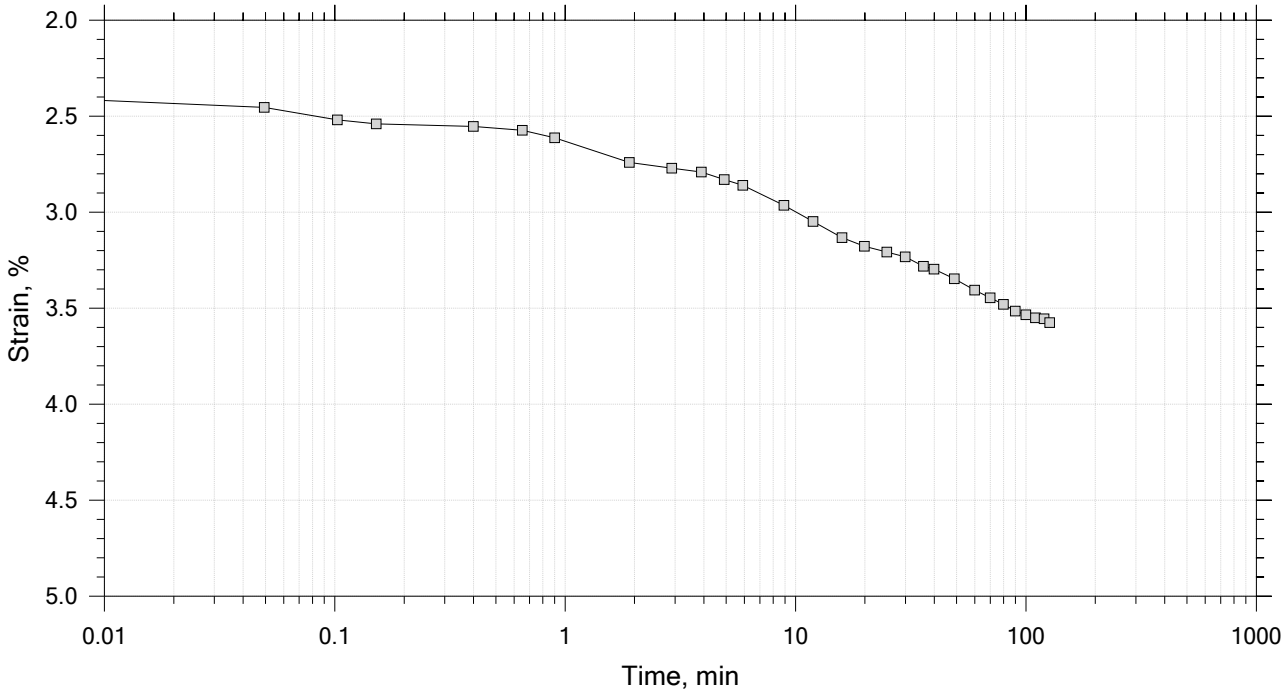
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

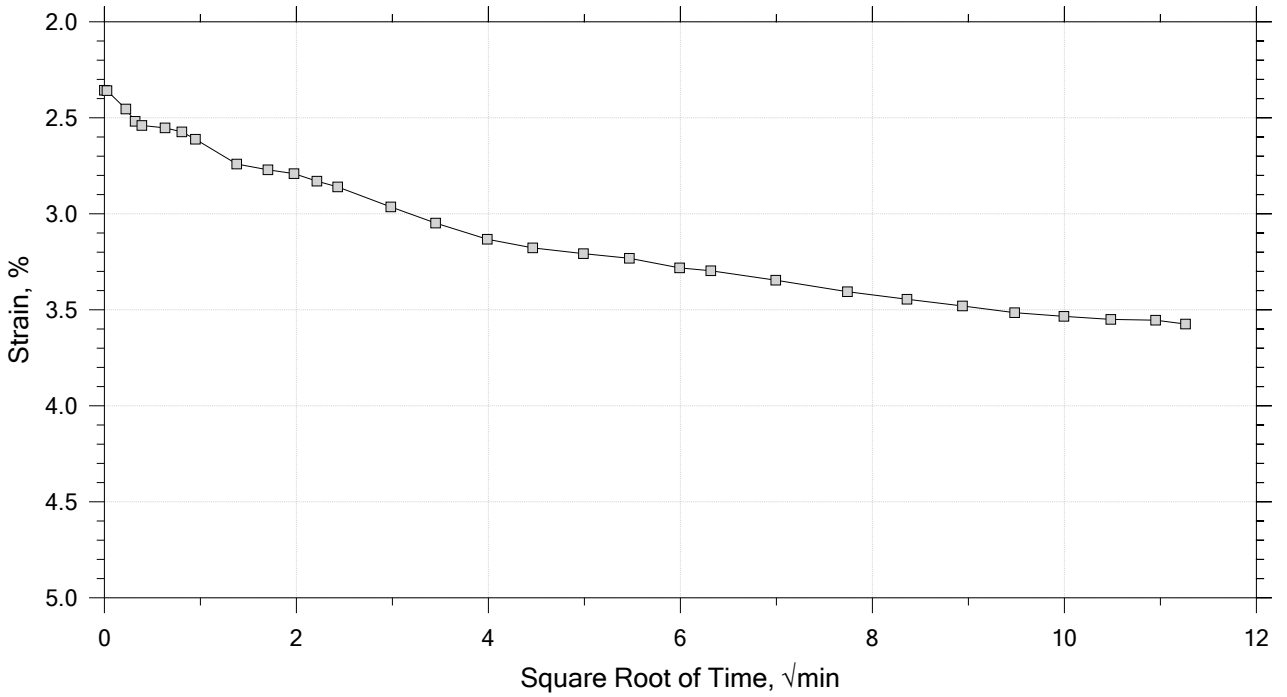
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf

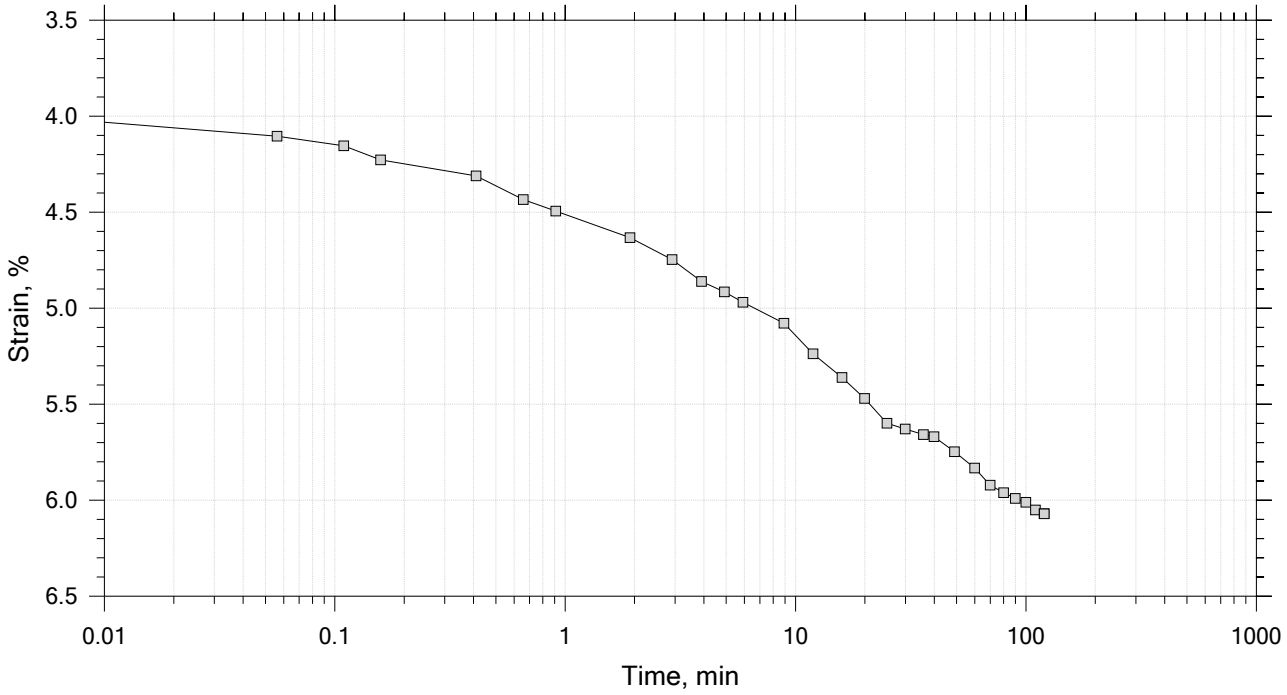


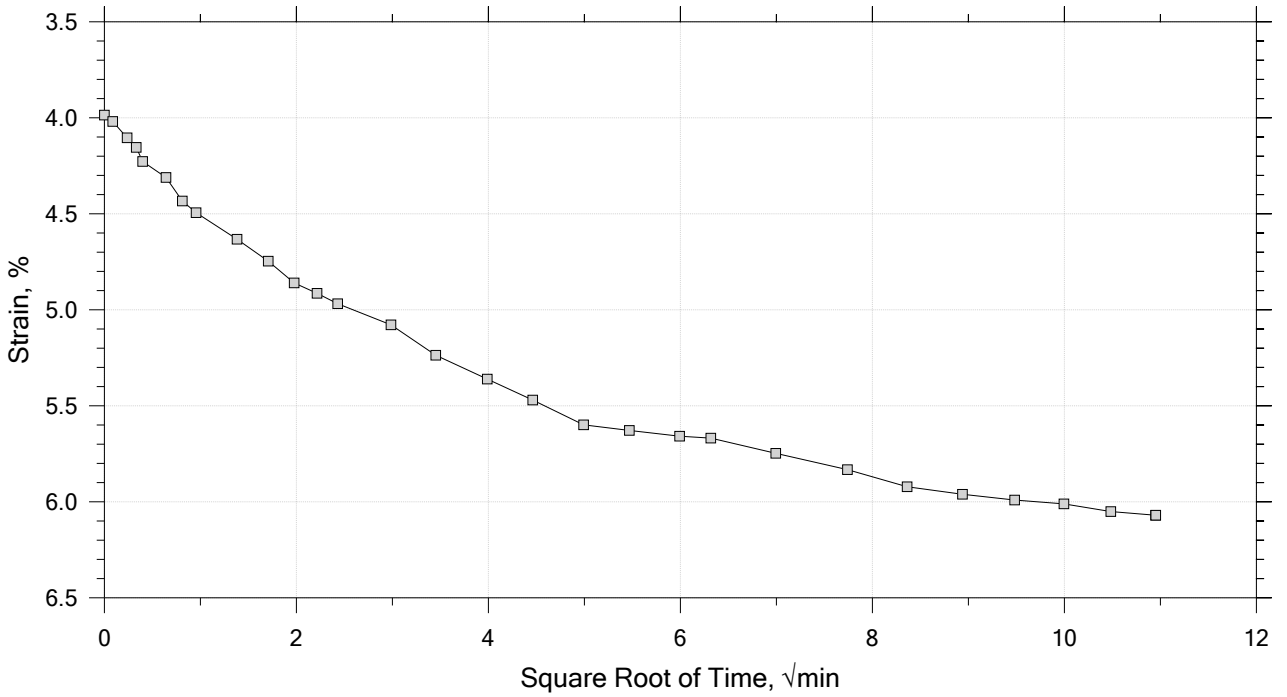


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14
Constant Load Step
Stress: 2 tsf





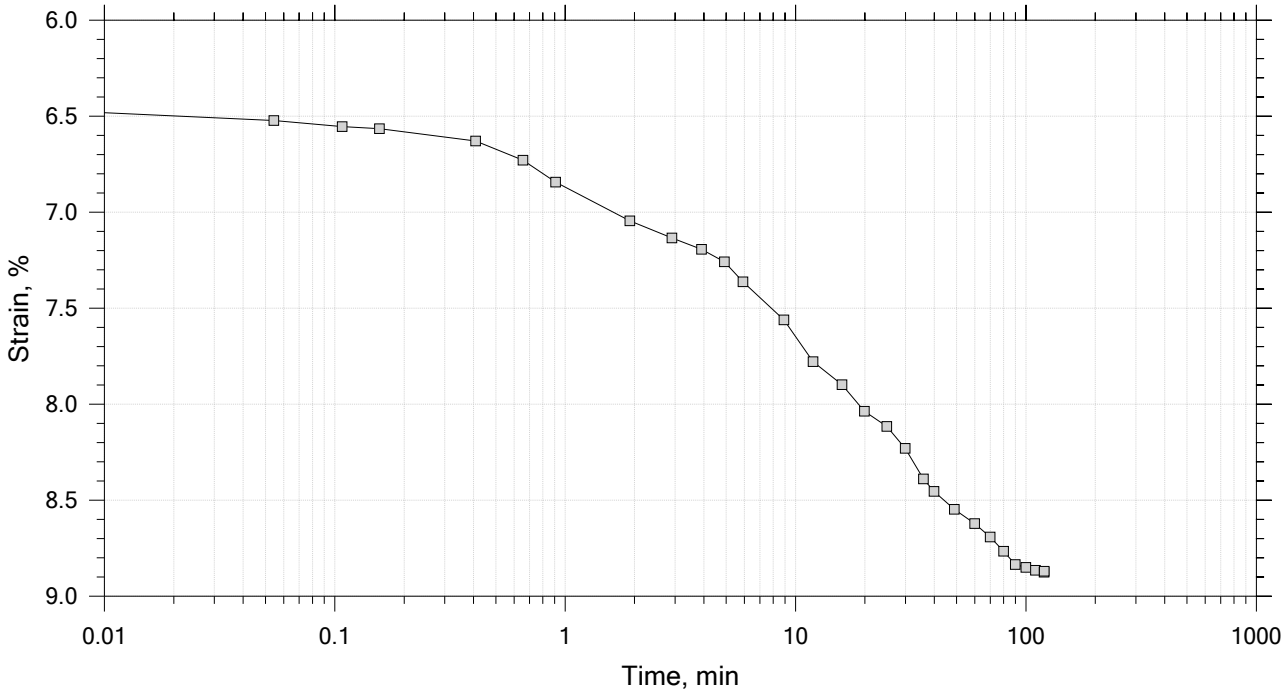
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

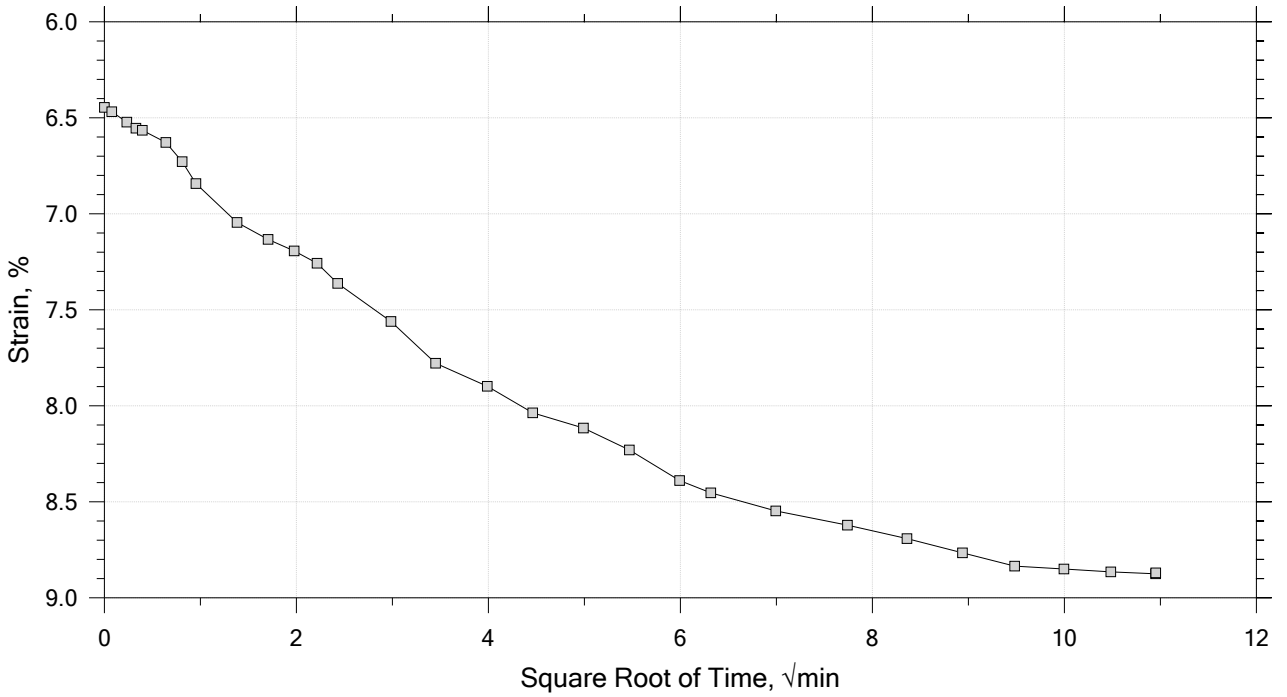
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





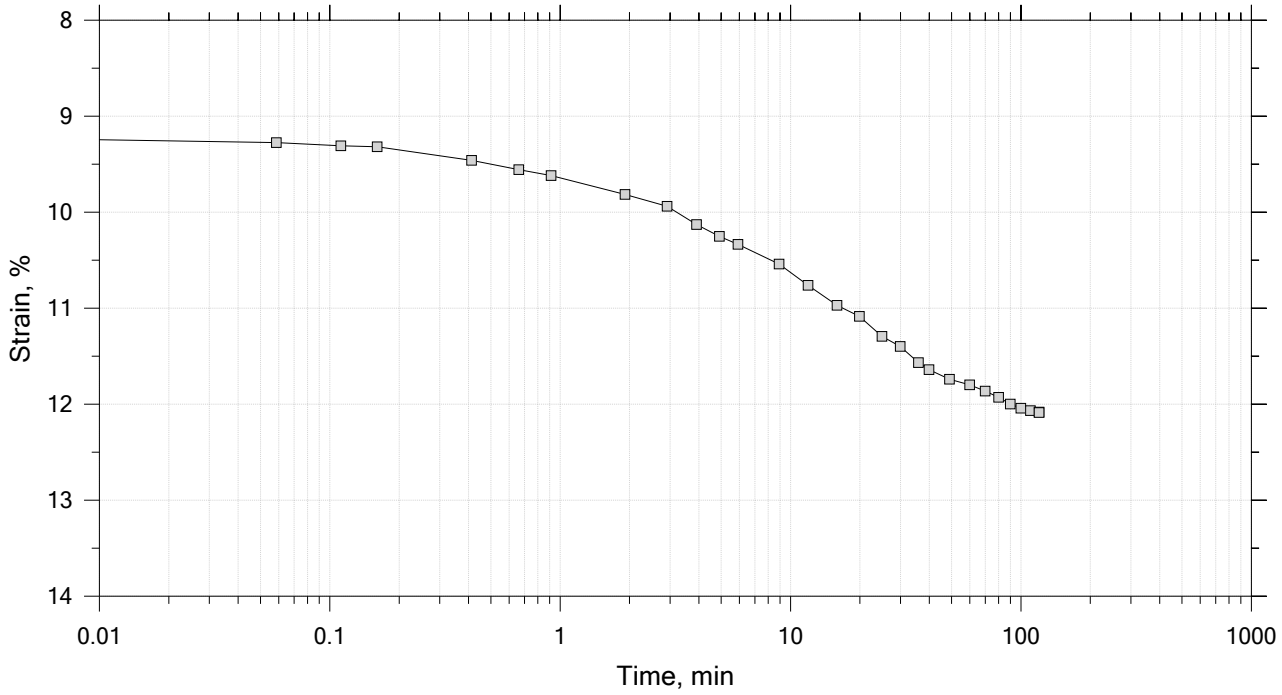
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

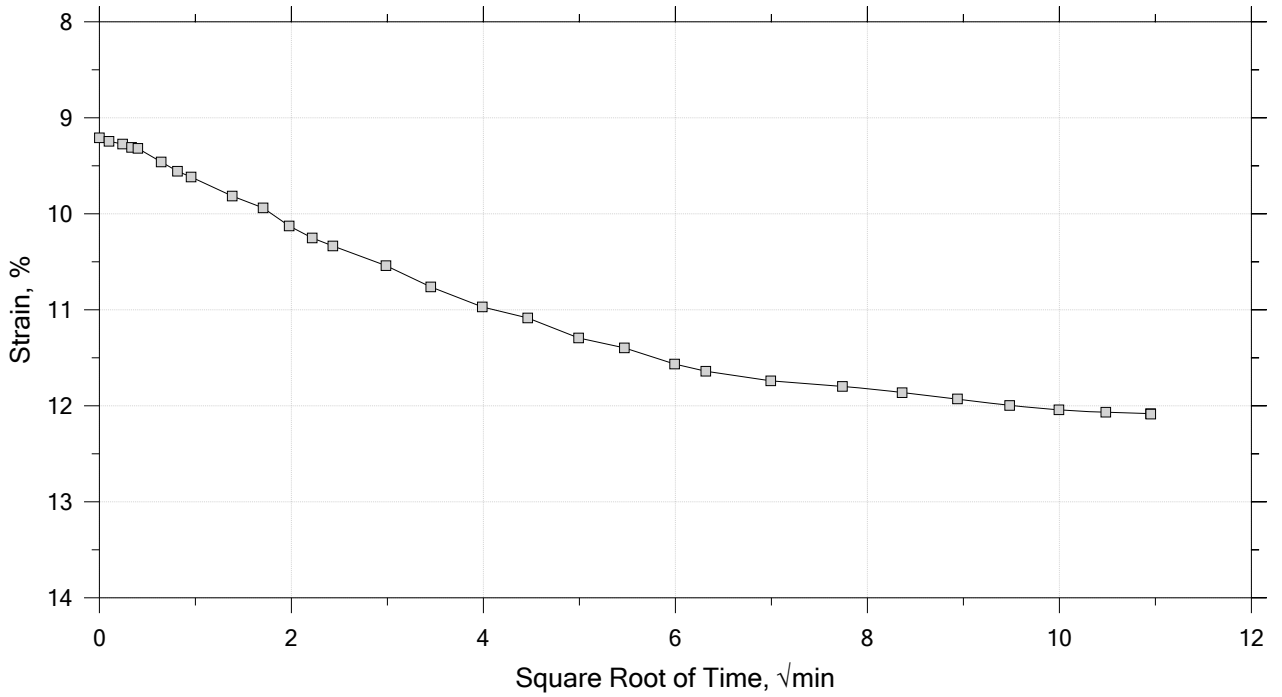
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

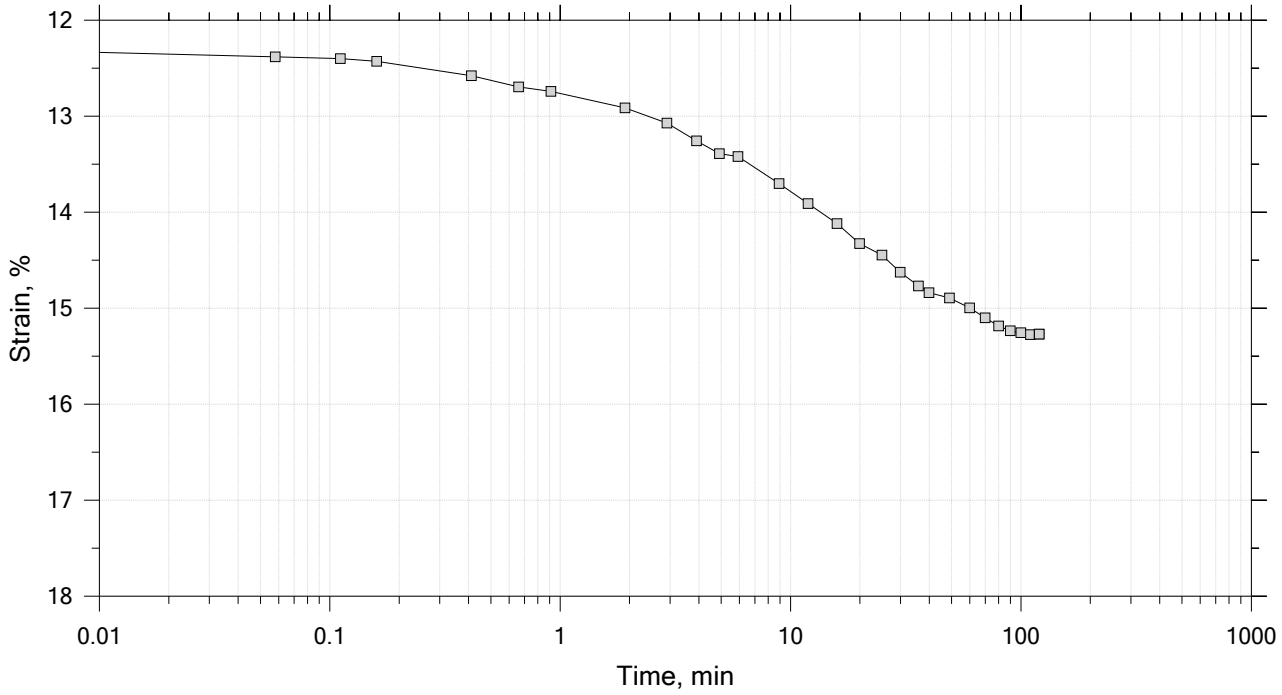


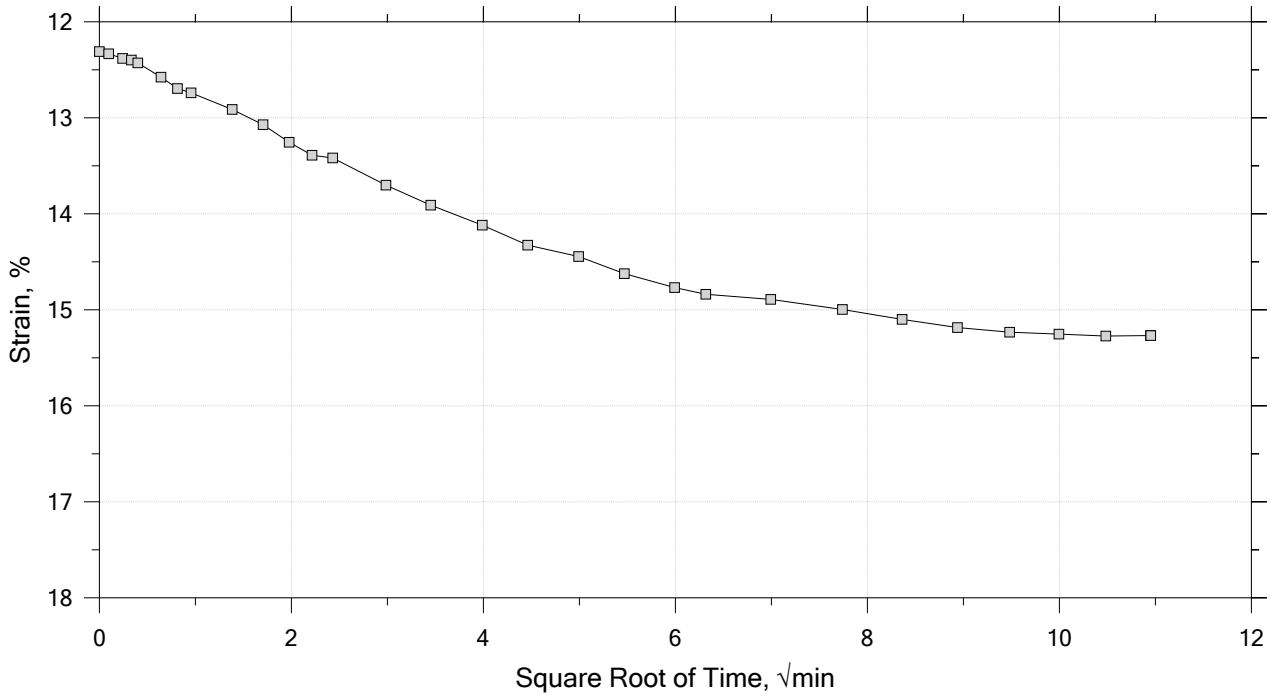


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

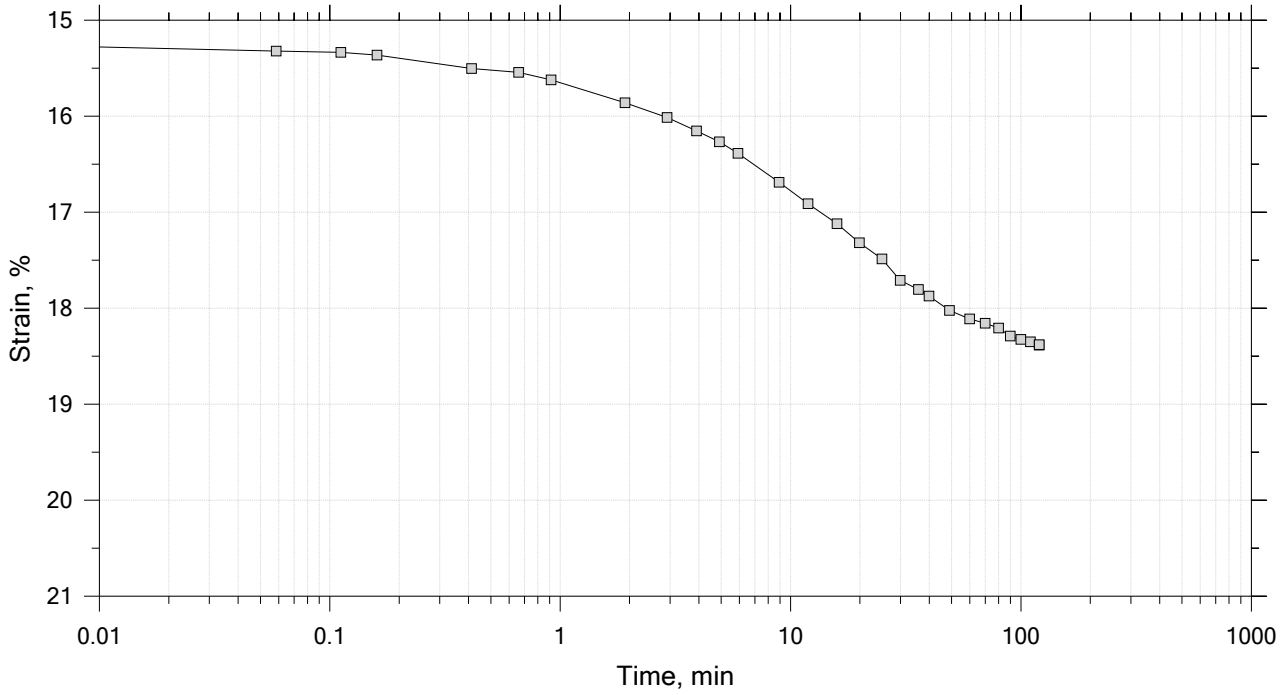


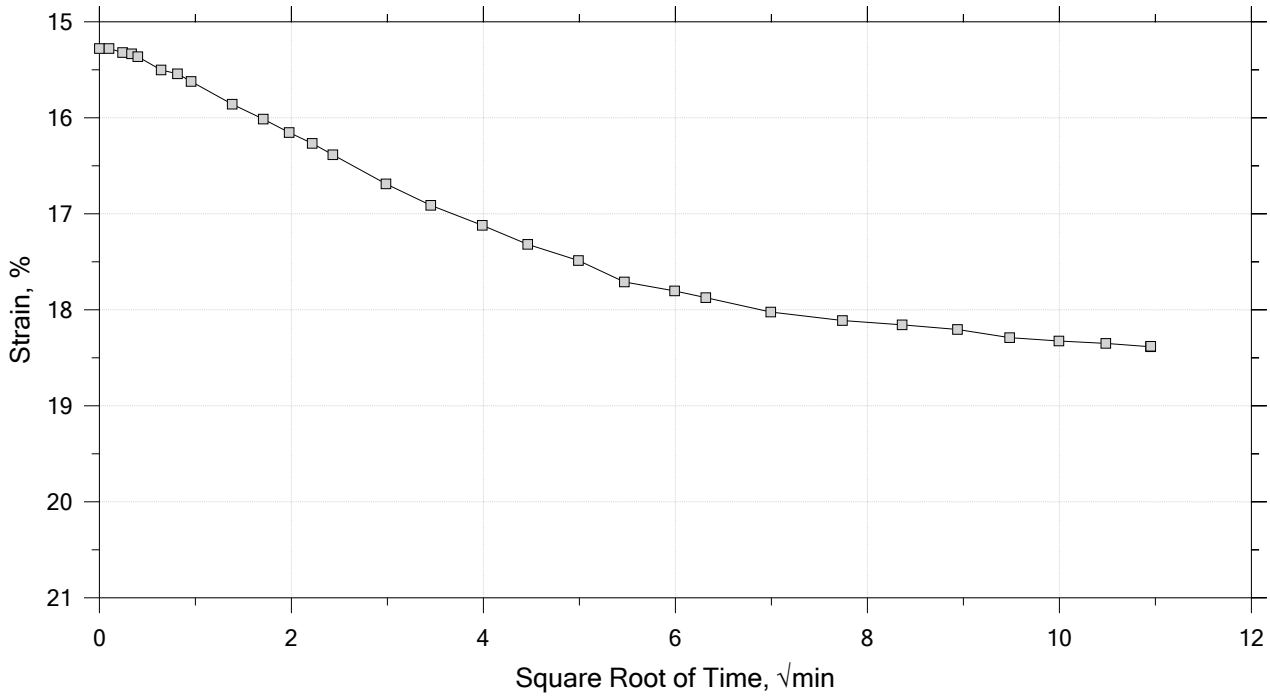


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

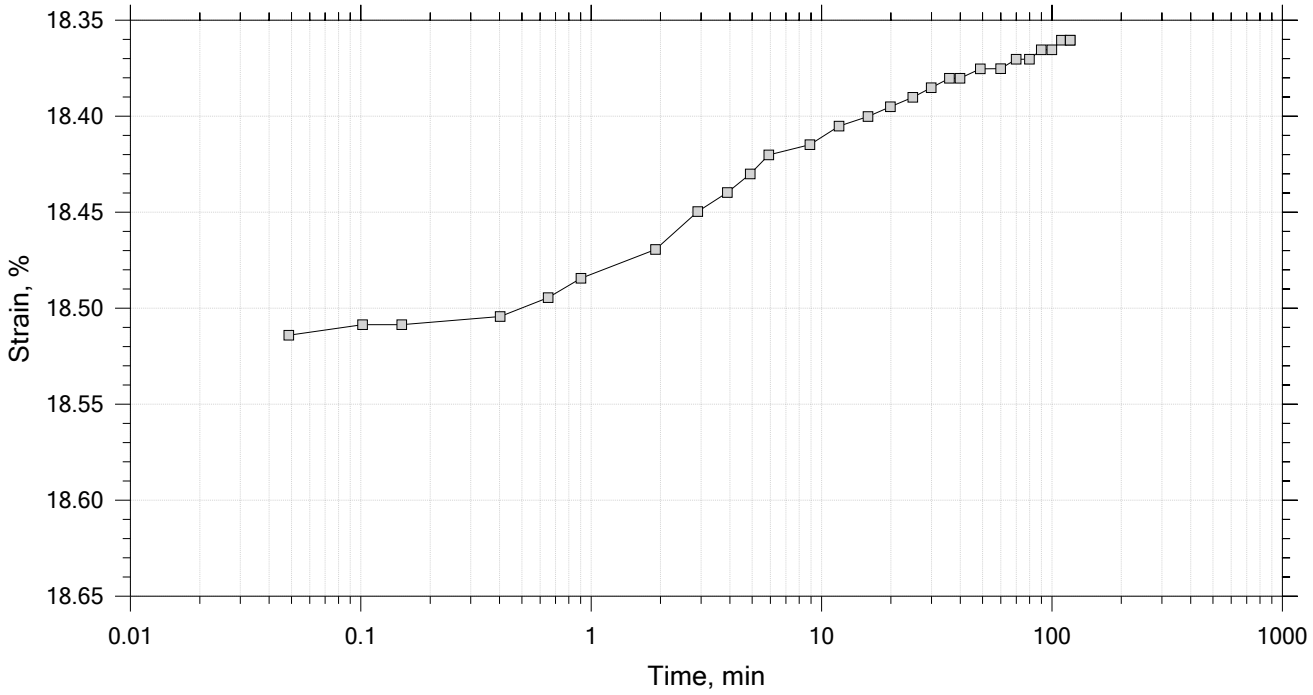


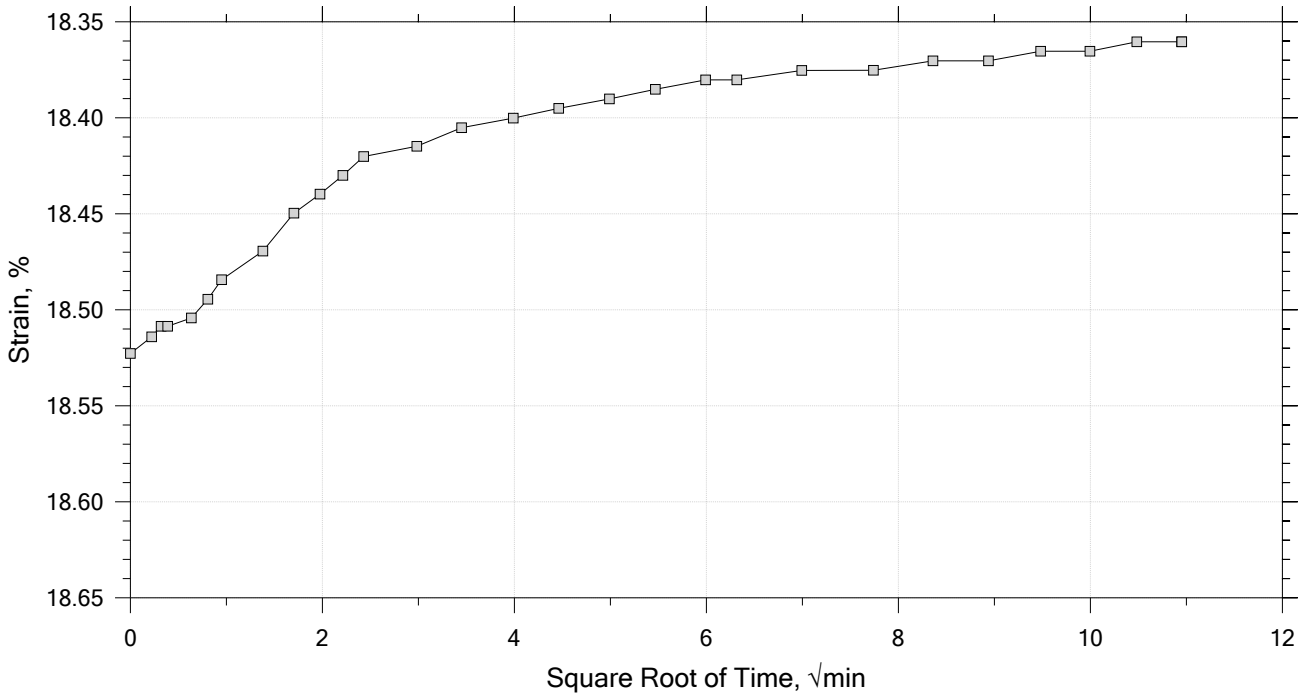


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

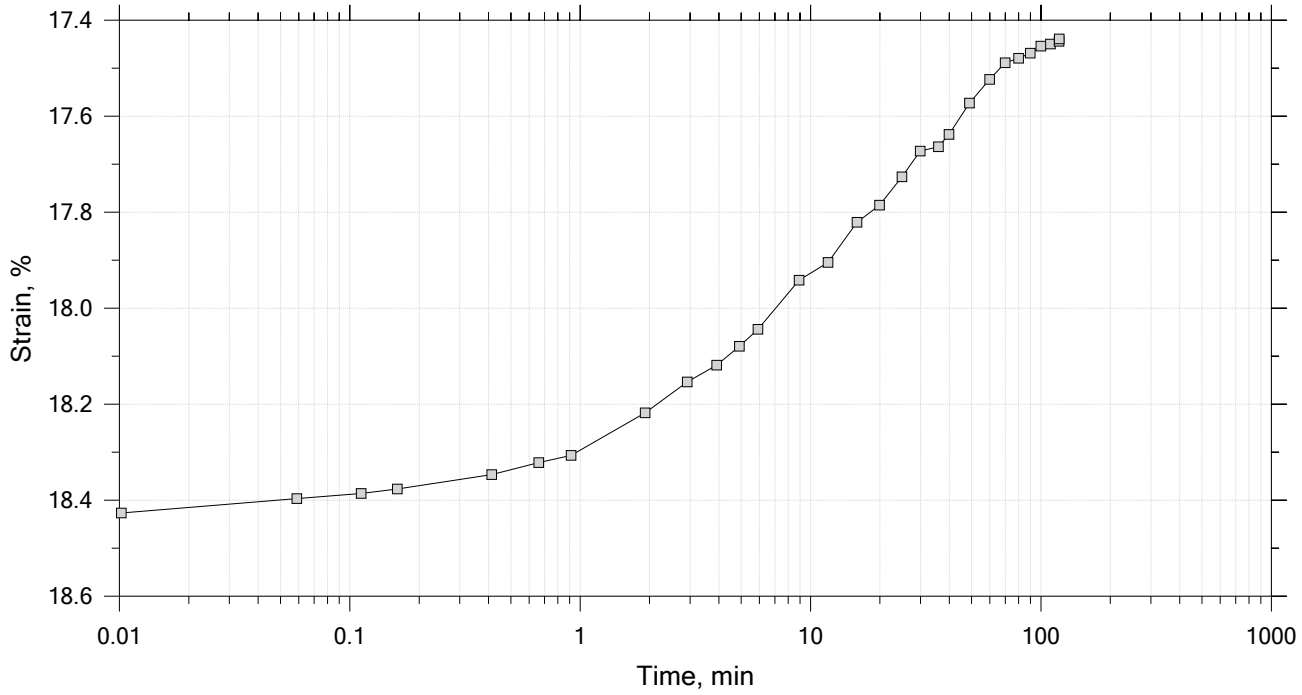


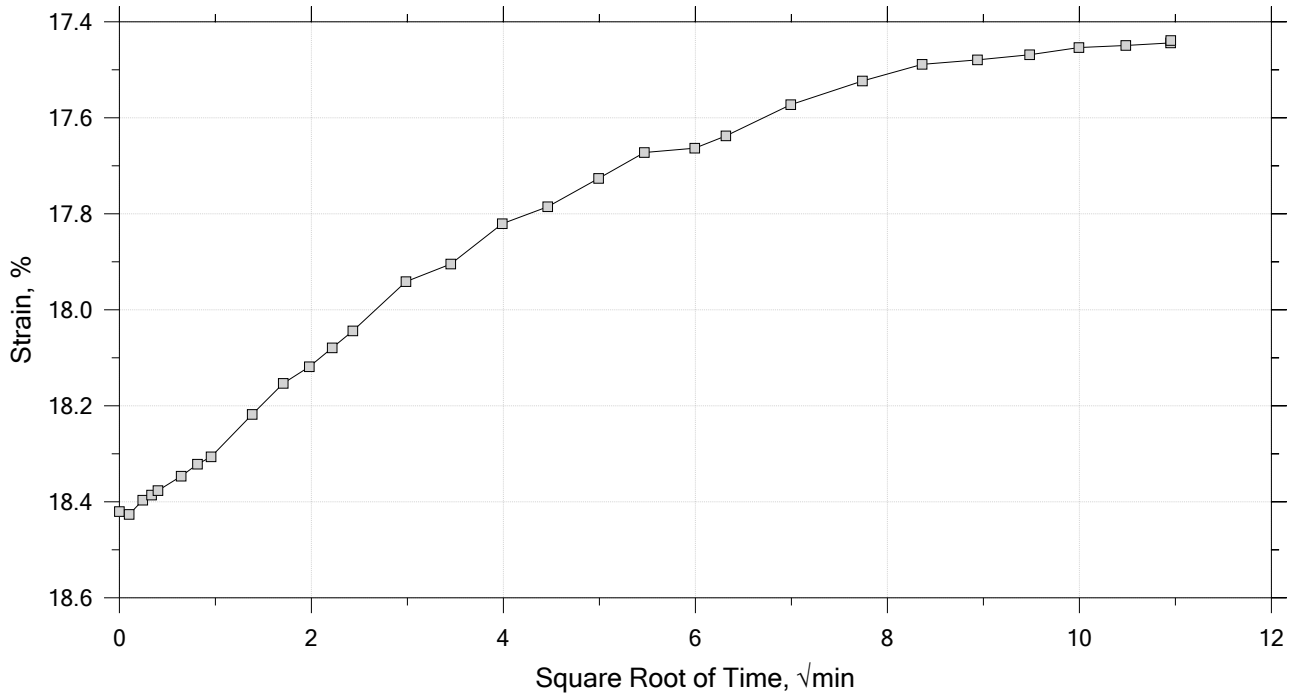


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

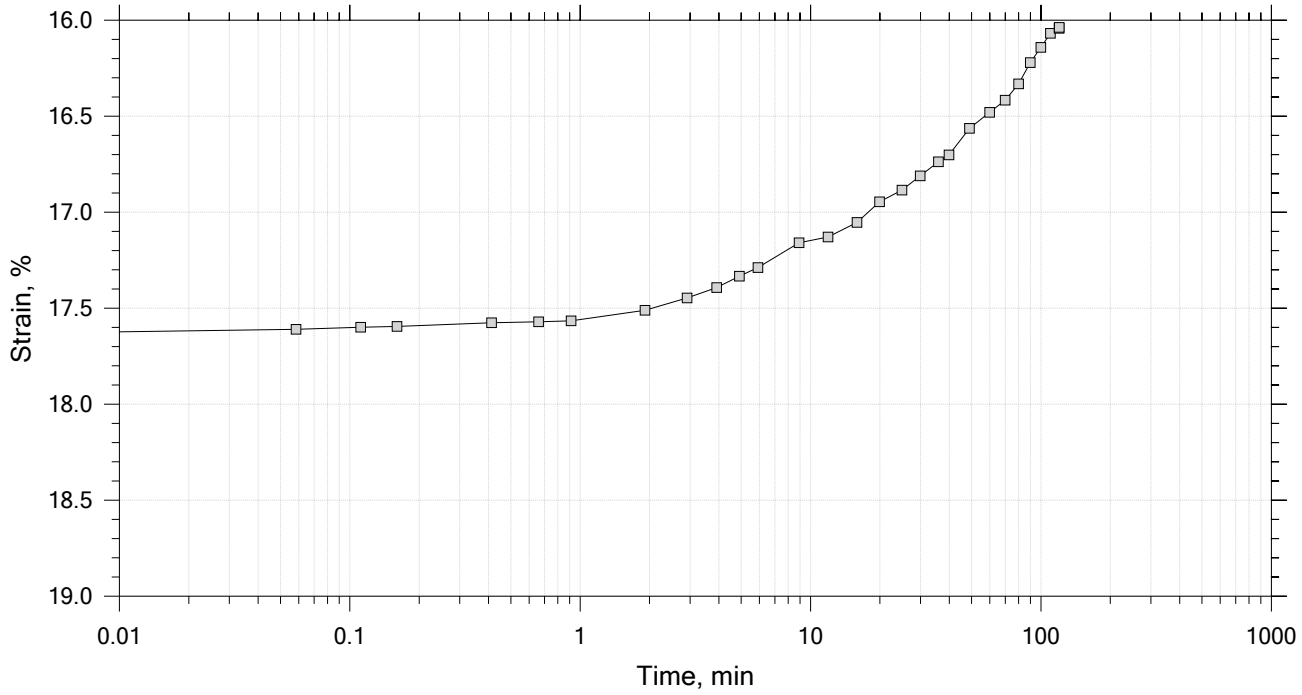


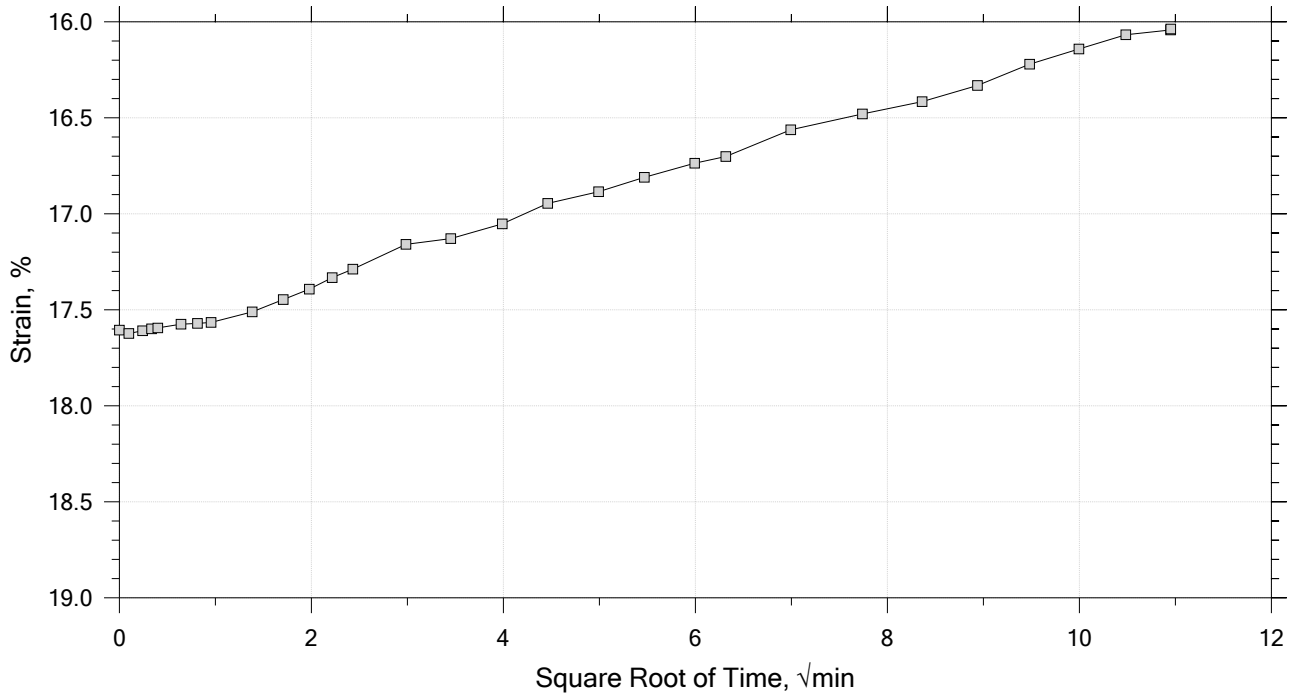


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

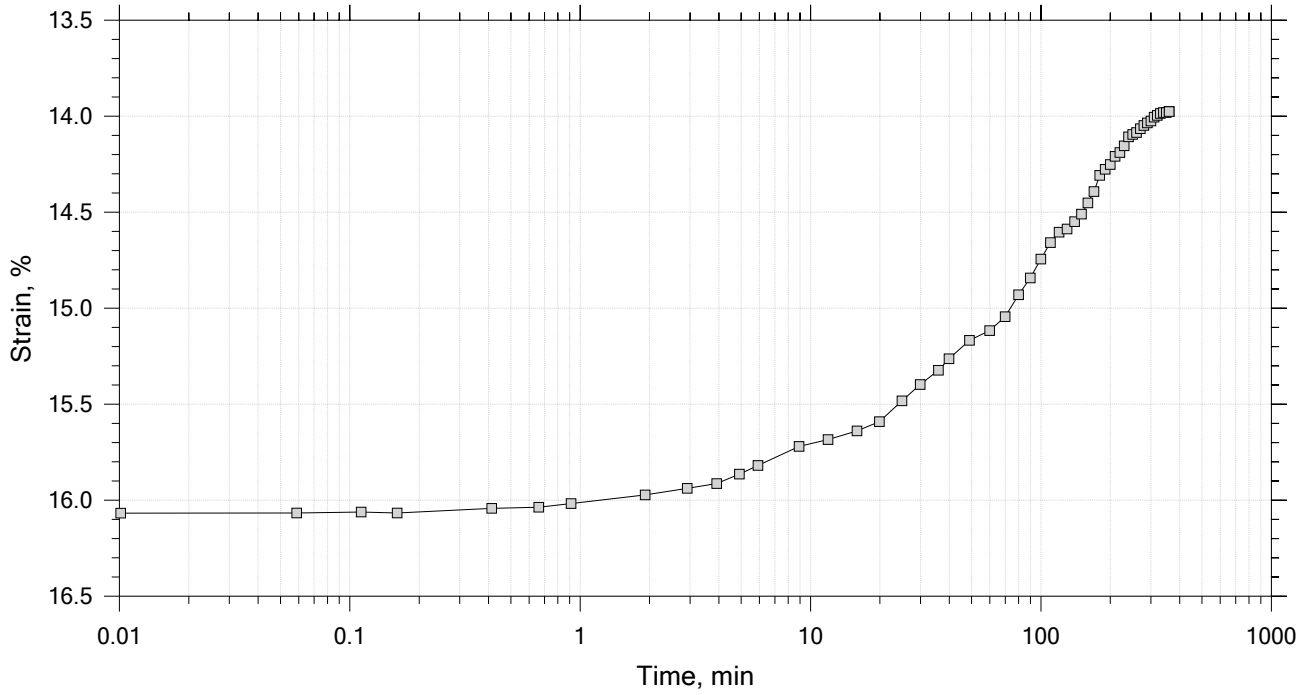


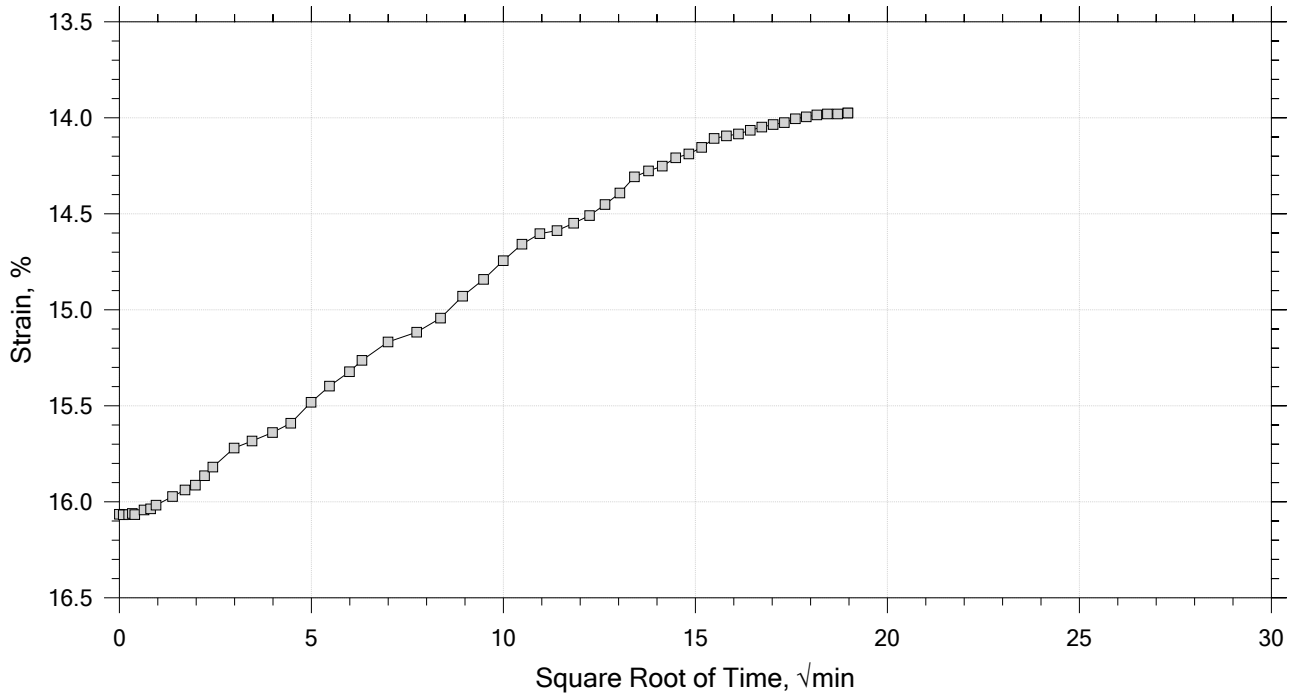


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.2	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
Test No.: IP-2-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.71	Liquid Limit: 40
Initial Height: 1.00 in	Initial Void Ratio: 0.763	Plastic Limit: 22
Final Height: 0.86 in	Final Void Ratio: 0.517	Plasticity Index: 18

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E3952	RING		E4320
Mass Container, gm	8.91	107.99	107.99	8.48
Mass Container + Wet Soil, gm	298.16	262.55	255.34	155.13
Mass Container + Dry Soil, gm	247.51	231.76	231.76	131.66
Mass Dry Soil, gm	238.6	123.77	123.77	123.18
Water Content, %	21.23	24.88	19.05	19.05
Void Ratio	---	0.76	0.52	---
Degree of Saturation, %	---	88.42	100.00	---
Dry Unit Weight, pcf	---	96.054	111.66	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

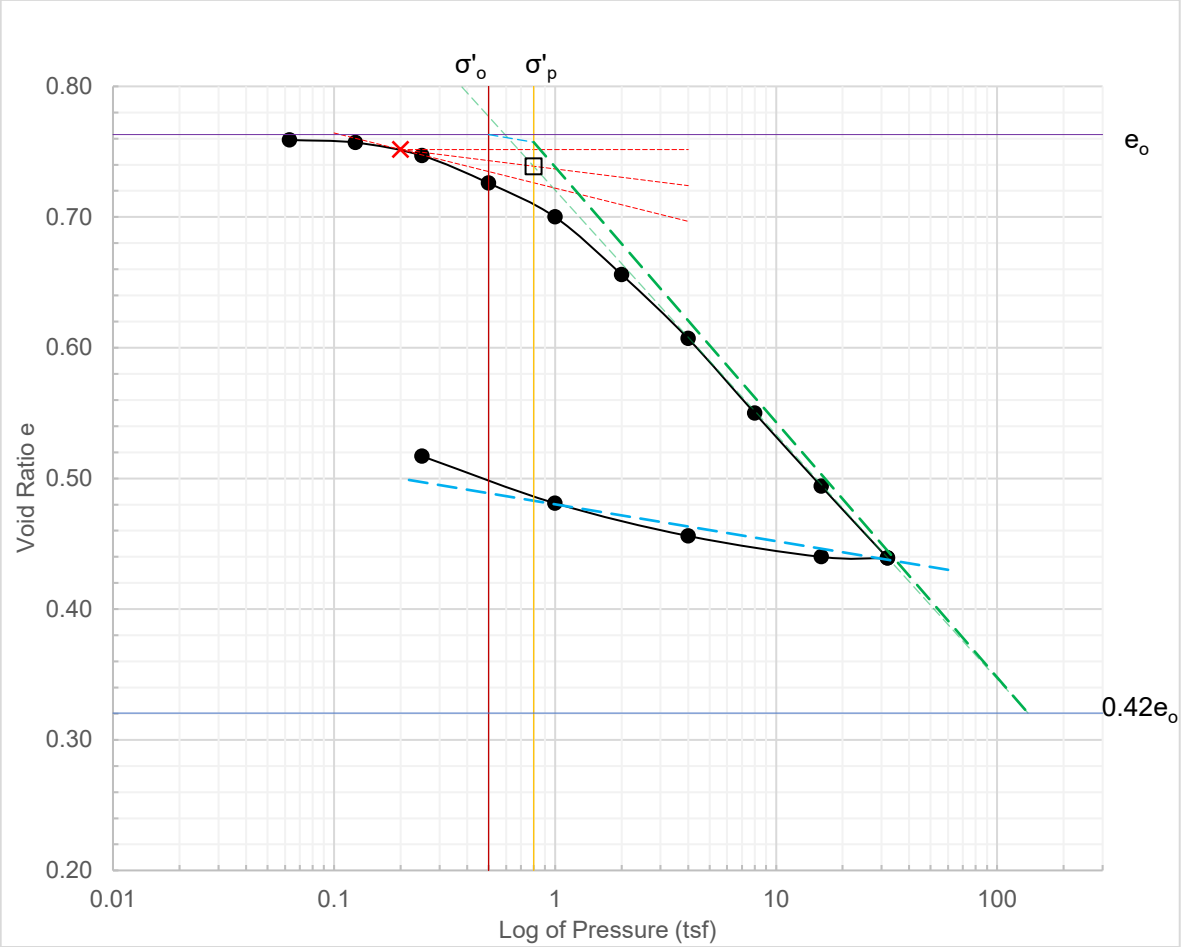
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0629	0.002586	0.759	0.259	0.000	0.00e+00	4.11e-02	0.00e+00
2	0.125	0.003881	0.757	0.388	12.922	2.72e-04	2.09e-02	1.06e-04
3	0.250	0.009353	0.747	0.935	4.852	7.19e-04	4.38e-02	5.89e-04
4	0.500	0.02110	0.726	2.11	47.479	7.22e-05	4.70e-02	6.35e-05
5	1.00	0.03575	0.700	3.57	24.931	1.34e-04	2.93e-02	7.34e-05
6	2.00	0.06071	0.656	6.07	27.296	1.17e-04	2.50e-02	5.48e-05
7	4.00	0.08870	0.607	8.87	39.449	7.67e-05	1.40e-02	2.01e-05
8	8.00	0.1209	0.550	12.1	42.698	6.63e-05	8.04e-03	9.99e-06
9	16.0	0.1527	0.494	15.3	41.064	6.41e-05	3.98e-03	4.78e-06
10	32.0	0.1838	0.439	18.4	49.883	4.90e-05	1.94e-03	1.78e-06
11	16.0	0.1836	0.440	18.4	16.364	1.44e-04	1.20e-05	3.22e-08
12	4.00	0.1744	0.456	17.4	32.881	7.24e-05	7.68e-04	1.04e-06
13	1.00	0.1604	0.481	16.0	91.721	2.67e-05	4.67e-03	2.34e-06
14	0.250	0.1398	0.517	14.0	351.691	7.26e-06	2.75e-02	3.74e-06

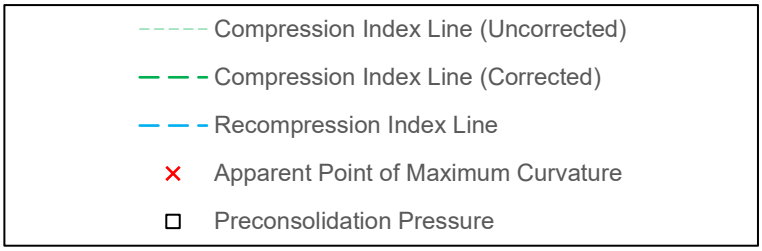
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.2	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/8/22	Depth: 7.9-8.0
	Test No.: IP-2-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: TX-011, Swell Pressure = 0.0629 tsf		
	Displacement at End of Increment		

Boring: B-4.2

Depth: 7.9'-8.0'

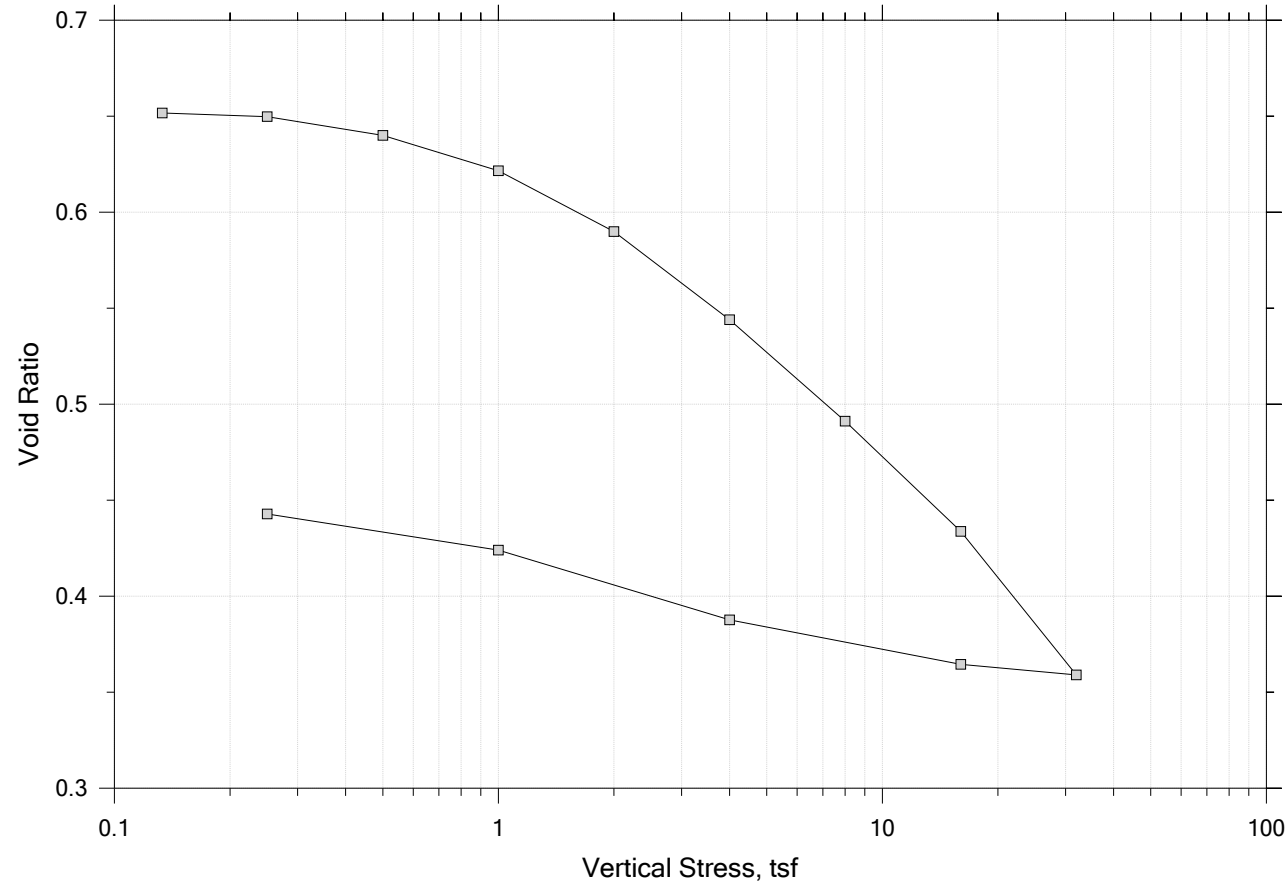
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.50
Preconsolidation Pressure, σ'_p (tsf) = 0.80
Compression Index, C_c = 0.20
Recompression Index, C_r = 0.028

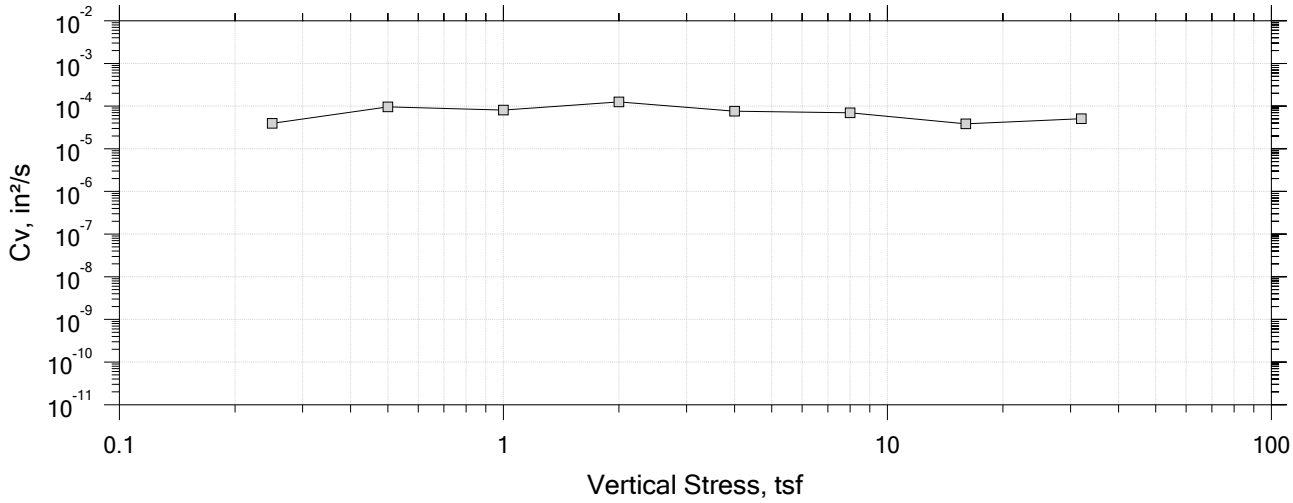




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

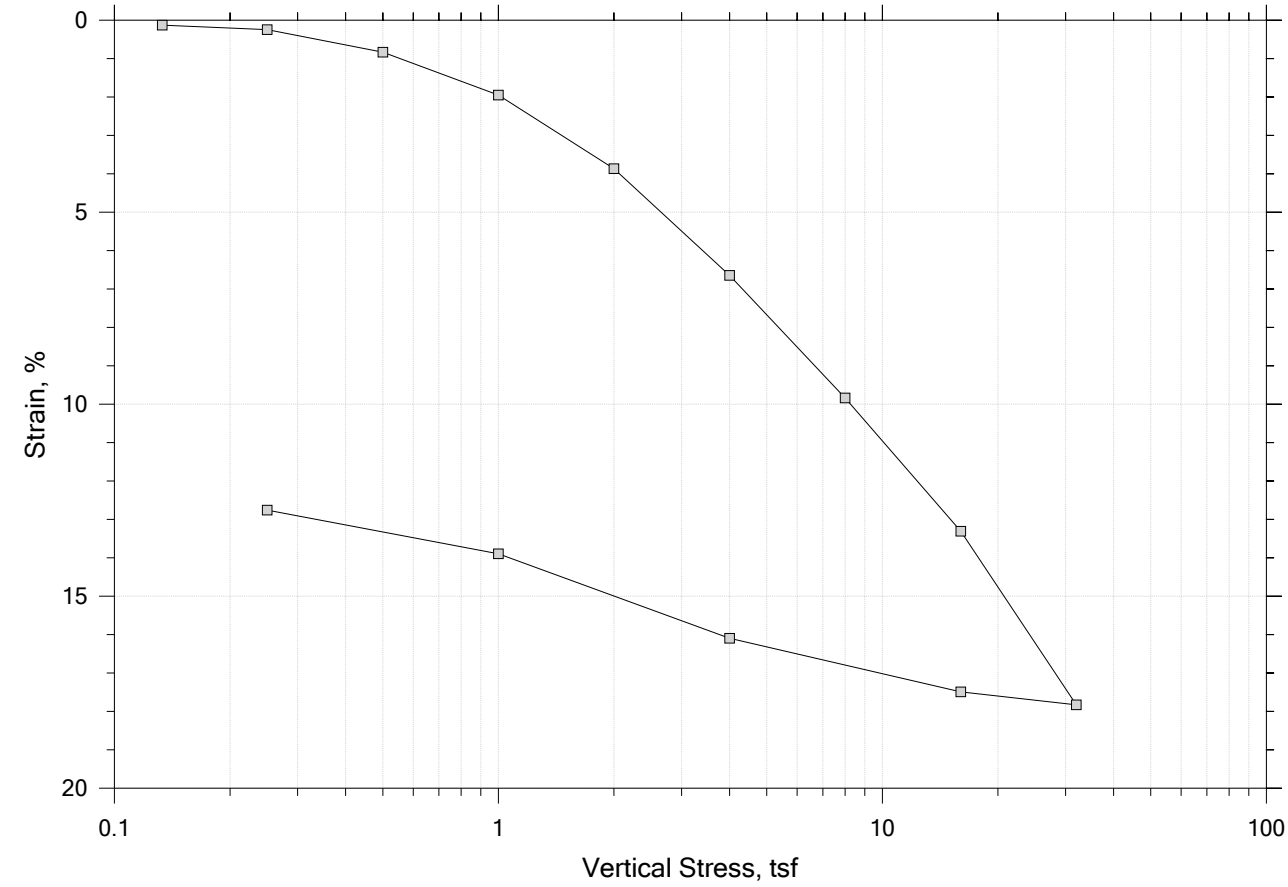


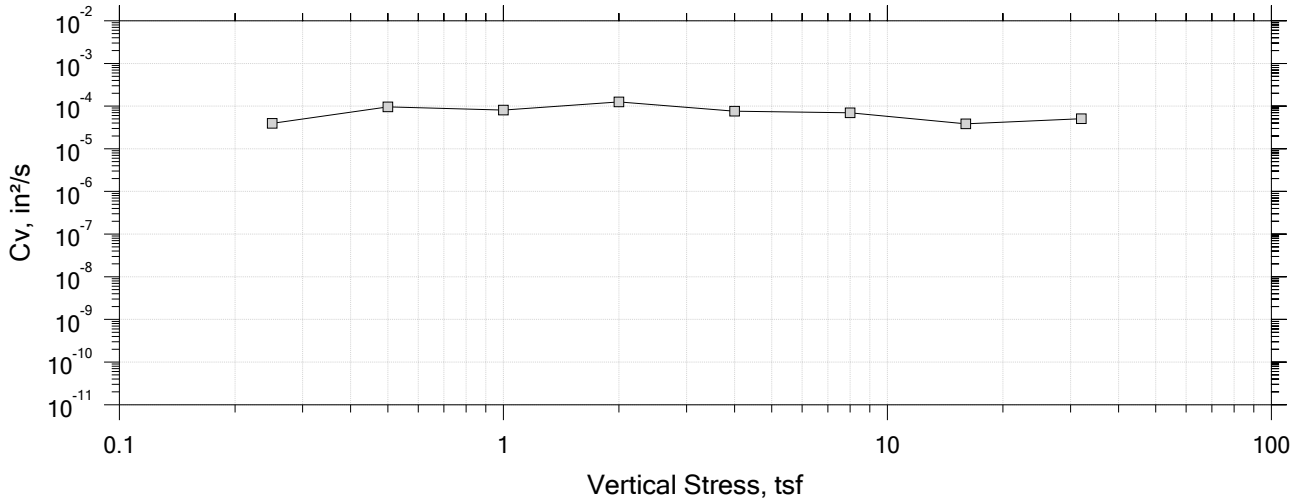


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

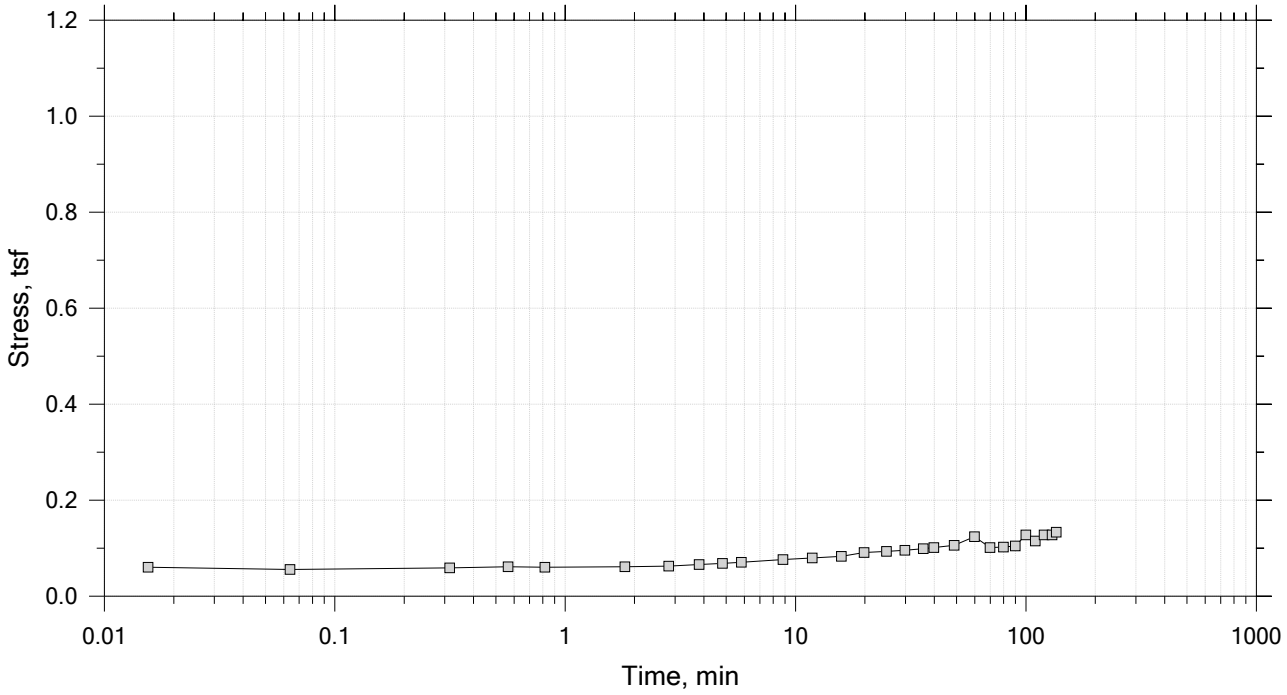


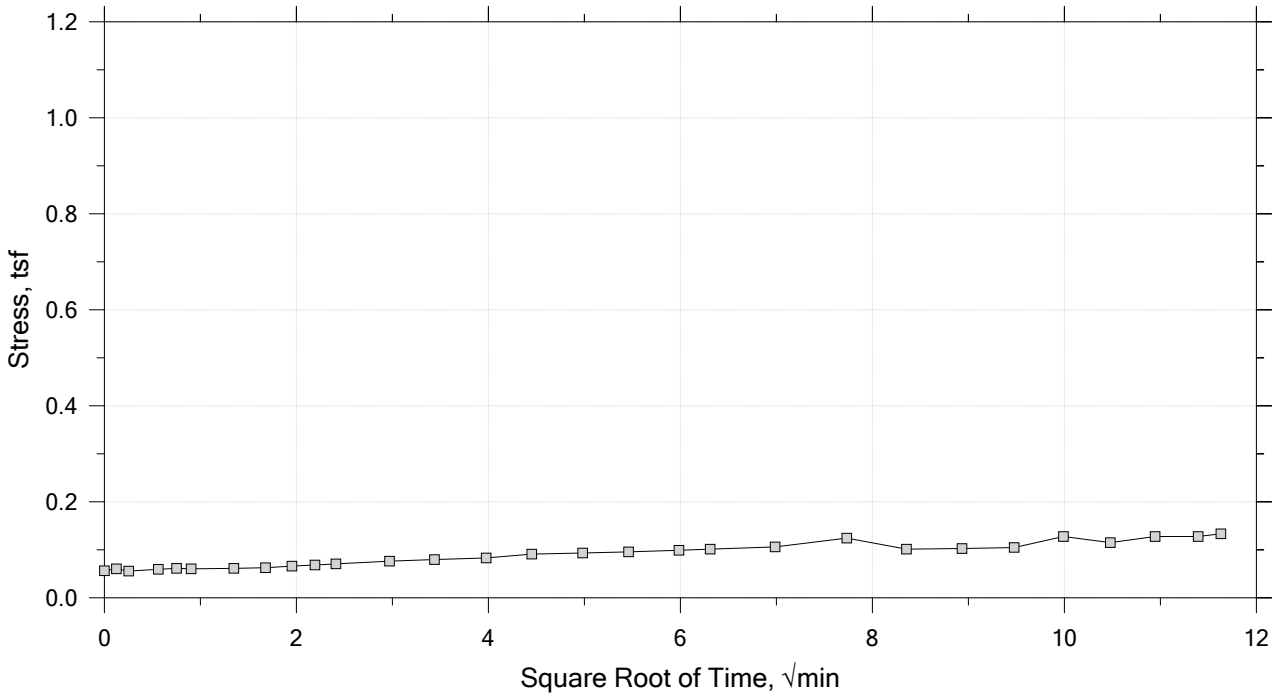


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 13
Constant Volume Step
Stress: 0.133 tsf

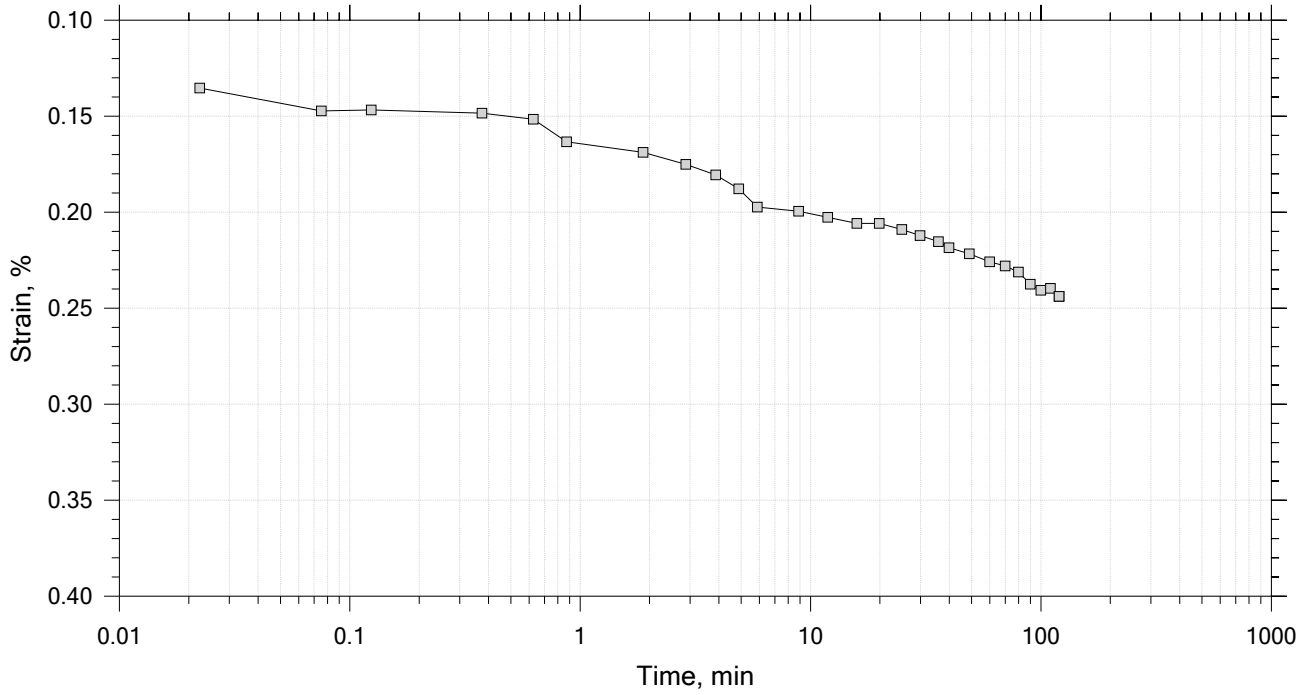


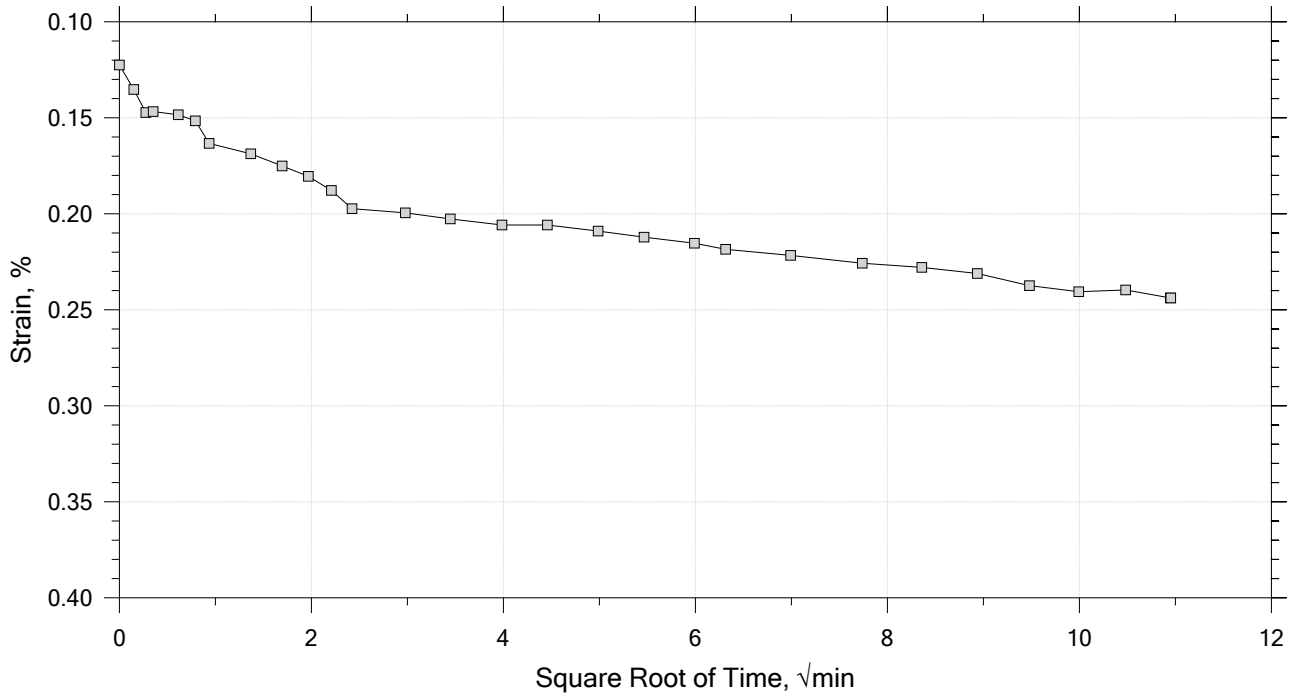


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 13
Constant Load Step
Stress: 0.25 tsf

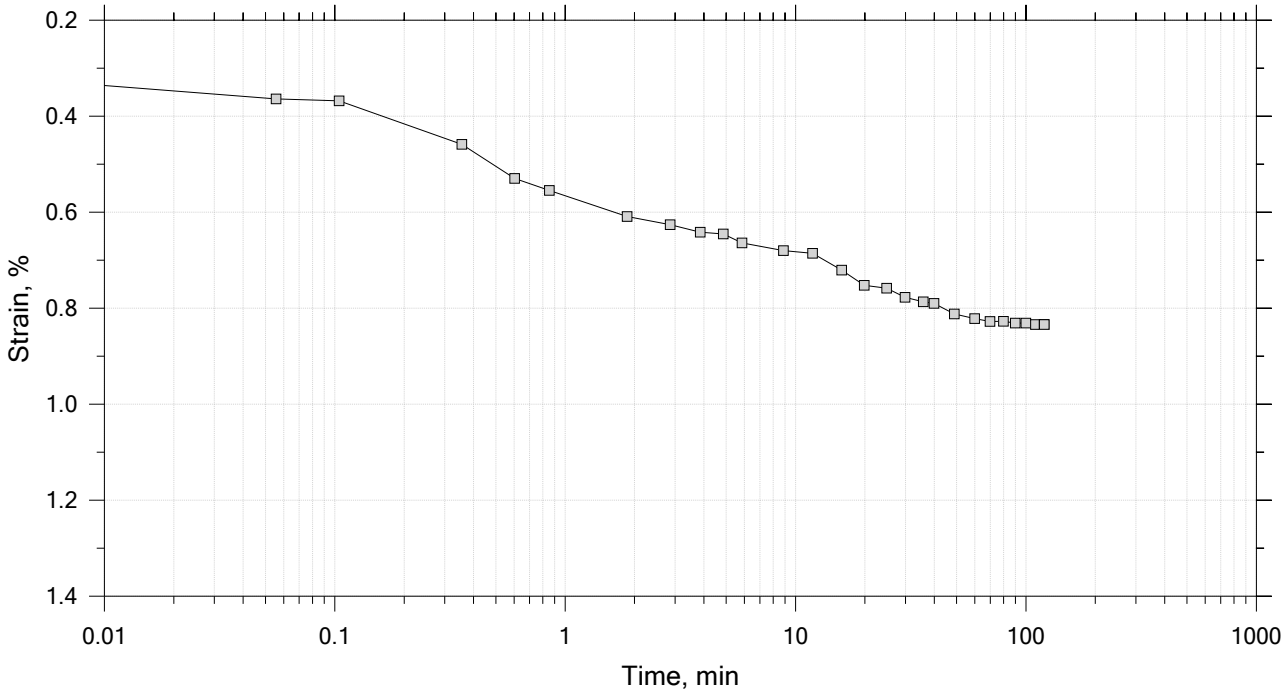


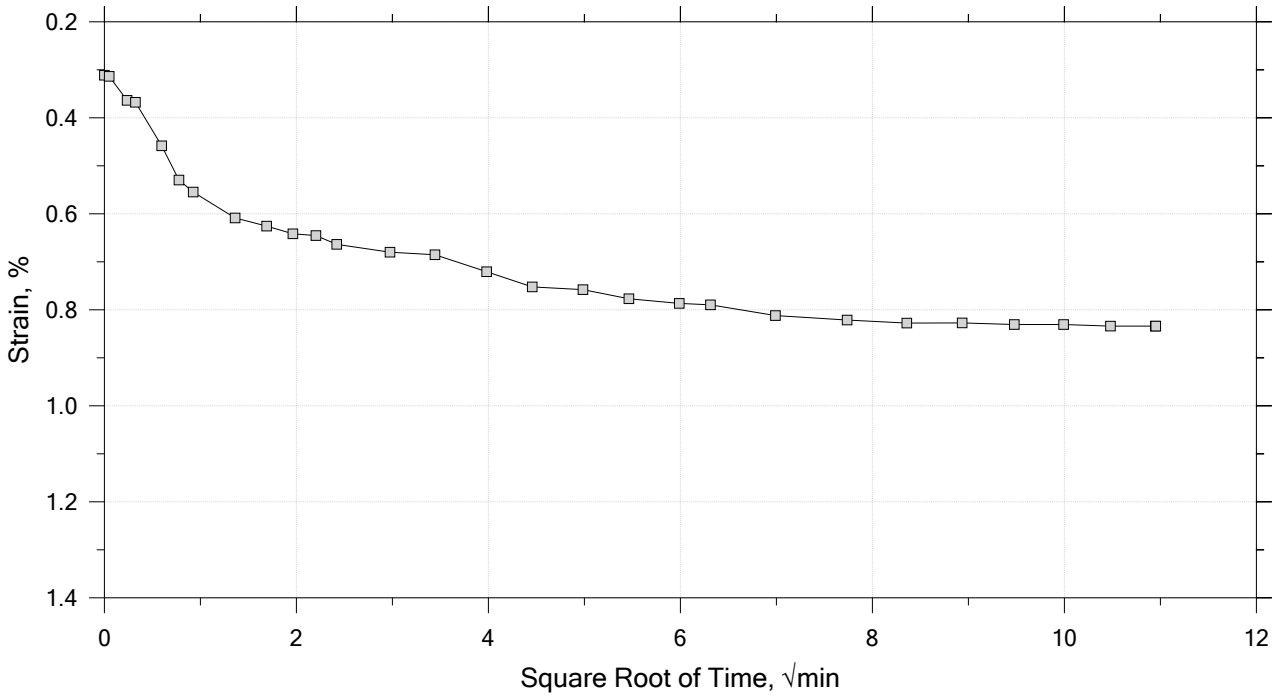


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 13
Constant Load Step
Stress: 0.5 tsf





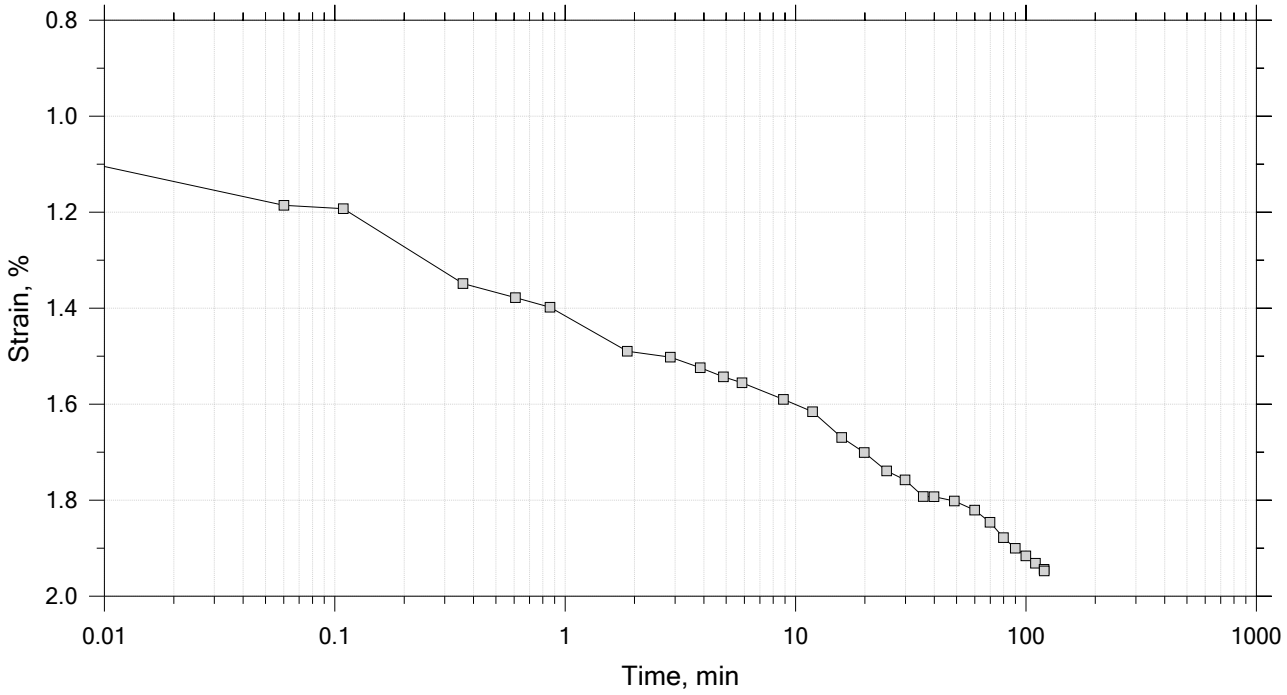
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

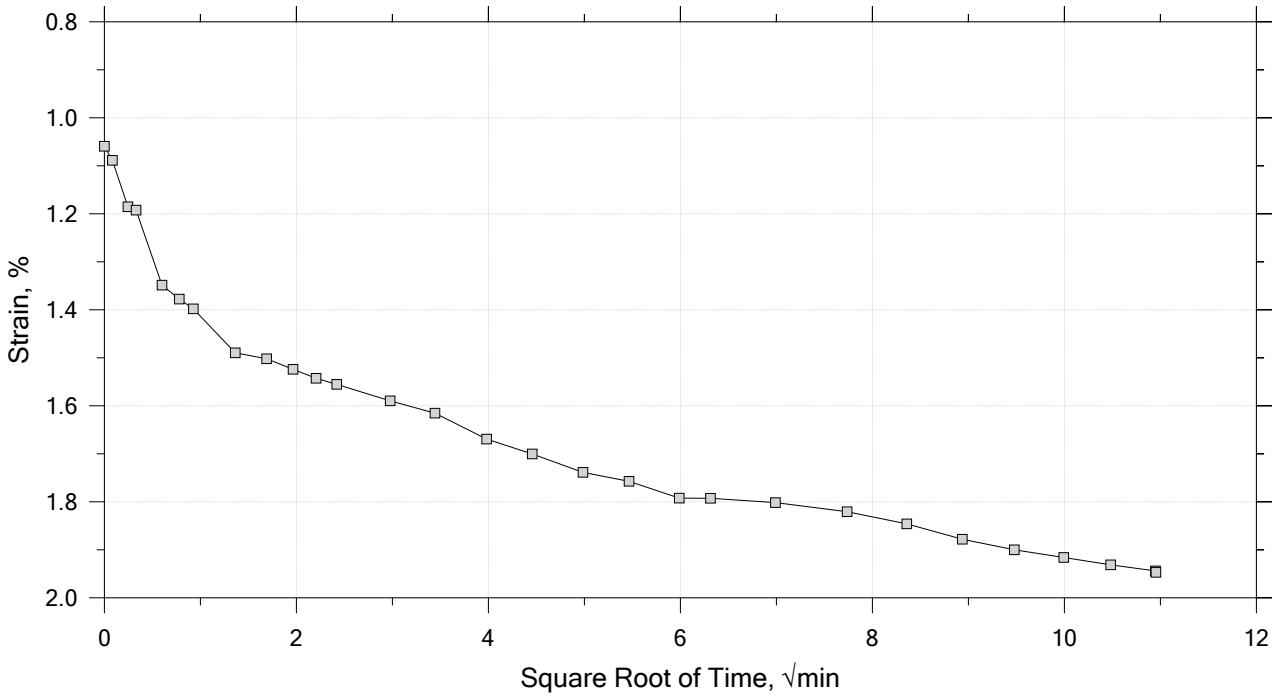
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 13

Constant Load Step

Stress: 1 tsf





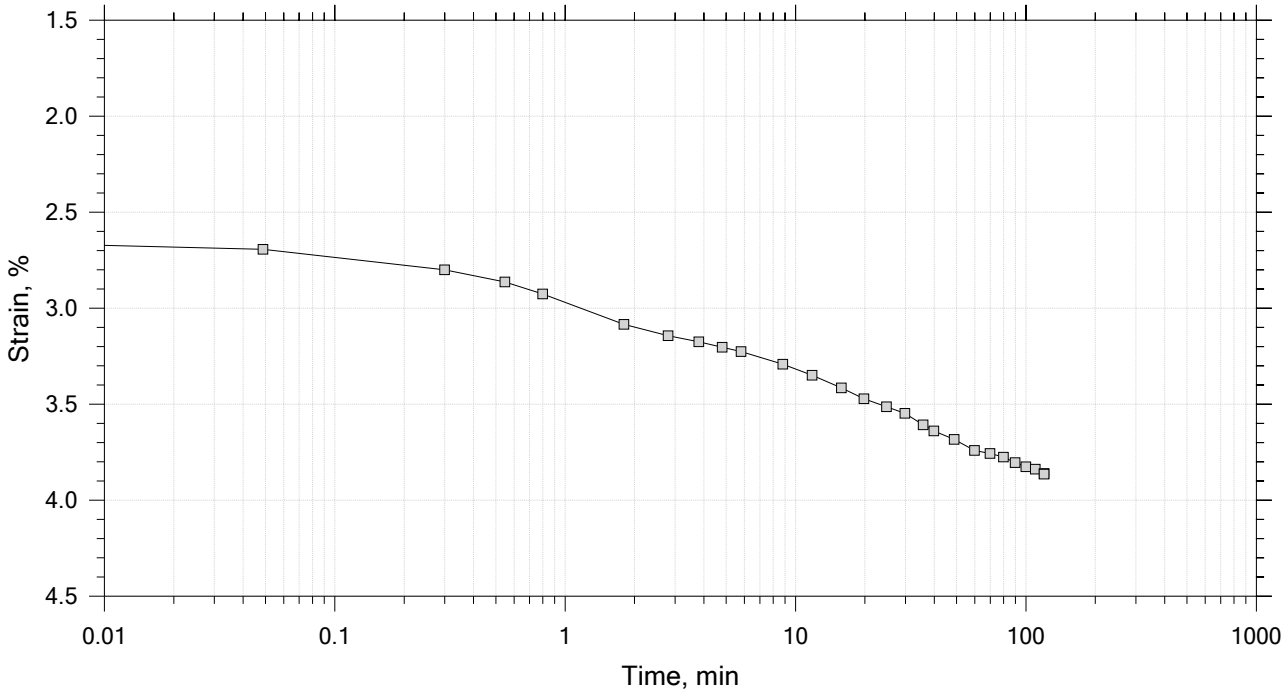
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

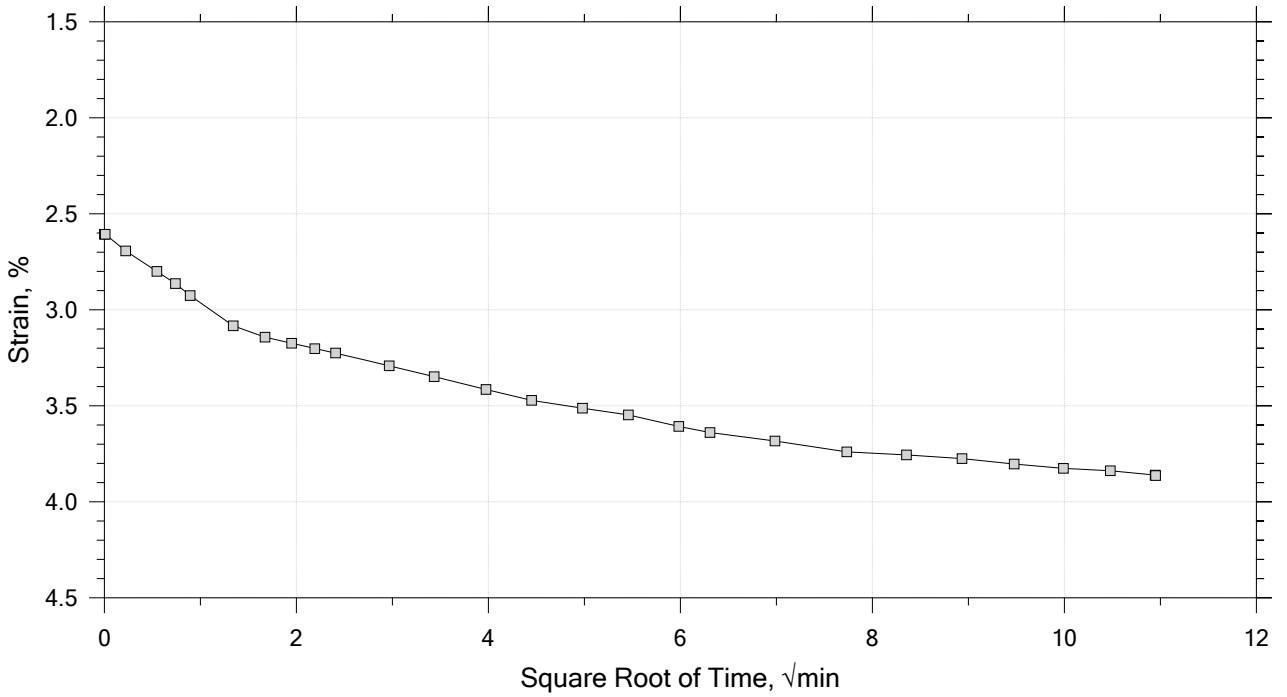
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 13

Constant Load Step

Stress: 2 tsf





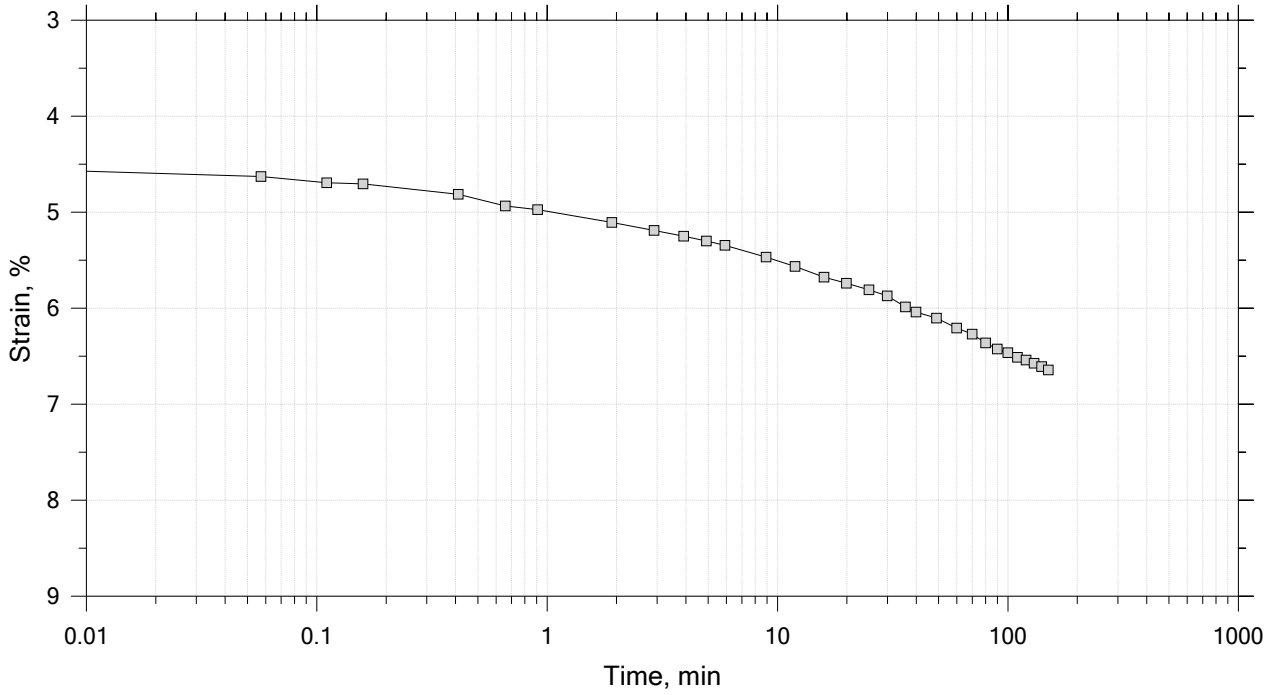
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

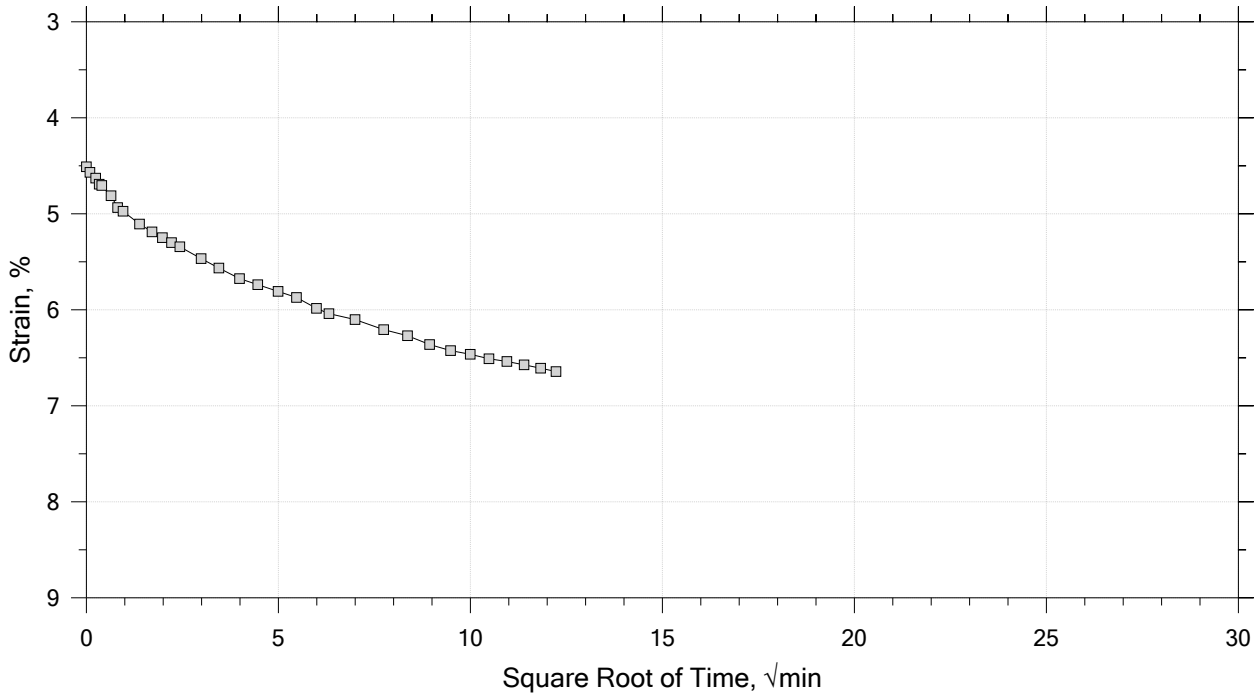
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 13

Constant Load Step

Stress: 4 tsf





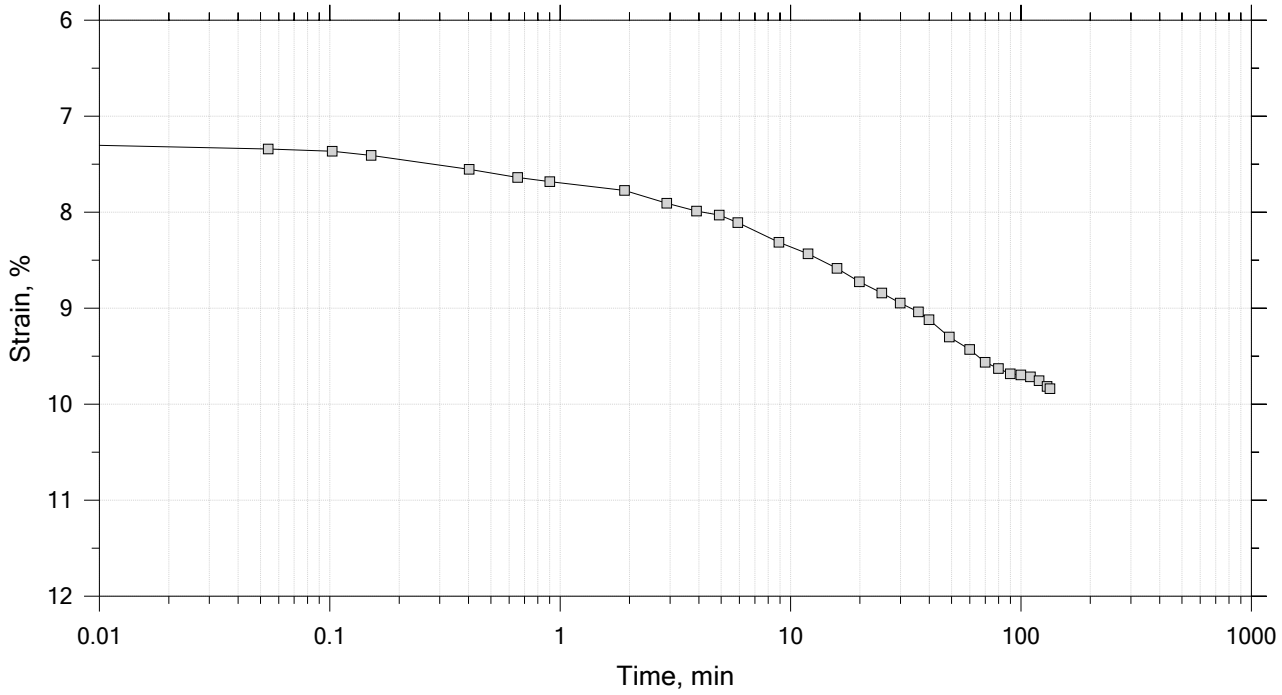
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

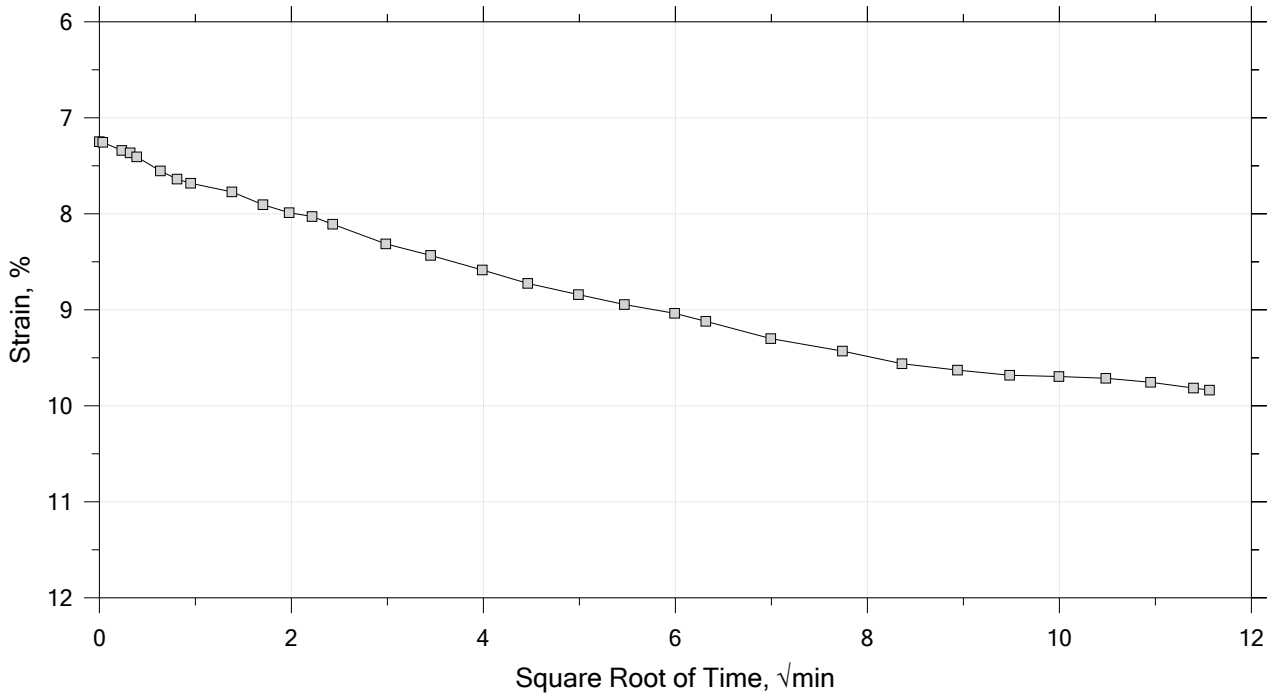
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 13

Constant Load Step

Stress: 8 tsf

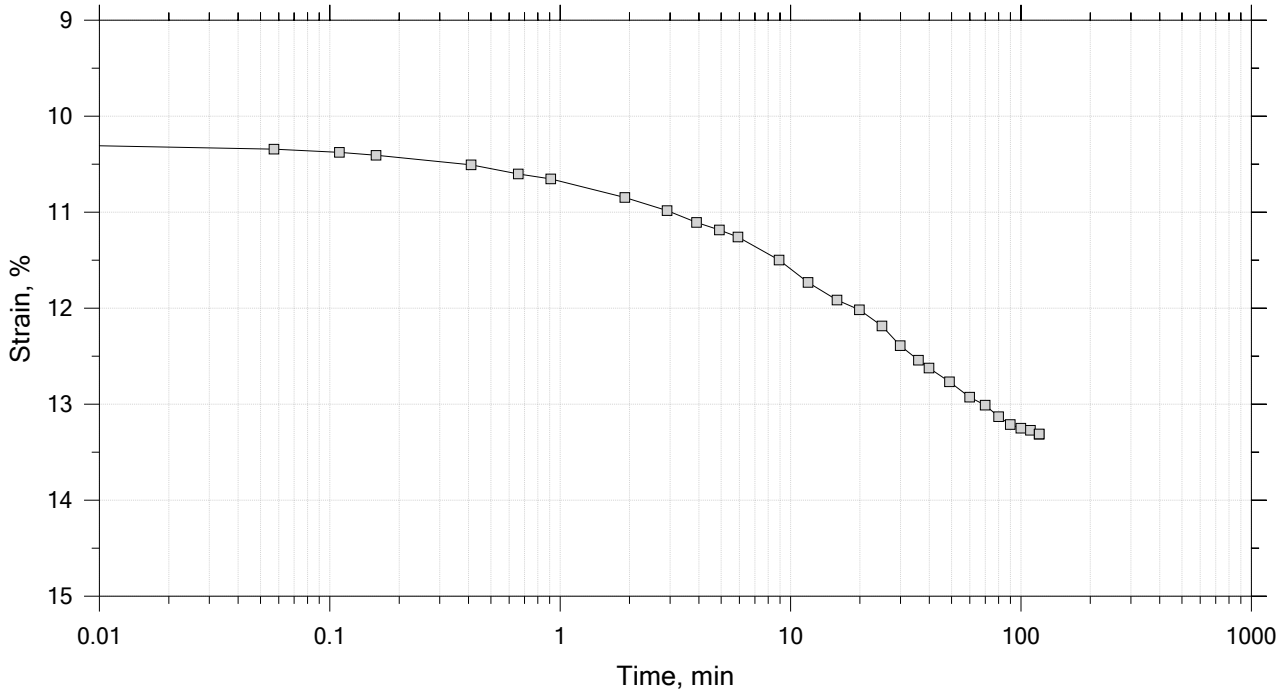


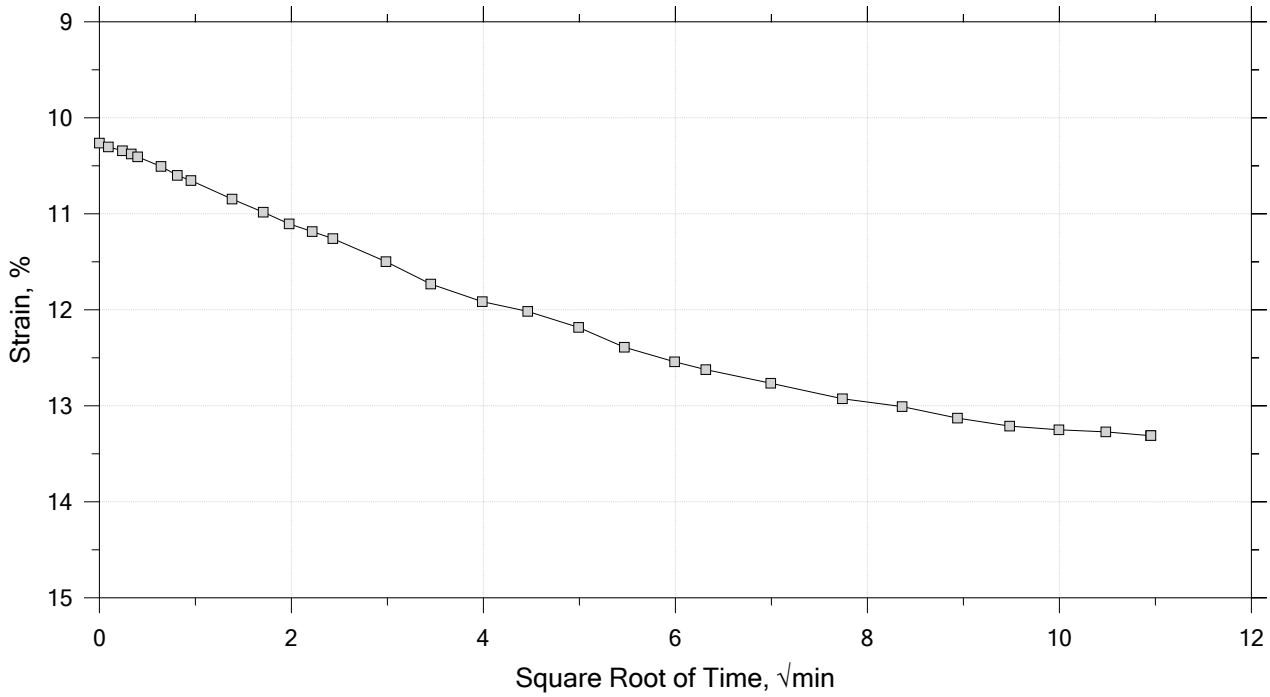


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 13
Constant Load Step
Stress: 16 tsf





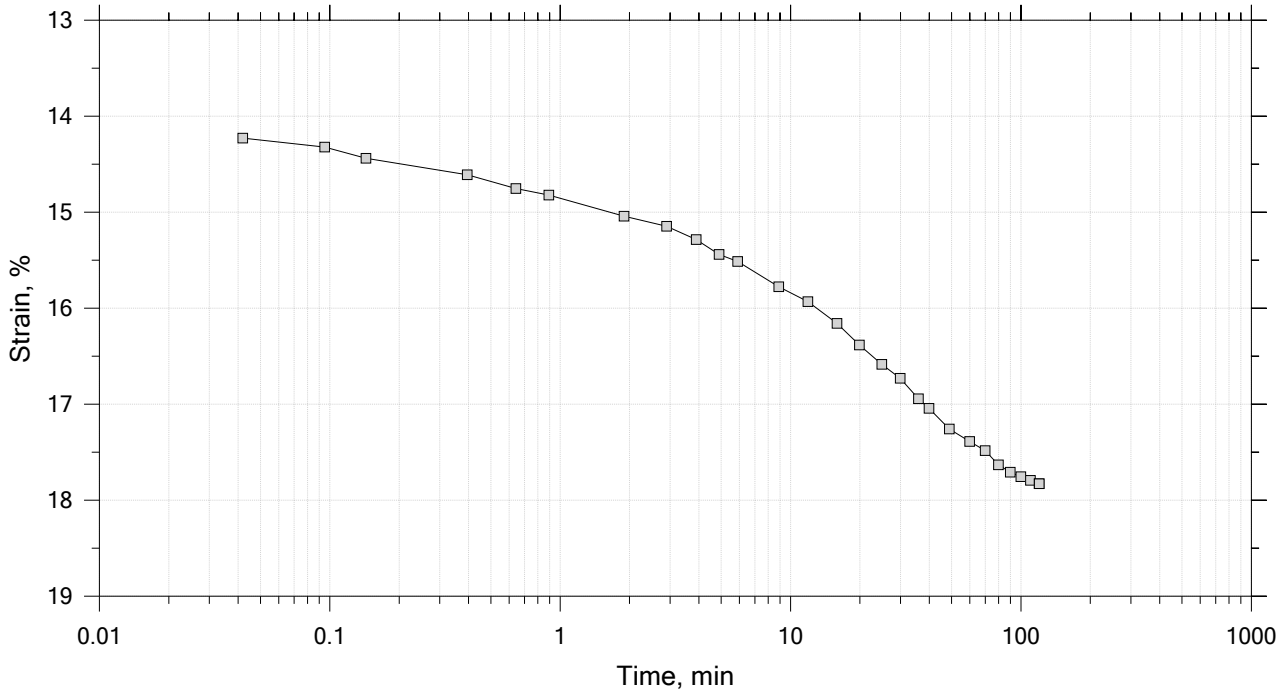
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

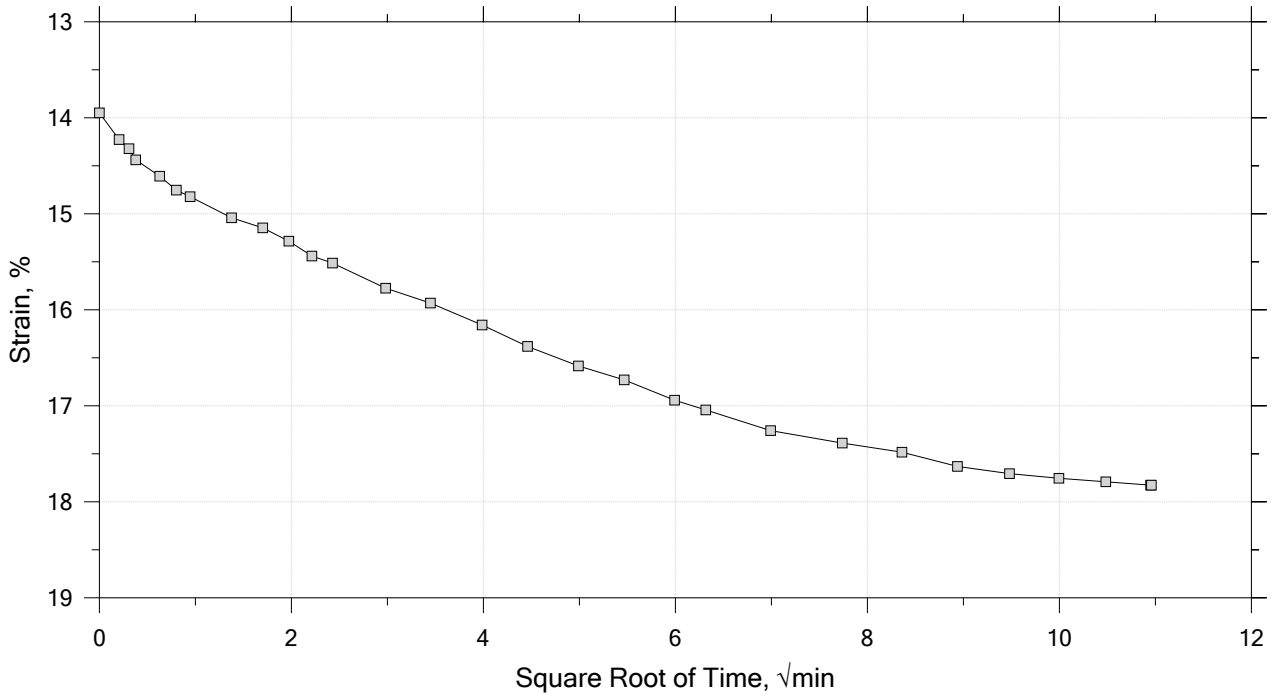
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 13

Constant Load Step

Stress: 32 tsf

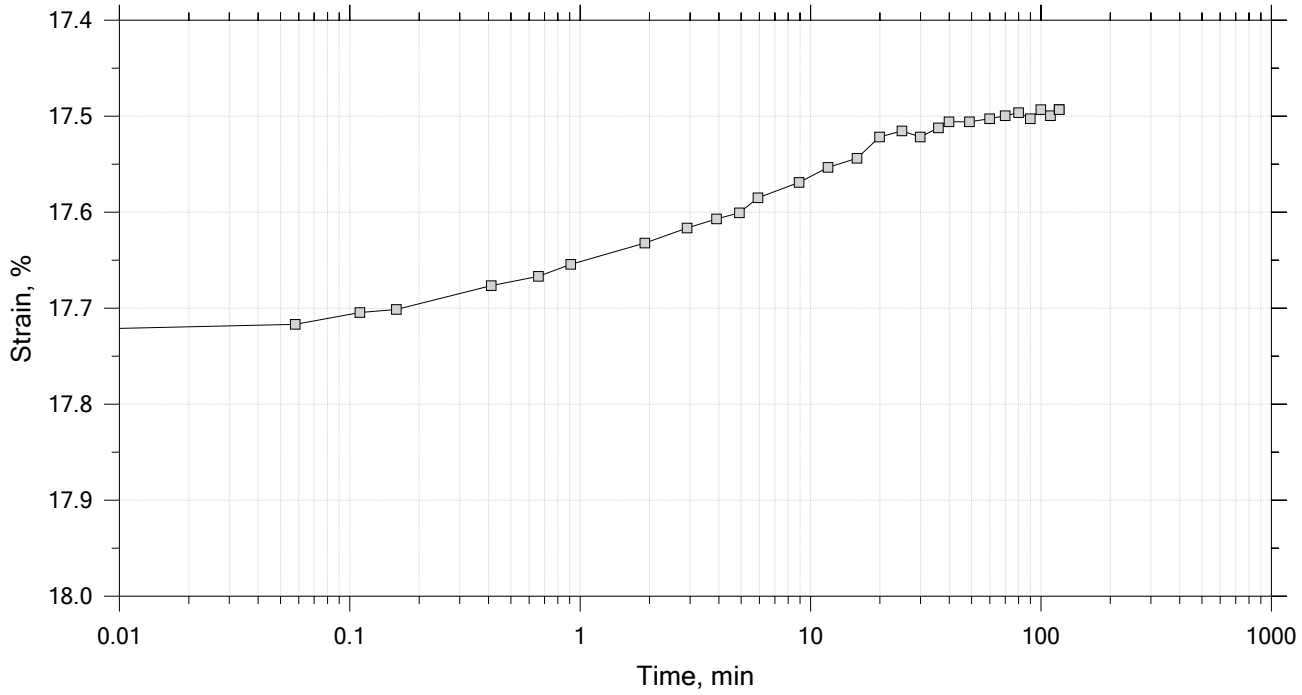


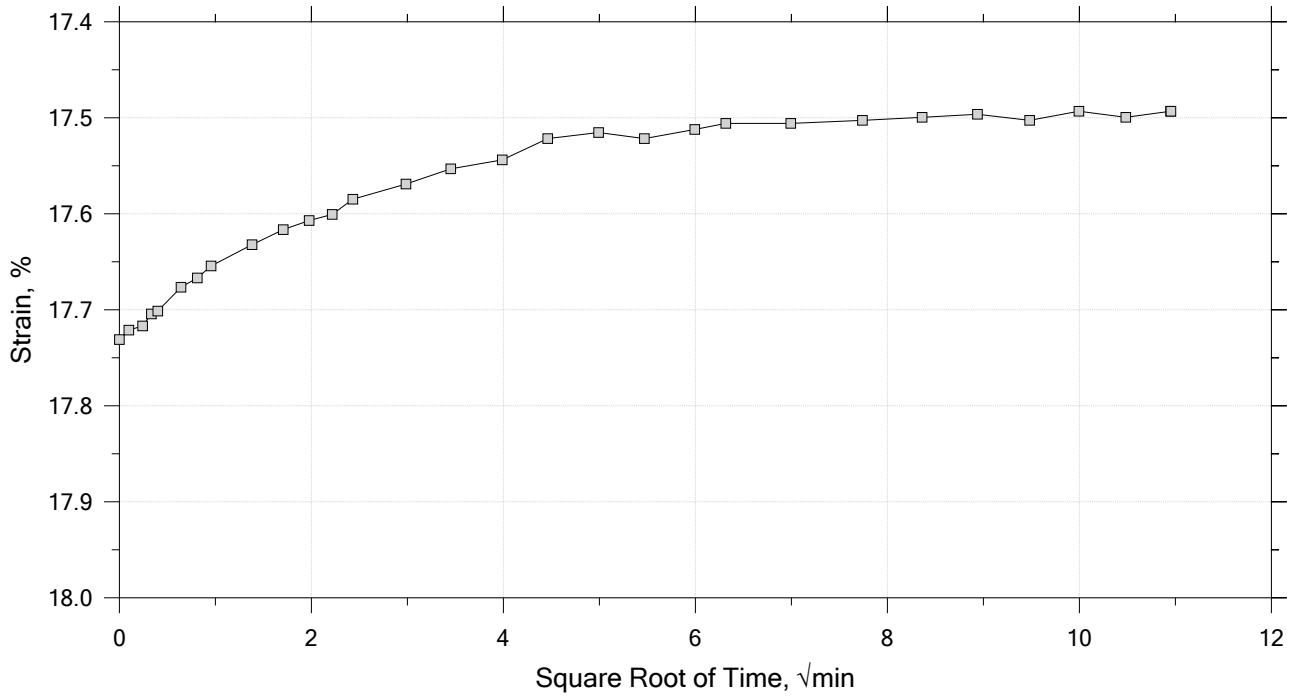


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 13
Constant Load Step
Stress: 16 tsf

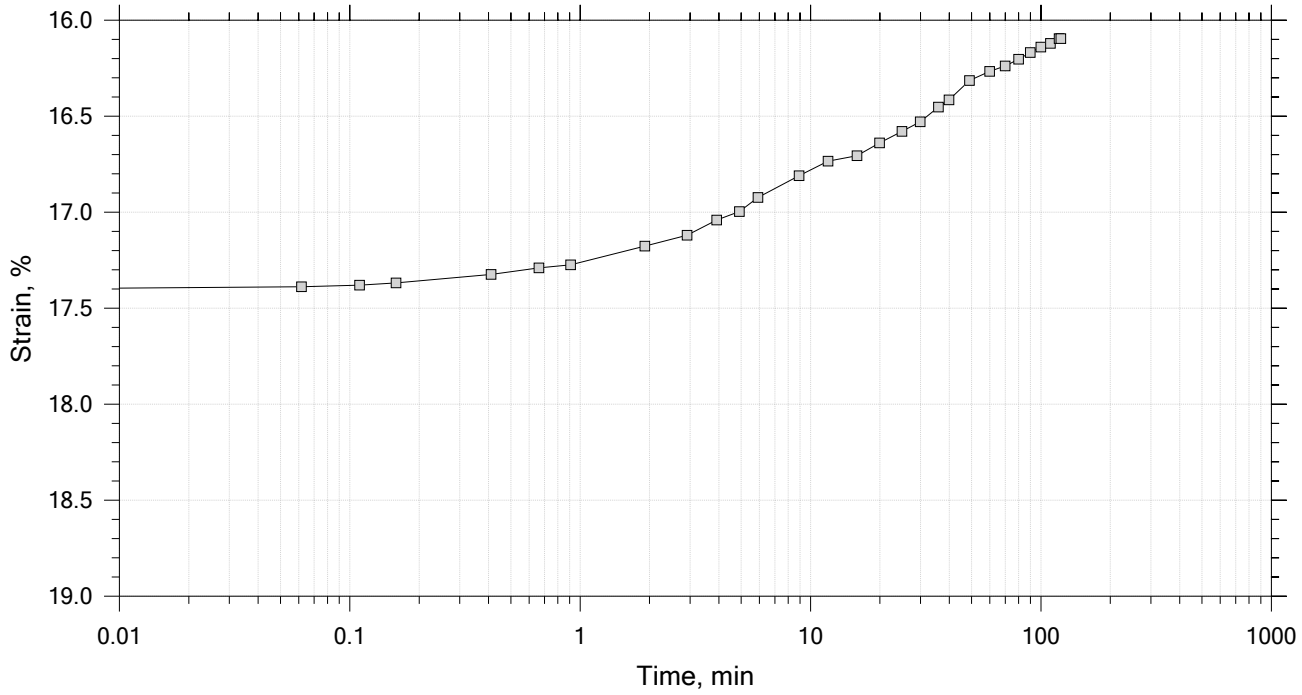


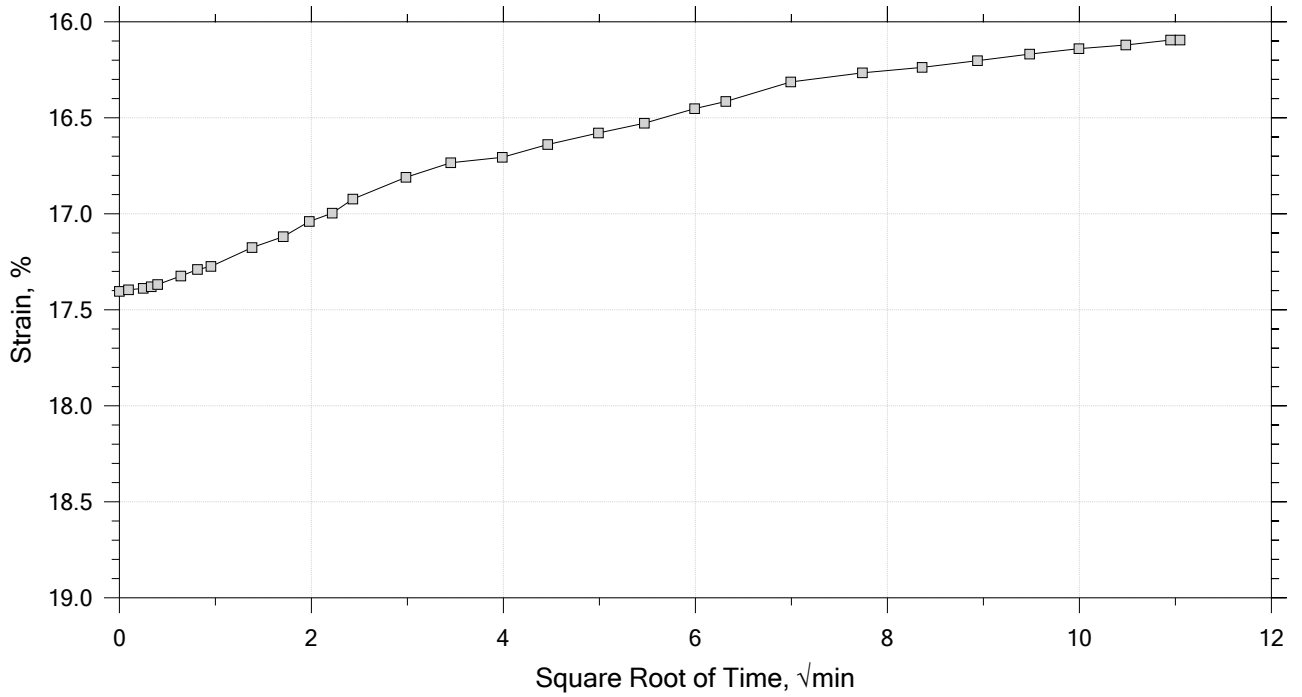


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 13
Constant Load Step
Stress: 4 tsf

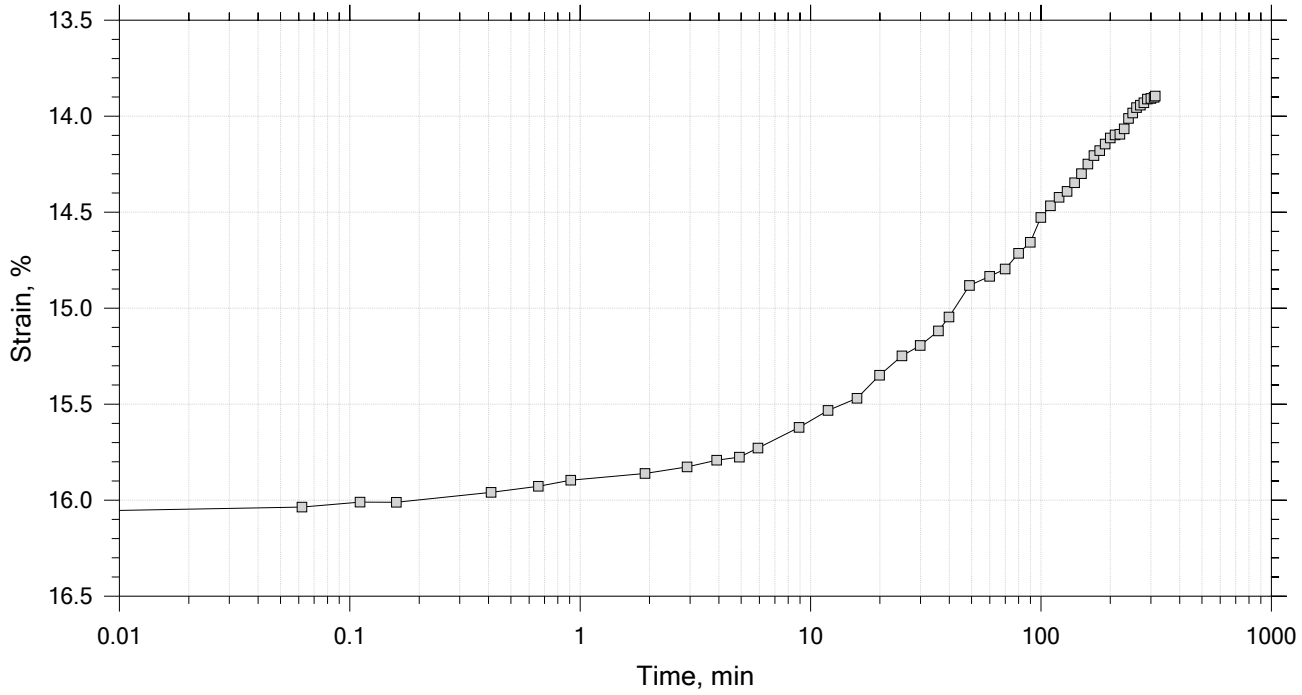


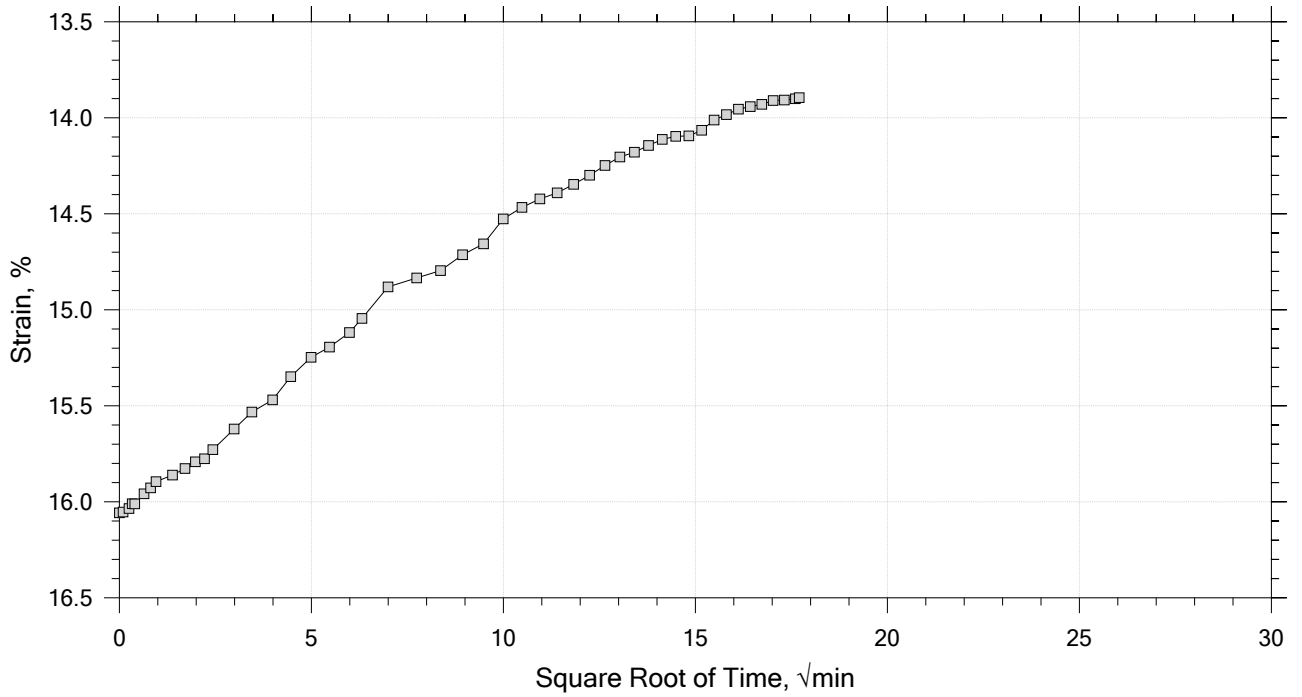


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 13
Constant Load Step
Stress: 1 tsf

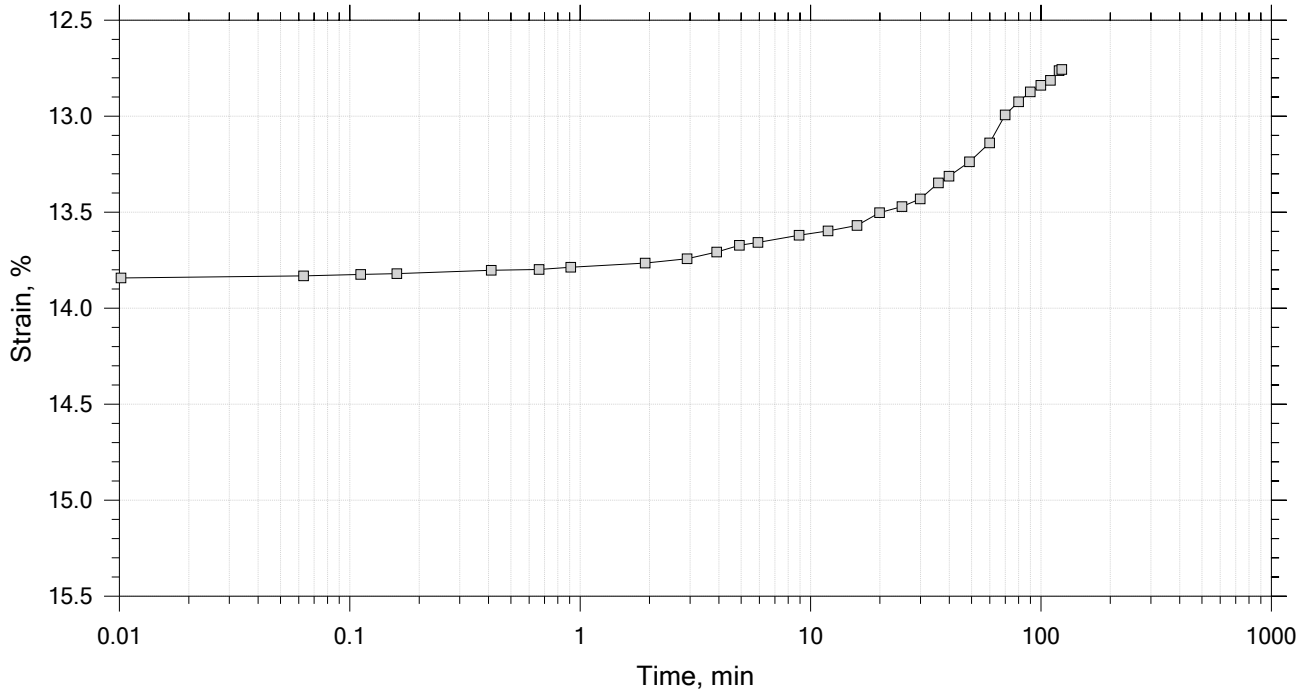


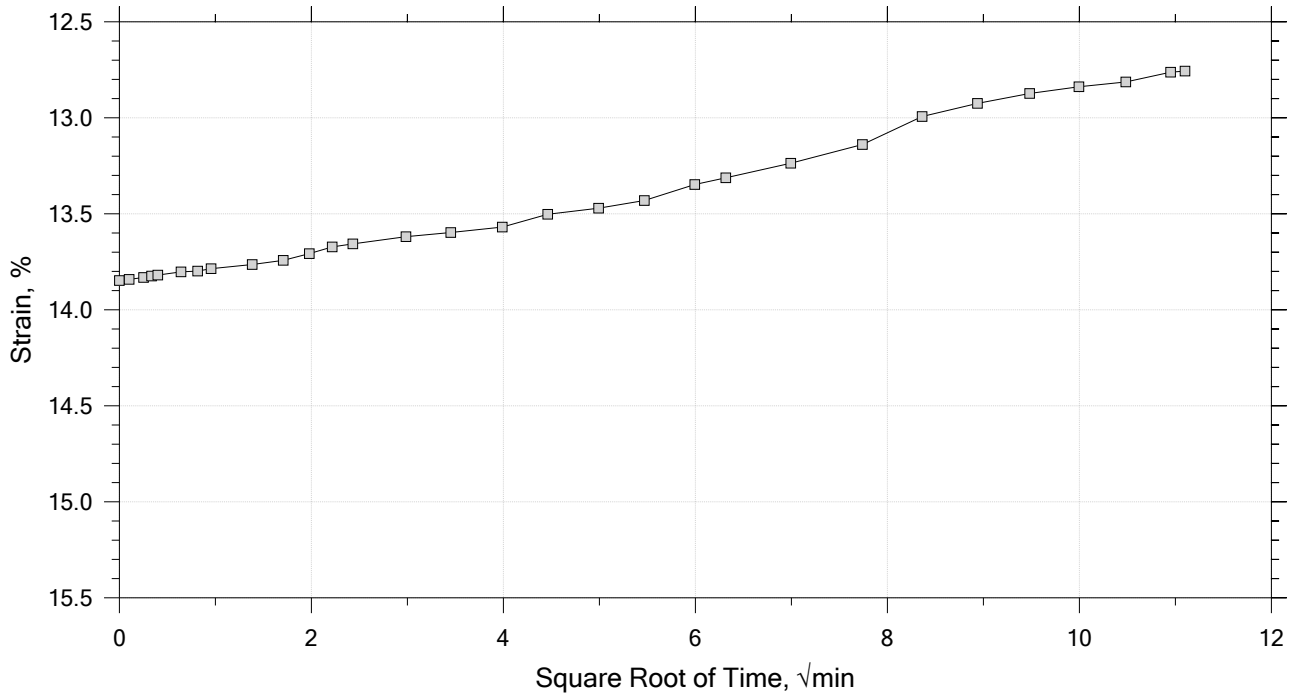


Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.4	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
Test No.: IP-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 13
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 26
Initial Height: 1.00 in	Initial Void Ratio: 0.654	Plastic Limit: 13
Final Height: 0.87 in	Final Void Ratio: 0.443	Plasticity Index: 13

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-1940	RING		E2532
Mass Container, gm	8.23	109.53	109.53	8.26
Mass Container + Wet Soil, gm	294.25	270.05	265.05	163.27
Mass Container + Dry Soil, gm	246.38	243.51	243.51	141.8
Mass Dry Soil, gm	238.15	133.98	133.98	133.54
Water Content, %	20.10	19.81	16.08	16.08
Void Ratio	---	0.65	0.44	---
Degree of Saturation, %	---	83.46	100.00	---
Dry Unit Weight, pcf	---	103.98	119.18	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.4	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
	Test No.: IP-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Log of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv in²/s	Mv 1/tsf	k ft/day	Ca %
1	0.133	0.001291	0.652	0.129	0.000	0.00e+00	9.69e-03	0.00e+00	0.00e+00
2	0.250	0.002438	0.650	0.244	0.000	0.00e+00	9.82e-03	0.00e+00	0.00e+00
3	0.500	0.008340	0.640	0.834	0.000	0.00e+00	2.36e-02	0.00e+00	0.00e+00
4	1.00	0.01947	0.622	1.95	0.000	0.00e+00	2.23e-02	0.00e+00	0.00e+00
5	2.00	0.03864	0.590	3.86	0.000	0.00e+00	1.92e-02	0.00e+00	0.00e+00
6	4.00	0.06643	0.544	6.64	0.000	0.00e+00	1.39e-02	0.00e+00	0.00e+00
7	8.00	0.09838	0.491	9.84	0.000	0.00e+00	7.99e-03	0.00e+00	0.00e+00
8	16.0	0.1331	0.434	13.3	0.000	0.00e+00	4.34e-03	0.00e+00	0.00e+00
9	32.0	0.1783	0.359	17.8	0.000	0.00e+00	2.82e-03	0.00e+00	0.00e+00
10	16.0	0.1749	0.365	17.5	0.000	0.00e+00	2.09e-04	0.00e+00	0.00e+00
11	4.00	0.1610	0.388	16.1	0.000	0.00e+00	1.16e-03	0.00e+00	0.00e+00
12	1.00	0.1389	0.424	13.9	46.602	1.27e-05	7.33e-03	1.75e-06	0.00e+00
13	0.250	0.1276	0.443	12.8	0.000	0.00e+00	1.52e-02	0.00e+00	0.00e+00

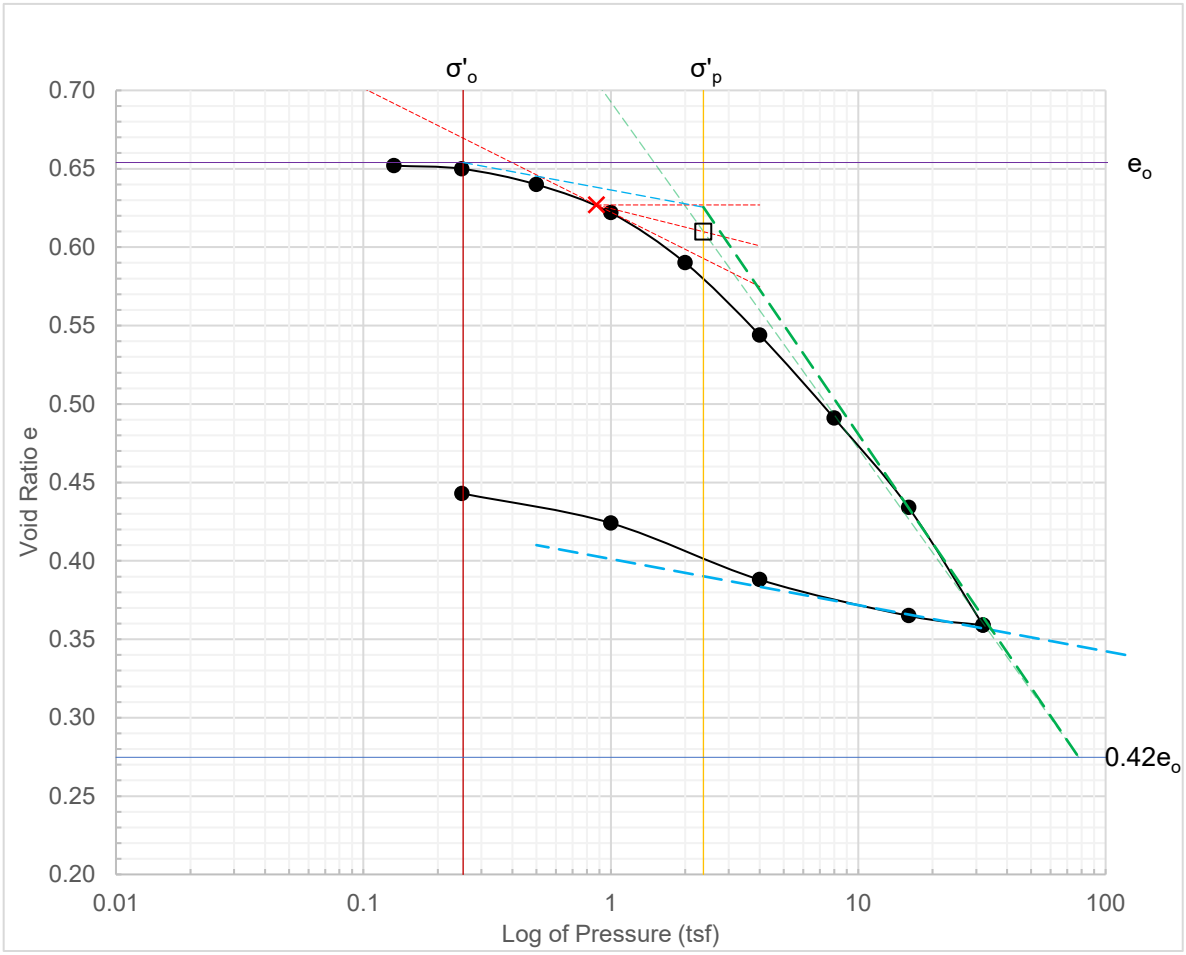
GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.4	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 4.1-4.3
Test No.: IP-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-J, Swell Pressure = 0.133 tsf		
Displacement at End of Increment		

Boring: B-4.4

Depth: 4.1'-4.3'

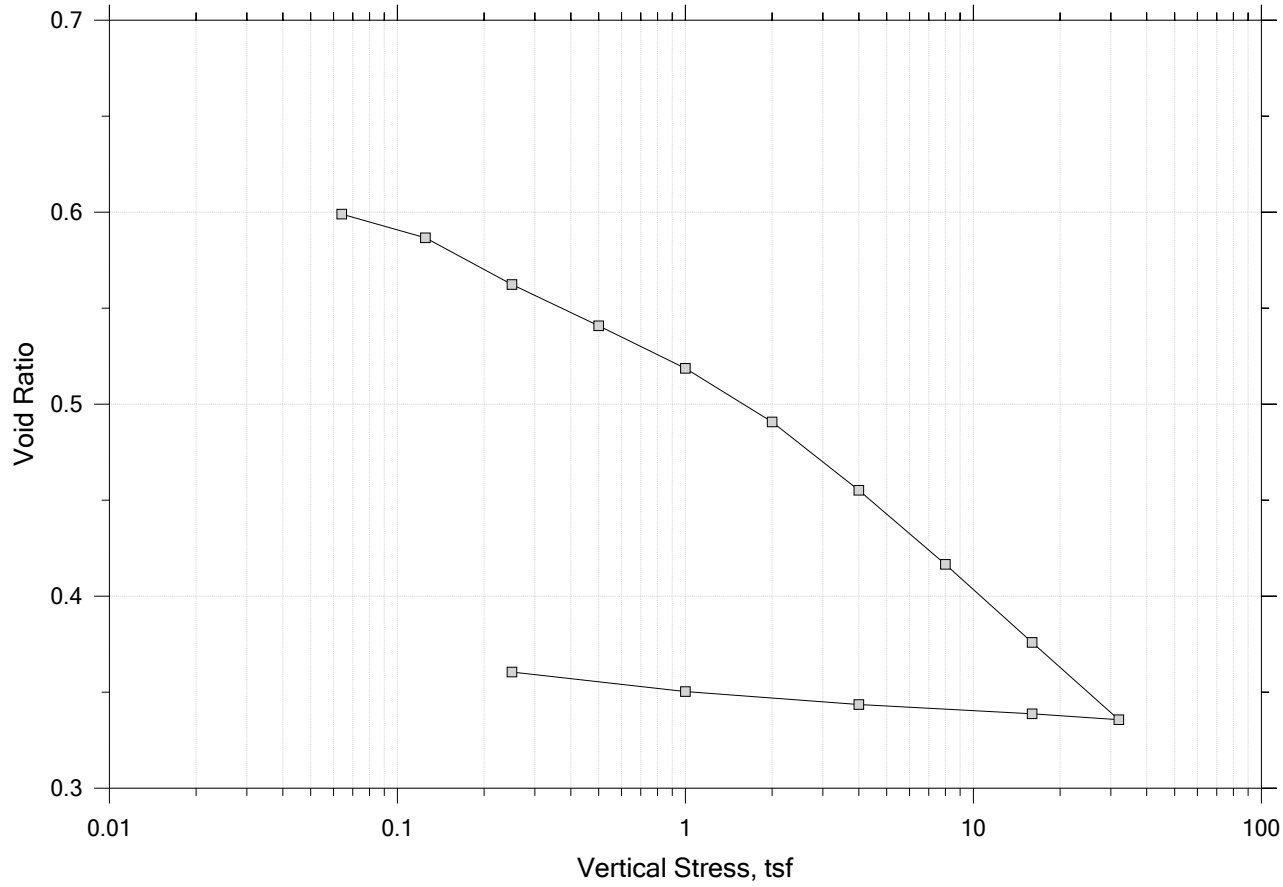
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.25
Preconsolidation Pressure, σ'_p (tsf) = 2.37
Compression Index, C_c = 0.23
Recompression Index, C_r = 0.0029

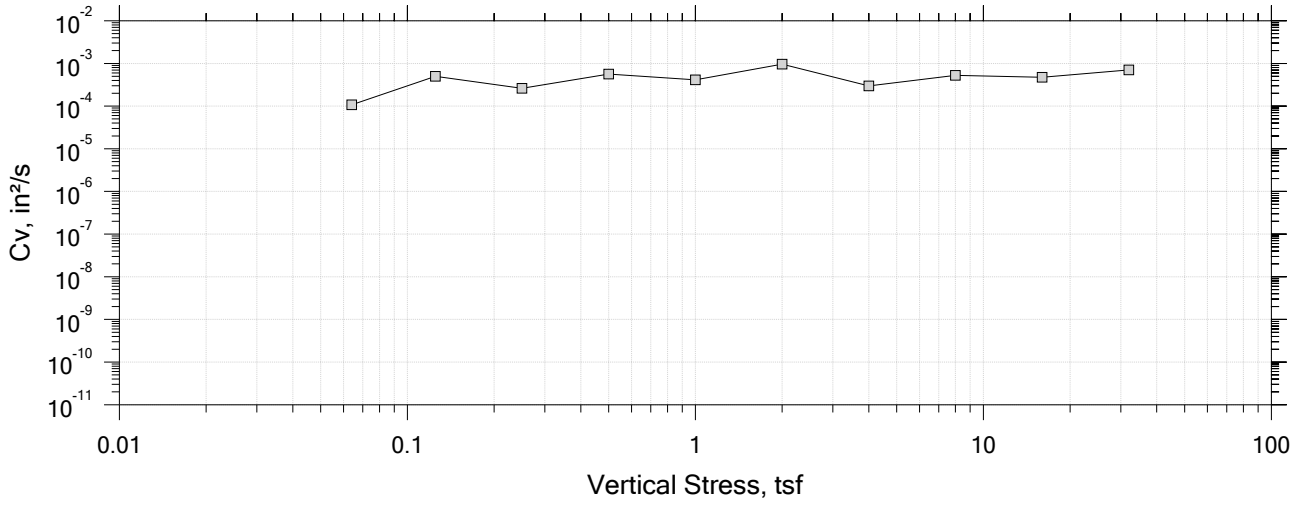


Compression Index Line (Uncorrected)
Compression Index Line (Corrected)
Recompression Index Line
Apparent Point of Maximum Curvature
Preconsolidation Pressure

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

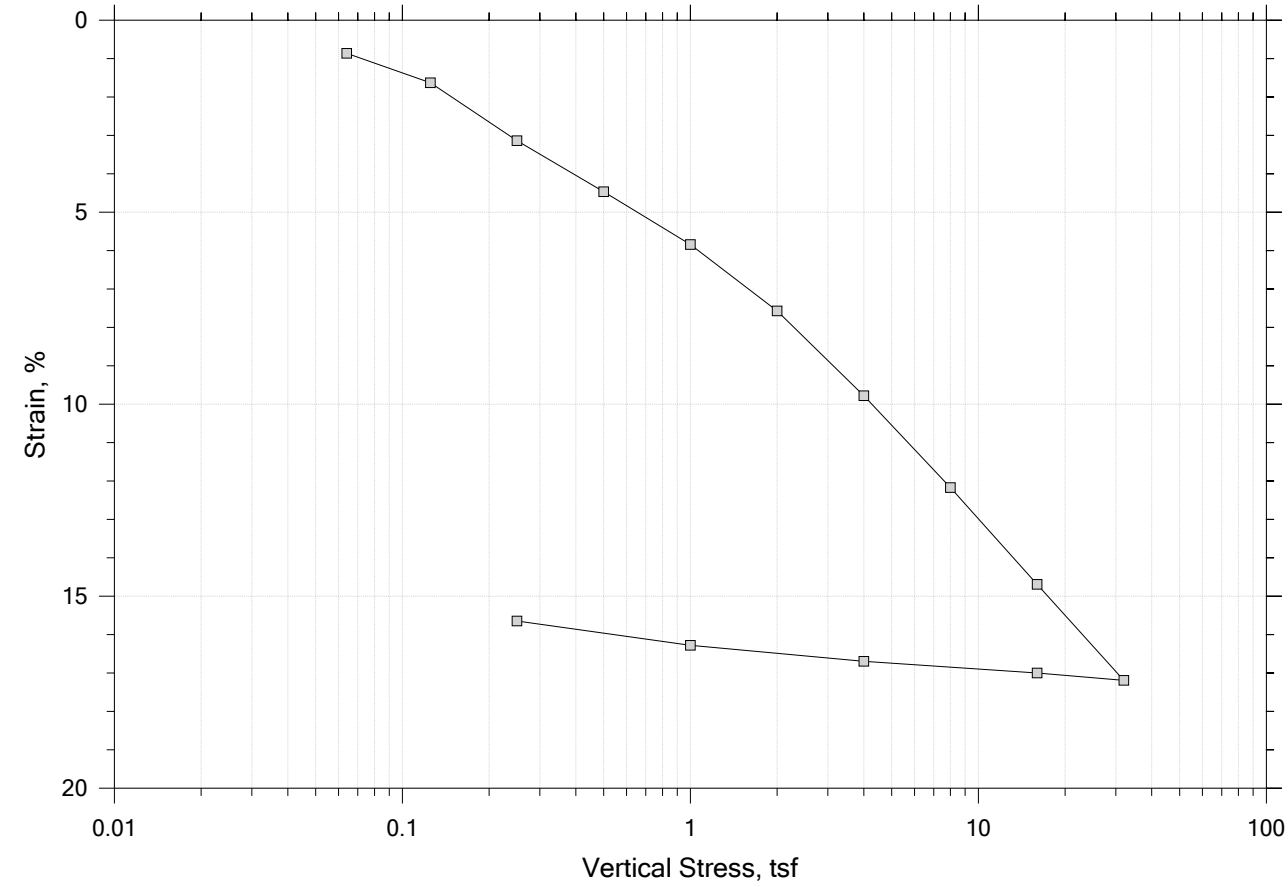


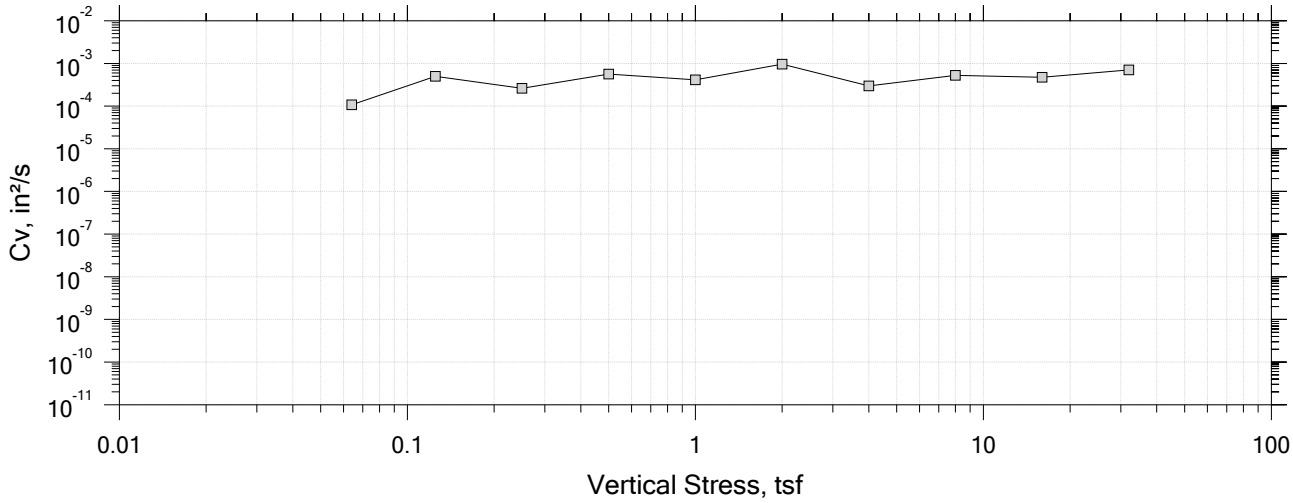


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

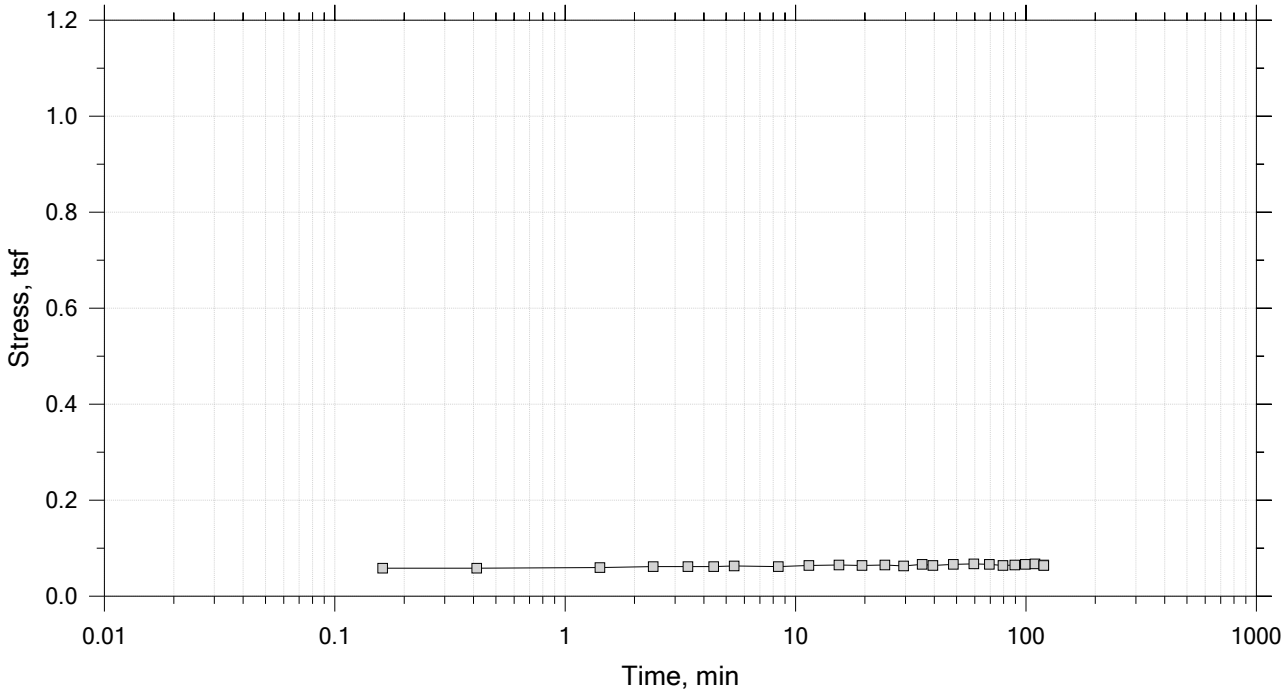


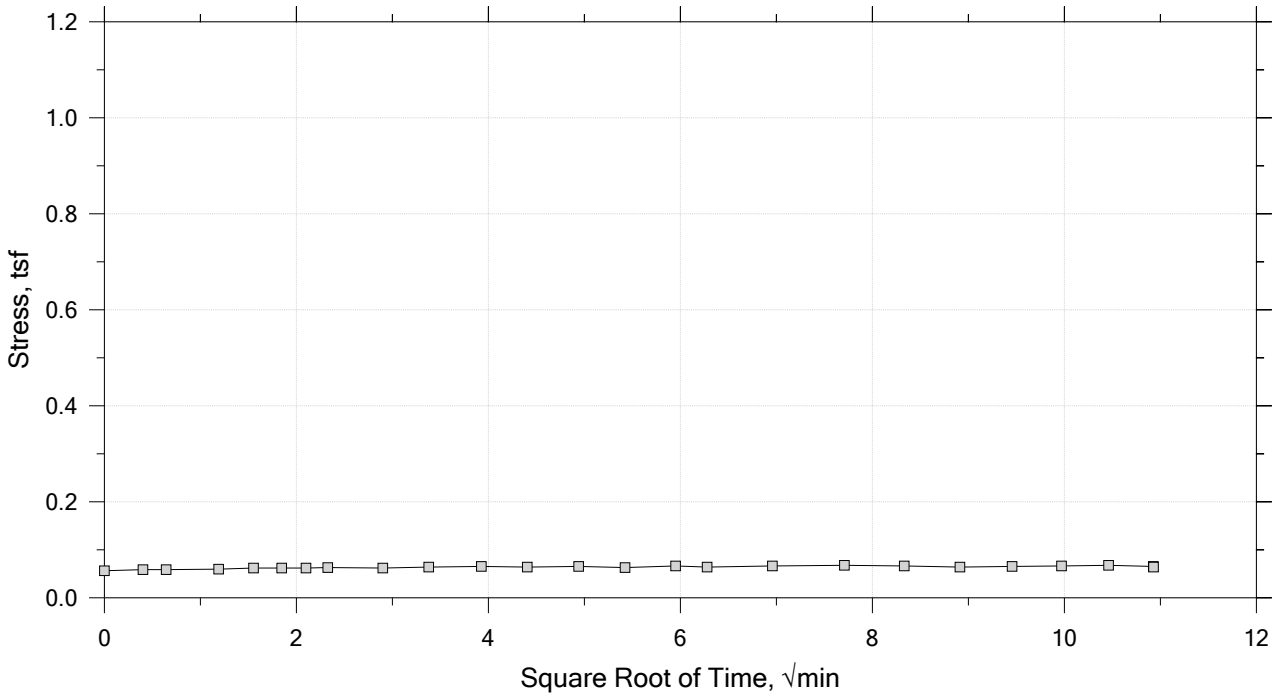


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0641 tsf

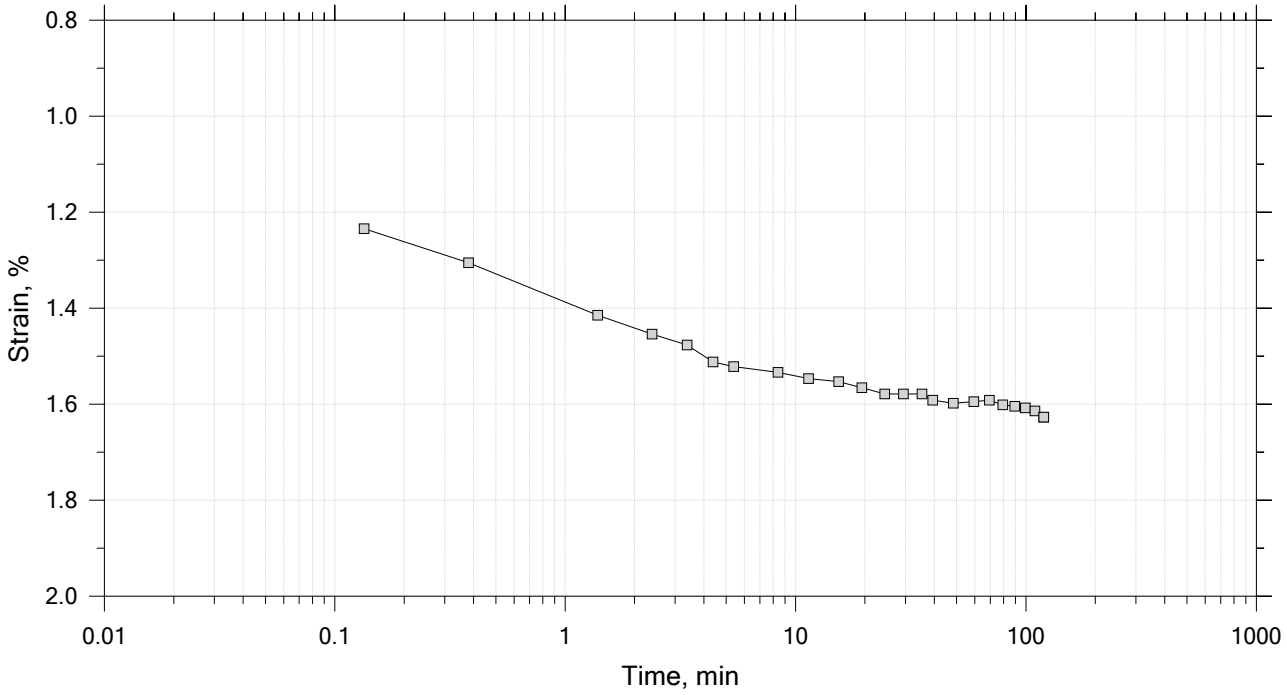


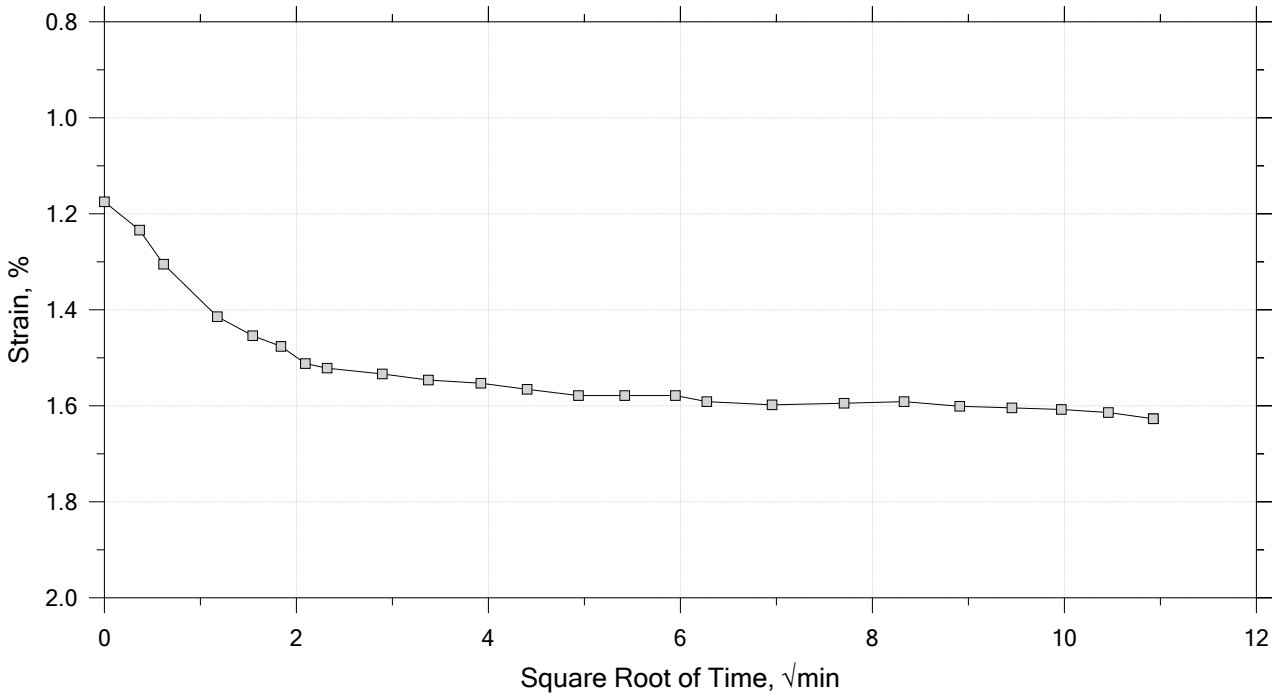


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





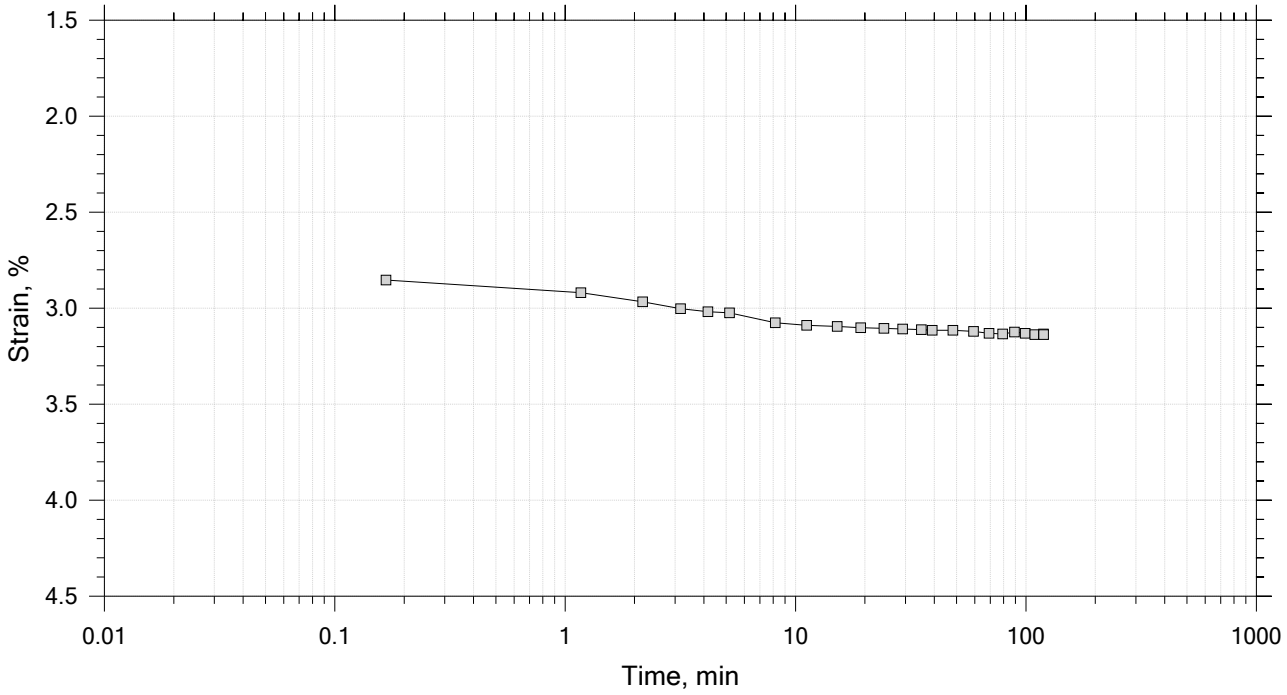
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

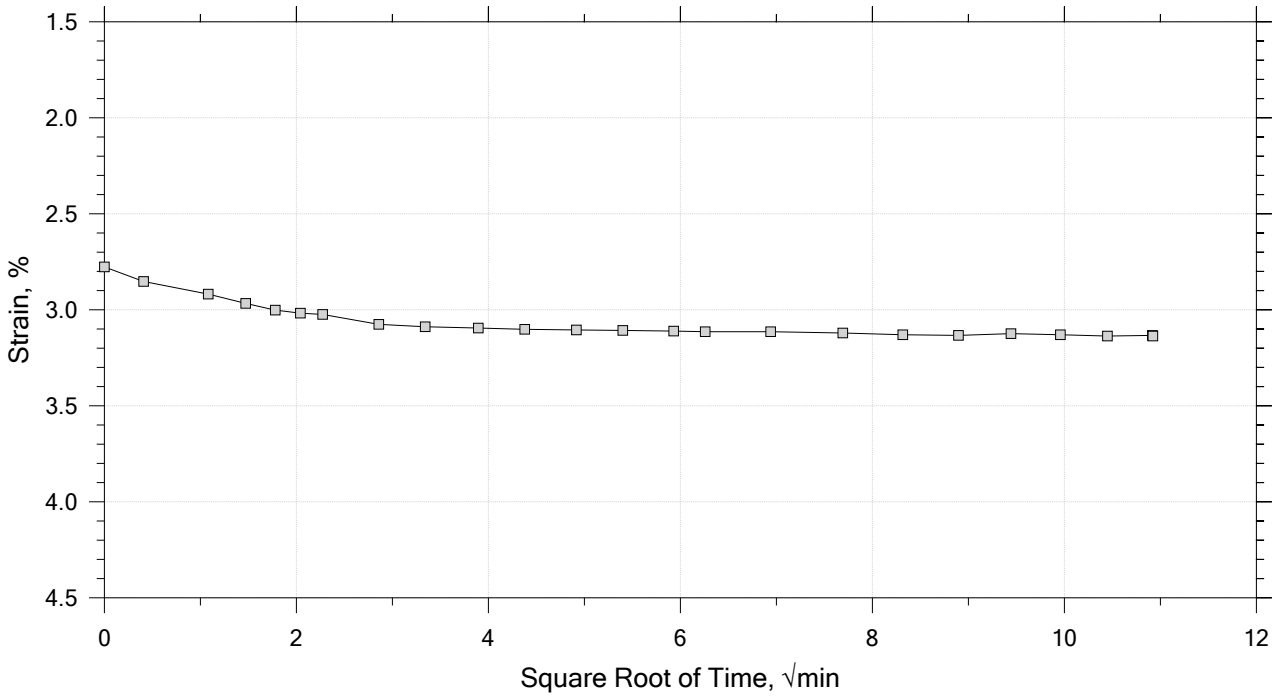
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf

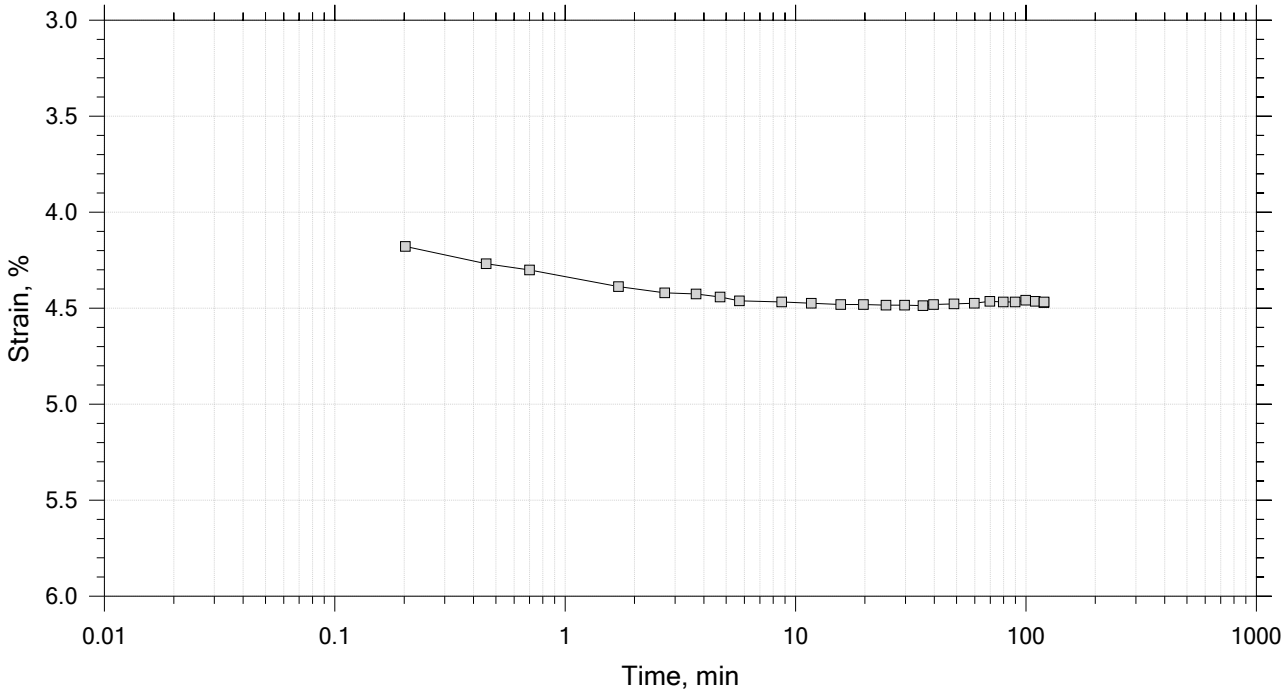


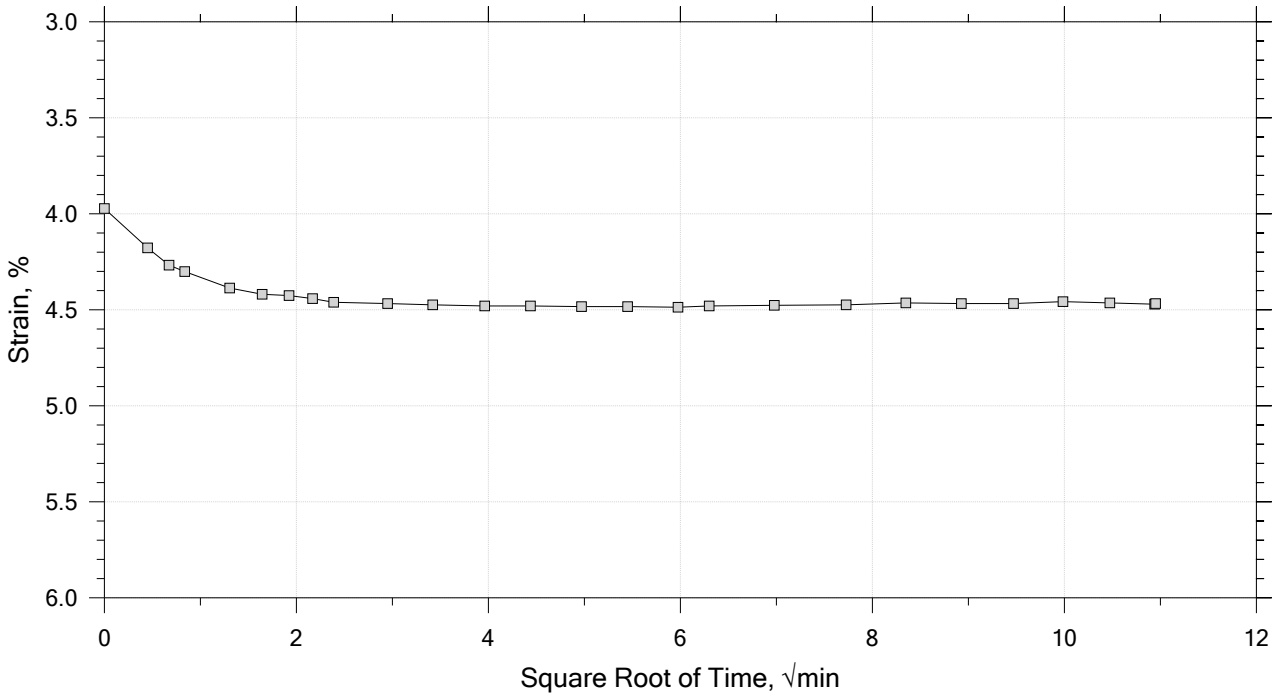


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.6	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
Test No.: IP-4	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





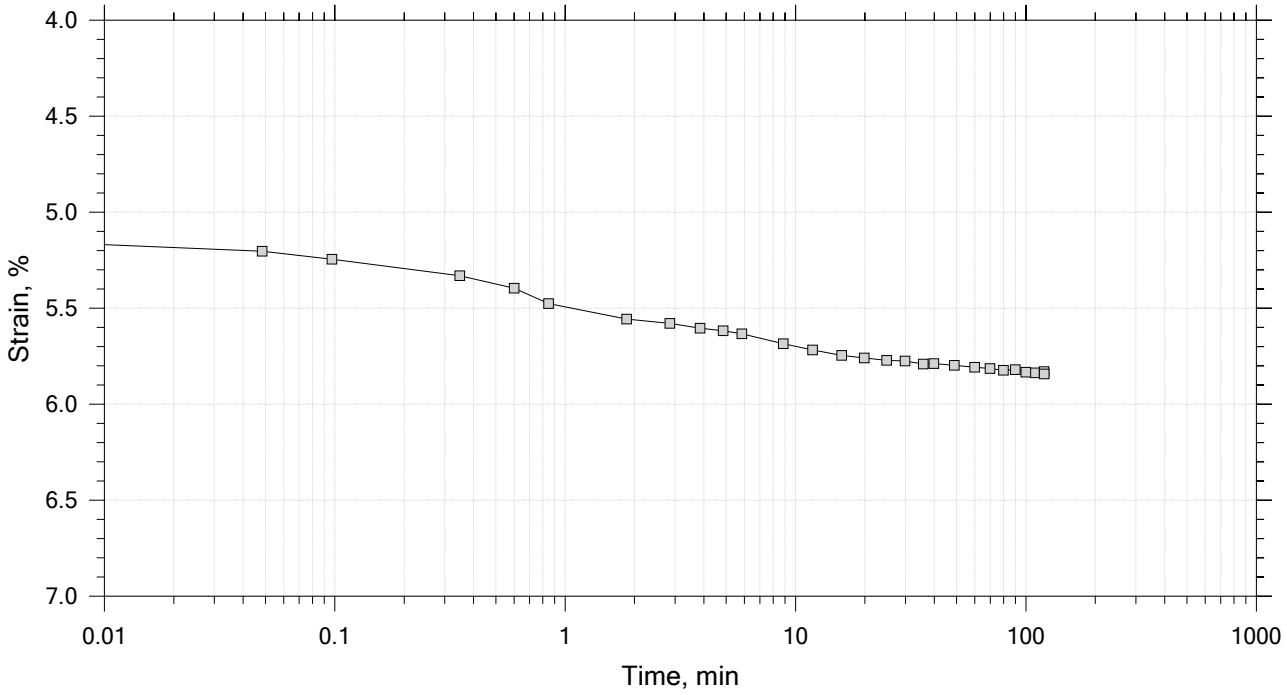
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

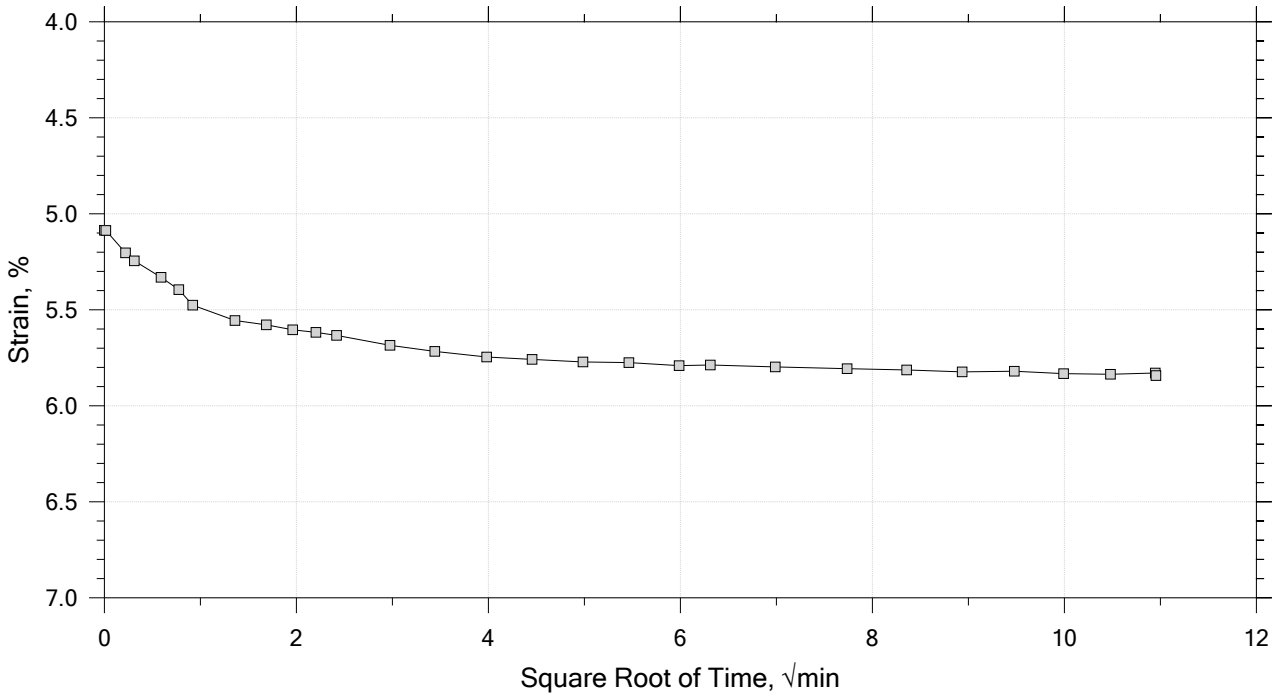
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





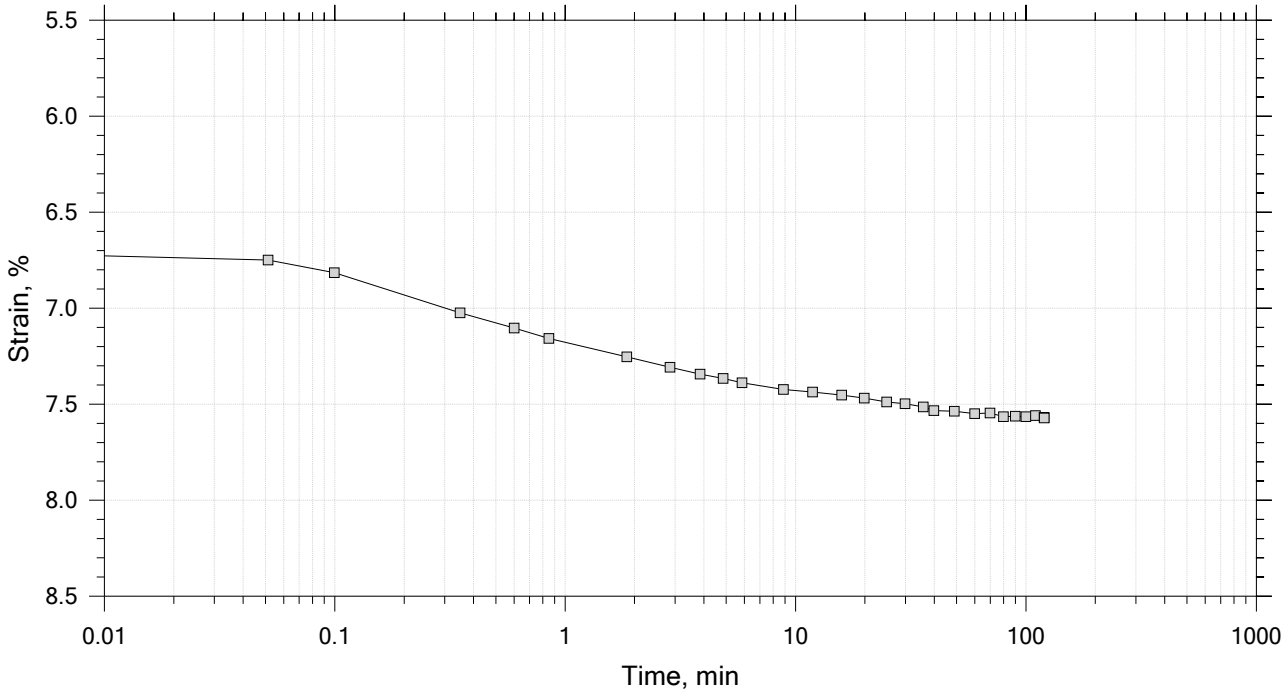
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

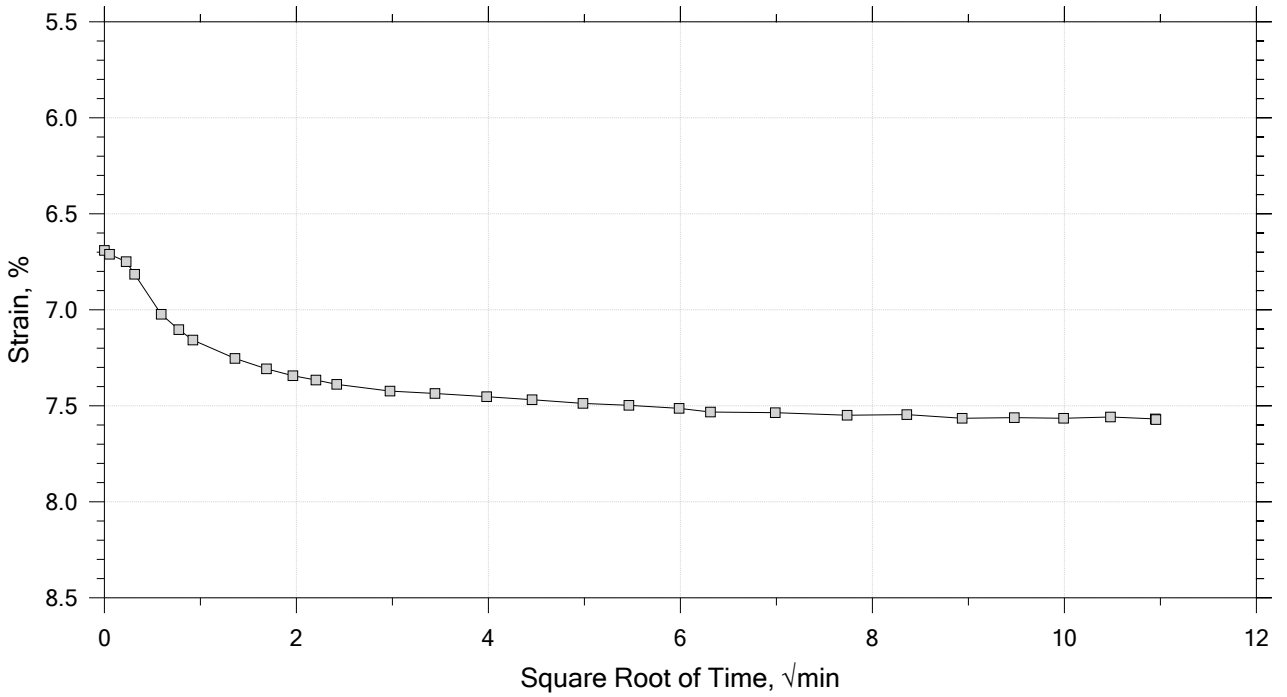
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





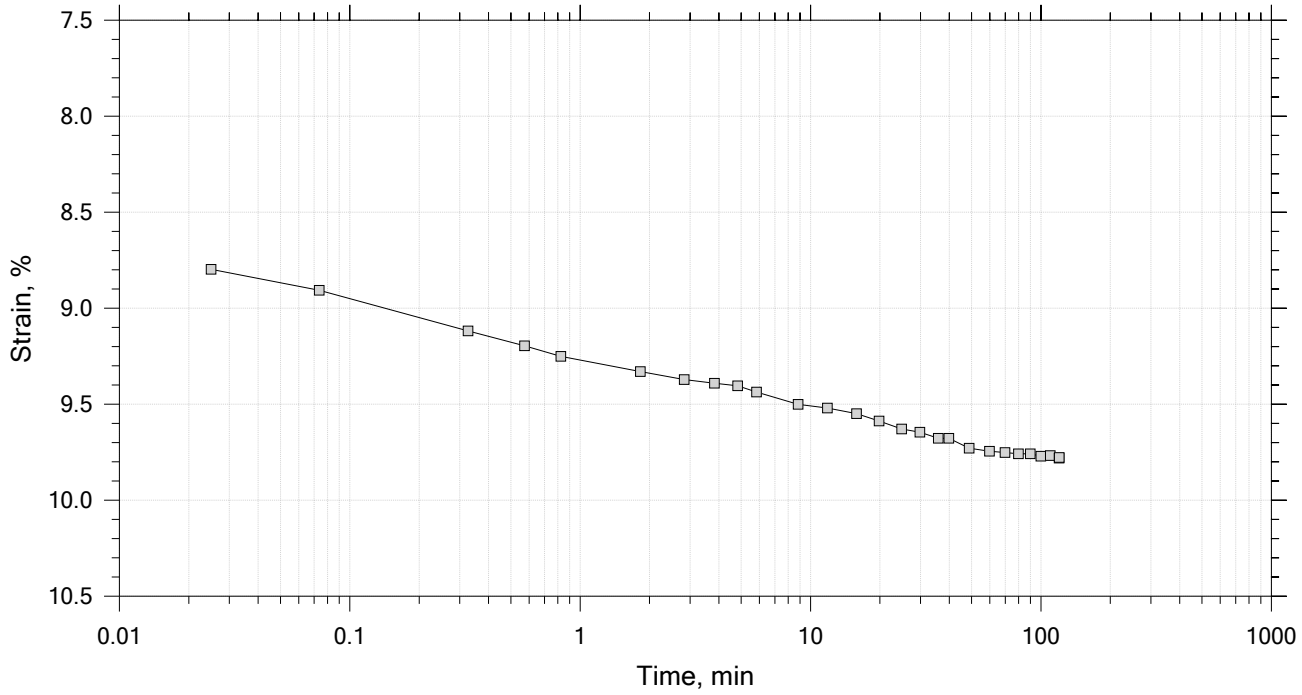
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.6	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
Test No.: IP-4	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

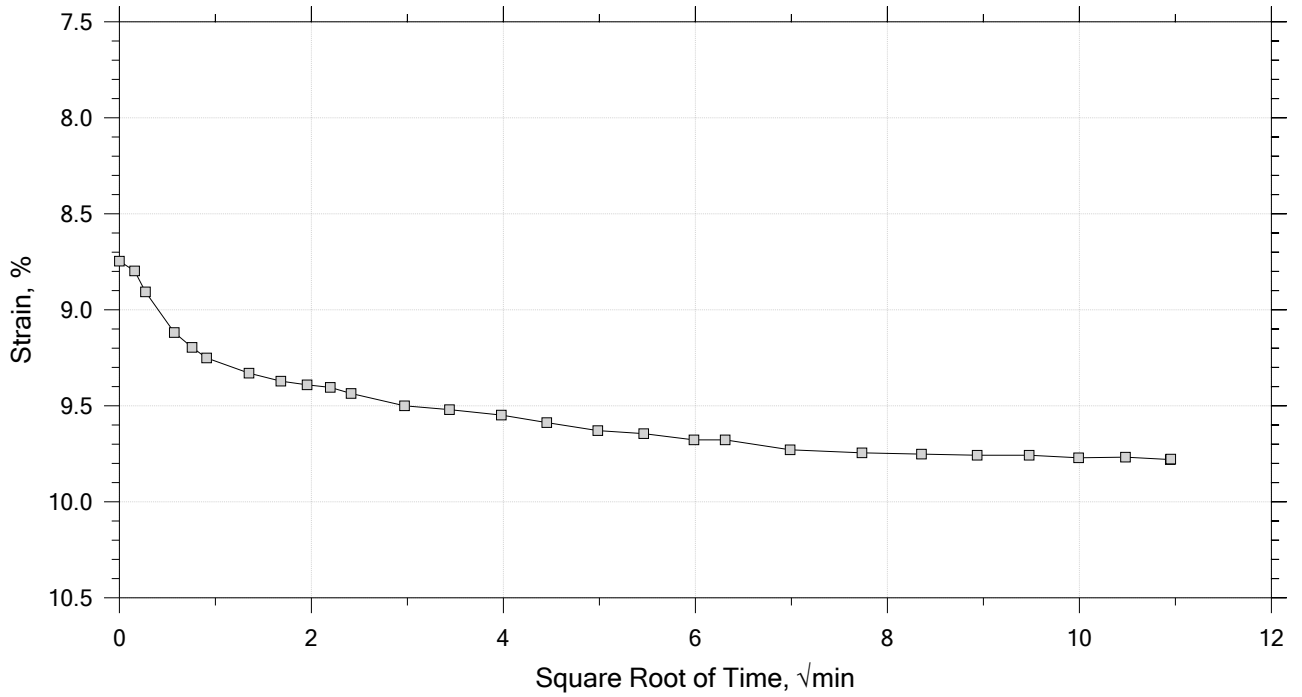
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





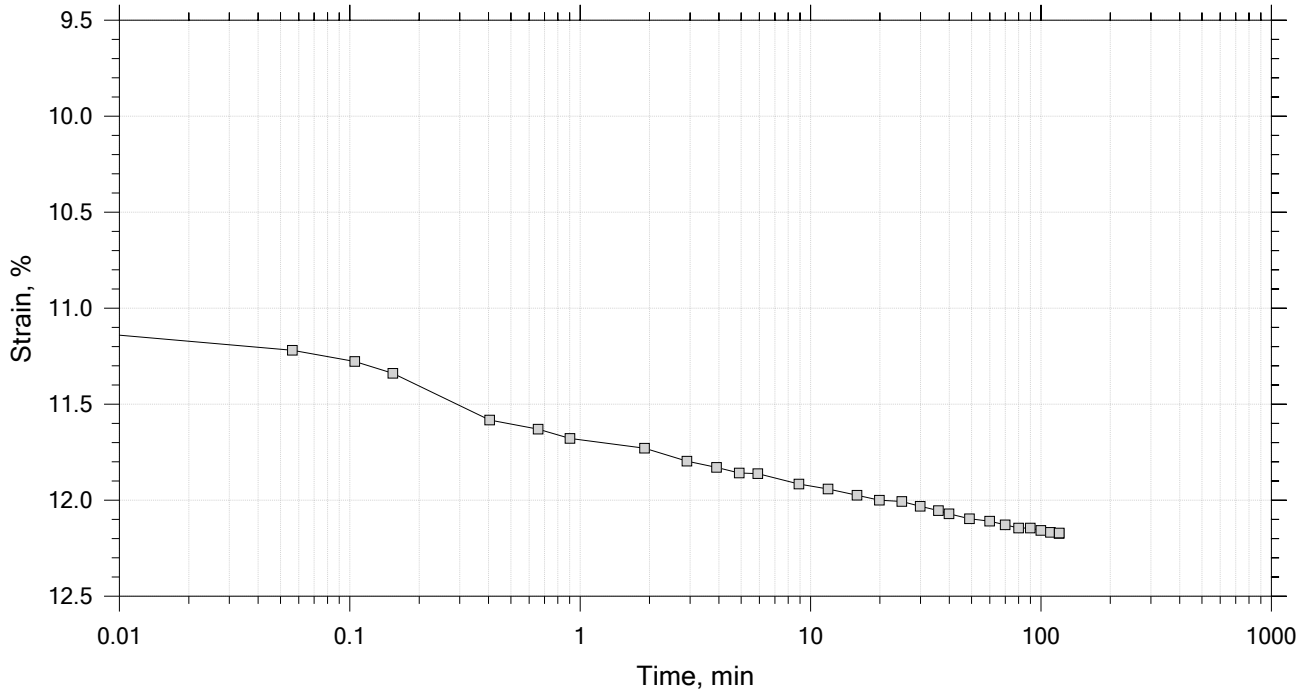
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

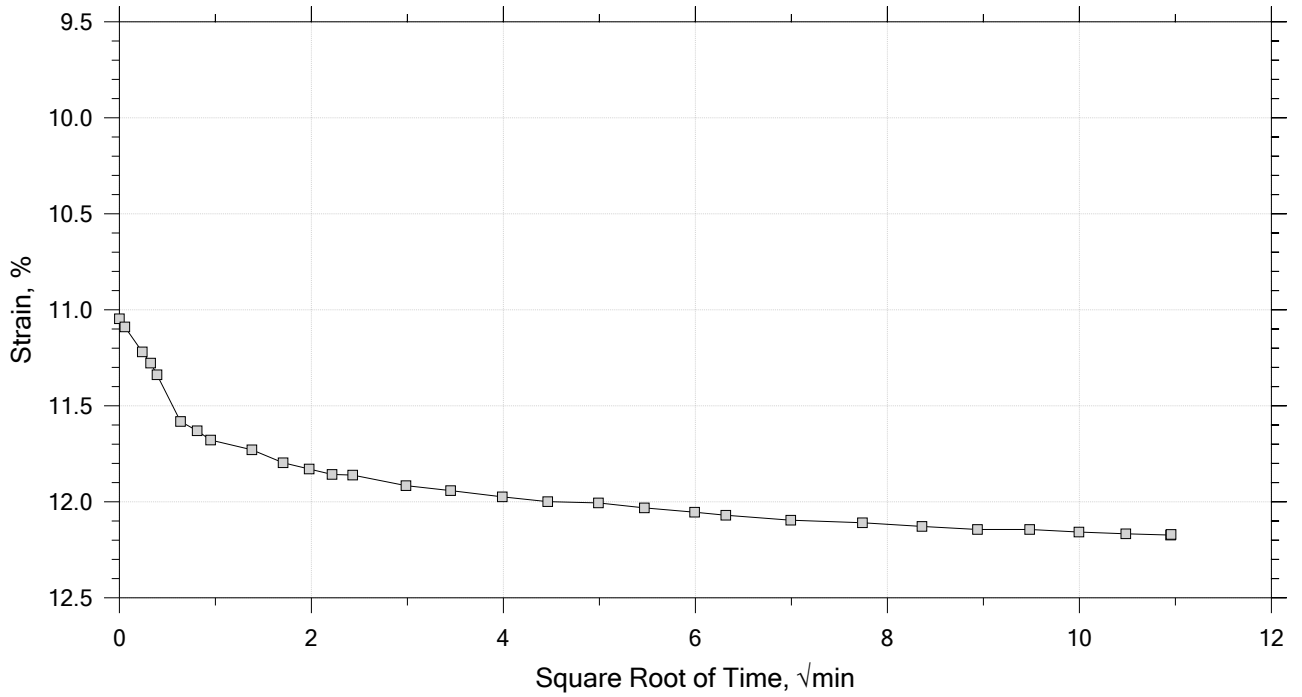
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

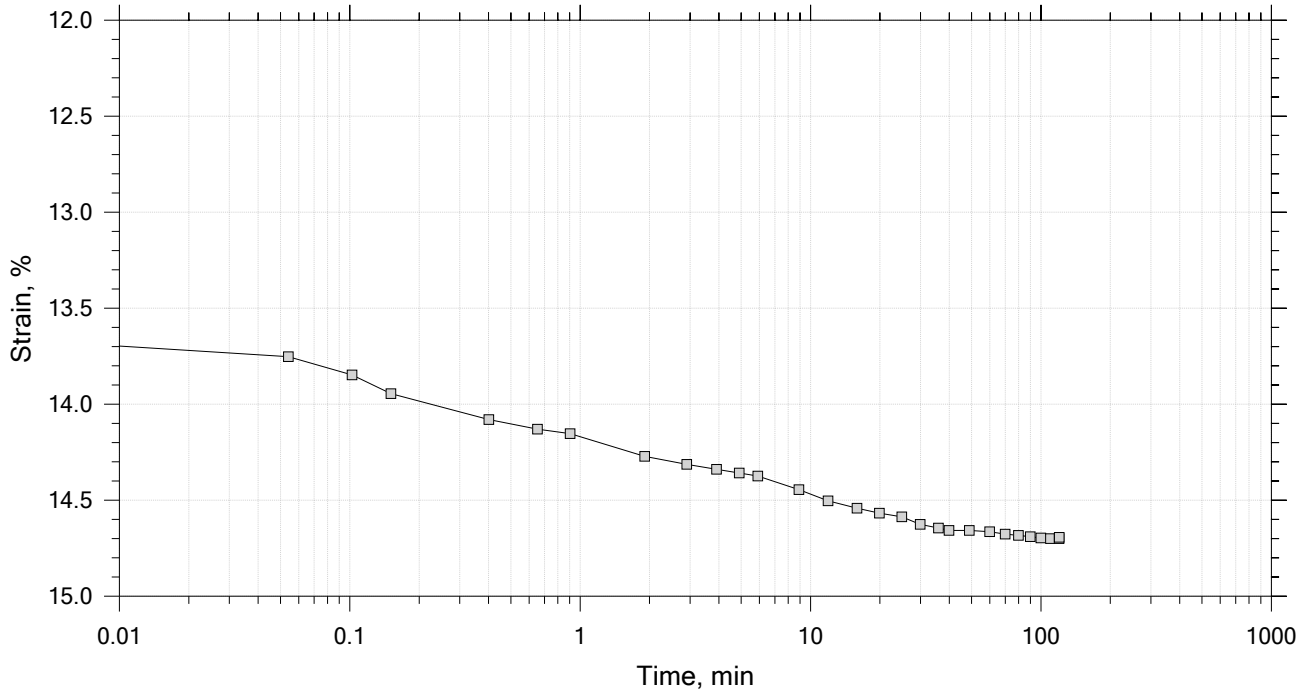


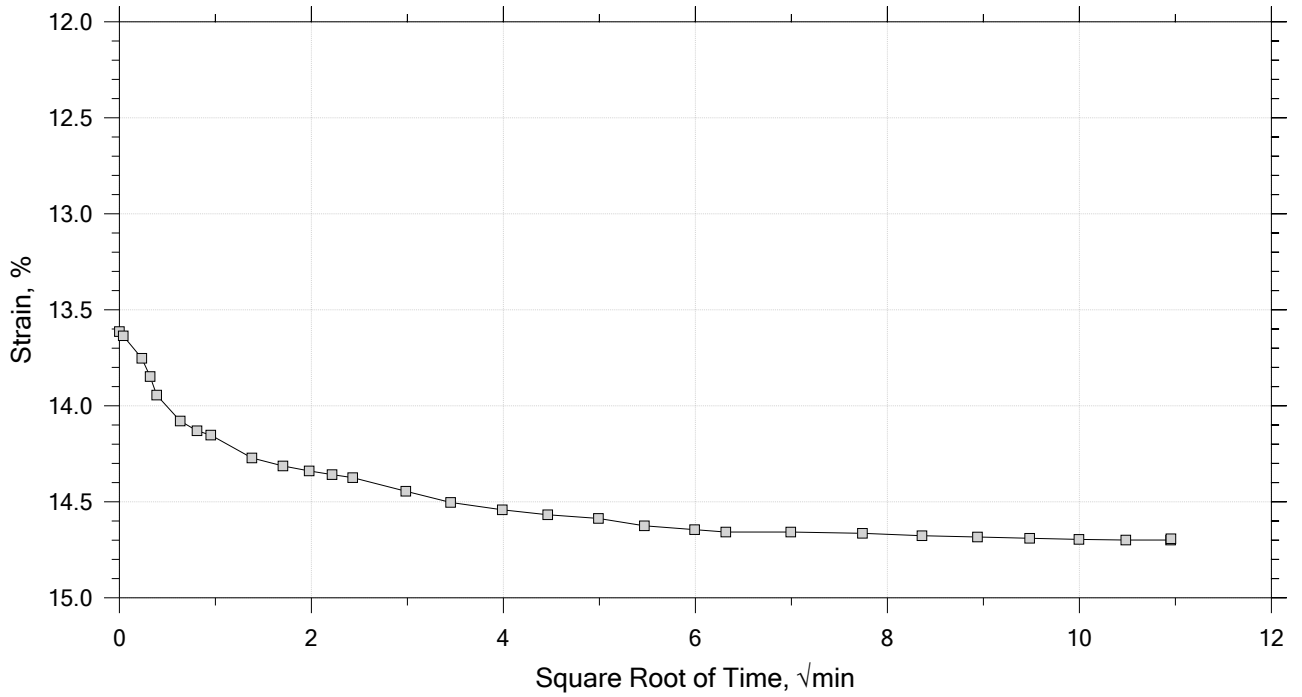


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

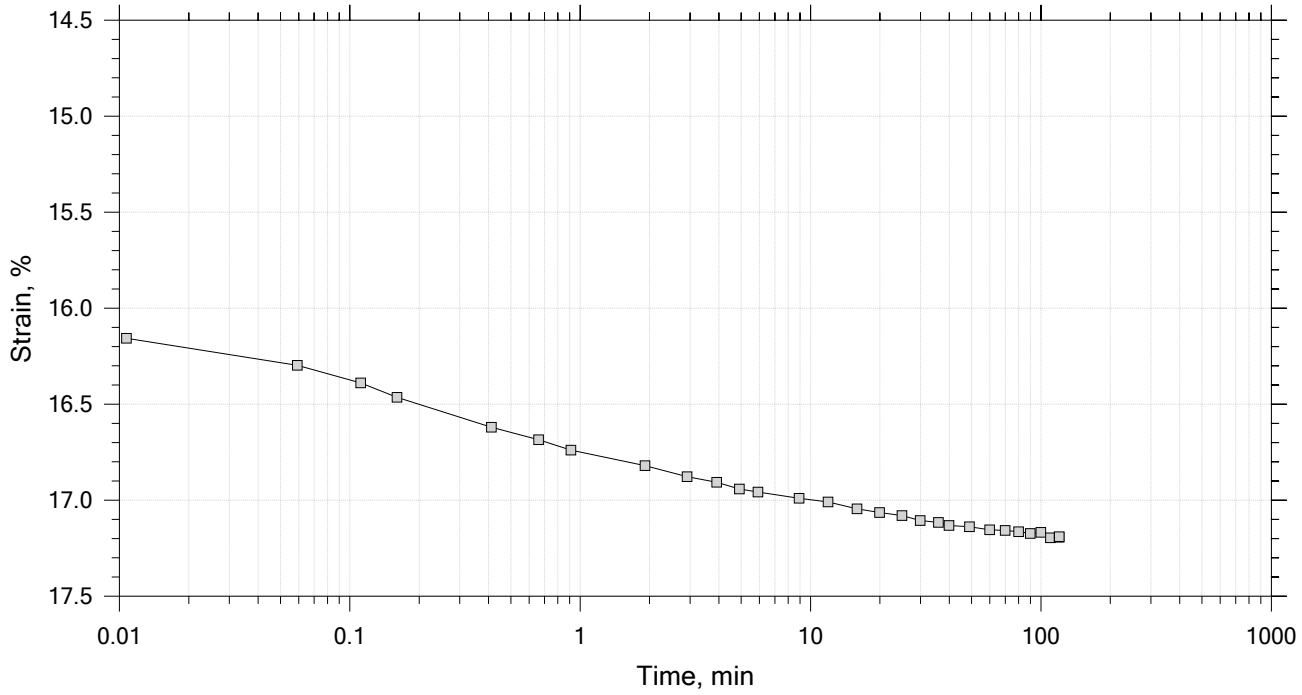


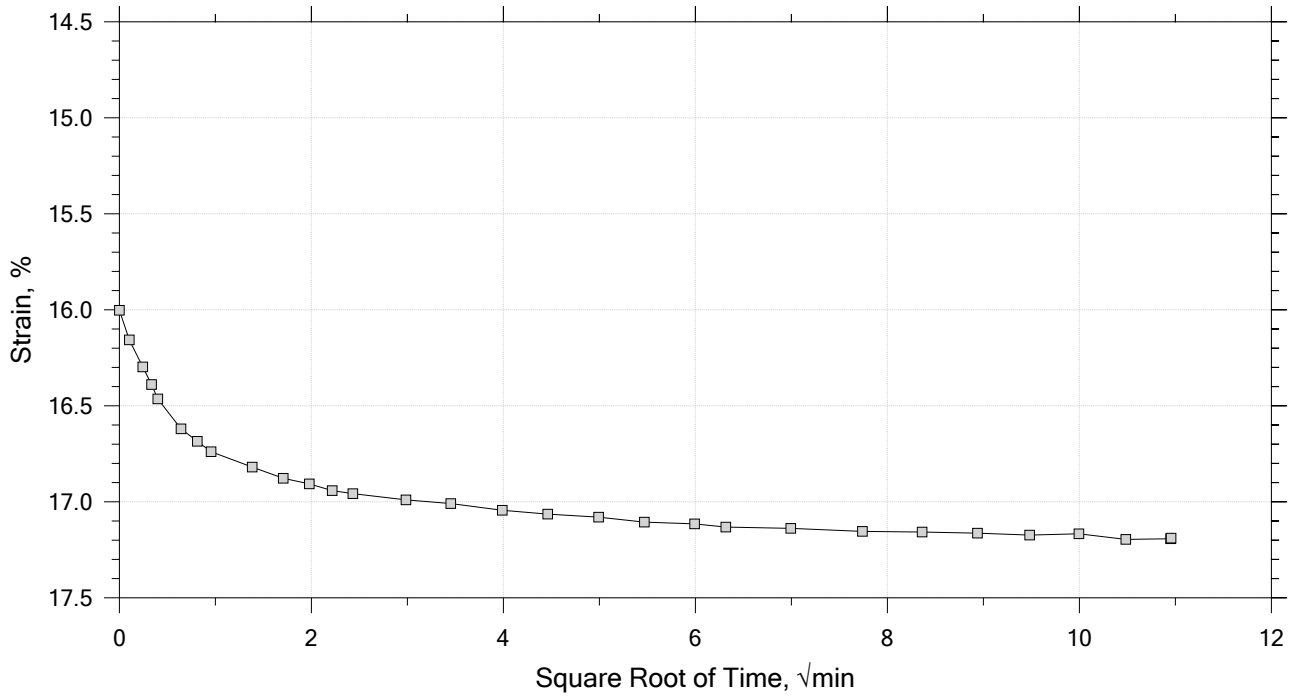


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





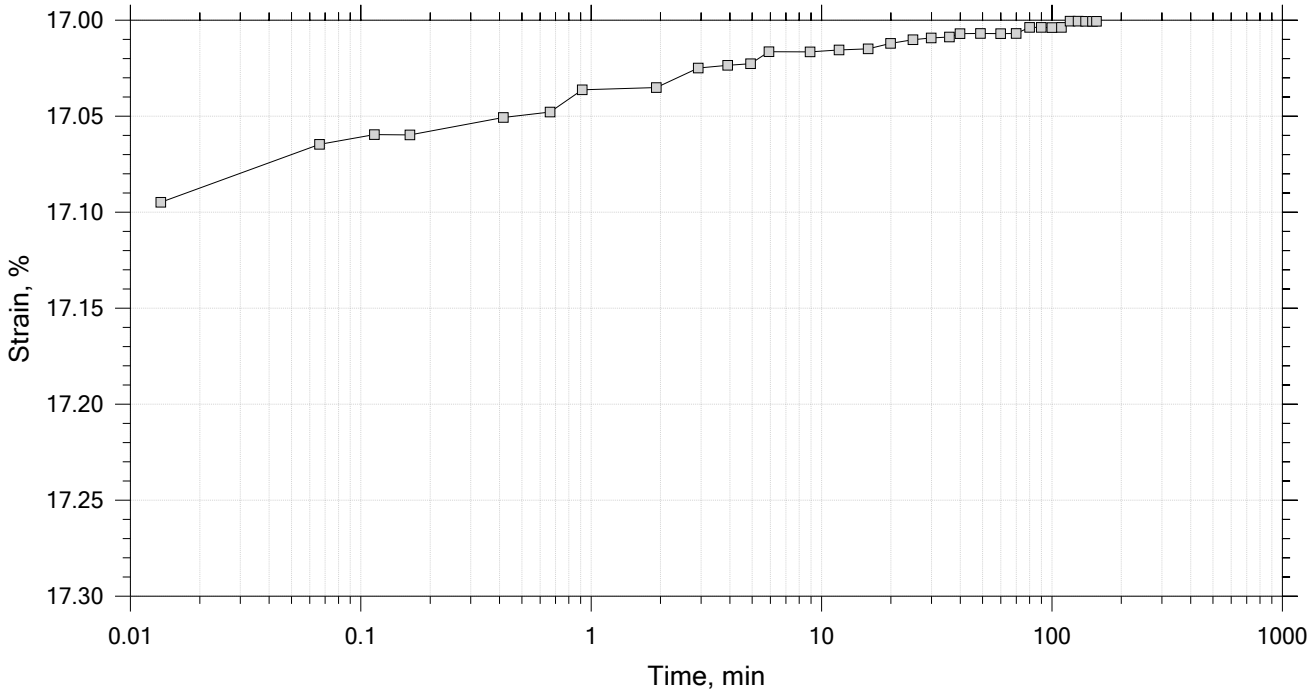
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

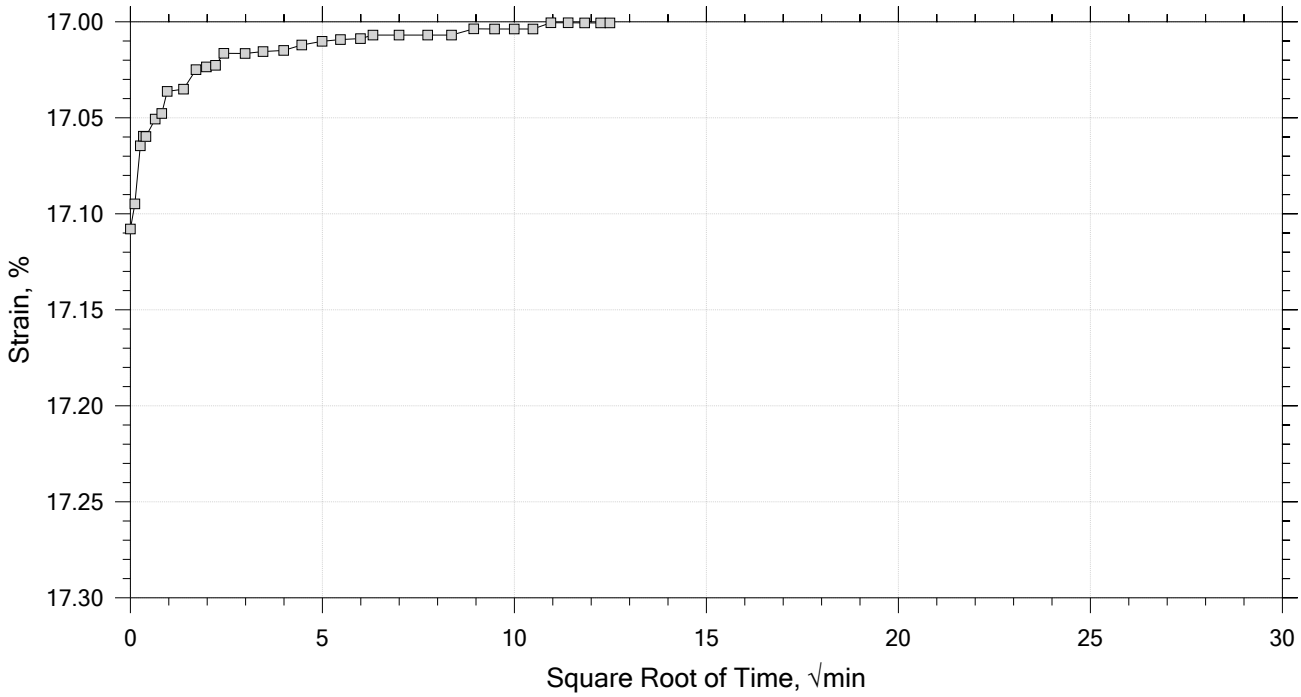
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf

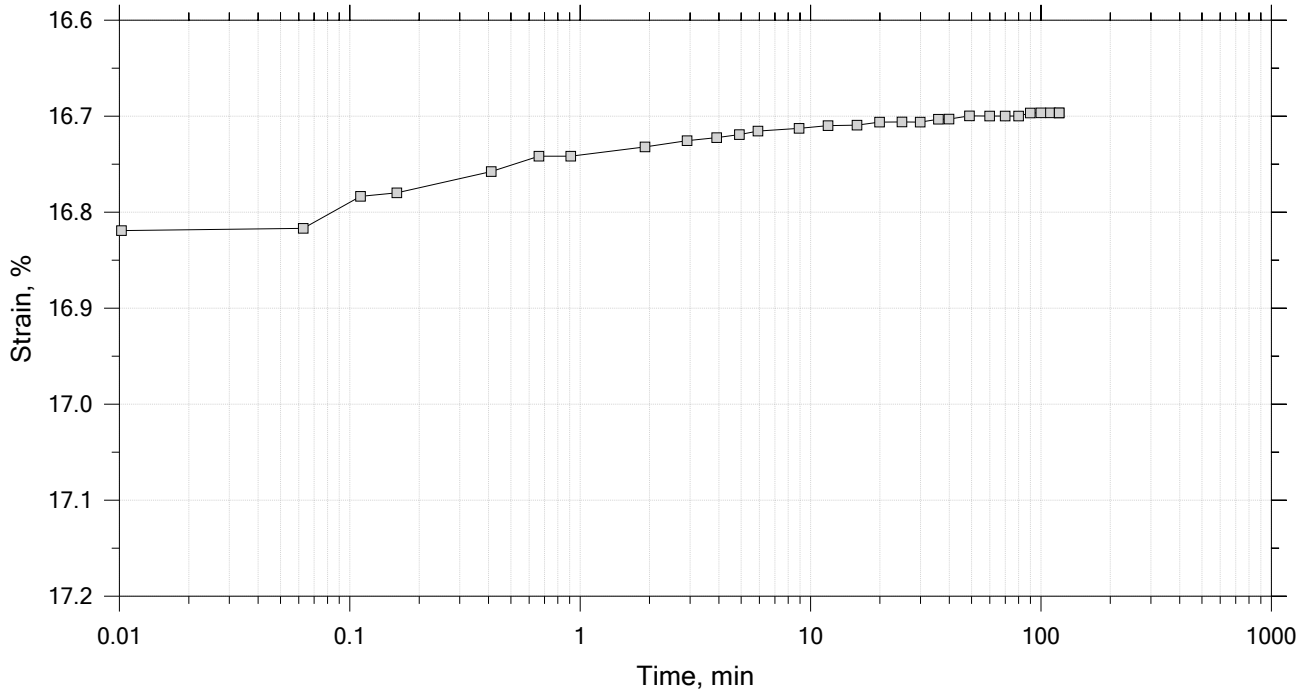


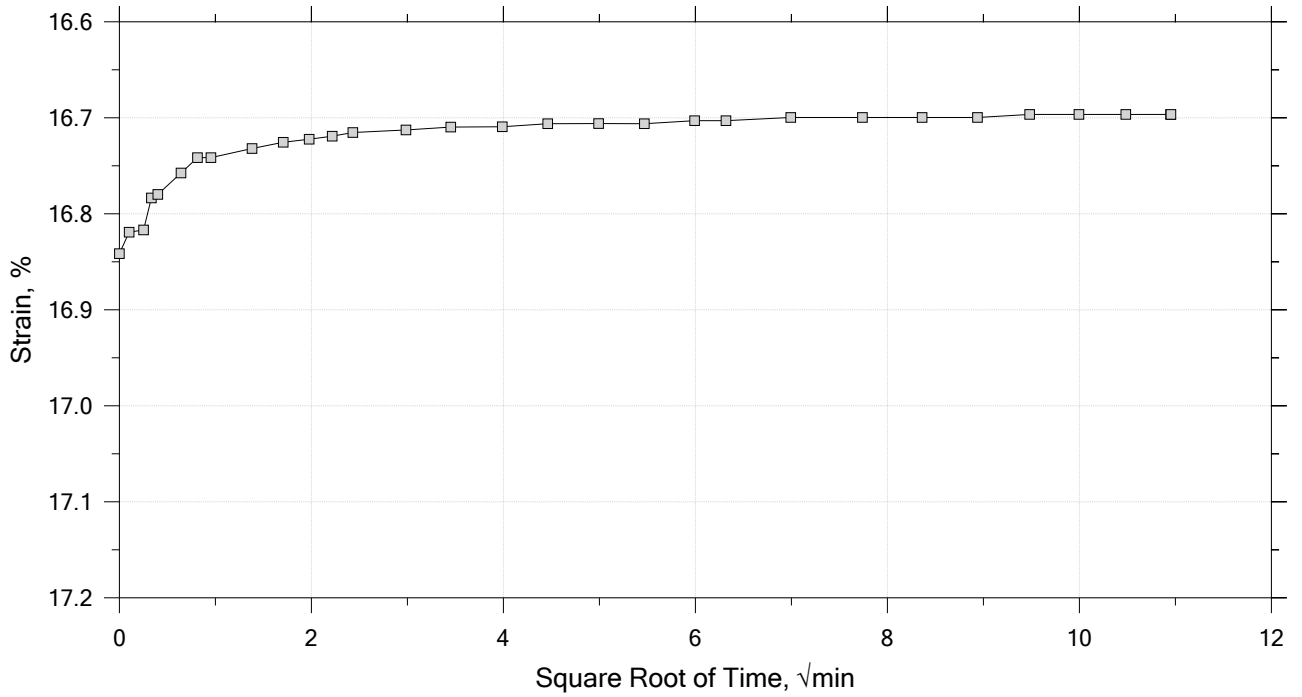


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

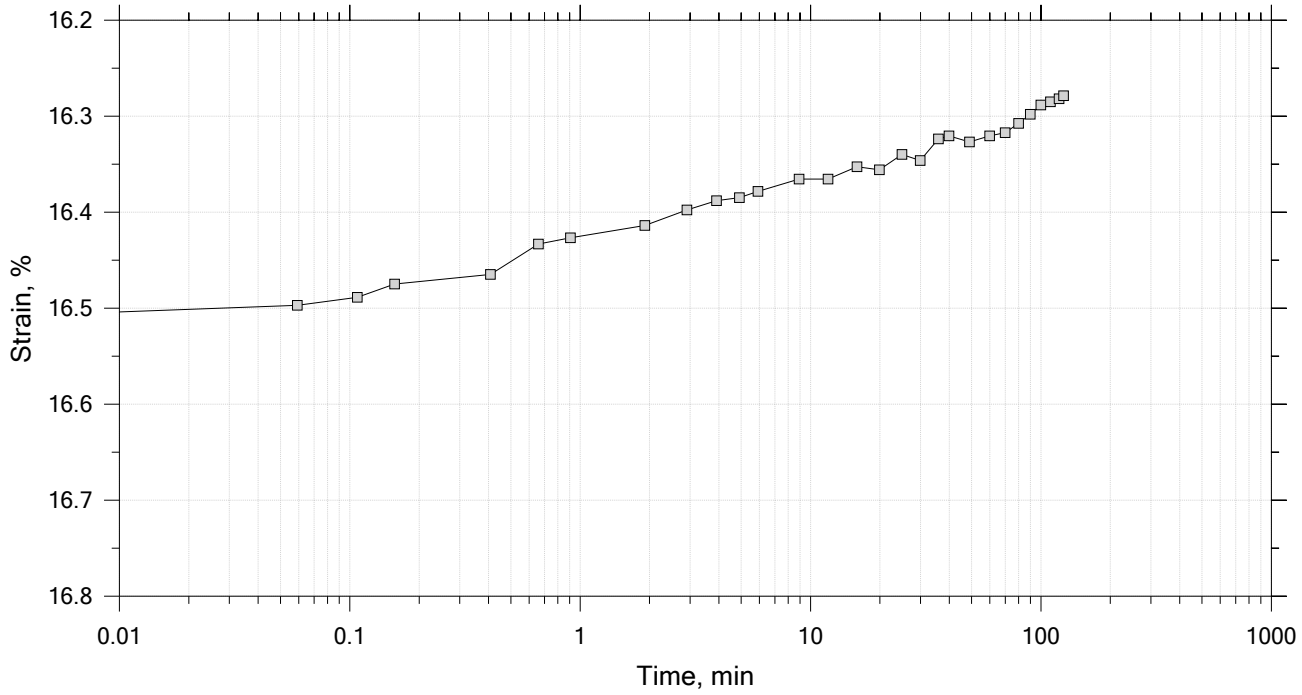


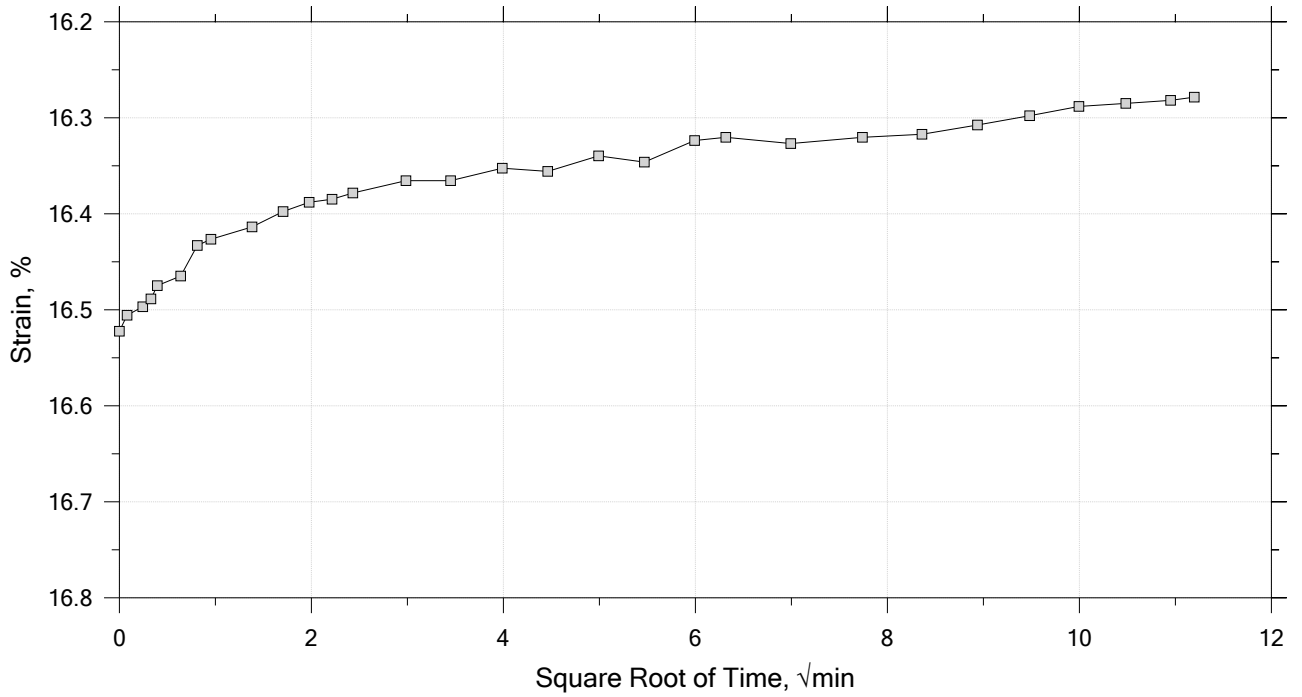


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

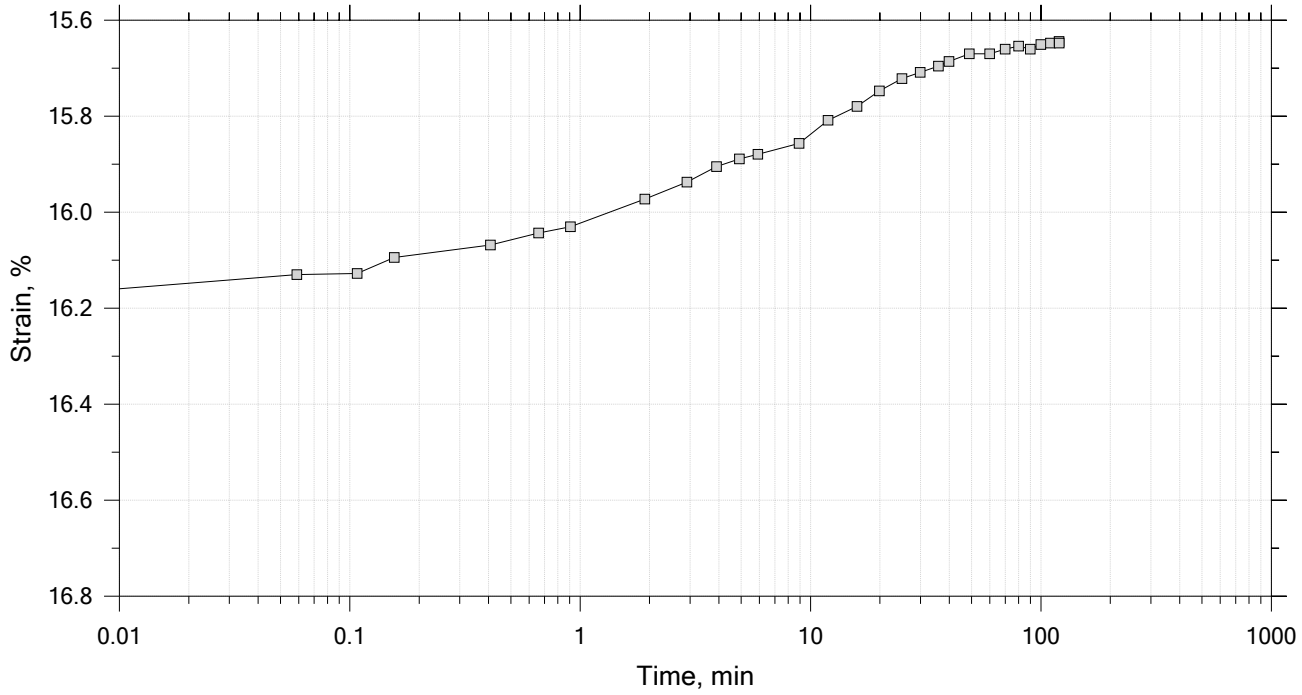


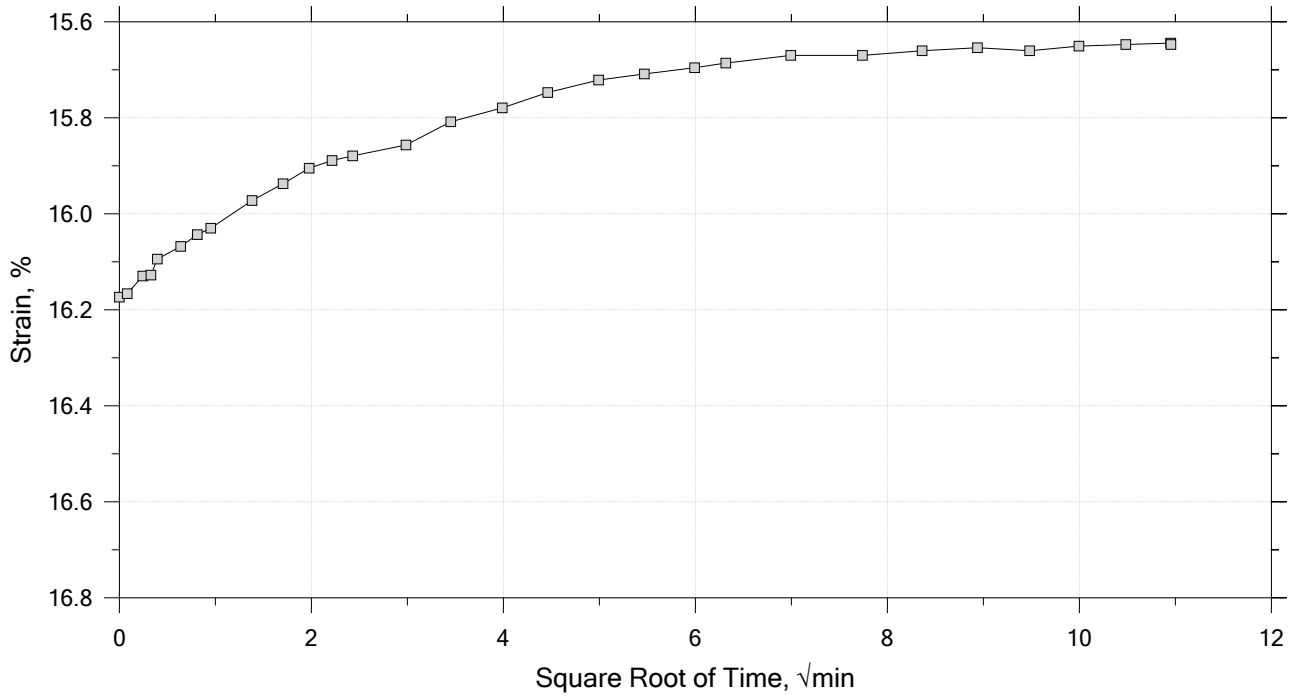


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.6	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
Test No.: IP-4	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.6	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
Test No.: IP-4	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.73	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.613	Plastic Limit: 15
Final Height: 0.85 in	Final Void Ratio: 0.371	Plasticity Index: 9

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5554	RING		E4823
Mass Container, gm	8.15	108.45	108.45	8.28
Mass Container + Wet Soil, gm	254.49	267.61	262.9	160.63
Mass Container + Dry Soil, gm	217.52	244.4	244.4	142.38
Mass Dry Soil, gm	209.37	135.95	135.95	134.1
Water Content, %	17.66	17.07	13.61	13.61
Void Ratio	---	0.61	0.37	---
Degree of Saturation, %	---	75.94	100.00	---
Dry Unit Weight, pcf	---	105.51	124.13	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Log of Time Coefficients

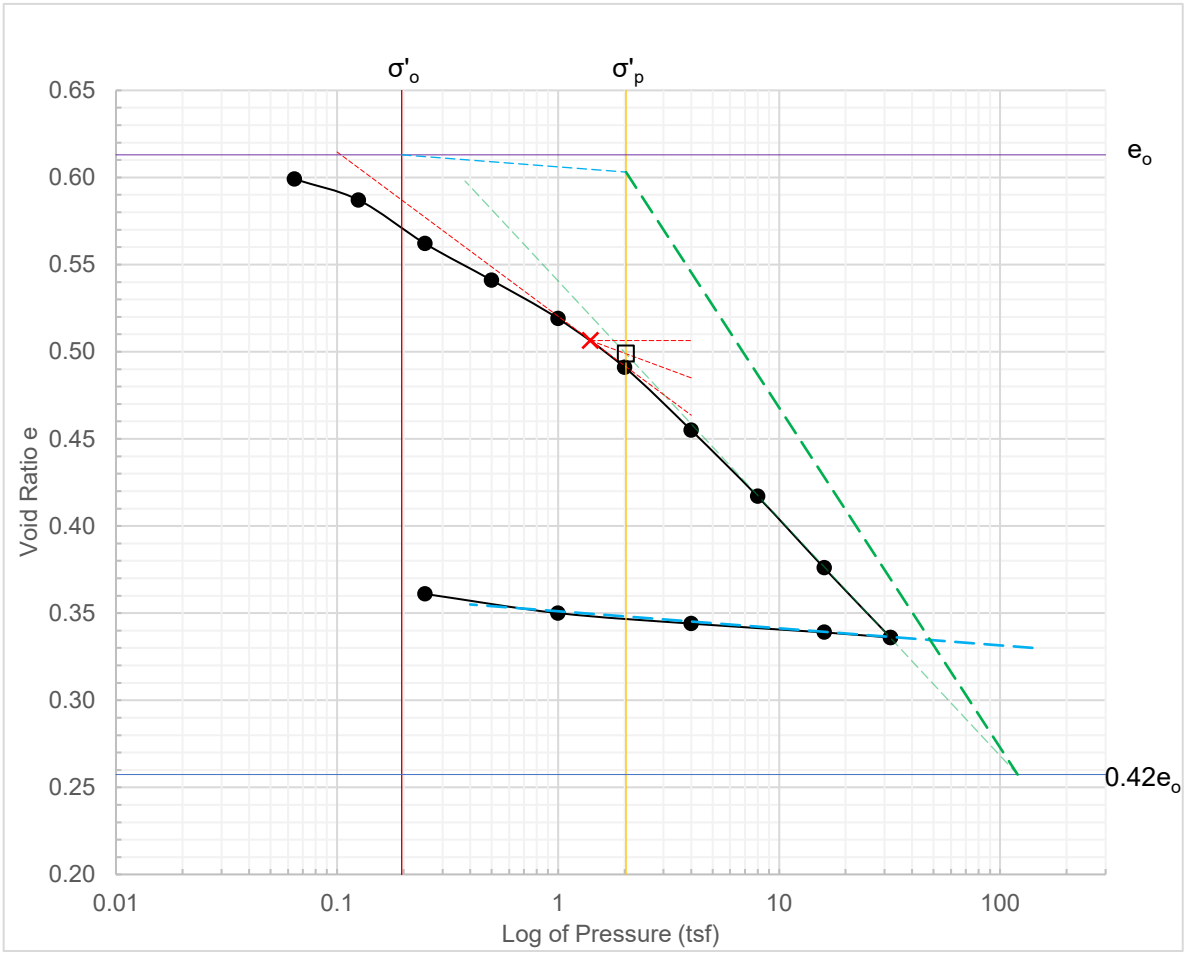
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv in²/s	Mv 1/tsf	k ft/day	Ca %
1	0.0641	0.008596	0.599	0.860	0.000	0.00e+00	1.34e-01	0.00e+00	0.00e+00
2	0.125	0.01627	0.587	1.63	0.000	0.00e+00	1.26e-01	0.00e+00	0.00e+00
3	0.250	0.03137	0.562	3.14	0.000	0.00e+00	1.21e-01	0.00e+00	0.00e+00
4	0.500	0.04468	0.541	4.47	0.000	0.00e+00	5.32e-02	0.00e+00	0.00e+00
5	1.00	0.05843	0.519	5.84	0.000	0.00e+00	2.75e-02	0.00e+00	0.00e+00
6	2.00	0.07572	0.491	7.57	0.000	0.00e+00	1.73e-02	0.00e+00	0.00e+00
7	4.00	0.09777	0.455	9.78	0.000	0.00e+00	1.10e-02	0.00e+00	0.00e+00
8	8.00	0.1217	0.417	12.2	0.000	0.00e+00	5.98e-03	0.00e+00	0.00e+00
9	16.0	0.1469	0.376	14.7	0.000	0.00e+00	3.15e-03	0.00e+00	0.00e+00
10	32.0	0.1719	0.336	17.2	0.310	1.87e-03	1.56e-03	5.48e-05	0.00e+00
11	16.0	0.1700	0.339	17.0	0.357	1.58e-03	1.18e-04	3.50e-06	0.00e+00
12	4.00	0.1670	0.344	16.7	0.000	0.00e+00	2.53e-04	0.00e+00	0.00e+00
13	1.00	0.1628	0.350	16.3	0.000	0.00e+00	1.39e-03	0.00e+00	0.00e+00
14	0.250	0.1565	0.361	15.6	0.000	0.00e+00	8.41e-03	0.00e+00	0.00e+00

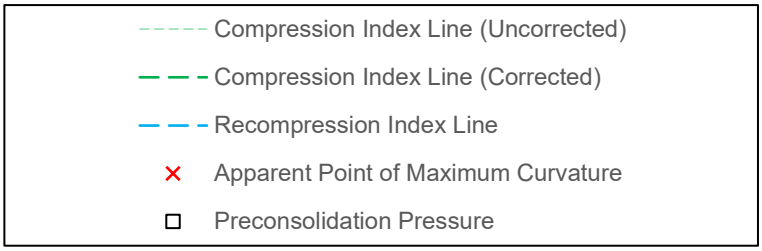
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.6	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 3.2-3.3
	Test No.: IP-4	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-I, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

Boring: B-4.6

Depth: 3.2'-3.3'

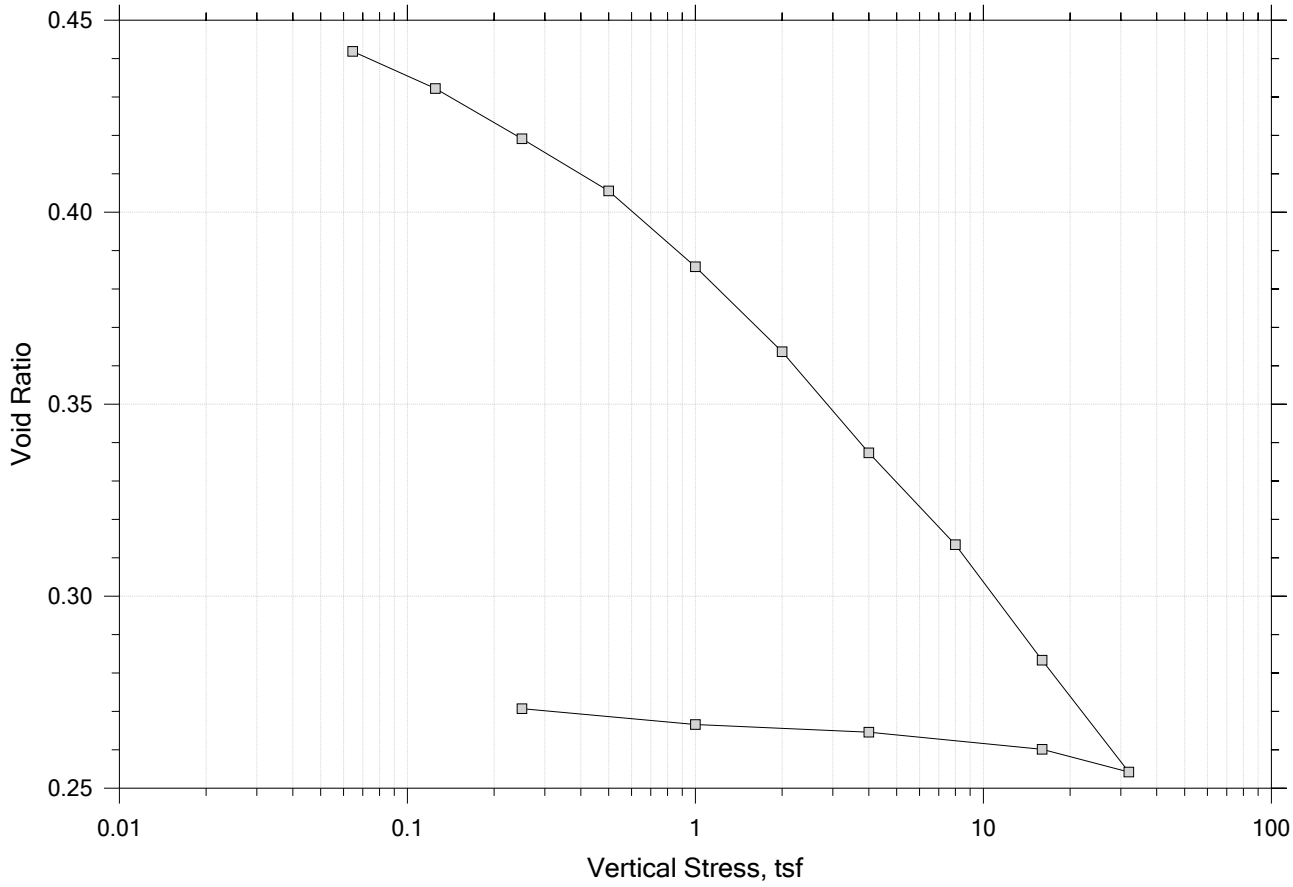
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.20
Preconsolidation Pressure, σ'_p (tsf) = 2.03
Compression Index, C_c = 0.20
Recompression Index, C_r = 0.0098

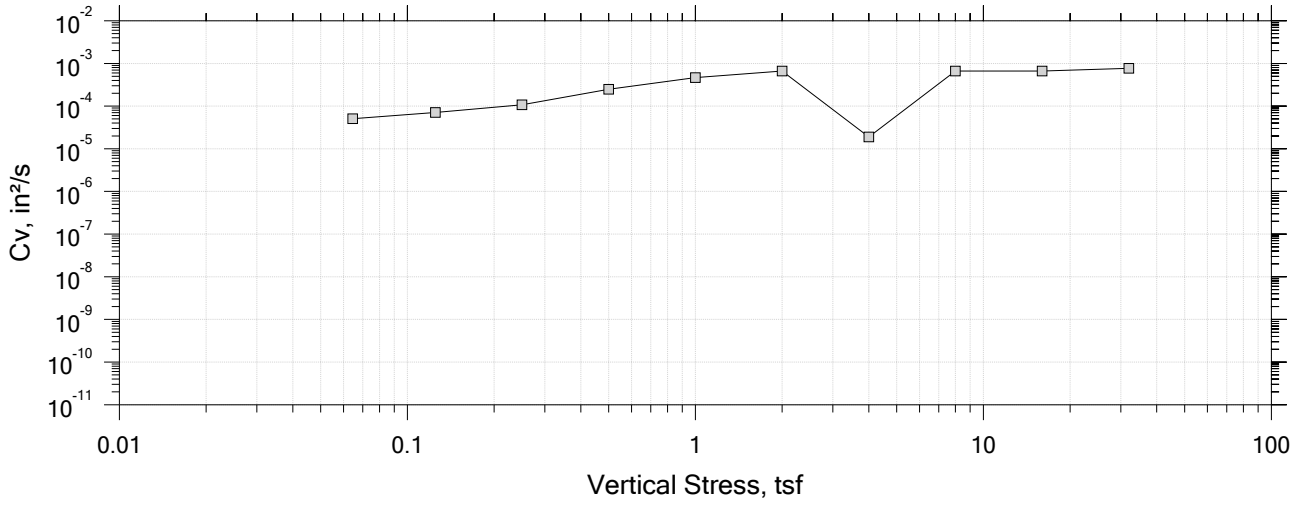




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

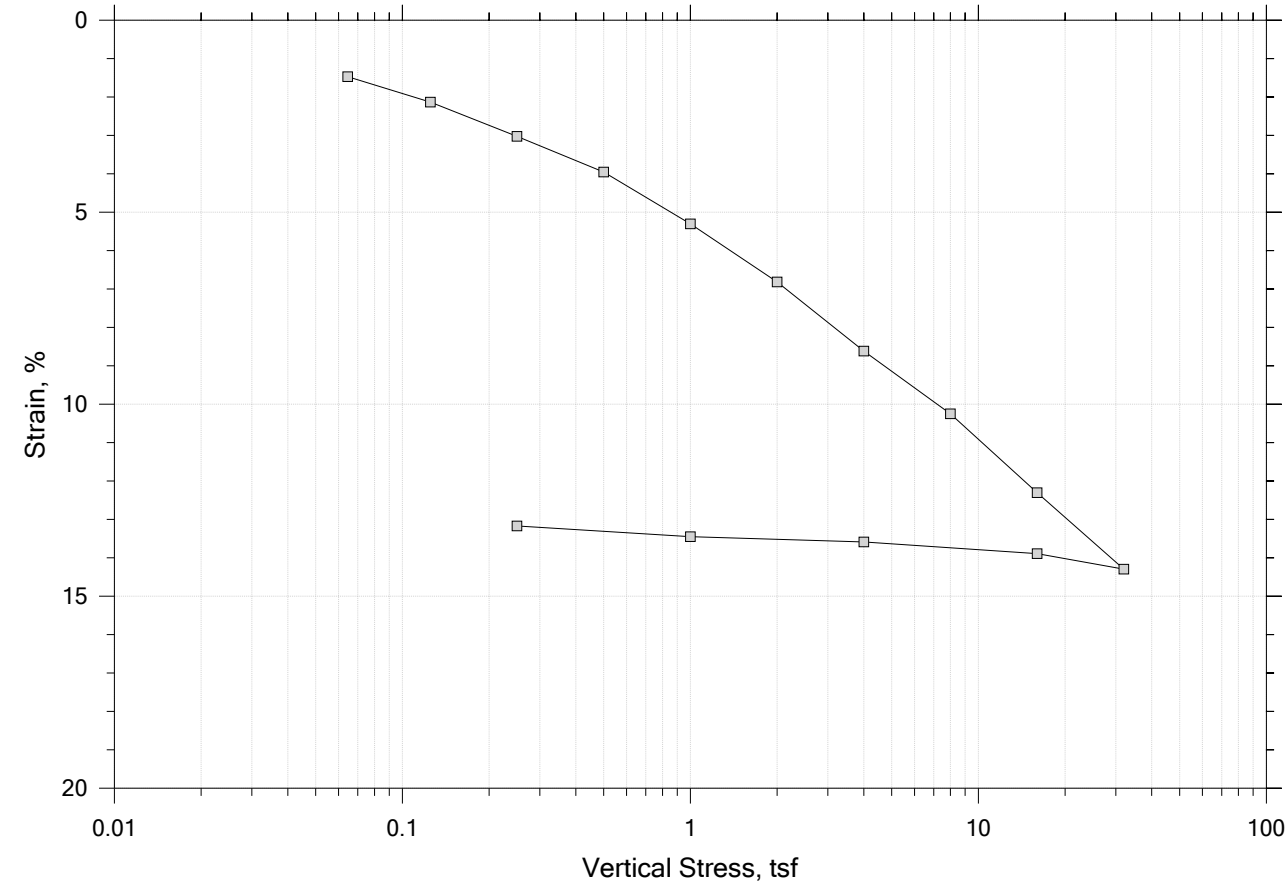


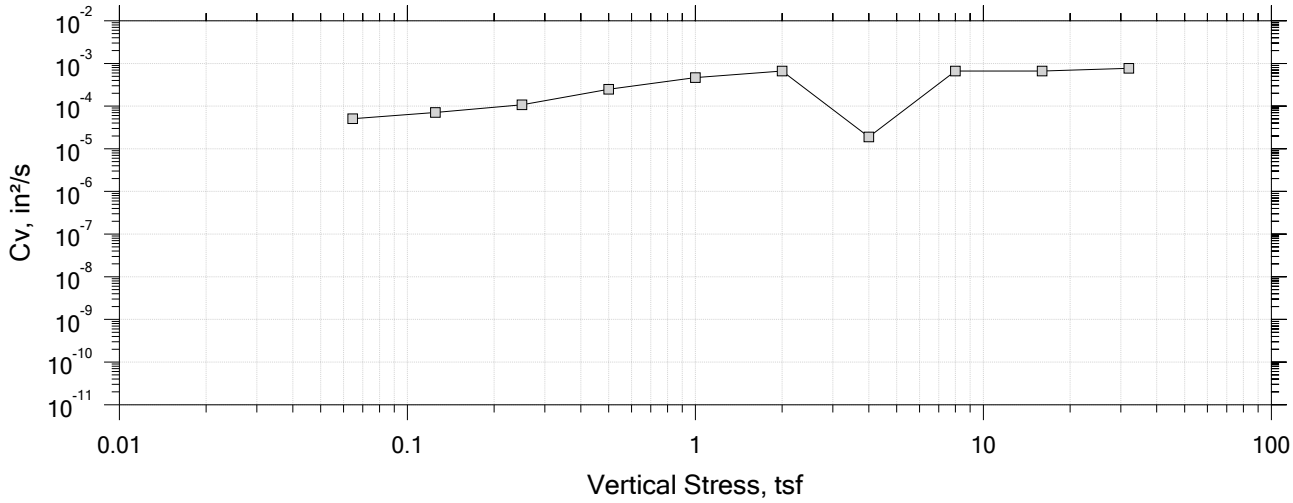


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

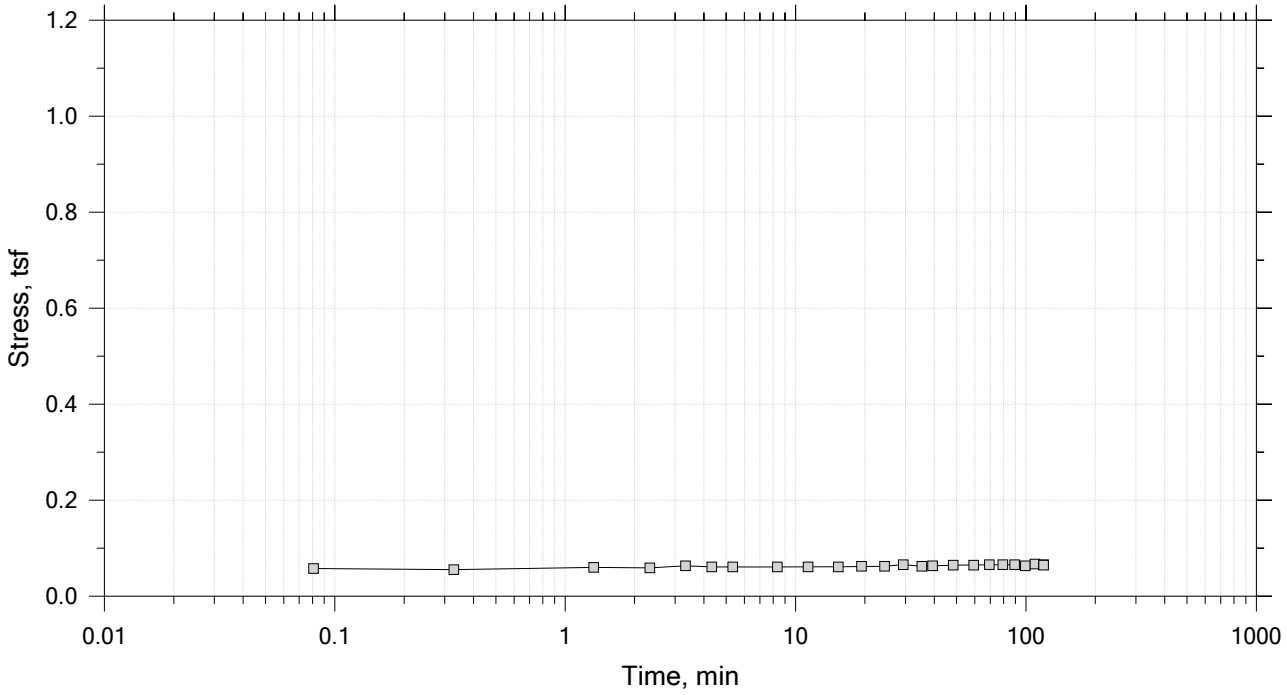


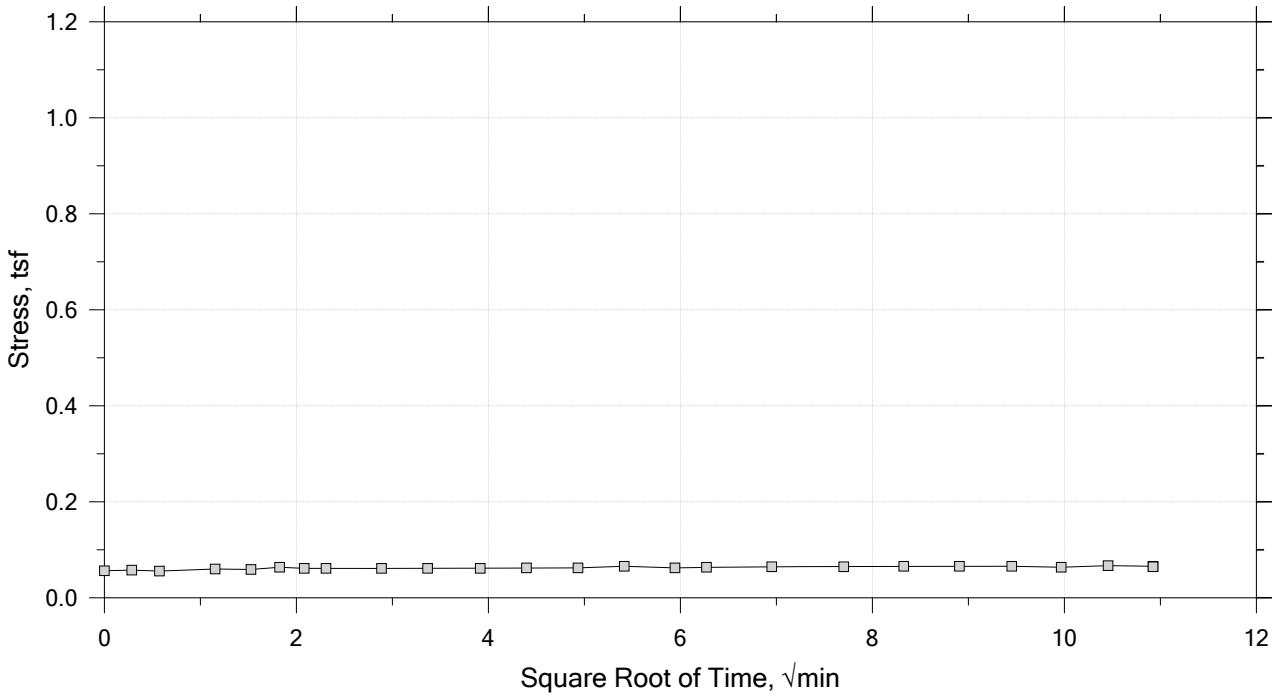


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0646 tsf

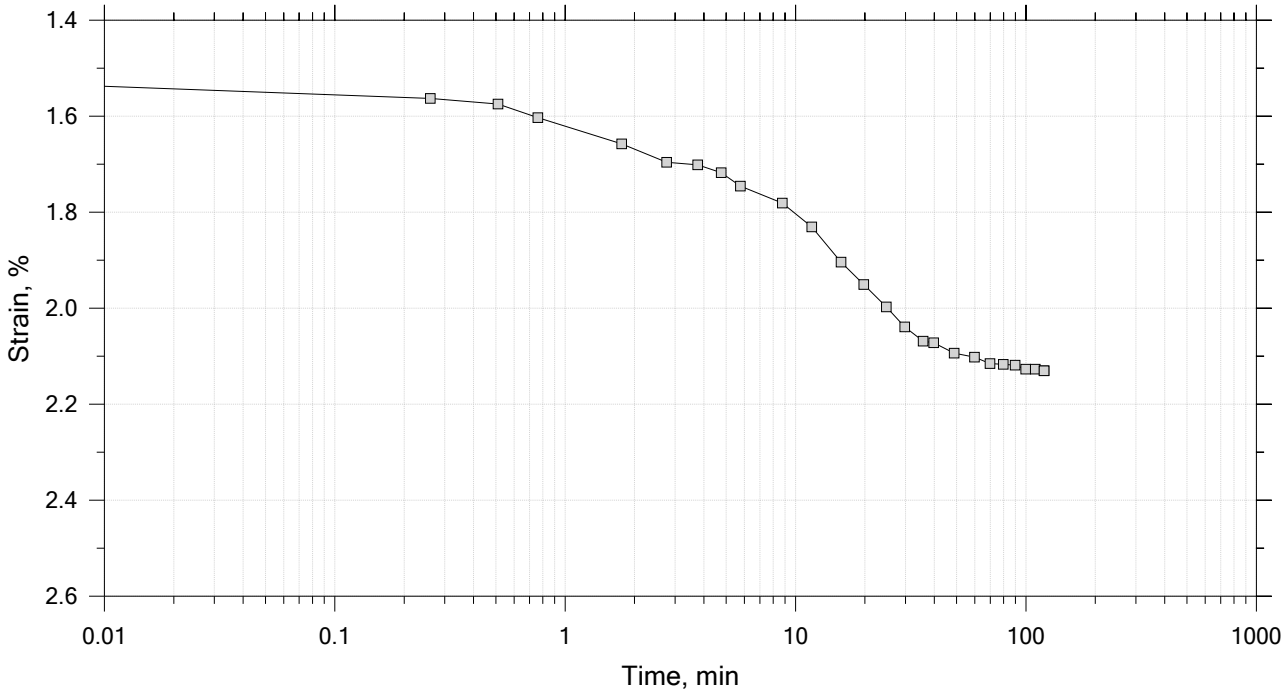


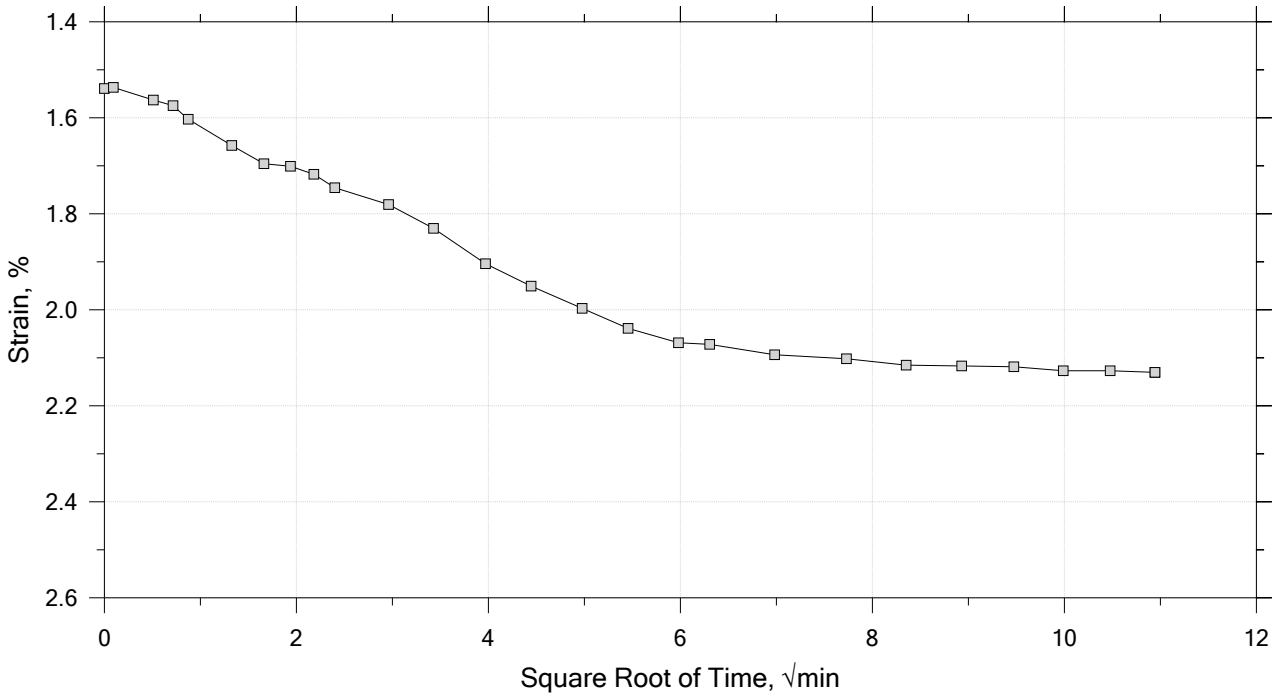


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

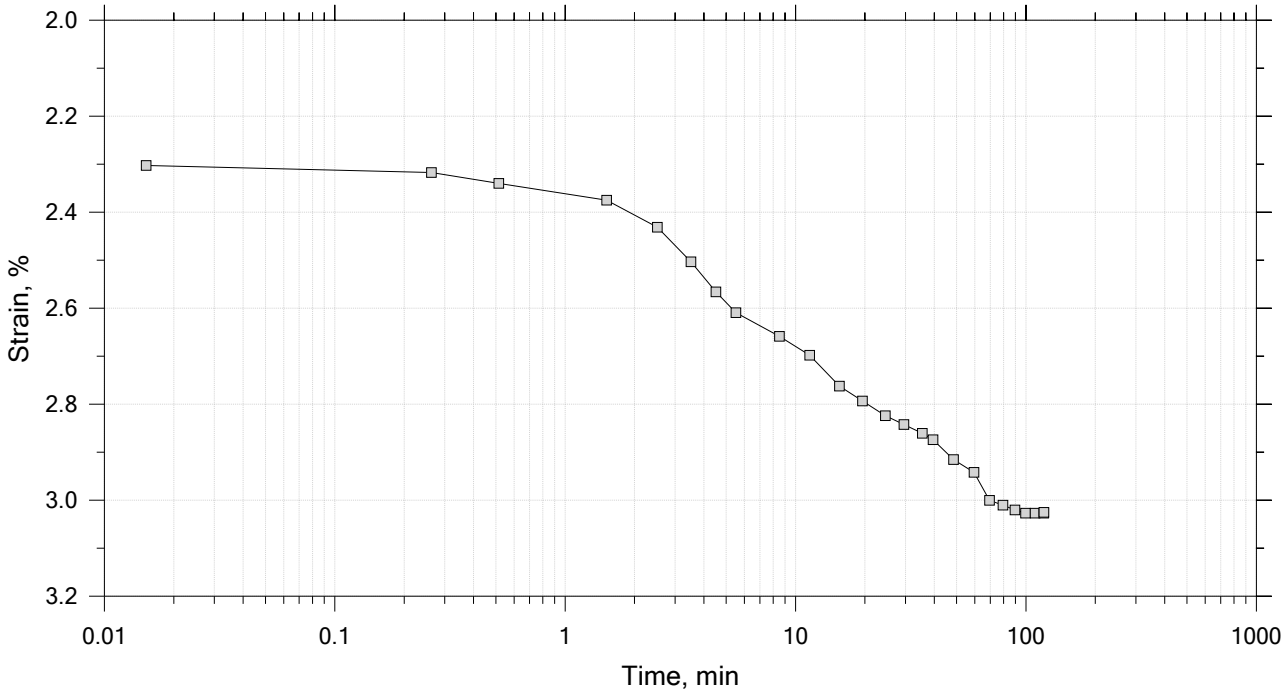


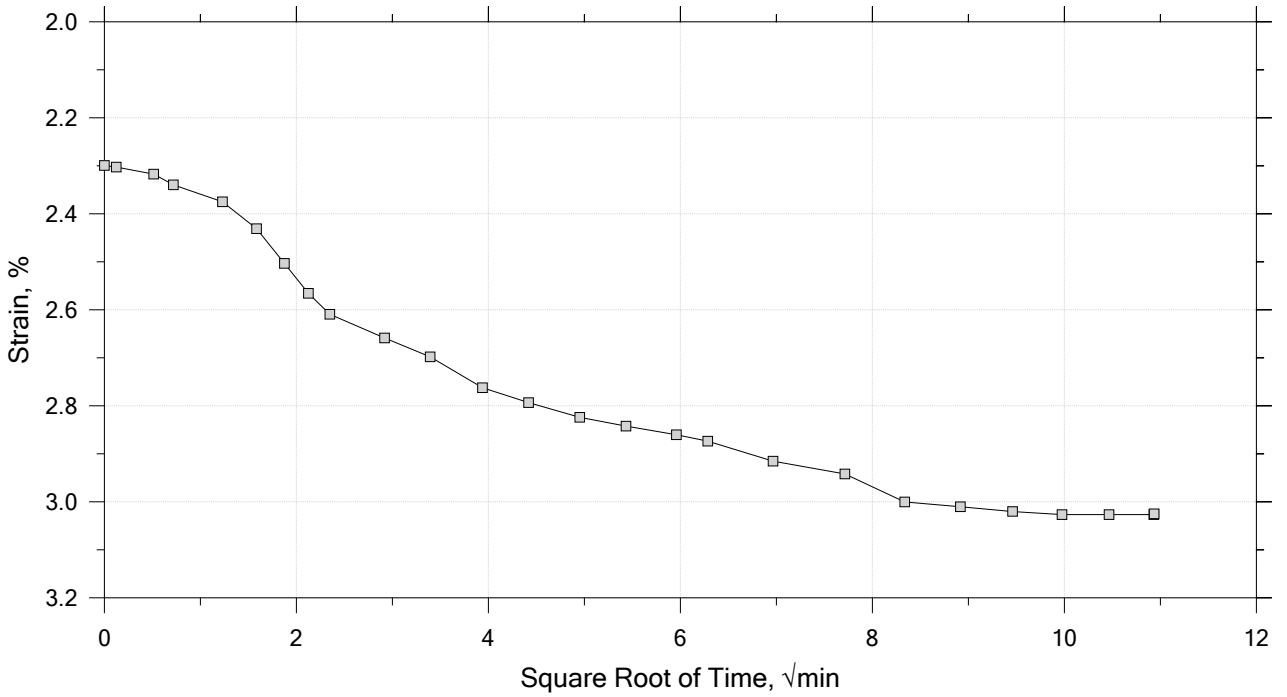


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





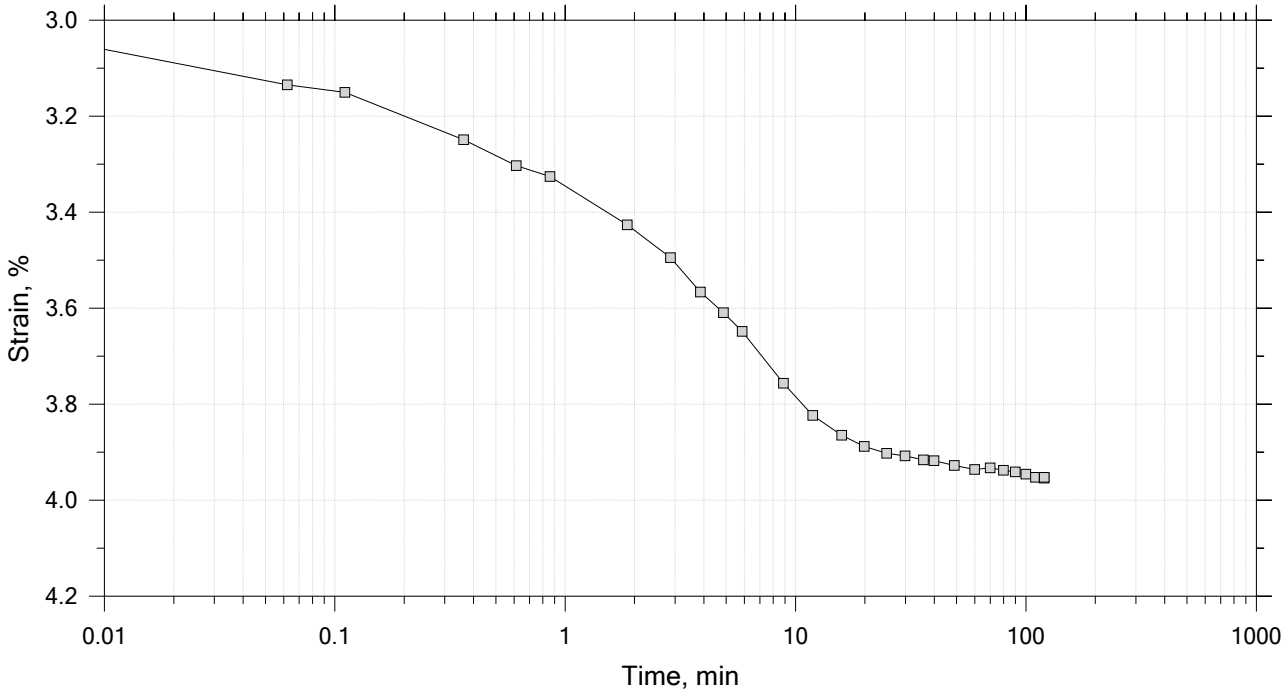
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

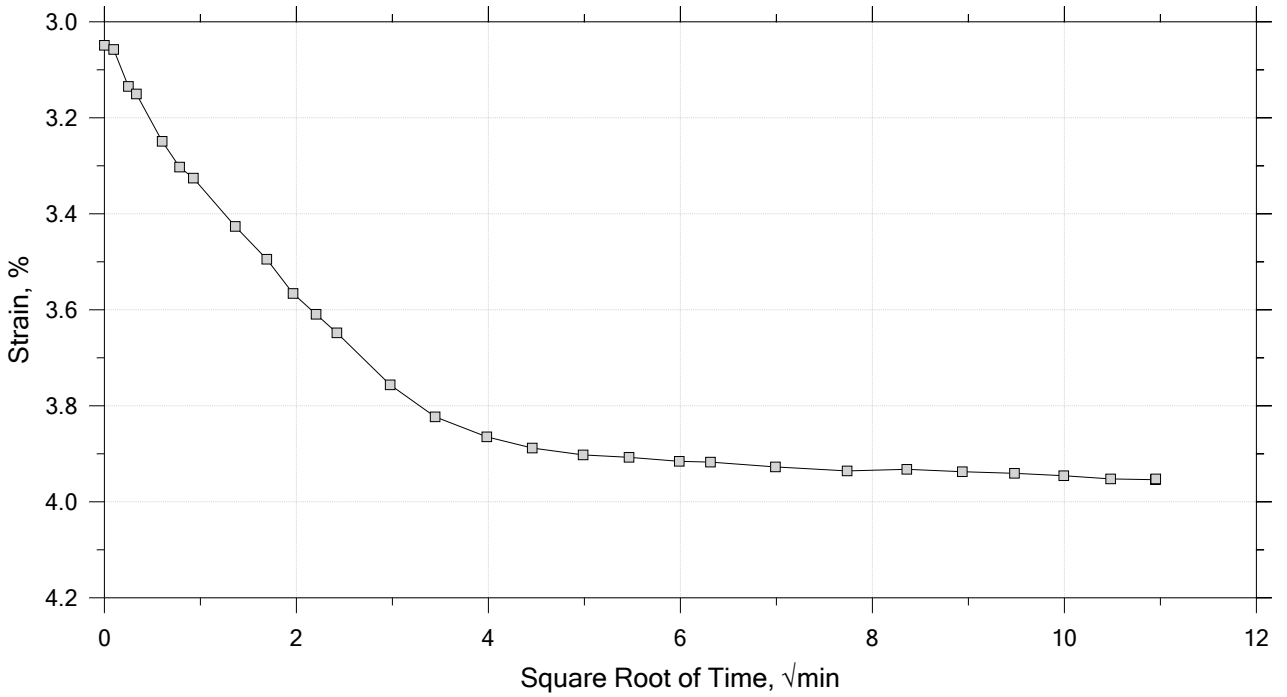
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





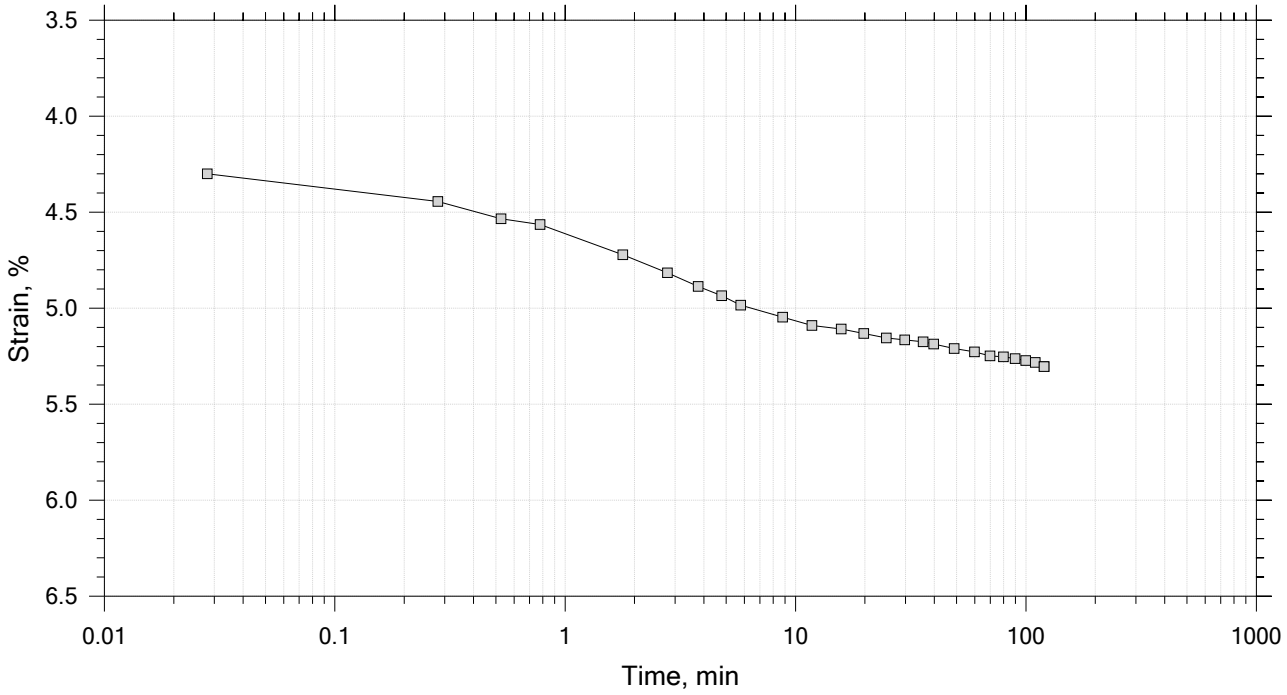
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

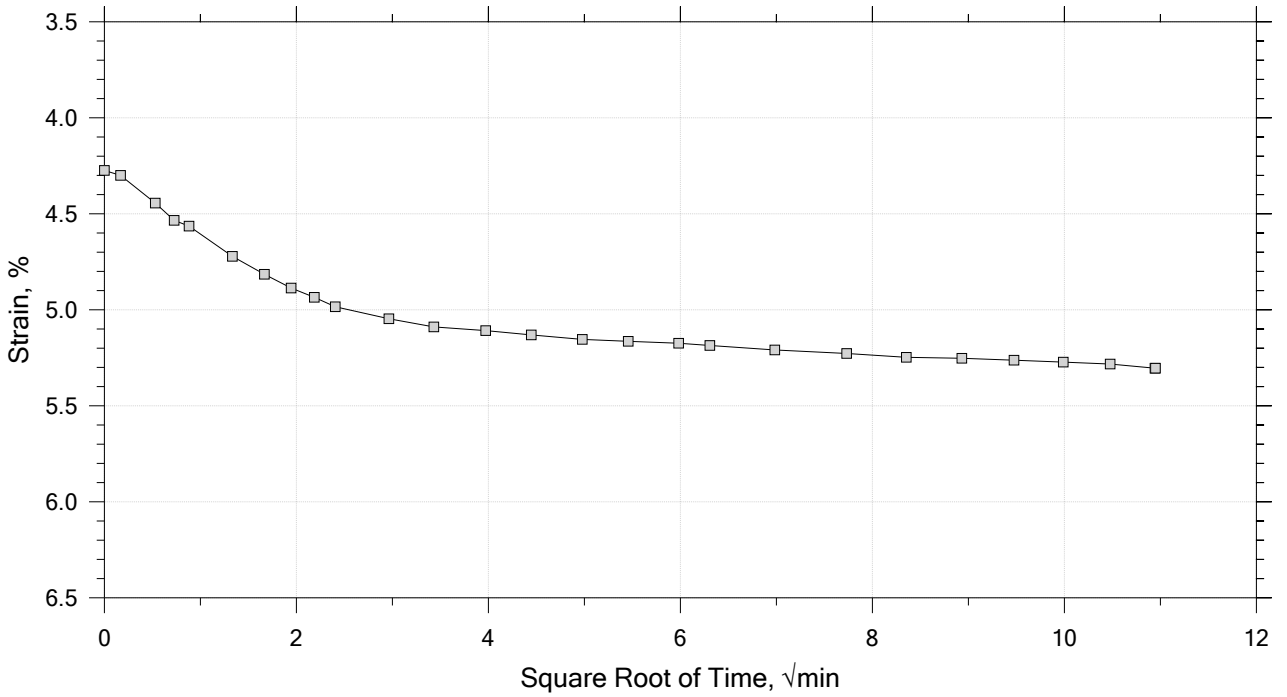
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





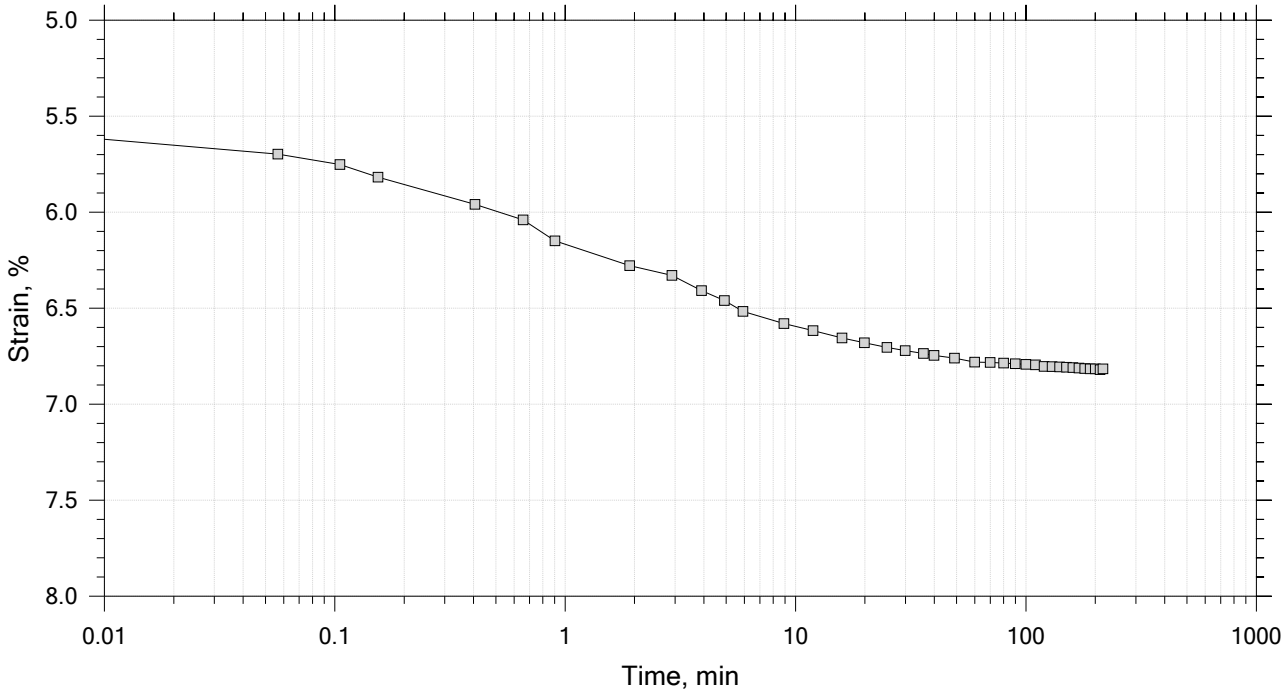
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

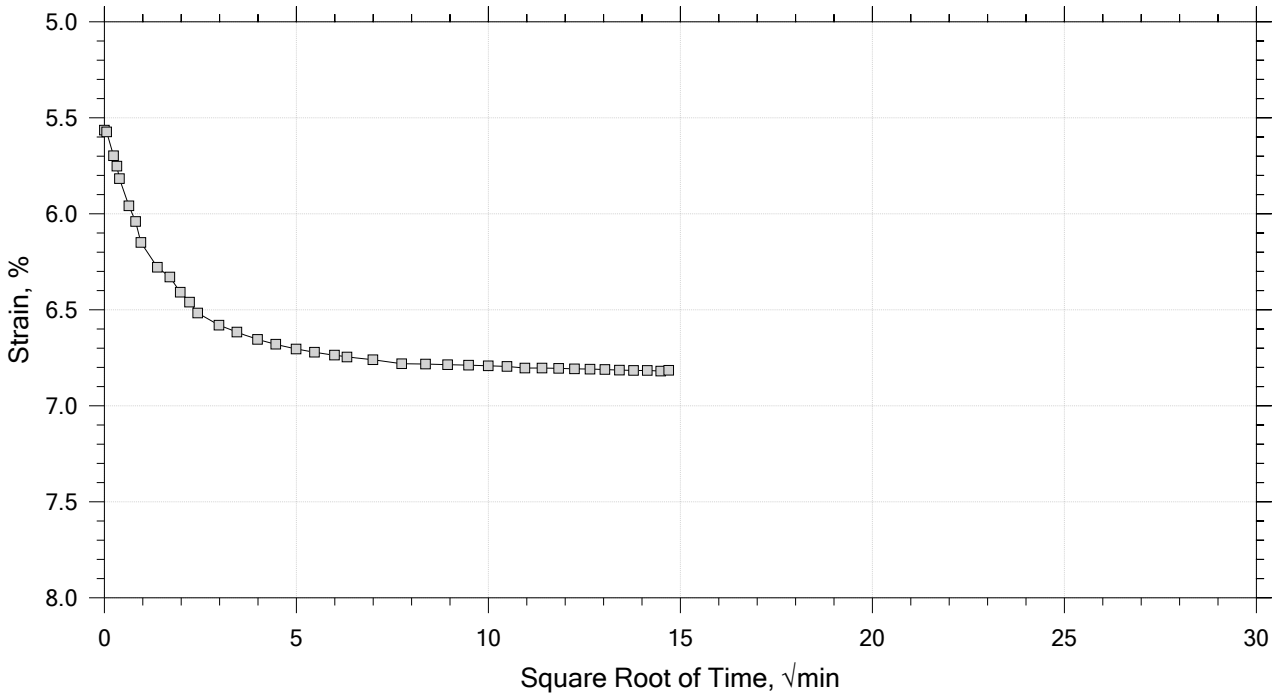
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





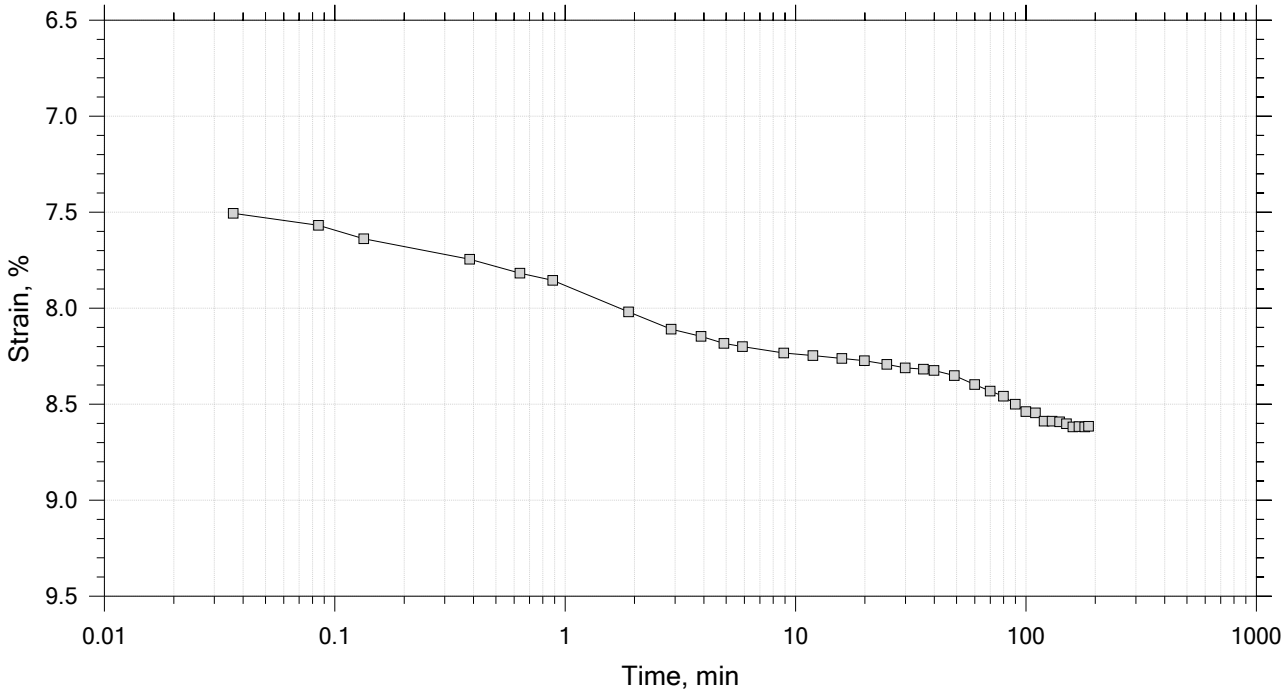
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

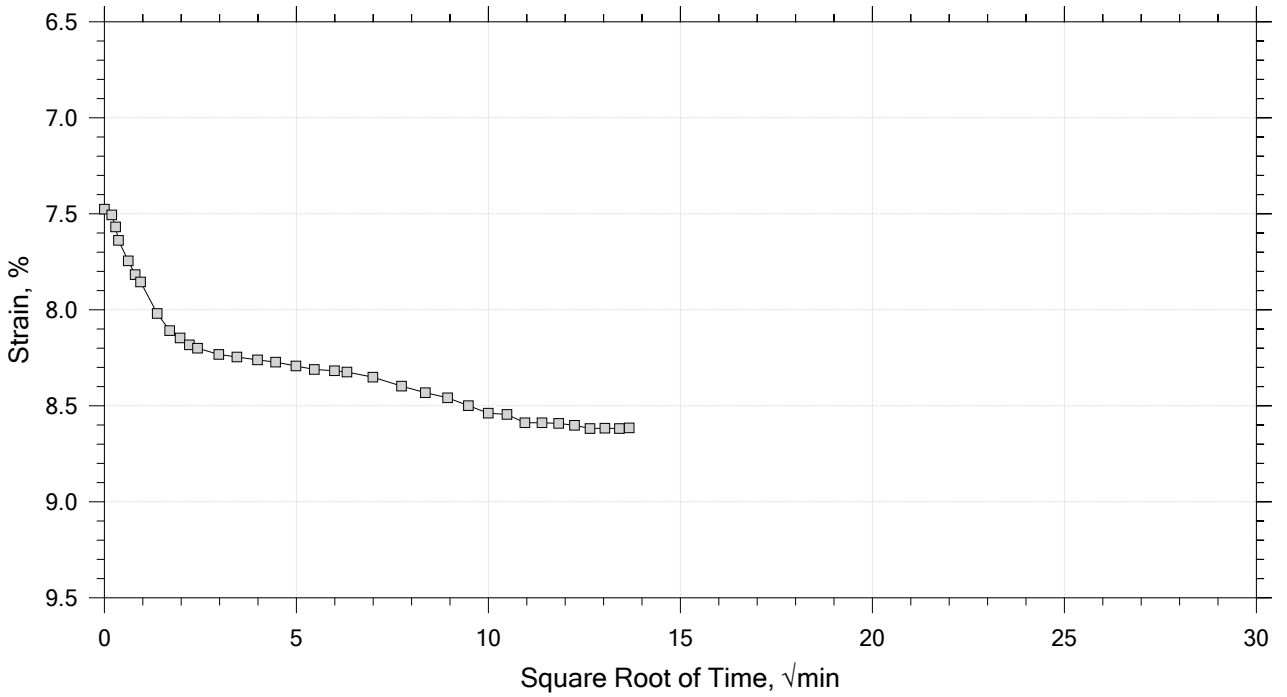
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

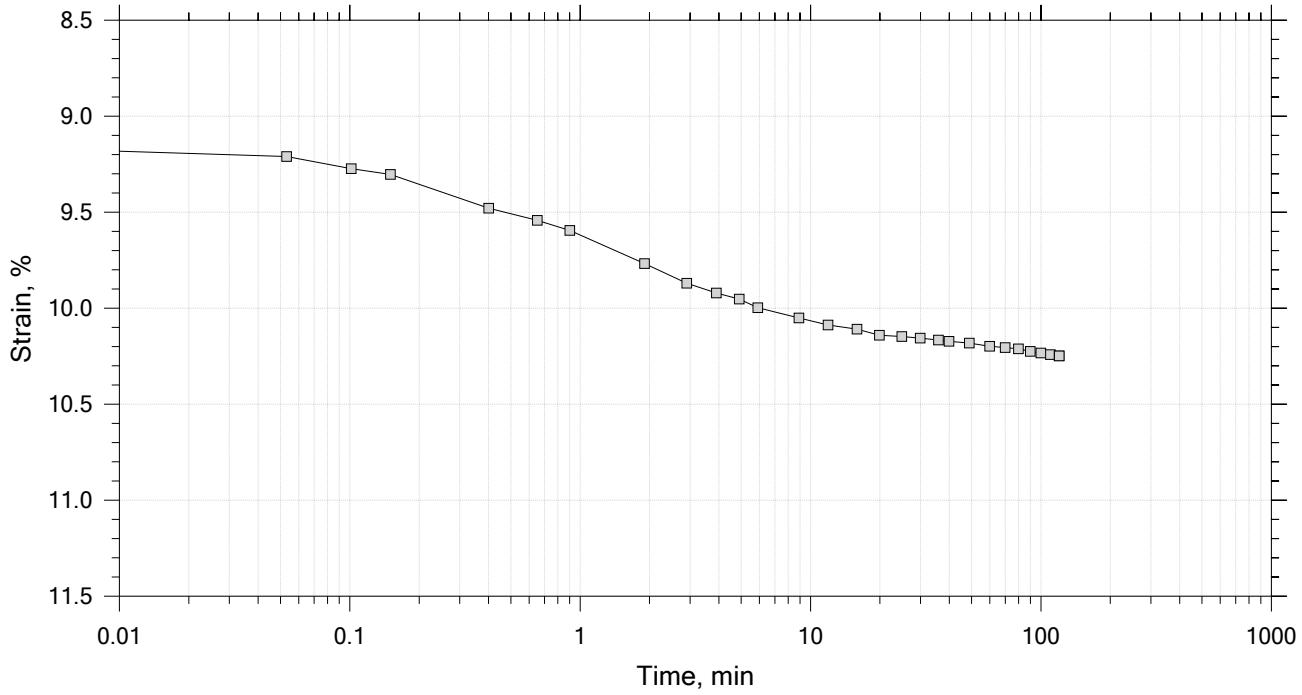


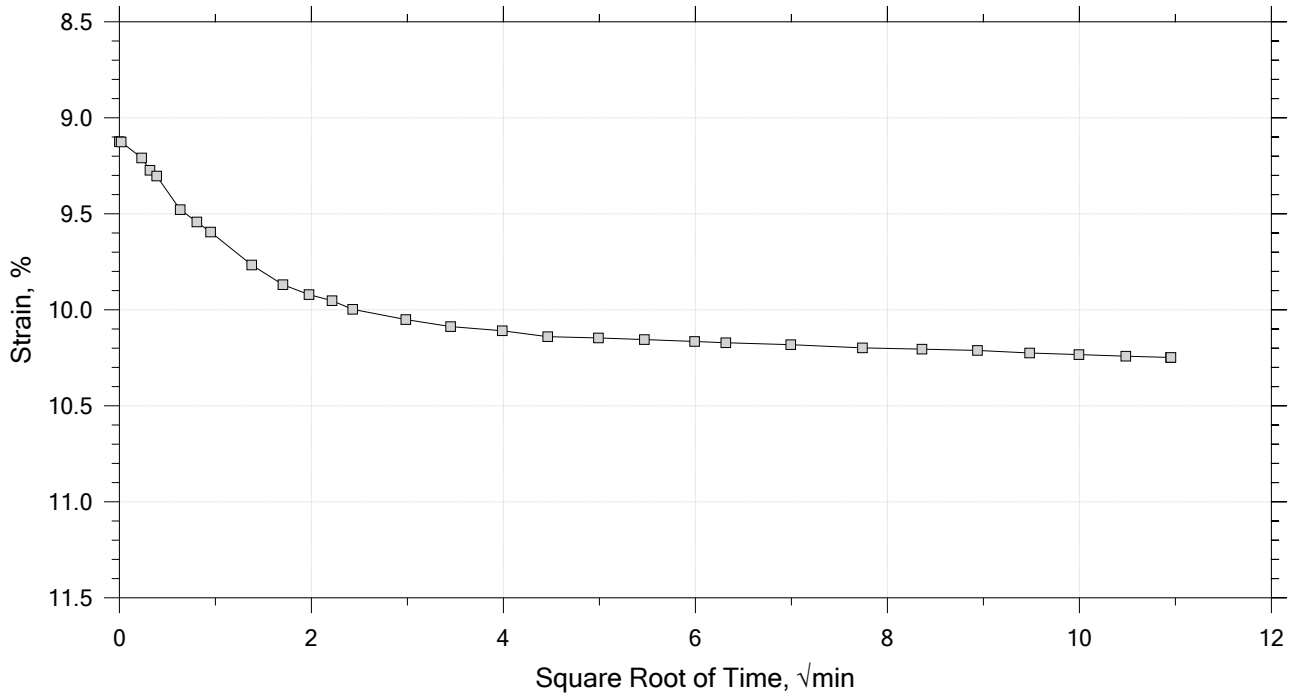


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf





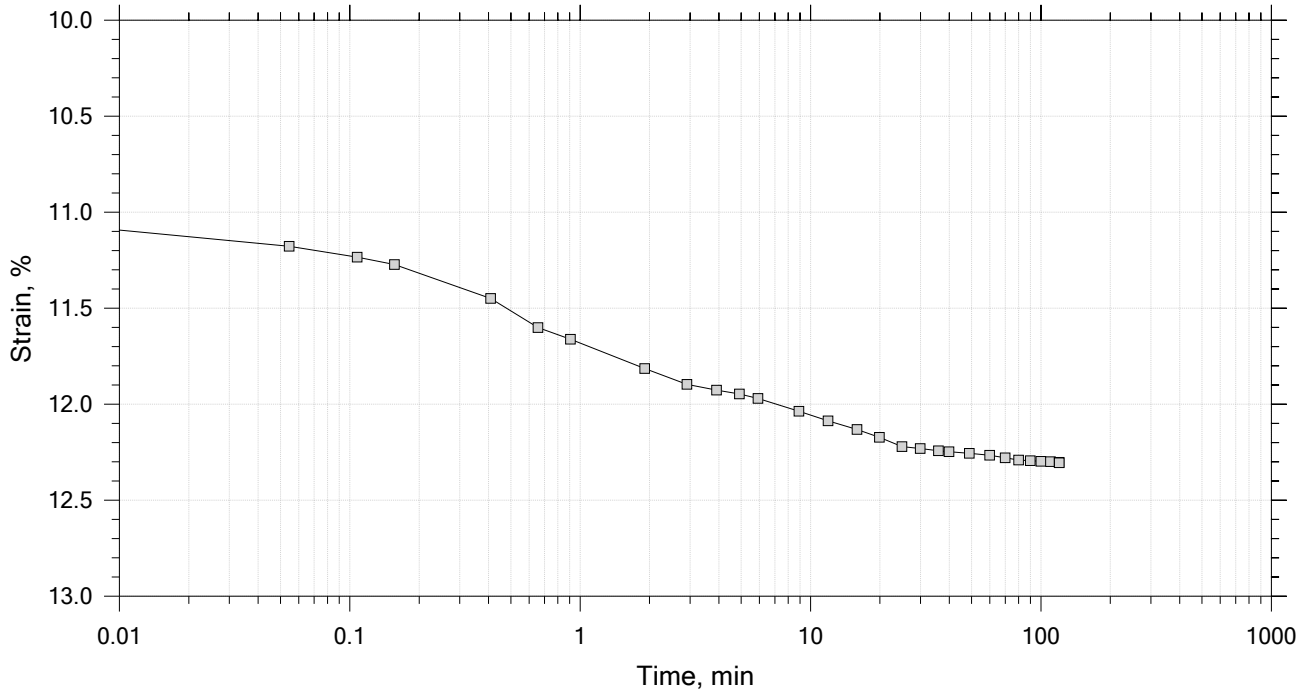
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.7	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
Test No.: IP-5	Sample Type: intact	Elevation: ---
Description: Moits, greenish brown clayey sand		
Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

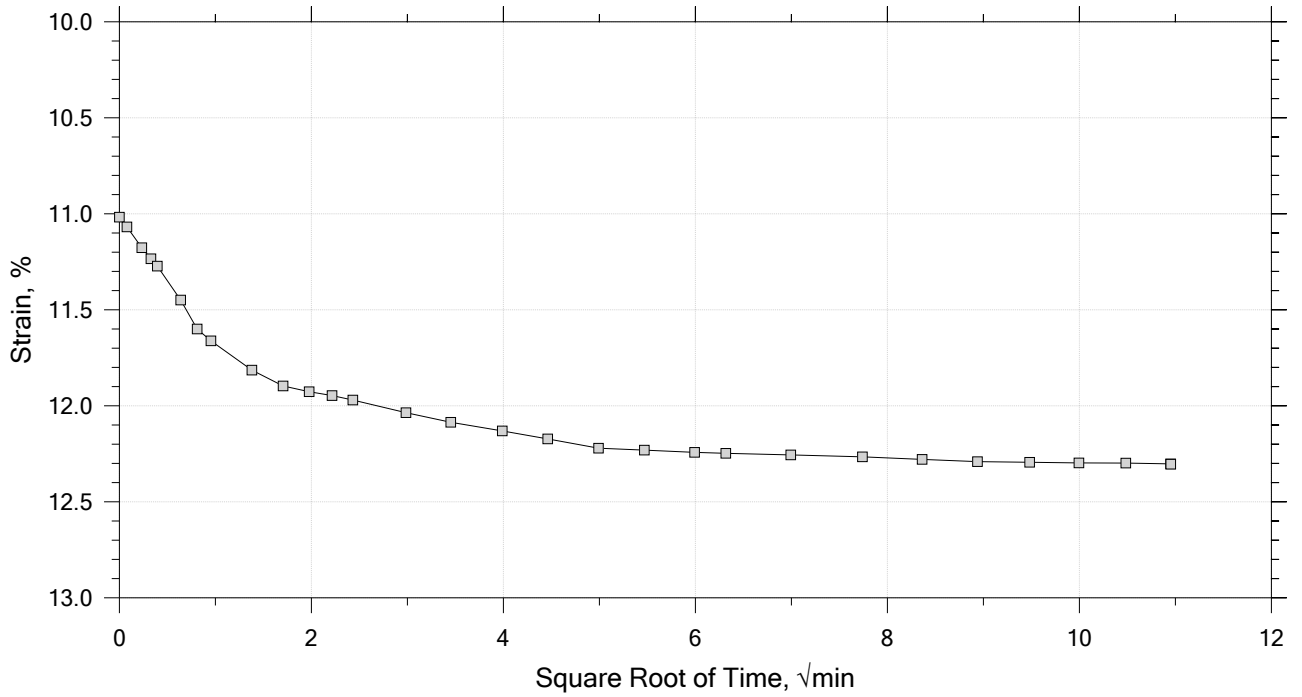
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

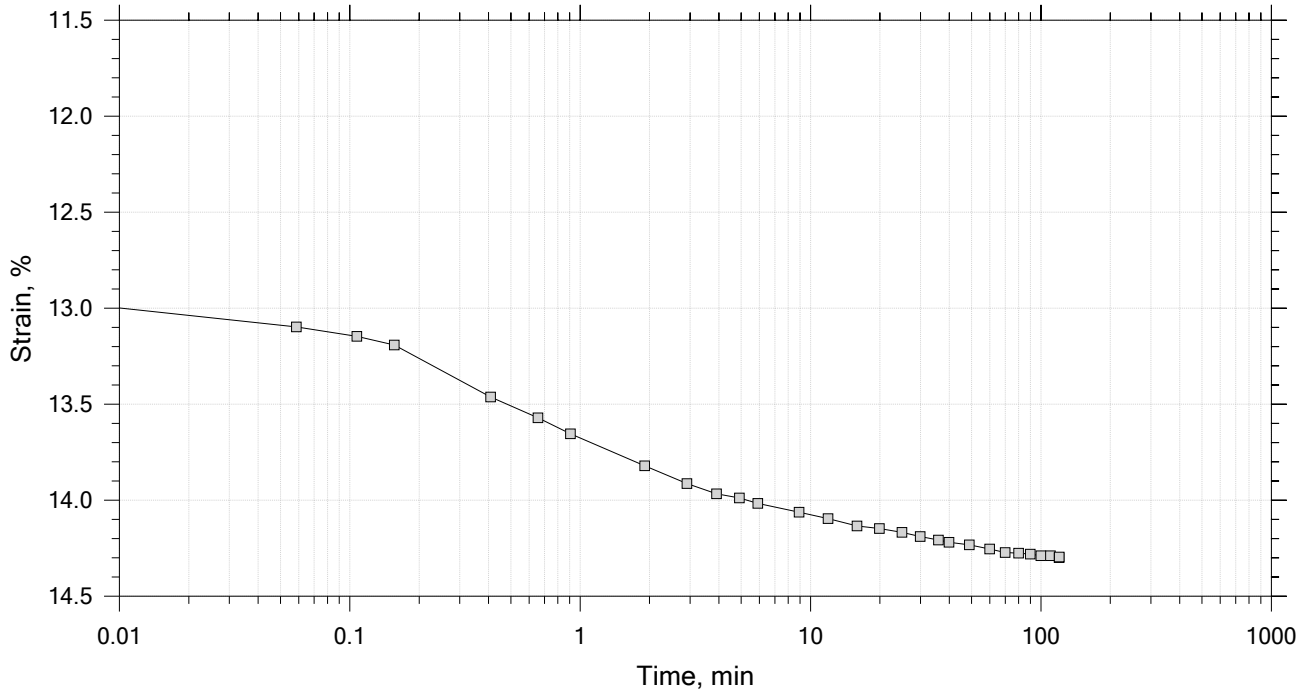


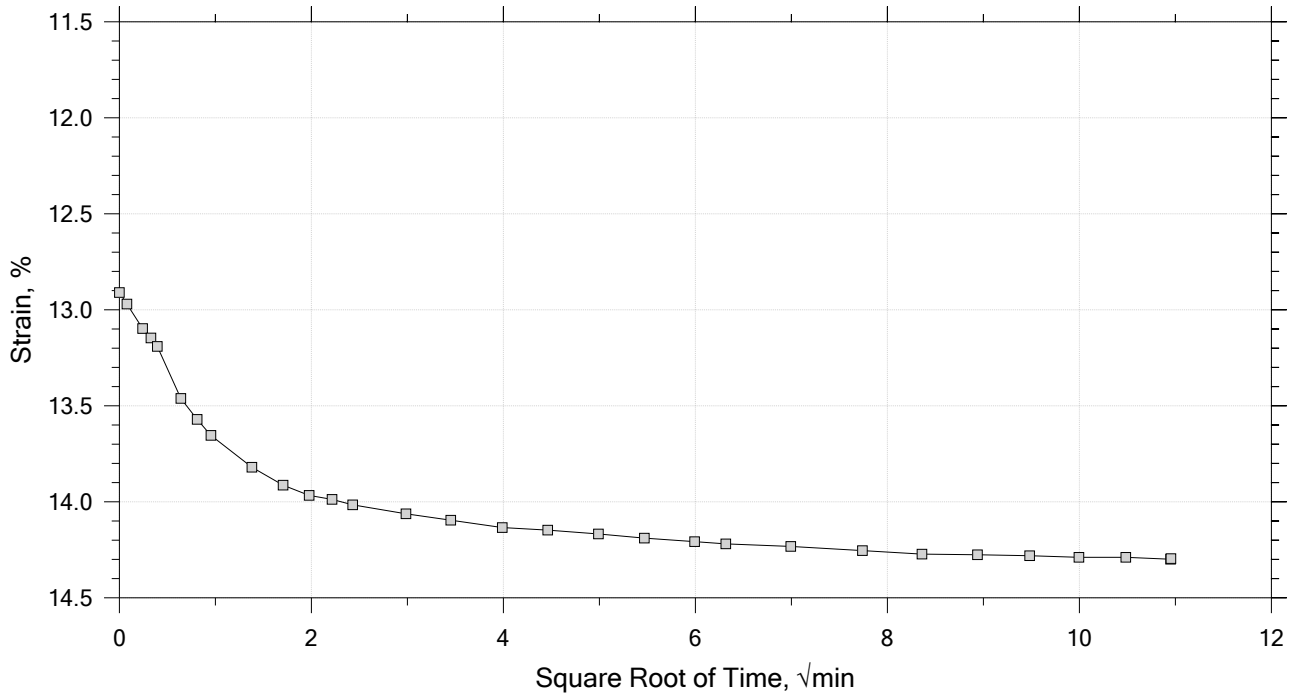


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

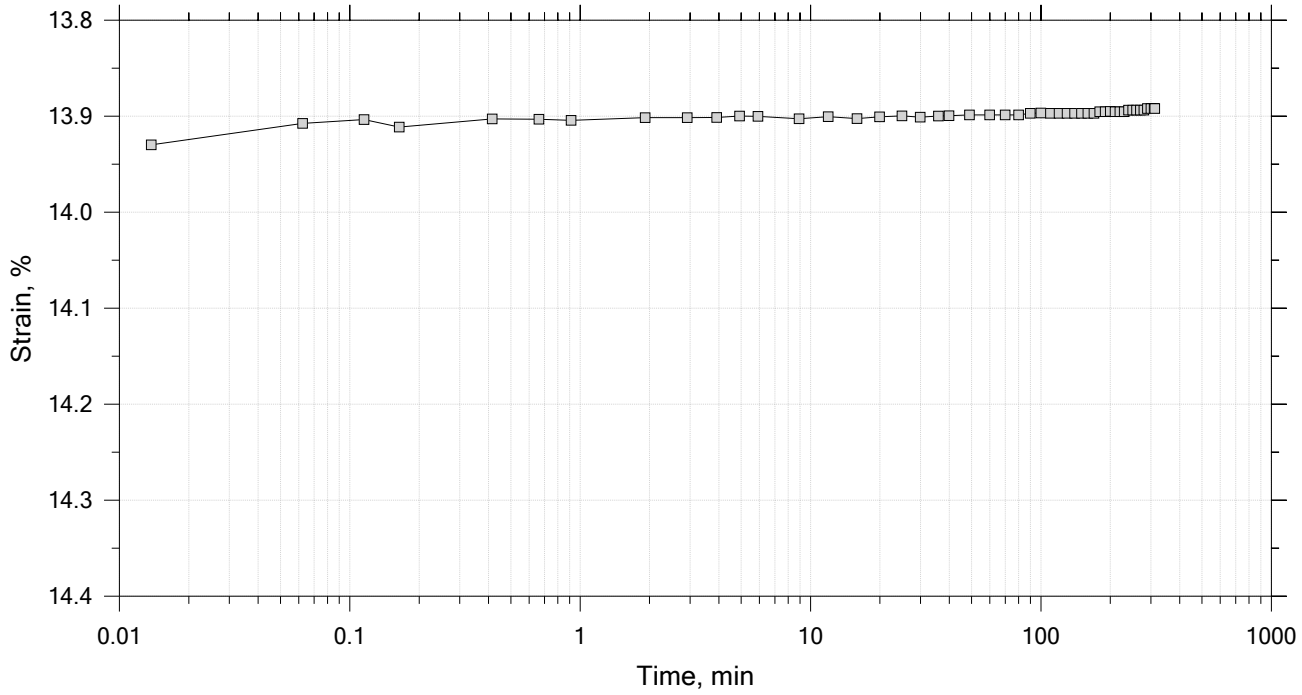


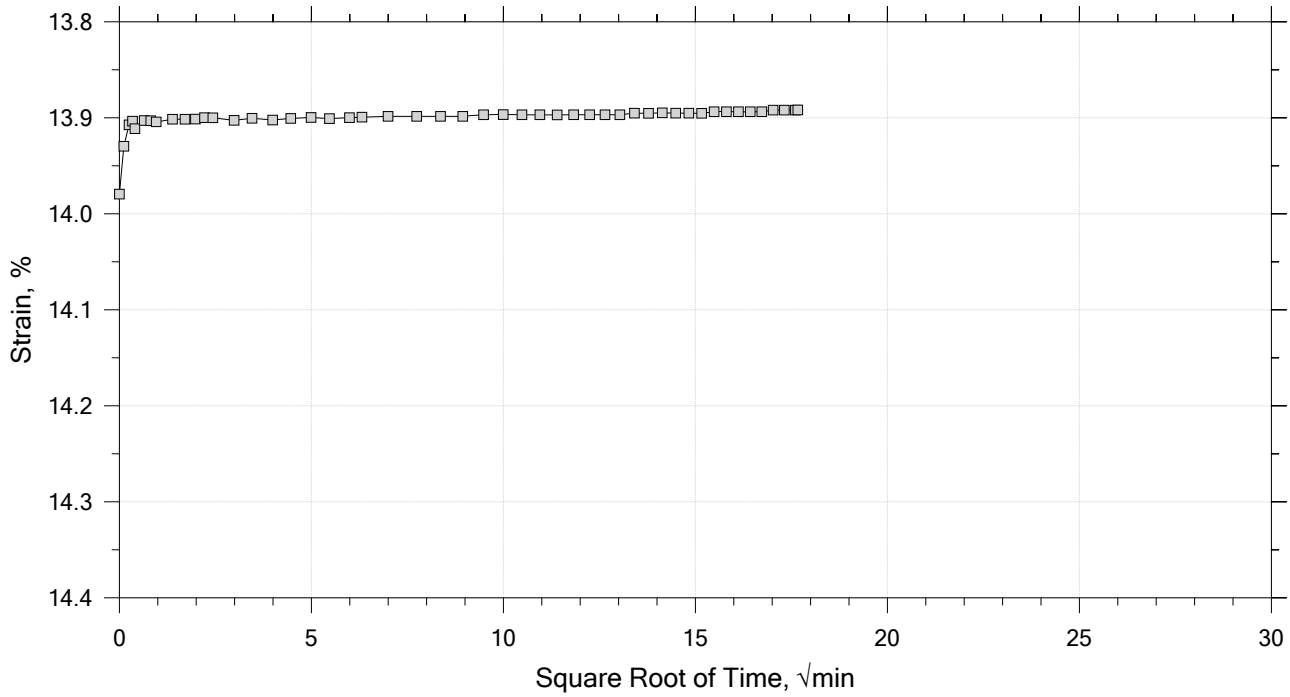


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

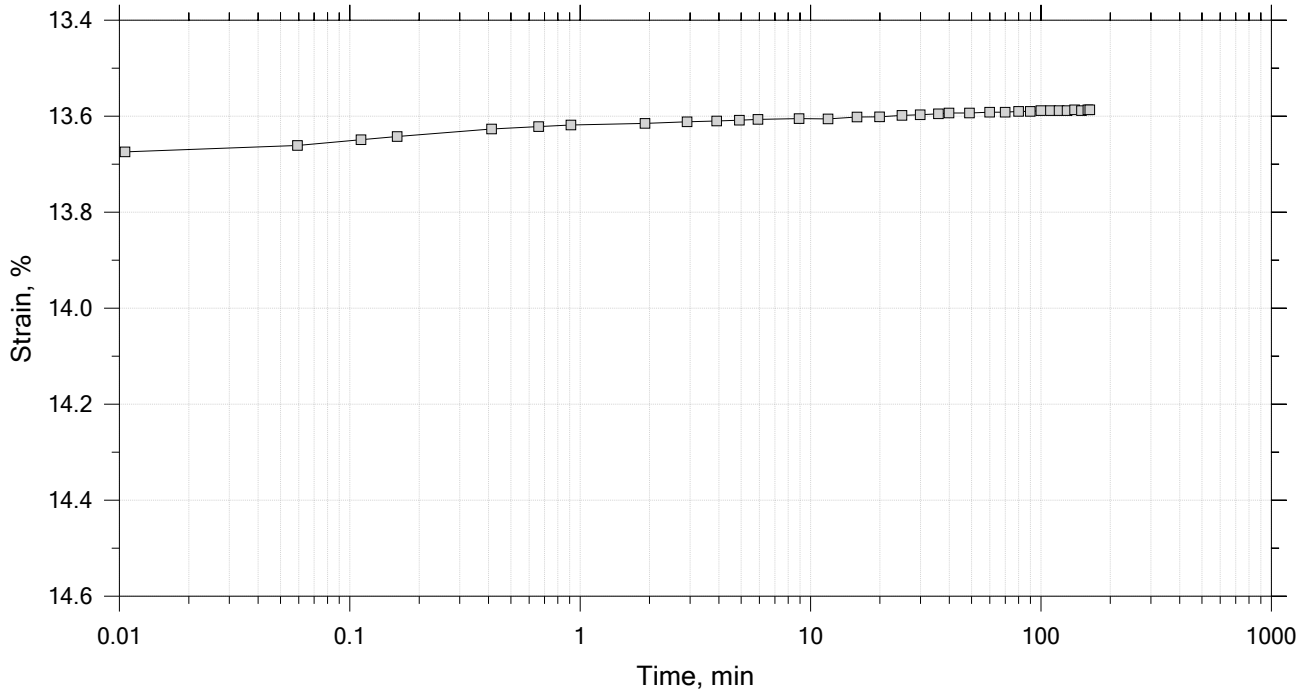


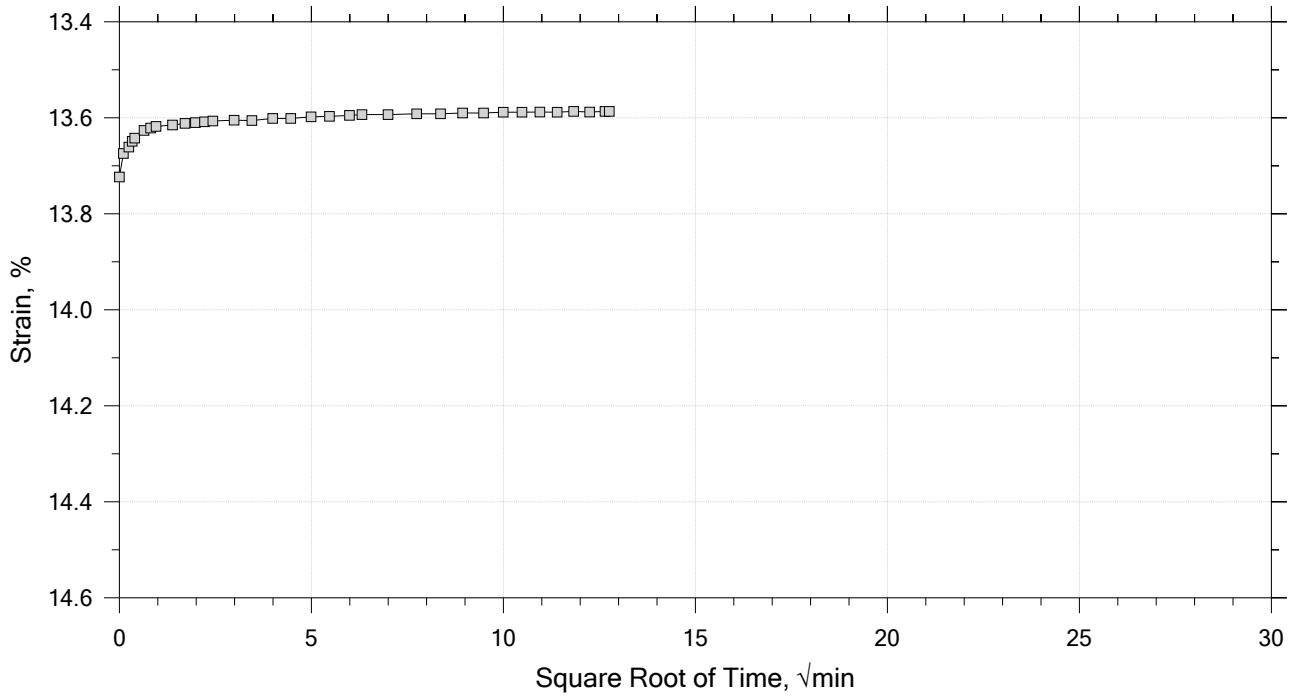


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.7	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
Test No.: IP-5	Sample Type: intact	Elevation: ---
Description: Moits, greenish brown clayey sand		
Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





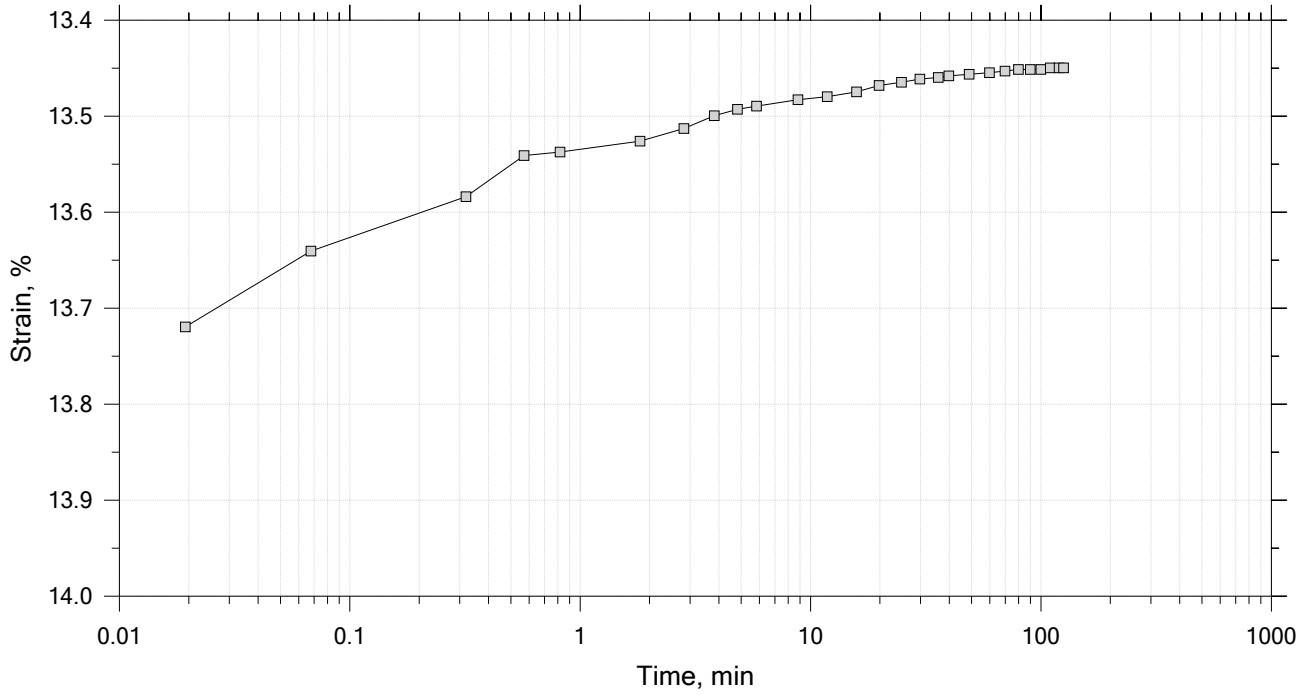
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.7	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
Test No.: IP-5	Sample Type: intact	Elevation: ---
Description: Moits, greenish brown clayey sand		
Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

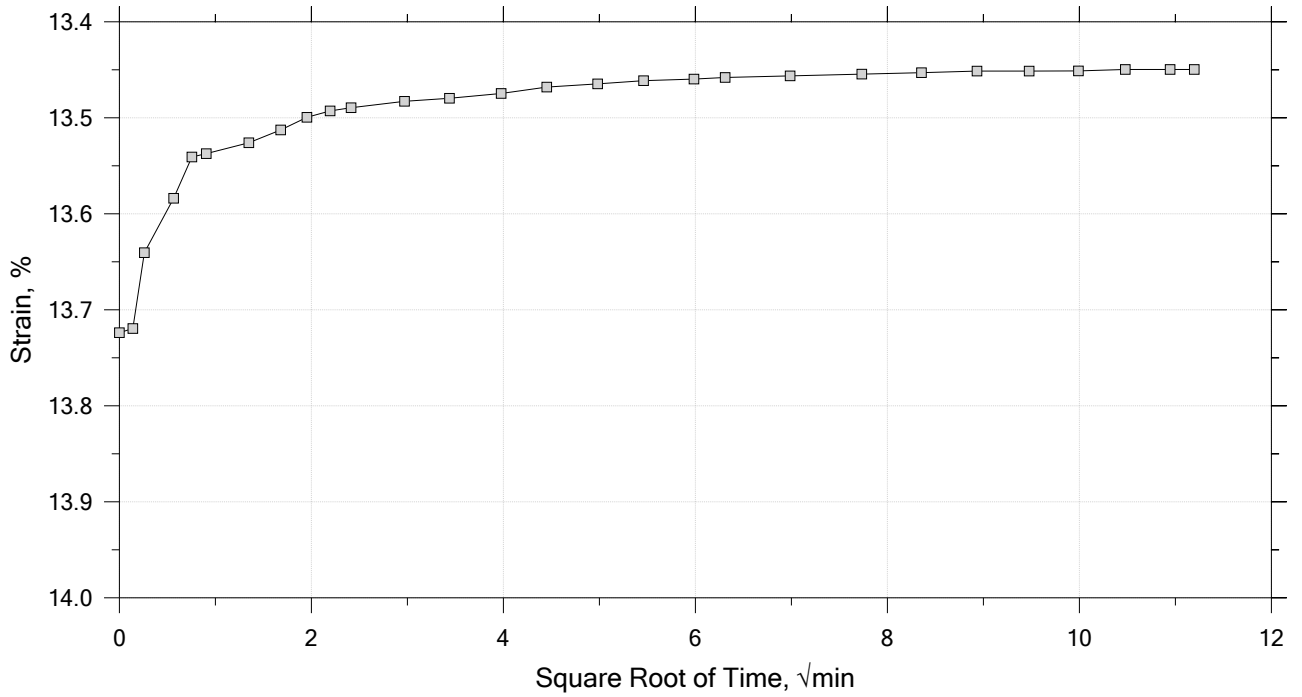
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

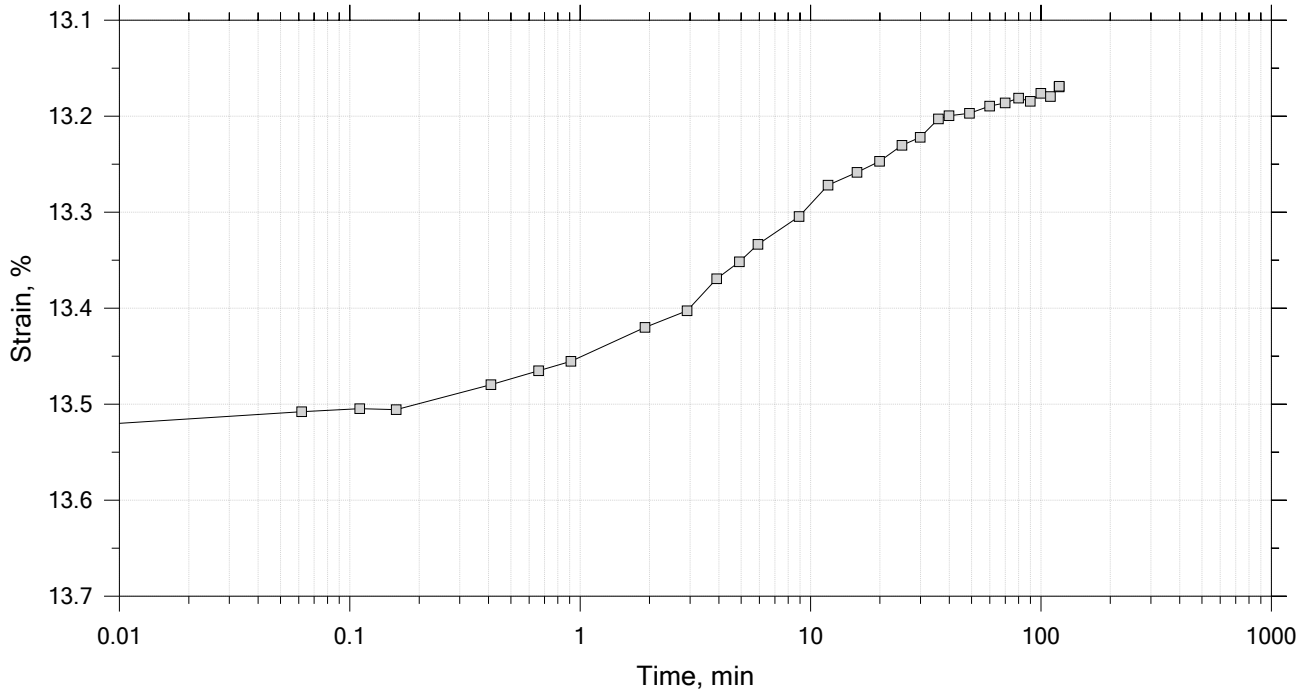


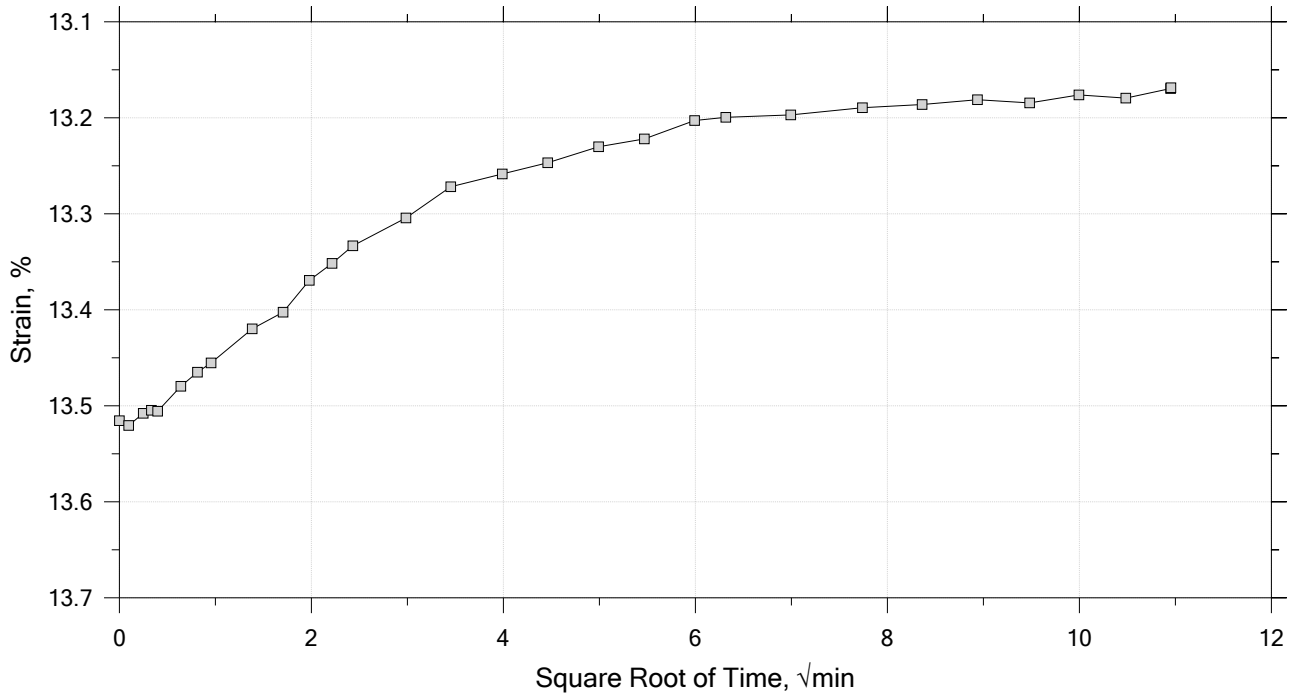


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.70	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.463	Plastic Limit: 16
Final Height: 0.88 in	Final Void Ratio: 0.288	Plasticity Index: 8

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-0208	RING		E5882
Mass Container, gm	8.24	108.06	108.06	8.35
Mass Container + Wet Soil, gm	110.6	280.13	272.19	170.93
Mass Container + Dry Soil, gm	96.21	256.37	256.37	155.26
Mass Dry Soil, gm	87.97	148.31	148.31	146.91
Water Content, %	16.36	16.02	10.67	10.67
Void Ratio	---	0.46	0.29	---
Degree of Saturation, %	---	93.28	100.00	---
Dry Unit Weight, pcf	---	115.1	130.8	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

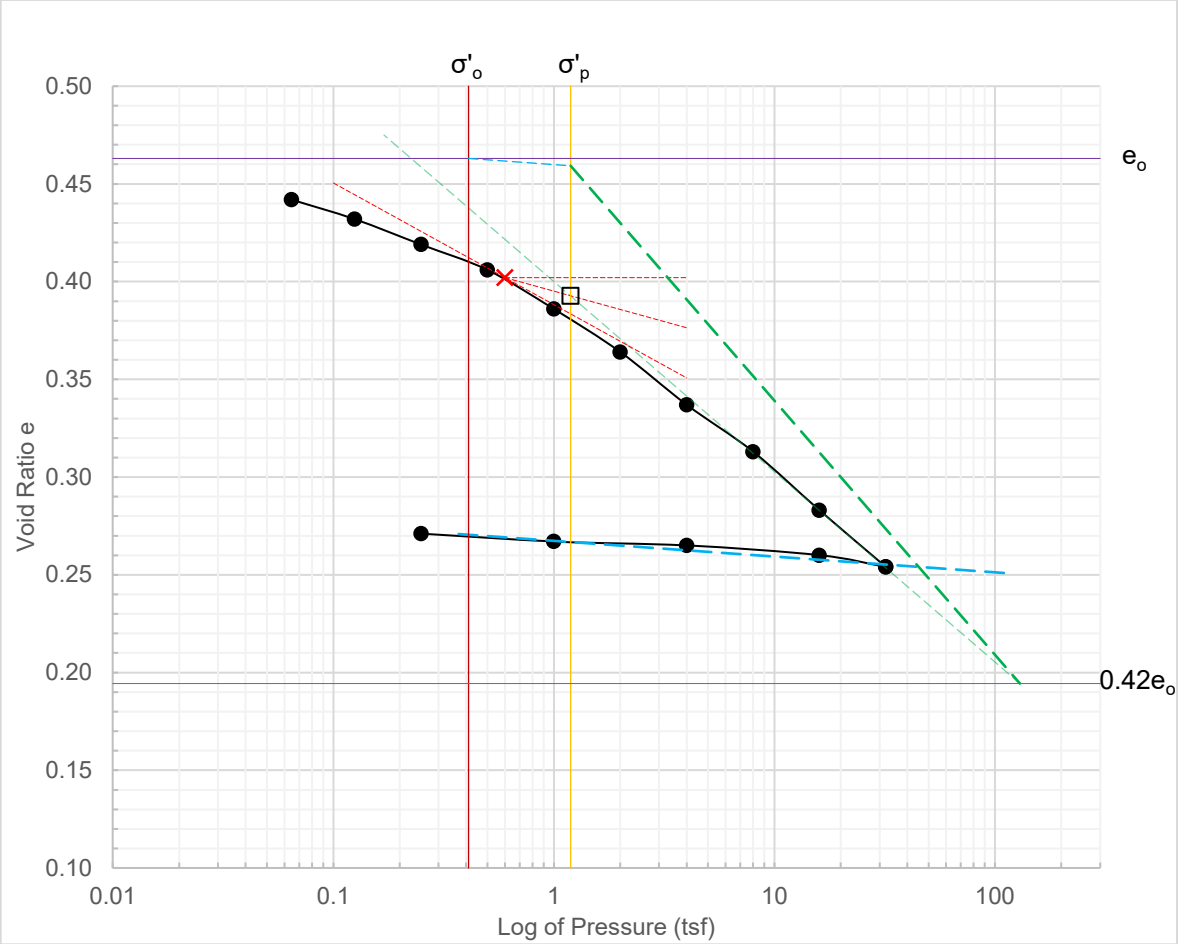
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0646	0.01471	0.442	1.47	68.566	5.08e-05	2.28e-01	2.17e-04
2	0.125	0.02130	0.432	2.13	48.156	7.08e-05	1.09e-01	1.45e-04
3	0.250	0.03025	0.419	3.03	31.244	1.07e-04	7.16e-02	1.44e-04
4	0.500	0.03952	0.406	3.95	13.284	2.48e-04	3.71e-02	1.72e-04
5	1.00	0.05304	0.386	5.30	6.921	4.64e-04	2.70e-02	2.35e-04
6	2.00	0.06815	0.364	6.82	4.692	6.65e-04	1.51e-02	1.88e-04
7	4.00	0.08615	0.337	8.62	158.993	1.89e-05	9.00e-03	3.19e-06
8	8.00	0.1025	0.313	10.2	4.378	6.62e-04	4.08e-03	5.06e-05
9	16.0	0.1230	0.283	12.3	4.200	6.62e-04	2.57e-03	3.19e-05
10	32.0	0.1430	0.254	14.3	3.444	7.71e-04	1.24e-03	1.80e-05
11	16.0	0.1389	0.260	13.9	0.115	2.27e-02	2.52e-04	1.07e-04
12	4.00	0.1359	0.265	13.6	3.153	8.34e-04	2.54e-04	3.97e-06
13	1.00	0.1345	0.267	13.4	2.555	1.03e-03	4.57e-04	8.84e-06
14	0.250	0.1317	0.271	13.2	19.411	1.37e-04	3.75e-03	9.60e-06

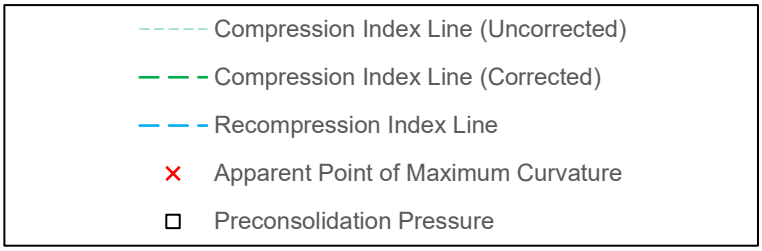
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.7	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.0-8.1
	Test No.: IP-5	Sample Type: intact	Elevation: ---
	Description: Moits, greenish brown clayey sand		
	Remarks: System LTIII-H, Swell Pressure = 0.0646 tsf		
	Displacement at End of Increment		

Boring: B-4.7

Depth: 8.0'-8.1'

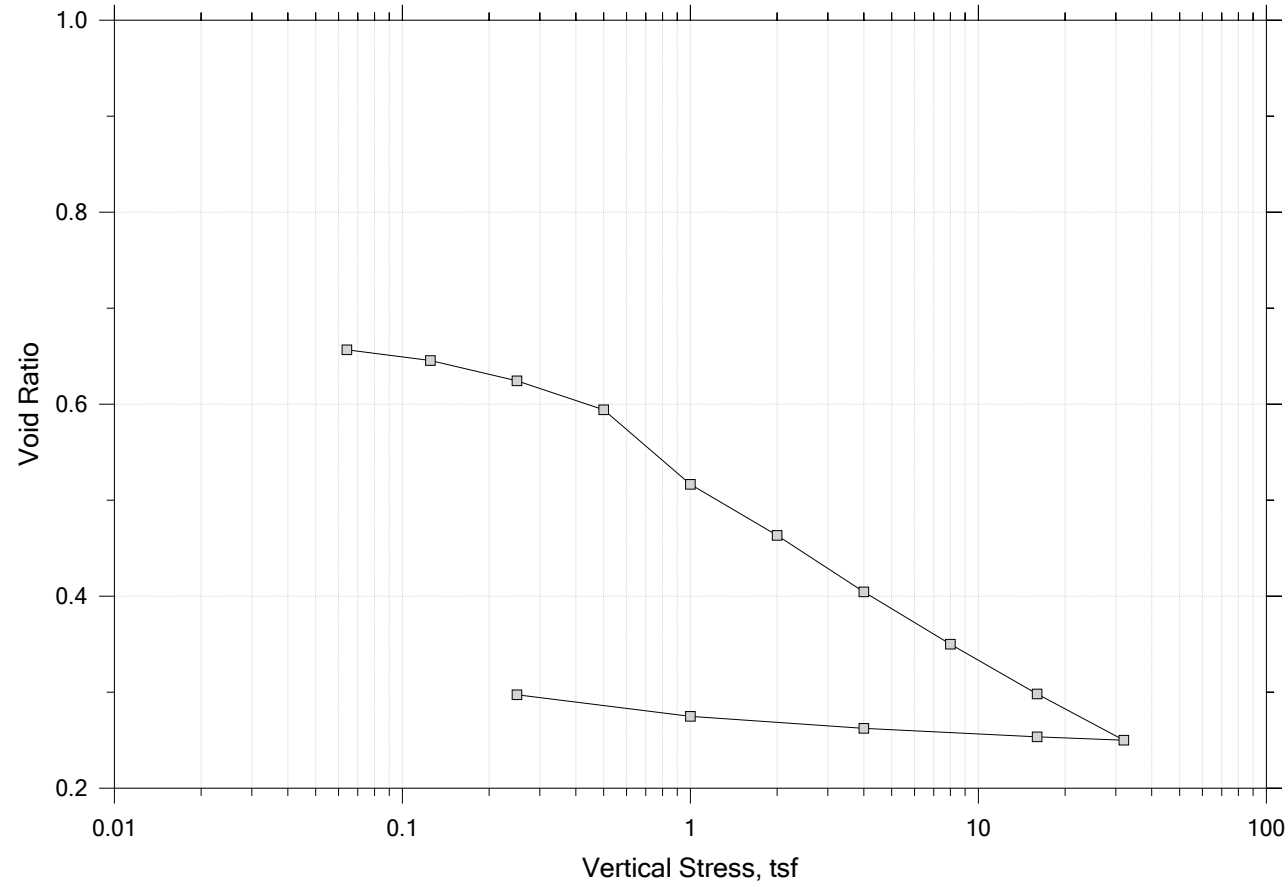
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.41
Preconsolidation Pressure, σ'_p (tsf) = 1.19
Compression Index, C_c = 0.13
Recompression Index, C_r = 0.0080

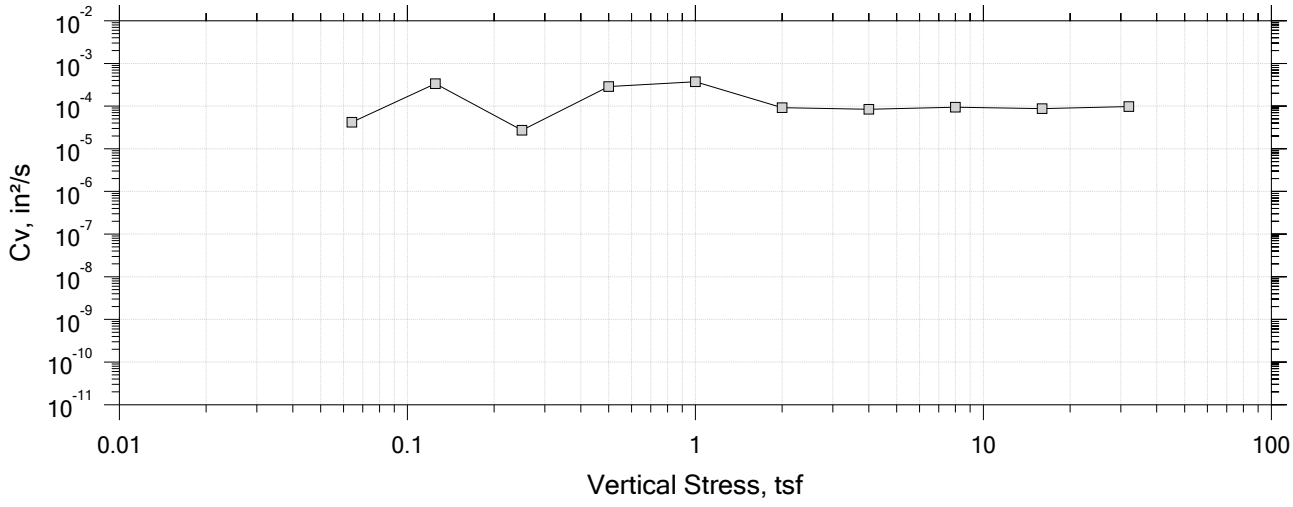




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

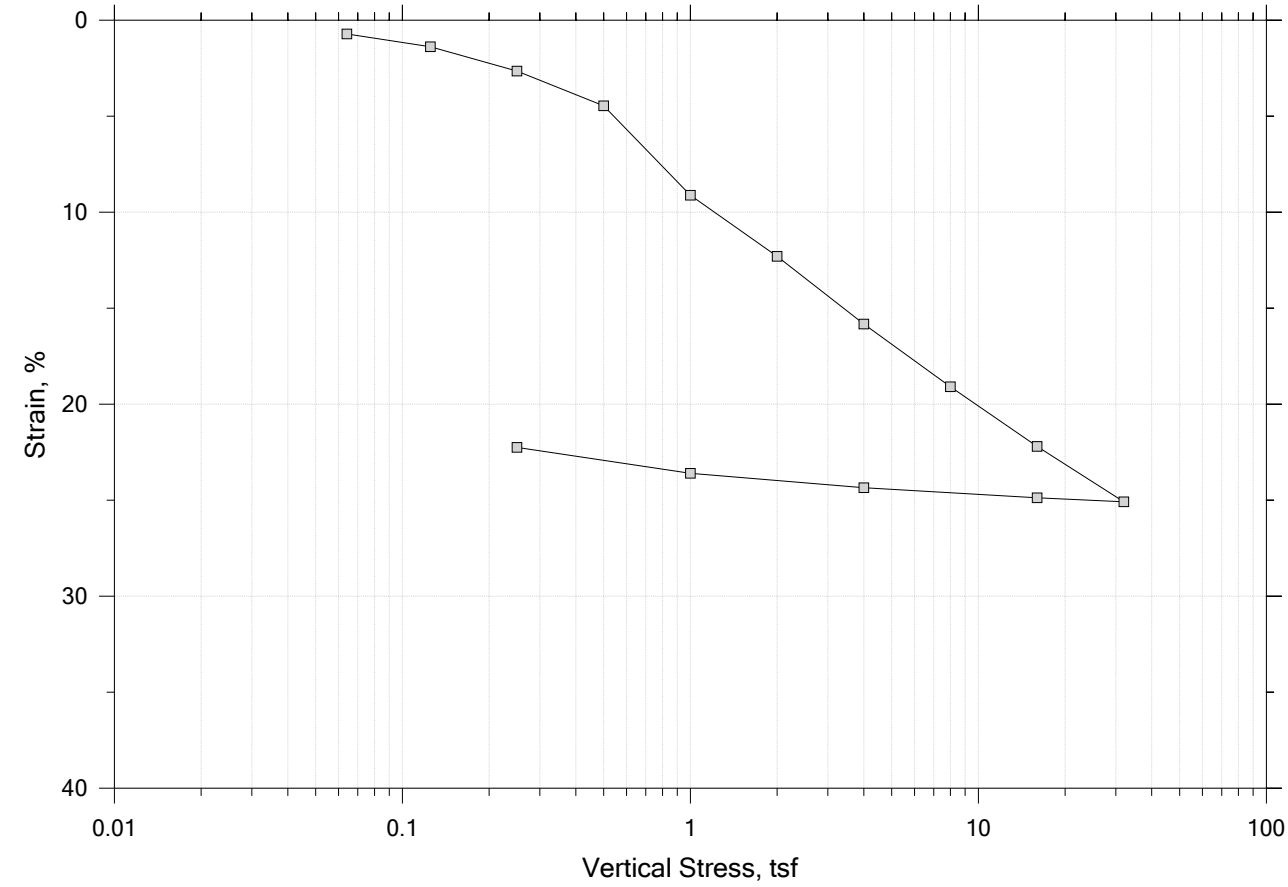


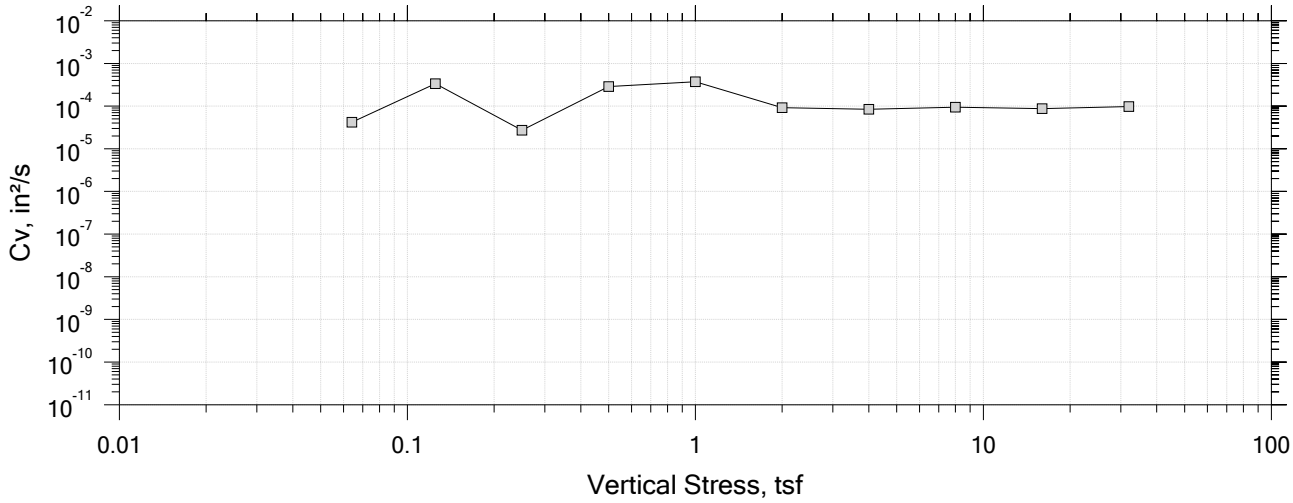


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

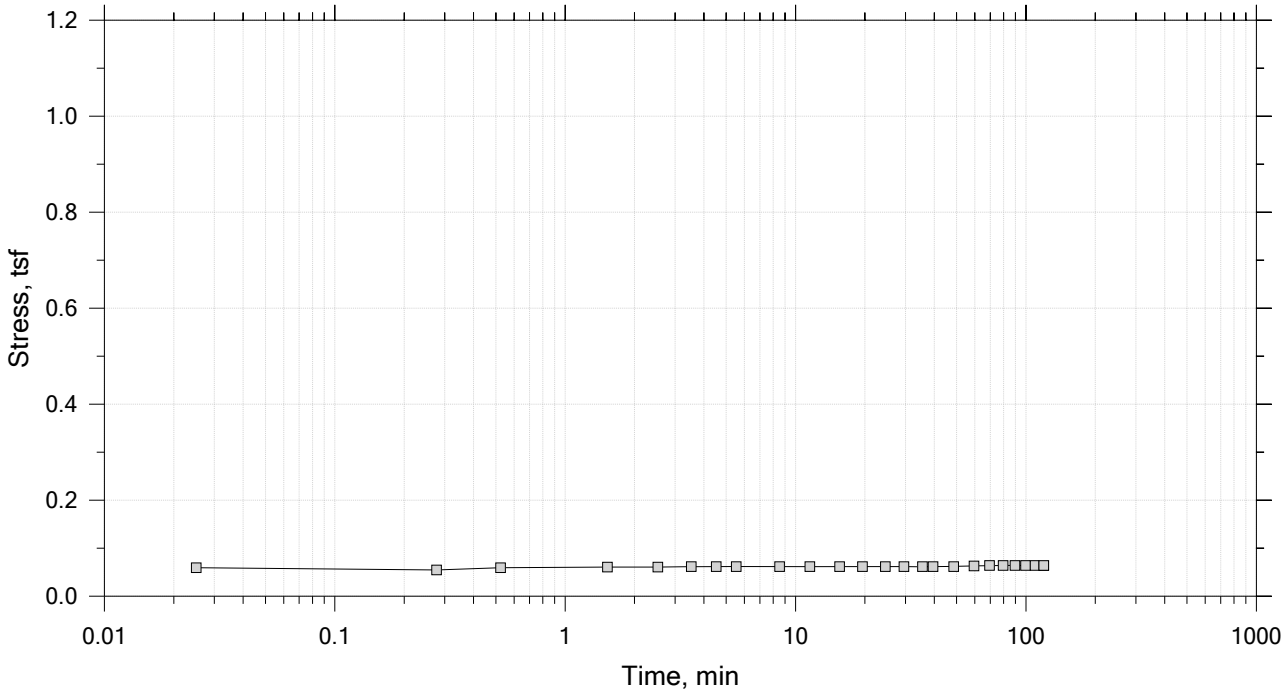


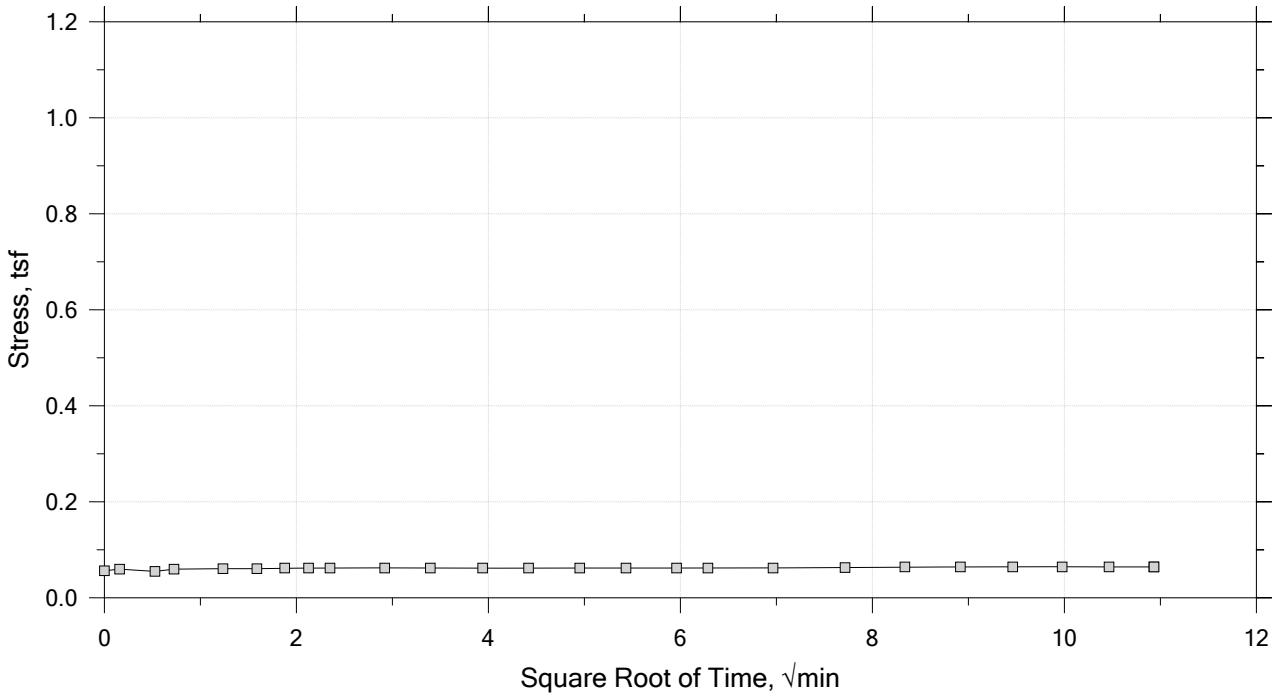


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0641 tsf

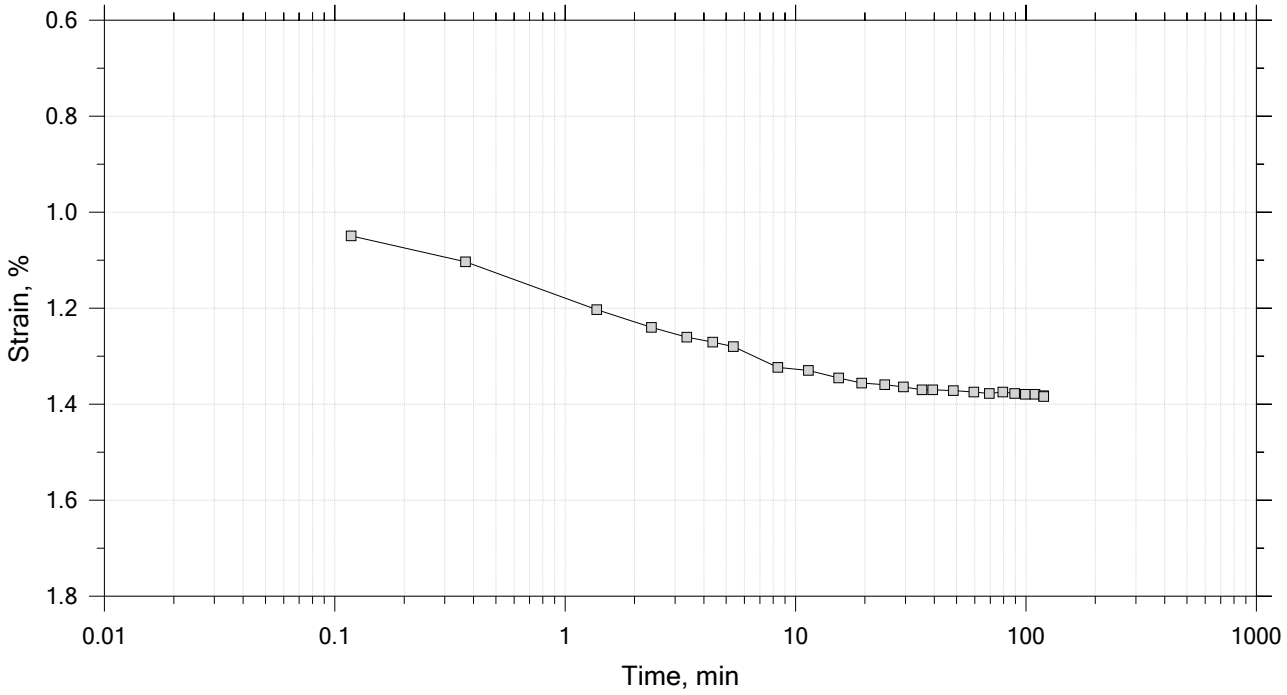


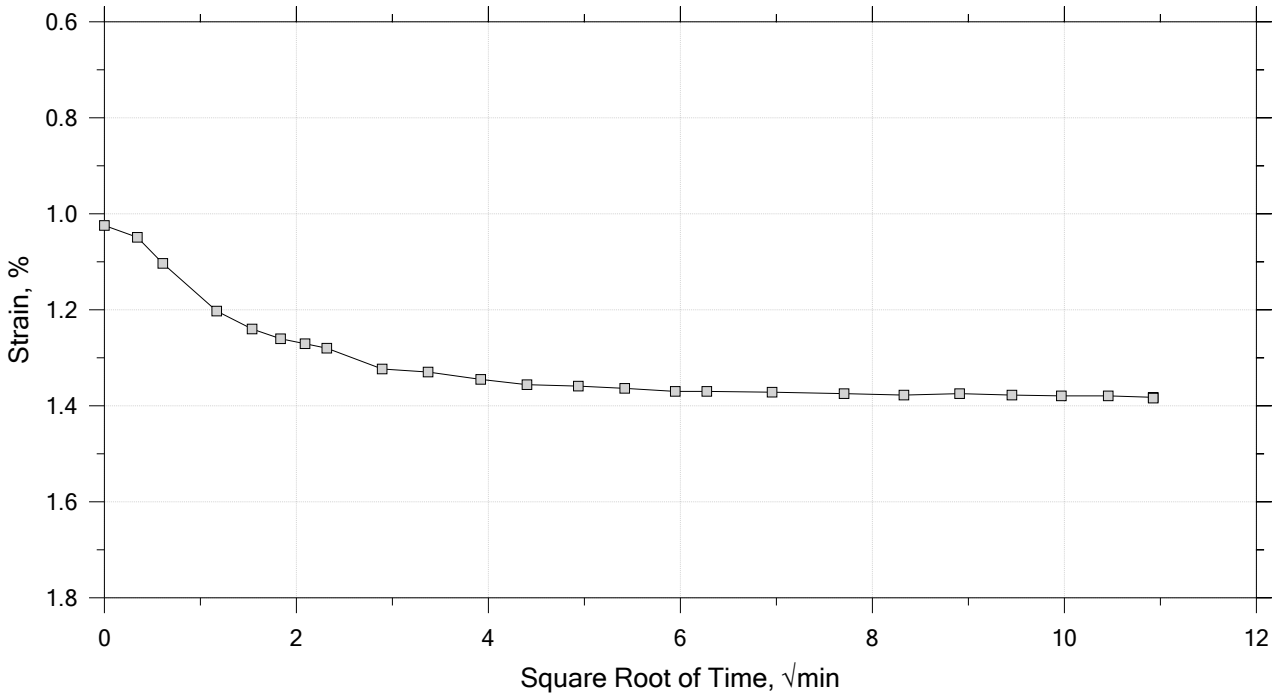


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





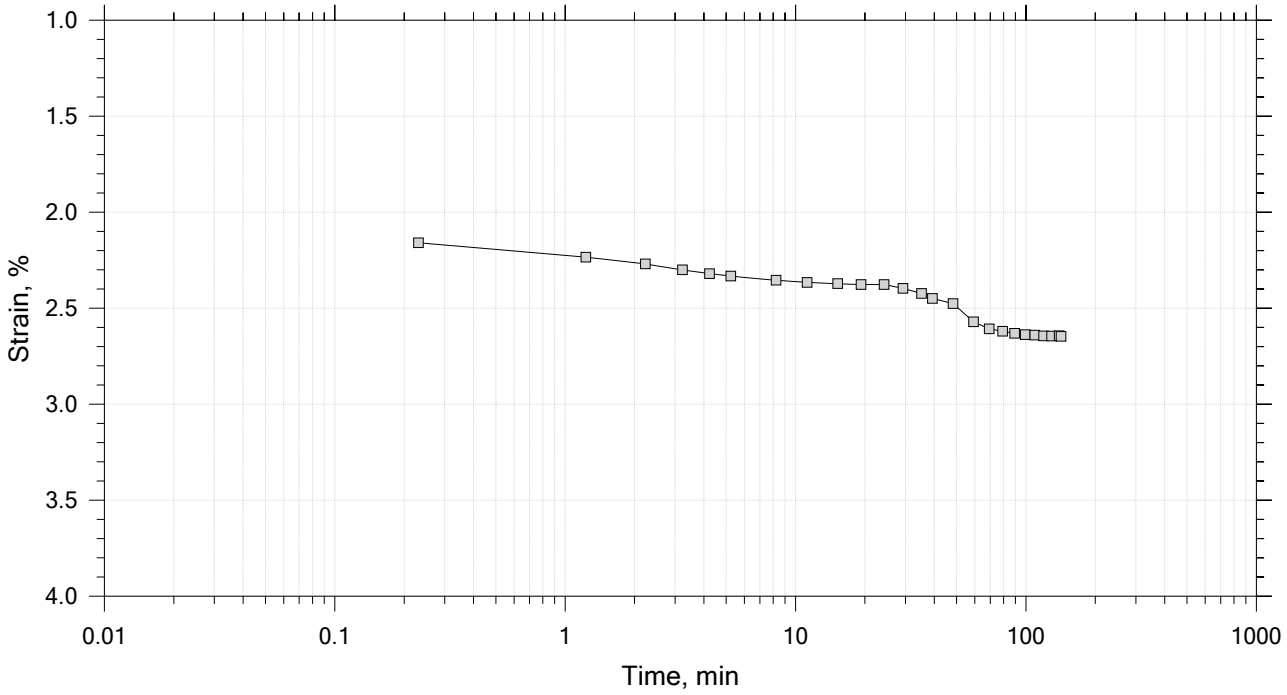
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

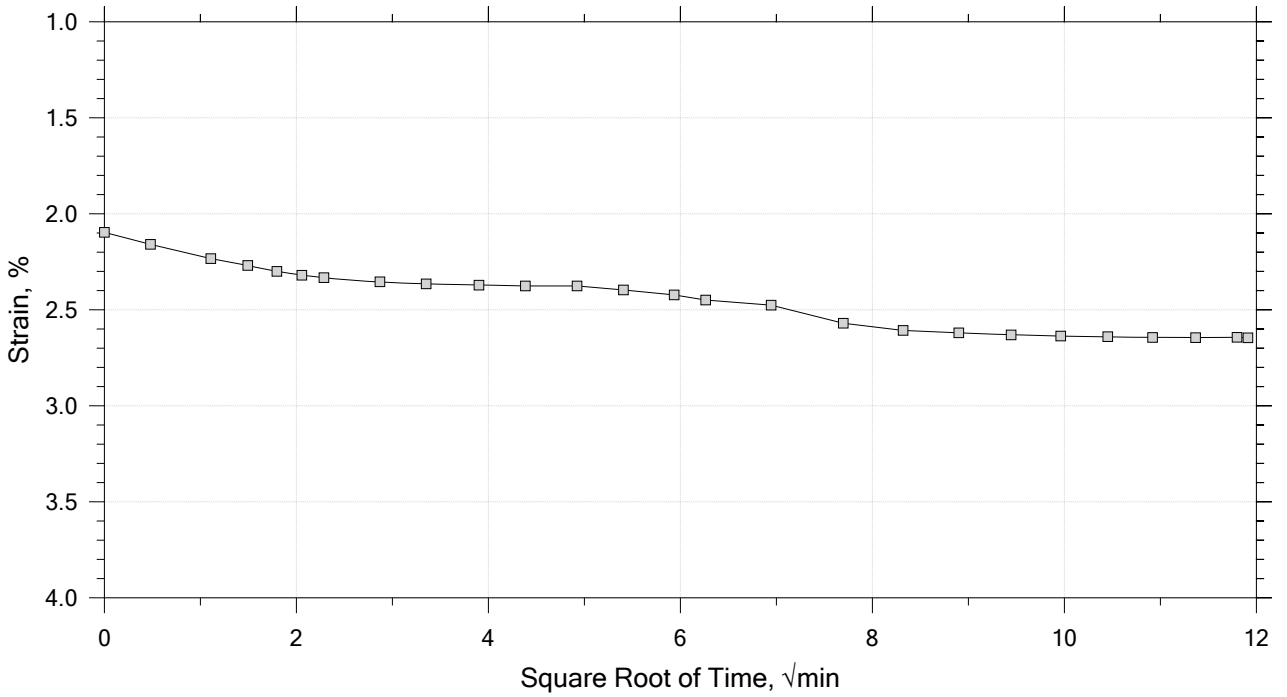
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf

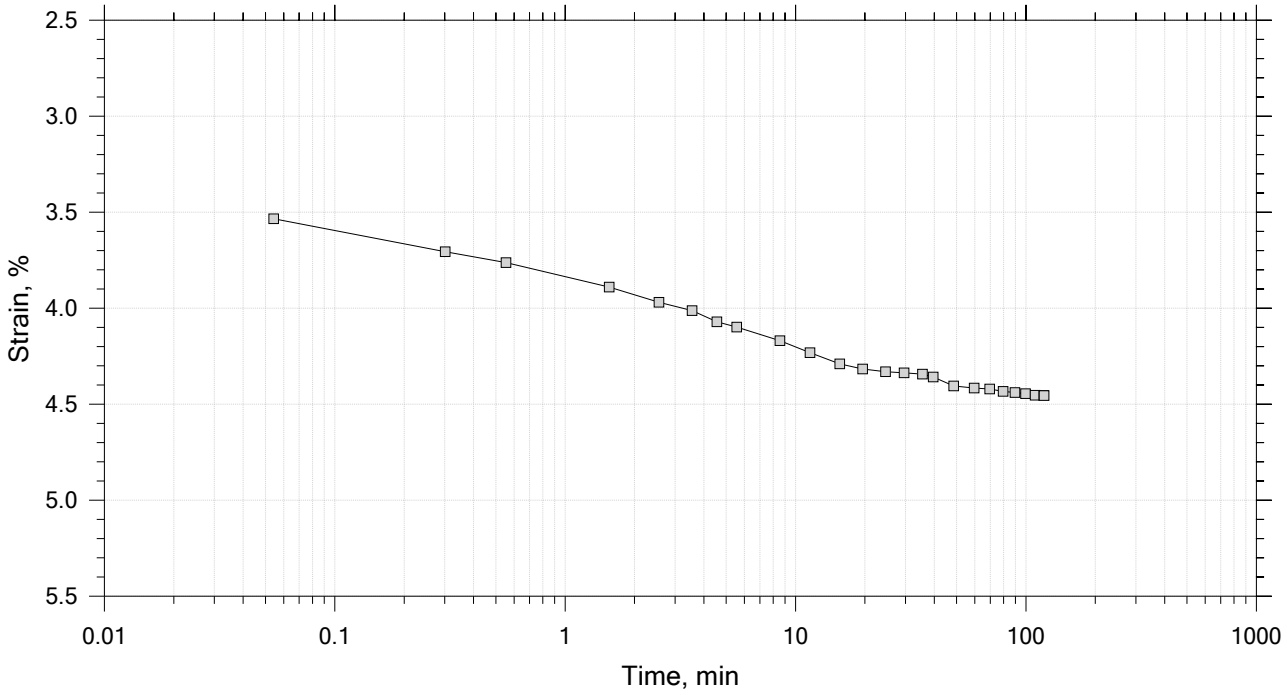


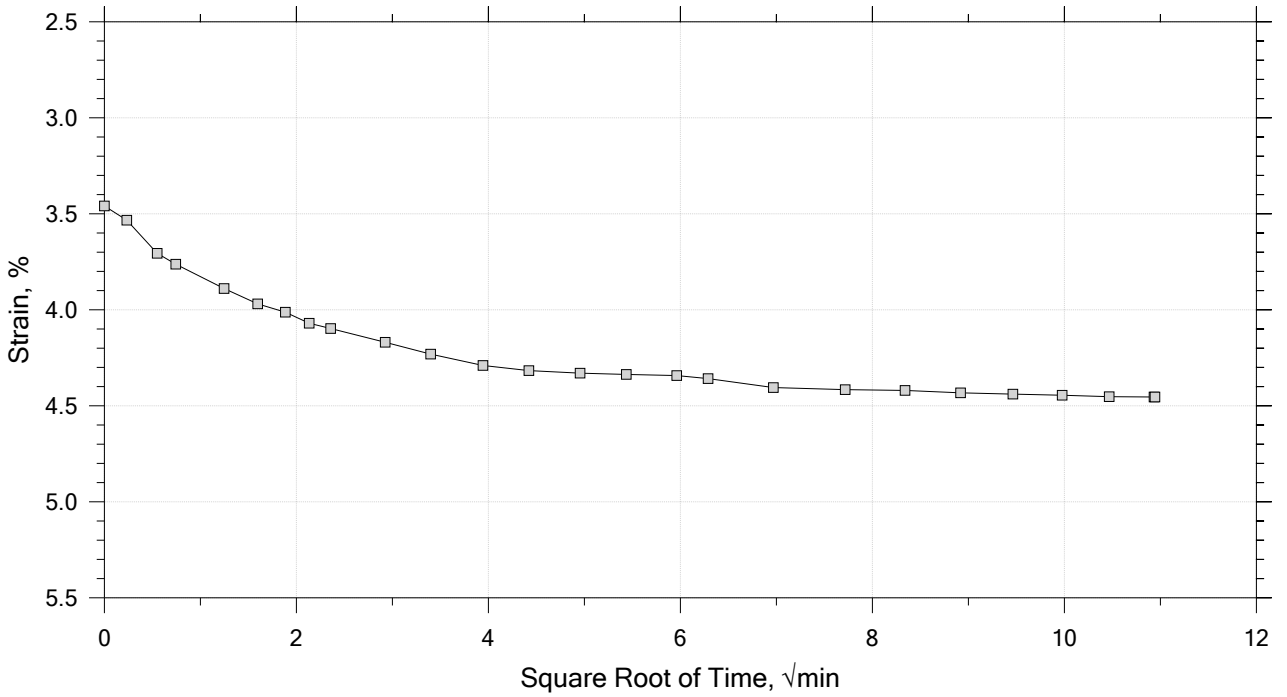


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





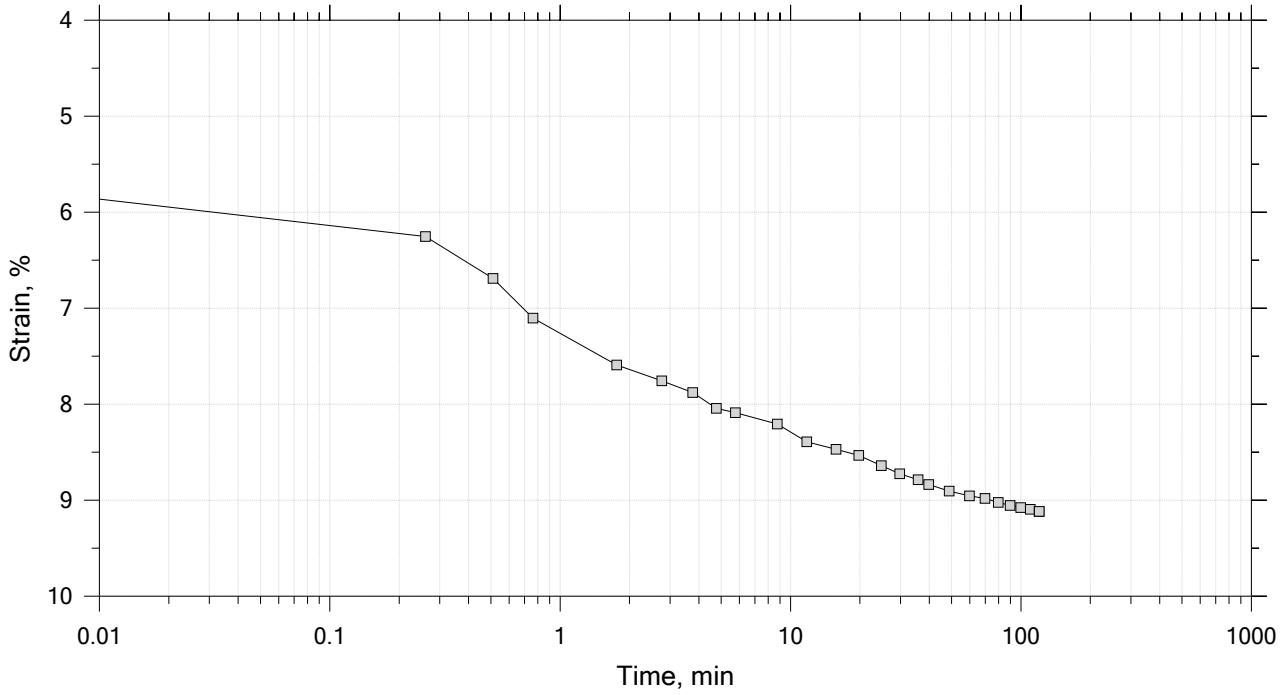
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

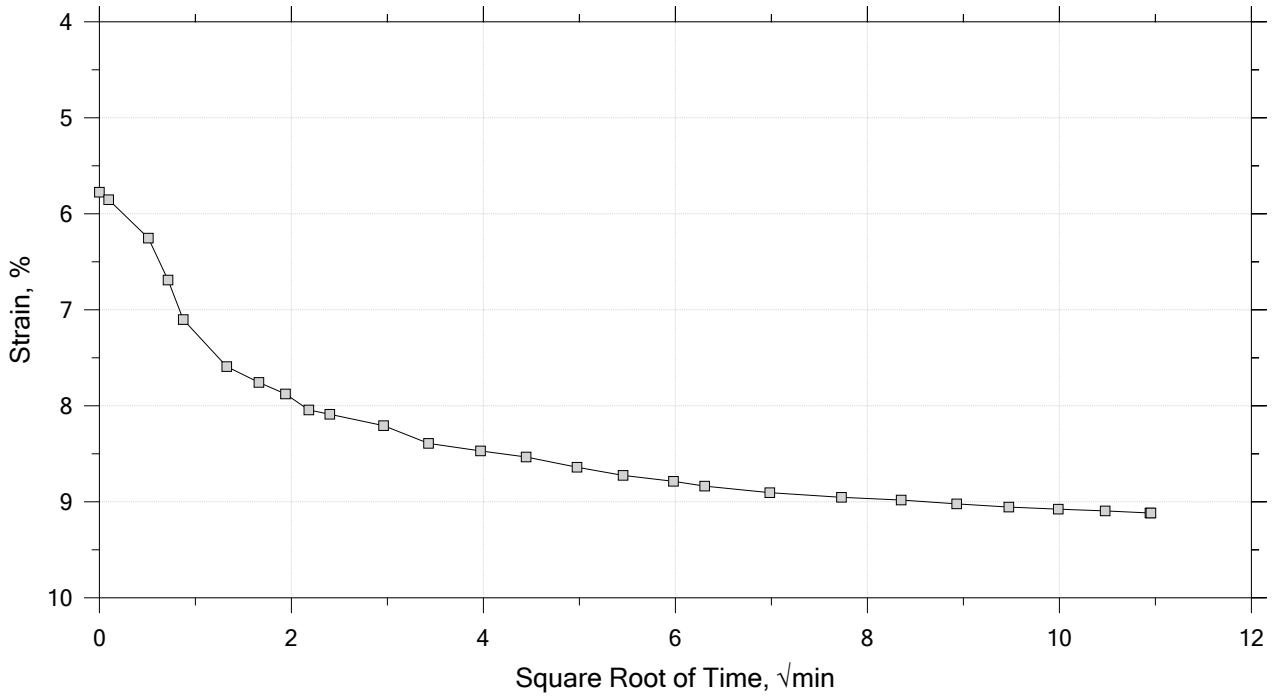
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





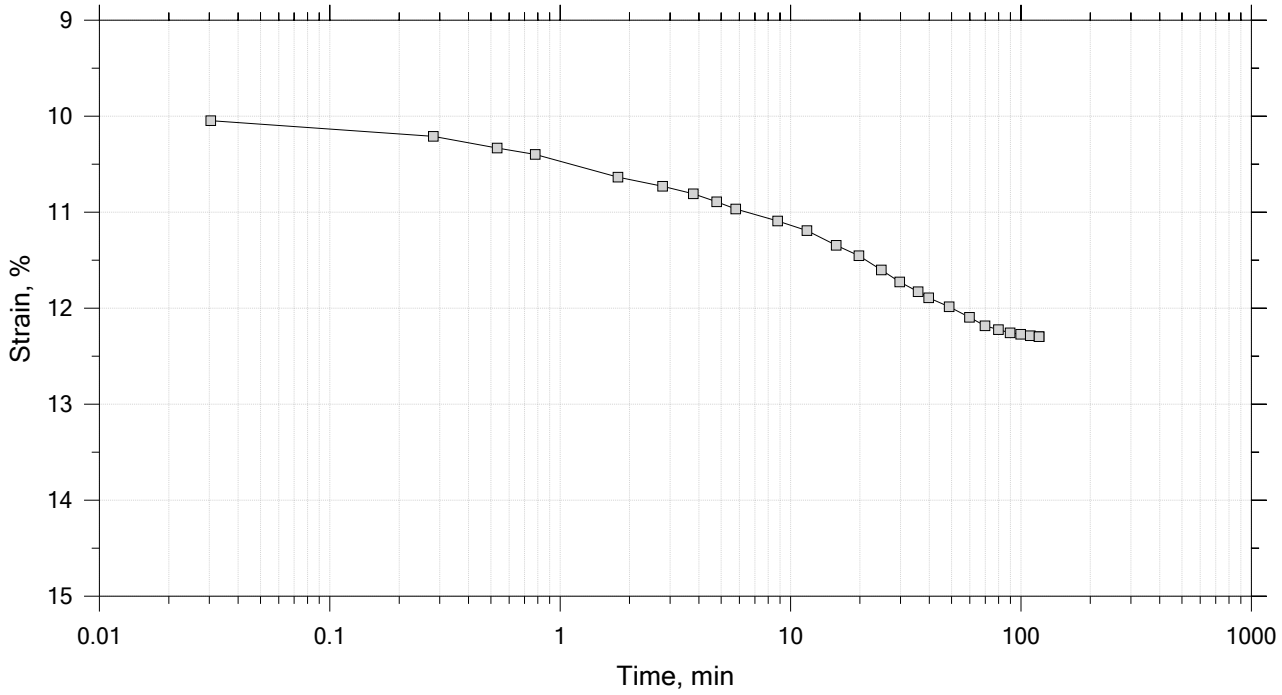
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

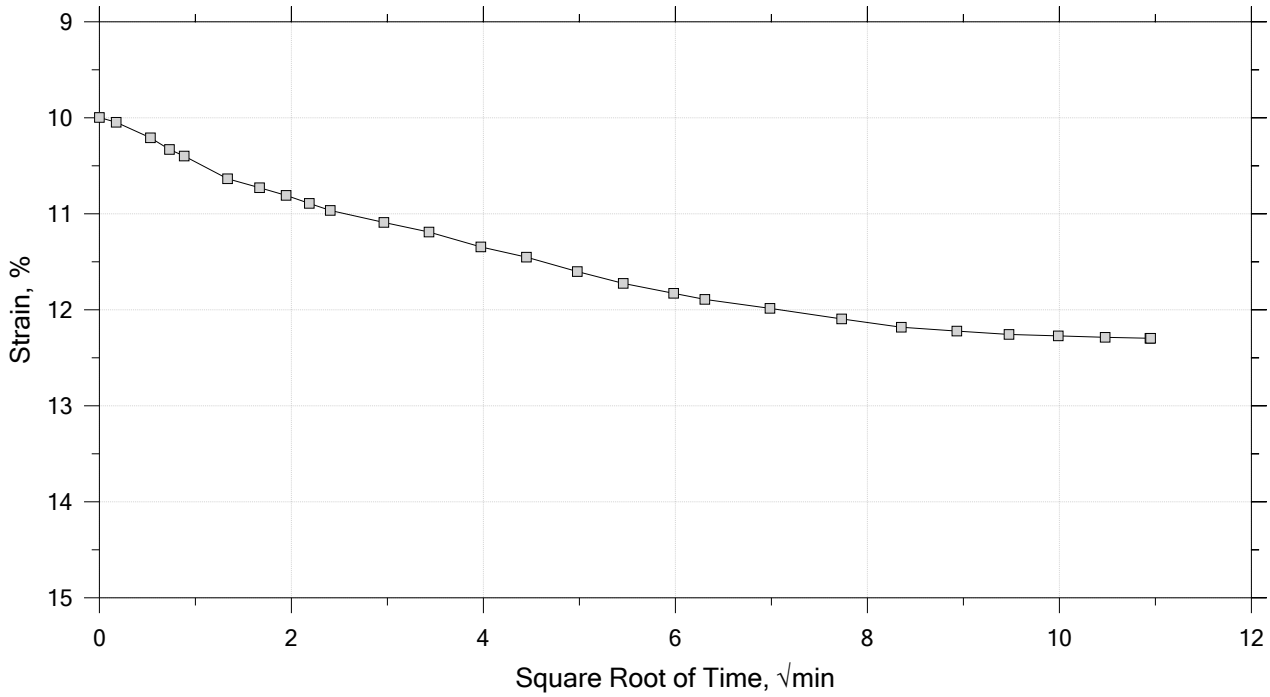
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





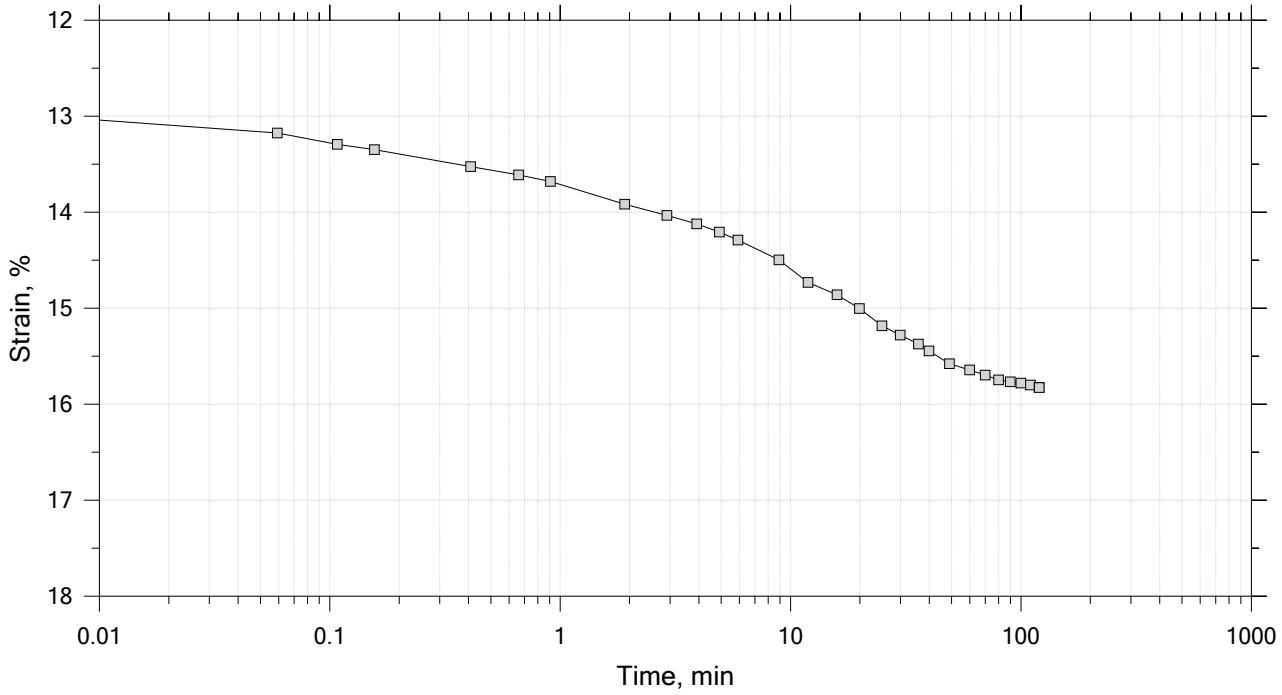
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

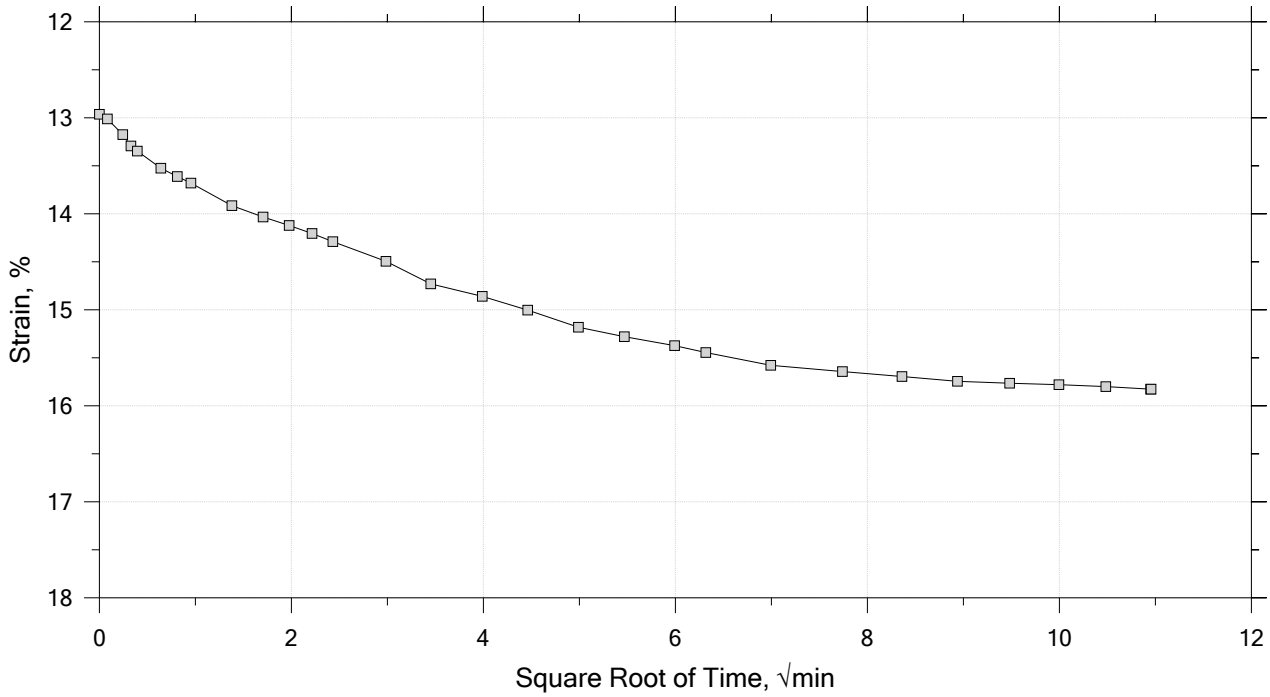
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





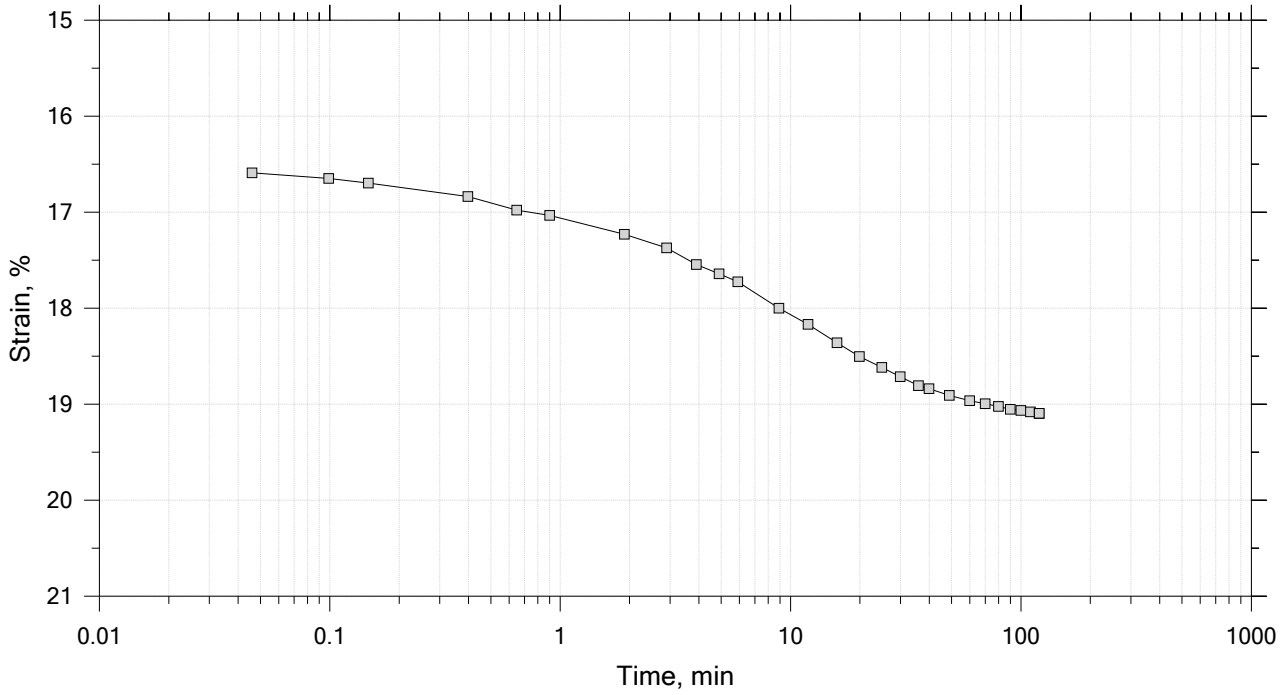
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

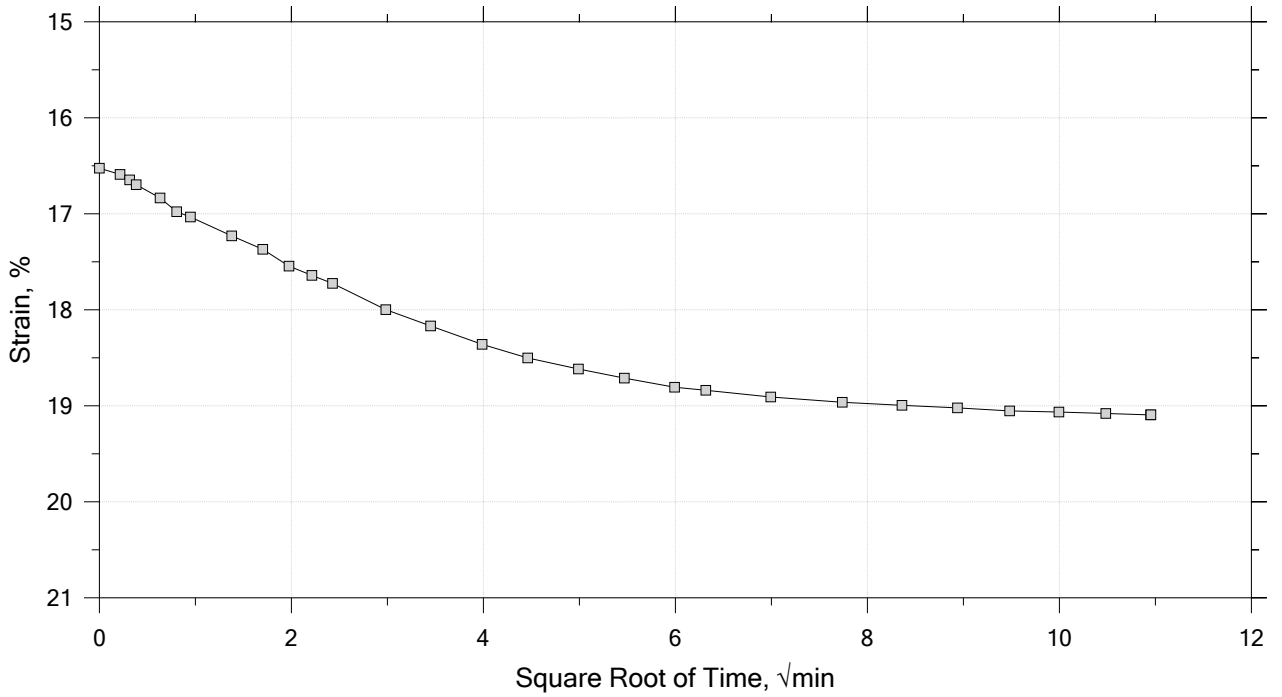
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

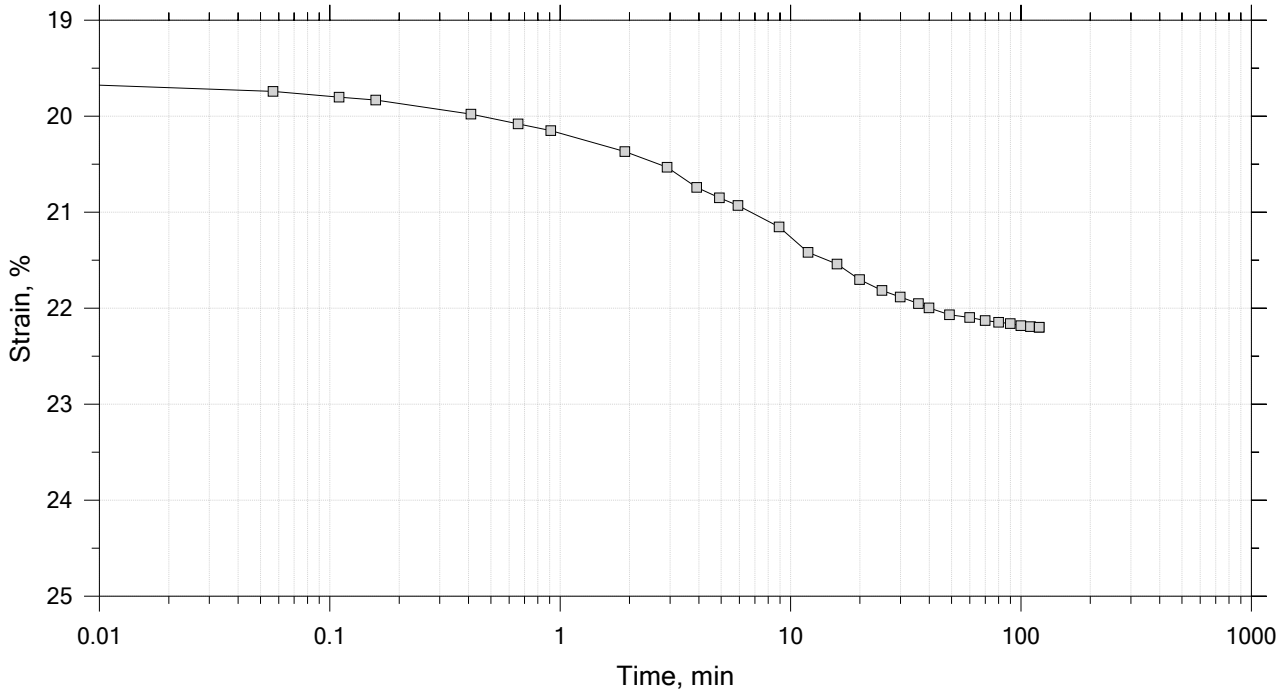


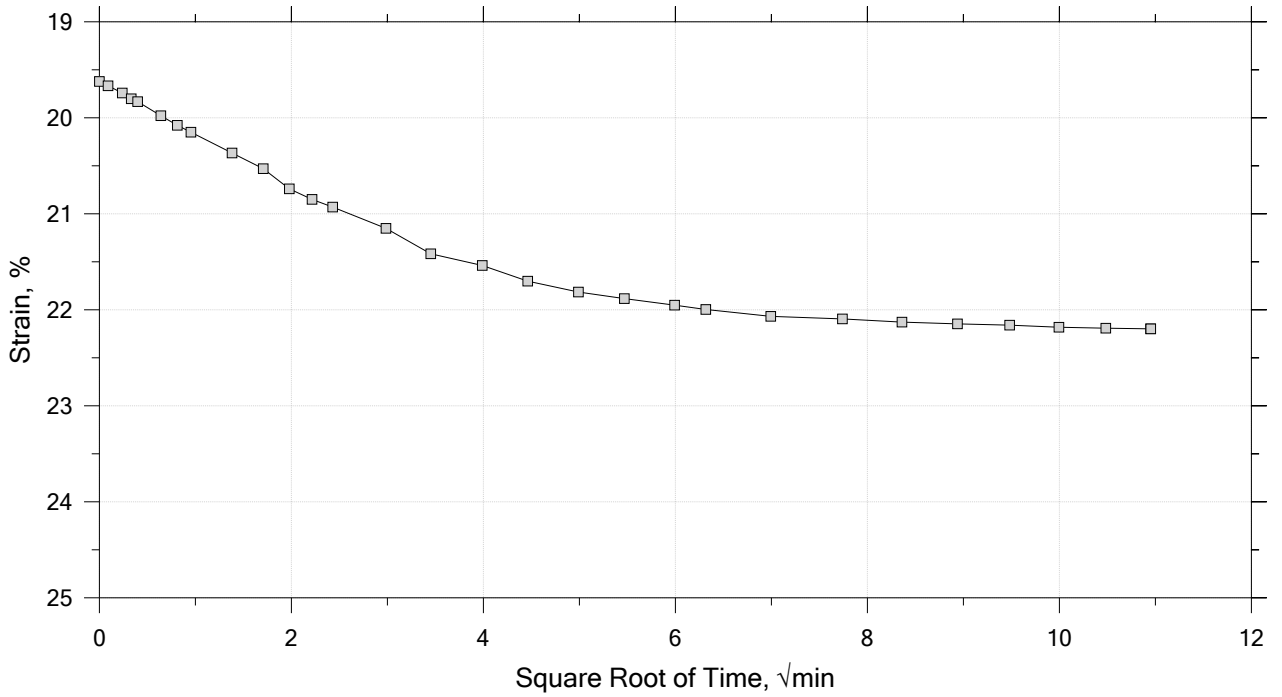


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

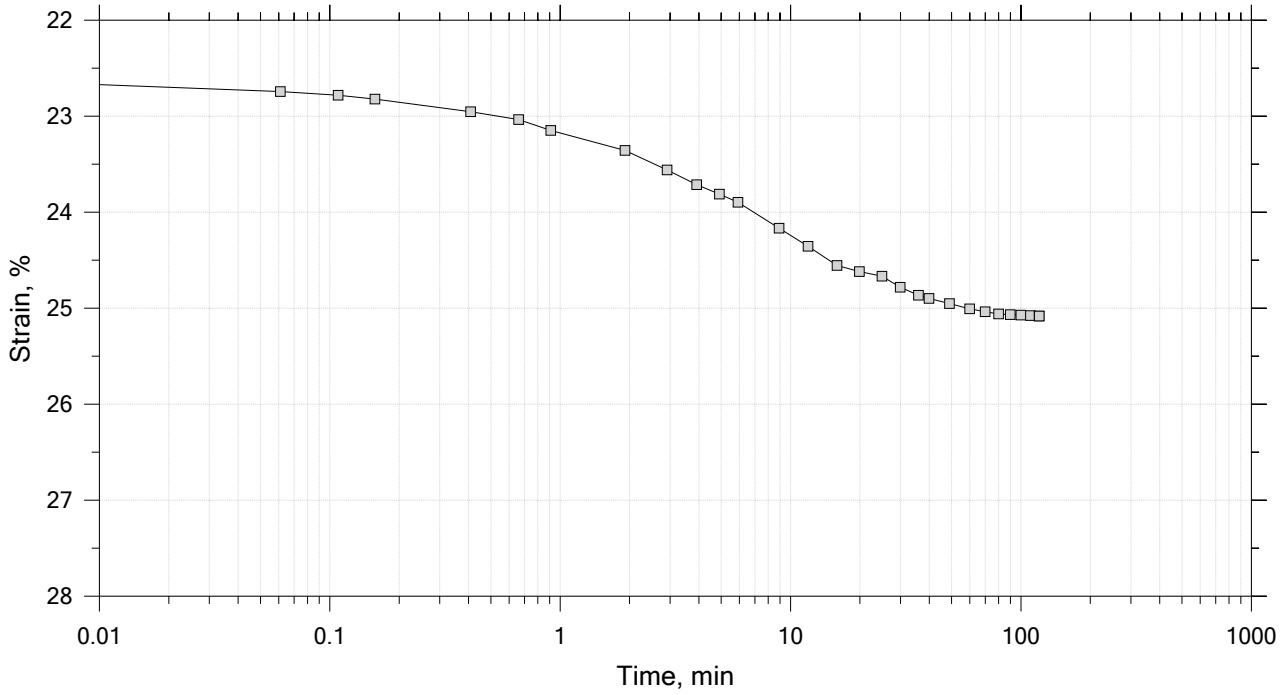


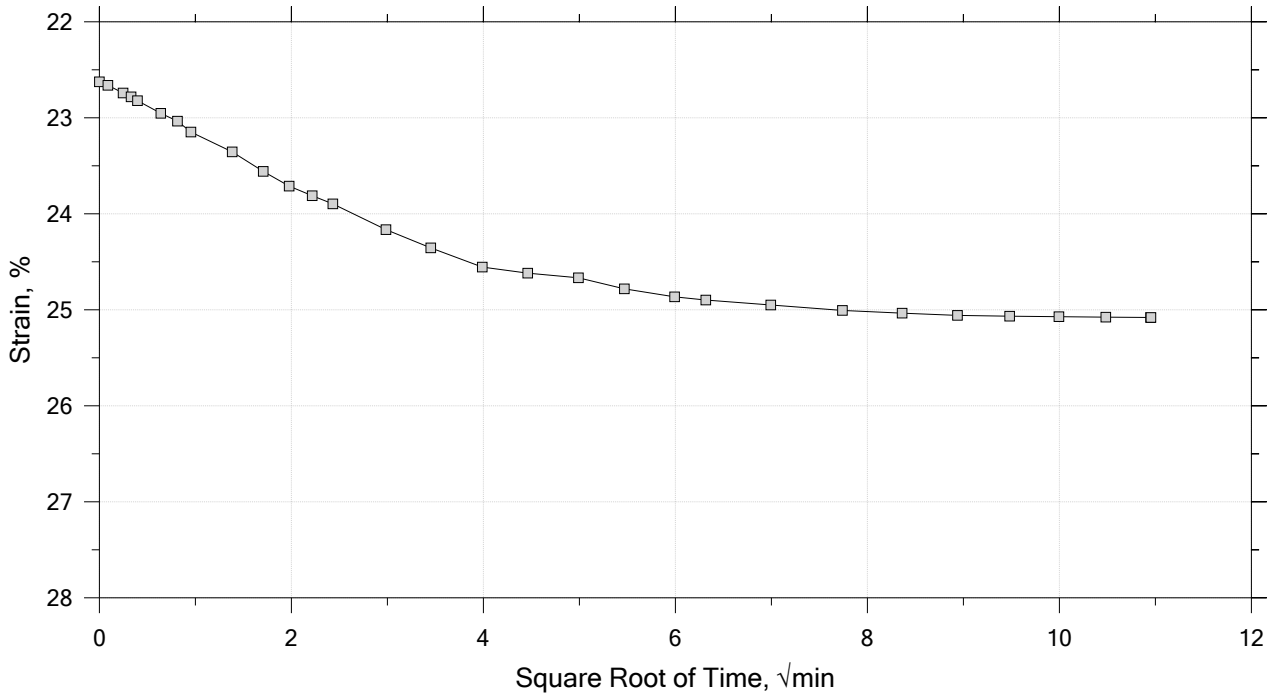


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

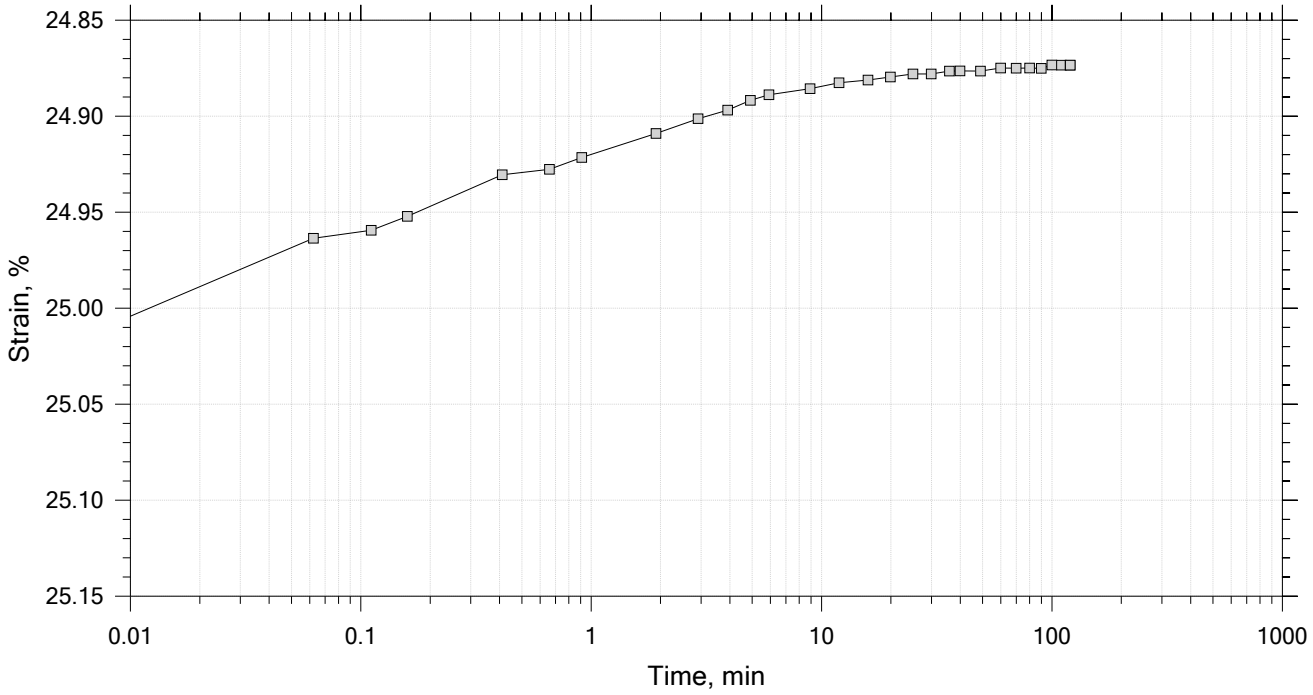


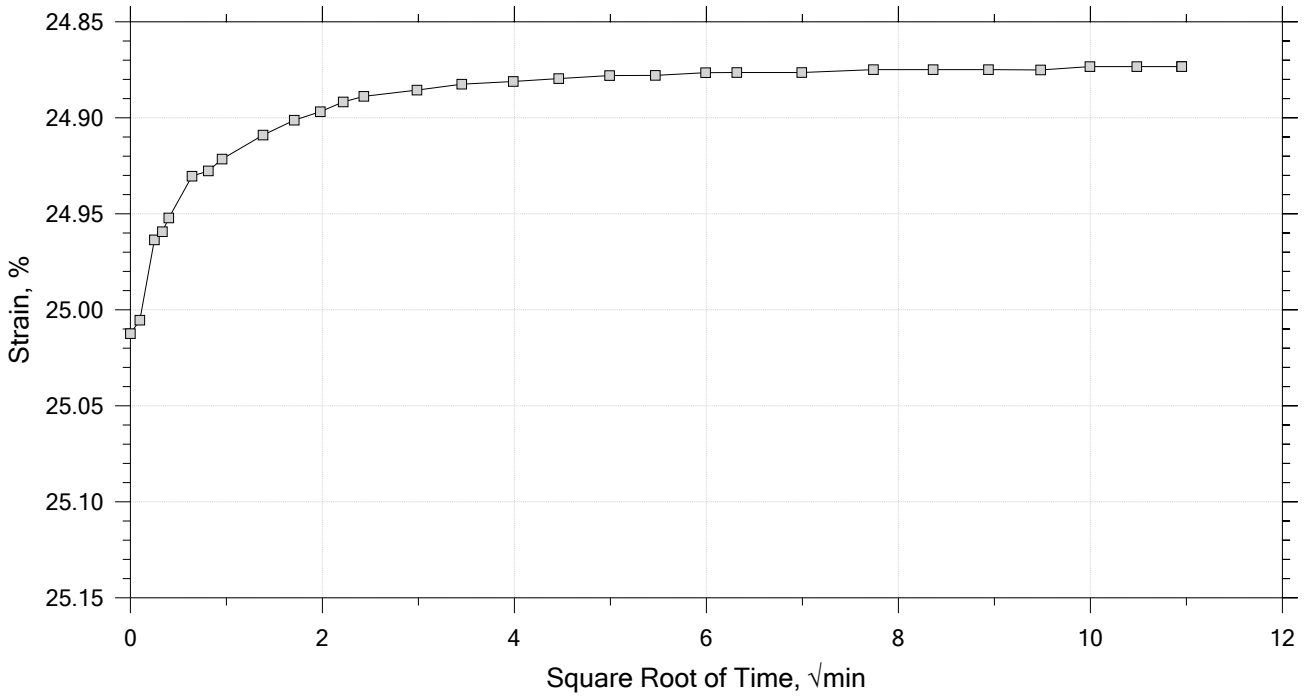


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

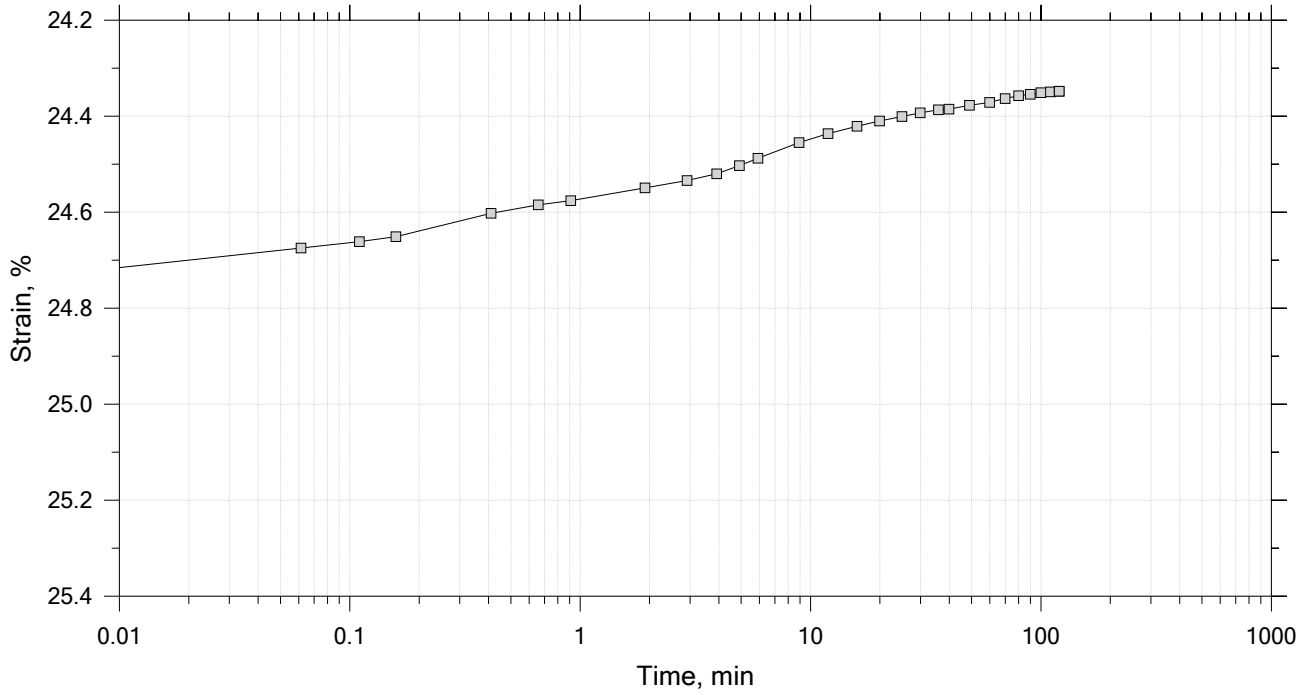


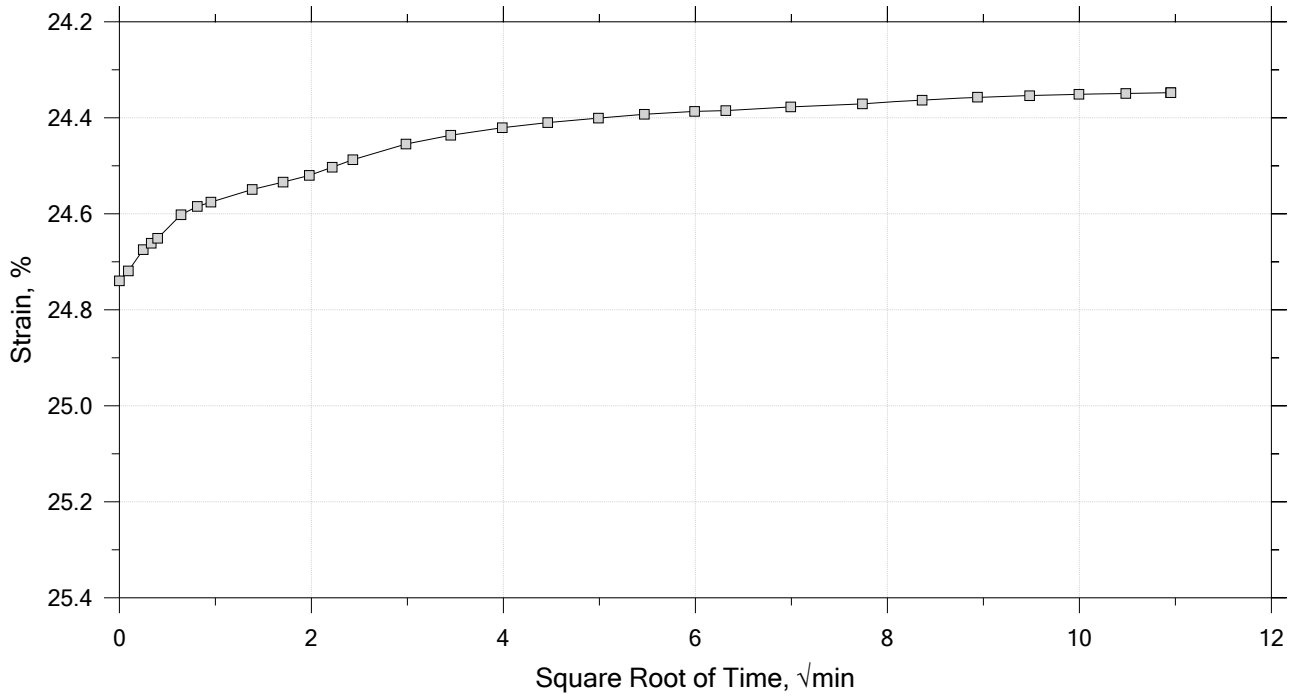


Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.8	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
Test No.: IP-6	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





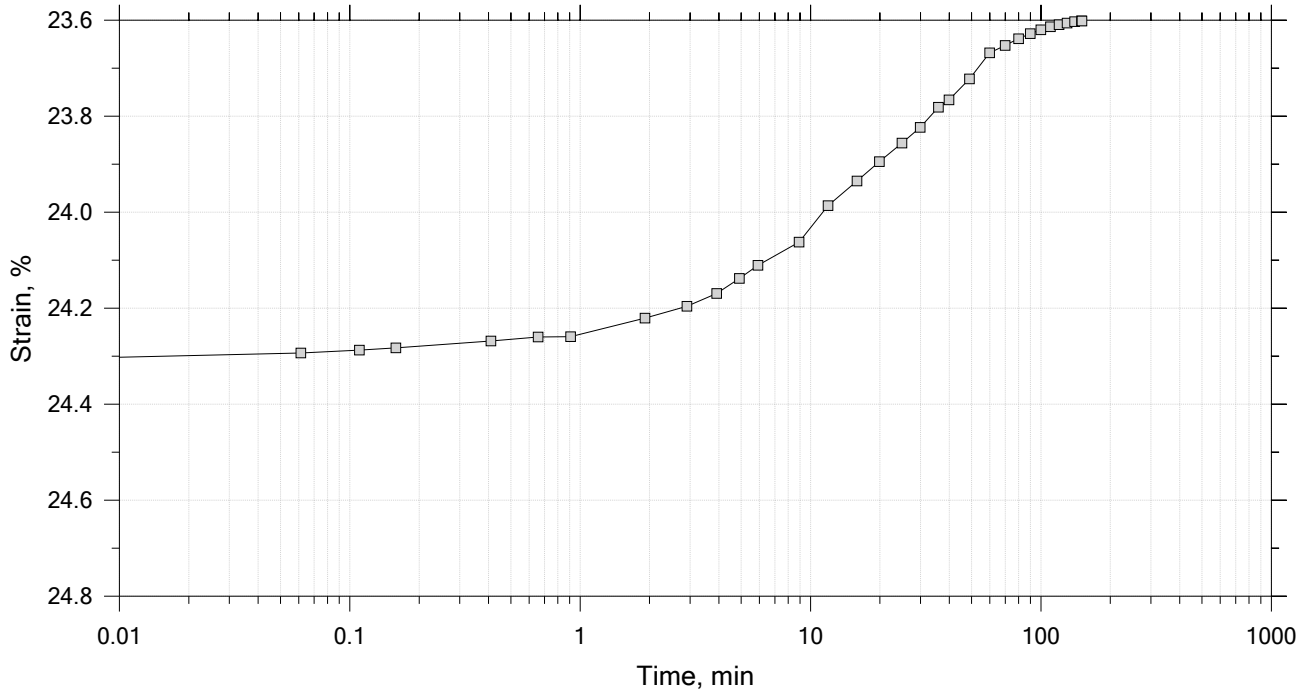
Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.8	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
Test No.: IP-6	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

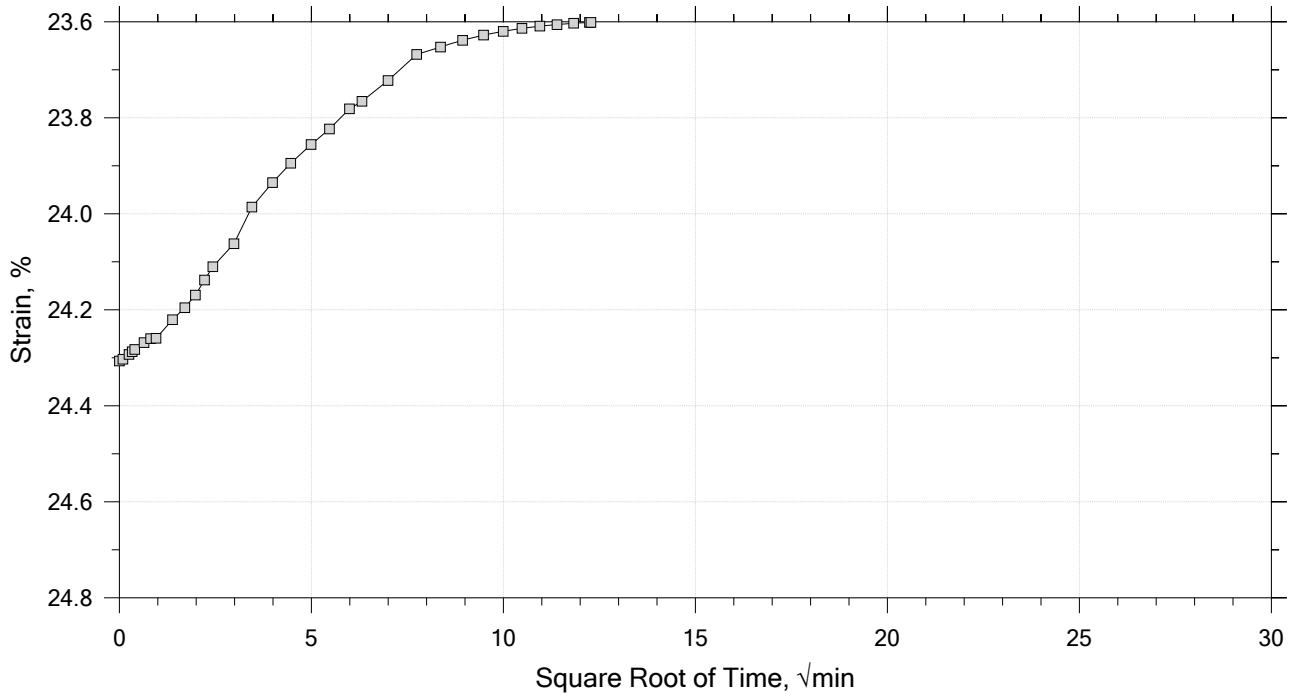
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

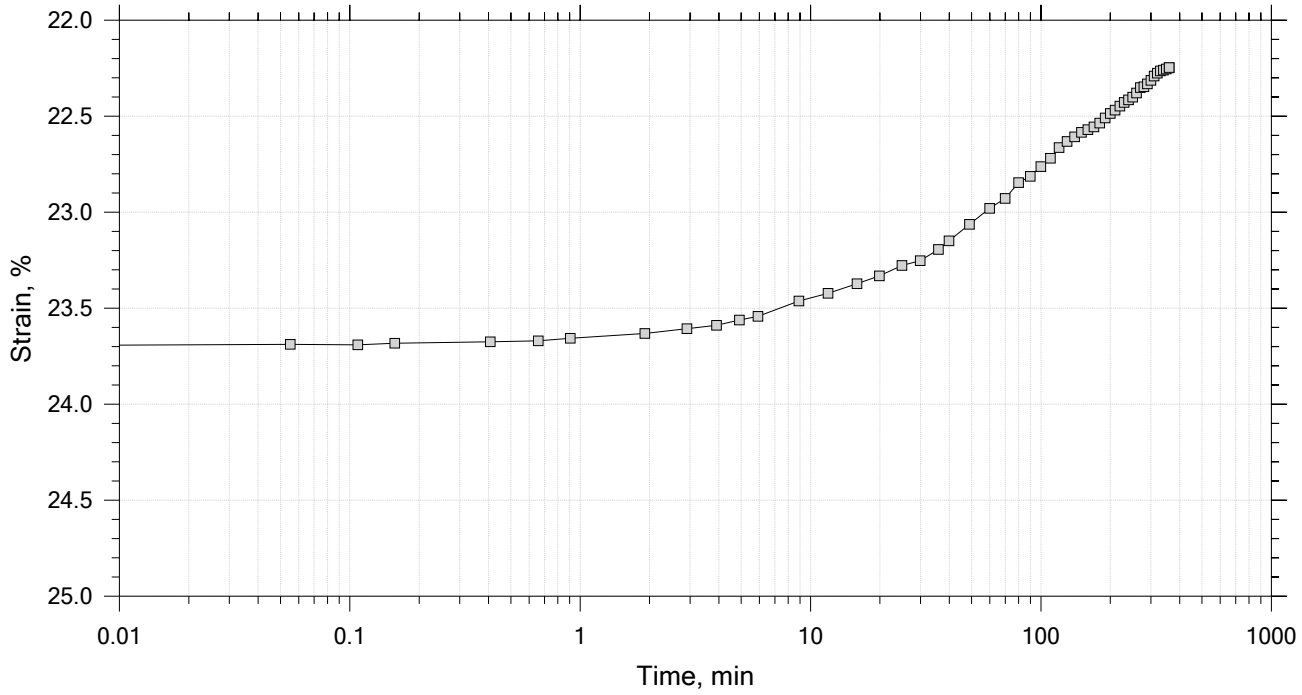


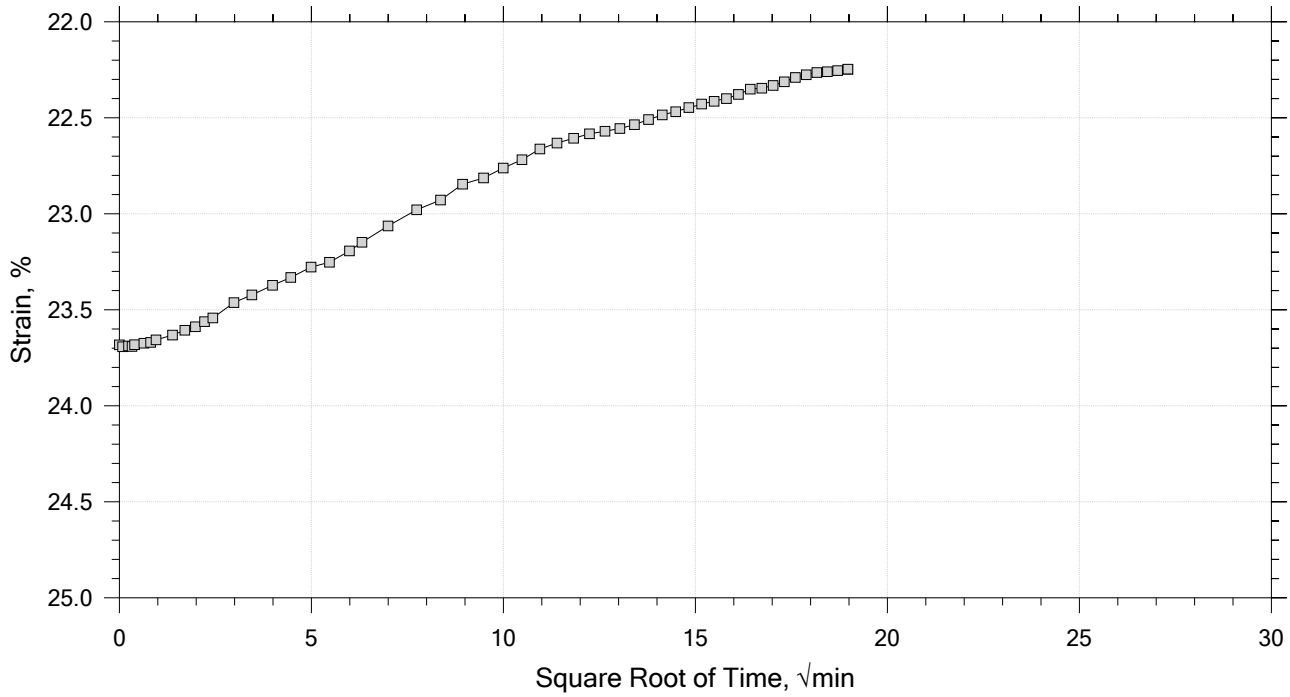


Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.8	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
Test No.: IP-6	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.8	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
Test No.: IP-6	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.69	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.669	Plastic Limit: 14
Final Height: 0.78 in	Final Void Ratio: 0.308	Plasticity Index: 10

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-4767	RING		E5659
Mass Container, gm	8.23	109.94	109.94	8.48
Mass Container + Wet Soil, gm	101.24	264.64	254.69	152.88
Mass Container + Dry Soil, gm	86.55	239.83	239.83	138.06
Mass Dry Soil, gm	78.32	129.89	129.89	129.58
Water Content, %	18.76	19.10	11.44	11.44
Void Ratio	---	0.67	0.31	---
Degree of Saturation, %	---	76.96	100.00	---
Dry Unit Weight, pcf	---	100.81	128.58	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
	Boring No.: B-4.8	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
	Test No.: IP-6	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clayey sand		
	Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0641	0.007115	0.657	0.711	83.781	4.19e-05	1.11e-01	8.70e-05
2	0.125	0.01384	0.645	1.38	10.286	3.36e-04	1.10e-01	6.96e-04
3	0.250	0.02646	0.624	2.65	124.575	2.72e-05	1.01e-01	5.15e-05
4	0.500	0.04455	0.594	4.45	11.431	2.88e-04	7.23e-02	3.89e-04
5	1.00	0.09117	0.516	9.12	8.241	3.73e-04	9.33e-02	6.51e-04
6	2.00	0.1230	0.463	12.3	30.591	9.21e-05	3.18e-02	5.48e-05
7	4.00	0.1583	0.404	15.8	30.961	8.43e-05	1.76e-02	2.79e-05
8	8.00	0.1909	0.350	19.1	25.443	9.46e-05	8.17e-03	1.45e-05
9	16.0	0.2220	0.298	22.2	25.461	8.74e-05	3.88e-03	6.35e-06
10	32.0	0.2508	0.250	25.1	21.106	9.76e-05	1.80e-03	3.29e-06
11	16.0	0.2487	0.254	24.9	1.493	1.33e-03	1.30e-04	3.24e-06
12	4.00	0.2435	0.262	24.3	16.385	1.23e-04	4.38e-04	1.01e-06
13	1.00	0.2360	0.275	23.6	79.823	2.56e-05	2.49e-03	1.19e-06
14	0.250	0.2225	0.297	22.2	290.603	7.22e-06	1.81e-02	2.44e-06

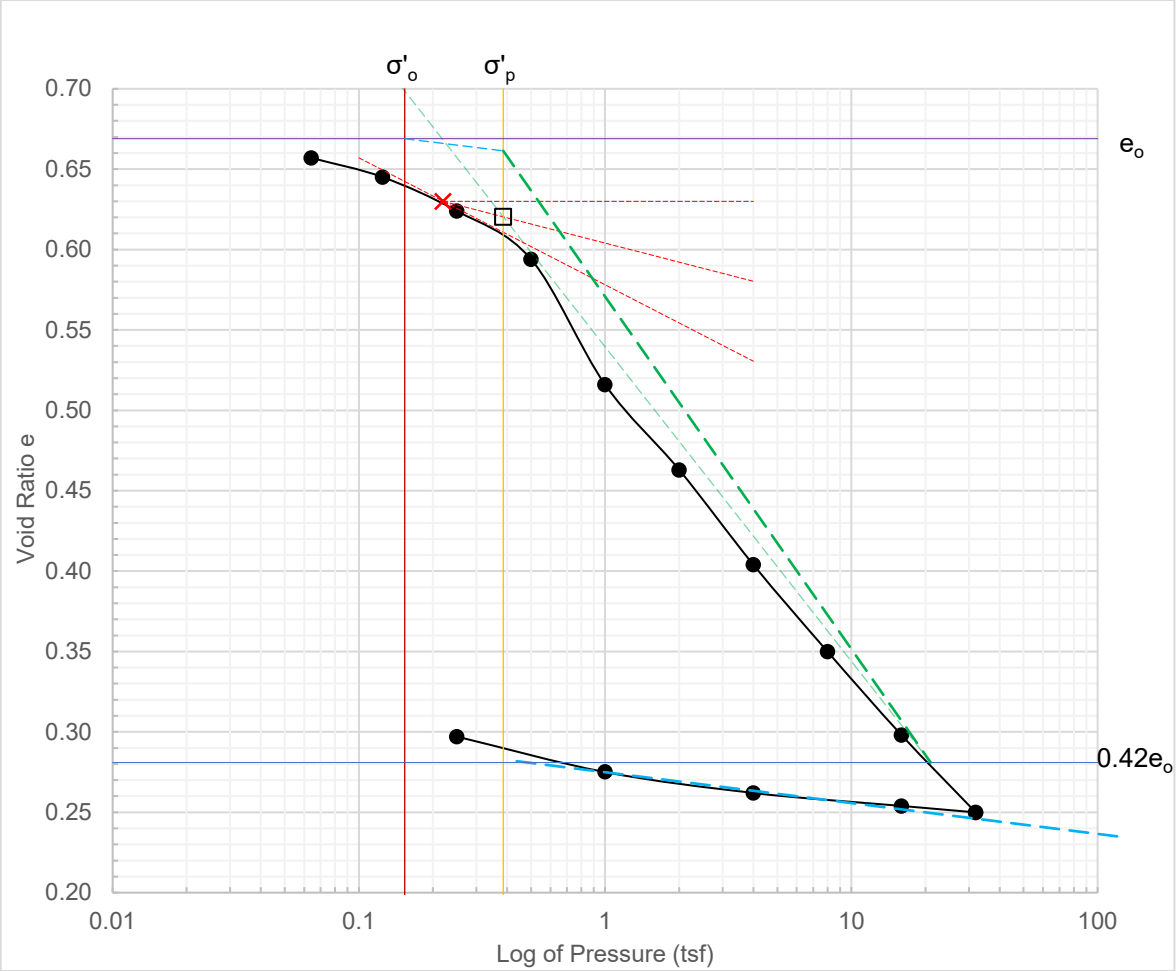
GeoTesting EXPRESS

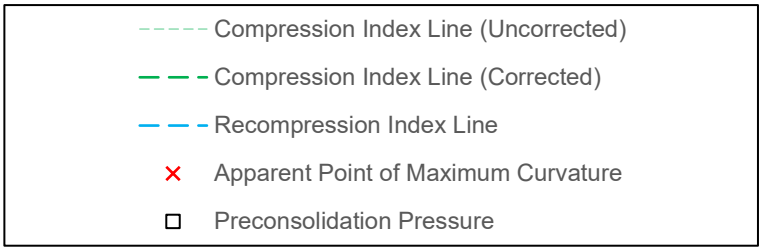
Project: Eagle Point Flood Basin	Location: Hancock, County	Project No.: GTX-315844
Boring No.: B-4.8	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 2.5-2.6
Test No.: IP-6	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clayey sand		
Remarks: System LTIII-G, Swell Pressure = 0.0641 tsf		
Displacement at End of Increment		

Boring: B-4.8

Depth: 2.5'-2.6'

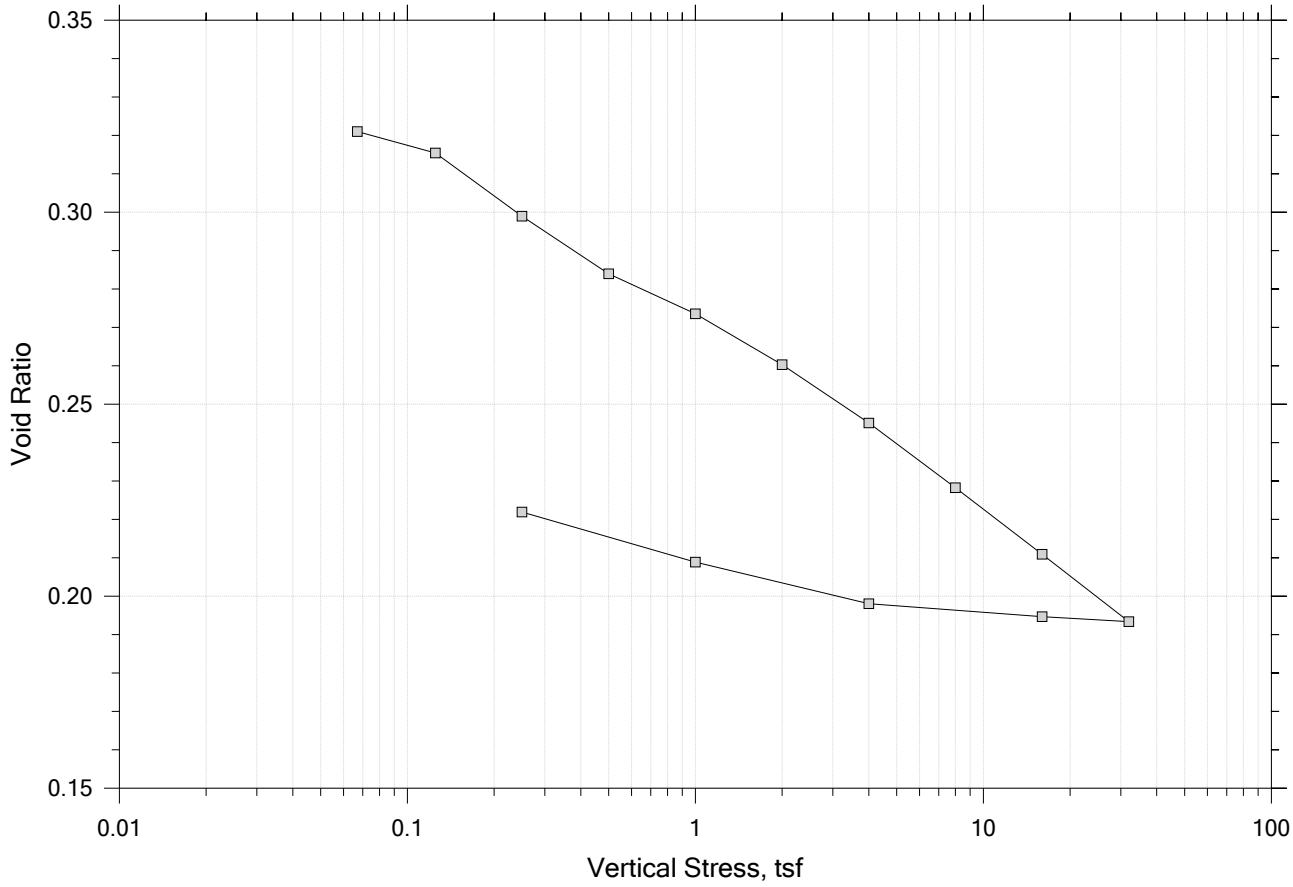
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.15
Preconsolidation Pressure, σ'_p (tsf) = 0.39
Compression Index, C_c = 0.22
Recompression Index, C_r = 0.019

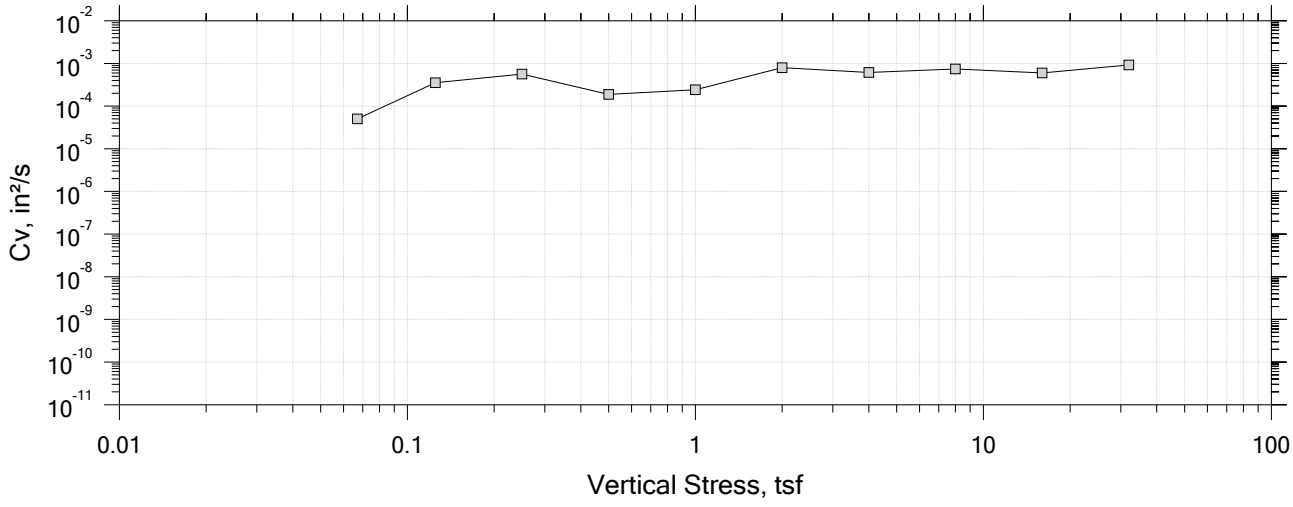




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

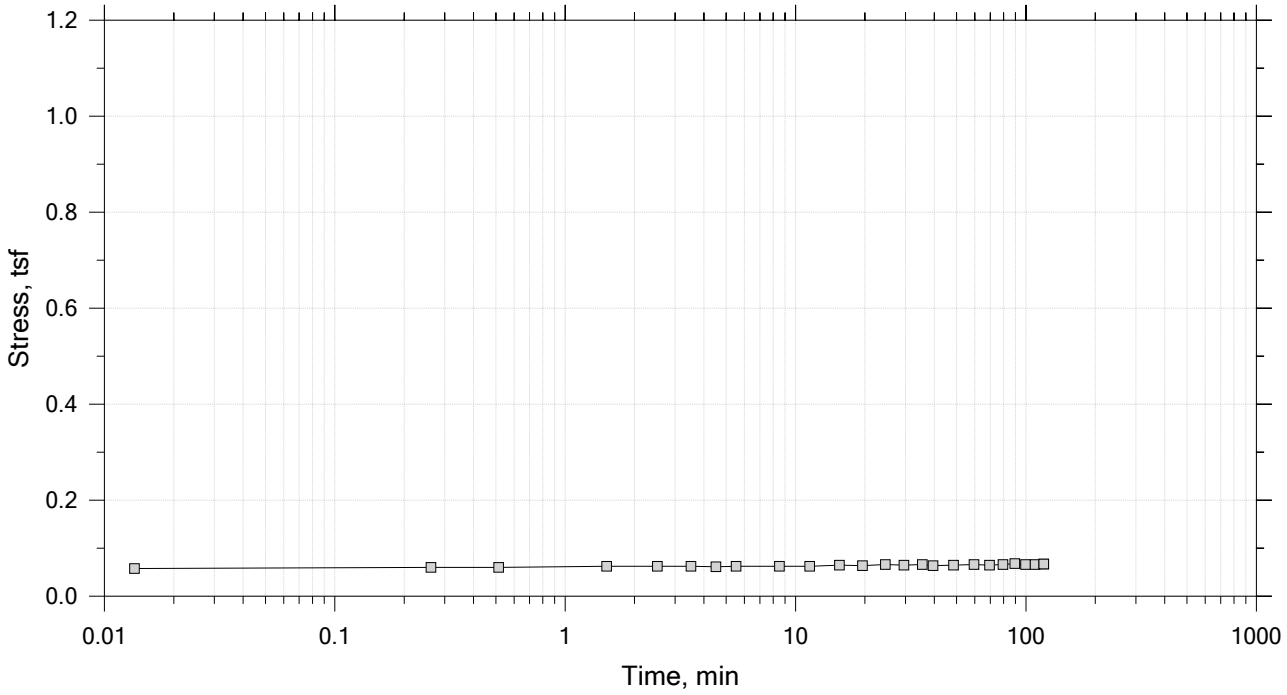


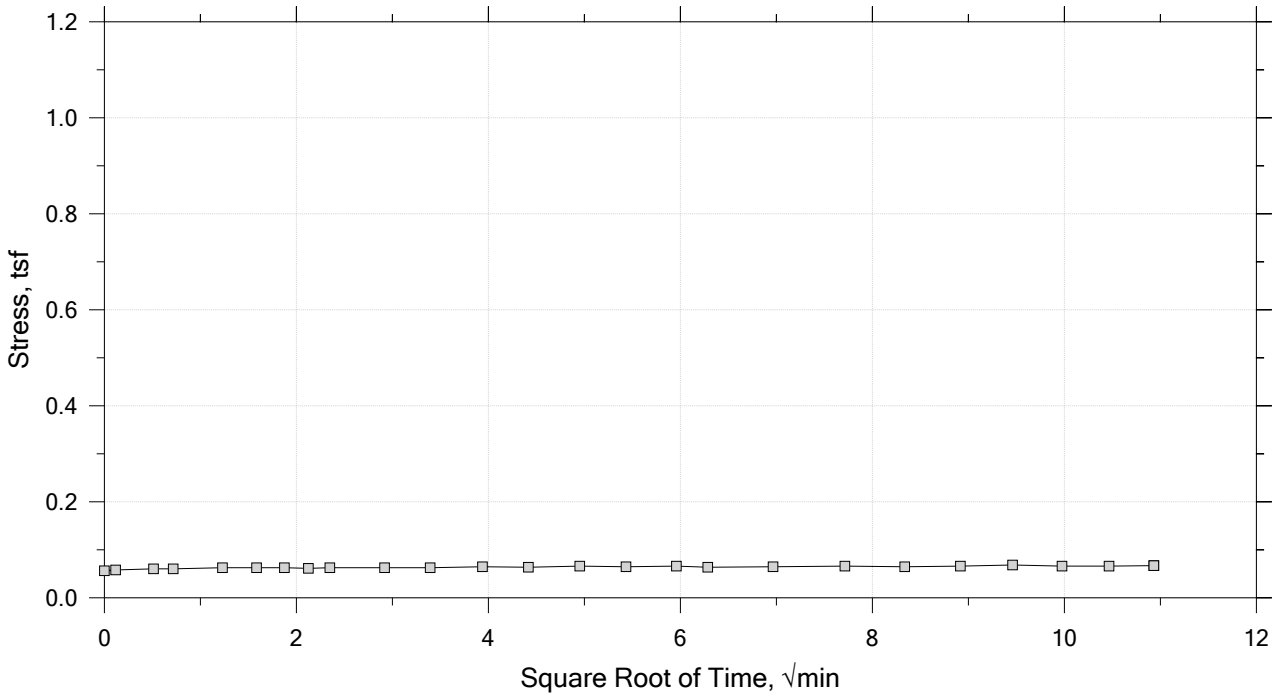


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.067 tsf





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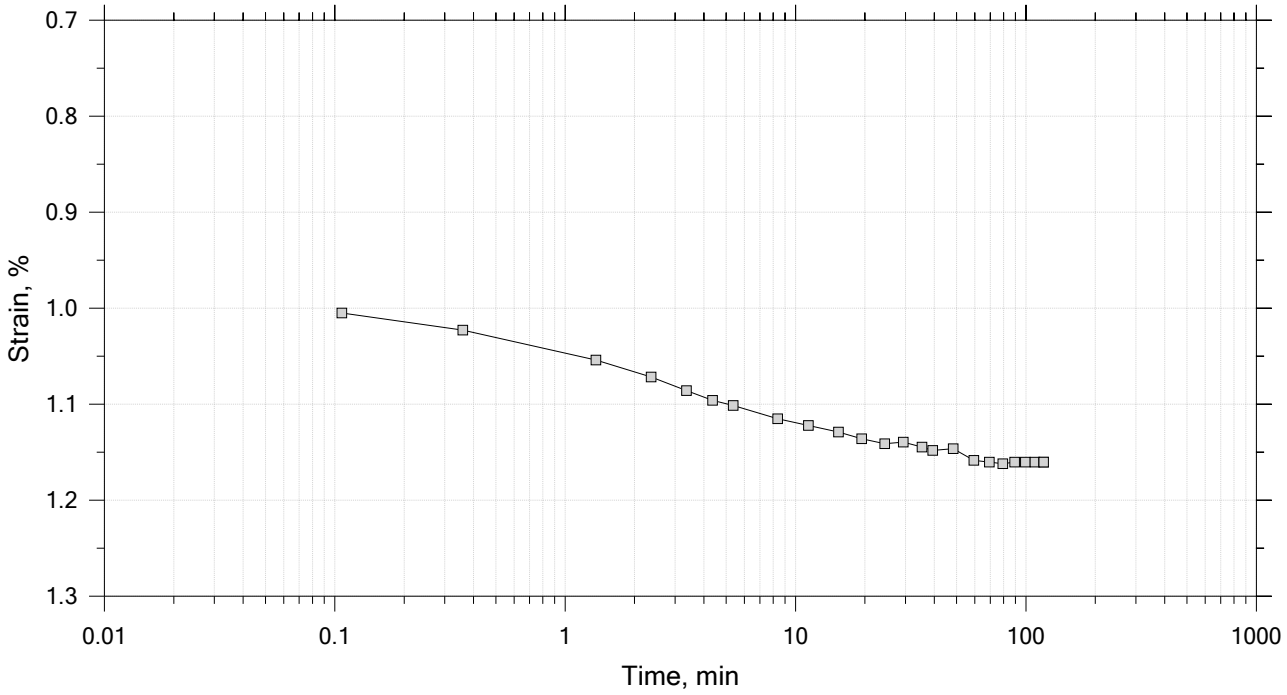
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

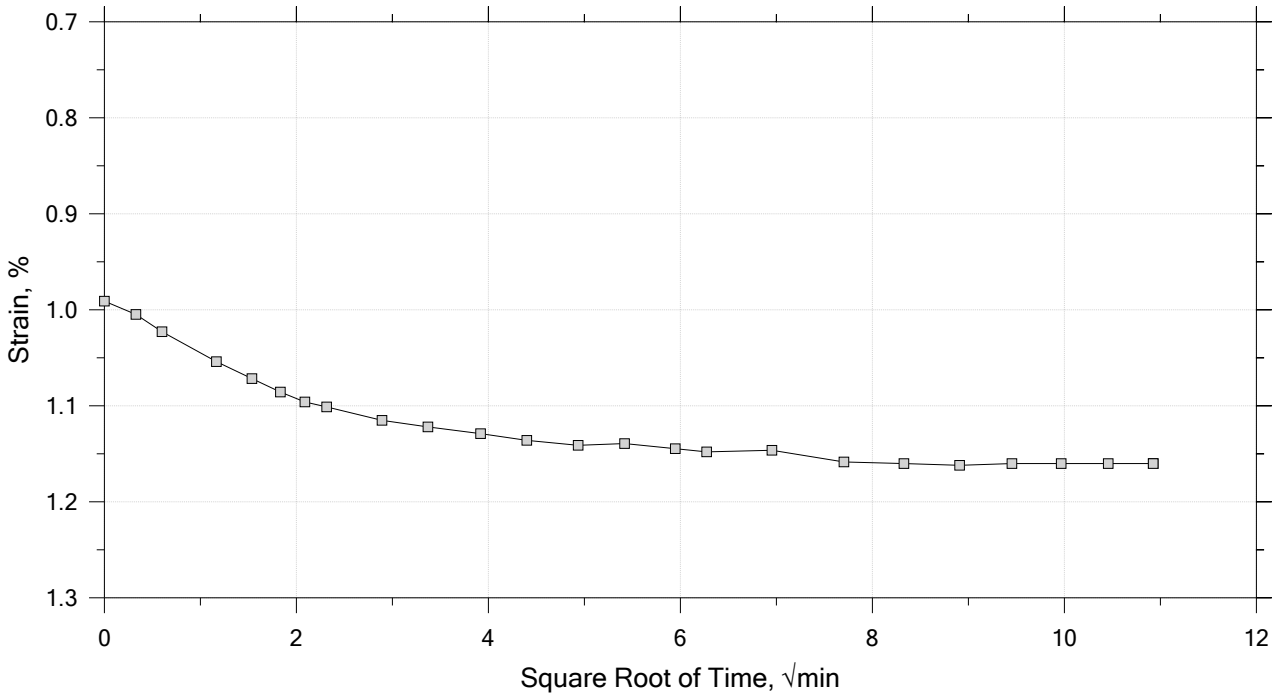
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf





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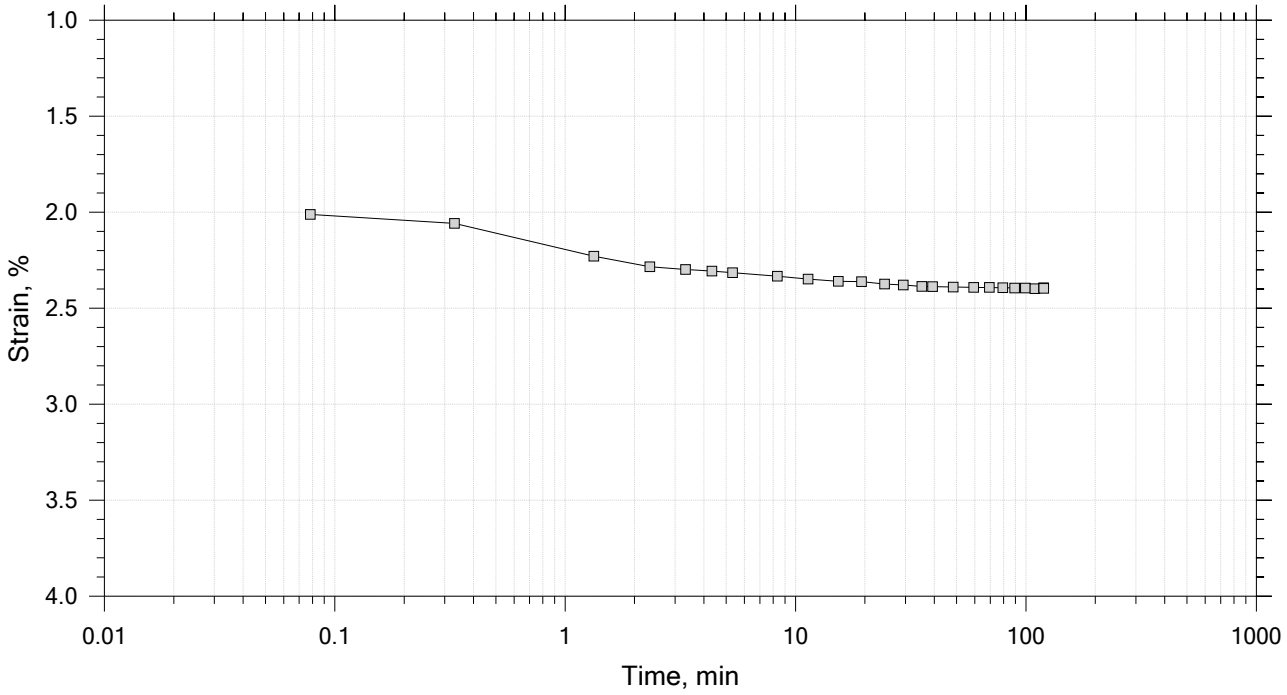
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

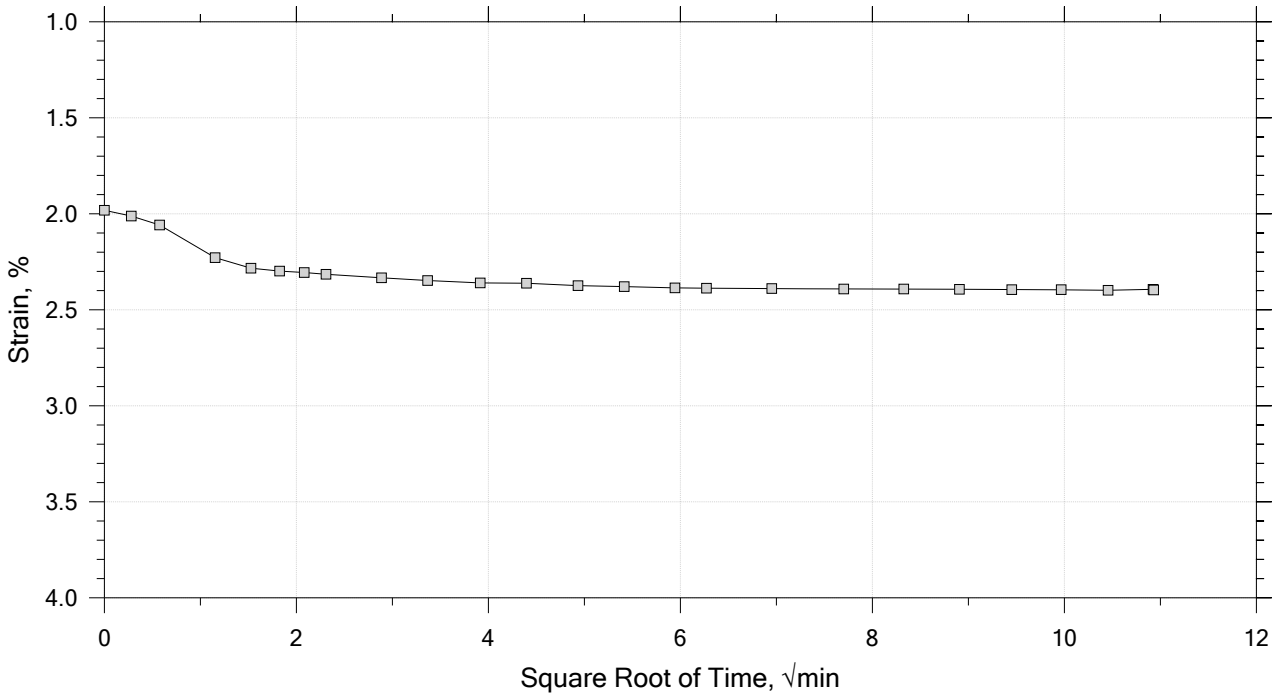
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





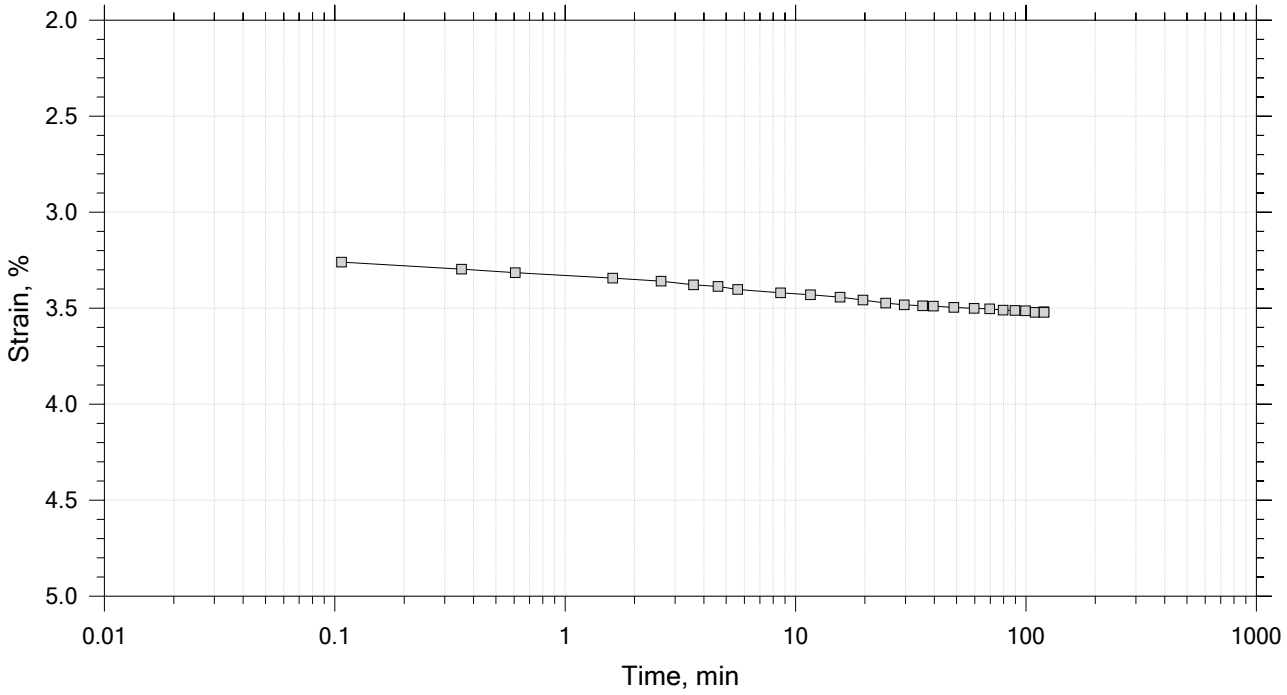
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

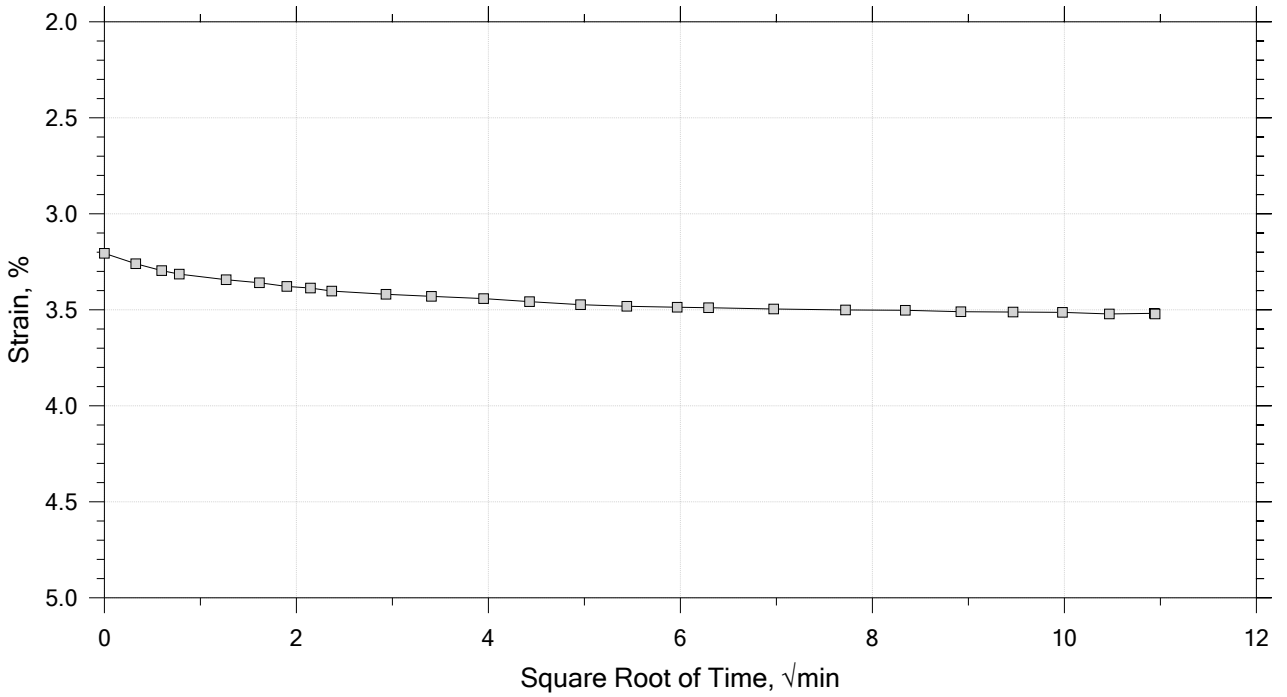
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





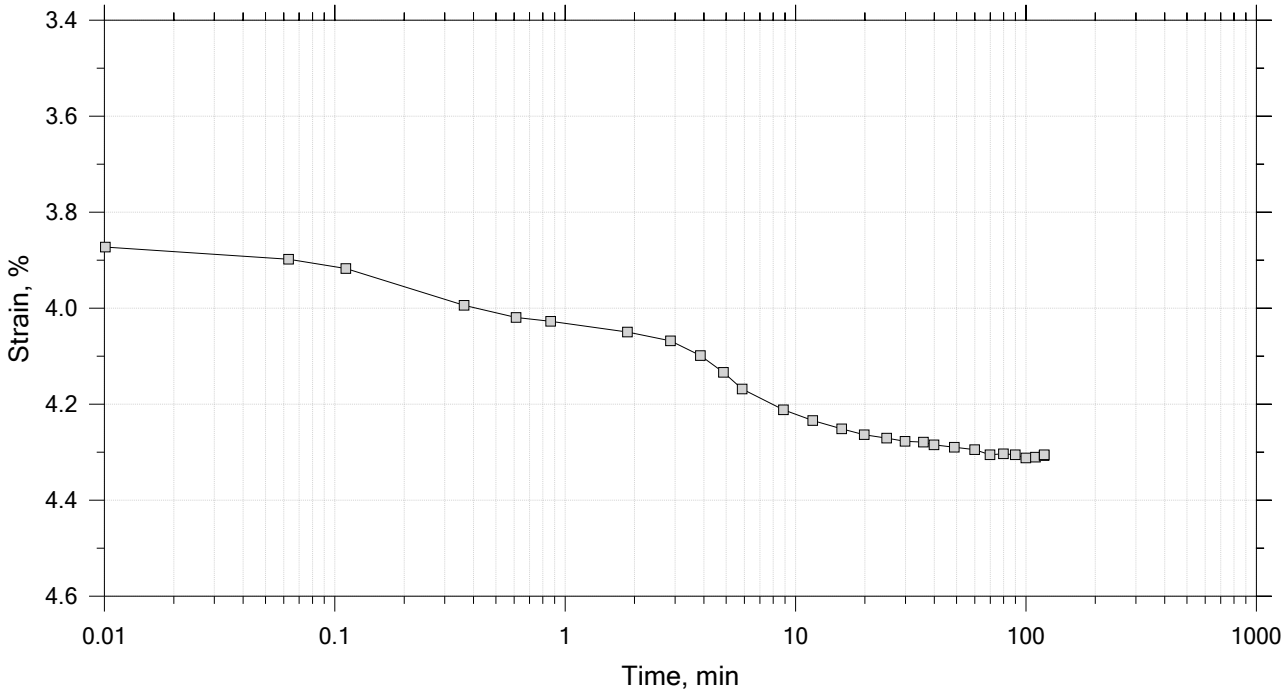
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

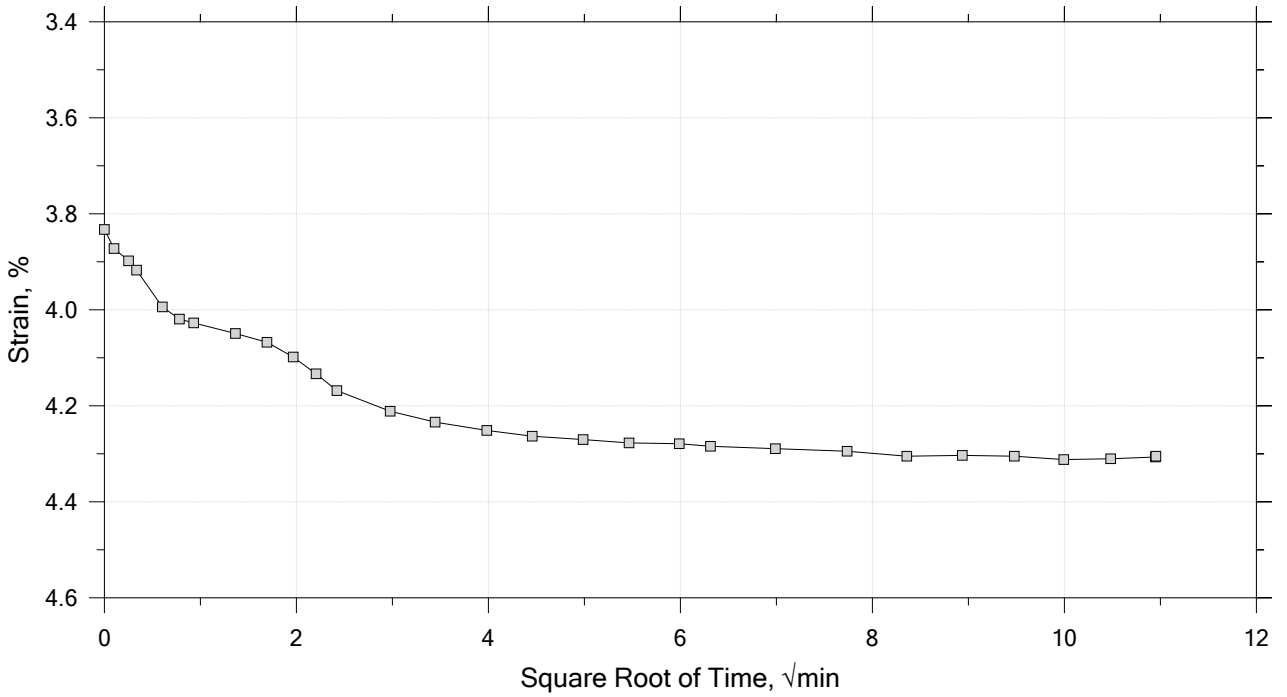
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





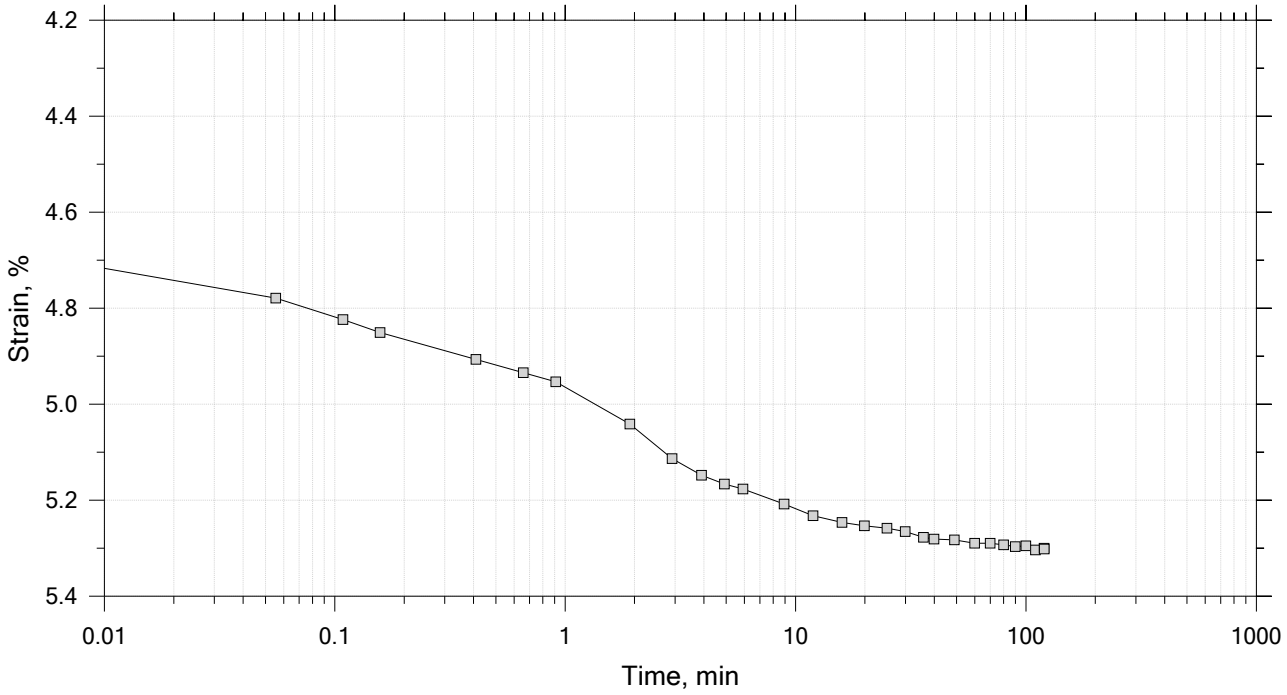
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

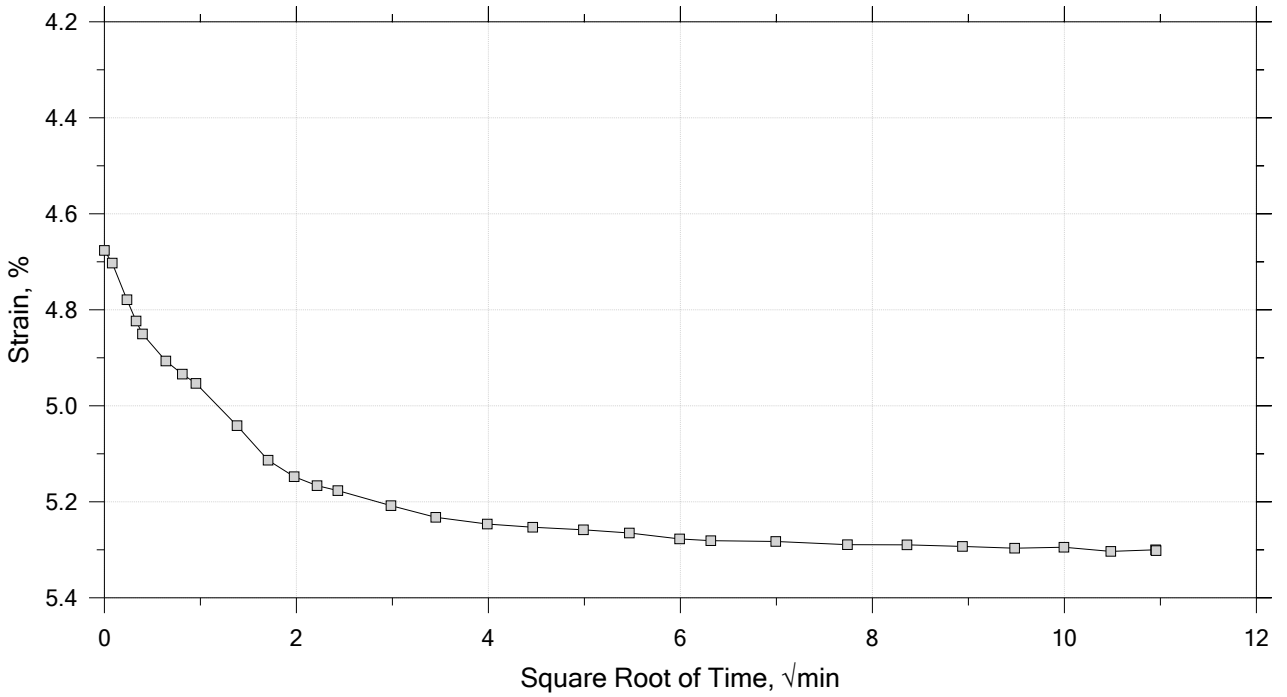
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf

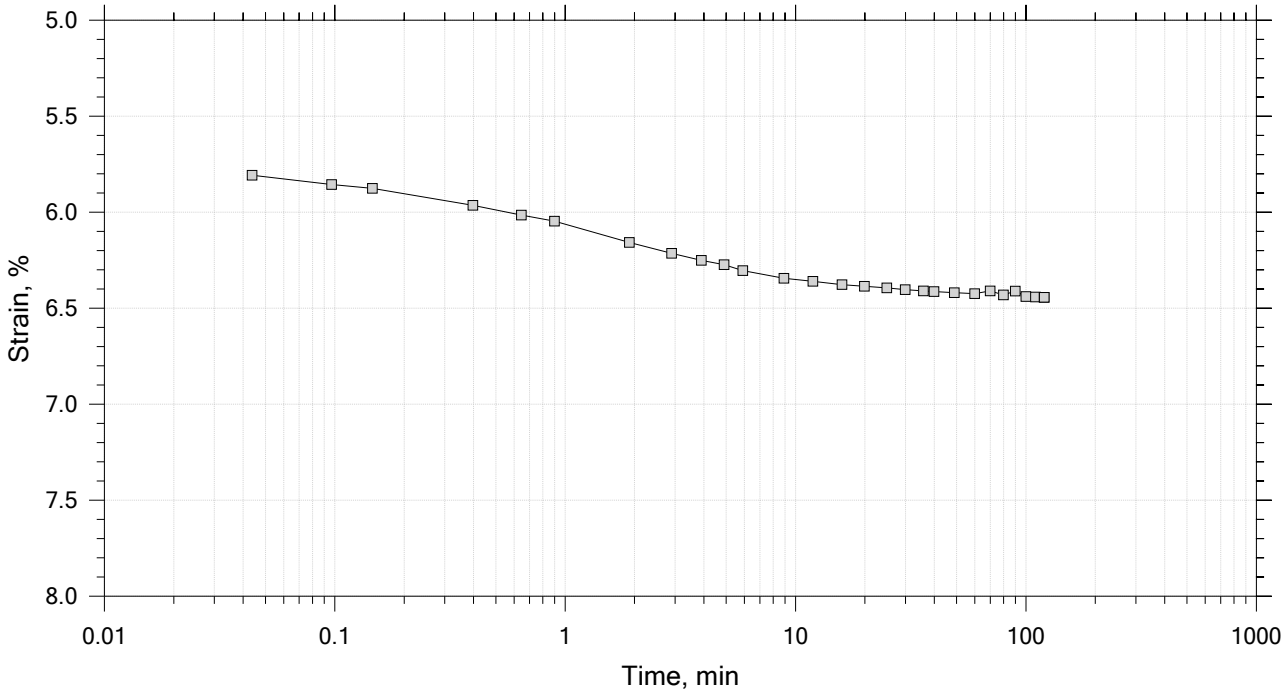


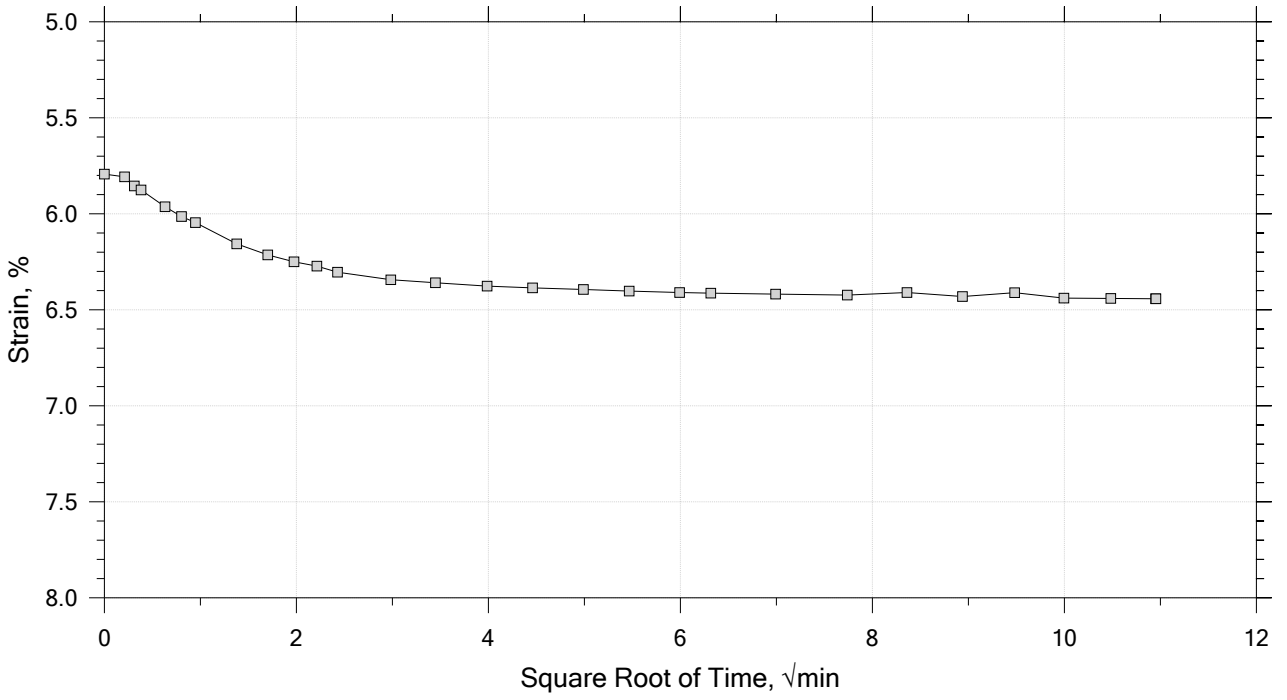


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf





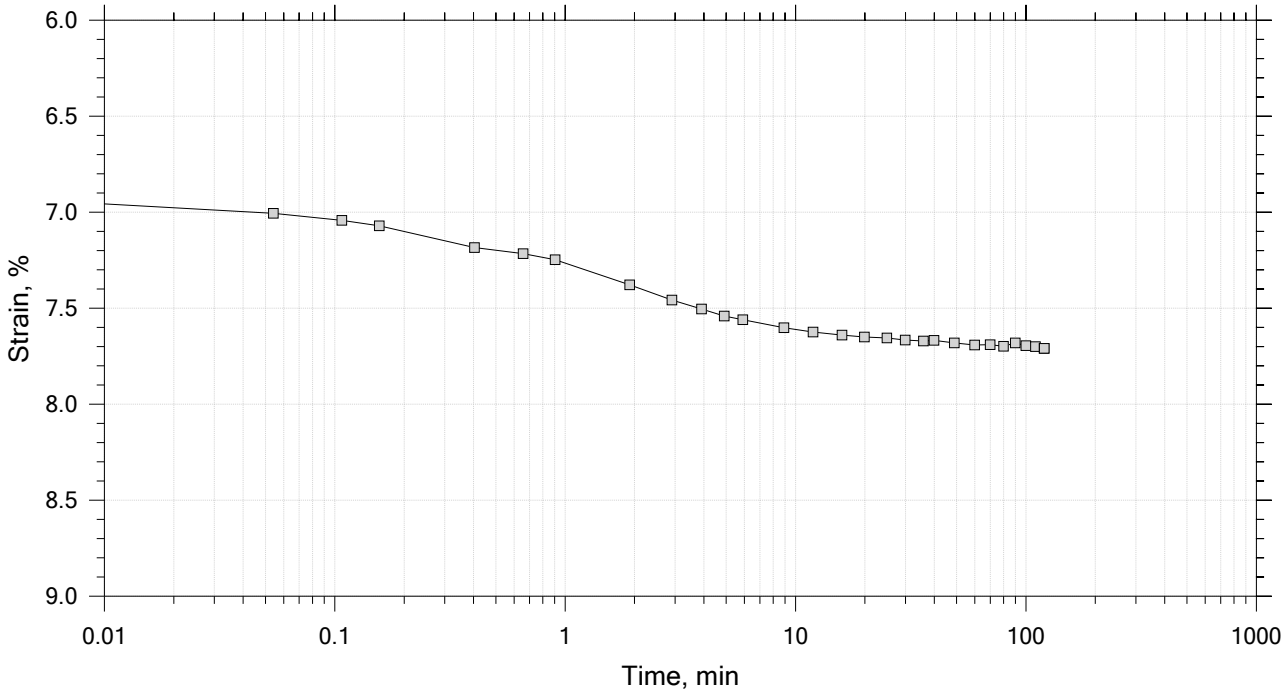
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

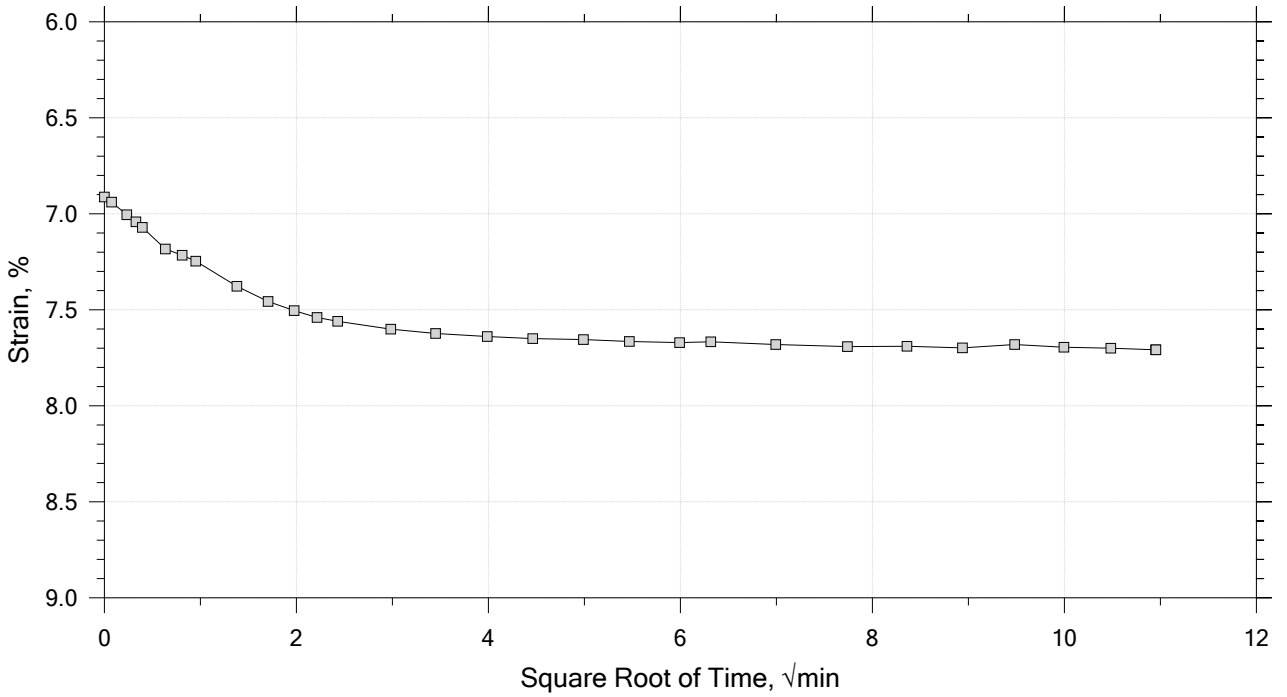
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

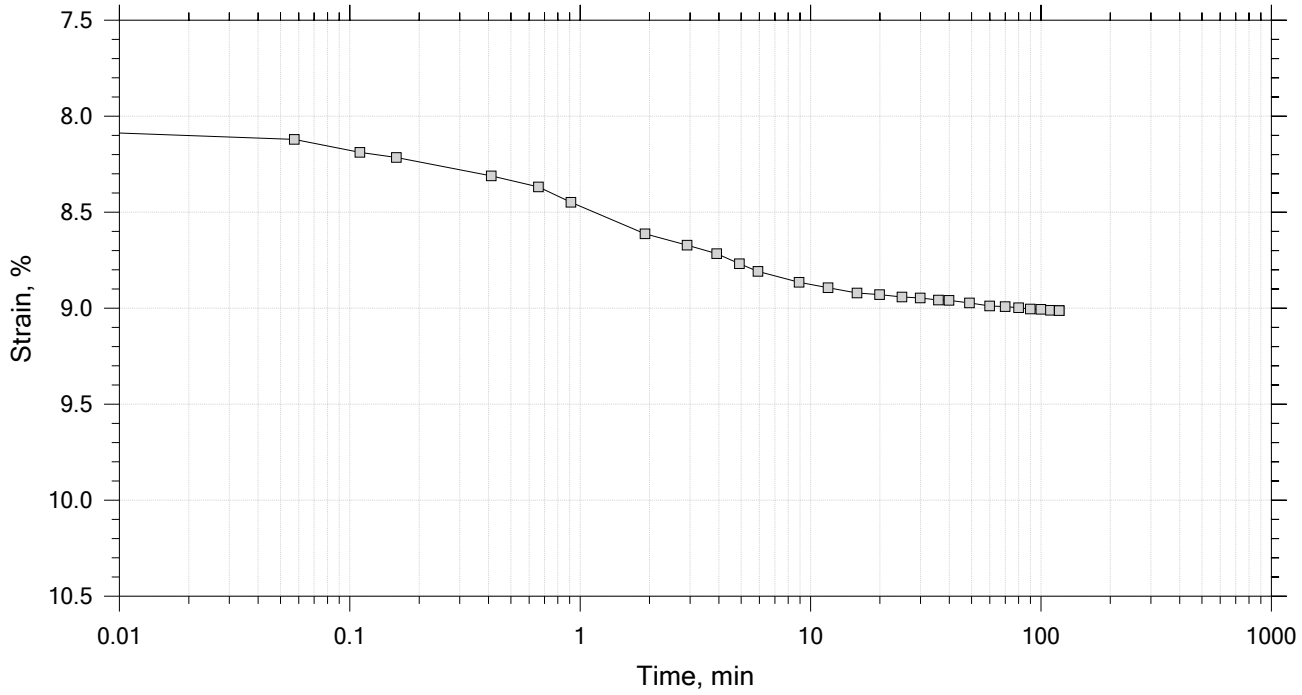


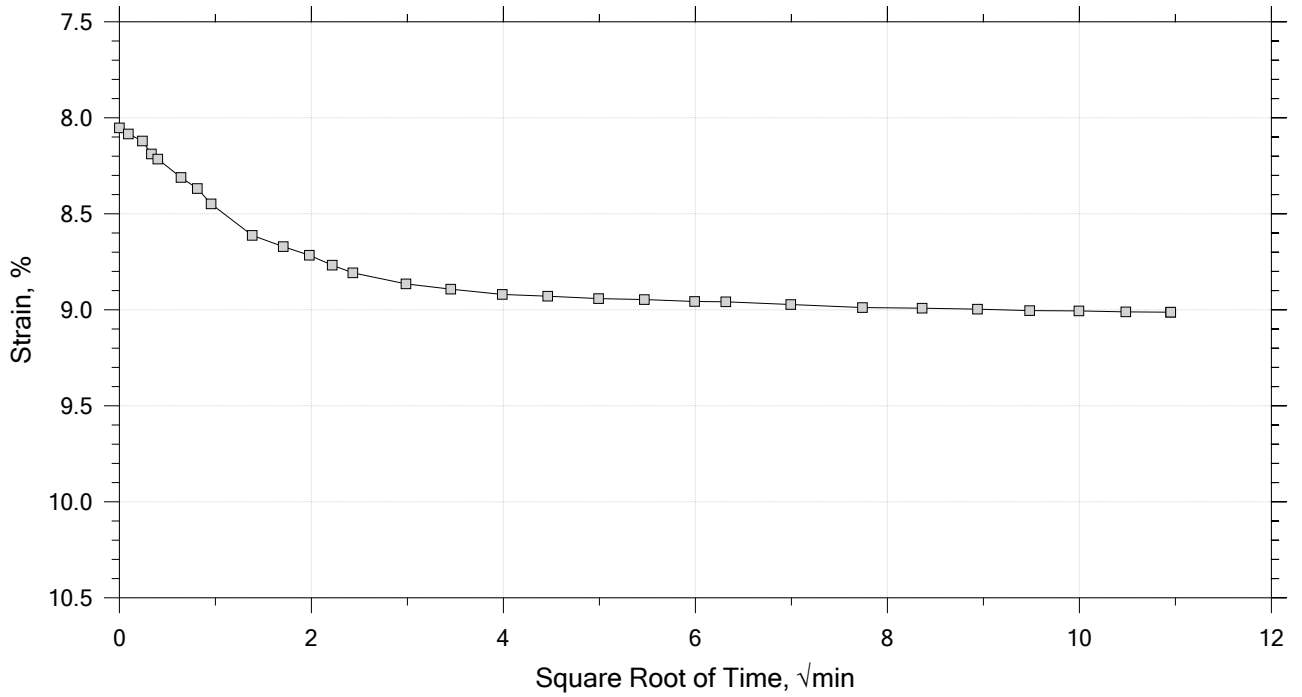


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

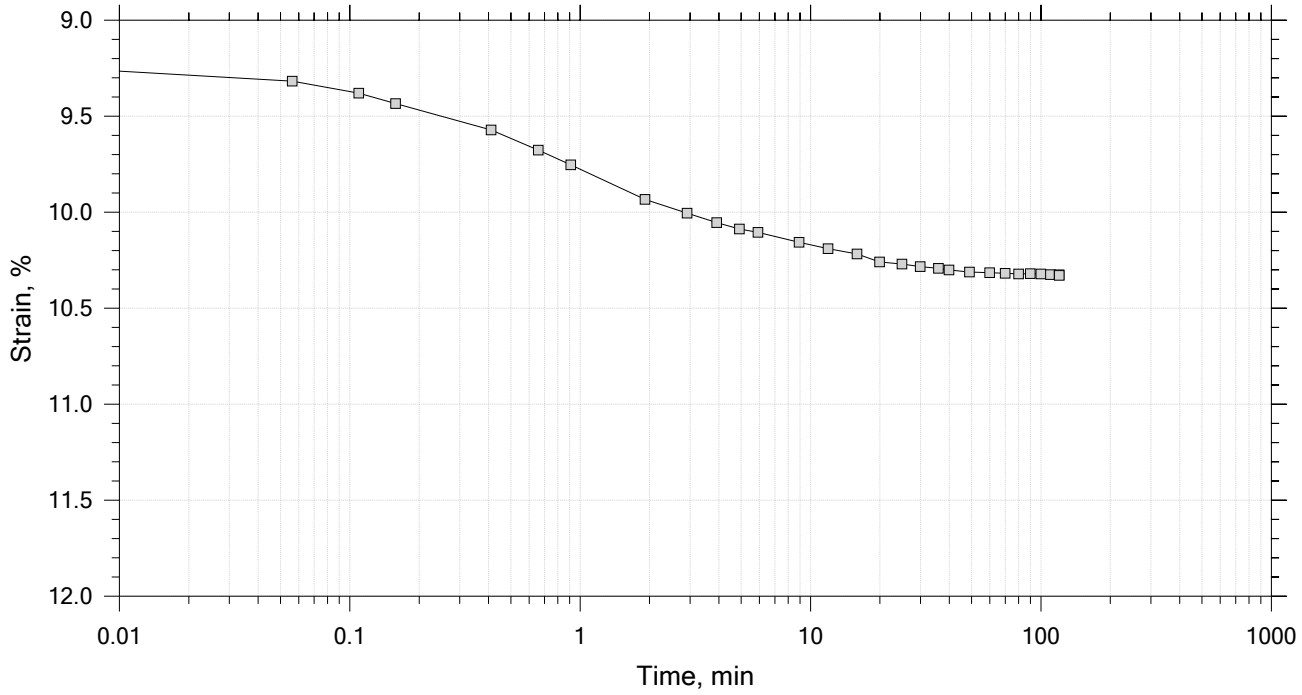


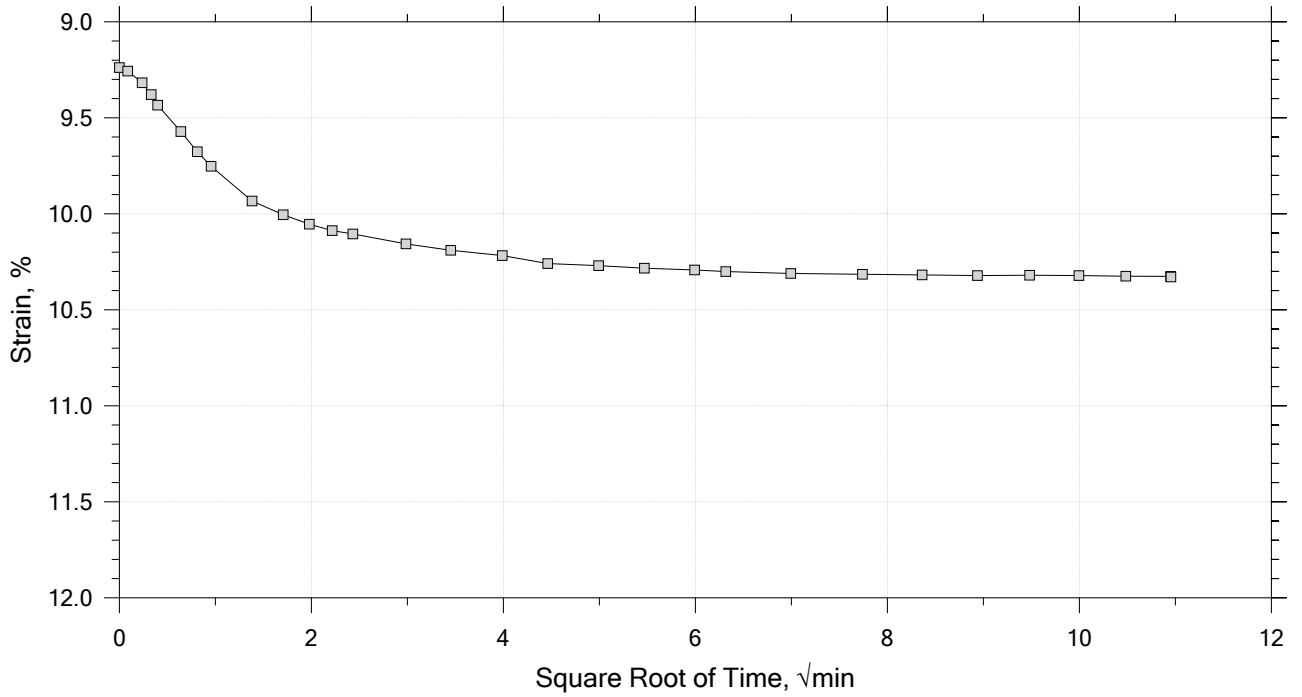


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

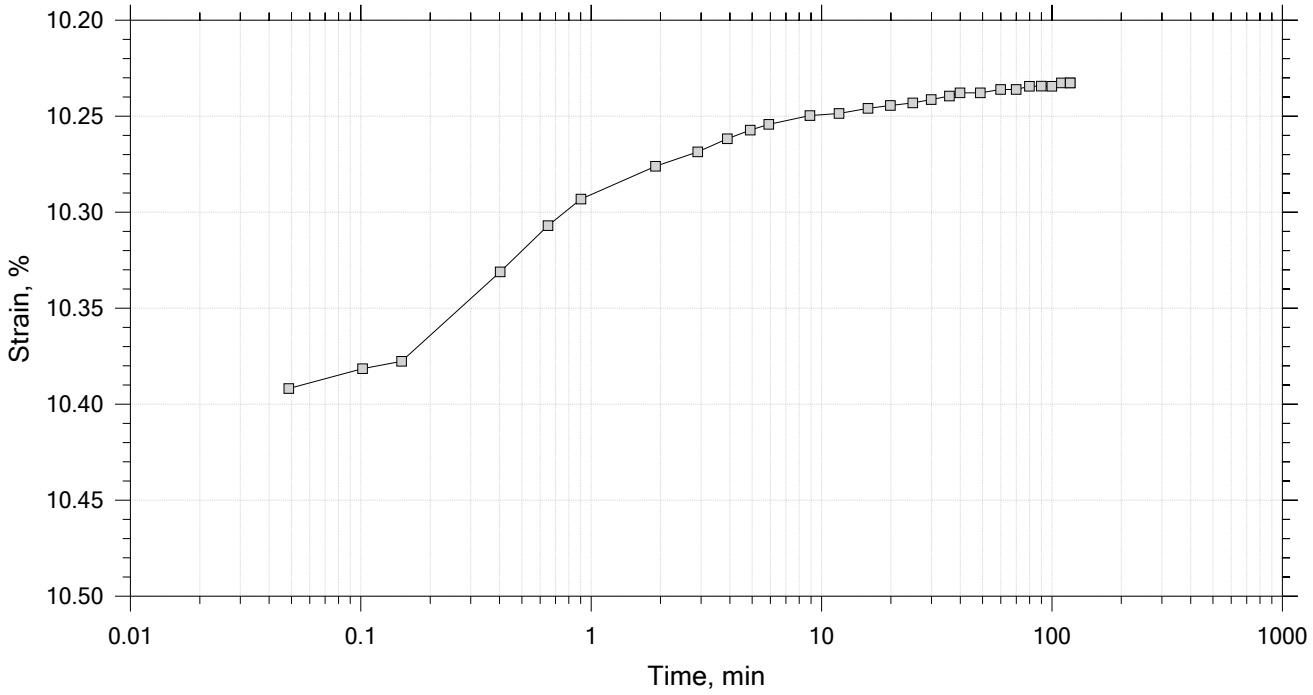


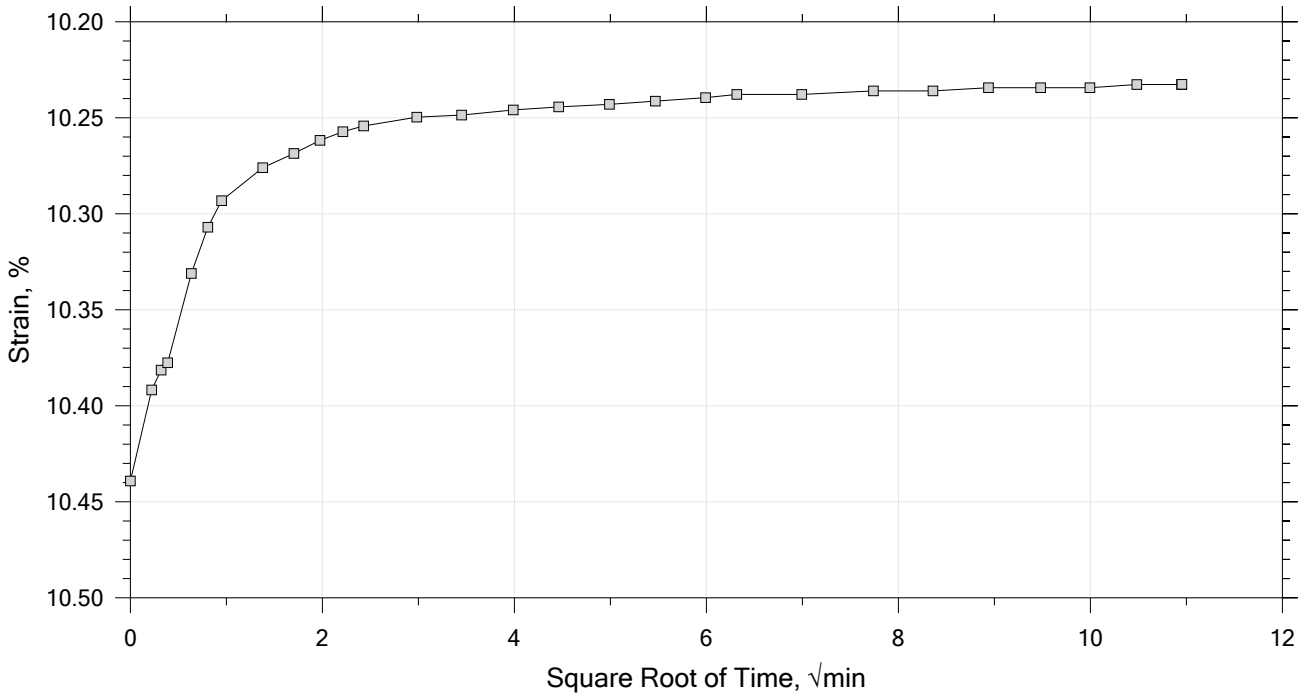


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf





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	Description: Moist, dark greenish brown clay with sand		
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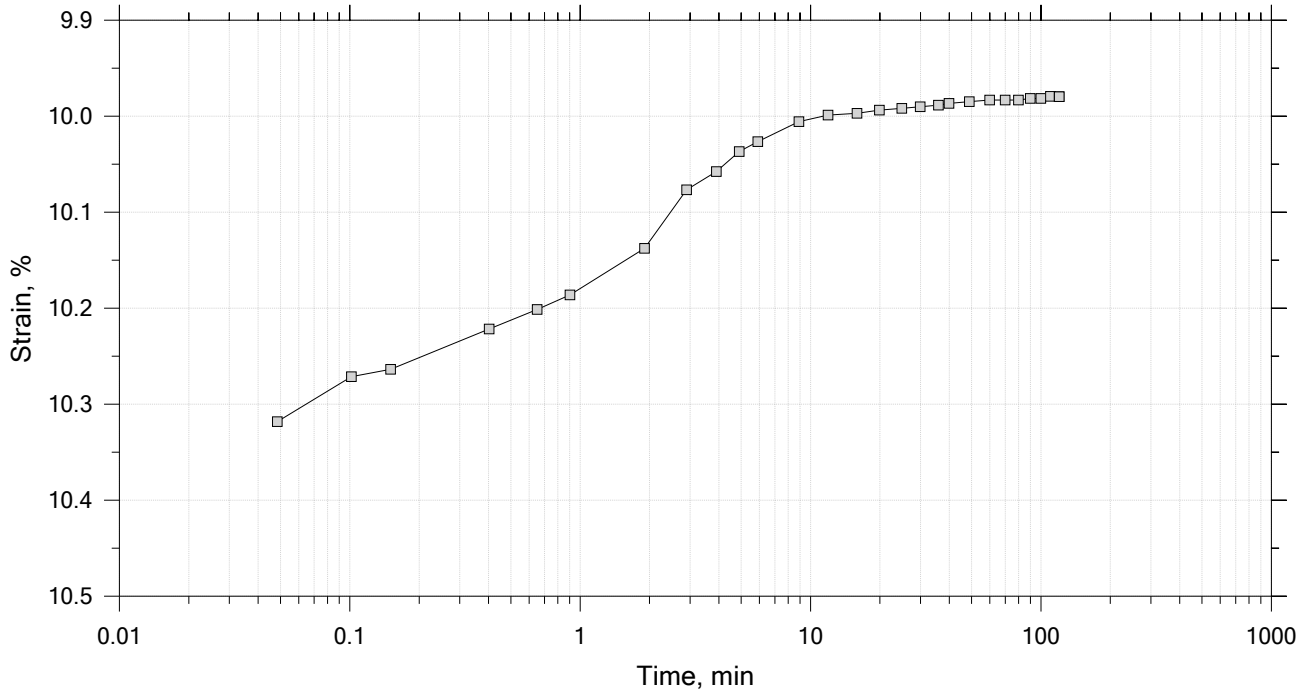
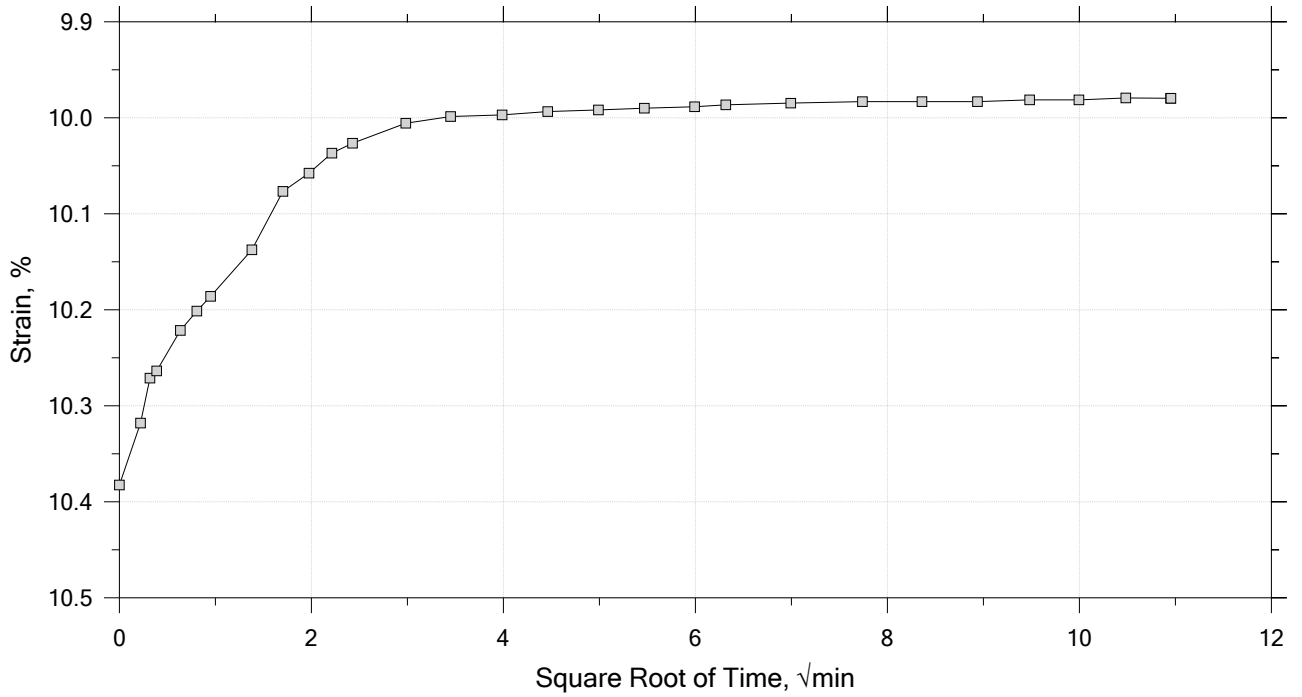
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





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Test No.: IP-7-1	Sample Type: intact	Elevation: ---
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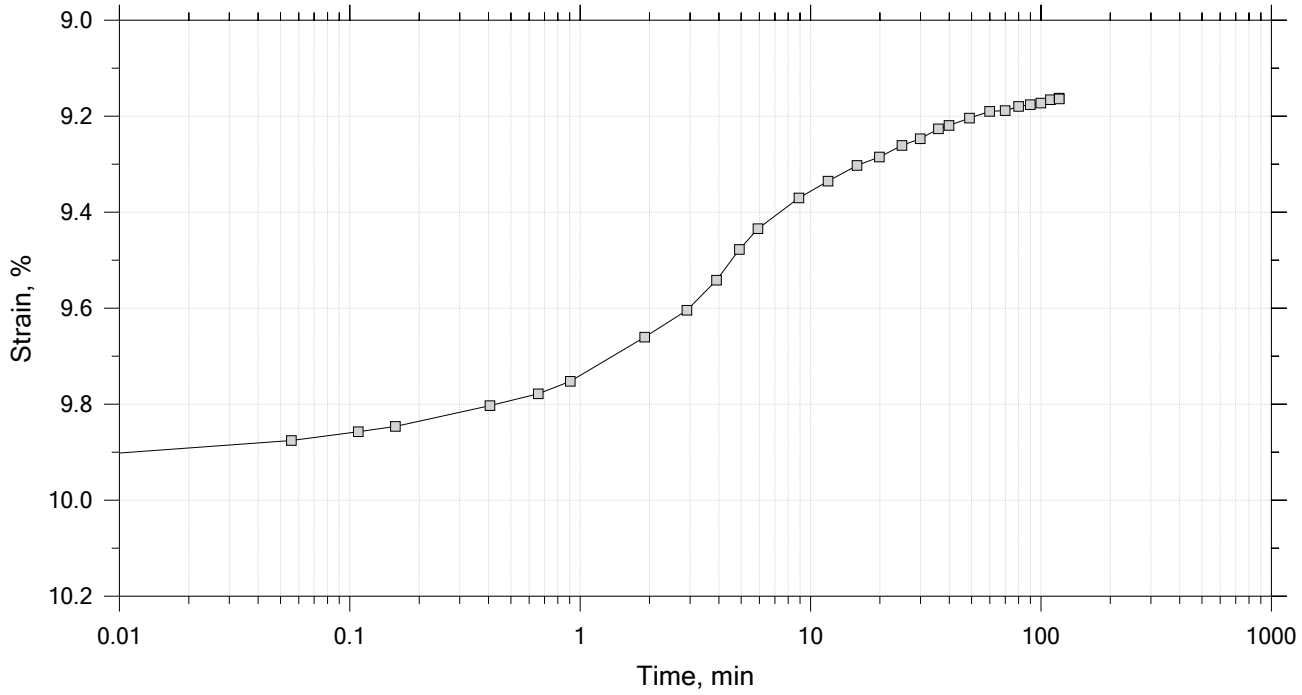
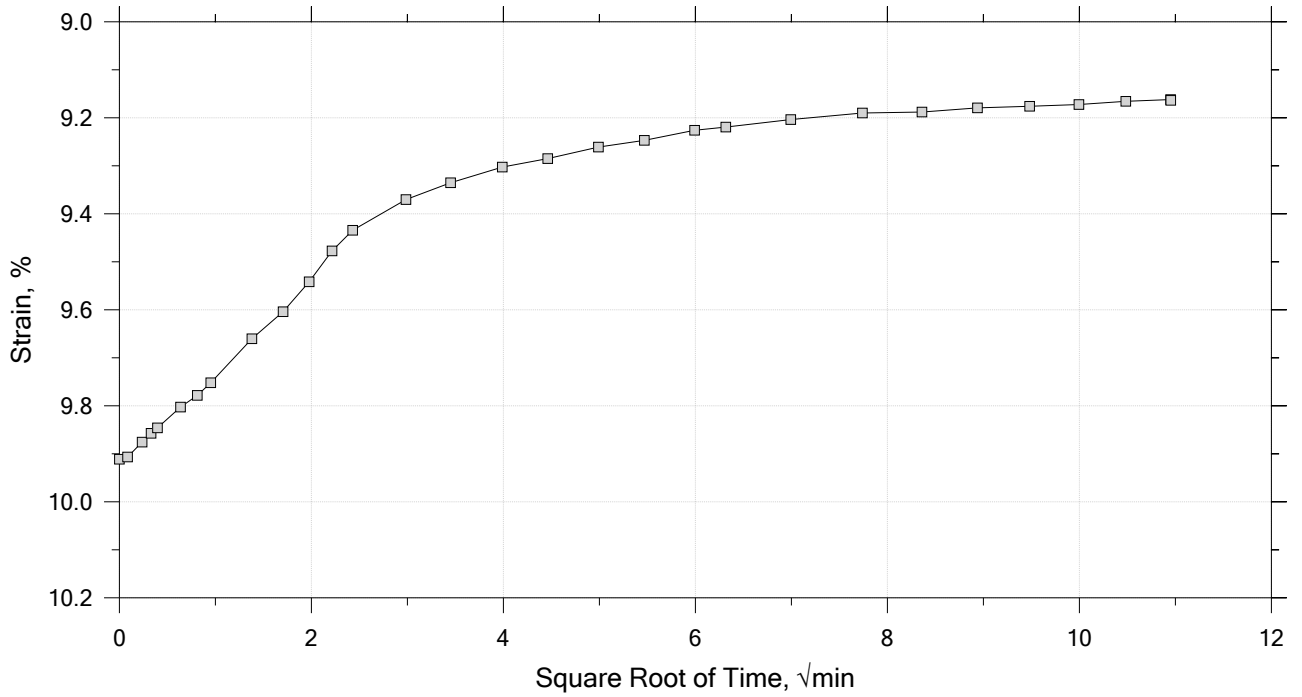
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf





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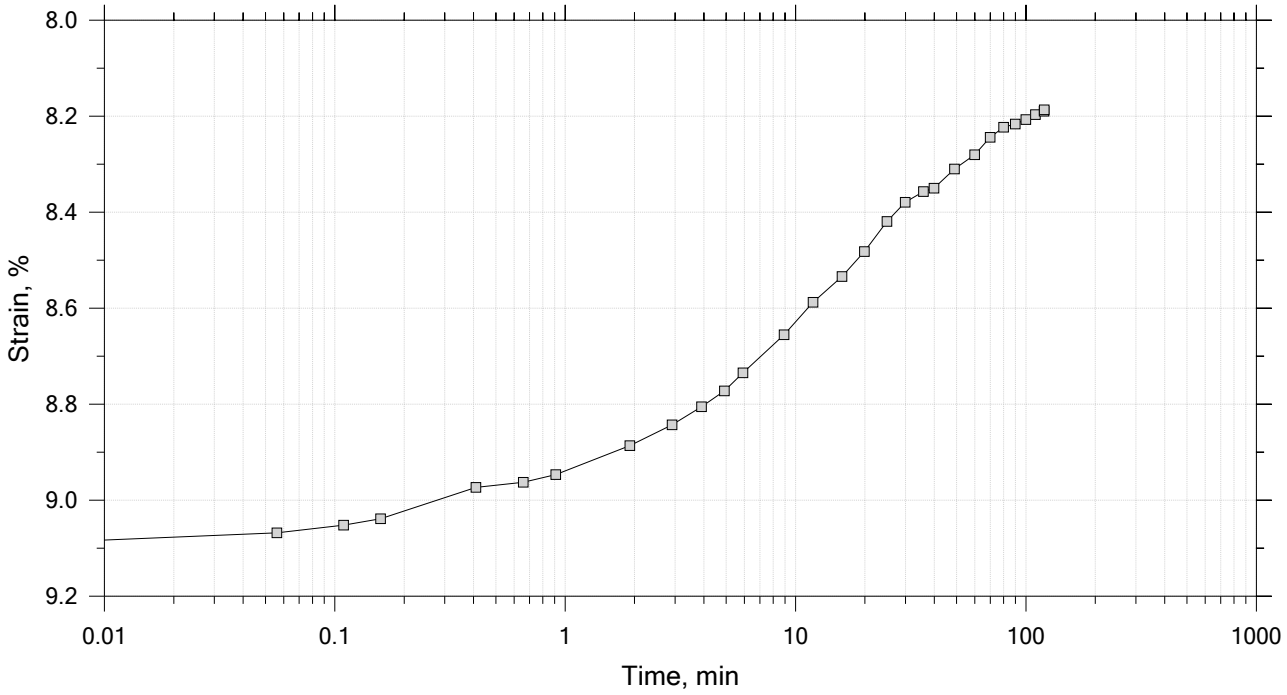
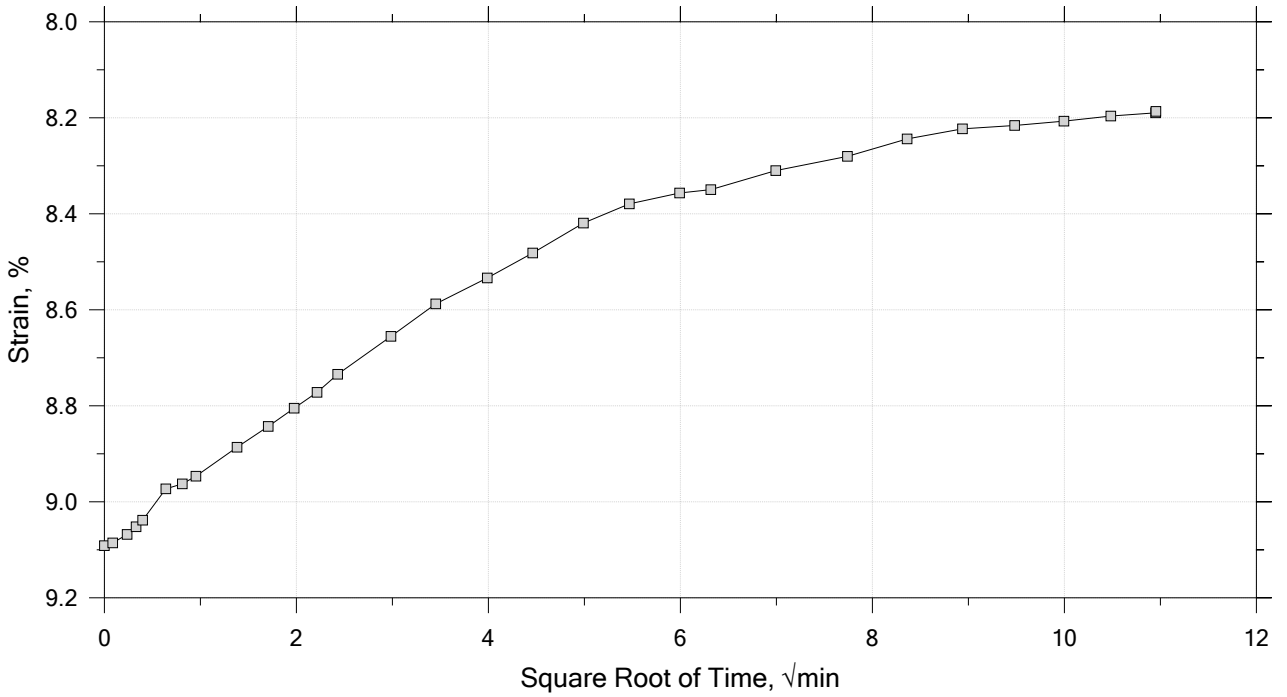
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
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	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.331	Plastic Limit: 16
Final Height: 0.92 in	Final Void Ratio: 0.222	Plasticity Index: 8

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-1005	RING		E3114
Mass Container, gm	8.32	109.05	109.05	8.31
Mass Container + Wet Soil, gm	192.16	293.51	288.43	186.99
Mass Container + Dry Soil, gm	173.76	275.02	275.02	173.63
Mass Dry Soil, gm	165.44	165.97	165.97	165.32
Water Content, %	11.12	11.14	8.08	8.08
Void Ratio	---	0.33	0.22	---
Degree of Saturation, %	---	92.47	100.00	---
Dry Unit Weight, pcf	---	128.8	140.29	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0670	0.007405	0.321	0.740	69.968	5.01e-05	1.10e-01	1.04e-04
2	0.125	0.01160	0.315	1.16	9.785	3.54e-04	7.24e-02	4.80e-04
3	0.250	0.02397	0.299	2.40	6.038	5.65e-04	9.89e-02	1.05e-03
4	0.500	0.03522	0.284	3.52	17.736	1.88e-04	4.50e-02	1.58e-04
5	1.00	0.04305	0.274	4.31	13.516	2.41e-04	1.57e-02	7.08e-05
6	2.00	0.05302	0.260	5.30	4.028	7.95e-04	9.97e-03	1.48e-04
7	4.00	0.06443	0.245	6.44	5.078	6.17e-04	5.71e-03	6.59e-05
8	8.00	0.07709	0.228	7.71	4.114	7.42e-04	3.16e-03	4.40e-05
9	16.0	0.09013	0.211	9.01	4.948	6.00e-04	1.63e-03	1.83e-05
10	32.0	0.1033	0.193	10.3	3.123	9.23e-04	8.23e-04	1.42e-05
11	16.0	0.1023	0.195	10.2	2.541	1.12e-03	6.03e-05	1.26e-06
12	4.00	0.09980	0.198	9.98	5.959	4.79e-04	2.11e-04	1.89e-06
13	1.00	0.09164	0.209	9.16	13.897	2.08e-04	2.72e-03	1.06e-05
14	0.250	0.08187	0.222	8.19	37.377	7.88e-05	1.30e-02	1.92e-05

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
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	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
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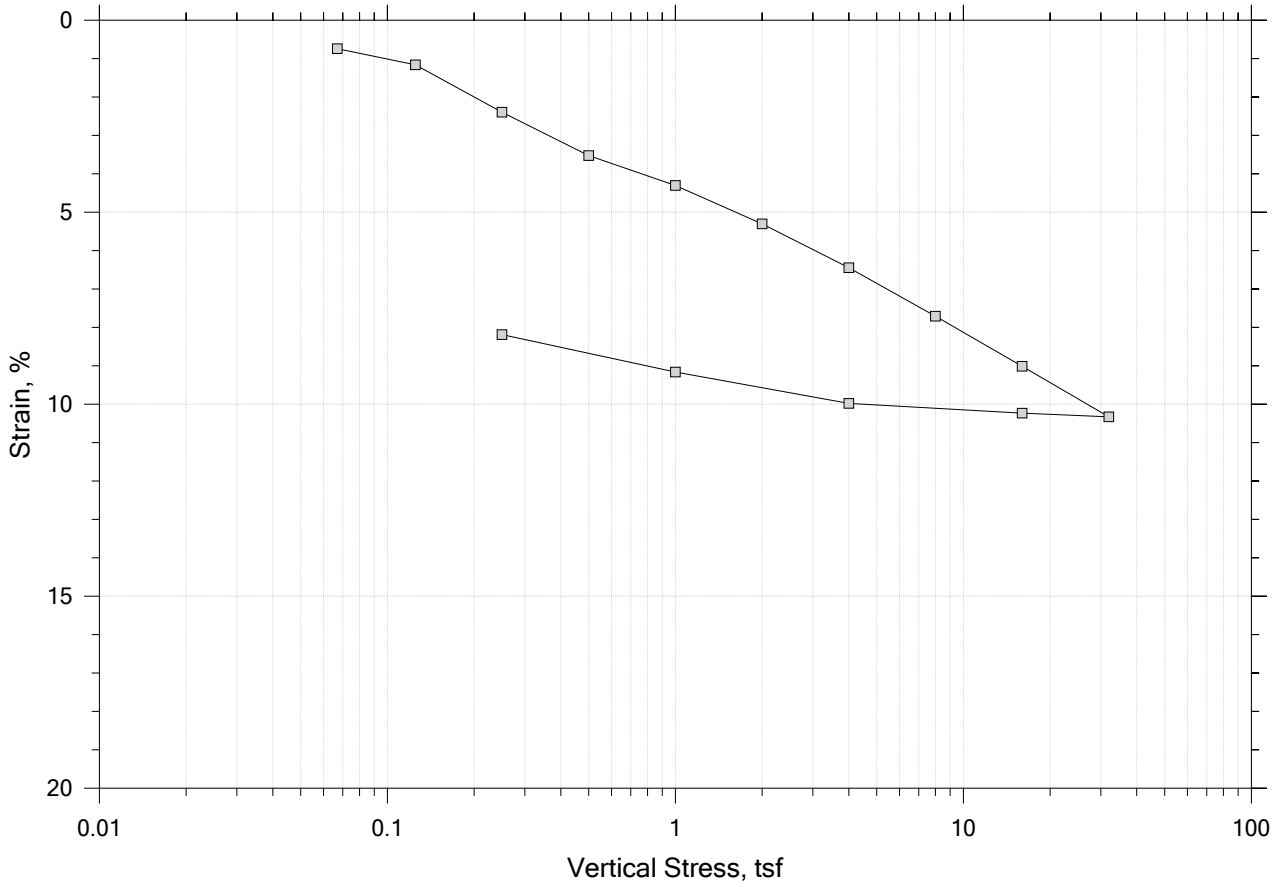
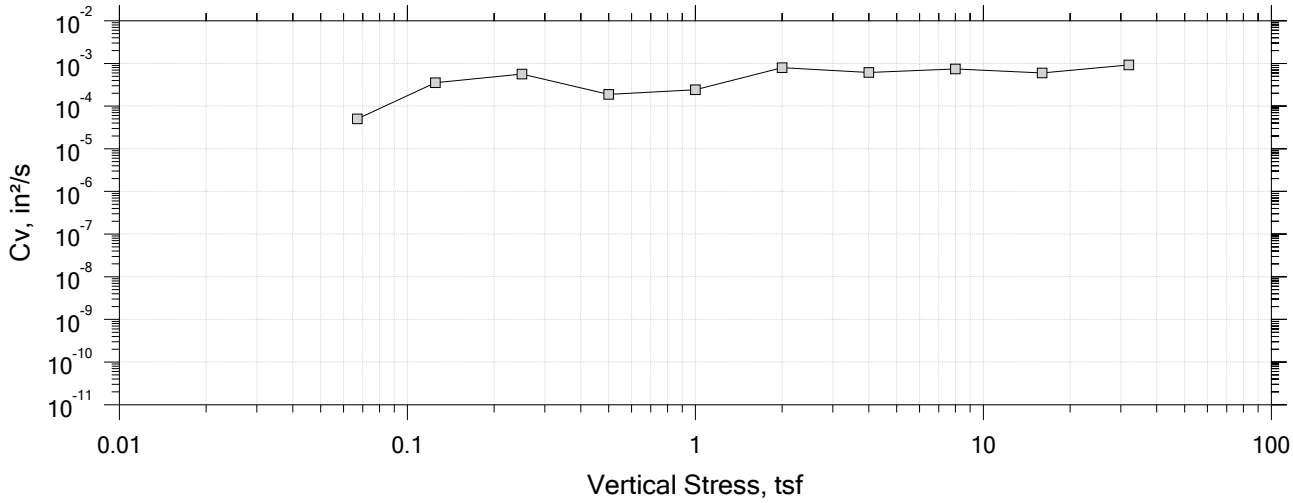
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

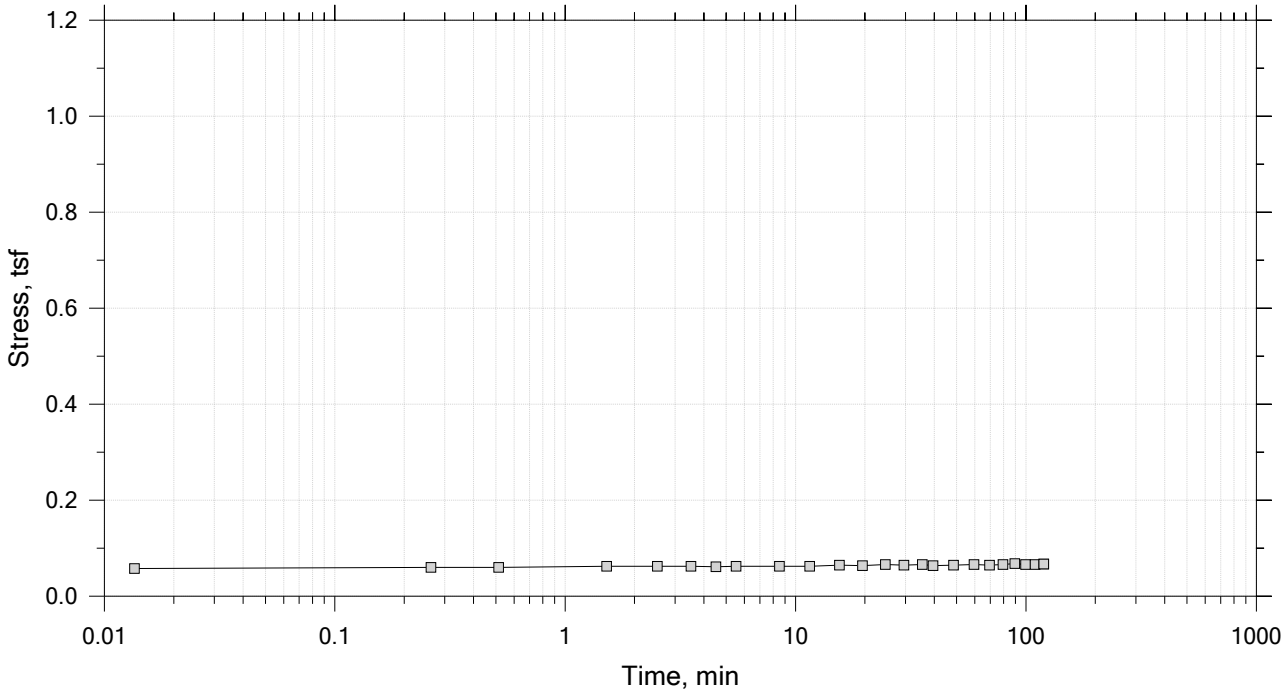


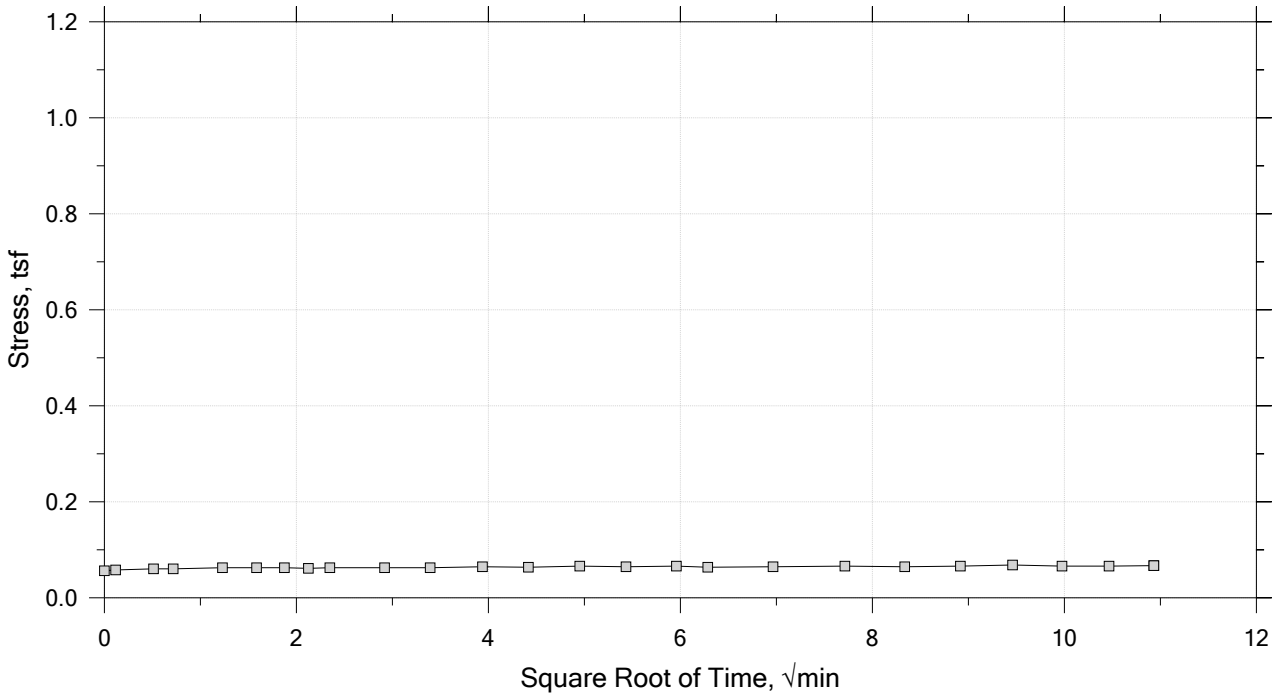


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.067 tsf





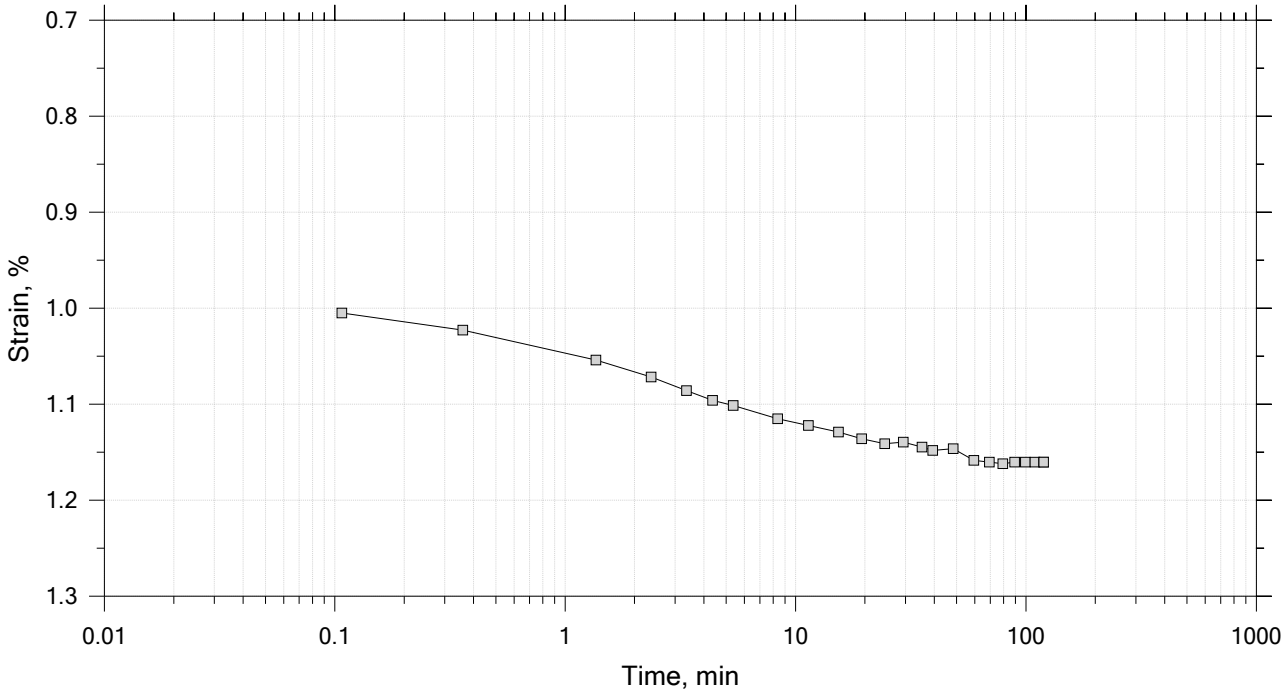
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

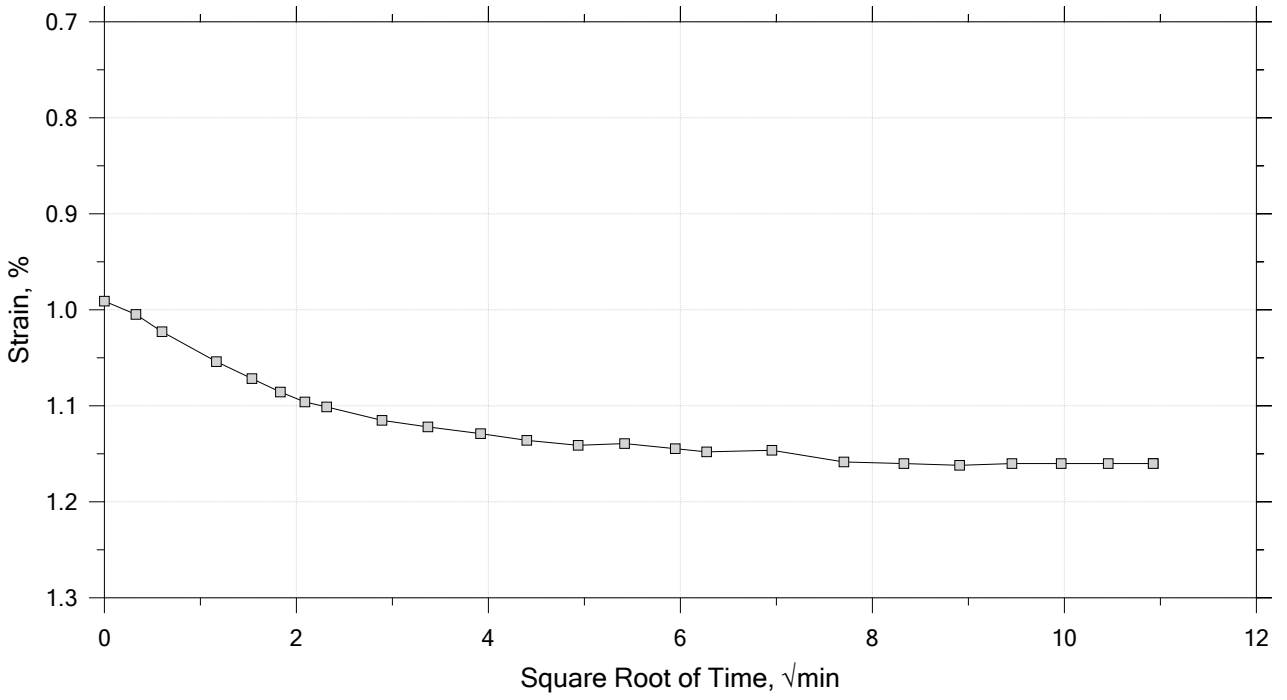
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

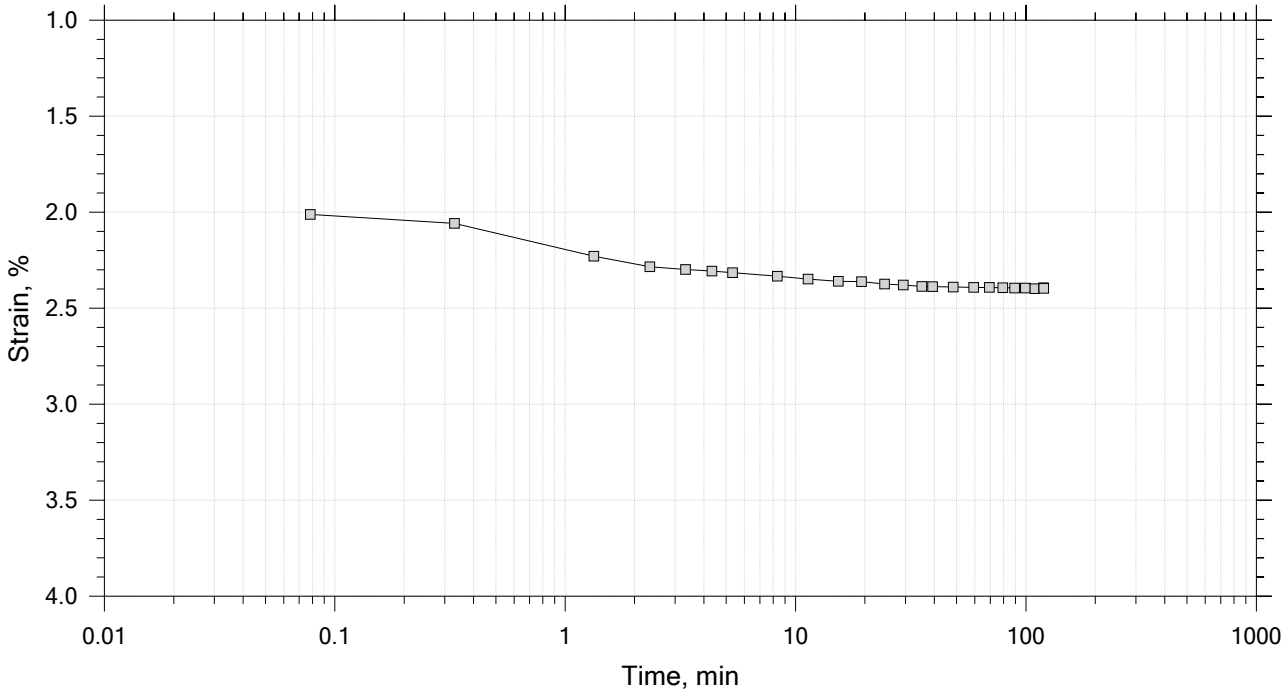


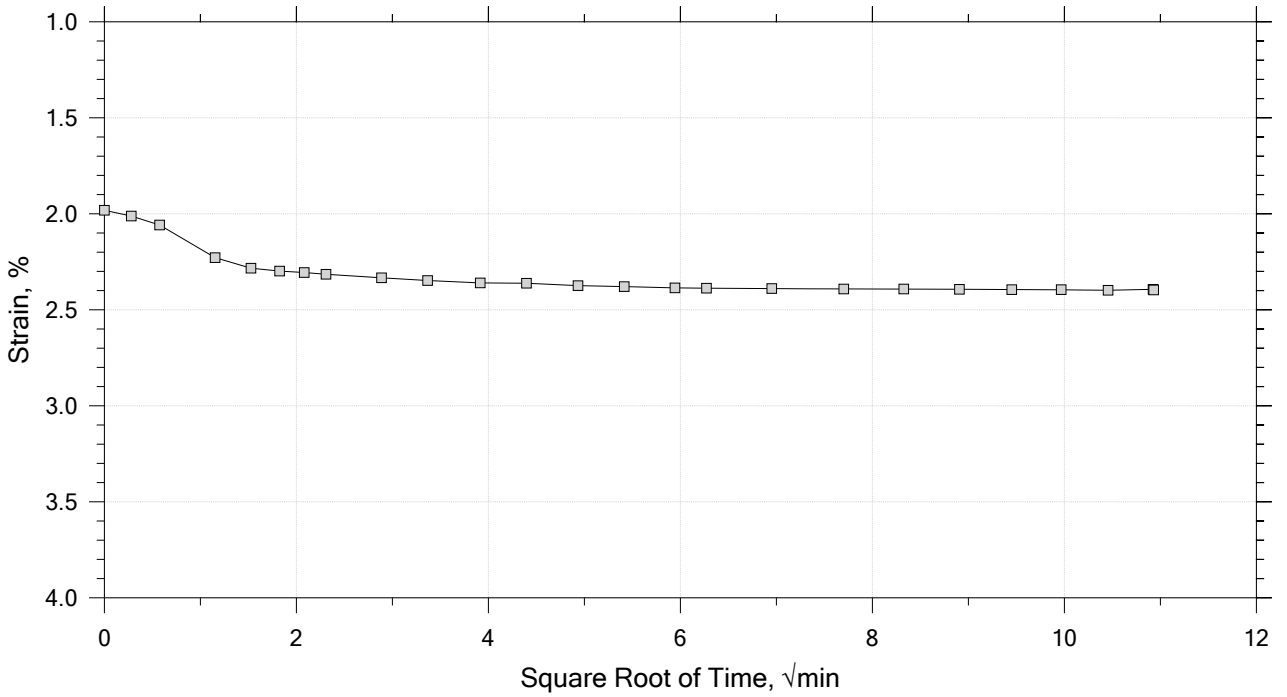


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

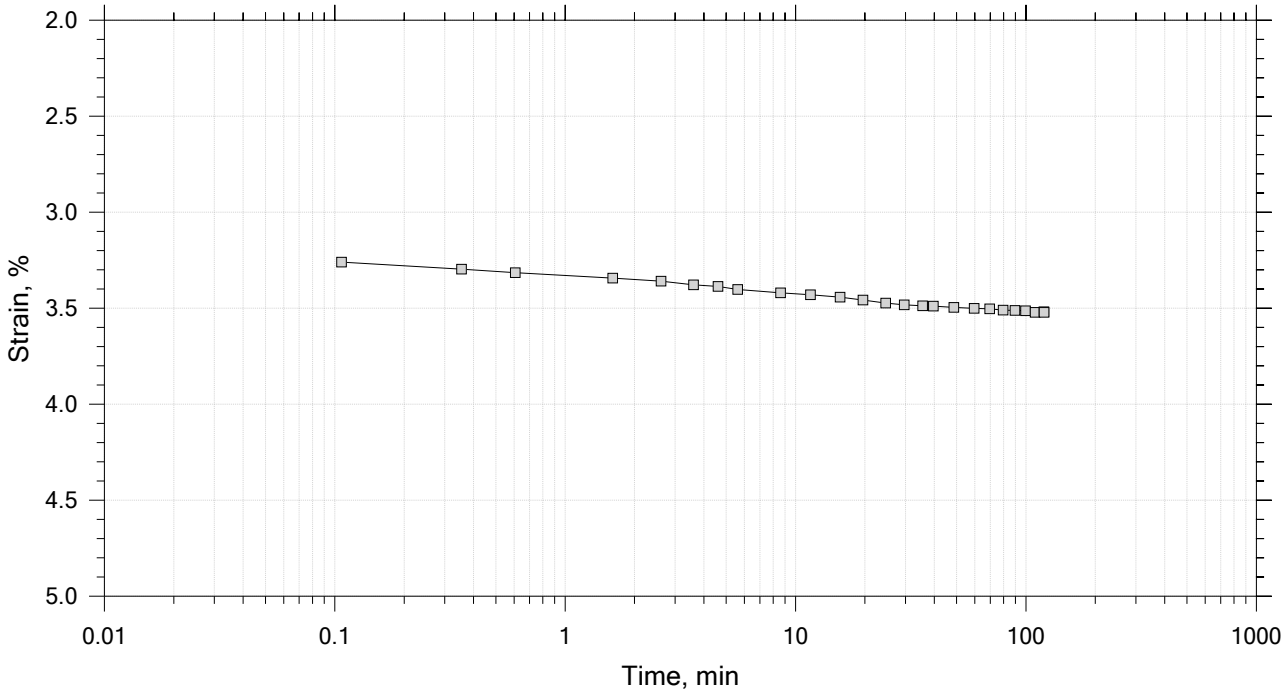


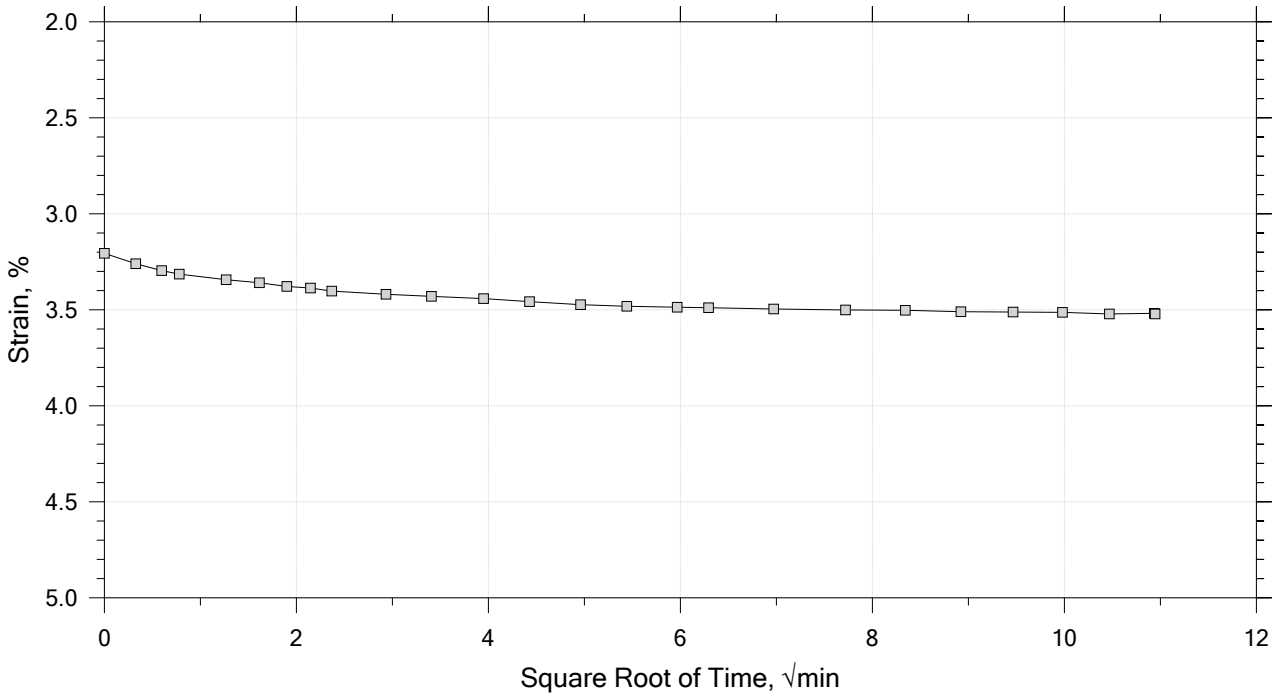


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





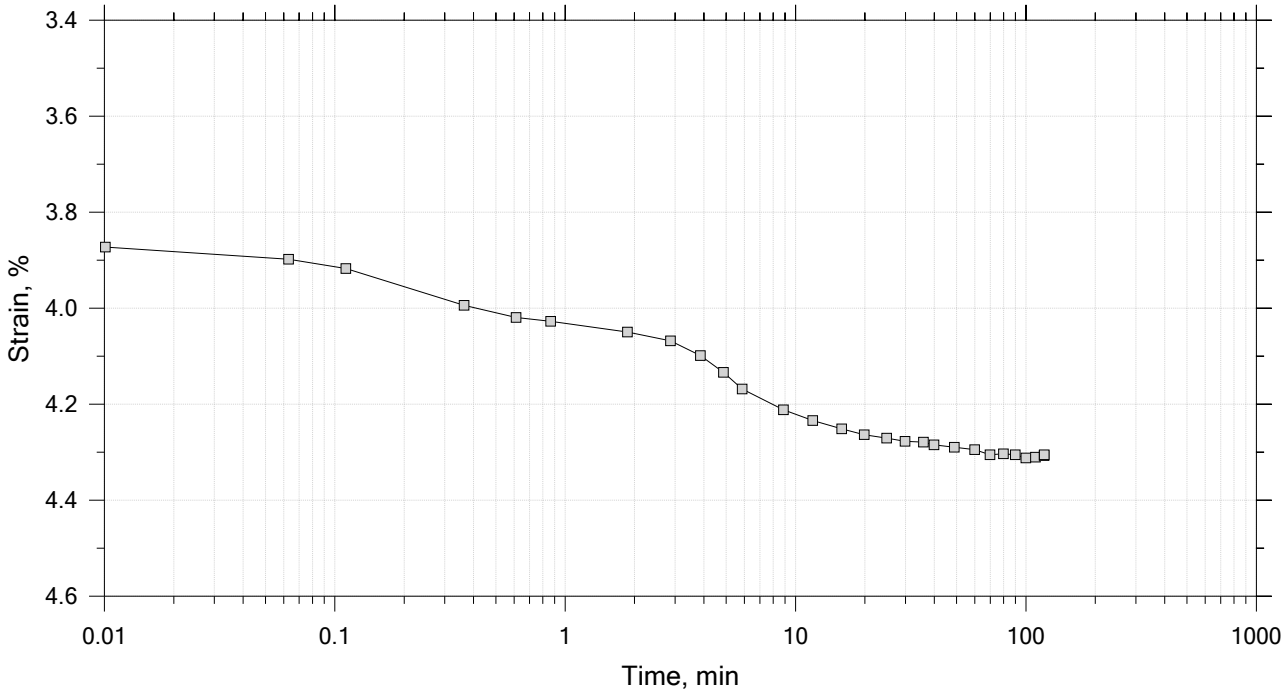
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

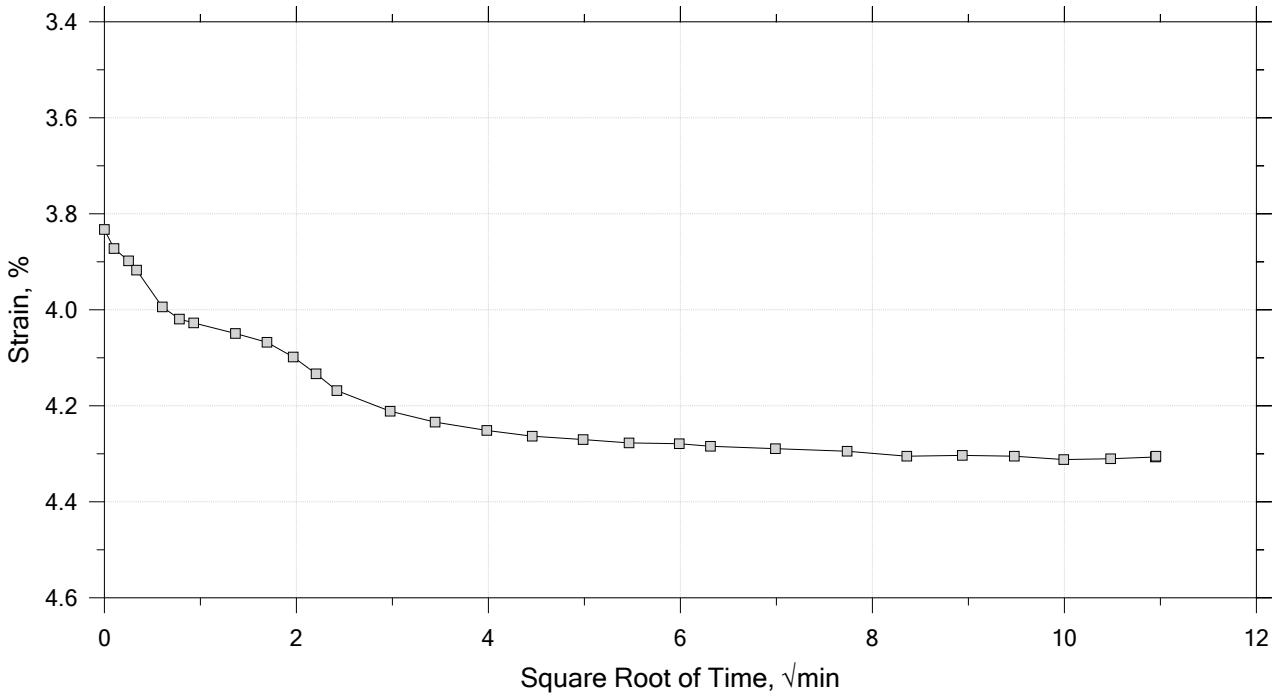
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf

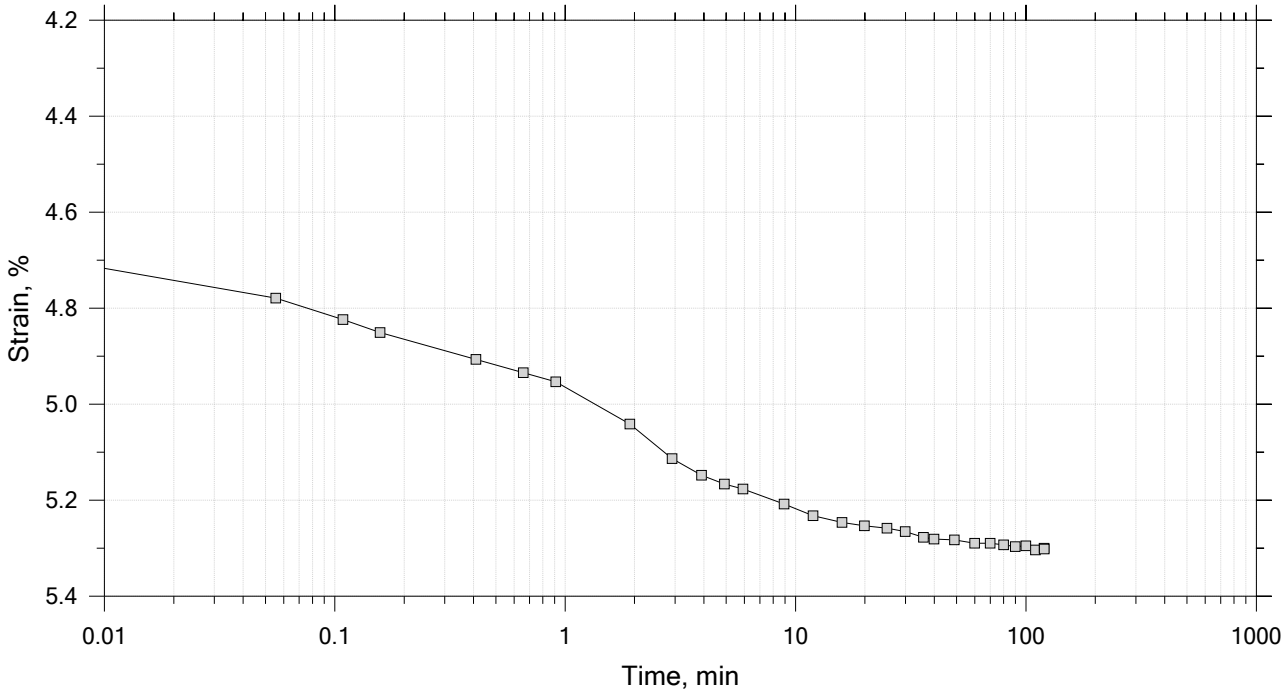


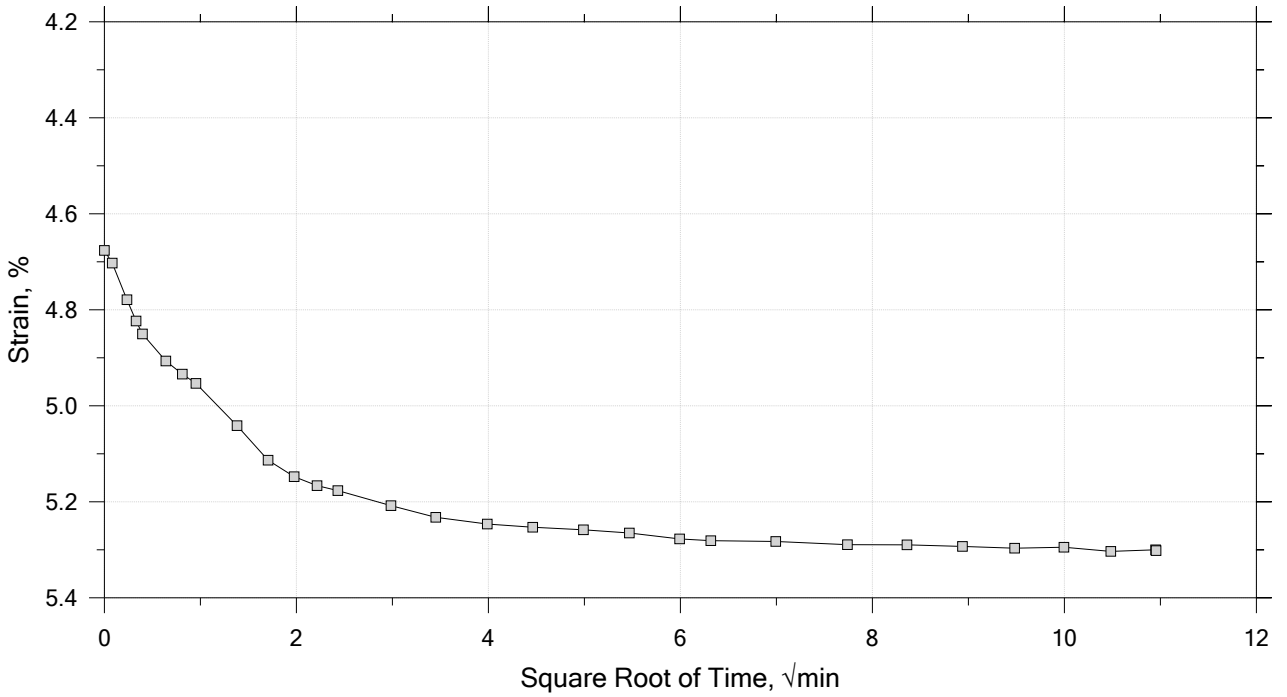


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14
Constant Load Step
Stress: 2 tsf

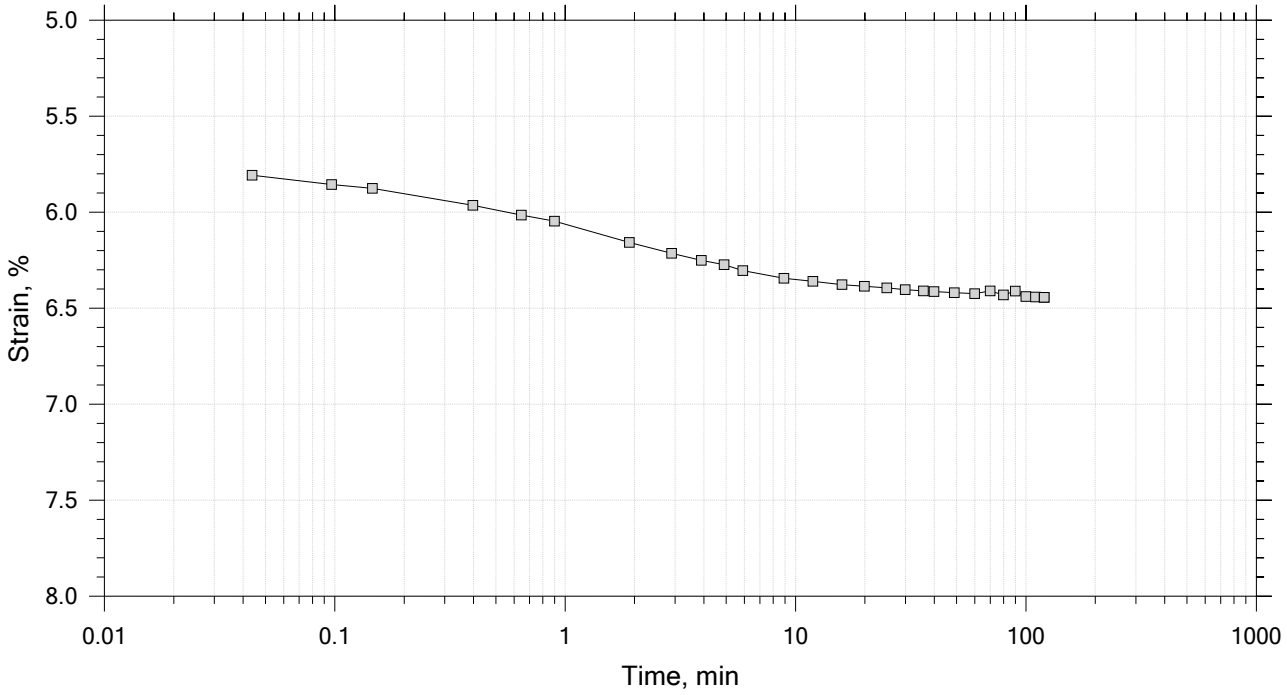


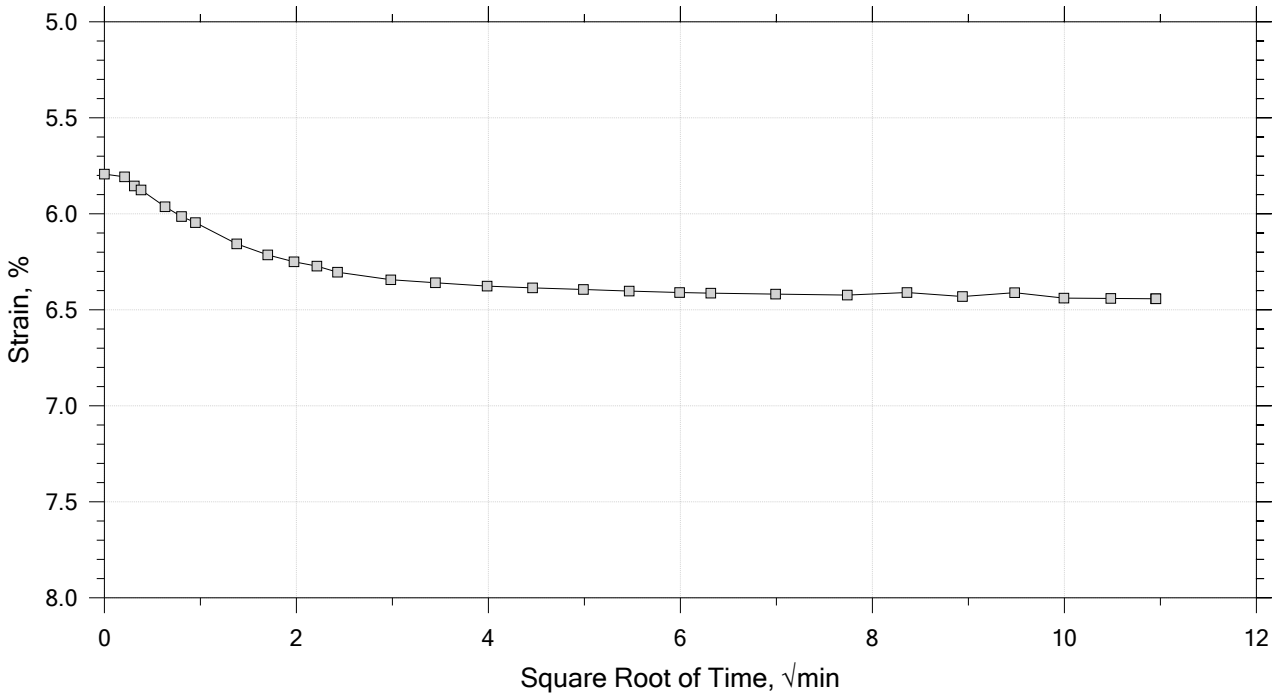


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf





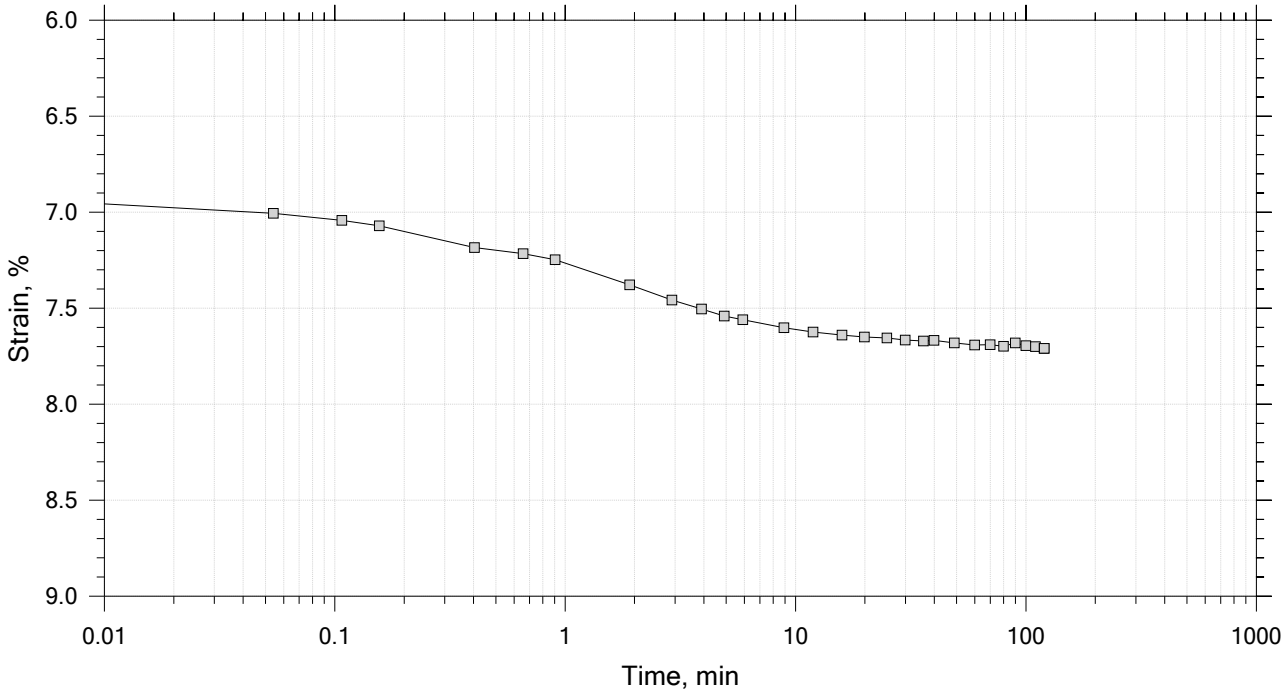
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

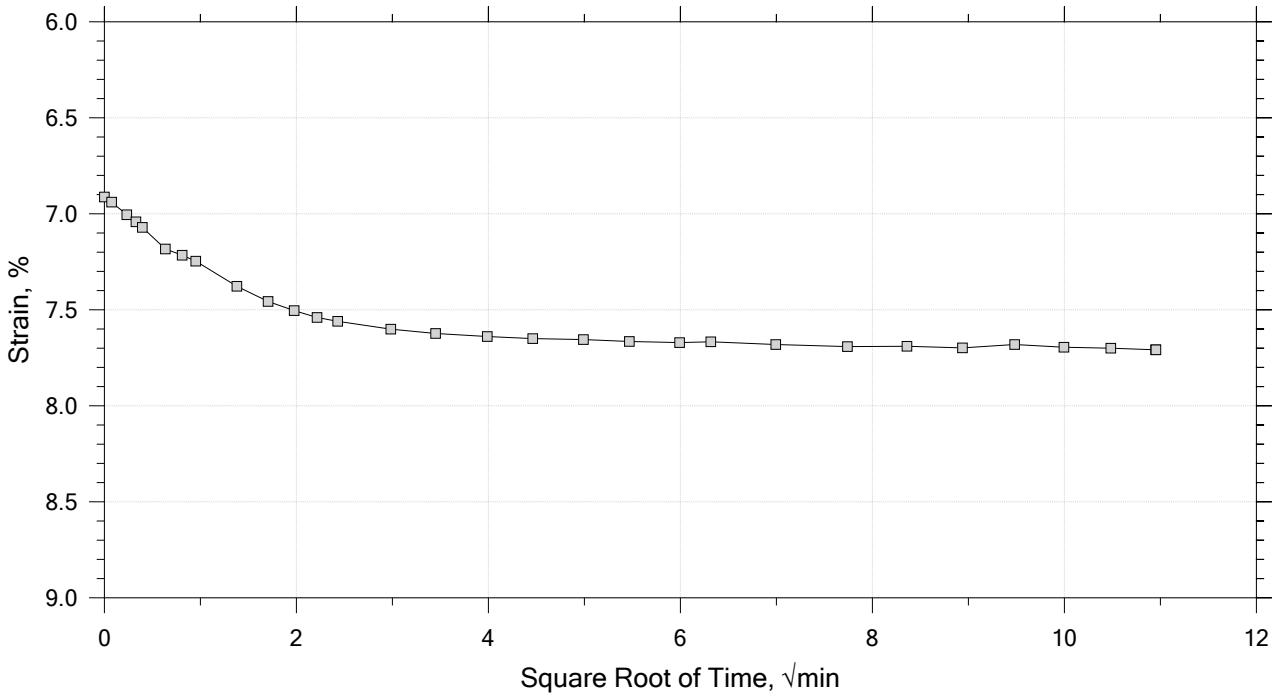
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





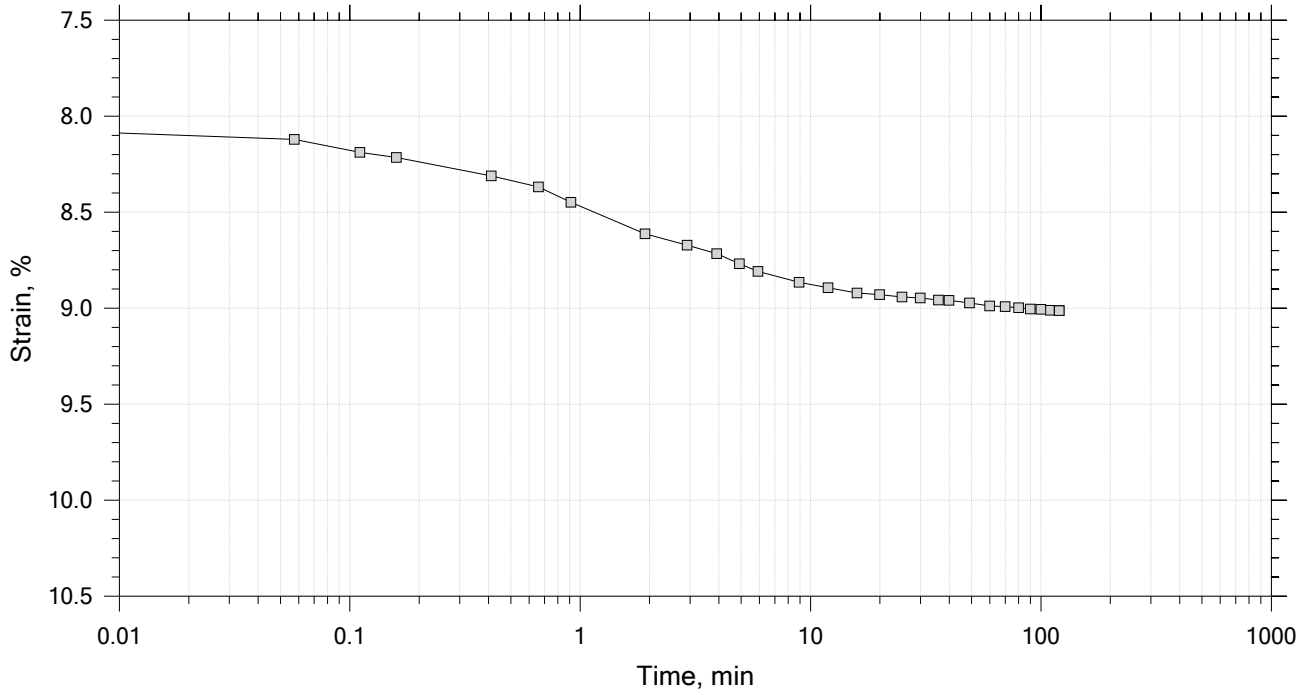
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

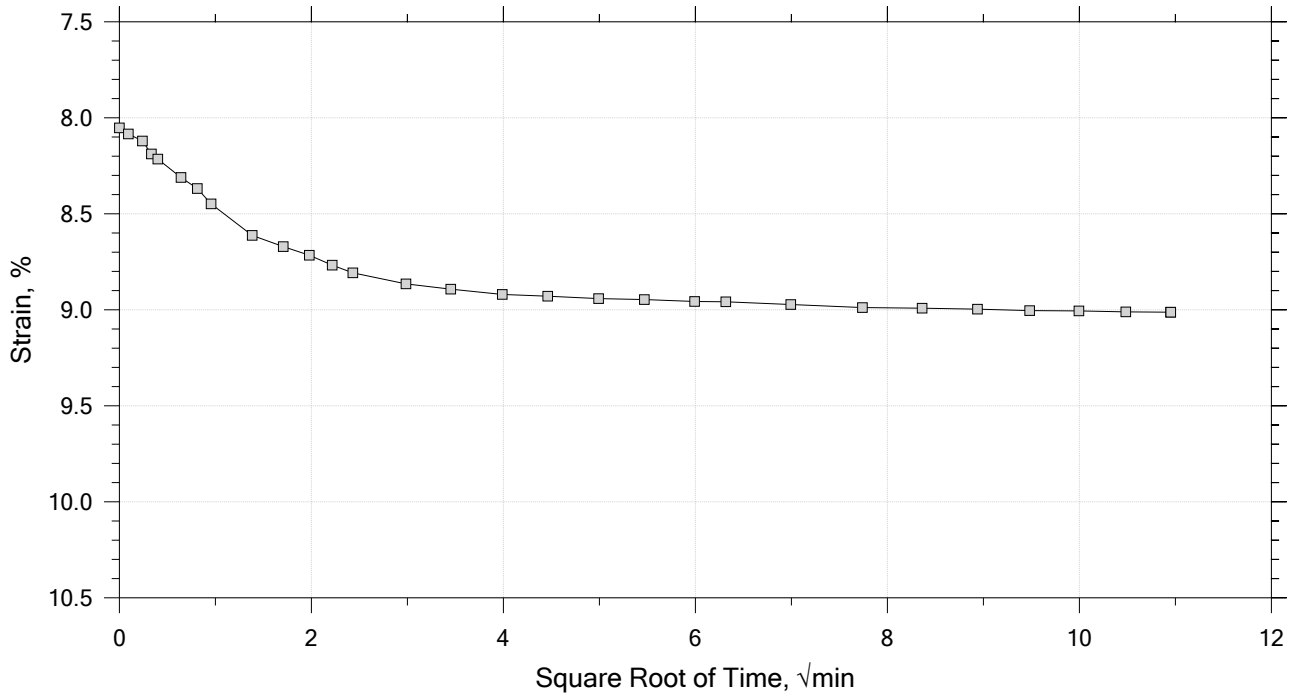
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

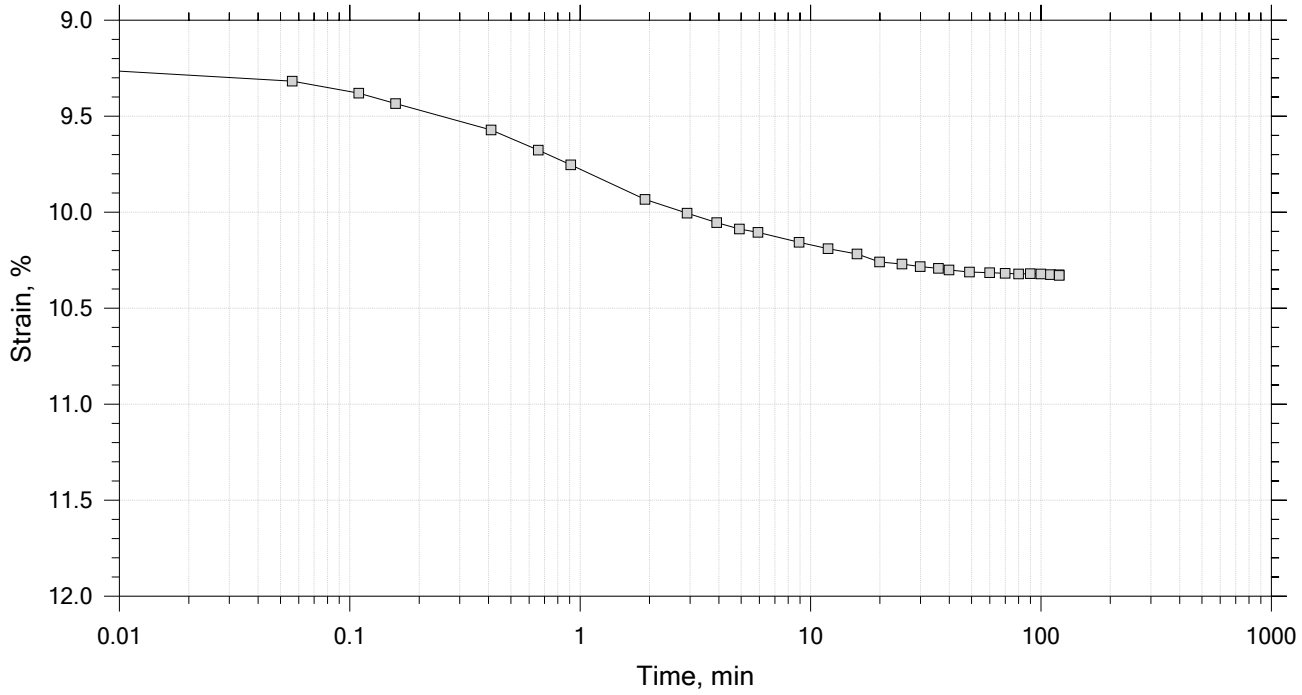


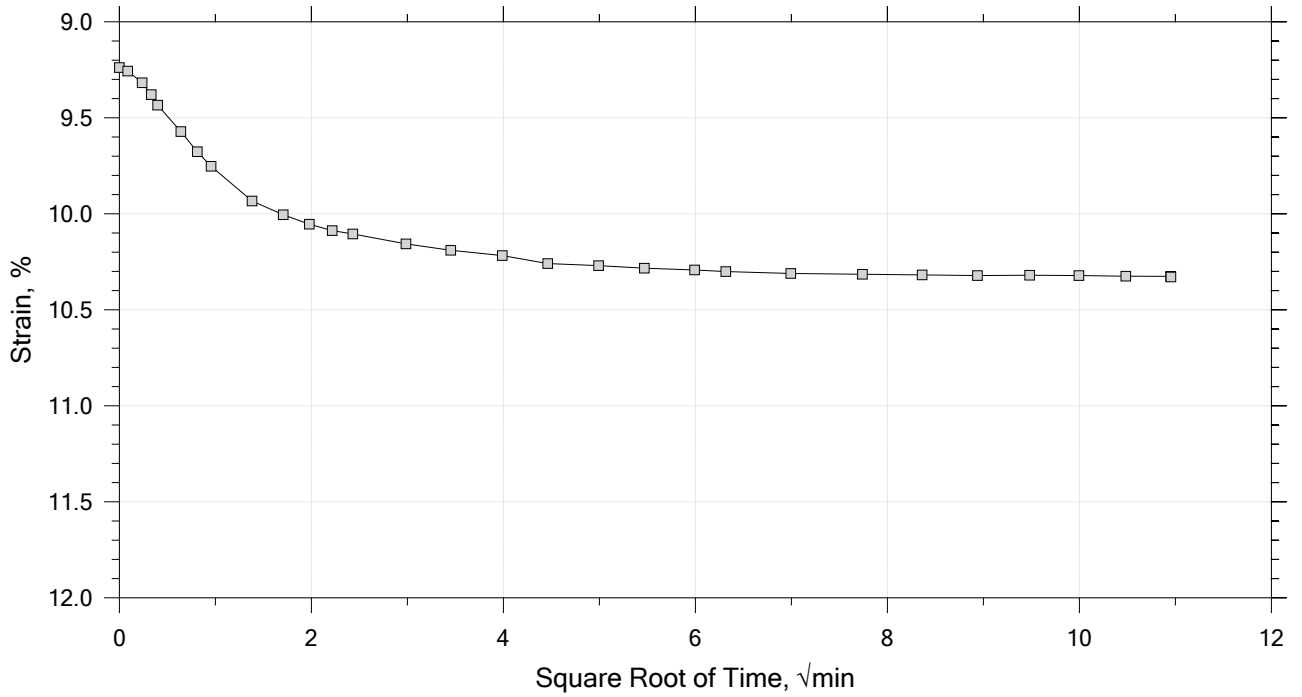


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

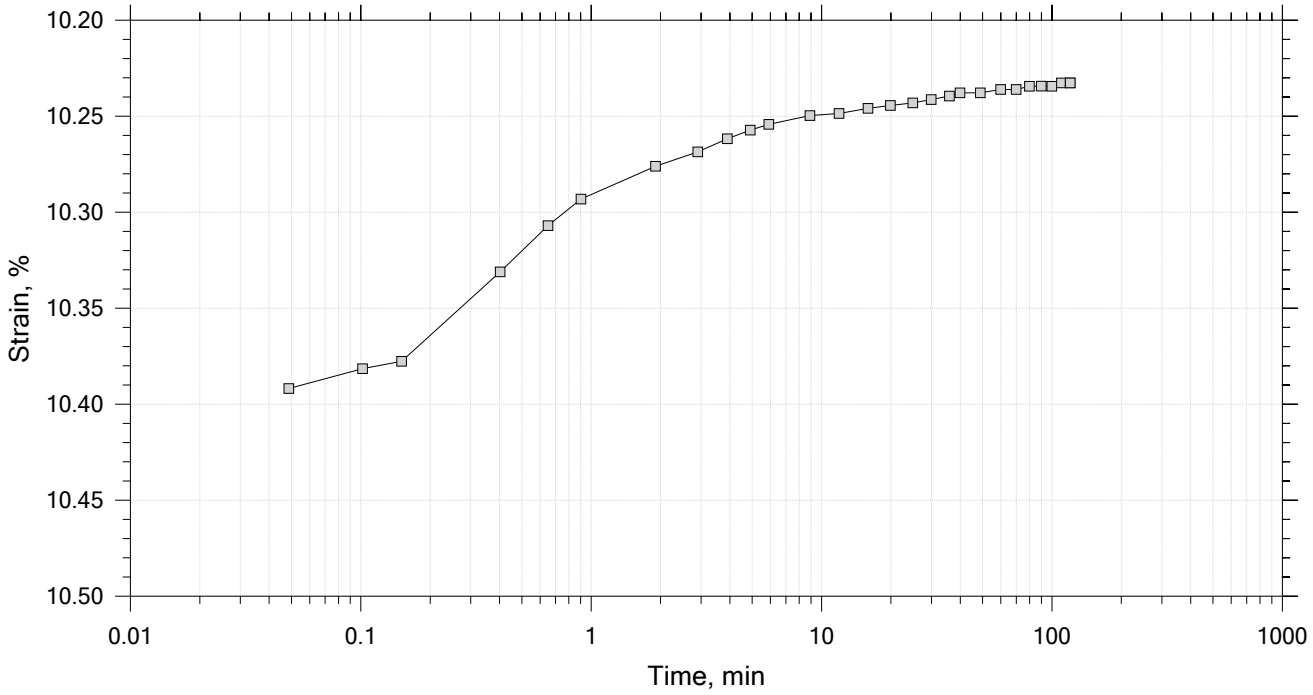


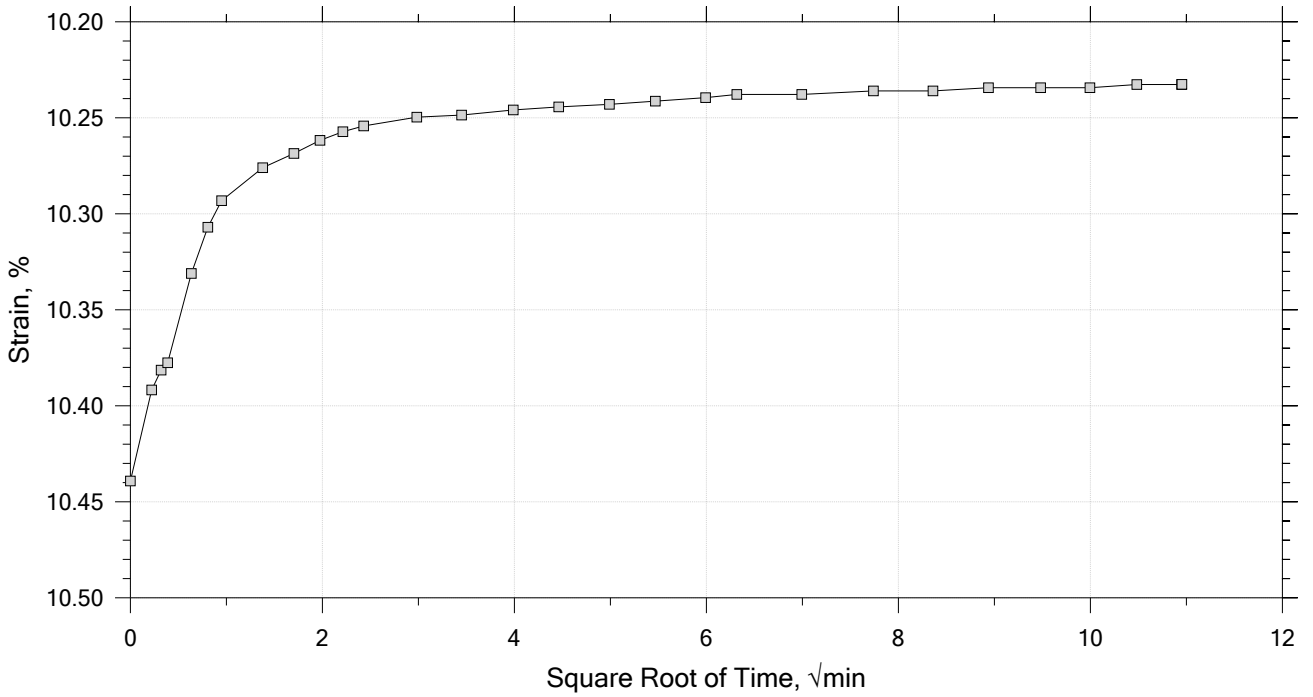


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

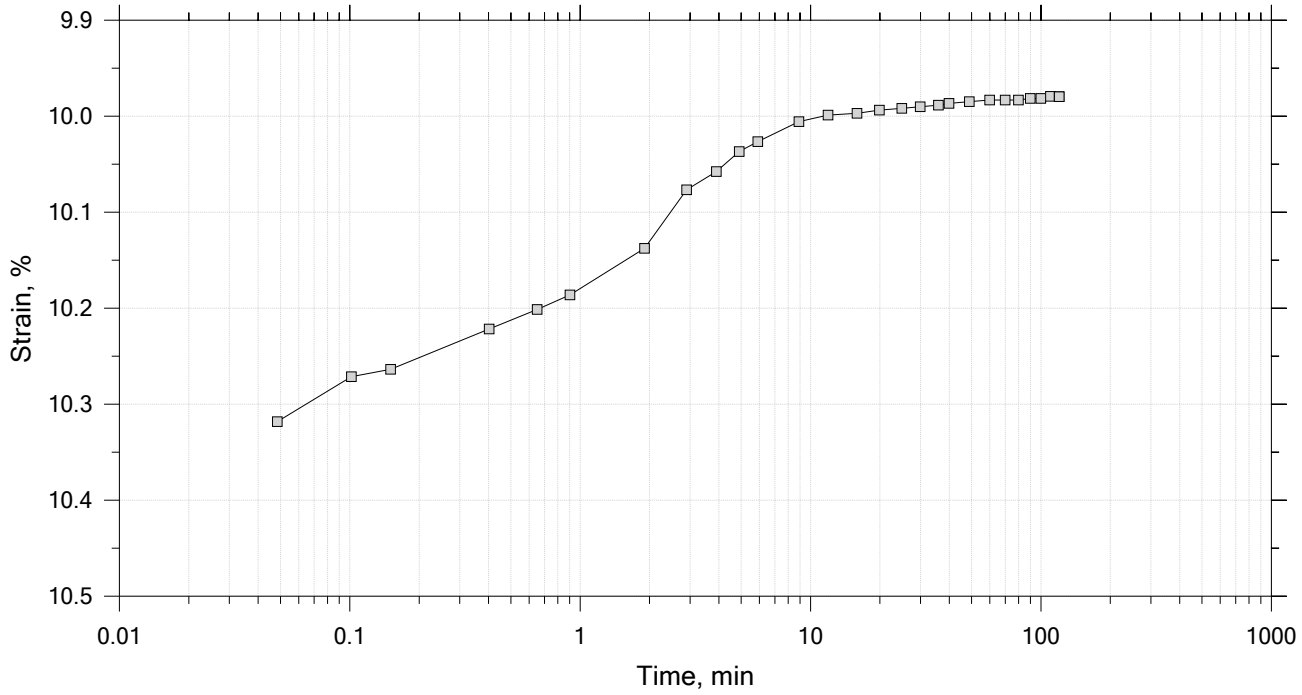


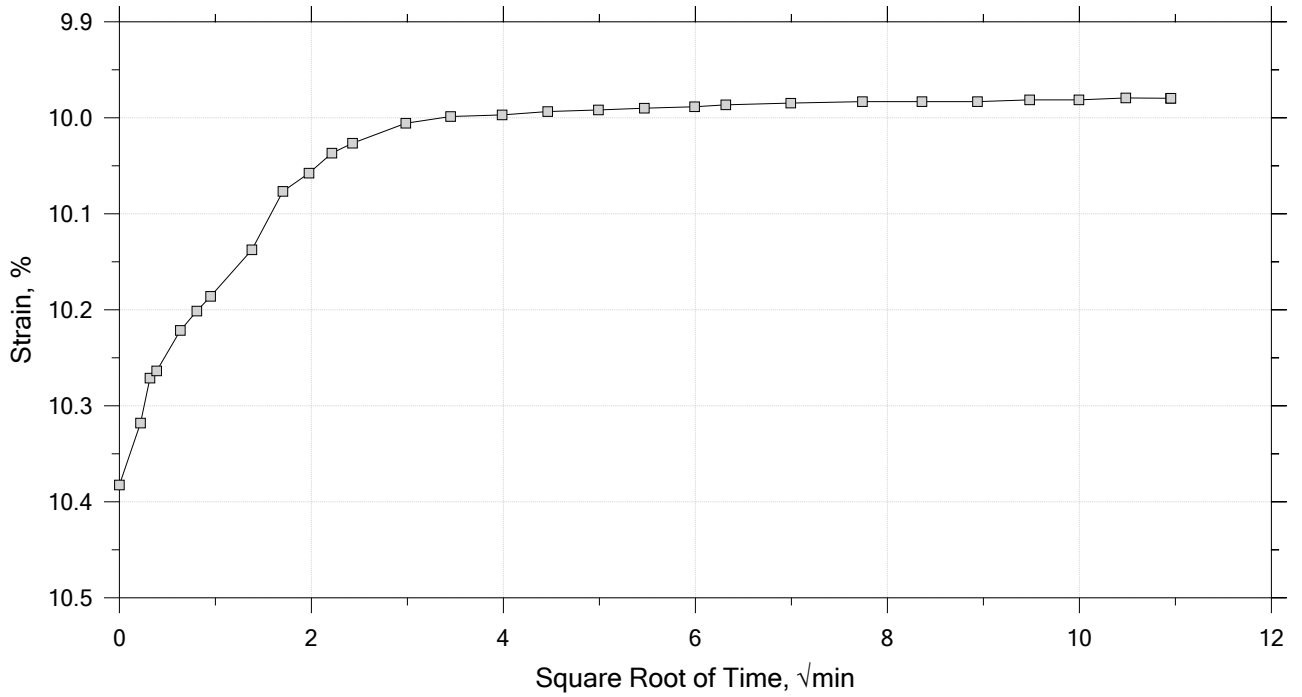


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

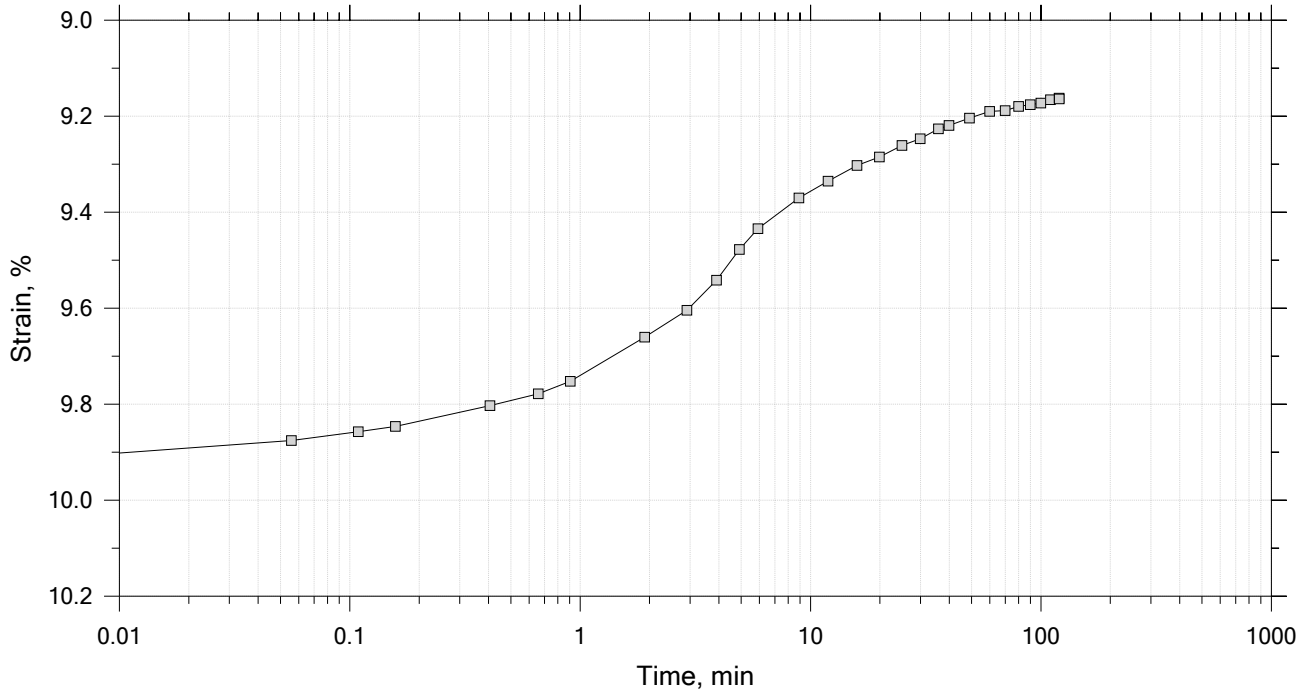


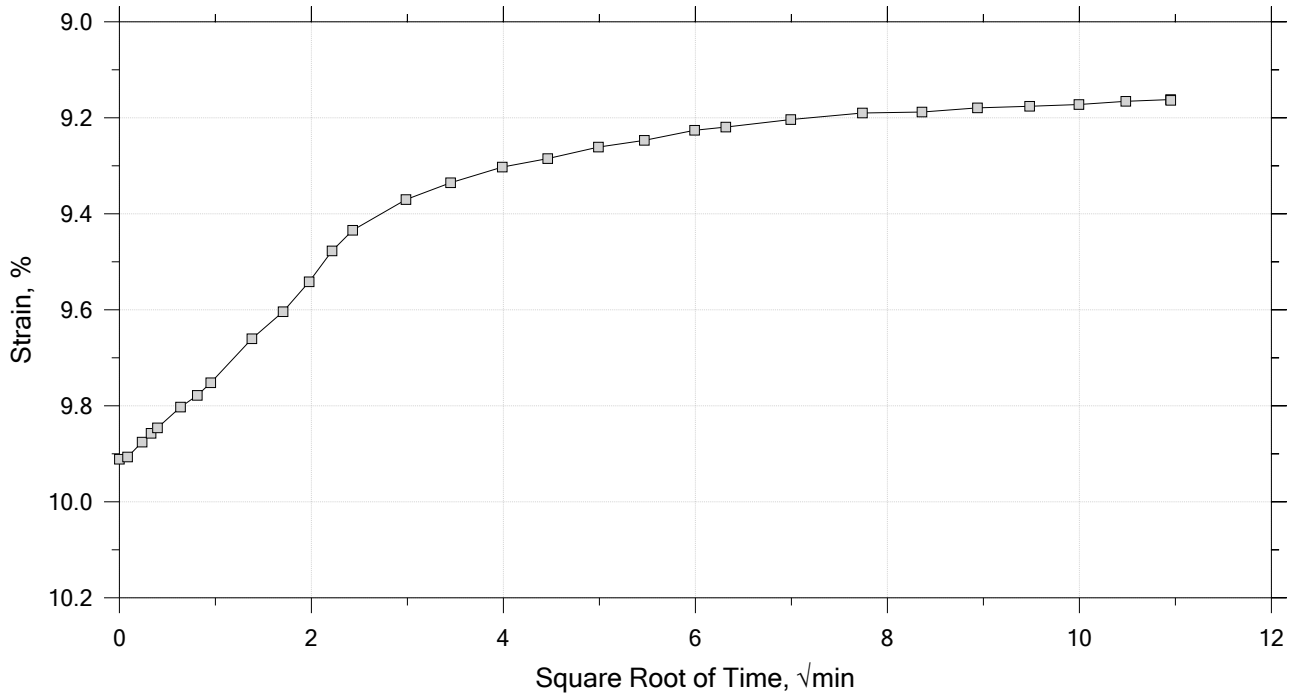


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
Test No.: IP-7-1	Sample Type: intact	Elevation: ---
Description: Moist, dark greenish brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

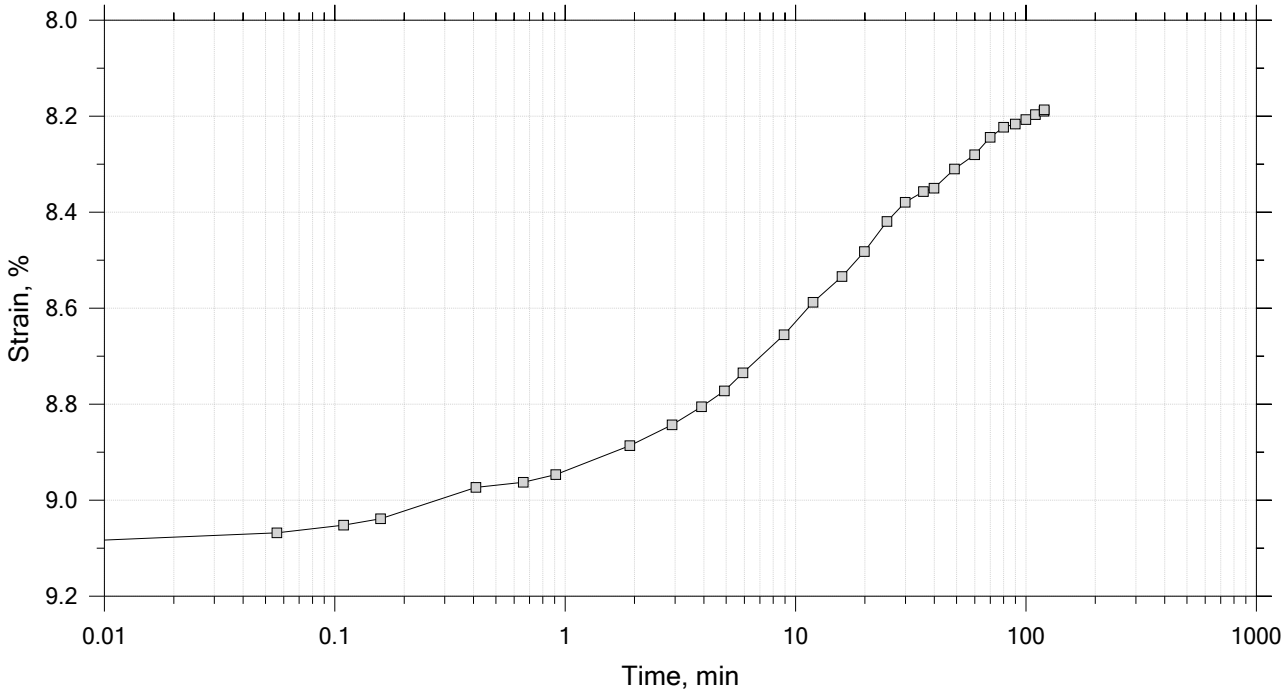


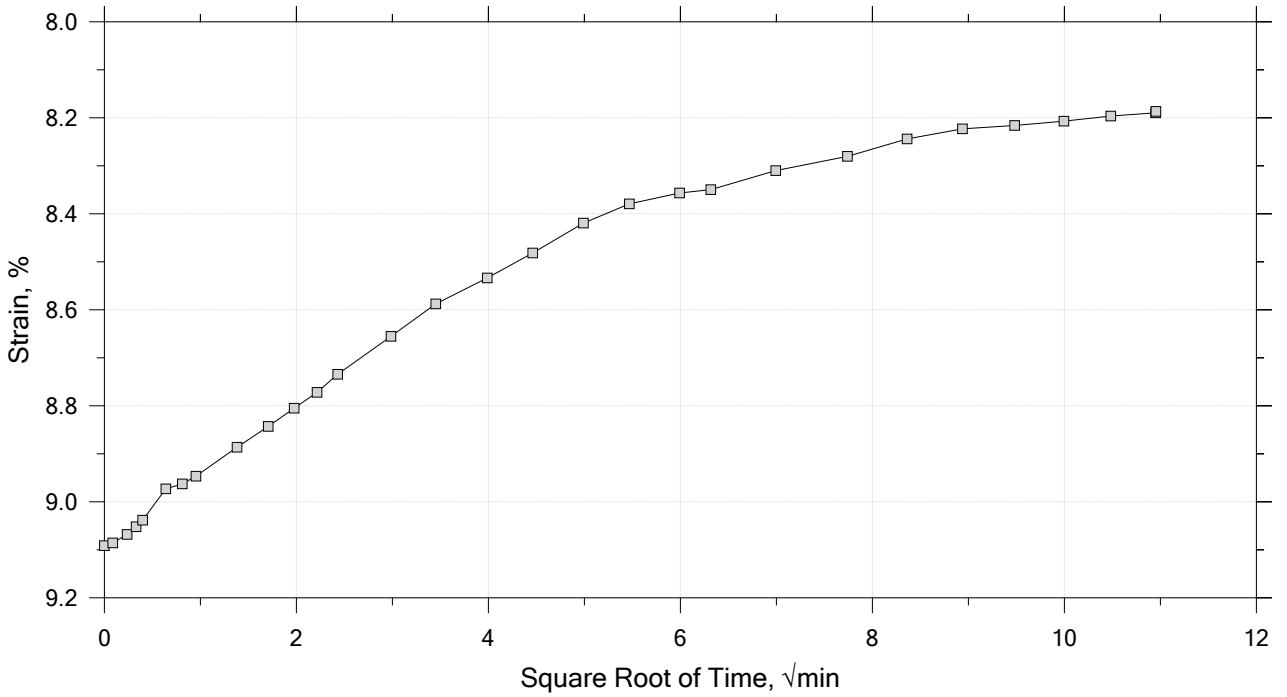


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.331	Plastic Limit: 16
Final Height: 0.92 in	Final Void Ratio: 0.222	Plasticity Index: 8

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-1005	RING		E3114
Mass Container, gm	8.32	109.05	109.05	8.31
Mass Container + Wet Soil, gm	192.16	293.51	288.43	186.99
Mass Container + Dry Soil, gm	173.76	275.02	275.02	173.63
Mass Dry Soil, gm	165.44	165.97	165.97	165.32
Water Content, %	11.12	11.14	8.08	8.08
Void Ratio	---	0.33	0.22	---
Degree of Saturation, %	---	92.47	100.00	---
Dry Unit Weight, pcf	---	128.8	140.29	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

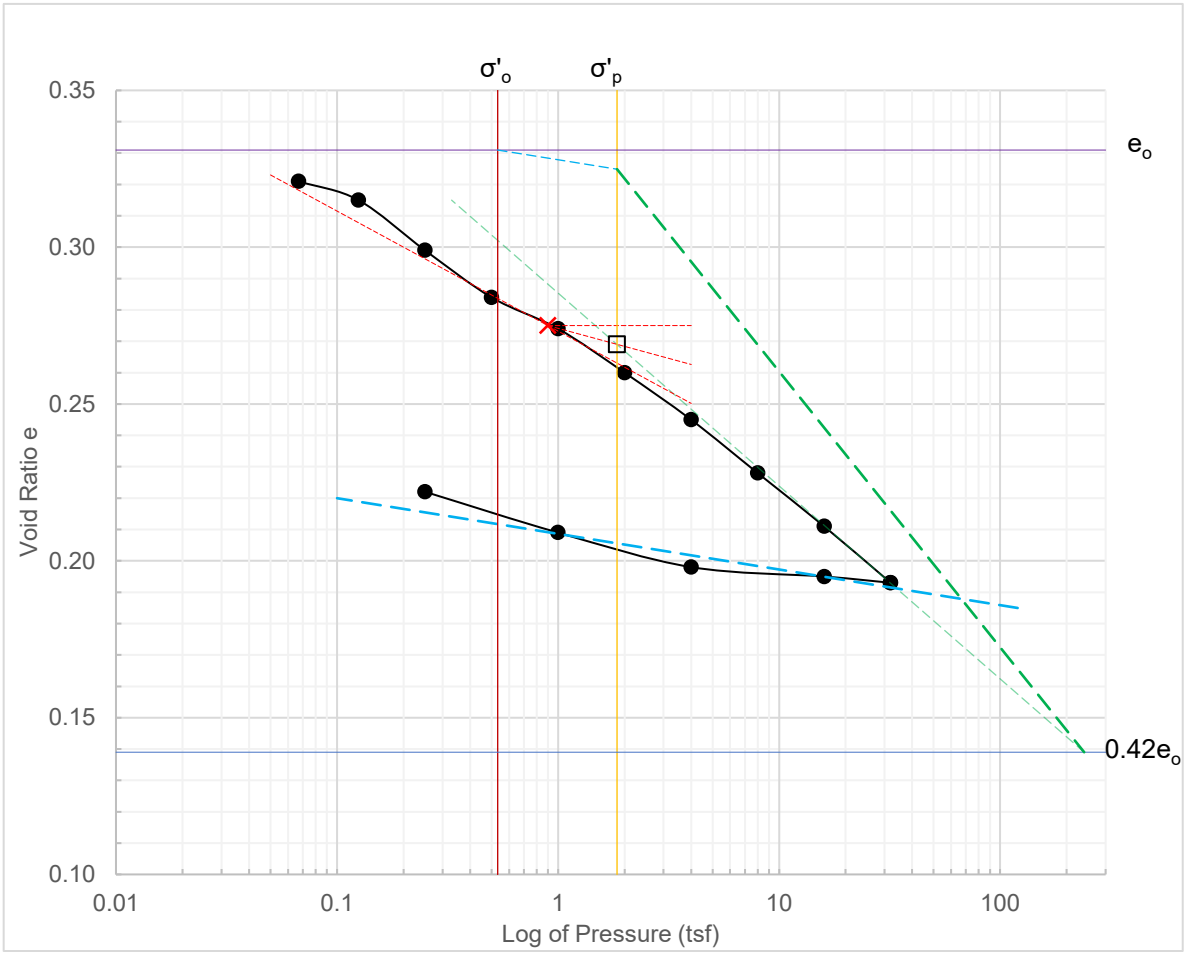
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0670	0.007405	0.321	0.740	69.968	5.01e-05	1.10e-01	1.04e-04
2	0.125	0.01160	0.315	1.16	9.785	3.54e-04	7.24e-02	4.80e-04
3	0.250	0.02397	0.299	2.40	6.038	5.65e-04	9.89e-02	1.05e-03
4	0.500	0.03522	0.284	3.52	17.736	1.88e-04	4.50e-02	1.58e-04
5	1.00	0.04305	0.274	4.31	13.516	2.41e-04	1.57e-02	7.08e-05
6	2.00	0.05302	0.260	5.30	4.028	7.95e-04	9.97e-03	1.48e-04
7	4.00	0.06443	0.245	6.44	5.078	6.17e-04	5.71e-03	6.59e-05
8	8.00	0.07709	0.228	7.71	4.114	7.42e-04	3.16e-03	4.40e-05
9	16.0	0.09013	0.211	9.01	4.948	6.00e-04	1.63e-03	1.83e-05
10	32.0	0.1033	0.193	10.3	3.123	9.23e-04	8.23e-04	1.42e-05
11	16.0	0.1023	0.195	10.2	2.541	1.12e-03	6.03e-05	1.26e-06
12	4.00	0.09980	0.198	9.98	5.959	4.79e-04	2.11e-04	1.89e-06
13	1.00	0.09164	0.209	9.16	13.897	2.08e-04	2.72e-03	1.06e-05
14	0.250	0.08187	0.222	8.19	37.377	7.88e-05	1.30e-02	1.92e-05

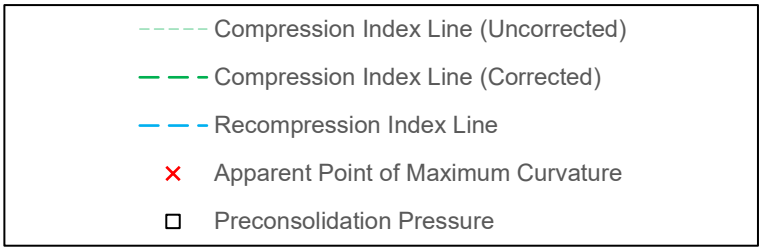
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 8.9-9.1
	Test No.: IP-7-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark greenish brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

Boring: B-4.10

Depth: 8.9'-9.1'

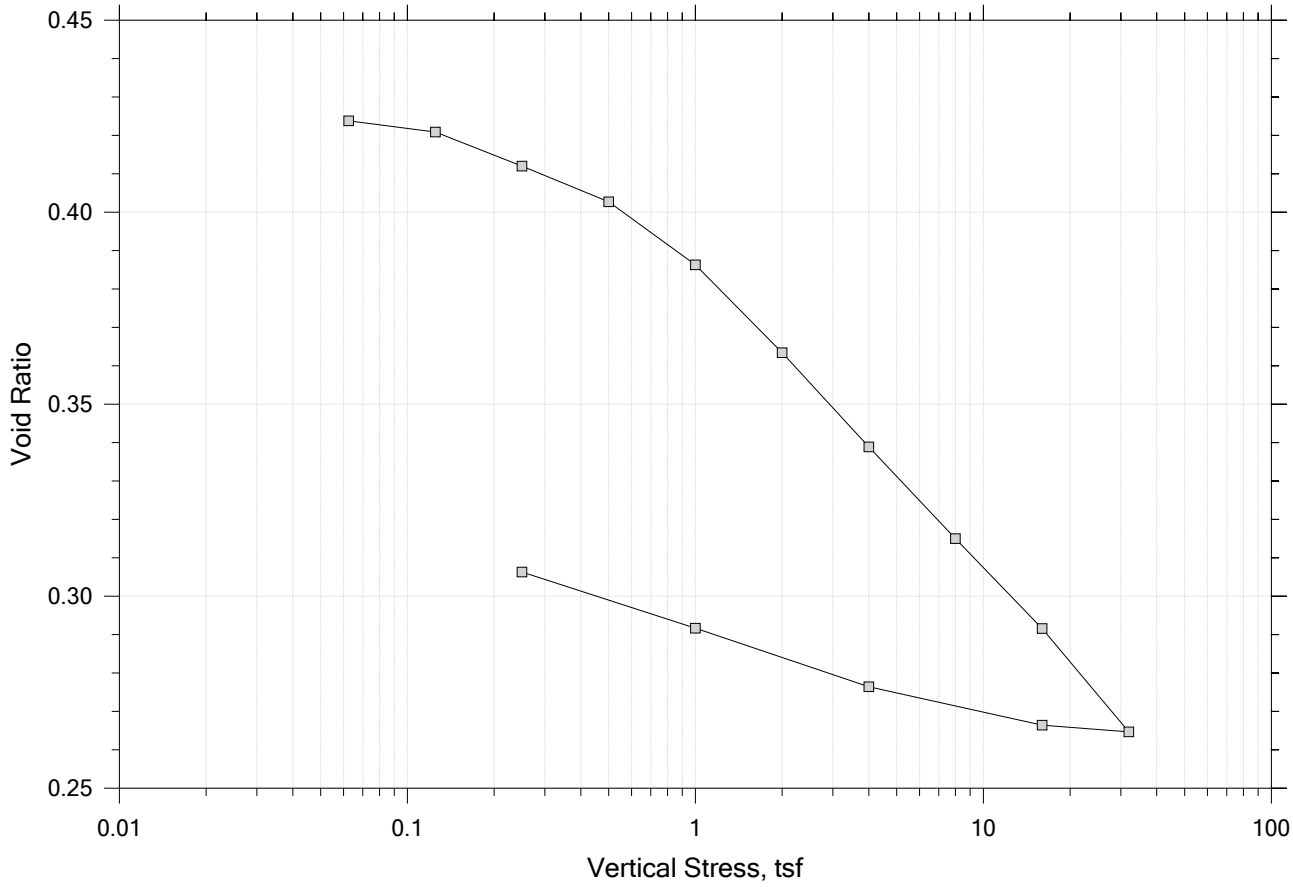
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.53
Preconsolidation Pressure, σ'_p (tsf) = 1.85
Compression Index, C_c = 0.088
Recompression Index, C_r = 0.011

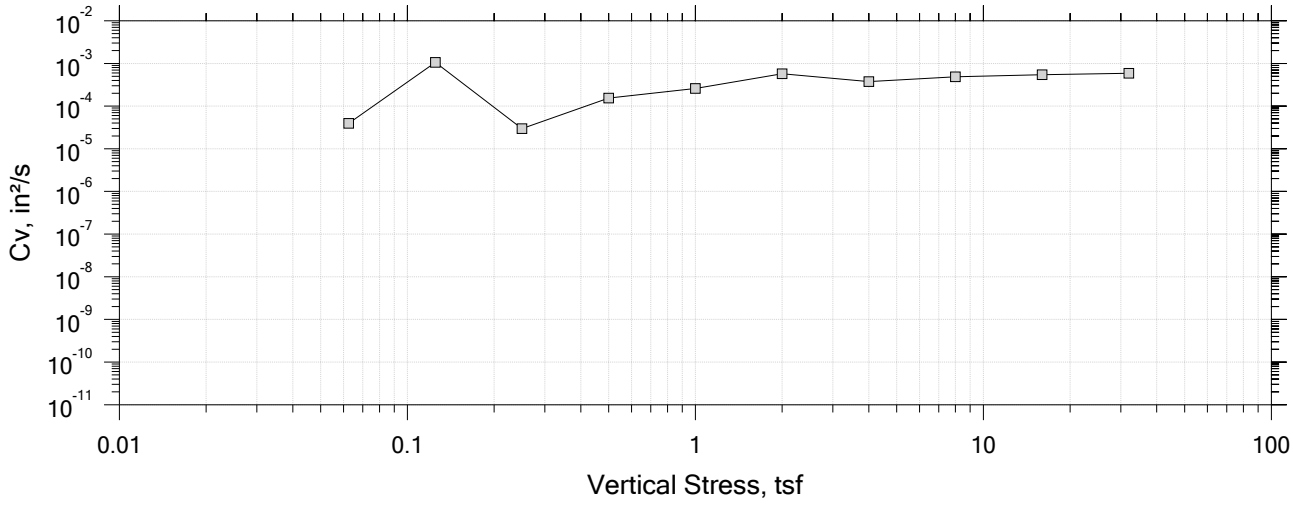




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

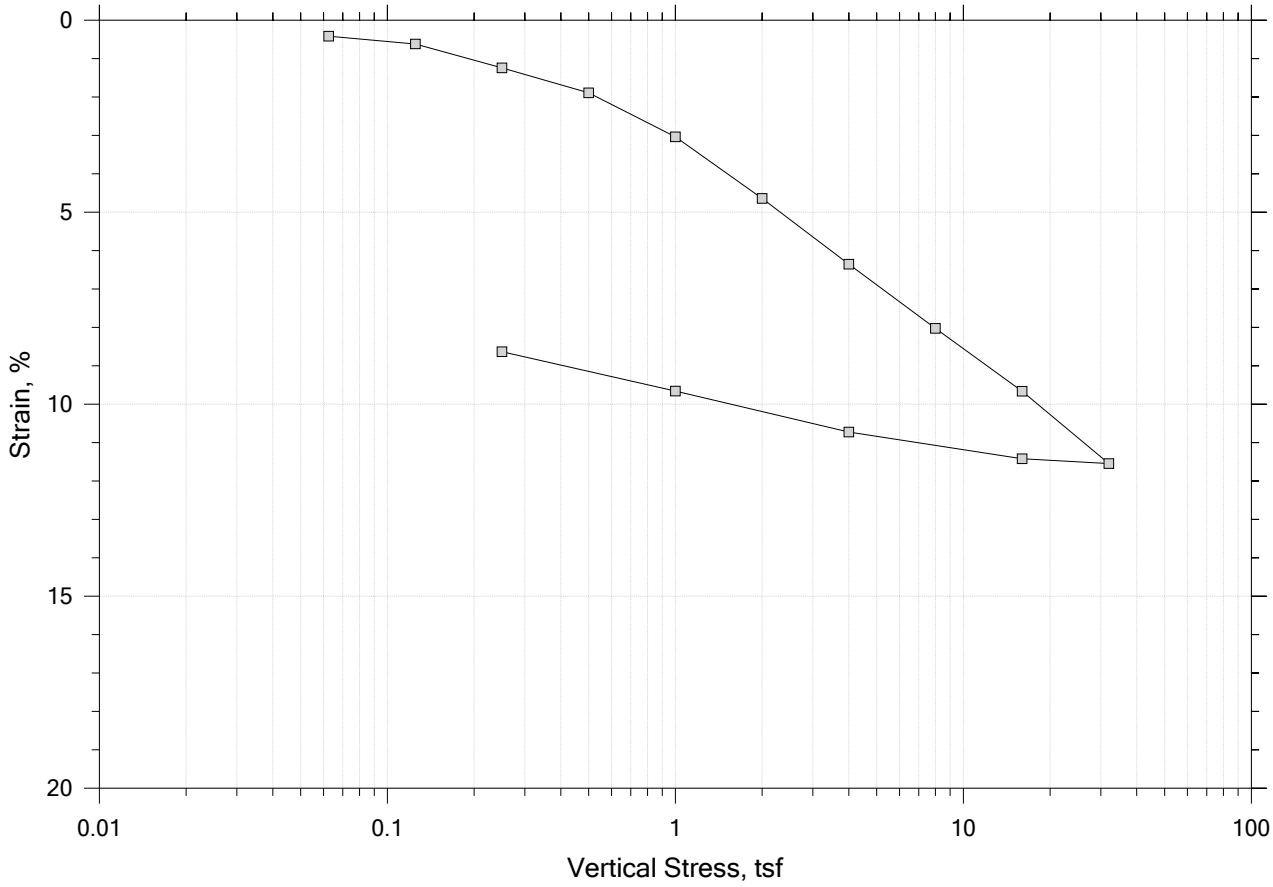


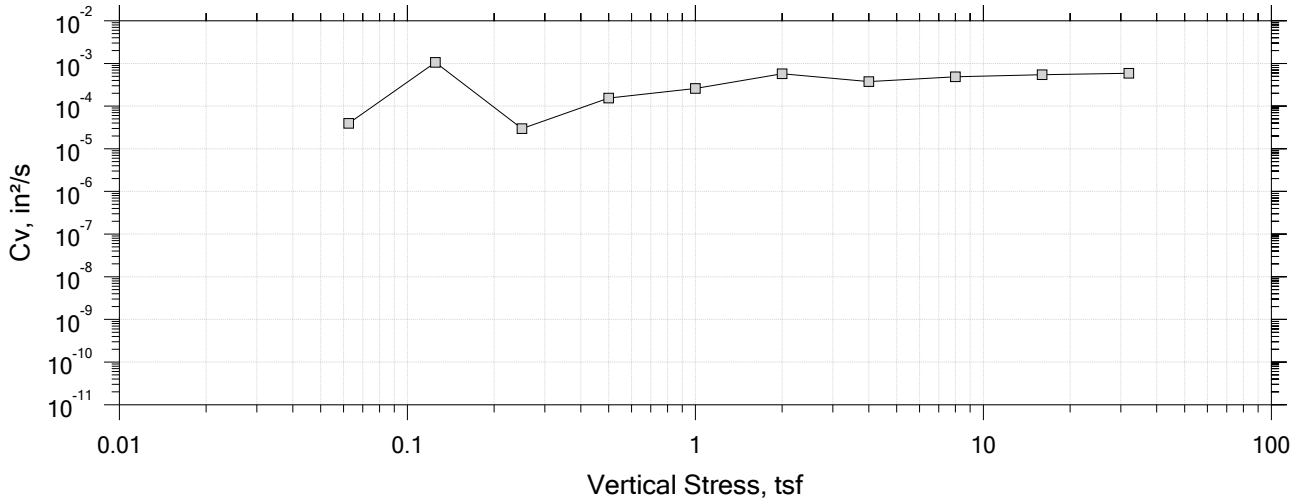


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

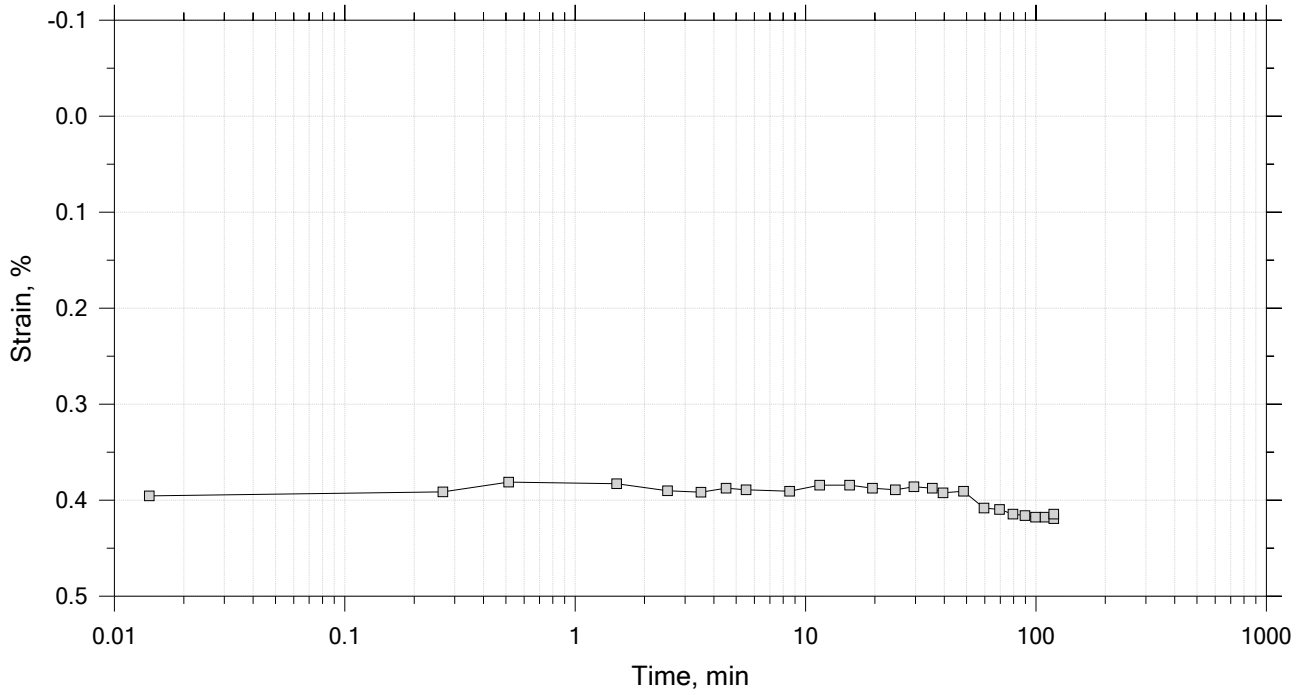


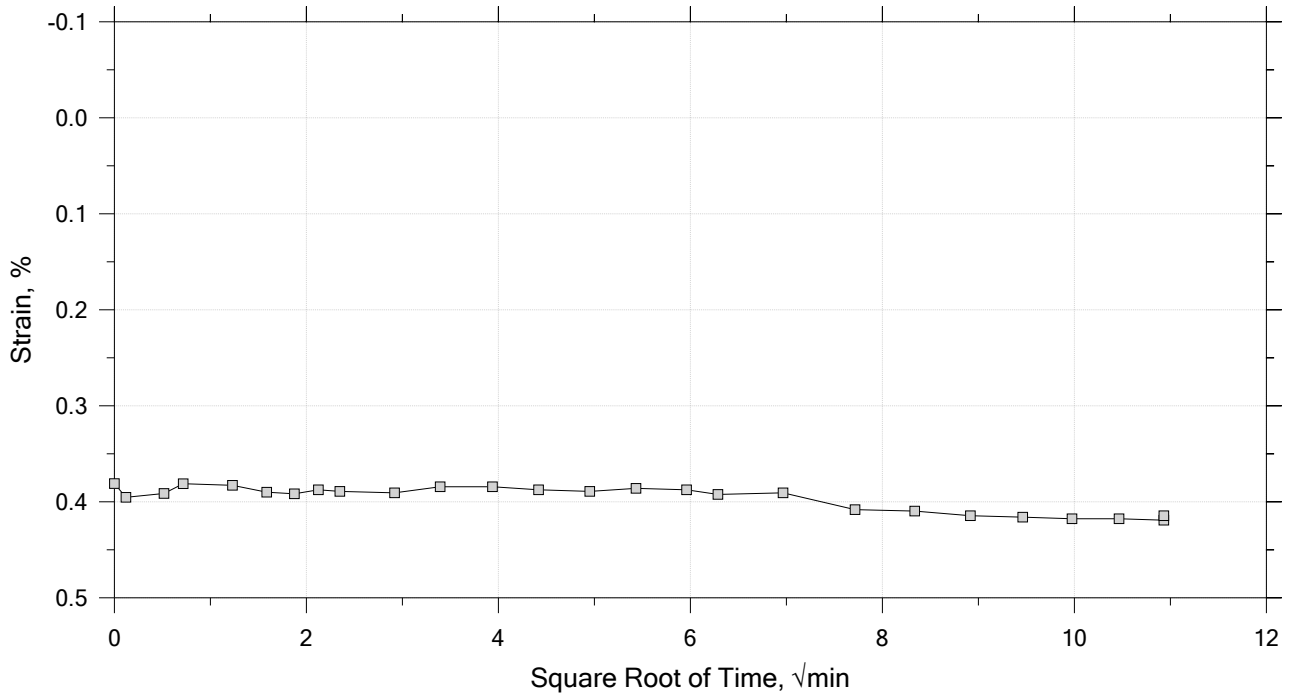


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Load Step
Stress: 0.0625 tsf





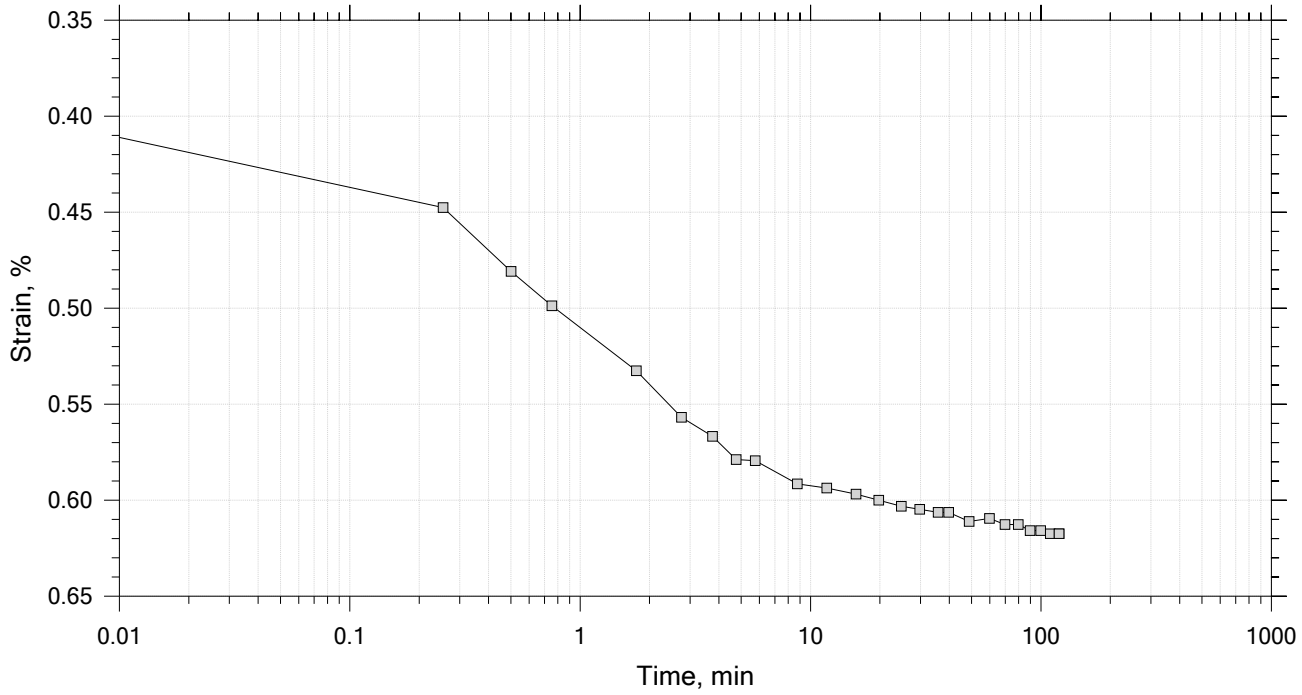
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

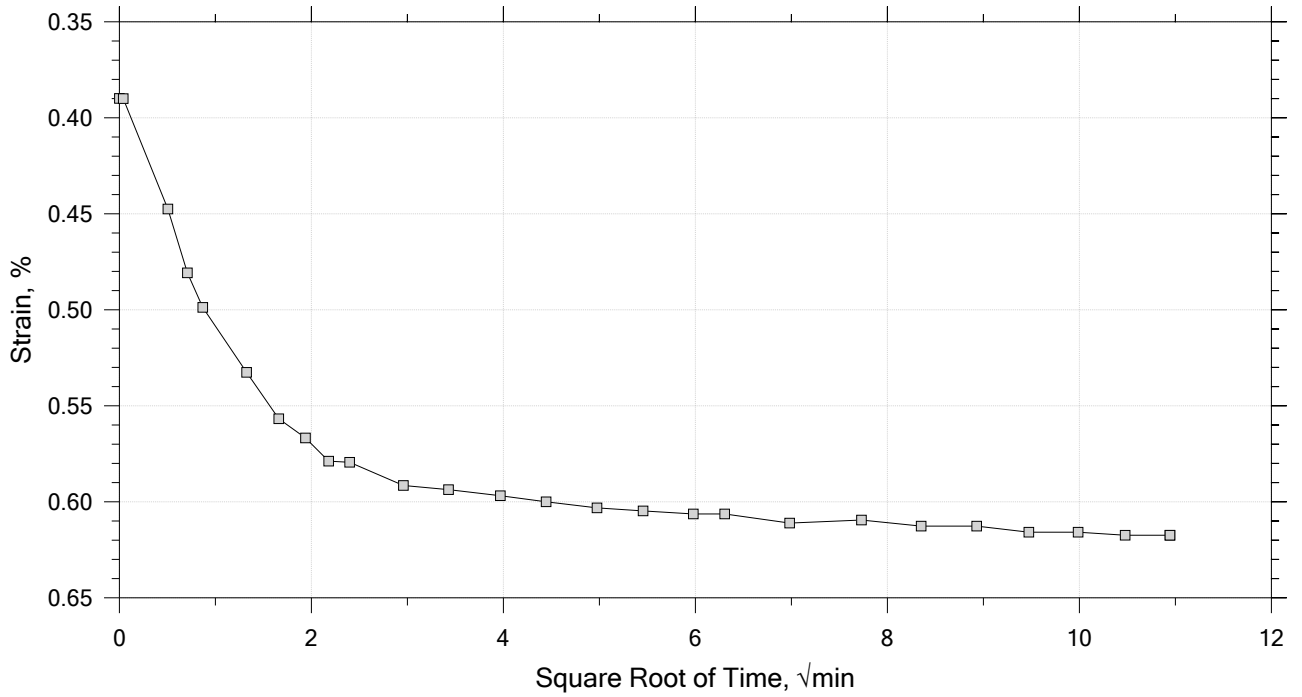
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

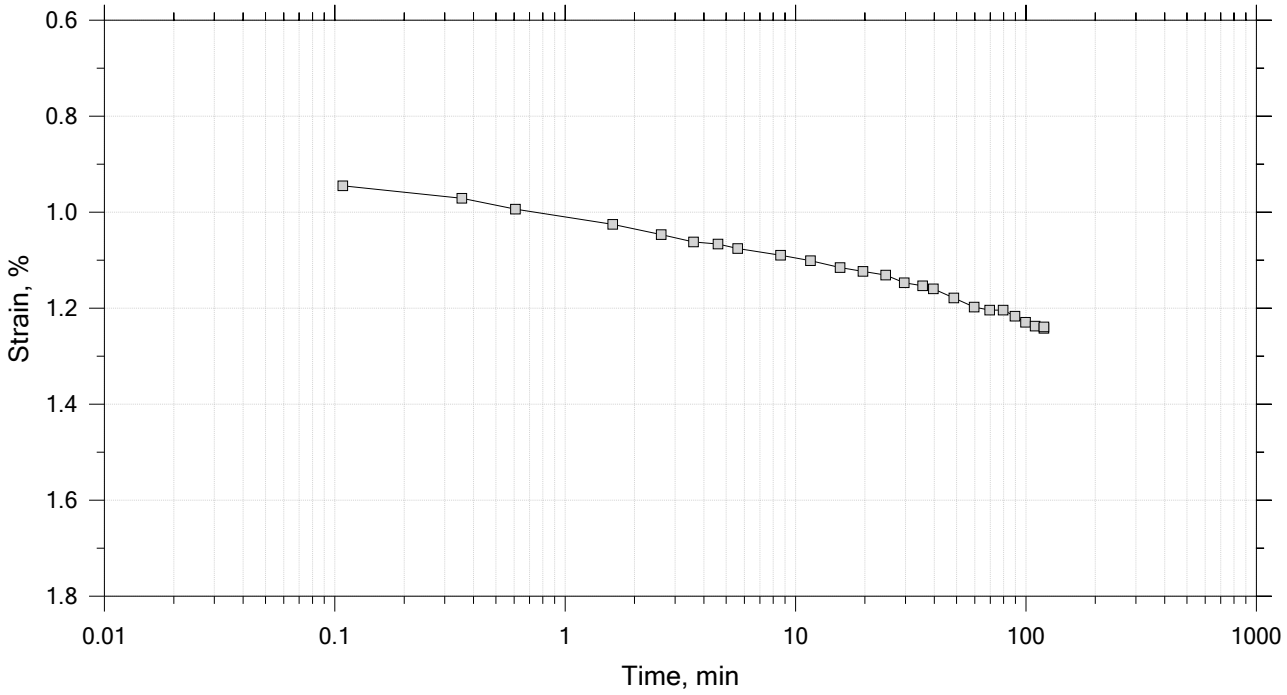


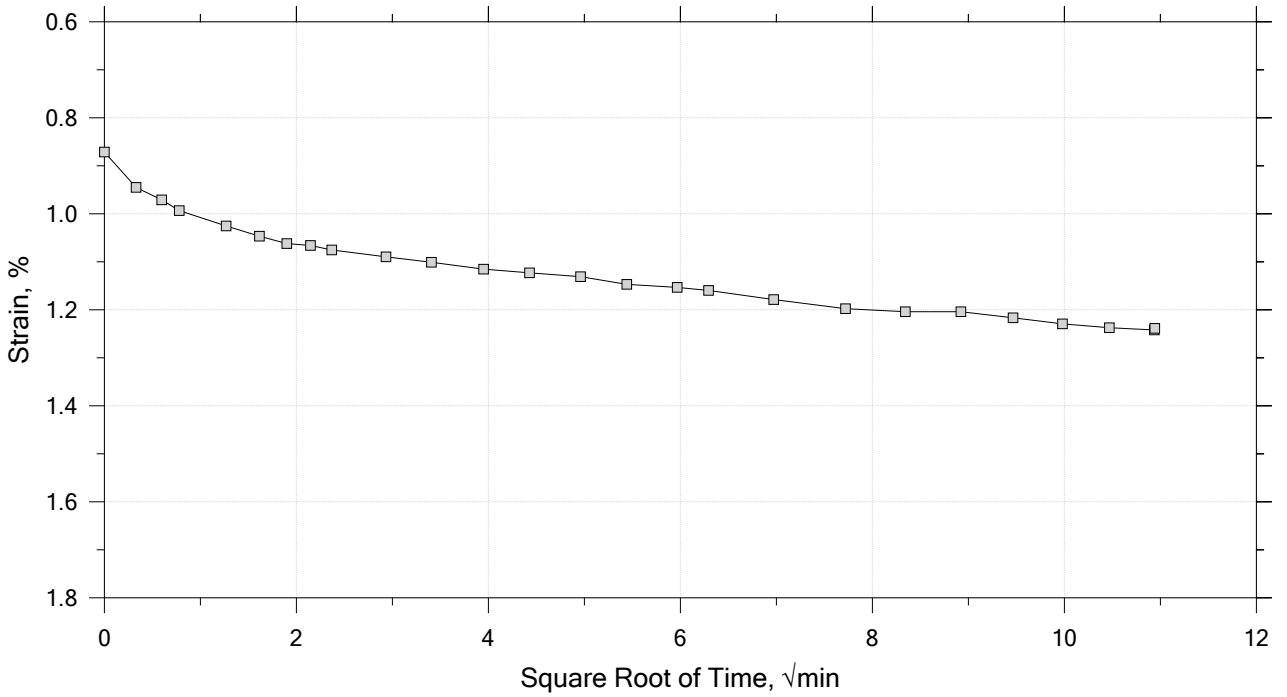


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





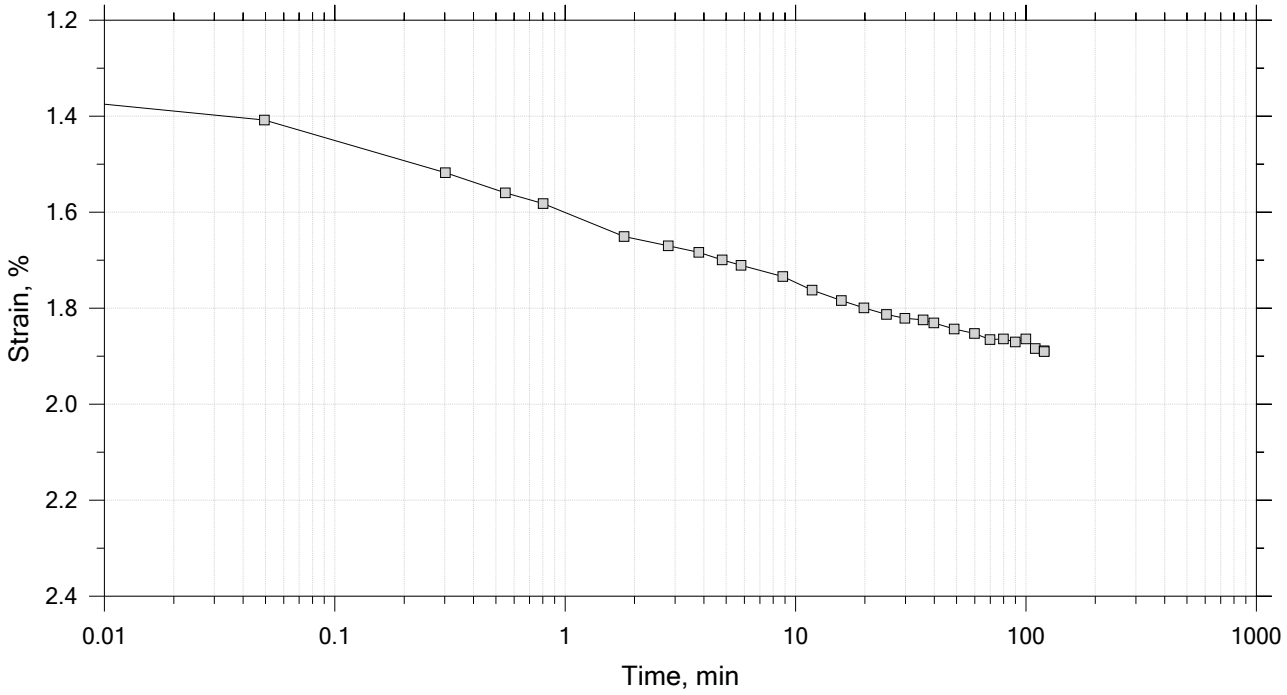
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

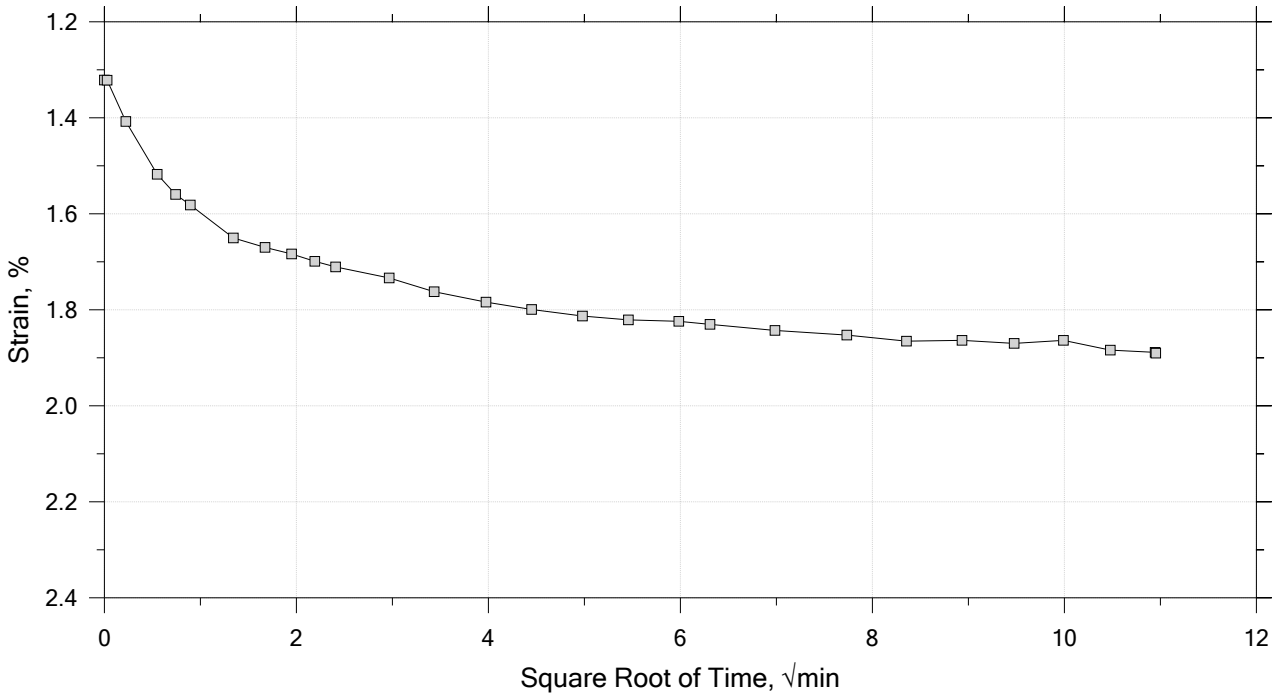
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf

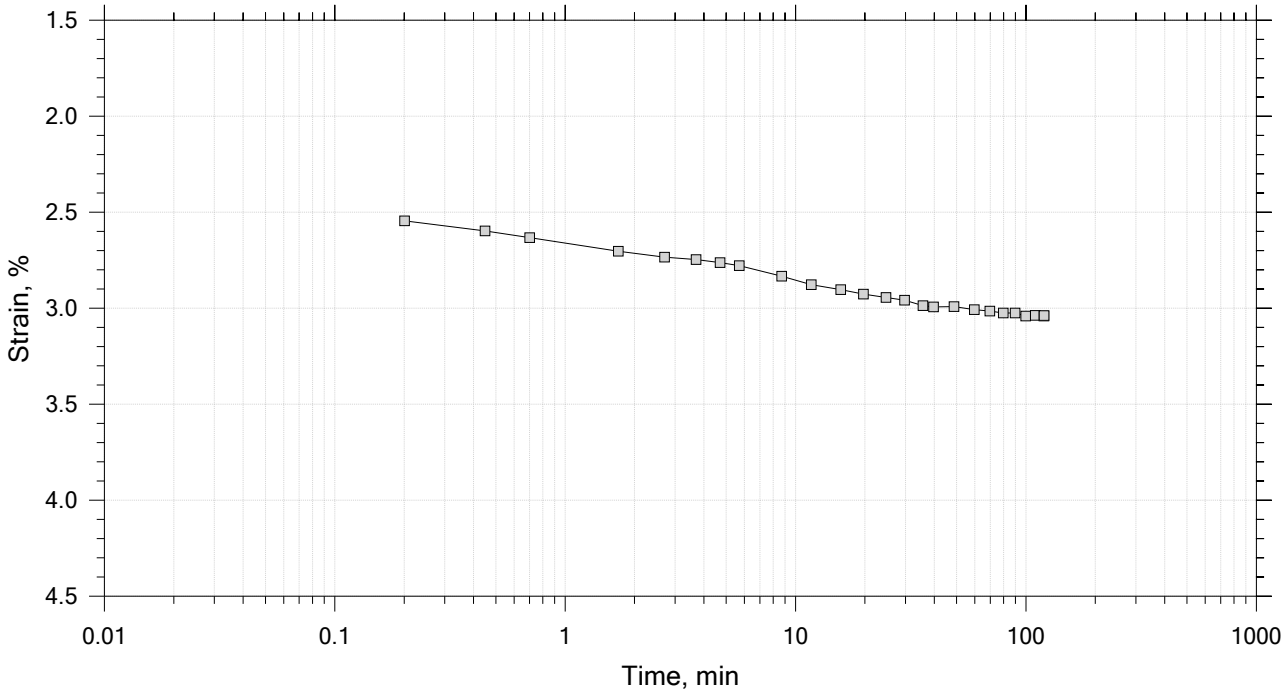


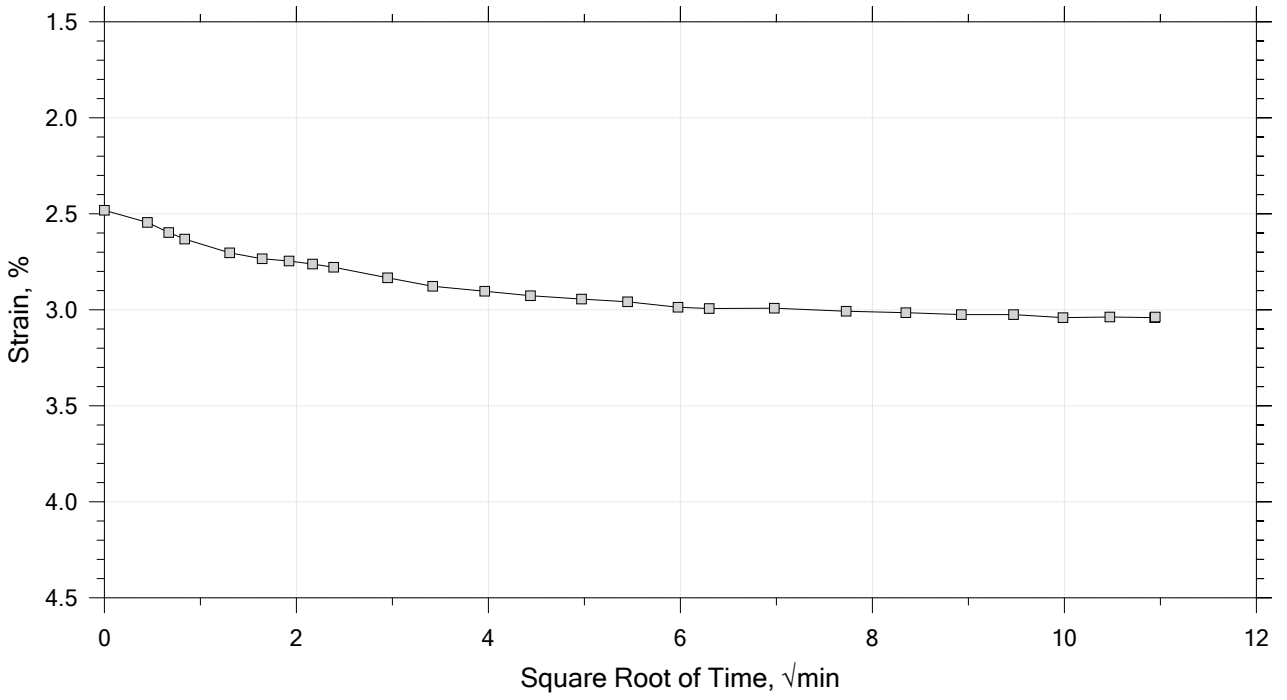


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





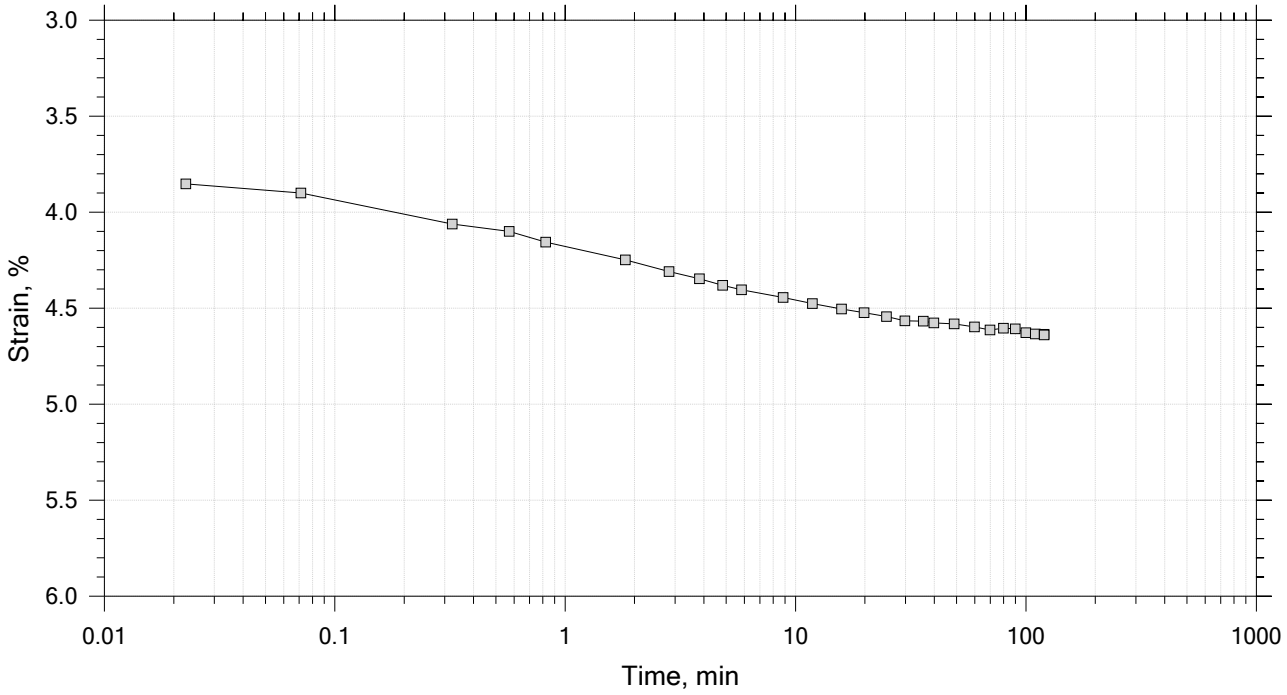
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

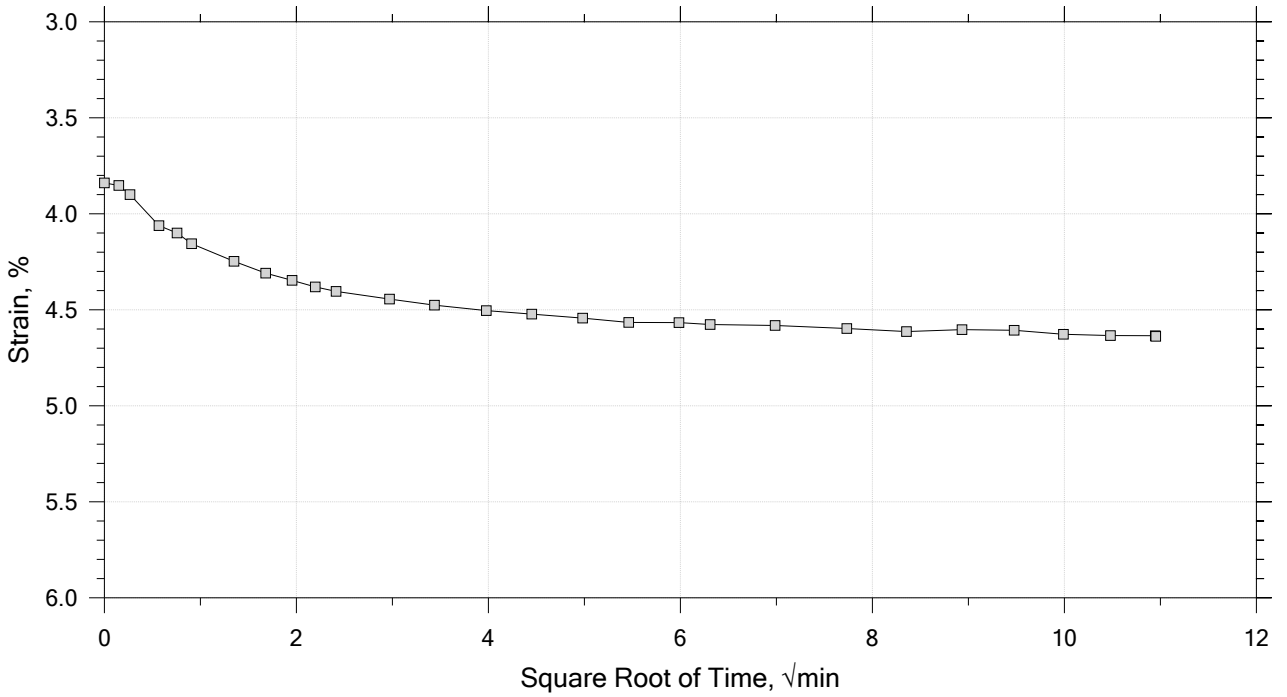
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





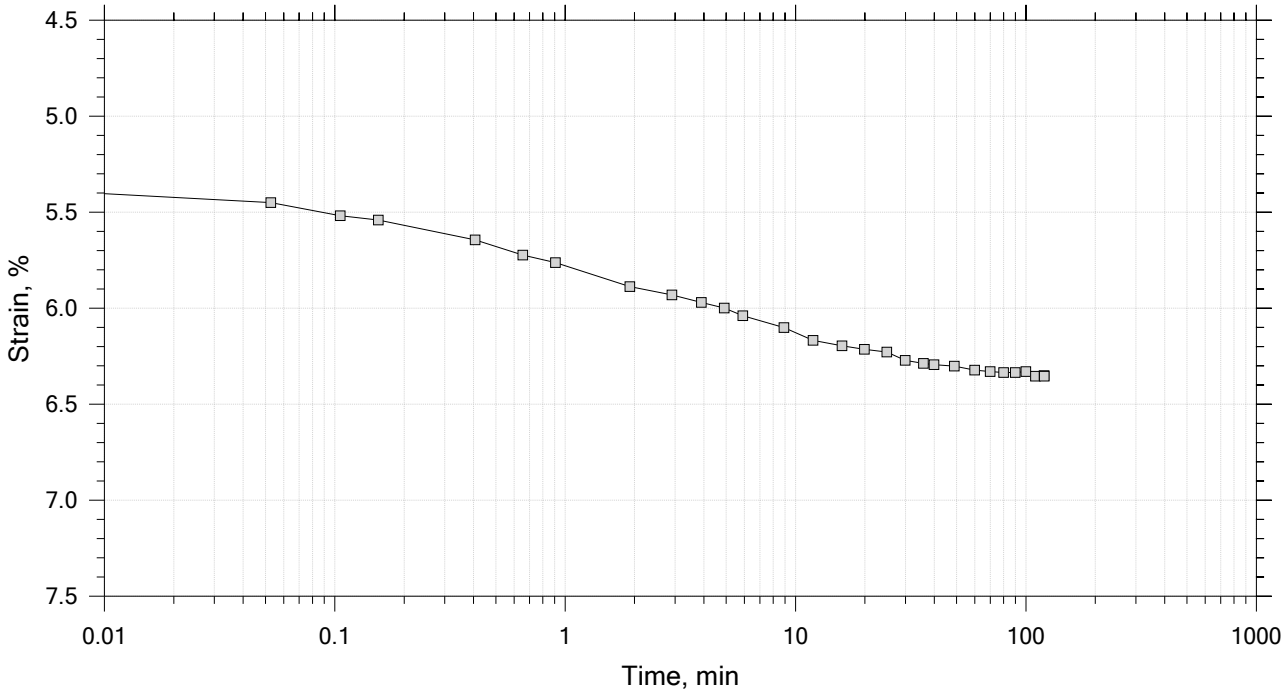
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist/dry brown clay w/sand and gravel		
Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

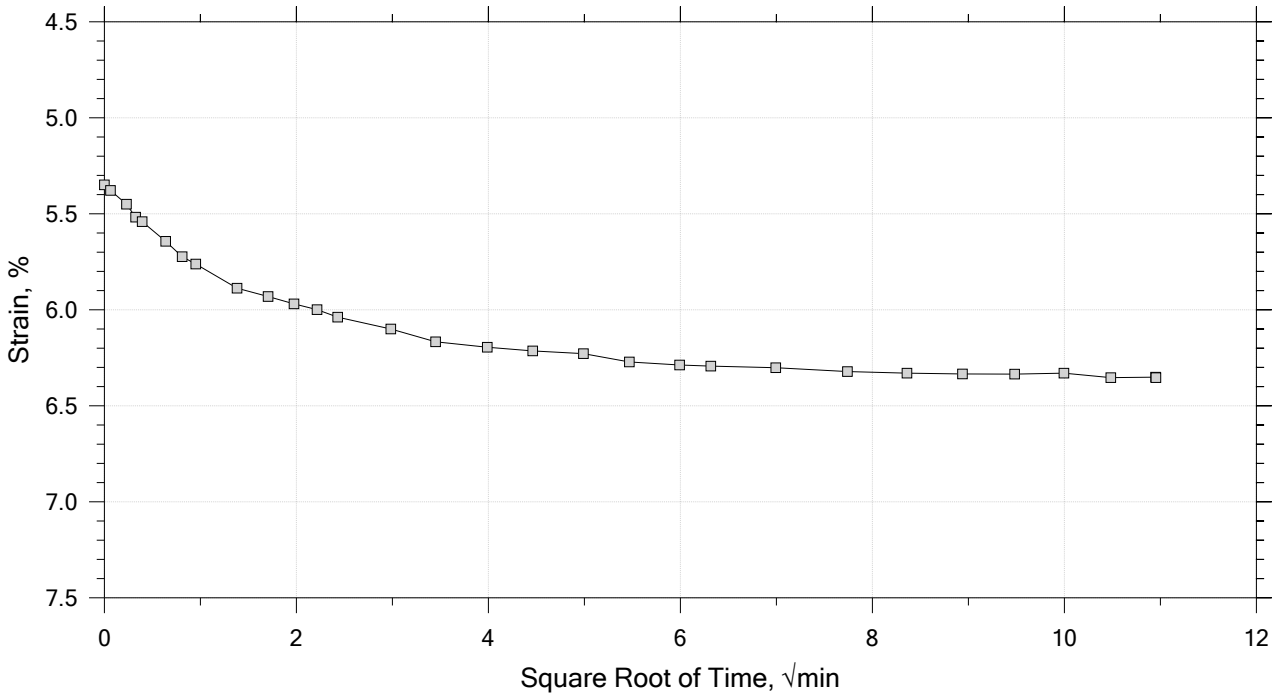
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





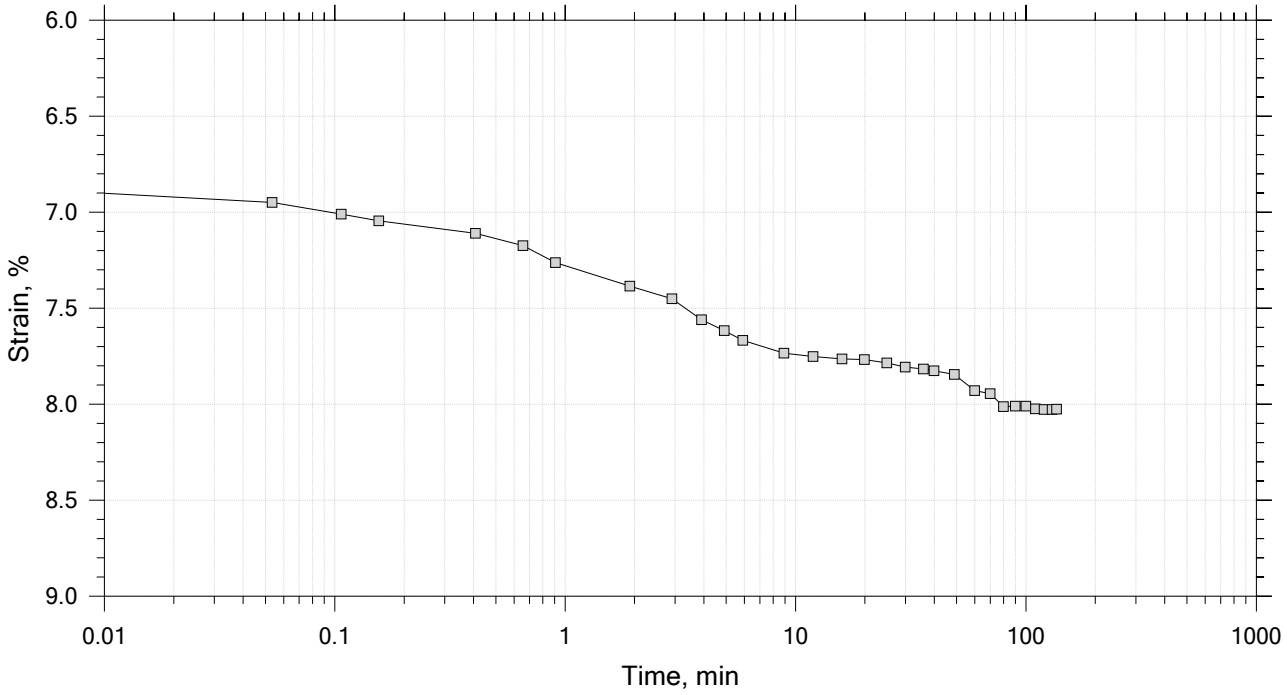
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

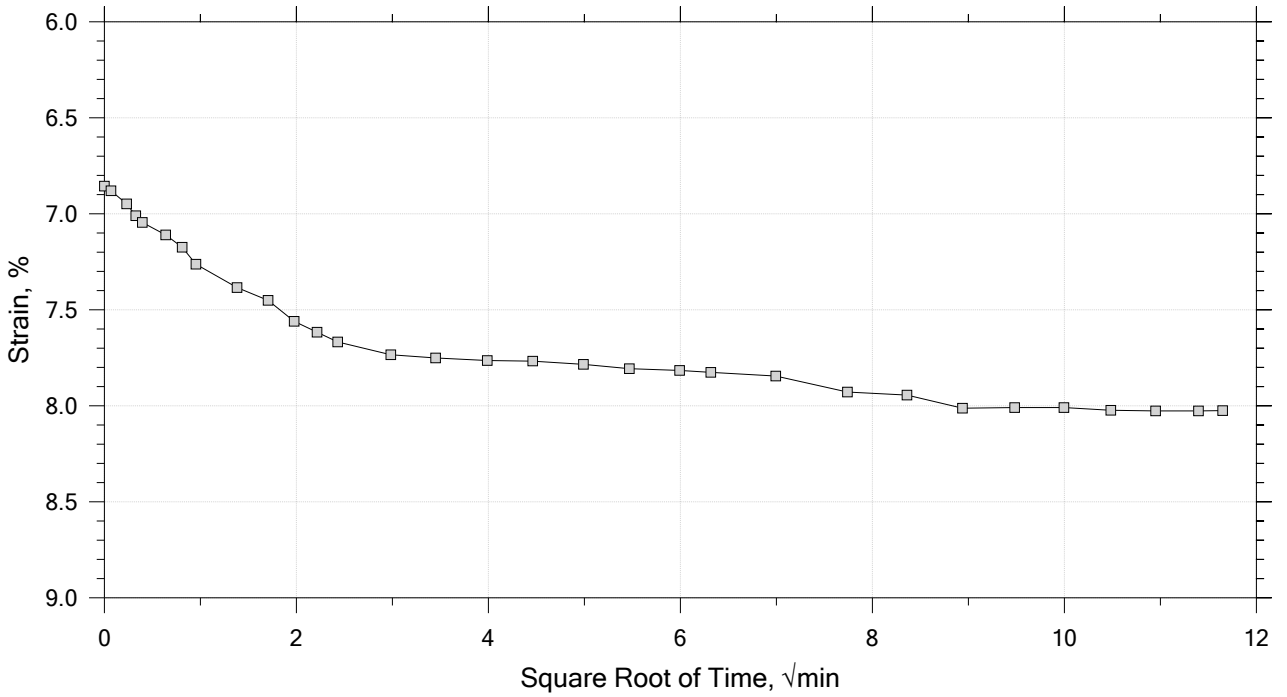
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





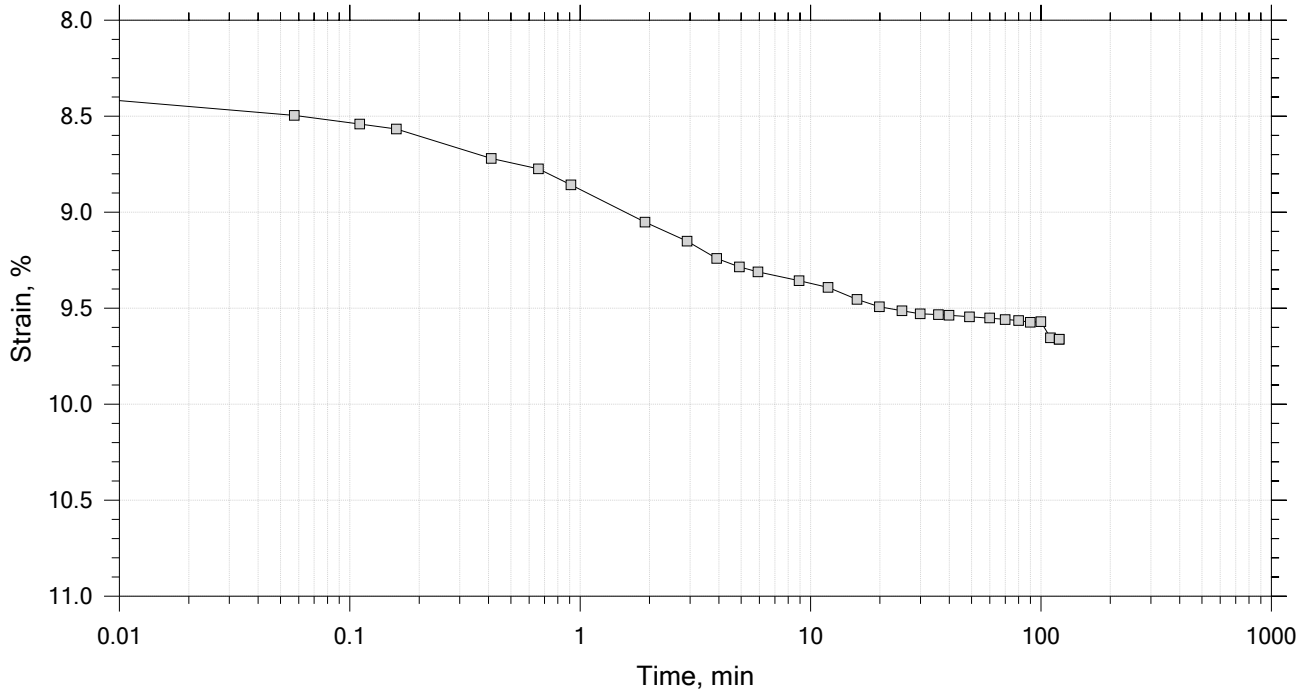
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

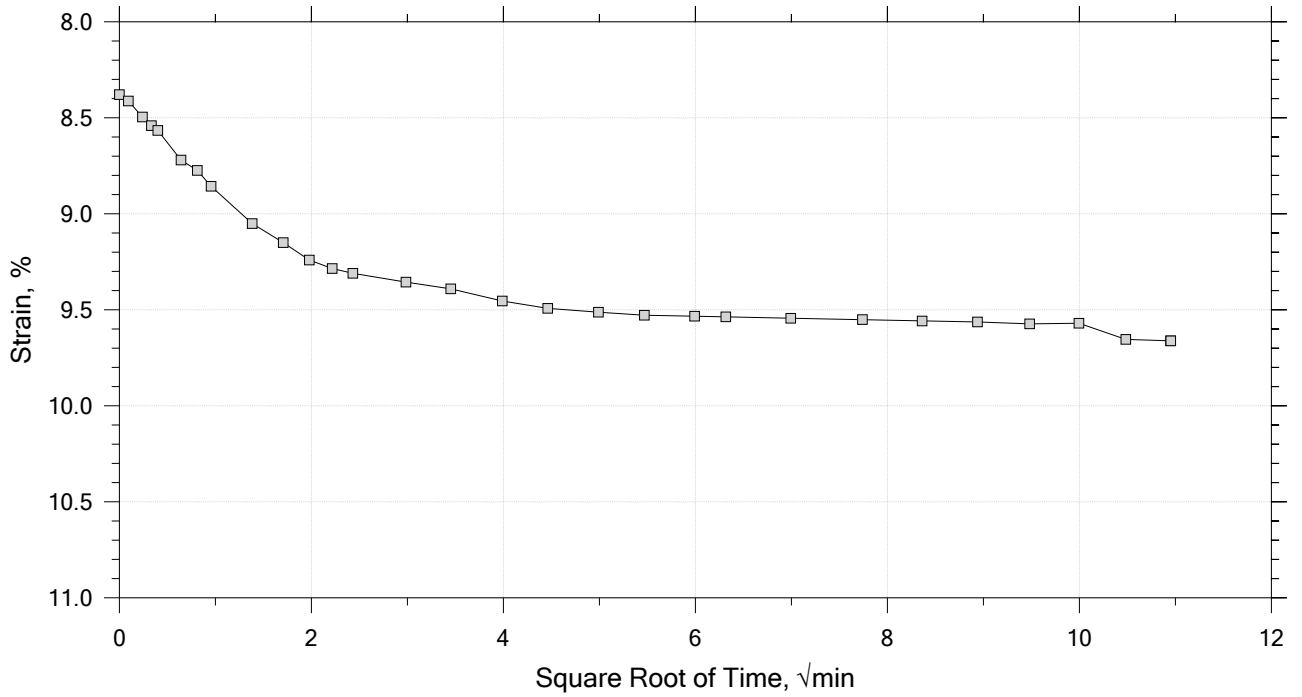
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

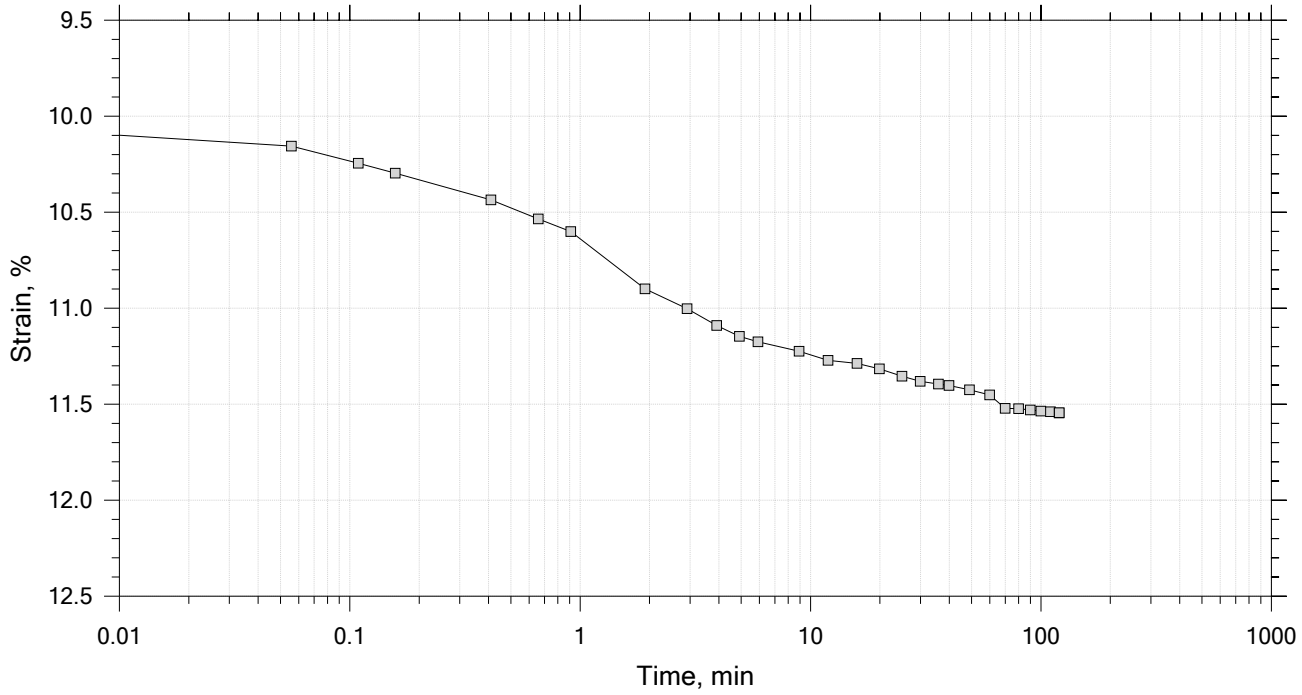


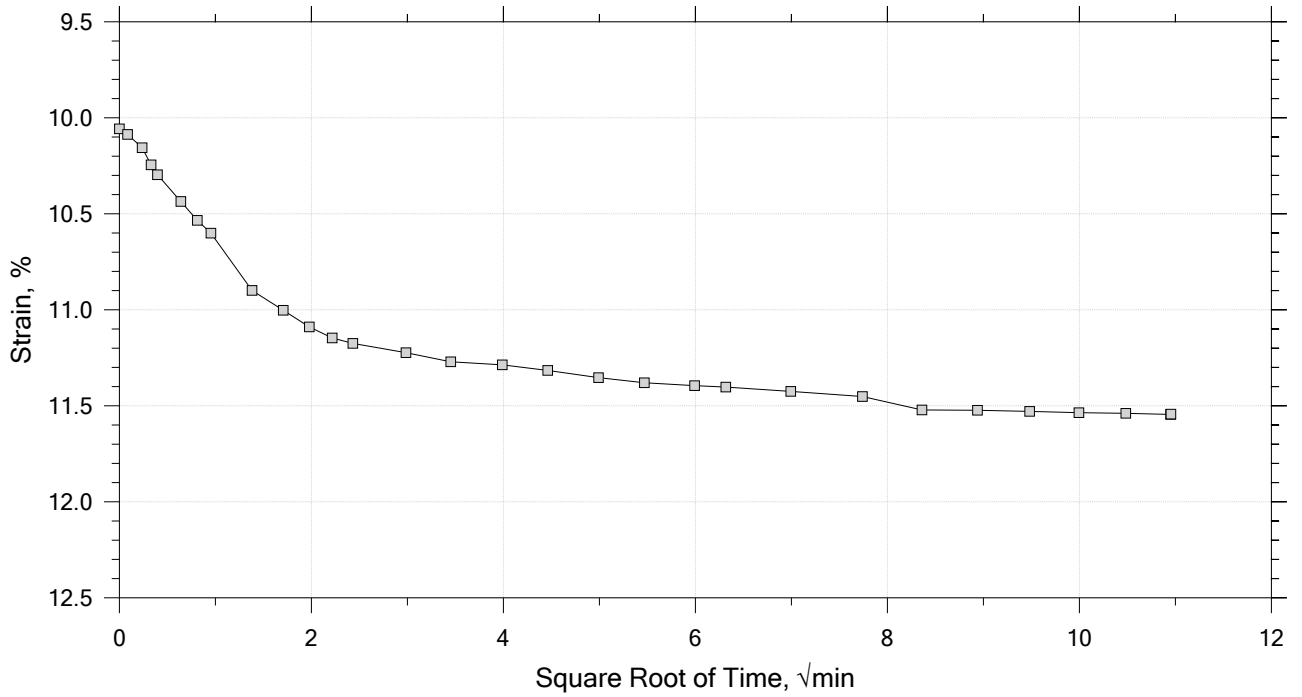


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.10	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist/dry brown clay w/sand and gravel		
Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

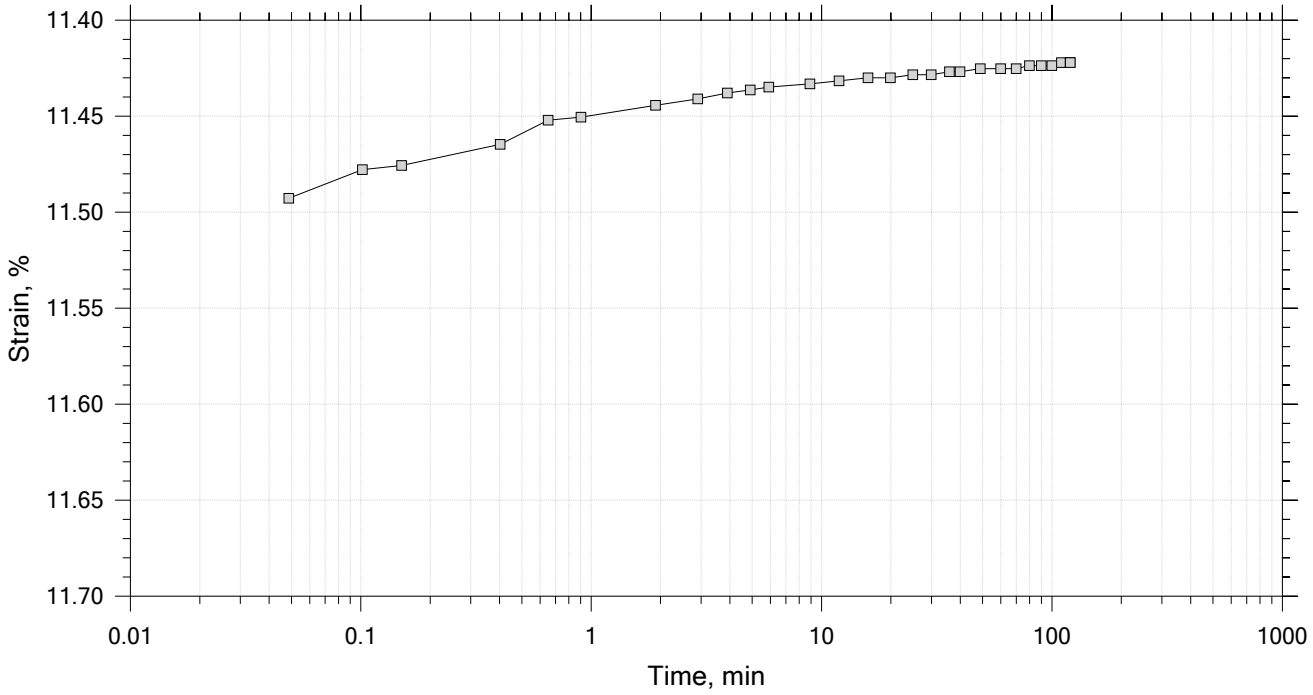


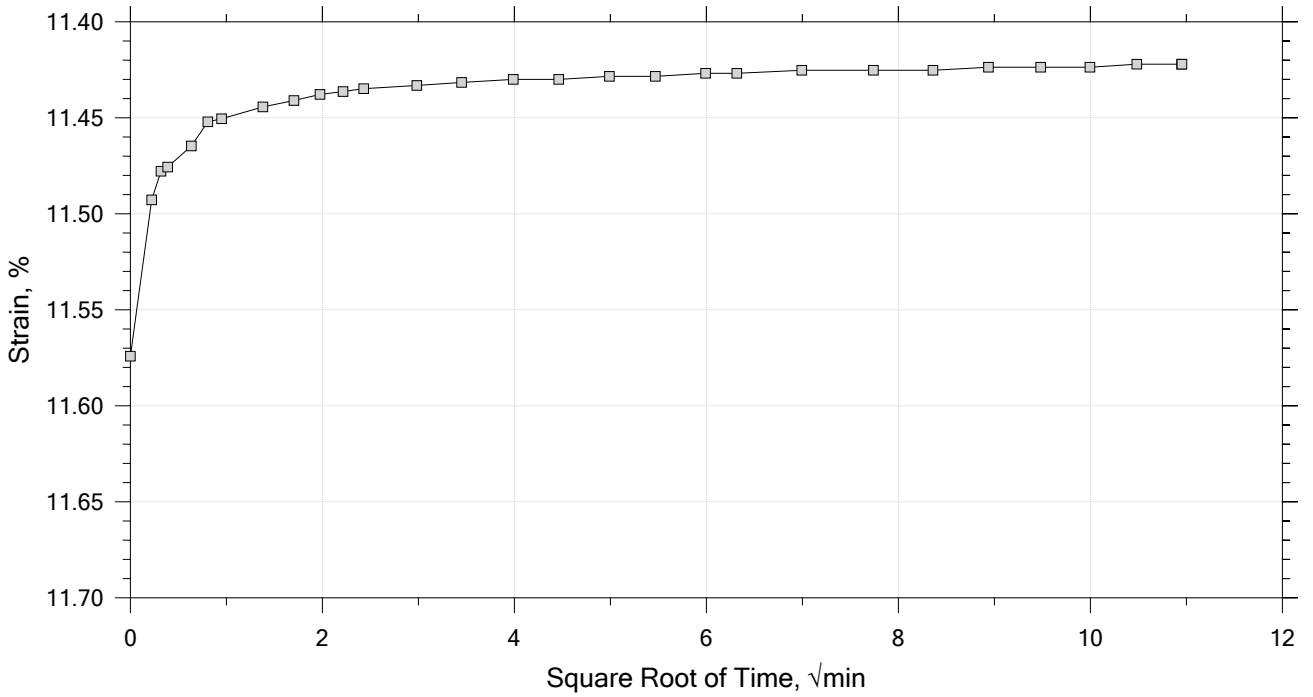


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf





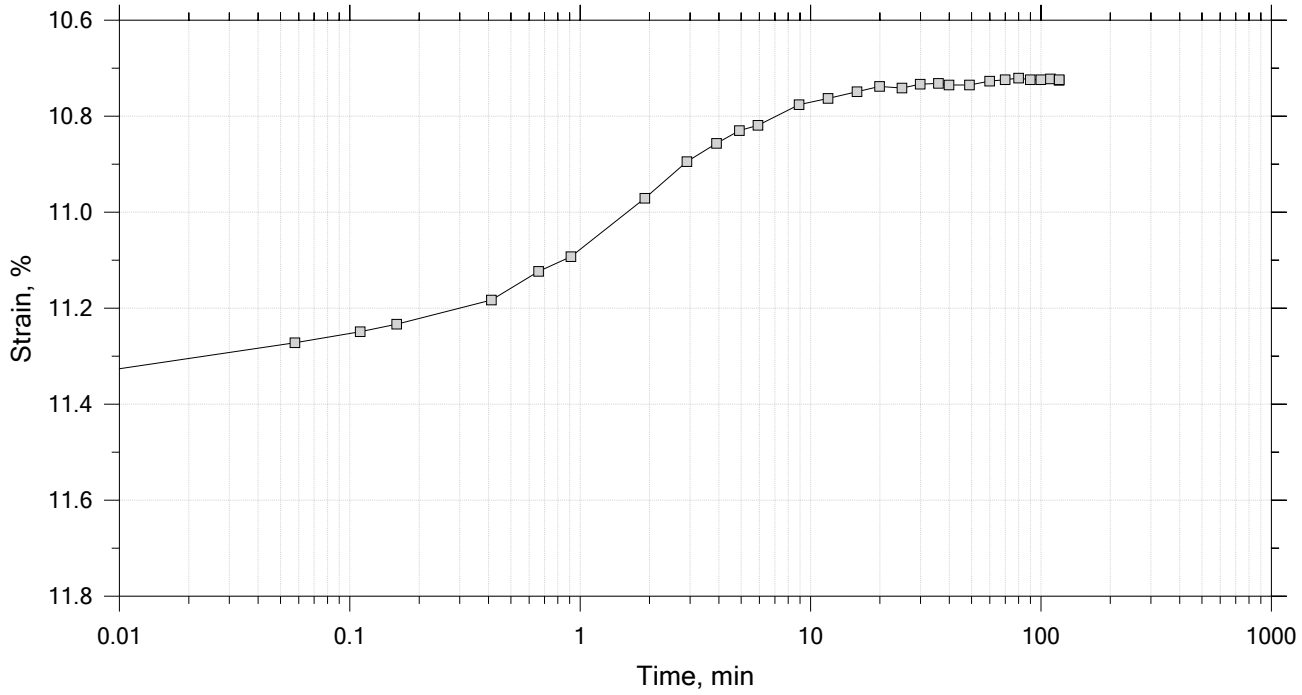
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

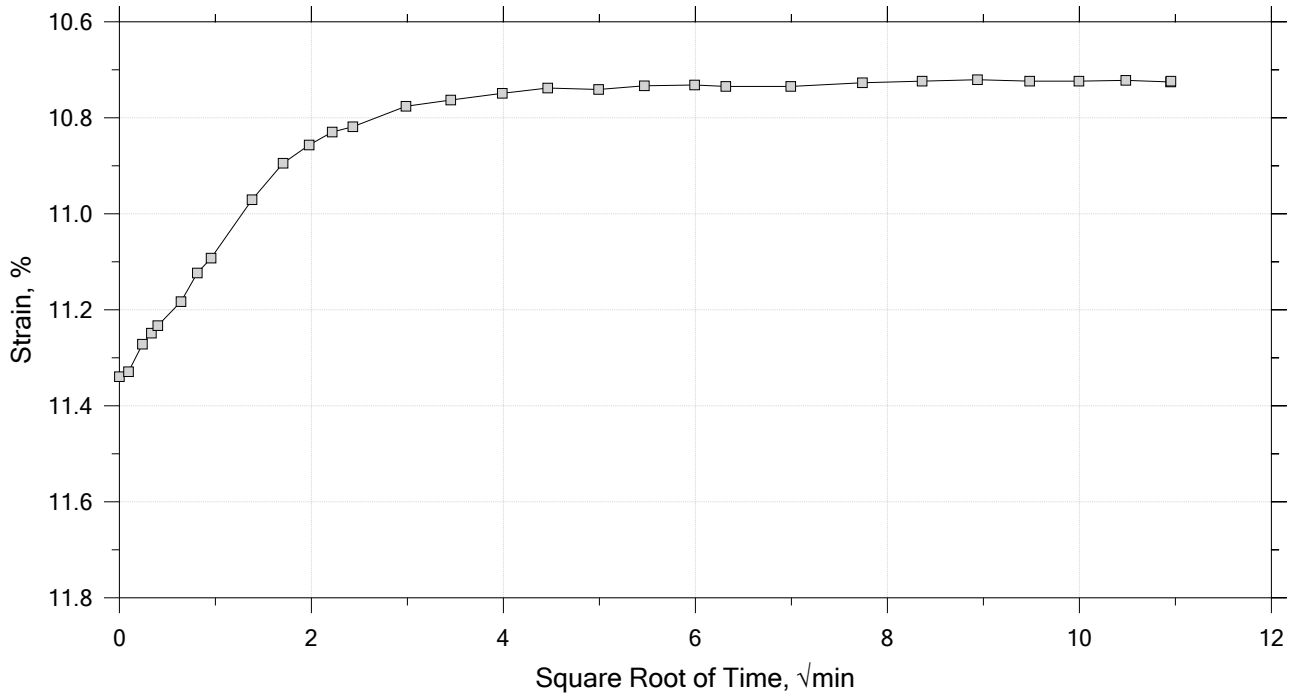
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 4 tsf





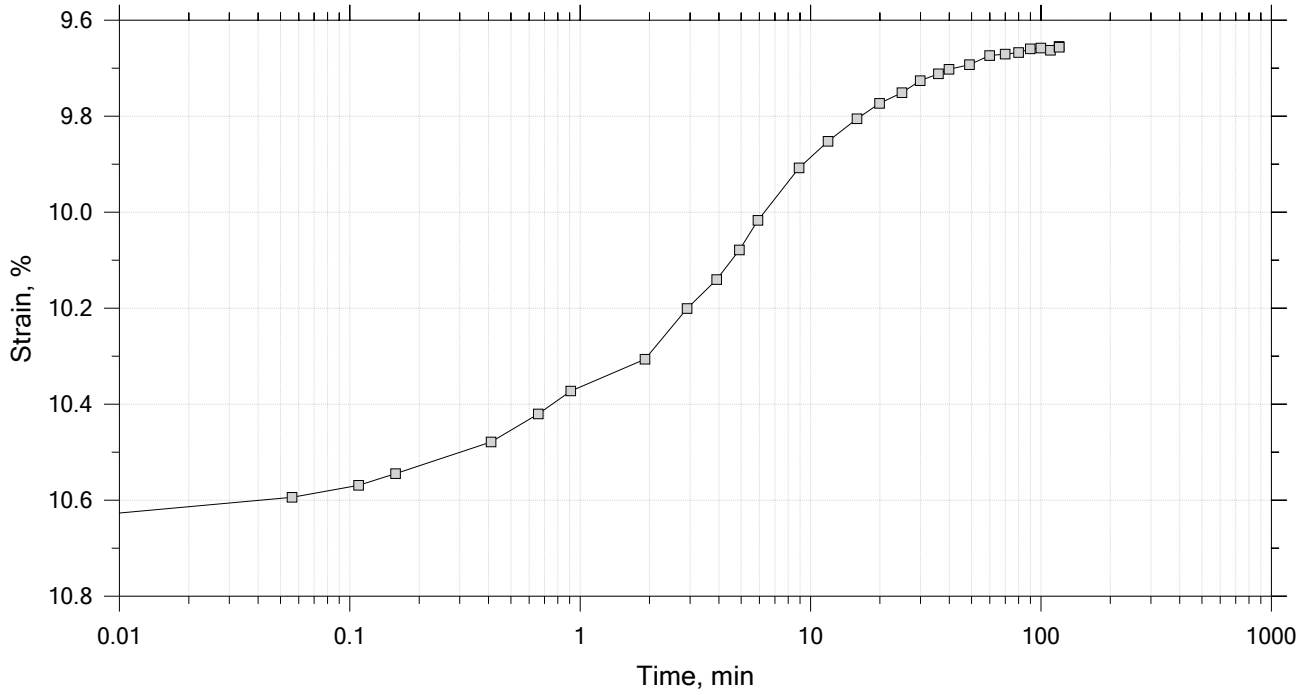
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

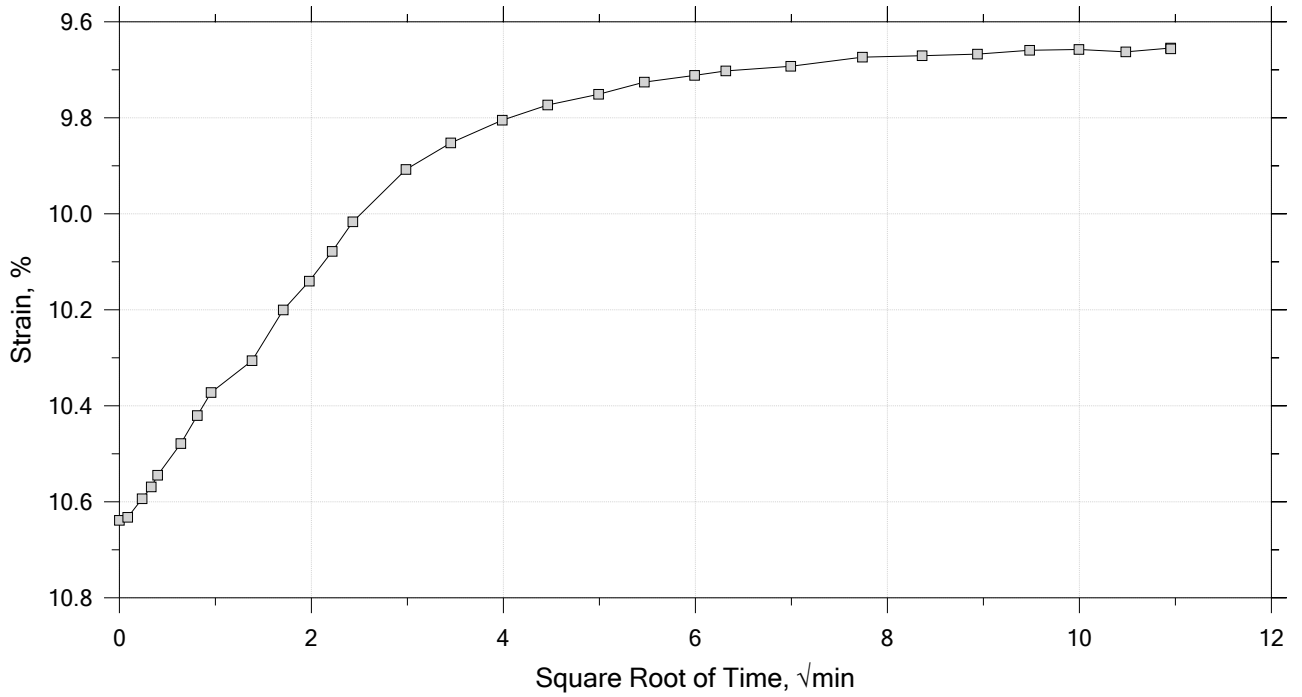
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

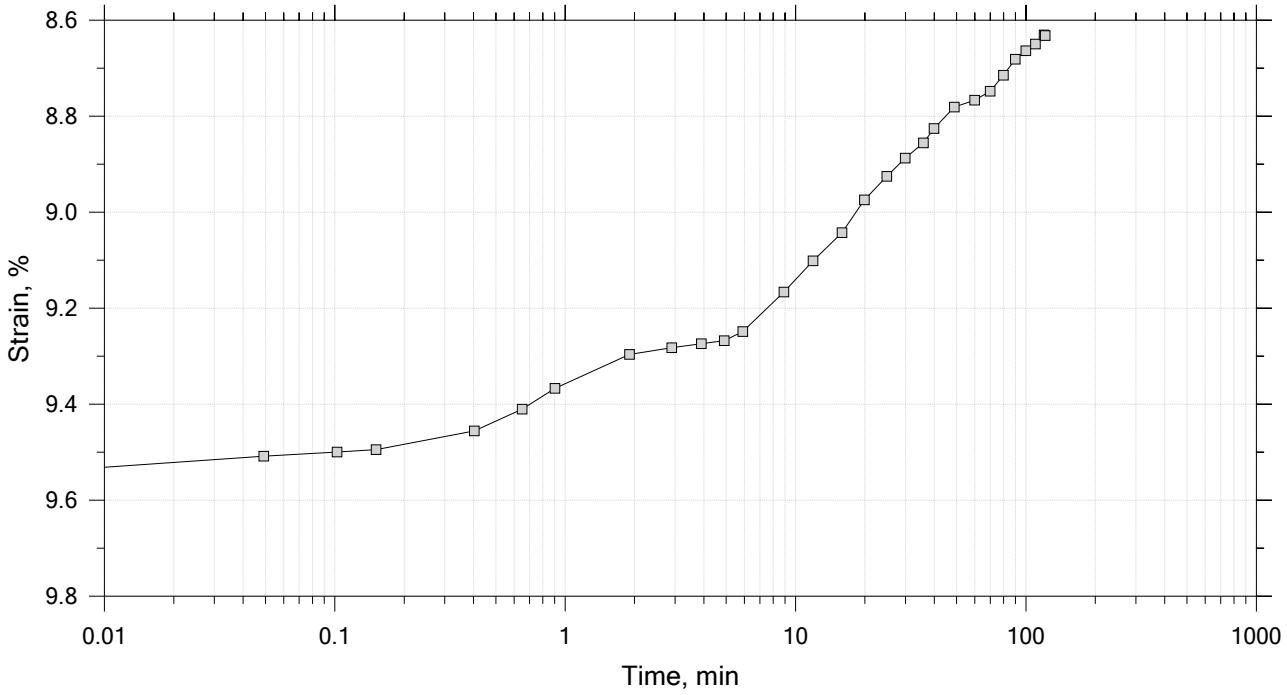


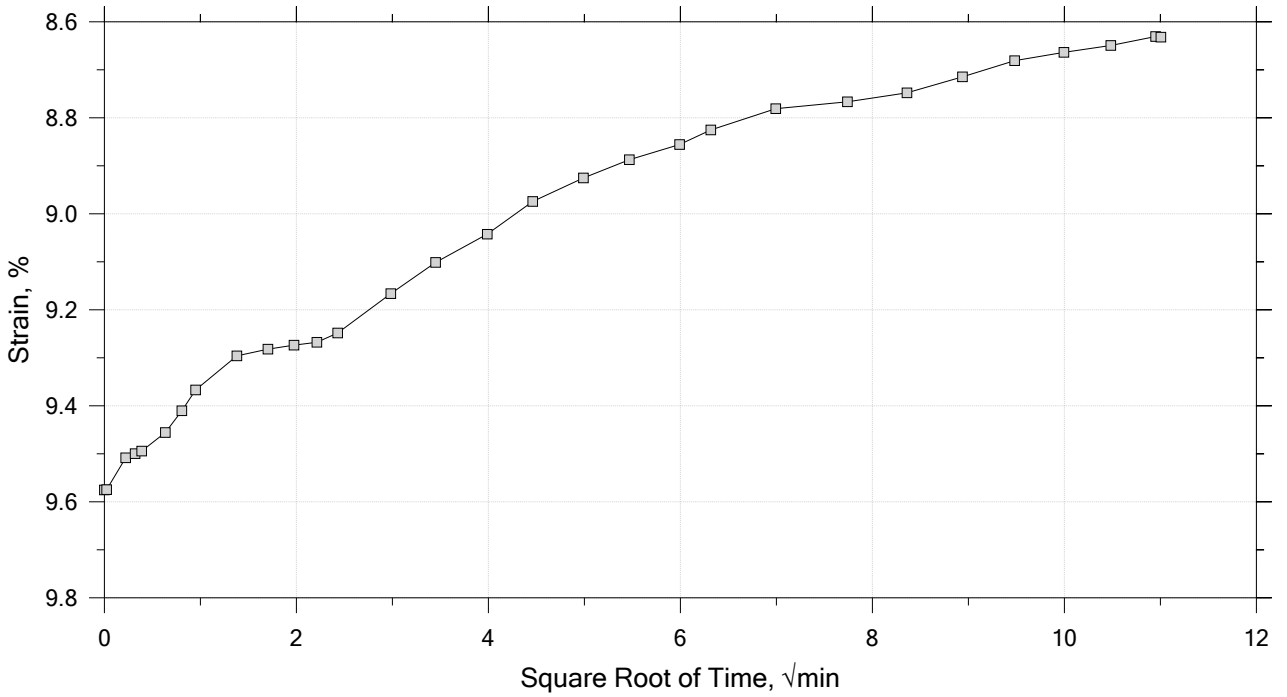


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 24
Initial Height: 1.00 in	Initial Void Ratio: 0.43	Plastic Limit: 16
Final Height: 0.91 in	Final Void Ratio: 0.306	Plasticity Index: 8

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-3634	RING		E4325
Mass Container, gm	8.31	108.41	108.41	8.4
Mass Container + Wet Soil, gm	115.19	283.27	280.84	179.79
Mass Container + Dry Soil, gm	103.52	263.61	263.61	162.66
Mass Dry Soil, gm	95.21	155.2	155.2	154.26
Water Content, %	12.26	12.67	11.10	11.10
Void Ratio	---	0.43	0.31	---
Degree of Saturation, %	---	81.33	100.00	---
Dry Unit Weight, pcf	---	120.44	131.82	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

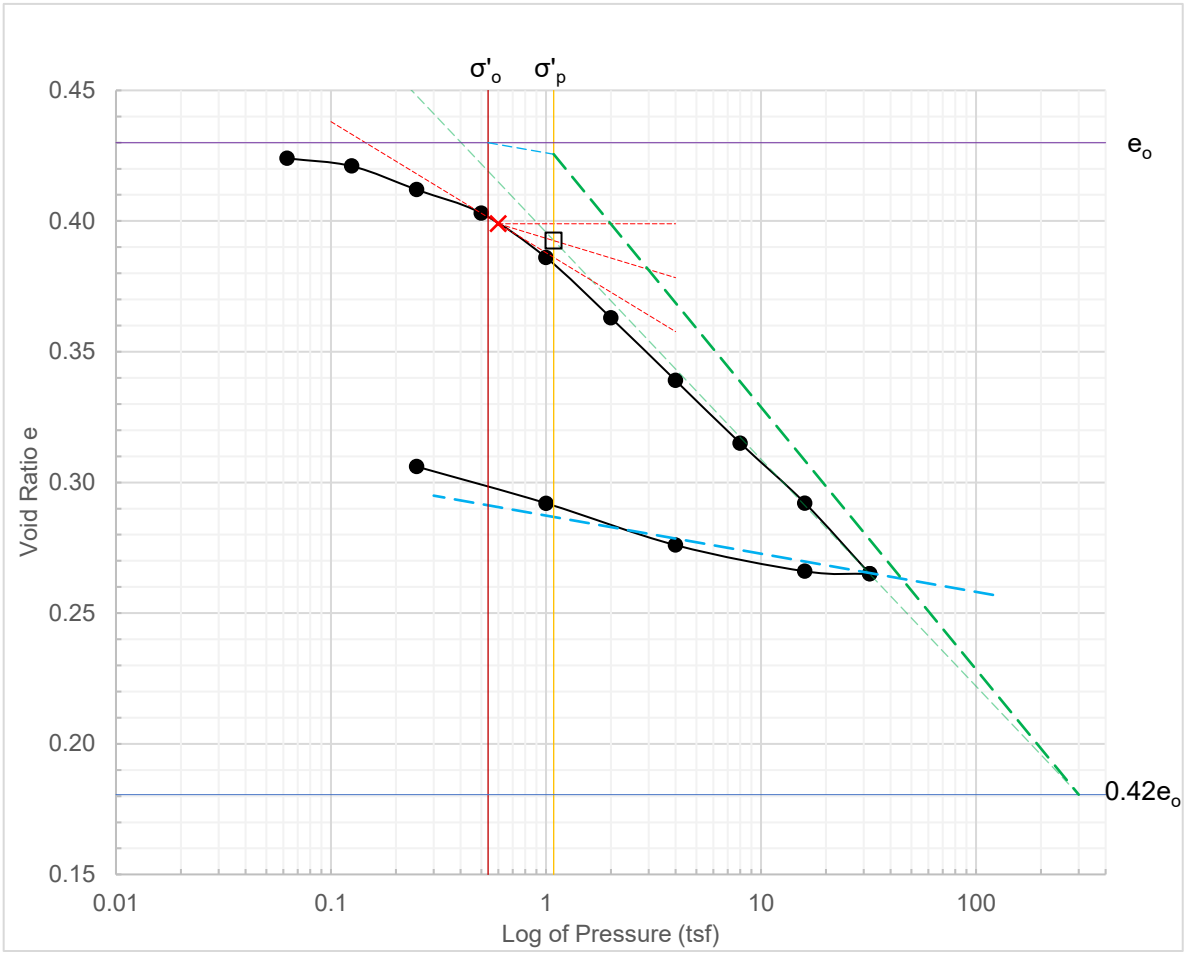
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0625	0.004145	0.424	0.414	89.302	3.94e-05	6.63e-02	4.89e-05
2	0.125	0.006175	0.421	0.617	3.299	1.06e-03	3.25e-02	6.45e-04
3	0.250	0.01239	0.412	1.24	116.603	2.97e-05	4.97e-02	2.77e-05
4	0.500	0.01890	0.403	1.89	22.168	1.54e-04	2.61e-02	7.54e-05
5	1.00	0.03038	0.386	3.04	13.007	2.58e-04	2.29e-02	1.11e-04
6	2.00	0.04639	0.363	4.64	5.688	5.74e-04	1.60e-02	1.72e-04
7	4.00	0.06354	0.339	6.35	8.371	3.77e-04	8.58e-03	6.05e-05
8	8.00	0.08025	0.315	8.03	6.264	4.86e-04	4.18e-03	3.80e-05
9	16.0	0.09662	0.292	9.66	5.388	5.45e-04	2.05e-03	2.09e-05
10	32.0	0.1154	0.265	11.5	4.817	5.86e-04	1.18e-03	1.29e-05
11	16.0	0.1142	0.266	11.4	2.588	1.07e-03	7.60e-05	1.52e-06
12	4.00	0.1072	0.276	10.7	5.655	4.94e-04	5.82e-04	5.38e-06
13	1.00	0.09656	0.292	9.66	14.916	1.91e-04	3.56e-03	1.27e-05
14	0.250	0.08632	0.306	8.63	42.843	6.81e-05	1.37e-02	1.74e-05

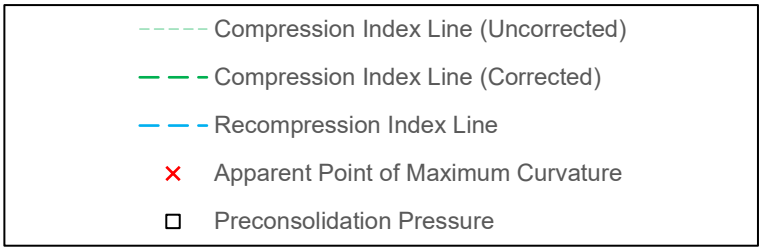
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.10	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 9.1-9.2
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist/dry brown clay w/sand and gravel		
	Remarks: System LTIII-E, Swell Pressure = 0.0625 tsf		
	Displacement at End of Increment		

Boring: B-4.10

Depth: 9.1'-9.2'

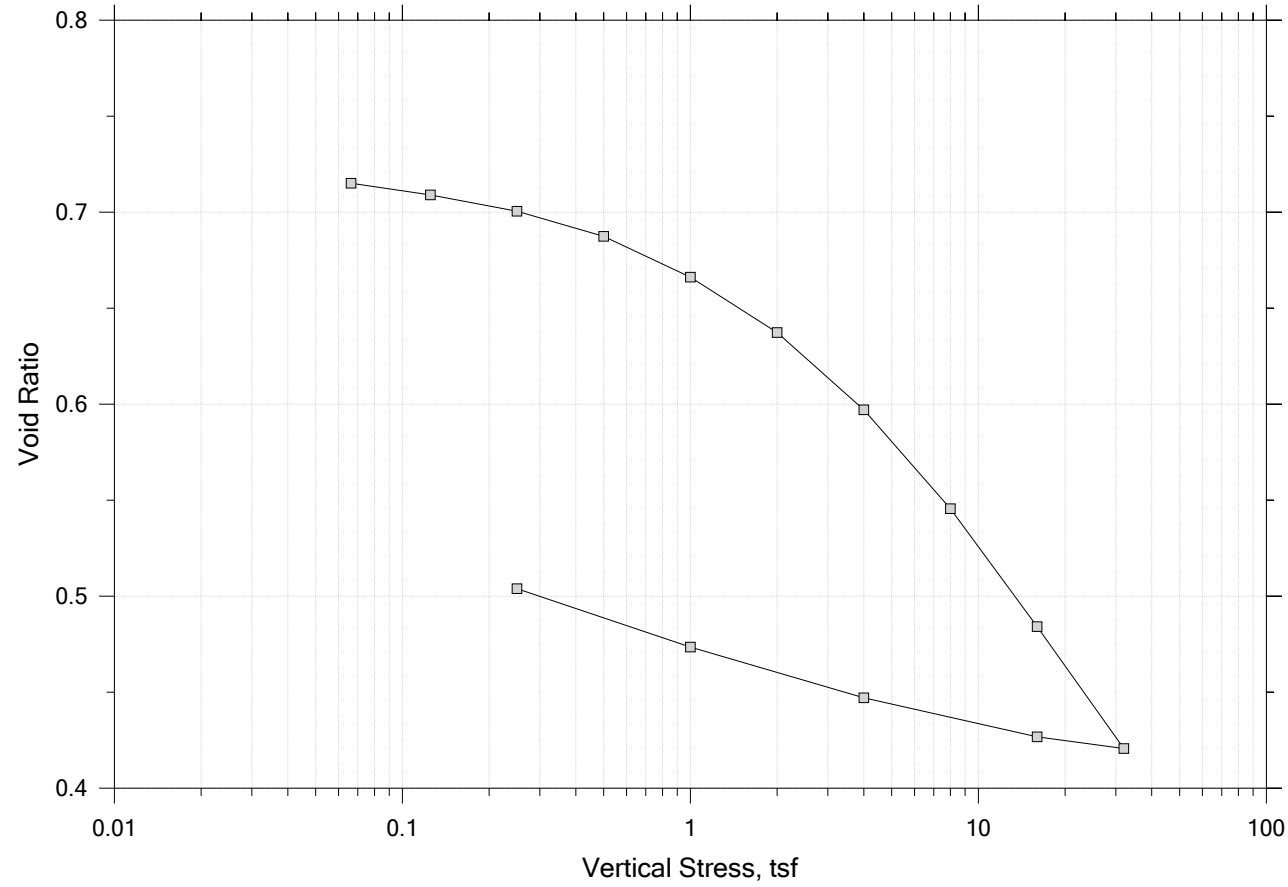
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.54
Preconsolidation Pressure, σ'_p (tsf) = 1.09
Compression Index, C_c = 0.10
Recompression Index, C_r = 0.015

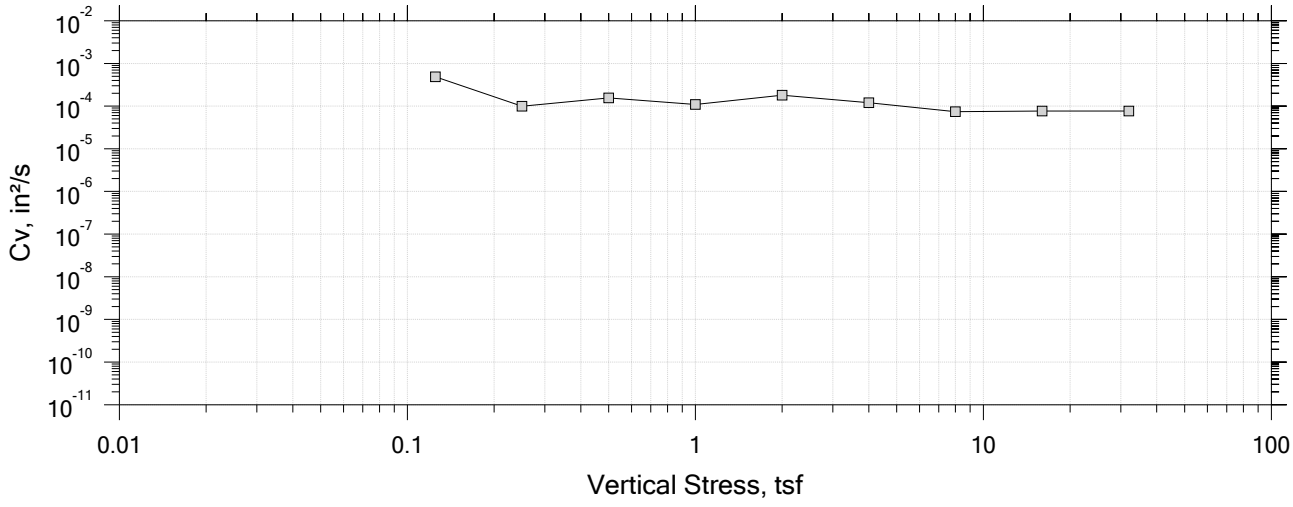




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

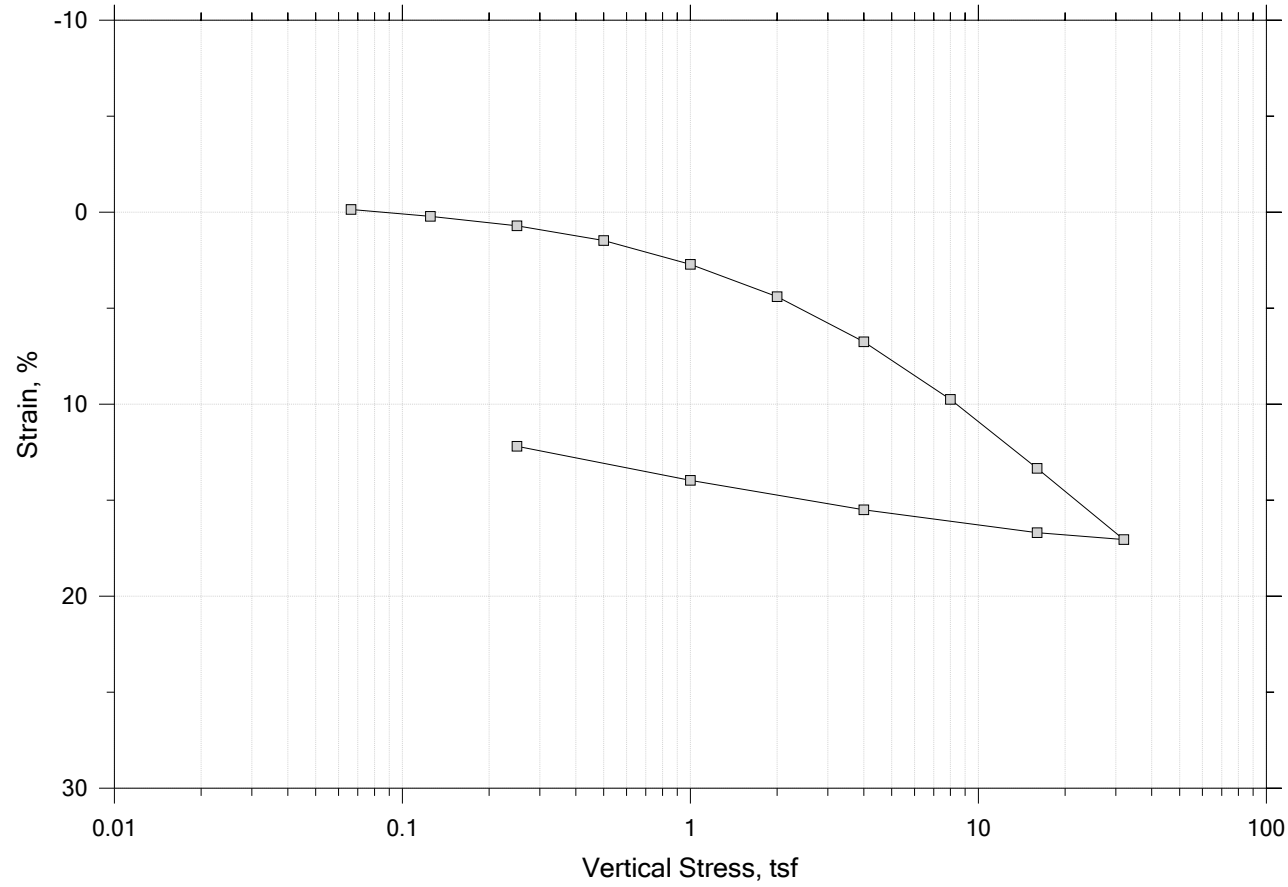


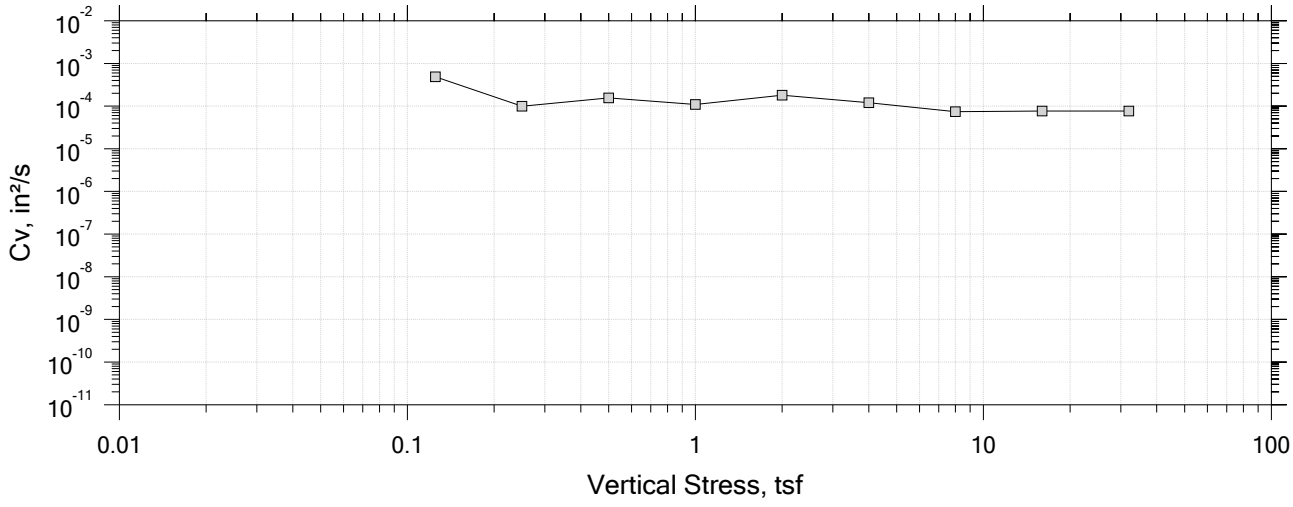


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

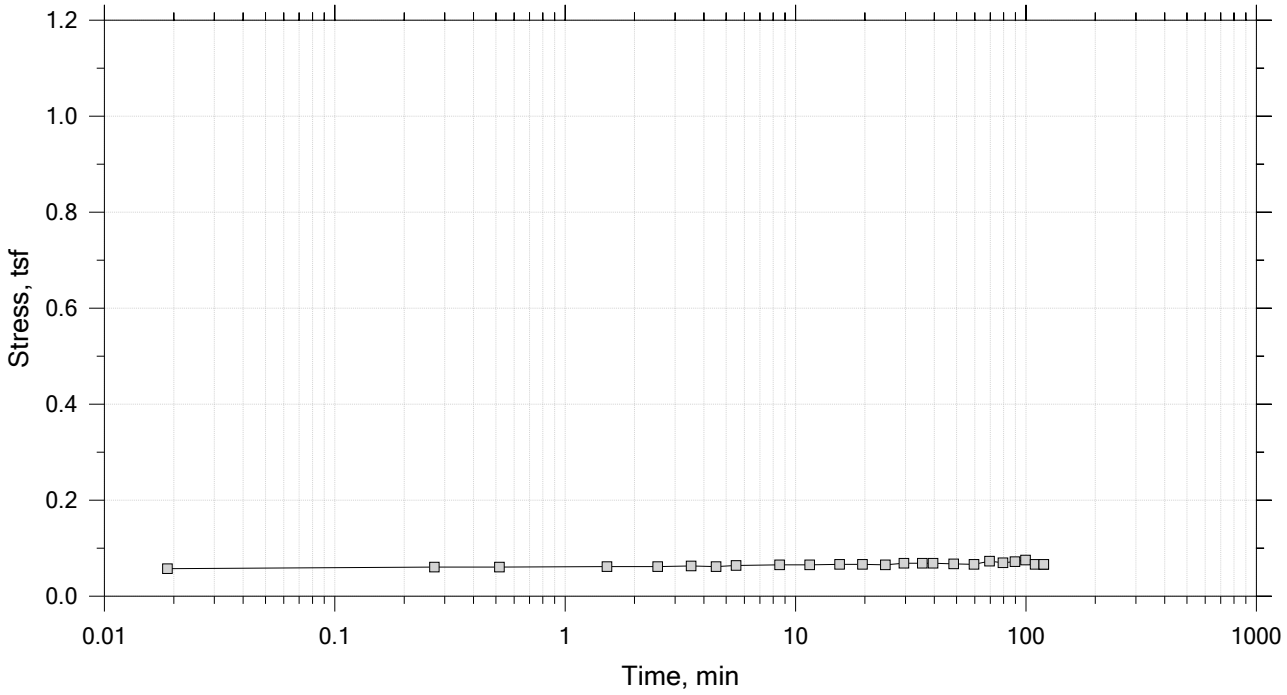


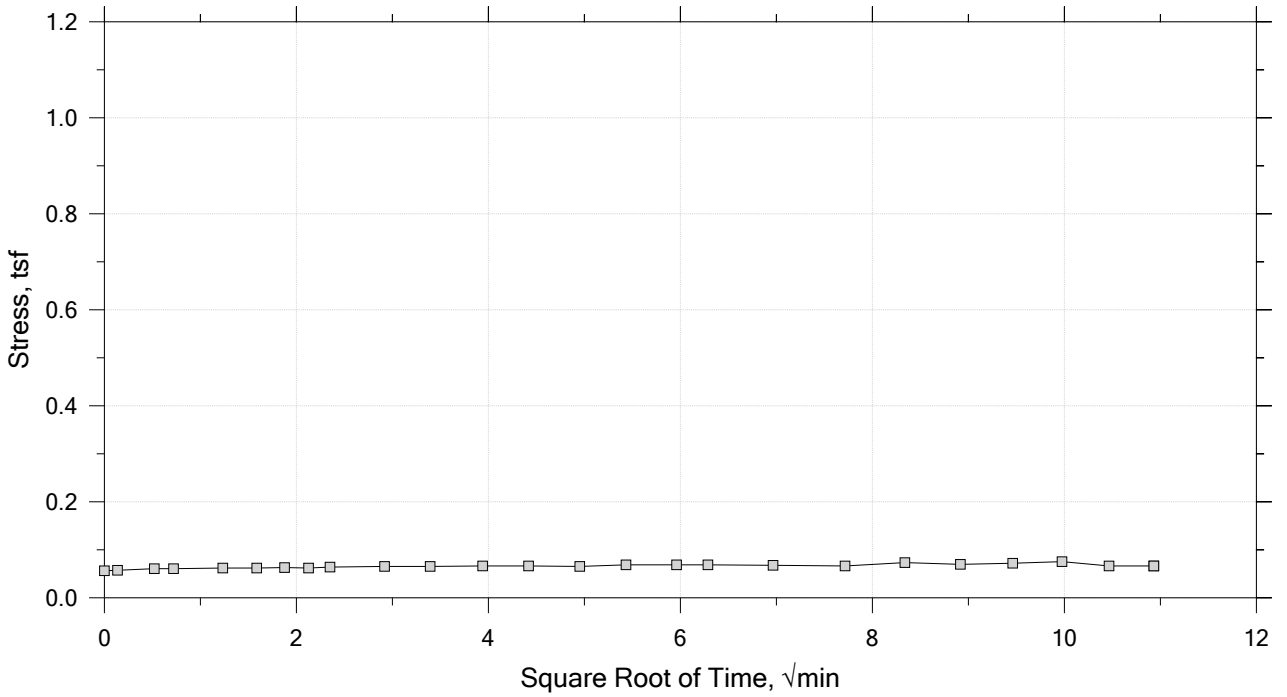


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0663 tsf

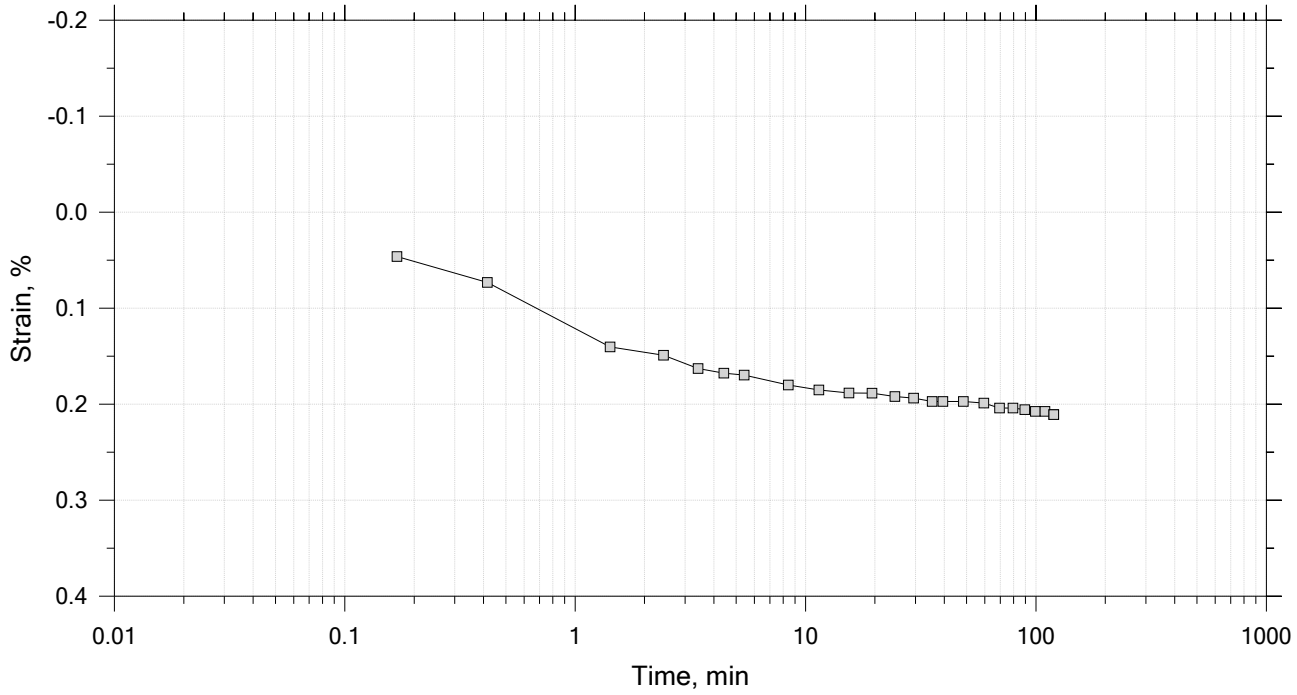


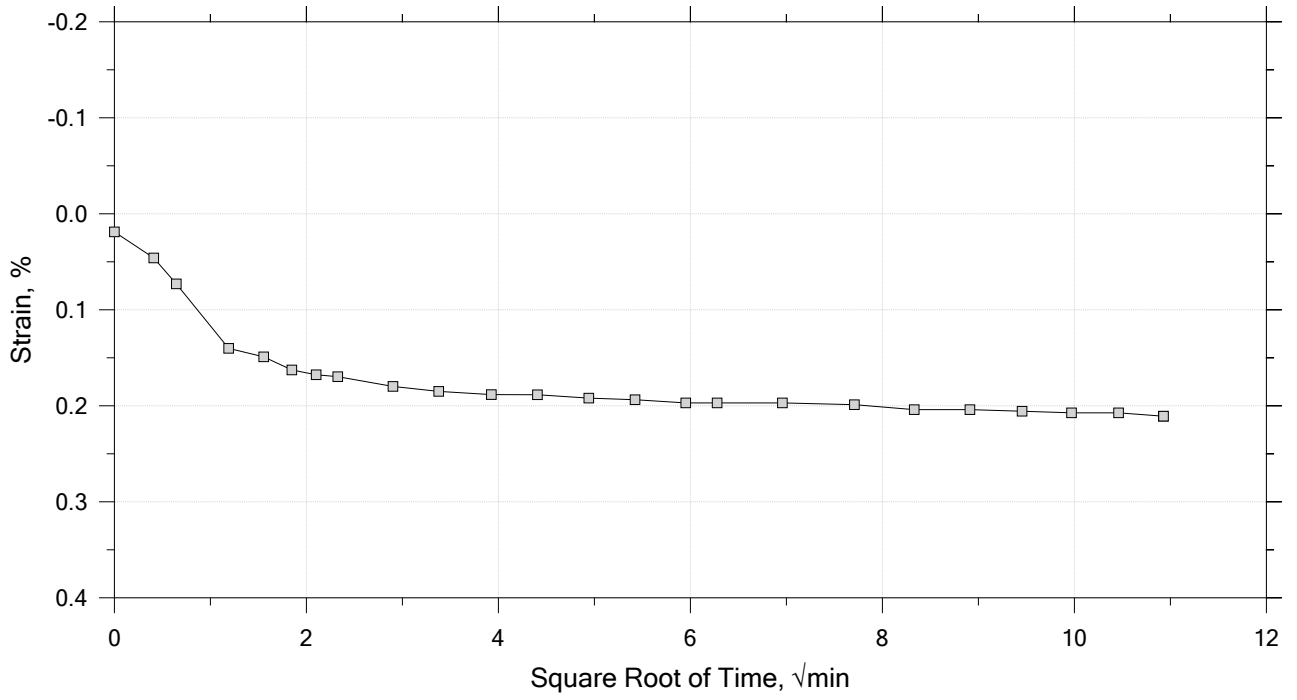


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

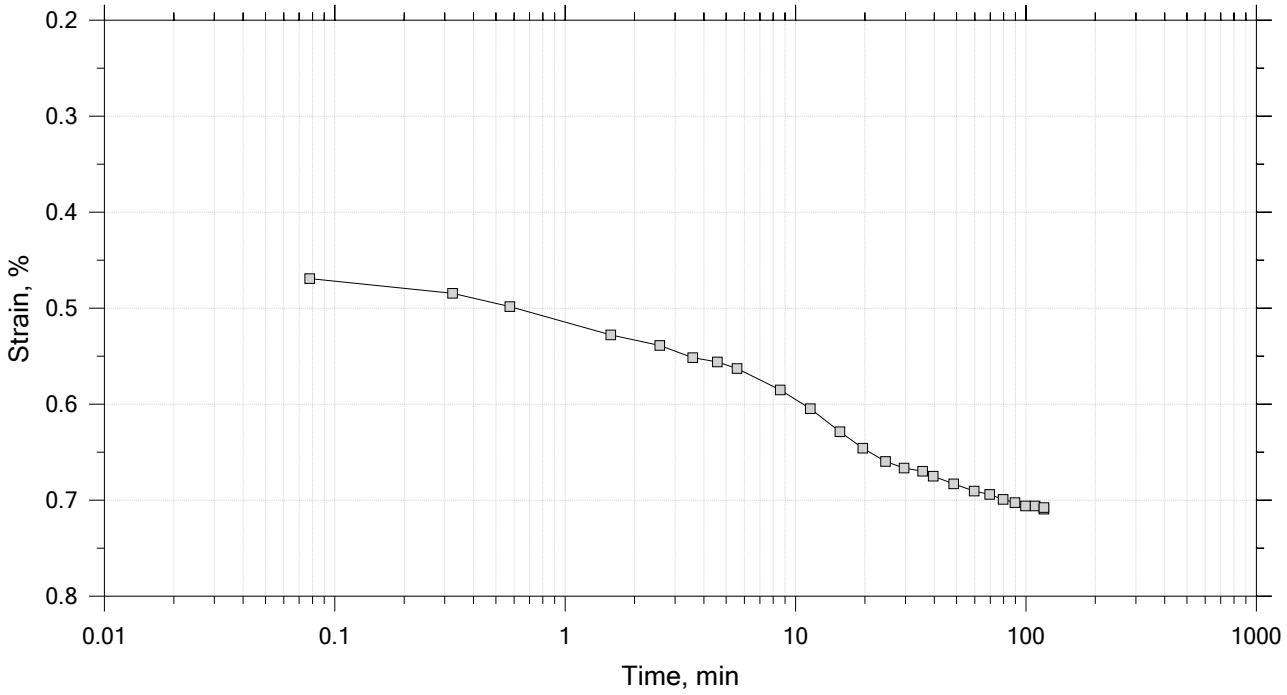


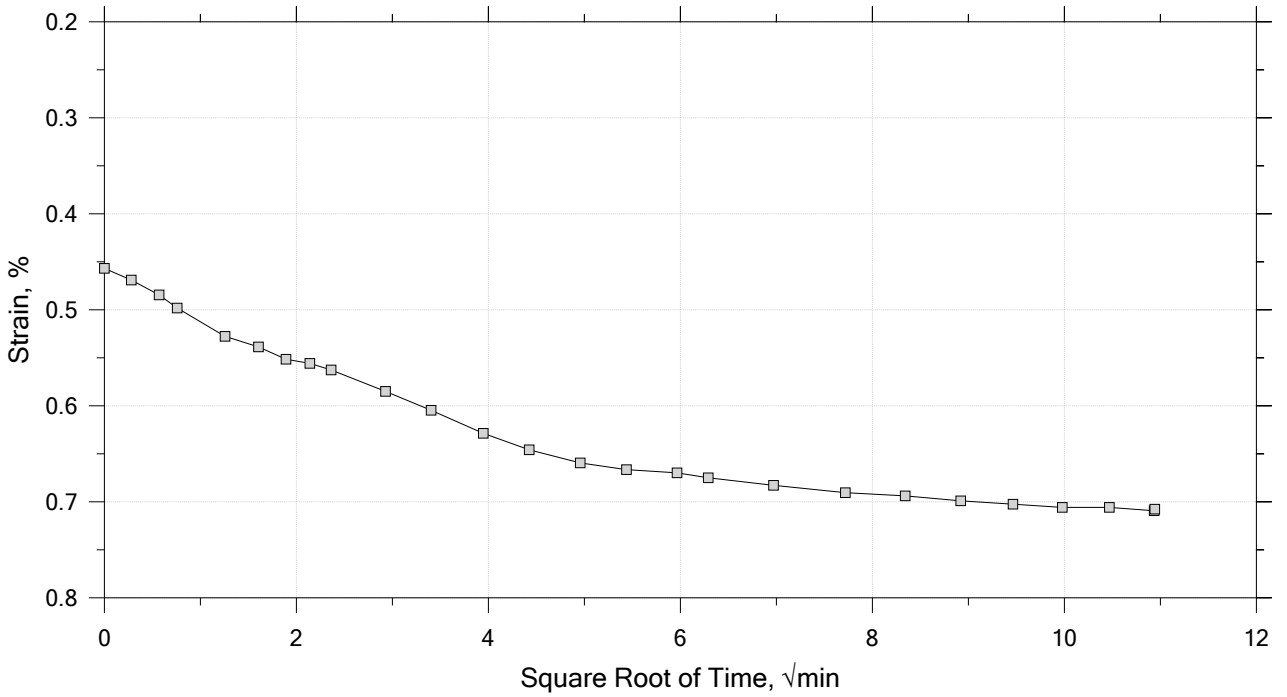


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

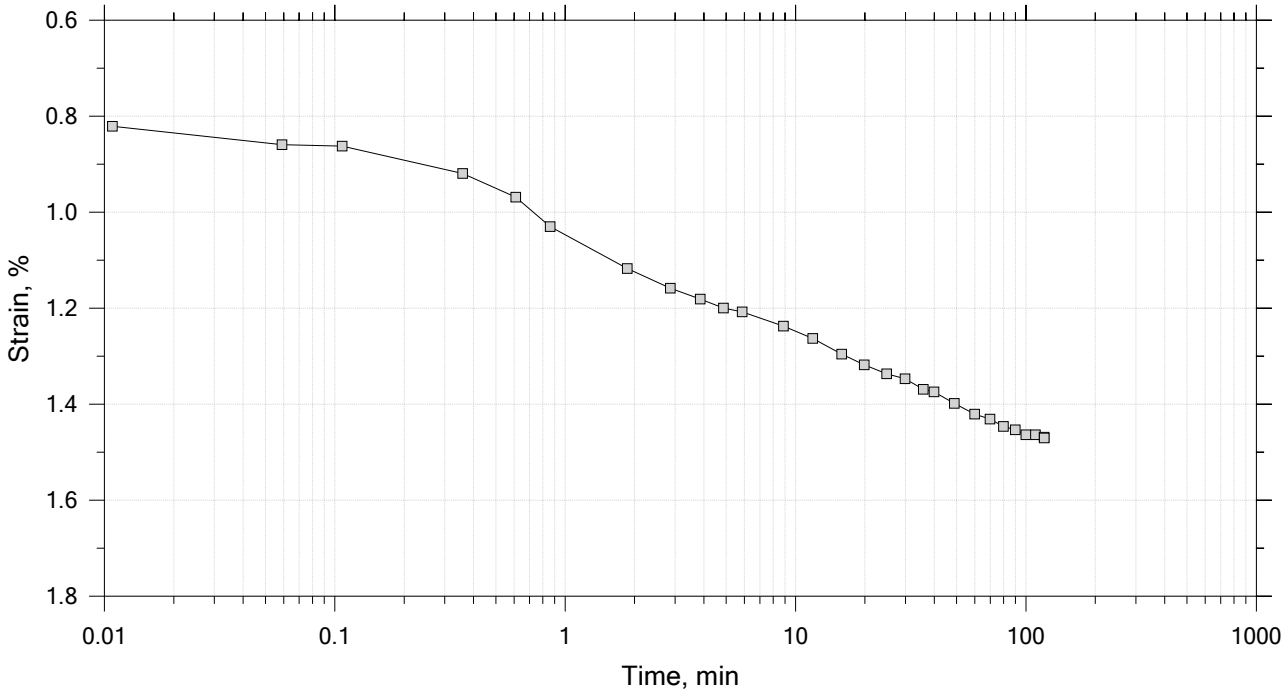


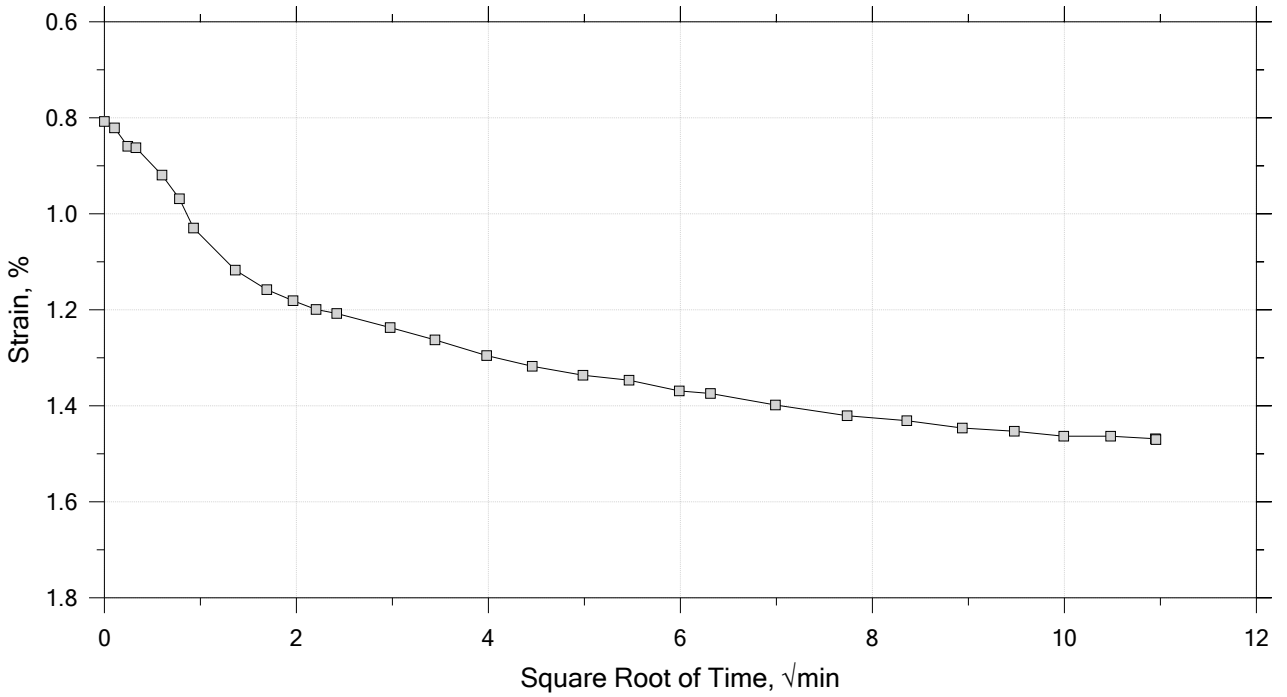


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





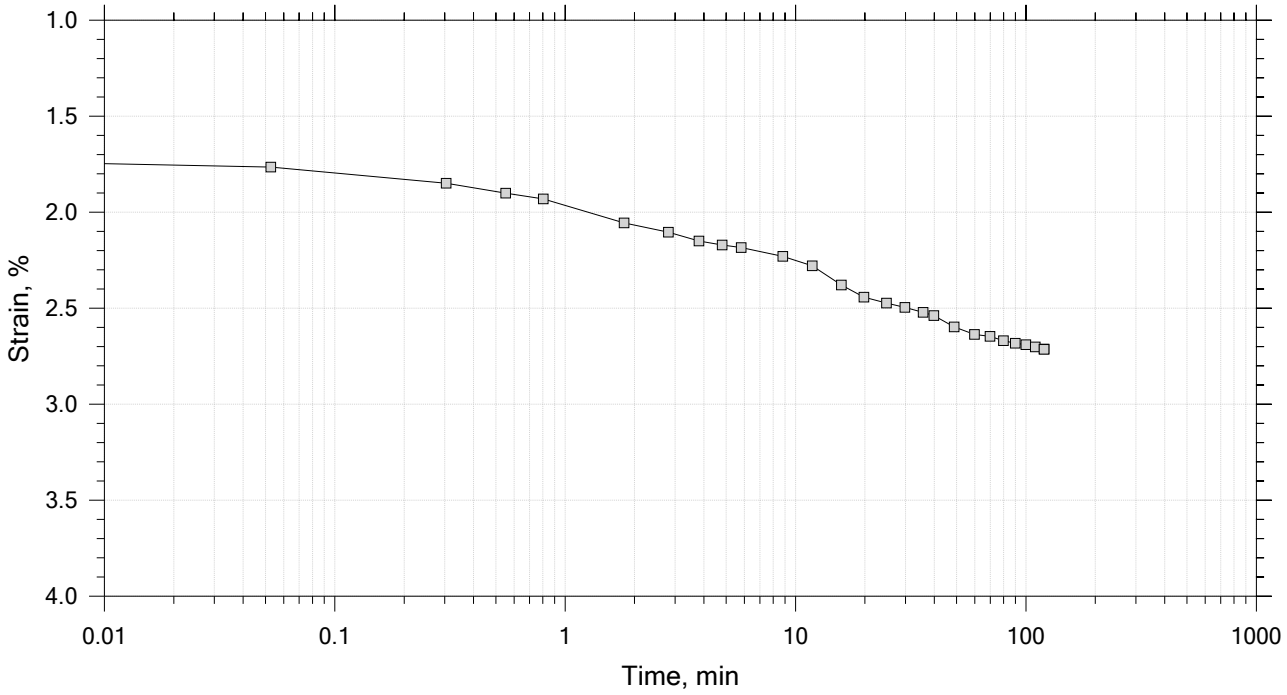
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

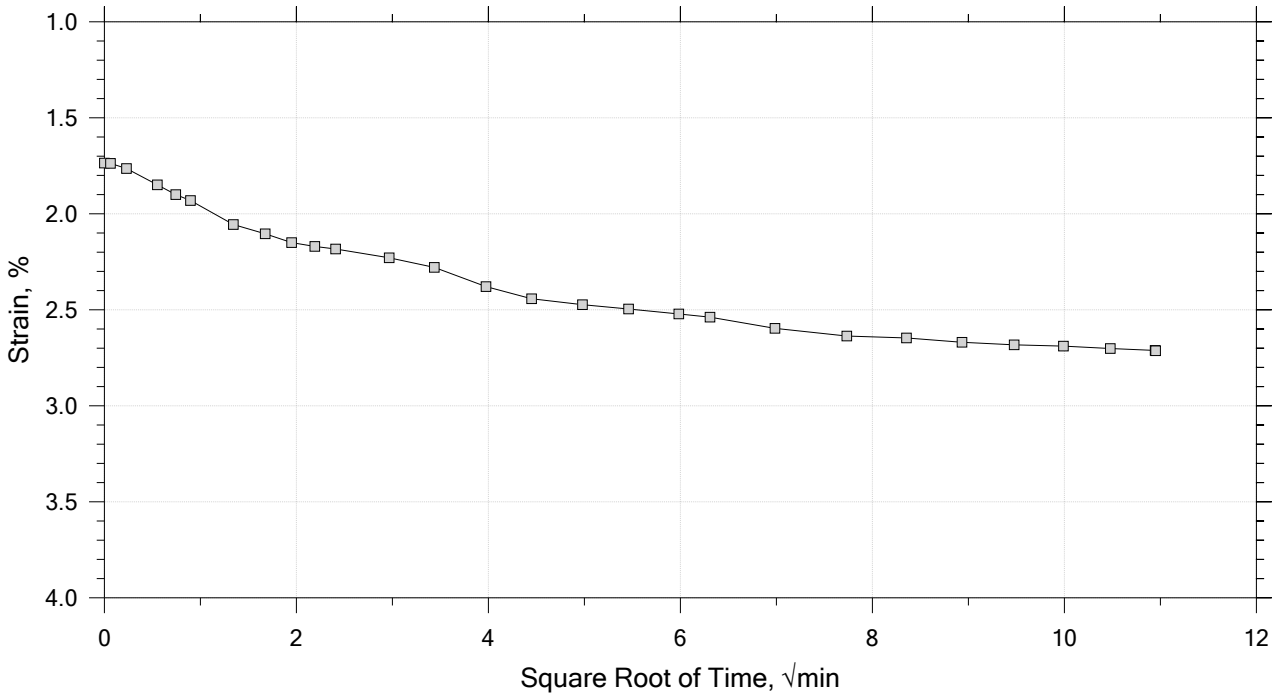
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





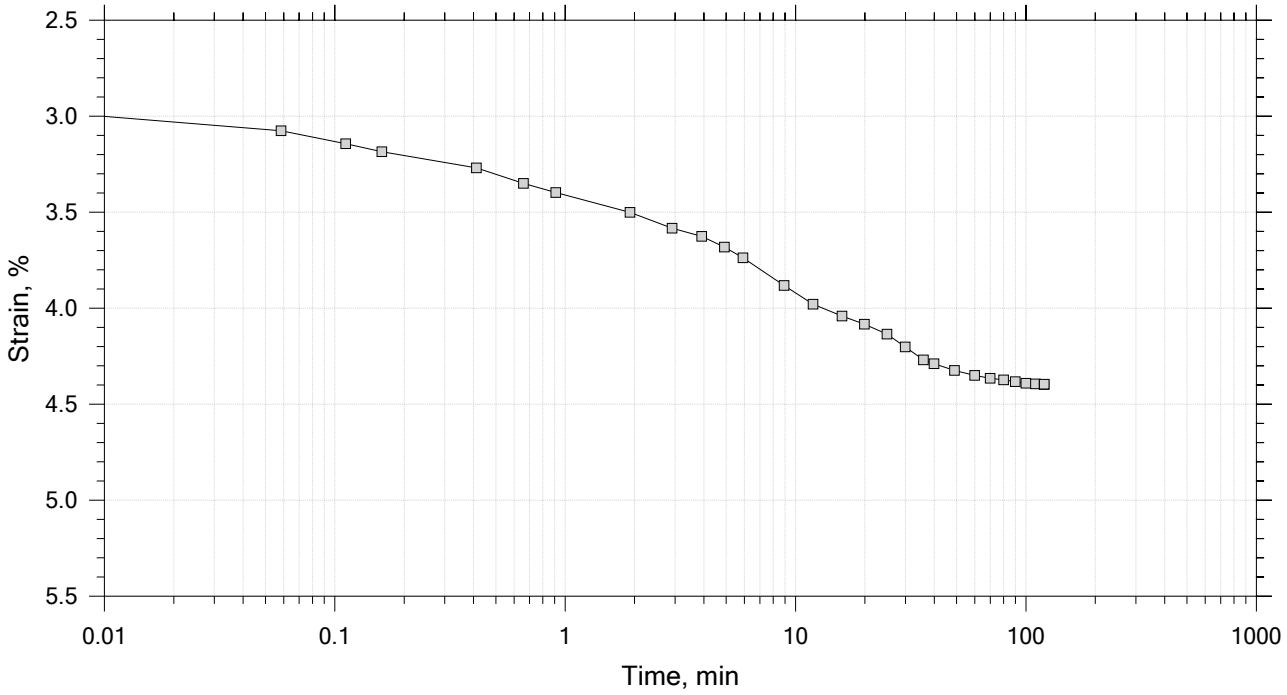
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

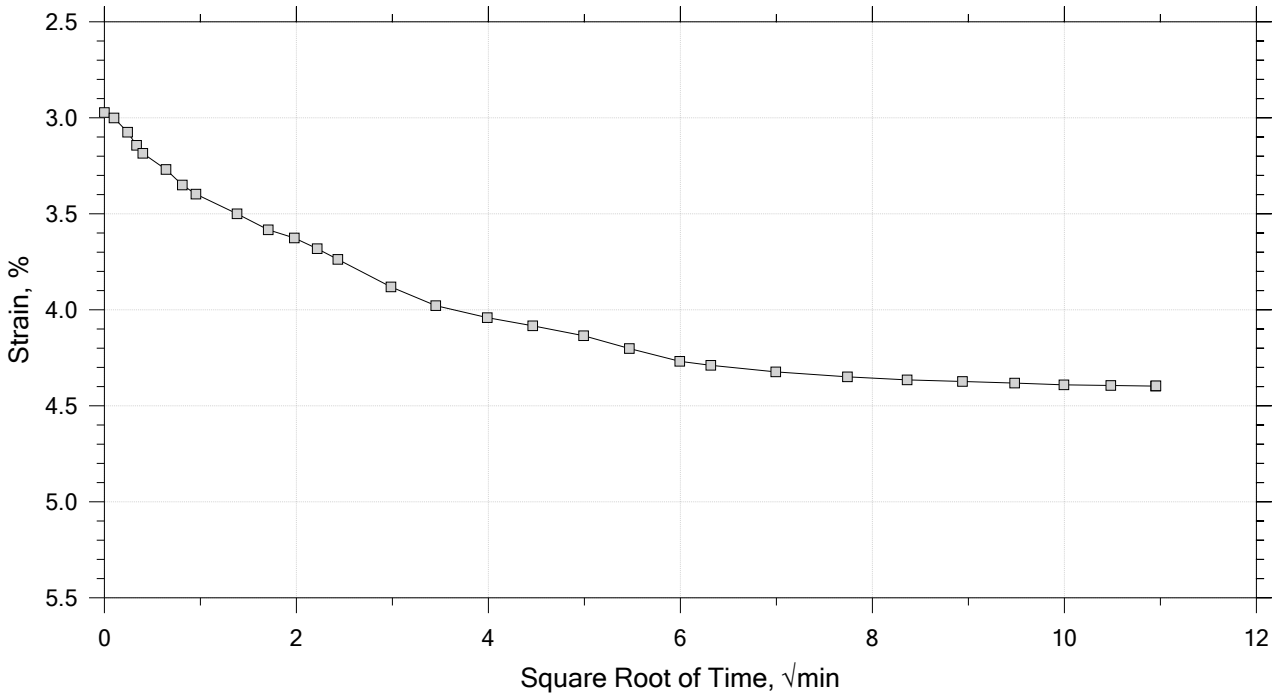
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





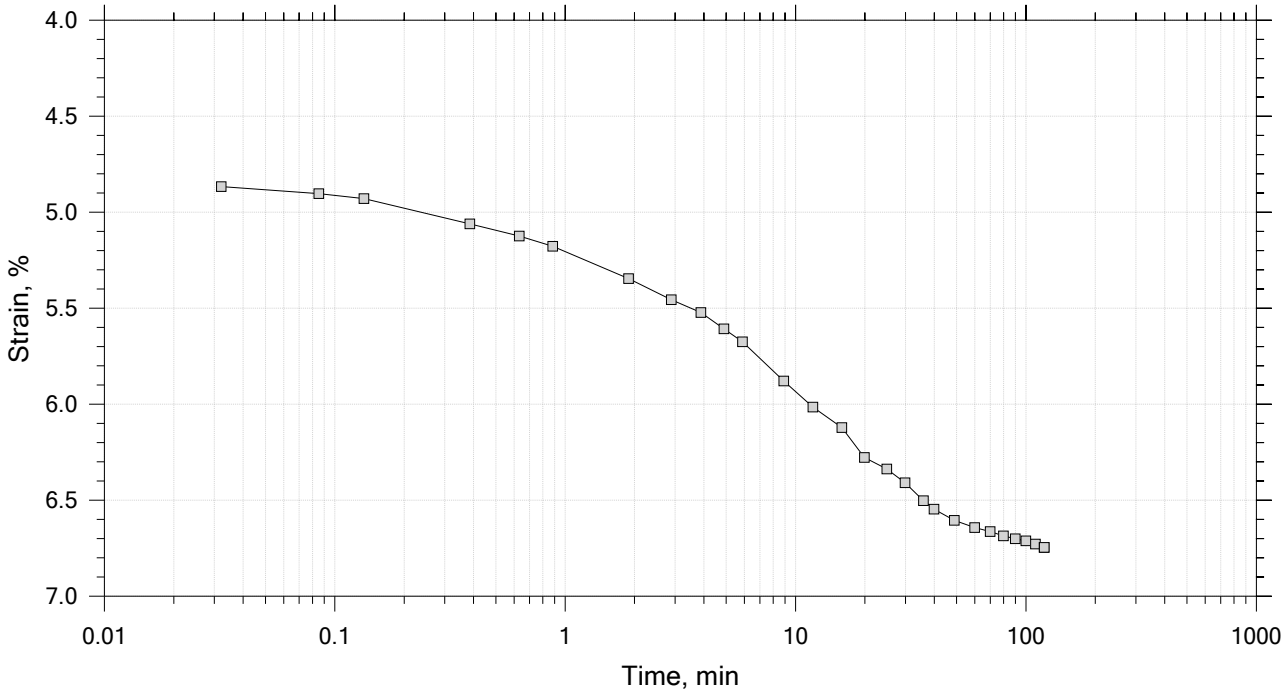
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

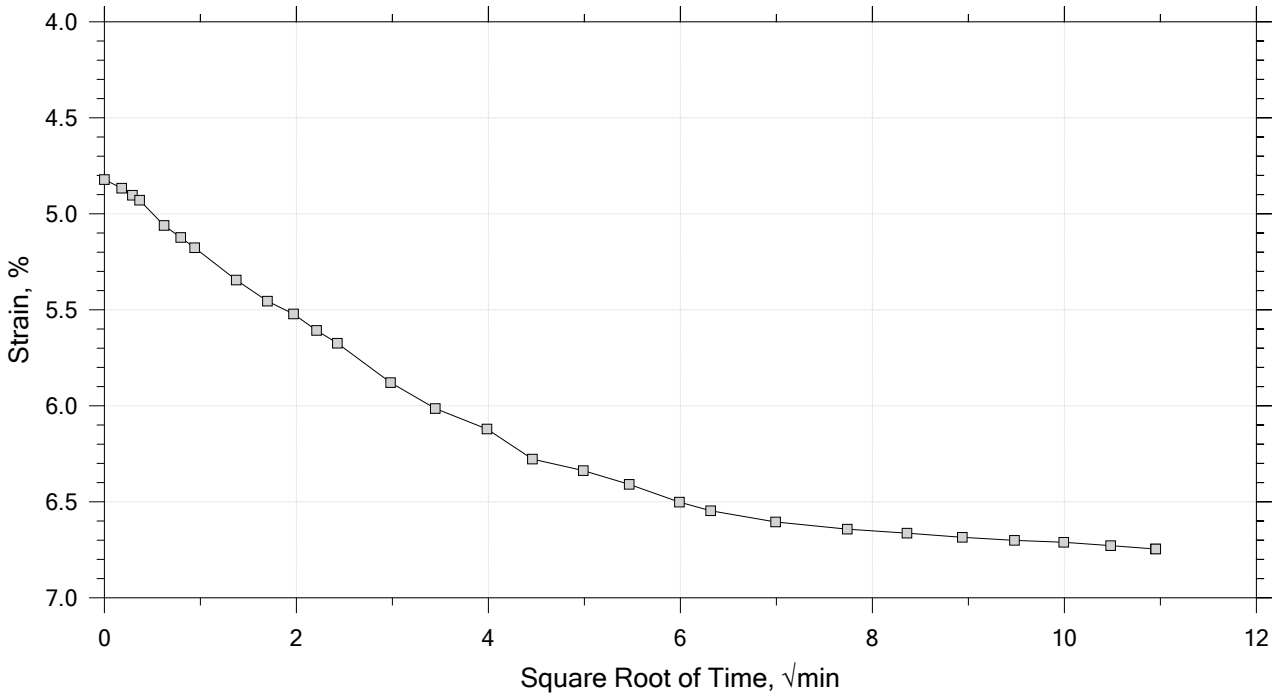
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





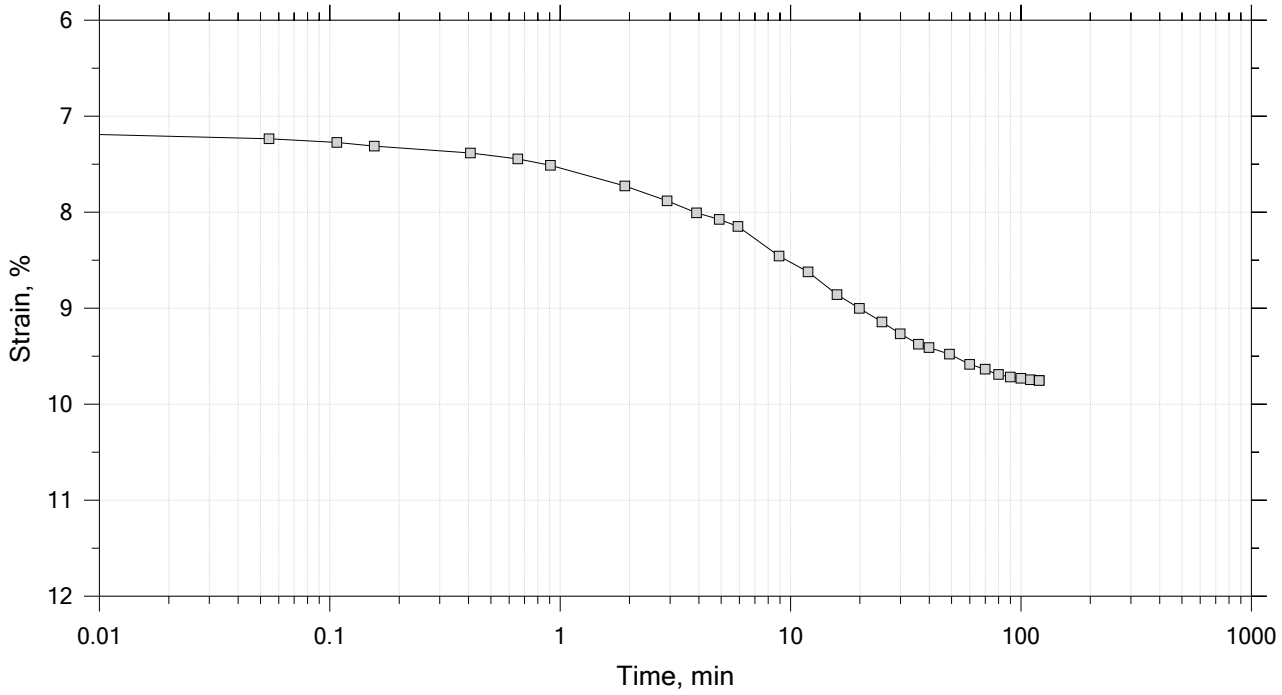
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

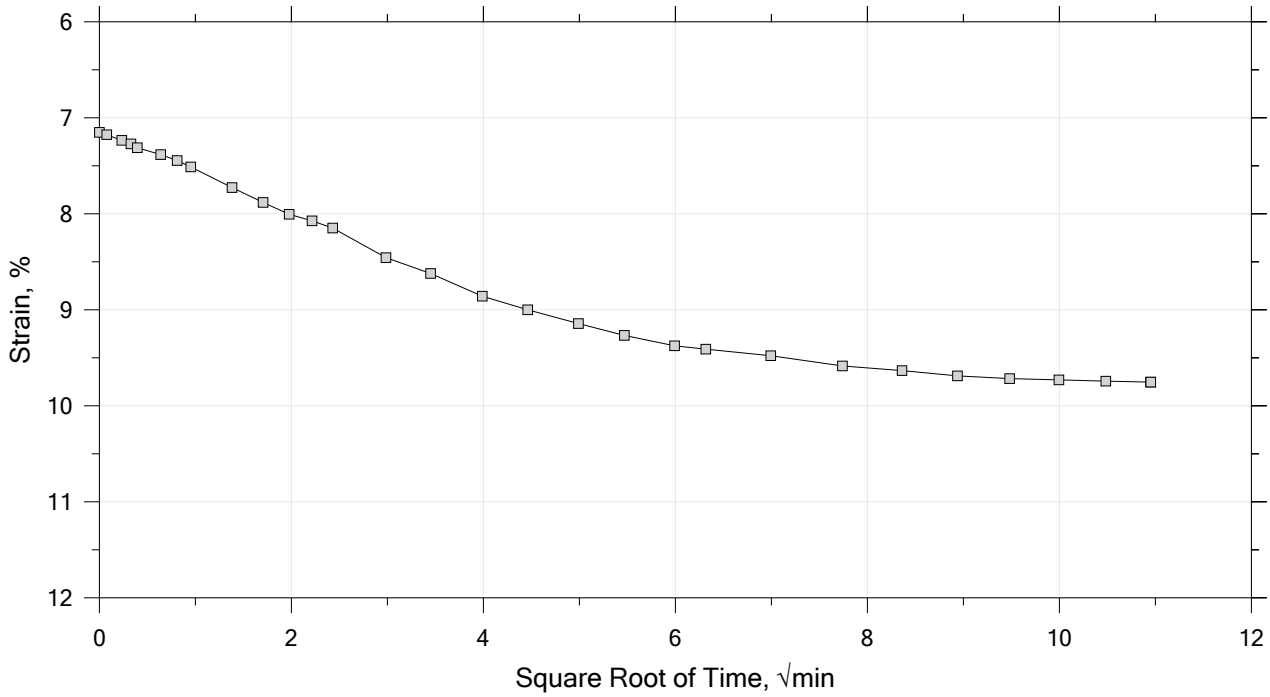
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





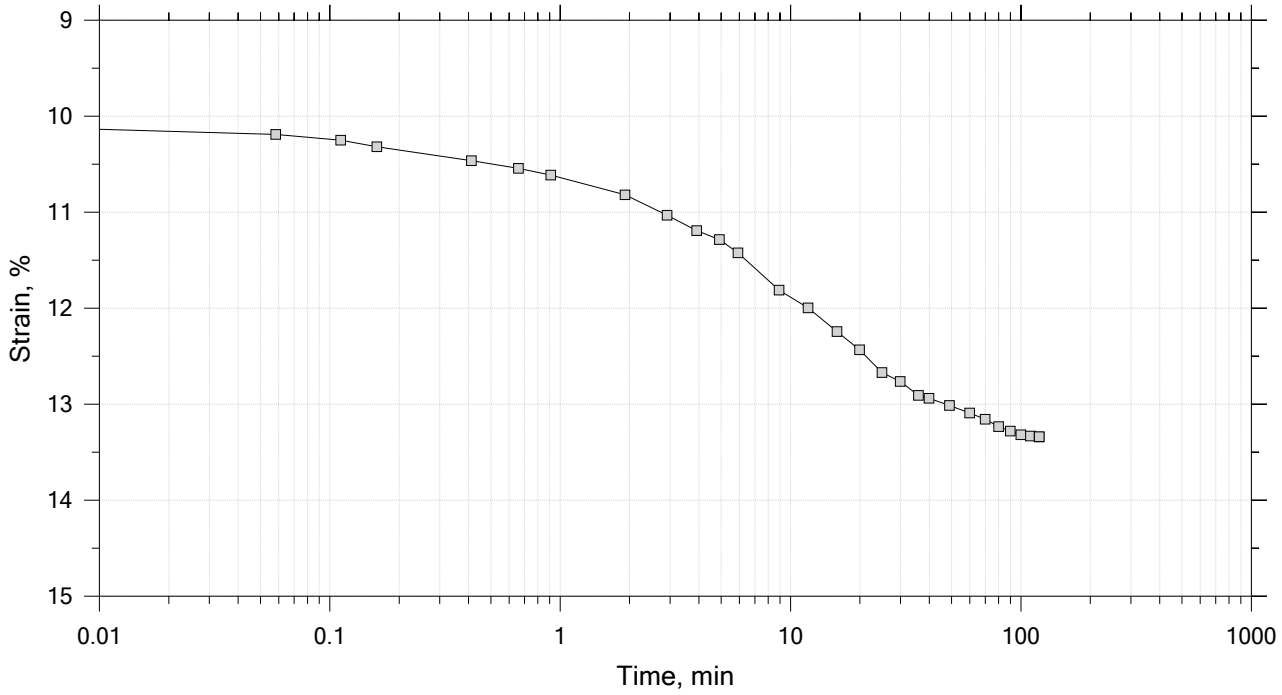
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

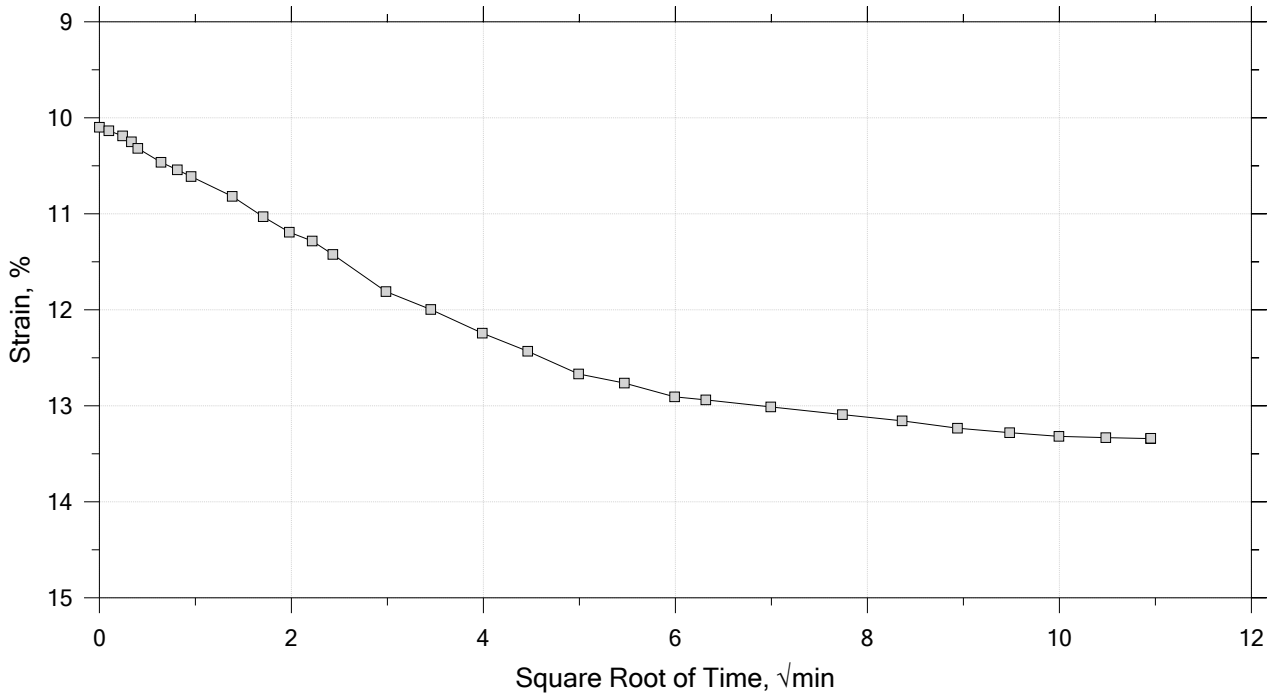
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

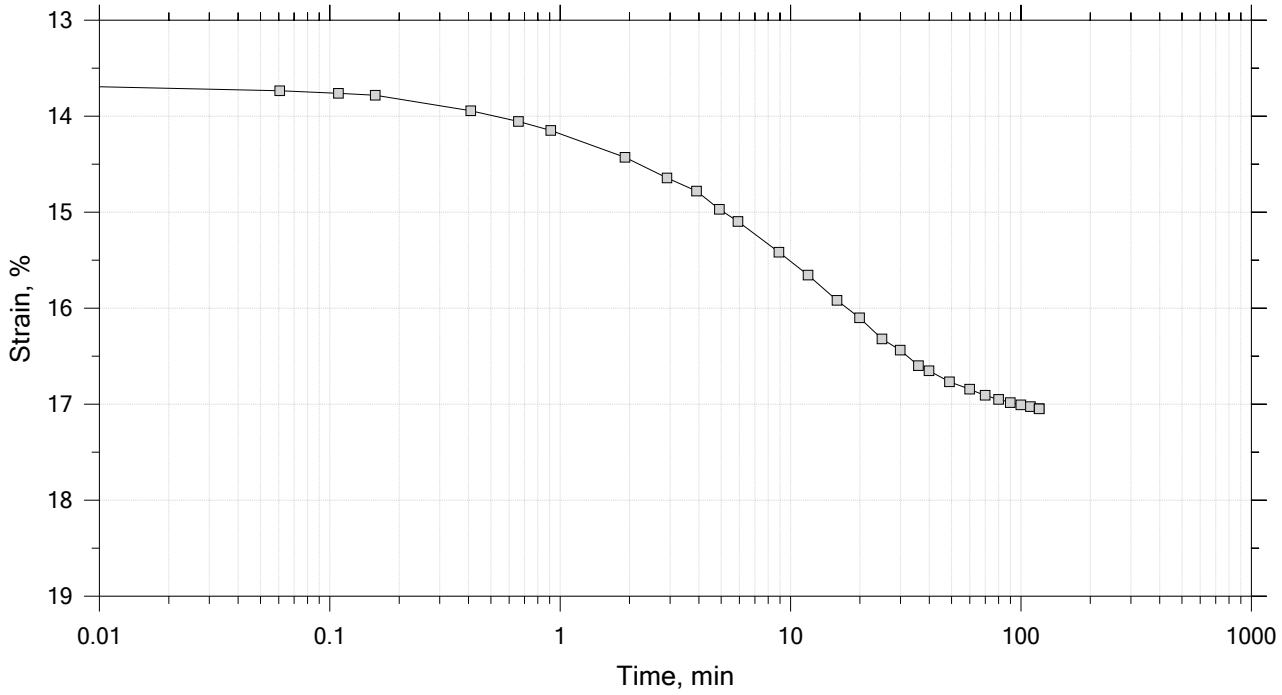


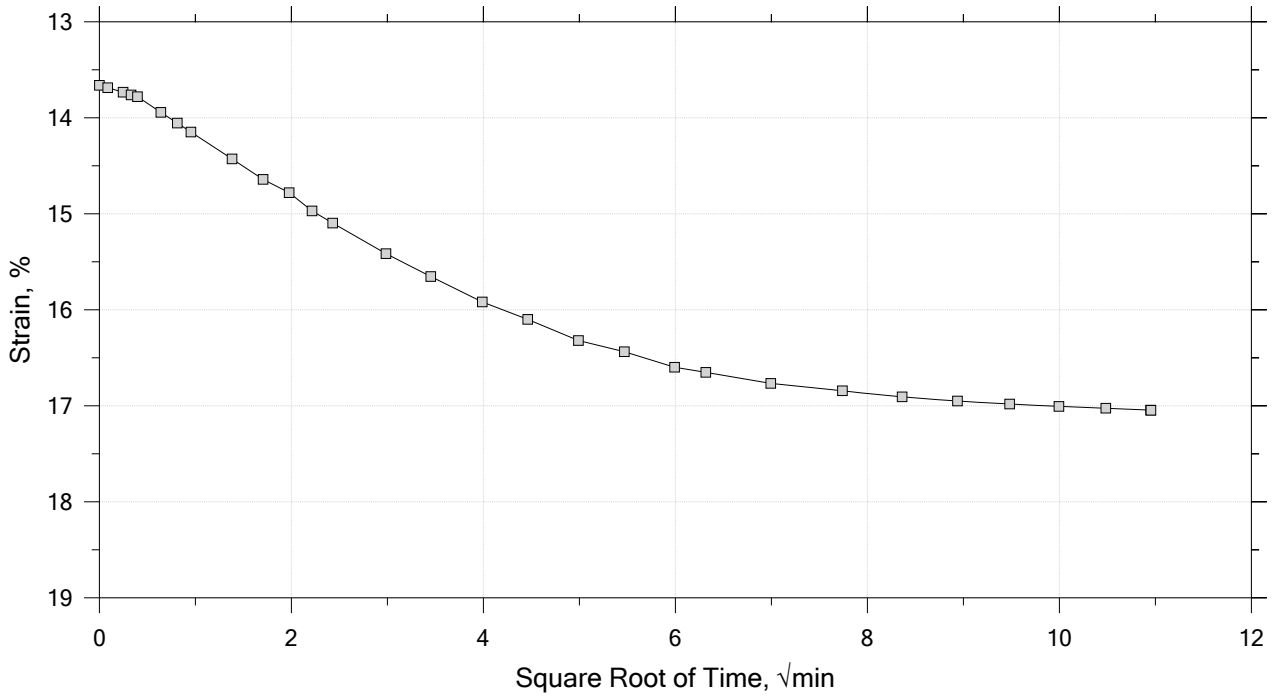


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

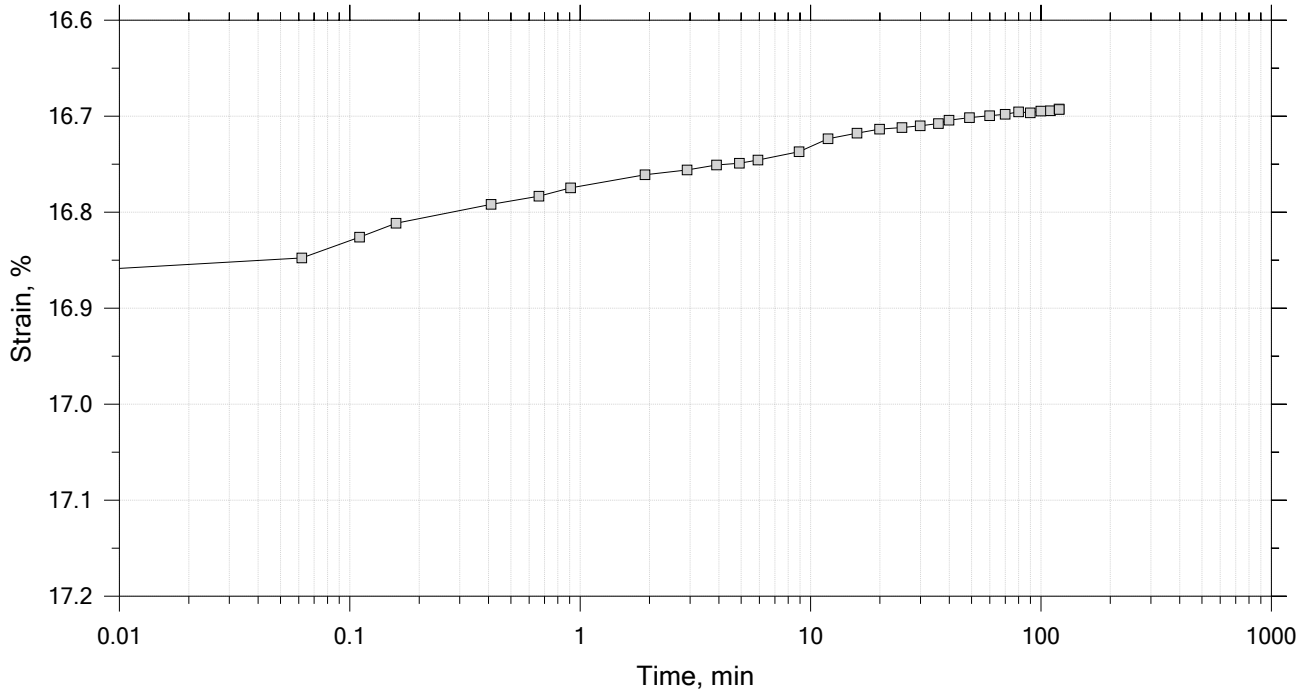


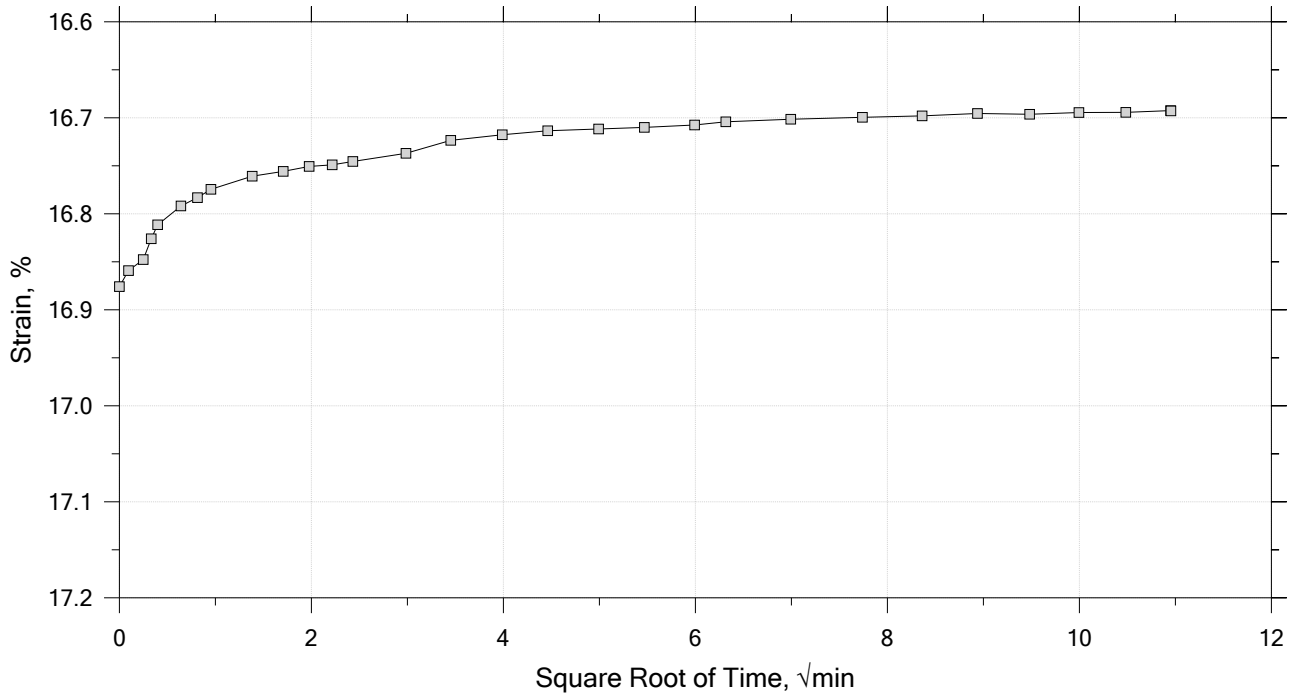


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

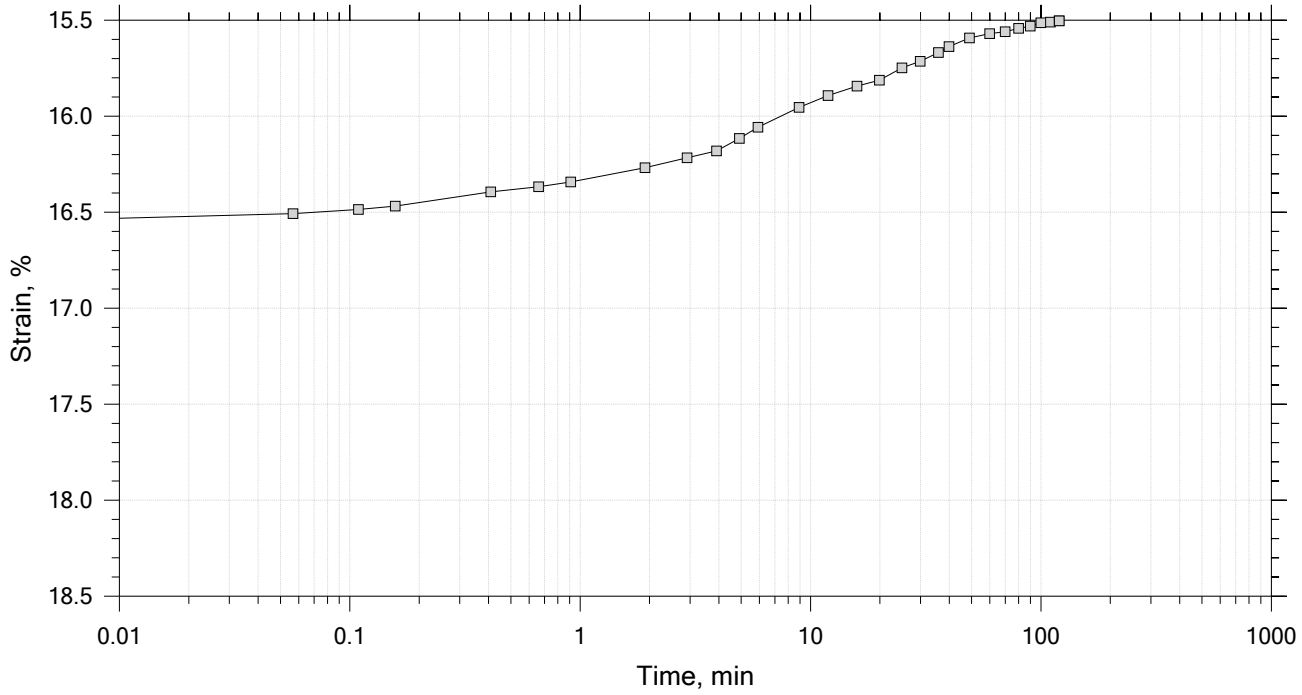


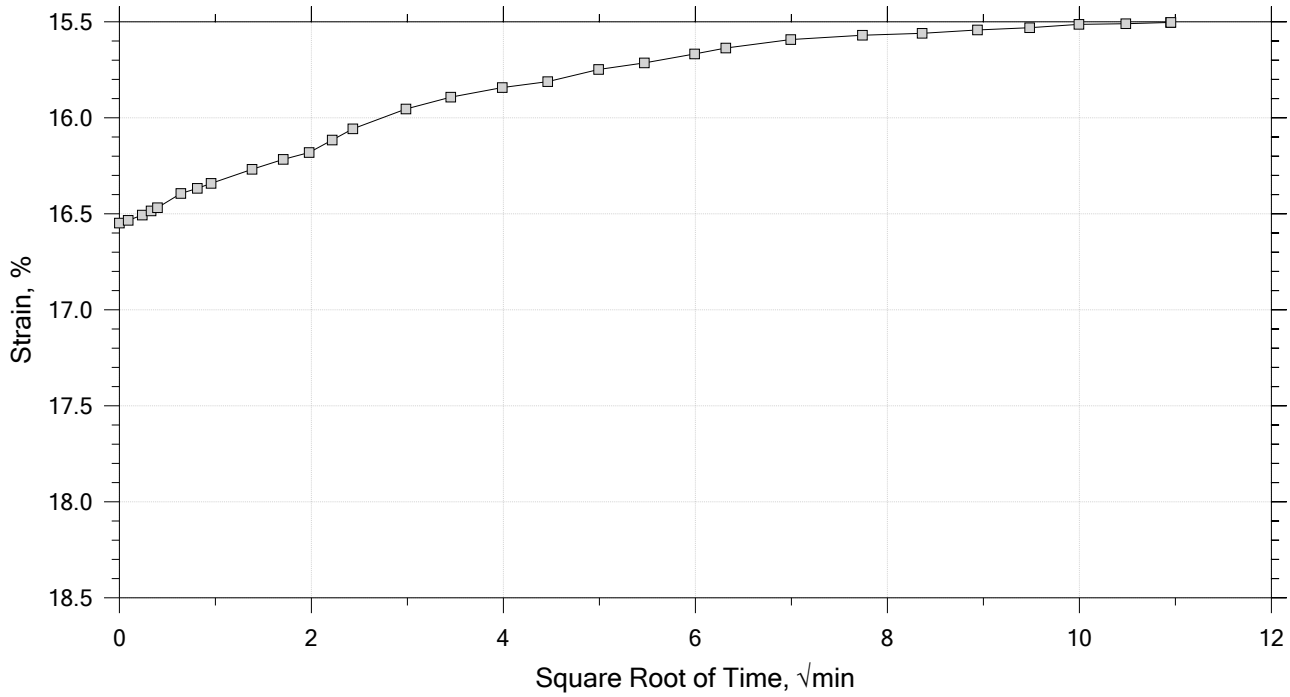


Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
Boring No.: B-4.11	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
Test No.: IP-8	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





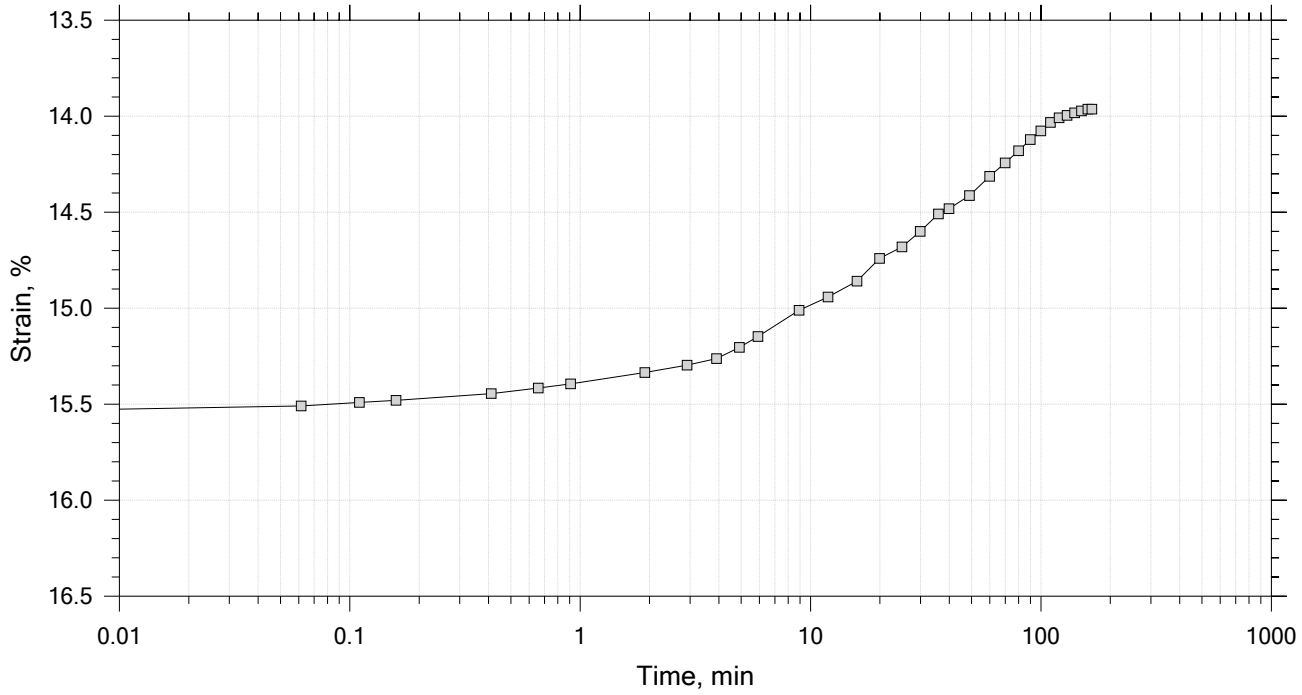
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

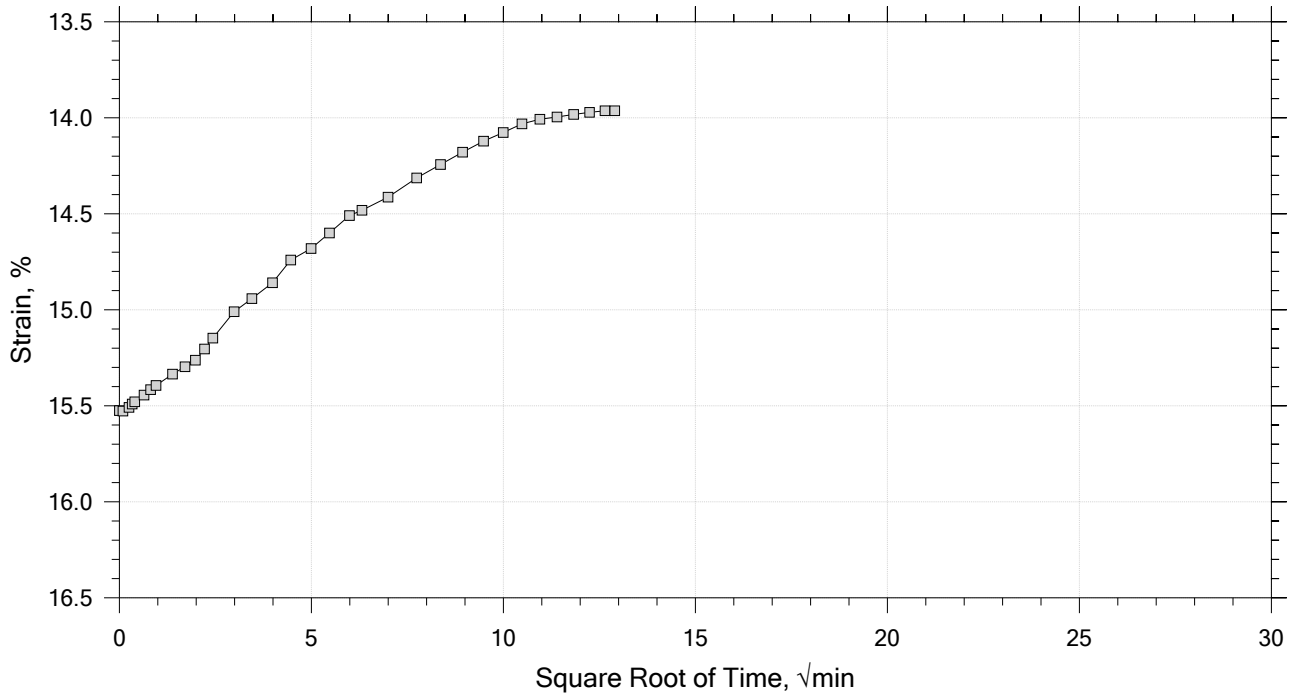
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

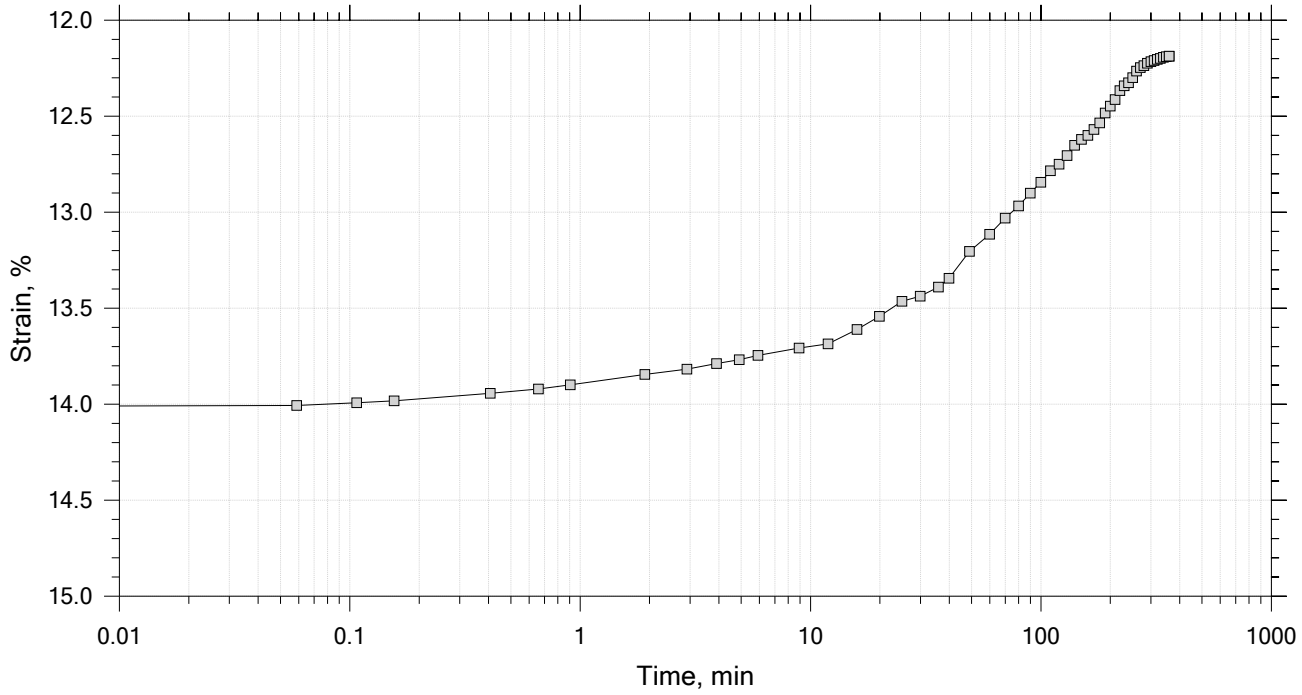


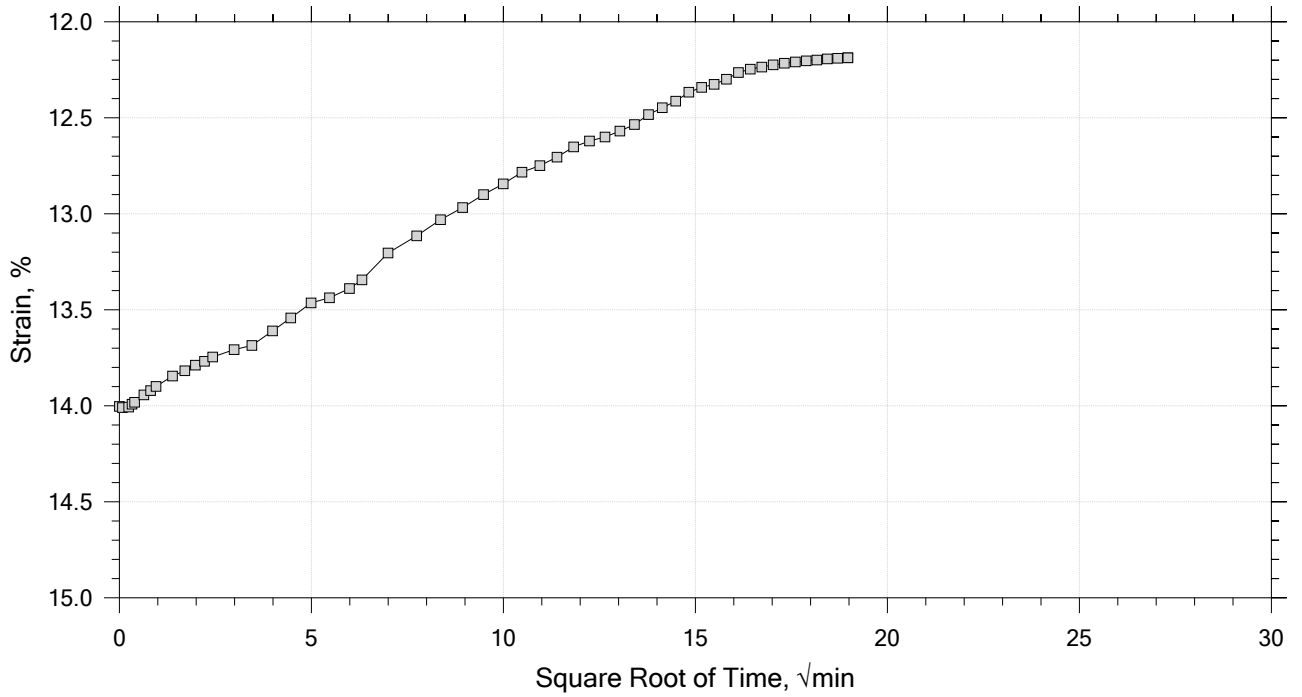


Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
Boring No.: B-4.11	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
Test No.: IP-8	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
Boring No.: B-4.11	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
Test No.: IP-8	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 45
Initial Height: 1.00 in	Initial Void Ratio: 0.713	Plastic Limit: 19
Final Height: 0.88 in	Final Void Ratio: 0.504	Plasticity Index: 26

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5063	RING		D2755
Mass Container, gm	8.4	110.87	110.87	8.16
Mass Container + Wet Soil, gm	134.3	271.13	264.03	160.43
Mass Container + Dry Soil, gm	110.17	240.36	240.36	136.9
Mass Dry Soil, gm	101.77	129.49	129.49	128.74
Water Content, %	23.71	23.76	18.28	18.28
Void Ratio	---	0.71	0.50	---
Degree of Saturation, %	---	91.92	100.00	---
Dry Unit Weight, pcf	---	100.5	114.44	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

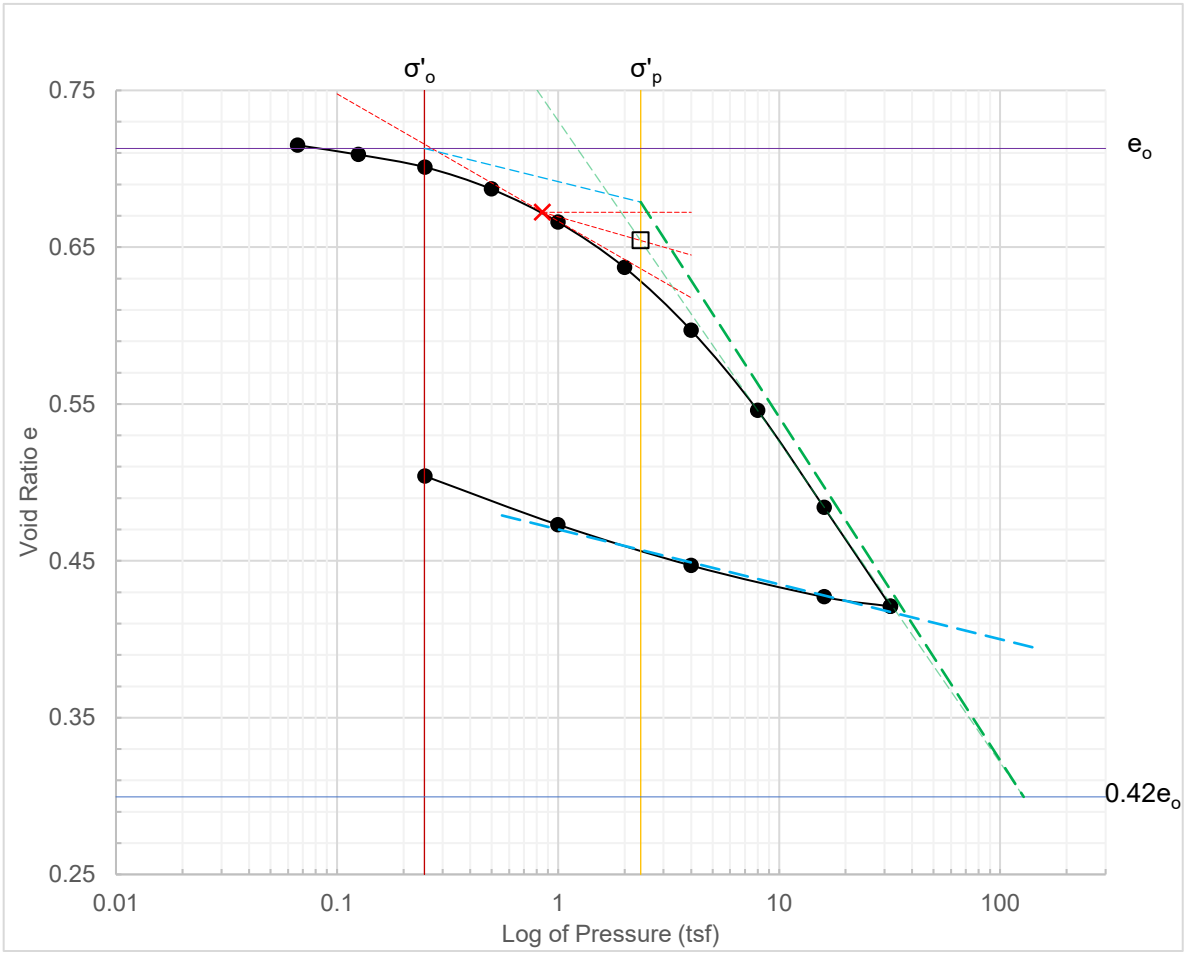
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0663	-0.001452	0.715	-0.145	0.000	0.00e+00	-2.19e-02	-0.00e+00
2	0.125	0.002108	0.709	0.211	7.291	4.84e-04	6.07e-02	5.50e-04
3	0.250	0.007077	0.701	0.708	35.407	9.89e-05	3.97e-02	7.36e-05
4	0.500	0.01470	0.687	1.47	22.155	1.56e-04	3.05e-02	8.92e-05
5	1.00	0.02714	0.666	2.71	31.004	1.09e-04	2.49e-02	5.09e-05
6	2.00	0.04396	0.637	4.40	18.266	1.80e-04	1.68e-02	5.67e-05
7	4.00	0.06746	0.597	6.75	26.142	1.21e-04	1.17e-02	2.65e-05
8	8.00	0.09753	0.546	9.75	40.326	7.38e-05	7.52e-03	1.04e-05
9	16.0	0.1334	0.484	13.3	36.188	7.64e-05	4.48e-03	6.41e-06
10	32.0	0.1705	0.421	17.0	33.132	7.67e-05	2.32e-03	3.33e-06
11	16.0	0.1669	0.427	16.7	14.090	1.73e-04	2.22e-04	7.20e-07
12	4.00	0.1550	0.447	15.5	19.397	1.28e-04	9.92e-04	2.38e-06
13	1.00	0.1396	0.473	14.0	91.059	2.82e-05	5.13e-03	2.71e-06
14	0.250	0.1219	0.504	12.2	327.707	8.15e-06	2.37e-02	3.61e-06

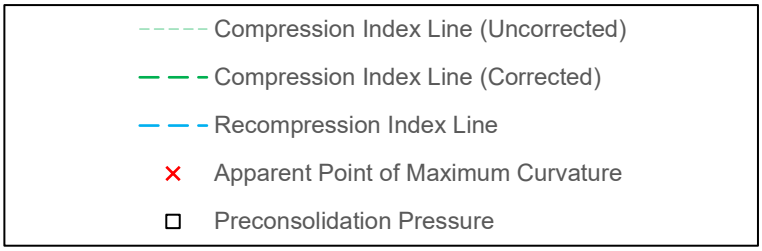
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock, County	Project No.: GTX-315877
	Boring No.: B-4.11	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/10/22	Depth: 4.2-4.3
	Test No.: IP-8	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System LTIII-A, Swell Pressure = 0.0663 tsf		
	Displacement at End of Increment		

Boring: B-4.11

Depth: 4.2'-4.3'

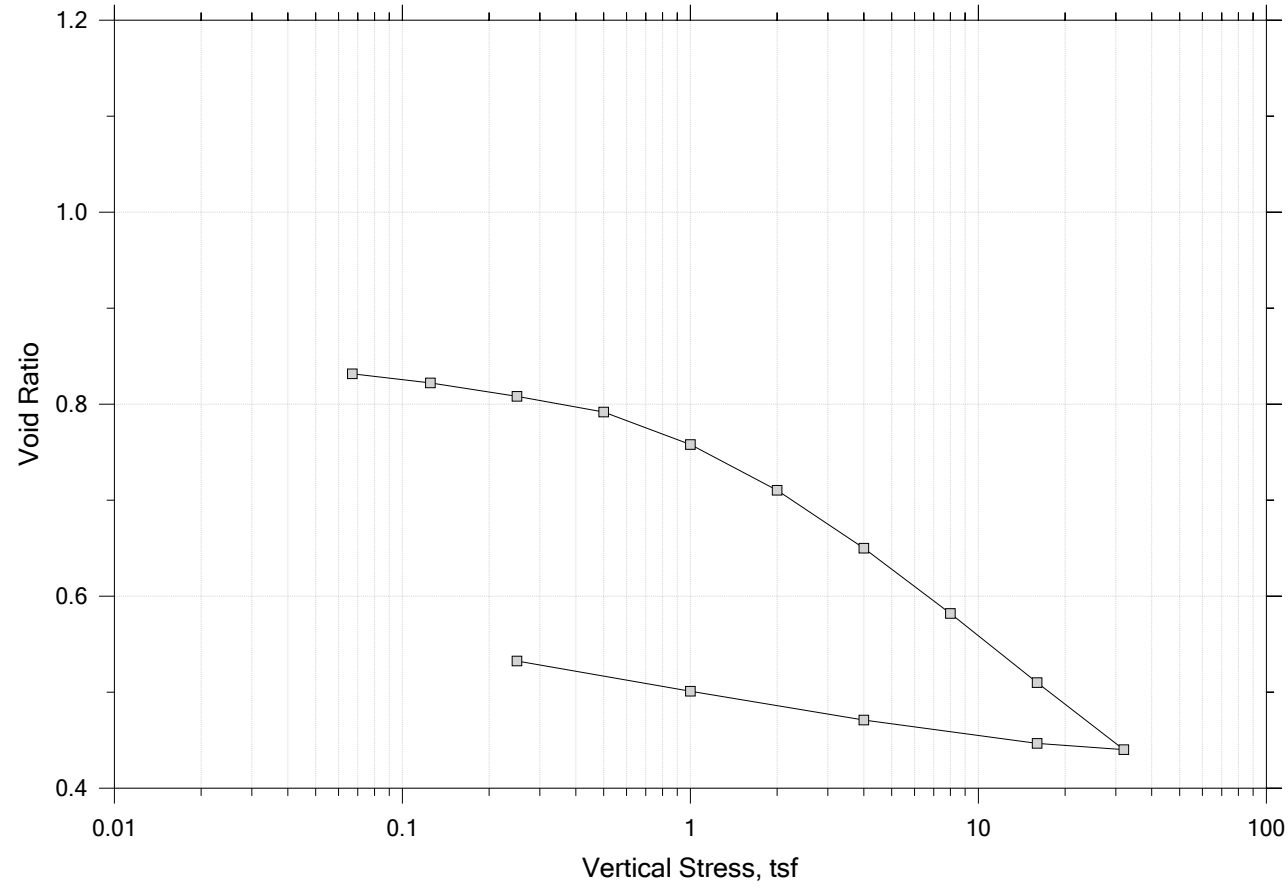
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.25
Preconsolidation Pressure, σ'_p (tsf) = 2.36
Compression Index, C_c = 0.22
Recompression Index, C_r = 0.035

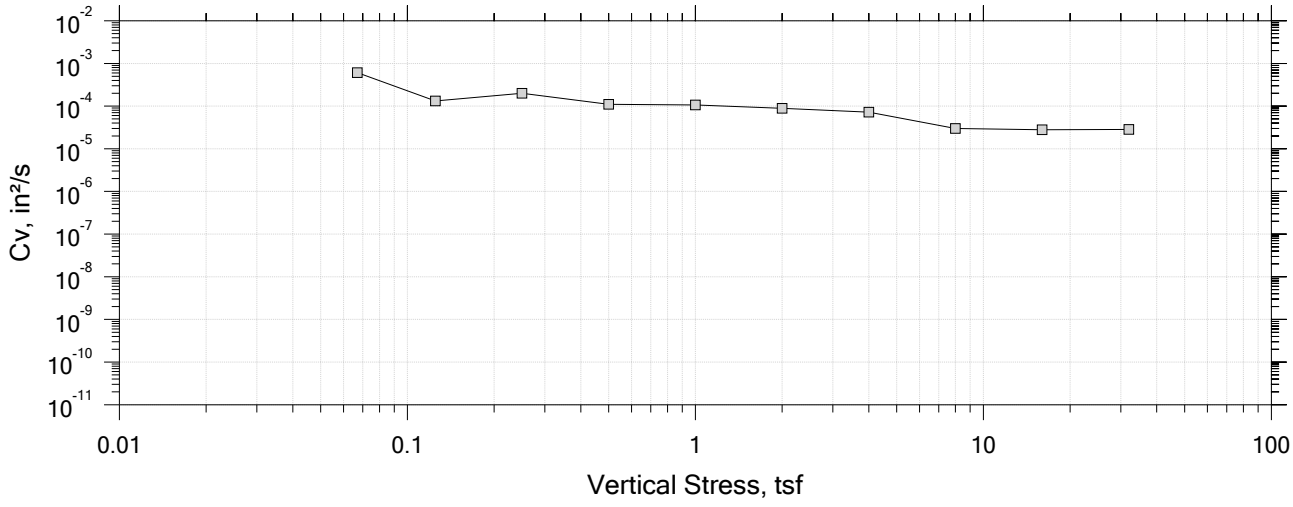




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

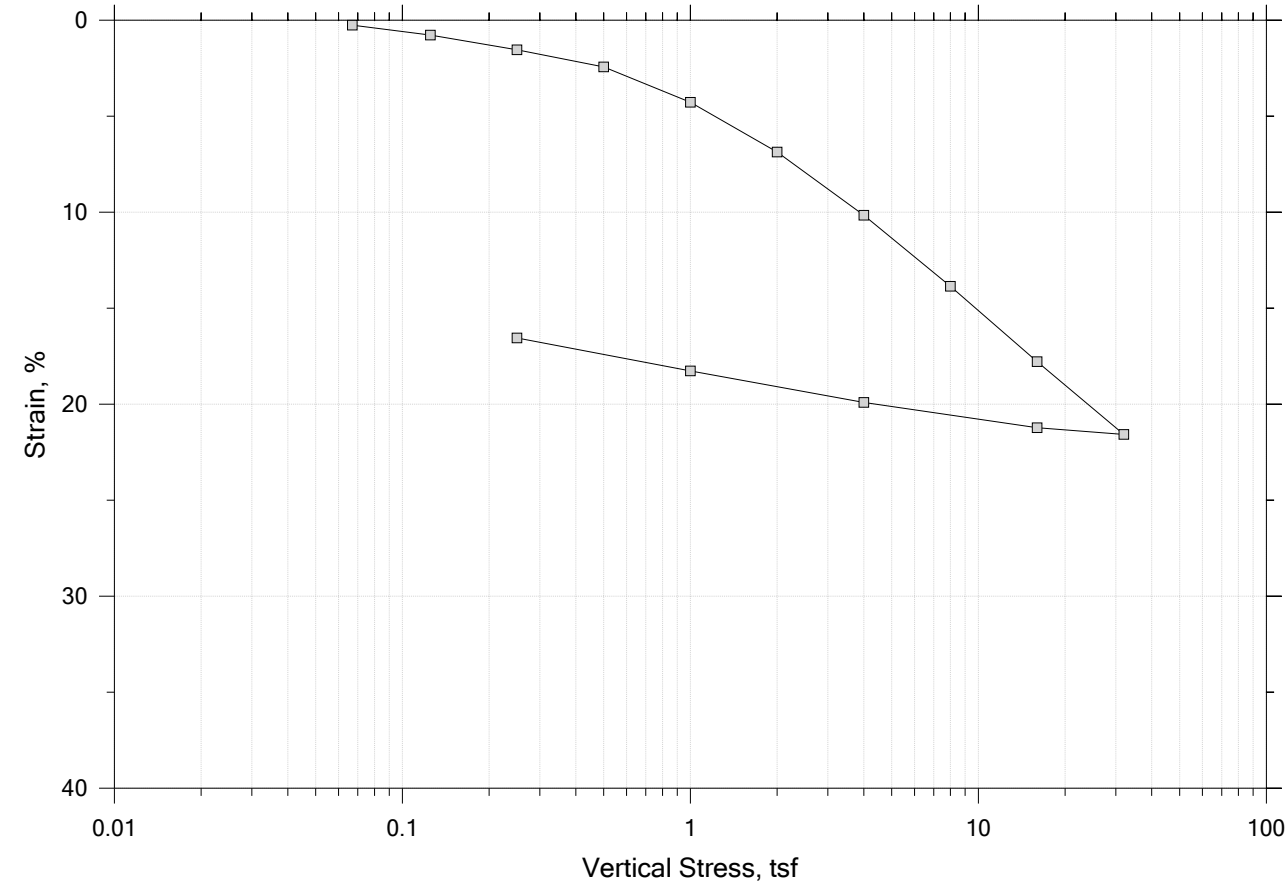


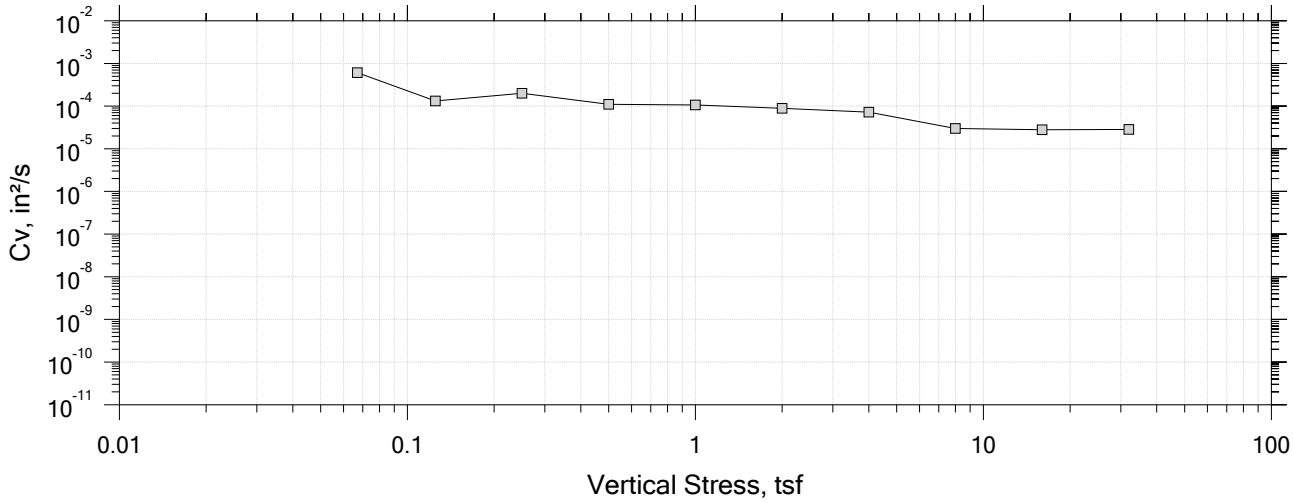


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

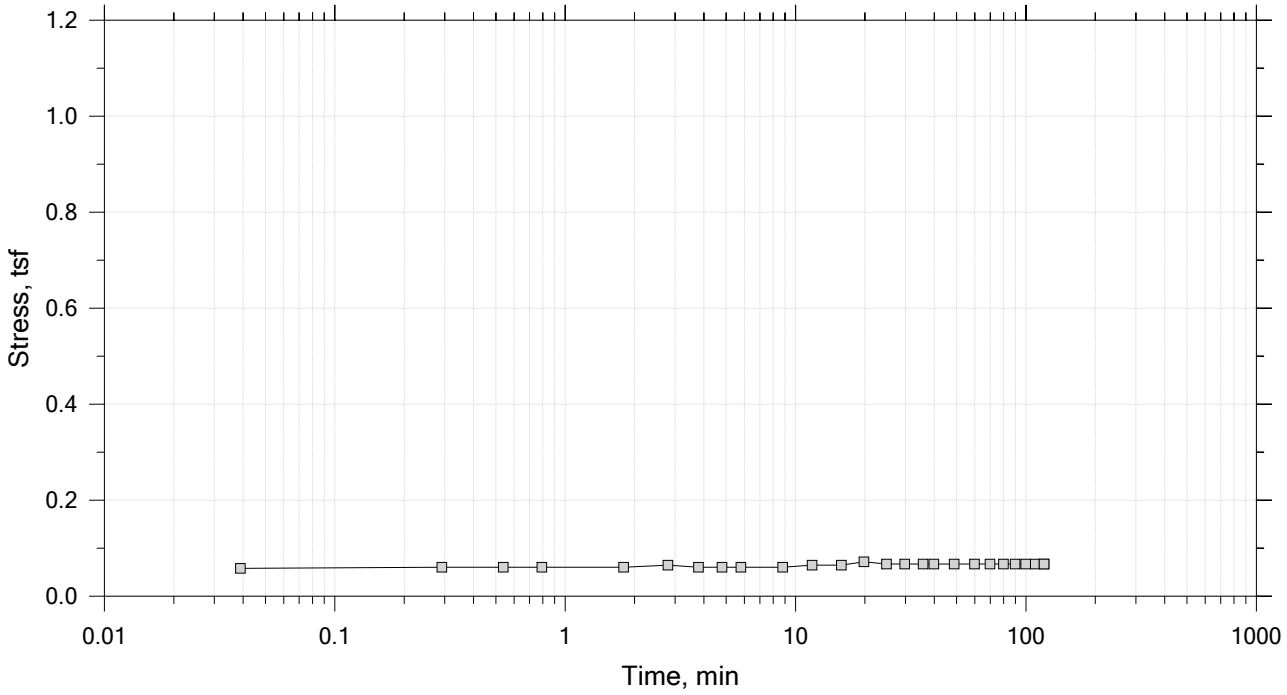


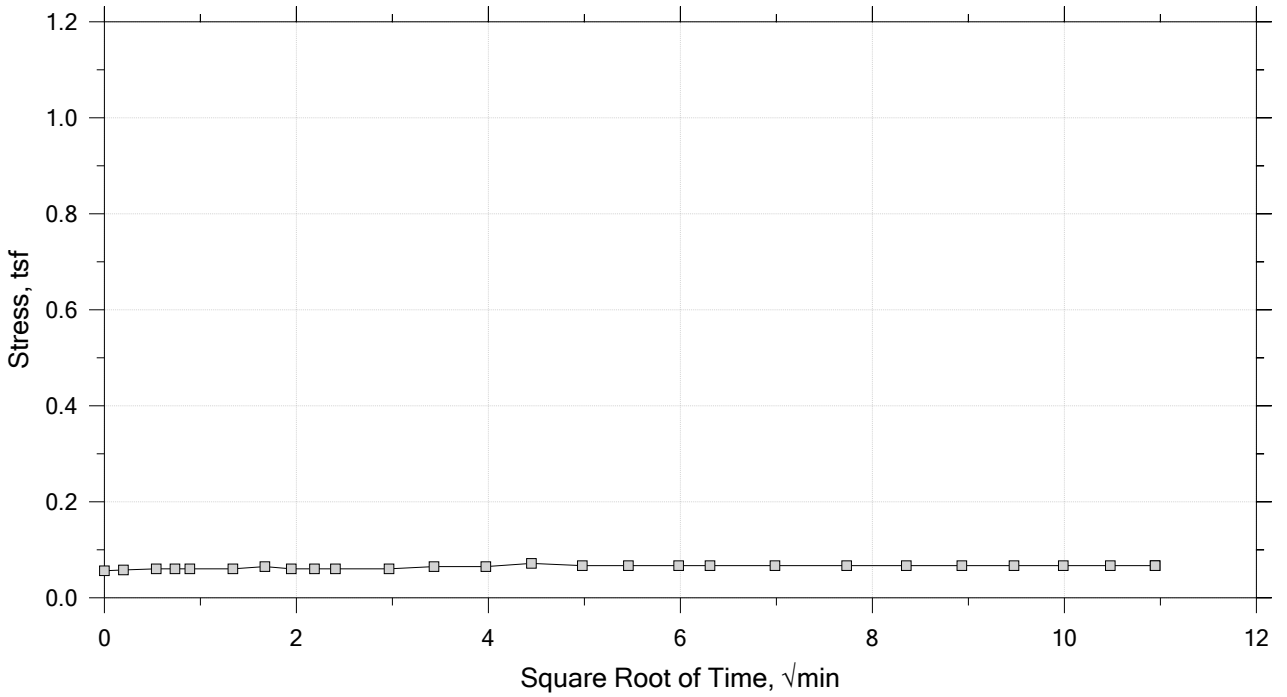


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.067 tsf

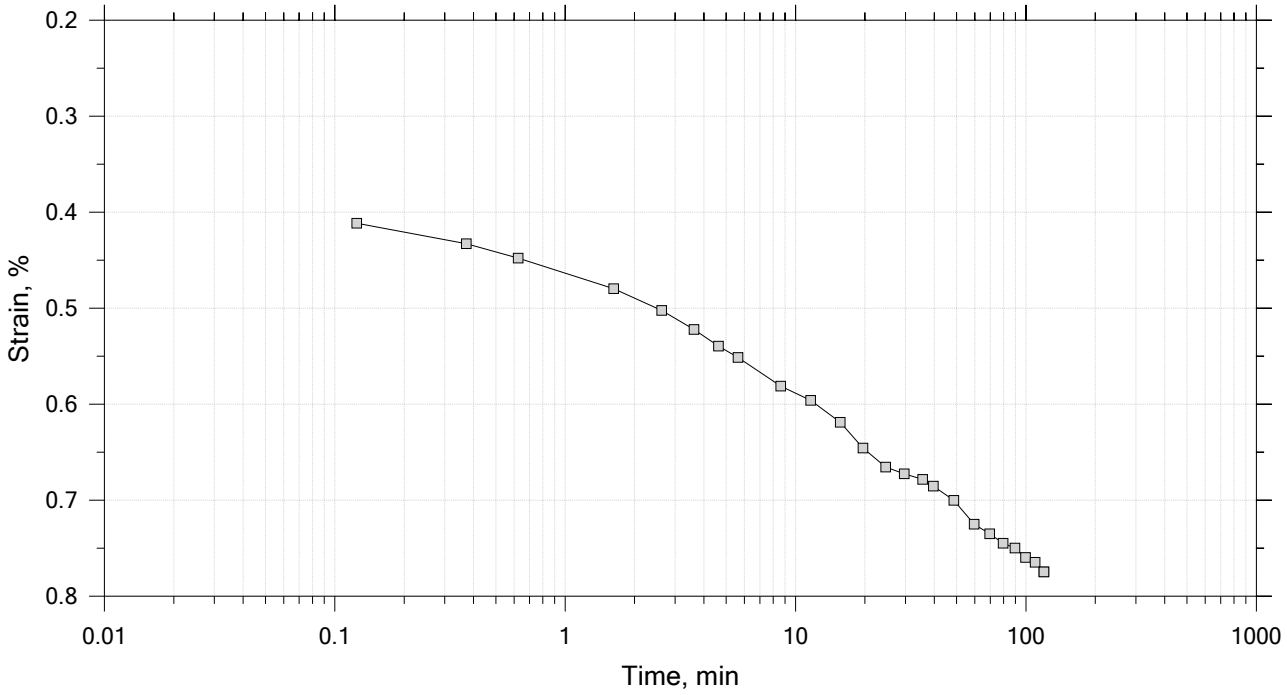


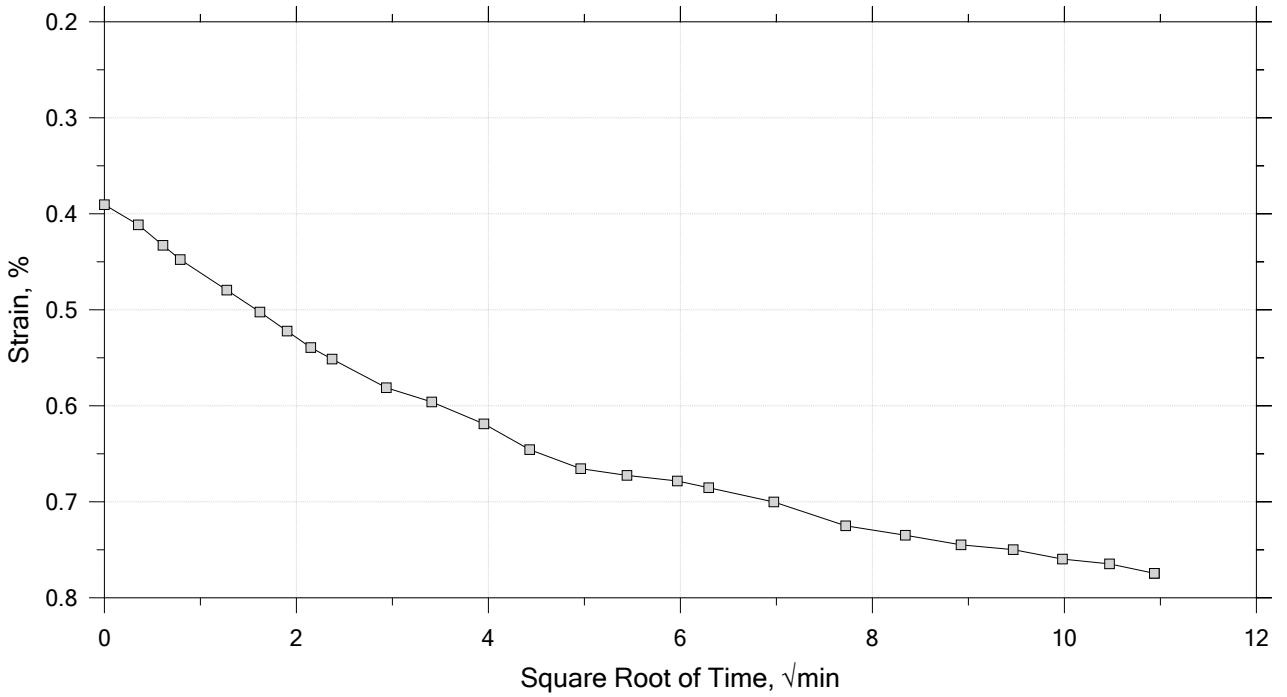


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

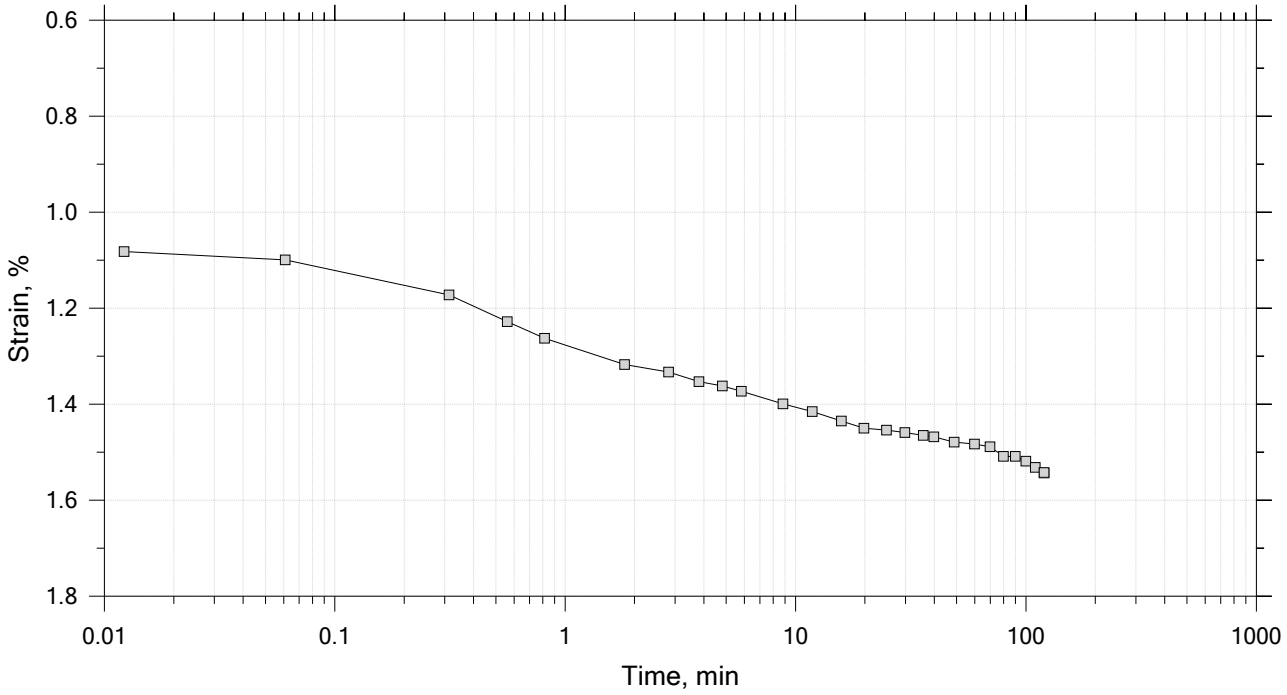


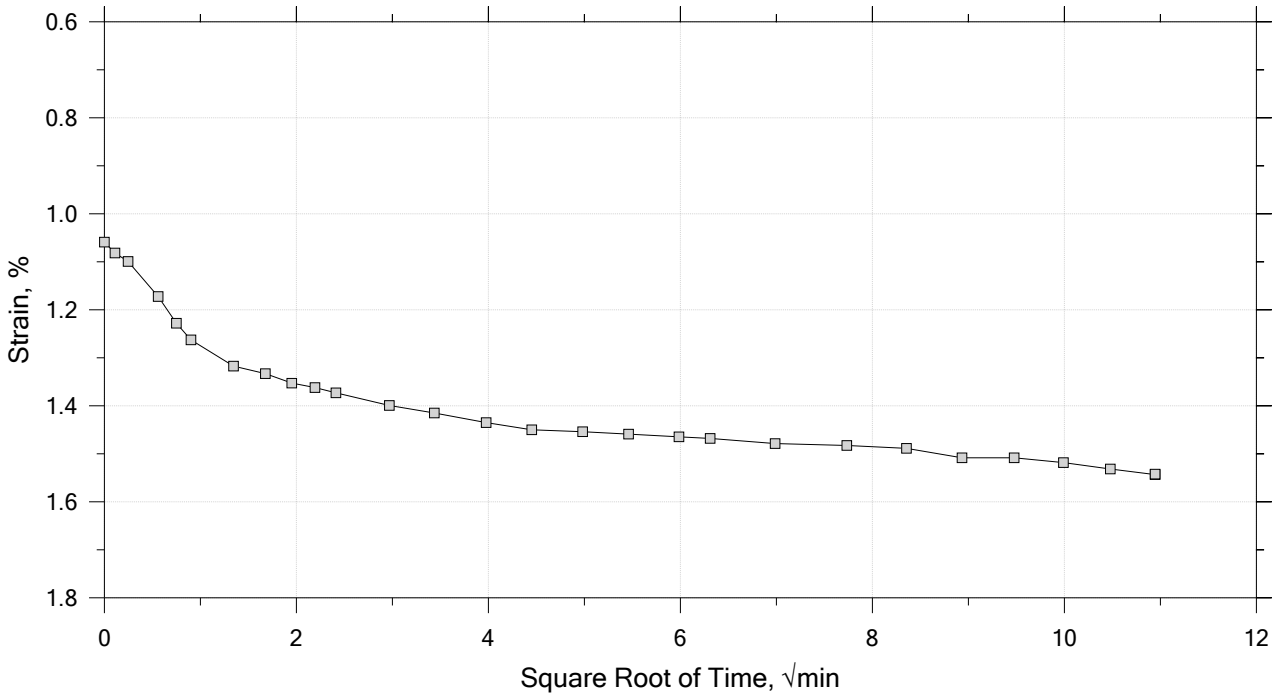


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

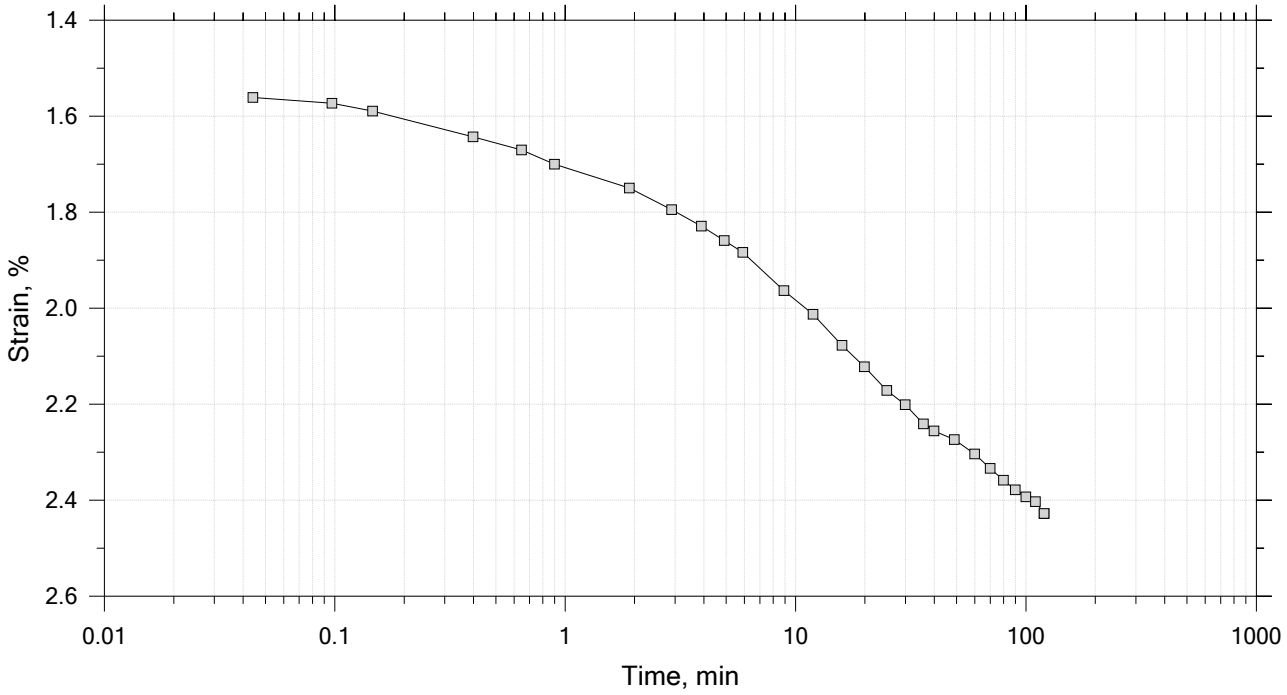


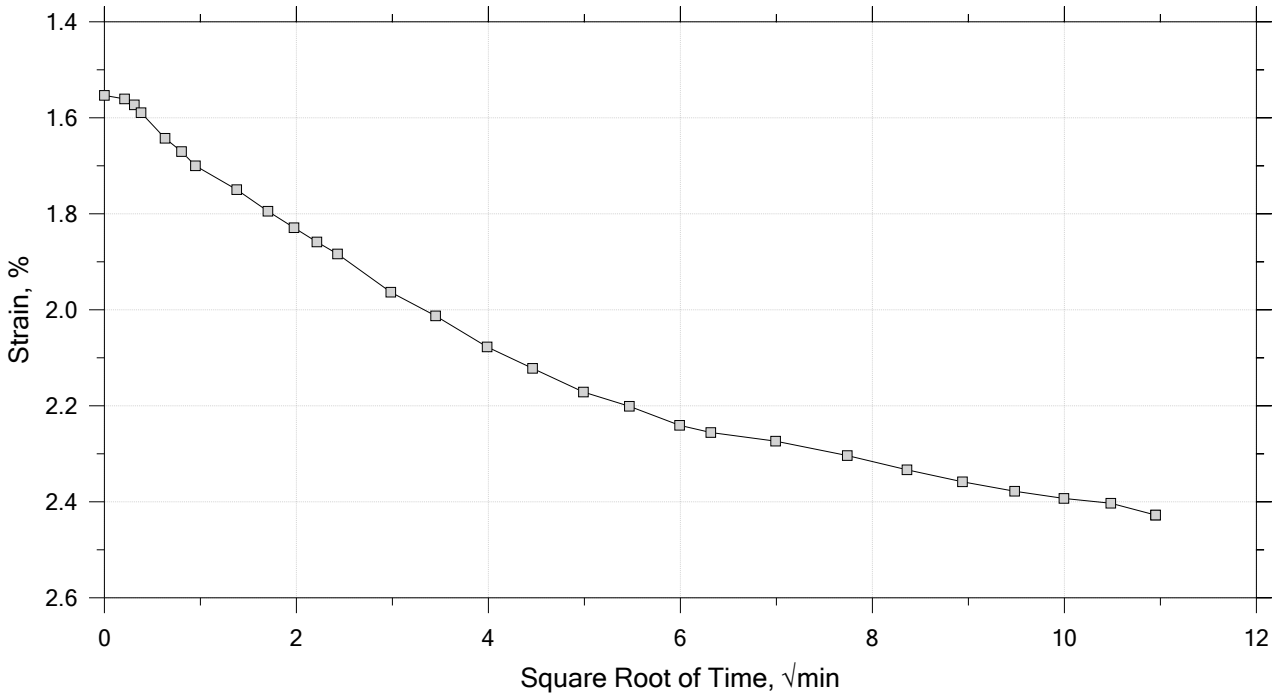


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf

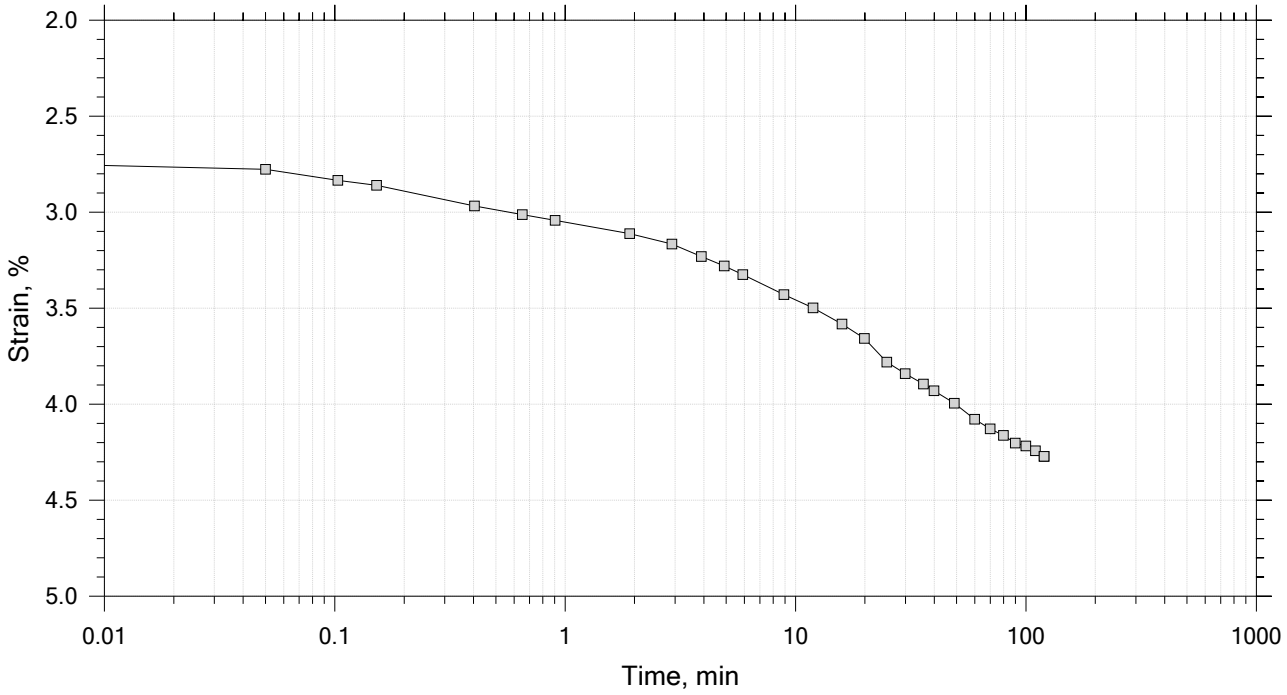


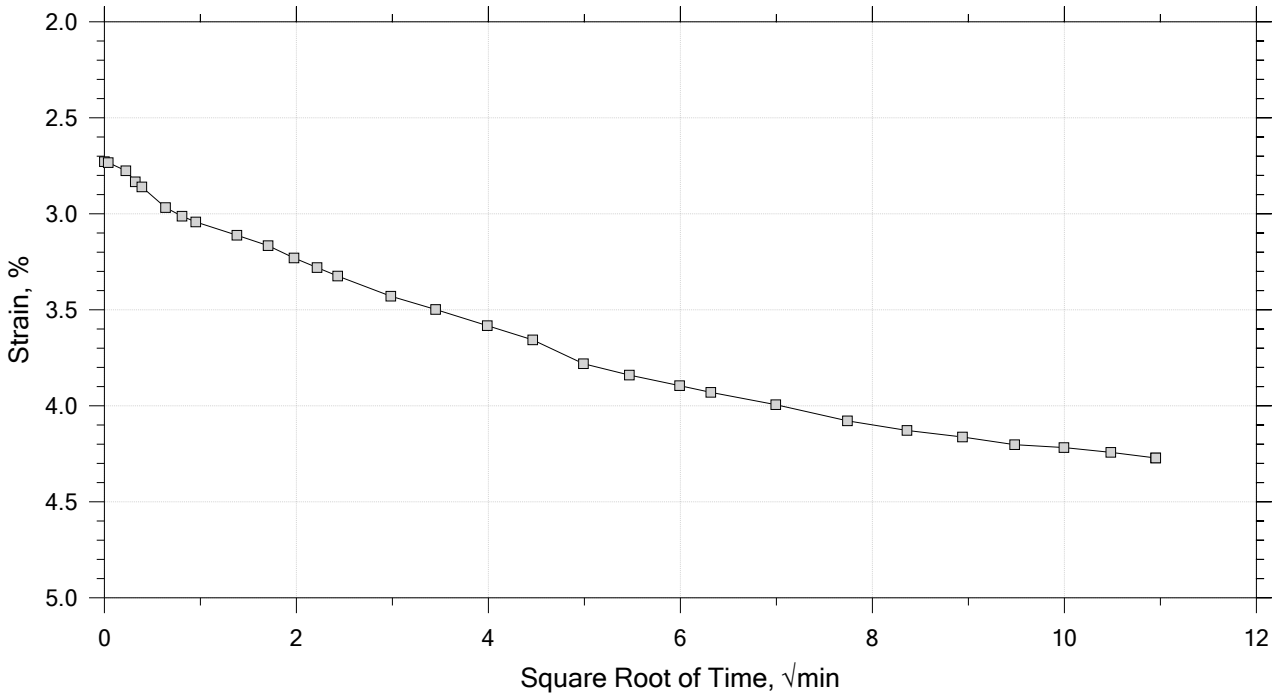


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





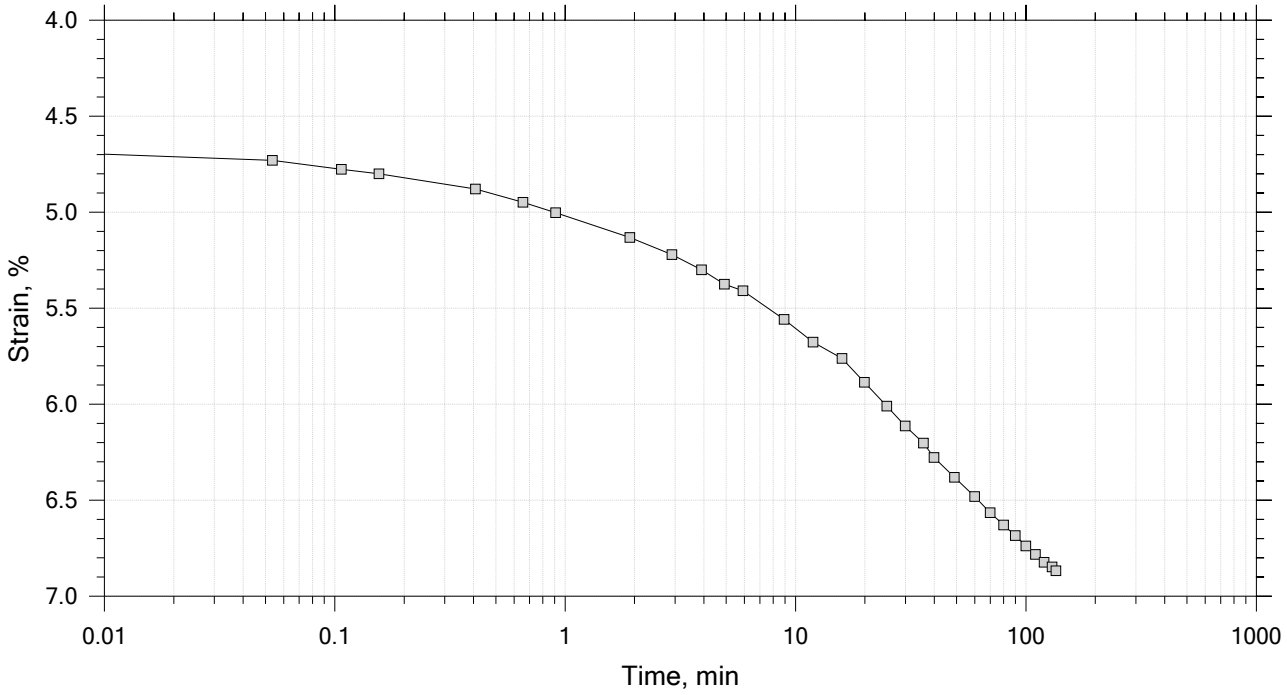
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

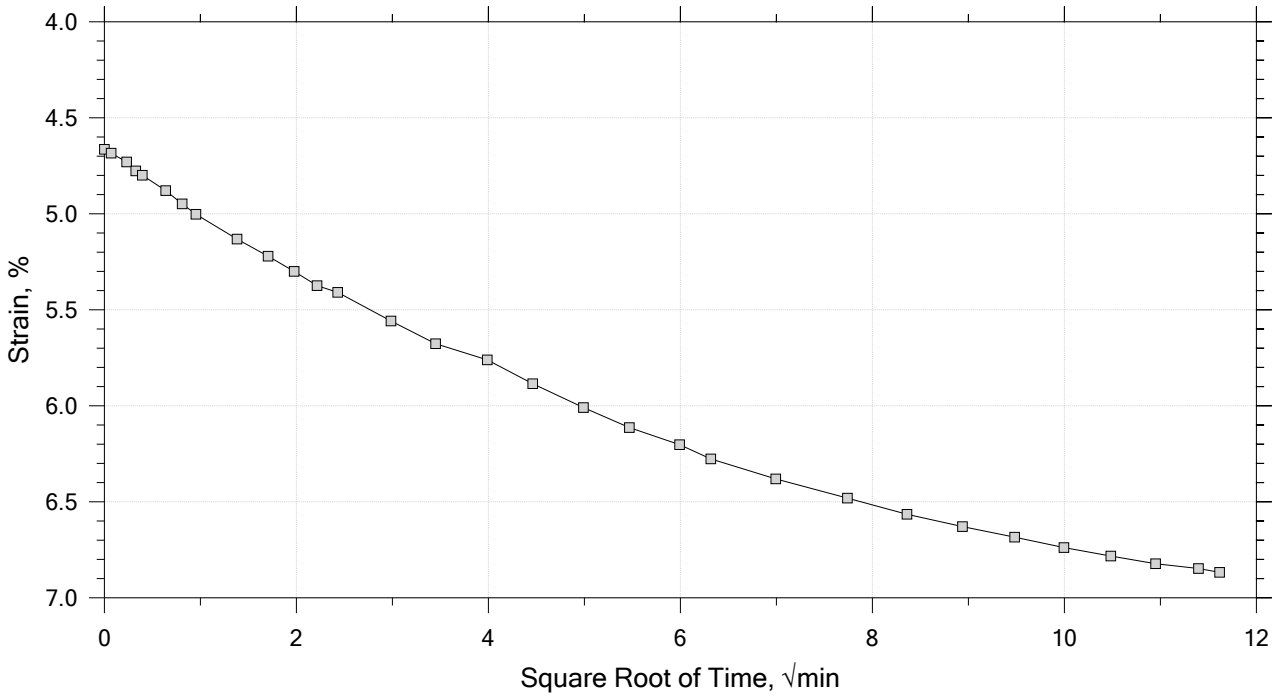
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





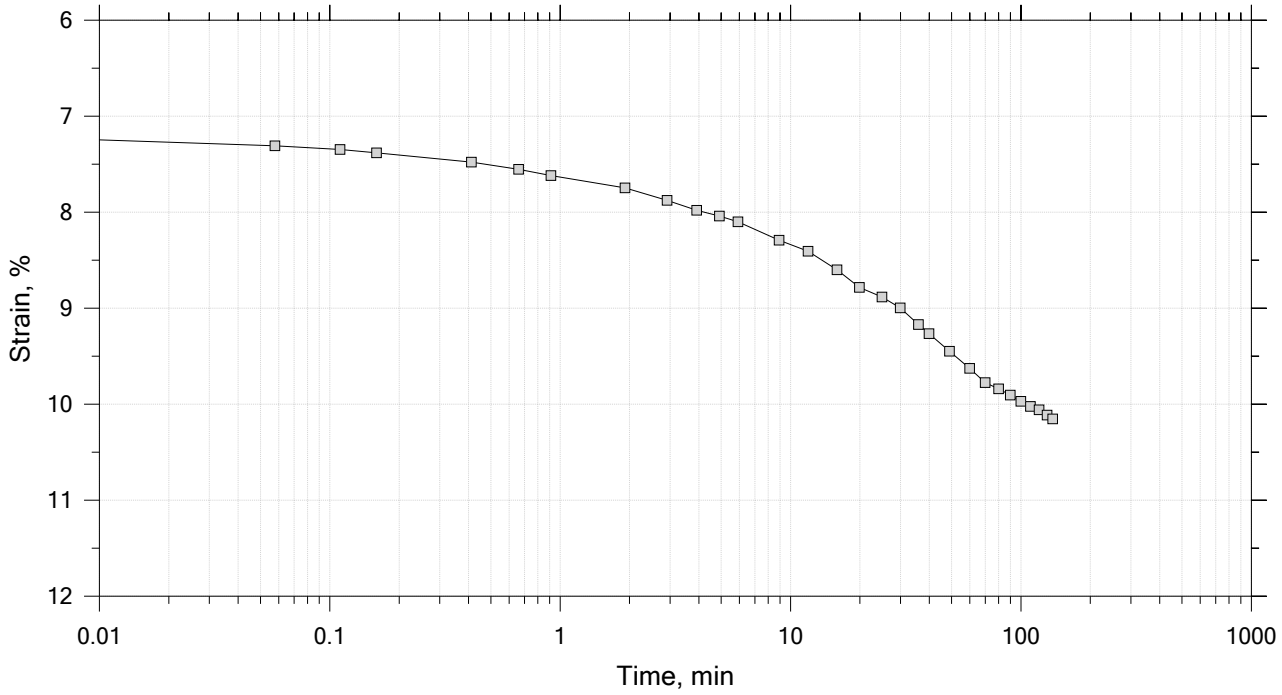
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
Test No.: IP-9	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

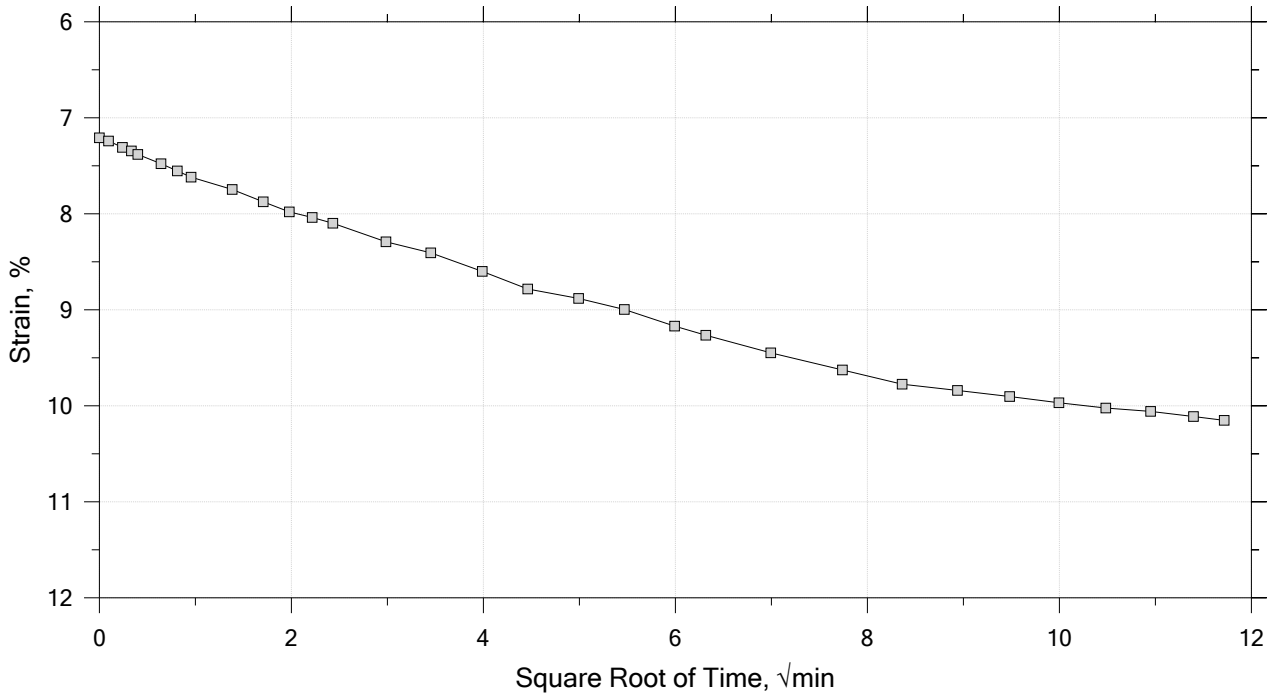
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





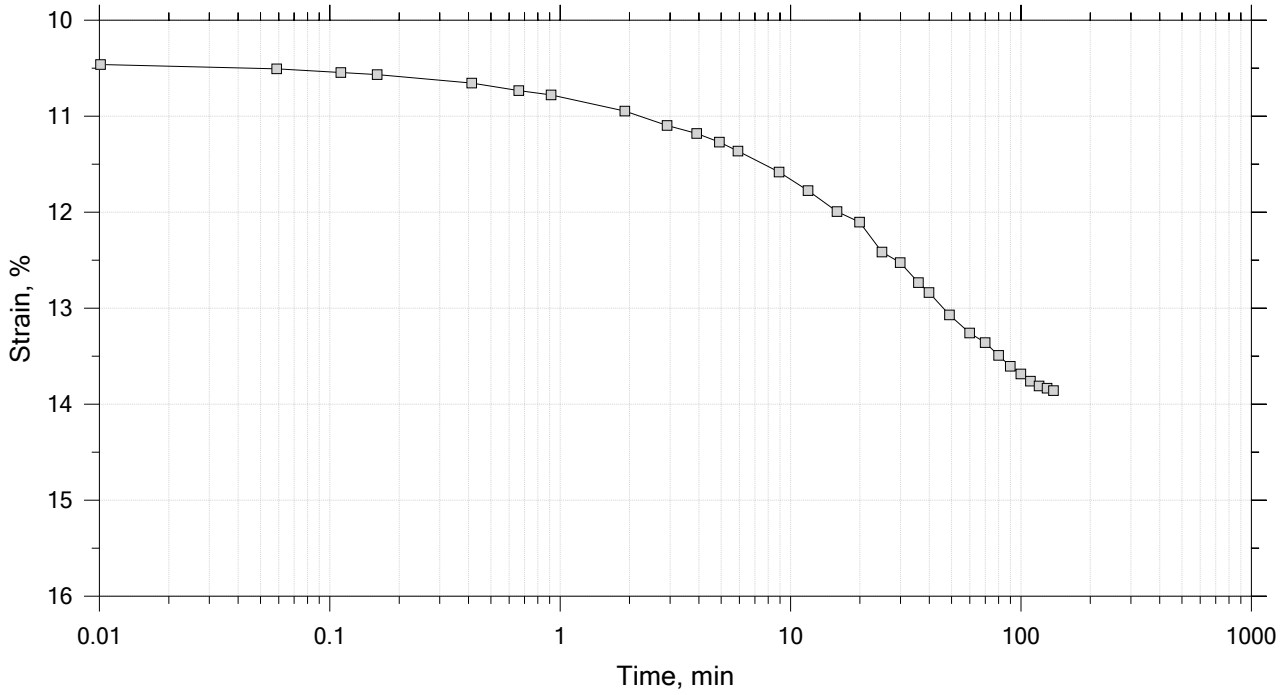
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

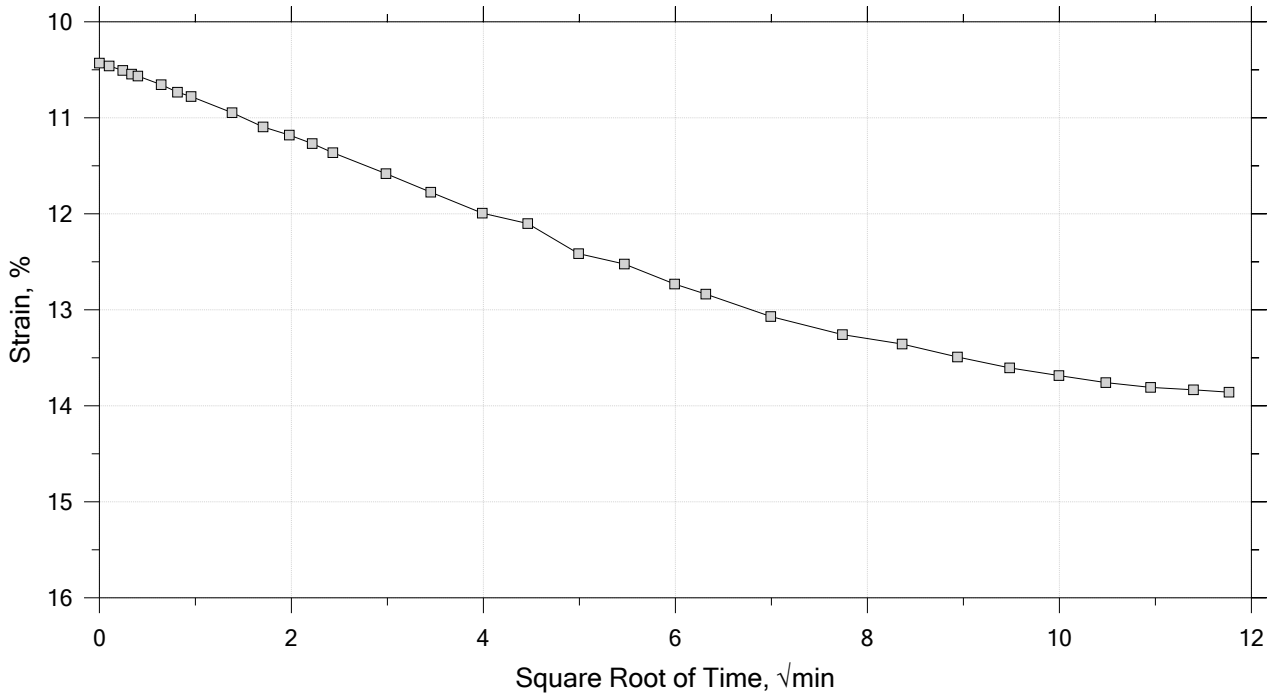
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

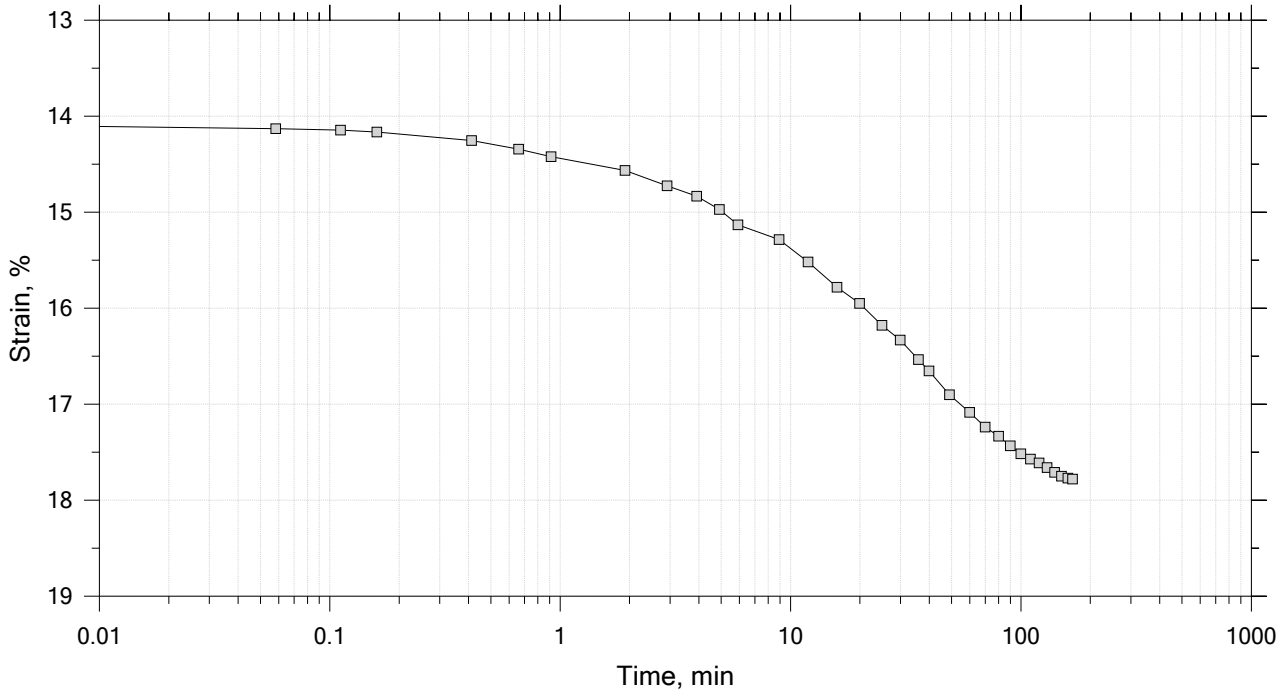


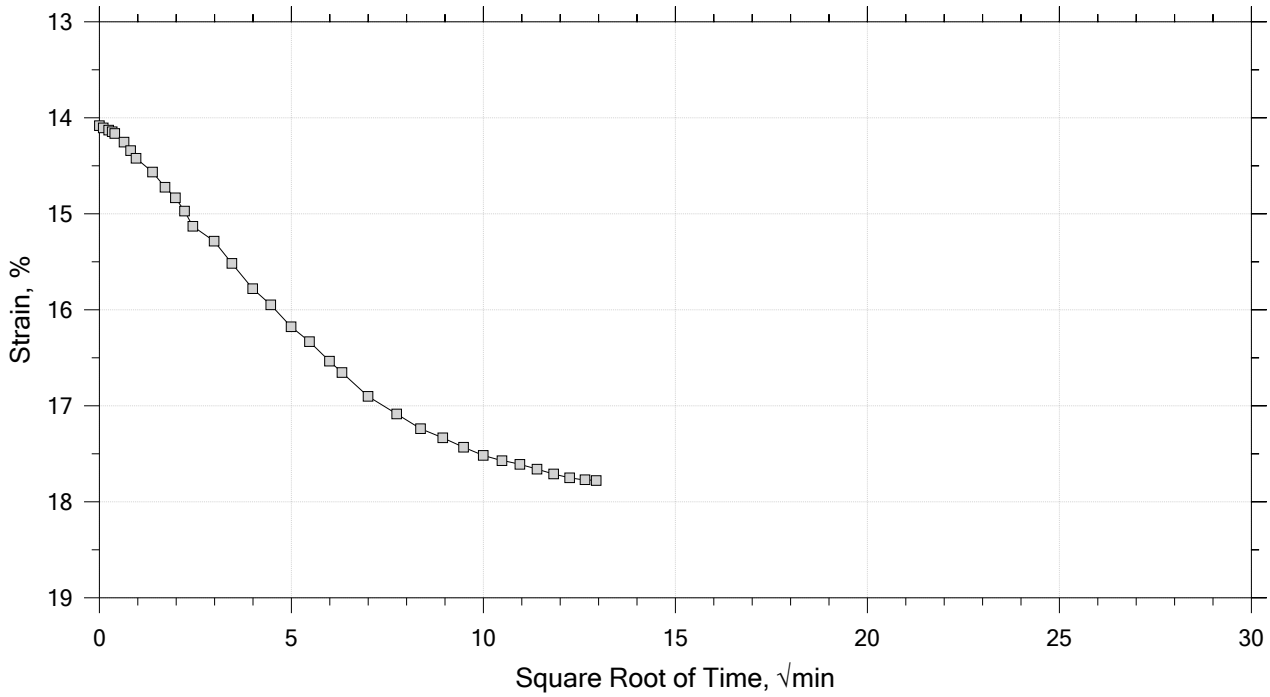


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

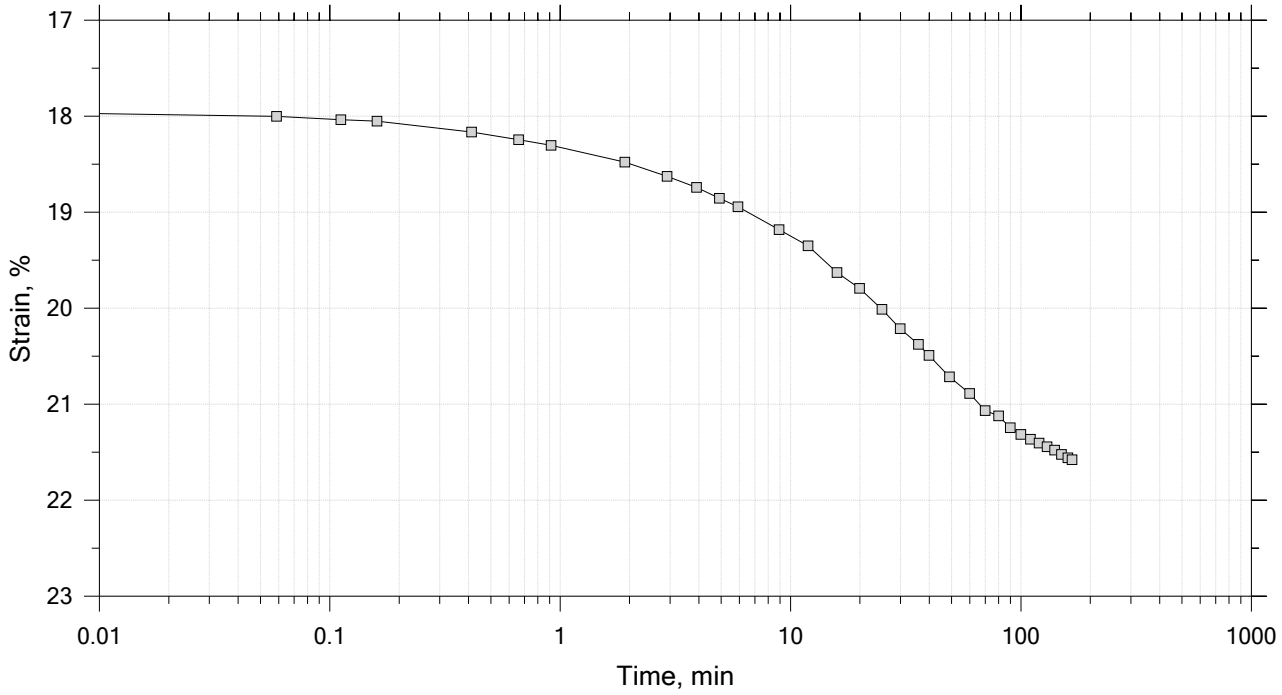


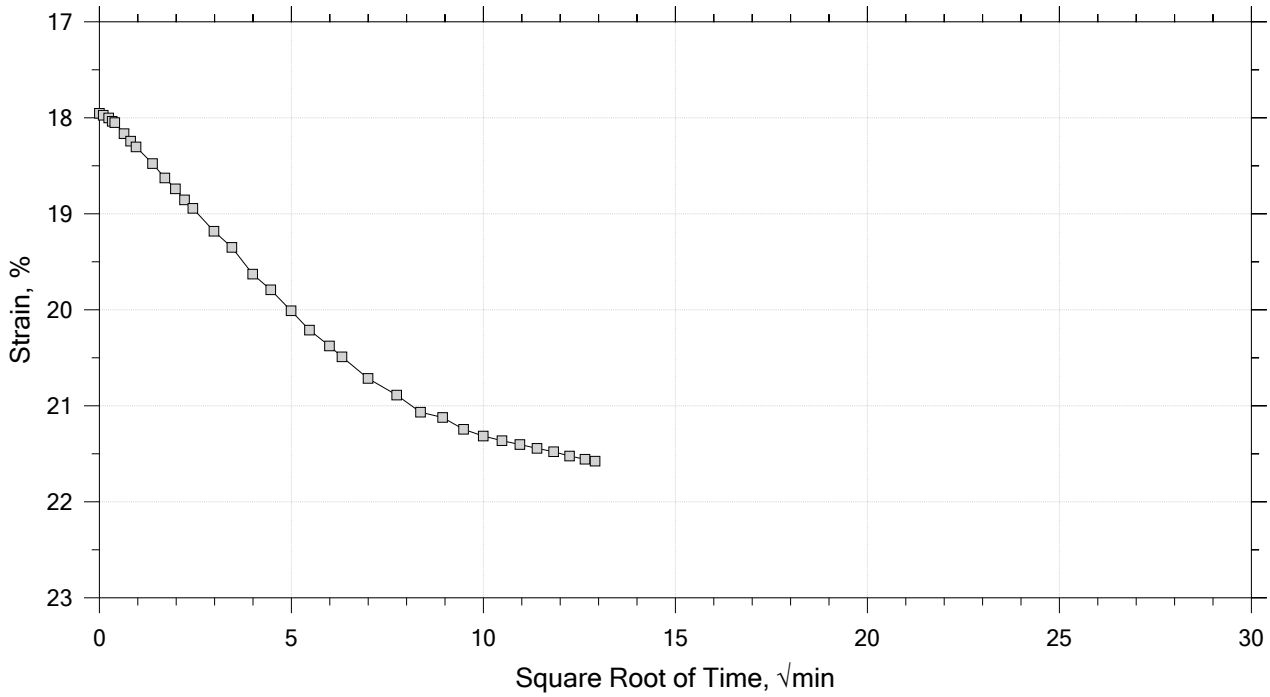


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

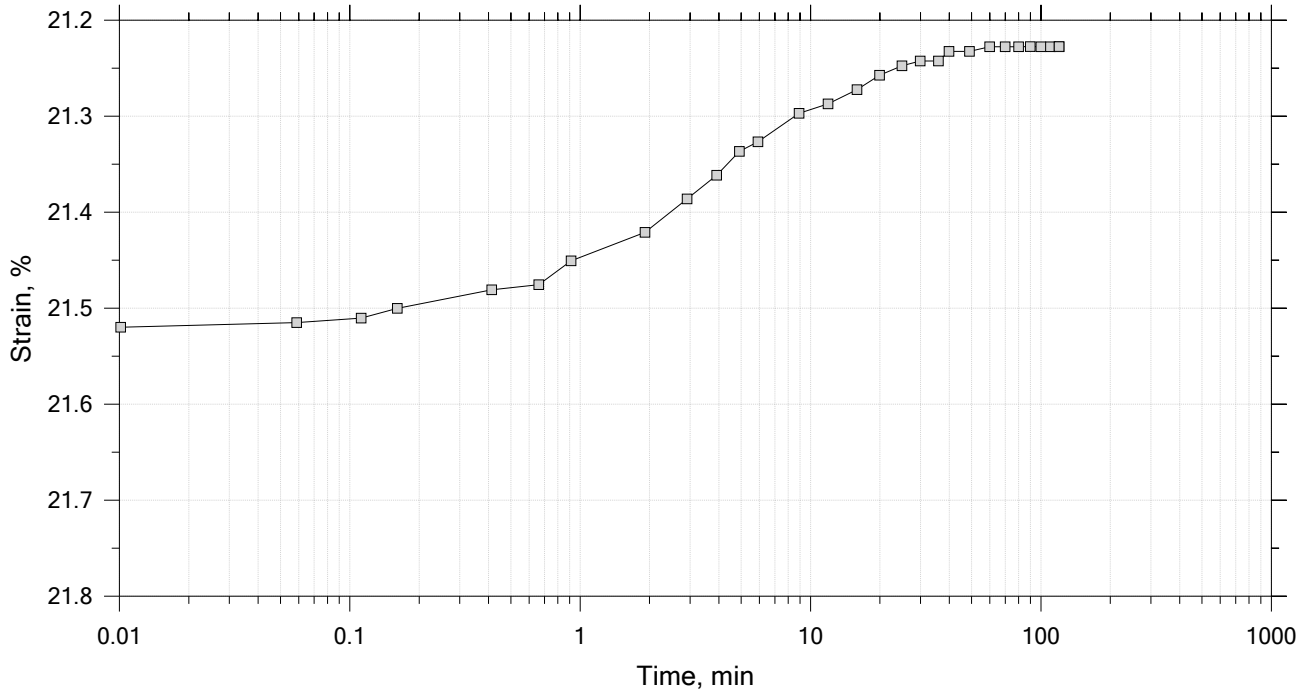


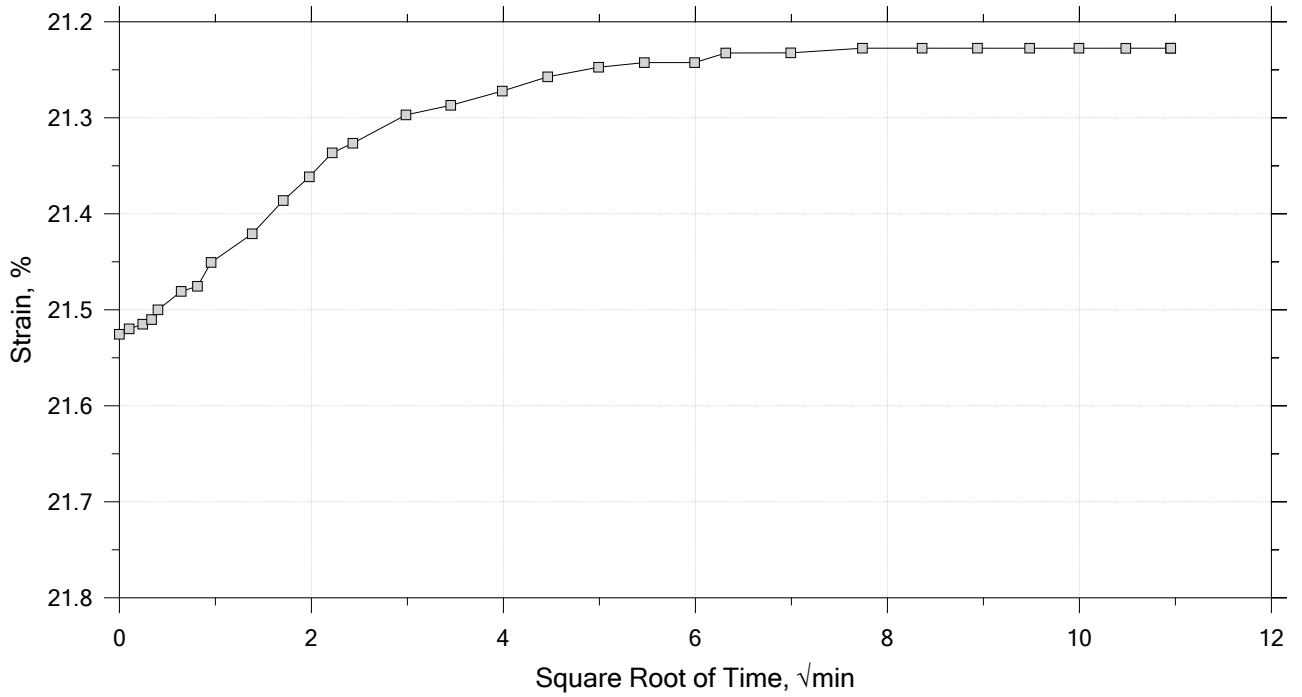


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

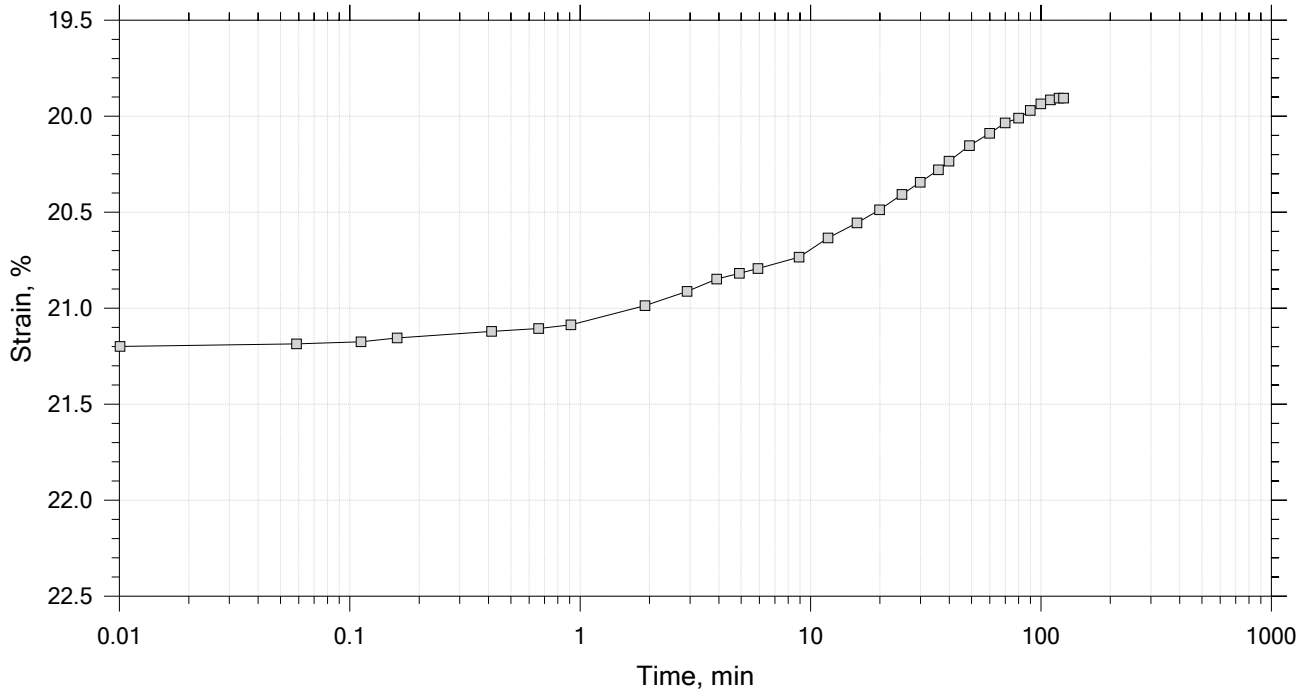


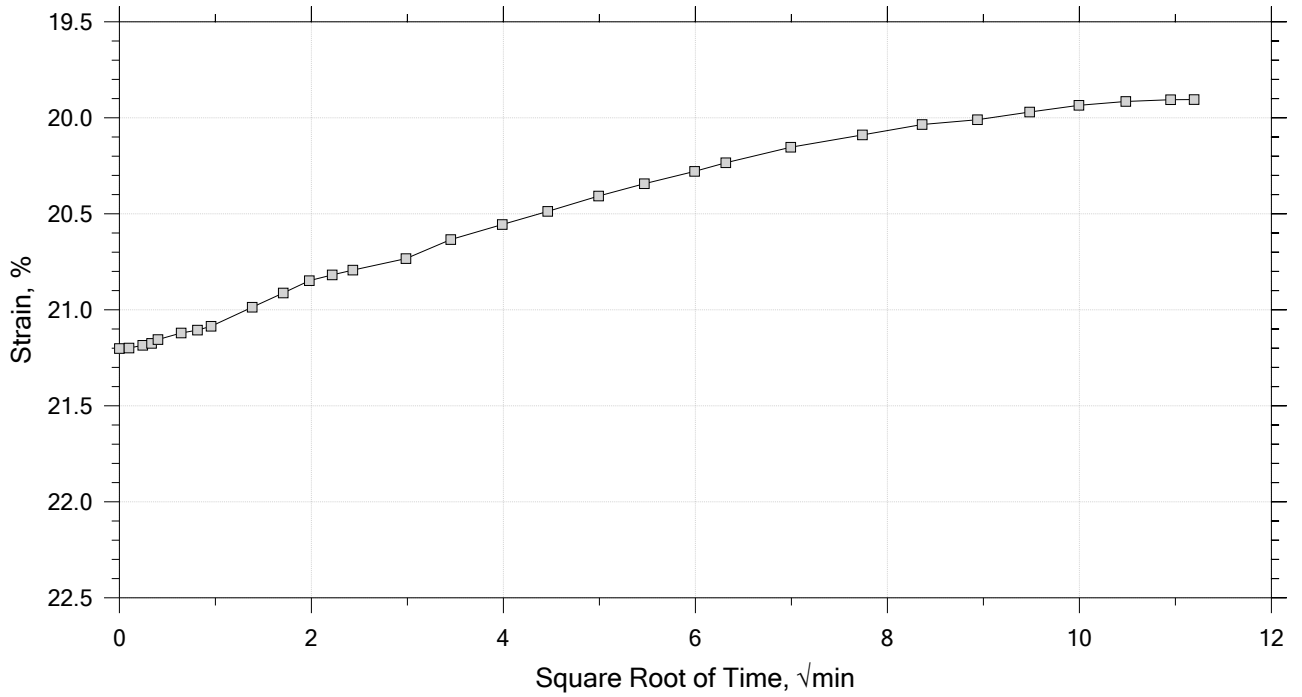


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





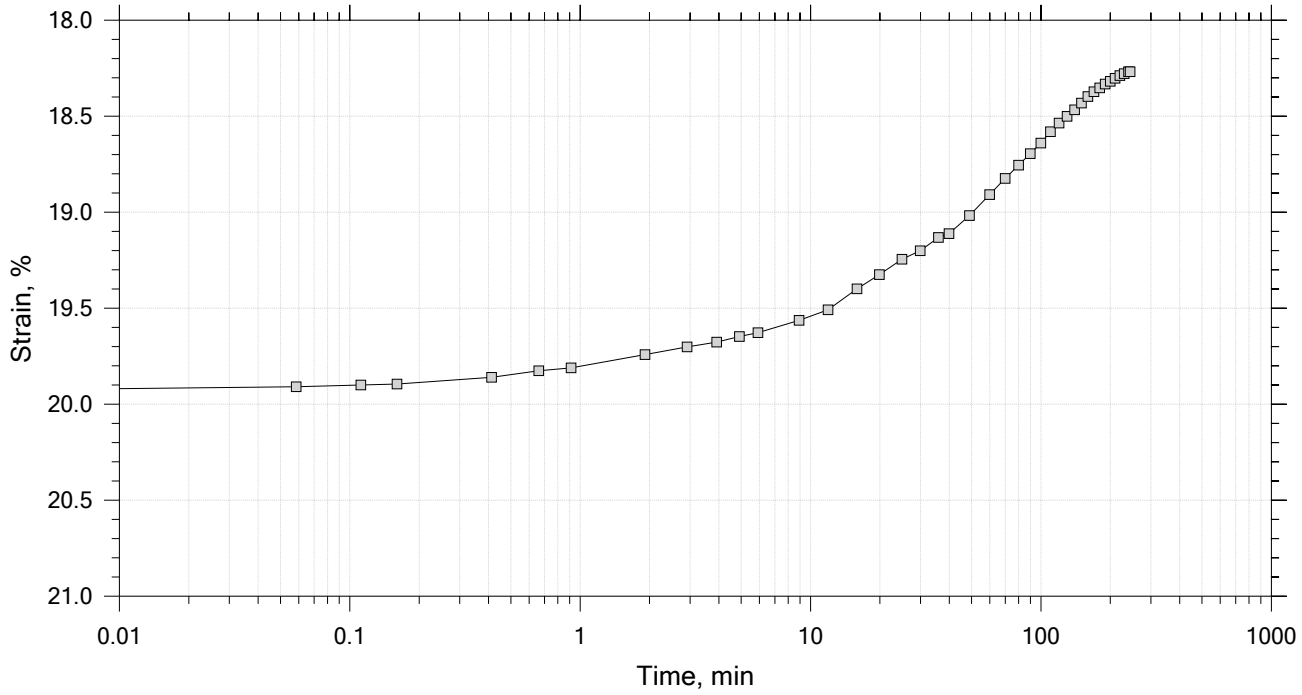
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

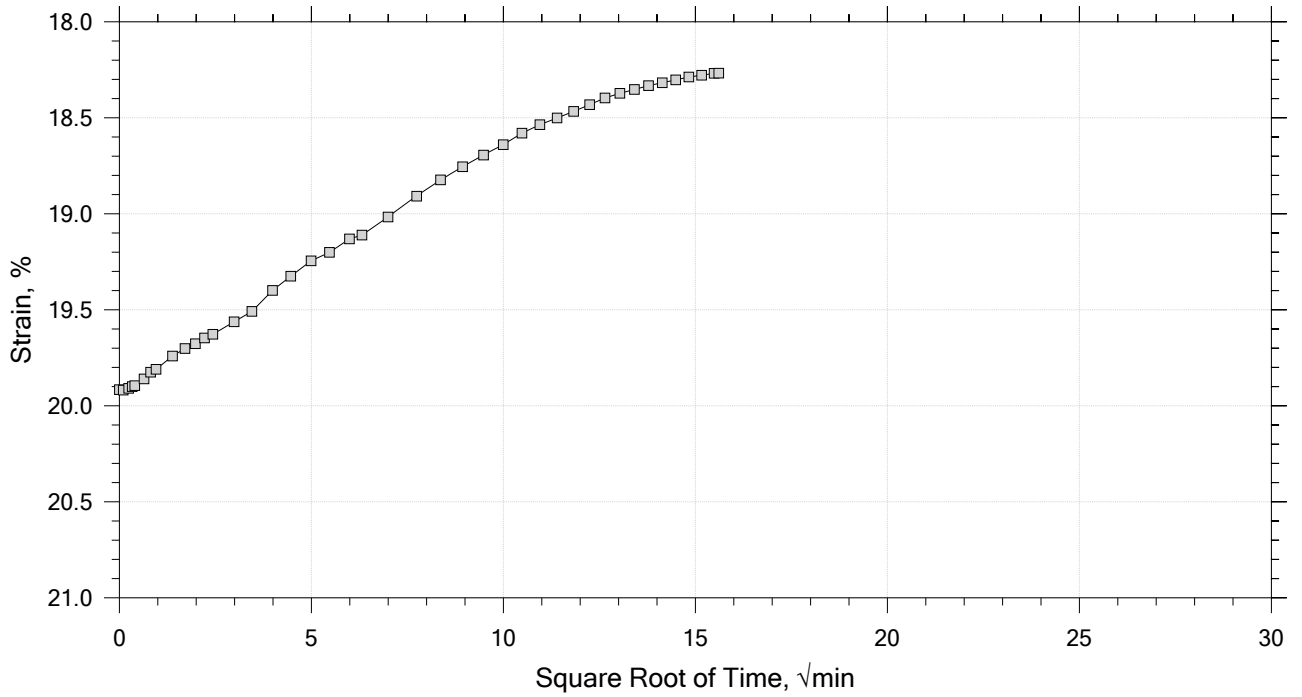
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

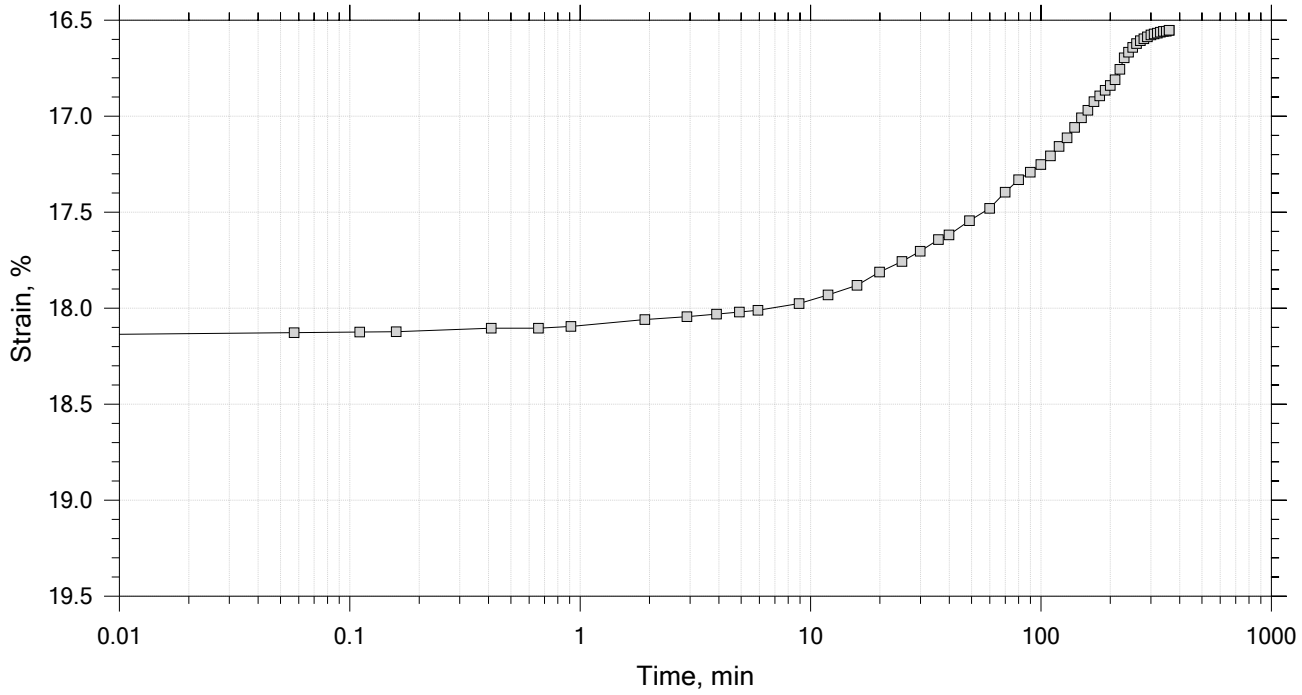


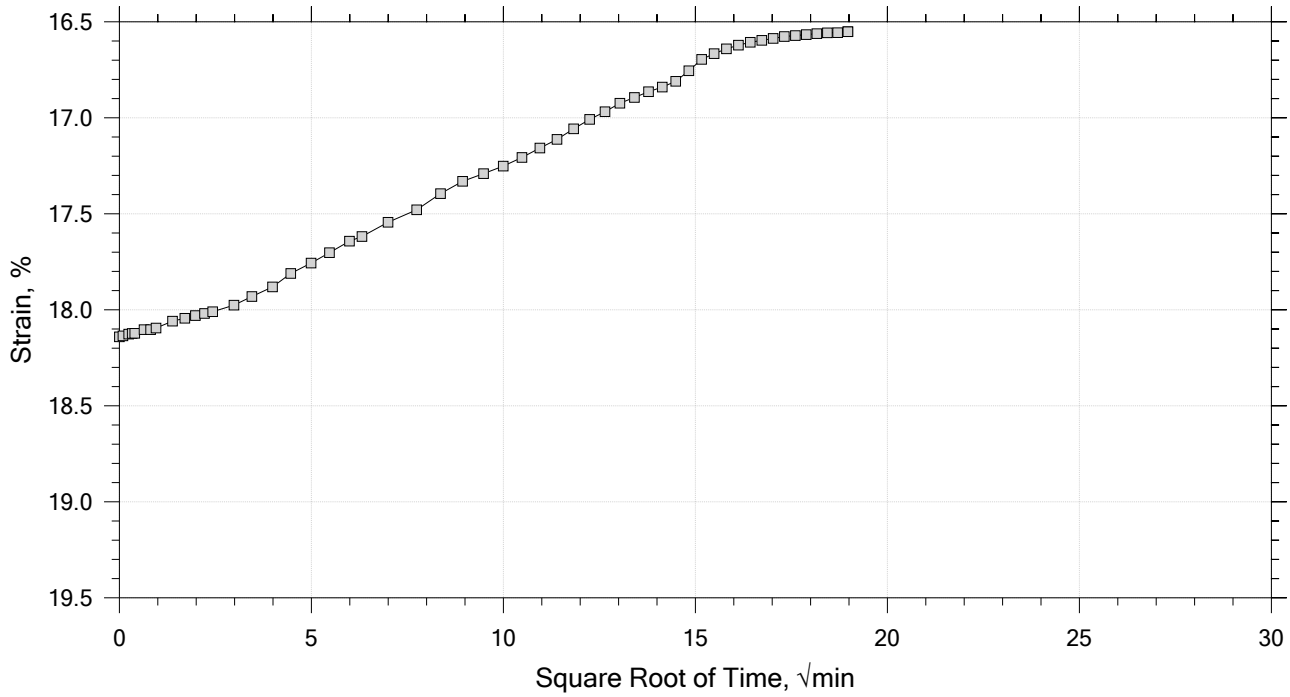


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
Test No.: IP-9	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.79	Liquid Limit: 31
Initial Height: 1.00 in	Initial Void Ratio: 0.836	Plastic Limit: 16
Final Height: 0.83 in	Final Void Ratio: 0.532	Plasticity Index: 15

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-2782	RING		E4527
Mass Container, gm	8.5	111.35	111.35	8.31
Mass Container + Wet Soil, gm	284.31	268.24	256.89	153.25
Mass Container + Dry Soil, gm	223.35	233.6	233.6	130.06
Mass Dry Soil, gm	214.85	122.25	122.25	121.75
Water Content, %	28.37	28.33	19.05	19.05
Void Ratio	---	0.84	0.53	---
Degree of Saturation, %	---	94.53	100.00	---
Dry Unit Weight, pcf	---	94.879	113.76	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

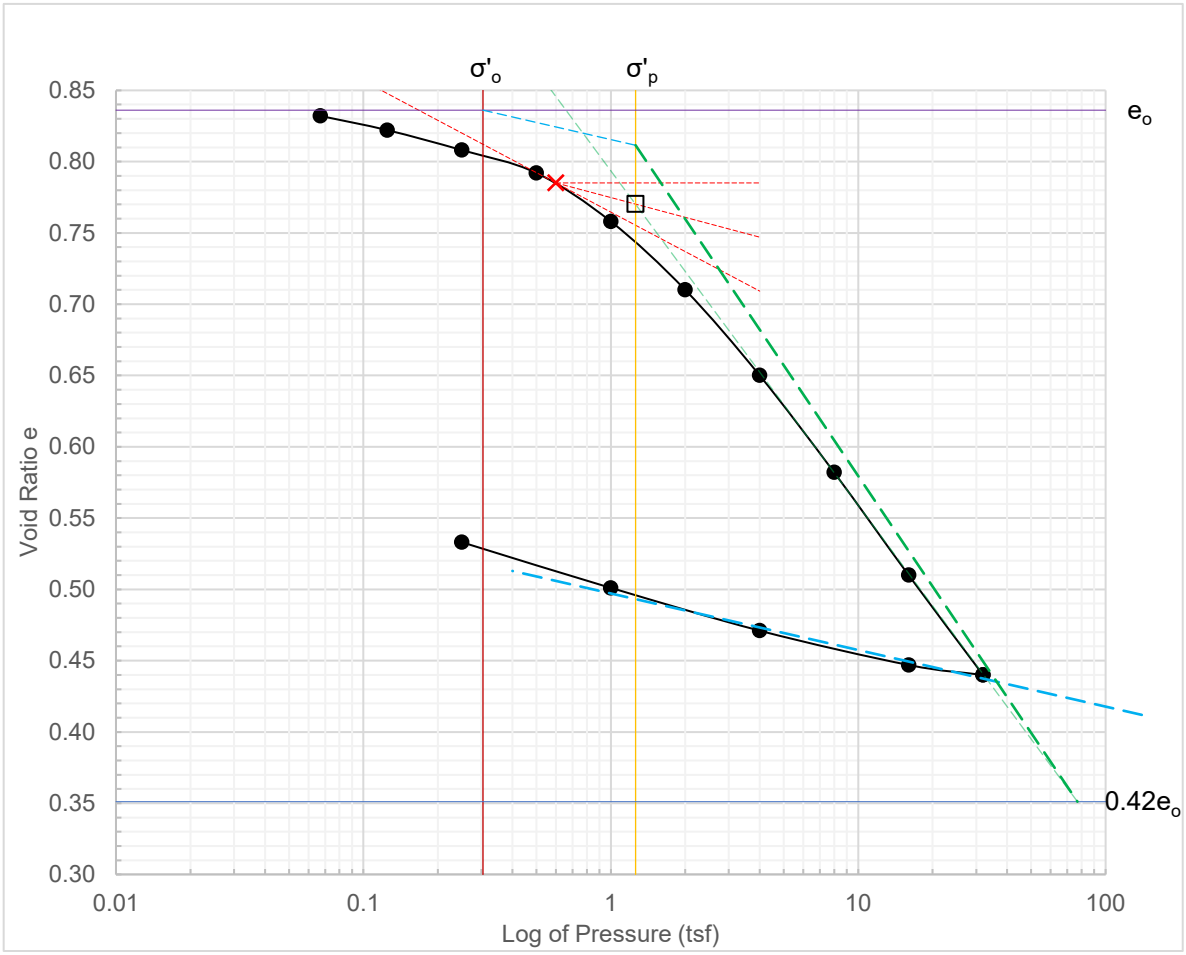
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0670	0.002586	0.832	0.259	5.791	6.09e-04	3.86e-02	4.40e-04
2	0.125	0.007746	0.822	0.775	26.393	1.32e-04	8.90e-02	2.21e-04
3	0.250	0.01542	0.808	1.54	17.203	2.01e-04	6.14e-02	2.31e-04
4	0.500	0.02428	0.792	2.43	30.711	1.11e-04	3.54e-02	7.33e-05
5	1.00	0.04272	0.758	4.27	30.938	1.07e-04	3.69e-02	7.37e-05
6	2.00	0.06868	0.710	6.87	35.618	8.85e-05	2.60e-02	4.30e-05
7	4.00	0.1015	0.650	10.2	41.033	7.21e-05	1.64e-02	2.22e-05
8	8.00	0.1386	0.582	13.9	91.486	2.99e-05	9.27e-03	5.19e-06
9	16.0	0.1778	0.510	17.8	89.439	2.80e-05	4.90e-03	2.57e-06
10	32.0	0.2158	0.440	21.6	80.017	2.85e-05	2.37e-03	1.27e-06
11	16.0	0.2123	0.447	21.2	13.810	1.58e-04	2.19e-04	6.48e-07
12	4.00	0.1991	0.471	19.9	77.565	2.87e-05	1.10e-03	5.93e-07
13	1.00	0.1827	0.501	18.3	202.833	1.14e-05	5.46e-03	1.17e-06
14	0.250	0.1655	0.533	16.6	273.844	8.80e-06	2.29e-02	3.77e-06

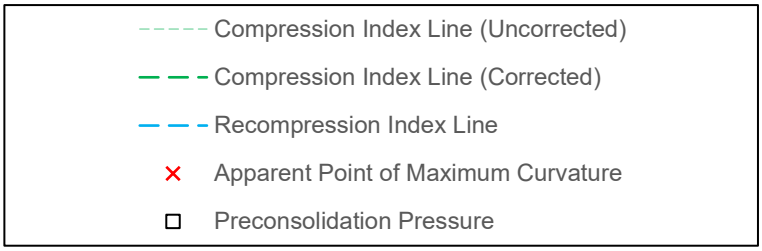
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 5.0-5.2
	Test No.: IP-9	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

Boring: B-4.12

Depth: 5.0'-5.2'

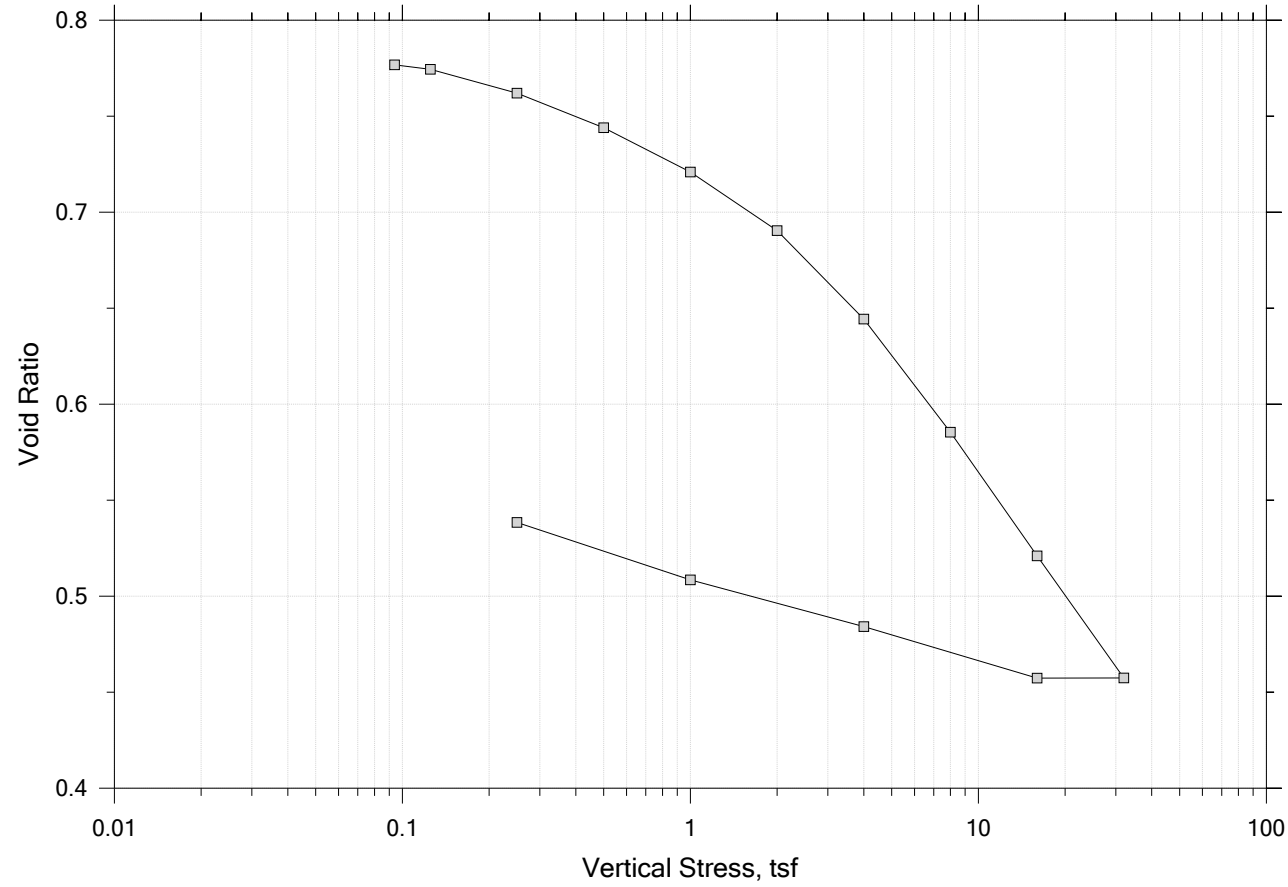
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.30
Preconsolidation Pressure, σ'_p (tsf) = 1.26
Compression Index, C_c = 0.26
Recompression Index, C_r = 0.040

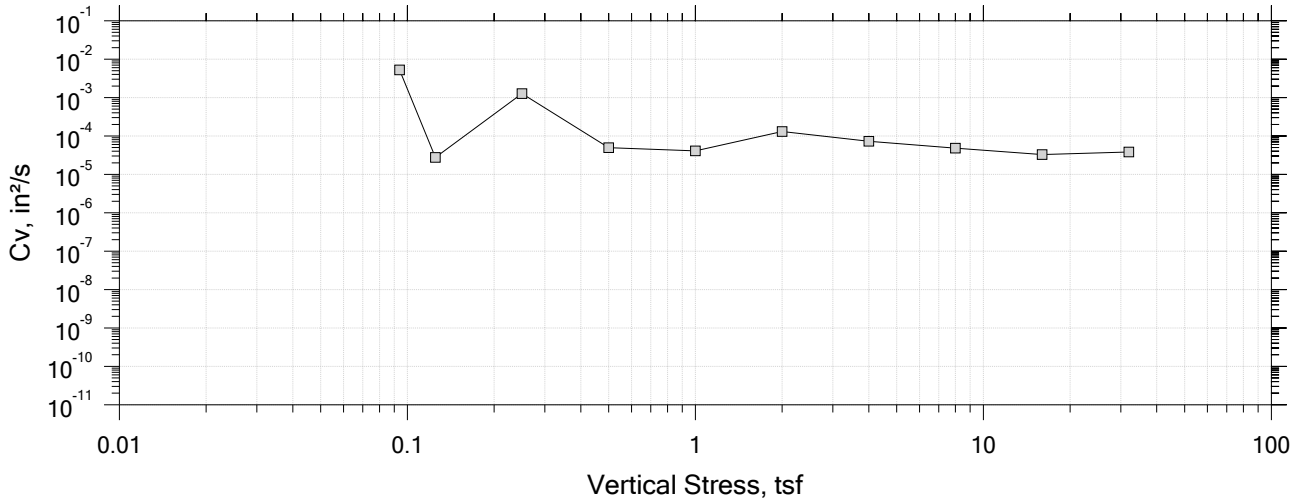




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

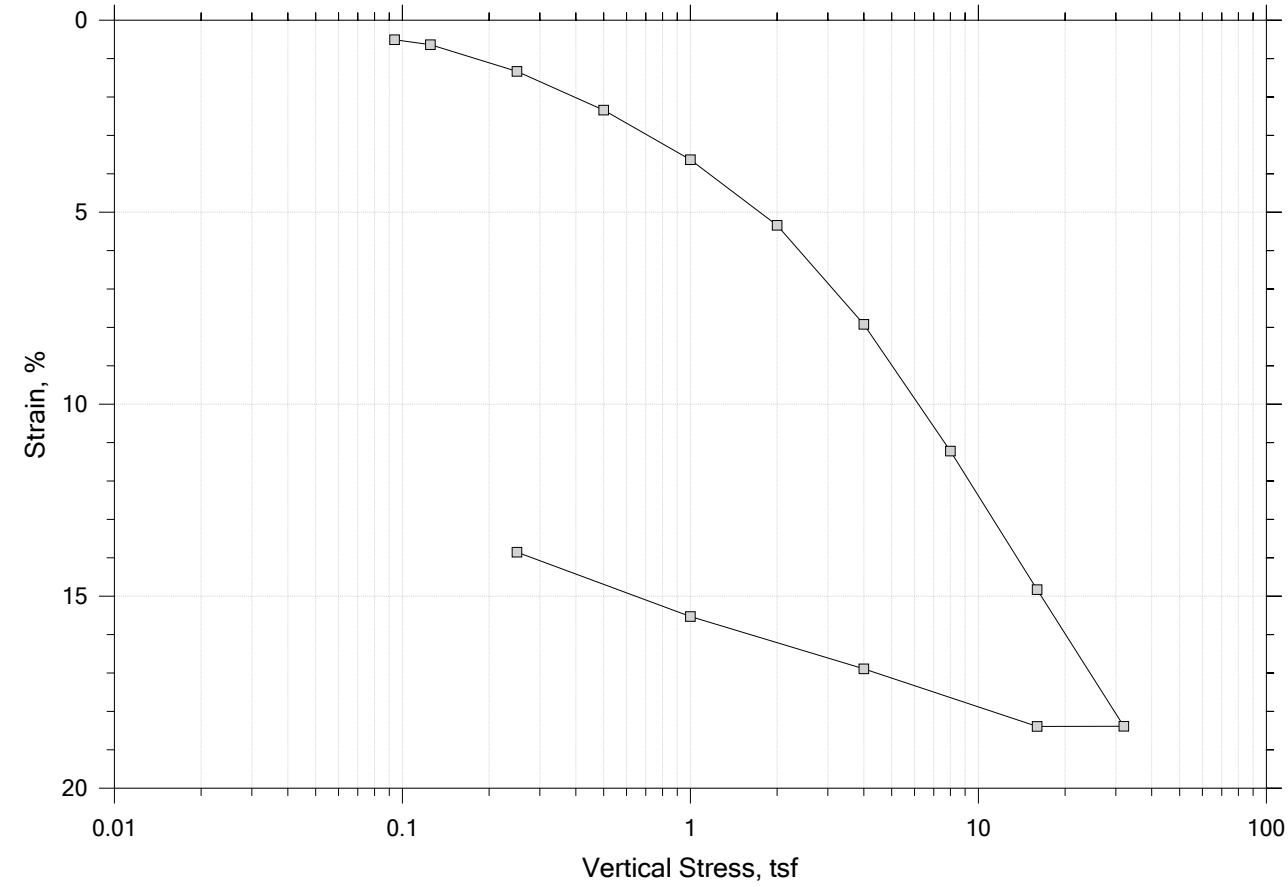


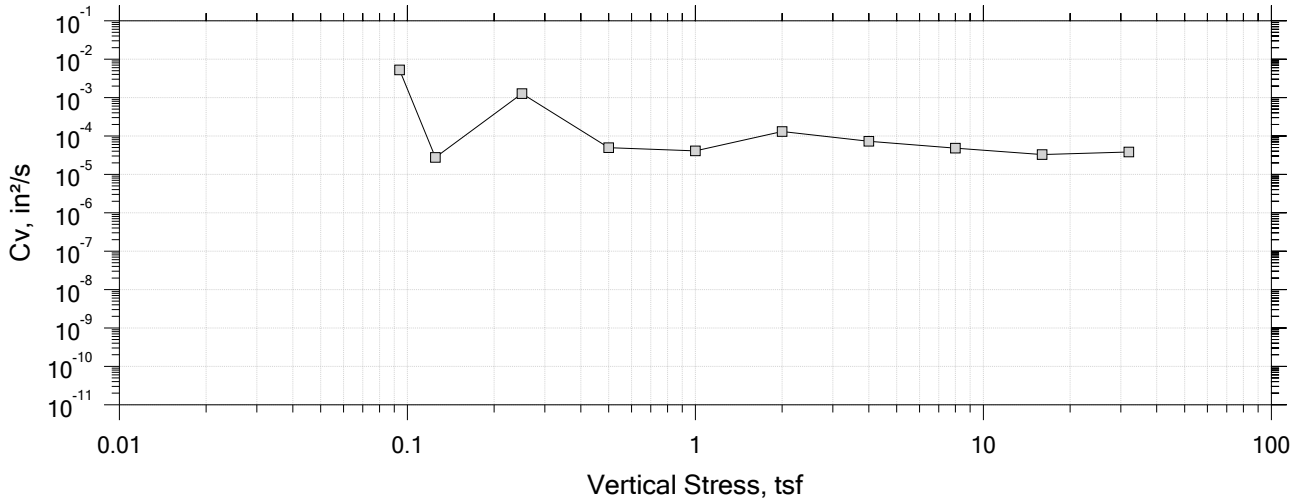


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

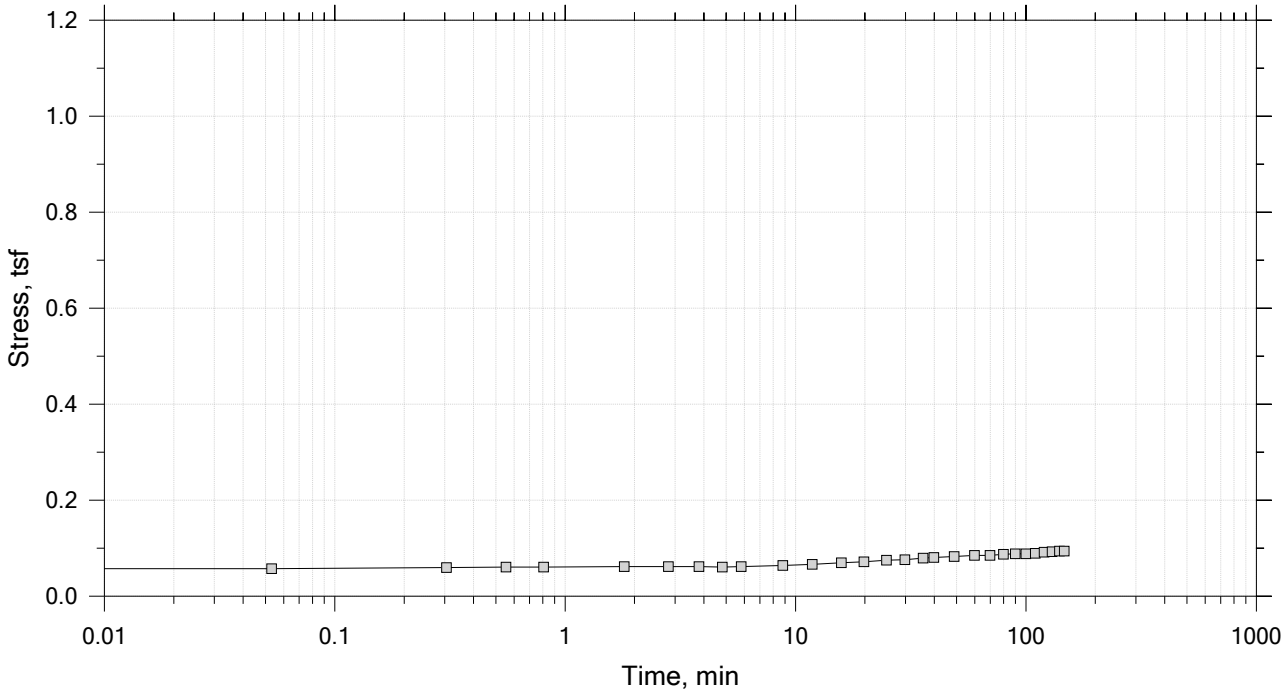


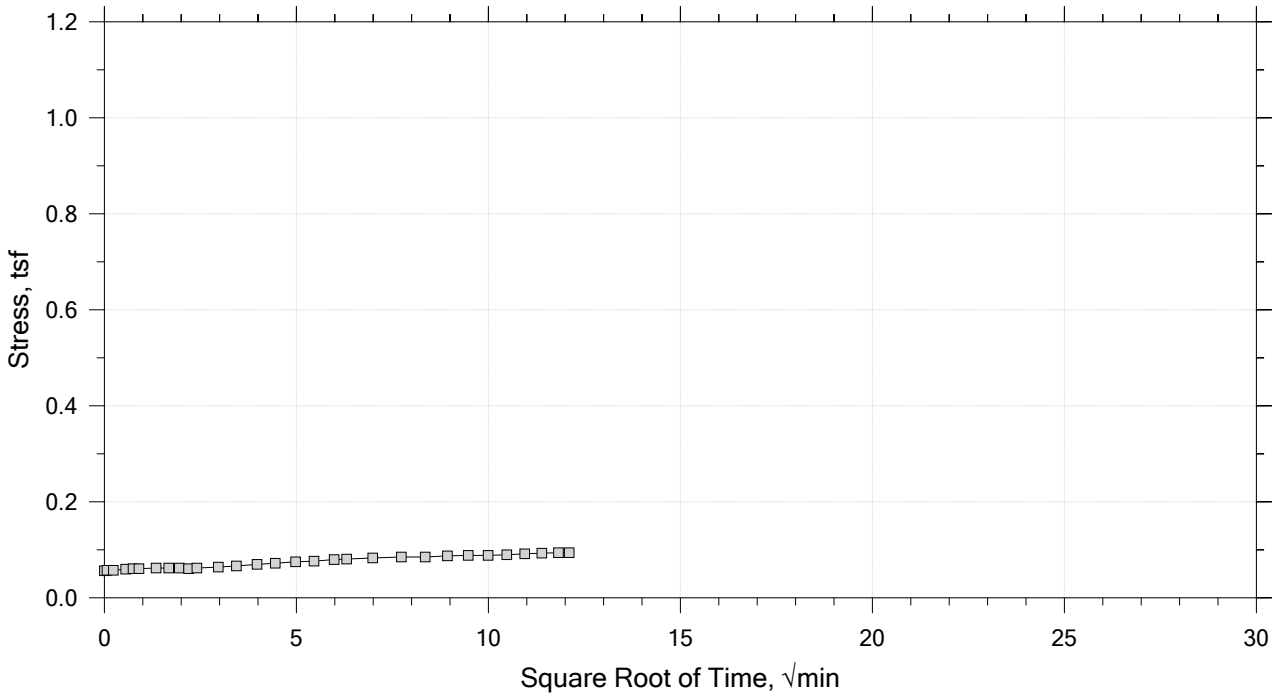


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0939 tsf





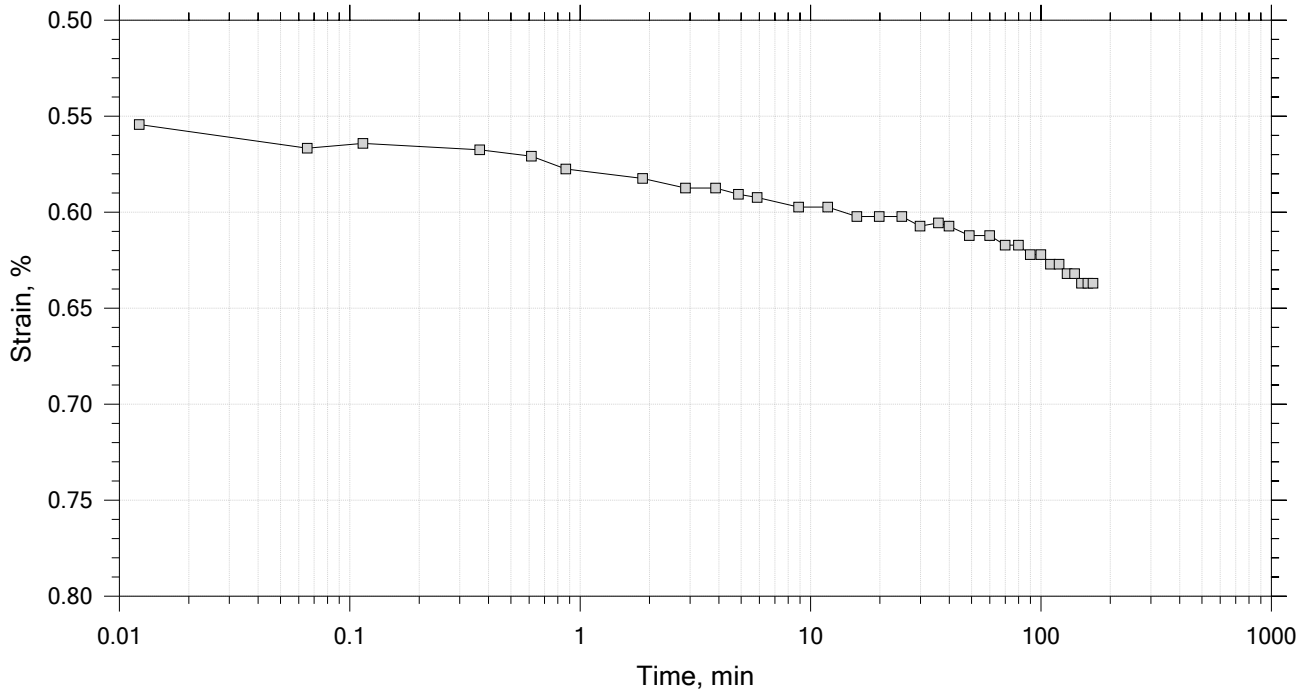
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

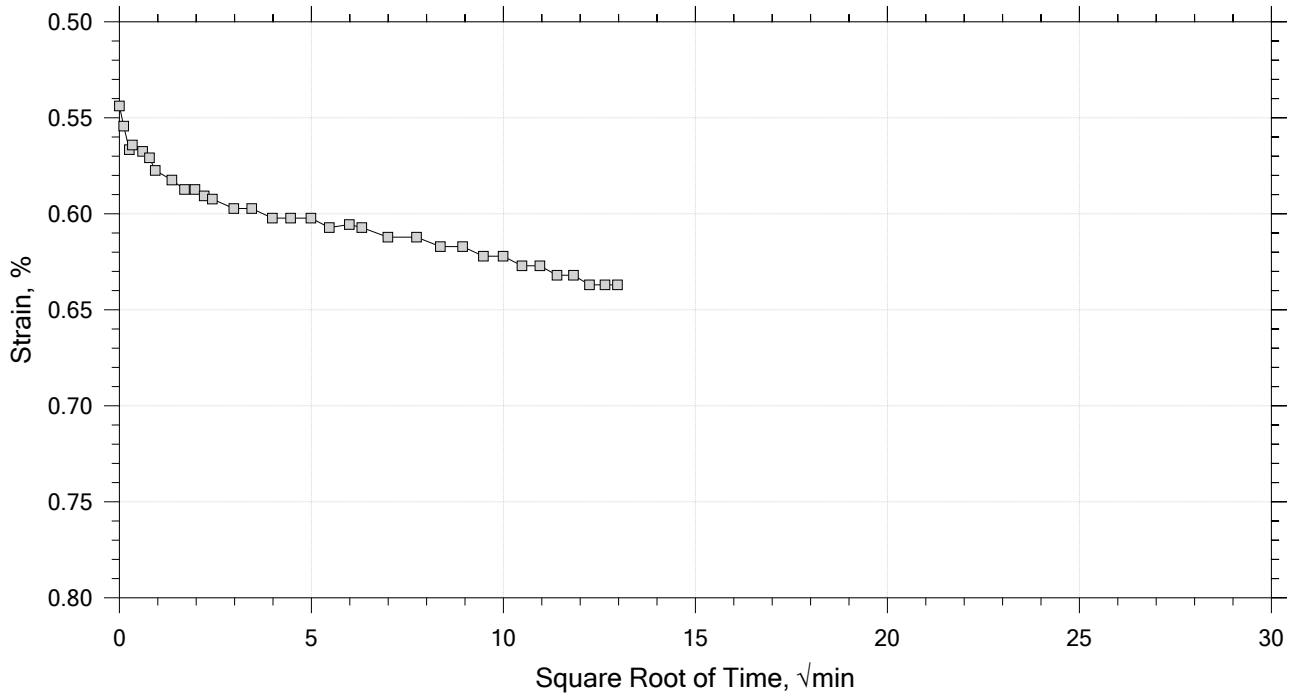
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf





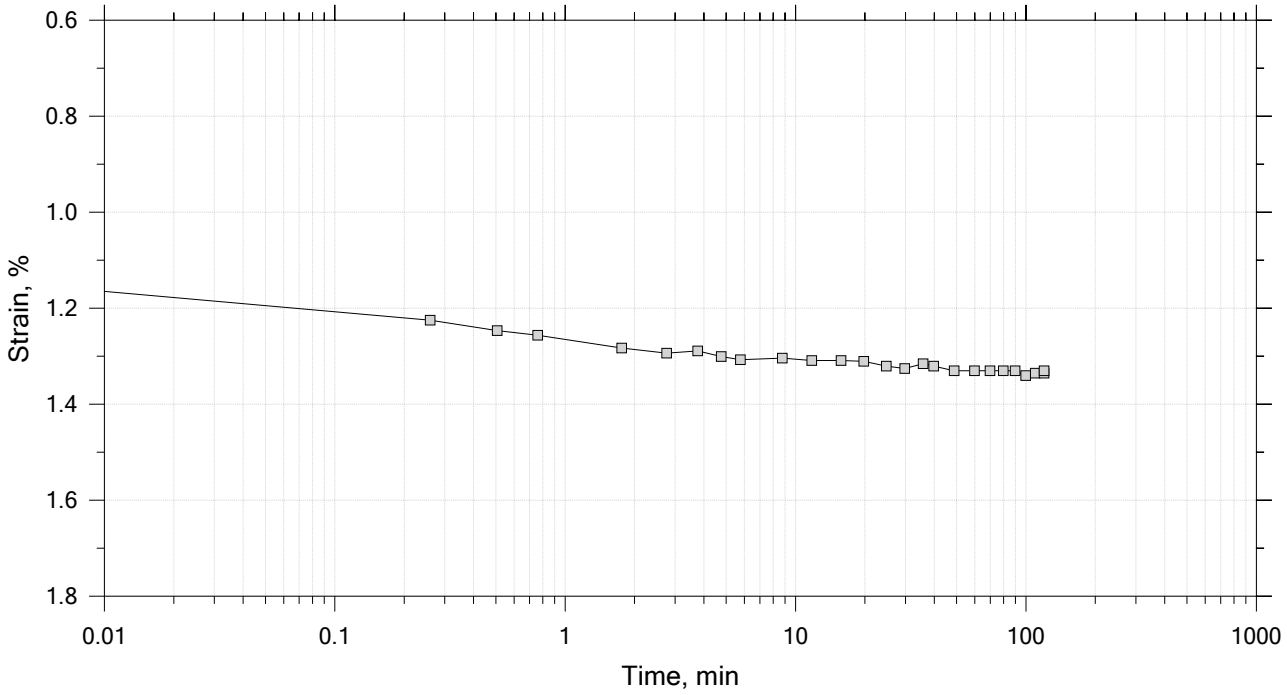
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

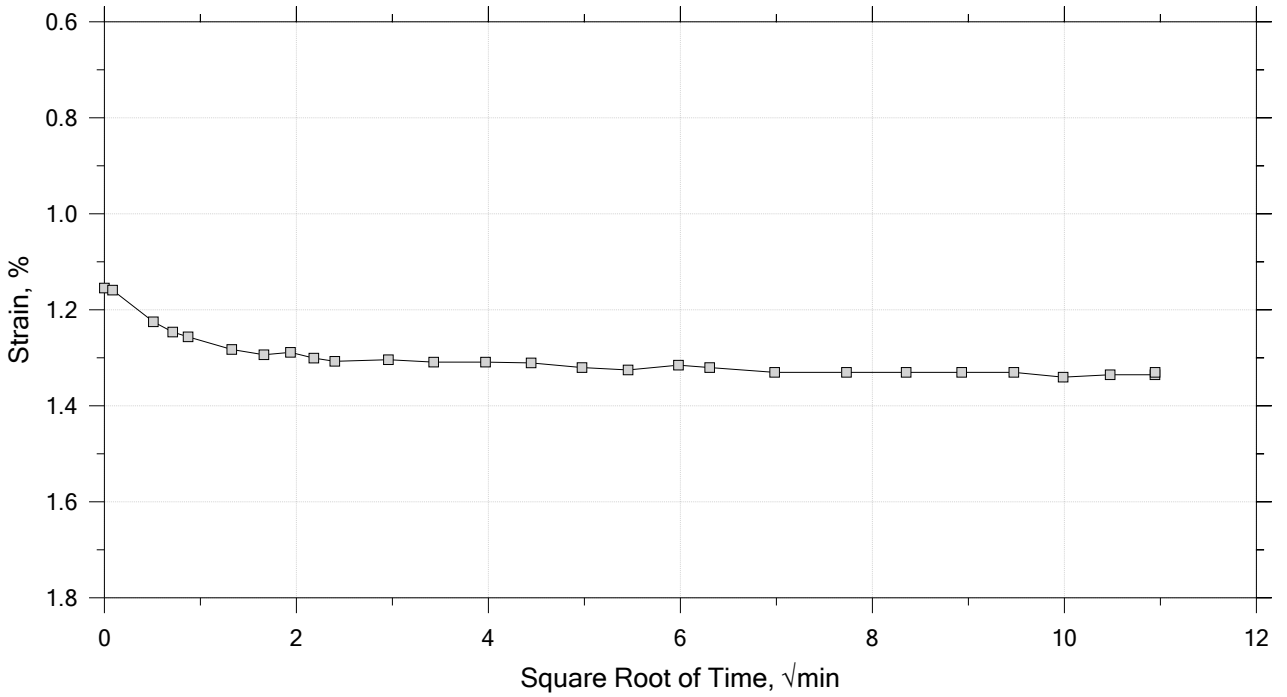
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





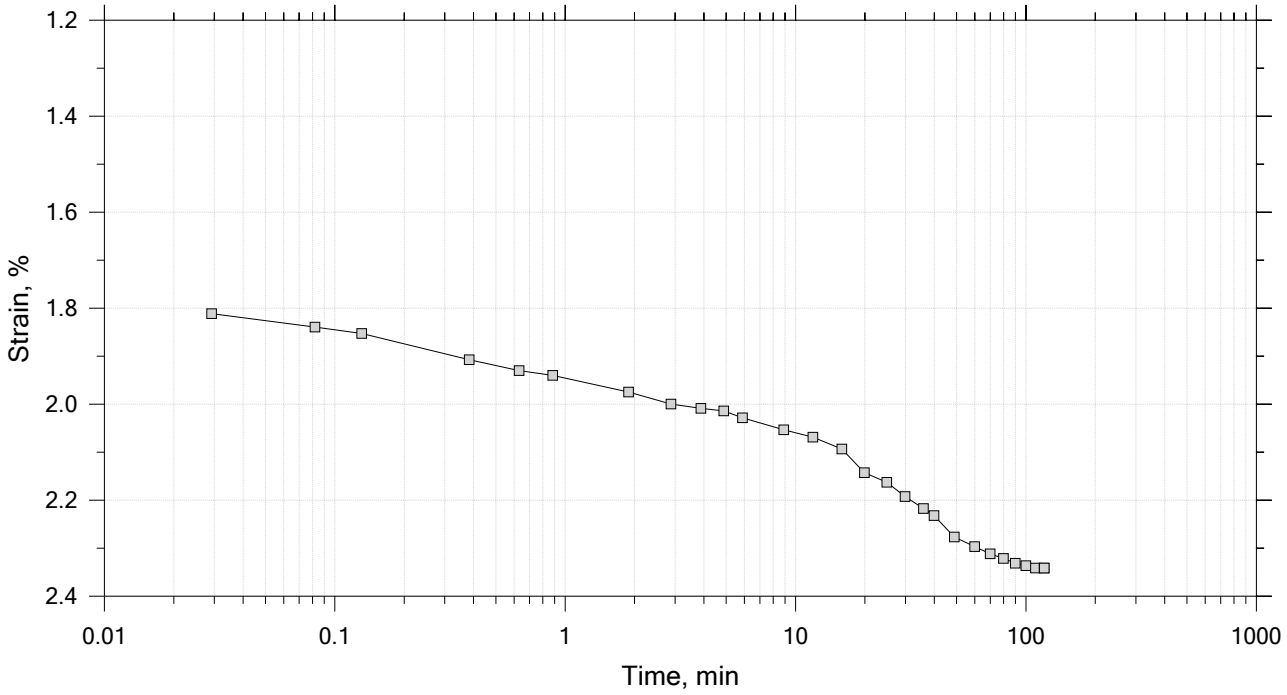
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

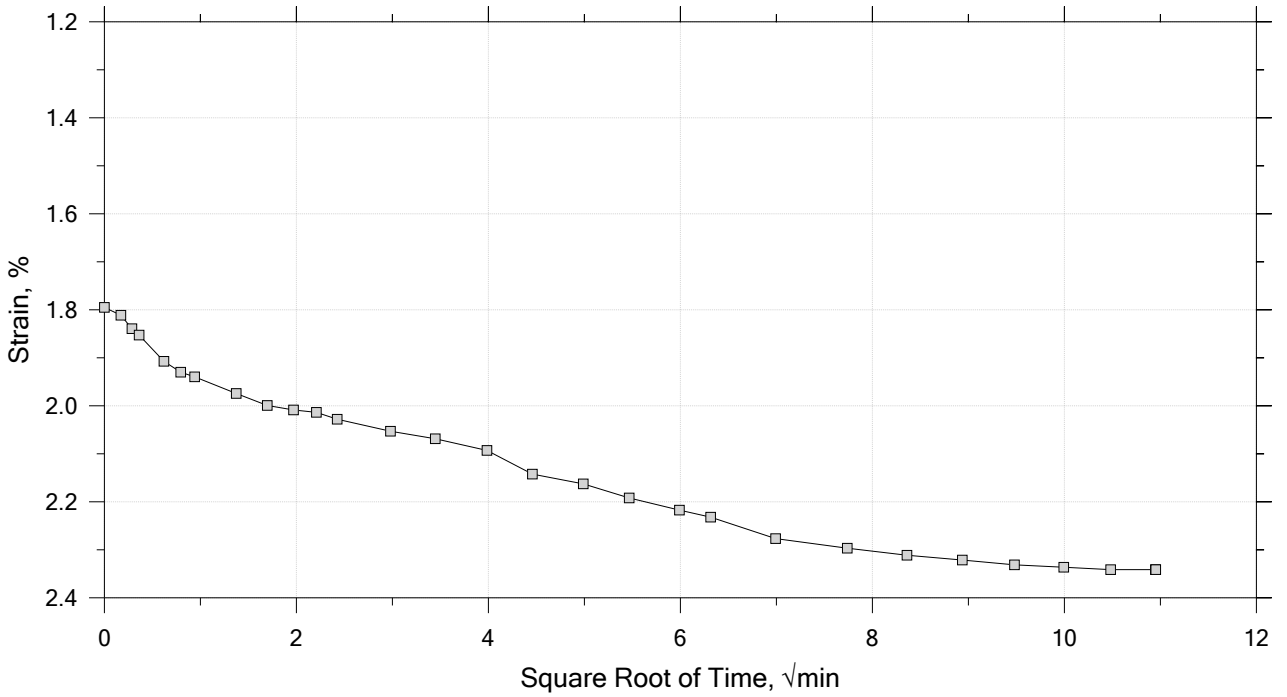
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





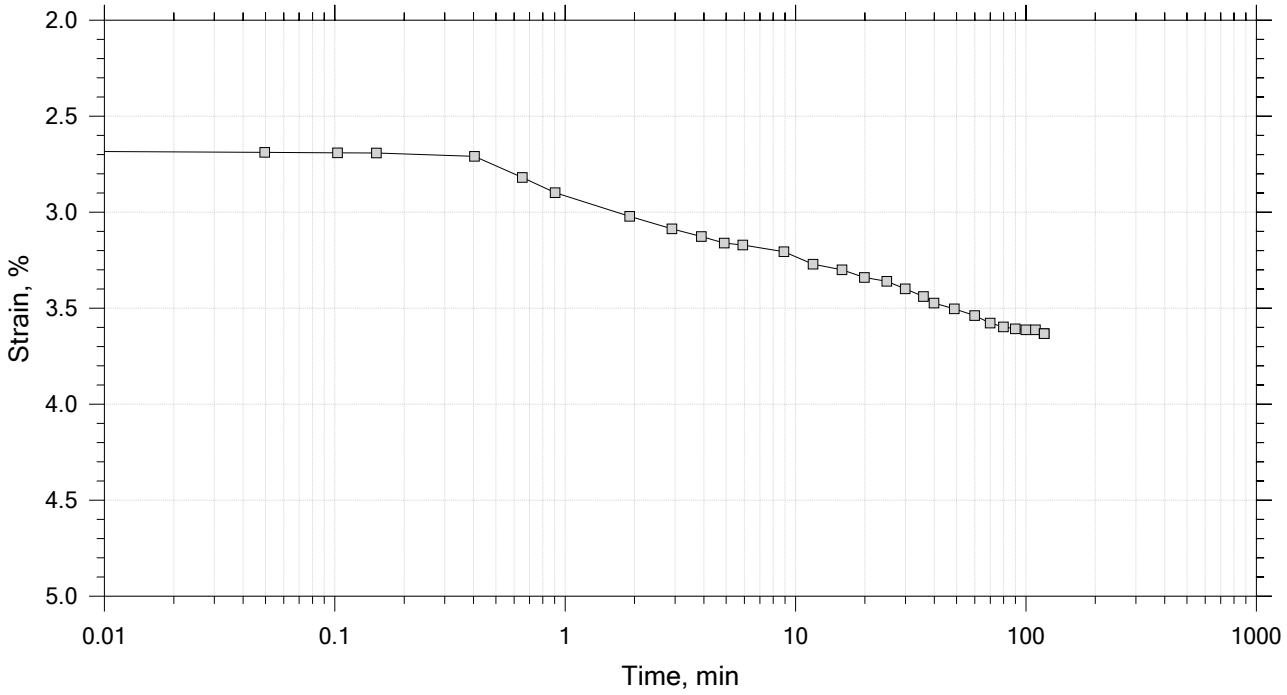
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

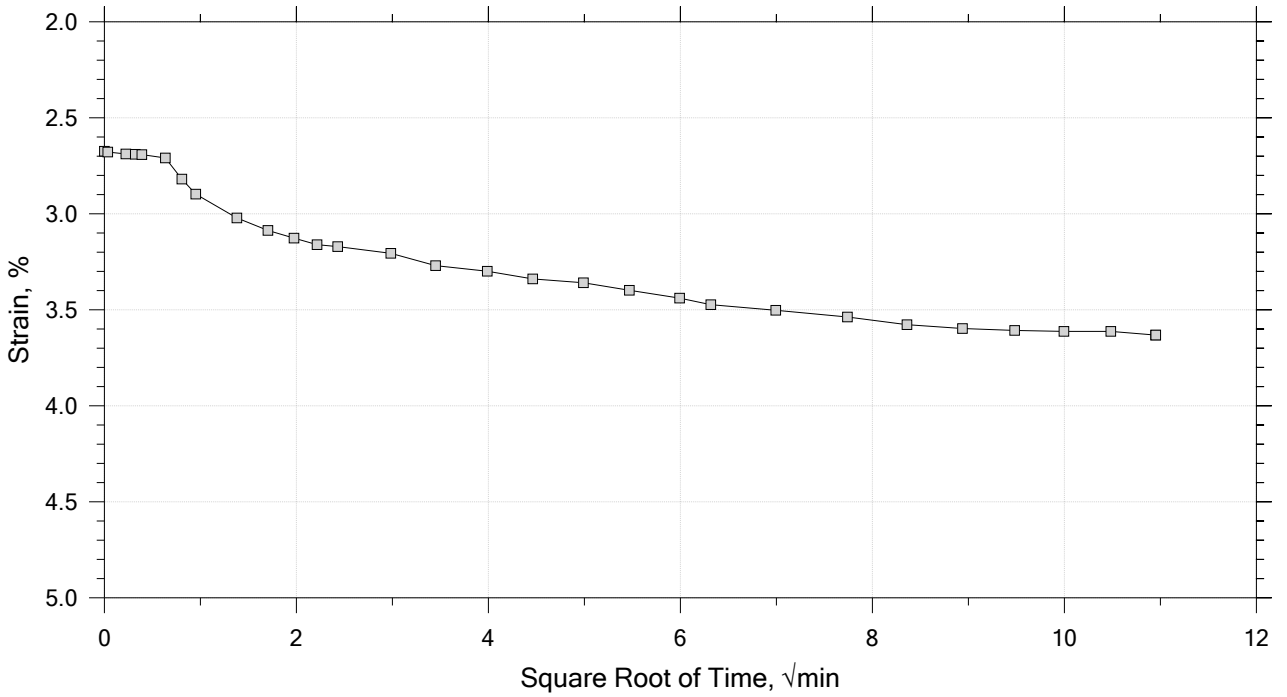
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





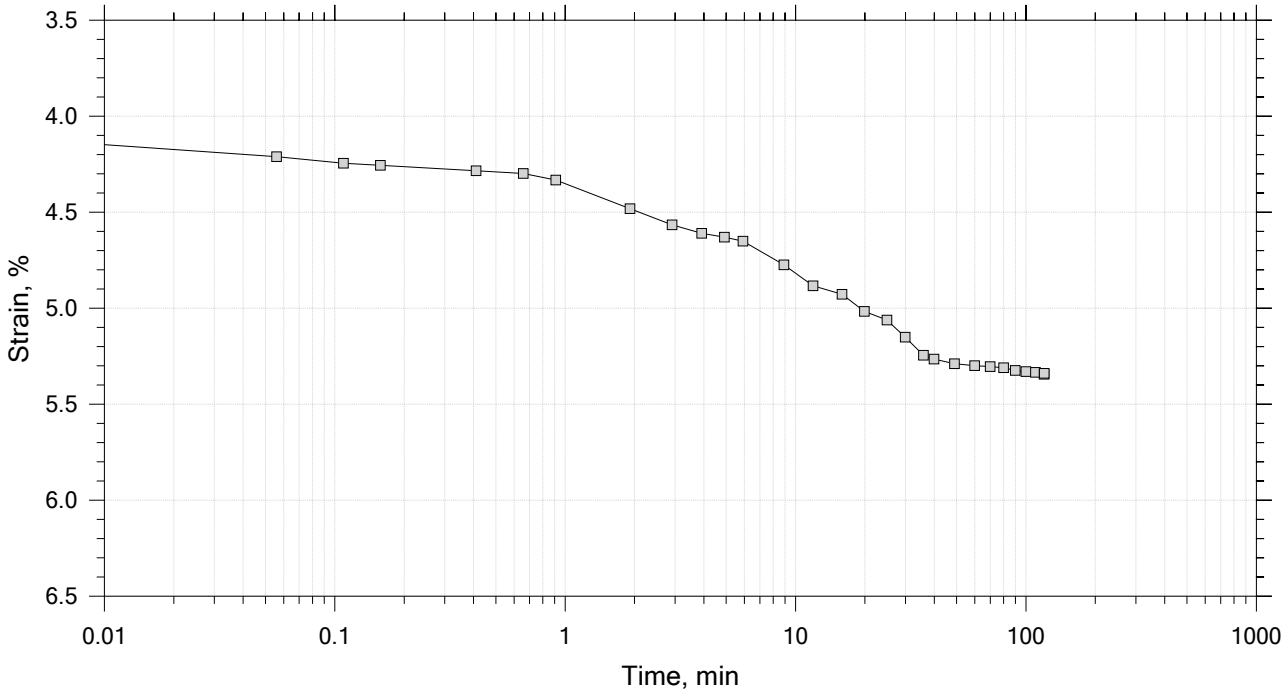
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

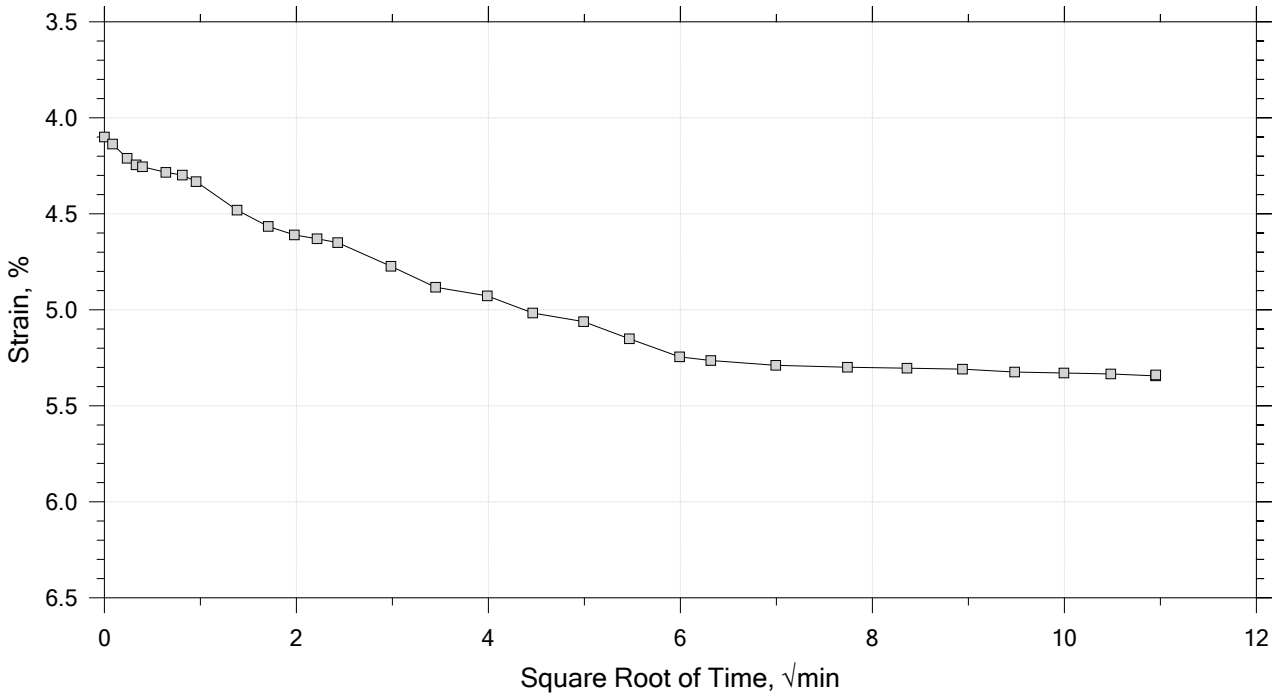
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





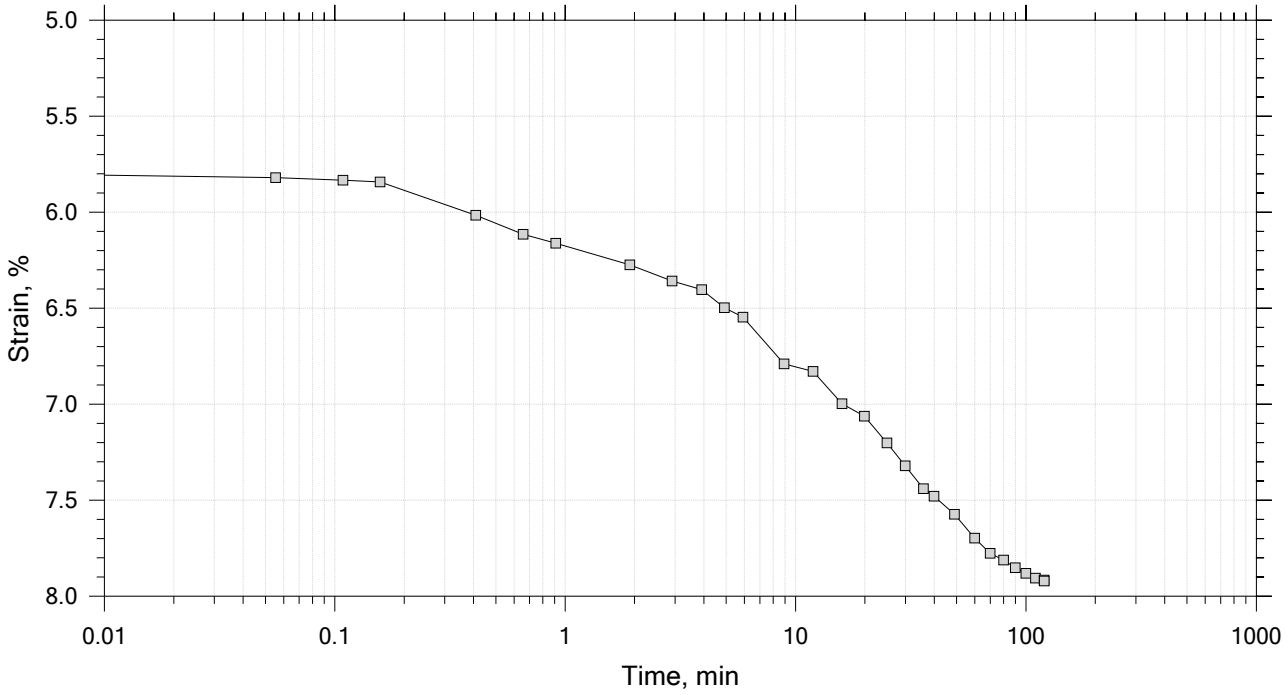
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

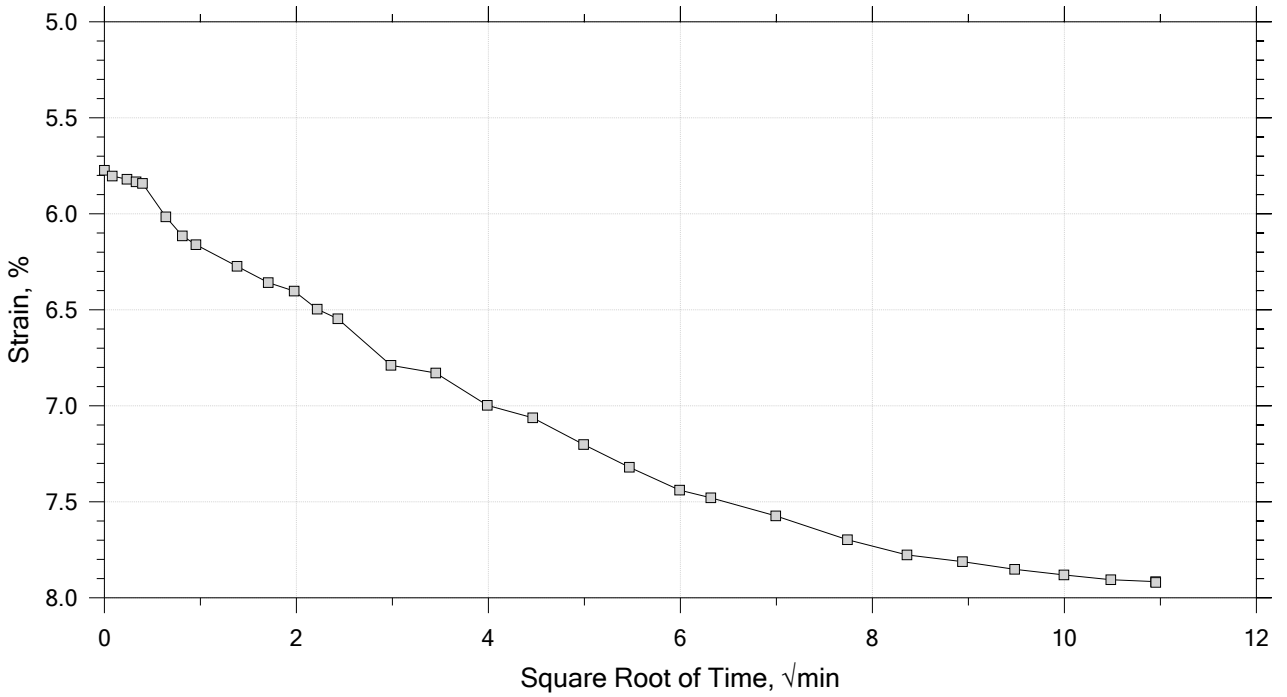
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

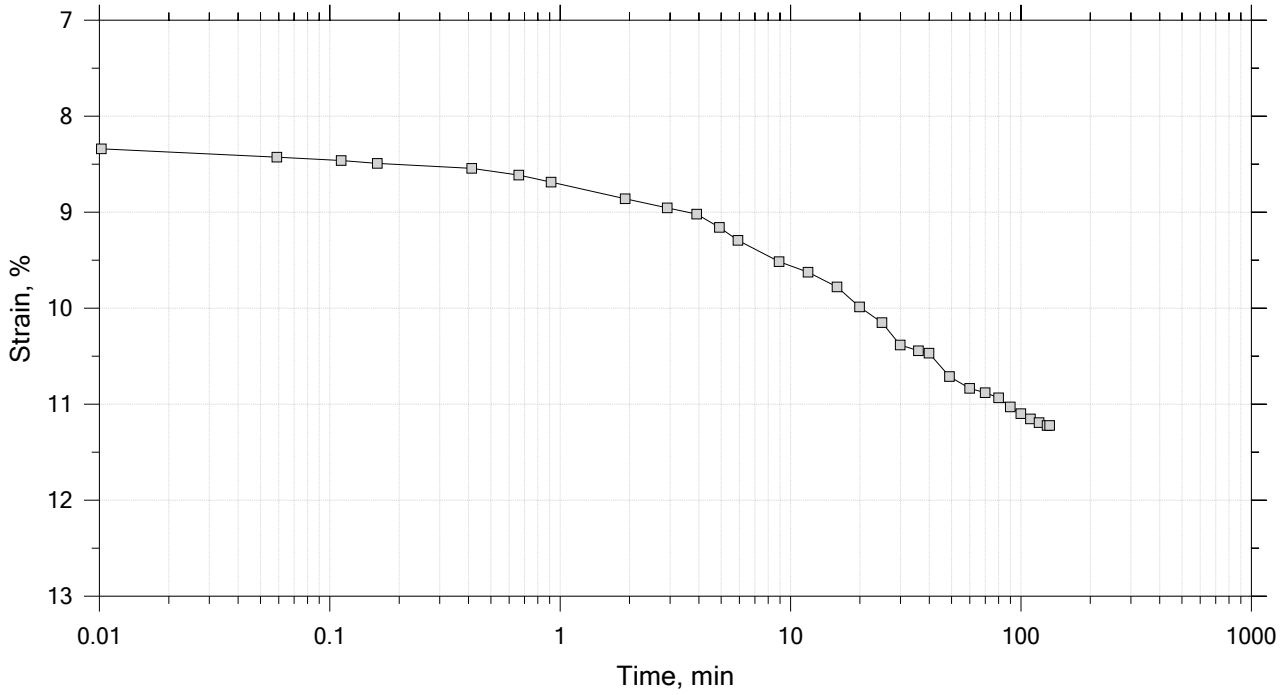


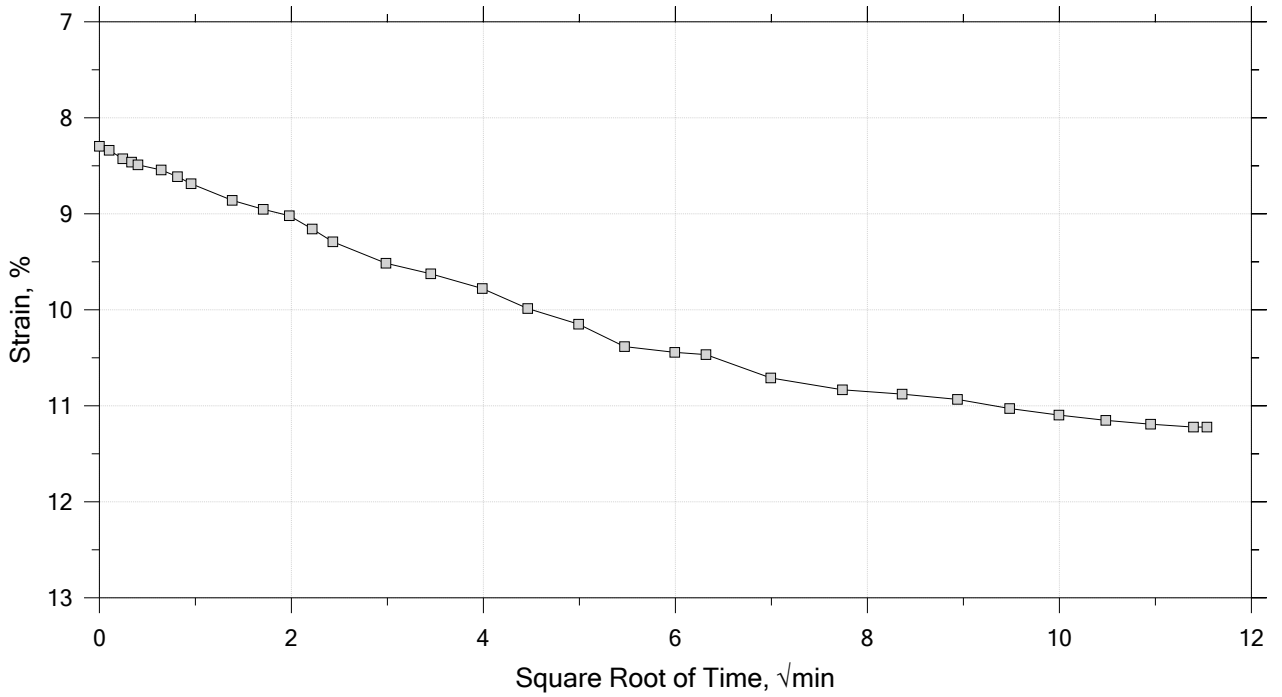


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
Test No.: IP-10	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

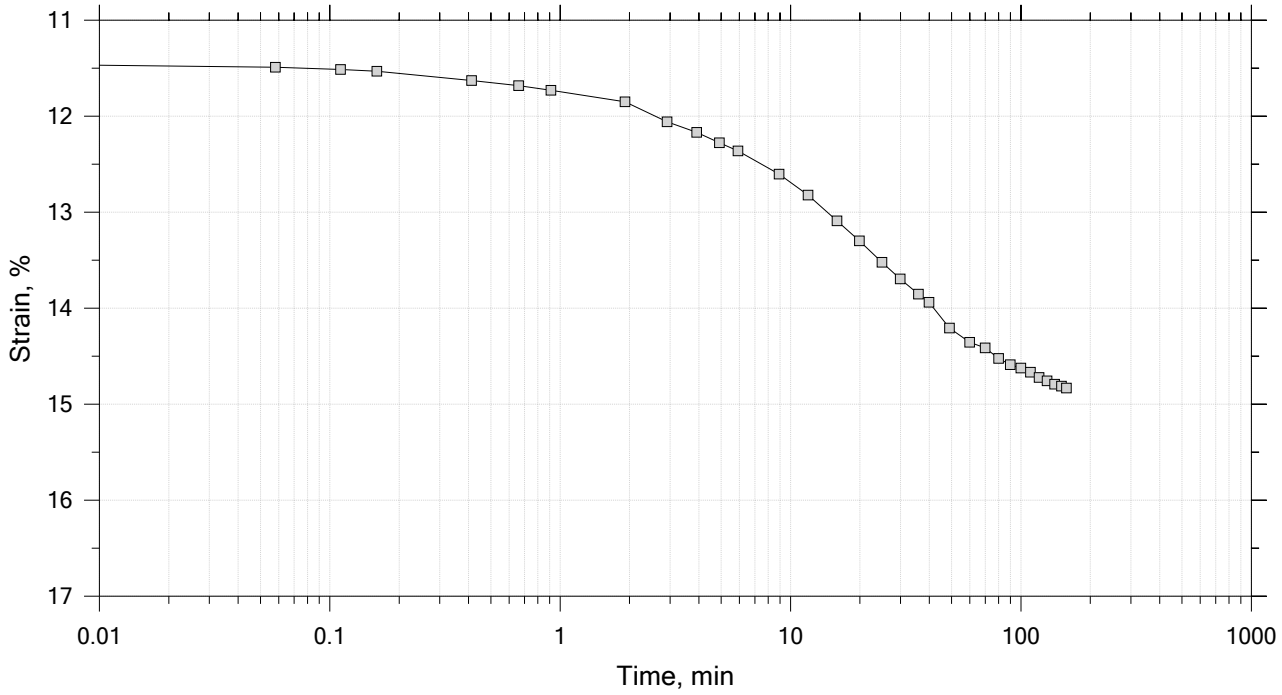


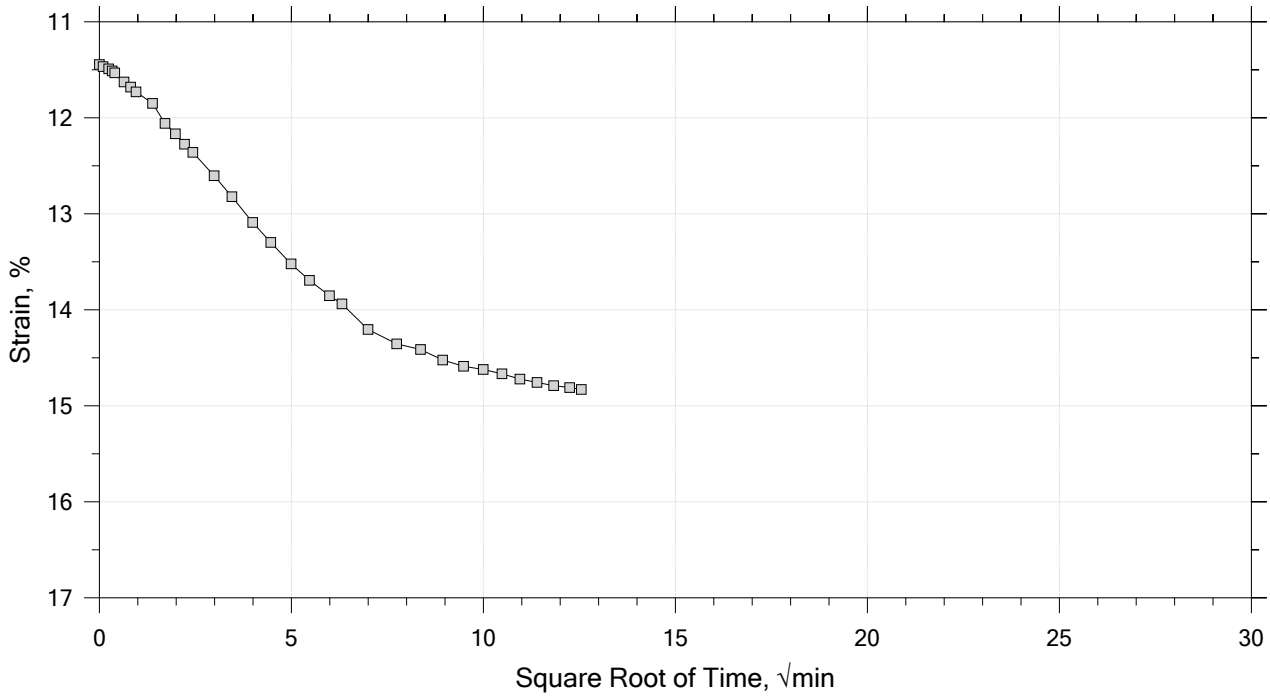


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

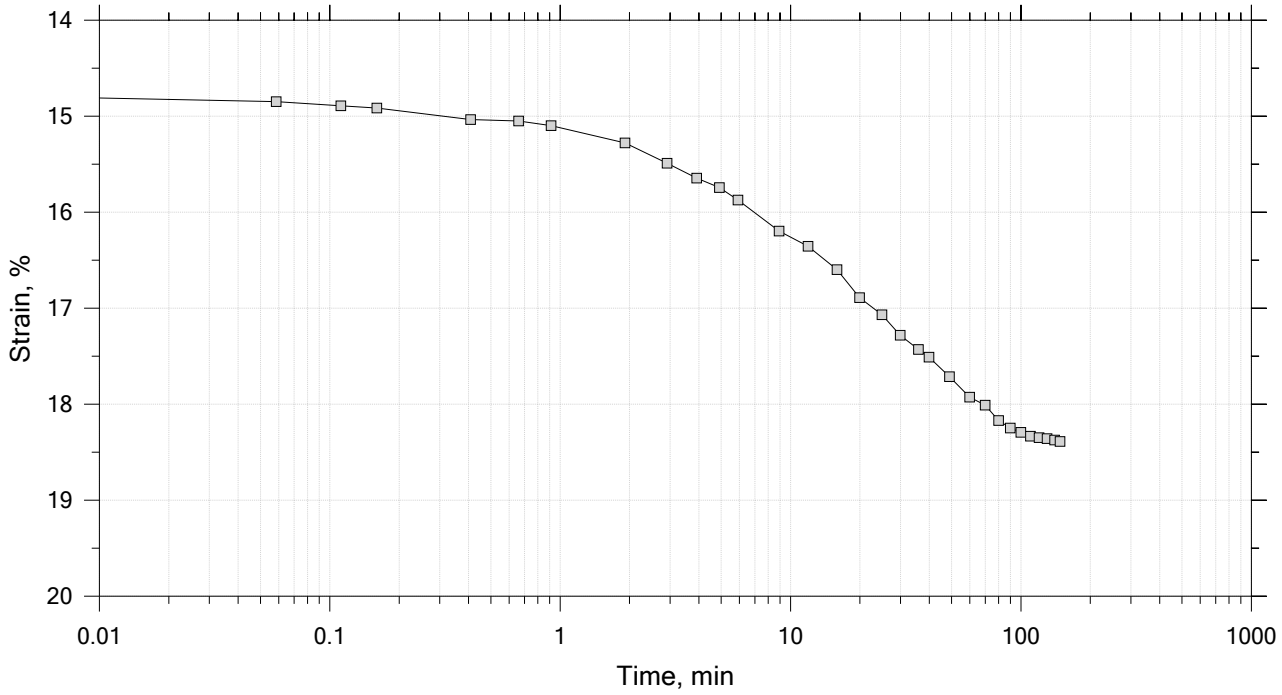


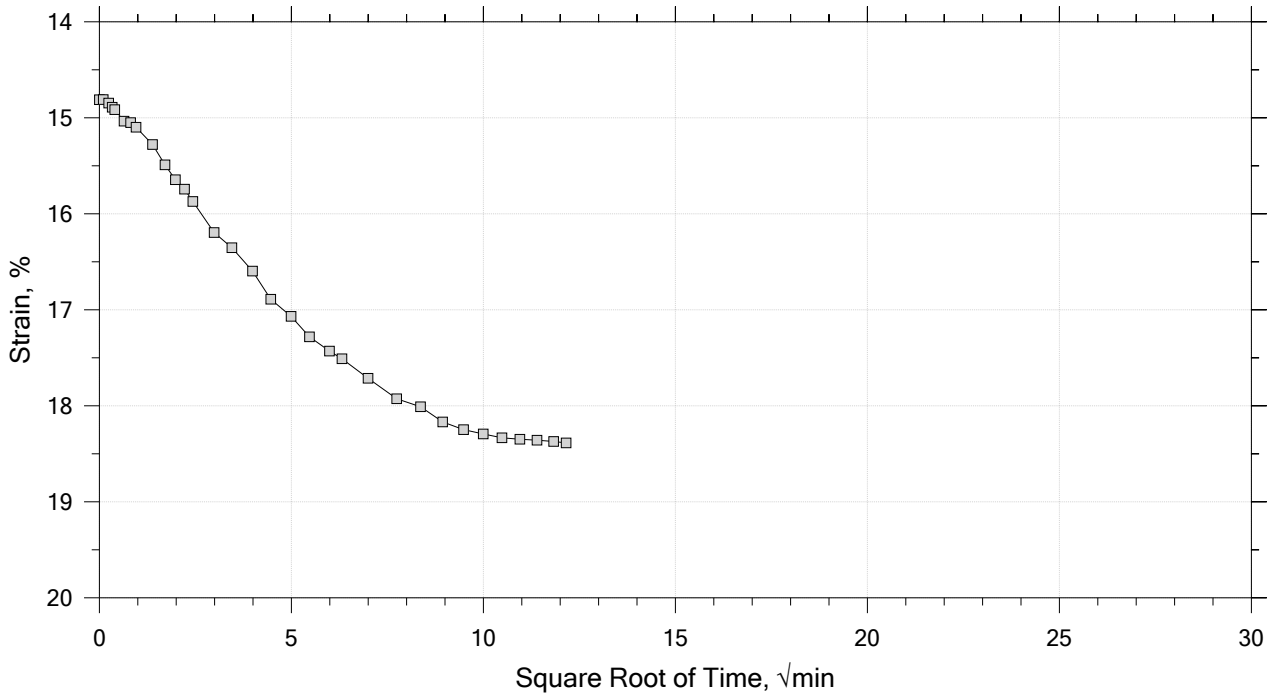


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

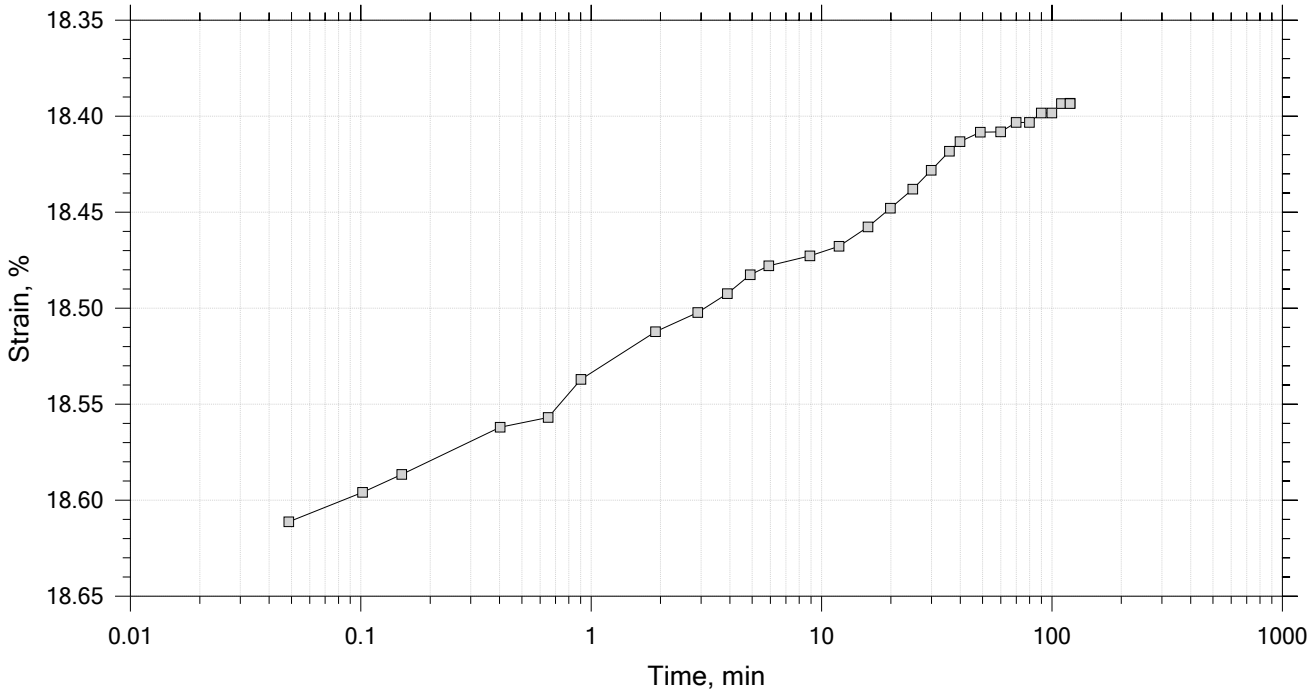


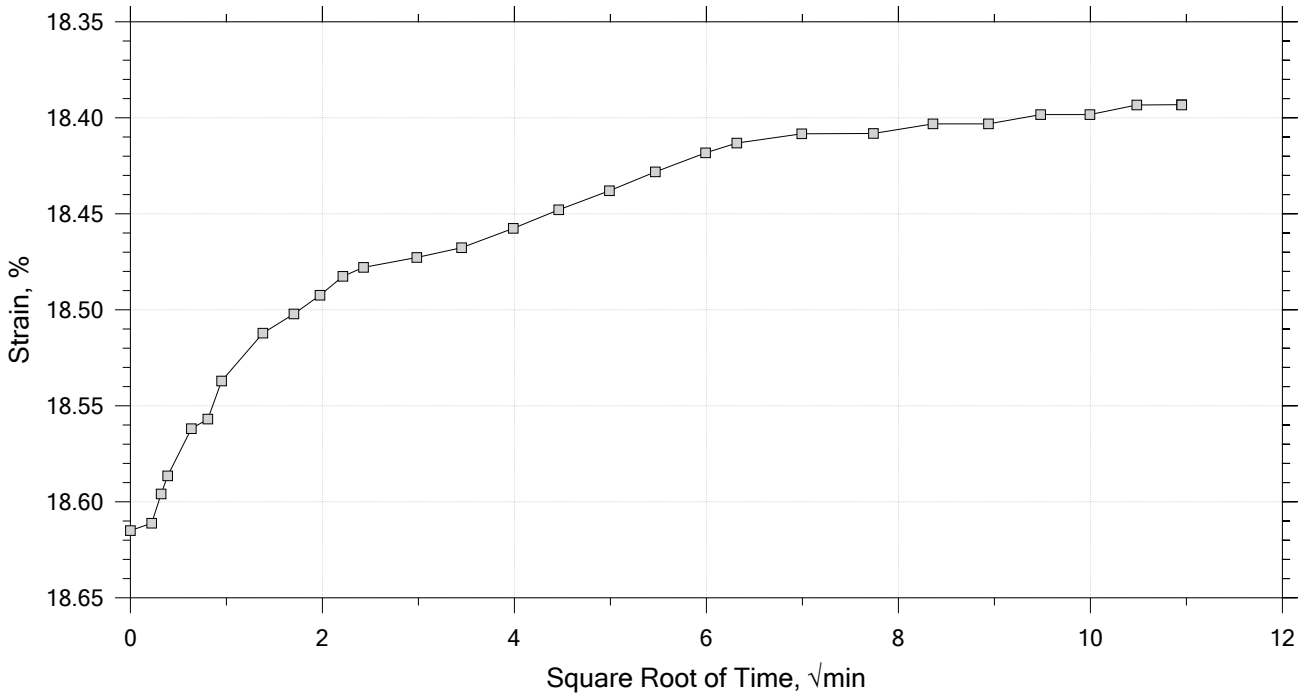


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

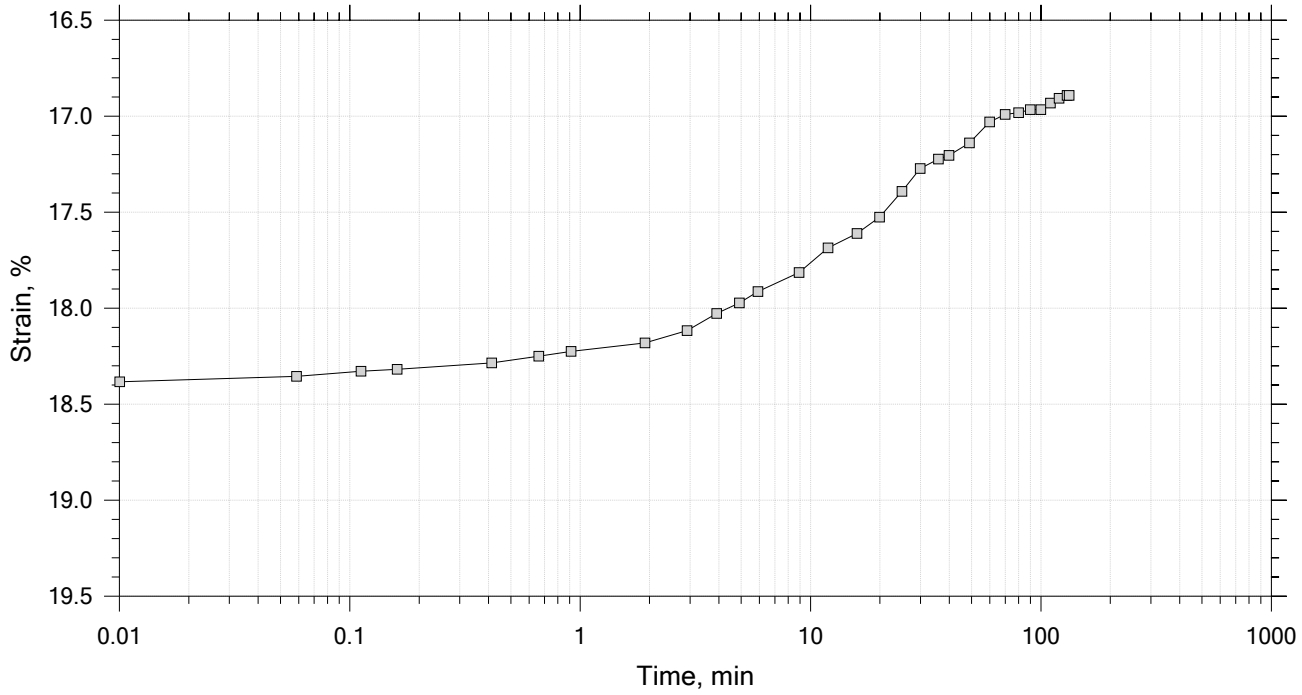


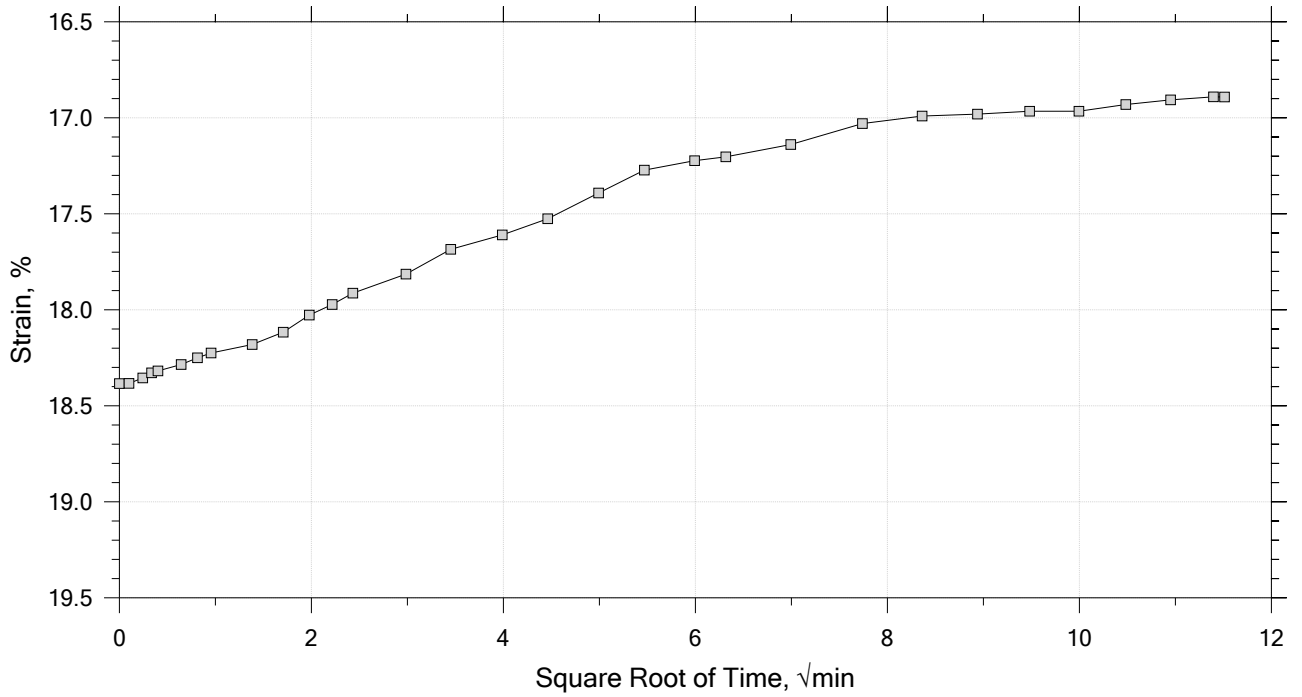


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





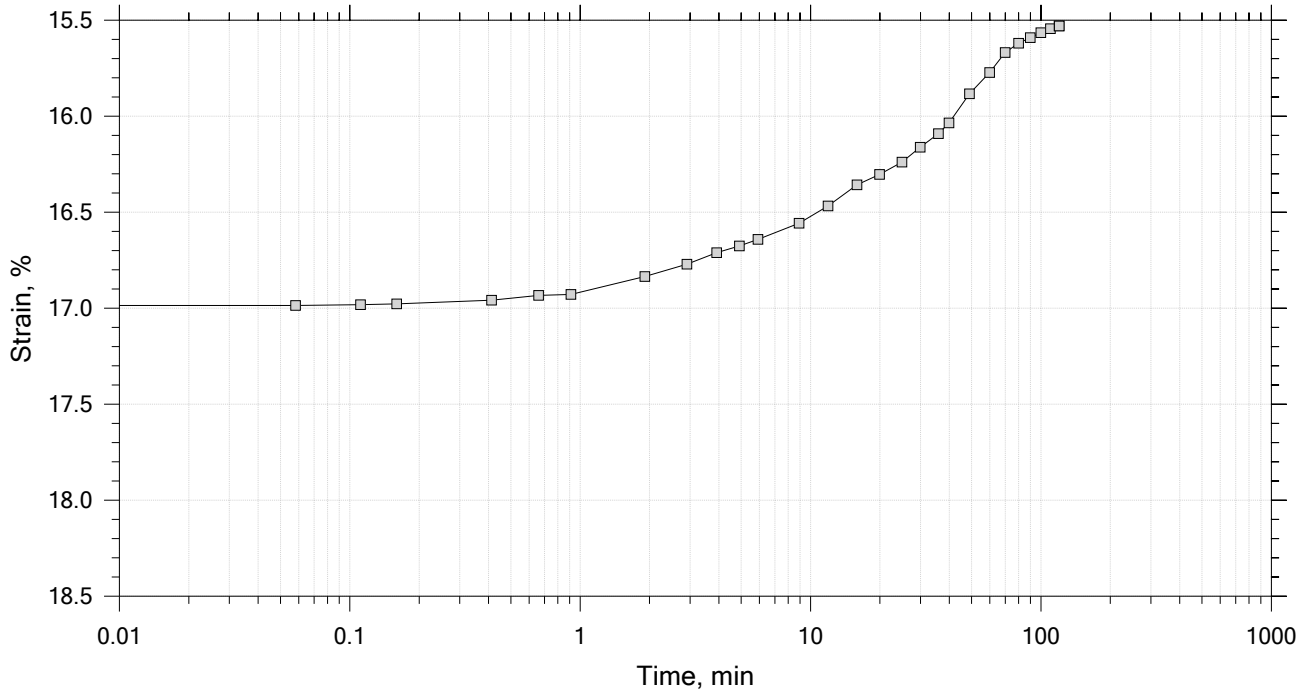
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

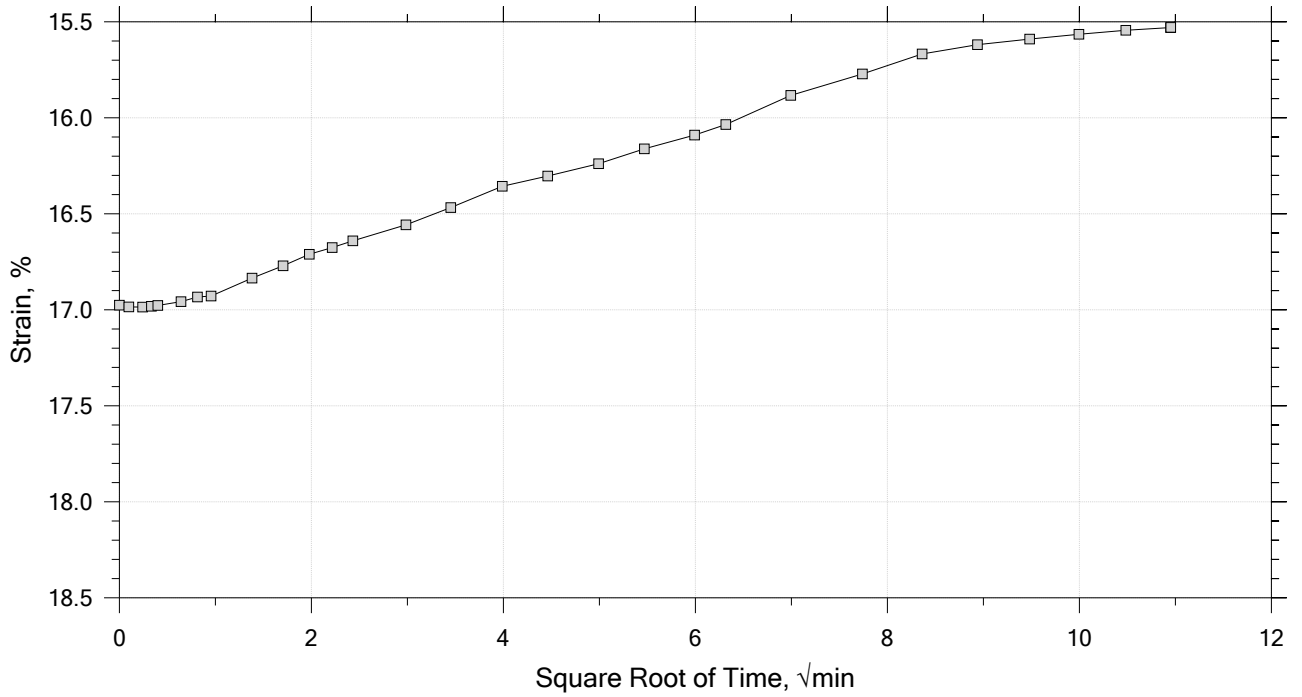
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

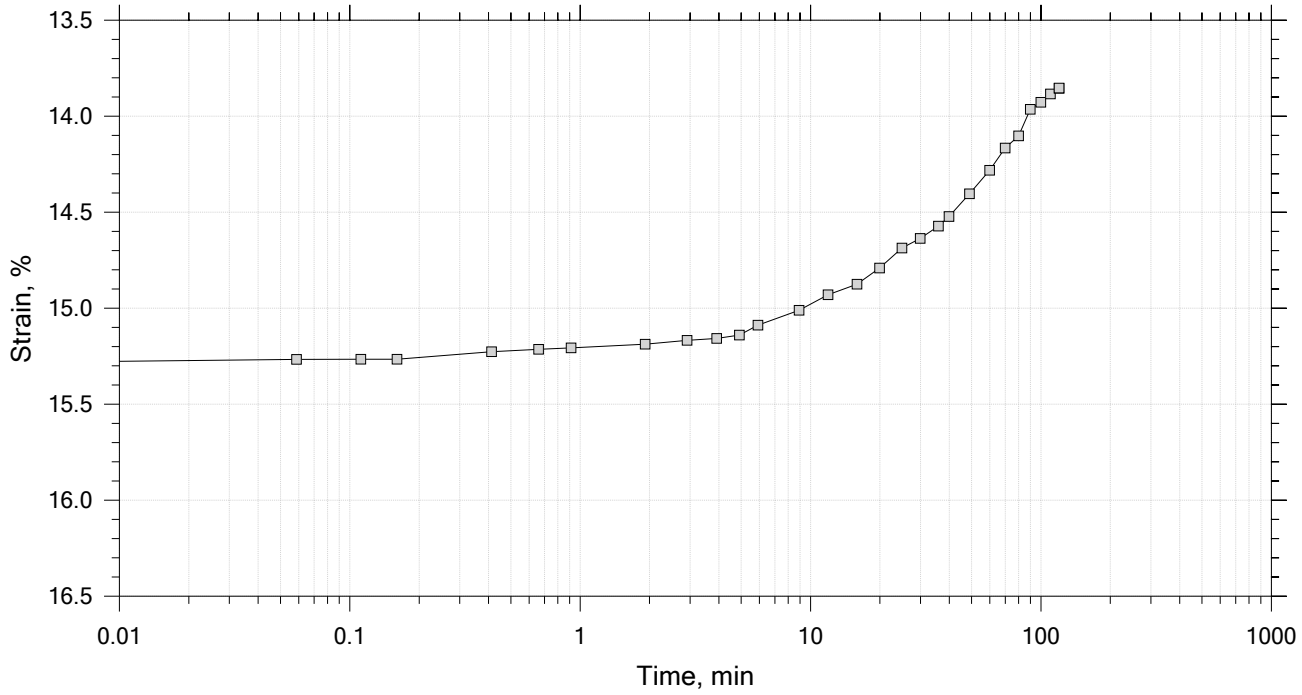


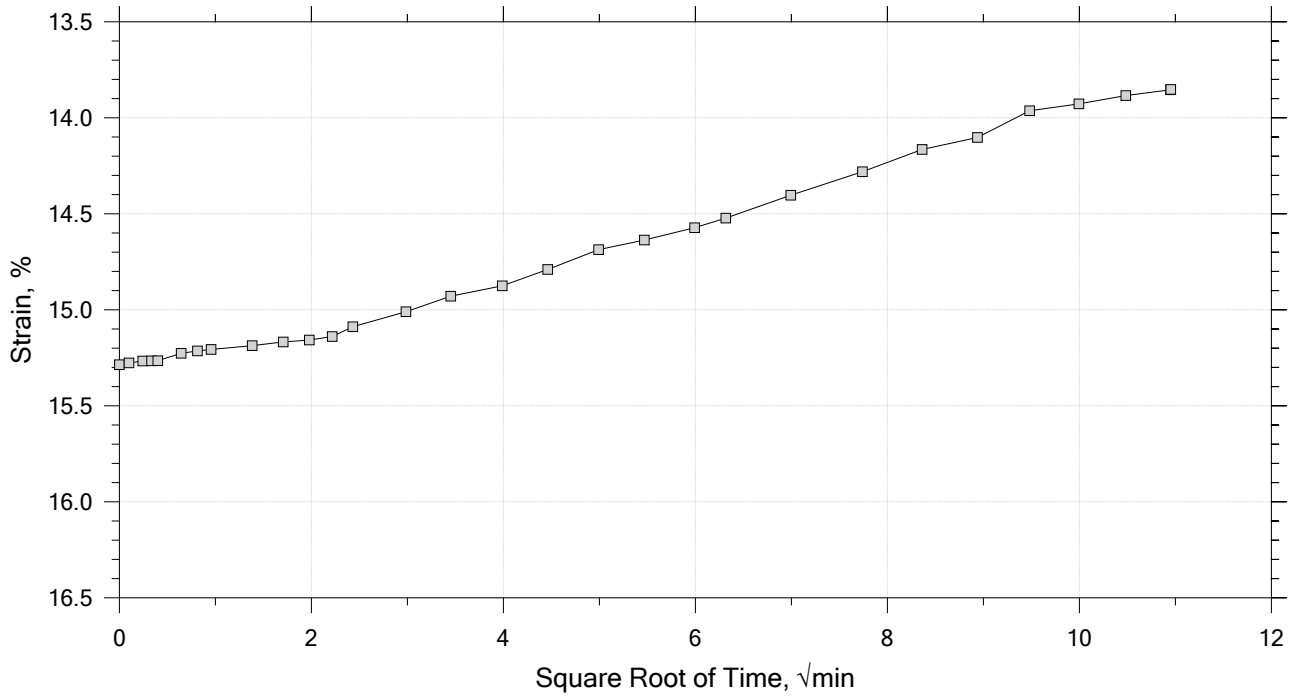


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.78	Liquid Limit: 54
Initial Height: 1.00 in	Initial Void Ratio: 0.786	Plastic Limit: 23
Final Height: 0.87 in	Final Void Ratio: 0.561	Plasticity Index: 31

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-3901	RING		E5716
Mass Container, gm	8.93	109.82	109.82	8.27
Mass Container + Wet Soil, gm	172.37	266.85	260.15	158.06
Mass Container + Dry Soil, gm	138.73	234.89	234.89	132.89
Mass Dry Soil, gm	129.8	125.07	125.07	124.62
Water Content, %	25.92	25.55	20.20	20.20
Void Ratio	---	0.79	0.56	---
Degree of Saturation, %	---	90.29	100.00	---
Dry Unit Weight, pcf	---	97.064	111.06	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

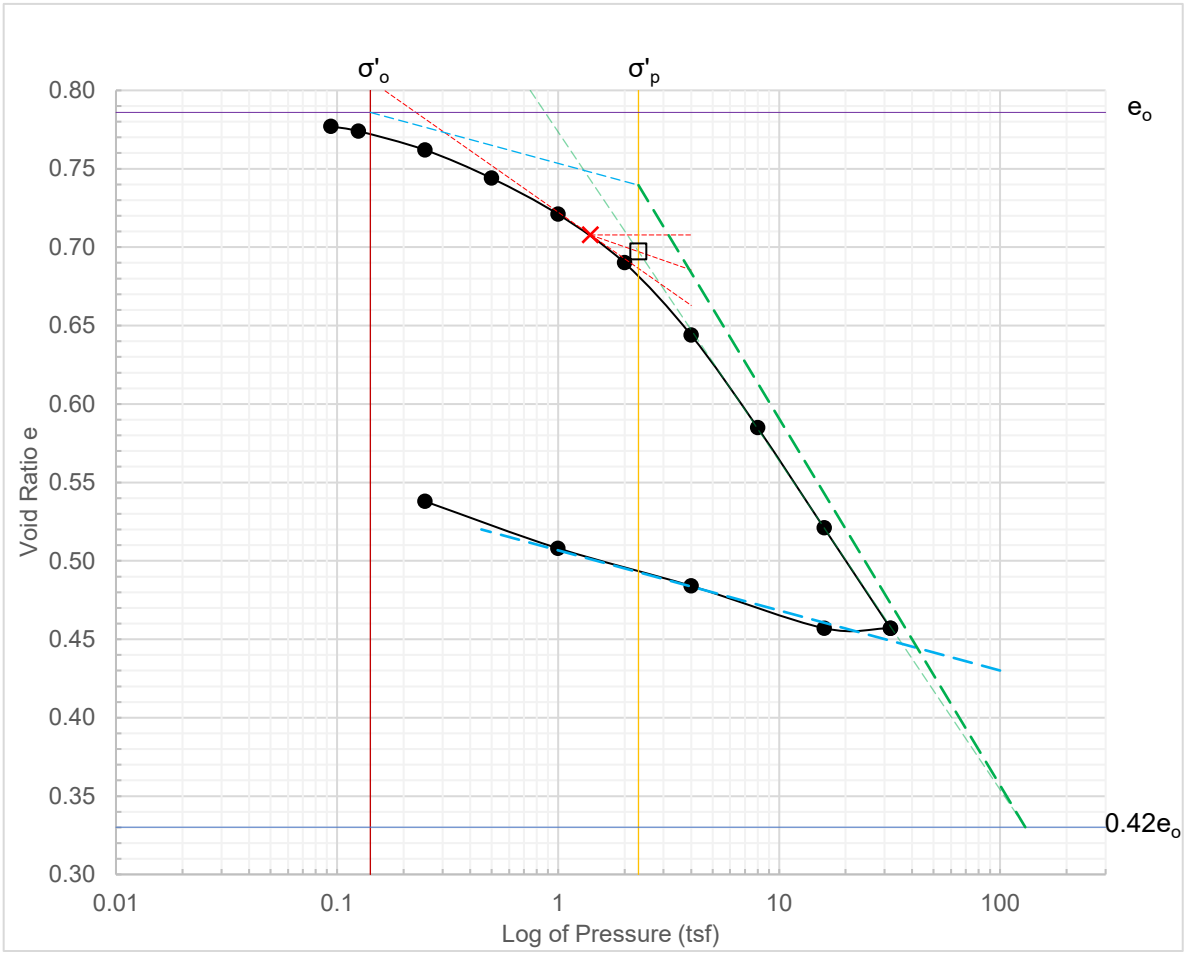
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0939	0.005074	0.777	0.507	0.667	5.27e-03	5.40e-02	5.33e-03
2	0.125	0.006370	0.774	0.637	126.398	2.76e-05	4.17e-02	2.16e-05
3	0.250	0.01330	0.762	1.33	2.738	1.27e-03	5.55e-02	1.31e-03
4	0.500	0.02341	0.744	2.34	68.590	4.96e-05	4.04e-02	3.76e-05
5	1.00	0.03632	0.721	3.63	81.362	4.09e-05	2.58e-02	1.98e-05
6	2.00	0.05339	0.690	5.34	24.643	1.31e-04	1.71e-02	4.18e-05
7	4.00	0.07921	0.644	7.92	42.147	7.31e-05	1.29e-02	1.77e-05
8	8.00	0.1122	0.585	11.2	60.094	4.81e-05	8.25e-03	7.43e-06
9	16.0	0.1483	0.521	14.8	81.638	3.27e-05	4.51e-03	2.77e-06
10	32.0	0.1839	0.457	18.4	64.250	3.82e-05	2.22e-03	1.59e-06
11	16.0	0.1839	0.457	18.4	55.566	4.24e-05	-3.58e-06	-2.84e-09
12	4.00	0.1689	0.484	16.9	64.303	3.73e-05	1.25e-03	8.74e-07
13	1.00	0.1553	0.508	15.5	118.687	2.09e-05	4.54e-03	1.78e-06
14	0.250	0.1385	0.538	13.9	90.676	2.84e-05	2.24e-02	1.19e-05

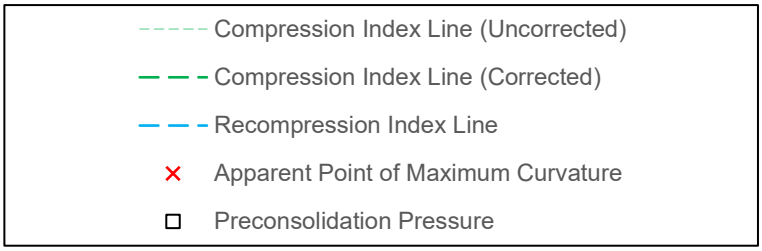
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 2.3-2.4
	Test No.: IP-10	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: TX-011, Swell Pressure = 0.0939 tsf		
	Displacement at End of Increment		

Boring: B-4.12A

Depth: 2.3'-2.4'

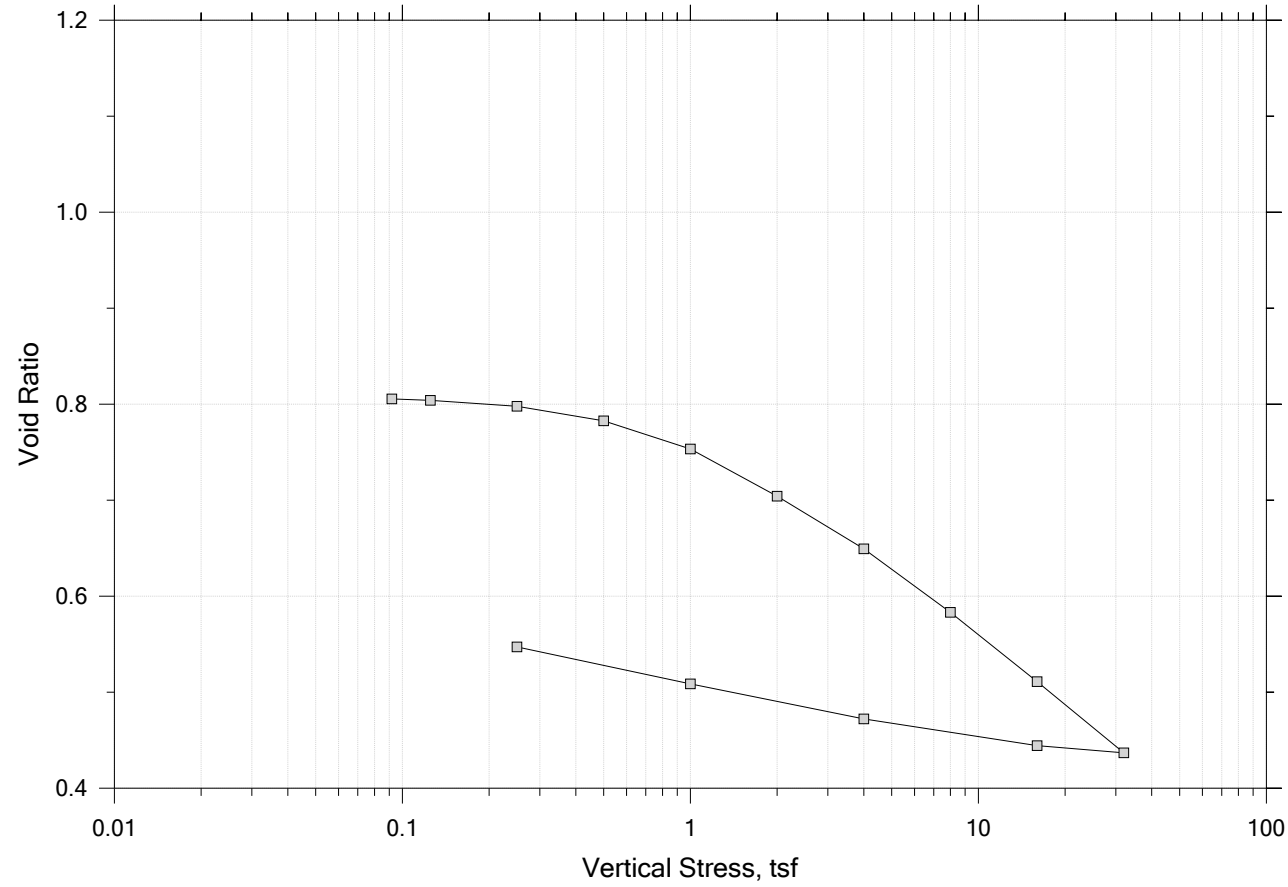
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.14
Preconsolidation Pressure, σ'_p (tsf) = 2.31
Compression Index, C_c = 0.23
Recompression Index, C_r = 0.038

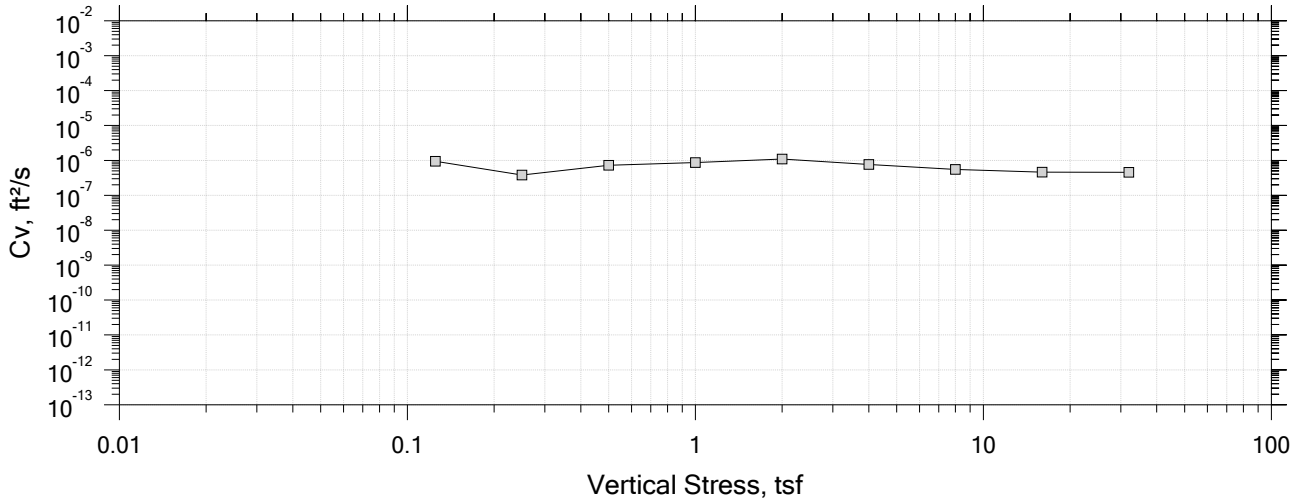




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

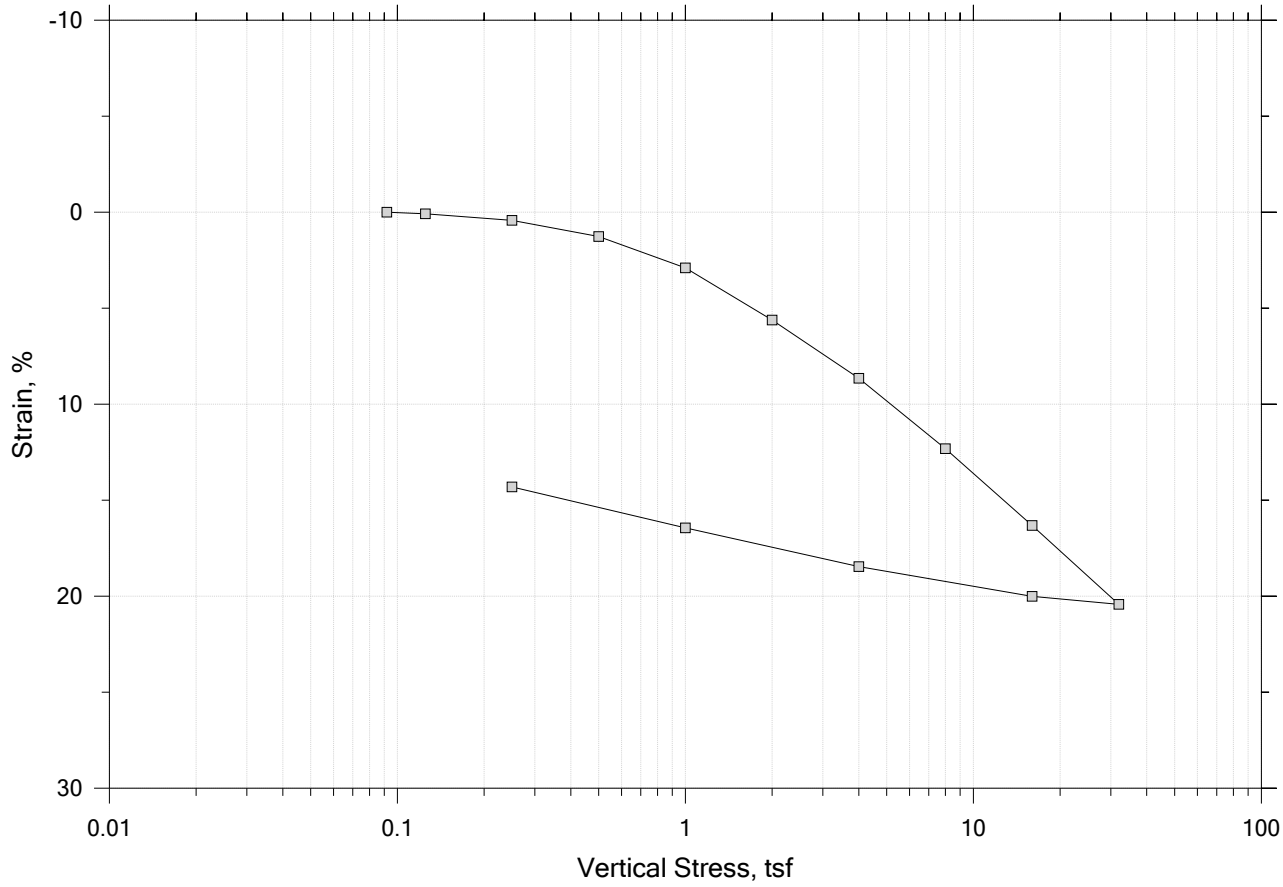


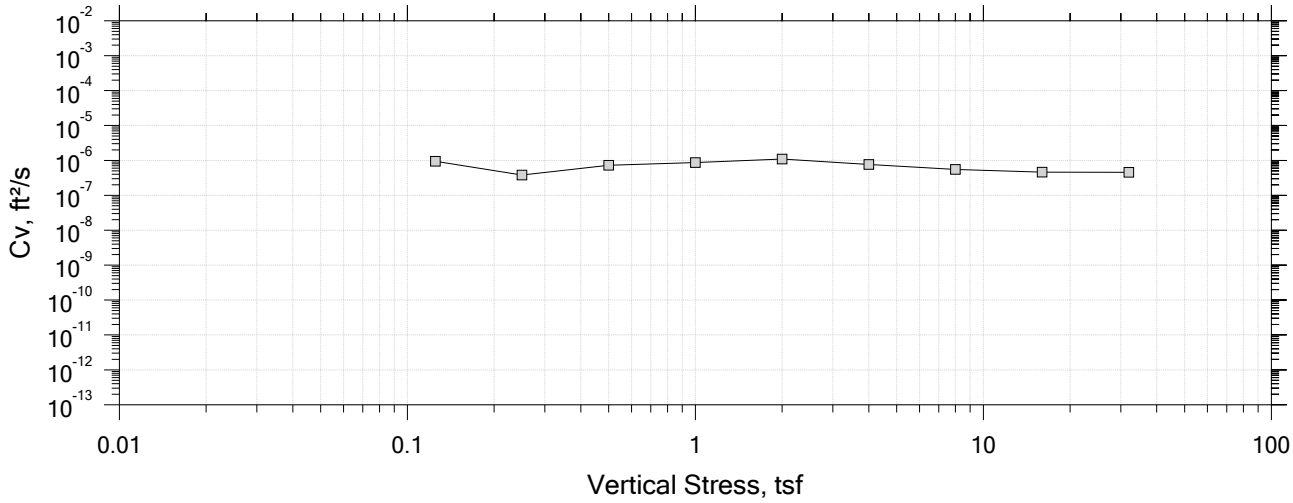


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

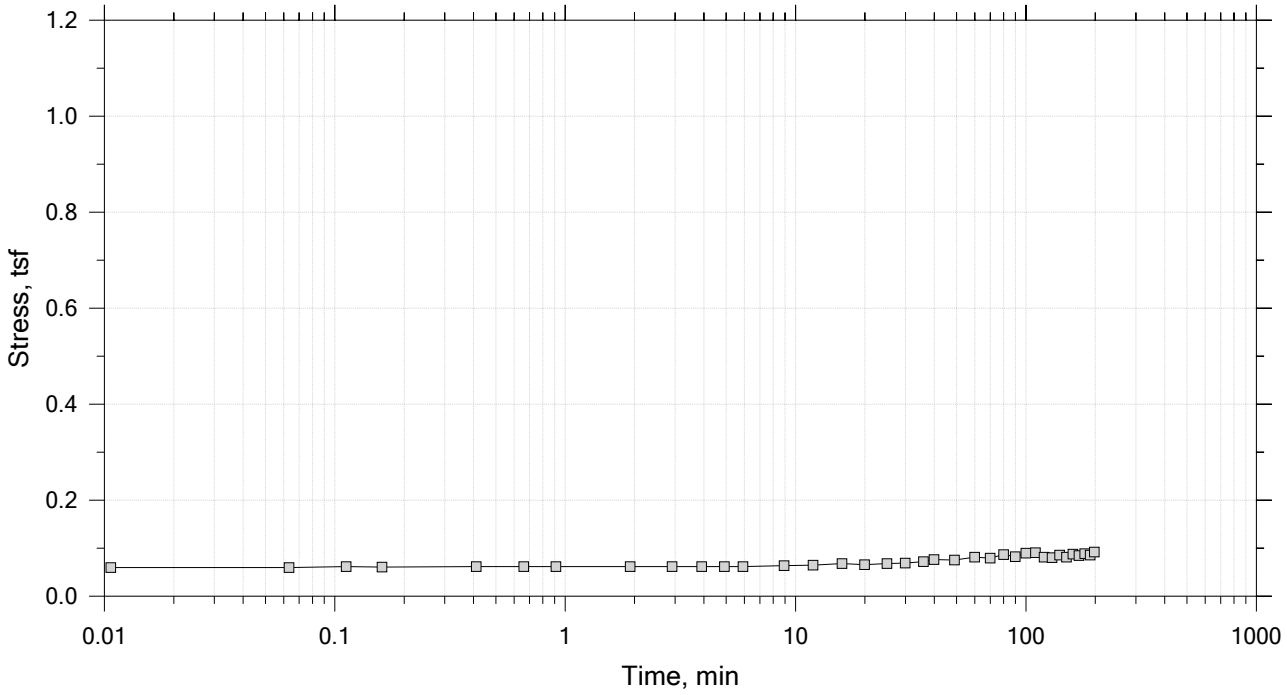


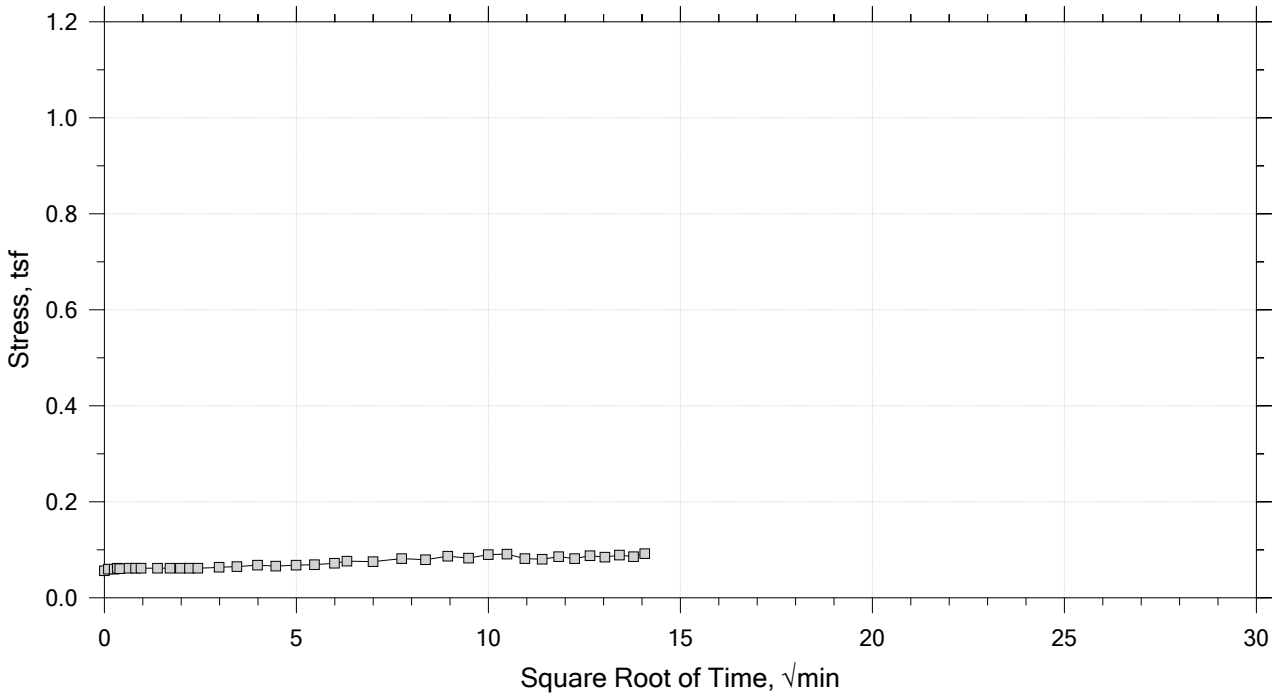


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0919 tsf

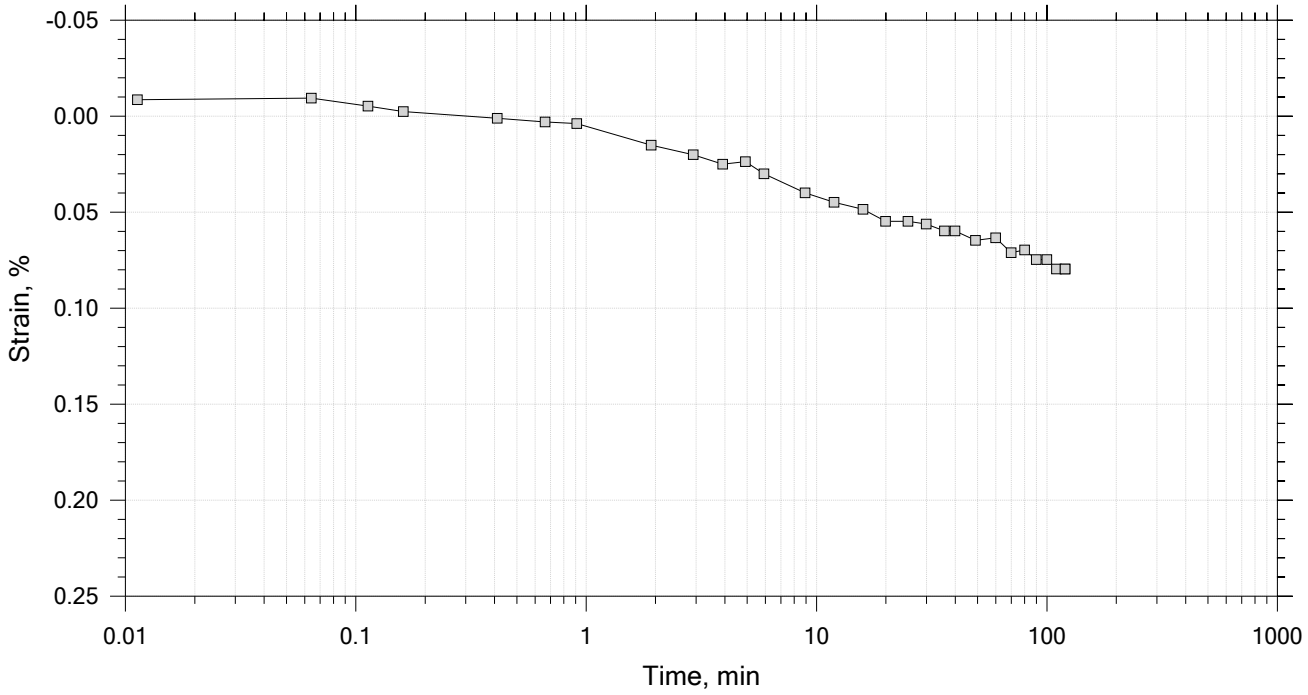


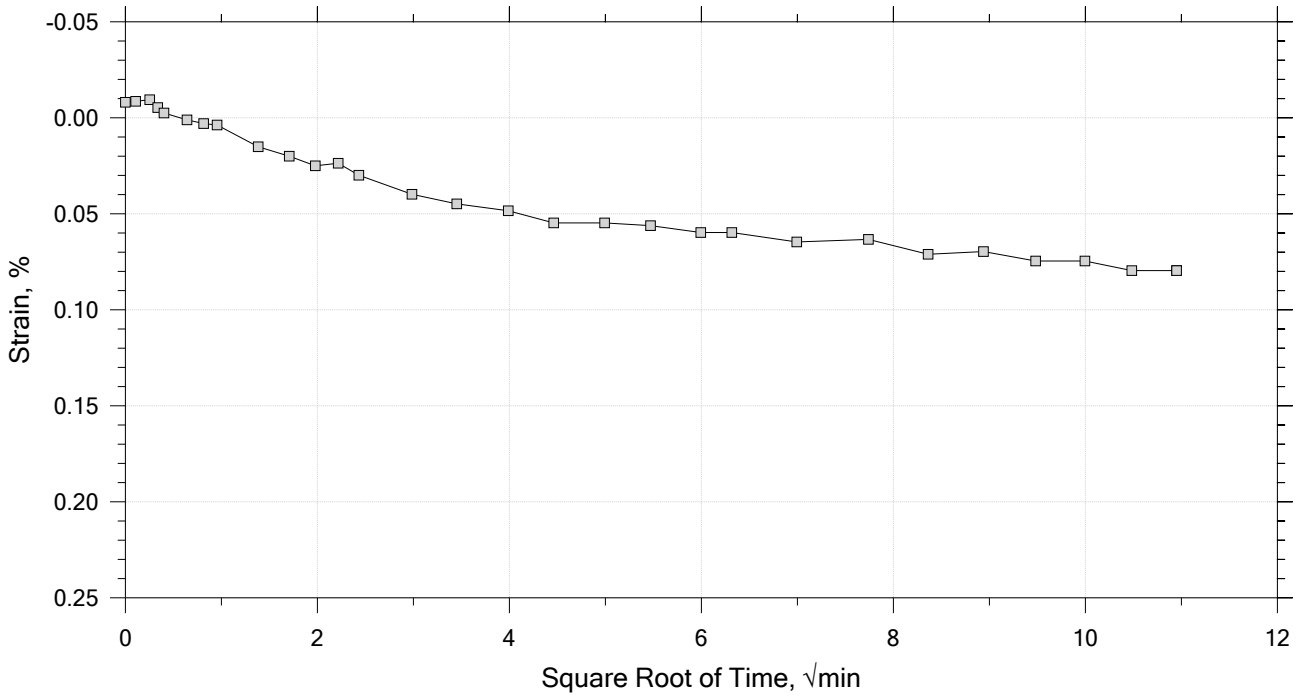


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

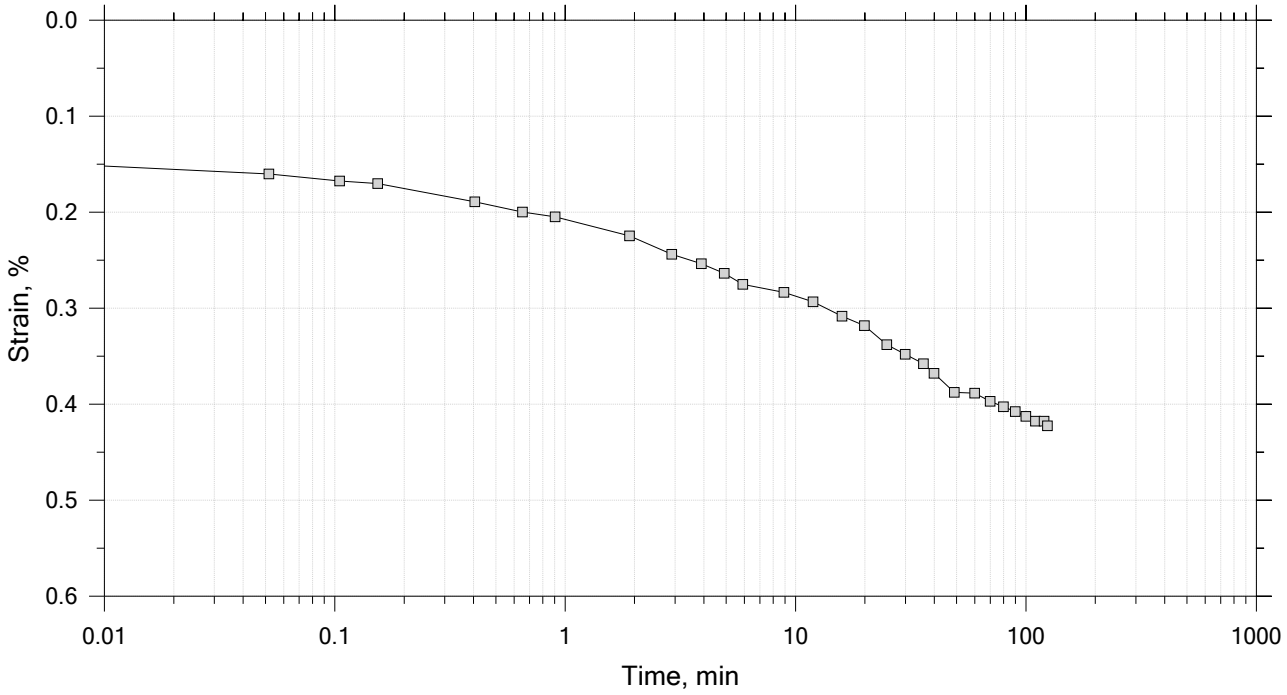


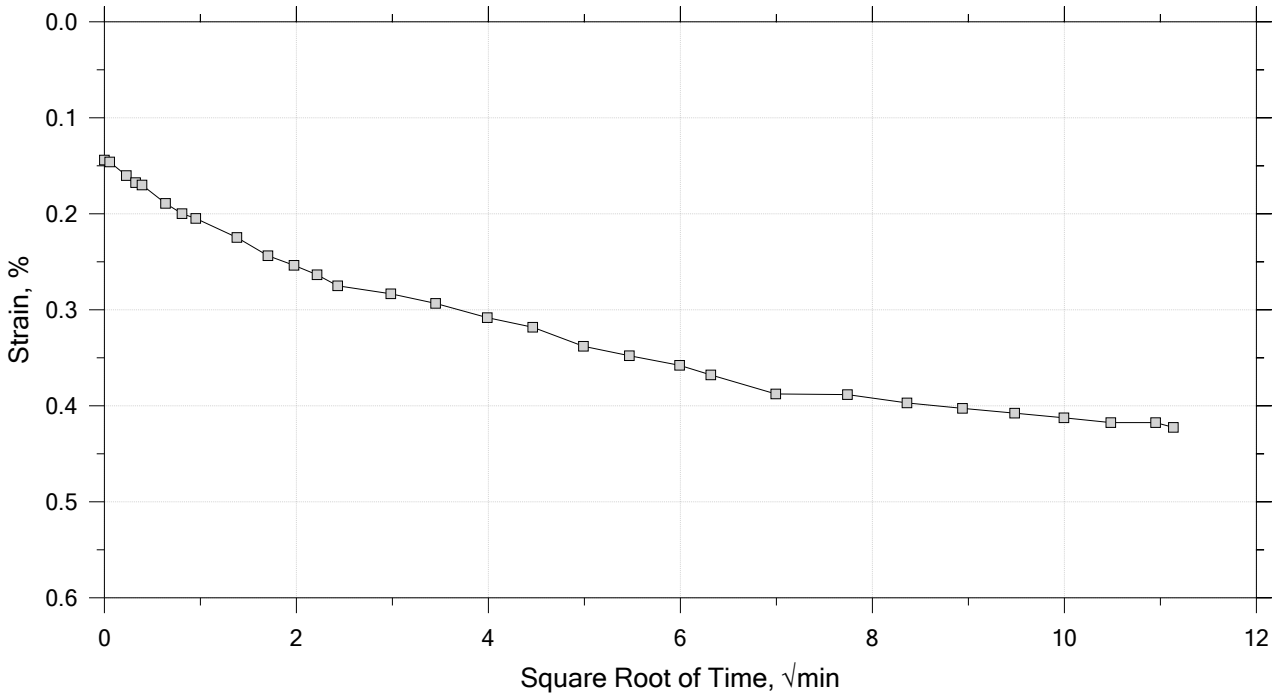


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

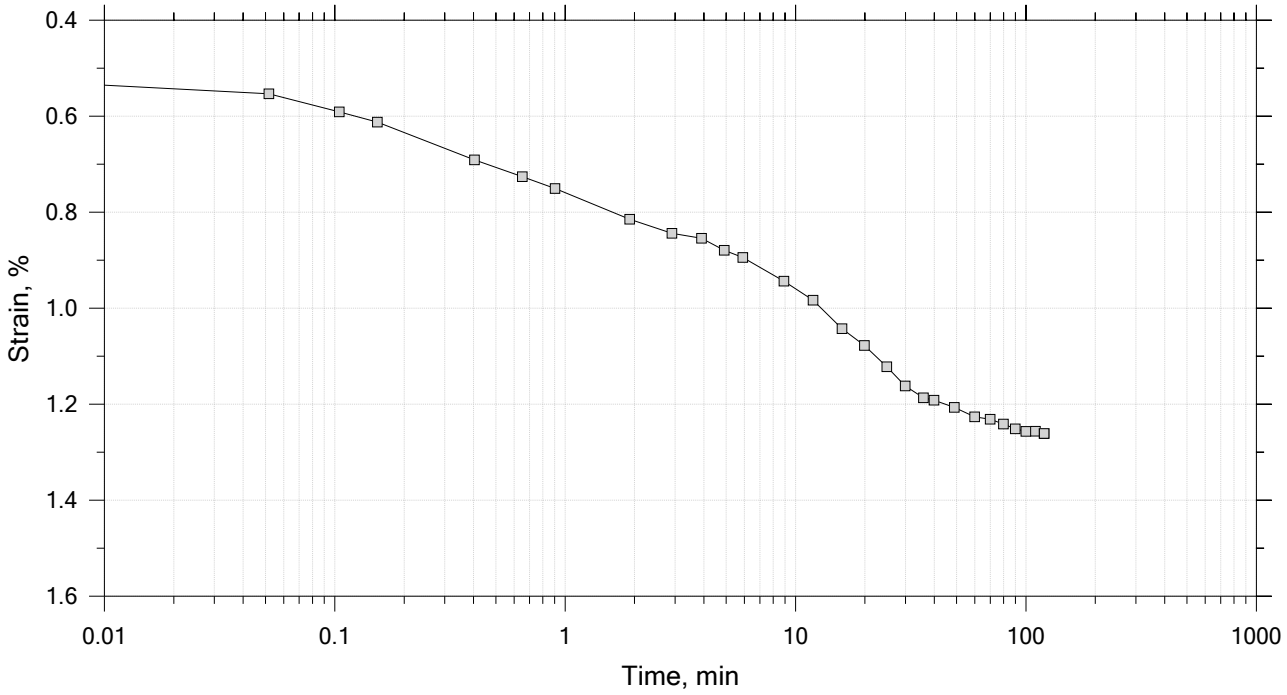


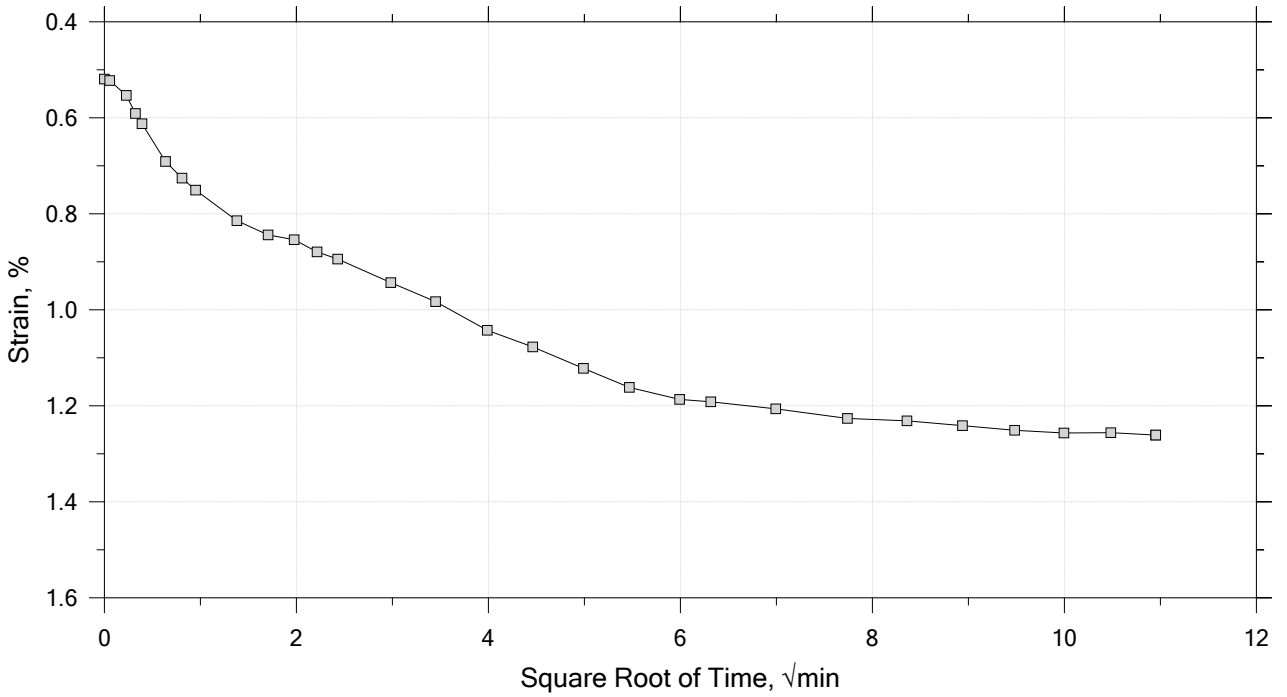


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





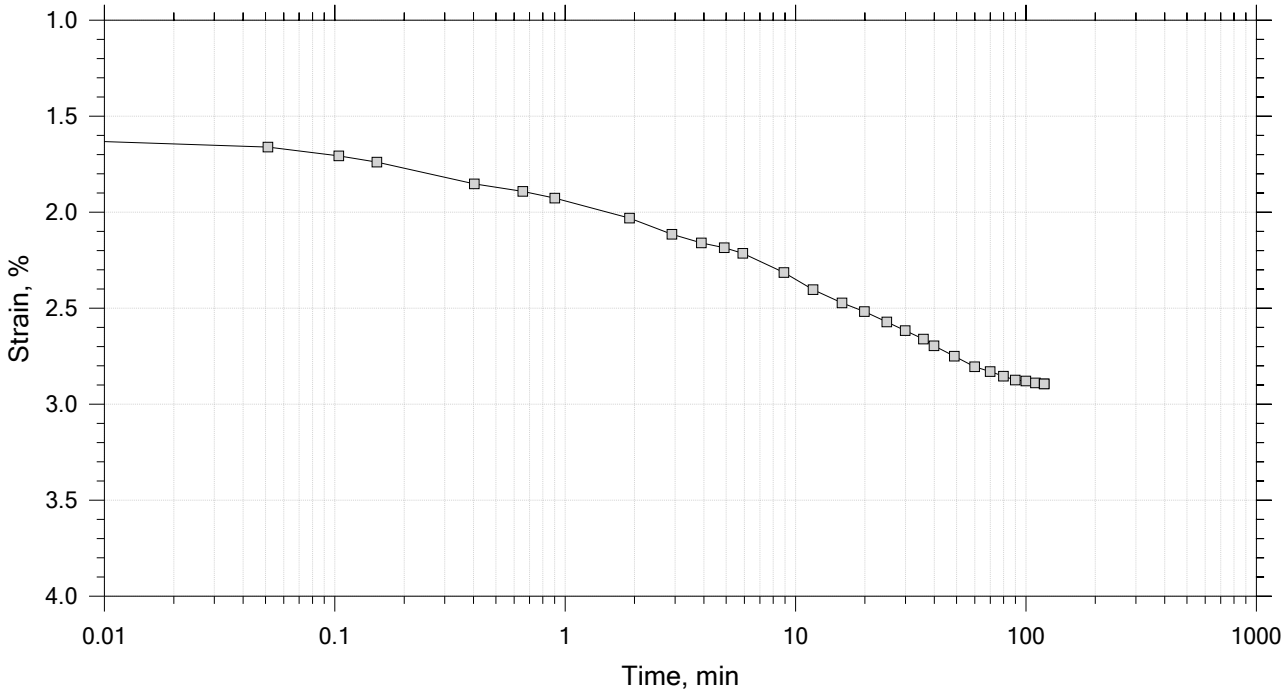
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

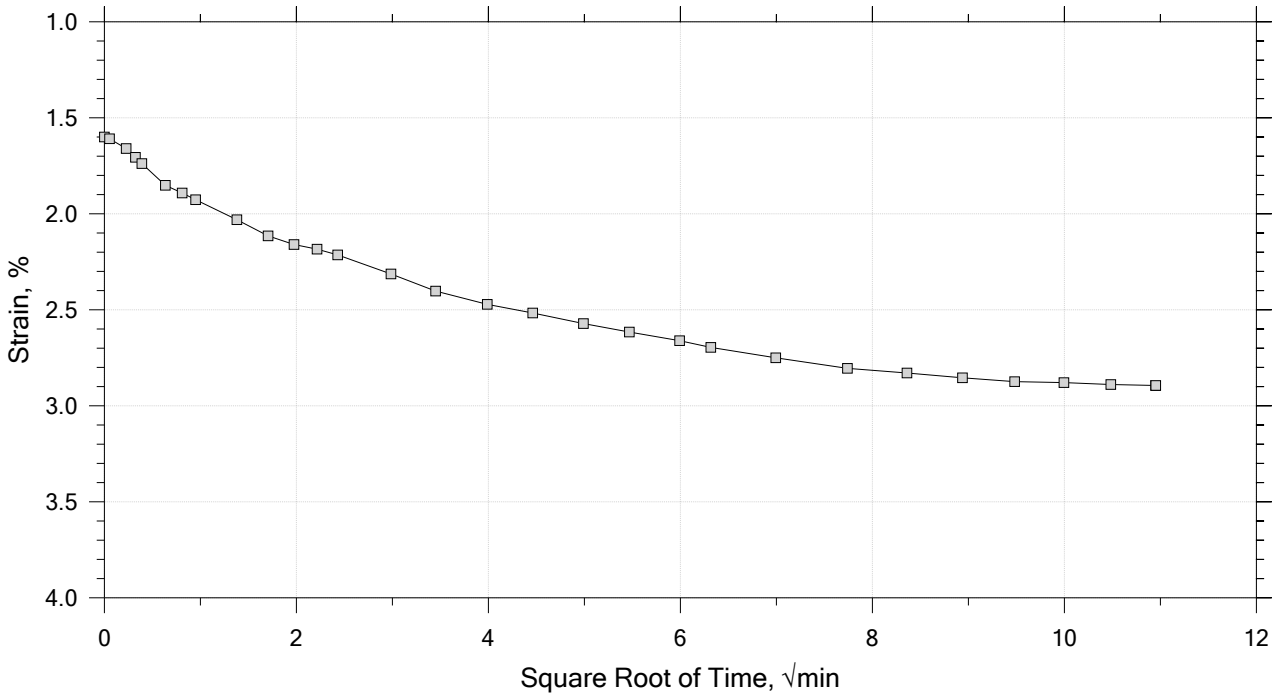
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





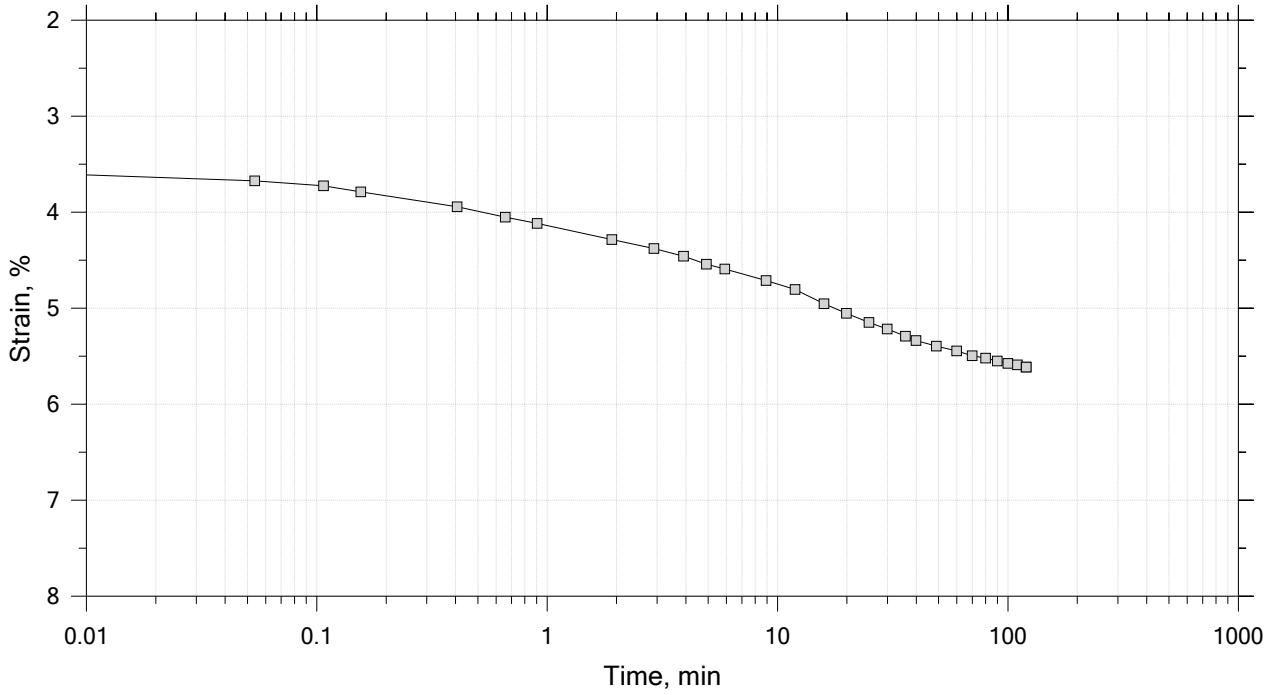
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
Test No.: IP-11	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay		
Remarks: System A, Swell Pressure = 0.0919 tsf		

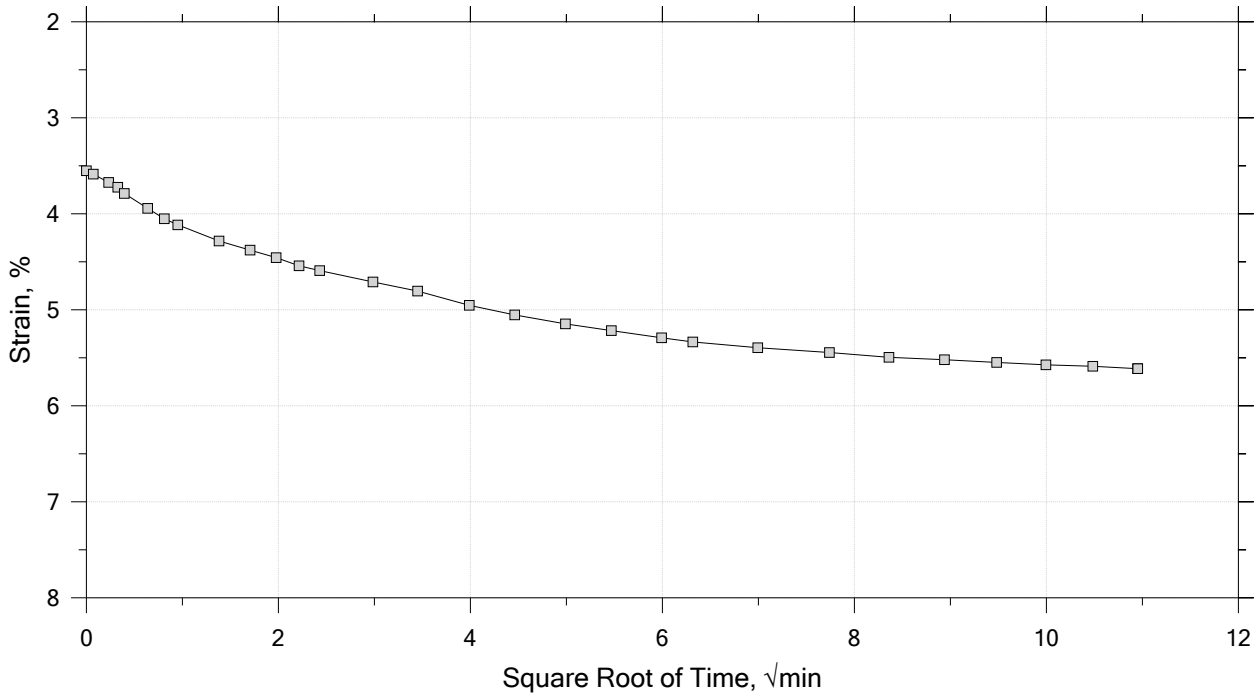
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





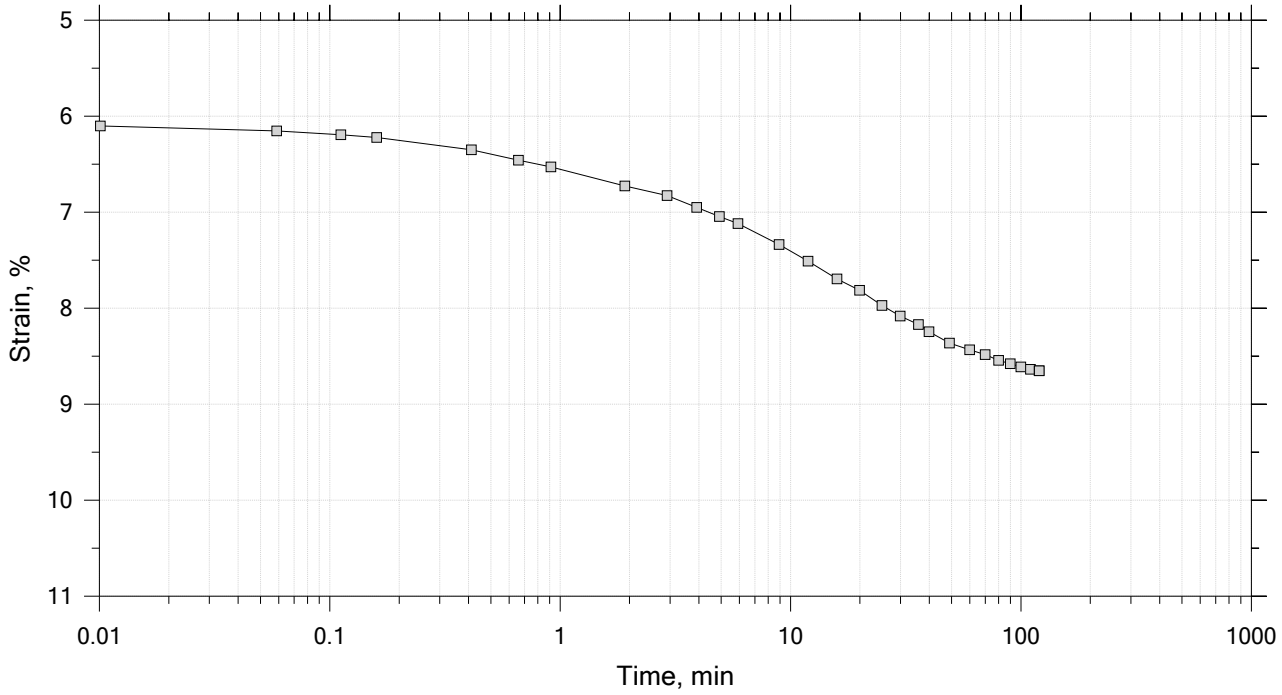
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

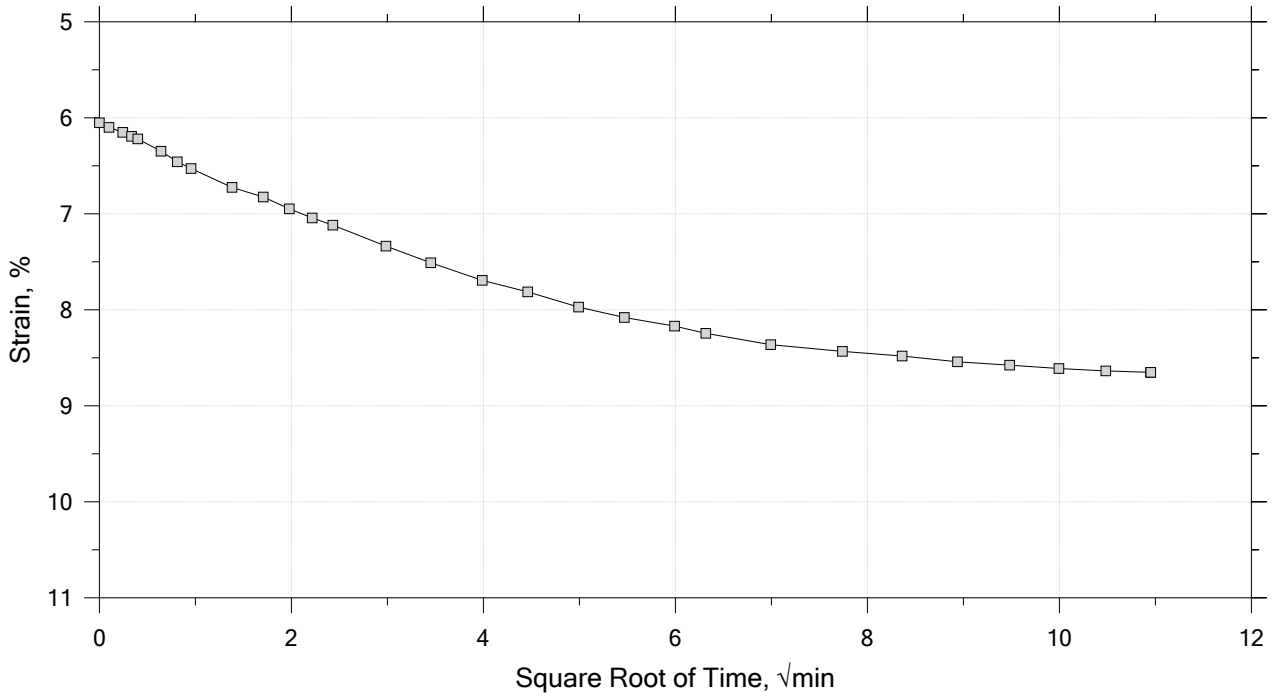
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





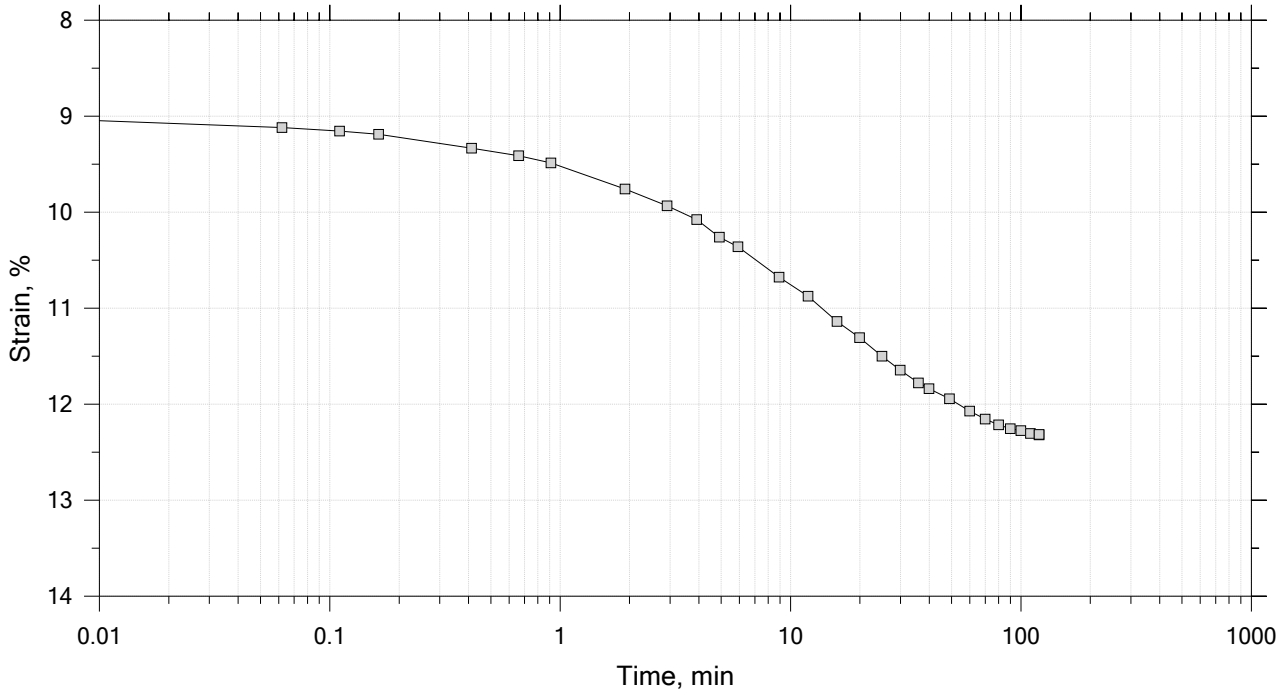
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

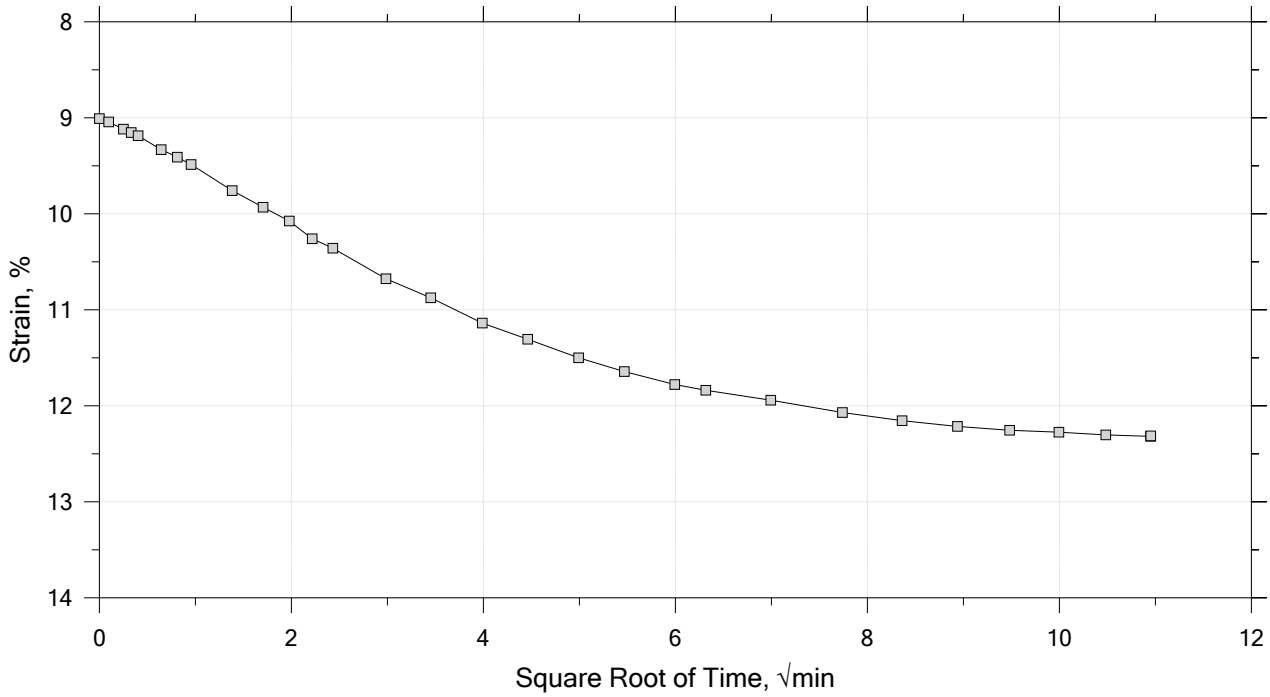
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

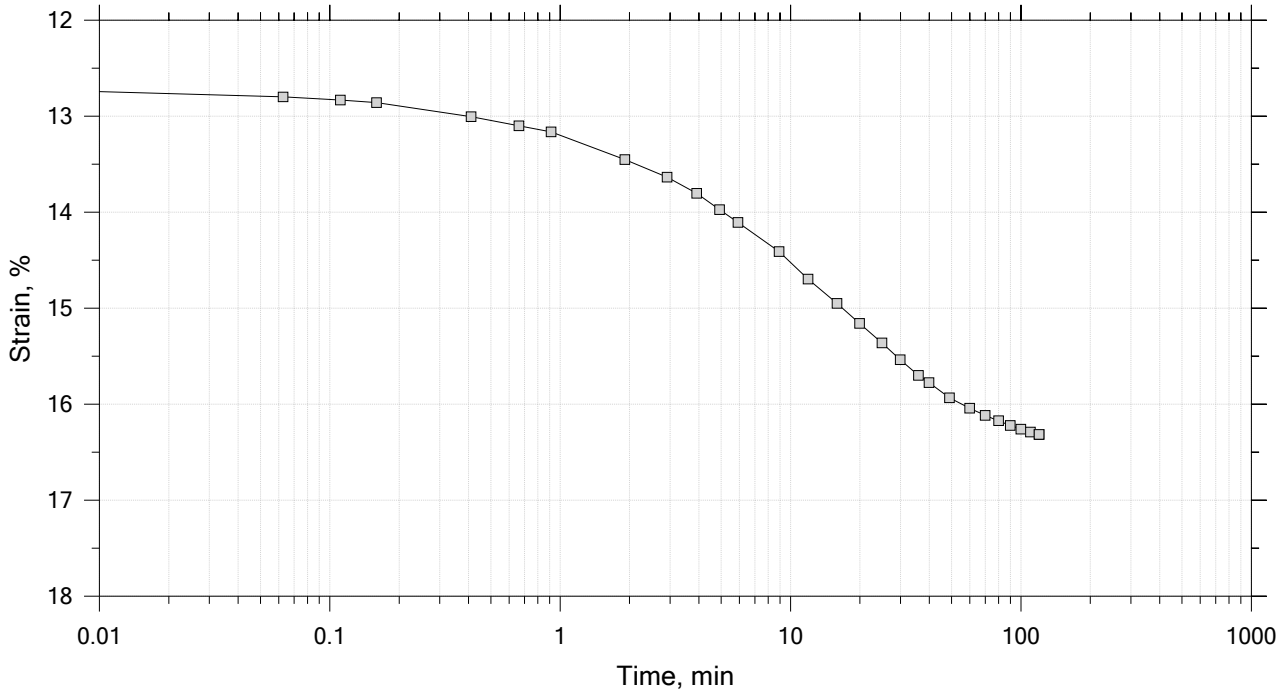


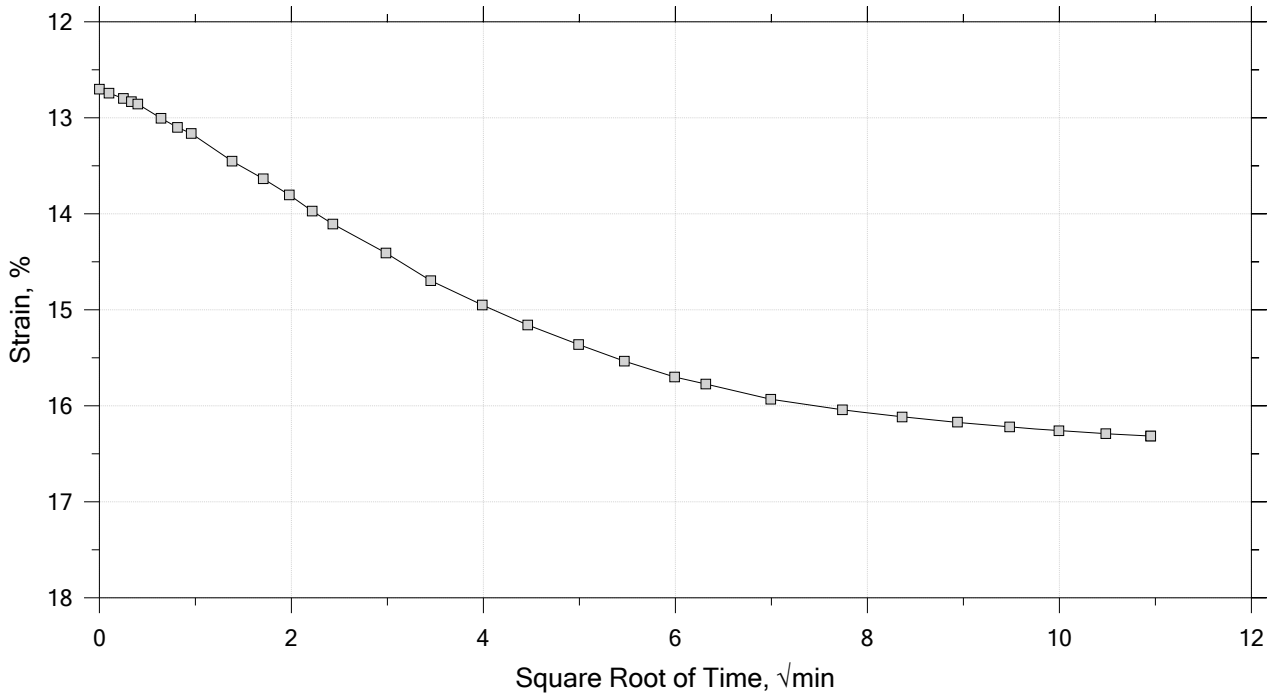


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

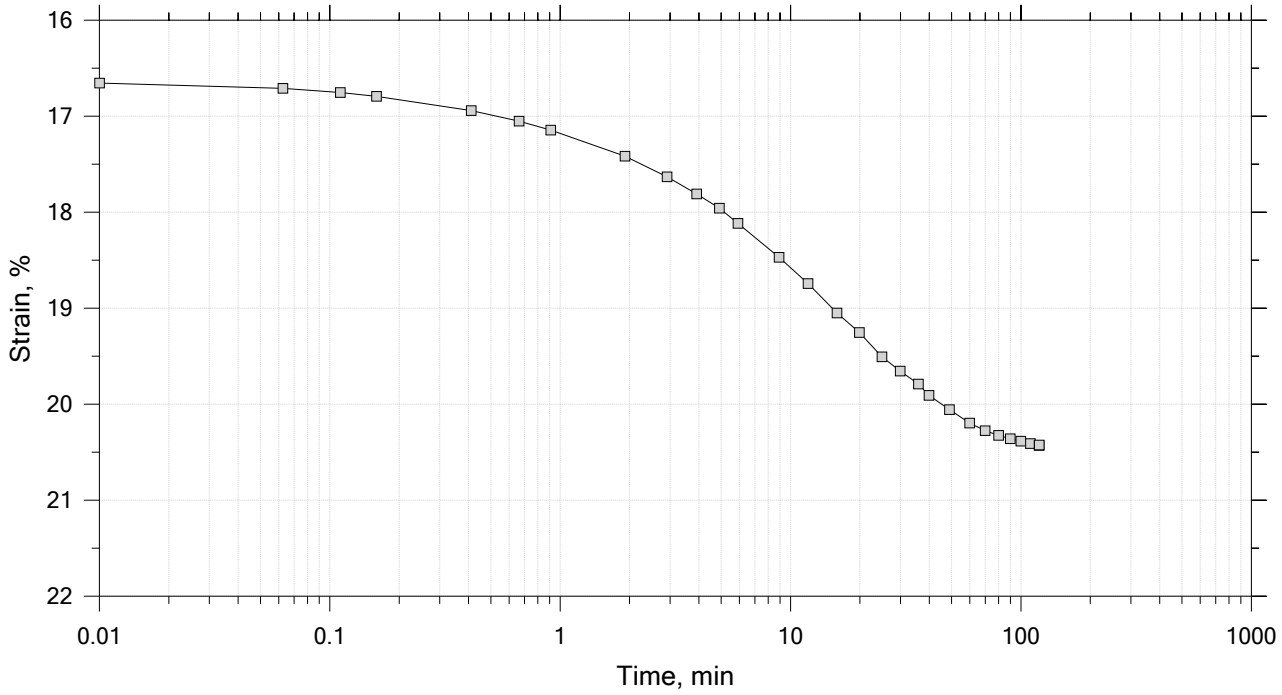


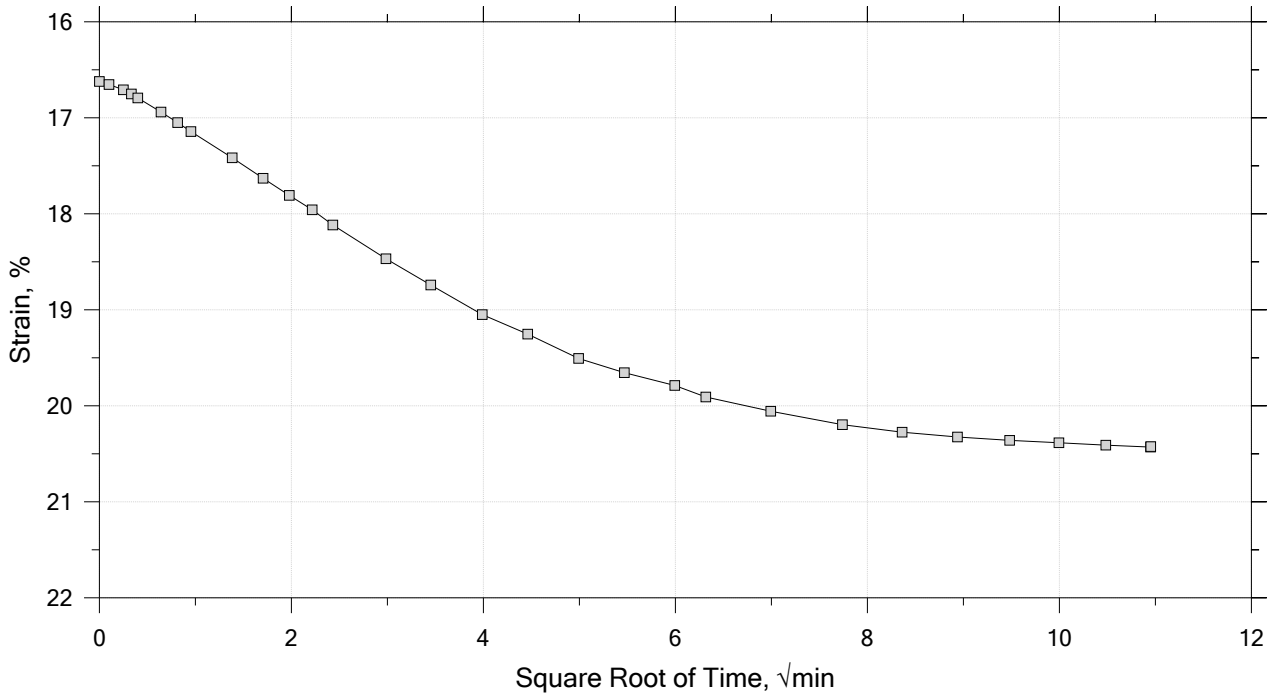


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

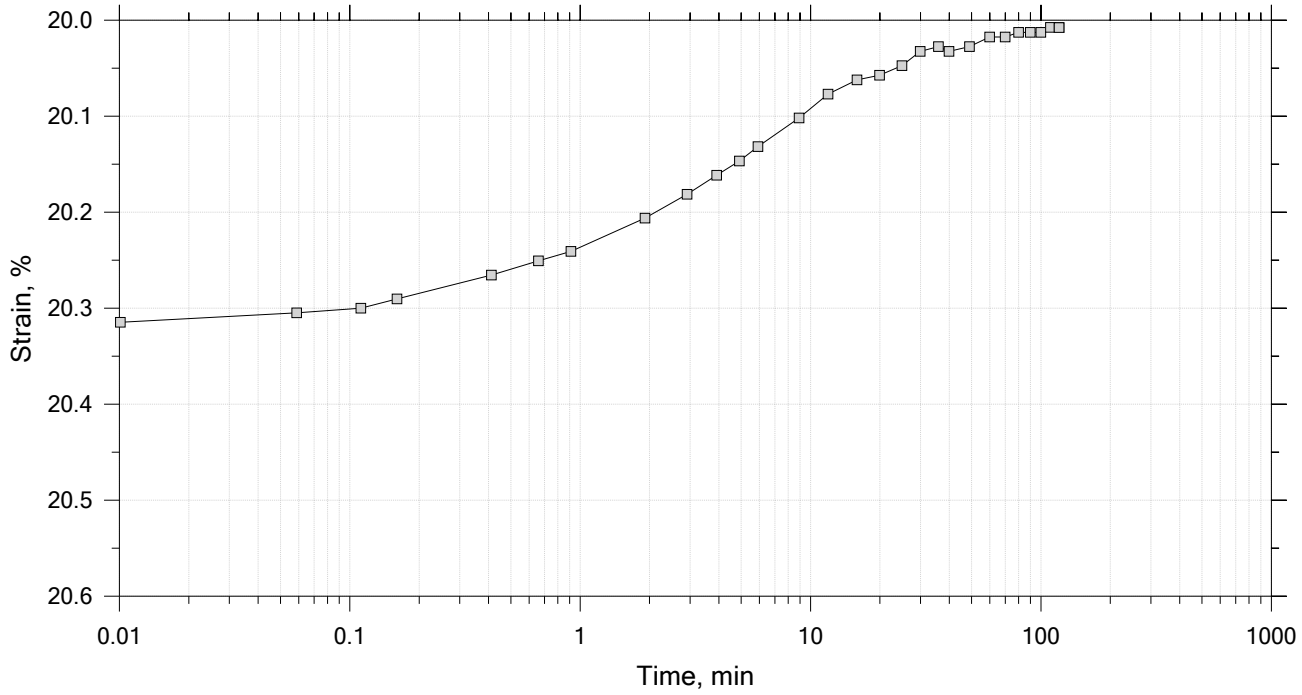


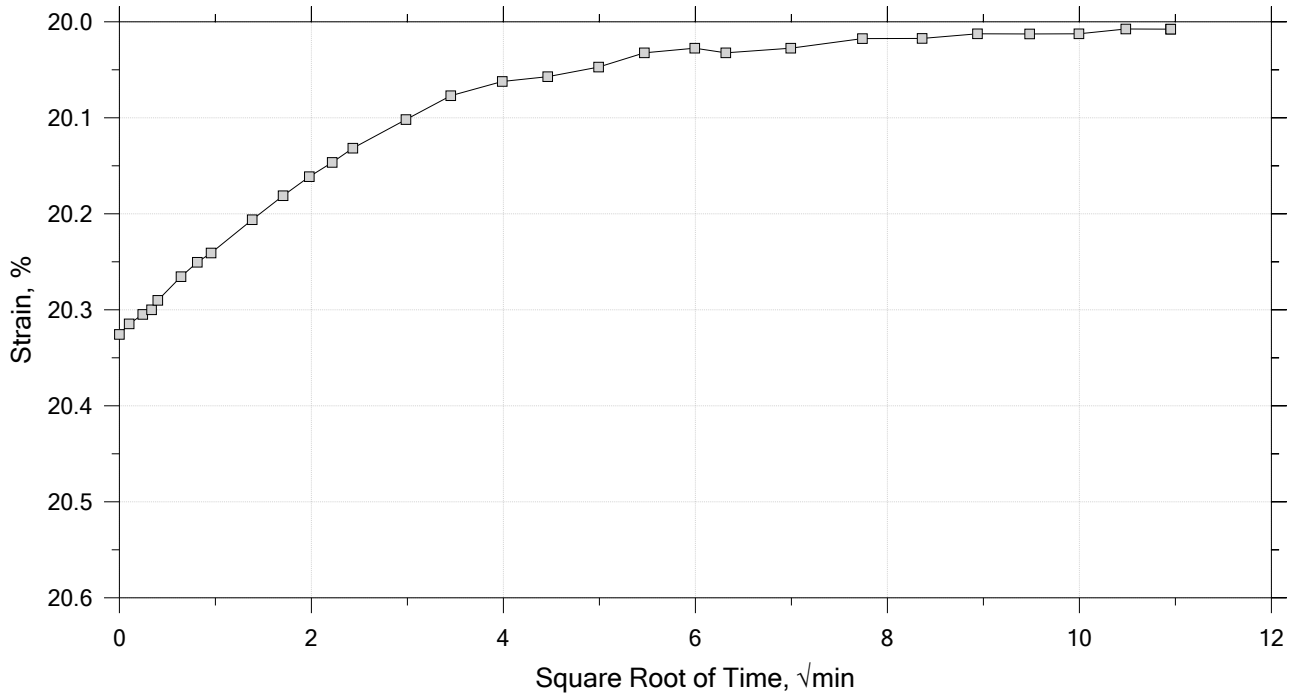


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

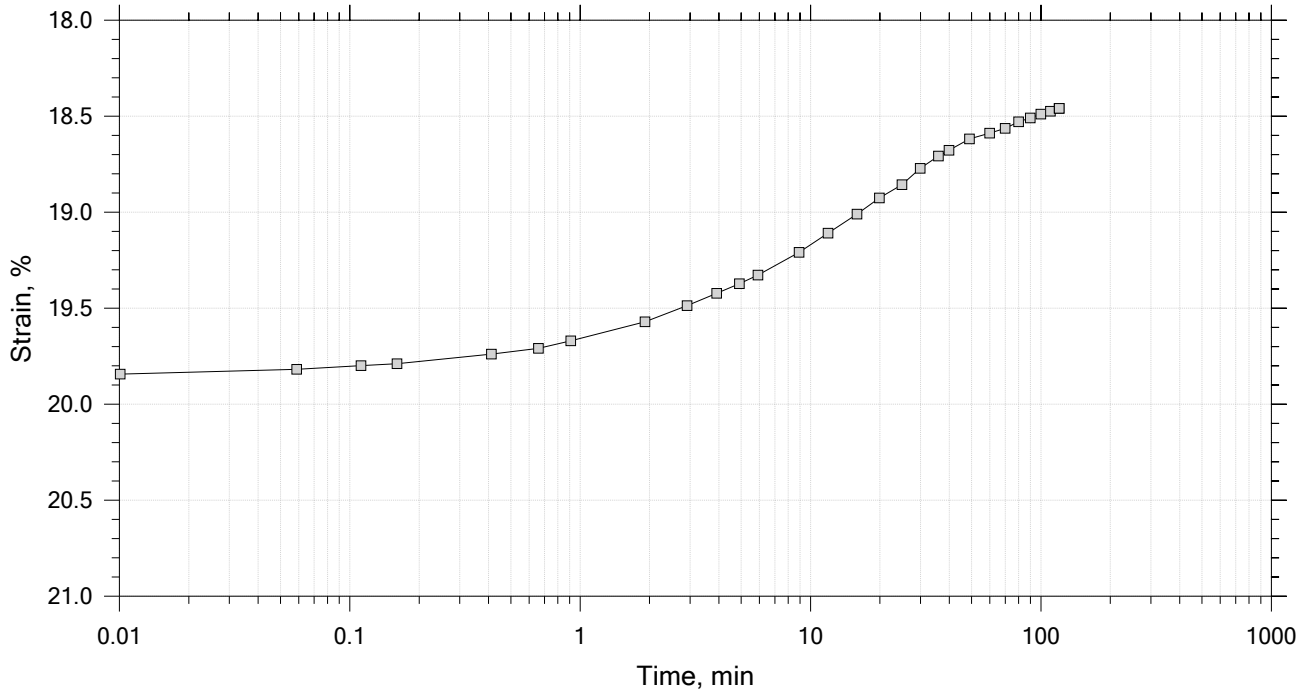


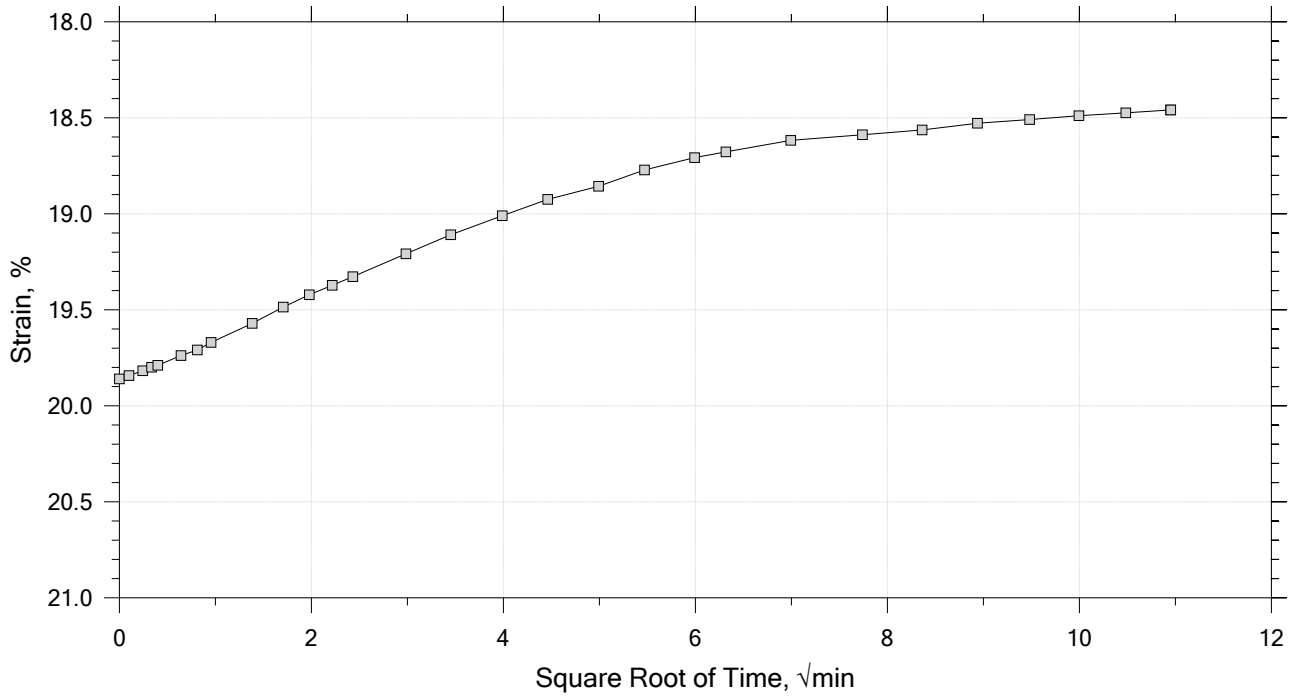


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





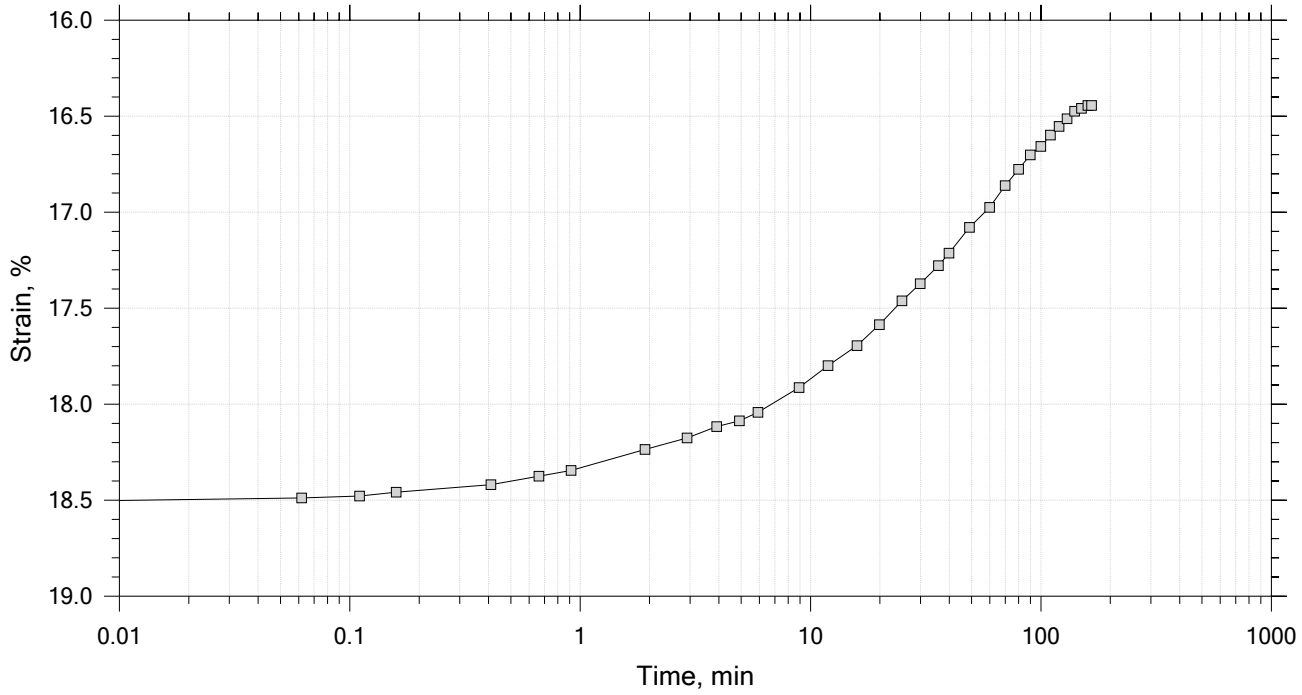
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

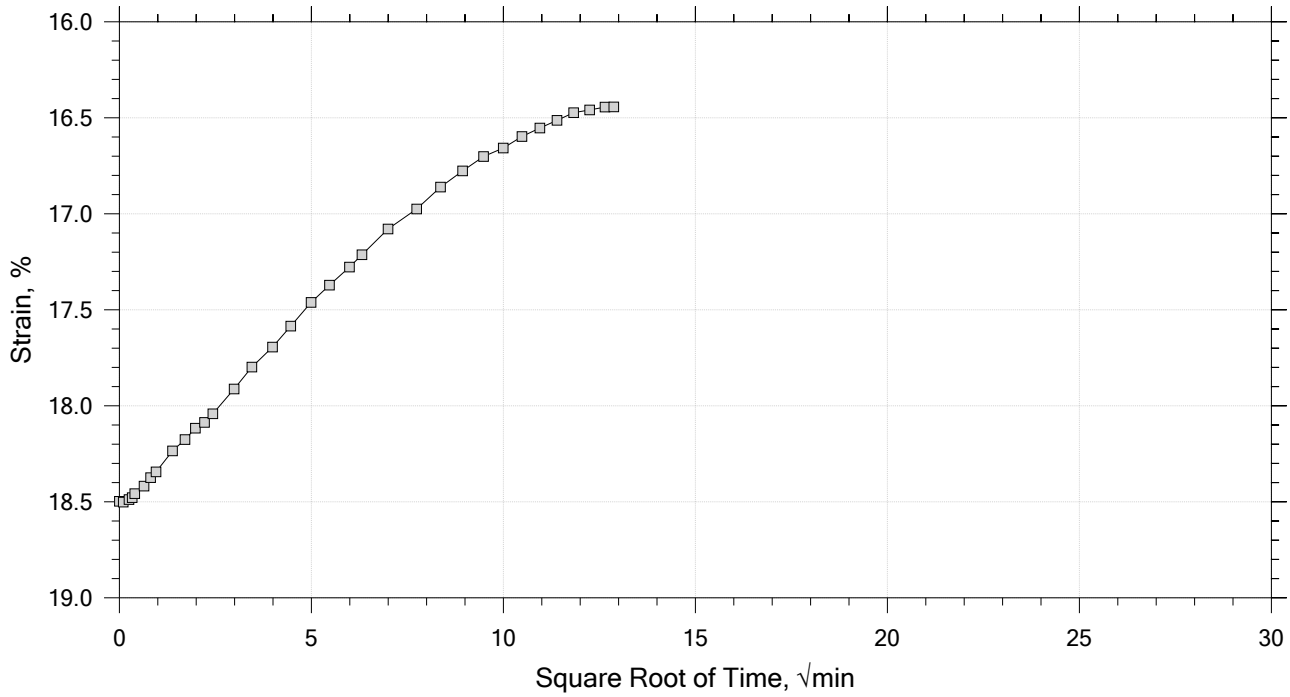
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

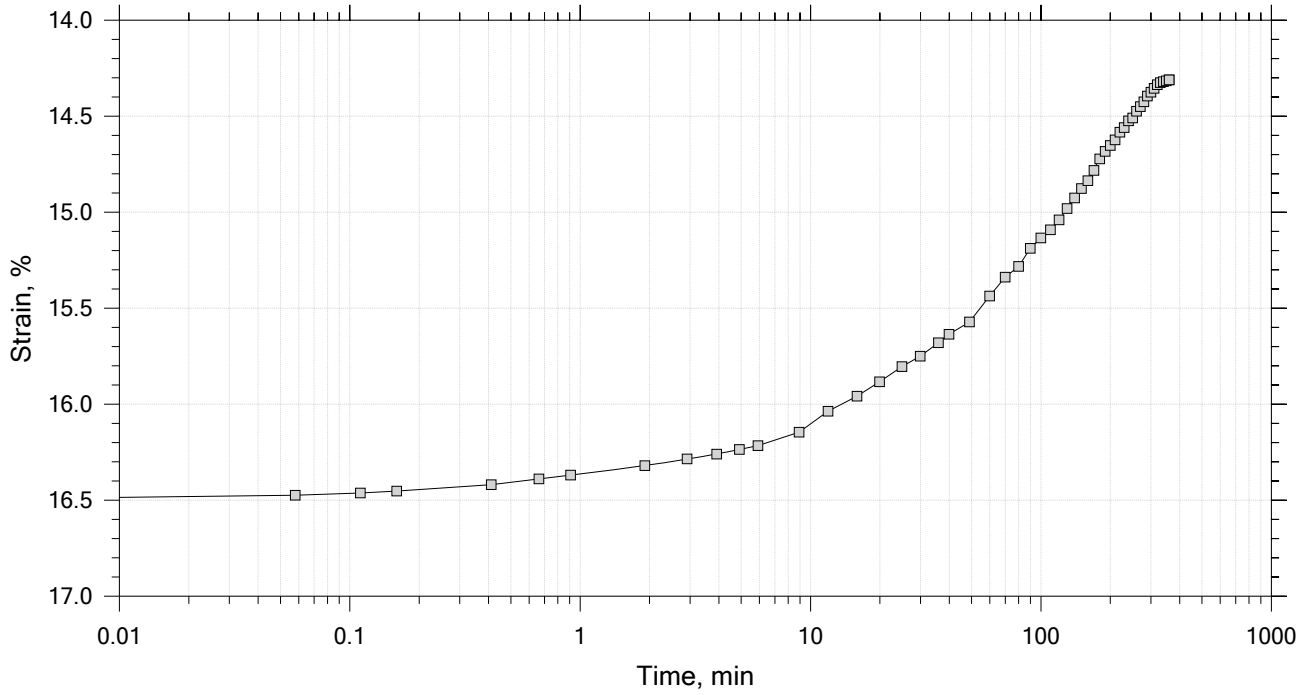


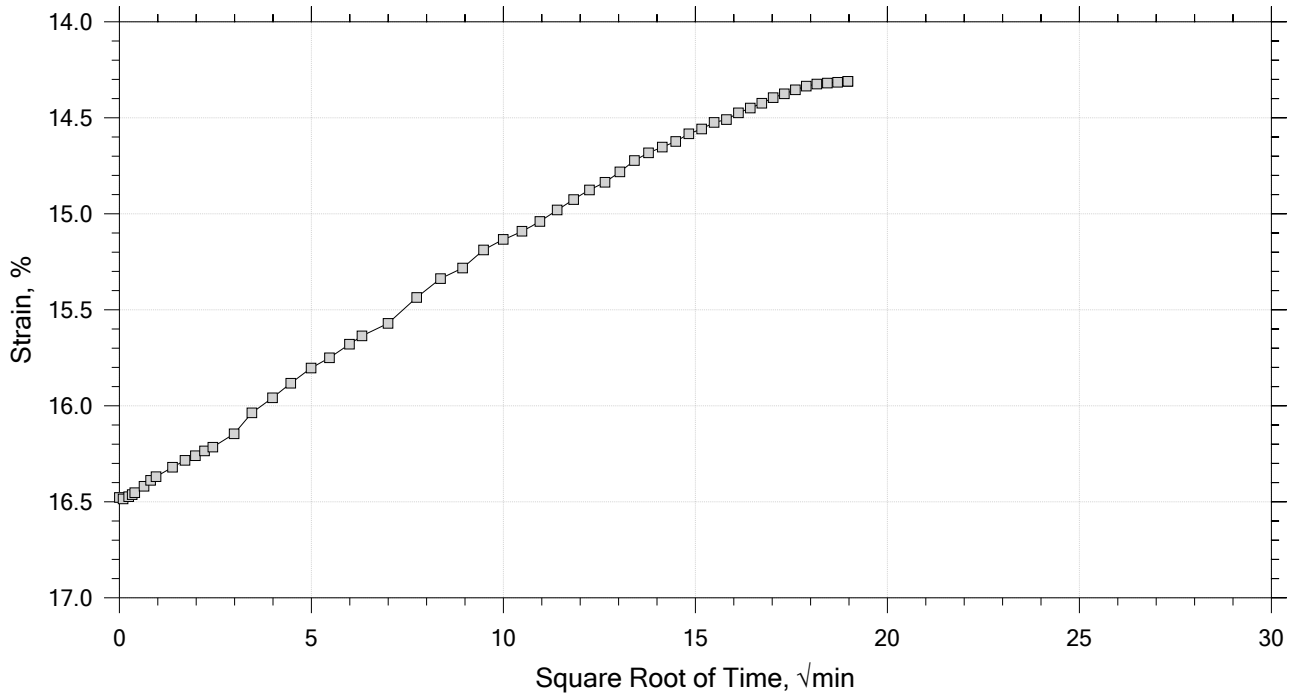


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
Test No.: IP-11	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay		
Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 52
Initial Height: 1.00 in	Initial Void Ratio: 0.806	Plastic Limit: 22
Final Height: 0.86 in	Final Void Ratio: 0.547	Plasticity Index: 30

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	sh9	RING		twh37
Mass Container, gm	8.22	210.3	210.3	8.22
Mass Container + Wet Soil, gm	119.99	365.61	357.23	154.93
Mass Container + Dry Soil, gm	96.84	332.85	332.85	130.59
Mass Dry Soil, gm	88.62	122.55	122.55	122.37
Water Content, %	26.12	26.73	19.89	19.89
Void Ratio	---	0.81	0.55	---
Degree of Saturation, %	---	91.27	100.00	---
Dry Unit Weight, pcf	---	95.112	111	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

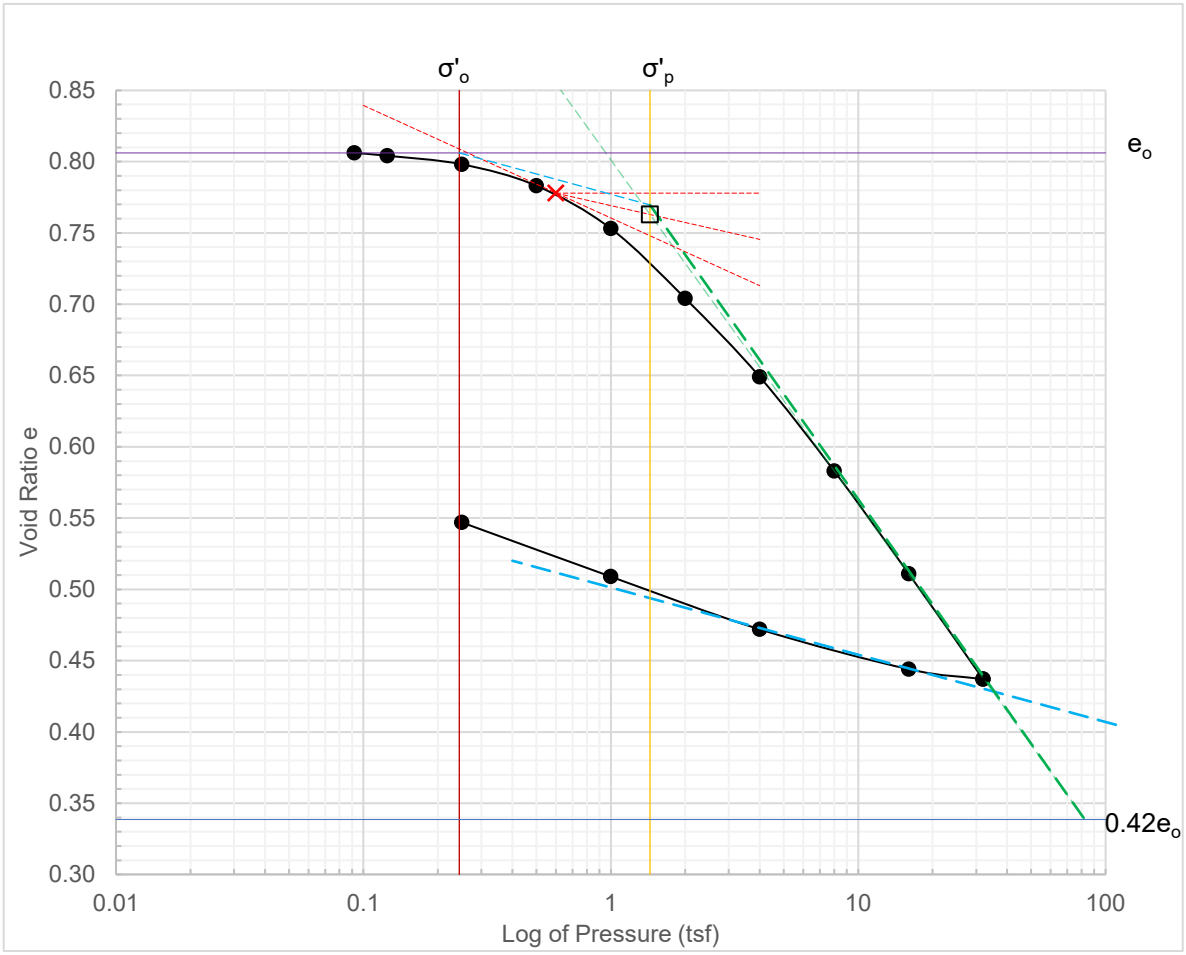
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k cm/s
1	0.0919	-4.049e-05	0.806	-0.00405	0.000	0.00e+00	-4.41e-04	-0.00e+00
2	0.125	0.0007958	0.804	0.0796	25.873	9.48e-07	2.52e-02	2.28e-08
3	0.250	0.004225	0.798	0.423	64.260	3.80e-07	2.74e-02	9.92e-09
4	0.500	0.01261	0.783	1.26	33.221	7.26e-07	3.35e-02	2.32e-08
5	1.00	0.02894	0.753	2.89	27.074	8.69e-07	3.27e-02	2.70e-08
6	2.00	0.05614	0.704	5.61	20.446	1.10e-06	2.72e-02	2.85e-08
7	4.00	0.08652	0.649	8.65	27.639	7.66e-07	1.52e-02	1.11e-08
8	8.00	0.1231	0.583	12.3	35.546	5.53e-07	9.16e-03	4.82e-09
9	16.0	0.1631	0.511	16.3	39.112	4.61e-07	5.00e-03	2.19e-09
10	32.0	0.2042	0.437	20.4	35.991	4.54e-07	2.57e-03	1.11e-09
11	16.0	0.2001	0.444	20.0	12.634	1.24e-06	2.61e-04	3.07e-10
12	4.00	0.1846	0.472	18.5	42.690	3.75e-07	1.29e-03	4.60e-10
13	1.00	0.1644	0.509	16.4	118.971	1.41e-07	6.72e-03	8.98e-10
14	0.250	0.1431	0.547	14.3	347.338	5.06e-08	2.84e-02	1.37e-09

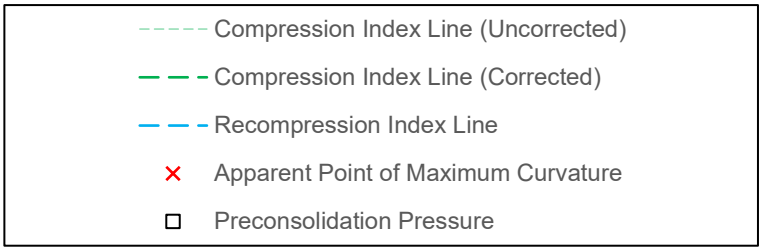
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 4.0-4.1 ft
	Test No.: IP-11	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay		
	Remarks: System A, Swell Pressure = 0.0919 tsf		
	Displacement at End of Increment		

Boring: B-4.12A

Depth: 4.0'-4.1'

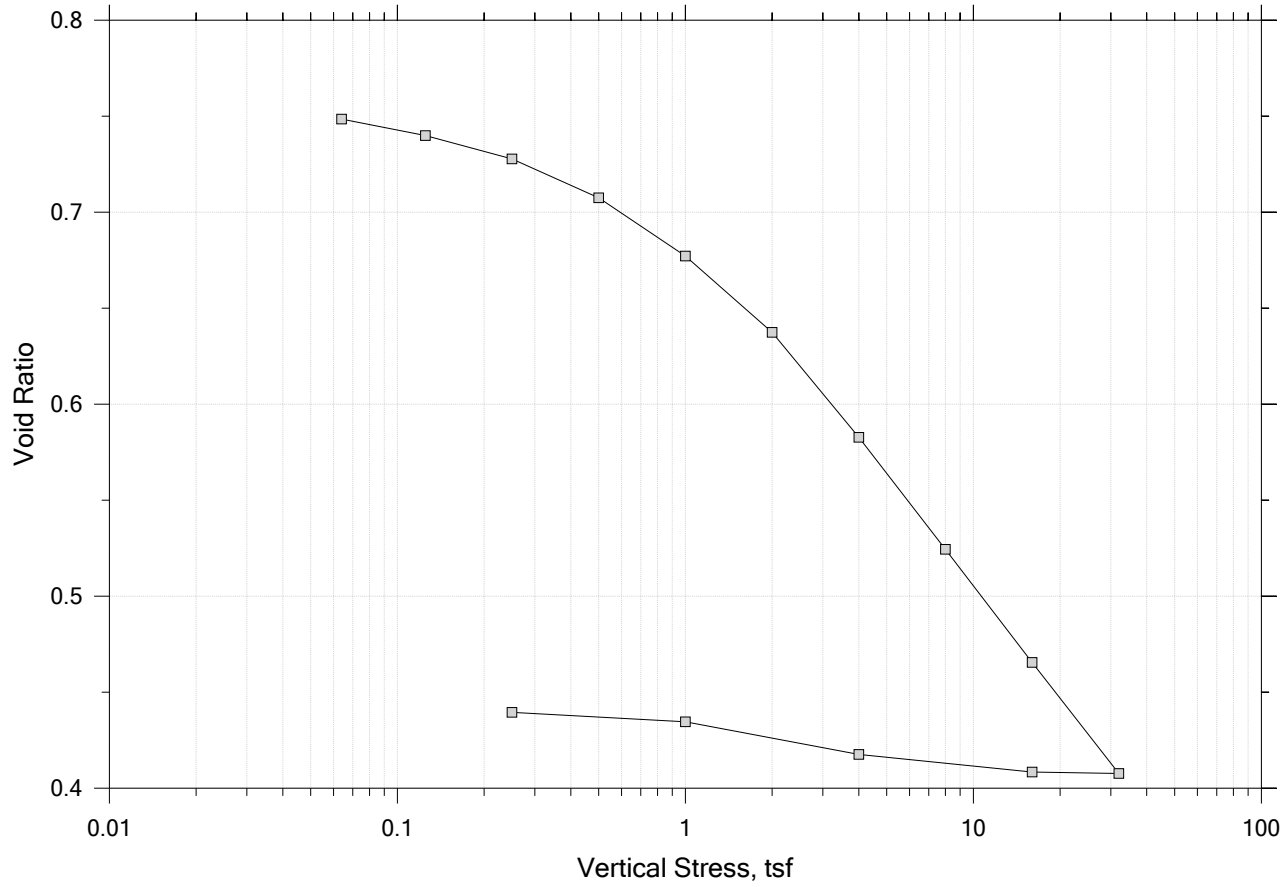
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.24
Preconsolidation Pressure, σ'_p (tsf) = 1.44
Compression Index, C_c = 0.25
Recompression Index, C_r = 0.047

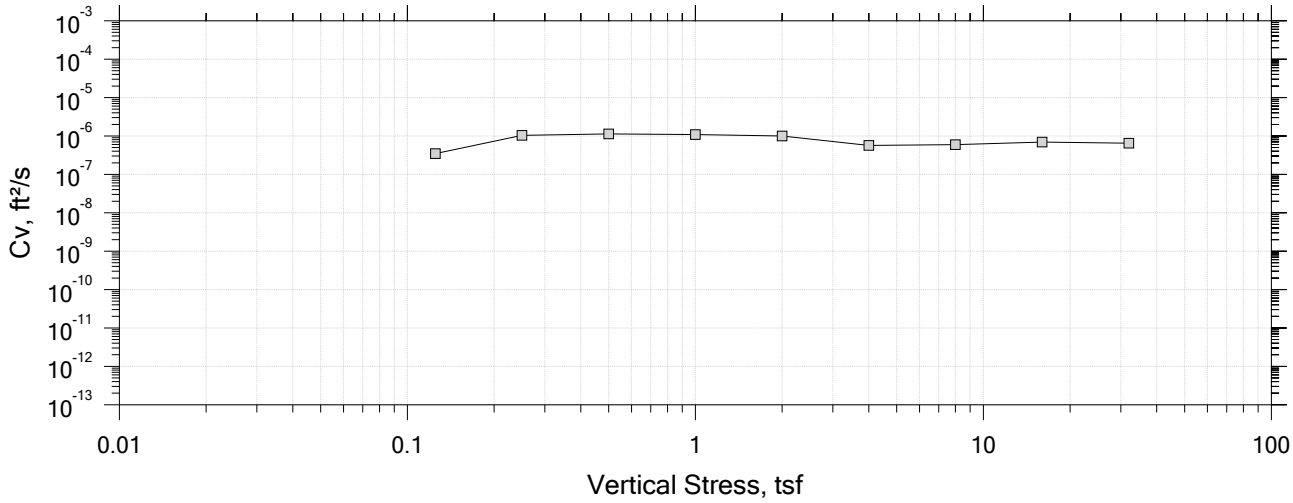




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

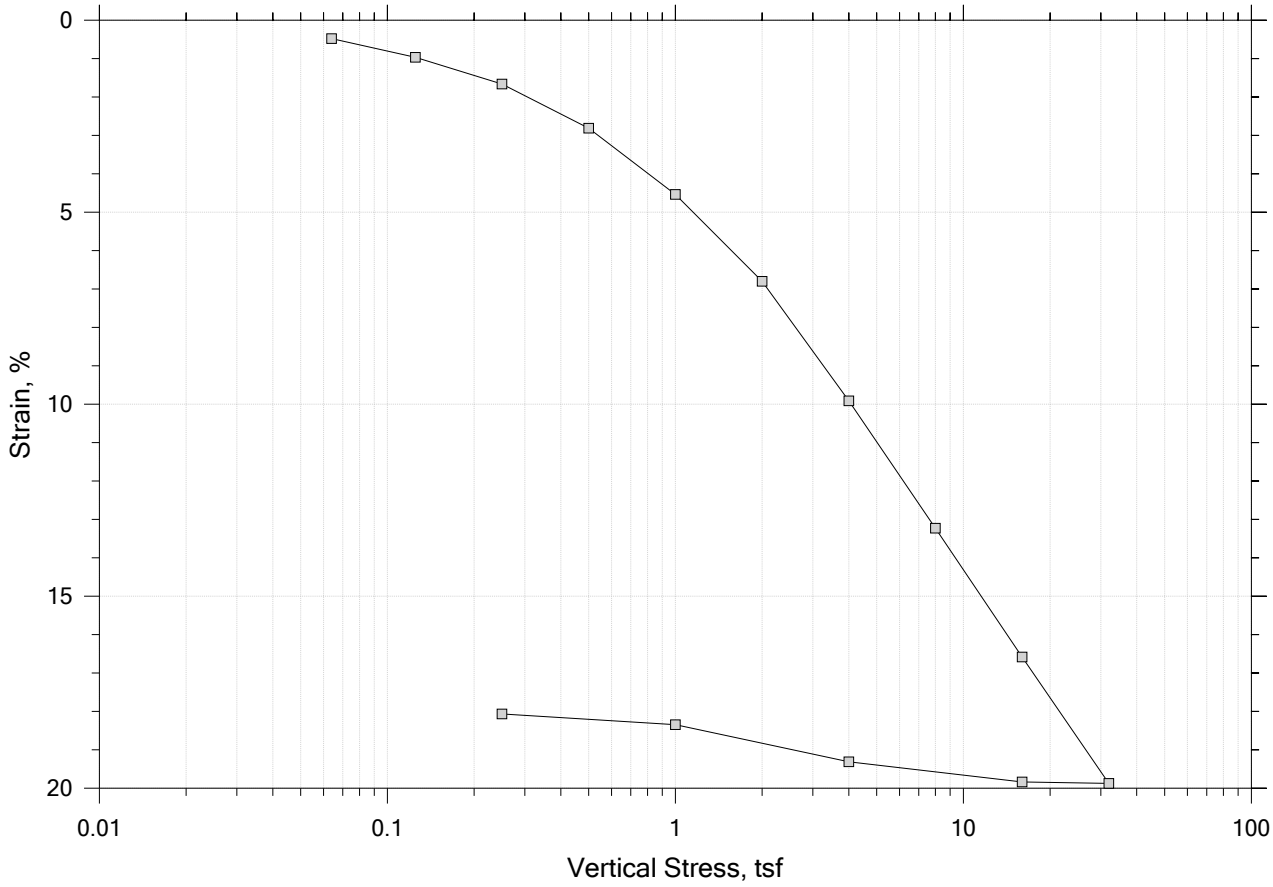


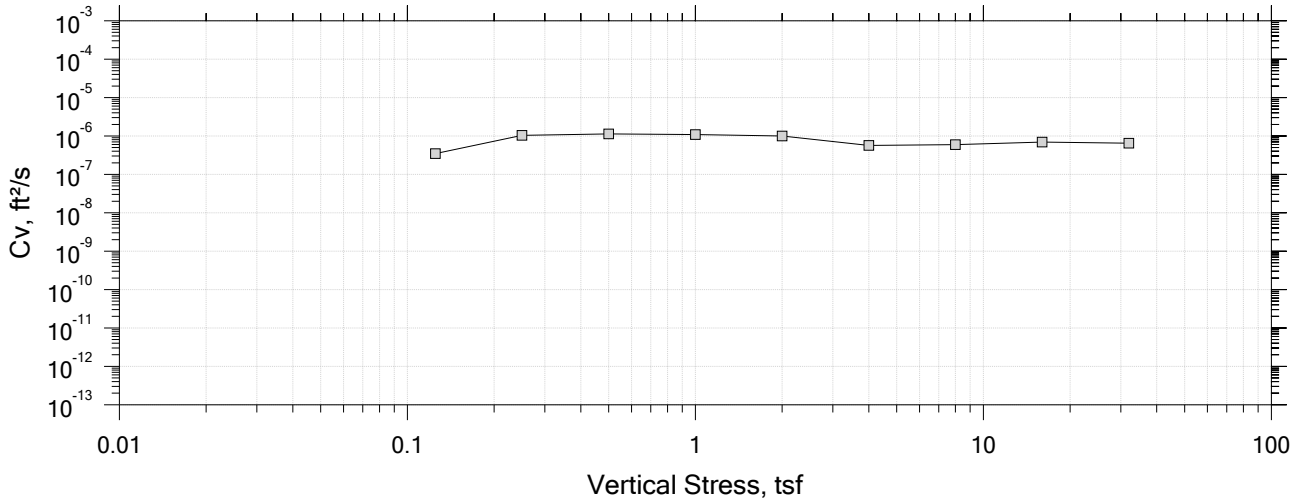


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

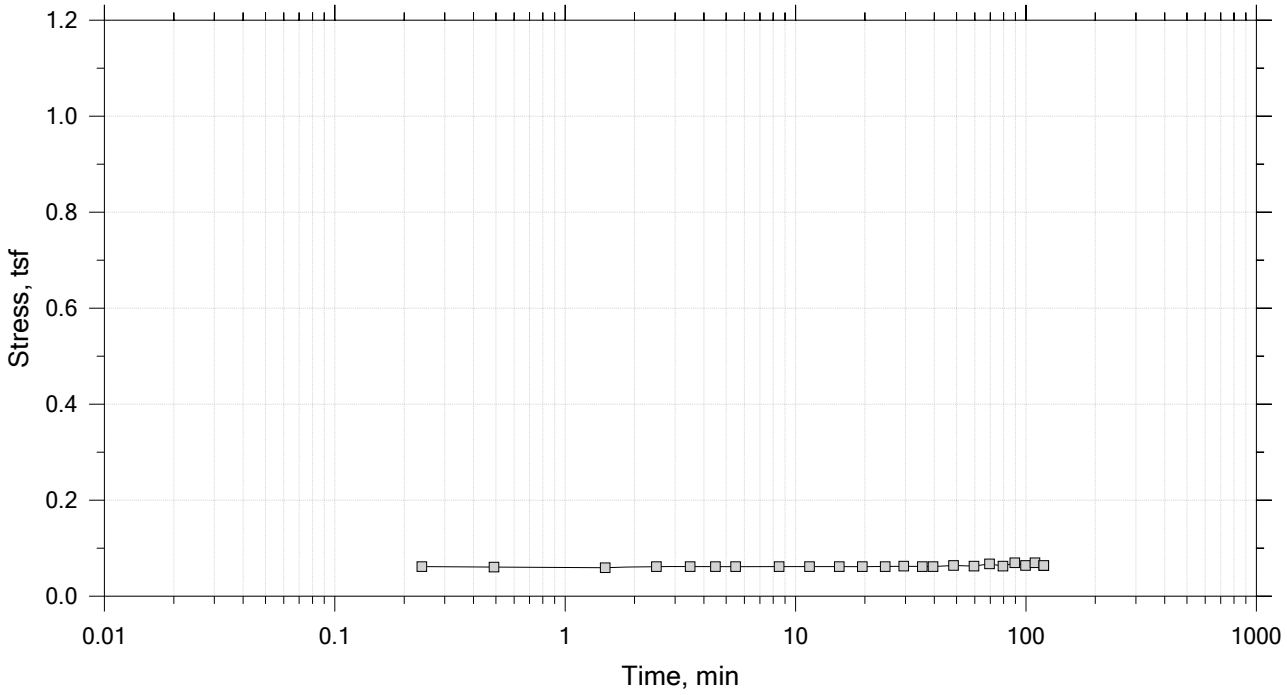


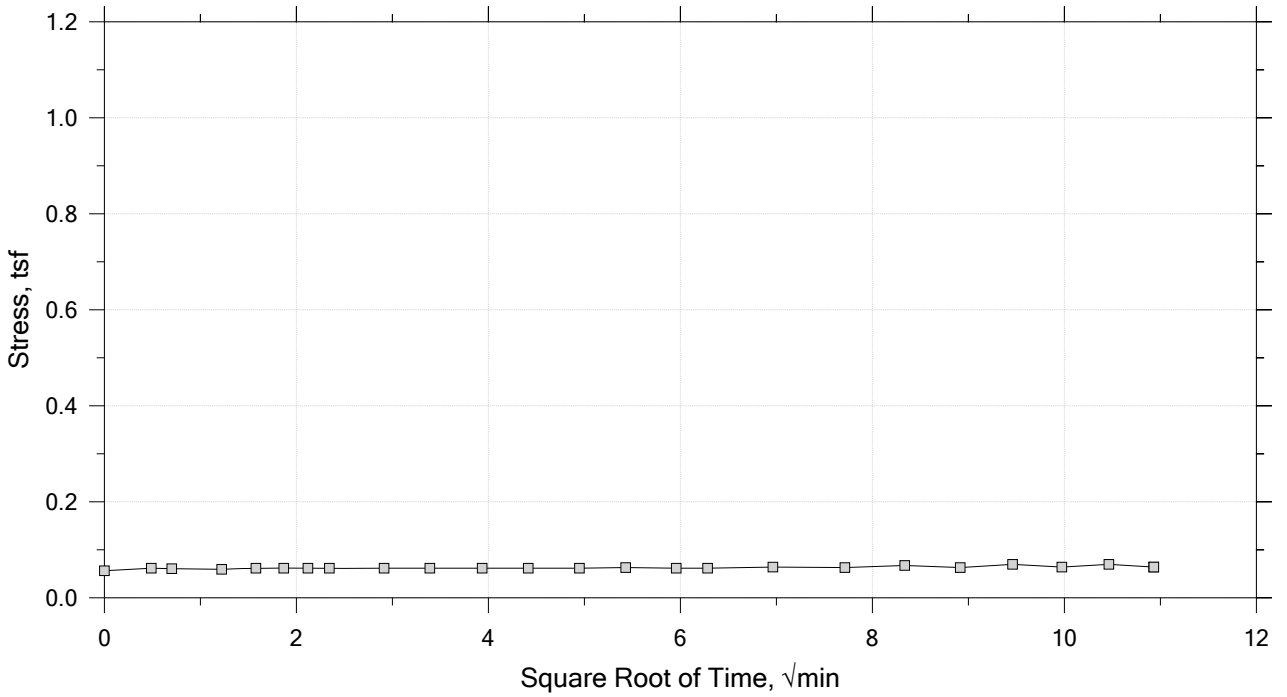


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.064 tsf

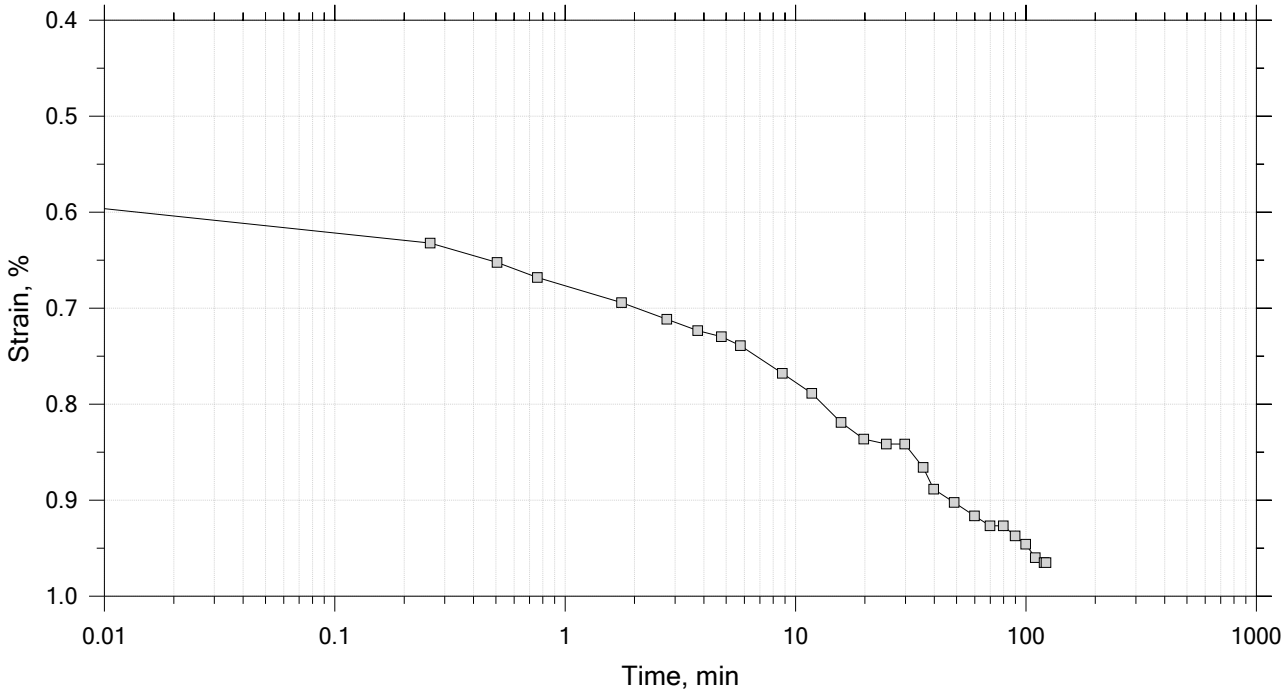


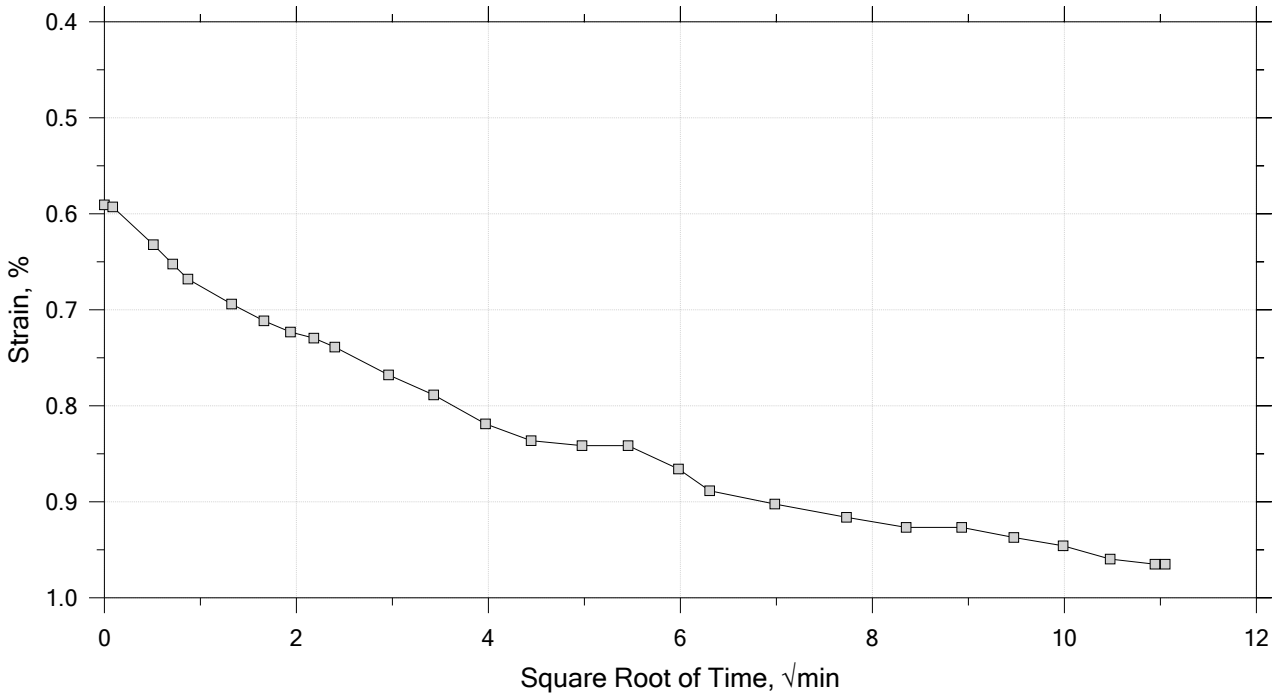


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

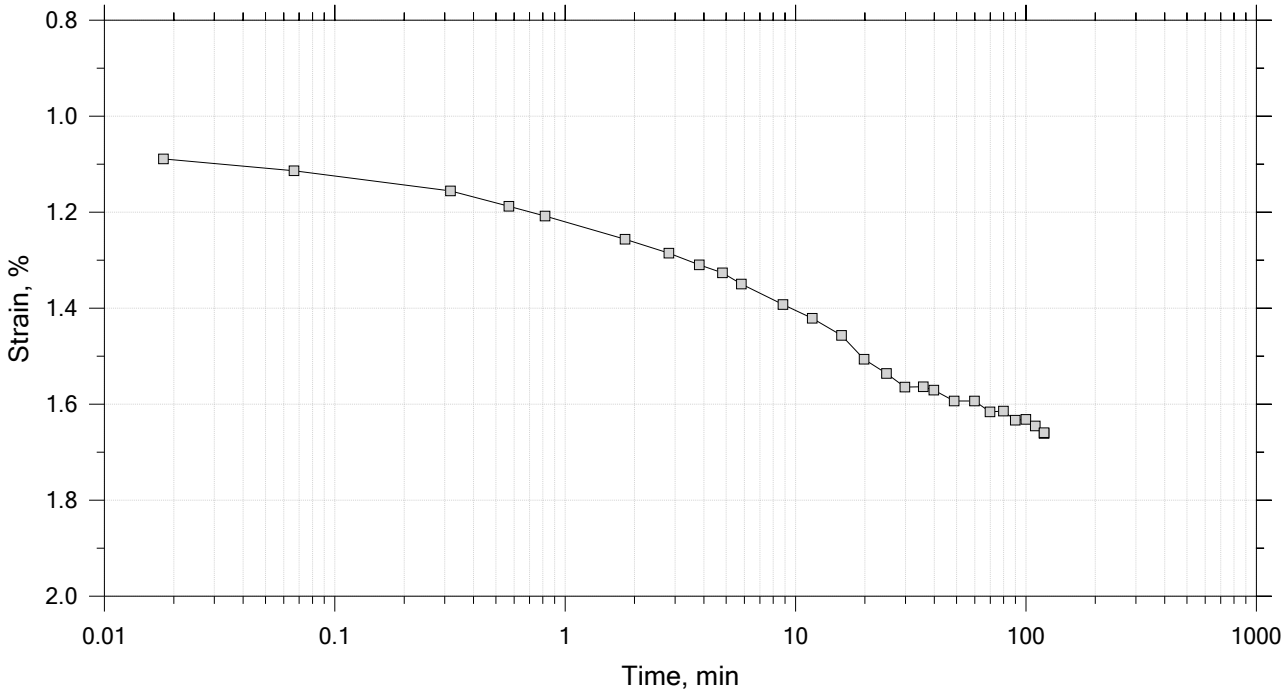


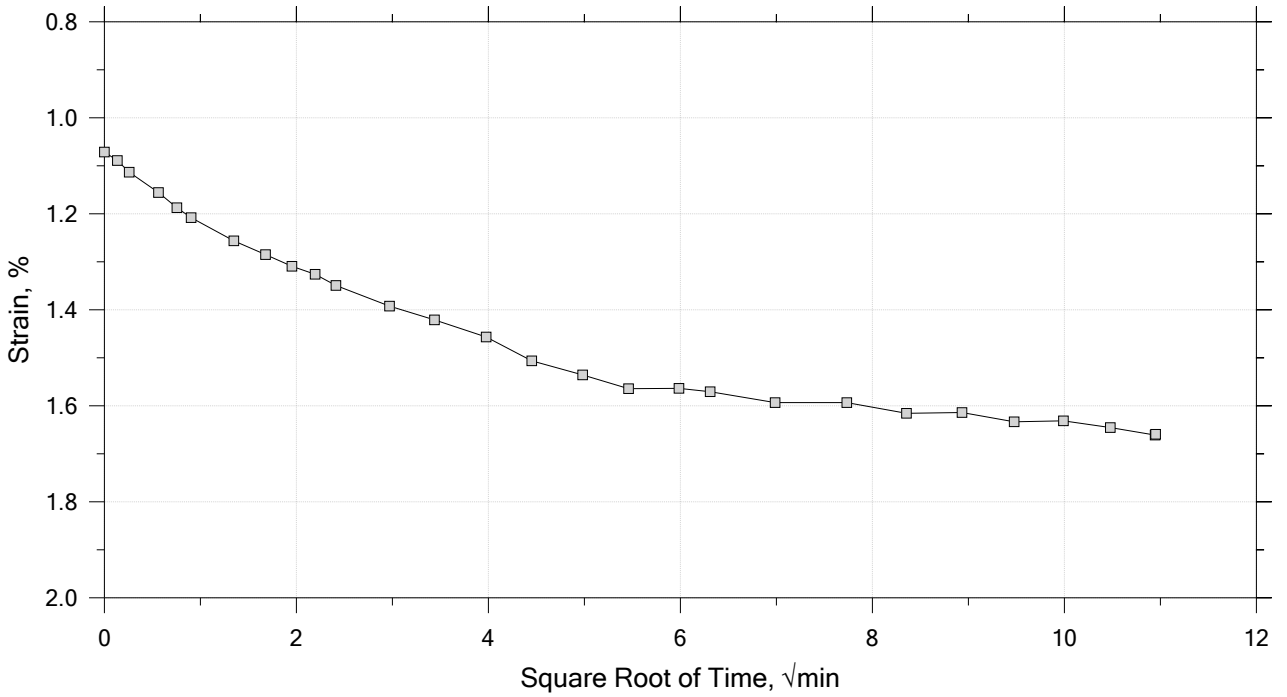


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

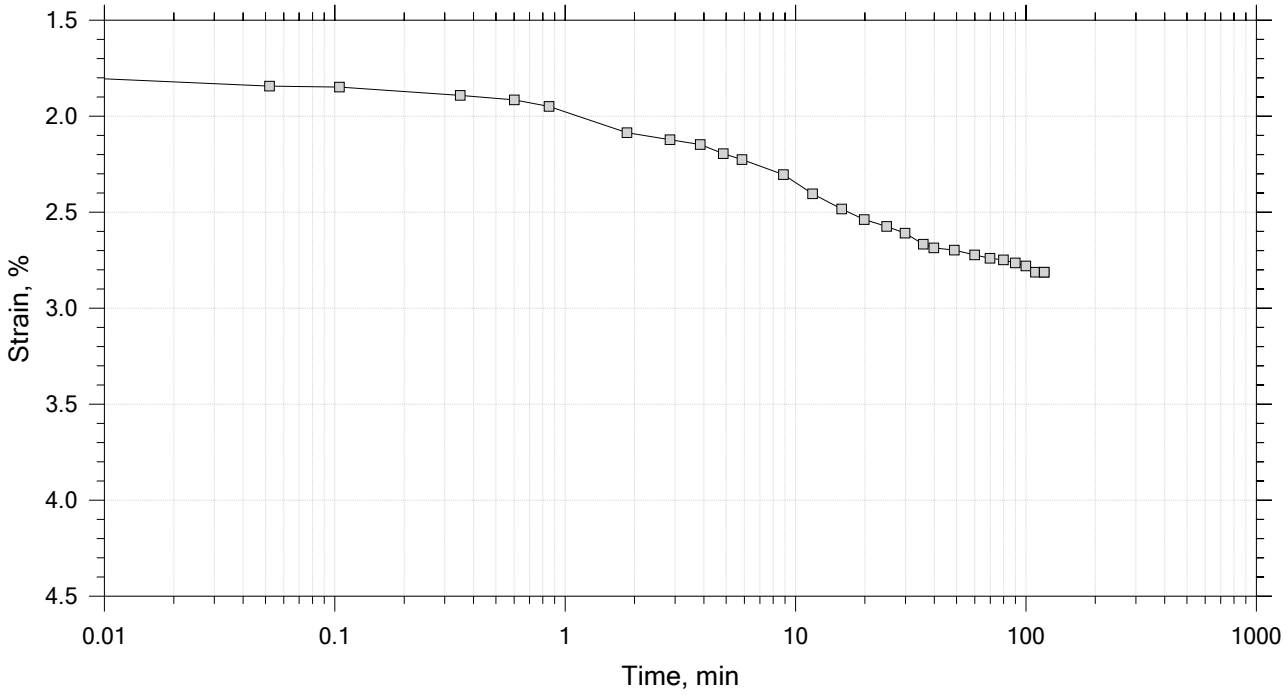


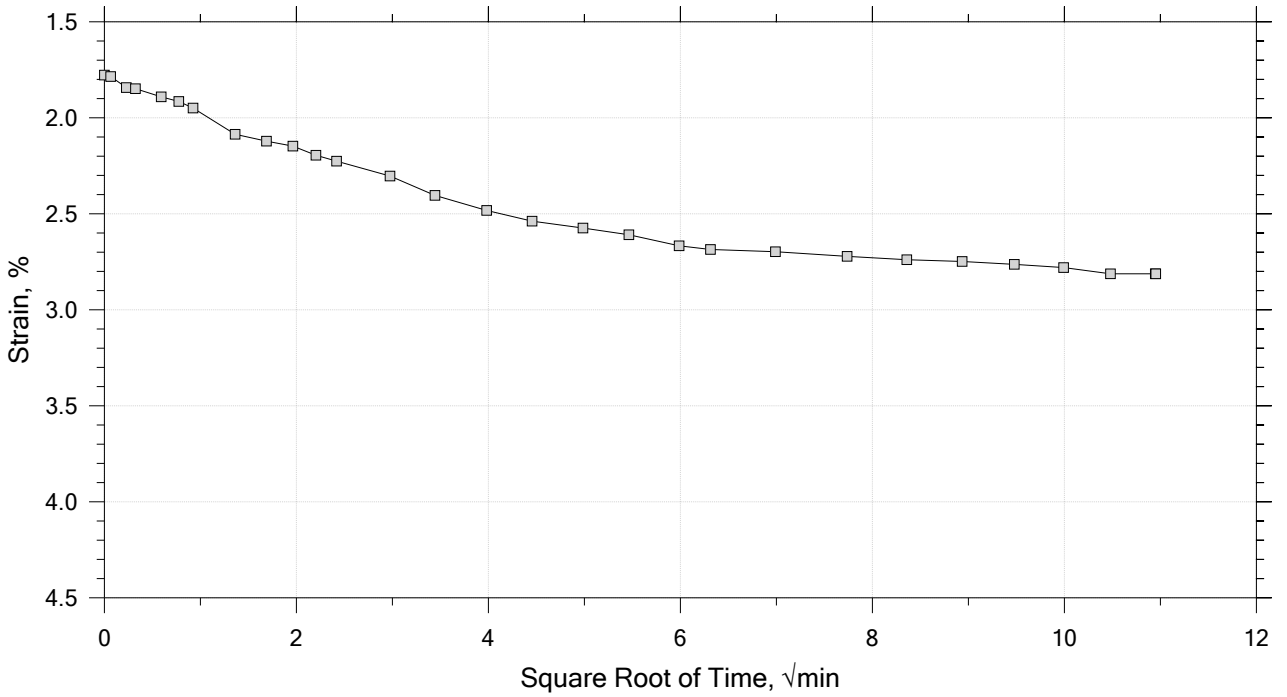


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf

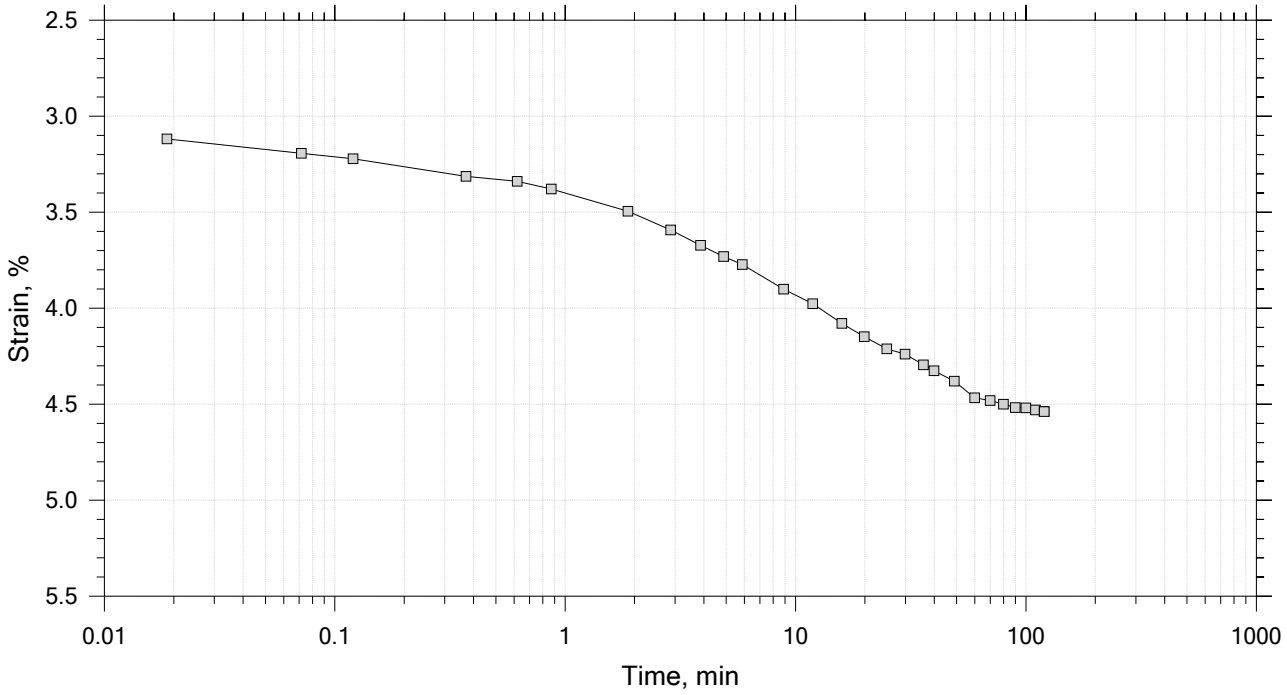


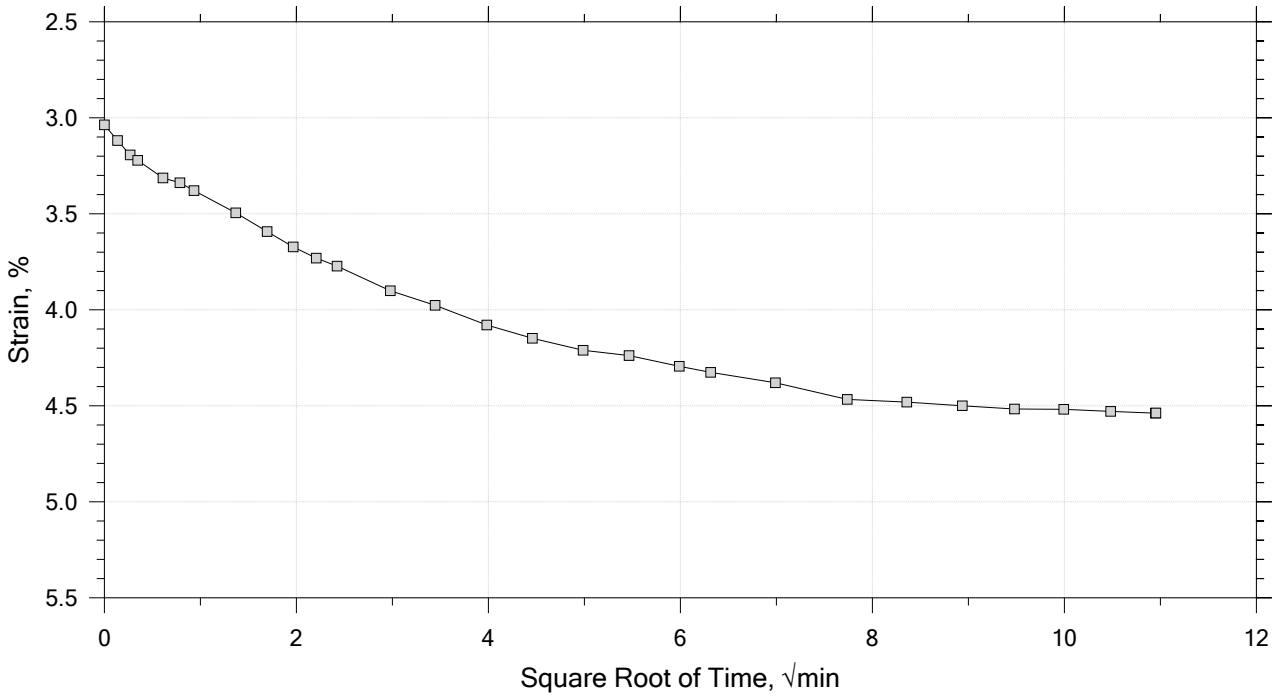


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf

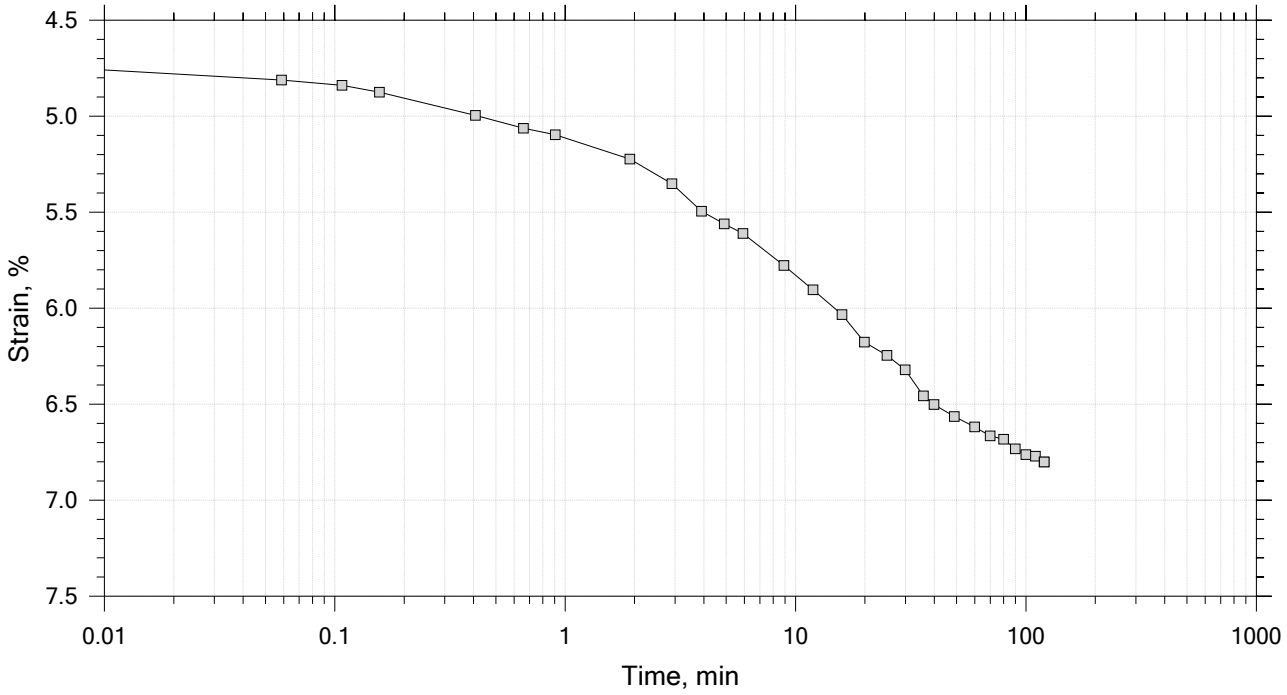


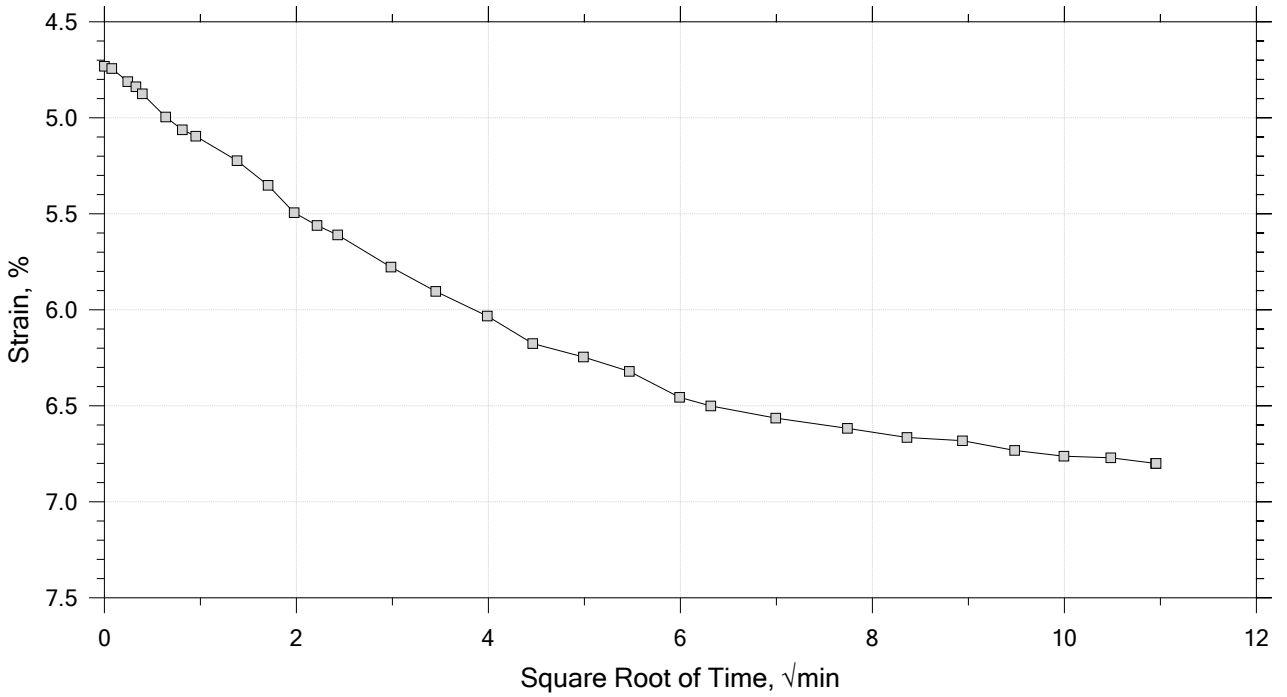


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14
Constant Load Step
Stress: 2 tsf





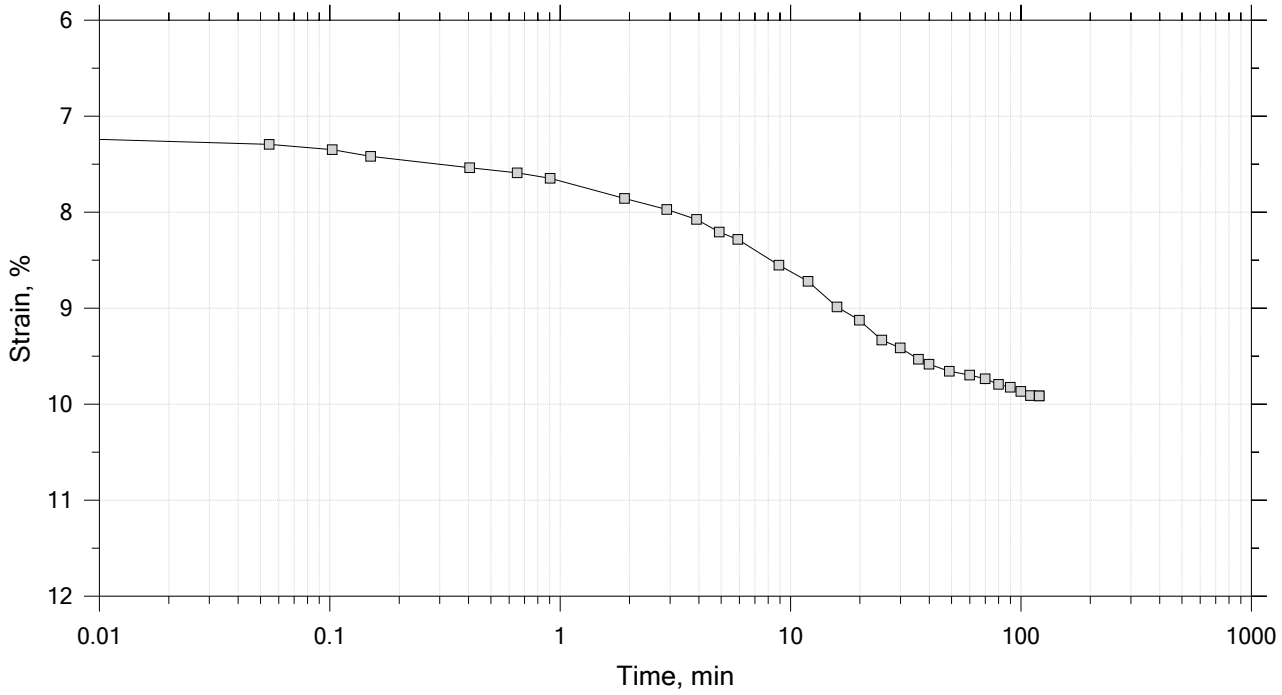
GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

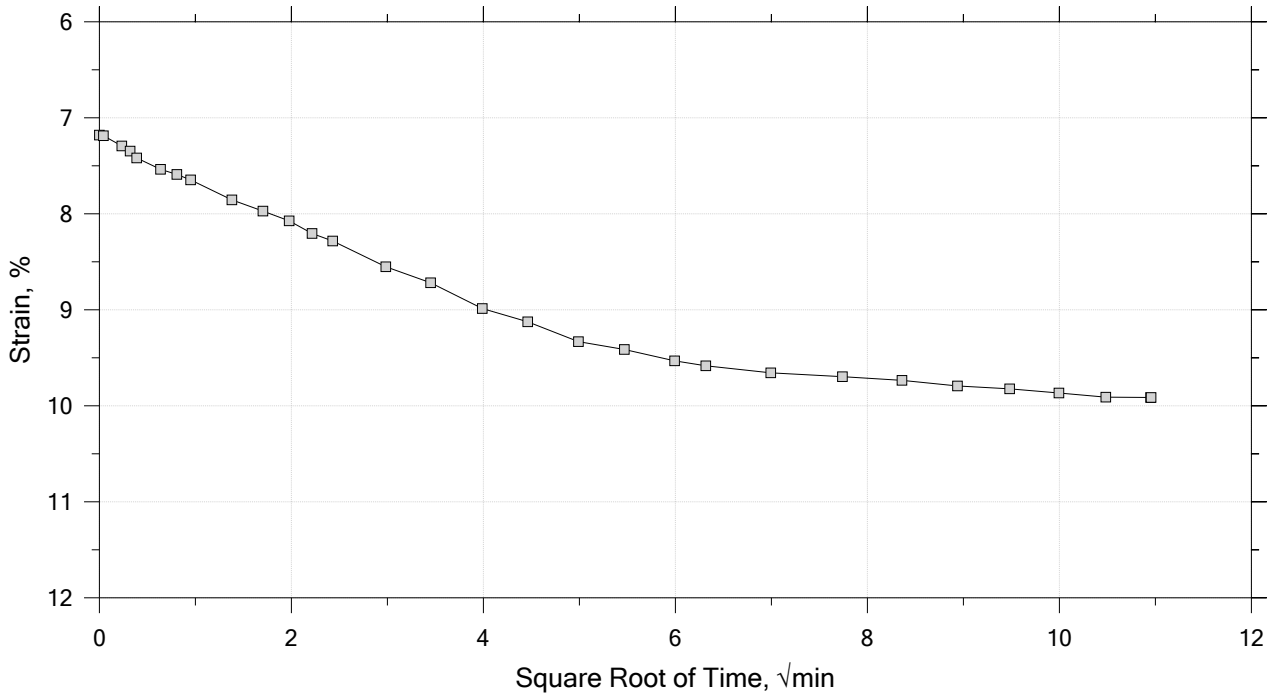
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





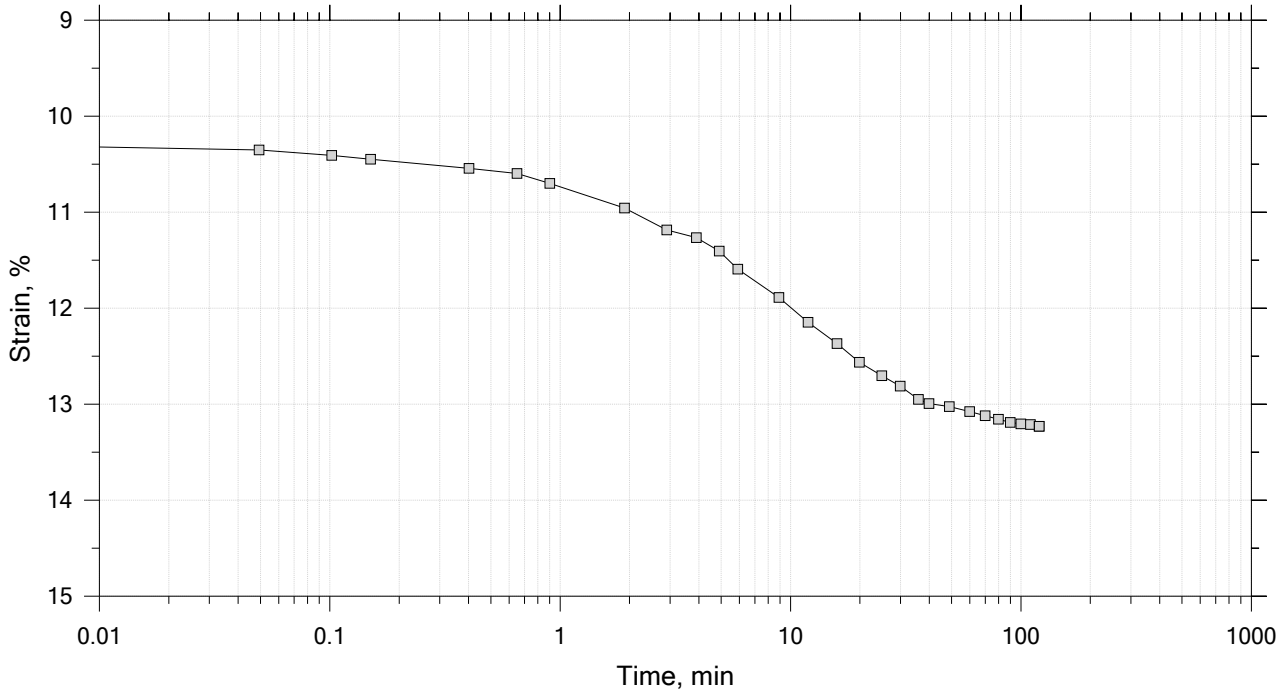
GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

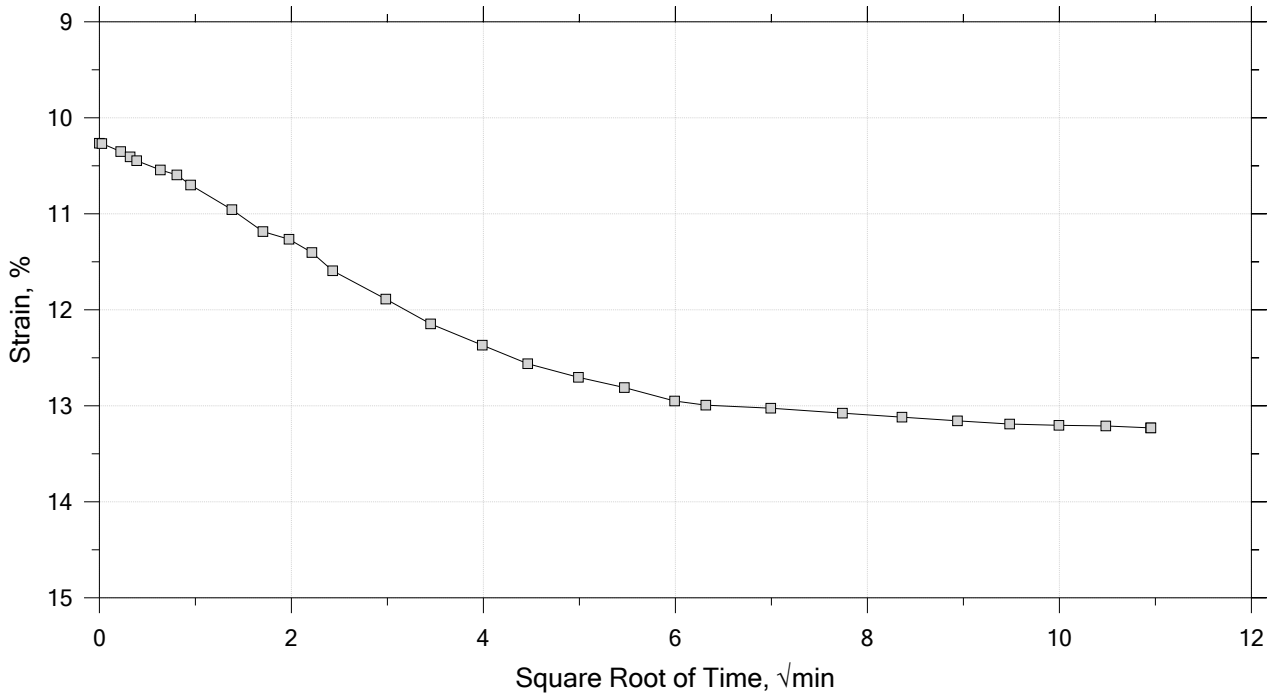
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





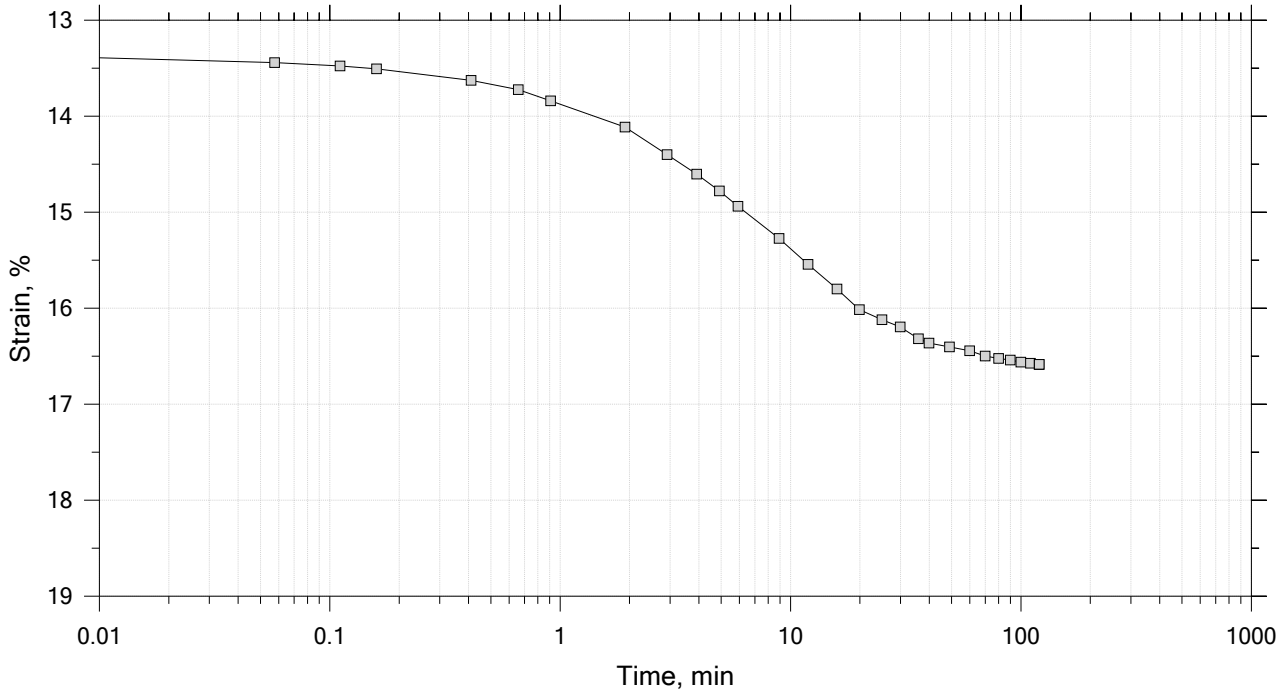
GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

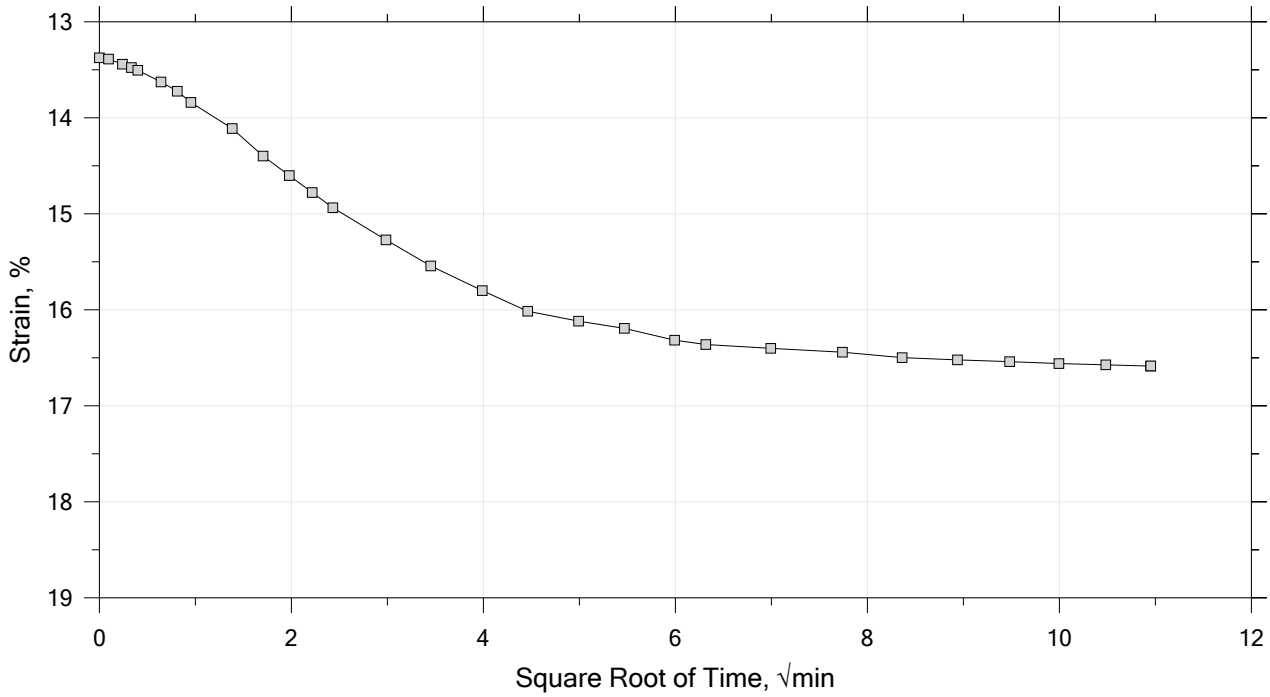
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

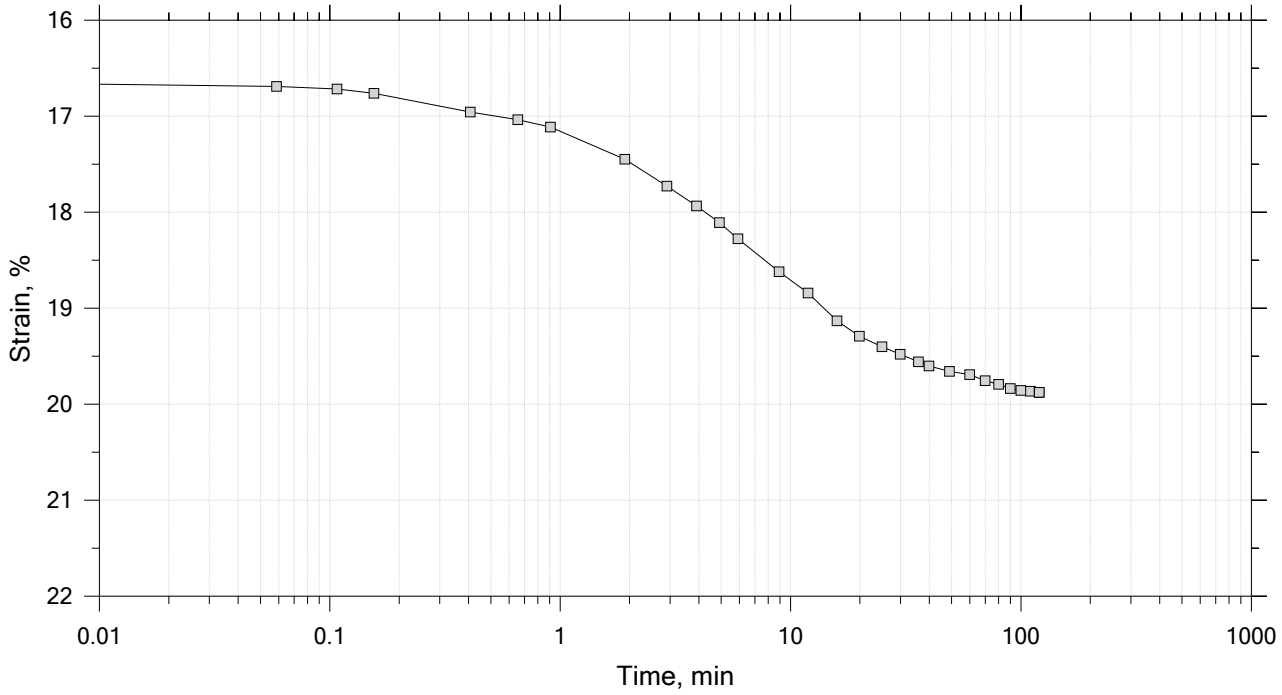


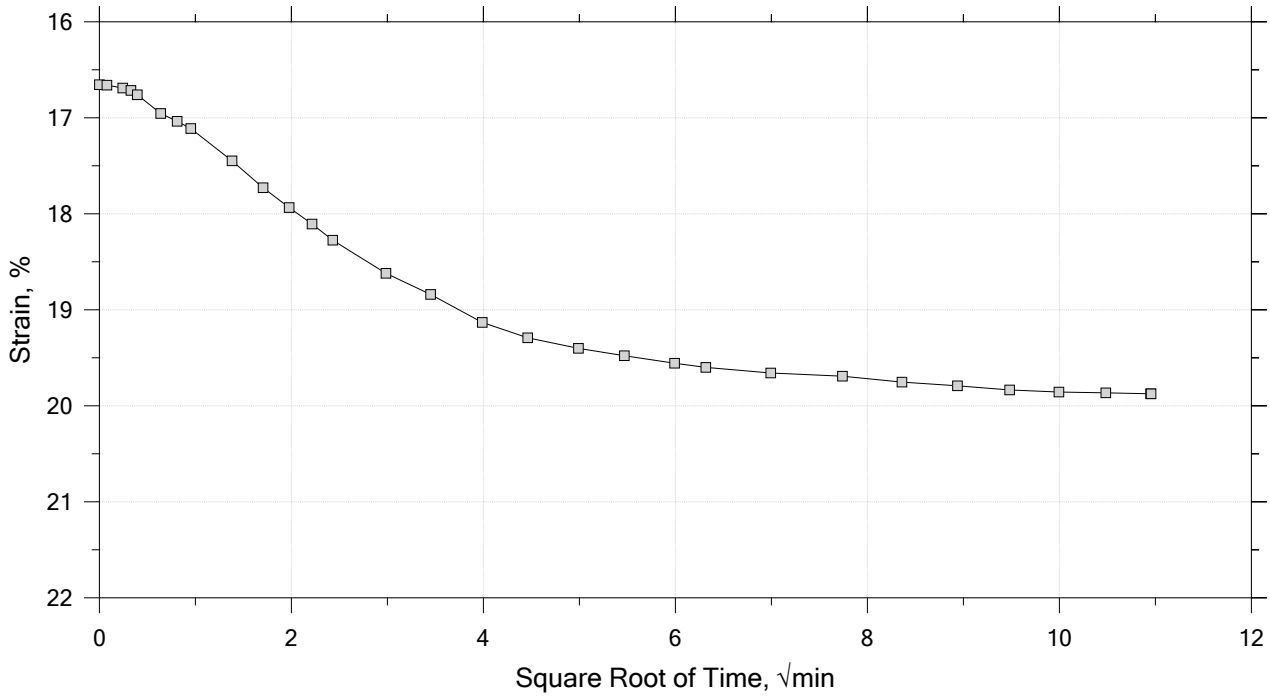


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

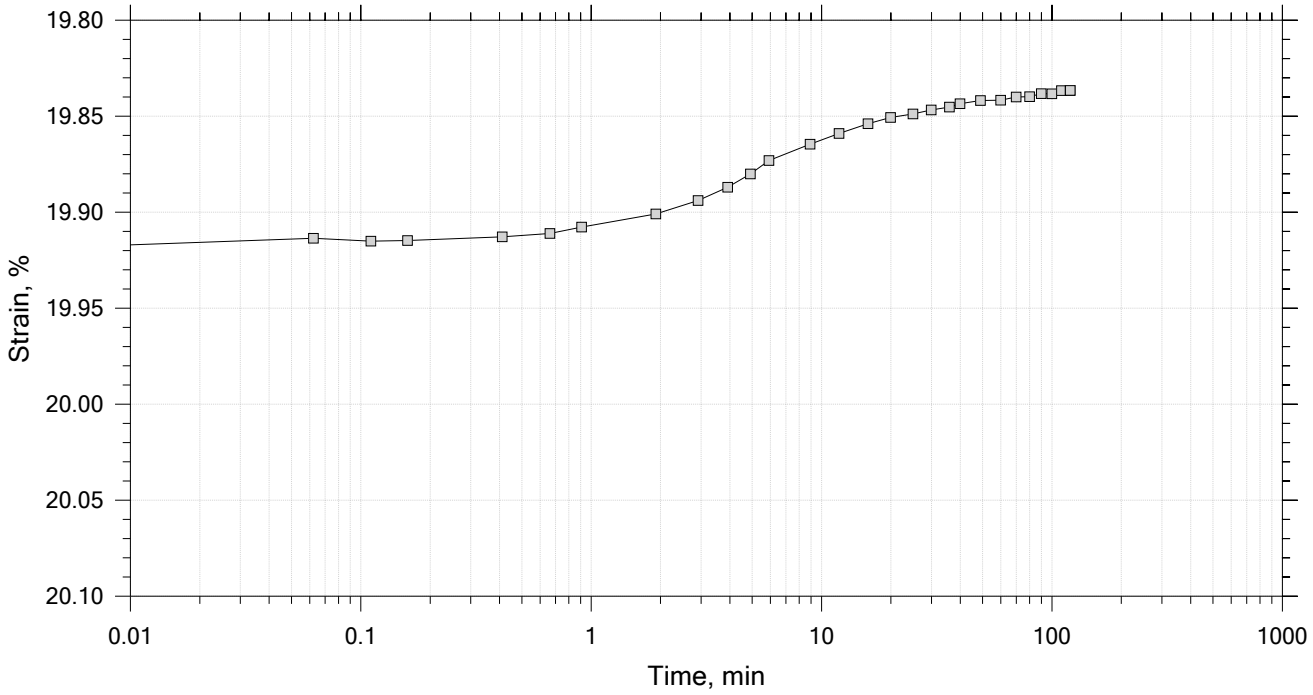


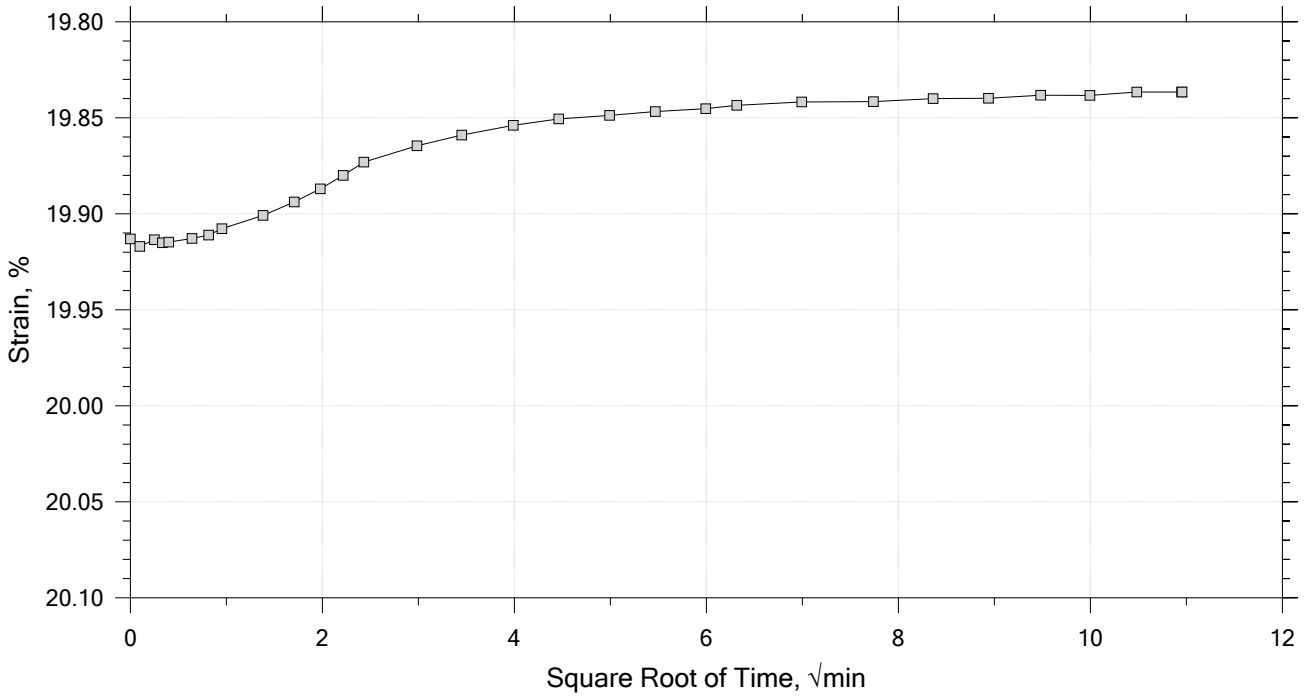


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

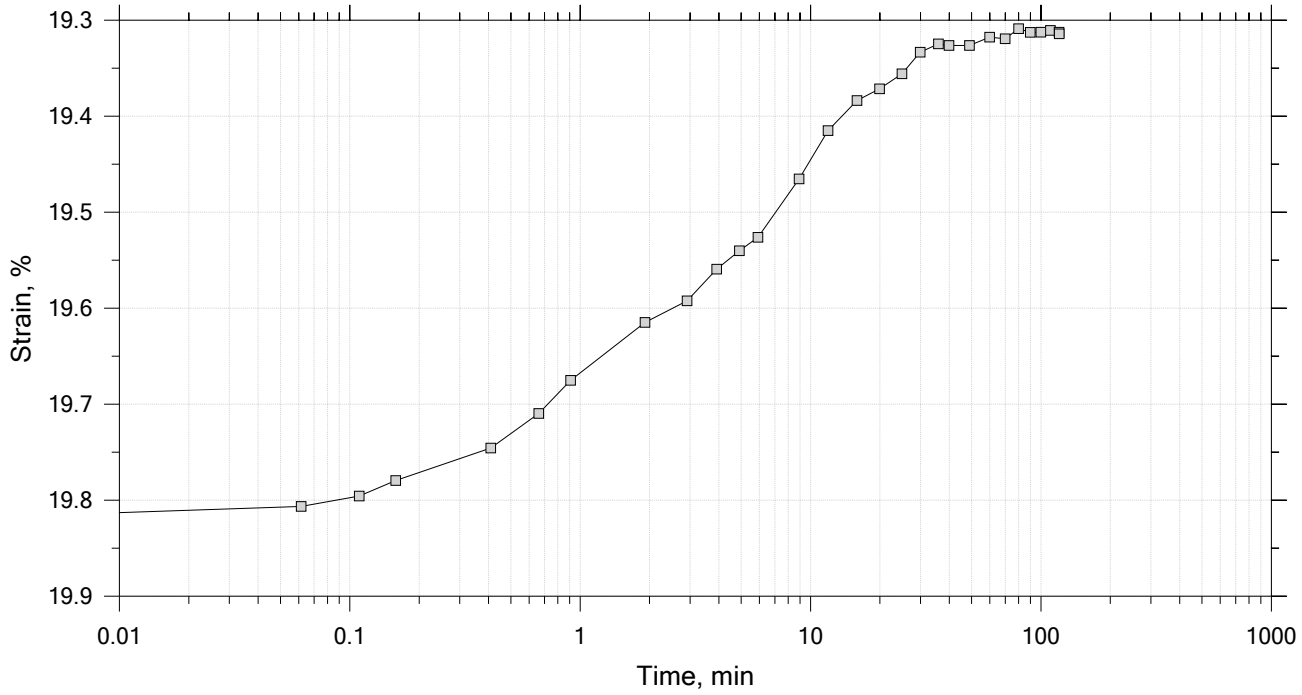


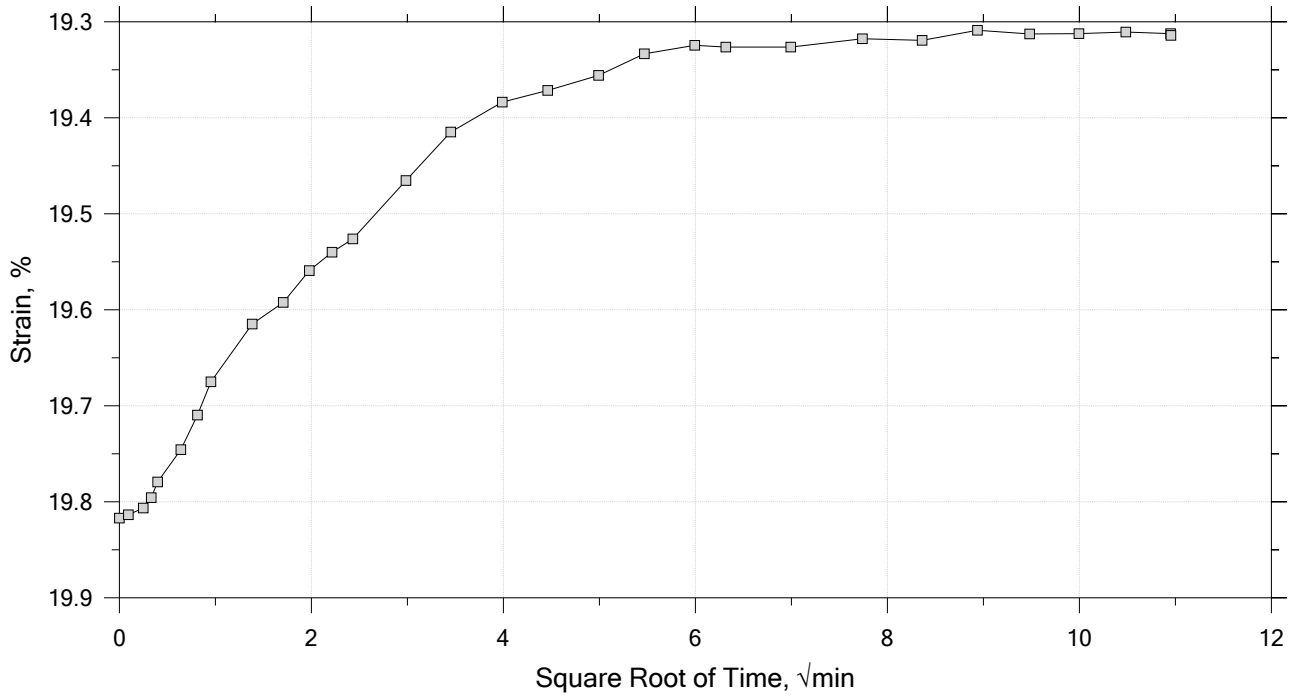


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

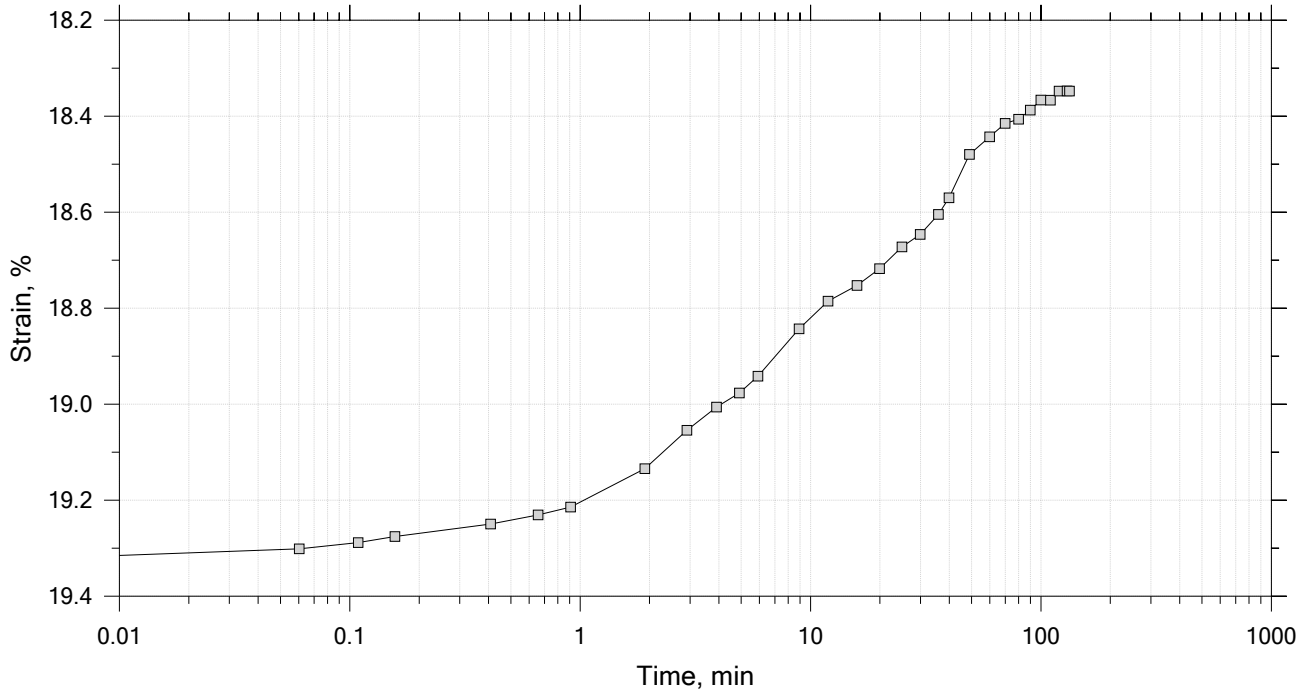


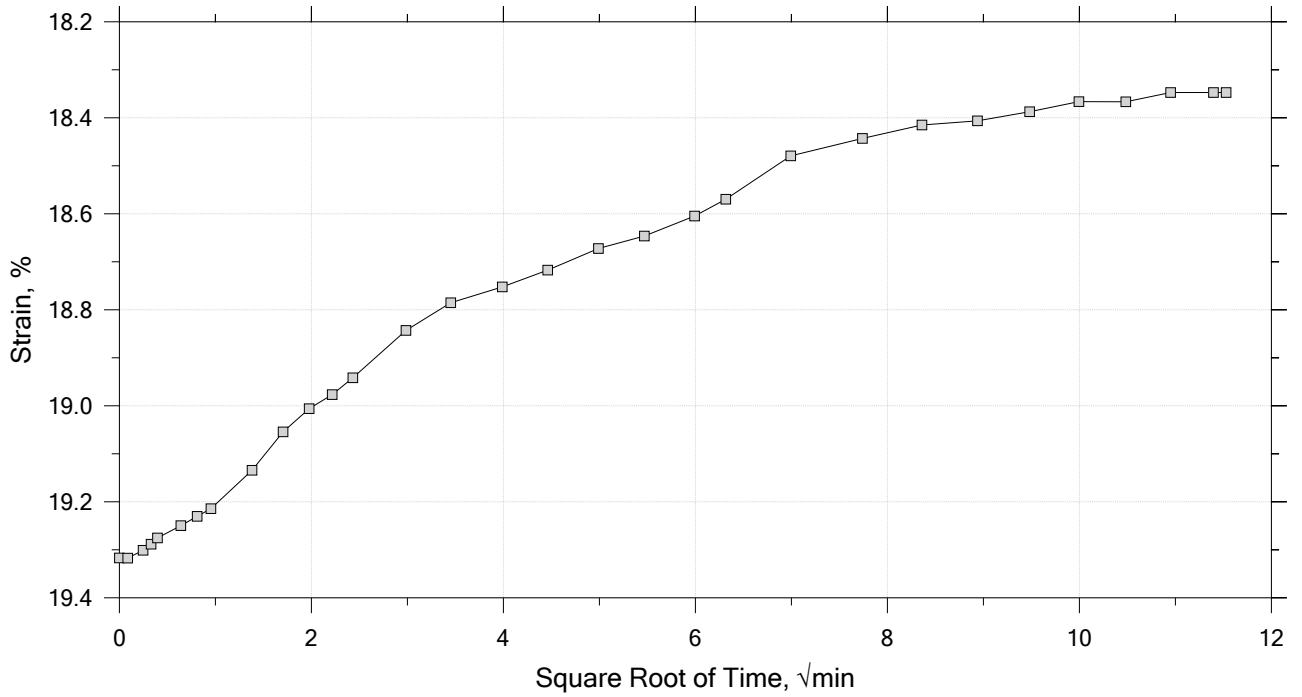


Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: 4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
Test No.: IP-12	Sample Type: intact	Elevation: ---
Description: Moist,greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

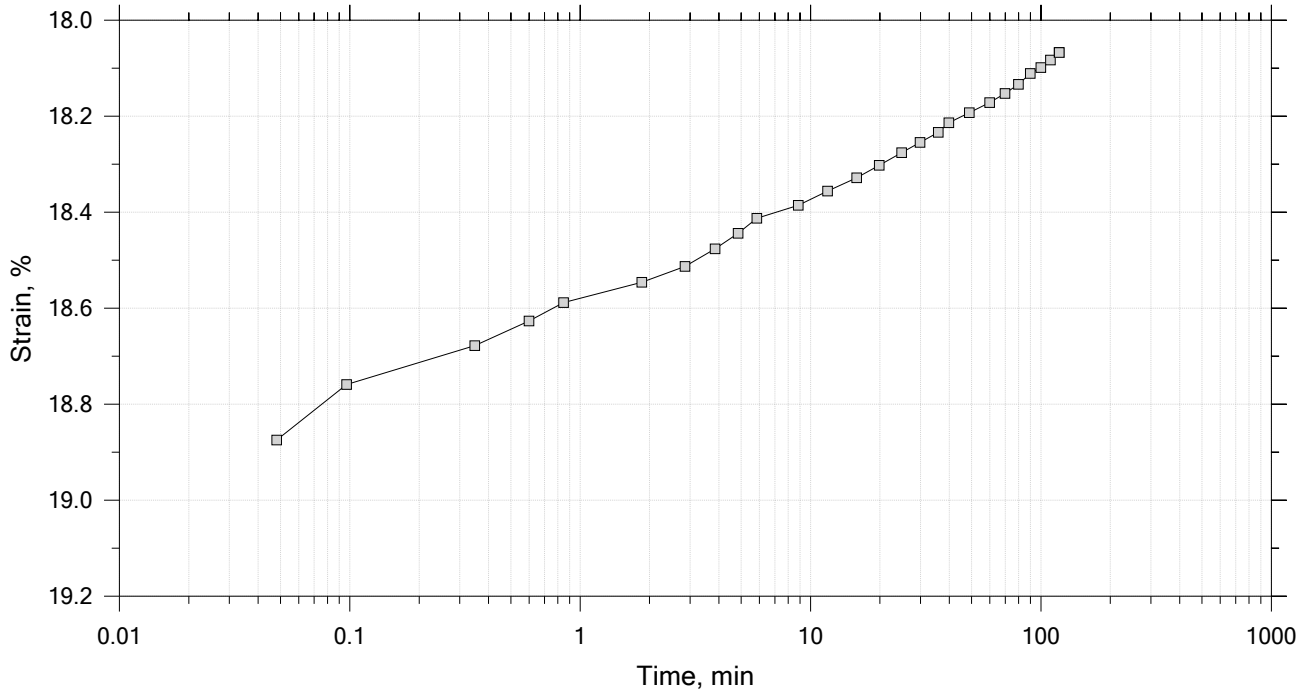


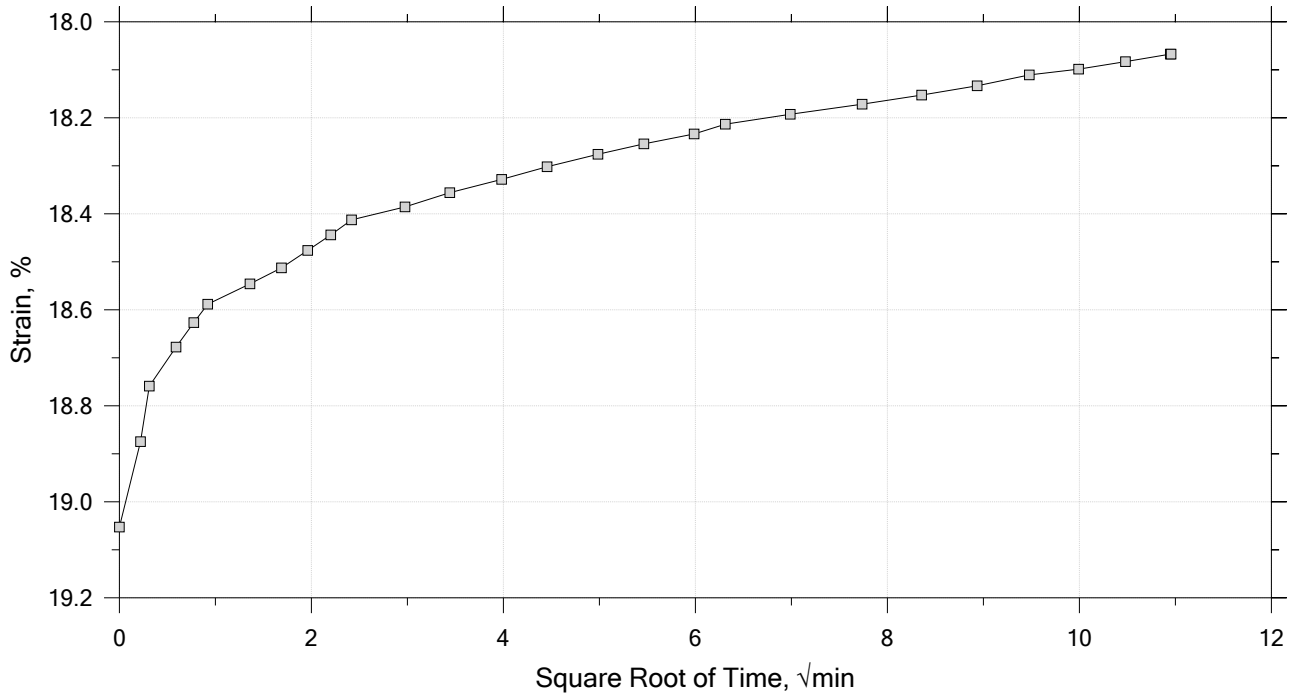


GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.74	Liquid Limit: 41
Initial Height: 1.00 in	Initial Void Ratio: 0.757	Plastic Limit: 19
Final Height: 0.85 in	Final Void Ratio: 0.493	Plasticity Index: 22

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	d2947	RING		dsp1
Mass Container, gm	8.25	108.08	108.08	8.22
Mass Container + Wet Soil, gm	114.96	267.71	256.15	155.97
Mass Container + Dry Soil, gm	92.24	233.56	233.56	133.43
Mass Dry Soil, gm	83.99	125.48	125.48	125.21
Water Content, %	27.05	27.21	18.00	18.00
Void Ratio	---	0.76	0.49	---
Degree of Saturation, %	---	98.54	100.00	---
Dry Unit Weight, pcf	---	97.384	114.57	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: 4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
	Test No.: IP-12	Sample Type: intact	Elevation: ---
	Description: Moist,greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.064 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0640	0.004761	0.749	0.476	0.000	0.00e+00	7.45e-02	0.00e+00
2	0.125	0.009650	0.740	0.965	69.759	3.47e-07	8.01e-02	7.49e-05
3	0.250	0.01659	0.728	1.66	23.133	1.03e-06	5.55e-02	1.55e-04
4	0.500	0.02812	0.707	2.81	20.728	1.13e-06	4.61e-02	1.41e-04
5	1.00	0.04538	0.677	4.54	20.820	1.09e-06	3.45e-02	1.02e-04
6	2.00	0.06801	0.637	6.80	21.893	9.97e-07	2.26e-02	6.09e-05
7	4.00	0.09914	0.583	9.91	36.415	5.66e-07	1.56e-02	2.38e-05
8	8.00	0.1323	0.524	13.2	32.362	5.93e-07	8.29e-03	1.33e-05
9	16.0	0.1659	0.466	16.6	25.519	6.96e-07	4.19e-03	7.87e-06
10	32.0	0.1988	0.408	19.9	25.212	6.51e-07	2.06e-03	3.61e-06
11	16.0	0.1984	0.408	19.8	20.223	7.79e-07	2.46e-05	5.16e-08
12	4.00	0.1931	0.418	19.3	12.076	1.31e-06	4.35e-04	1.54e-06
13	1.00	0.1835	0.435	18.3	56.776	2.85e-07	3.22e-03	2.47e-06
14	0.250	0.1807	0.439	18.1	19.061	8.61e-07	3.74e-03	8.68e-06

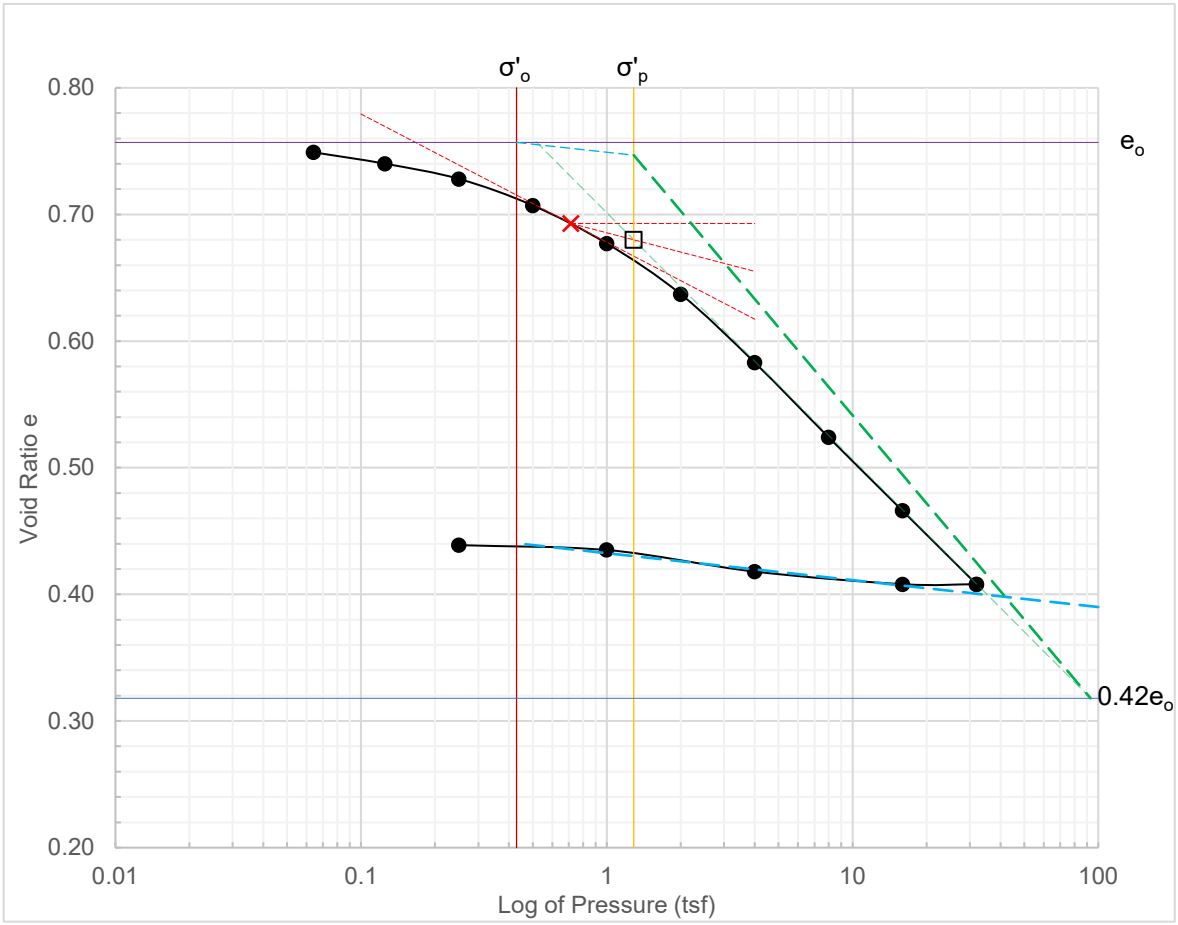
GeoTesting EXPRESS

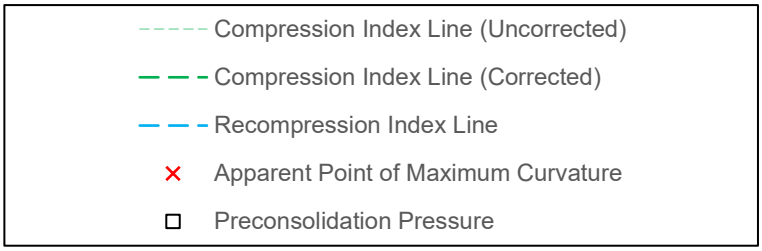
Project: Eagle CreekFlood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: 4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/9/22	Depth: 7.2-7.3 ft
Test No.: IP-12	Sample Type: intact	Elevation: ---
Description: Moist,greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.064 tsf		
Displacement at End of Increment		

Boring: B-4.12A

Depth: 7.2'-7.3'

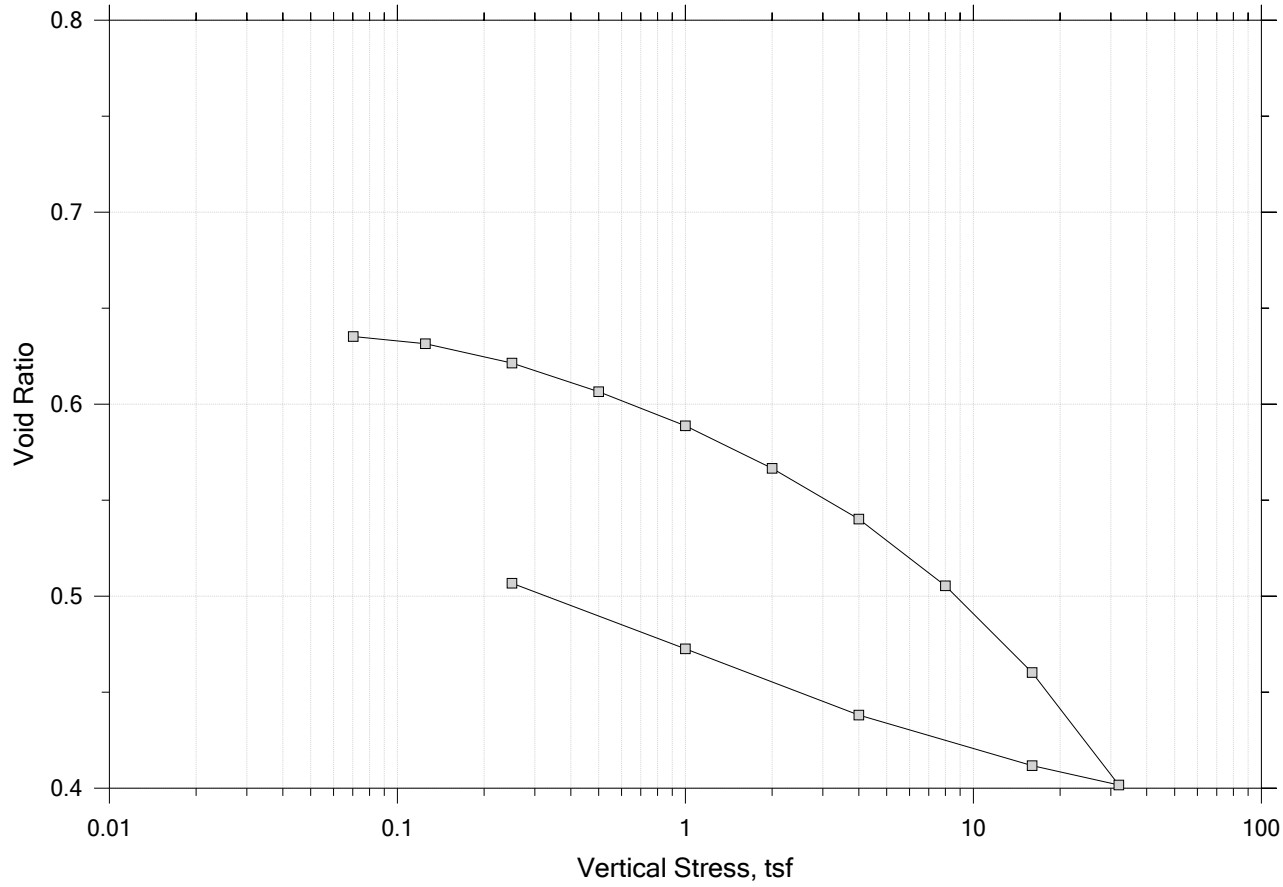
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.43
Preconsolidation Pressure, σ'_p (tsf) = 1.29
Compression Index, C_c = 0.23
Recompression Index, C_r = 0.021

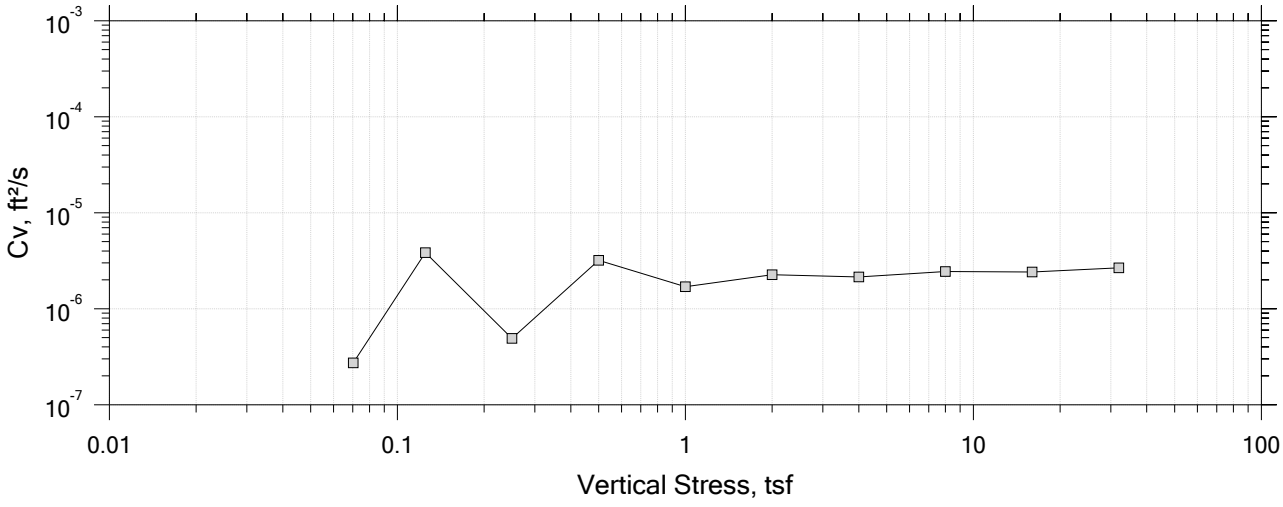




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

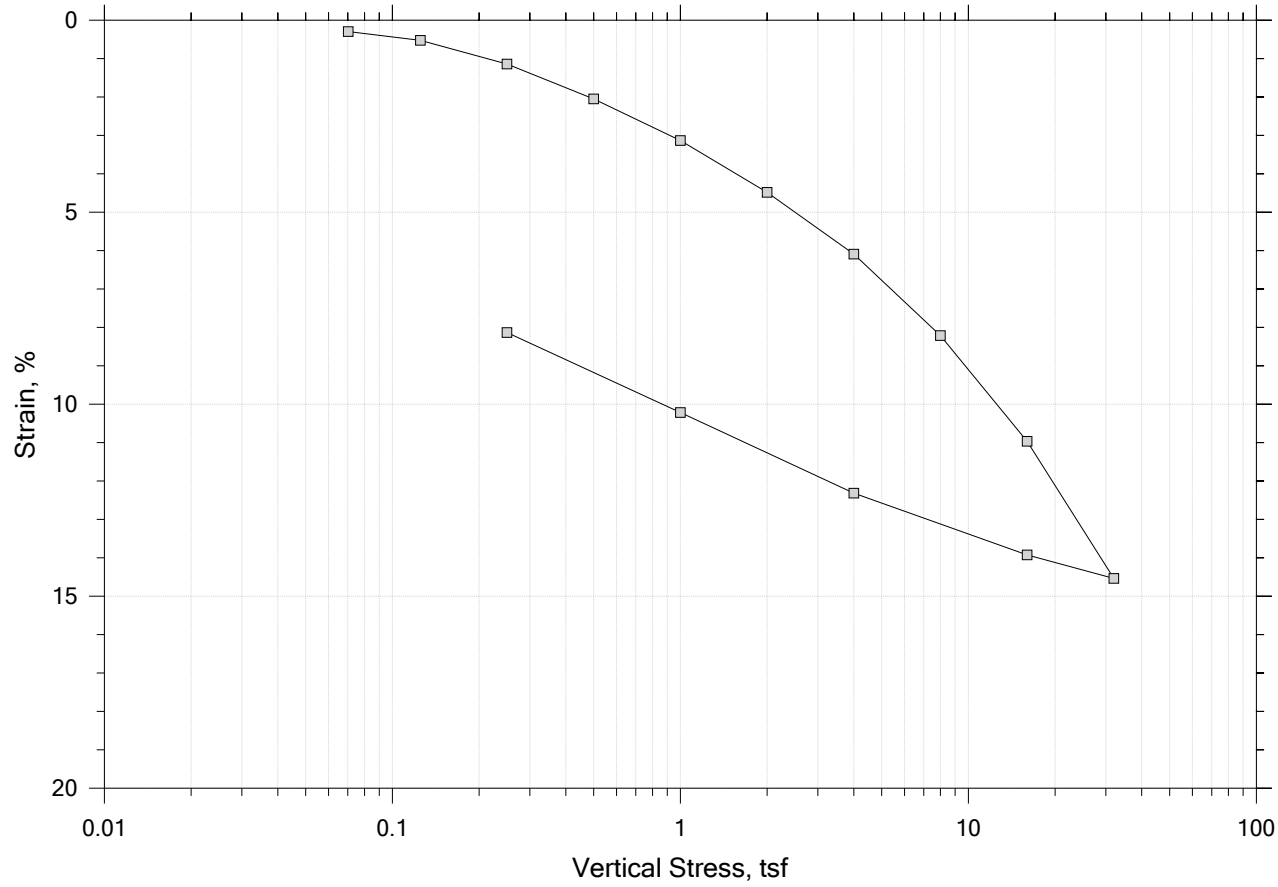


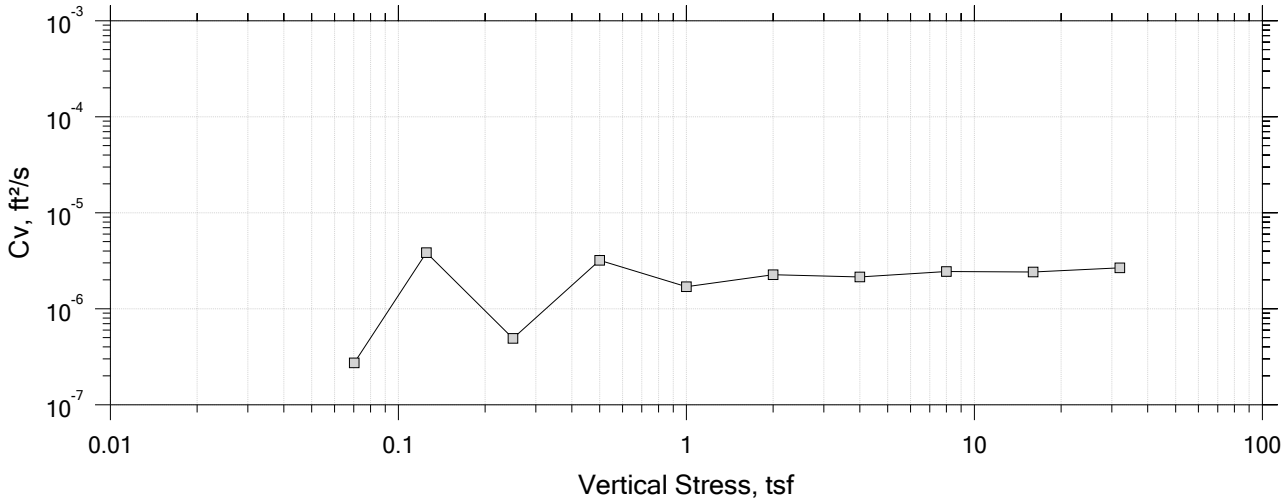


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

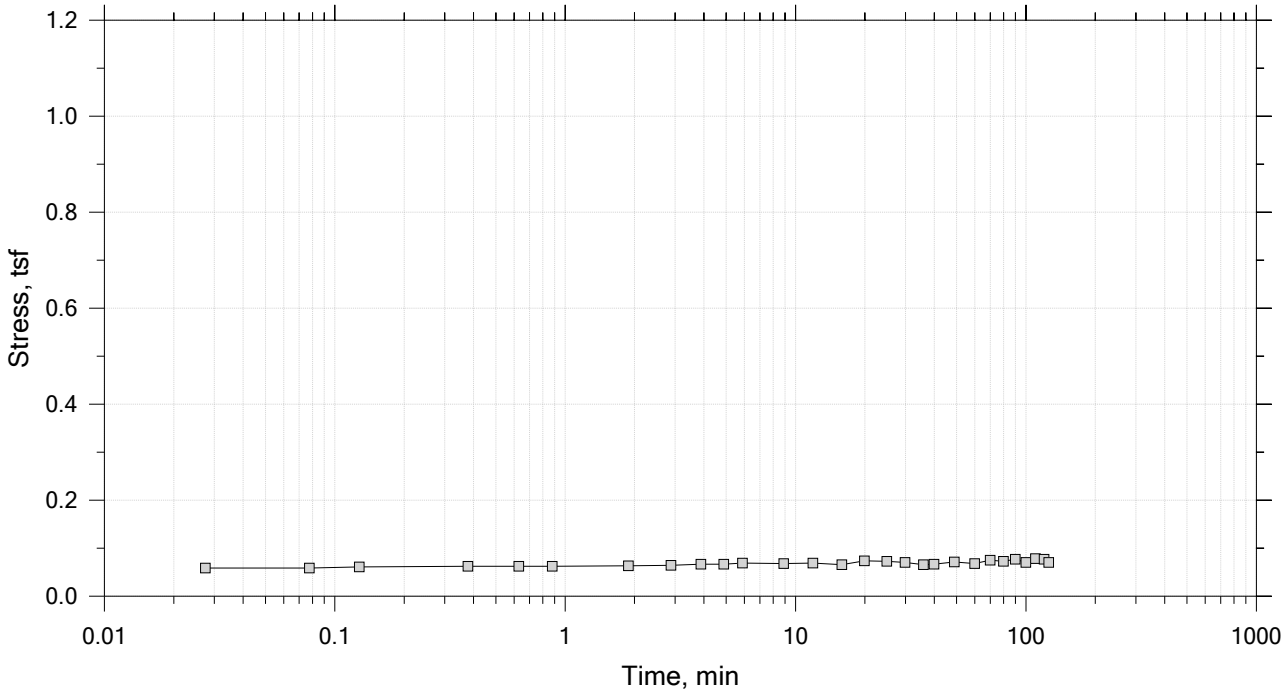


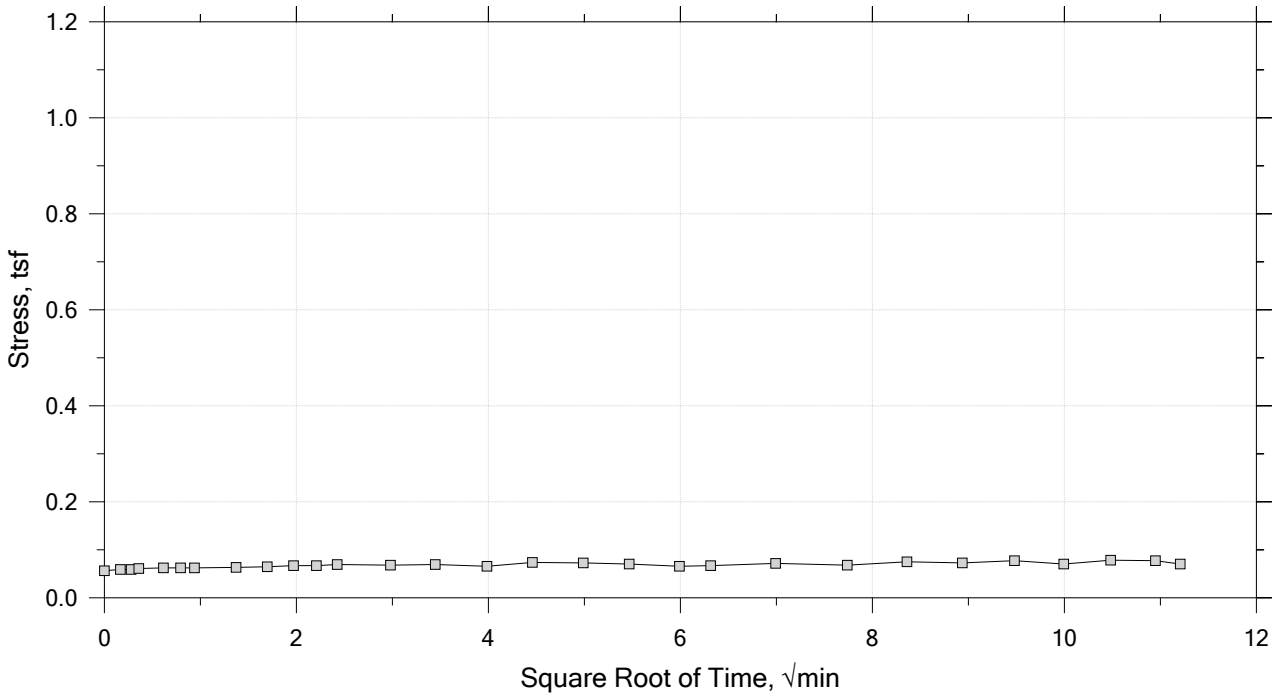


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0703 tsf

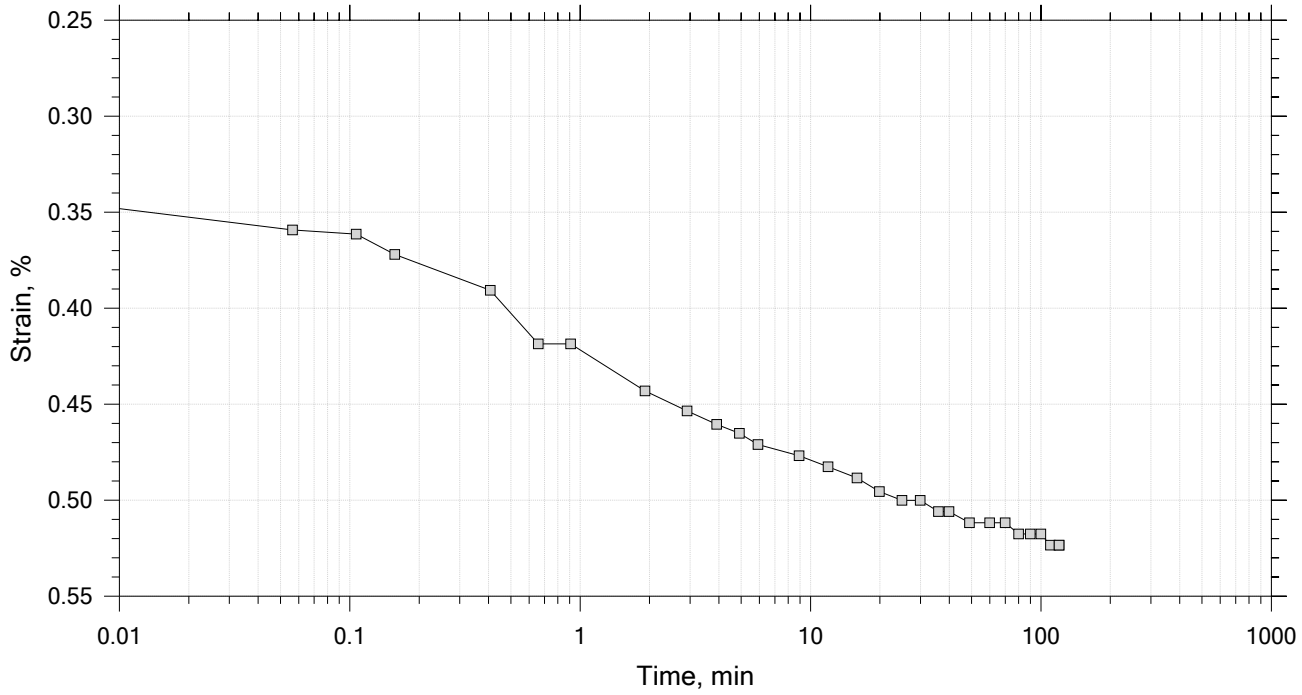


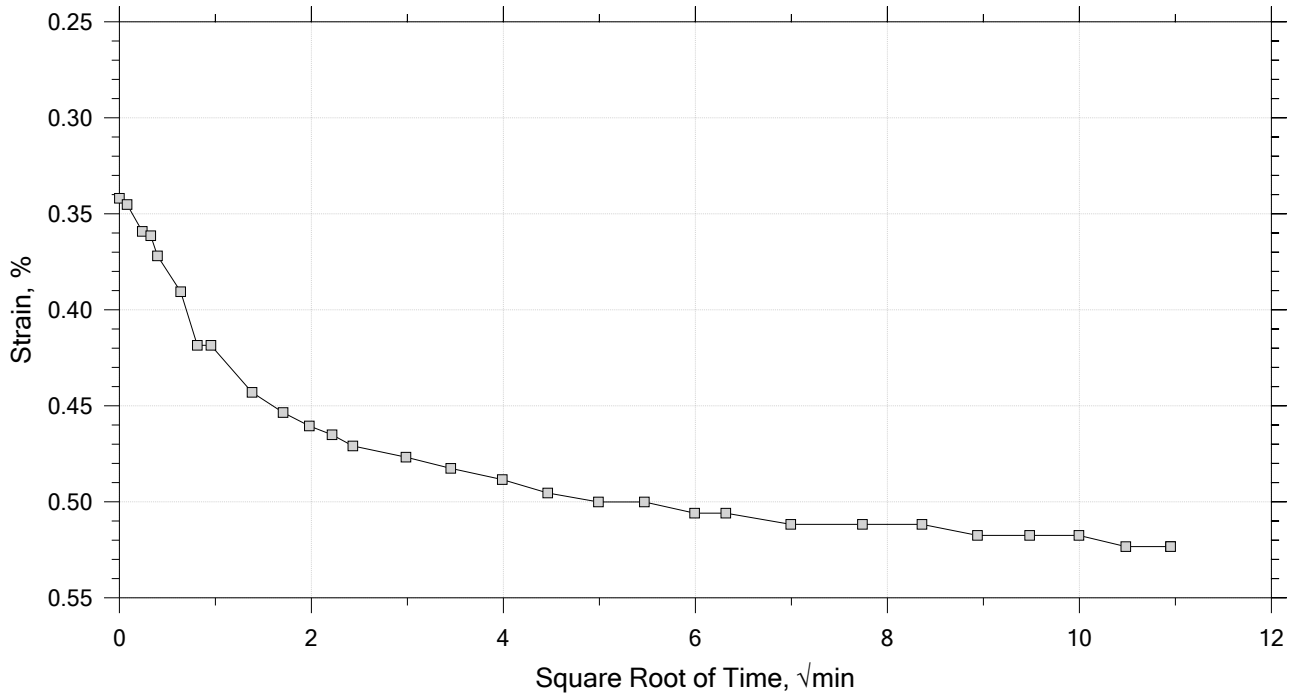


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

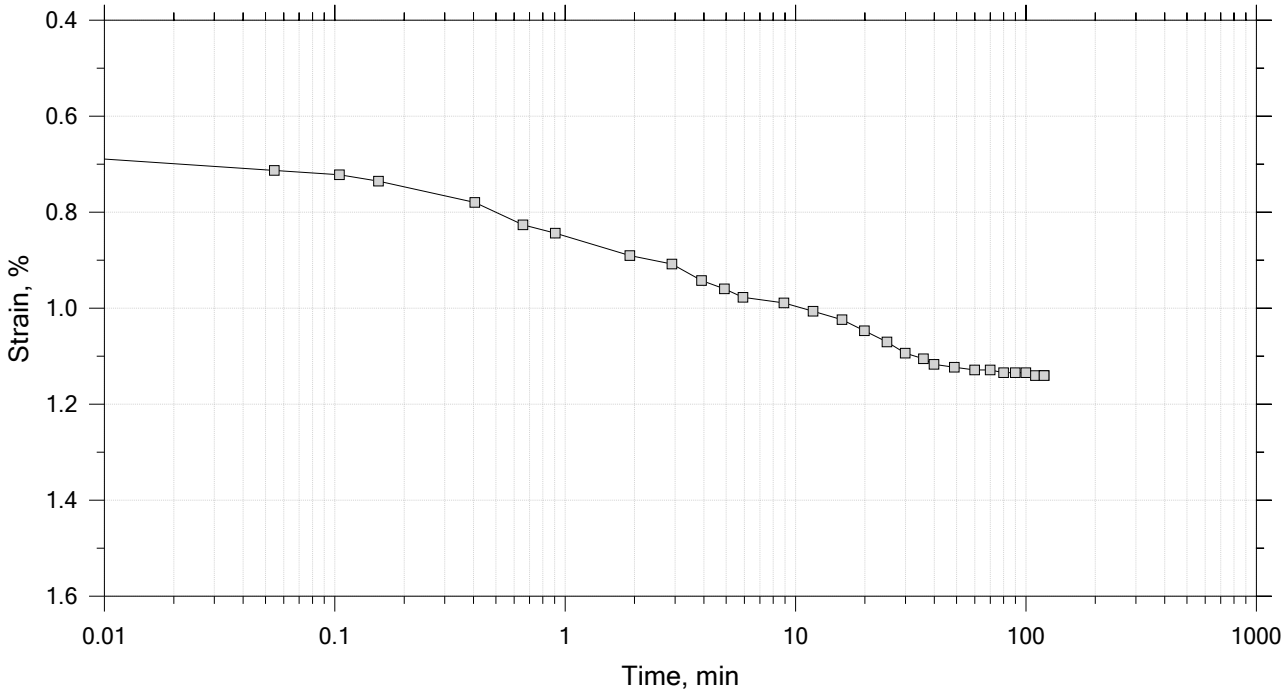


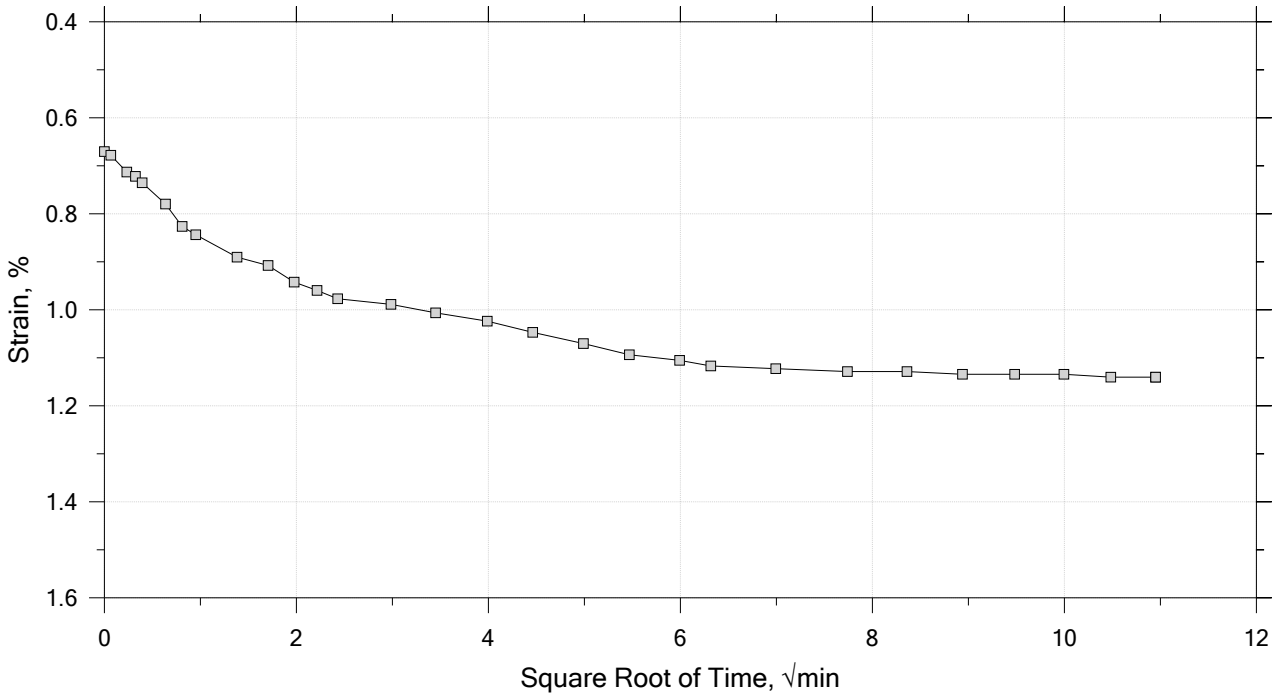


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

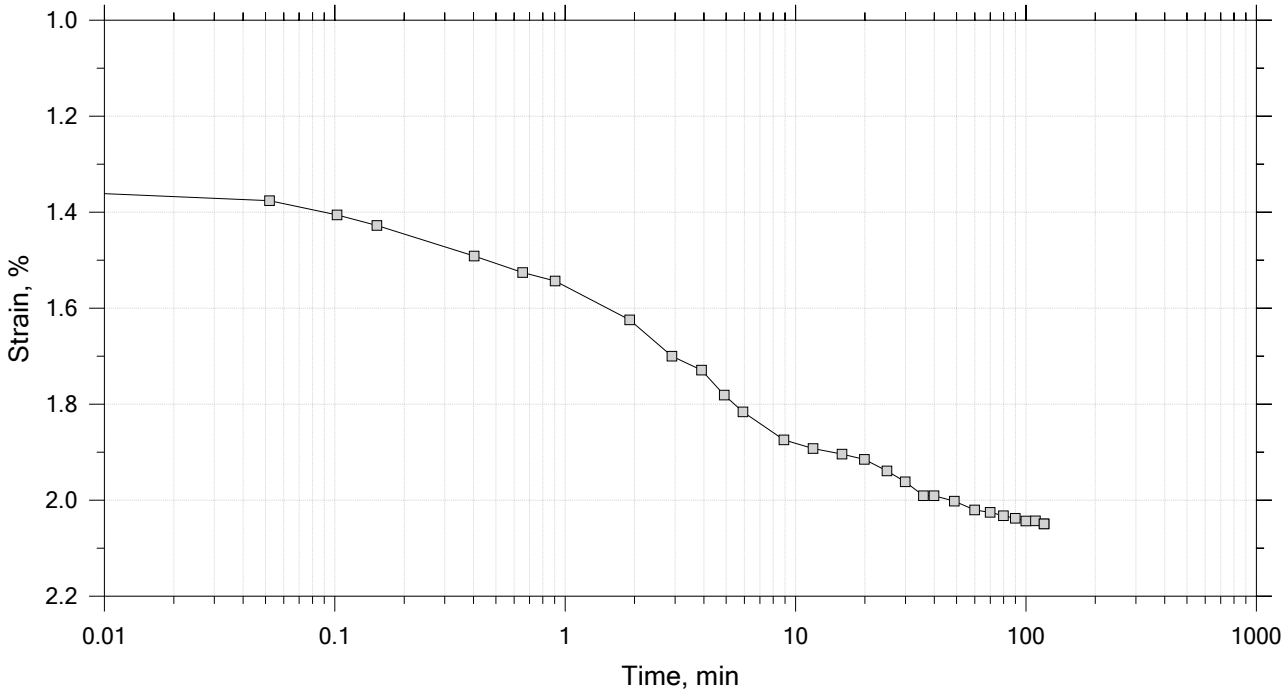


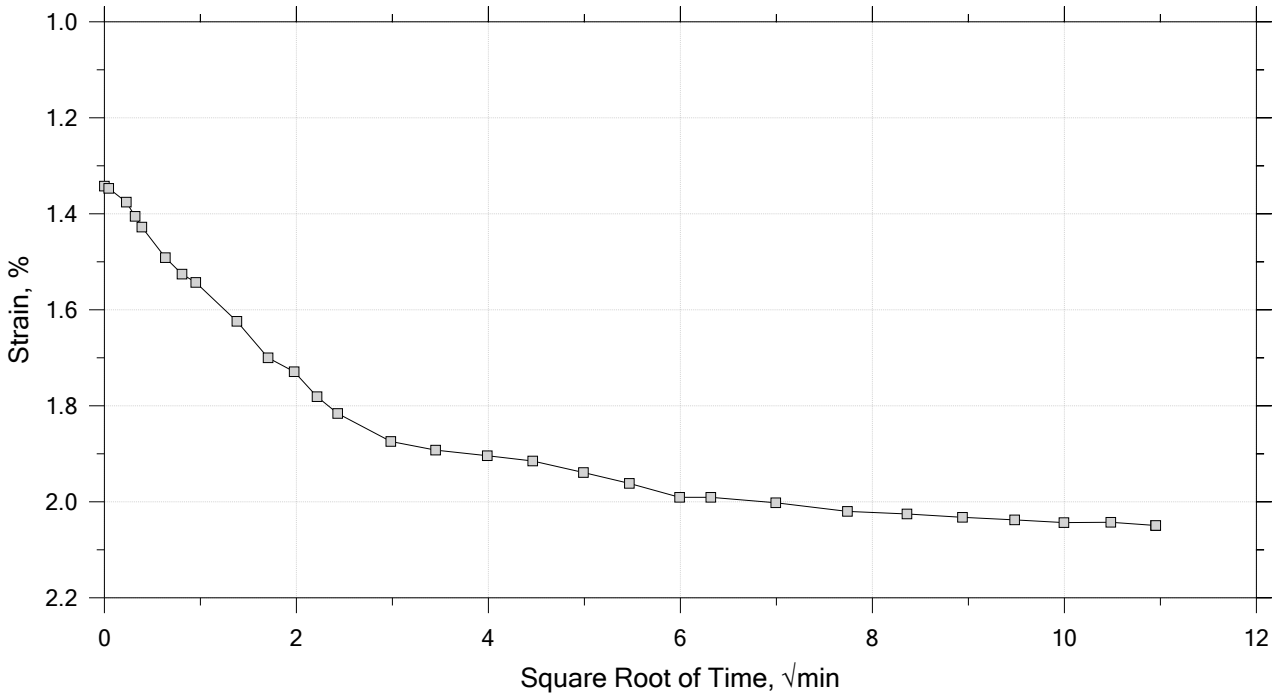


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





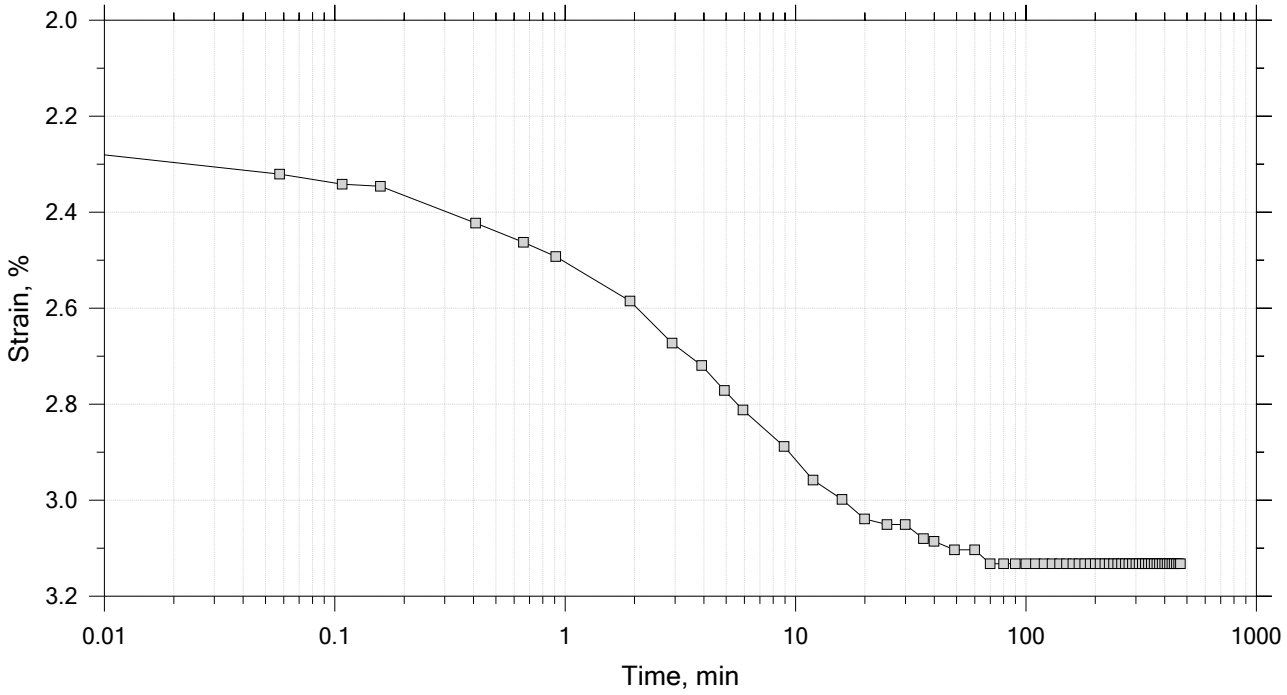
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

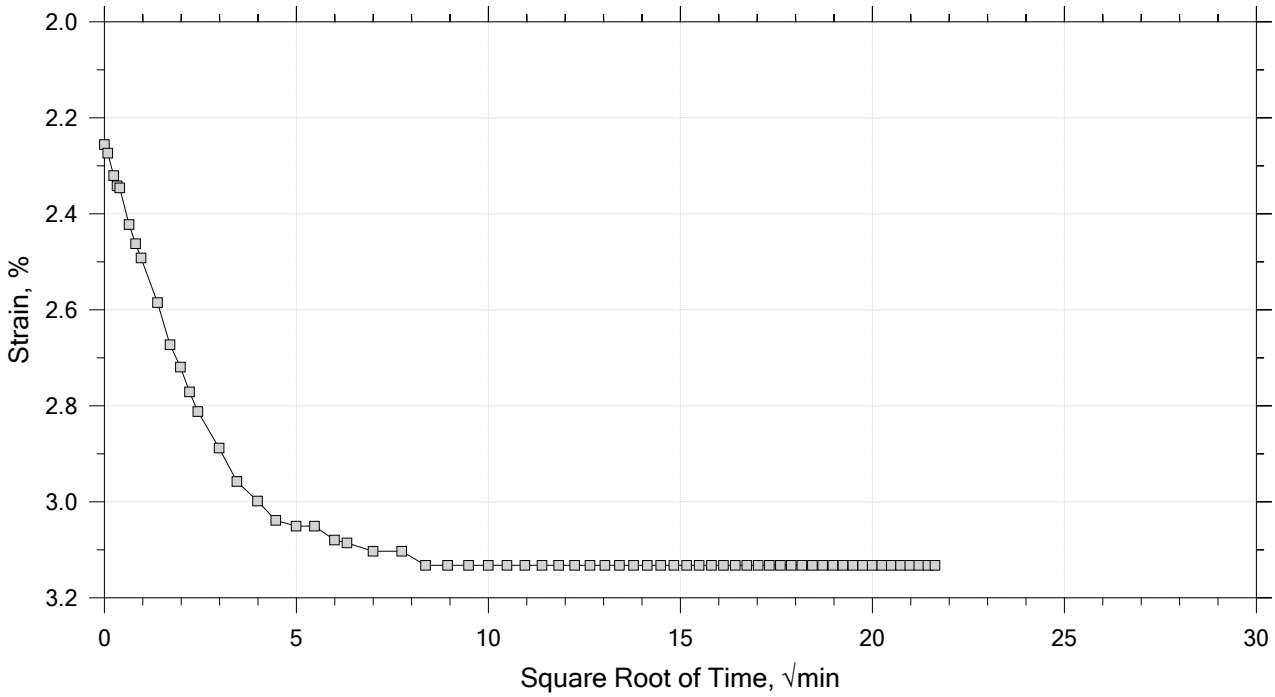
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





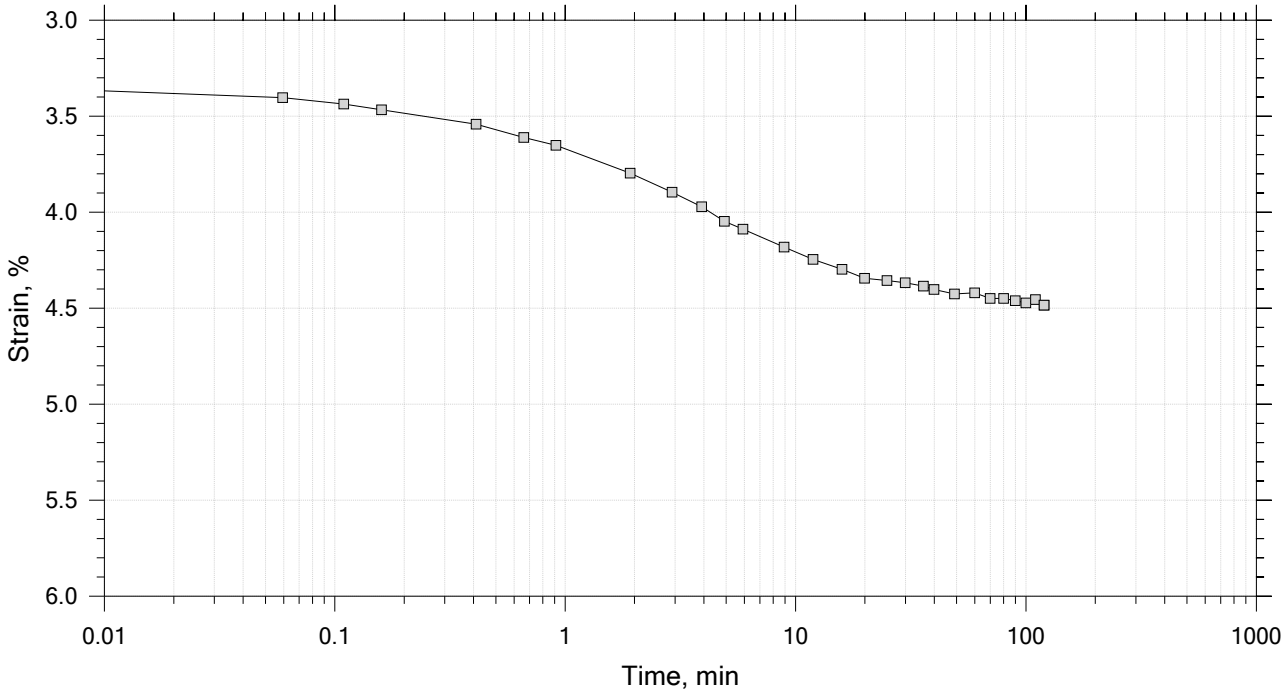
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

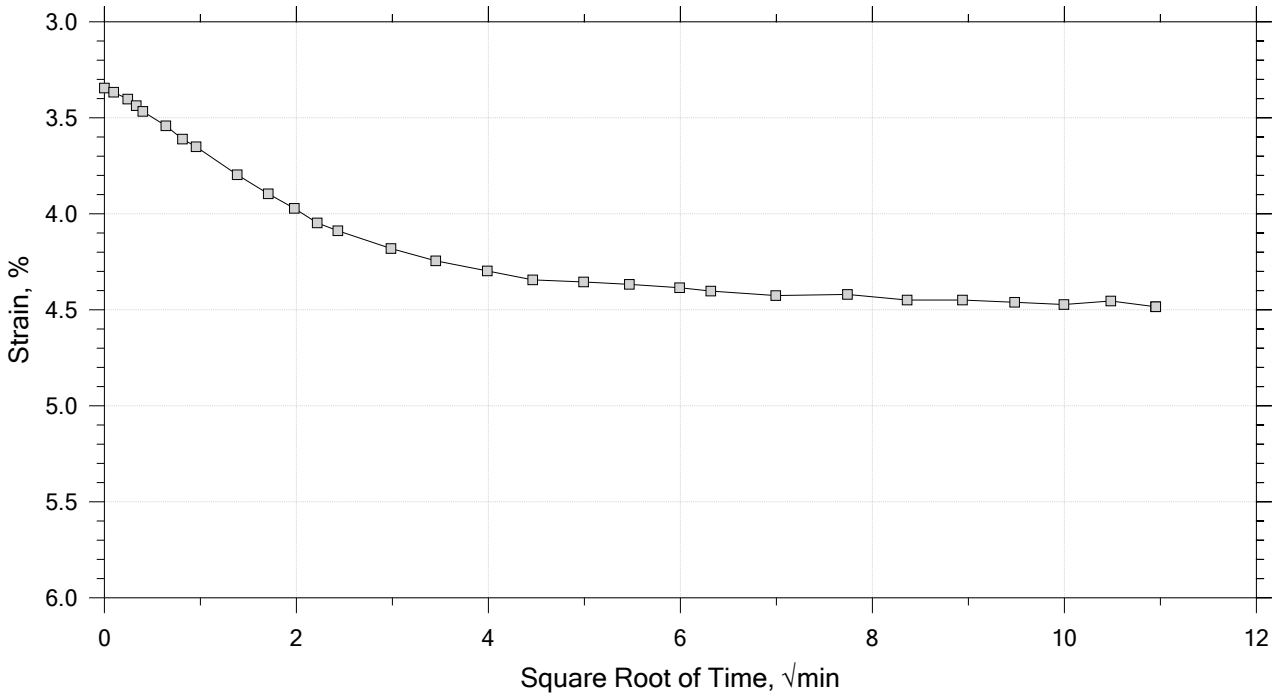
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





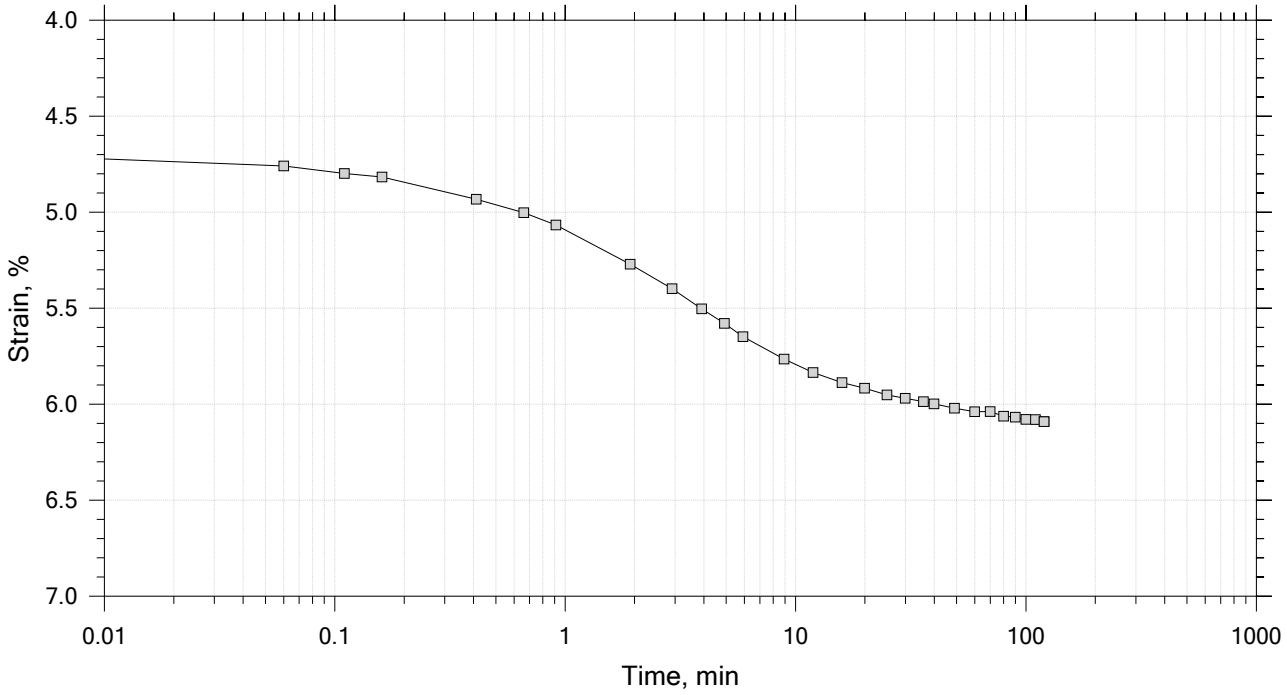
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

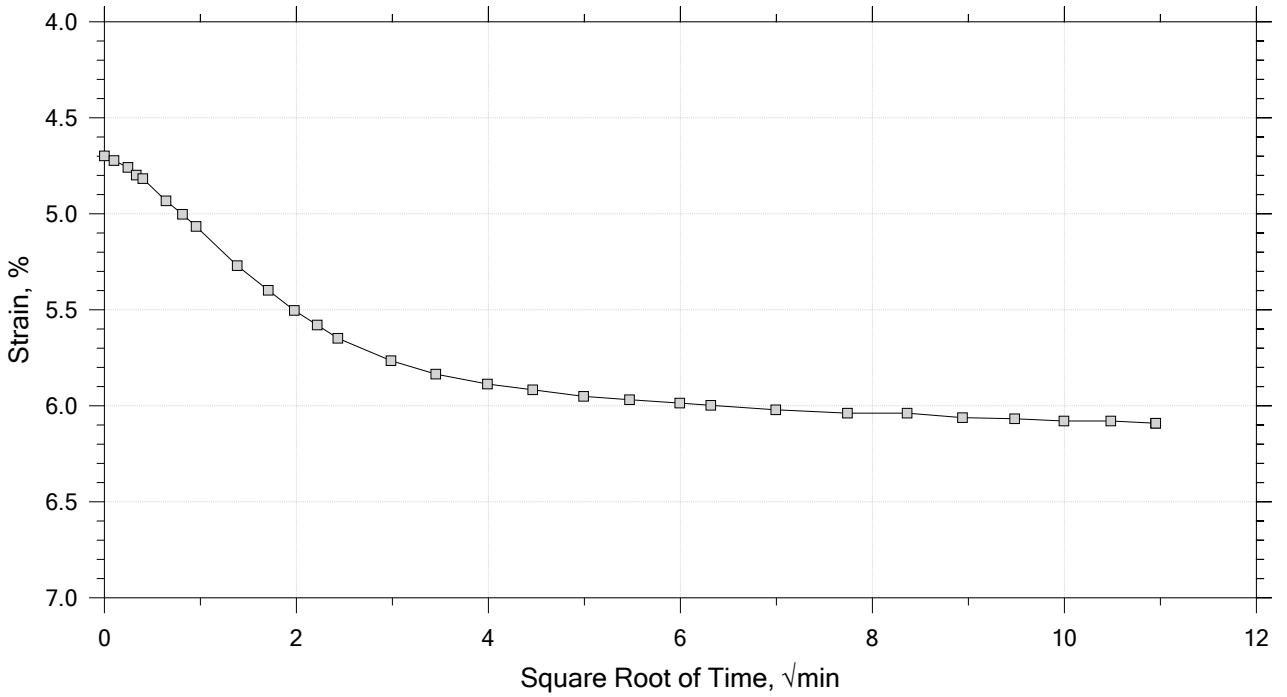
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

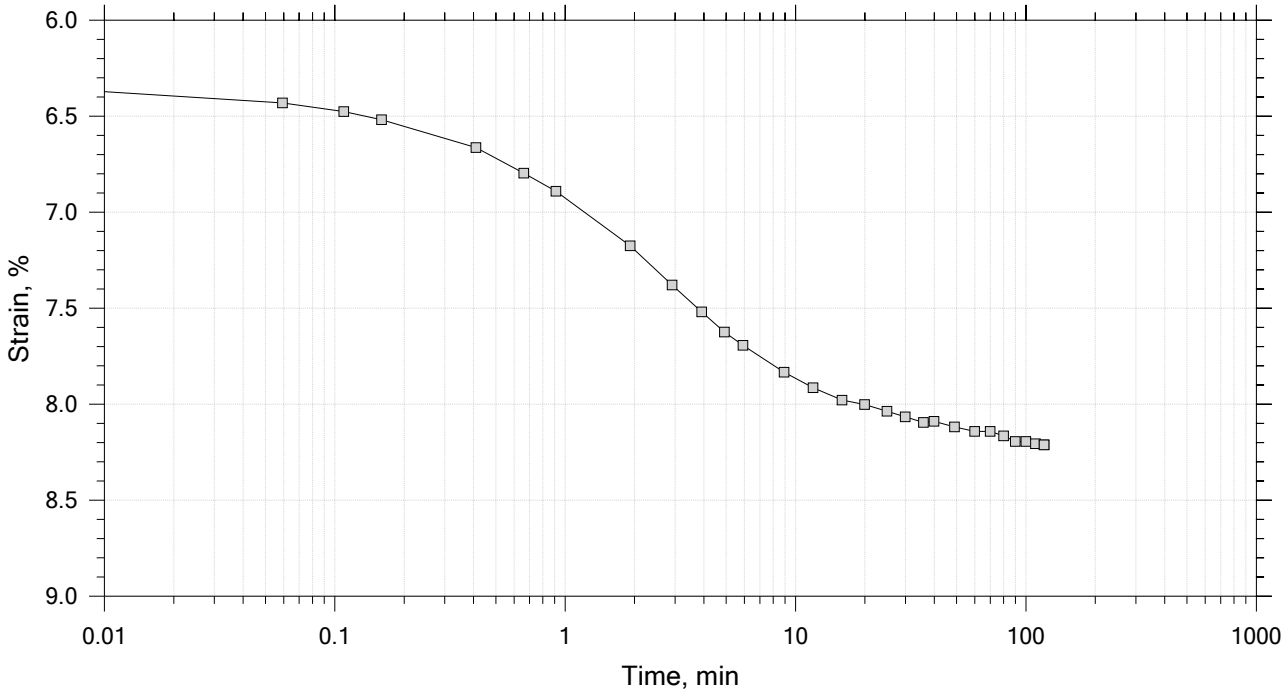


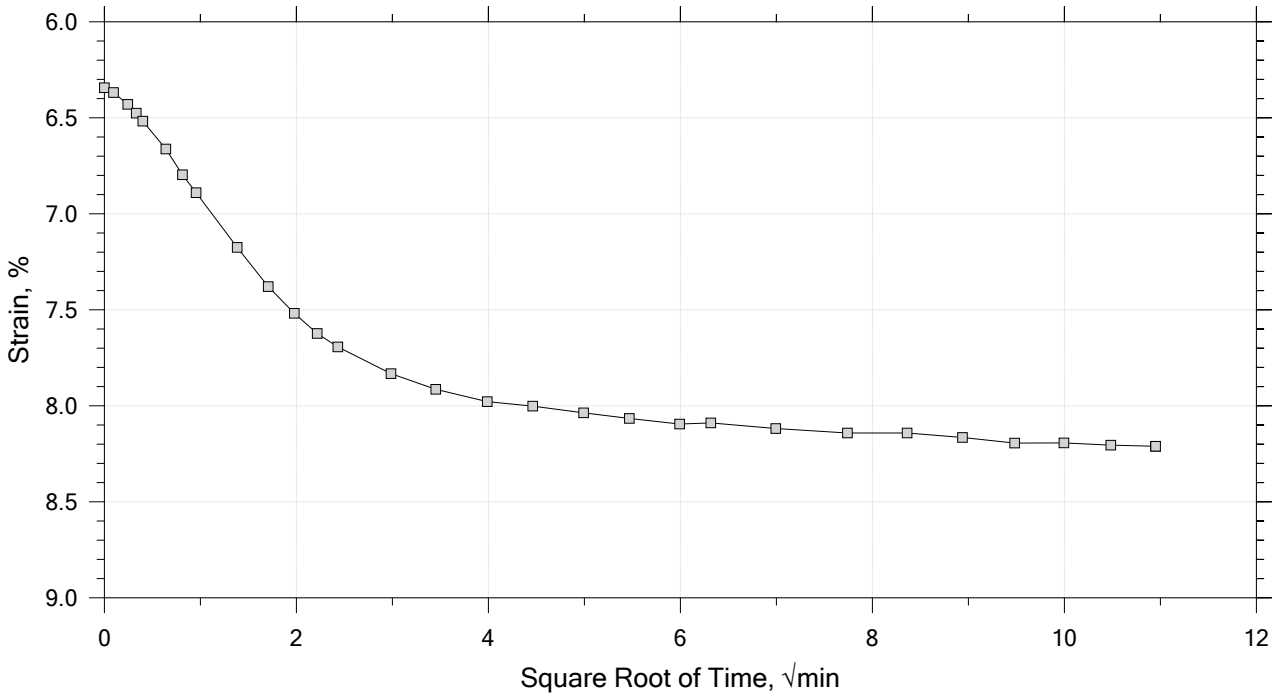


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

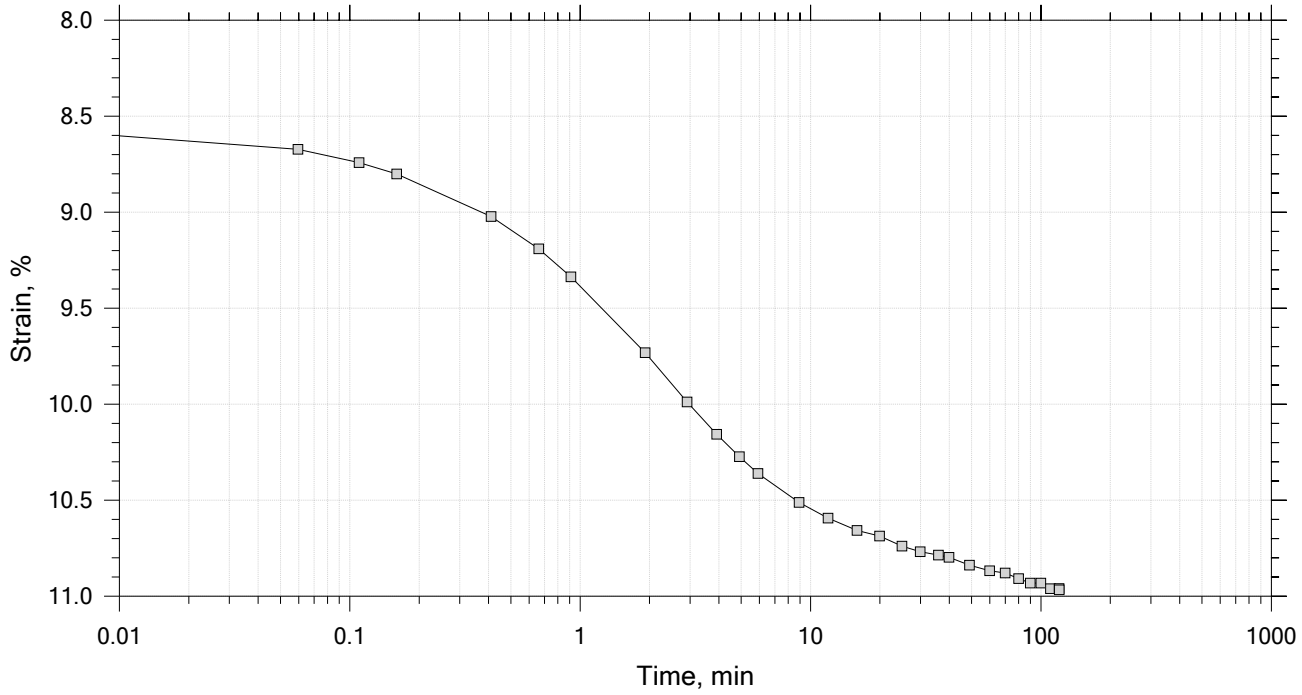


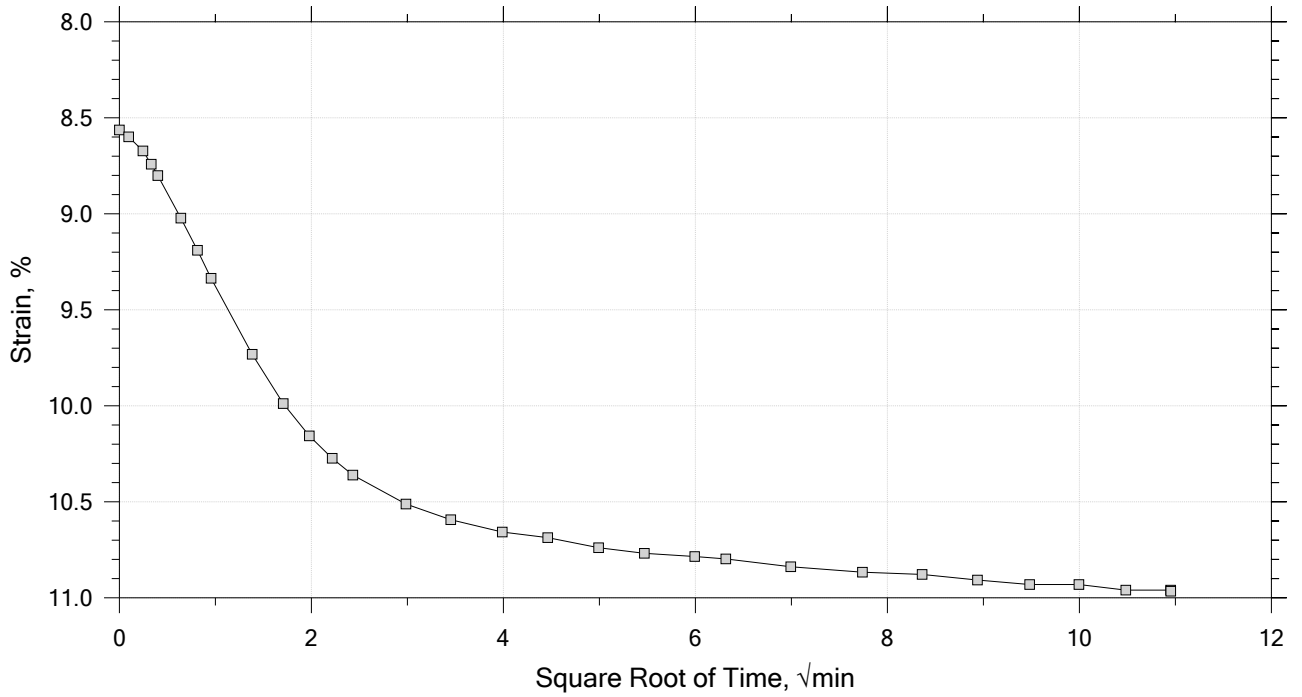


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

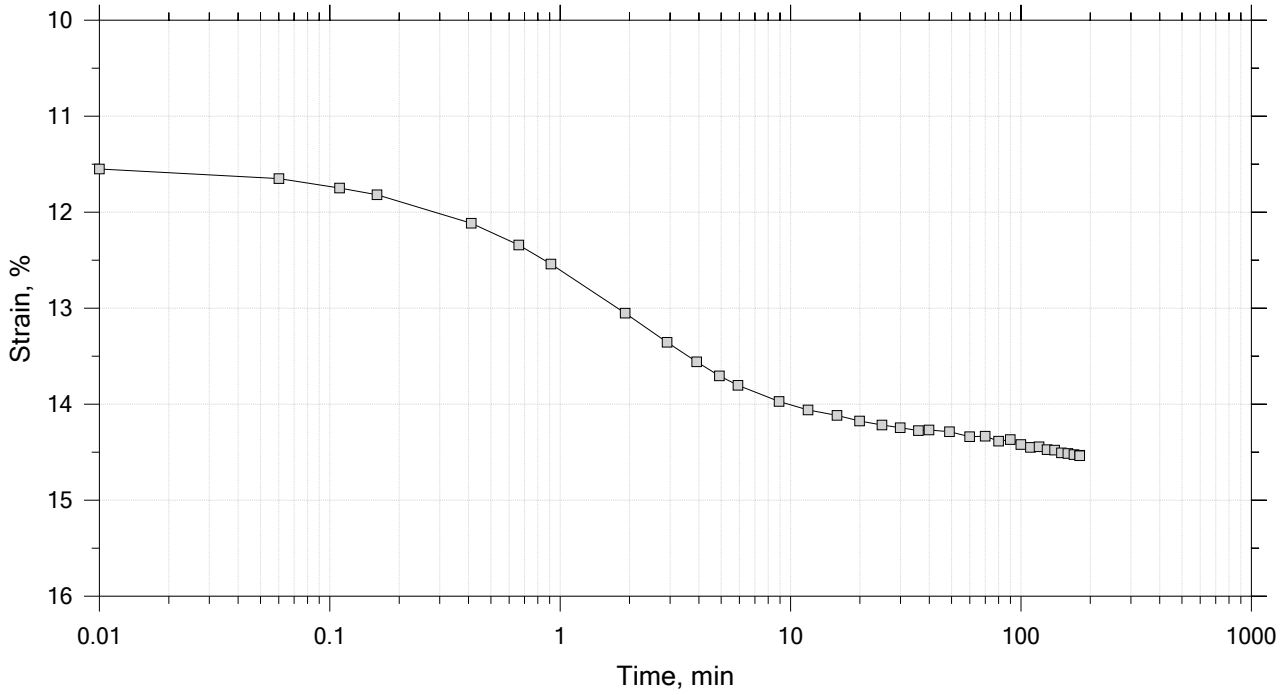


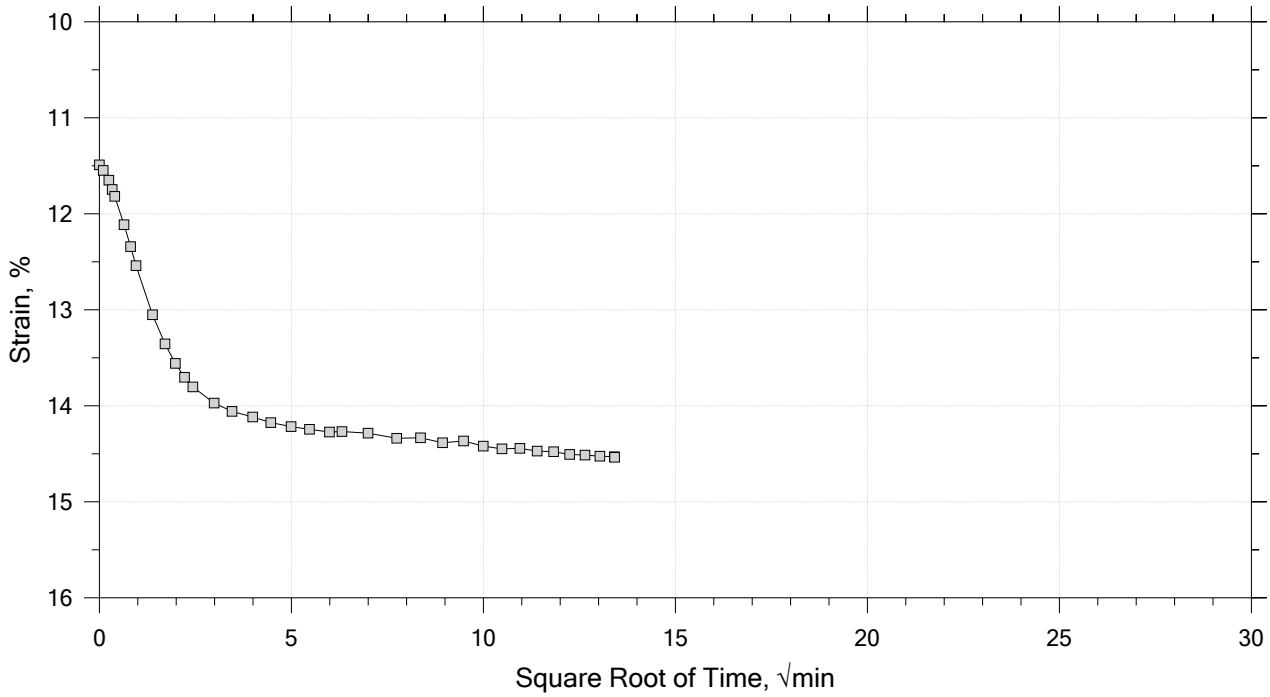


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
Test No.: IP-13	Sample Type: intact	Elevation: ---
Description: Moist, darkgray clayey sand		
Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





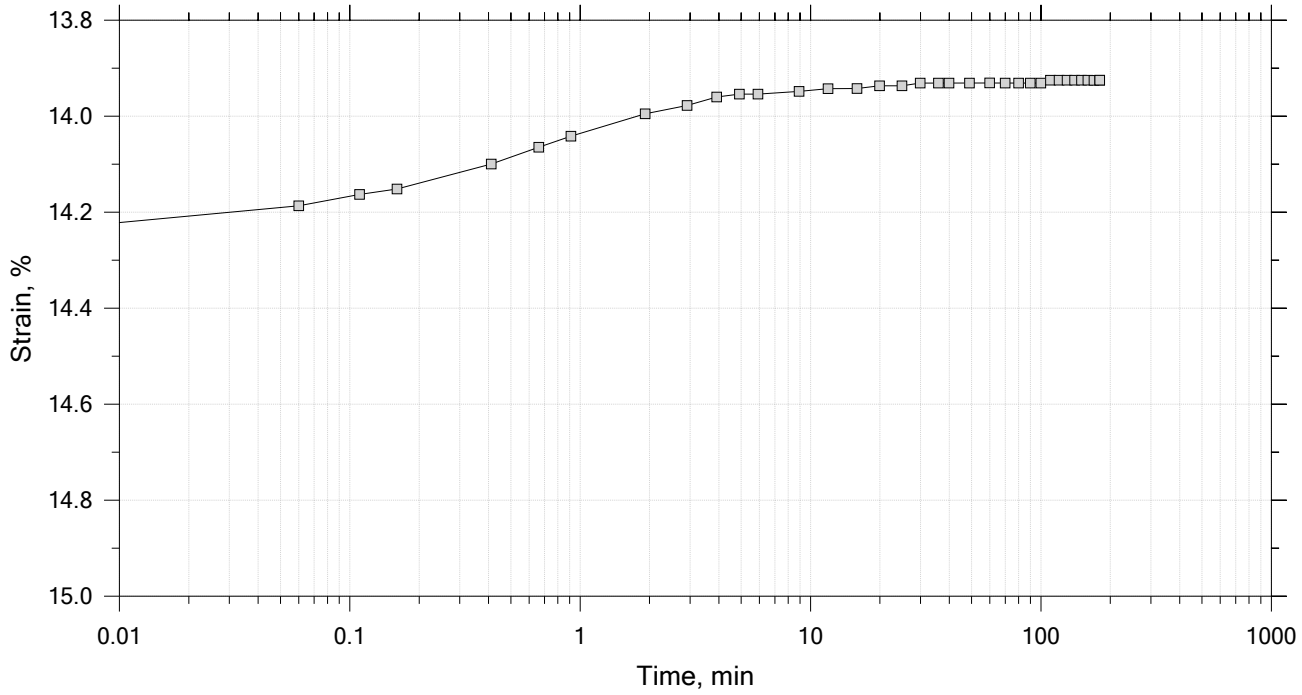
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

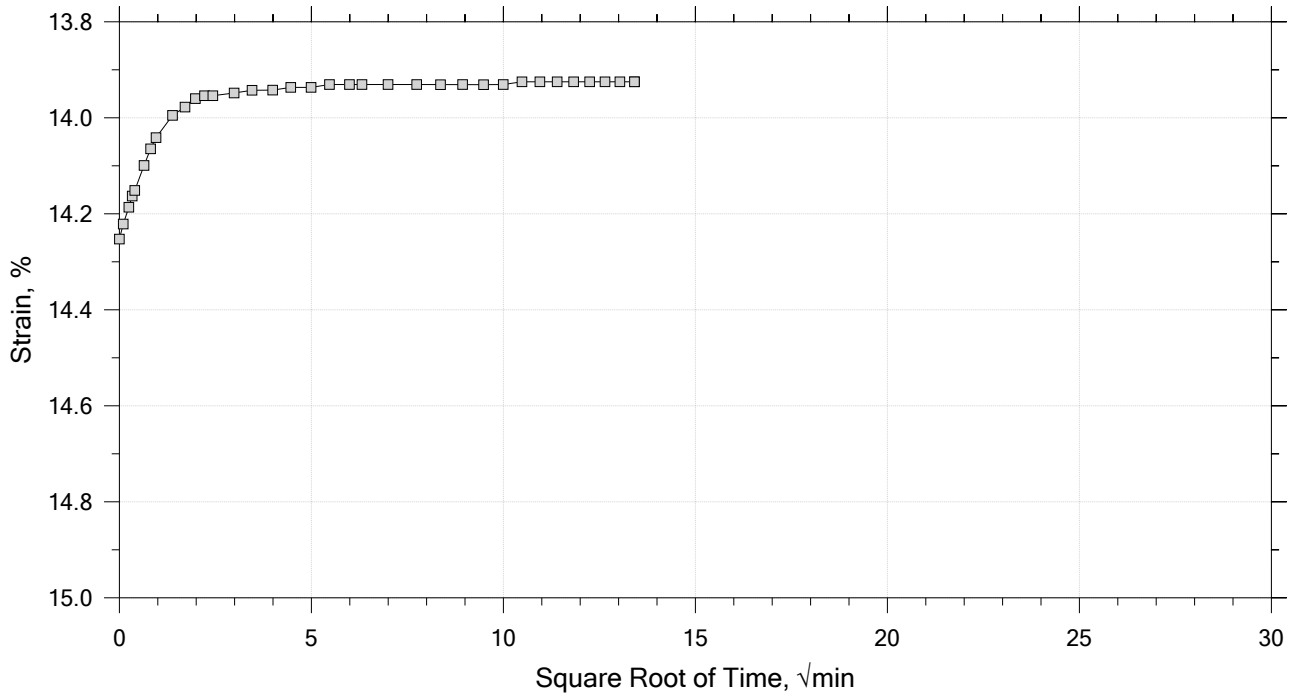
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf

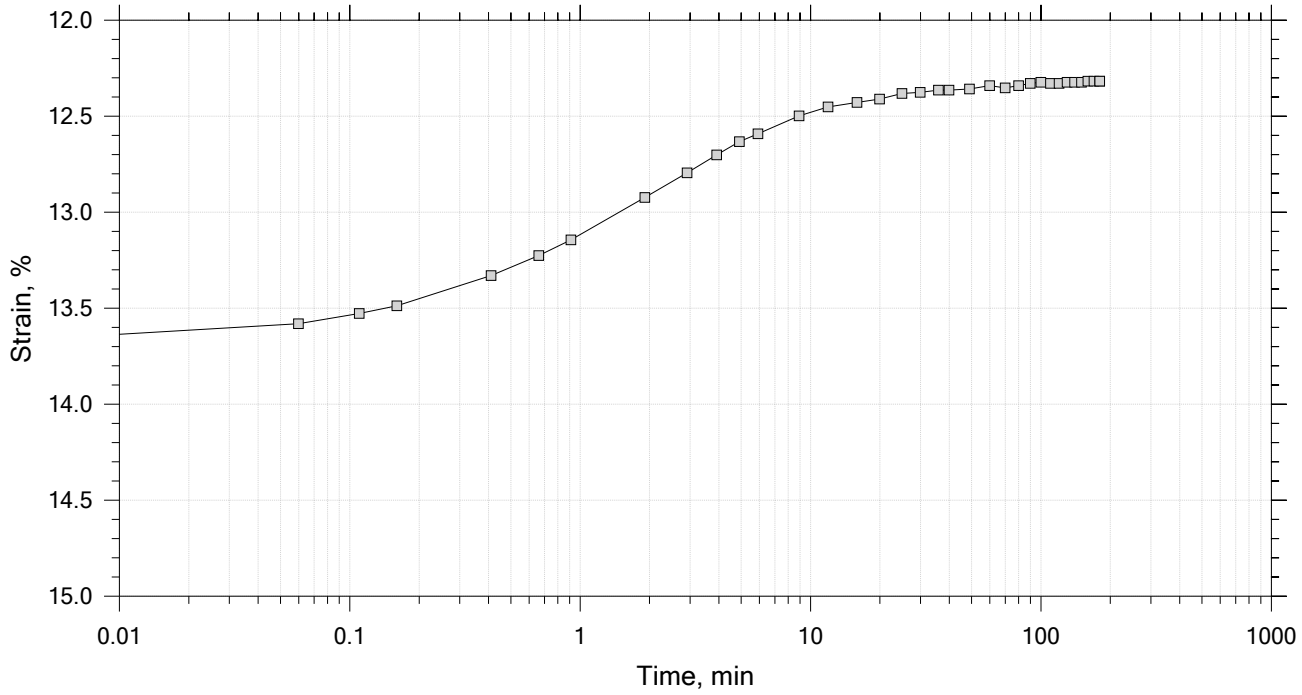


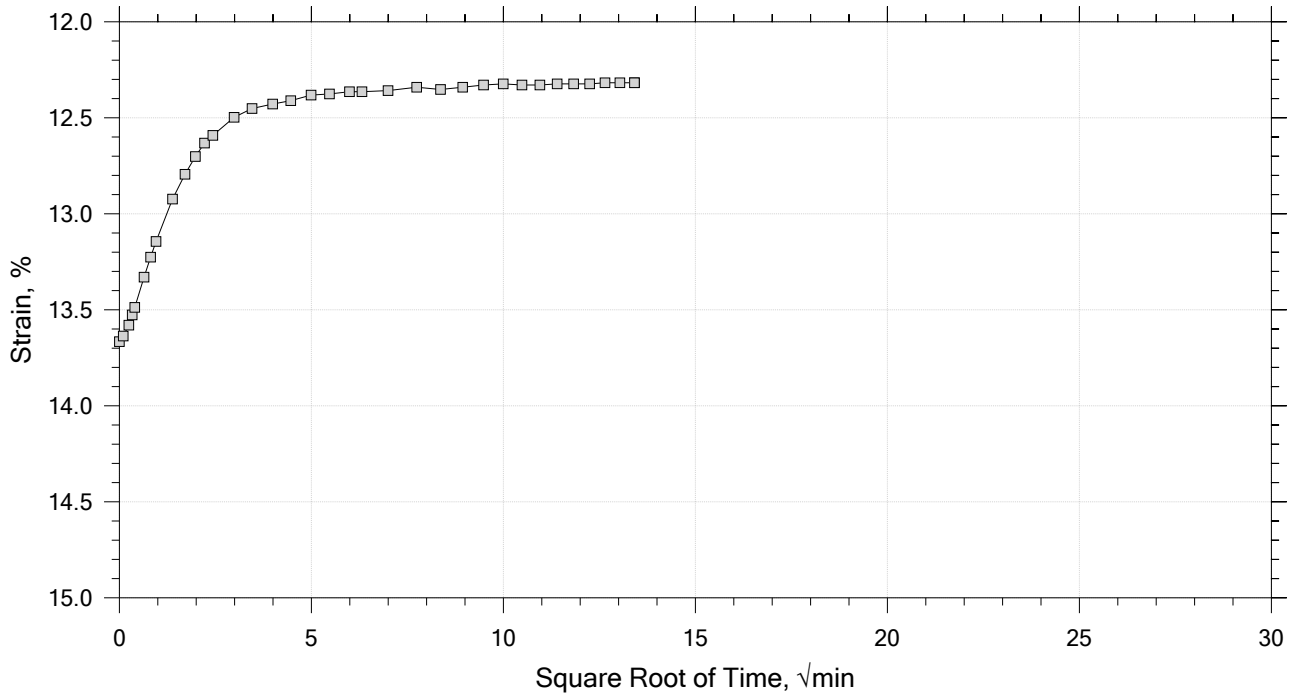


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





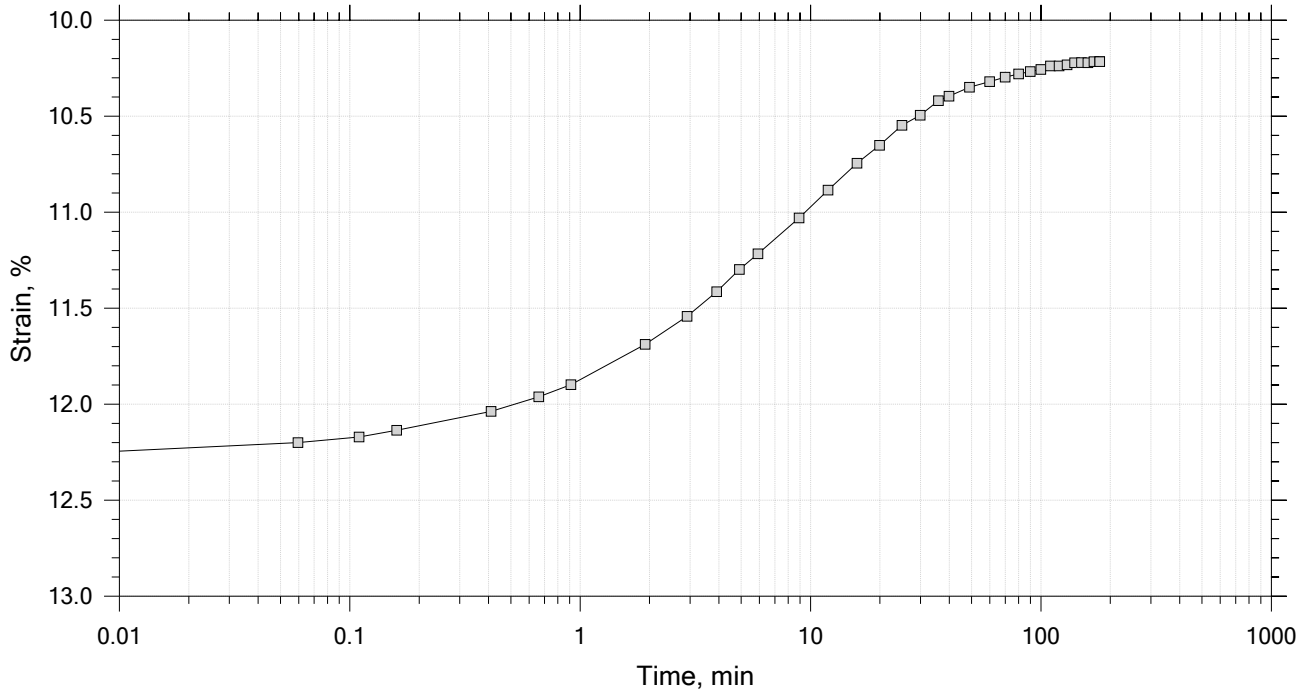
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
Test No.: IP-13	Sample Type: intact	Elevation: ---
Description: Moist, darkgray clayey sand		
Remarks: System C, Swell Pressure = 0.0703 tsf		

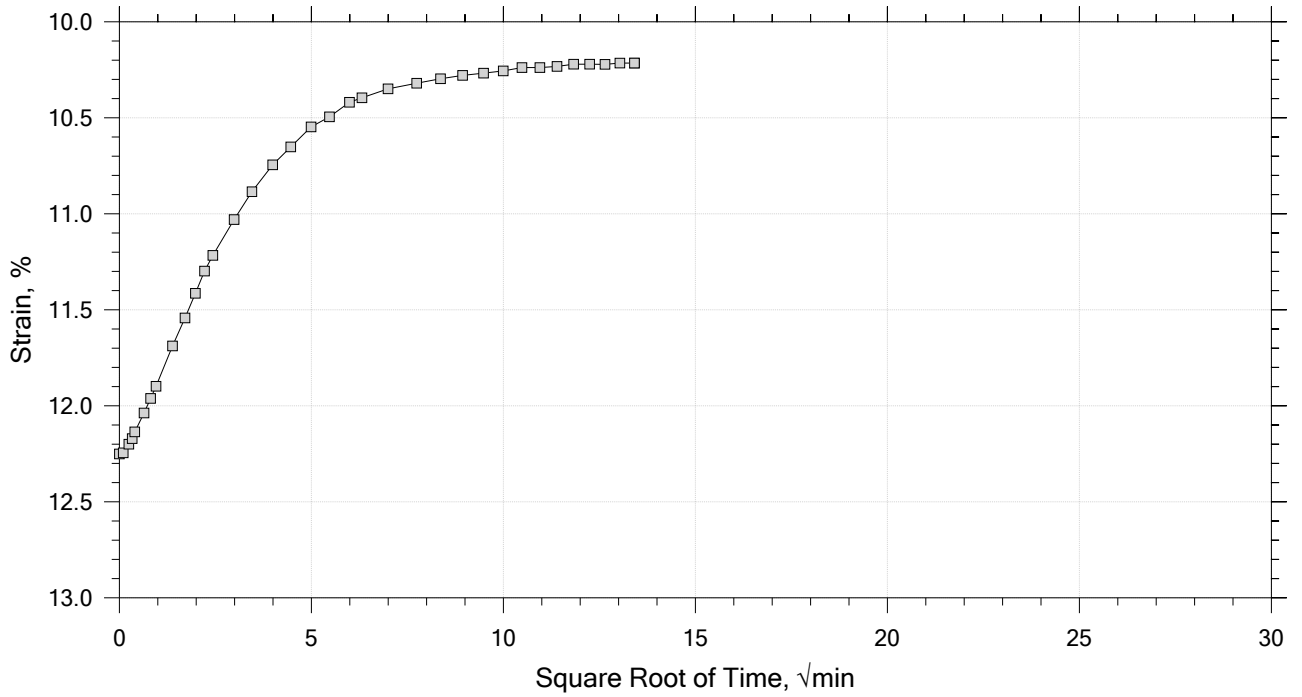
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

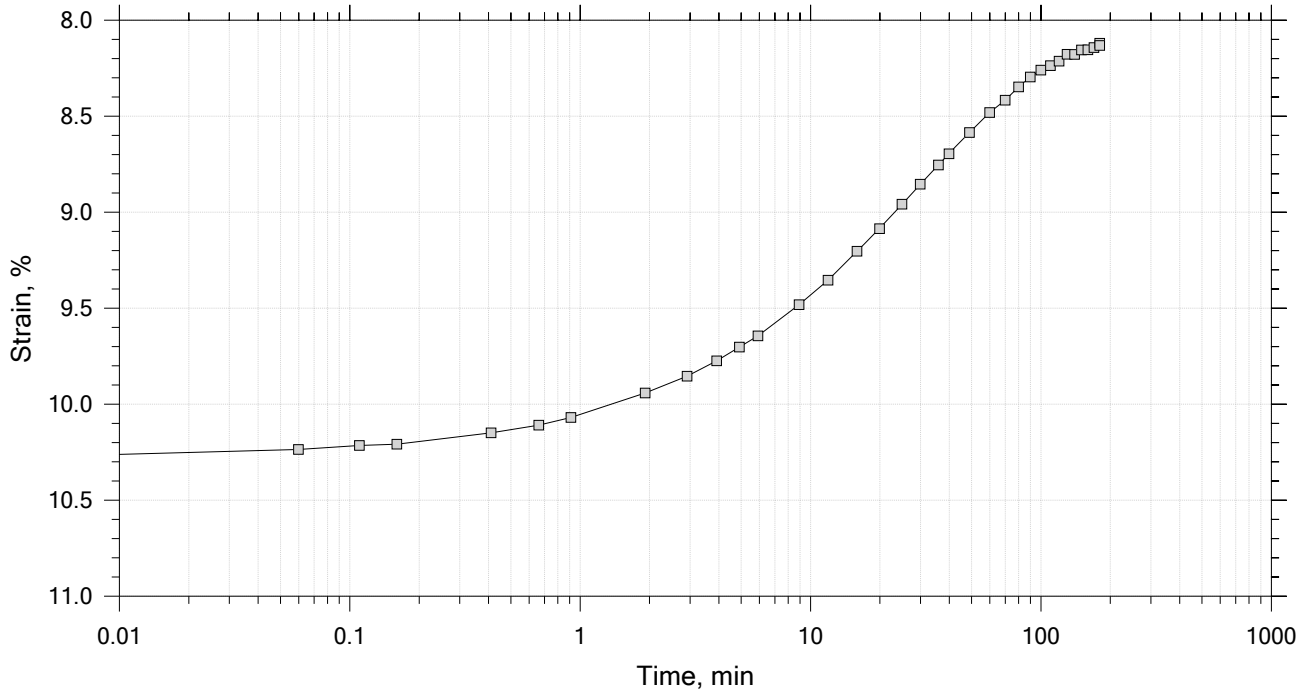


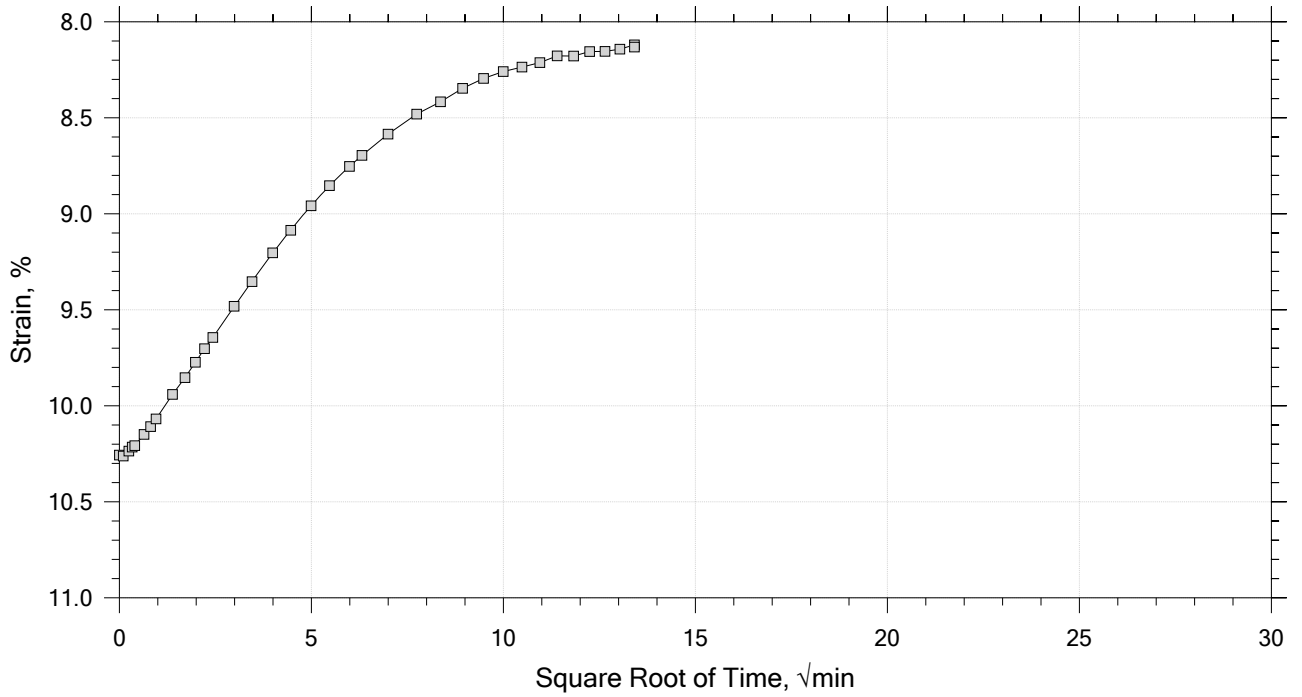


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
Test No.: IP-13	Sample Type: intact	Elevation: ---
Description: Moist, darkgray clayey sand		
Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.71	Liquid Limit: 27
Initial Height: 1.00 in	Initial Void Ratio: 0.64	Plastic Limit: 16
Final Height: 0.93 in	Final Void Ratio: 0.525	Plasticity Index: 11

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	e0249	RING		SS3
Mass Container, gm	8.27	108.07	108.07	8.18
Mass Container + Wet Soil, gm	160.22	270.93	266.91	167
Mass Container + Dry Soil, gm	131.25	241.15	241.15	141.24
Mass Dry Soil, gm	122.98	133.08	133.08	133.06
Water Content, %	23.56	22.38	19.36	19.36
Void Ratio	---	0.64	0.53	---
Degree of Saturation, %	---	94.87	100.00	---
Dry Unit Weight, pcf	---	103.28	111.05	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

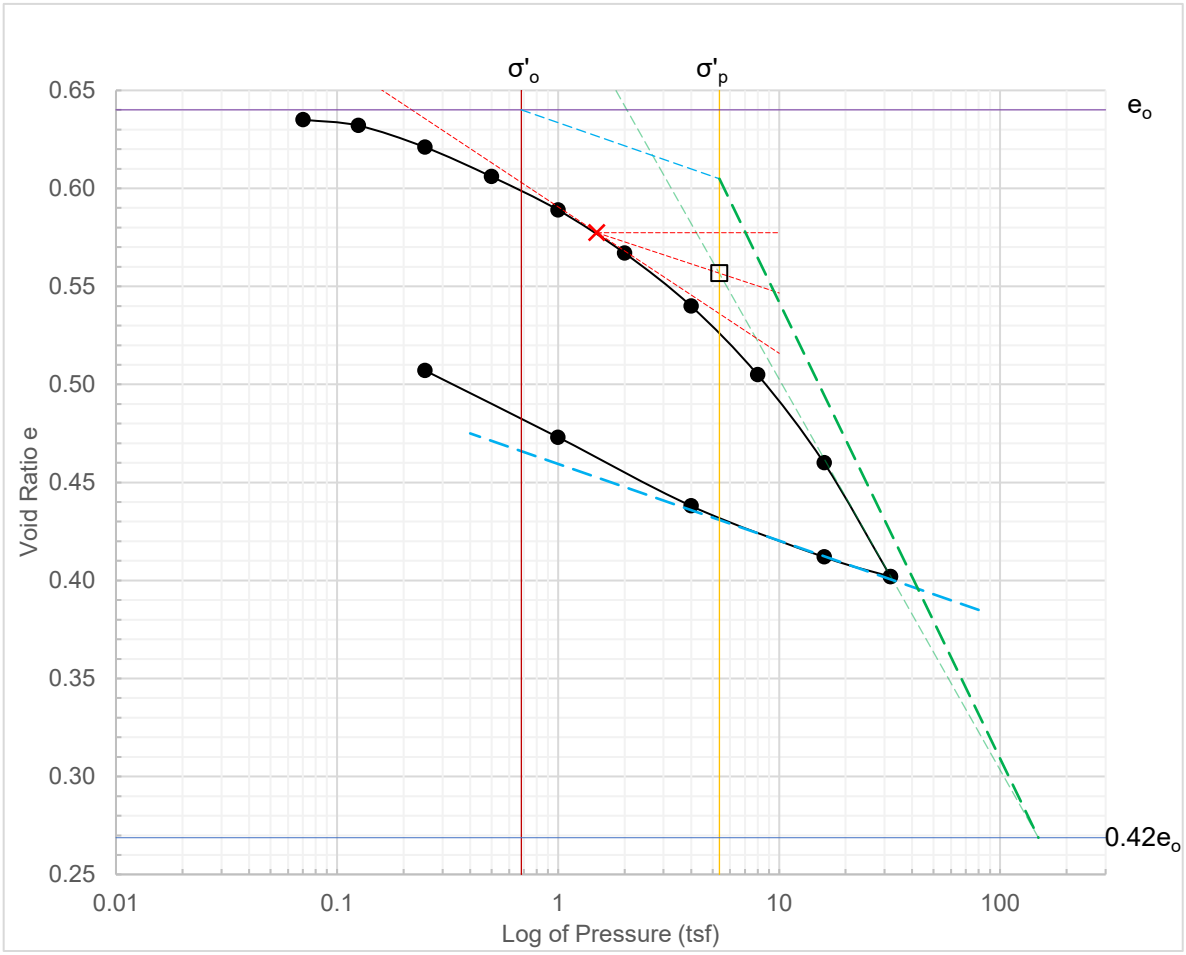
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0703	0.002938	0.635	0.294	89.737	2.73e-07	4.18e-02	3.07e-05
2	0.125	0.005234	0.632	0.523	6.325	3.85e-06	4.19e-02	4.35e-04
3	0.250	0.01140	0.621	1.14	49.177	4.91e-07	4.94e-02	6.53e-05
4	0.500	0.02049	0.606	2.05	7.444	3.19e-06	3.64e-02	3.13e-04
5	1.00	0.03132	0.589	3.13	13.699	1.70e-06	2.17e-02	9.93e-05
6	2.00	0.04484	0.567	4.48	10.018	2.27e-06	1.35e-02	8.26e-05
7	4.00	0.06091	0.540	6.09	10.277	2.14e-06	8.04e-03	4.64e-05
8	8.00	0.08211	0.505	8.21	8.663	2.44e-06	5.30e-03	3.49e-05
9	16.0	0.1097	0.460	11.0	8.300	2.42e-06	3.44e-03	2.24e-05
10	32.0	0.1454	0.402	14.5	6.994	2.67e-06	2.23e-03	1.61e-05
11	16.0	0.1392	0.412	13.9	2.469	7.31e-06	3.82e-04	7.54e-06
12	4.00	0.1232	0.438	12.3	6.291	2.94e-06	1.34e-03	1.06e-05
13	1.00	0.1022	0.473	10.2	18.831	1.03e-06	7.01e-03	1.94e-05
14	0.250	0.08131	0.507	8.13	65.188	3.11e-07	2.78e-02	2.33e-05

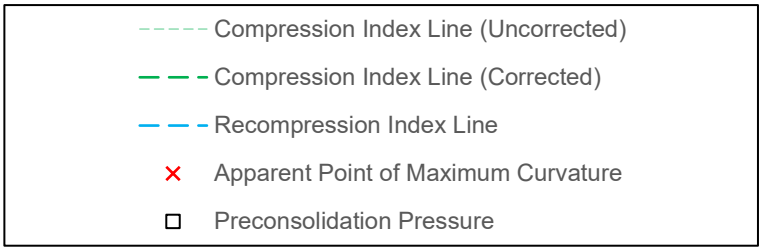
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.12A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/10/22	Depth: 14.8-14.9 ft
	Test No.: IP-13	Sample Type: intact	Elevation: ---
	Description: Moist, darkgray clayey sand		
	Remarks: System C, Swell Pressure = 0.0703 tsf		
	Displacement at End of Increment		

Boring: B-4.12A

Depth: 14.8'-14.9'

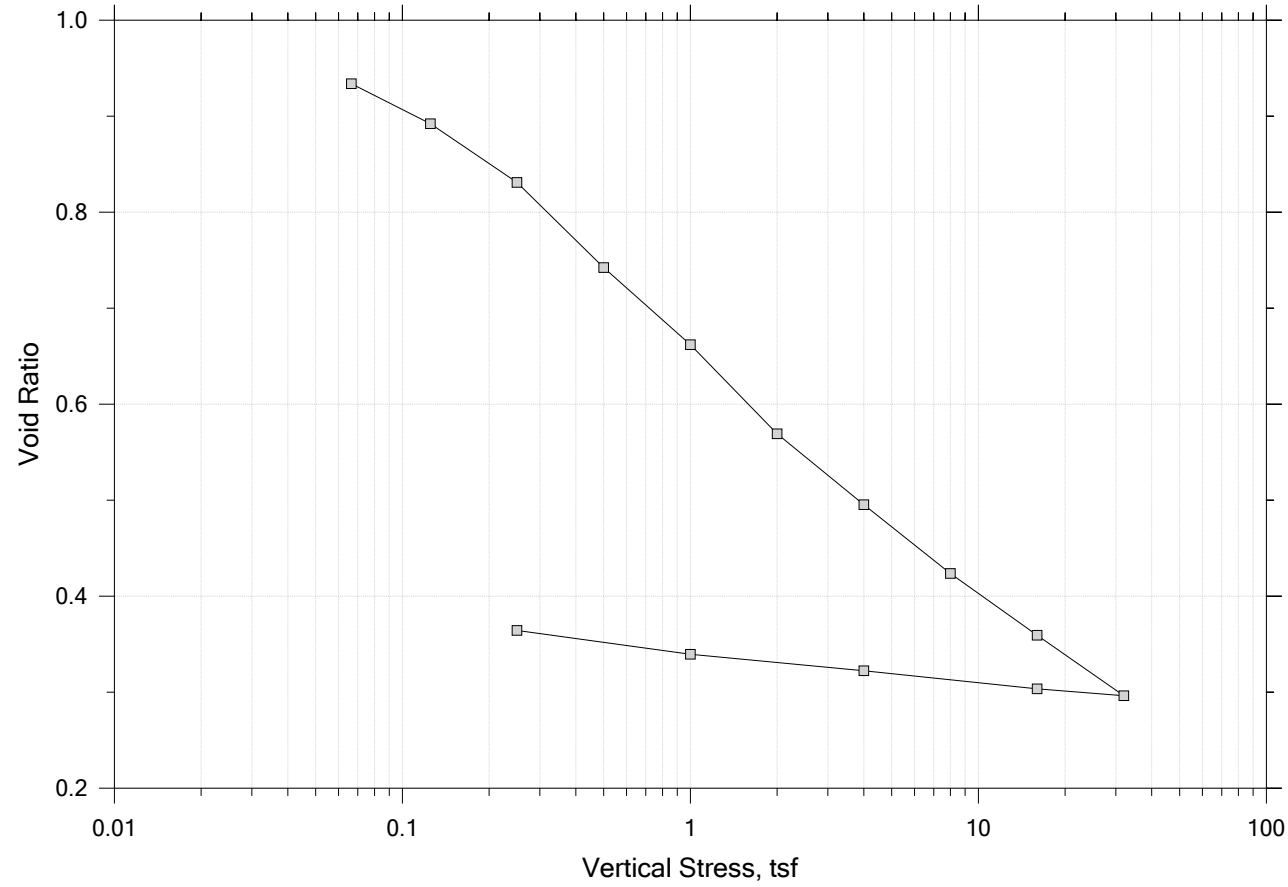
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.68
Preconsolidation Pressure, σ'_p (tsf) = 5.36
Compression Index, C_c = 0.23
Recompression Index, C_r = 0.039

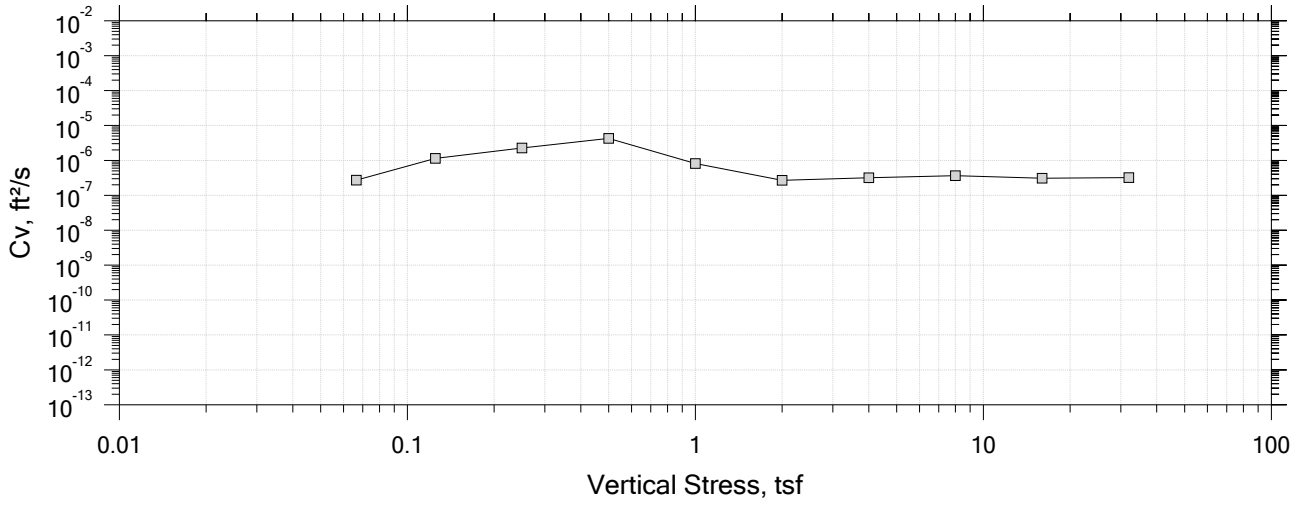




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

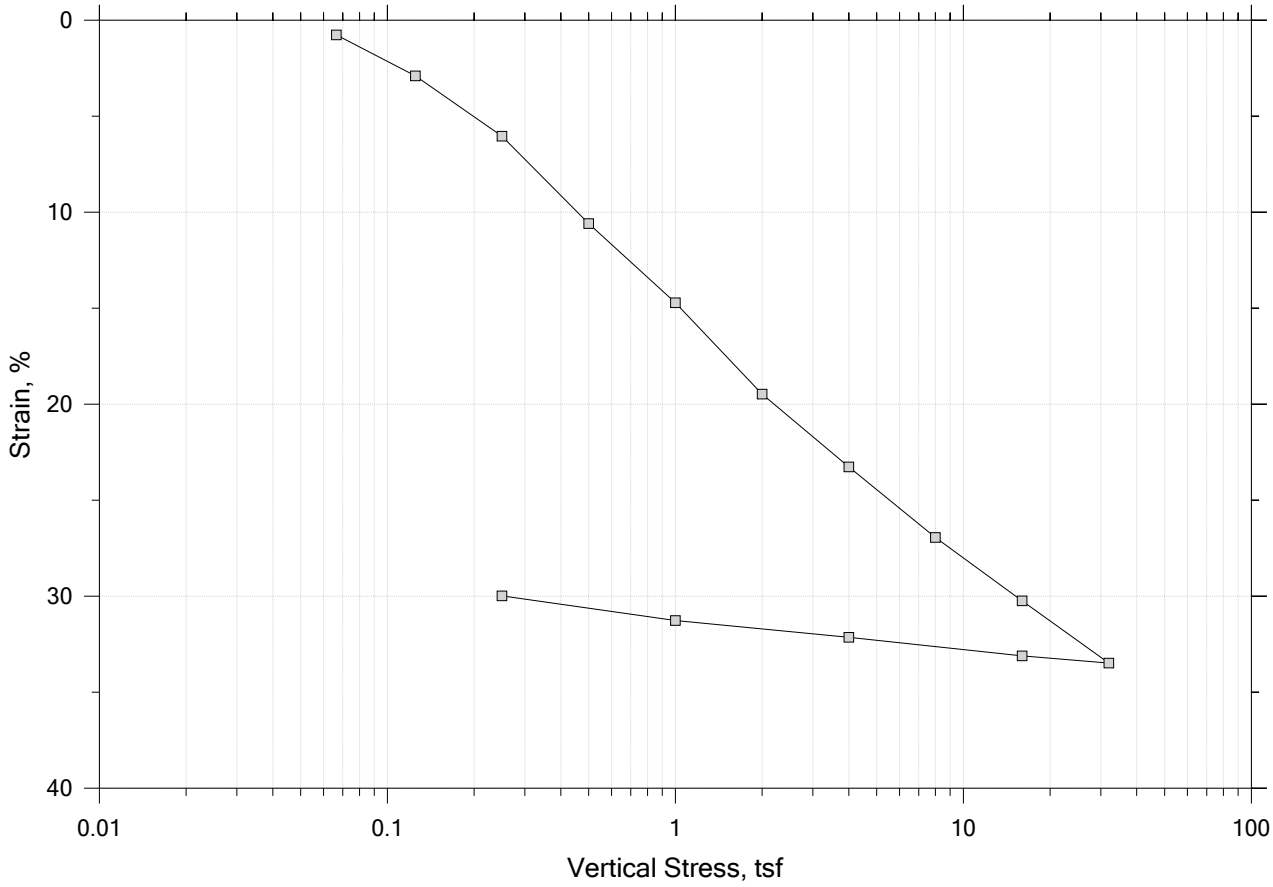


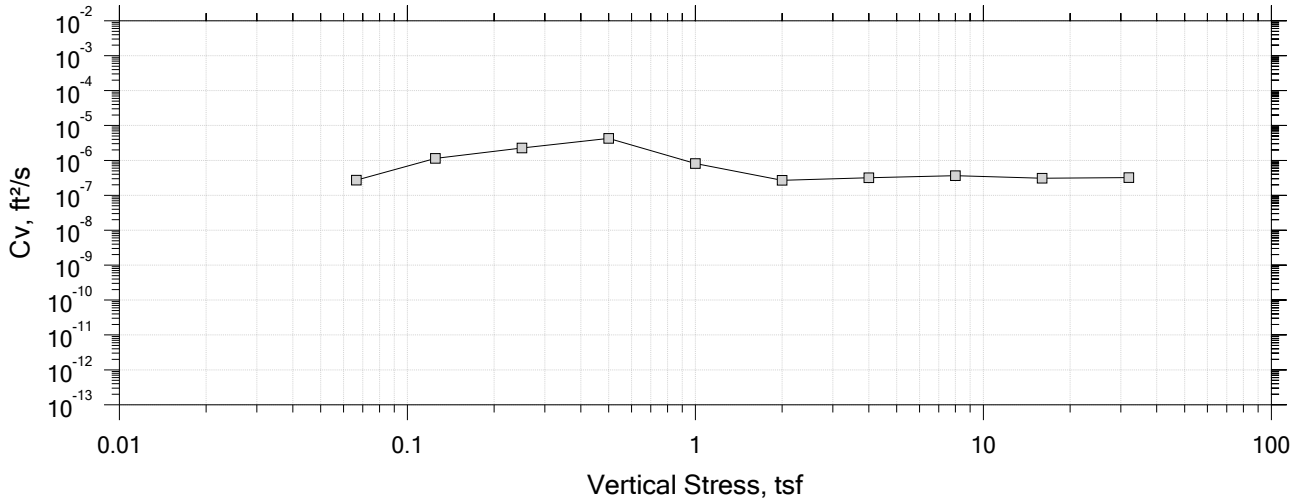


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

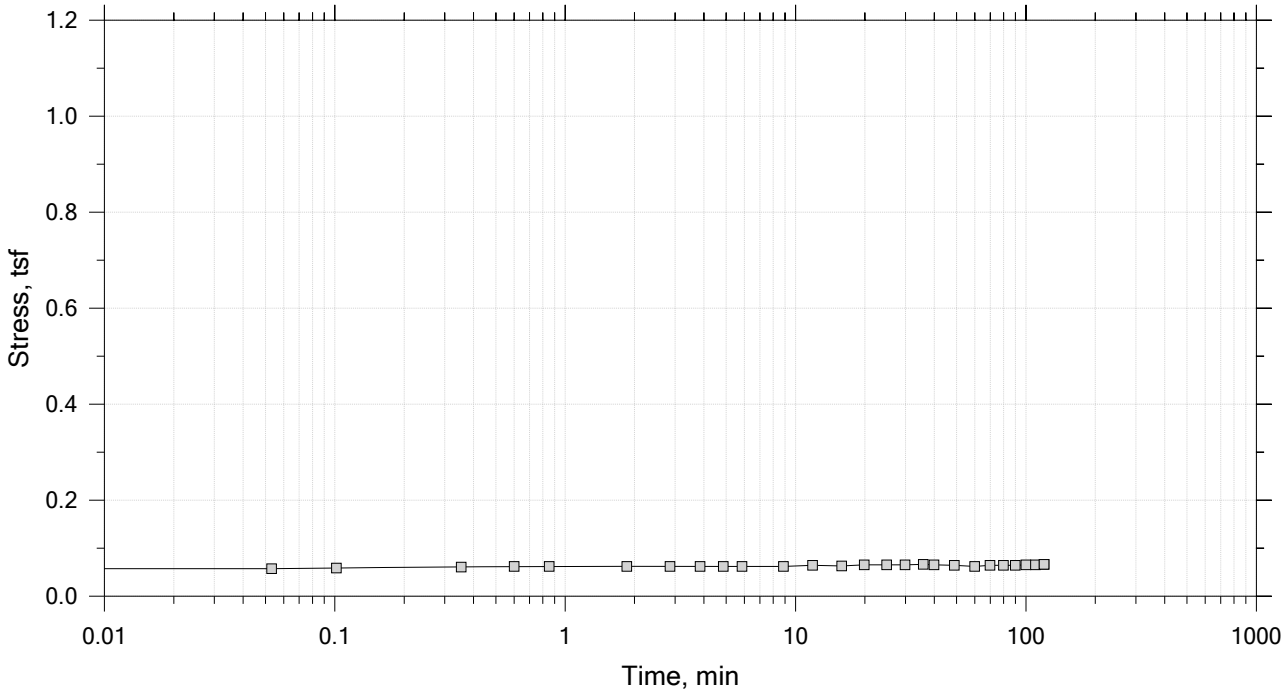


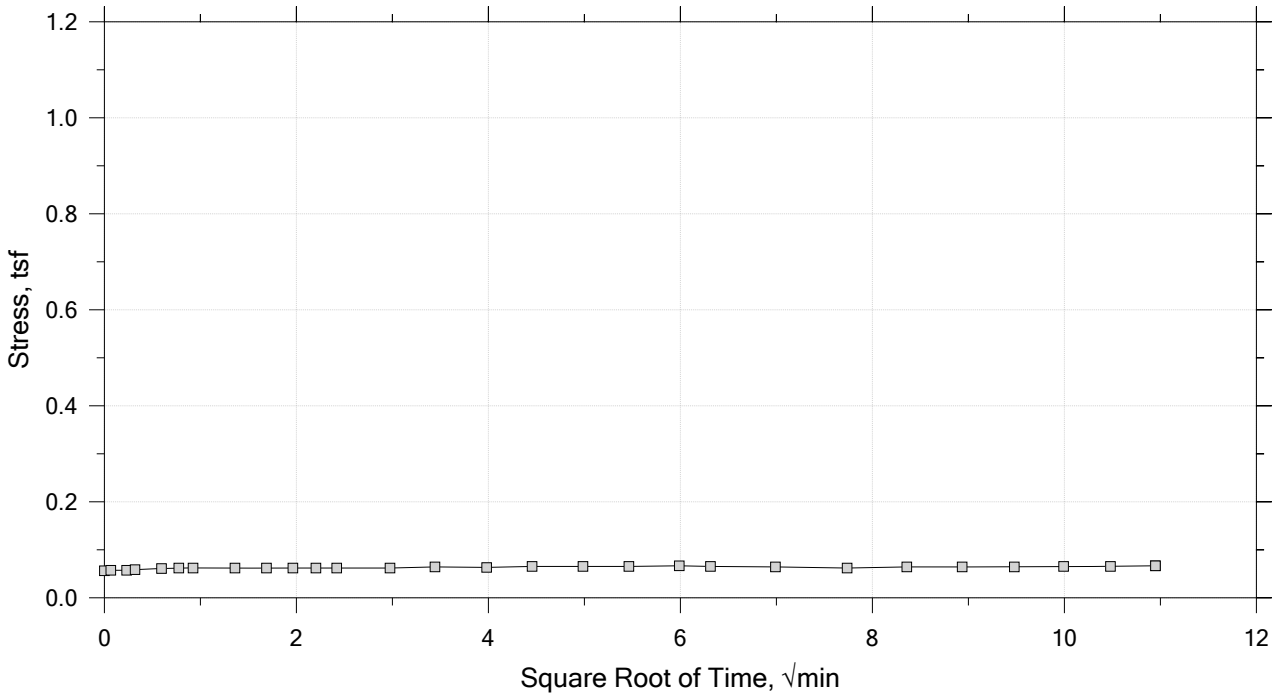


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0665 tsf





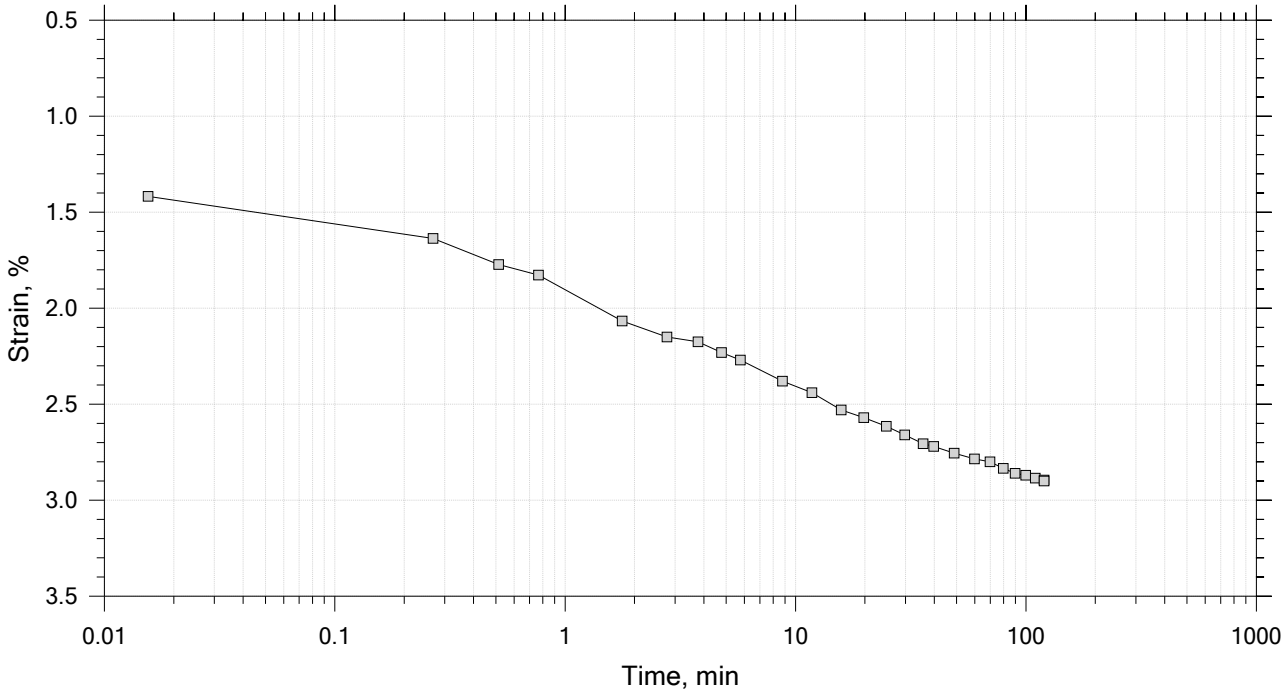
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
Test No.: IP-14-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: TX-028, Swell Pressure = 0.0665 tsf		

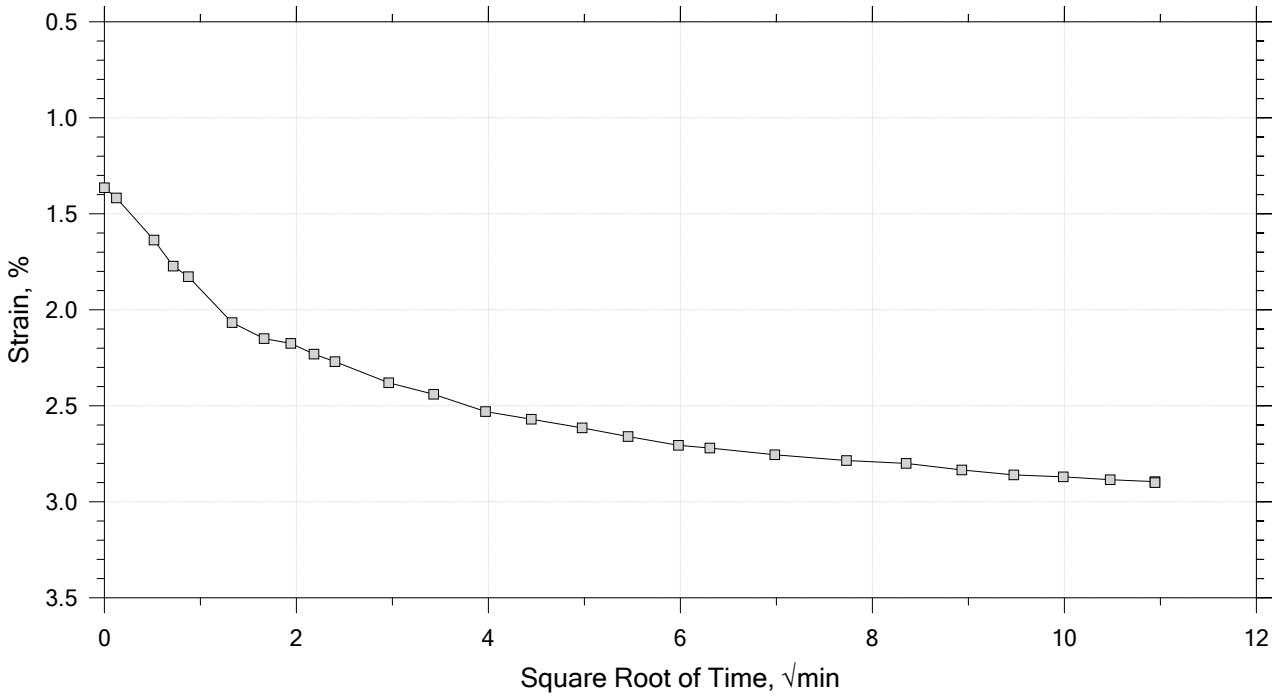
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

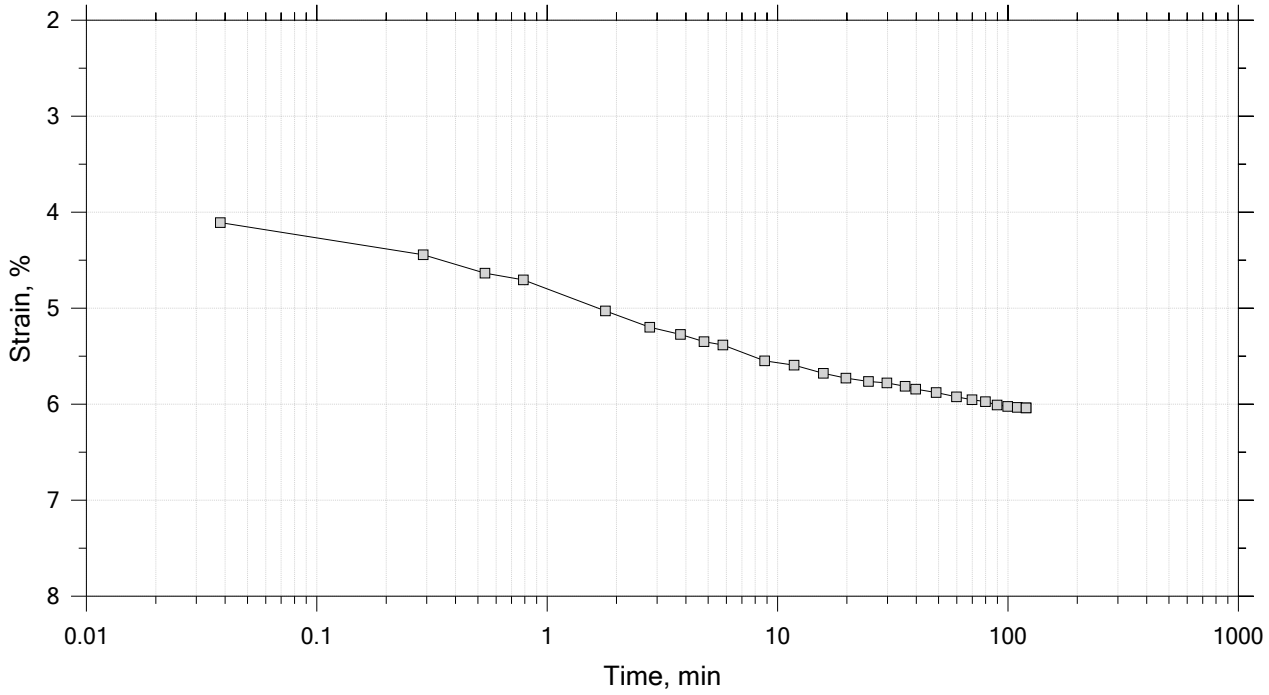


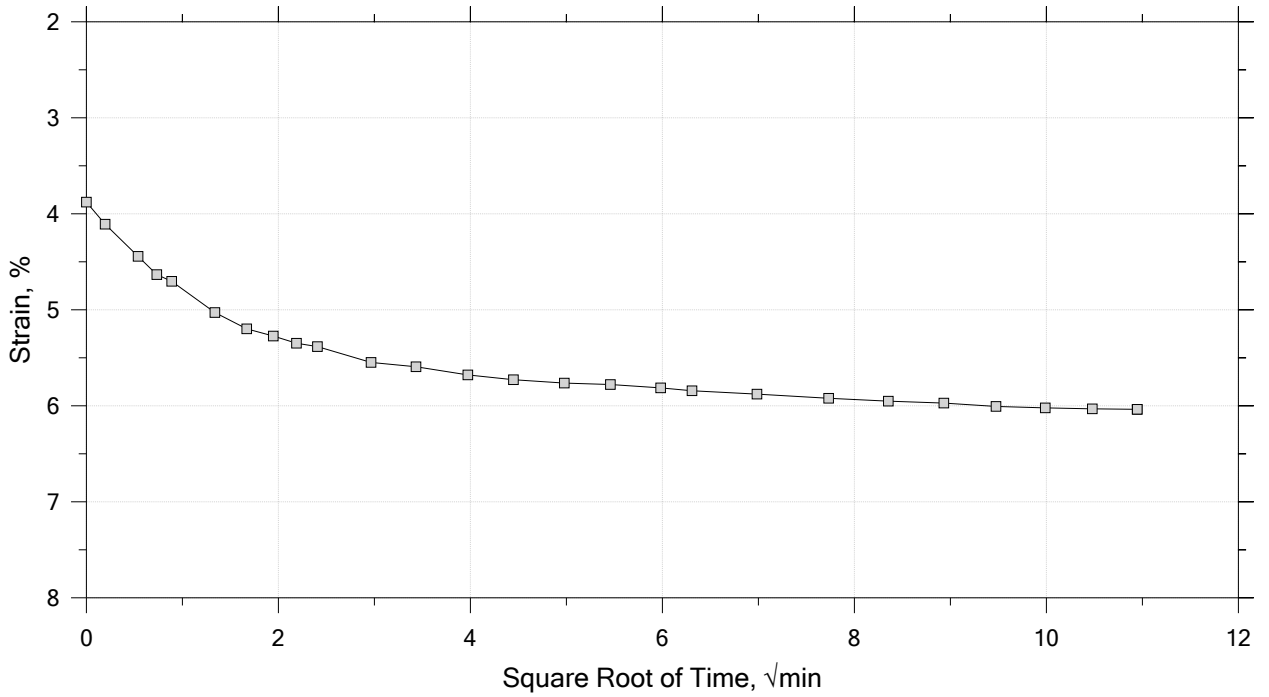


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





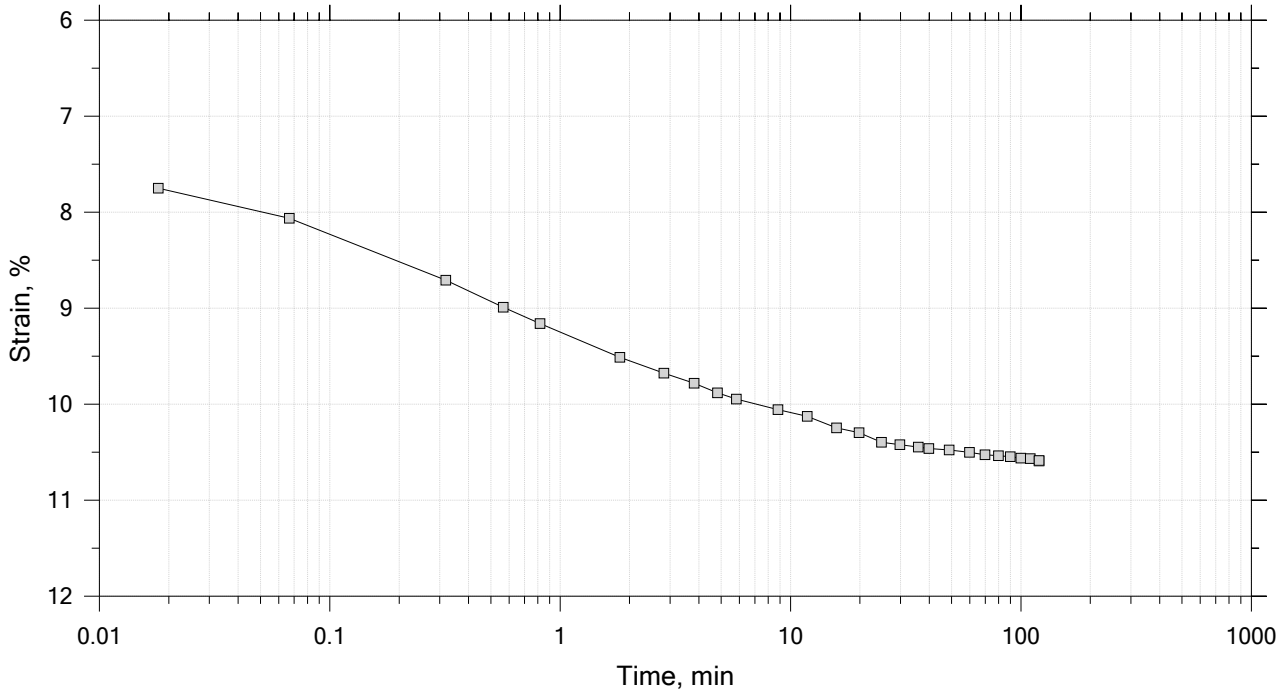
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

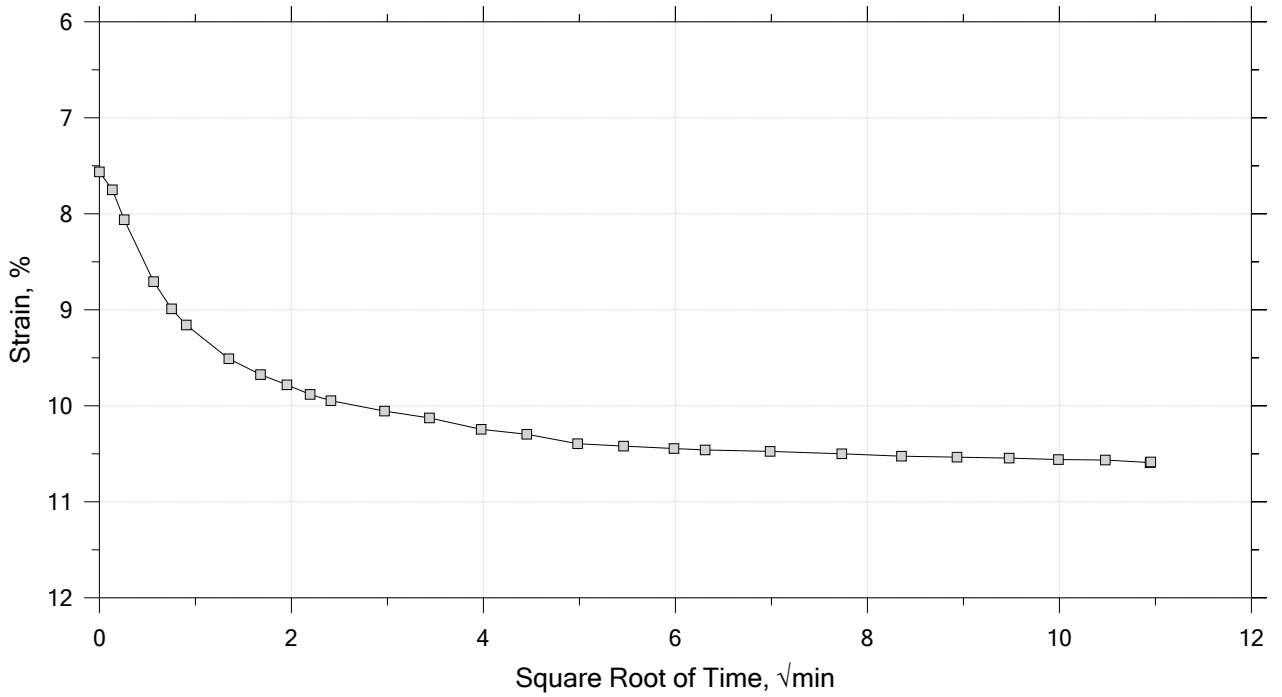
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





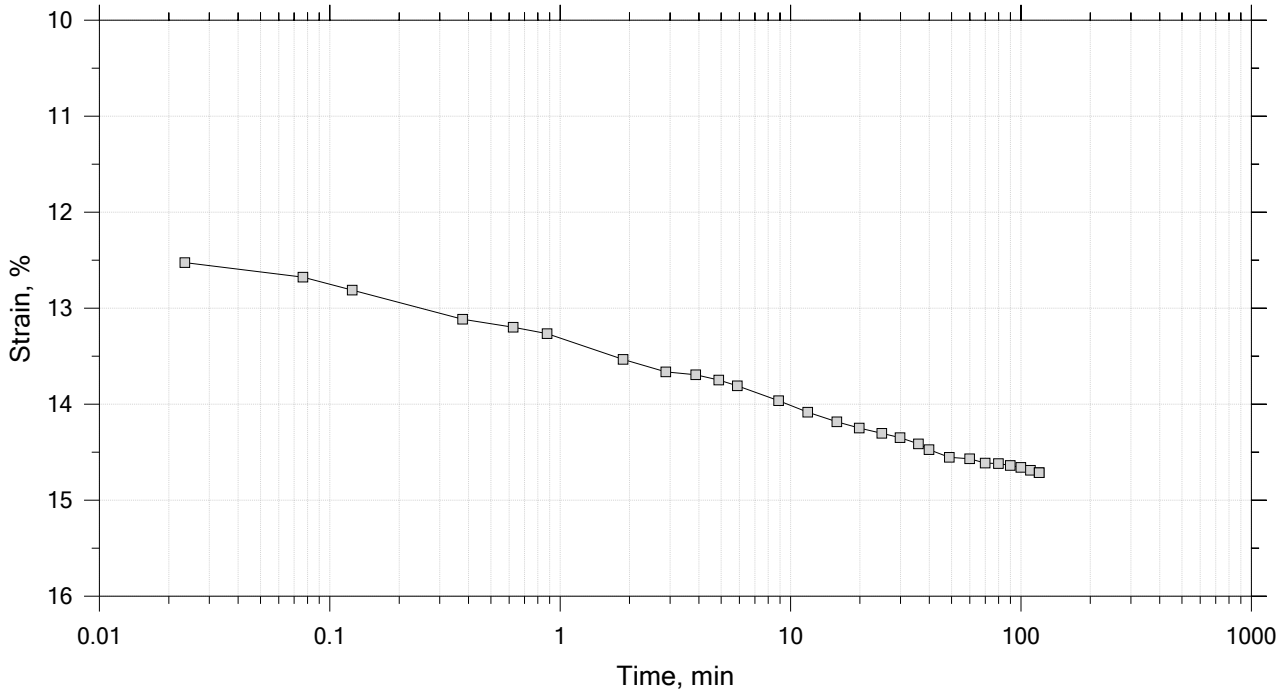
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

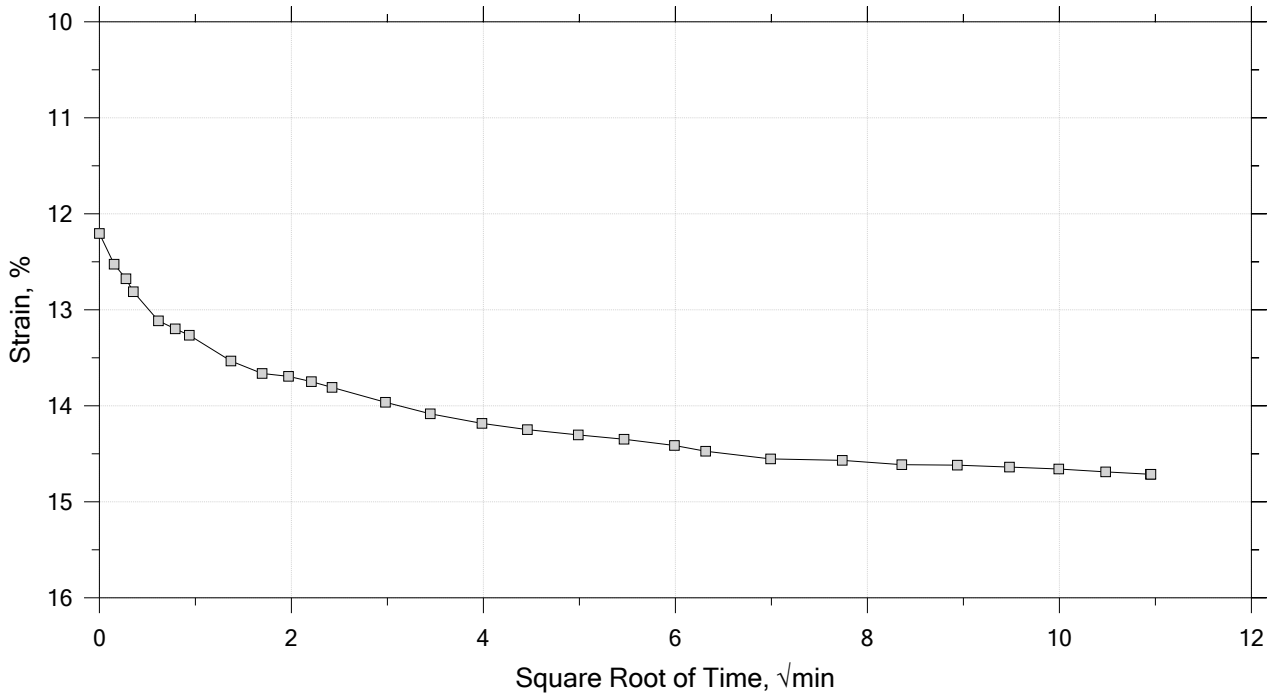
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





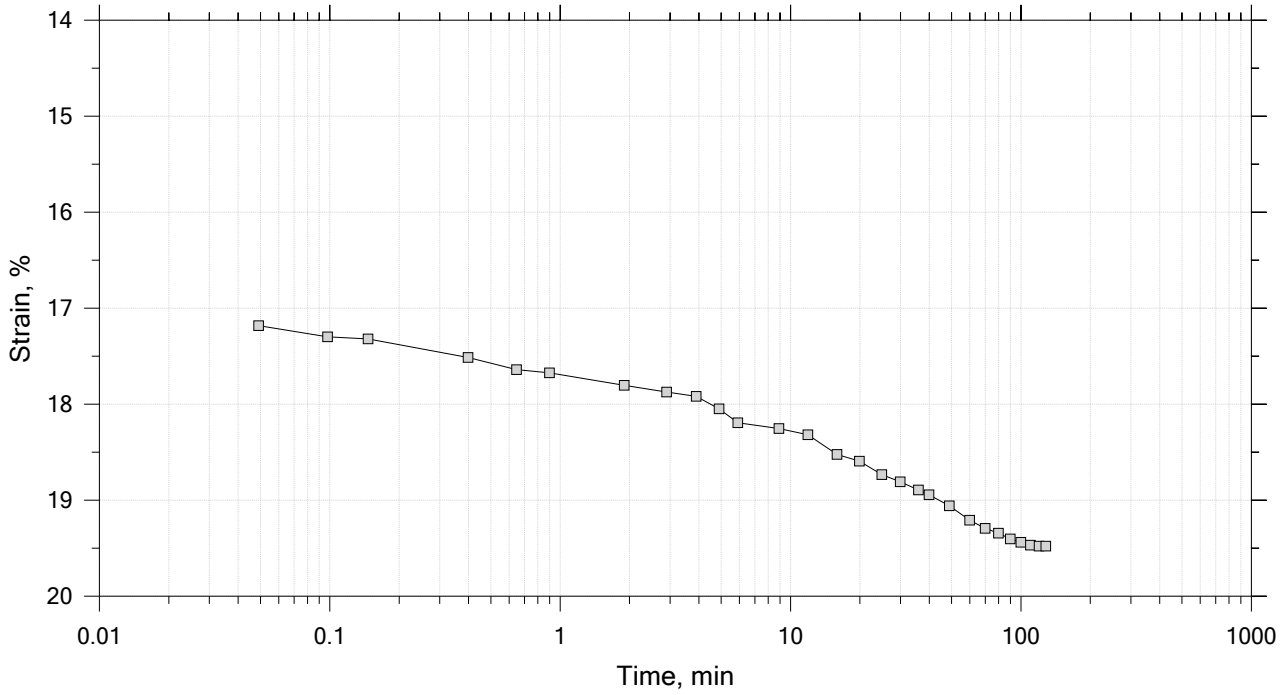
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

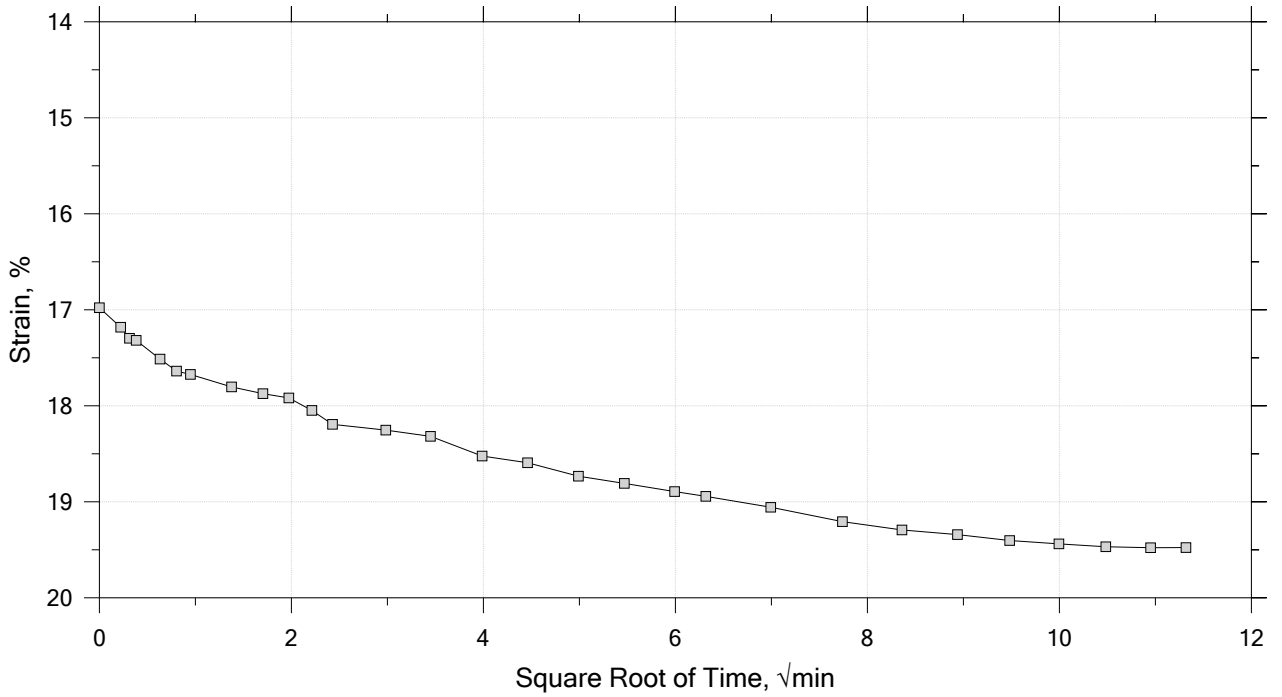
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf

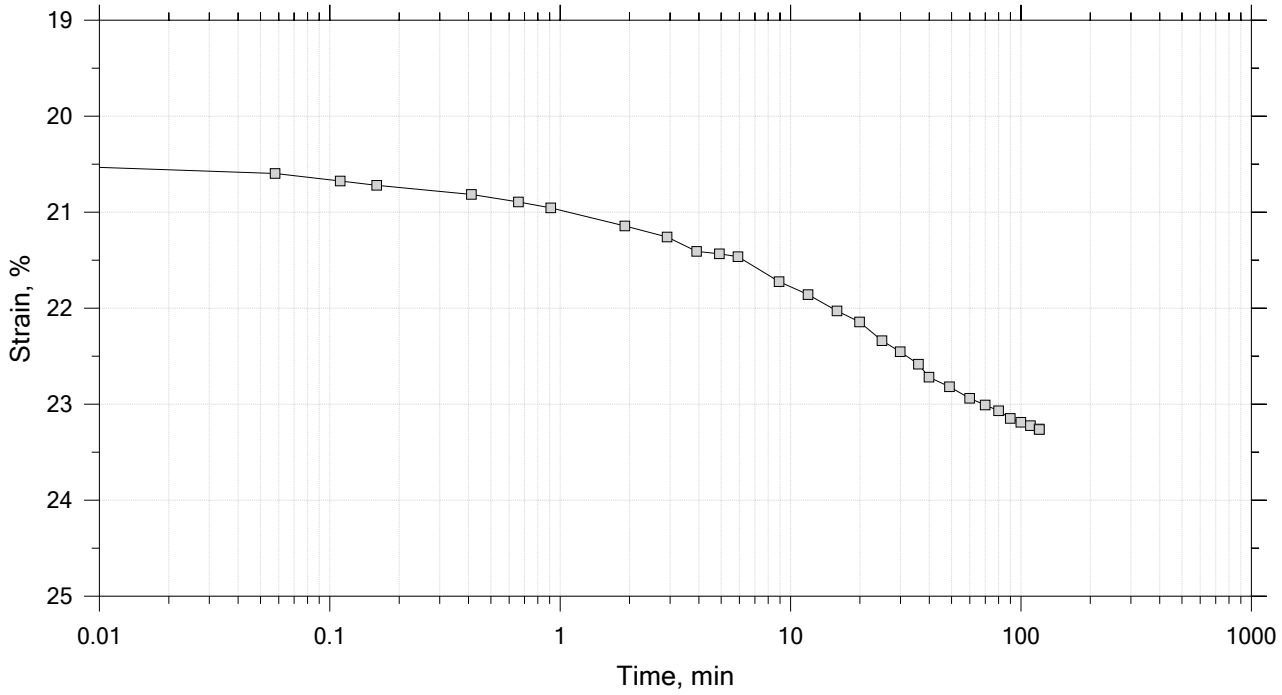


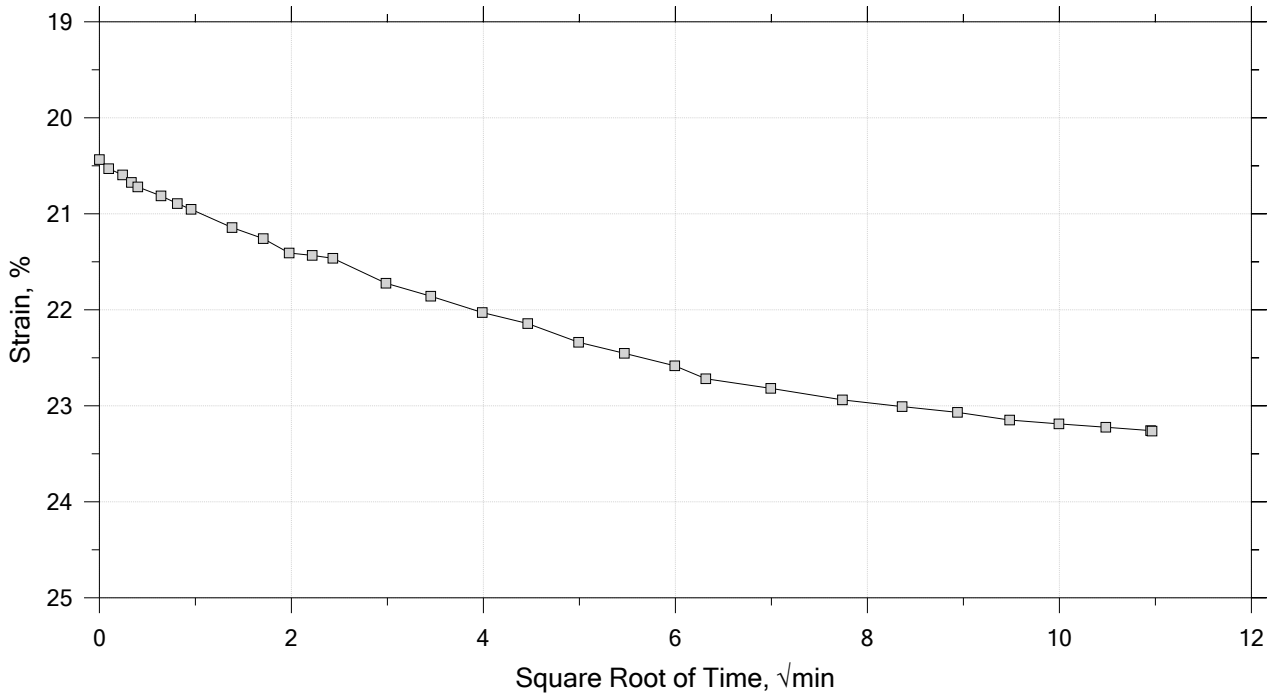


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf

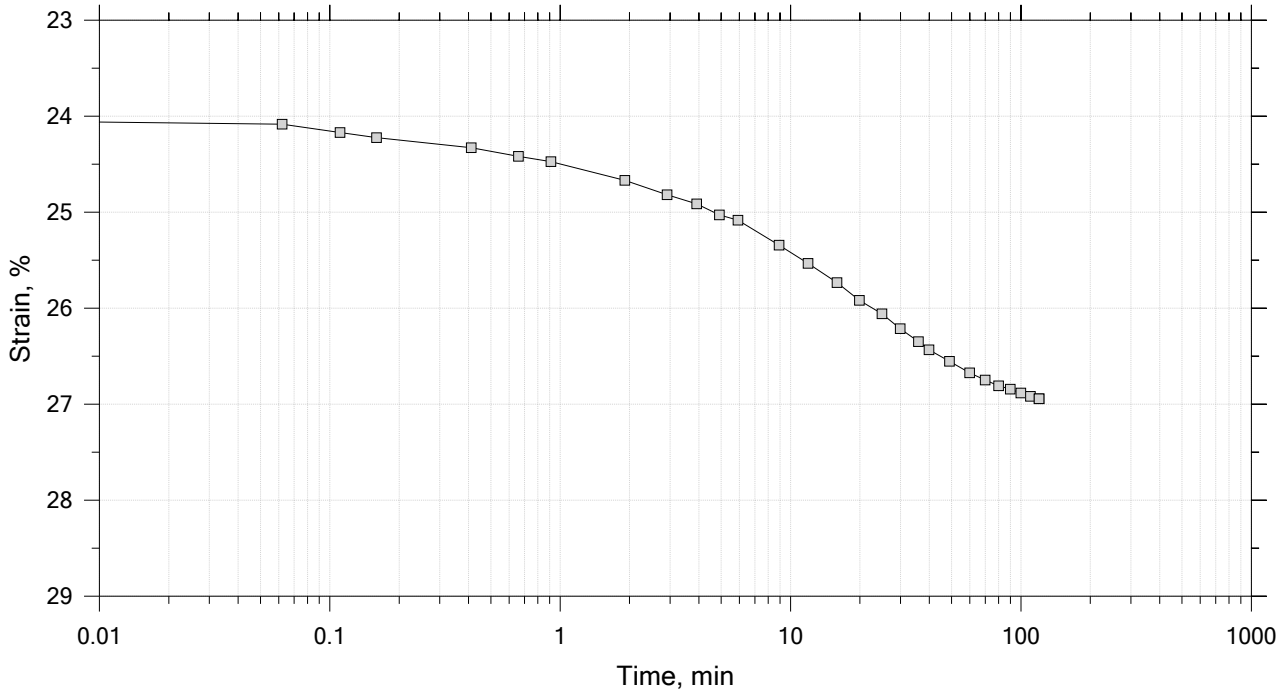


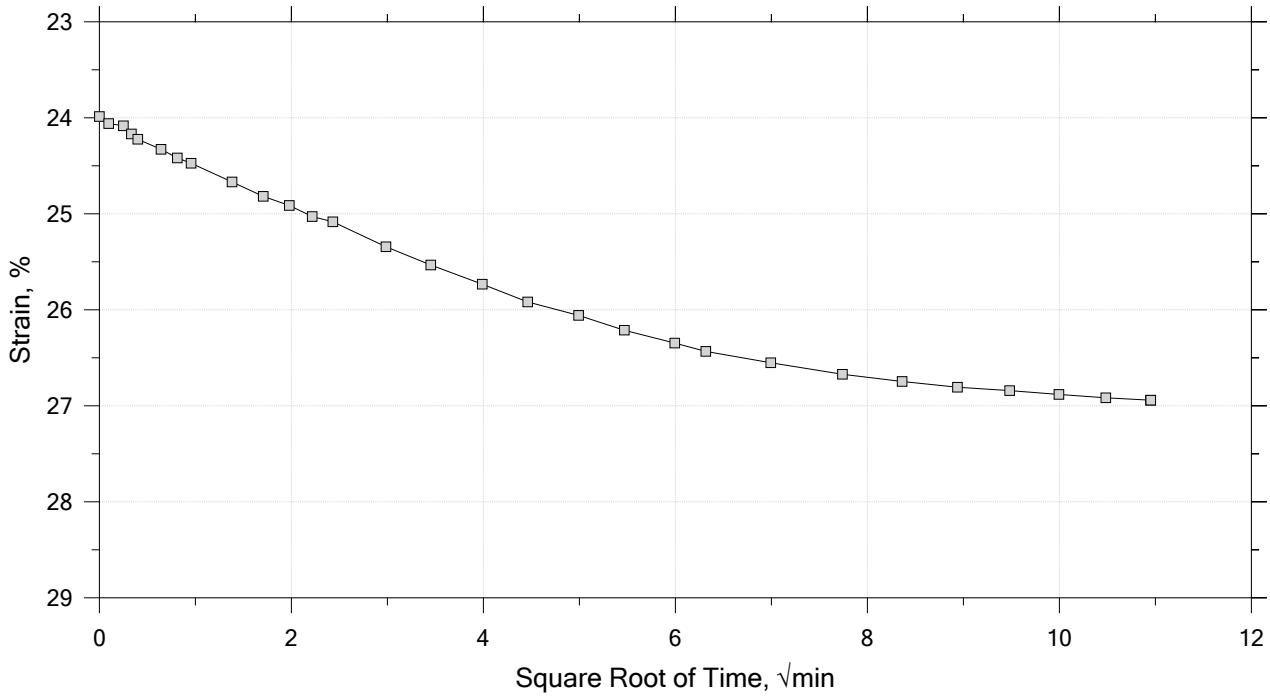


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

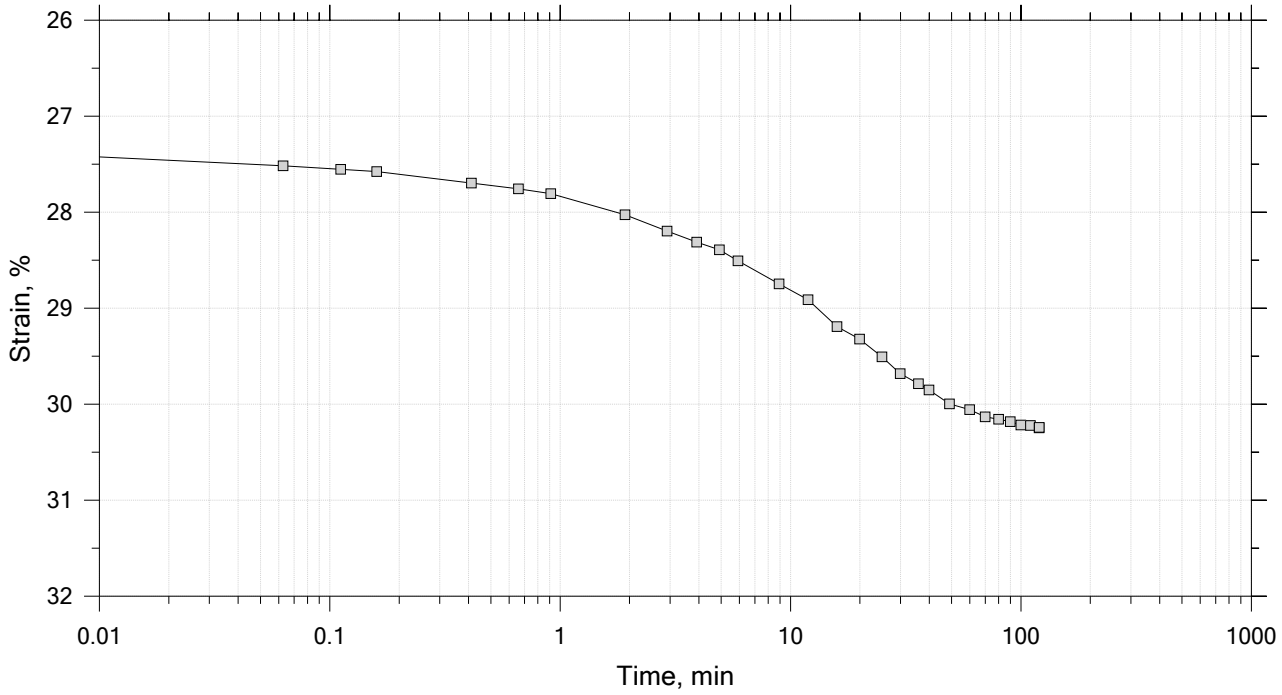


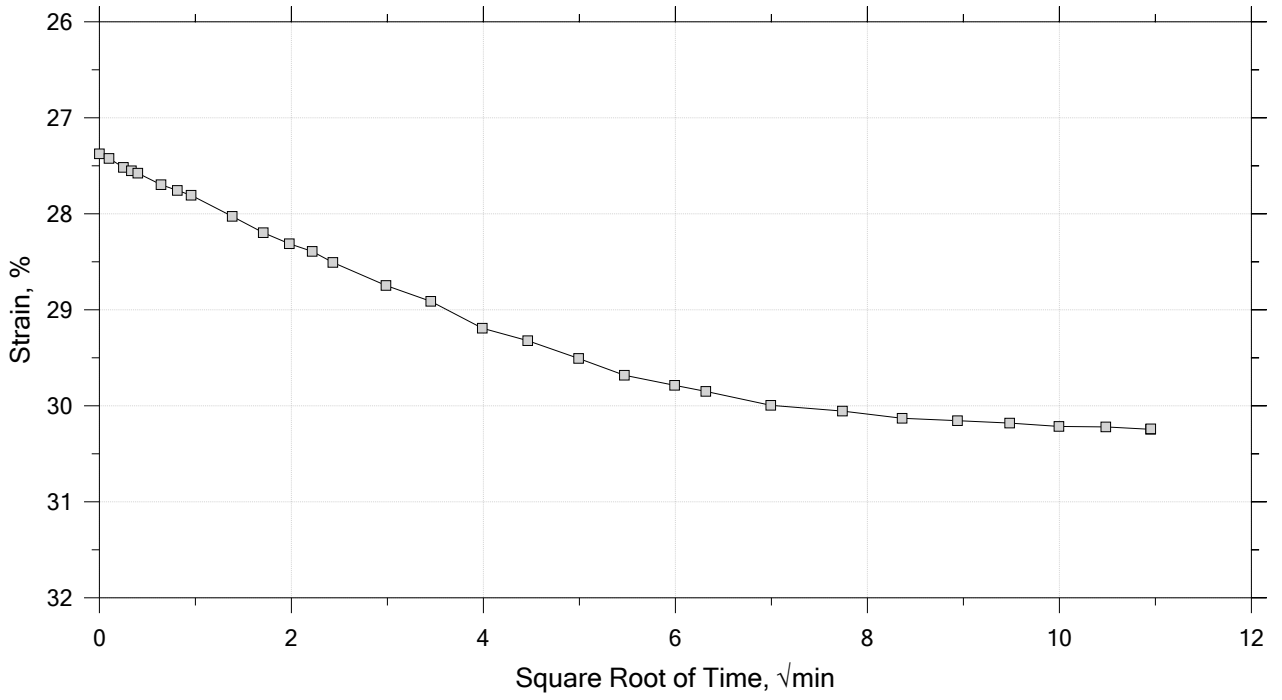


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

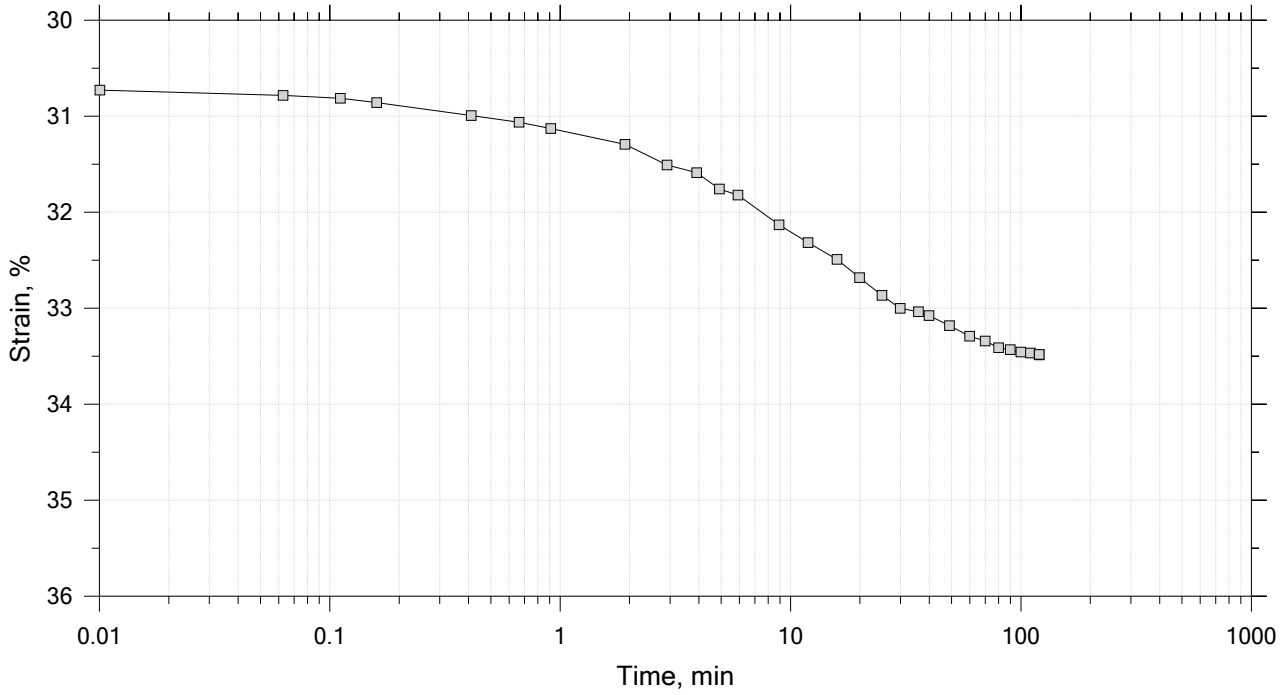


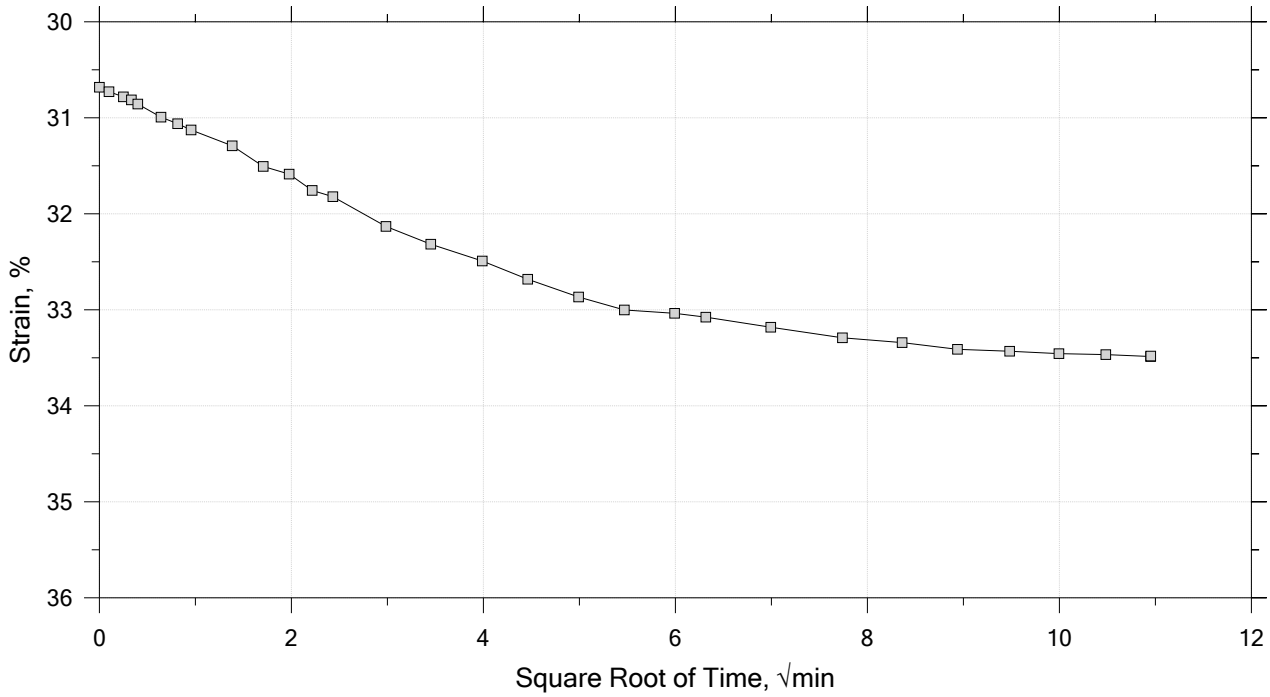


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

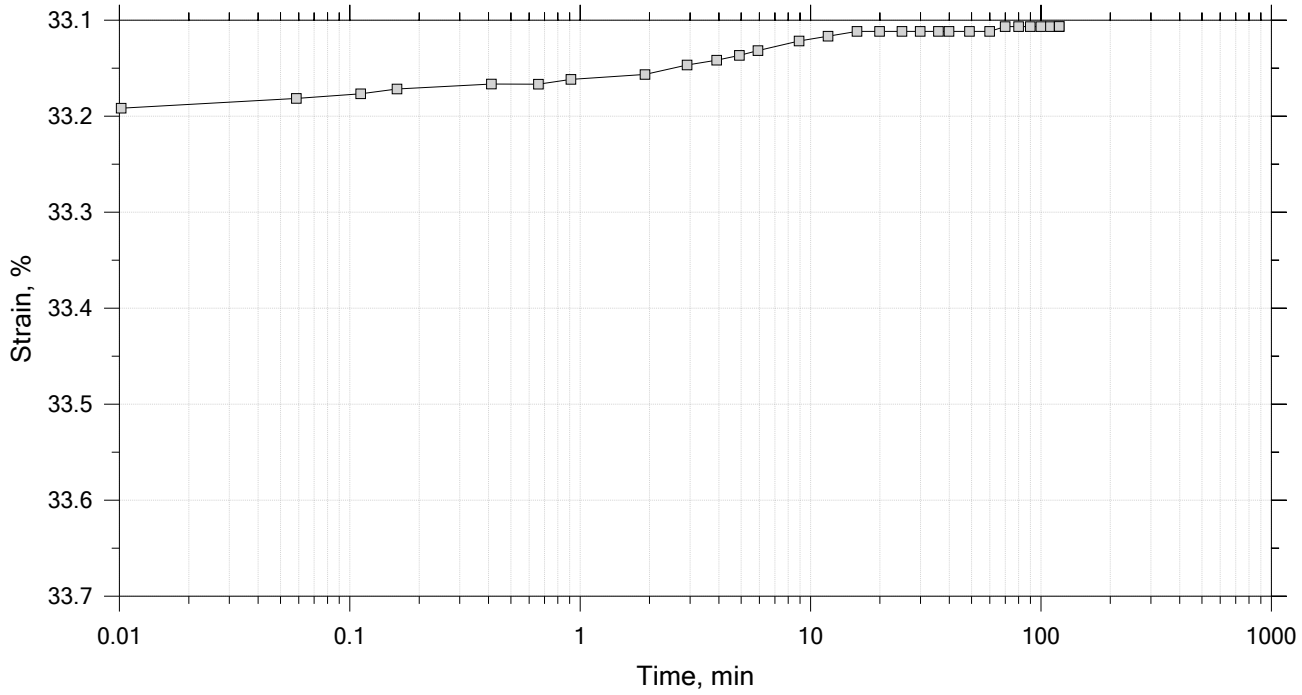


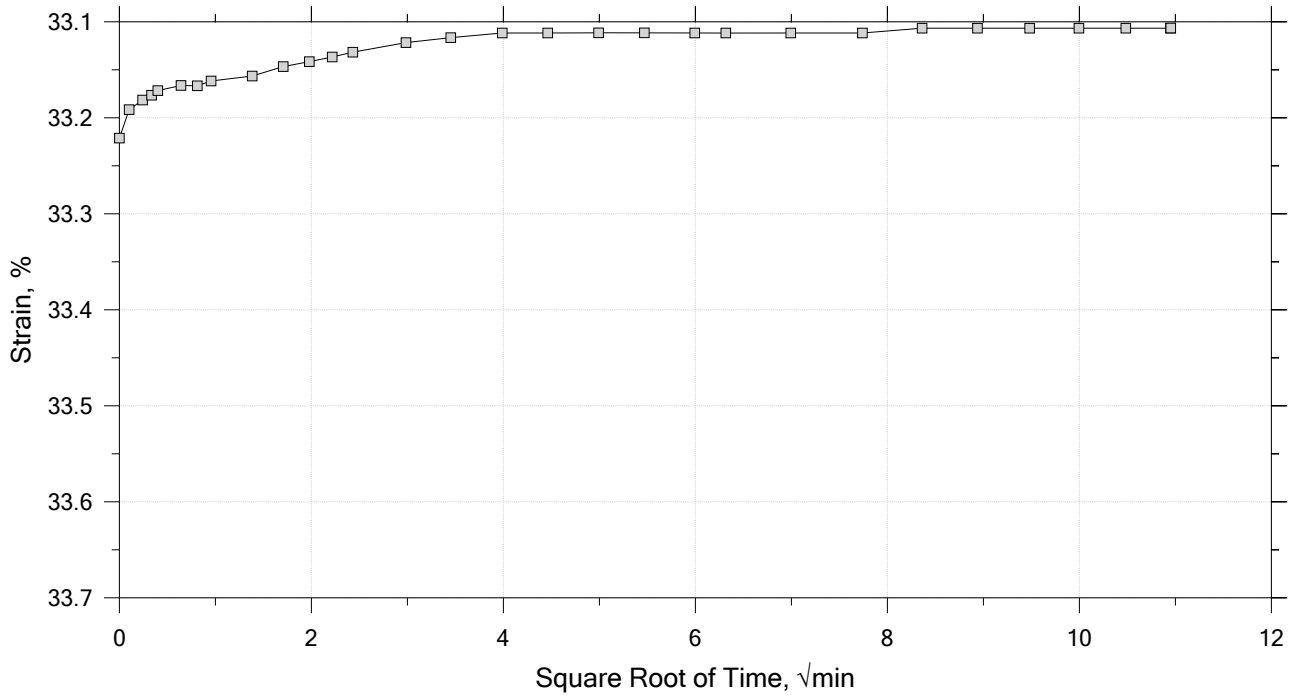


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

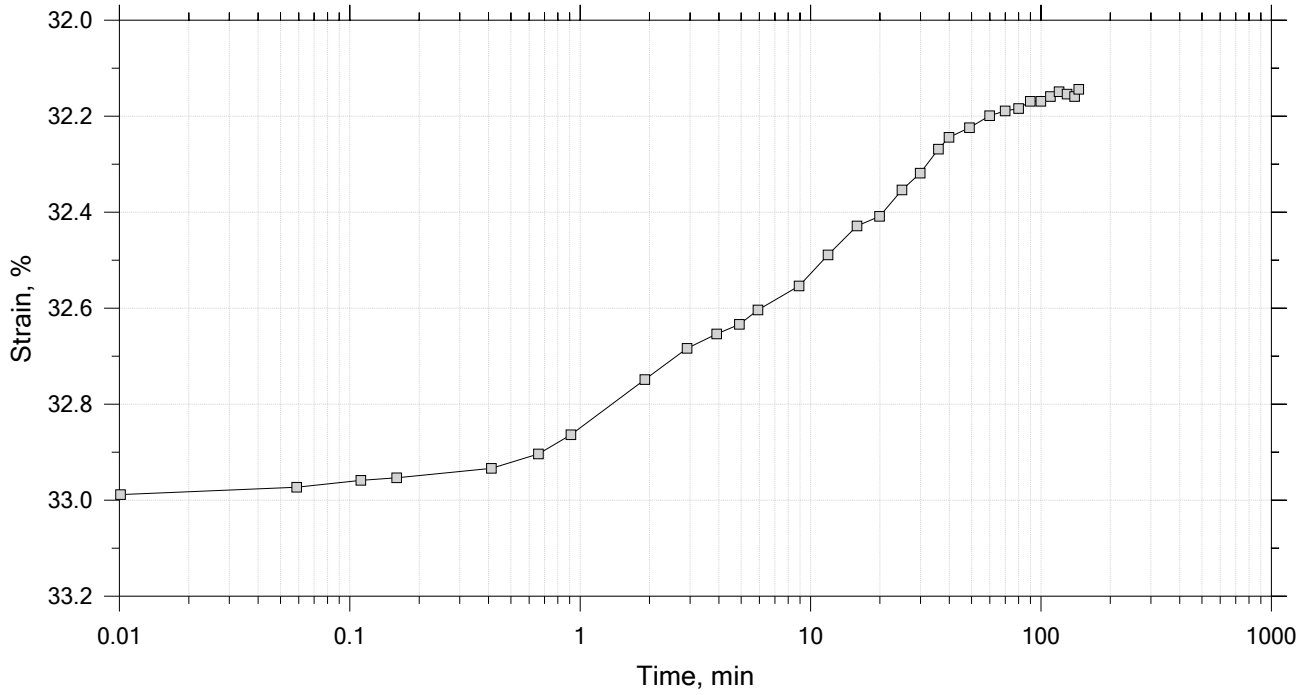


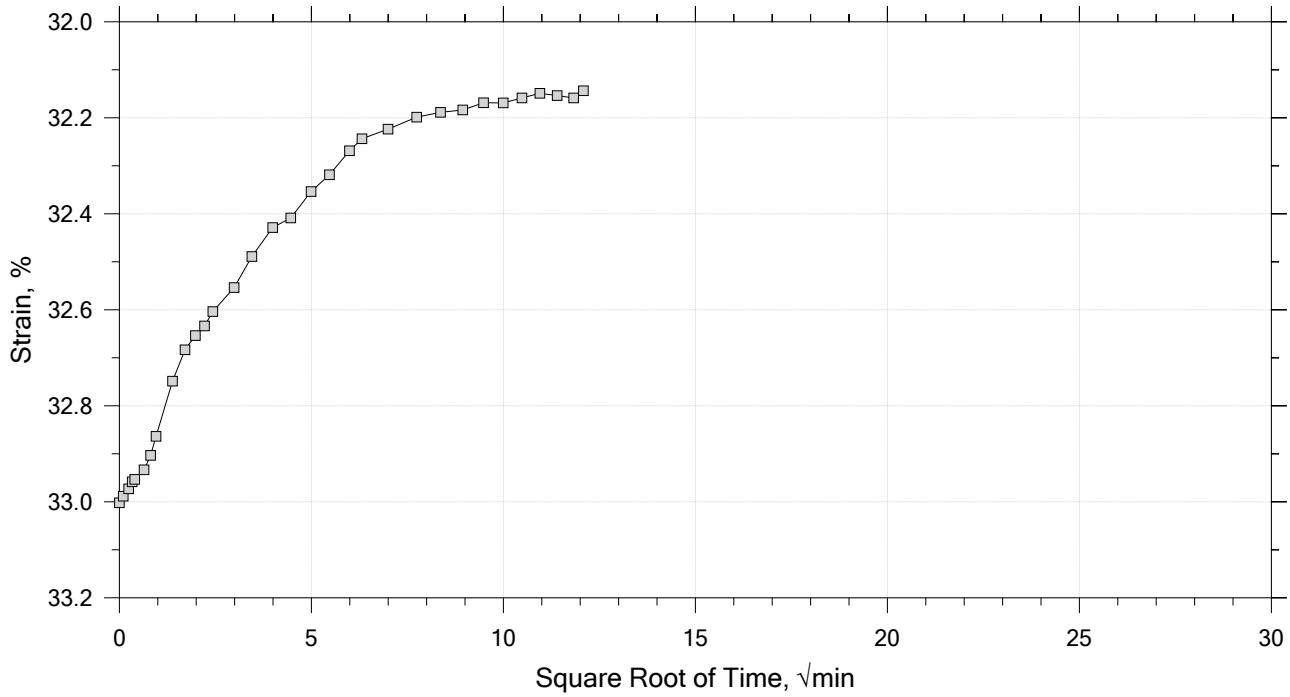


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

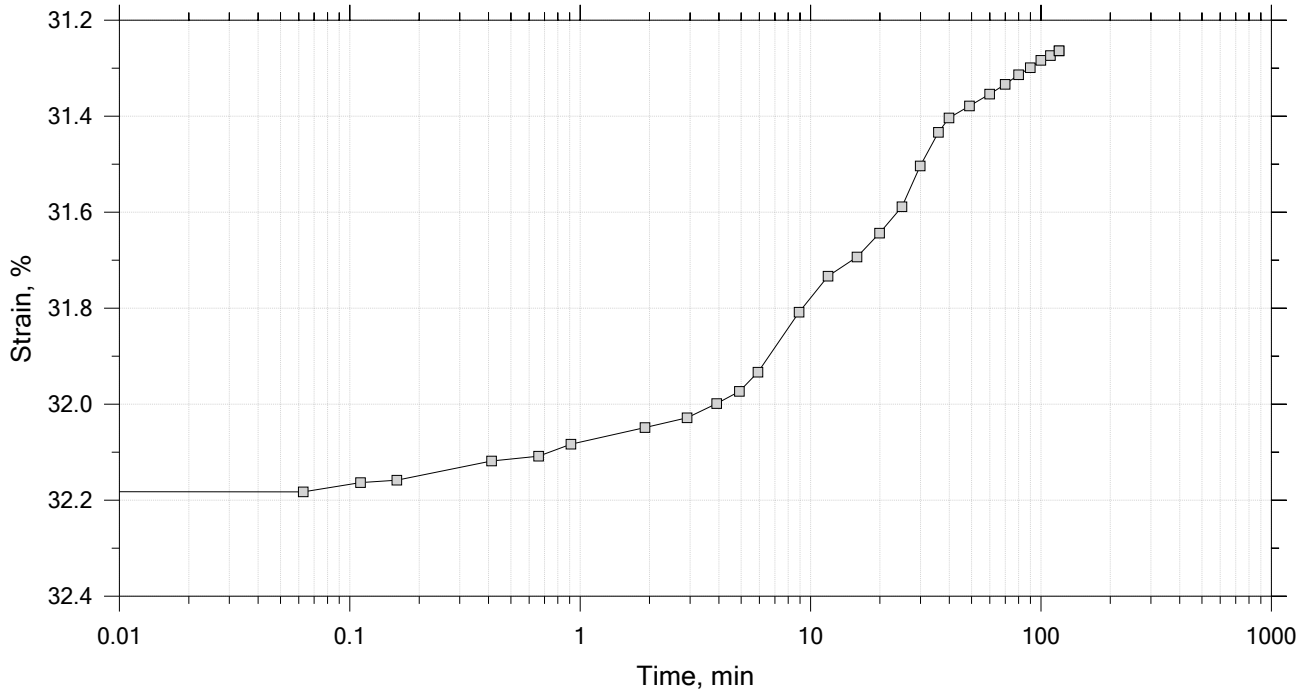


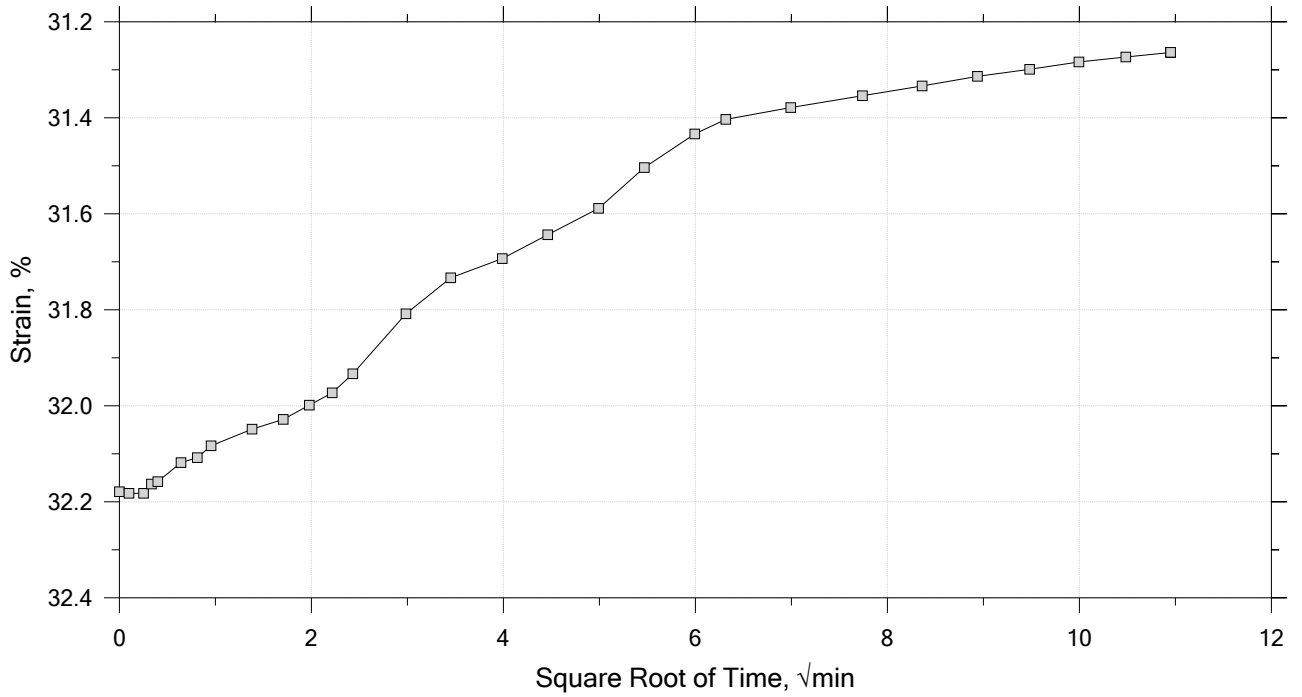


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
Test No.: IP-14-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

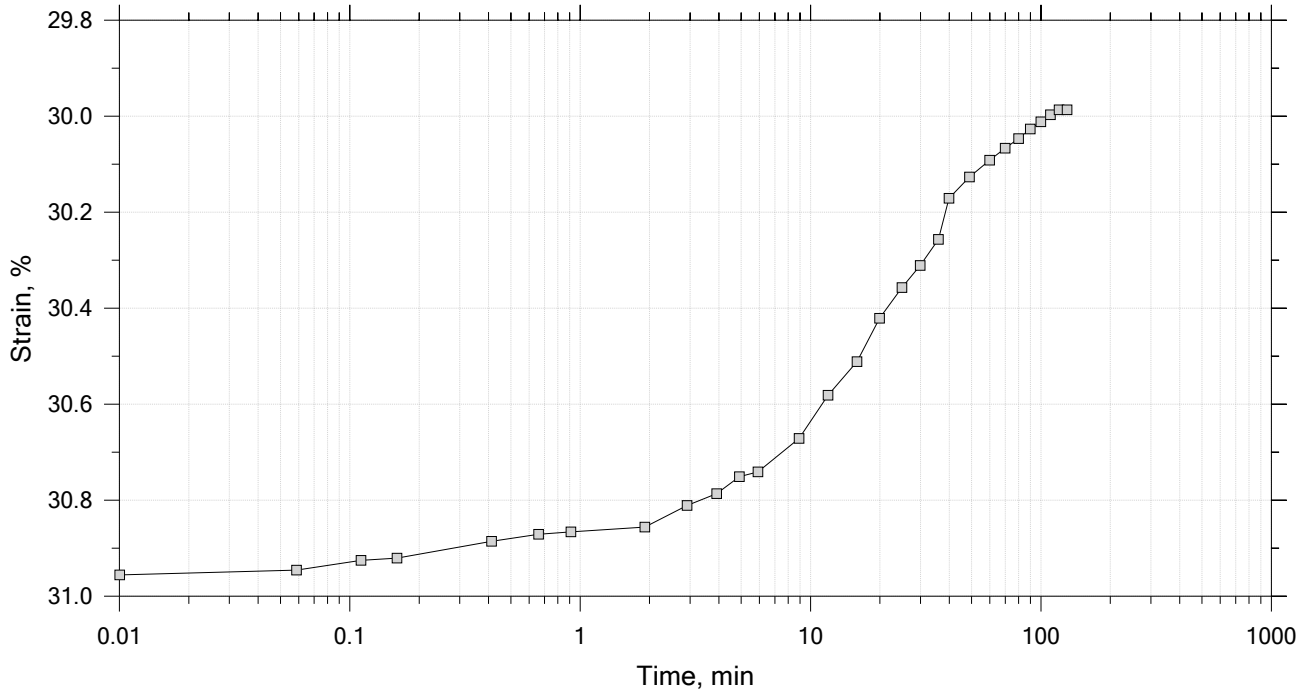


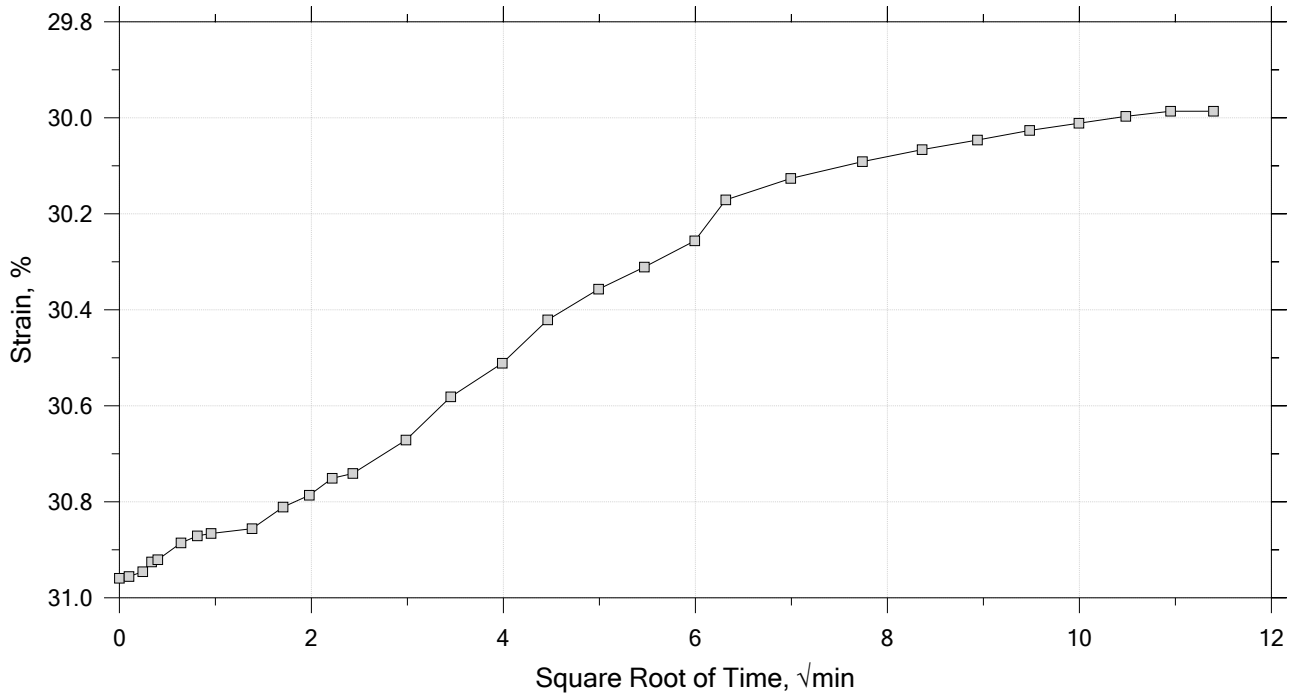


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
Test No.: IP-14-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.77	Liquid Limit: 43
Initial Height: 1.00 in	Initial Void Ratio: 0.949	Plastic Limit: 21
Final Height: 0.73 in	Final Void Ratio: 0.423	Plasticity Index: 22

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5534	RING		E2390
Mass Container, gm	8.41	111.24	111.24	8.76
Mass Container + Wet Soil, gm	87.1	250.28	243.11	140.38
Mass Container + Dry Soil, gm	73.55	225.67	225.67	122.97
Mass Dry Soil, gm	65.14	114.43	114.43	114.21
Water Content, %	20.80	21.51	15.24	15.24
Void Ratio	---	0.95	0.42	---
Degree of Saturation, %	---	62.85	100.00	---
Dry Unit Weight, pcf	---	88.805	121.65	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
	Test No.: IP-14-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: TX-028, Swell Pressure = 0.0665 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0665	0.007650	0.934	0.765	89.896	2.71e-07	1.15e-01	8.41e-05
2	0.125	0.02900	0.892	2.90	20.689	1.14e-06	3.65e-01	1.12e-03
3	0.250	0.06038	0.831	6.04	9.927	2.26e-06	2.51e-01	1.53e-03
4	0.500	0.1059	0.742	10.6	4.844	4.26e-06	1.82e-01	2.09e-03
5	1.00	0.1471	0.662	14.7	23.066	8.12e-07	8.26e-02	1.81e-04
6	2.00	0.1948	0.569	19.5	62.827	2.68e-07	4.76e-02	3.45e-05
7	4.00	0.2326	0.495	23.3	47.893	3.17e-07	1.89e-02	1.62e-05
8	8.00	0.2694	0.424	26.9	37.739	3.65e-07	9.20e-03	9.05e-06
9	16.0	0.3024	0.359	30.2	40.359	3.10e-07	4.12e-03	3.45e-06
10	32.0	0.3348	0.296	33.5	35.594	3.20e-07	2.03e-03	1.75e-06
11	16.0	0.3311	0.304	33.1	12.536	8.71e-07	2.35e-04	5.51e-07
12	4.00	0.3214	0.322	32.1	41.038	2.71e-07	8.02e-04	5.87e-07
13	1.00	0.3126	0.339	31.3	74.348	1.54e-07	2.93e-03	1.22e-06
14	0.250	0.2999	0.364	30.0	93.284	1.27e-07	1.70e-02	5.81e-06

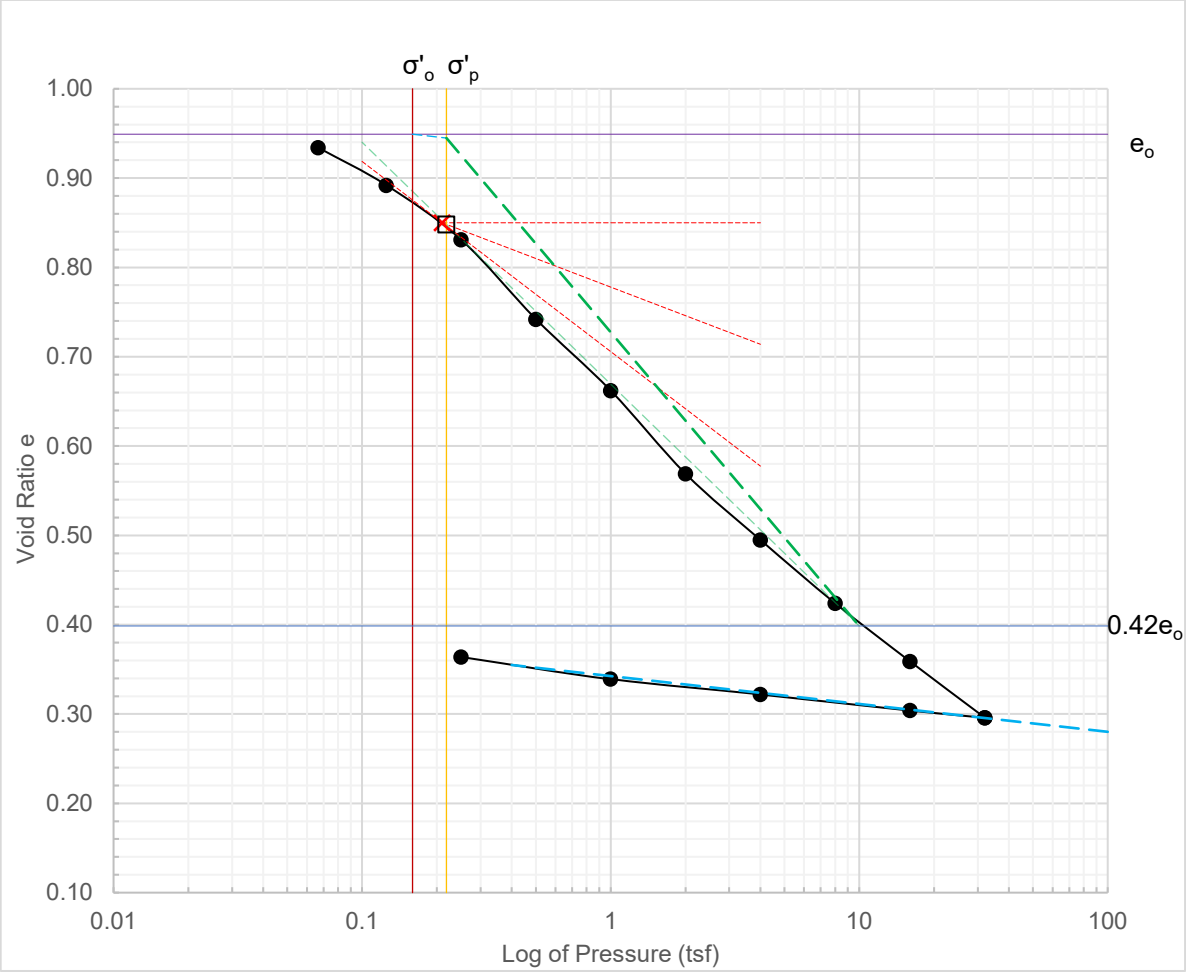
GeoTesting EXPRESS

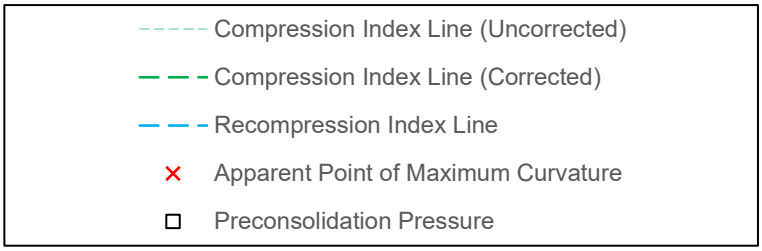
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.6-2.7
Test No.: IP-14-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: TX-028, Swell Pressure = 0.0665 tsf		
Displacement at End of Increment		

Boring: B-4.13

Depth: 2.6'-2.7'

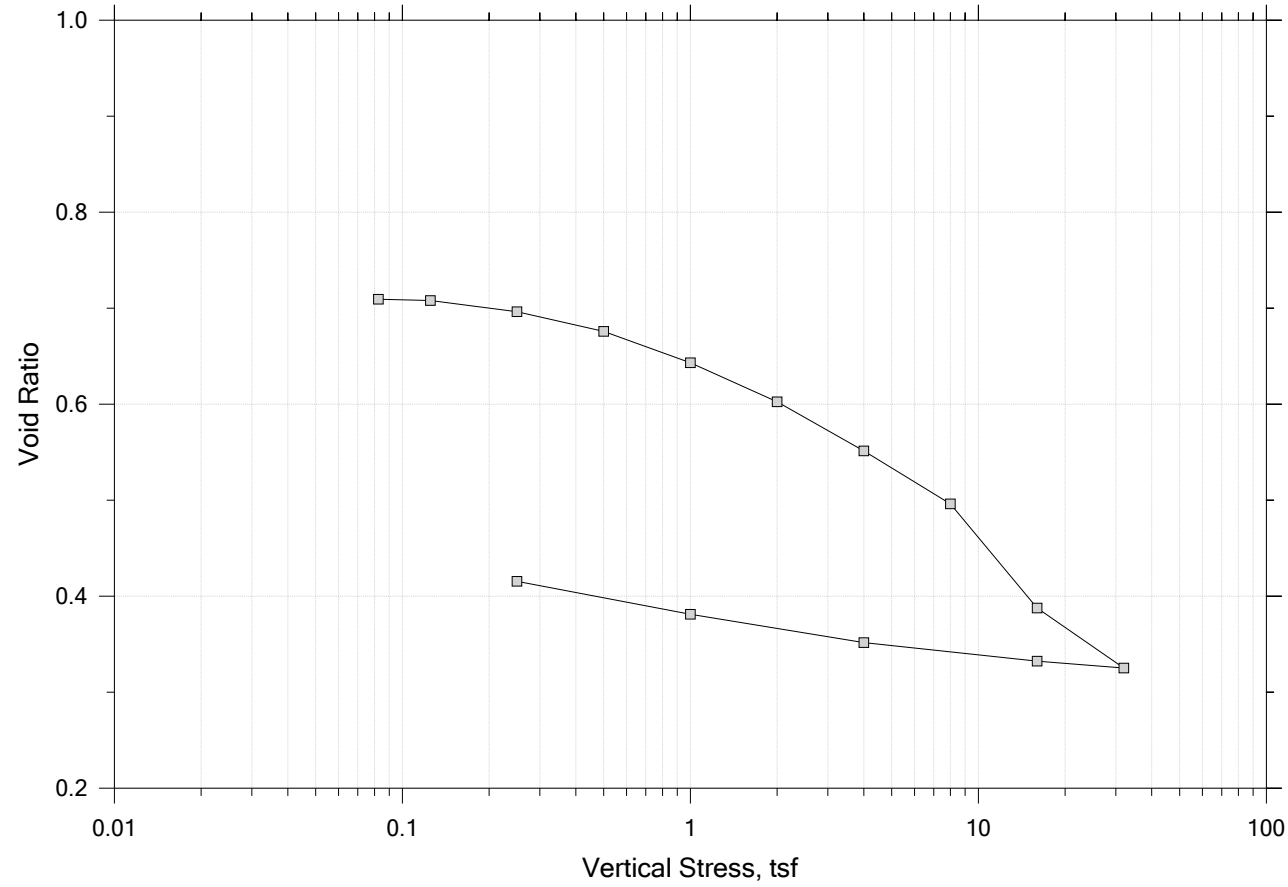
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.16
Preconsolidation Pressure, σ'_p (tsf) = 0.22
Compression Index, C_c = 0.33
Recompression Index, C_r = 0.031

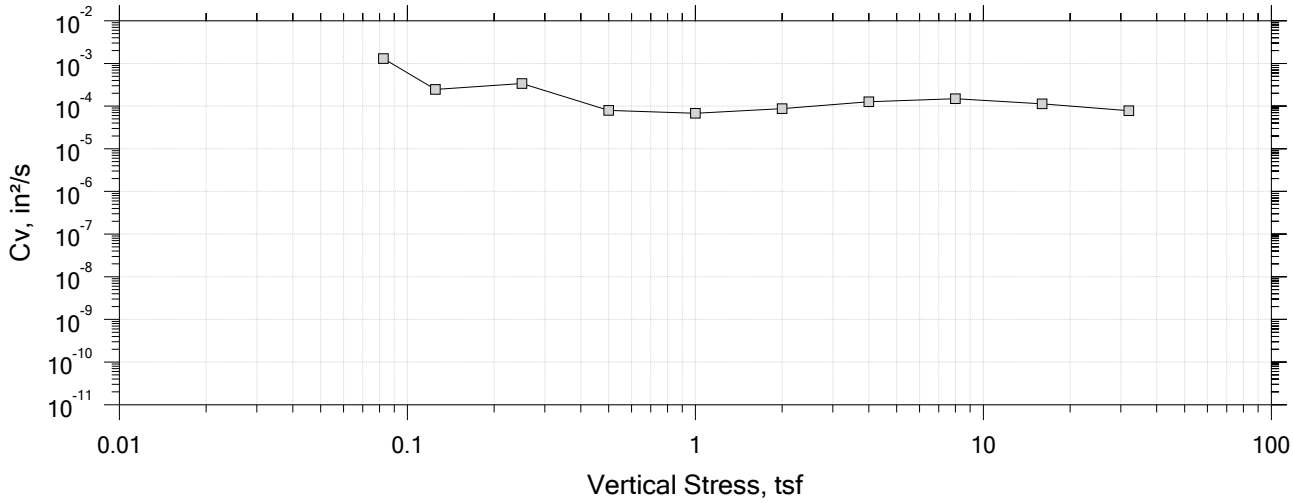




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

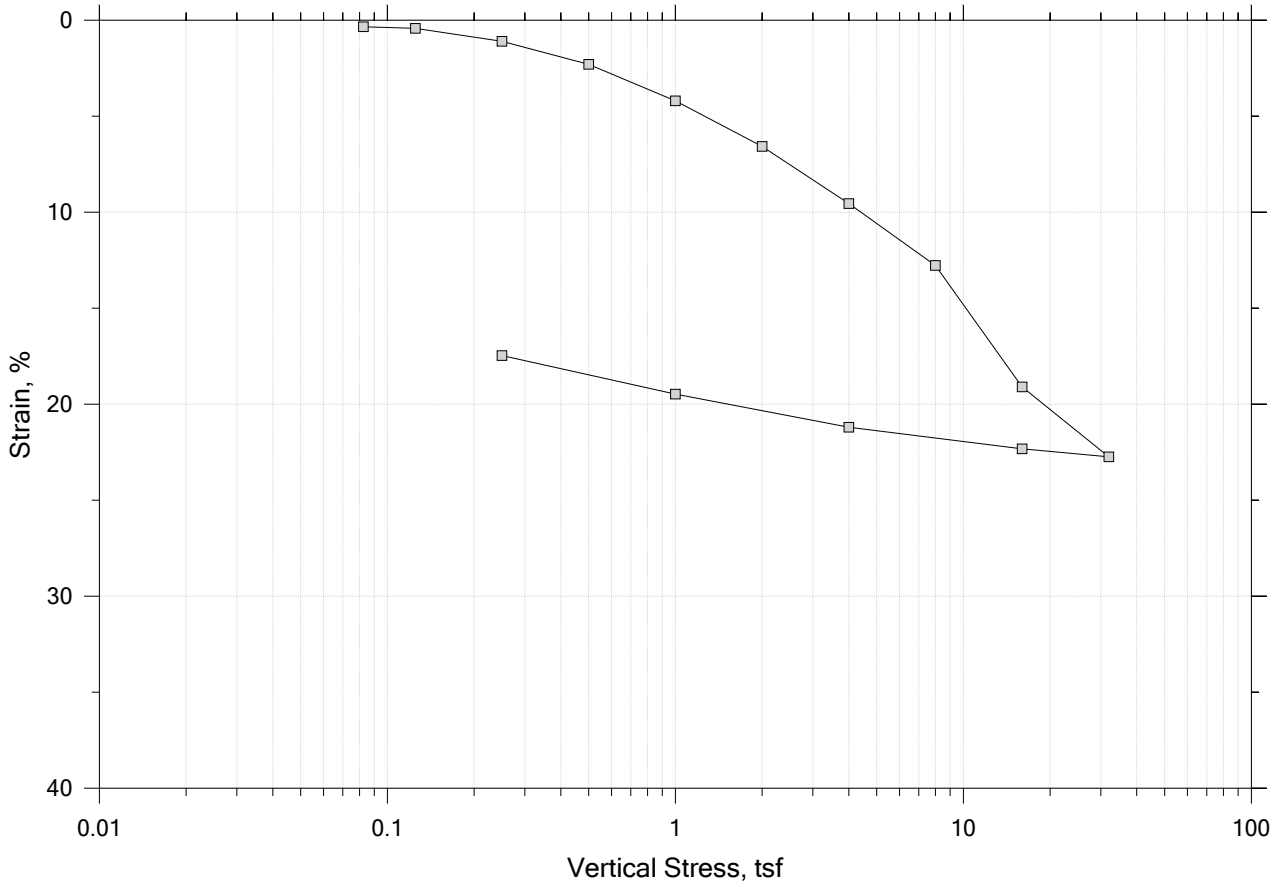


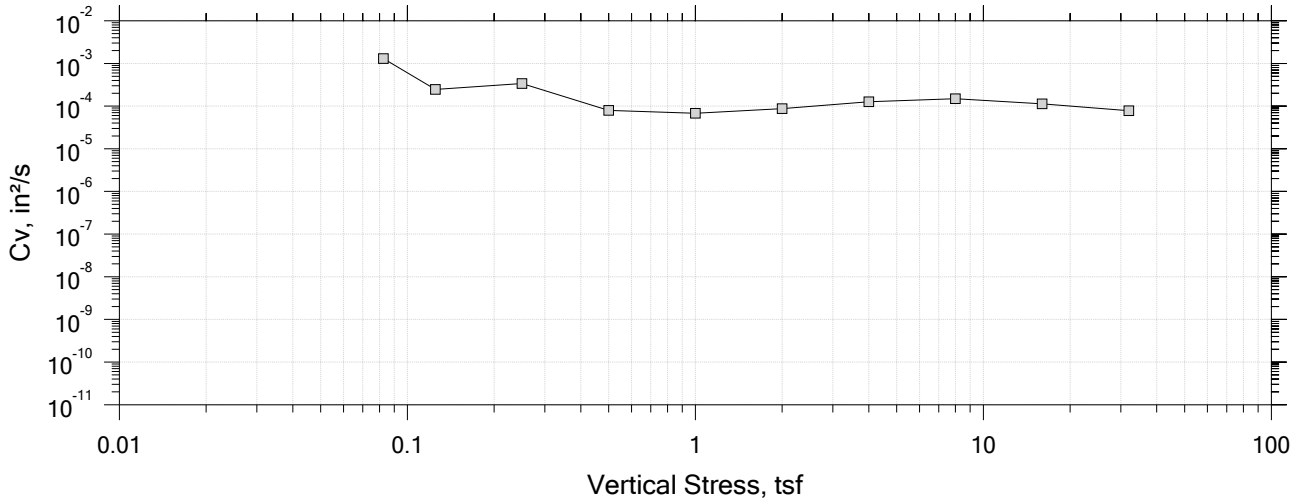


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

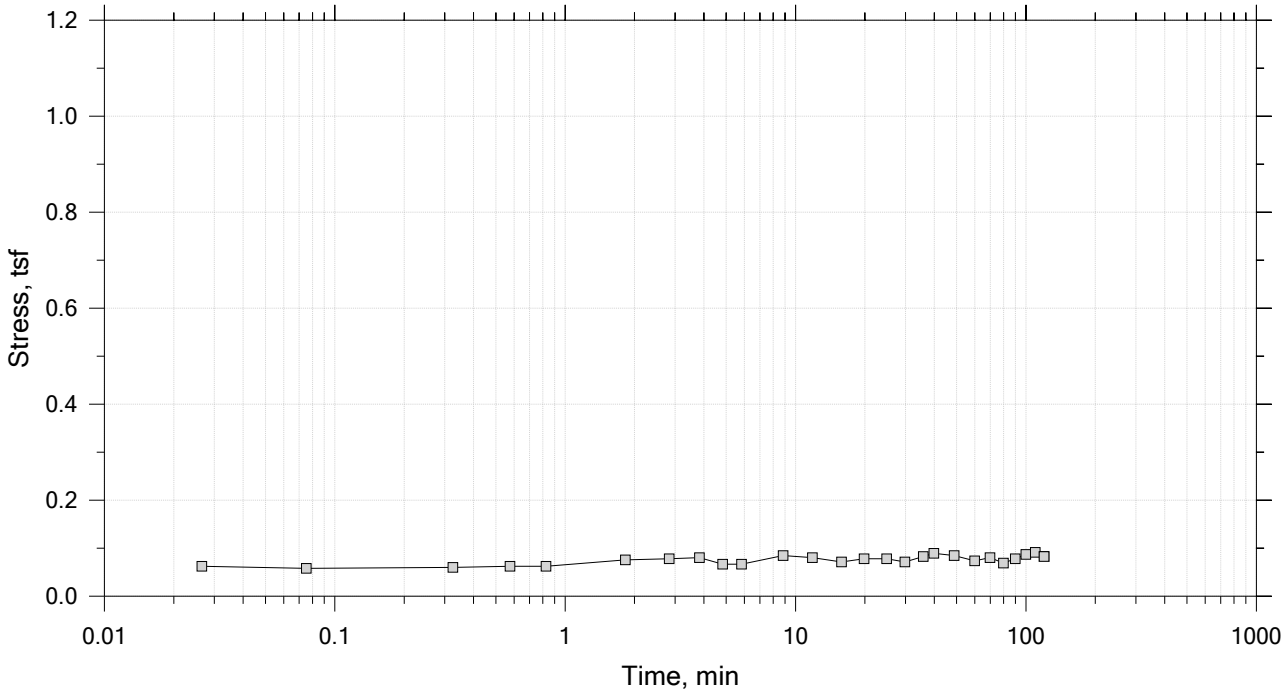


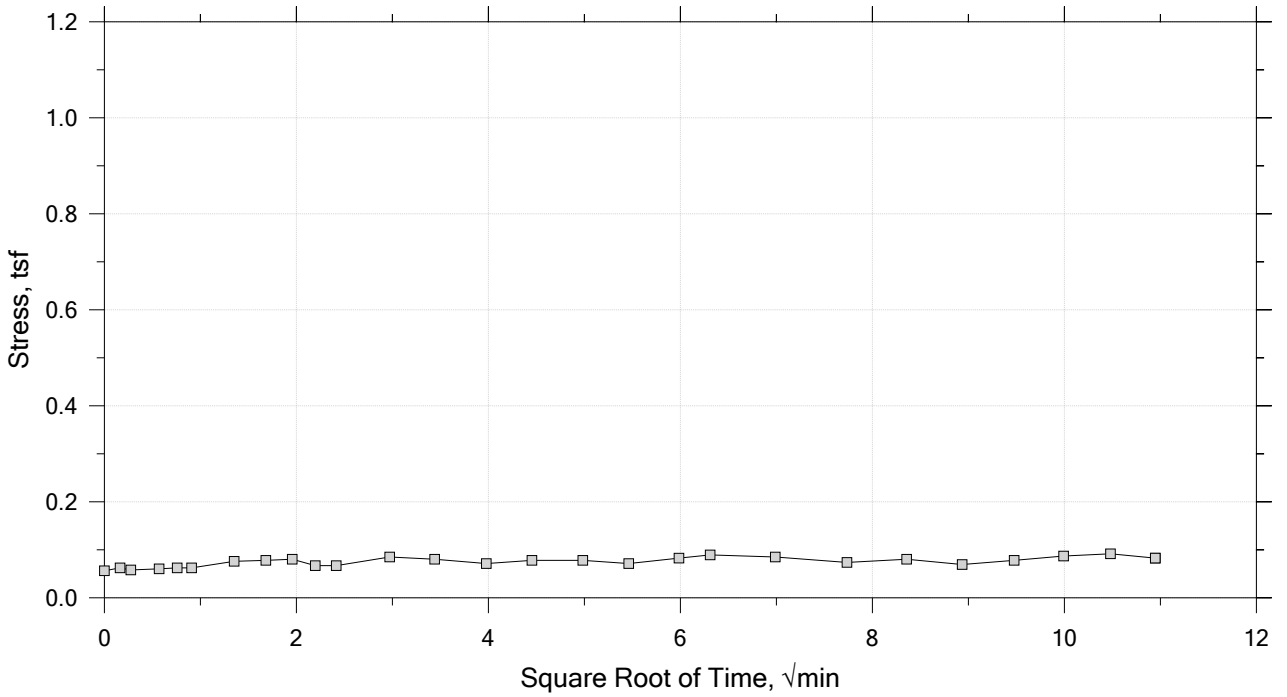


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0825 tsf

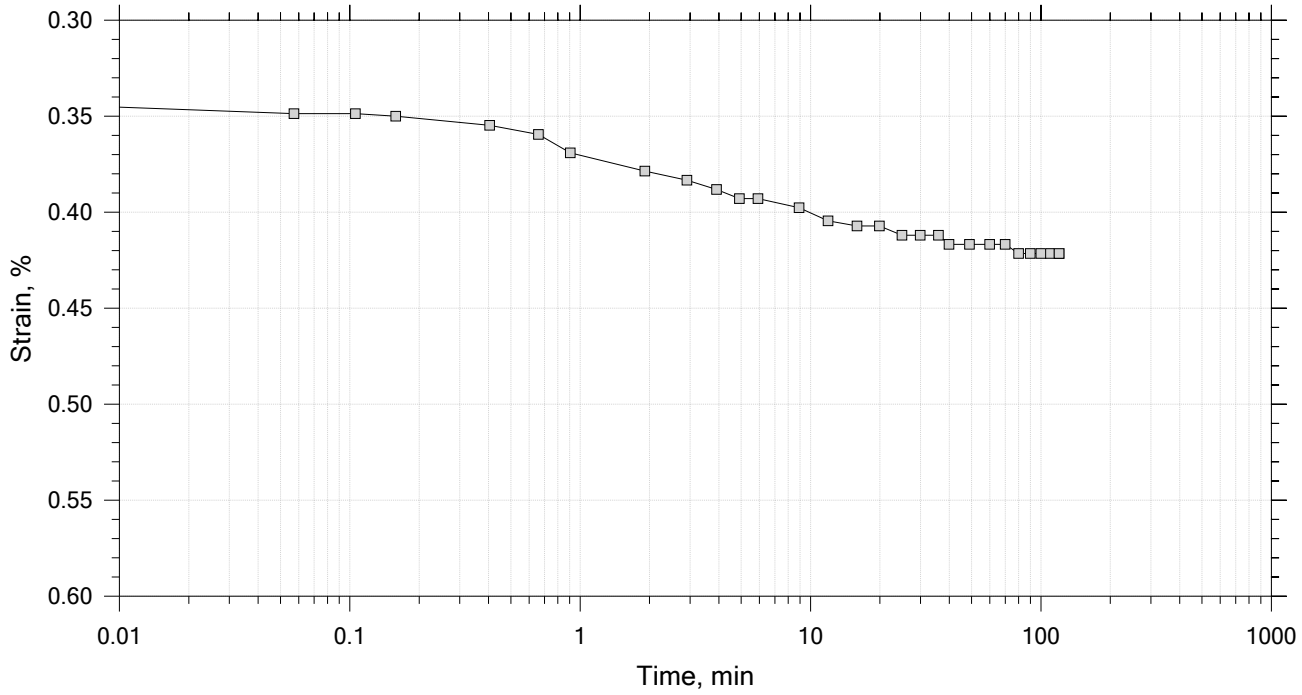


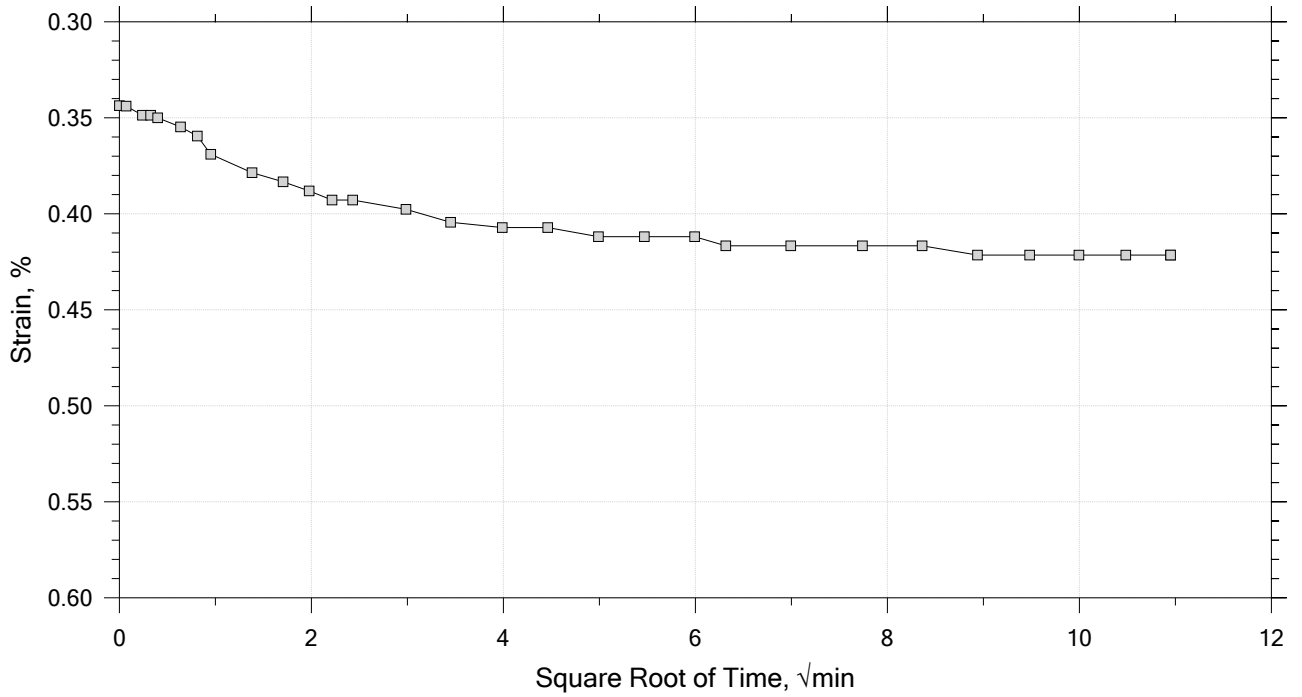


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

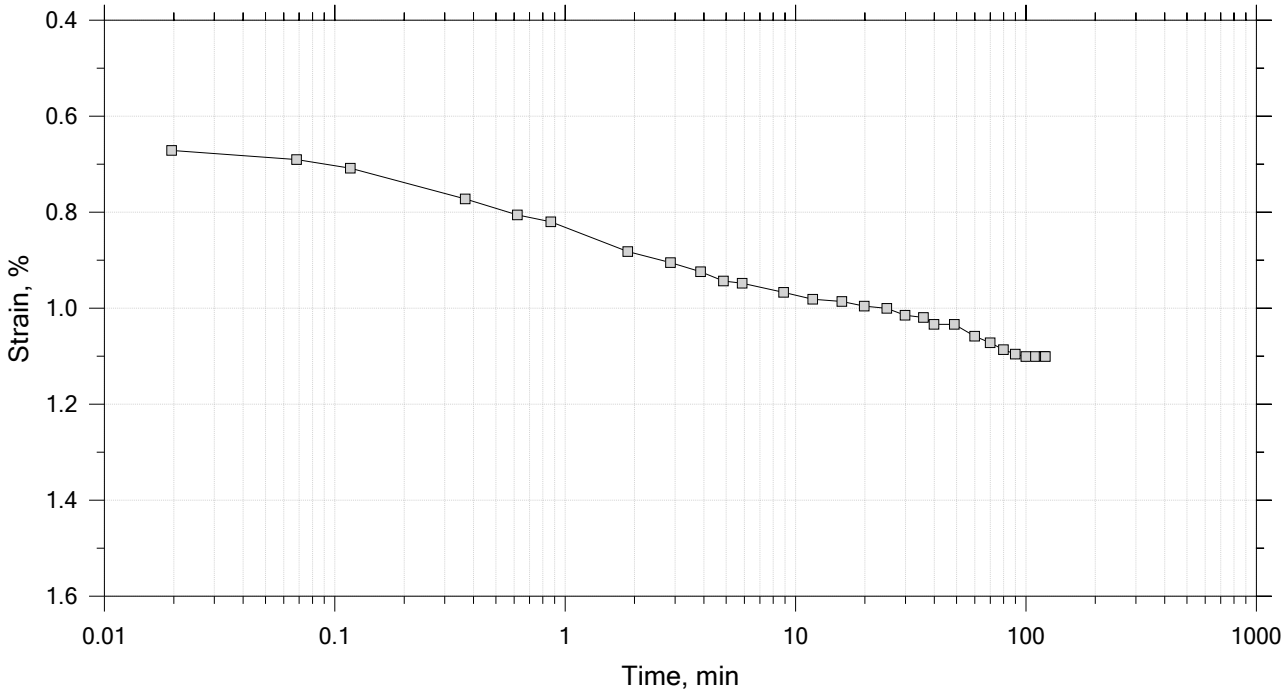


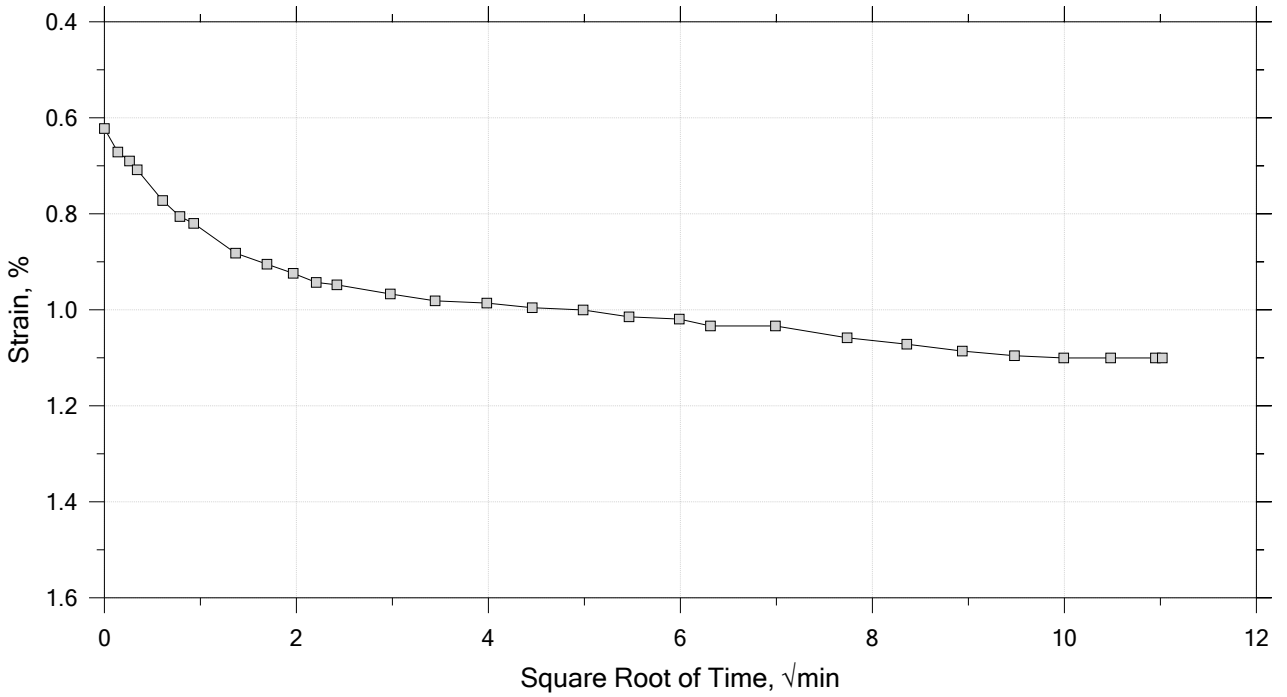


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
Test No.: IP-14-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

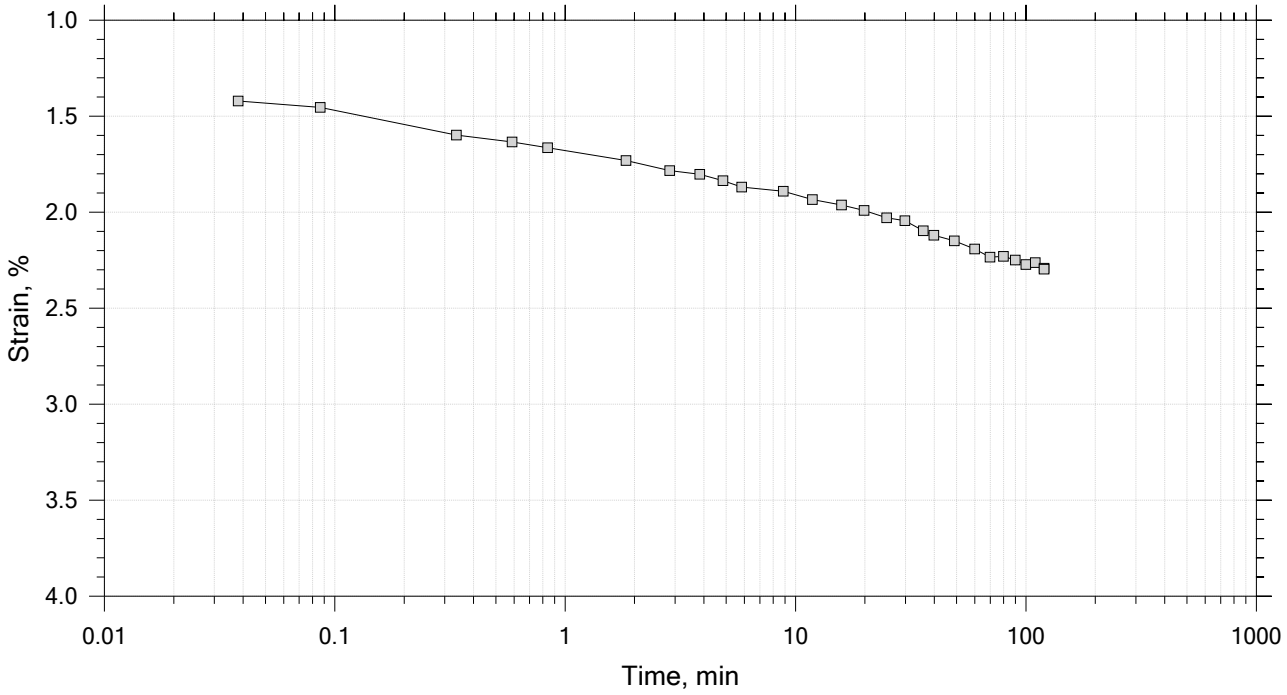


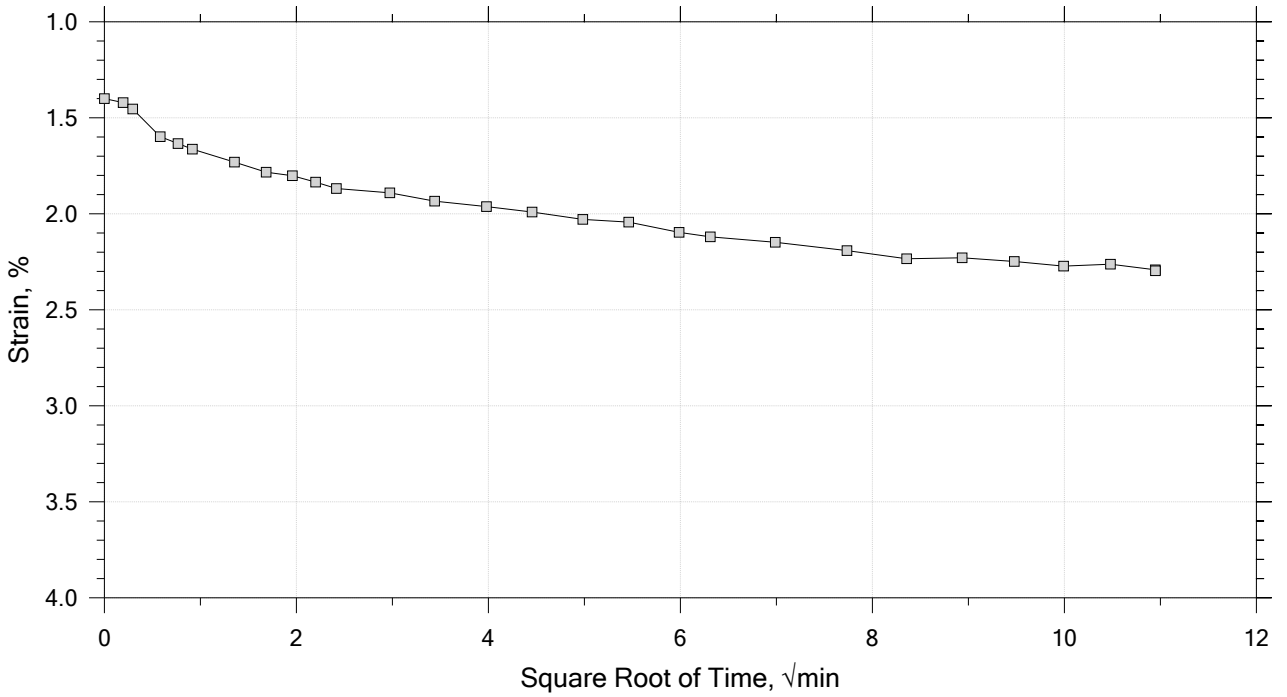


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





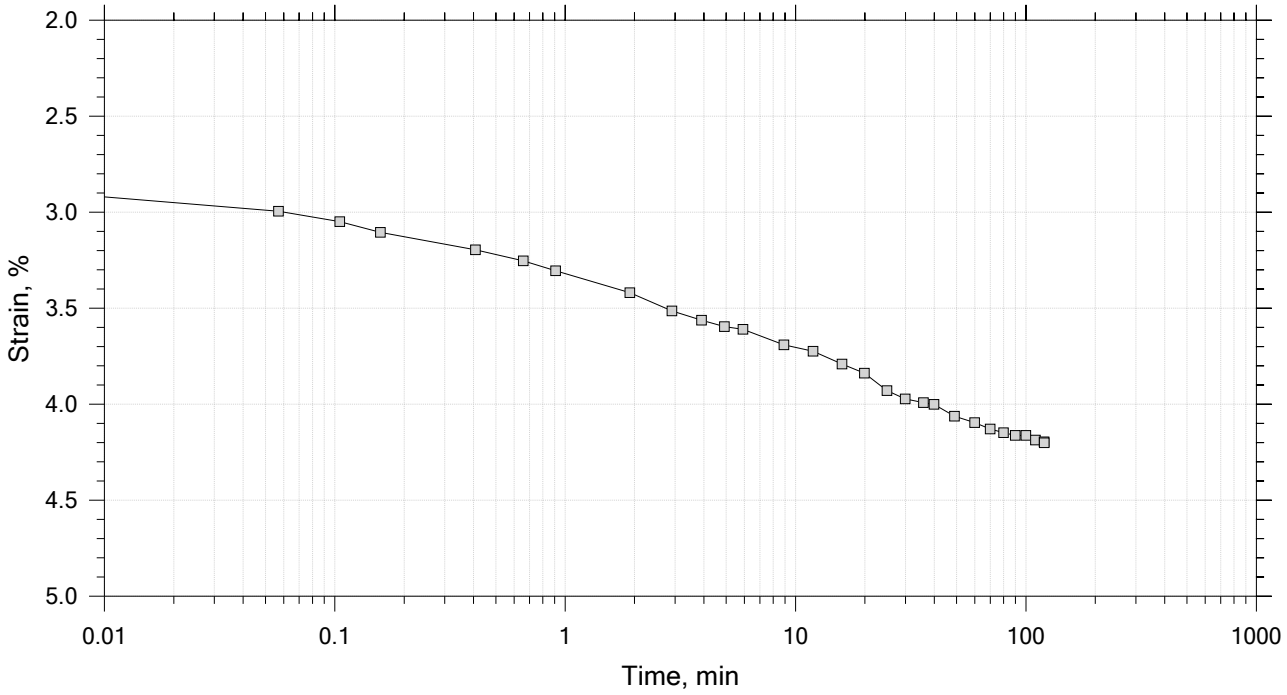
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

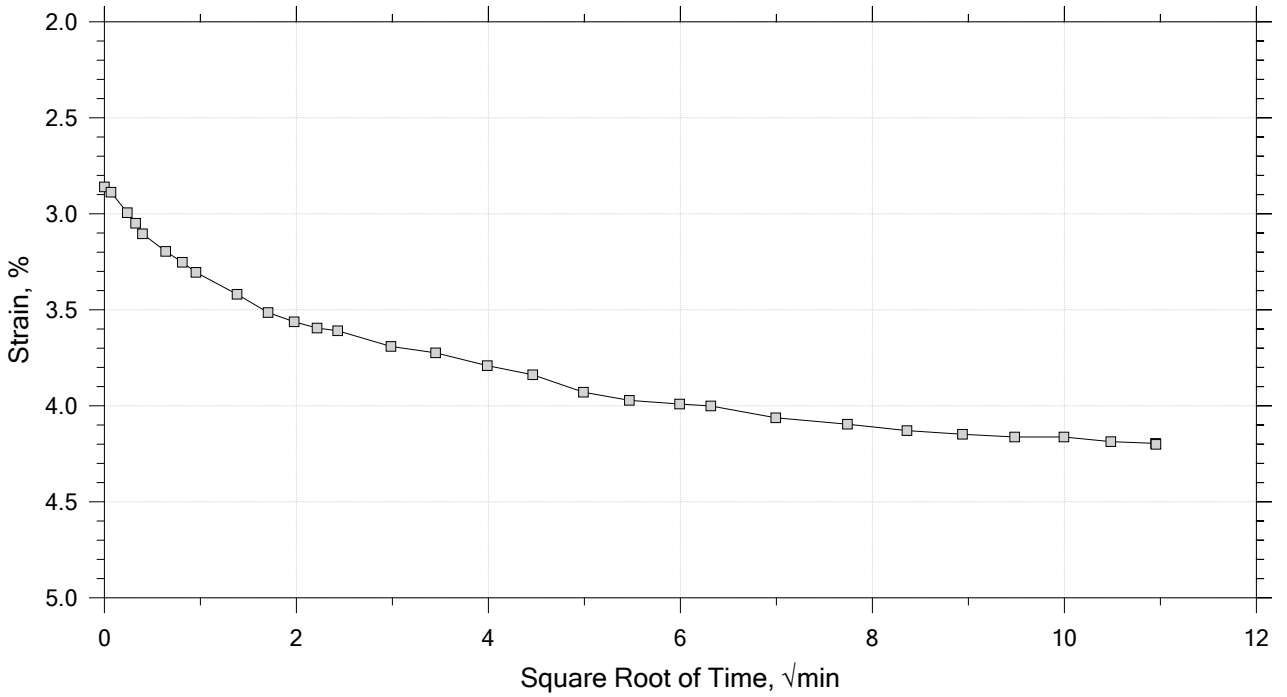
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





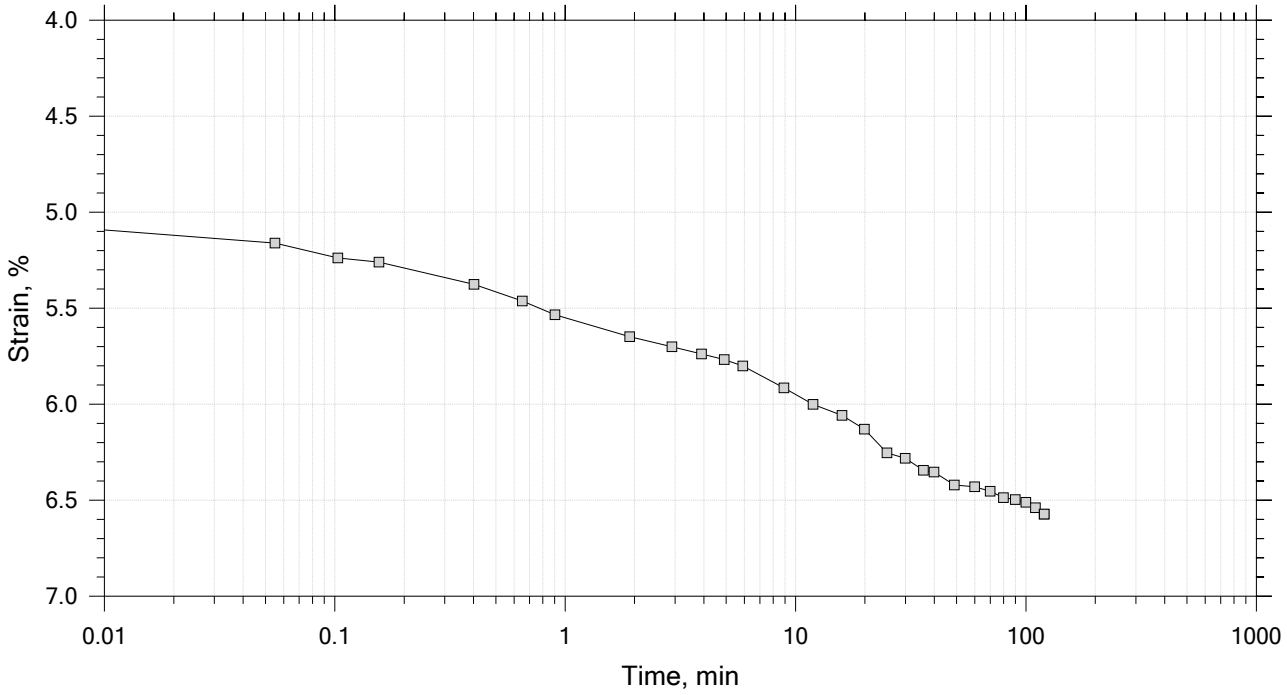
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

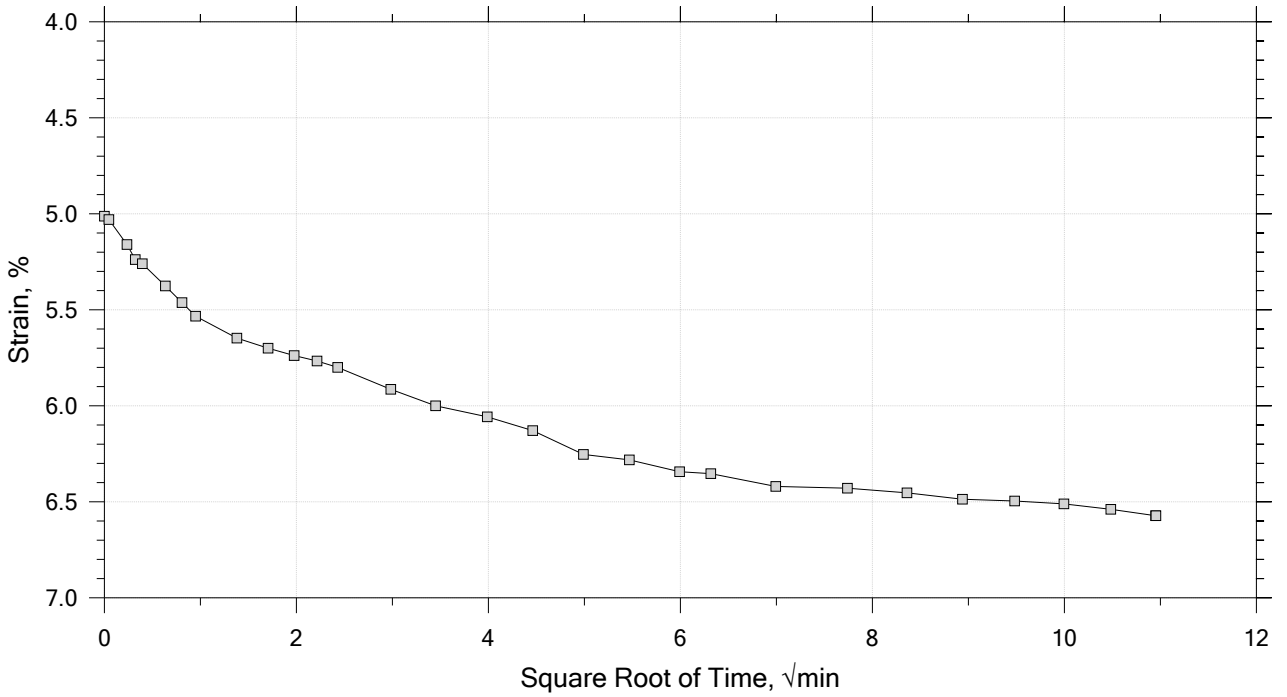
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf

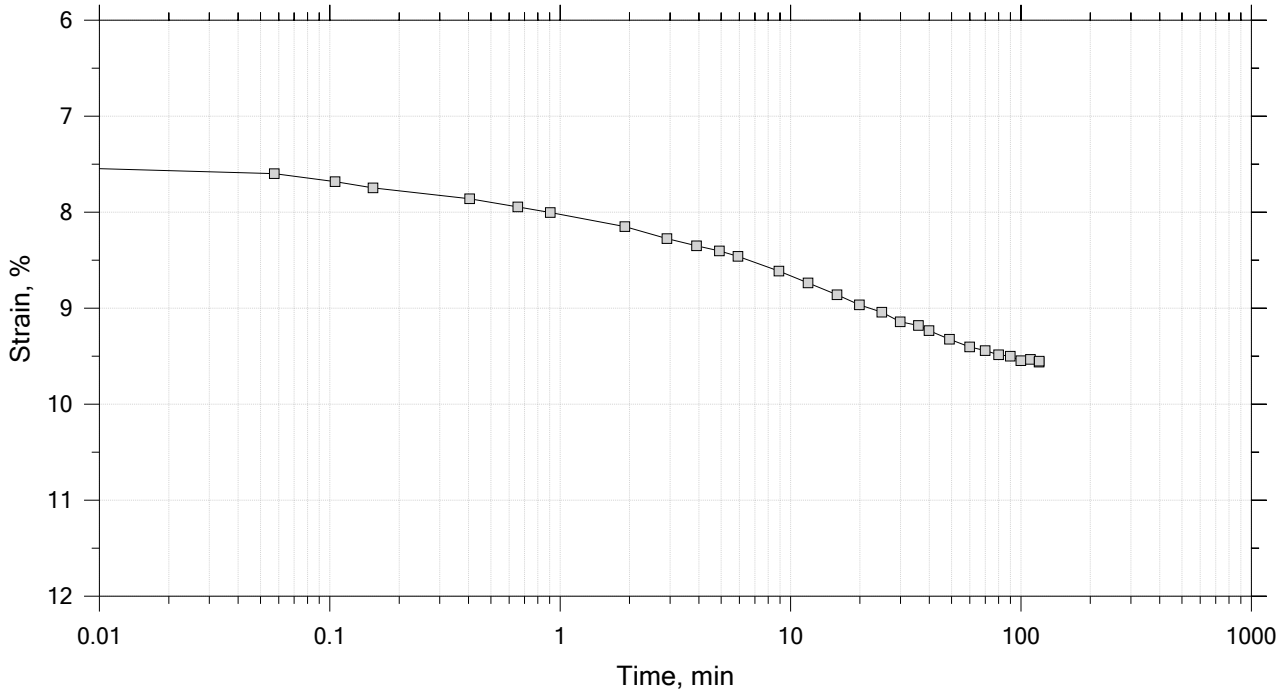


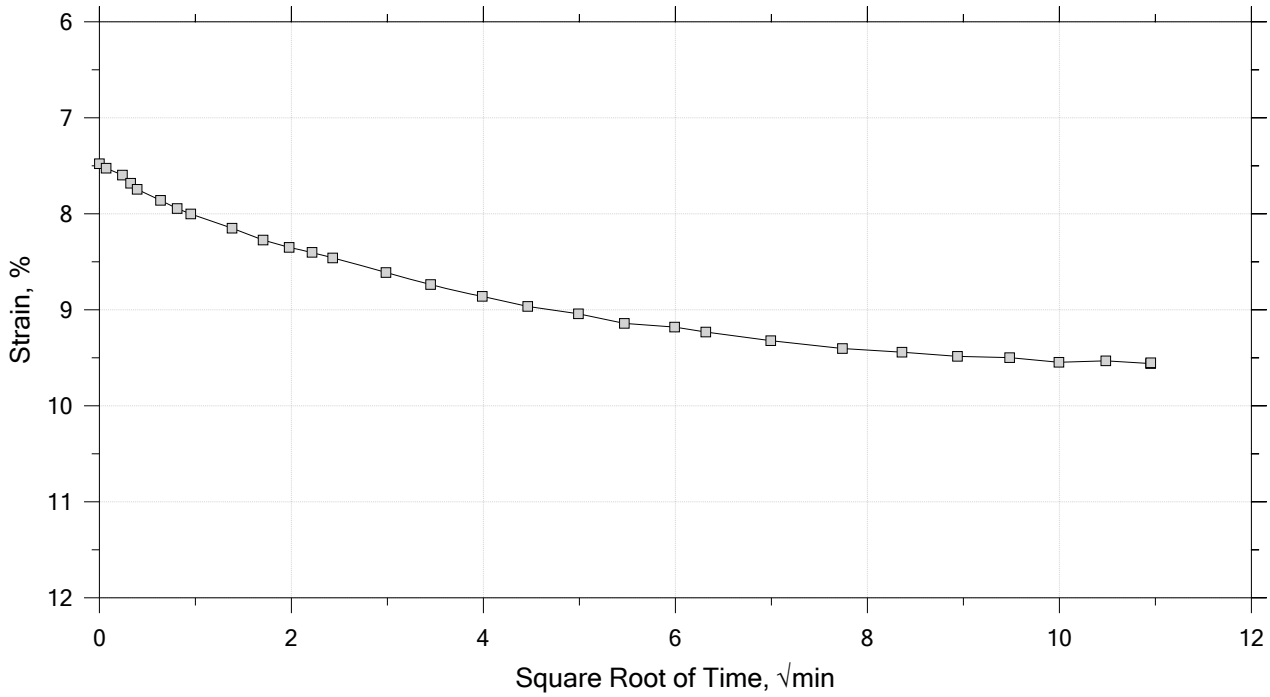


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf





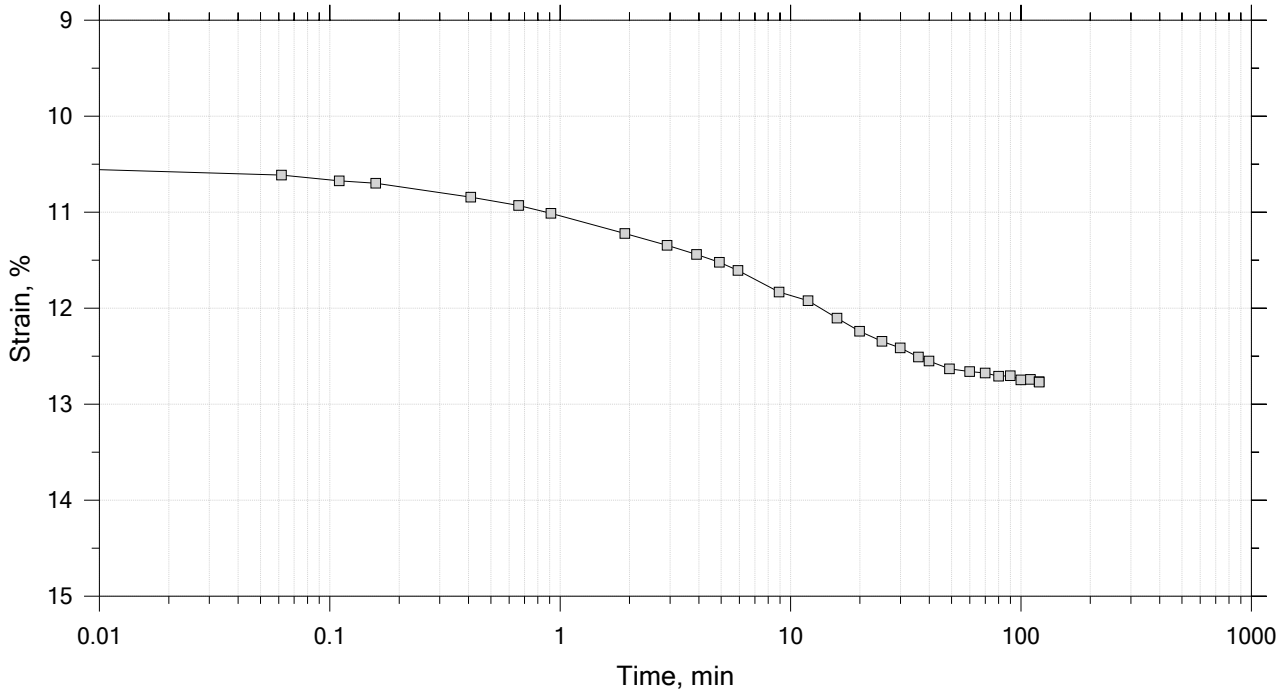
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

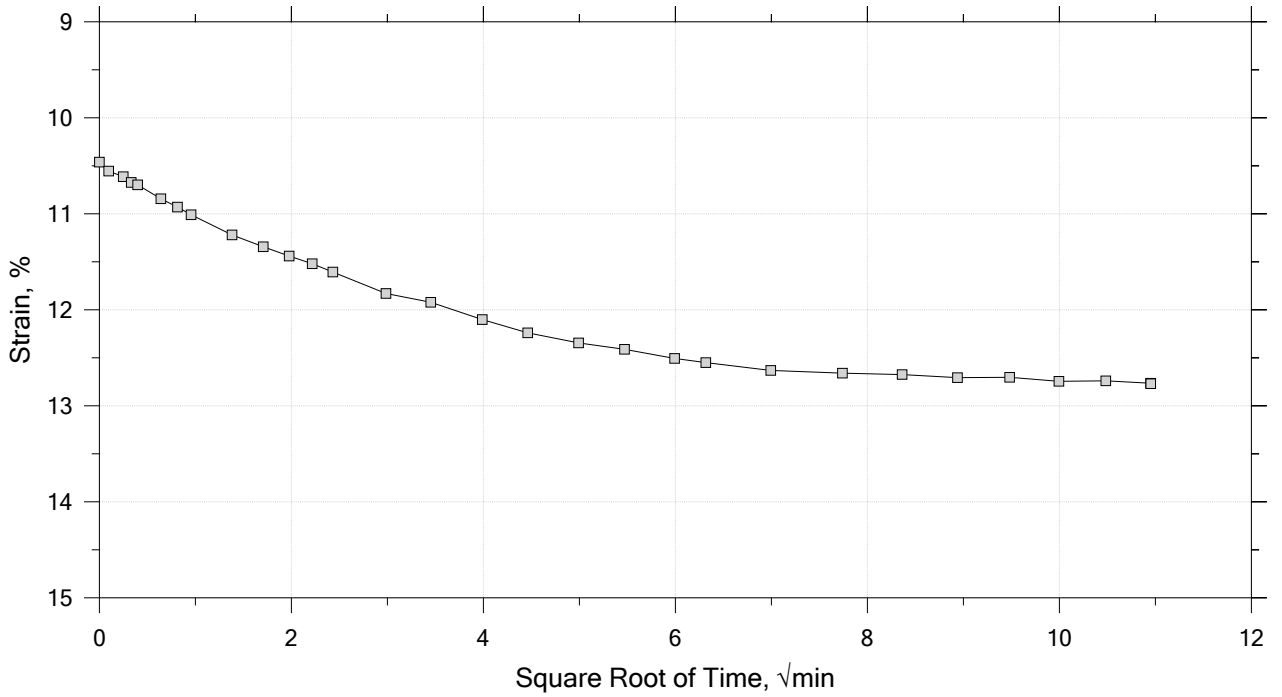
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

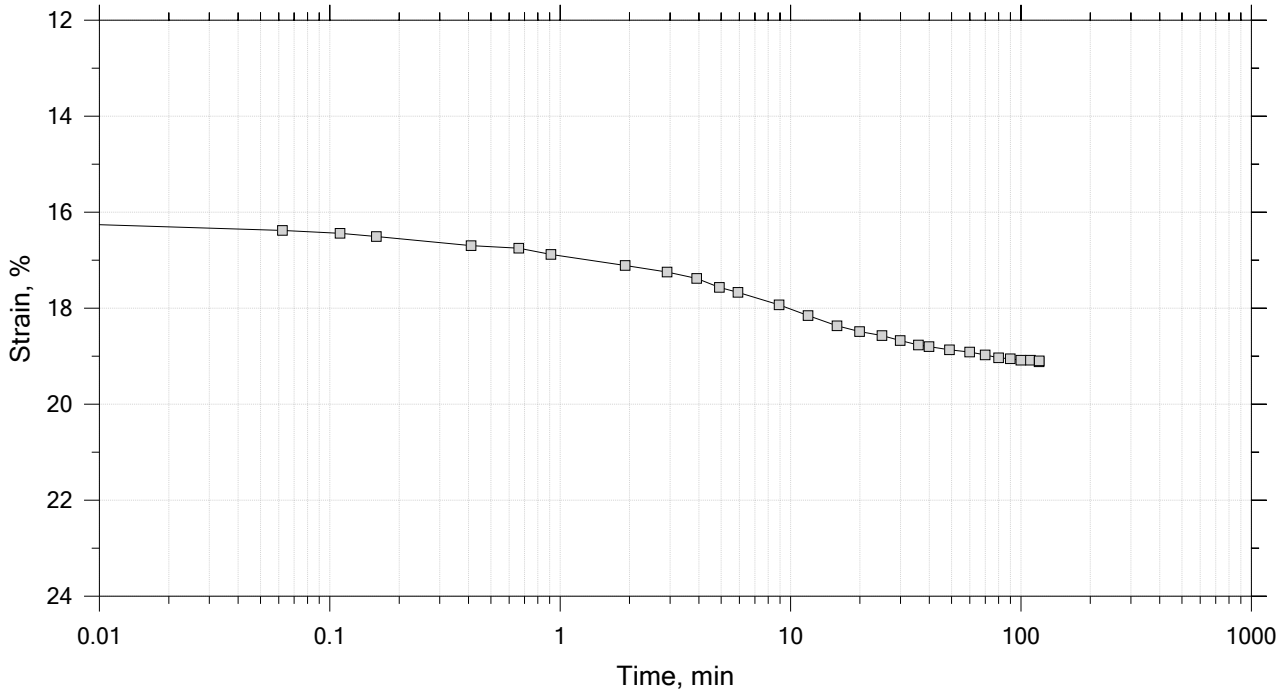


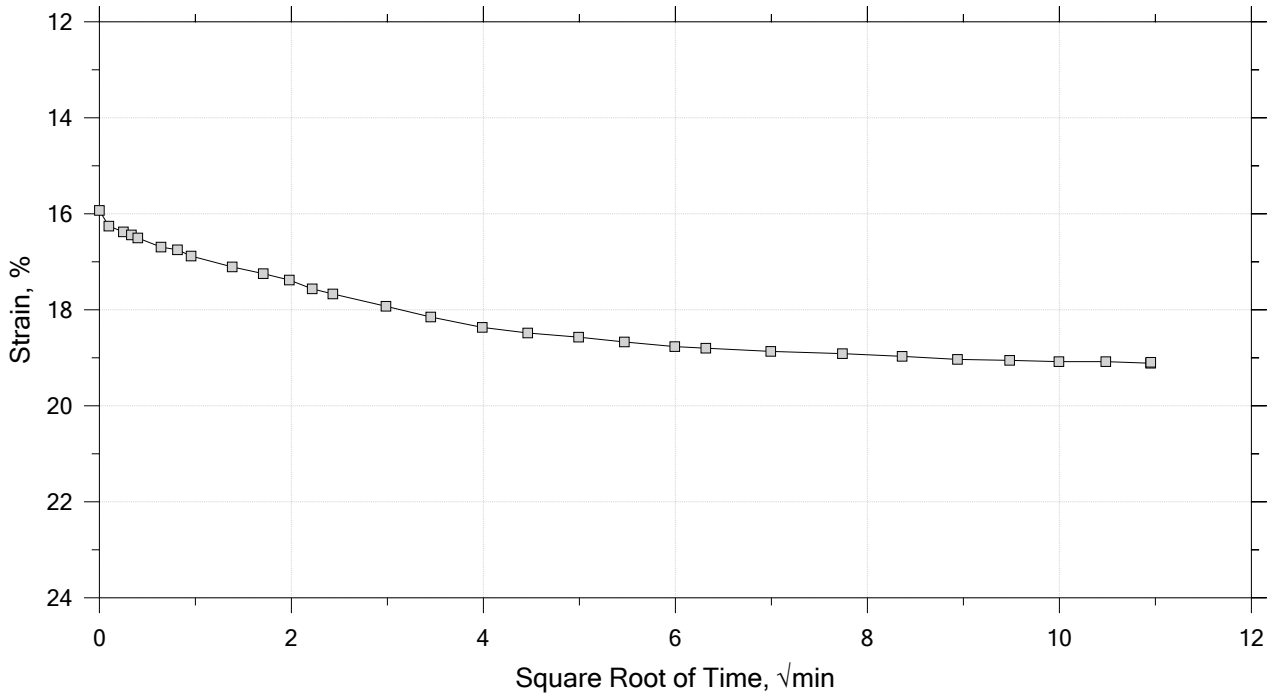


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

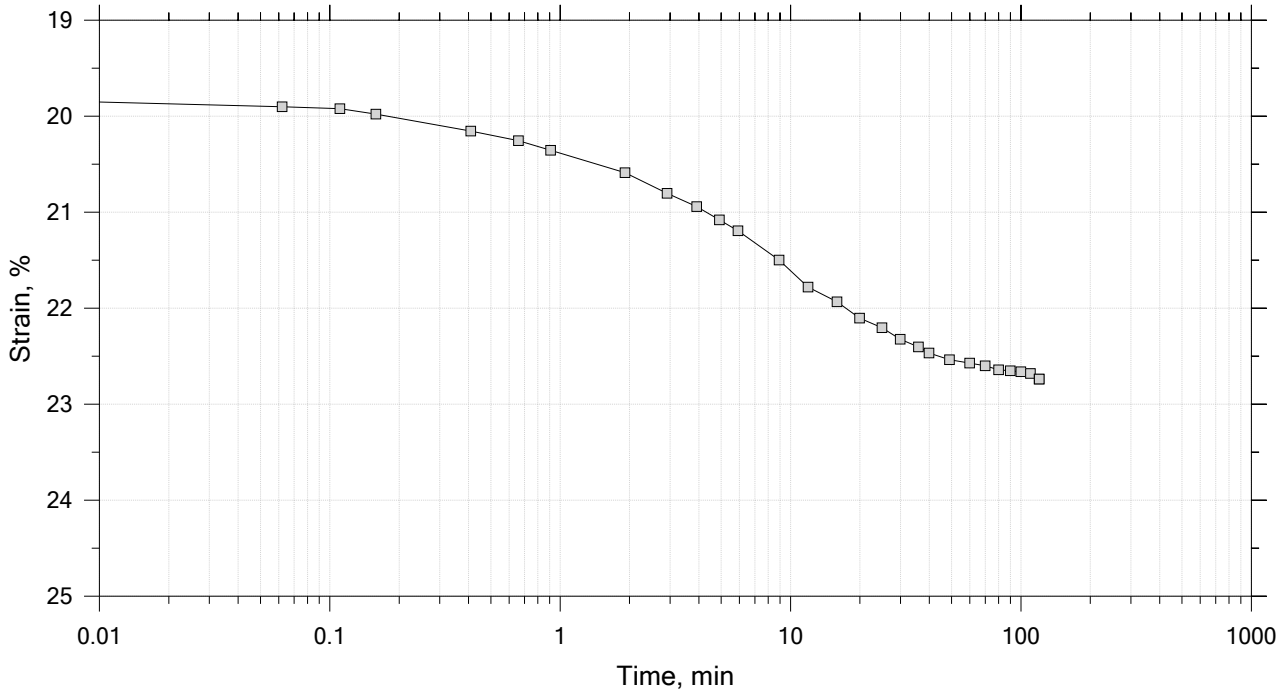


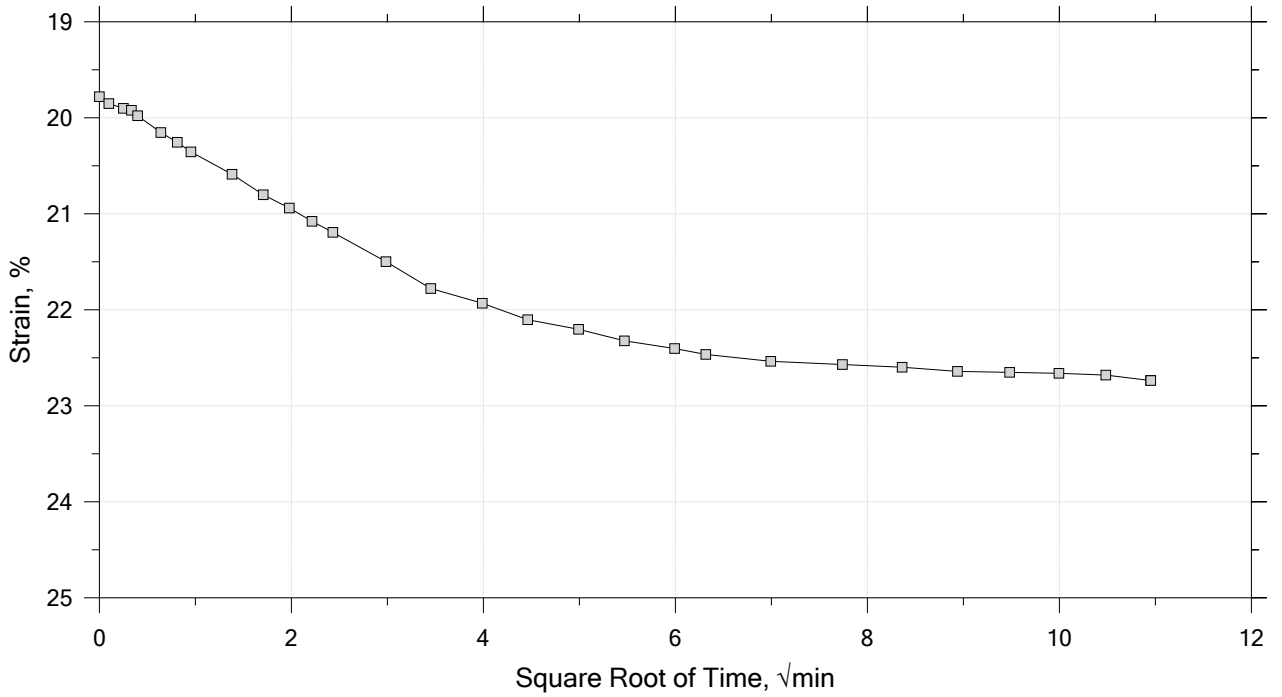


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

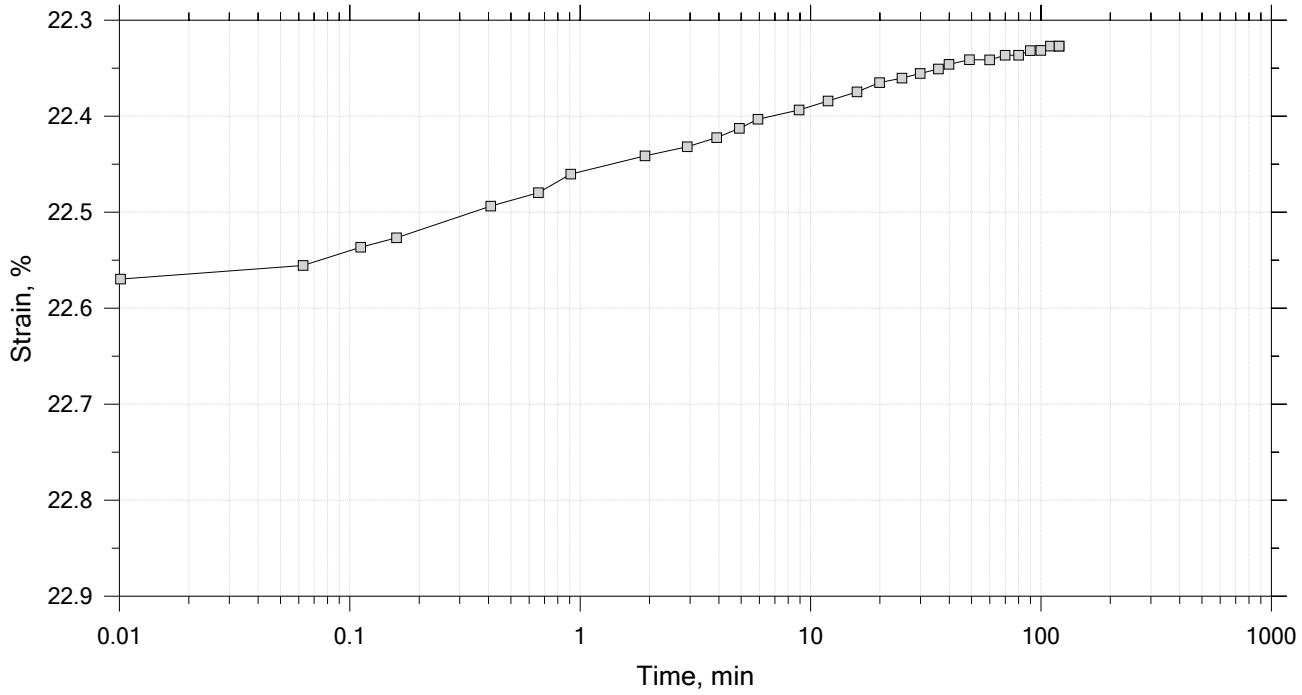


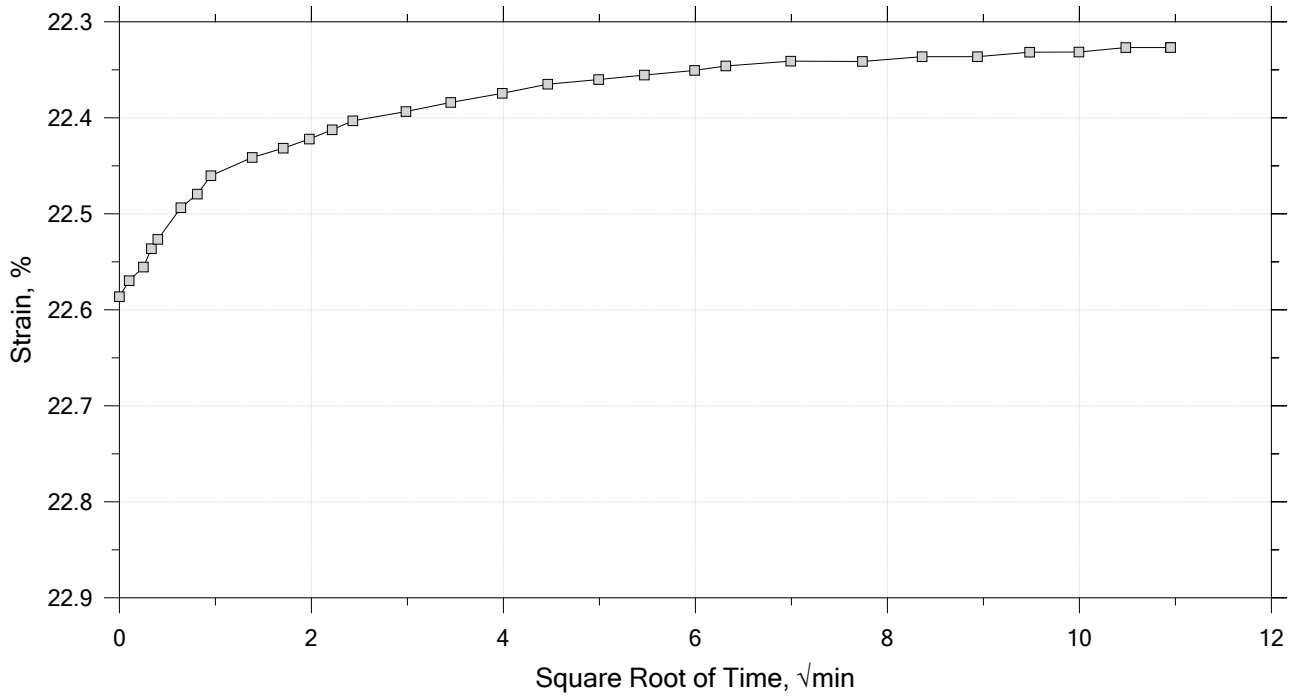


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

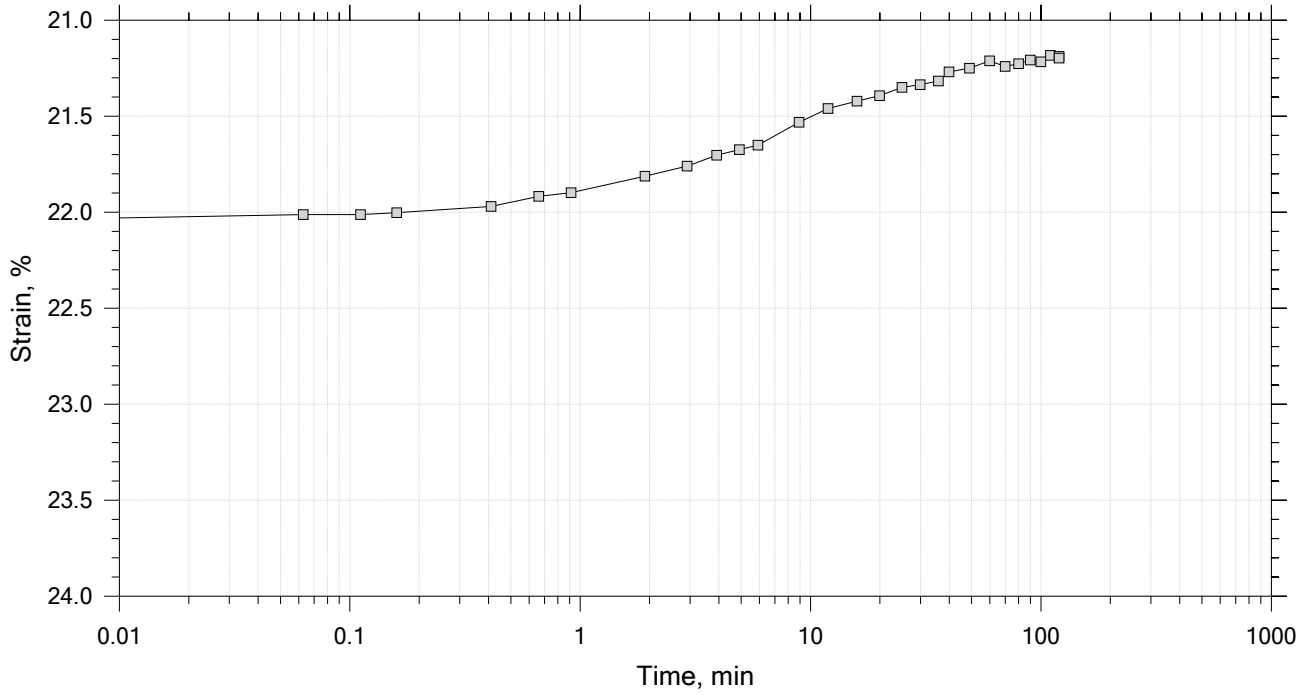


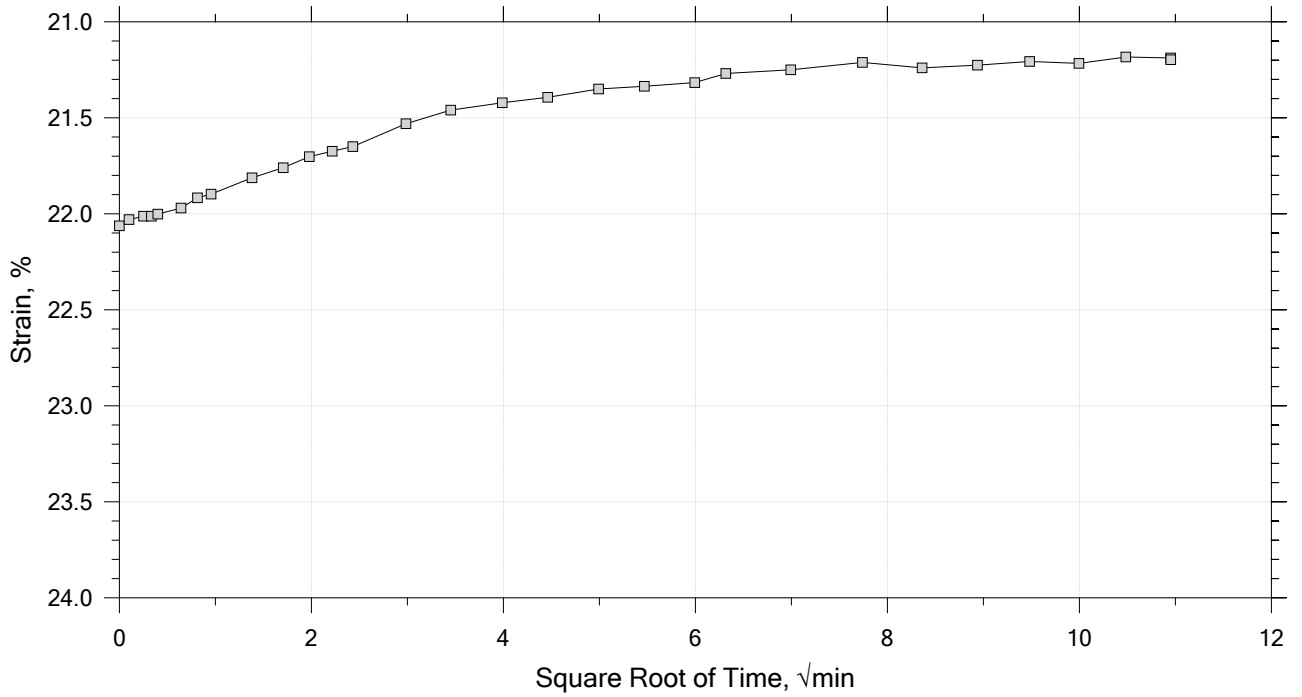


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





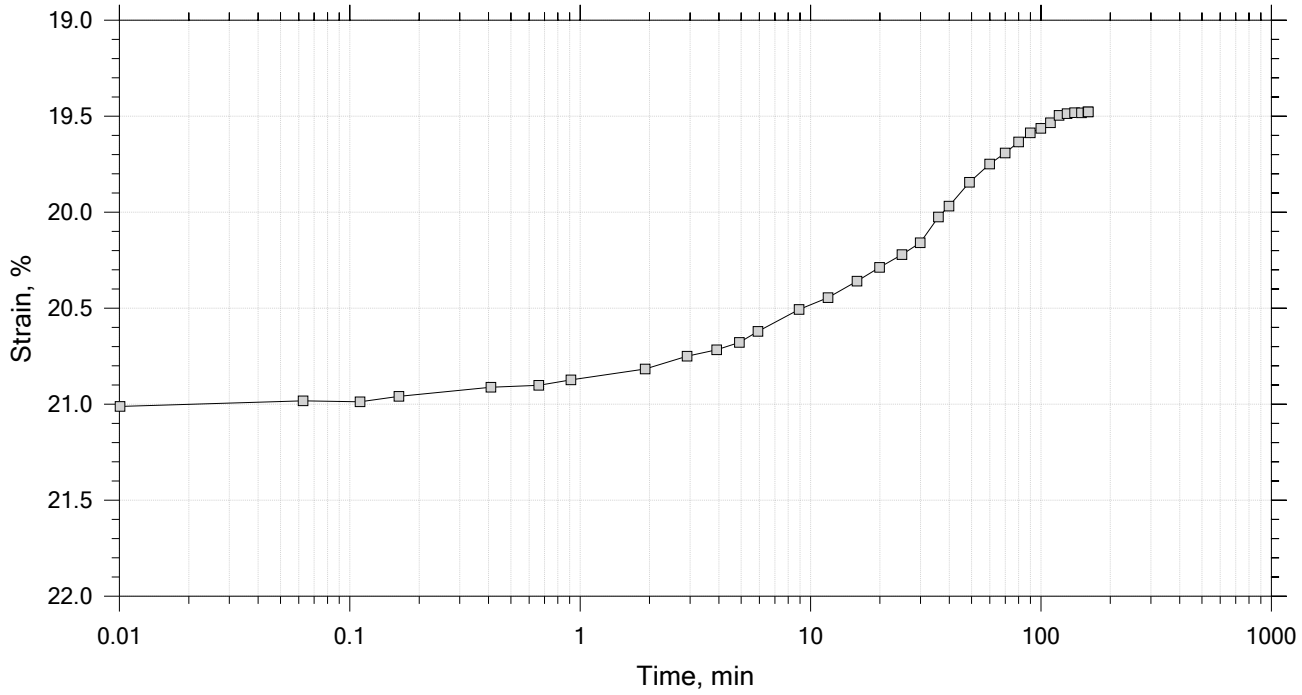
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.13	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
Test No.: IP-14-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

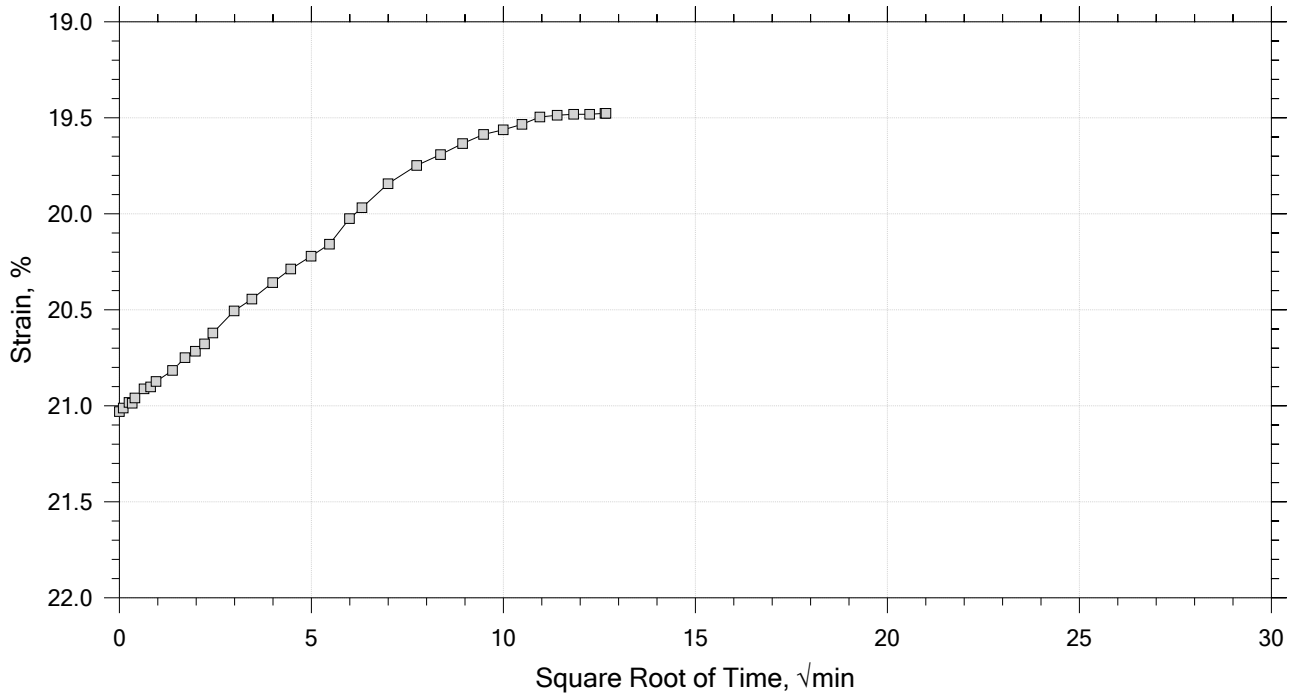
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

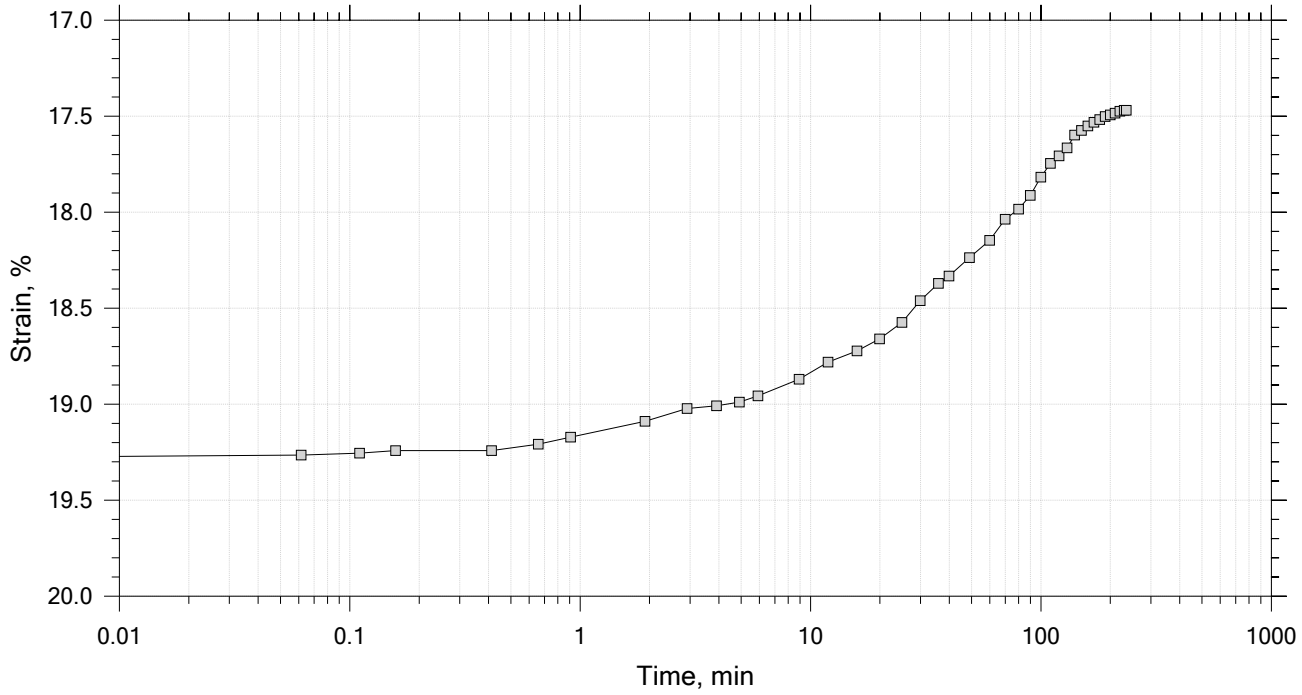


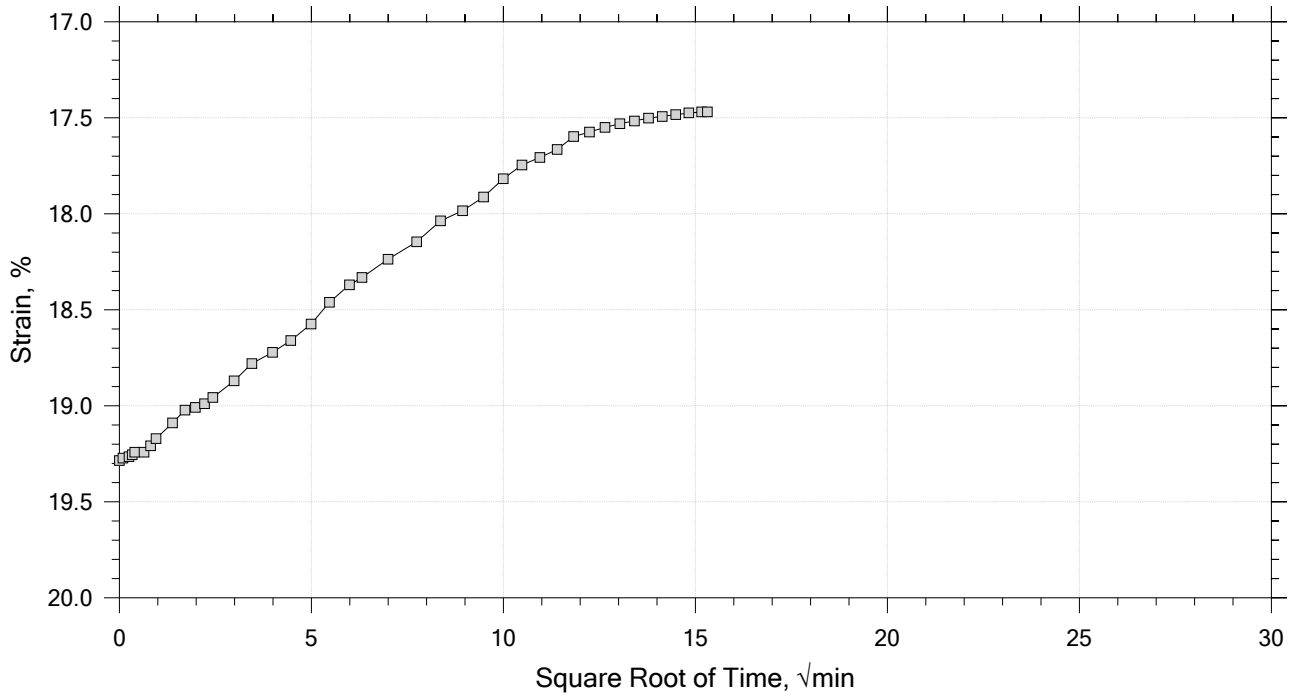


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.78	Liquid Limit: 43
Initial Height: 1.00 in	Initial Void Ratio: 0.715	Plastic Limit: 21
Final Height: 0.86 in	Final Void Ratio: 0.475	Plasticity Index: 22

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5054	RING		E7198
Mass Container, gm	8.4	110.4	110.4	8.63
Mass Container + Wet Soil, gm	120.38	269.9	263.16	161.11
Mass Container + Dry Soil, gm	100.2	240.88	240.88	138.87
Mass Dry Soil, gm	91.8	130.48	130.48	130.24
Water Content, %	21.98	22.24	17.08	17.08
Void Ratio	---	0.72	0.48	---
Degree of Saturation, %	---	86.52	100.00	---
Dry Unit Weight, pcf	---	101.26	117.75	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.13	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0825	0.003396	0.709	0.340	2.703	1.30e-03	4.12e-02	1.00e-03
2	0.125	0.004215	0.708	0.421	14.220	2.47e-04	1.93e-02	8.90e-05
3	0.250	0.01100	0.696	1.10	10.276	3.39e-04	5.43e-02	3.44e-04
4	0.500	0.02296	0.676	2.30	43.058	7.93e-05	4.78e-02	7.10e-05
5	1.00	0.04201	0.643	4.20	48.837	6.77e-05	3.81e-02	4.83e-05
6	2.00	0.06573	0.602	6.57	36.275	8.72e-05	2.37e-02	3.87e-05
7	4.00	0.09551	0.551	9.55	23.593	1.27e-04	1.49e-02	3.53e-05
8	8.00	0.1277	0.496	12.8	18.738	1.49e-04	8.05e-03	2.24e-05
9	16.0	0.1910	0.388	19.1	22.071	1.13e-04	7.91e-03	1.68e-05
10	32.0	0.2274	0.325	22.7	28.264	7.82e-05	2.28e-03	3.33e-06
11	16.0	0.2233	0.332	22.3	6.895	3.08e-04	2.57e-04	1.48e-06
12	4.00	0.2120	0.352	21.2	24.779	8.73e-05	9.41e-04	1.54e-06
13	1.00	0.1948	0.381	19.5	111.796	2.01e-05	5.74e-03	2.15e-06
14	0.250	0.1747	0.416	17.5	195.171	1.20e-05	2.68e-02	6.03e-06

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
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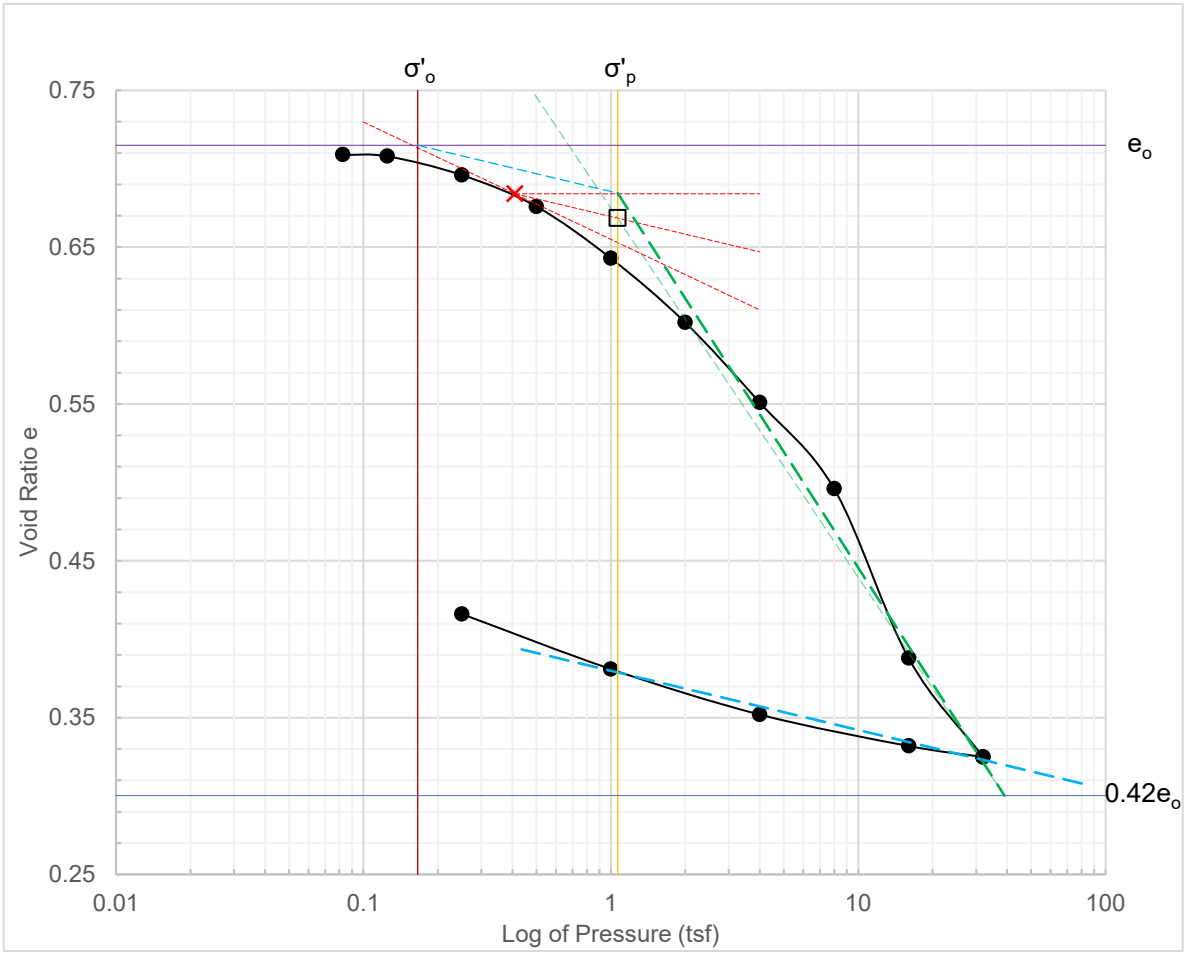
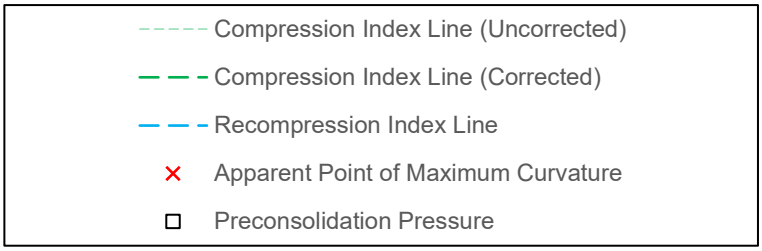
	Sample No.: ST	Test Date: 08/11/22	Depth: 2.7-2.8
	Test No.: IP-14-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0825 tsf		
	Displacement at End of Increment		

Boring: B-4.13

Depth: 2.7'-2.8'

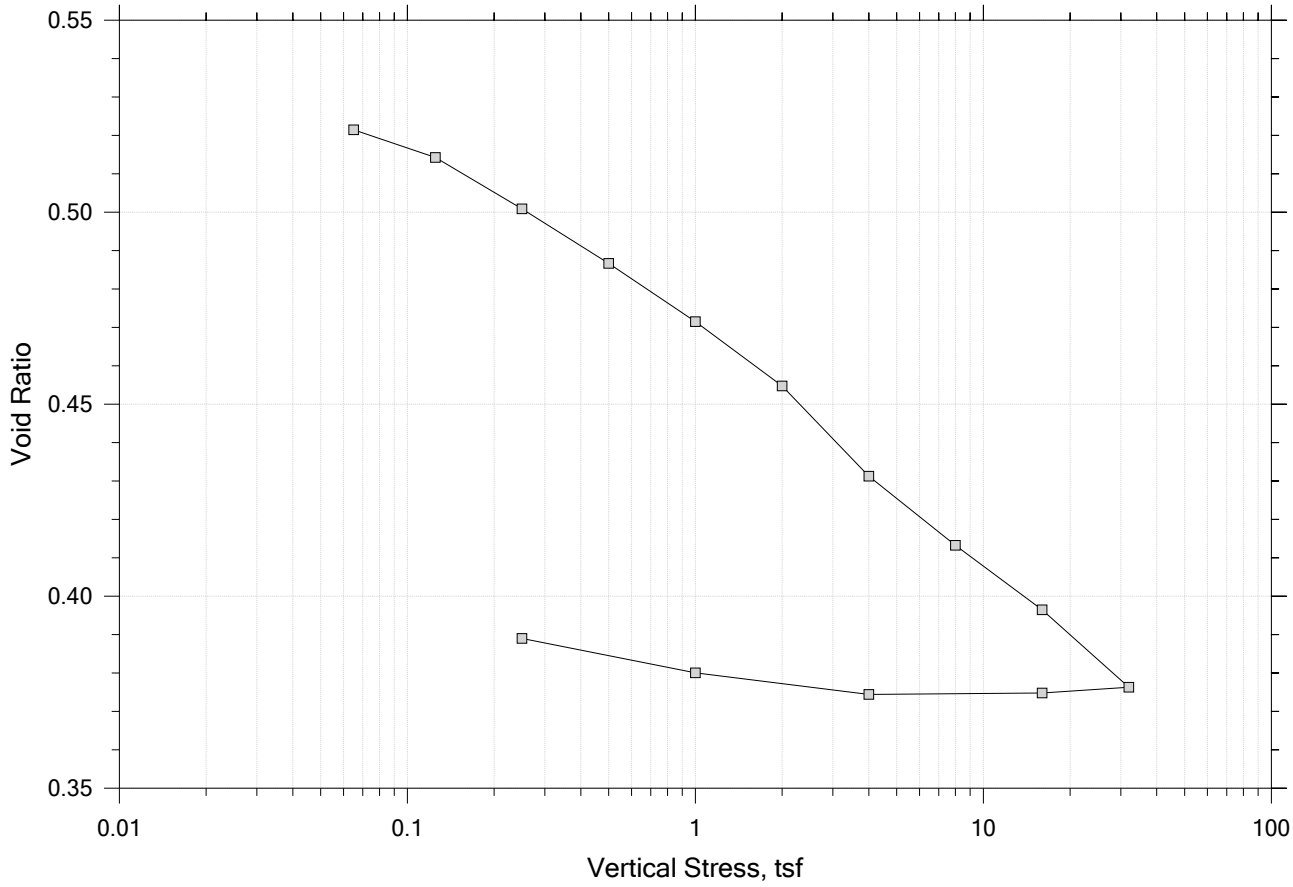
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.17
Preconsolidation Pressure, σ'_p (tsf) = 1.06
Compression Index, C_c = 0.25
Recompression Index, C_r = 0.038

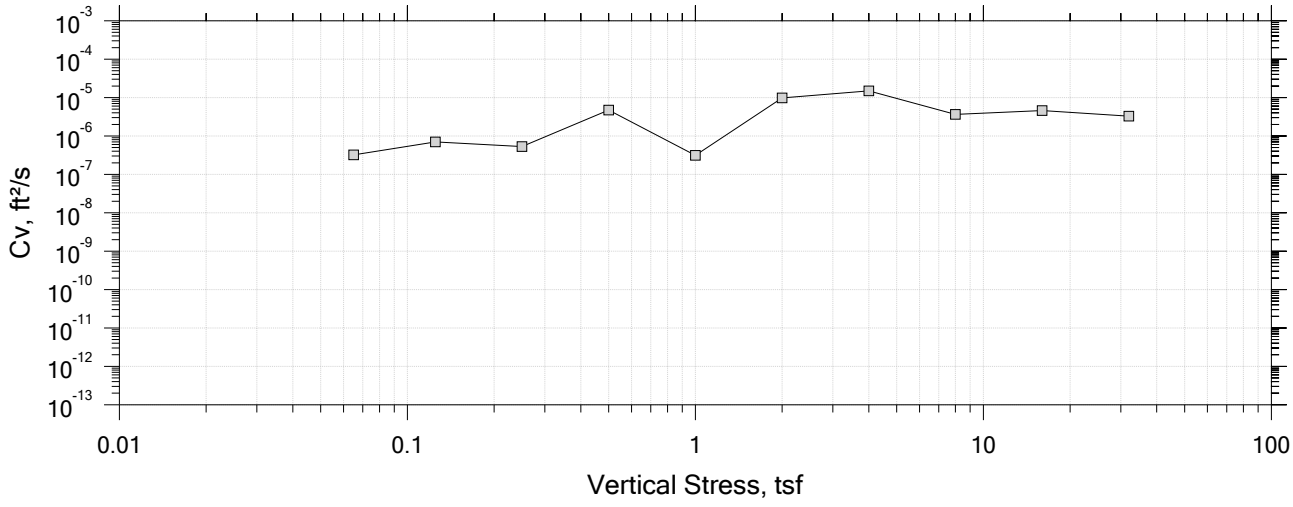




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

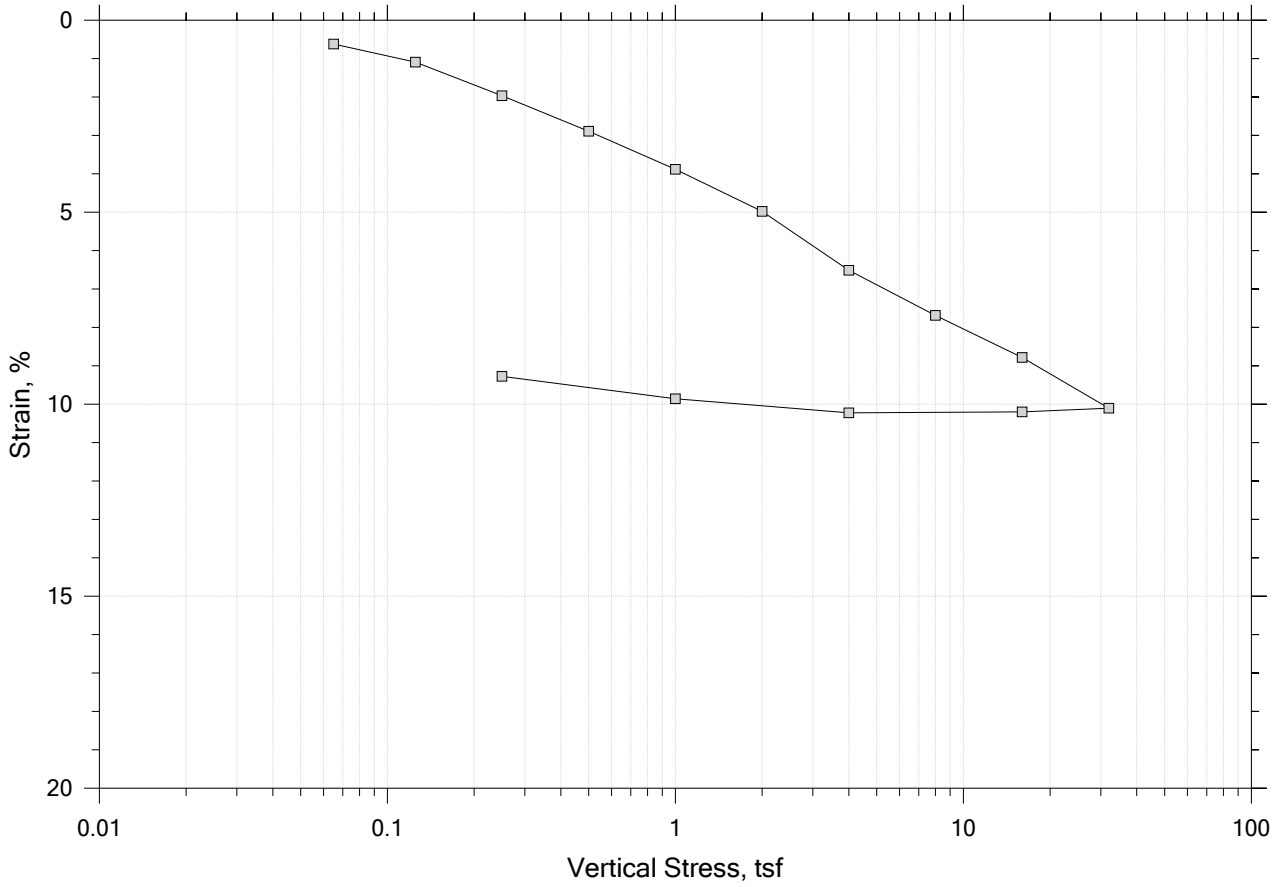


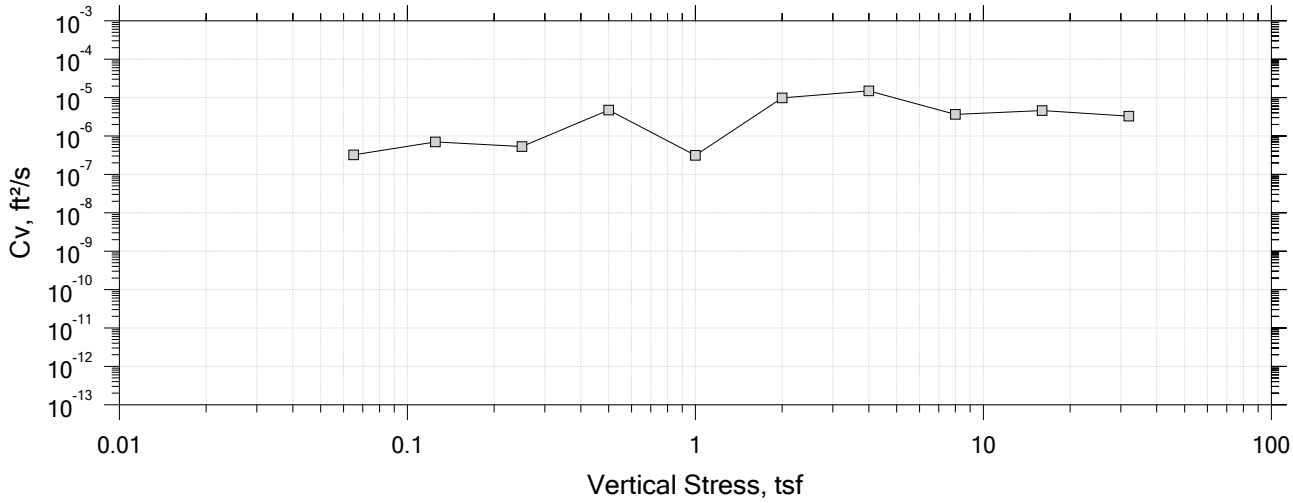


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

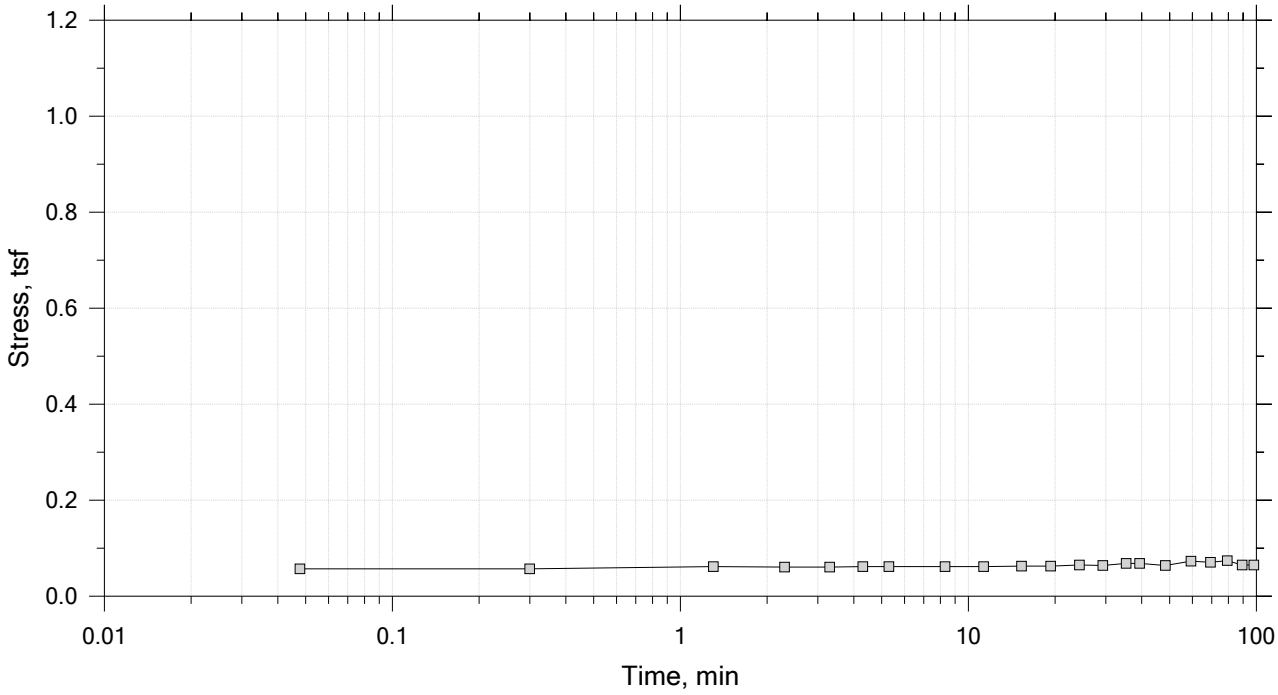


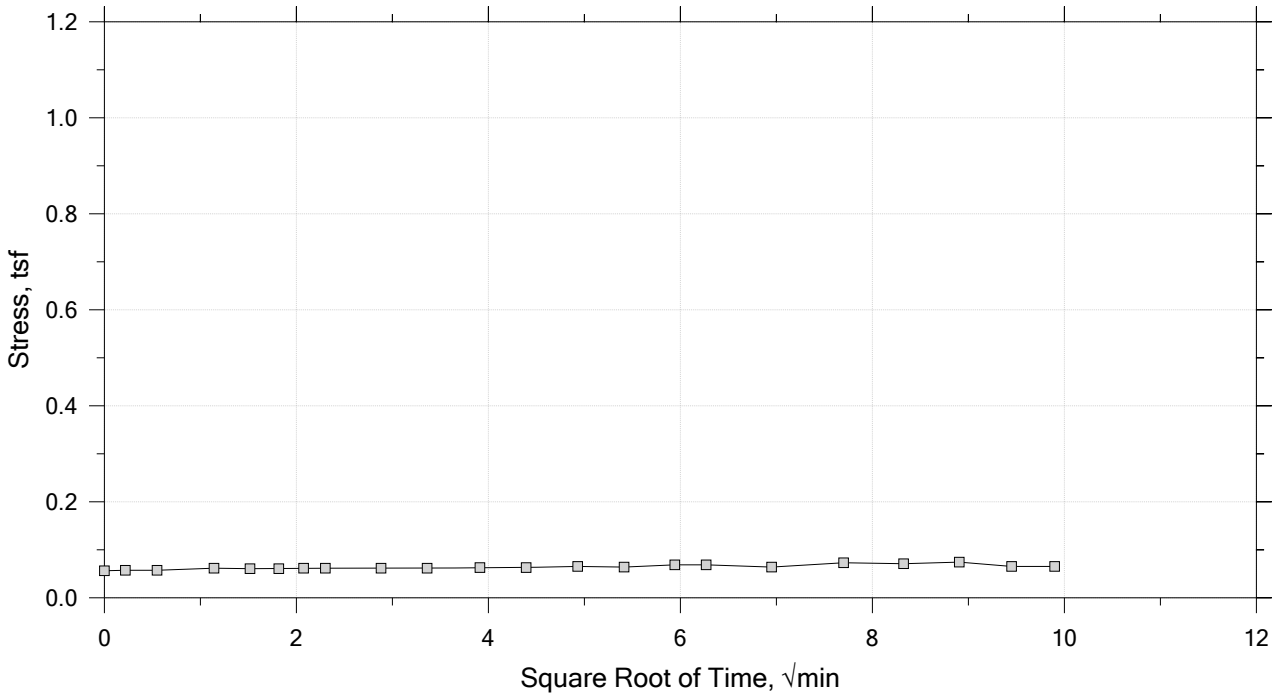


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0651 tsf

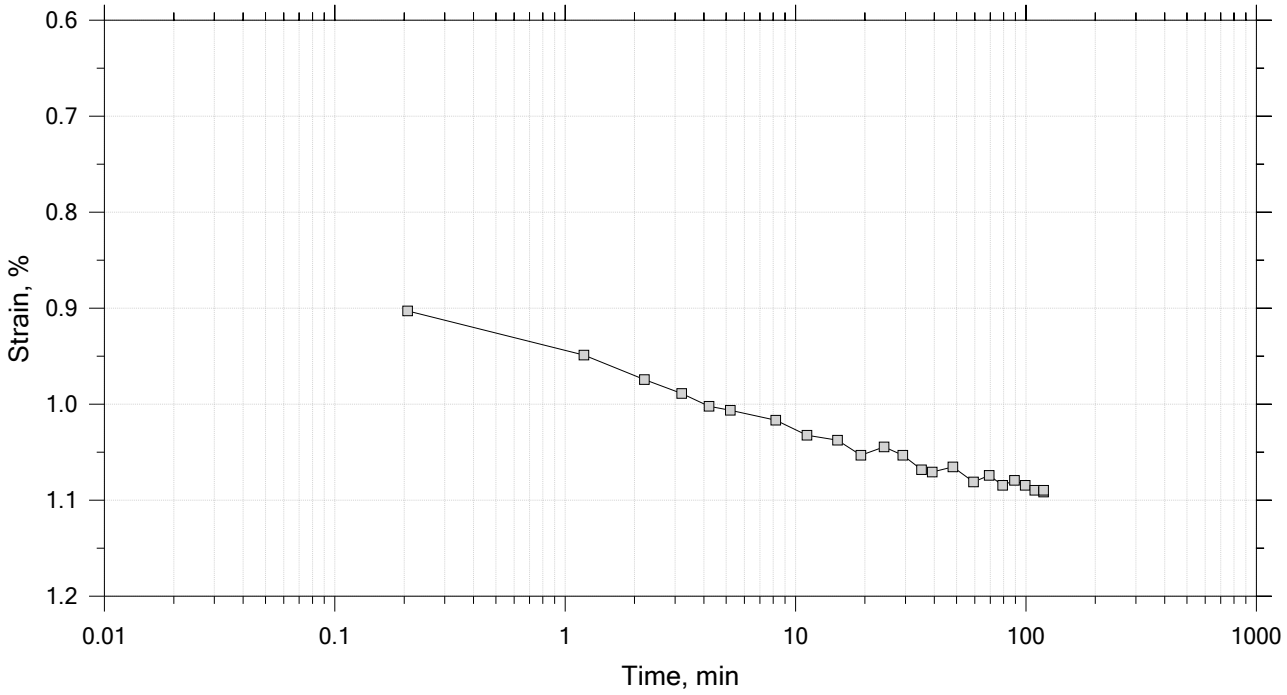


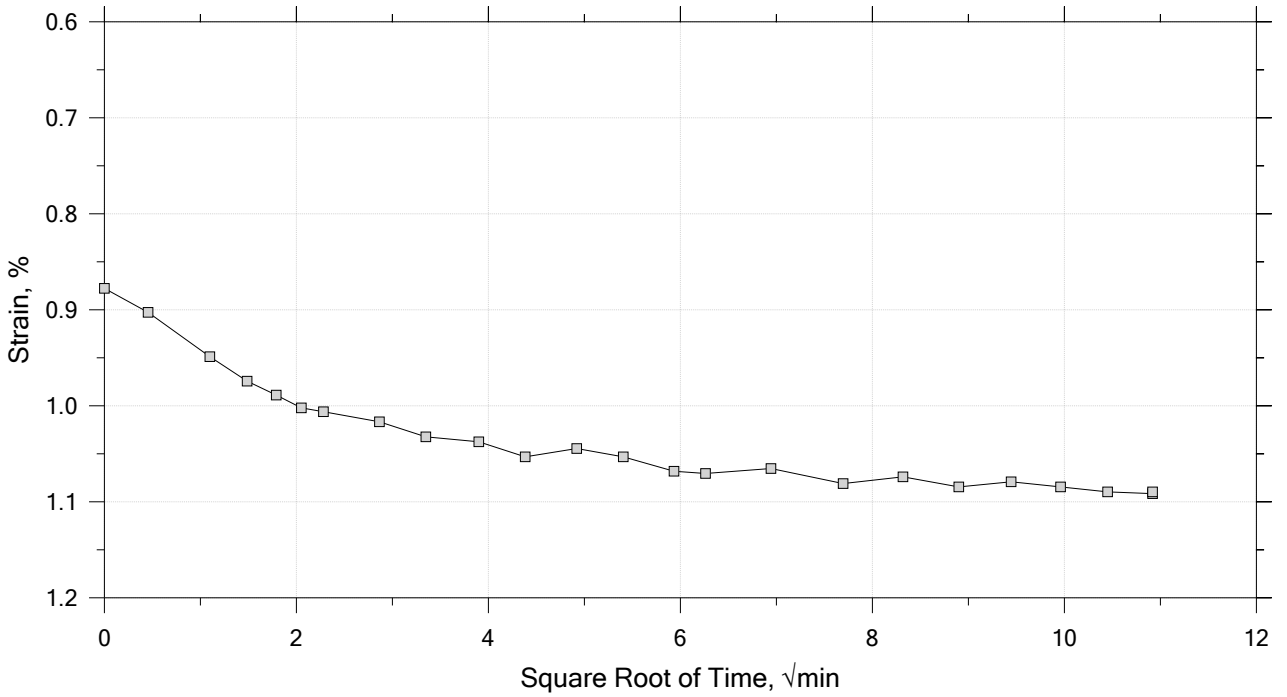


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

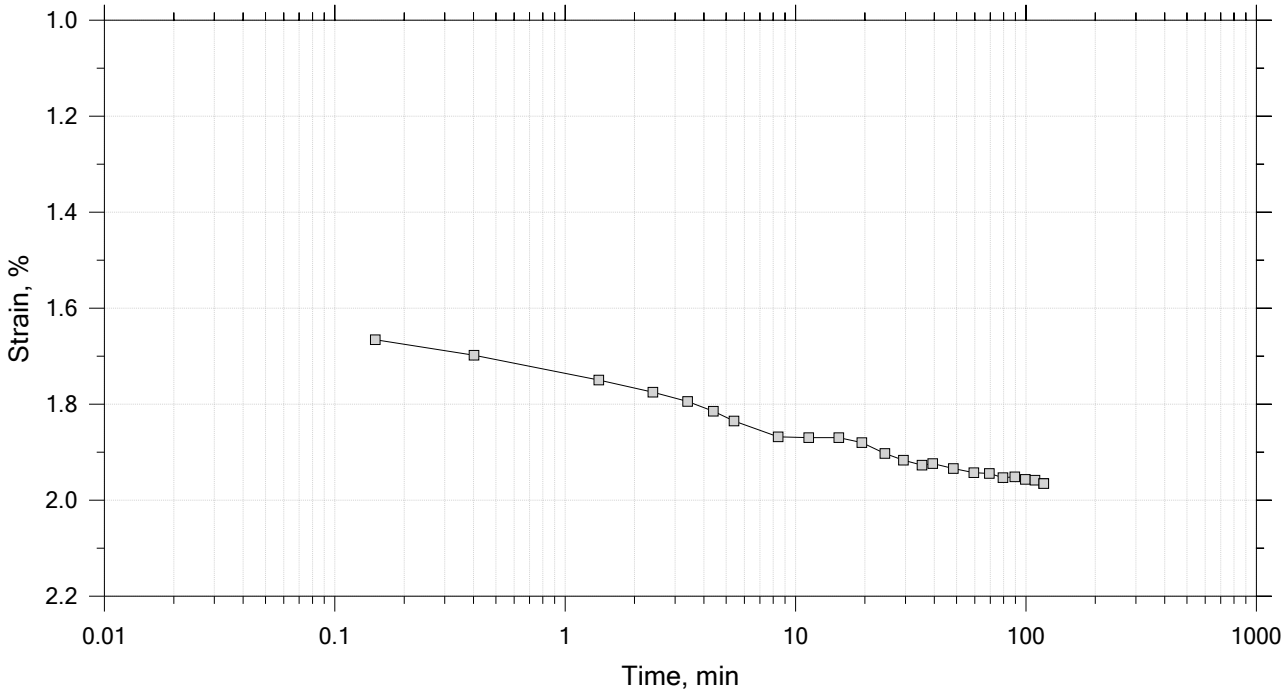


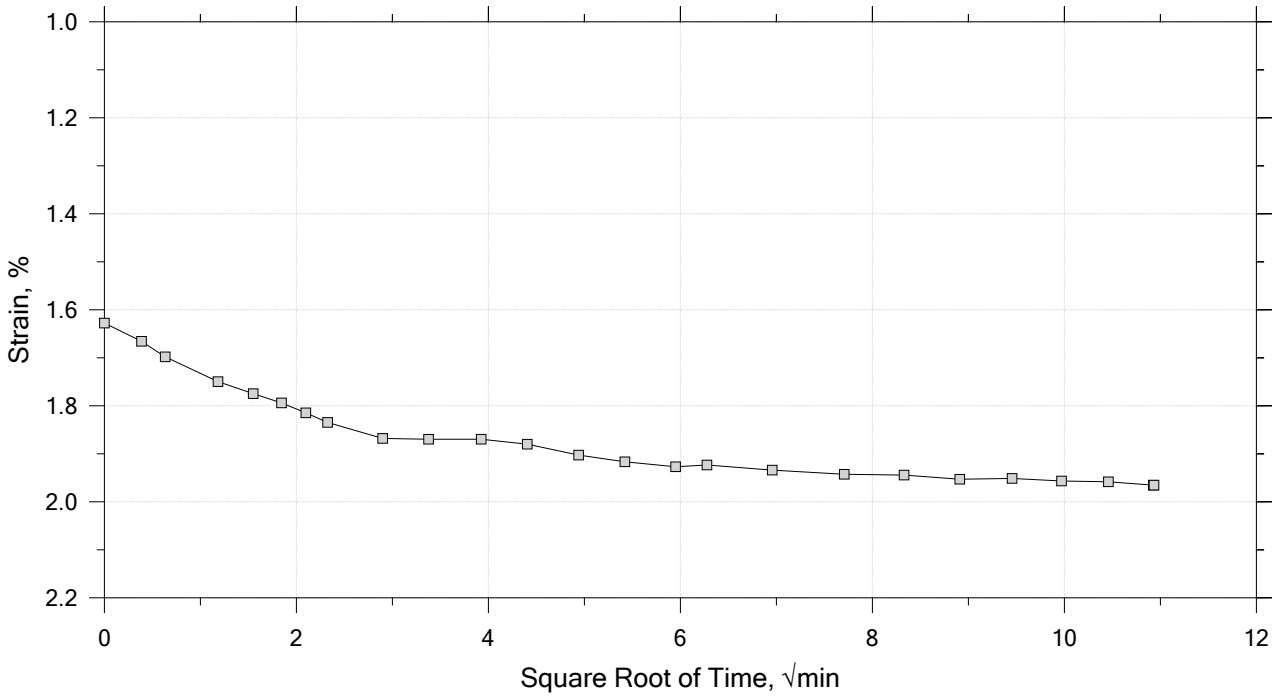


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

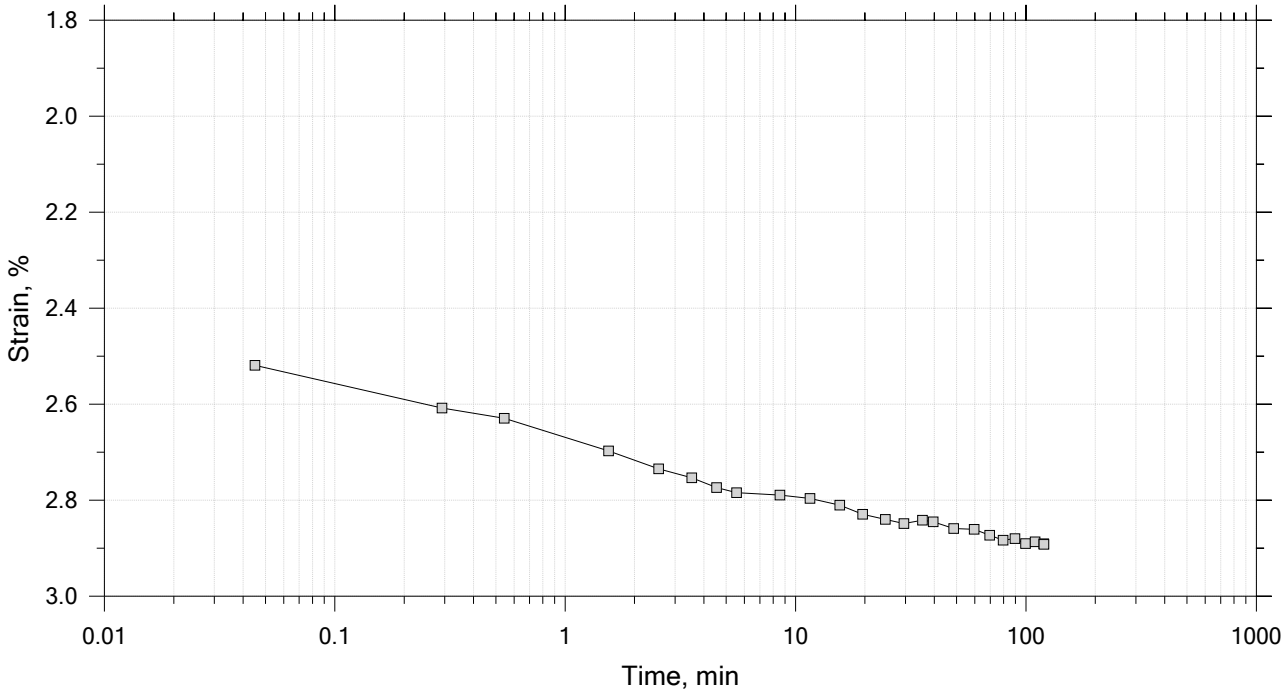


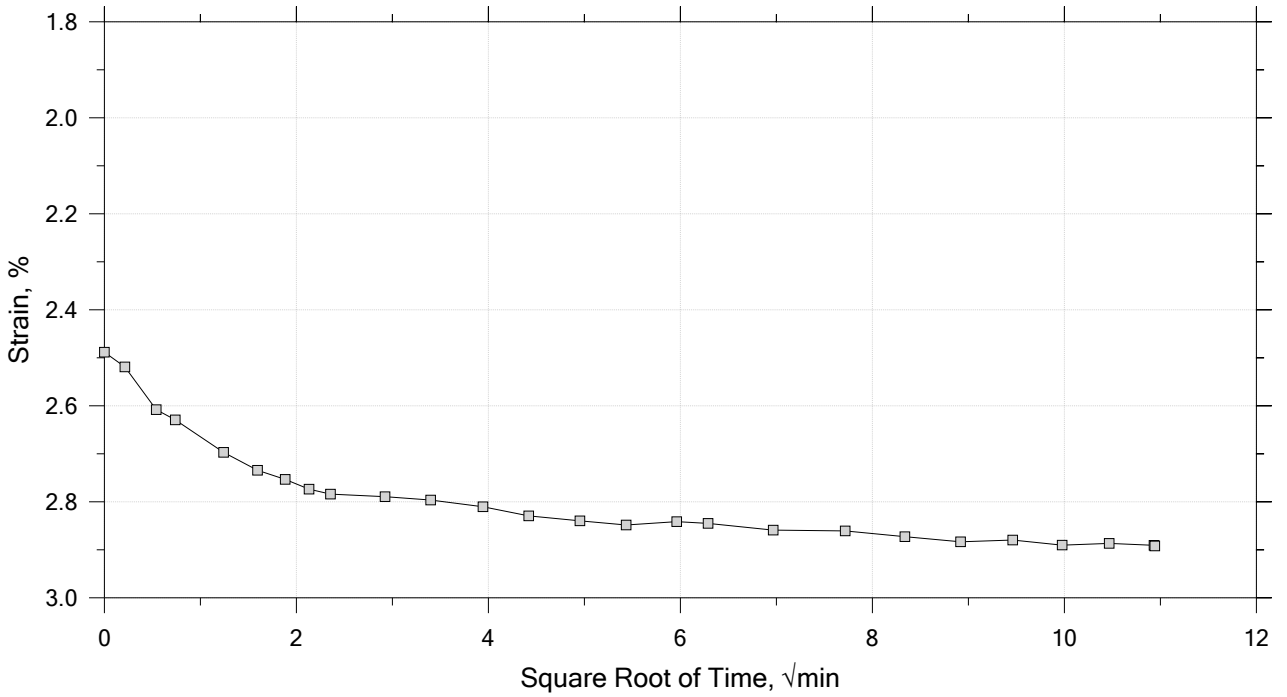


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf

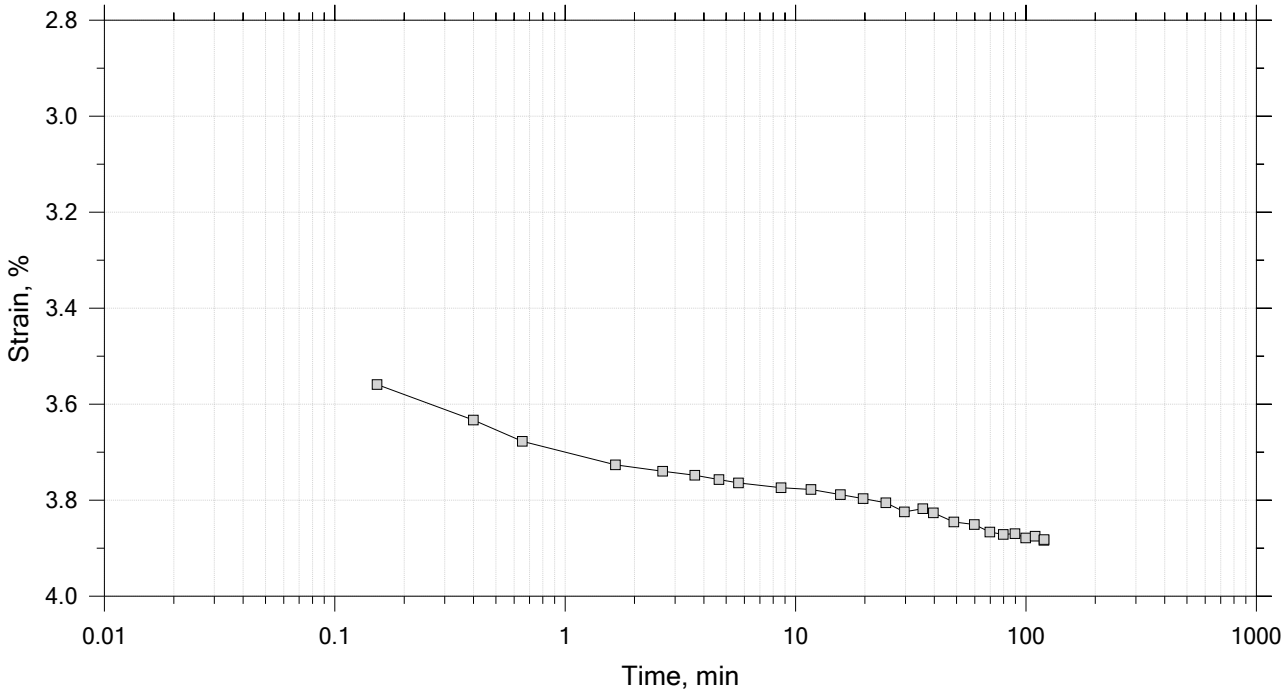


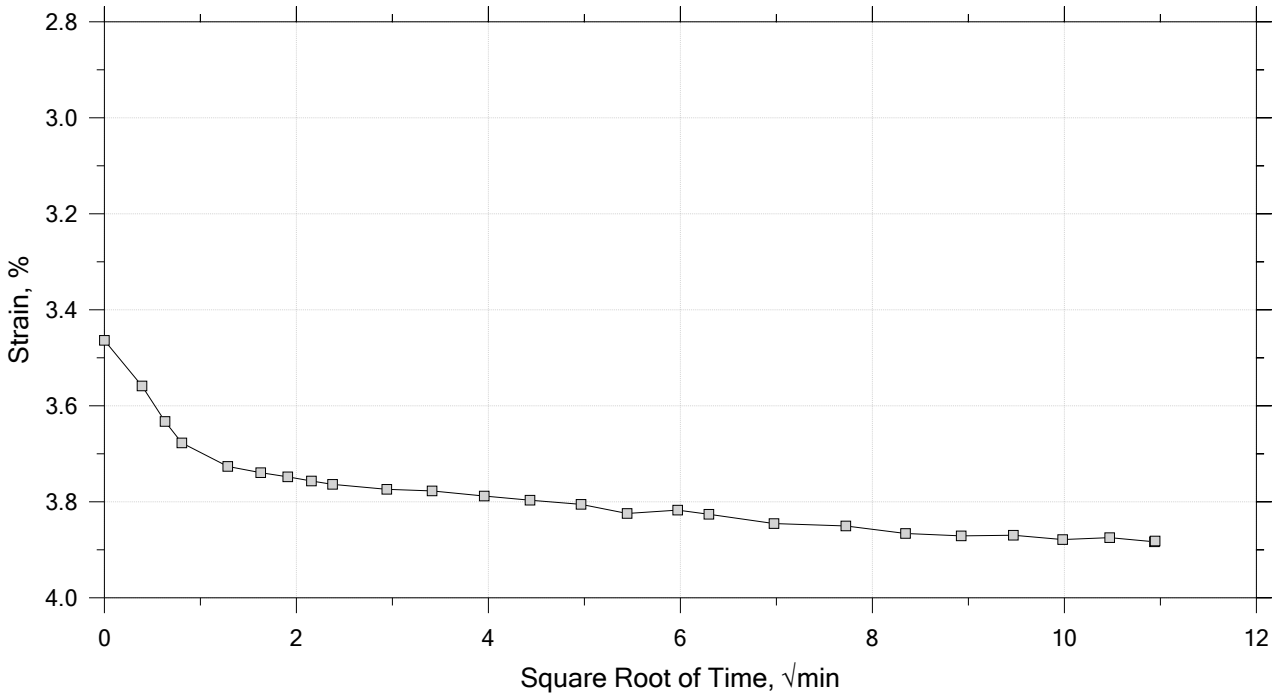


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





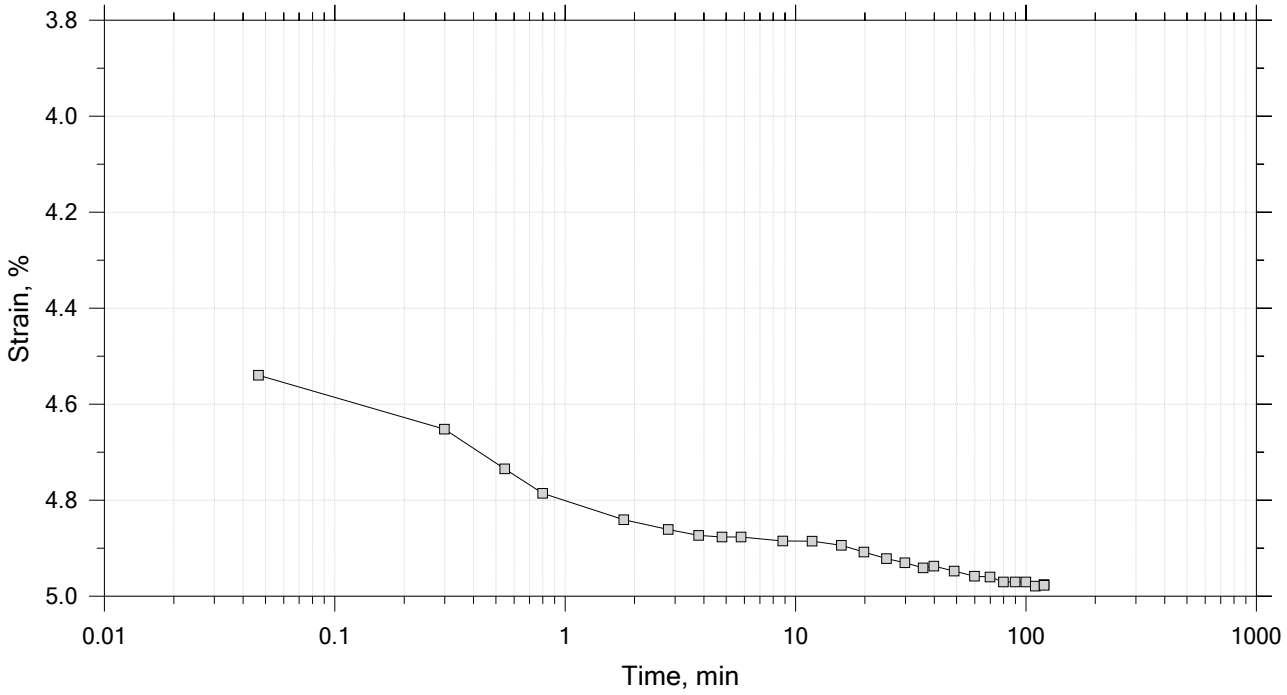
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

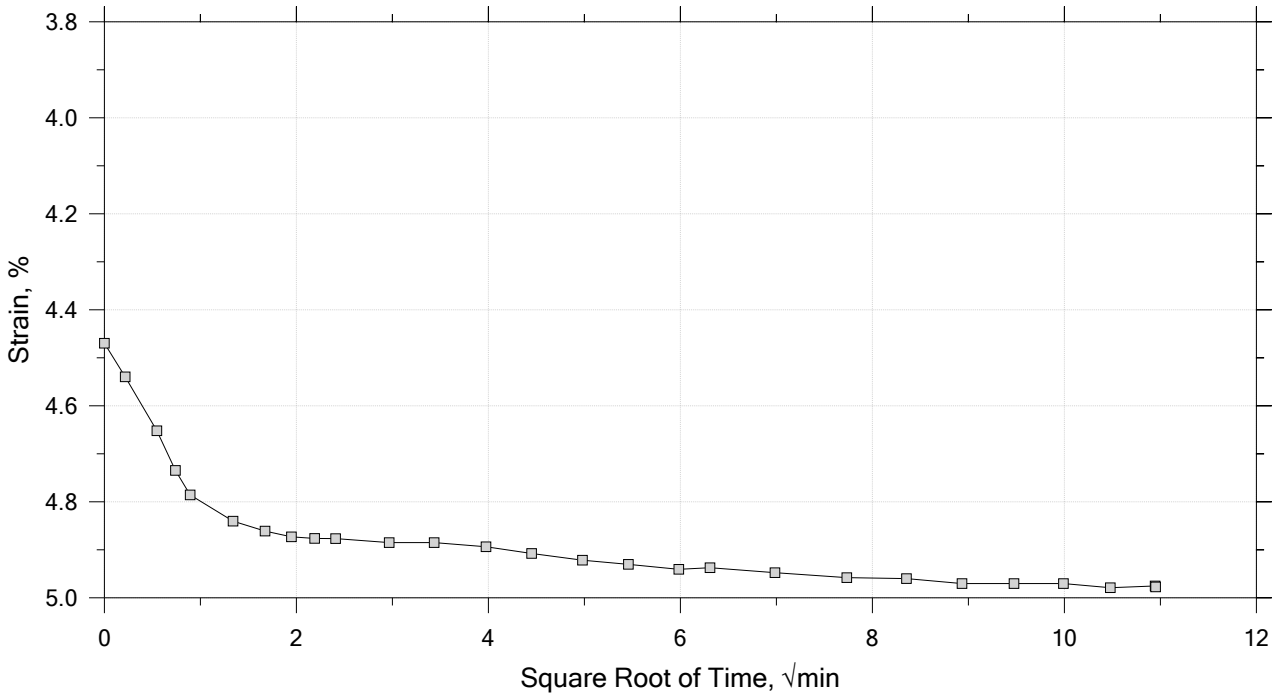
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





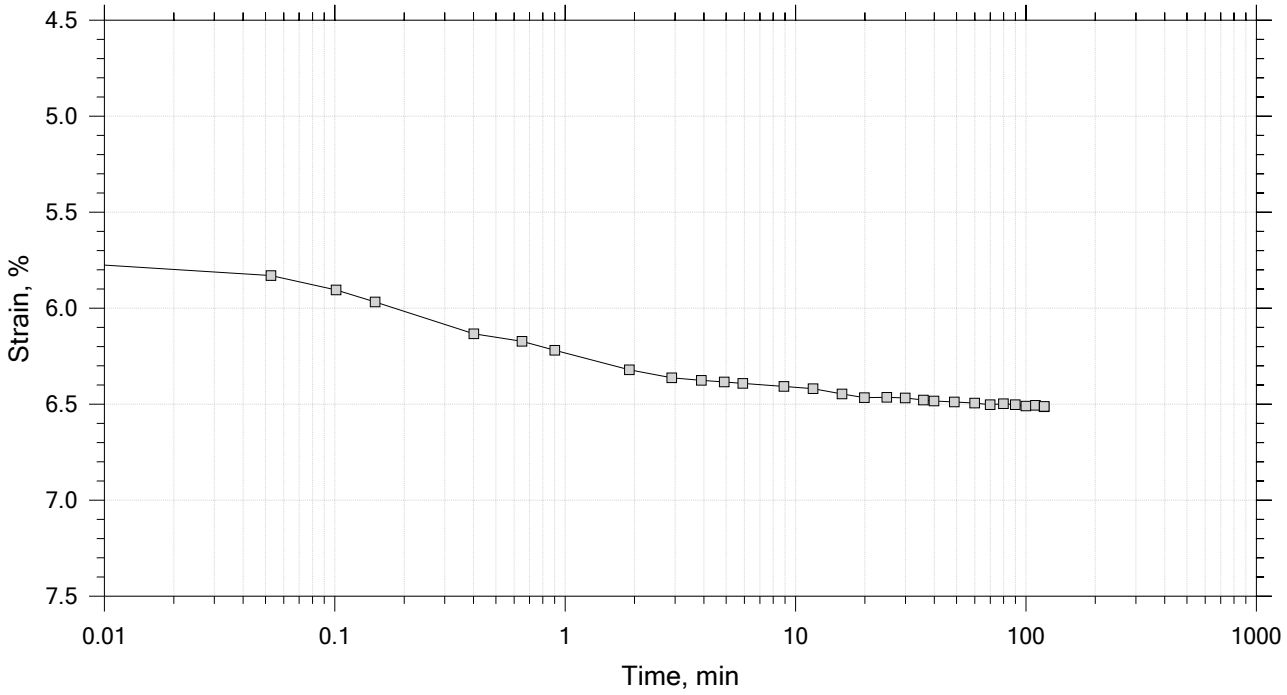
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

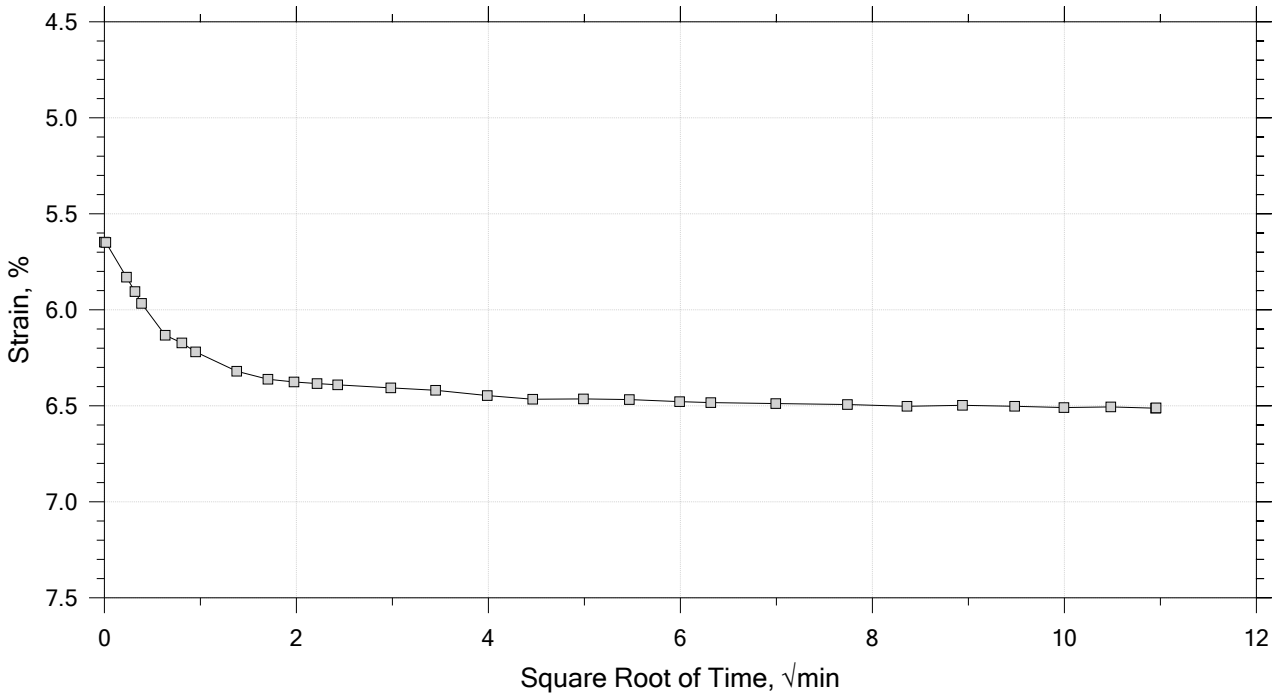
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

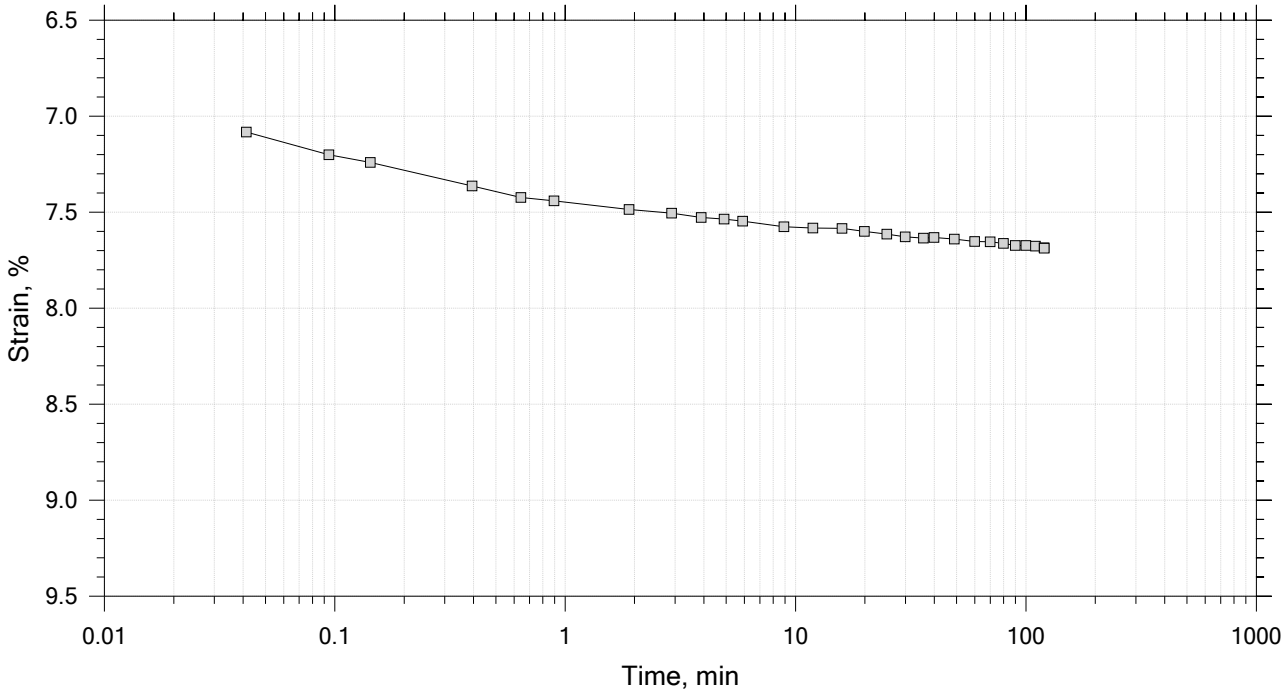


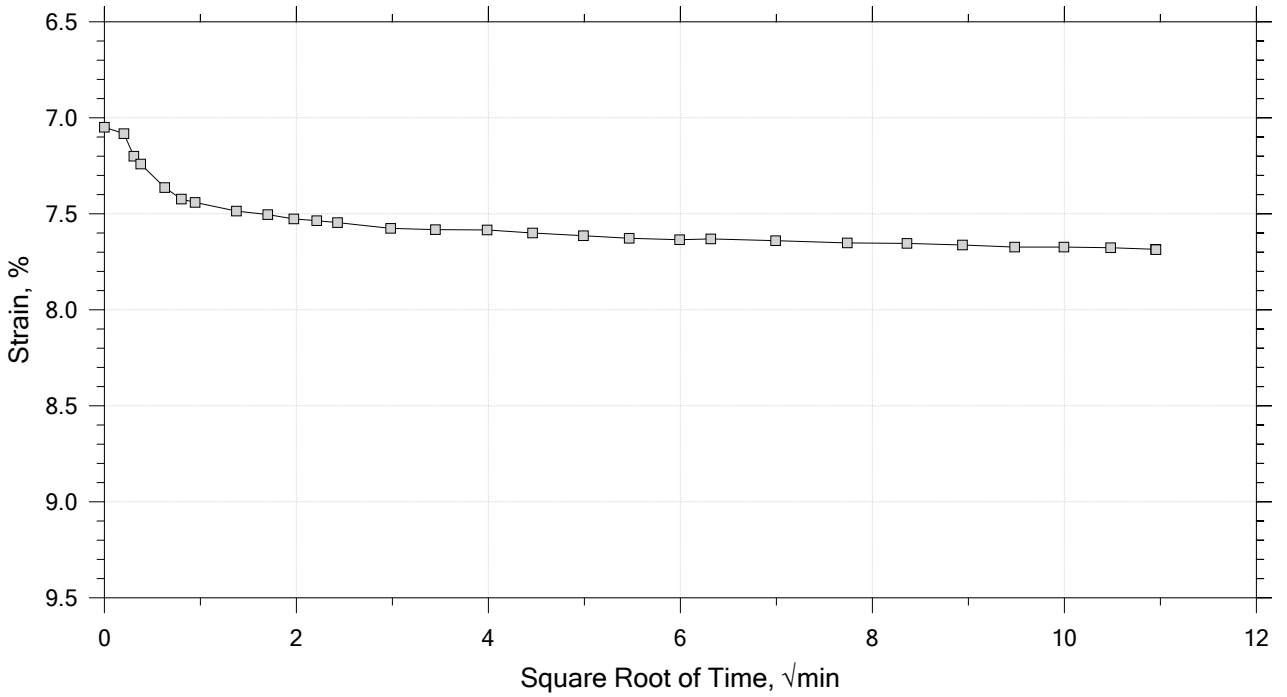


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

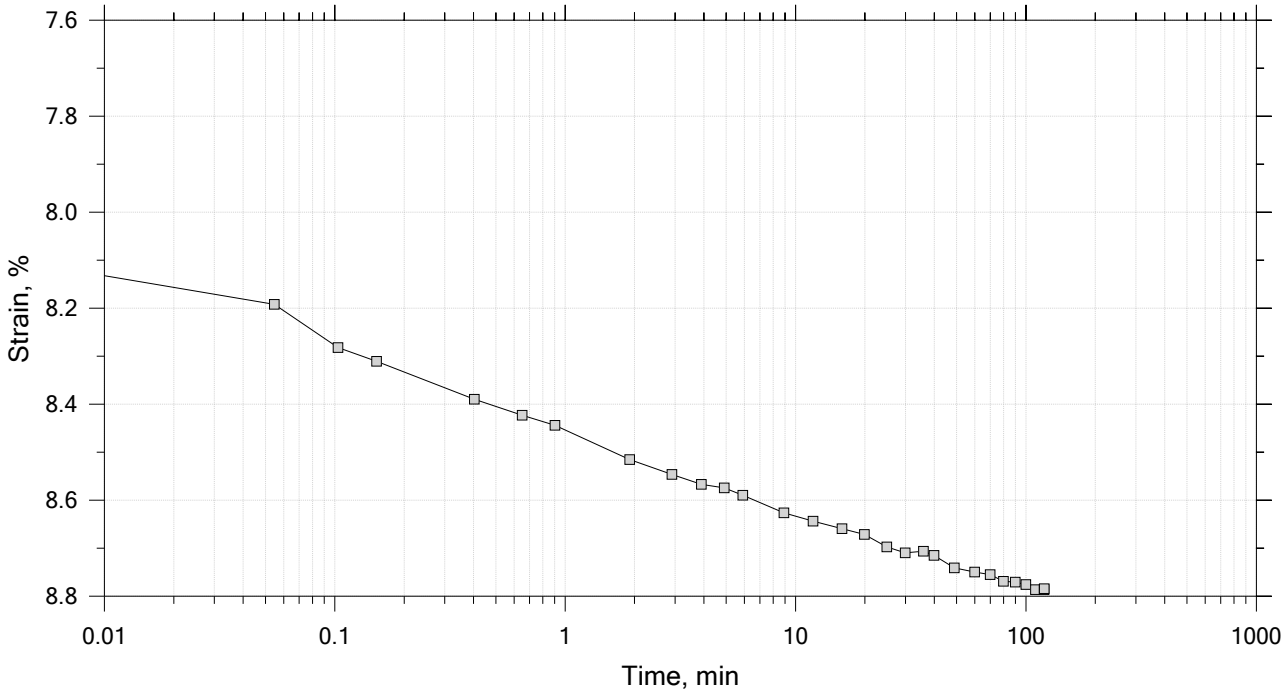


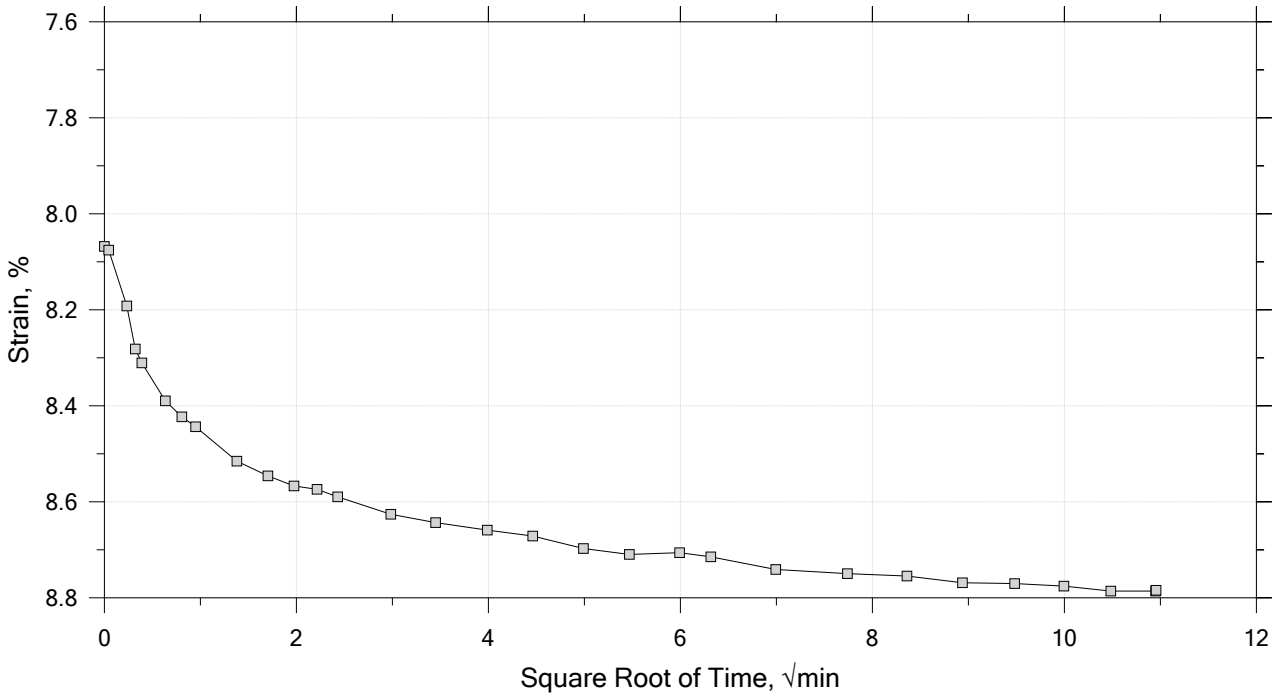


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.14	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
Test No.: IP-15A	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

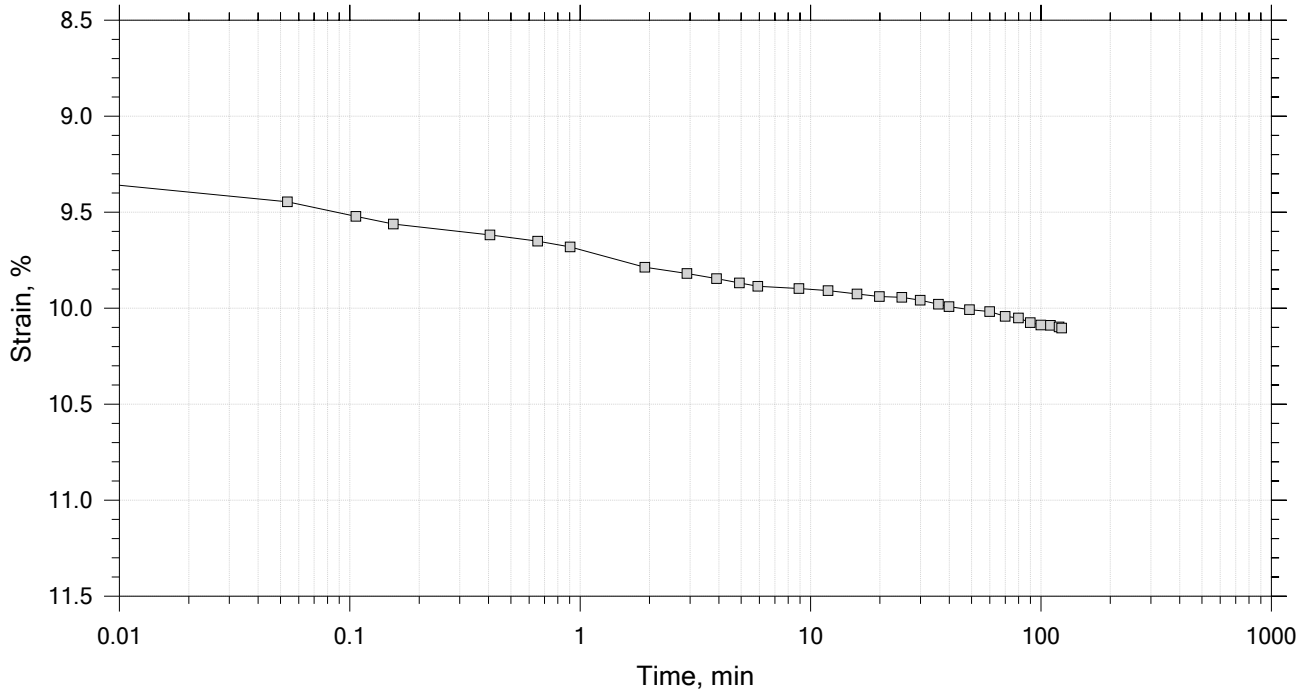


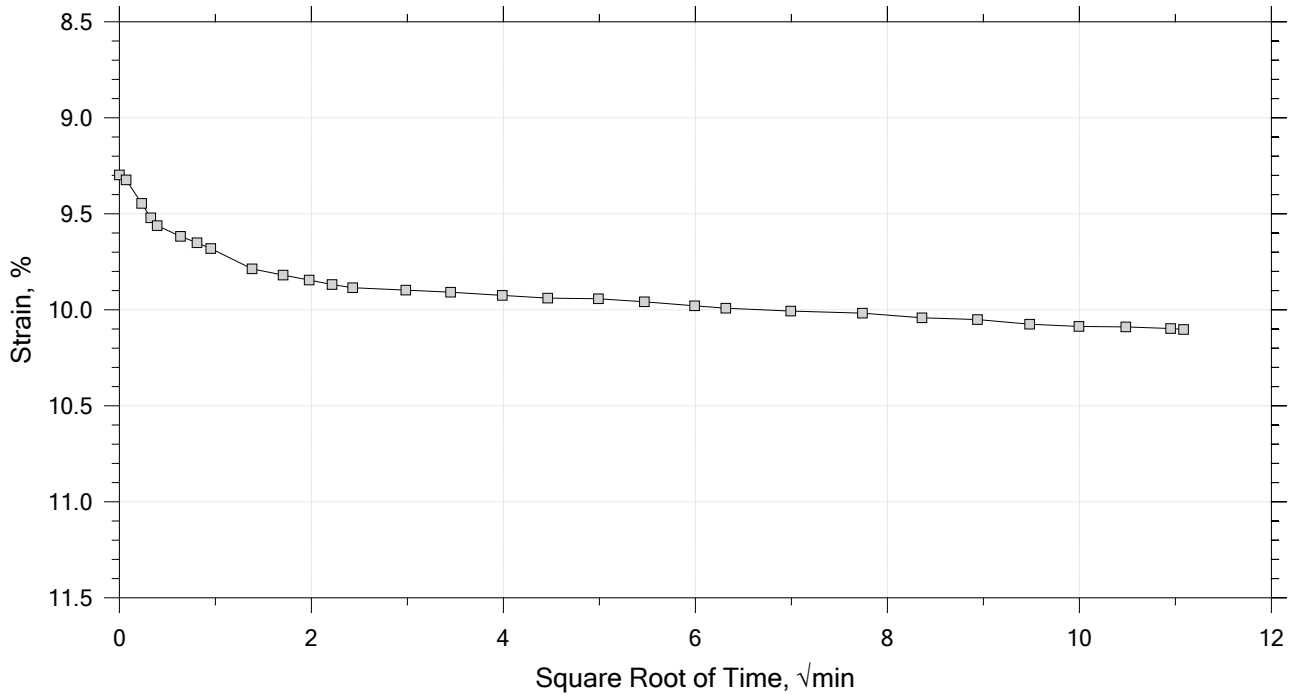


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

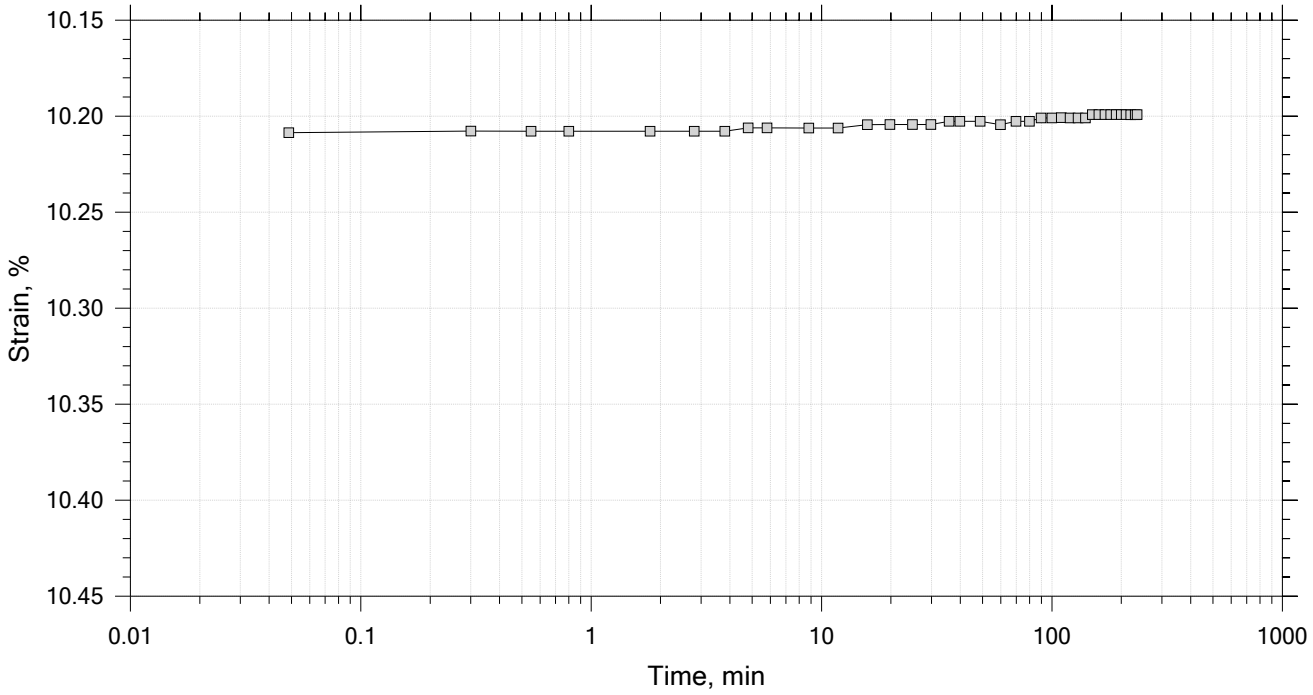


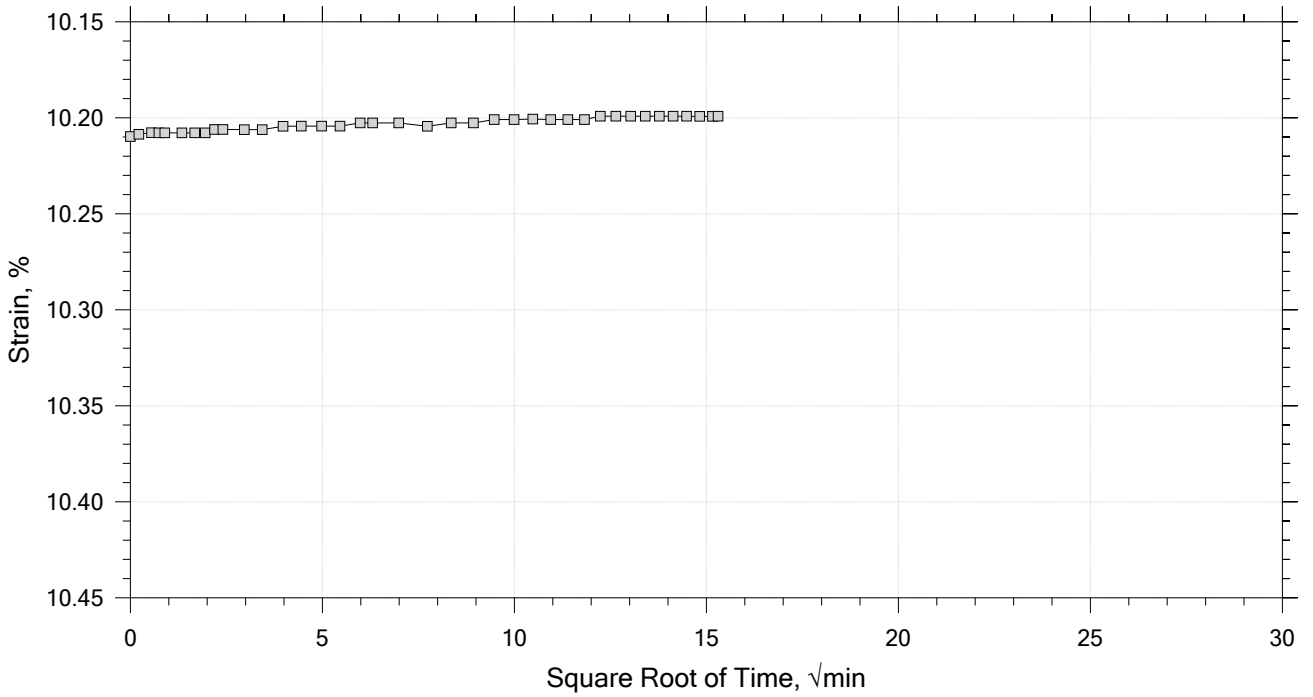


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.14	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
Test No.: IP-15A	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

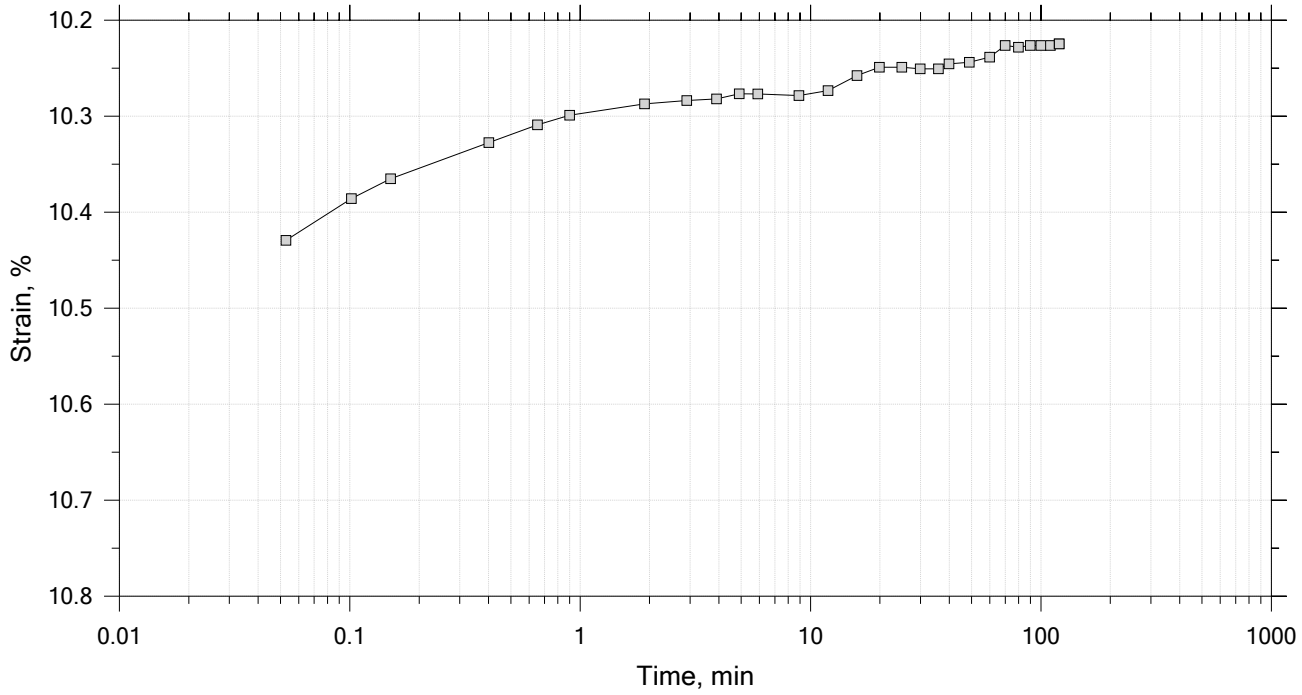


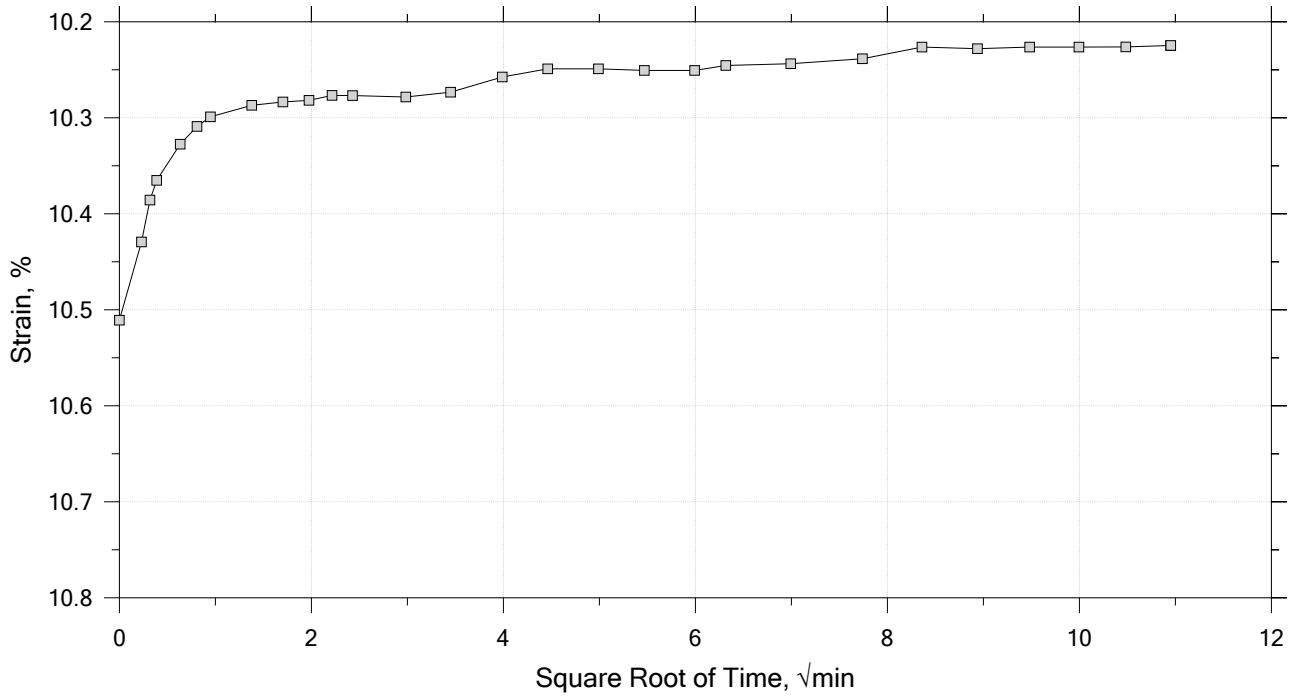


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

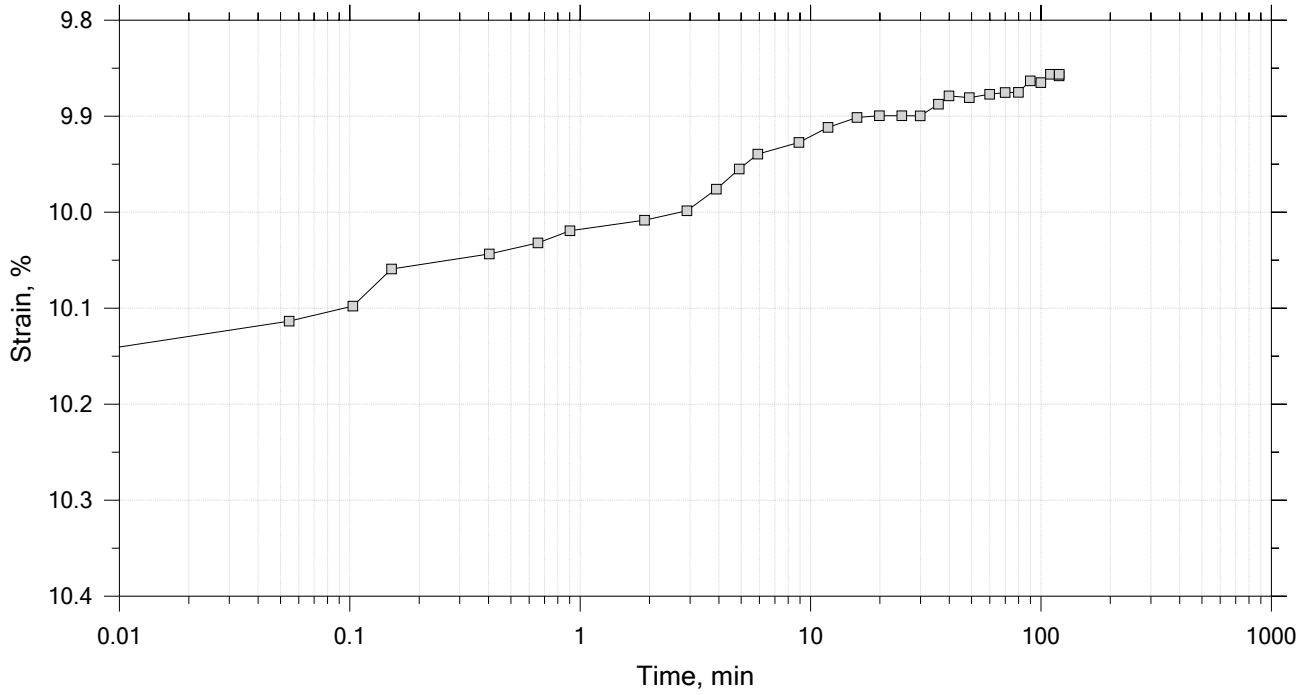


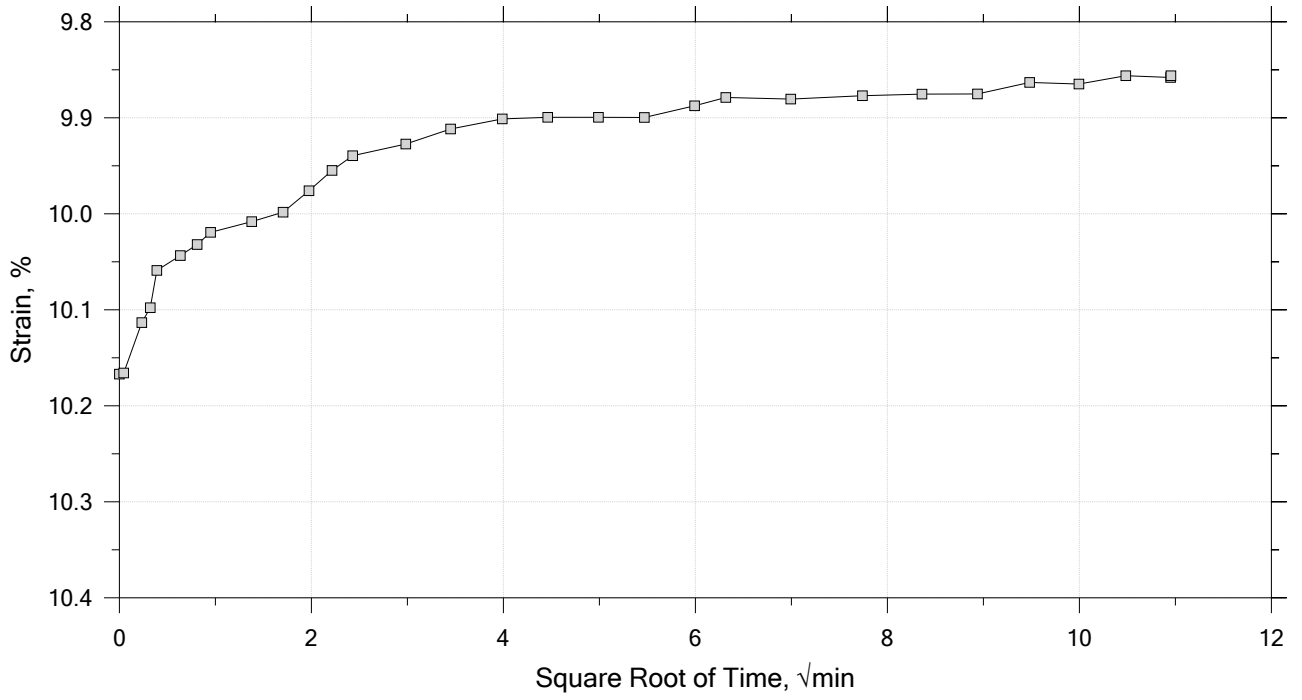


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

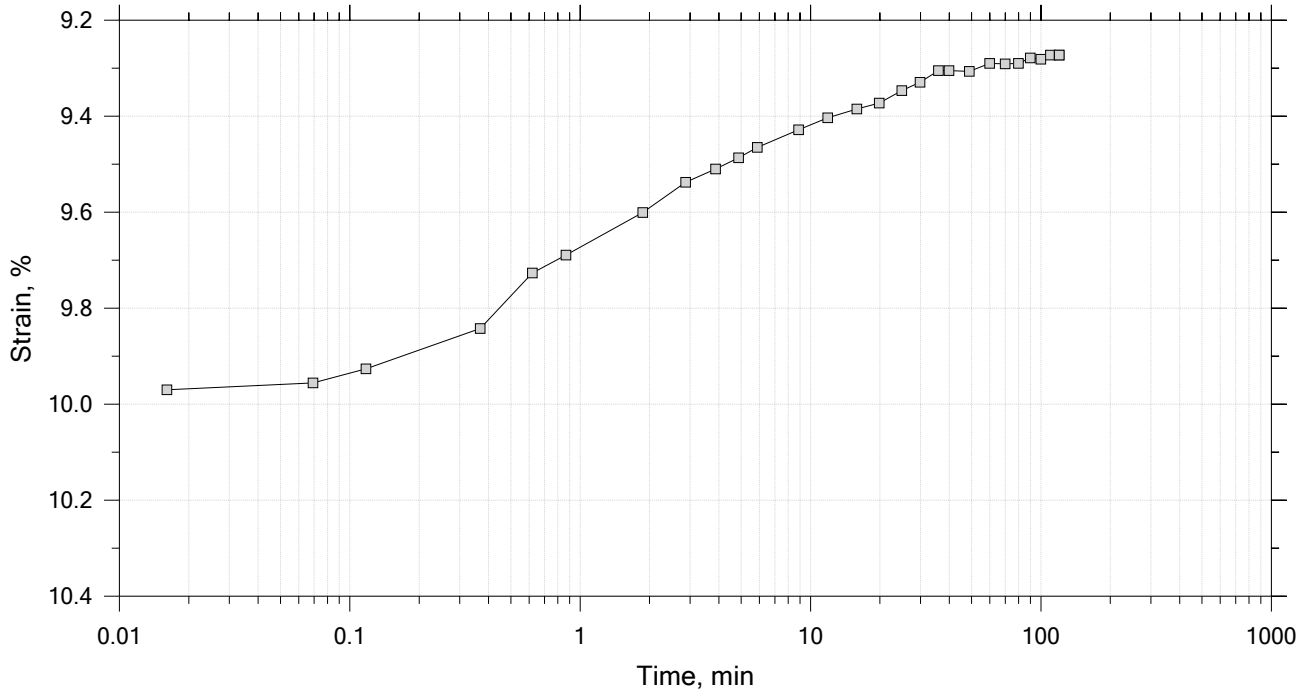


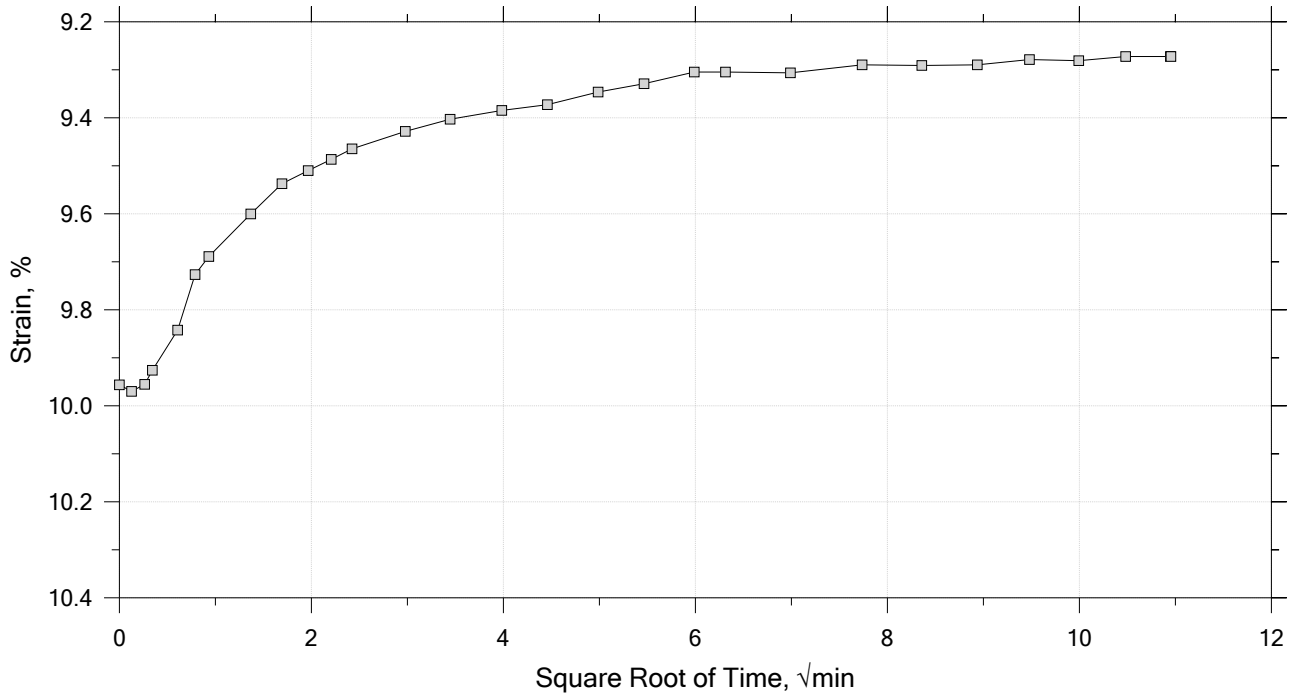


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.14	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
Test No.: IP-15A	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.14	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
Test No.: IP-15A	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 27
Initial Height: 1.00 in	Initial Void Ratio: 0.531	Plastic Limit: 15
Final Height: 0.96 in	Final Void Ratio: 0.47	Plasticity Index: 12

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	e0735	RING		VC96
Mass Container, gm	8.26	108.04	108.04	8.29
Mass Container + Wet Soil, gm	114.26	280.06	277.75	176.35
Mass Container + Dry Soil, gm	97.22	253.07	253.07	151.91
Mass Dry Soil, gm	88.96	145.03	145.03	143.62
Water Content, %	19.15	18.61	17.02	17.02
Void Ratio	---	0.53	0.47	---
Degree of Saturation, %	---	96.75	100.00	---
Dry Unit Weight, pcf	---	112.56	117.25	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.14	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
	Test No.: IP-15A	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy clay		
	Remarks: System F, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0651	0.006186	0.521	0.619	75.459	3.23e-07	9.50e-02	8.28e-05
2	0.125	0.01090	0.514	1.09	34.297	7.03e-07	7.86e-02	1.49e-04
3	0.250	0.01965	0.501	1.97	45.107	5.27e-07	7.00e-02	9.96e-05
4	0.500	0.02892	0.487	2.89	4.940	4.73e-06	3.71e-02	4.73e-04
5	1.00	0.03882	0.472	3.88	73.274	3.13e-07	1.98e-02	1.67e-05
6	2.00	0.04977	0.455	4.98	2.291	9.78e-06	1.10e-02	2.89e-04
7	4.00	0.06511	0.431	6.51	1.461	1.49e-05	7.67e-03	3.09e-04
8	8.00	0.07687	0.413	7.69	5.830	3.63e-06	2.94e-03	2.88e-05
9	16.0	0.08784	0.396	8.78	4.482	4.61e-06	1.37e-03	1.71e-05
10	32.0	0.1010	0.376	10.1	6.140	3.28e-06	8.24e-04	7.28e-06
11	16.0	0.1020	0.375	10.2	149.568	1.32e-07	-6.02e-05	-2.15e-08
12	4.00	0.1022	0.374	10.2	2.395	8.26e-06	-2.12e-05	-4.72e-07
13	1.00	0.09856	0.380	9.86	8.635	2.30e-06	1.23e-03	7.62e-06
14	0.250	0.09272	0.389	9.27	4.986	4.03e-06	7.78e-03	8.45e-05

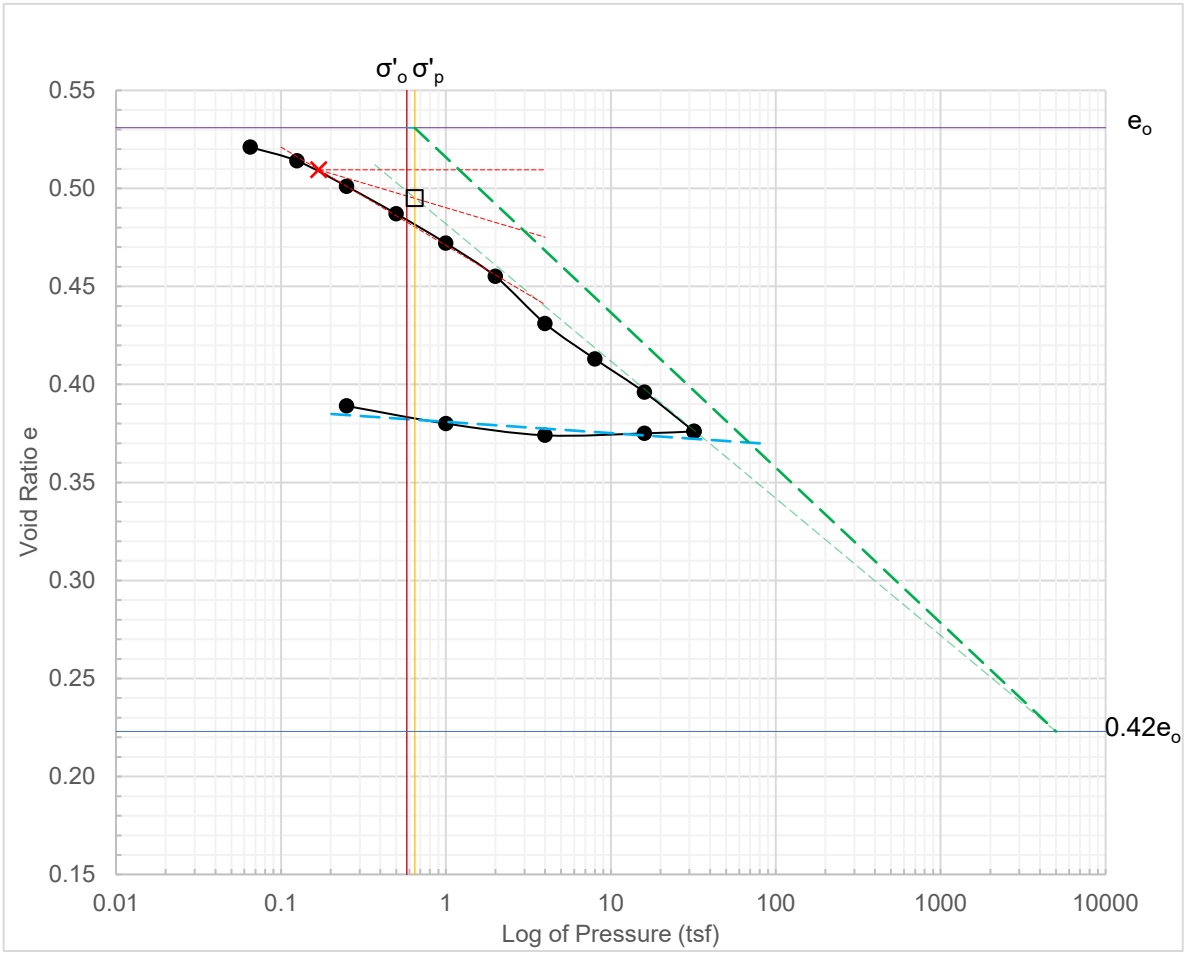
GeoTesting EXPRESS

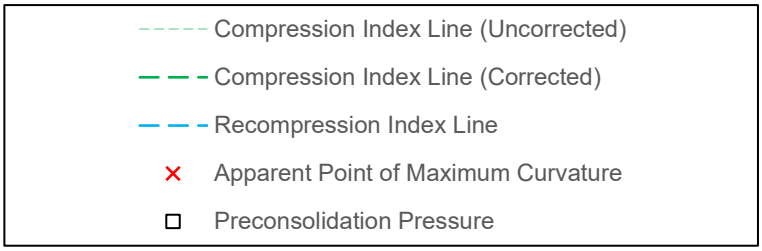
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.14	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.4-13.5 ft
Test No.: IP-15A	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy clay		
Remarks: System F, Swell Pressure = 0.0651 tsf		
Displacement at End of Increment		

Boring: B-4.14

Depth: 13.4'-13.5'

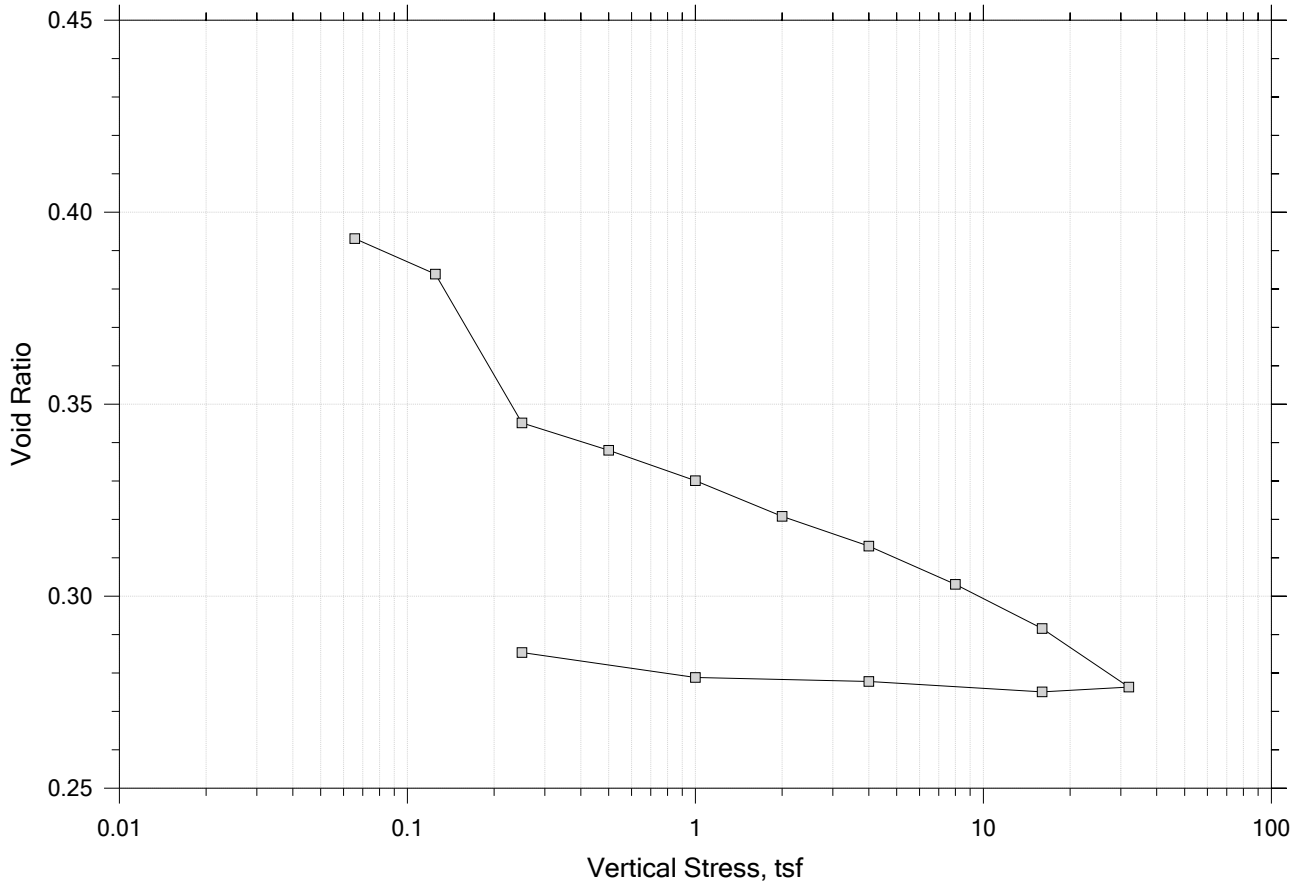
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.58
Preconsolidation Pressure, σ'_p (tsf) = 0.65
Compression Index, C_c = 0.079
Recompression Index, C_r = 0.0058

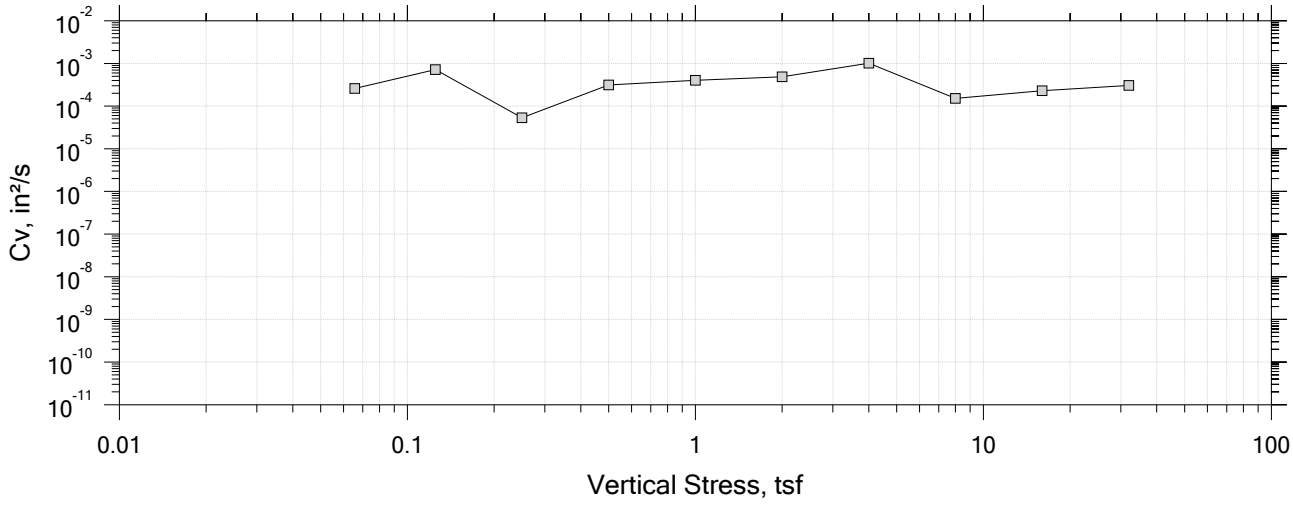




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

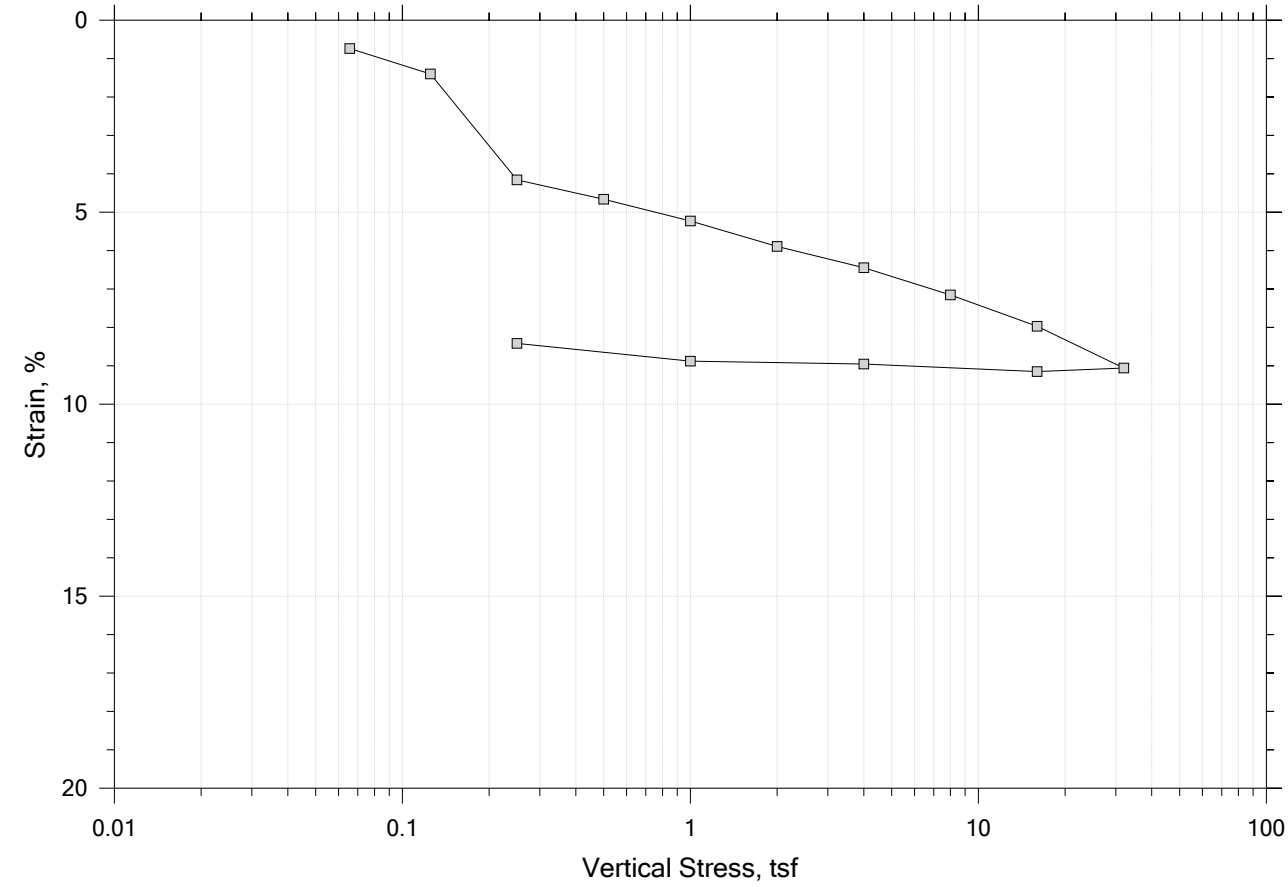


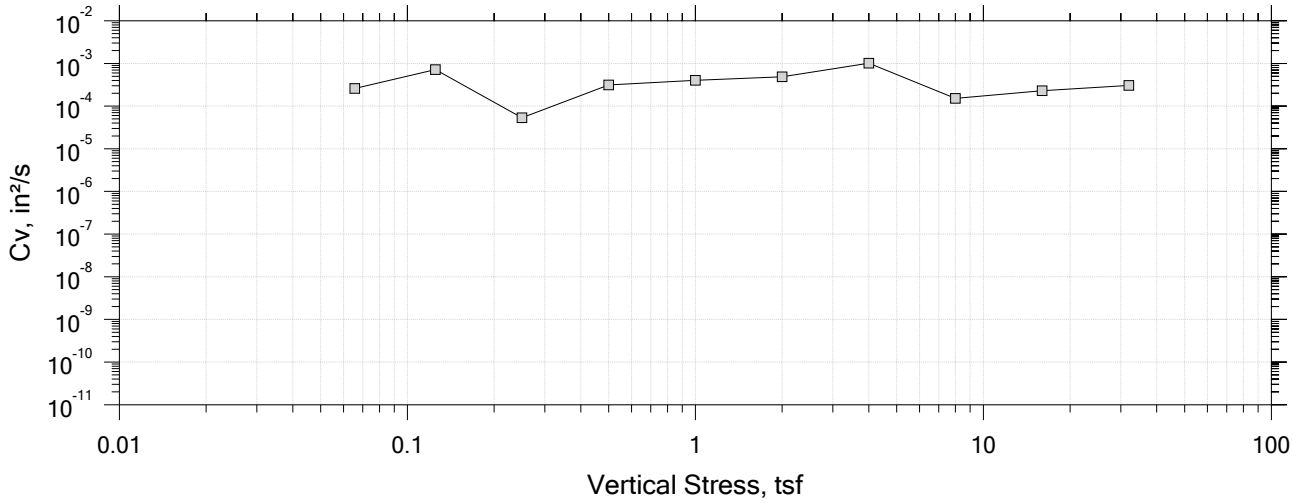


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

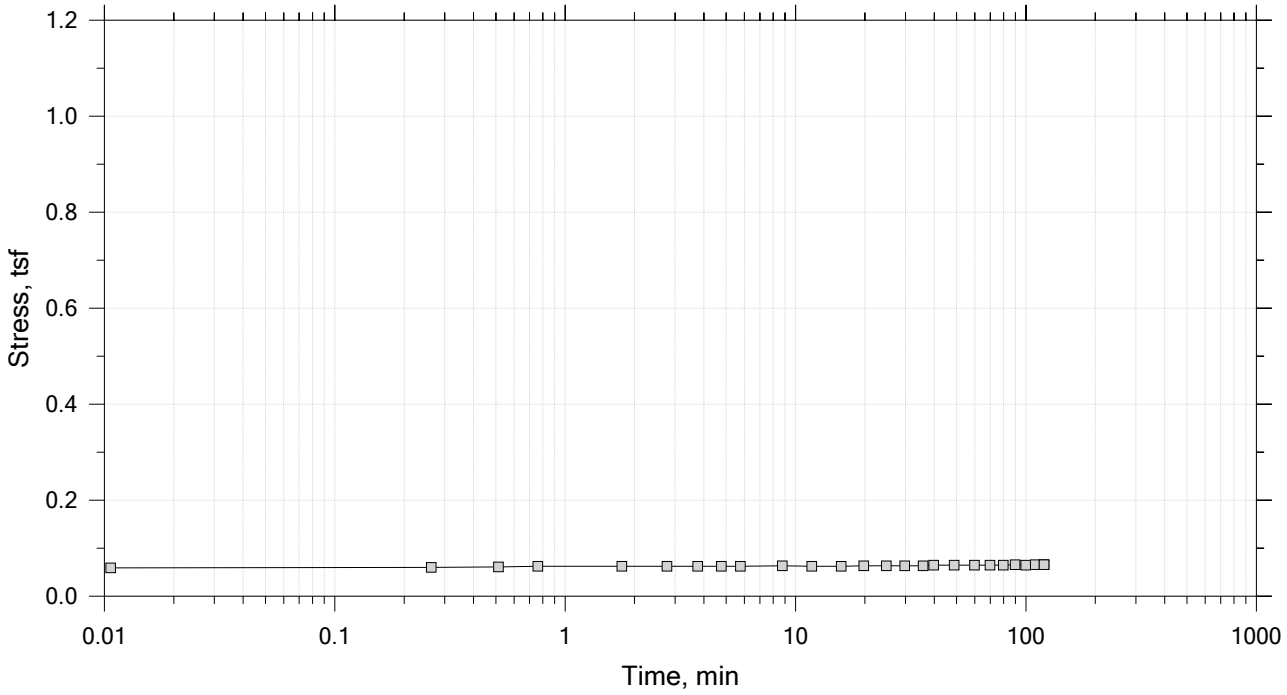


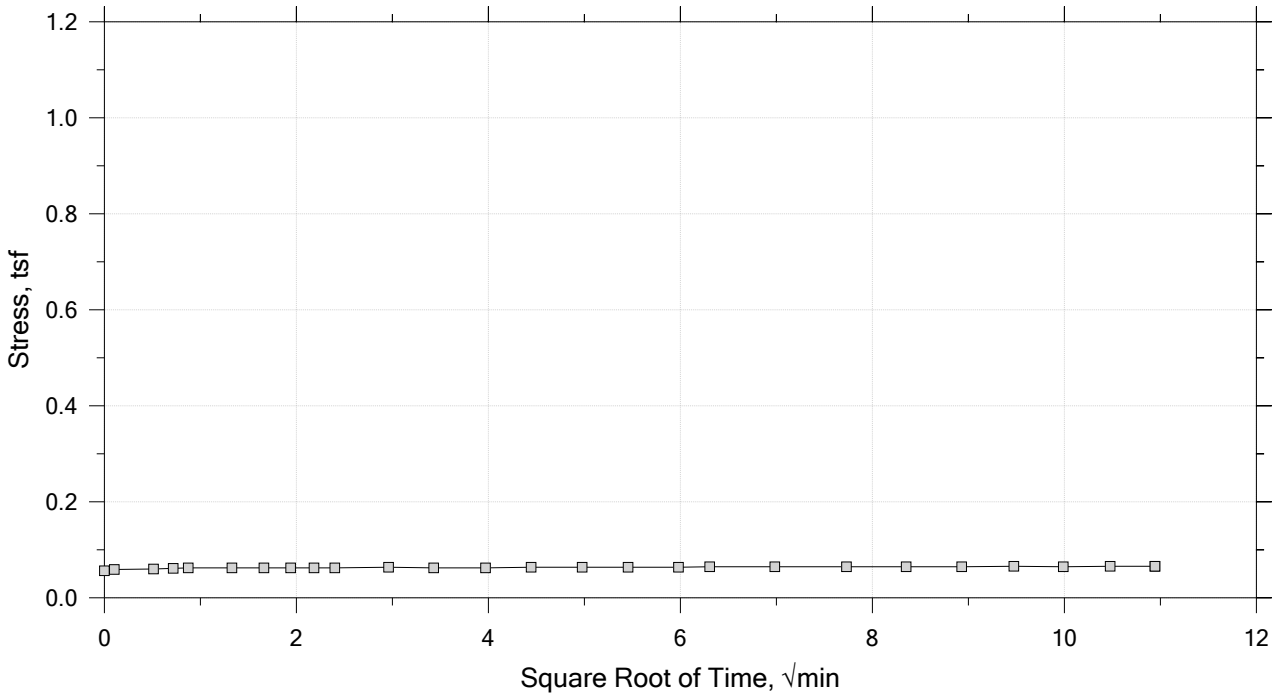


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0656 tsf

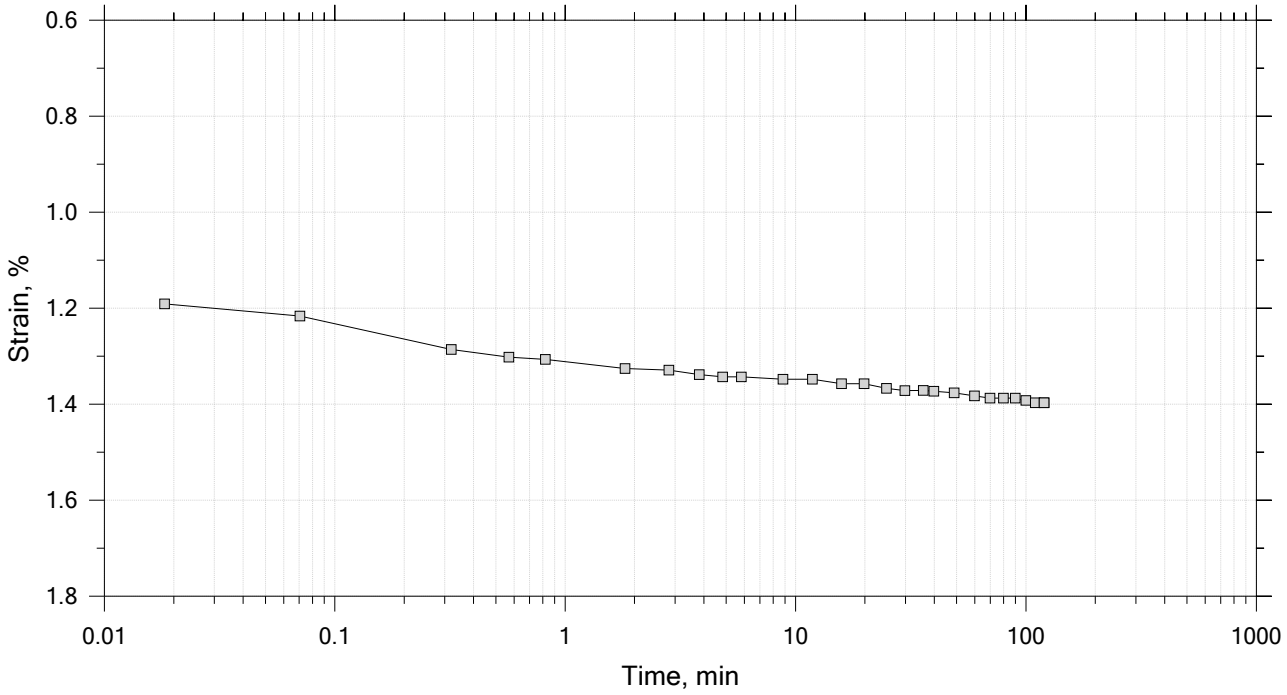


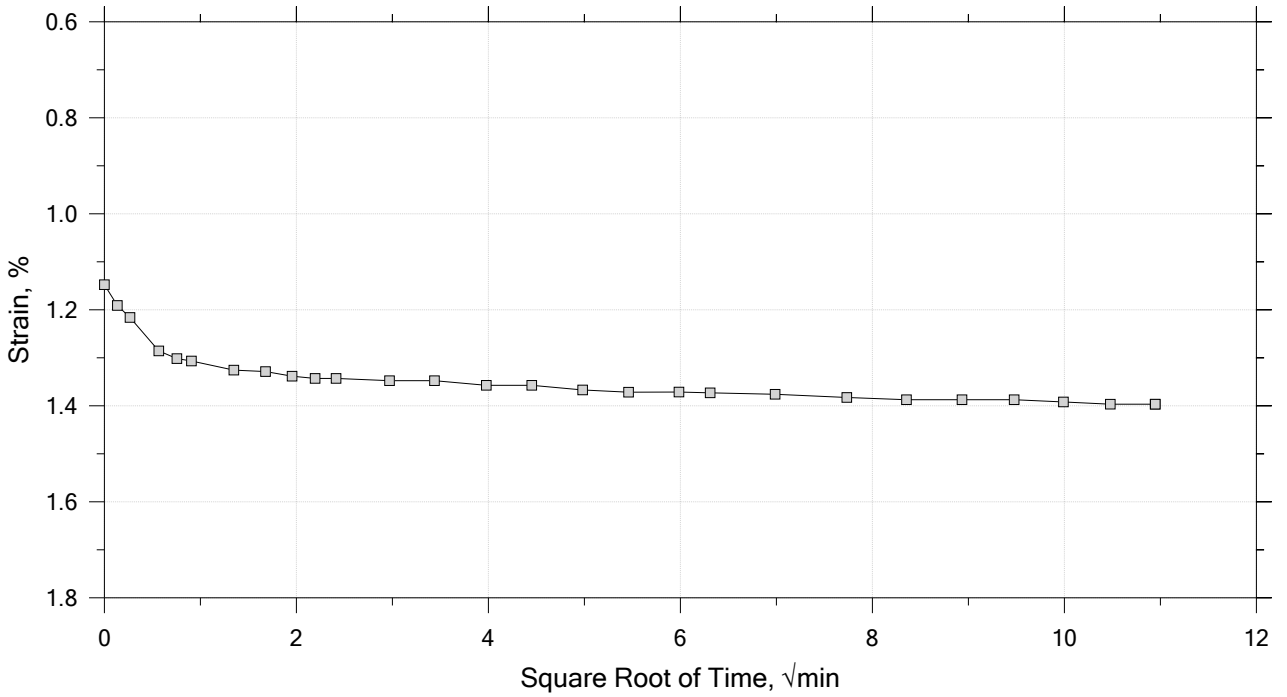


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





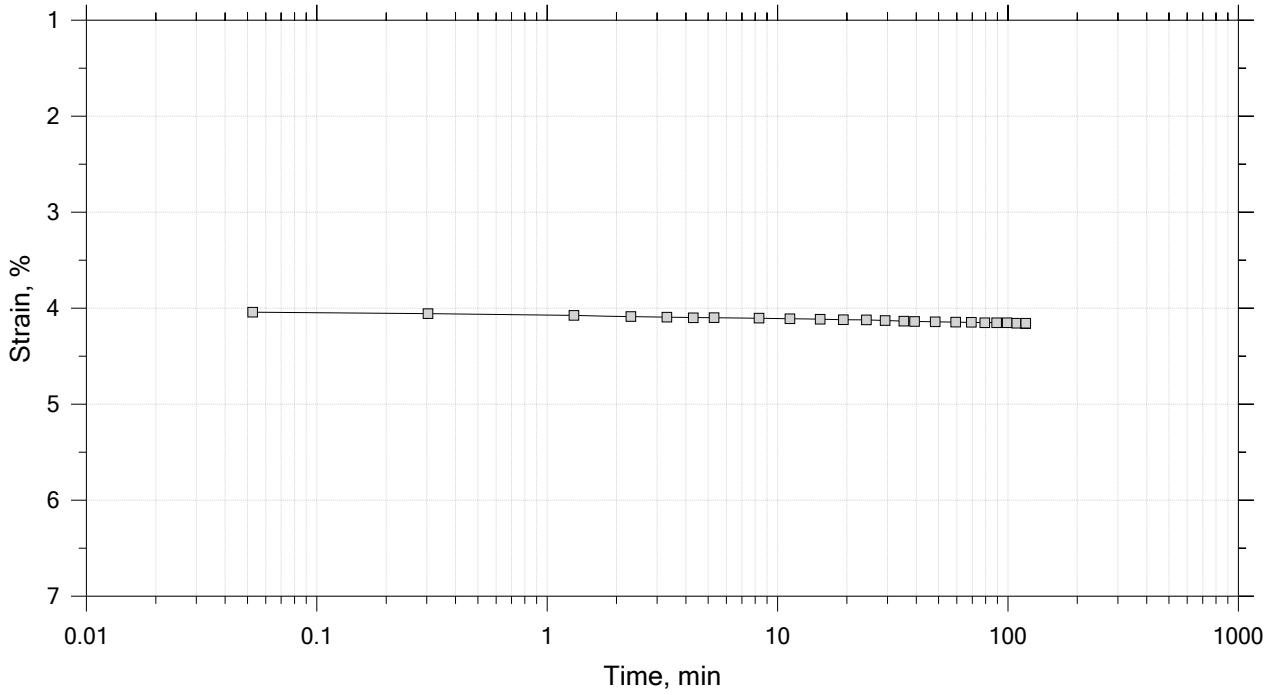
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

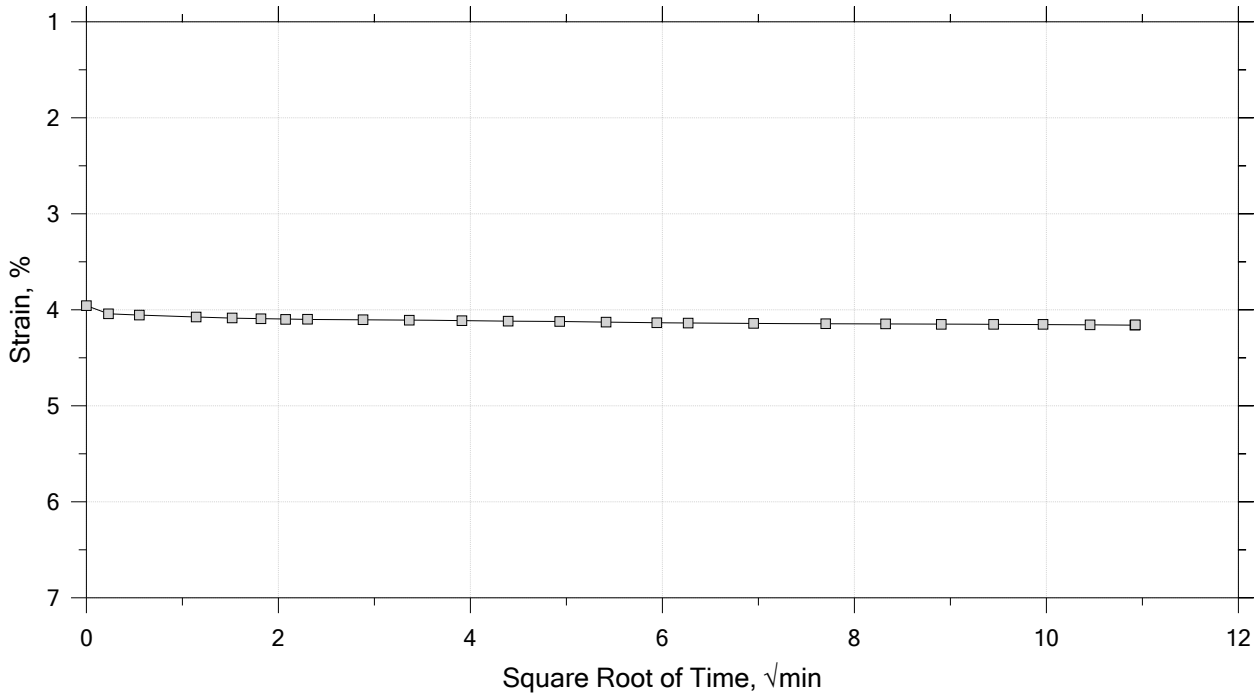
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





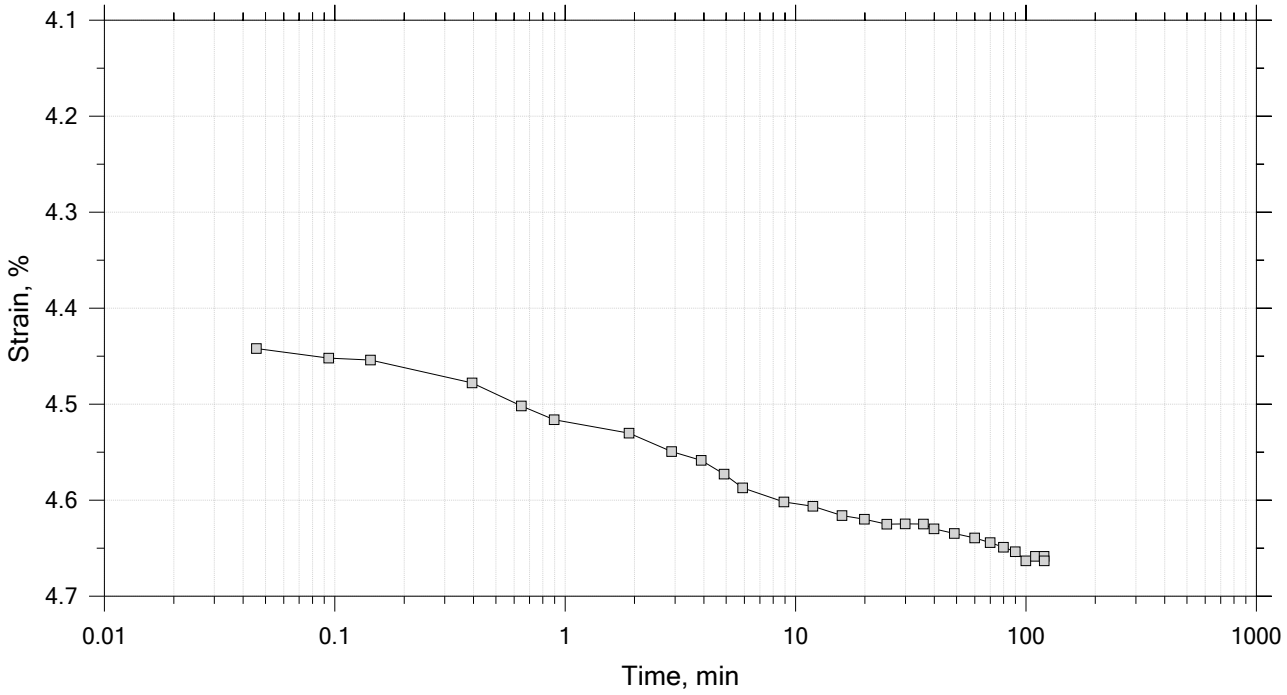
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

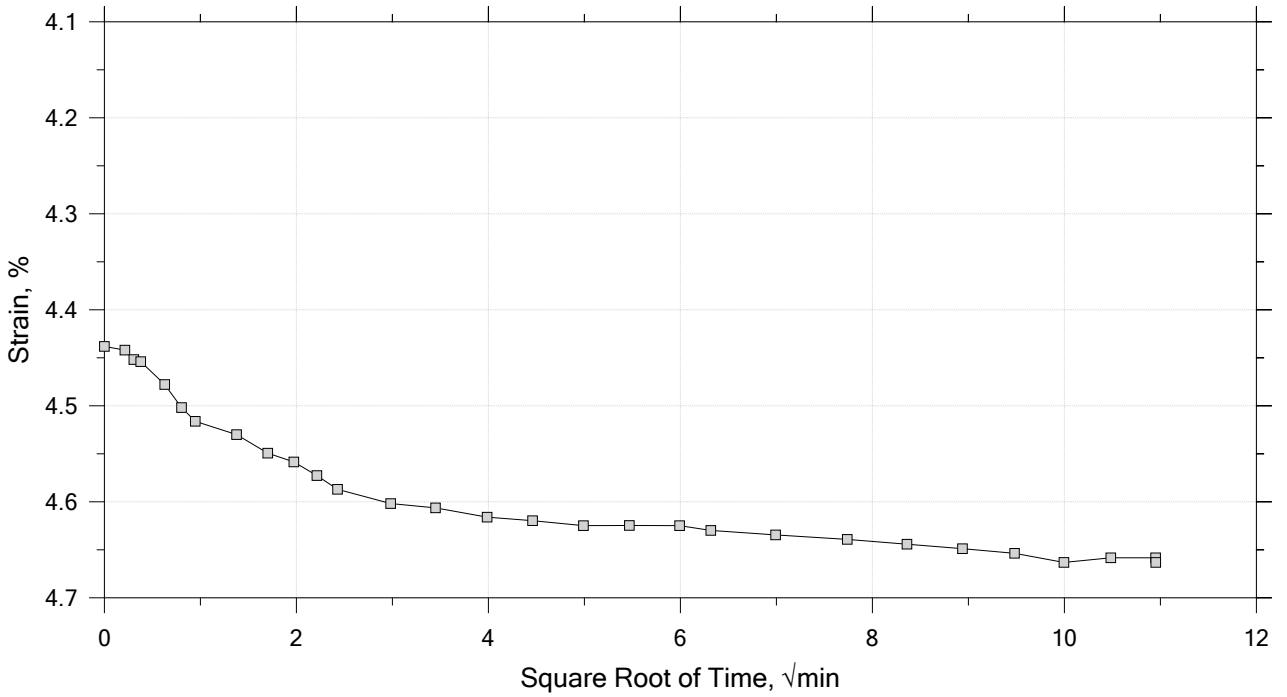
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





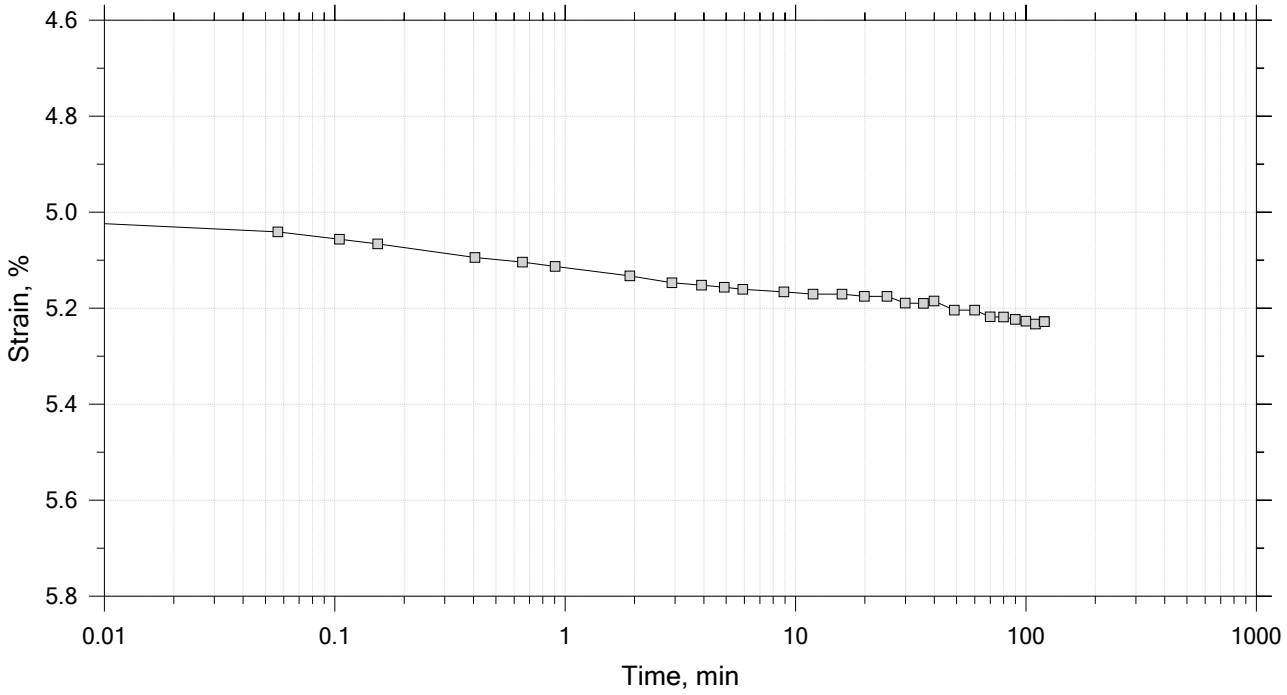
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

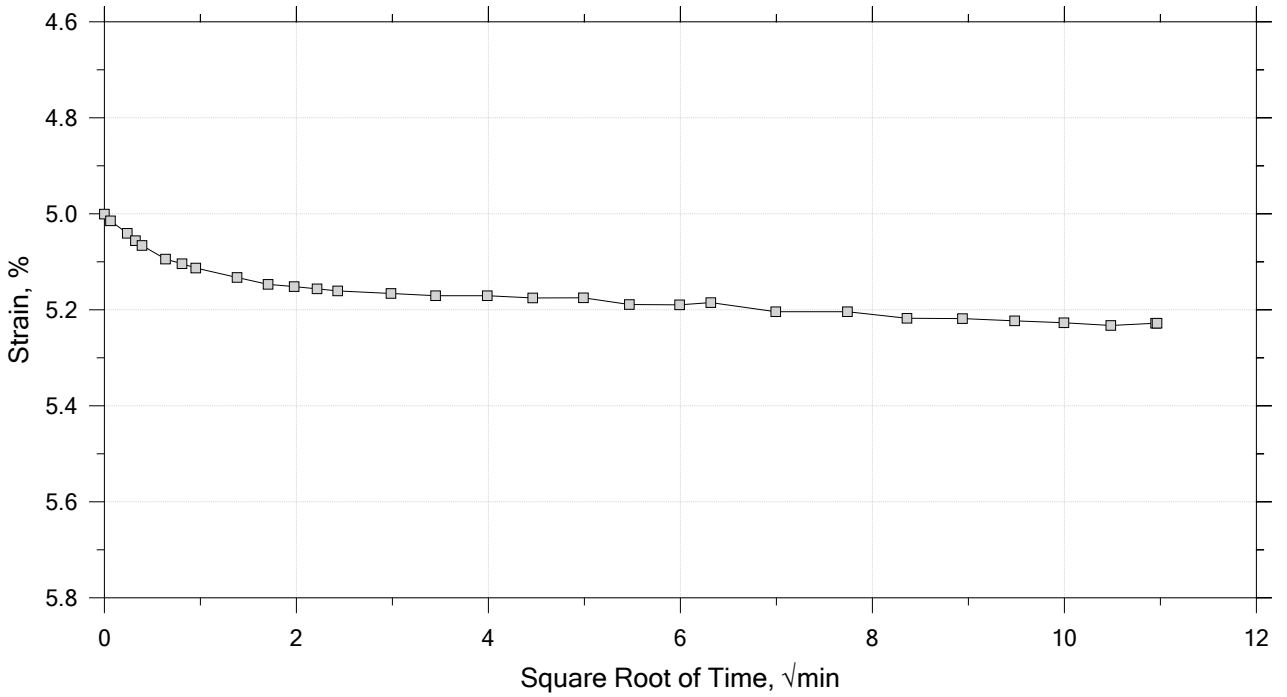
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





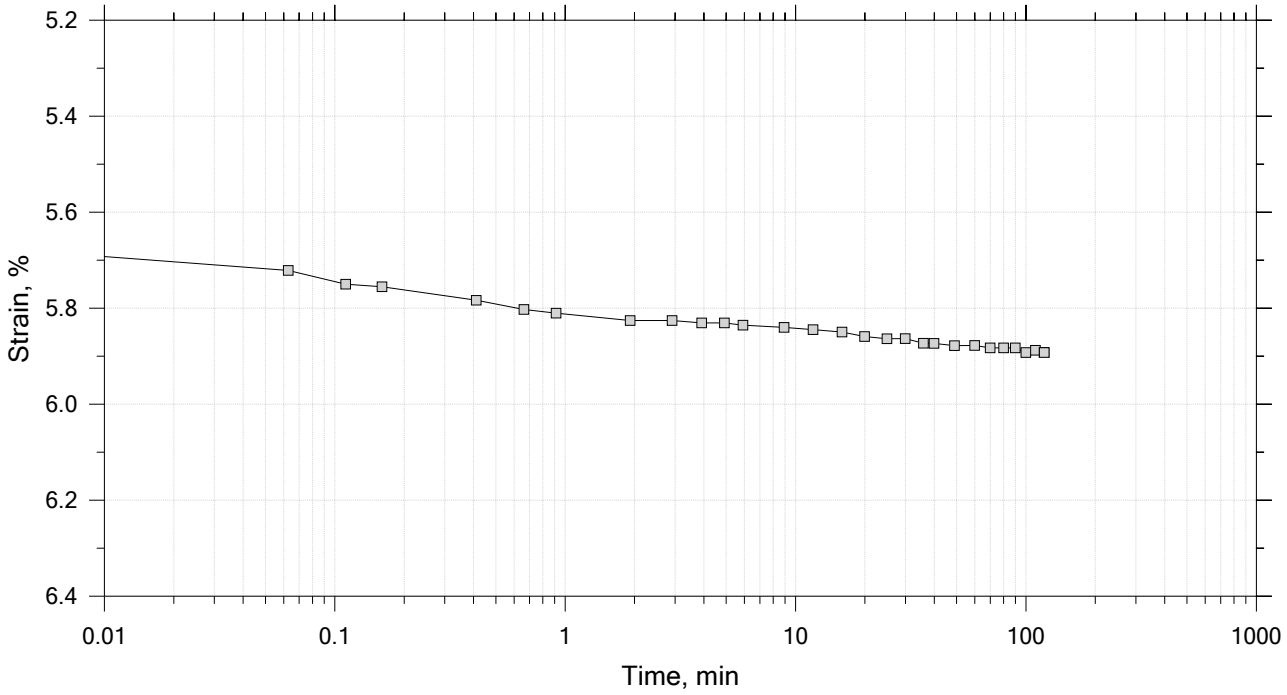
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
Test No.: IP-16-1	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System LTII-TX-011, Swell Pressure =		

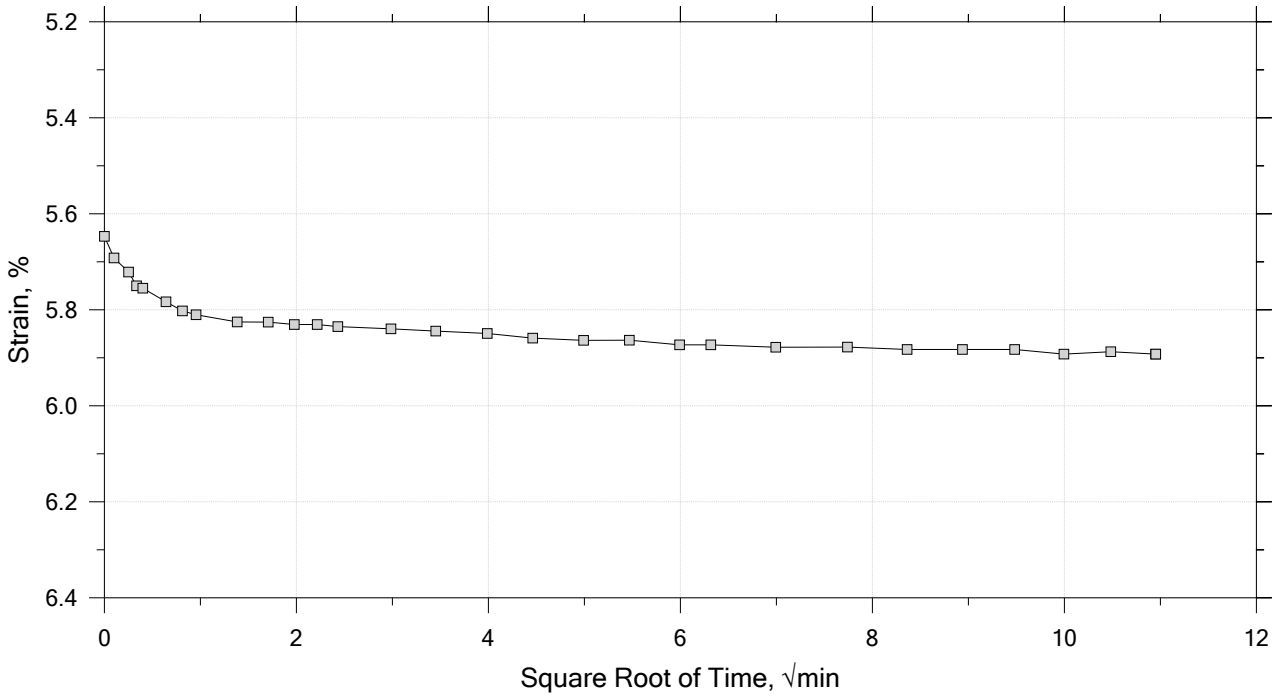
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





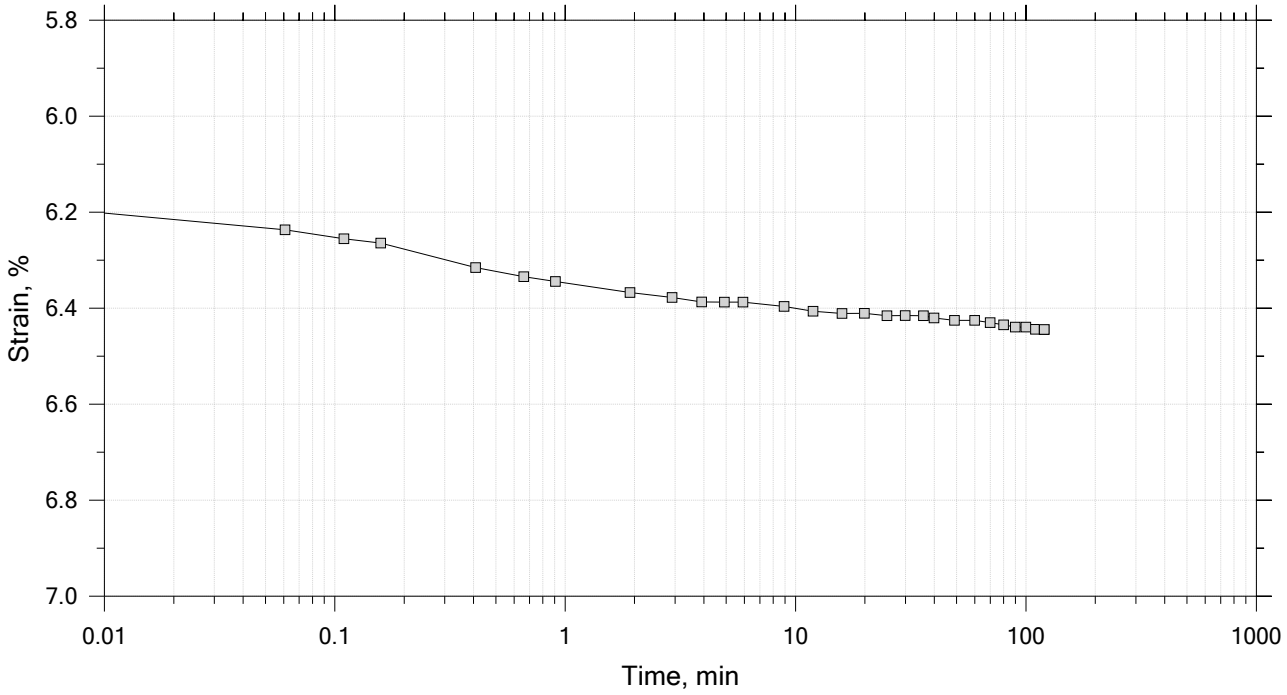
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

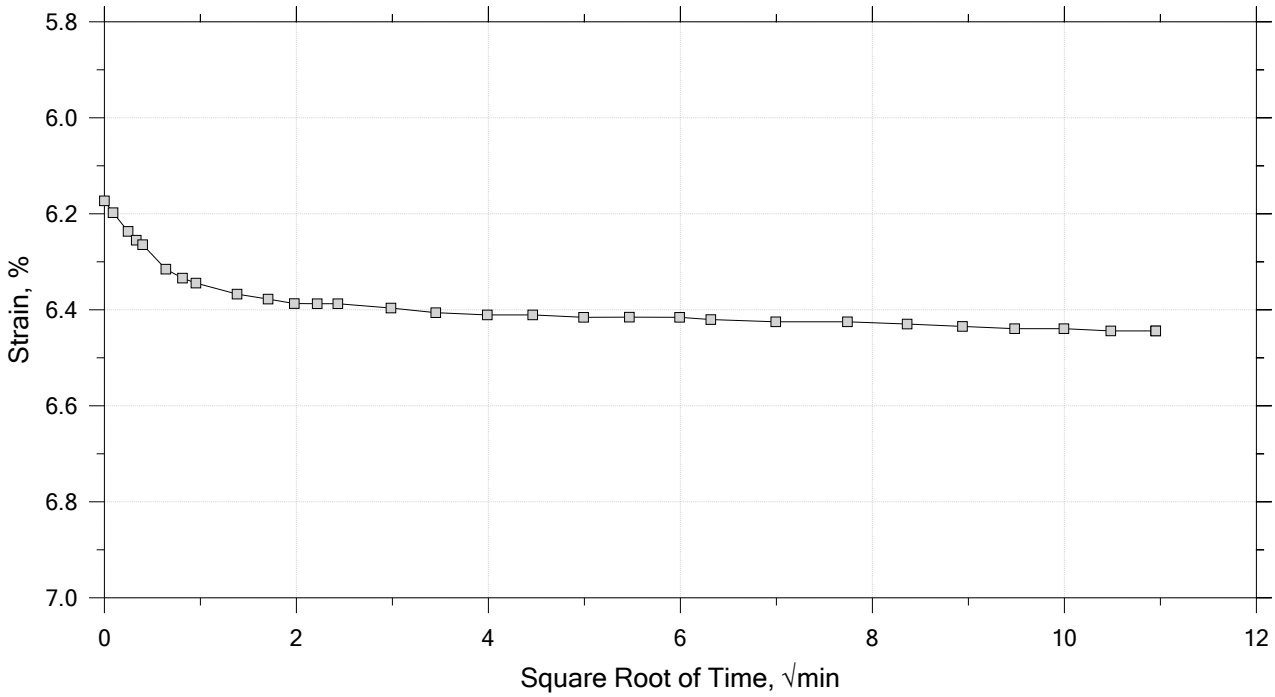
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





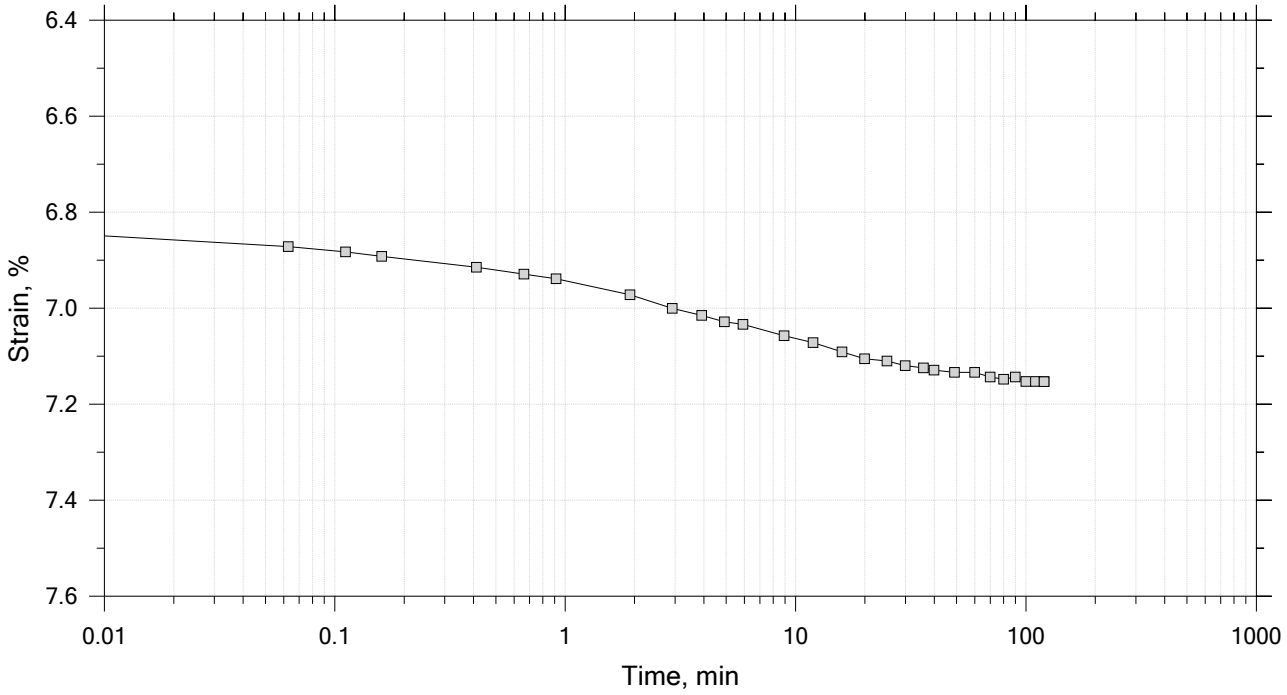
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

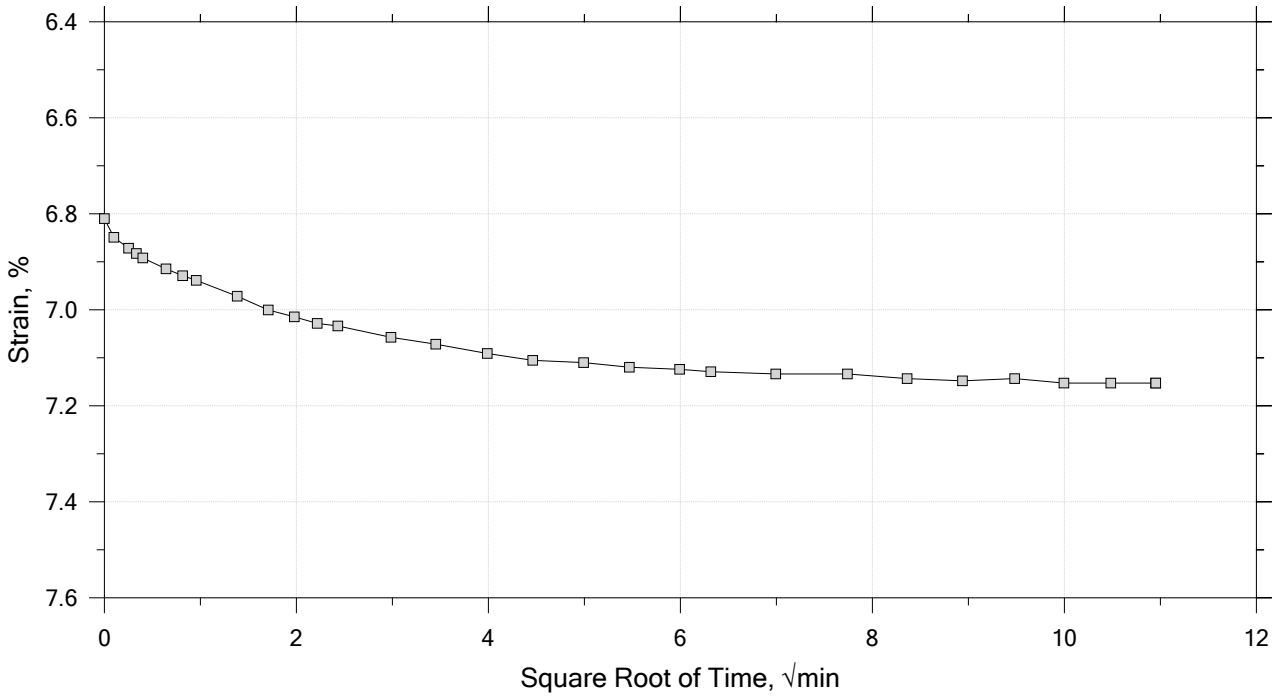
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

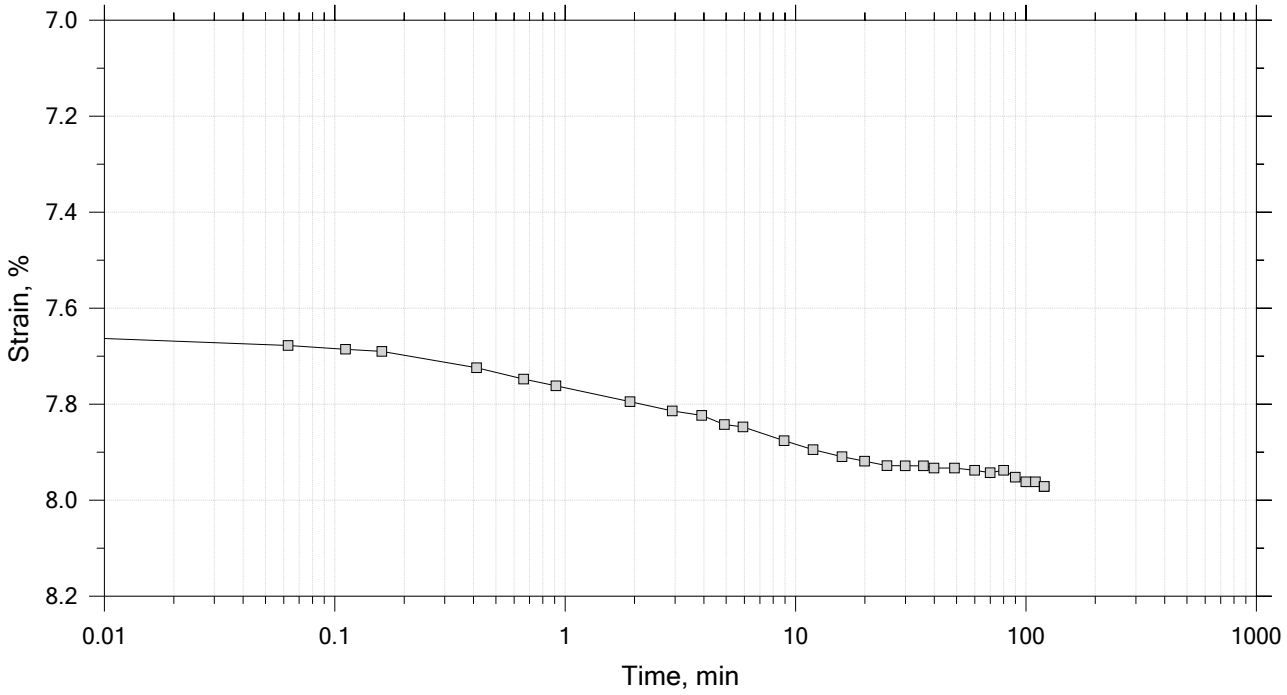


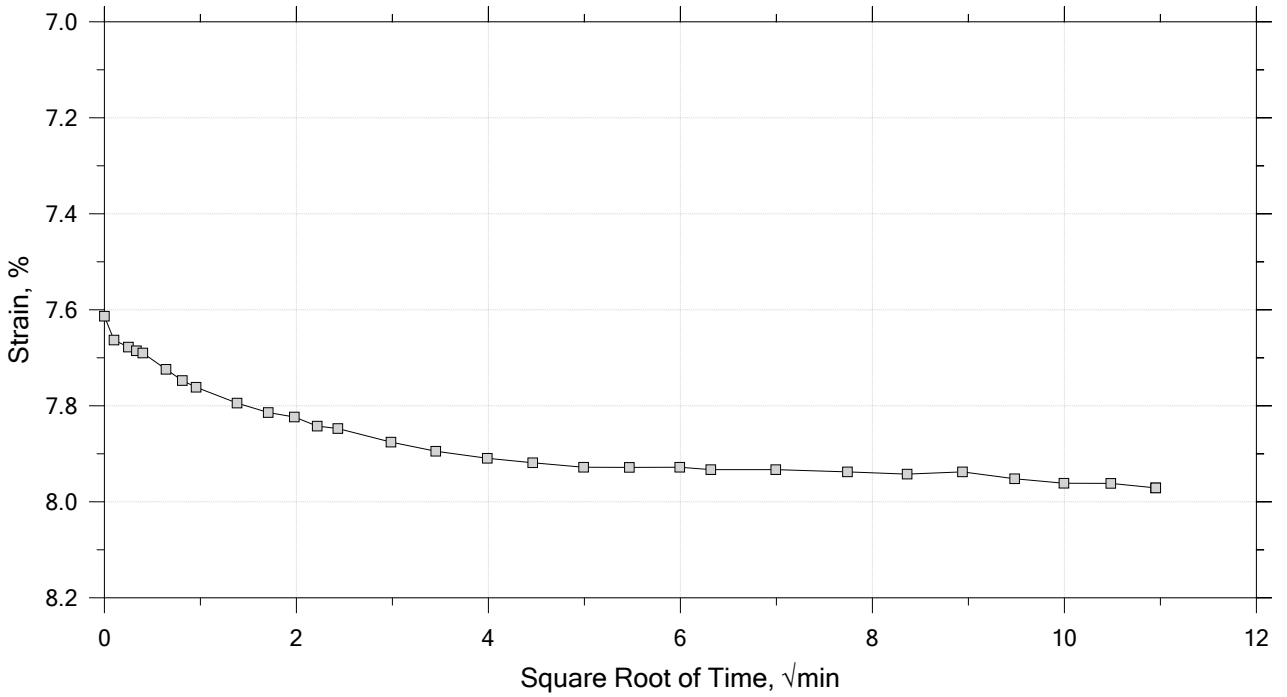


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

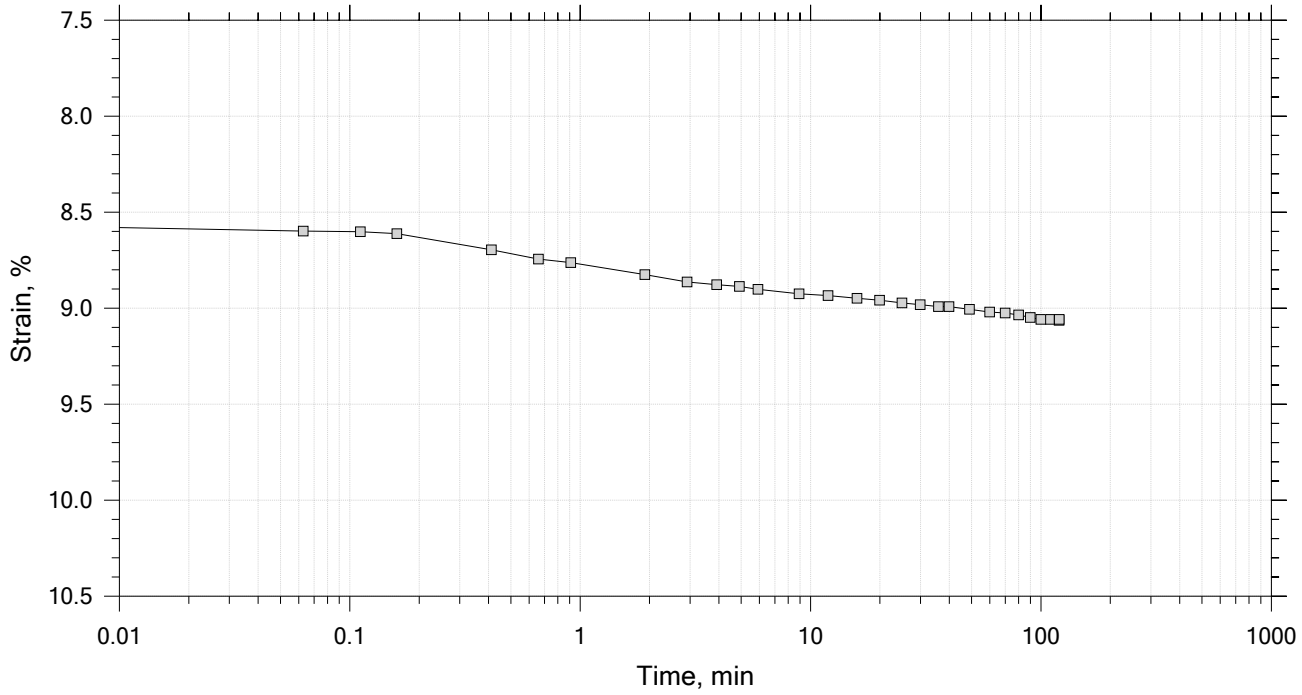


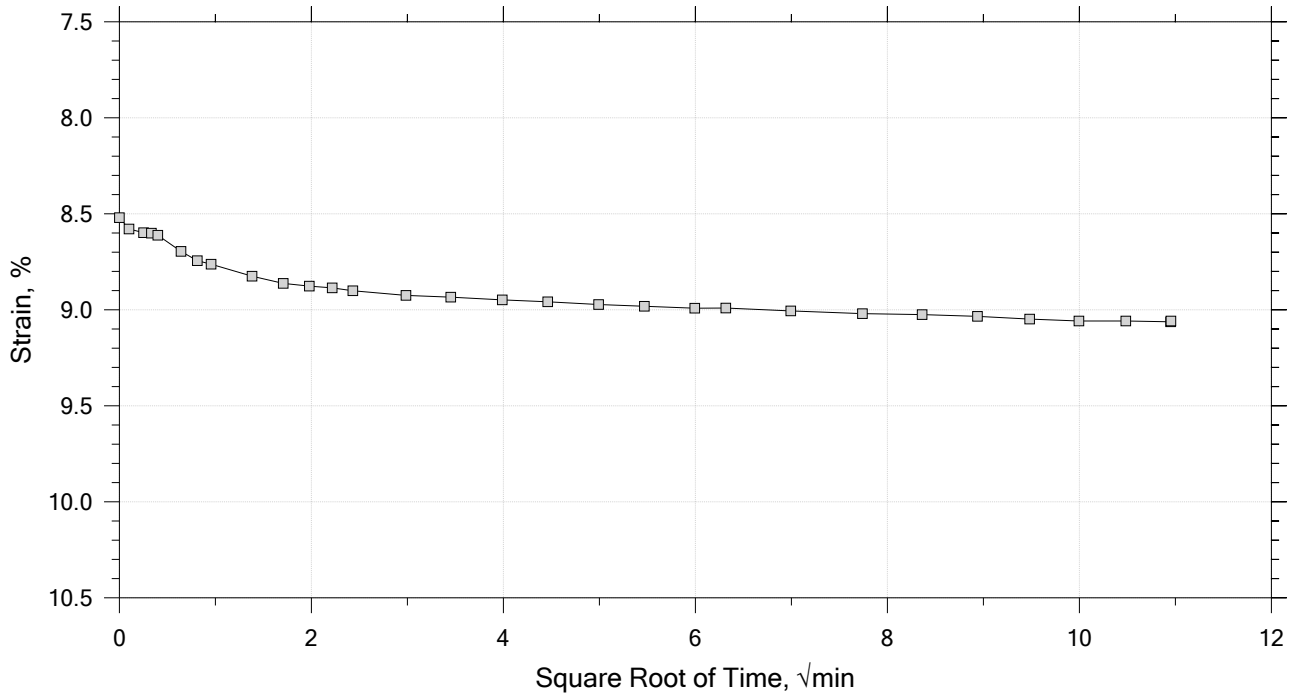


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

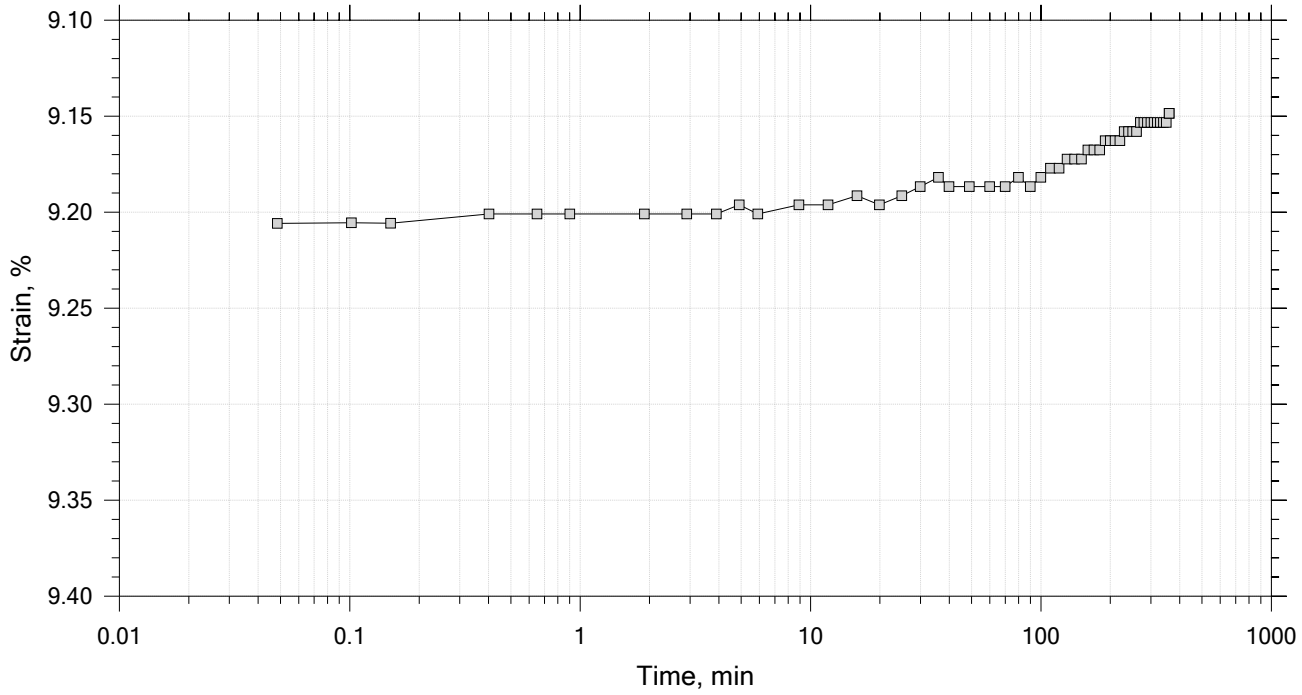


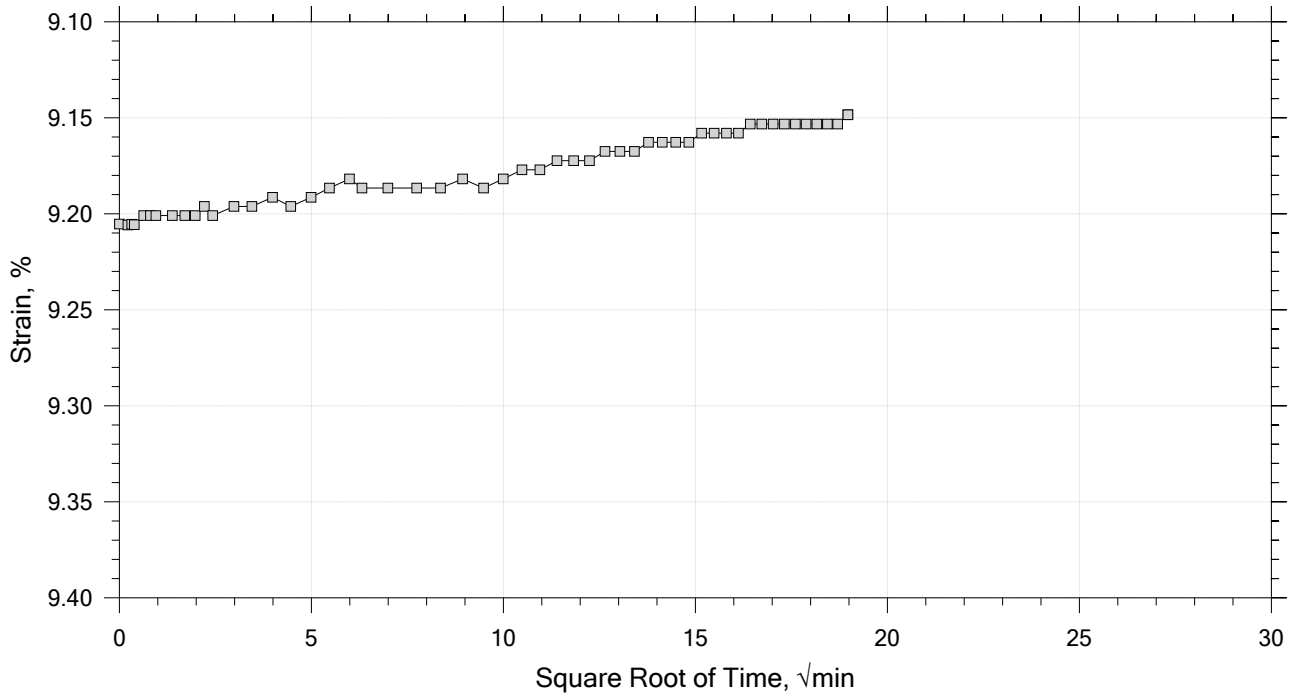


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

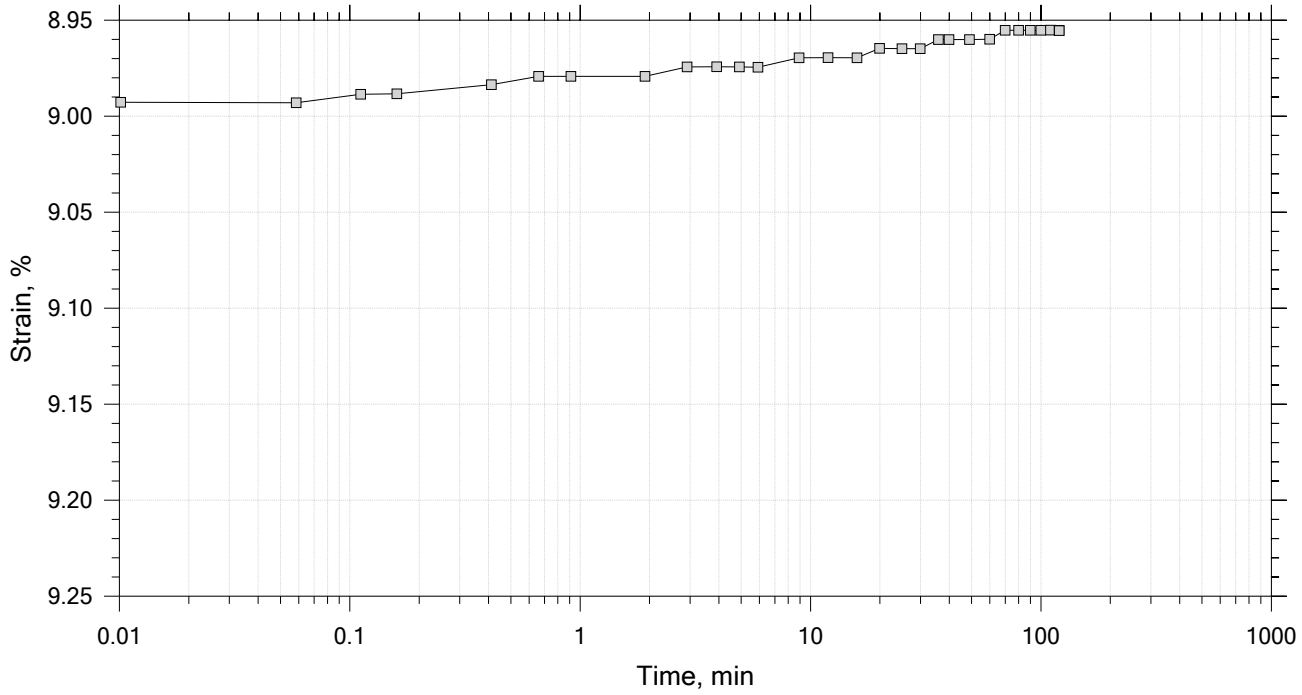


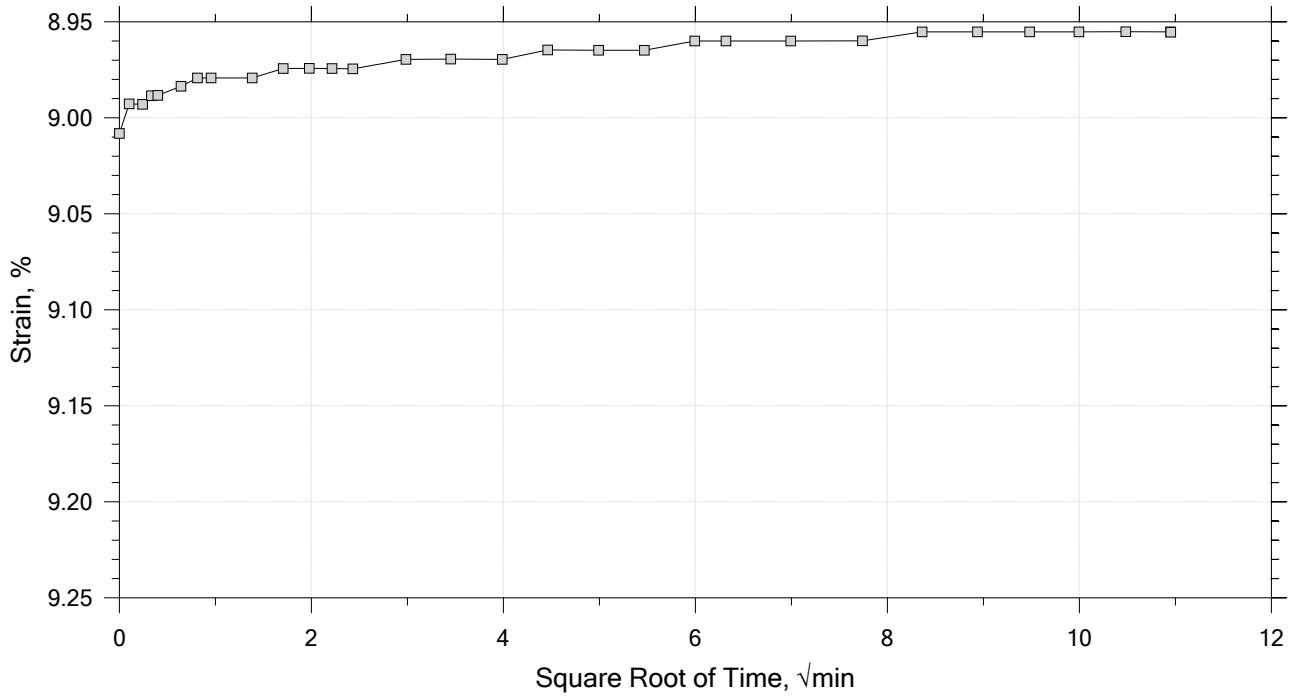


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
Test No.: IP-16-1	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





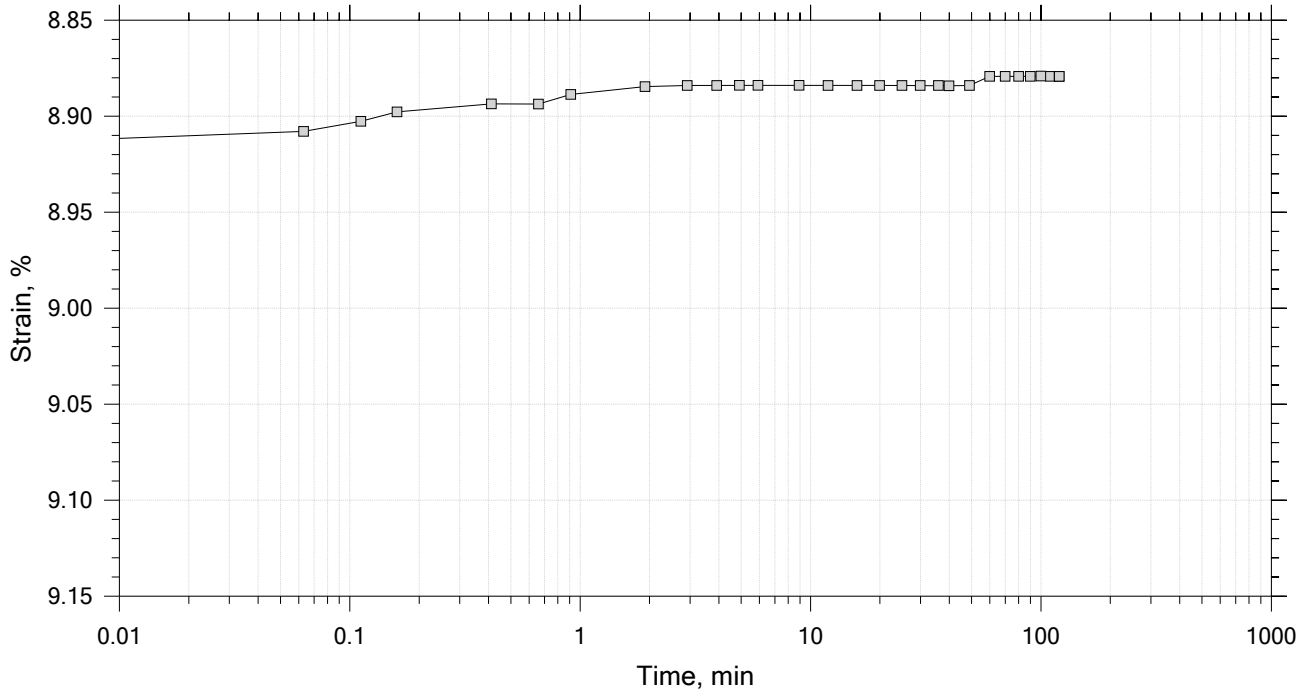
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
Test No.: IP-16-1	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System LTII-TX-011, Swell Pressure =		

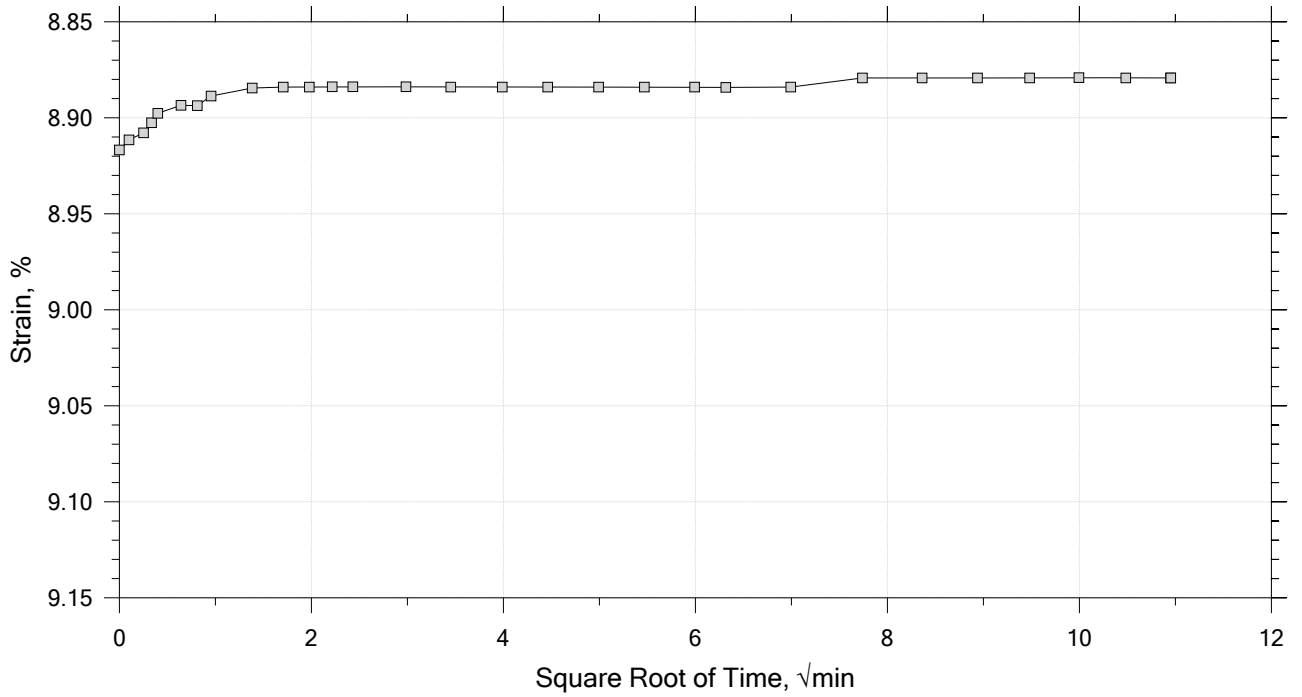
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

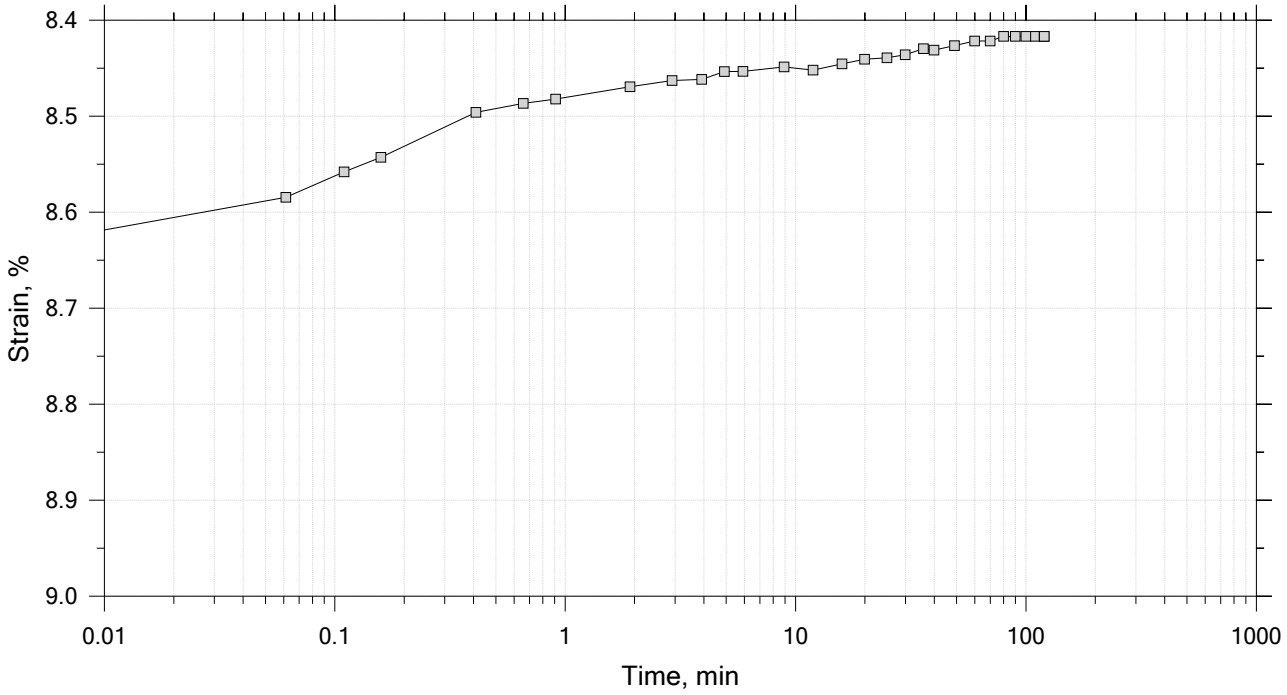


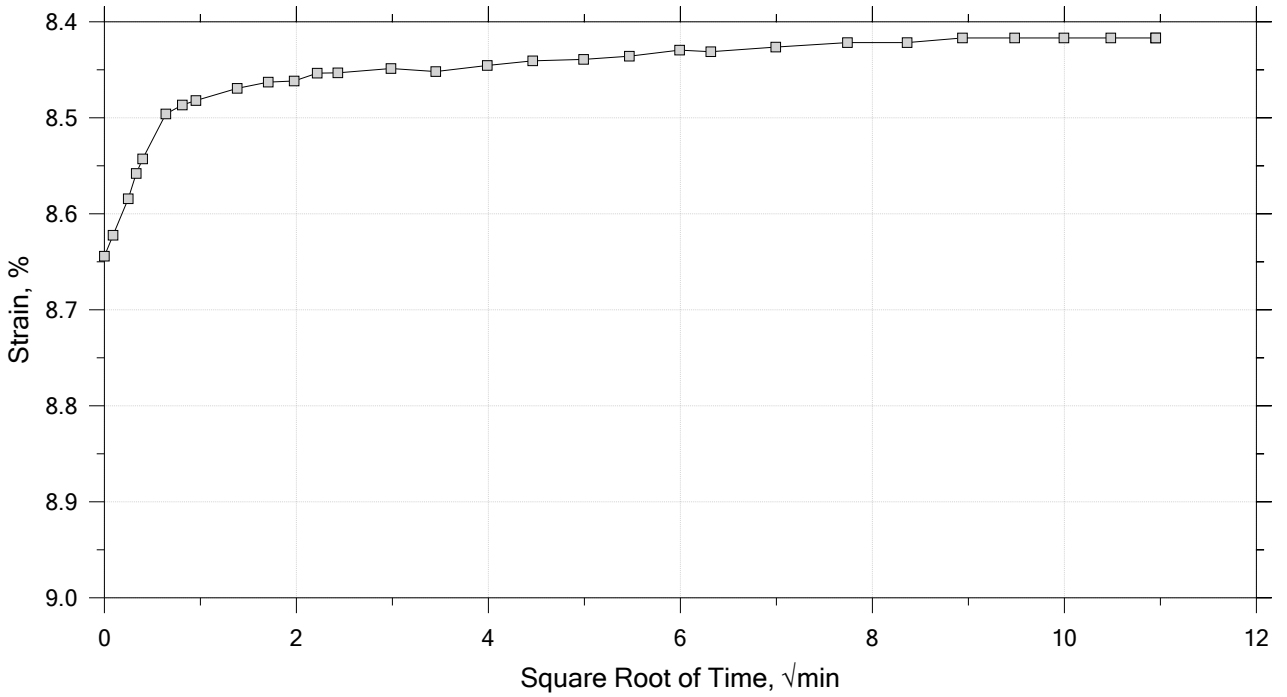


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.71	Liquid Limit: NP
Initial Height: 1.00 in	Initial Void Ratio: 0.403	Plastic Limit: NP
Final Height: 0.96 in	Final Void Ratio: 0.347	Plasticity Index: NP

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-3873	RING		E4935
Mass Container, gm	9.88	109.76	109.76	8.25
Mass Container + Wet Soil, gm	99.23	286.06	284.76	182.57
Mass Container + Dry Soil, gm	88.18	264.85	264.85	162.74
Mass Dry Soil, gm	78.3	155.09	155.09	154.49
Water Content, %	14.11	13.67	12.84	12.84
Void Ratio	---	0.40	0.35	---
Degree of Saturation, %	---	91.71	100.00	---
Dry Unit Weight, pcf	---	120.36	125.38	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

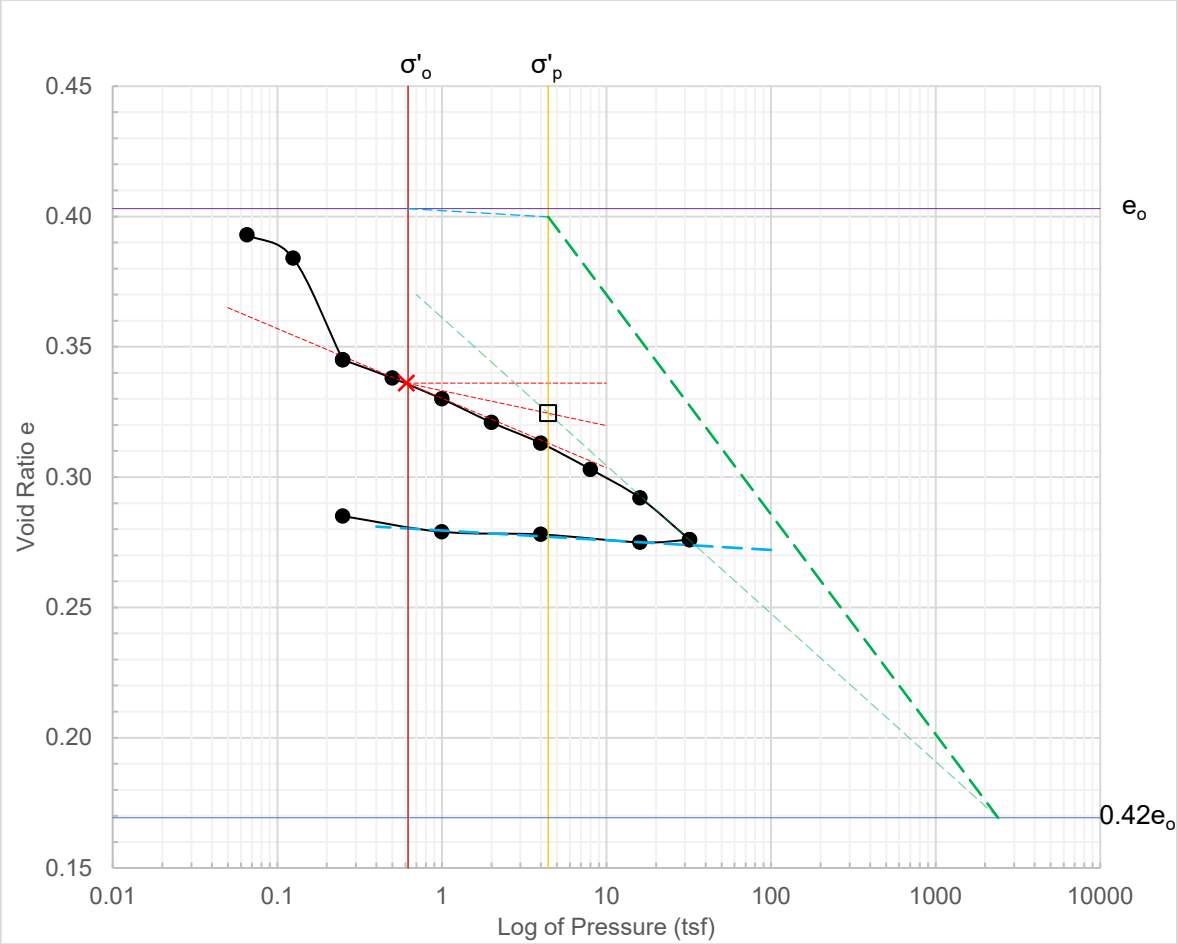
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0656	0.007366	0.393	0.737	13.550	2.59e-04	1.12e-01	5.44e-04
2	0.125	0.01397	0.384	1.40	4.820	7.17e-04	1.11e-01	1.49e-03
3	0.250	0.04157	0.345	4.16	62.647	5.33e-05	2.21e-01	2.20e-04
4	0.500	0.04663	0.338	4.66	10.272	3.14e-04	2.03e-02	1.19e-04
5	1.00	0.05228	0.330	5.23	7.907	4.04e-04	1.13e-02	8.54e-05
6	2.00	0.05892	0.321	5.89	6.499	4.85e-04	6.64e-03	6.03e-05
7	4.00	0.06444	0.313	6.44	3.079	1.01e-03	2.76e-03	5.22e-05
8	8.00	0.07153	0.303	7.15	20.192	1.52e-04	1.77e-03	5.04e-06
9	16.0	0.07971	0.292	7.97	13.123	2.30e-04	1.02e-03	4.41e-06
10	32.0	0.09058	0.276	9.06	9.719	3.04e-04	6.79e-04	3.87e-06
11	16.0	0.09148	0.275	9.15	265.588	1.10e-05	-5.65e-05	-1.16e-08
12	4.00	0.08955	0.278	8.96	69.911	4.18e-05	1.61e-04	1.26e-07
13	1.00	0.08879	0.279	8.88	2.145	1.37e-03	2.54e-04	6.50e-06
14	0.250	0.08417	0.285	8.42	1.085	2.72e-03	6.17e-03	3.14e-04

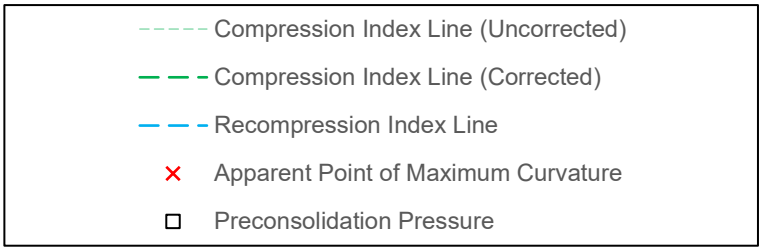
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.4-13.5
	Test No.: IP-16-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTII-TX-011, Swell Pressure =		
	Displacement at End of Increment		

Boring: B-4.15

Depth: 13.4'-13.5'

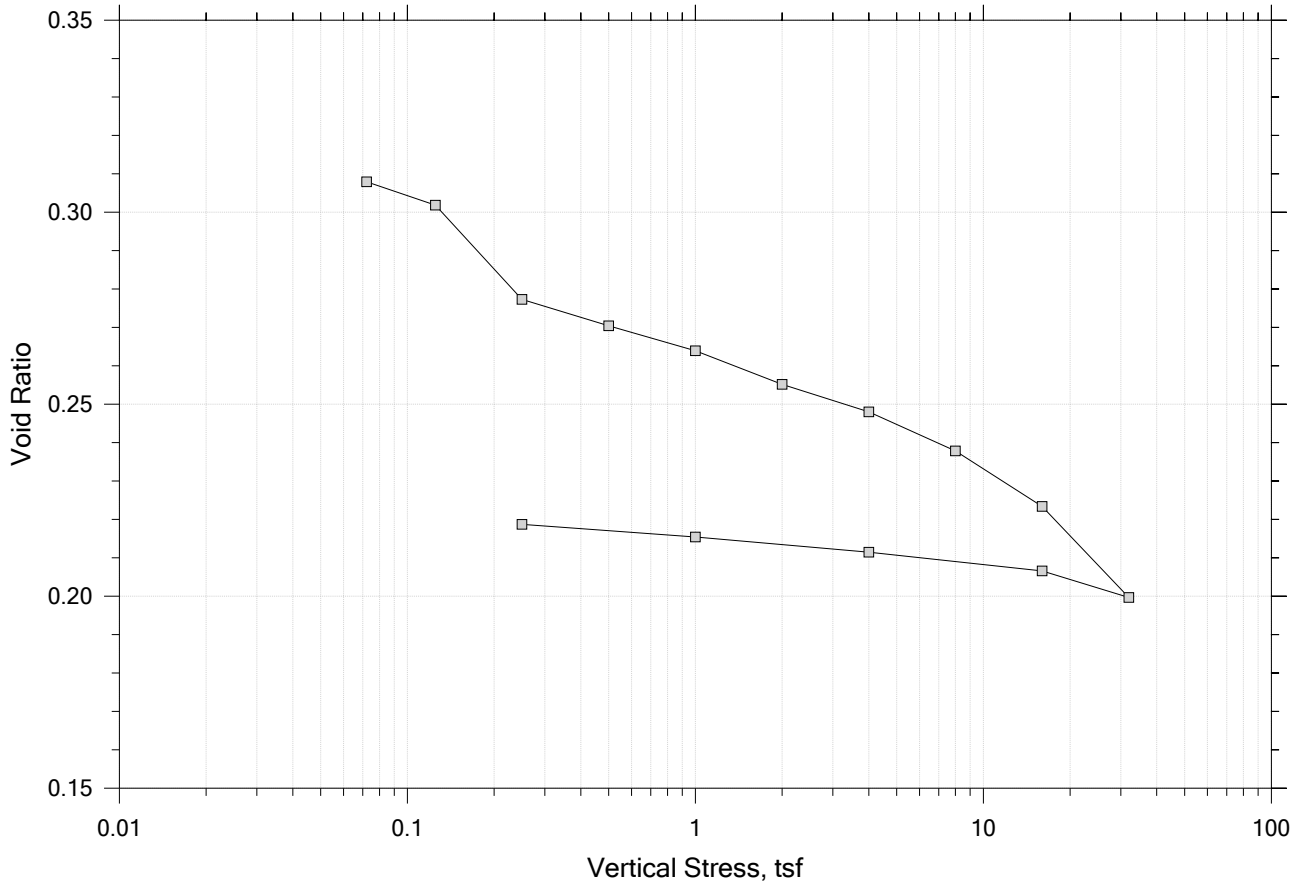
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.62
Preconsolidation Pressure, σ'_p (tsf) = 4.42
Compression Index, C_c = 0.084
Recompression Index, C_r = 0.0038

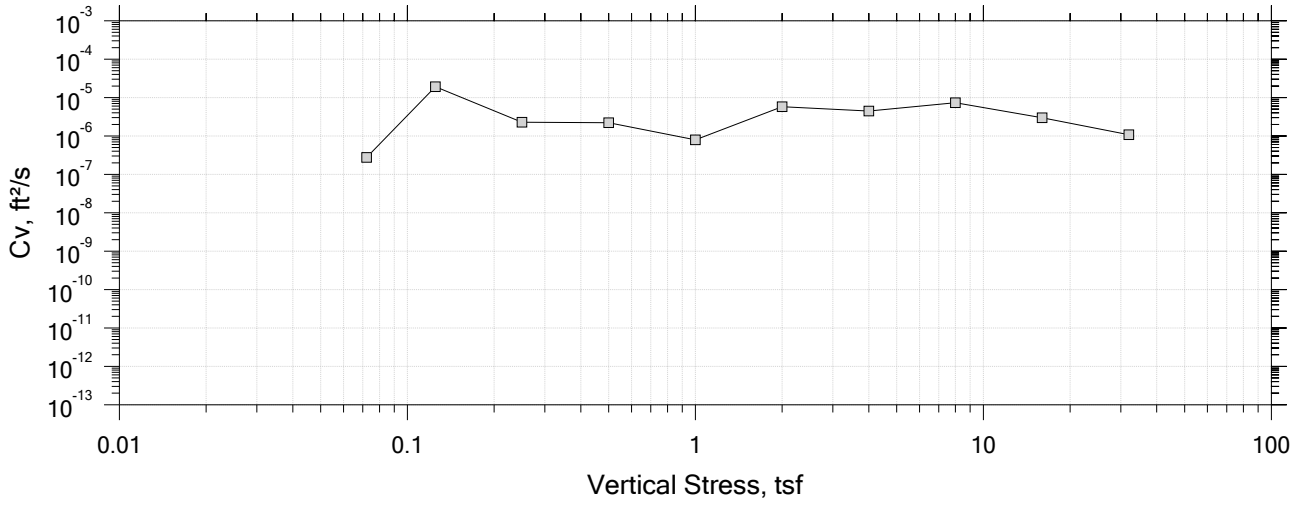




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

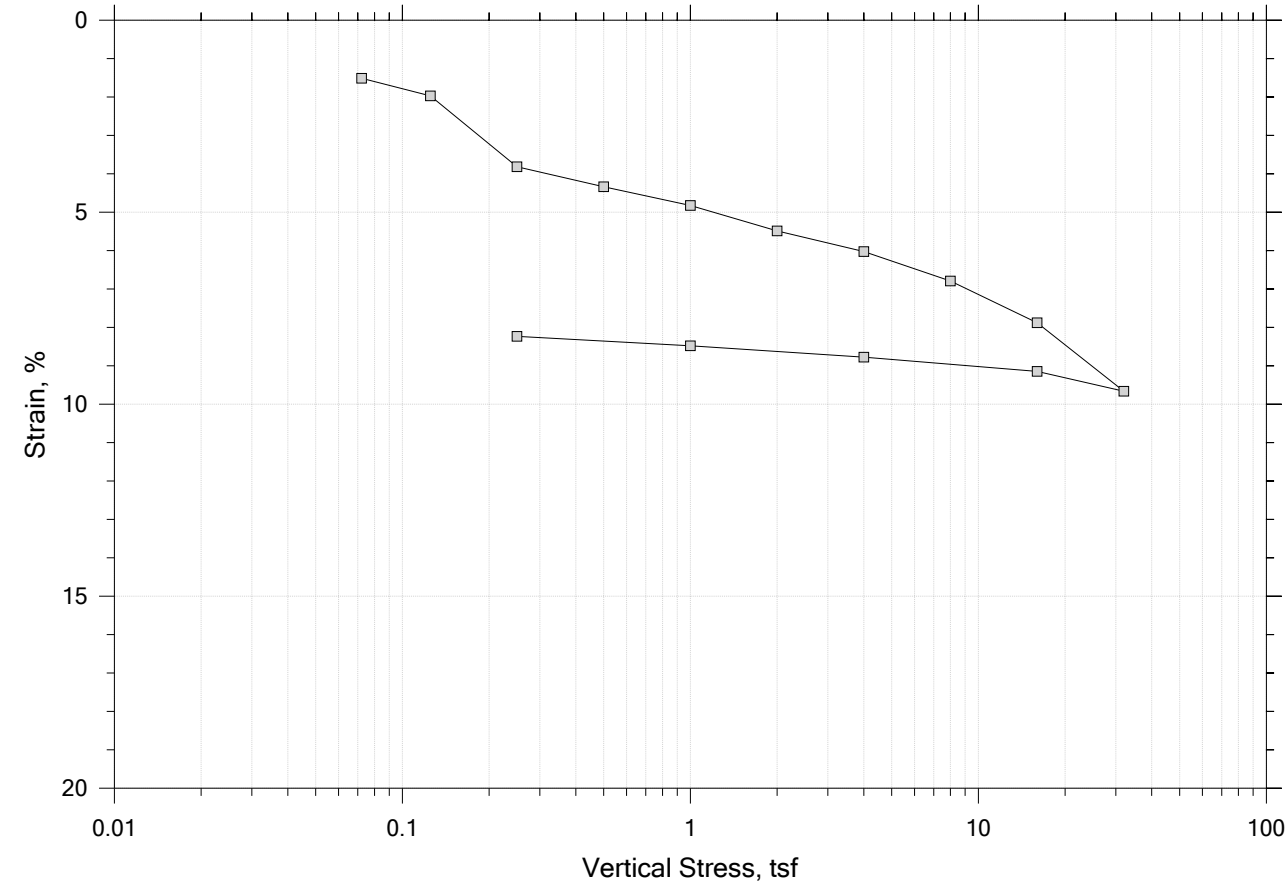


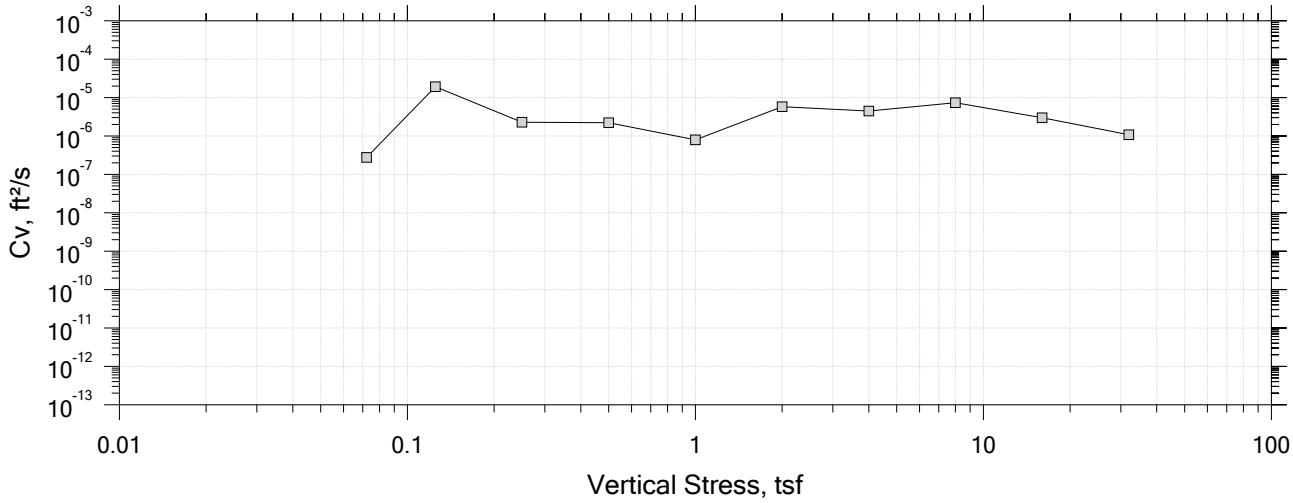


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

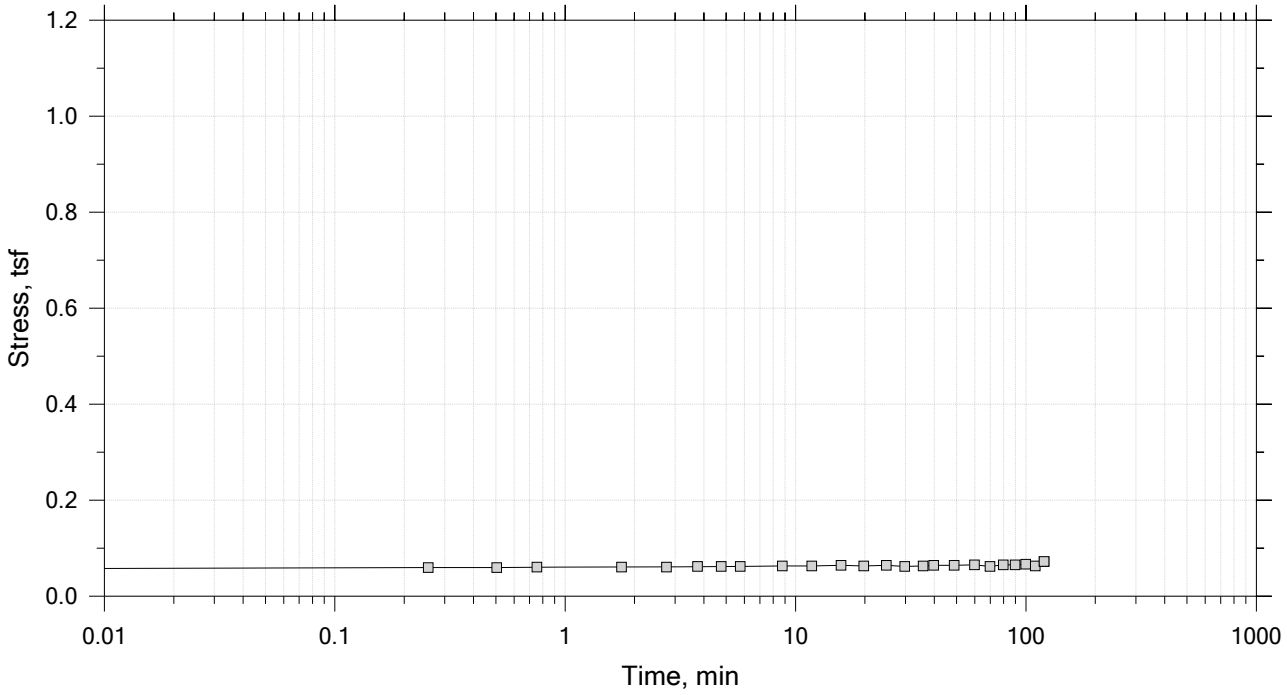


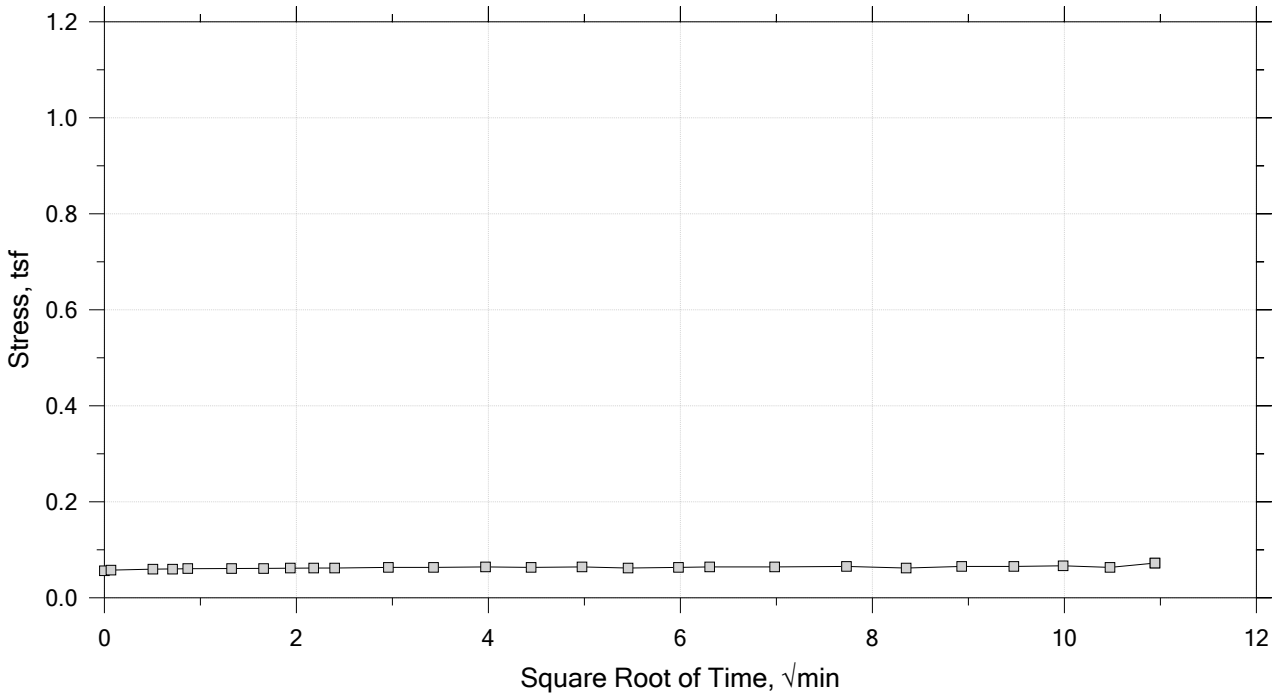


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0722 tsf





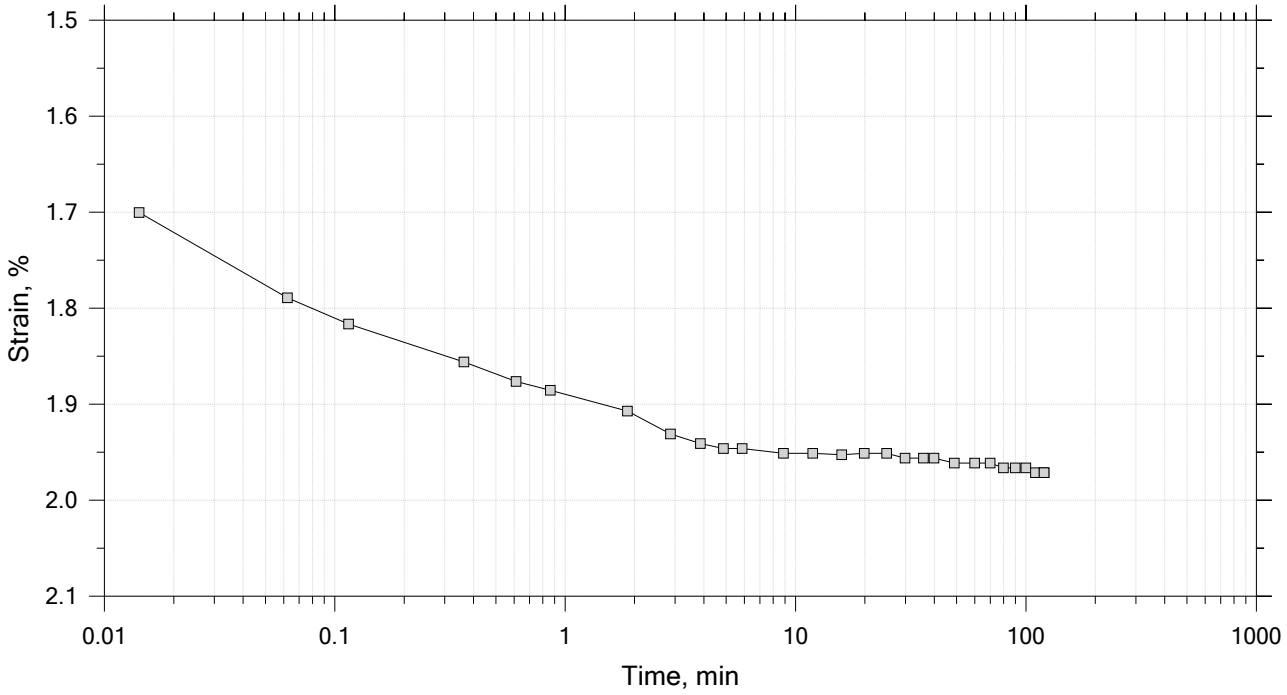
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

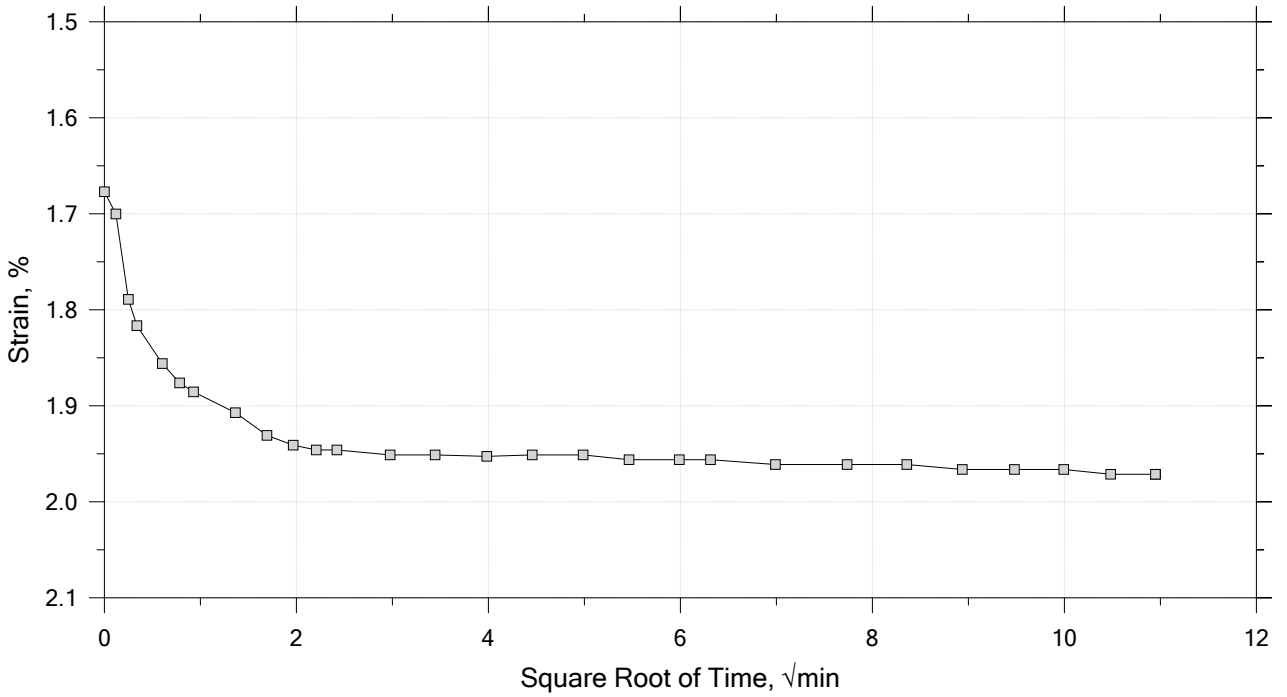
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf





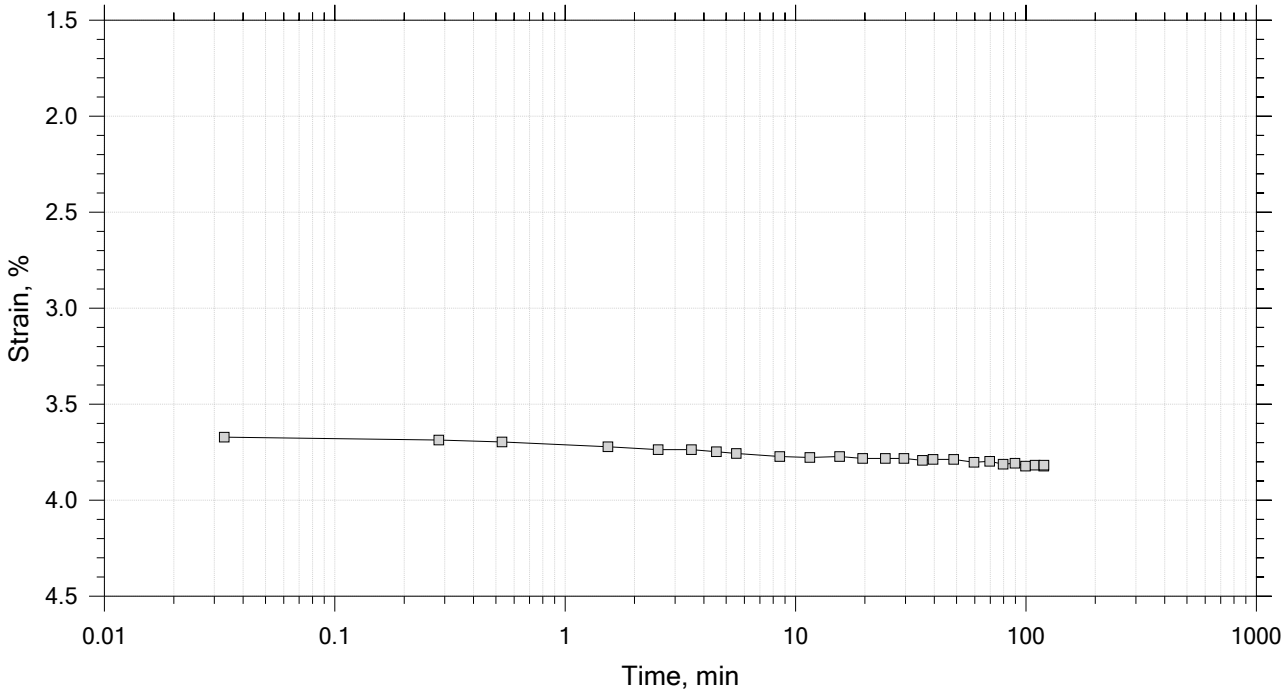
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

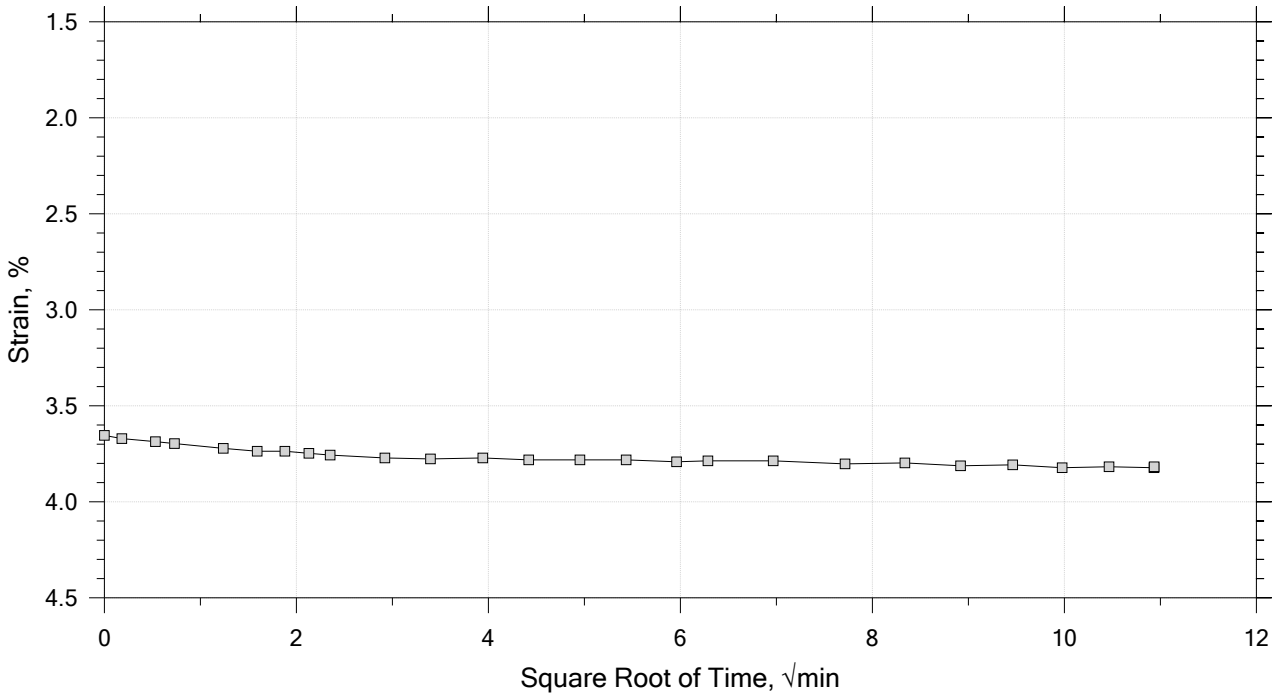
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





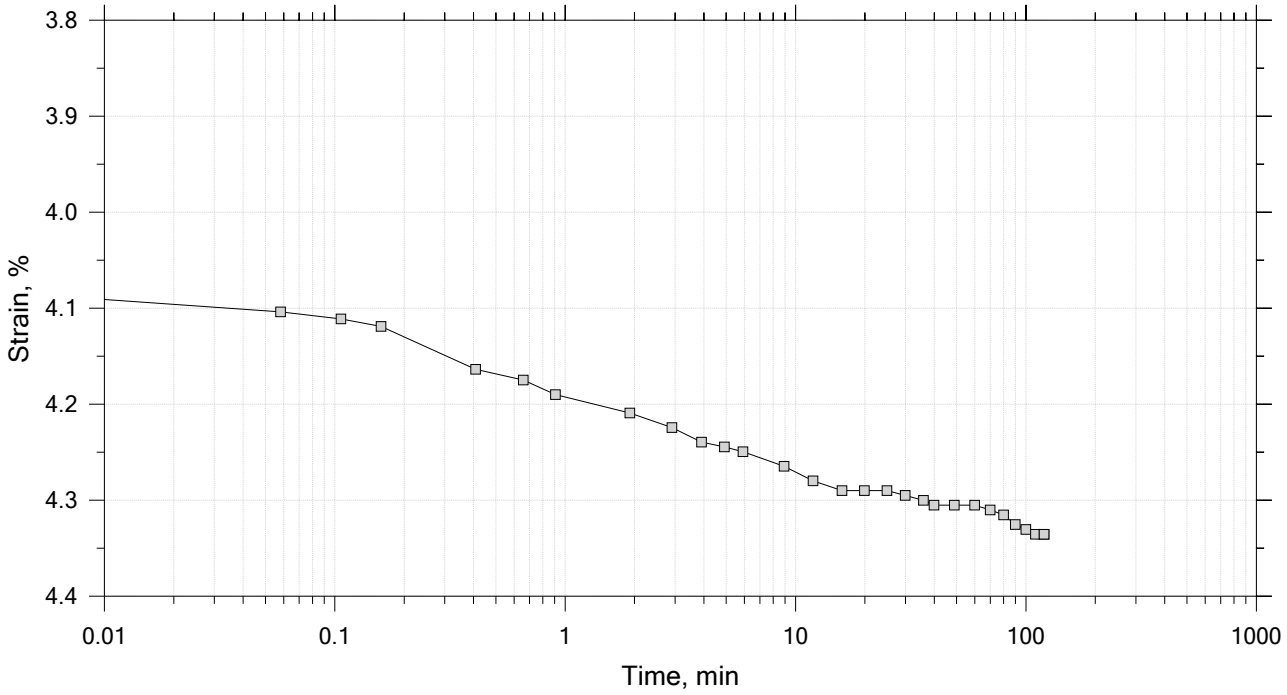
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		

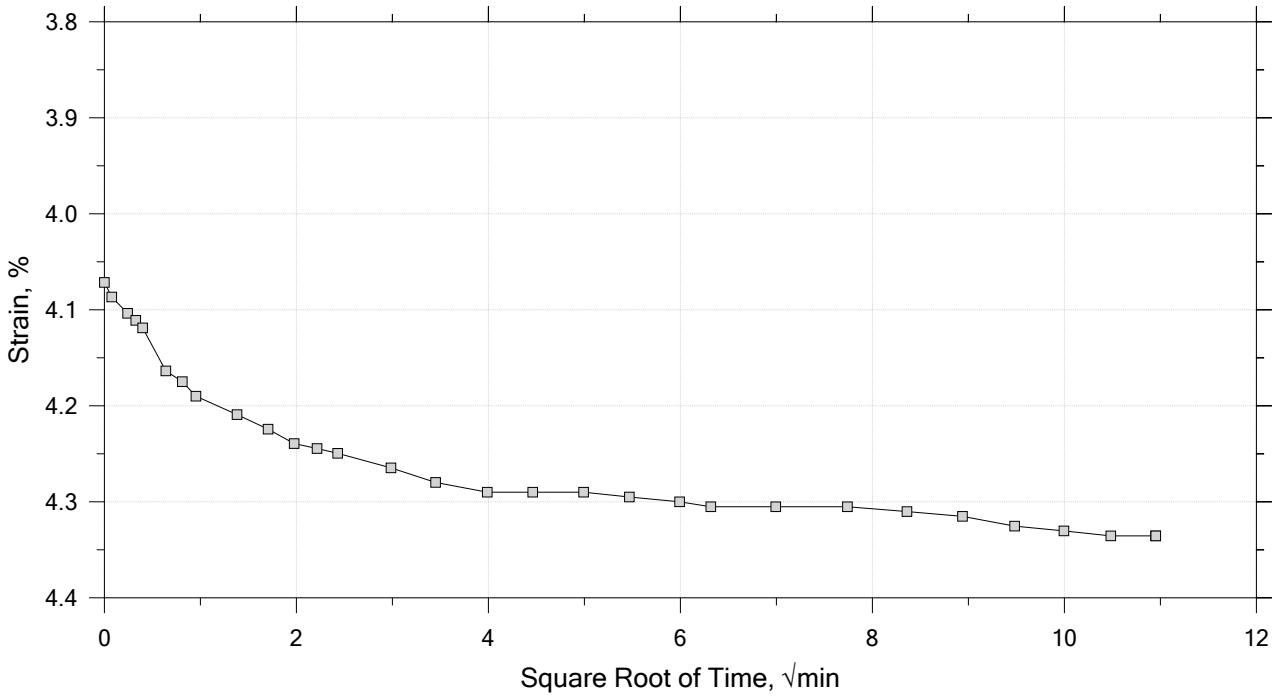
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf

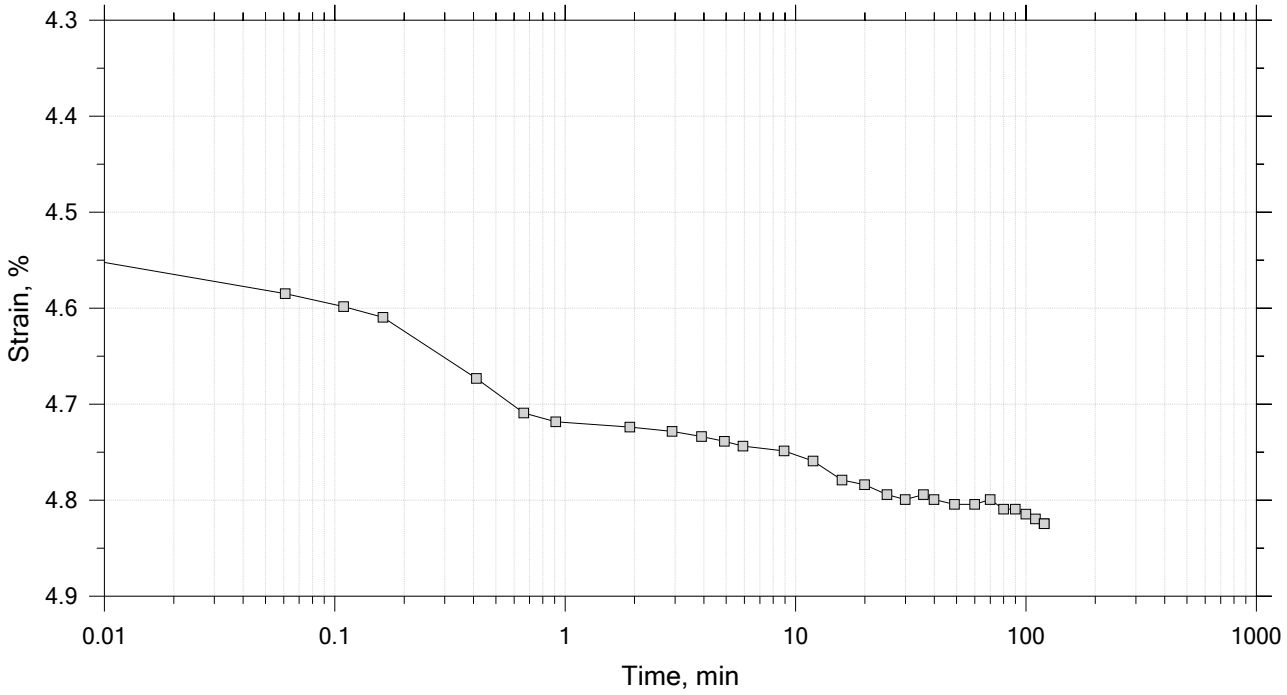


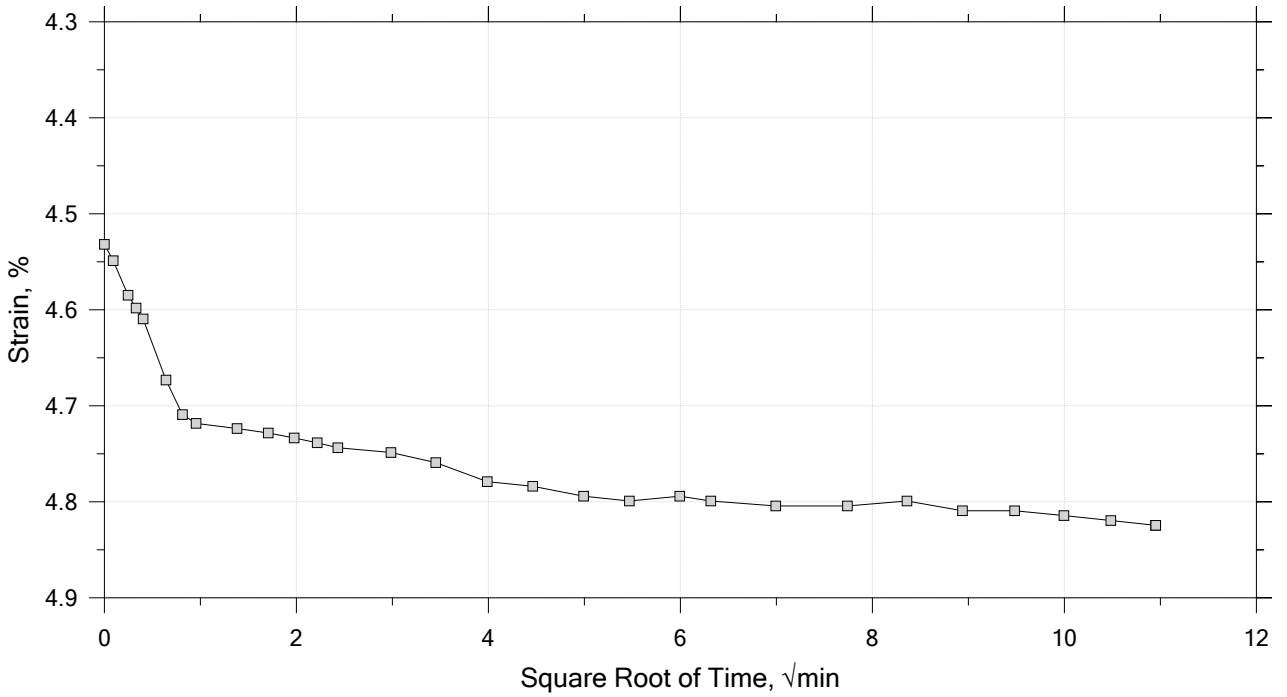


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





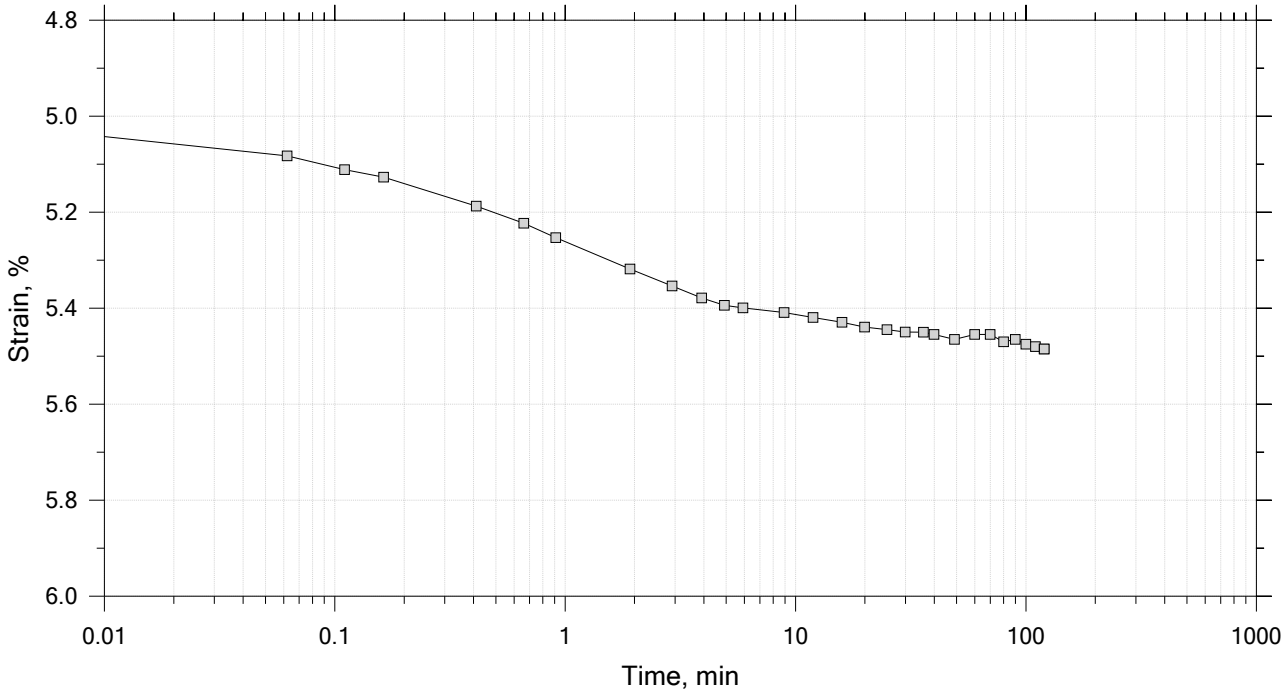
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

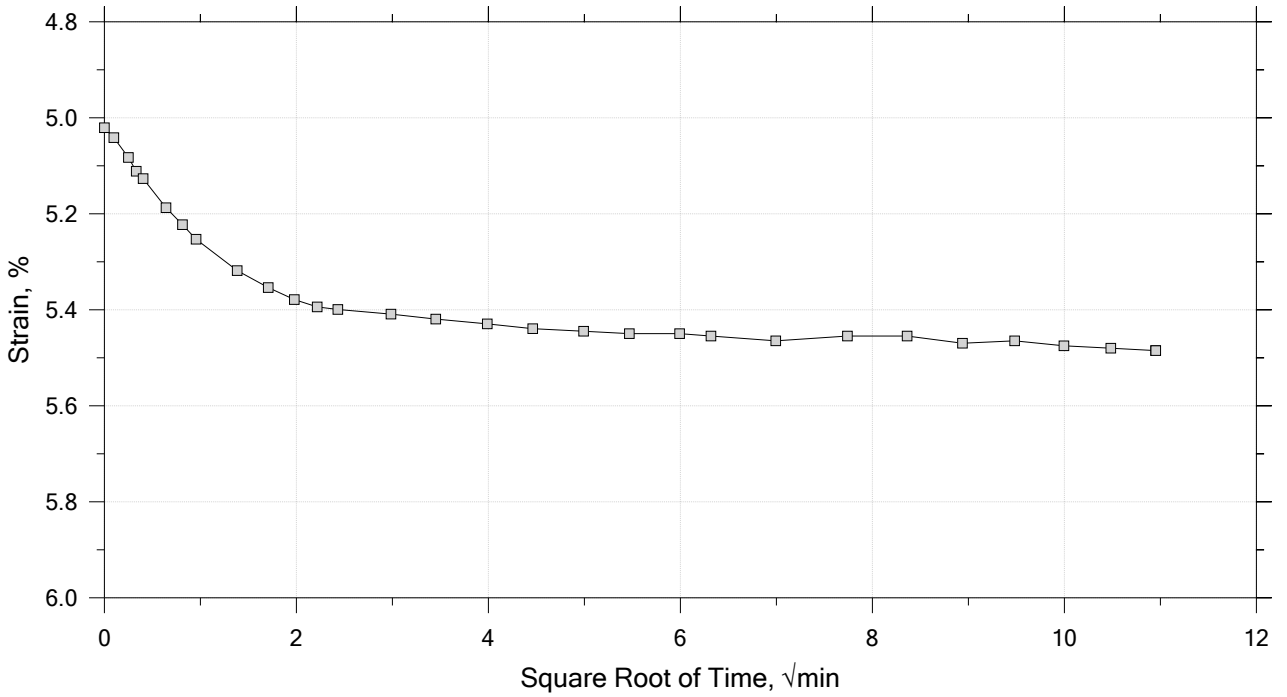
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





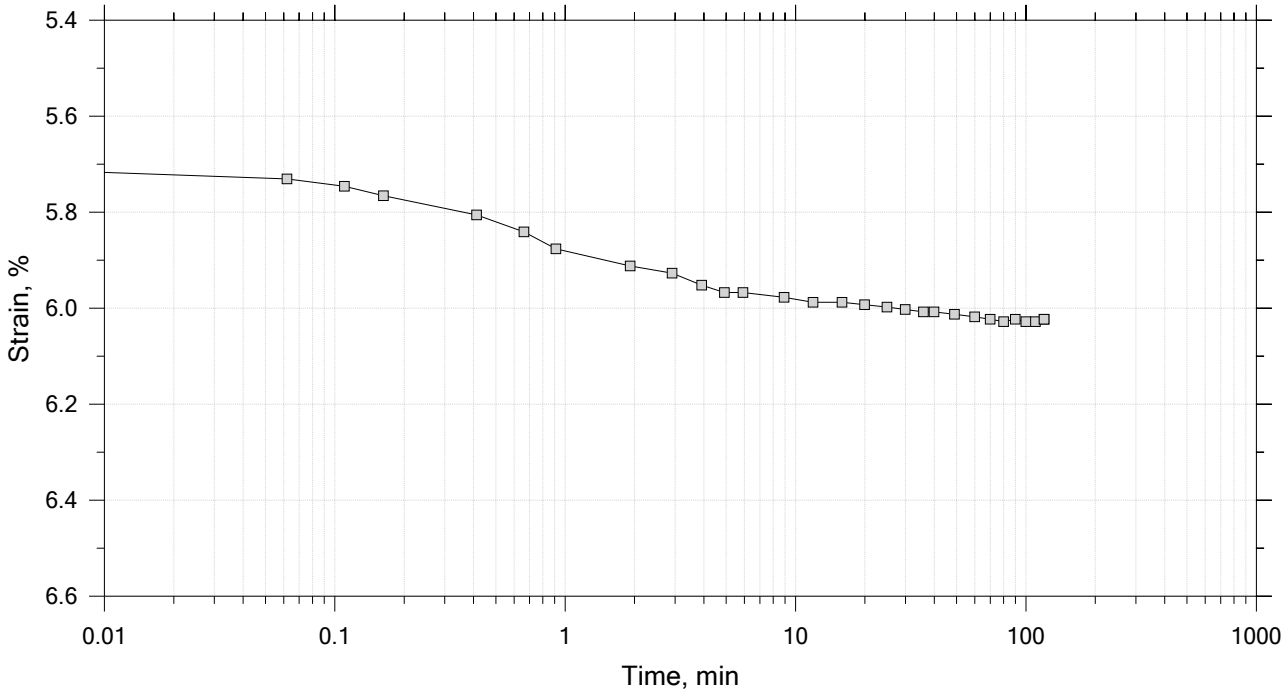
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		

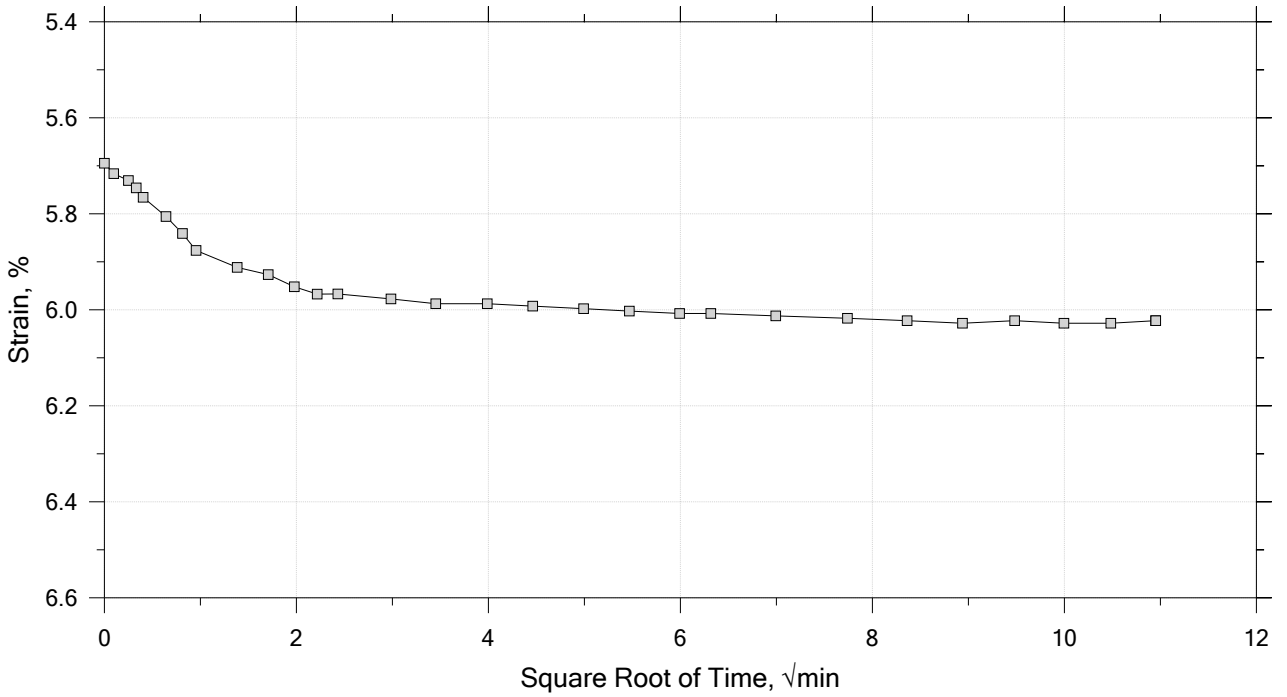
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





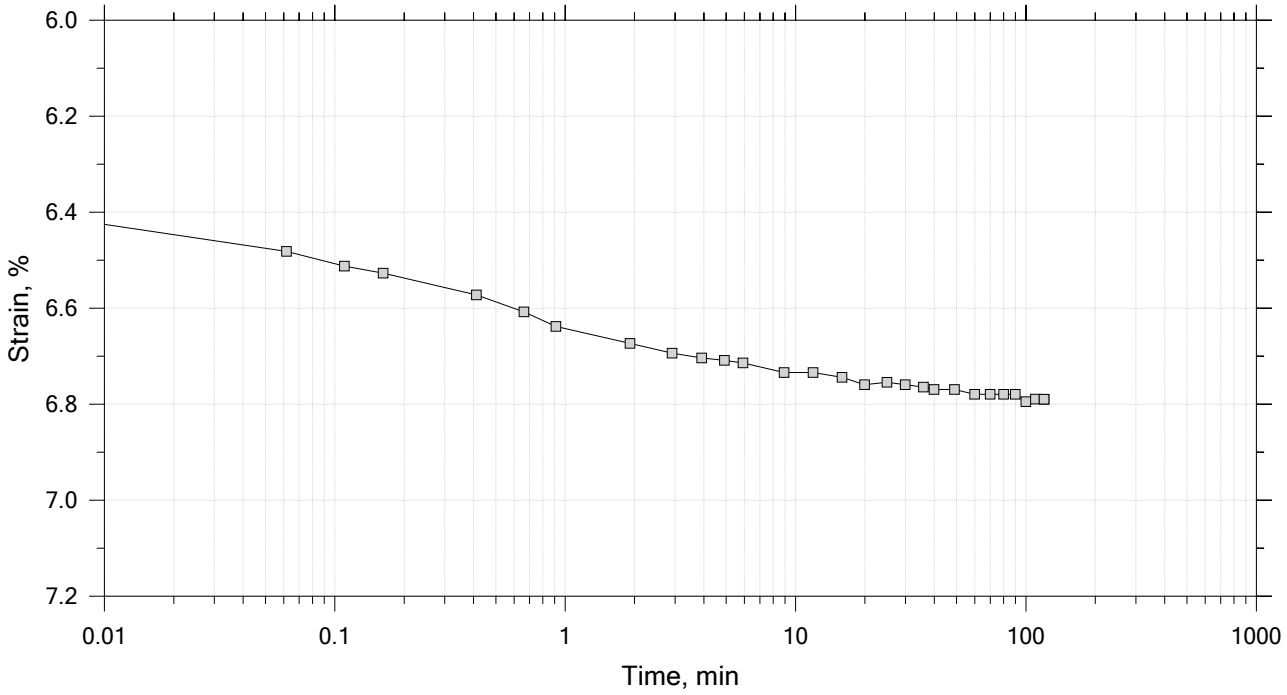
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

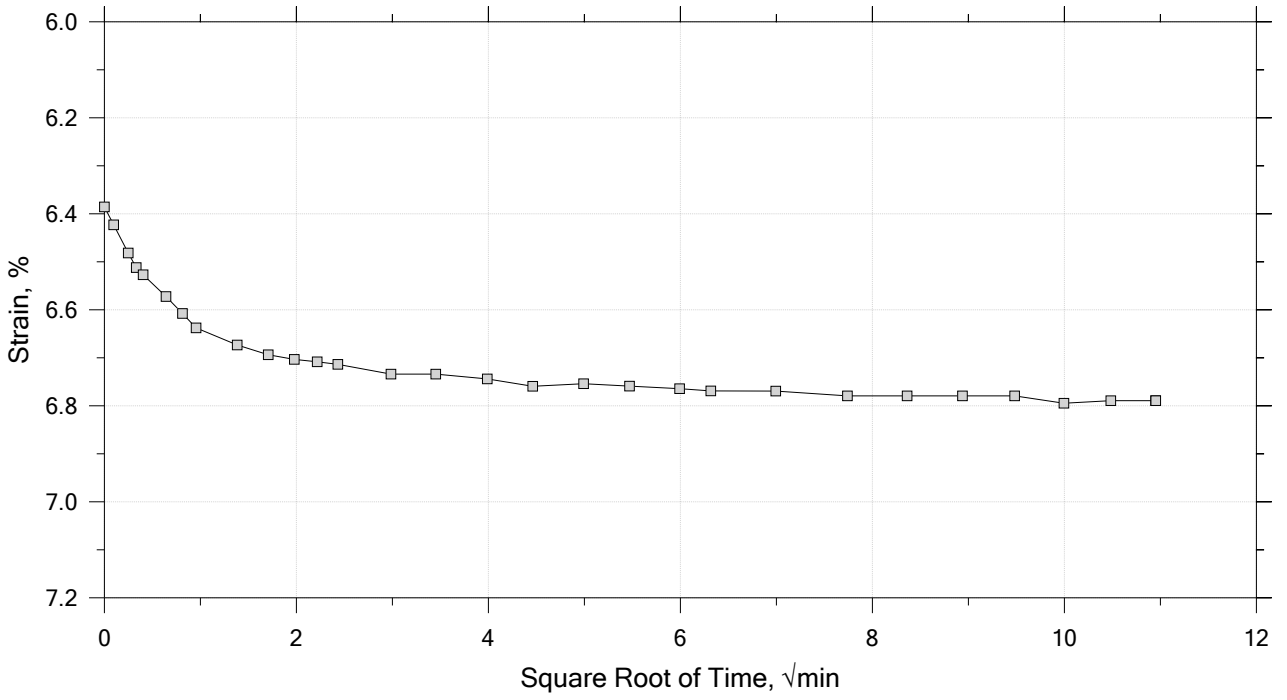
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





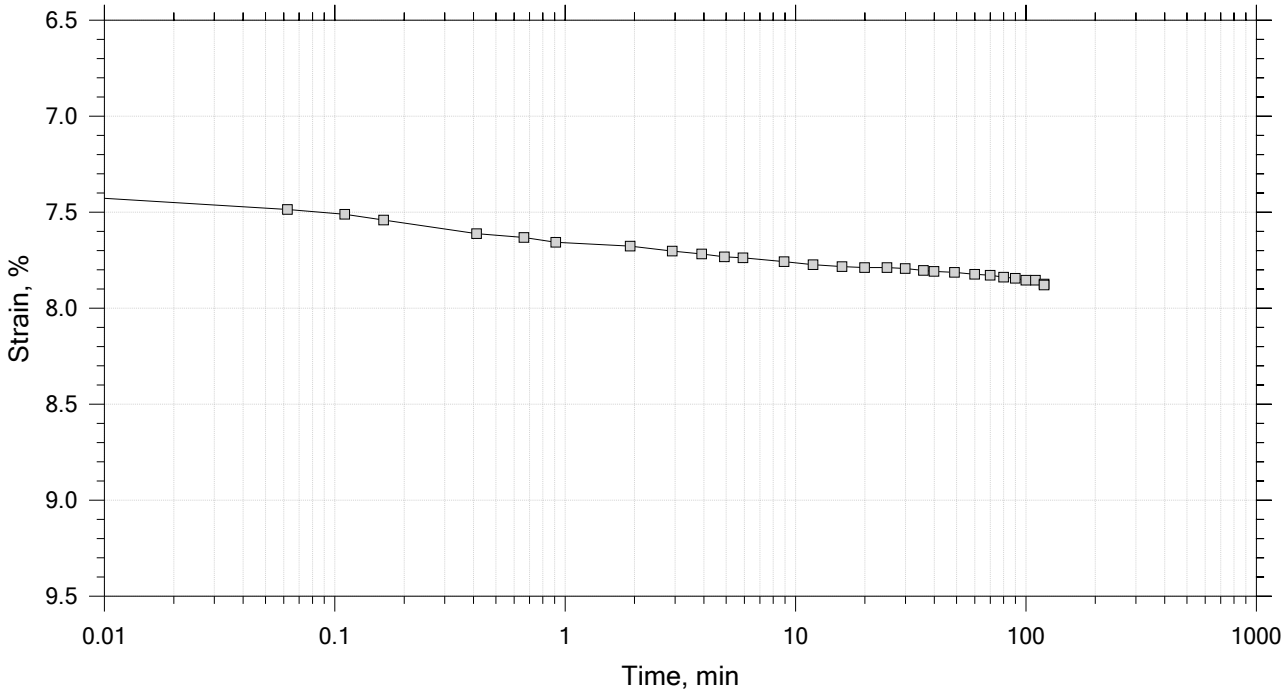
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

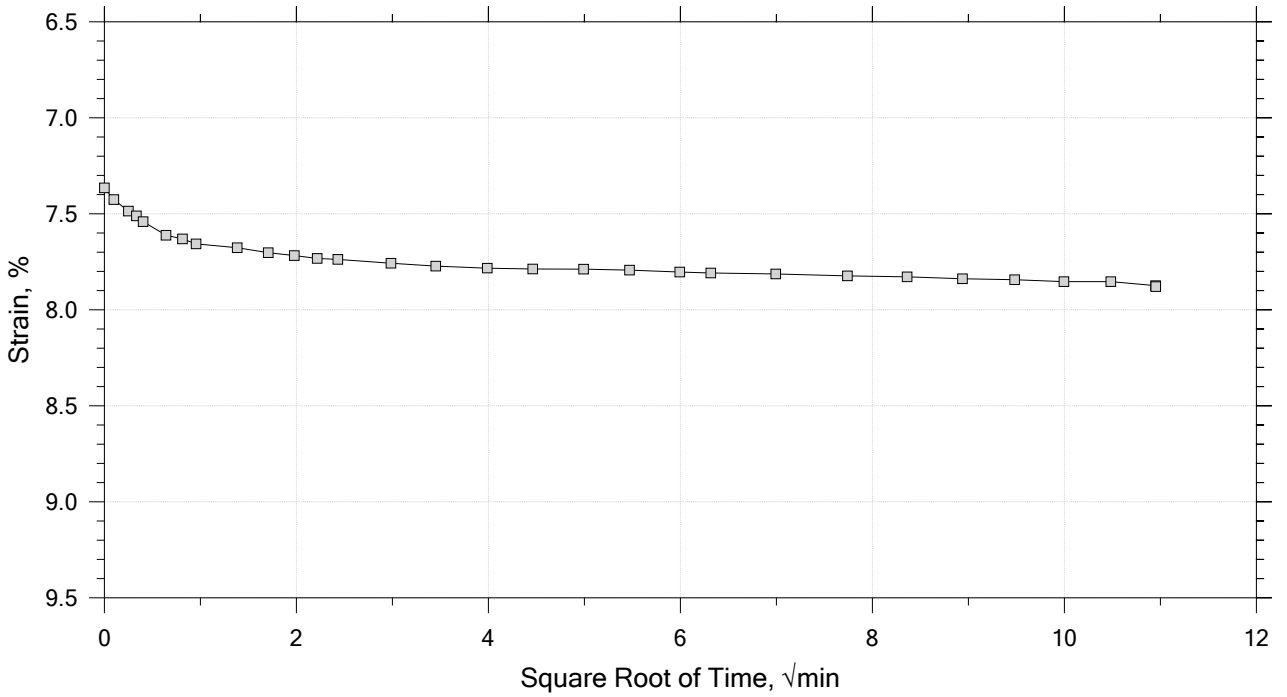
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

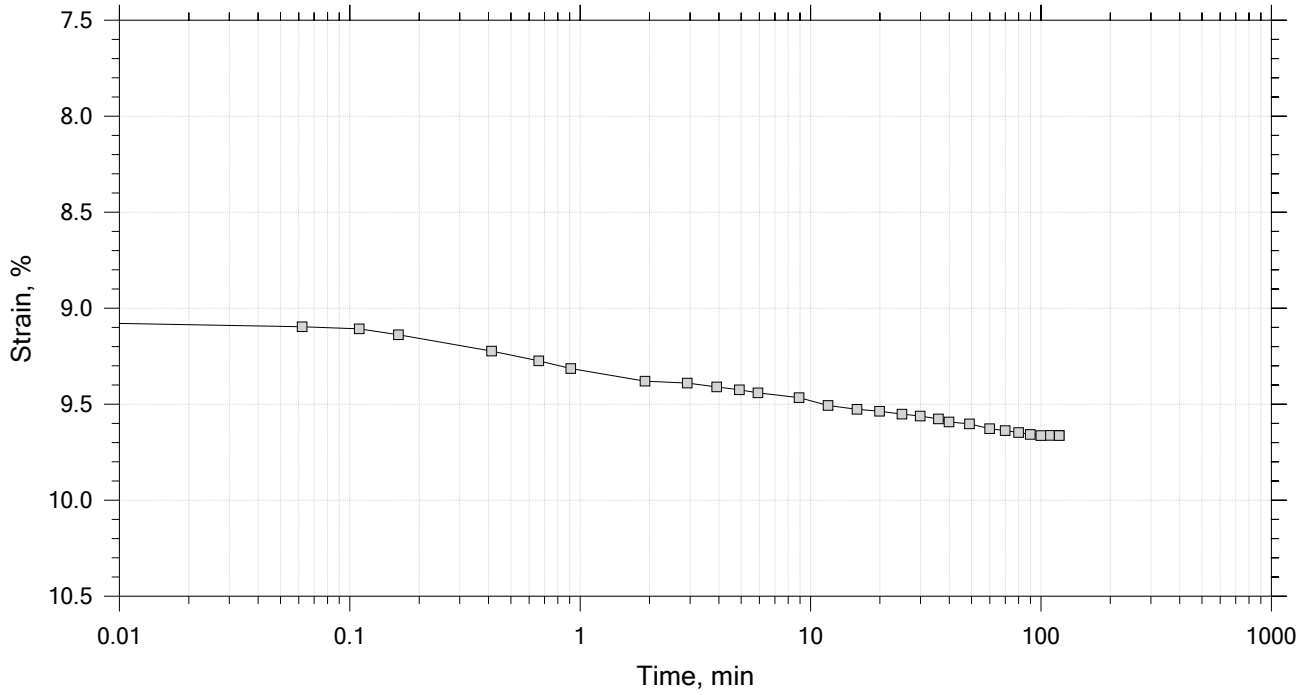


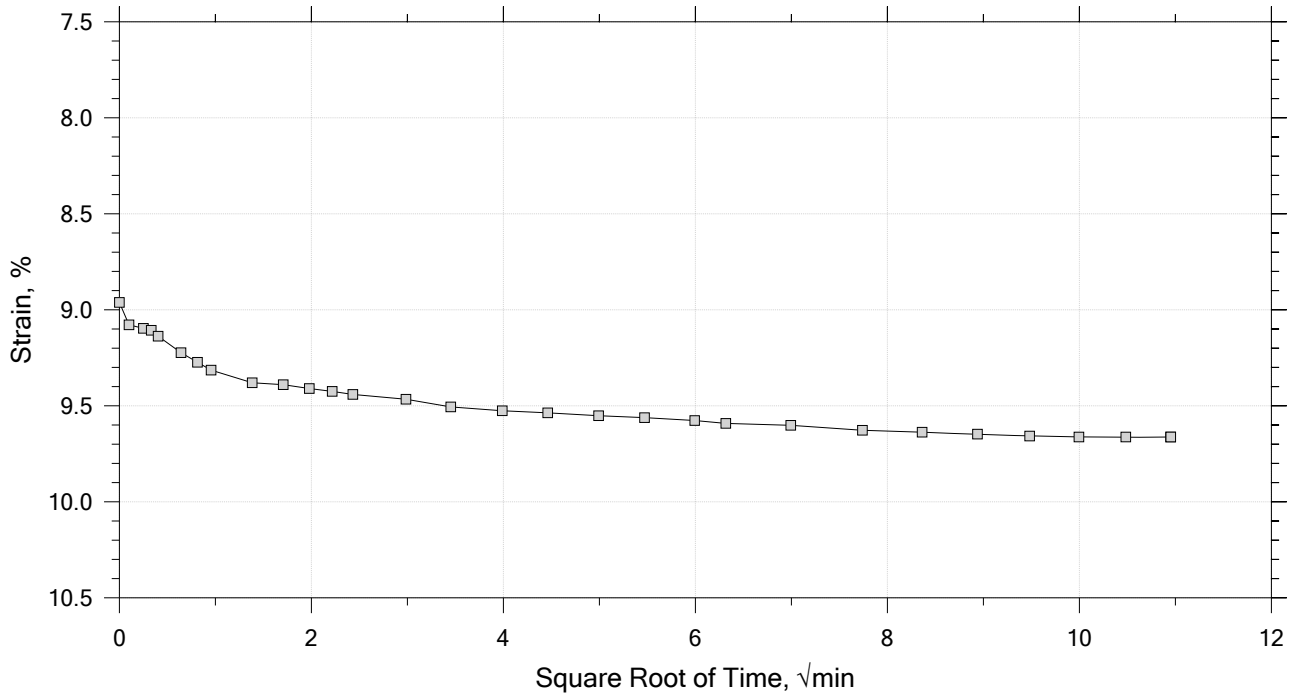


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

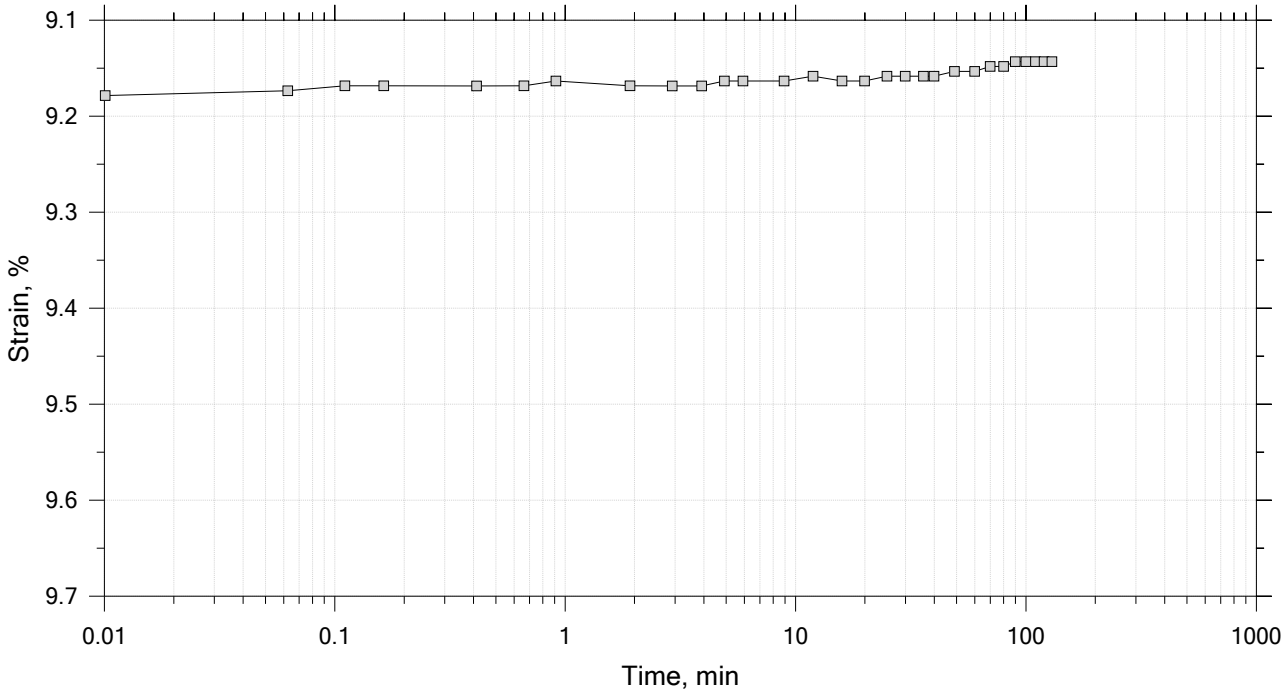


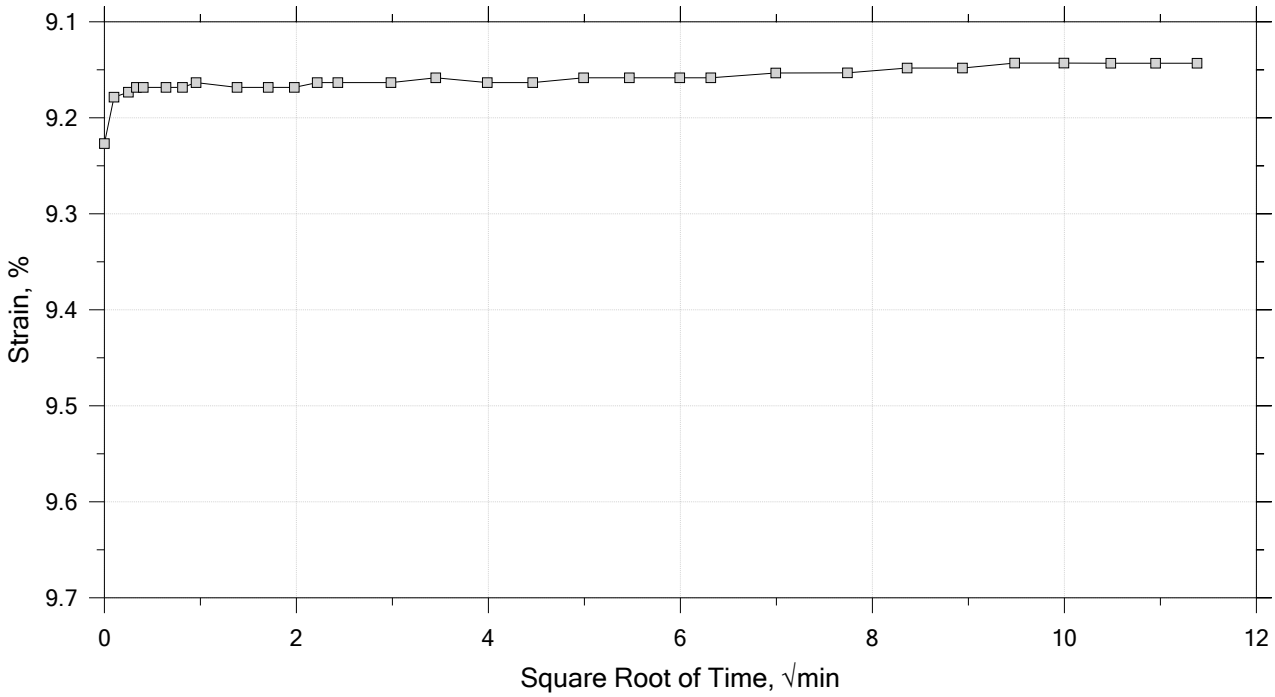


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

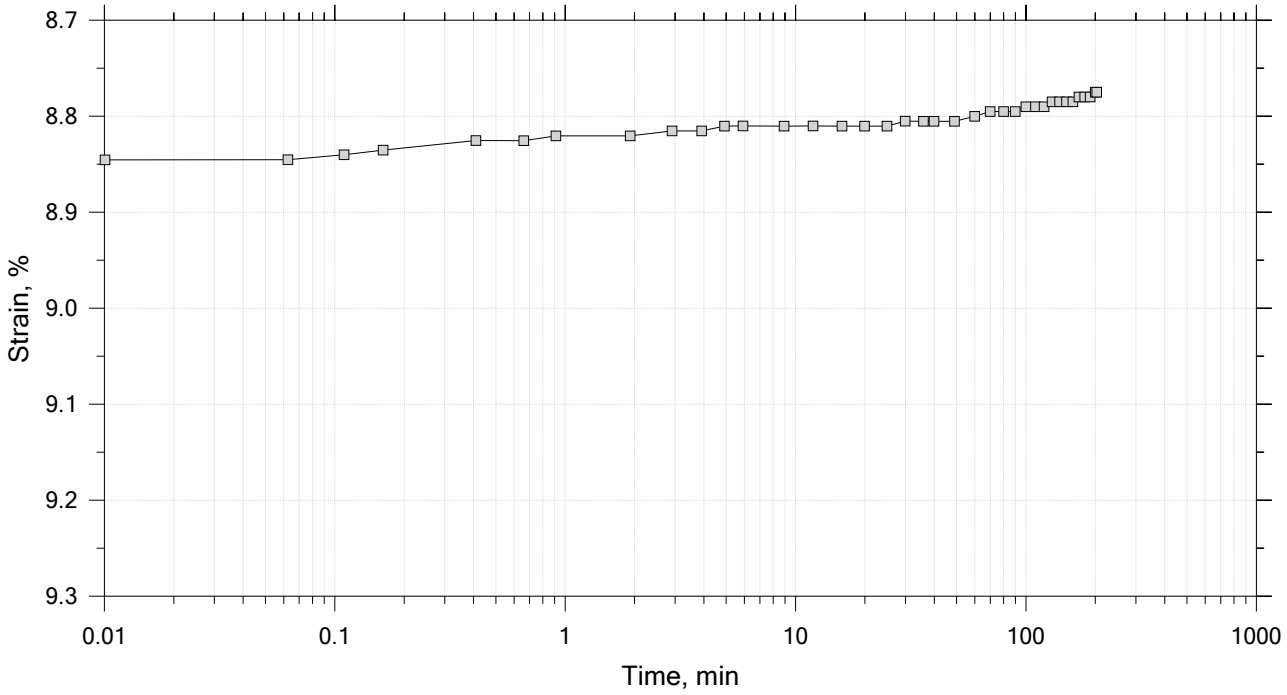


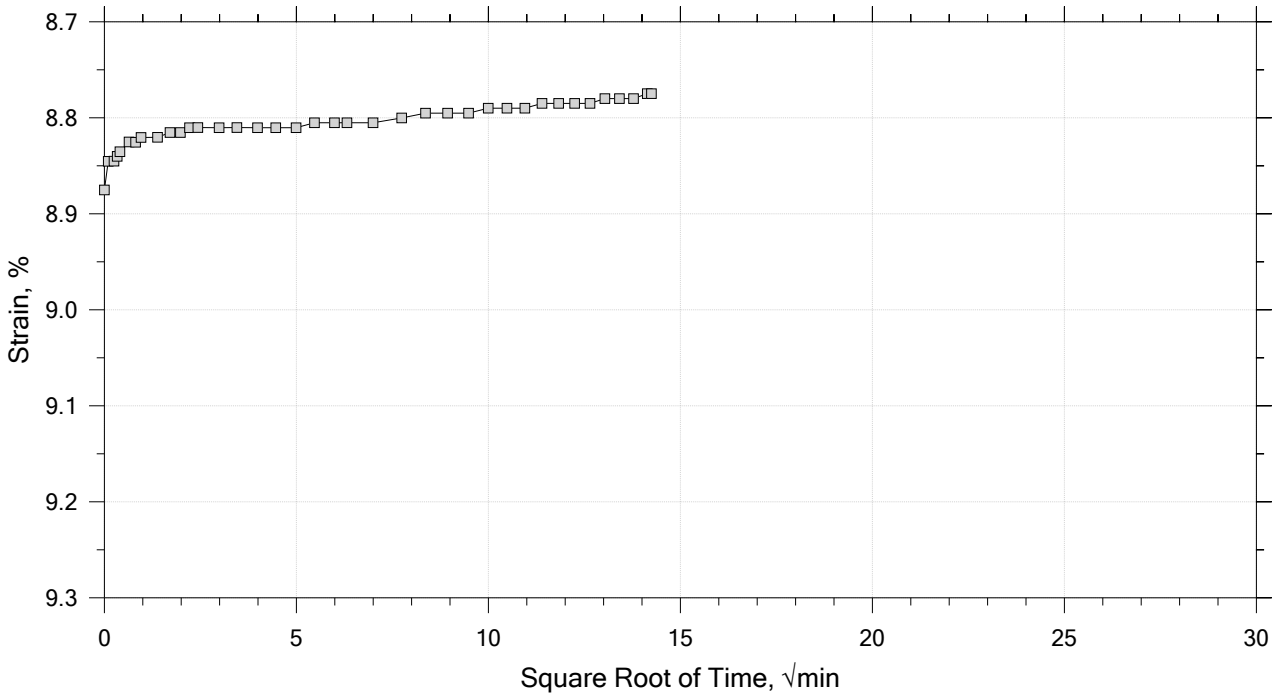


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

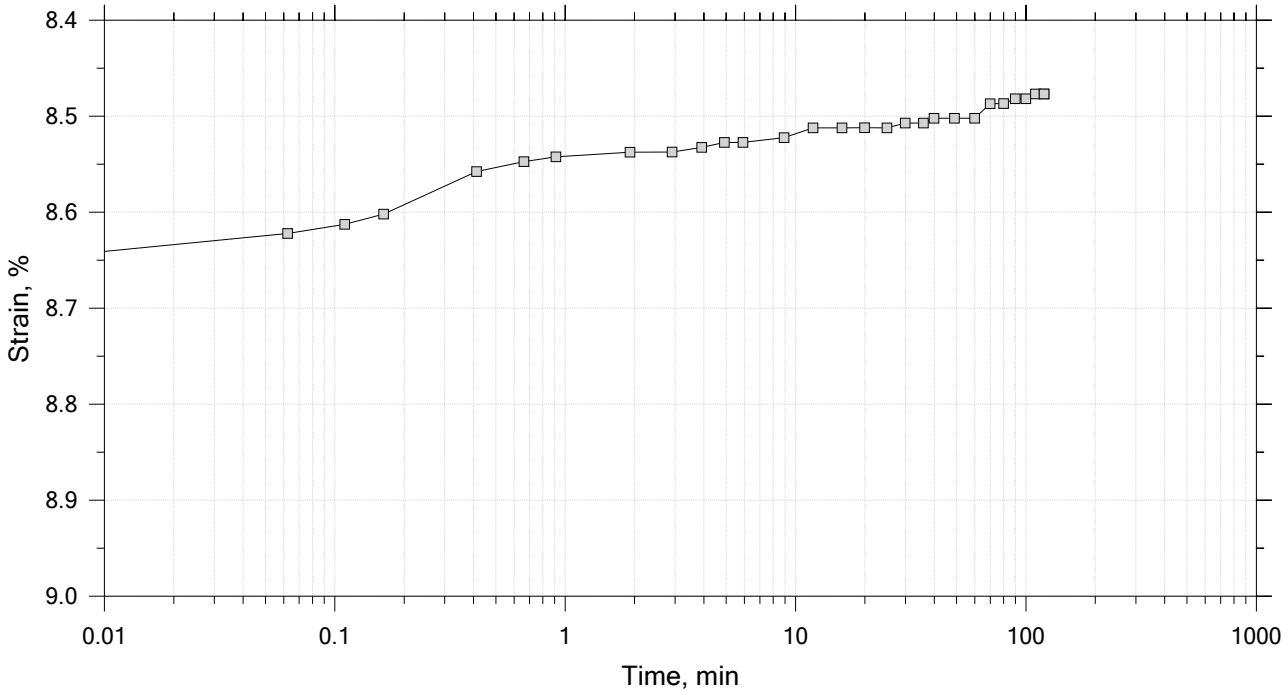


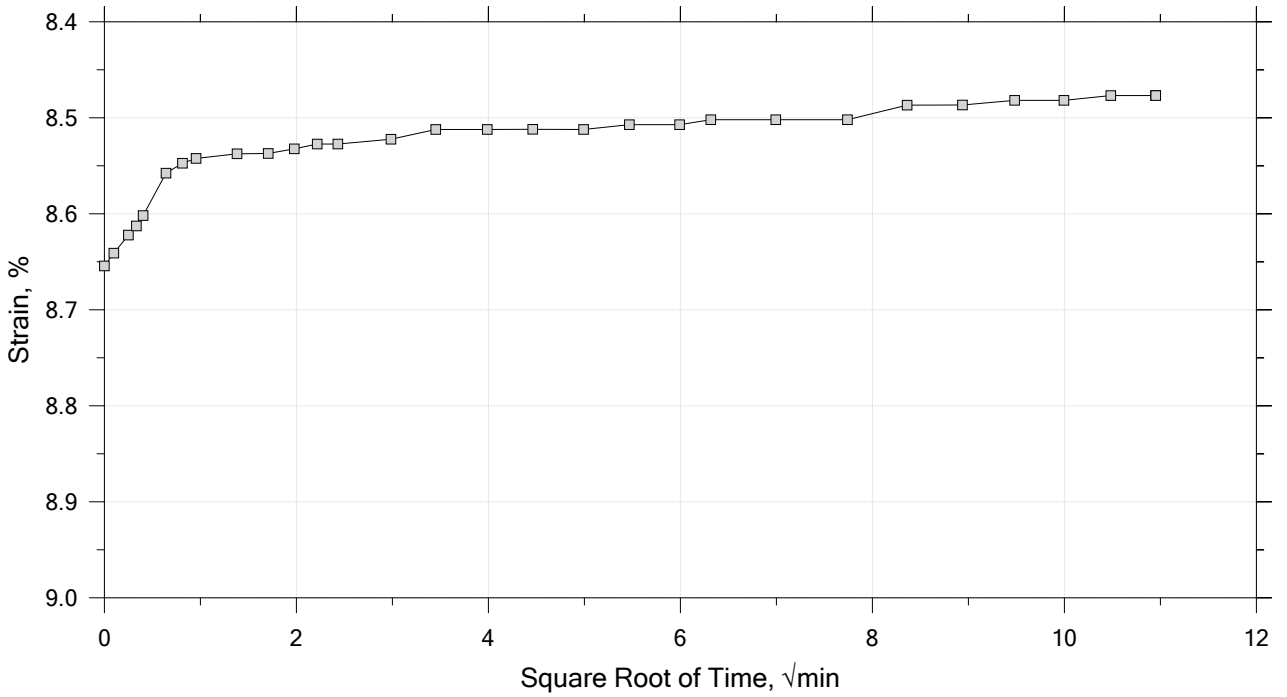


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

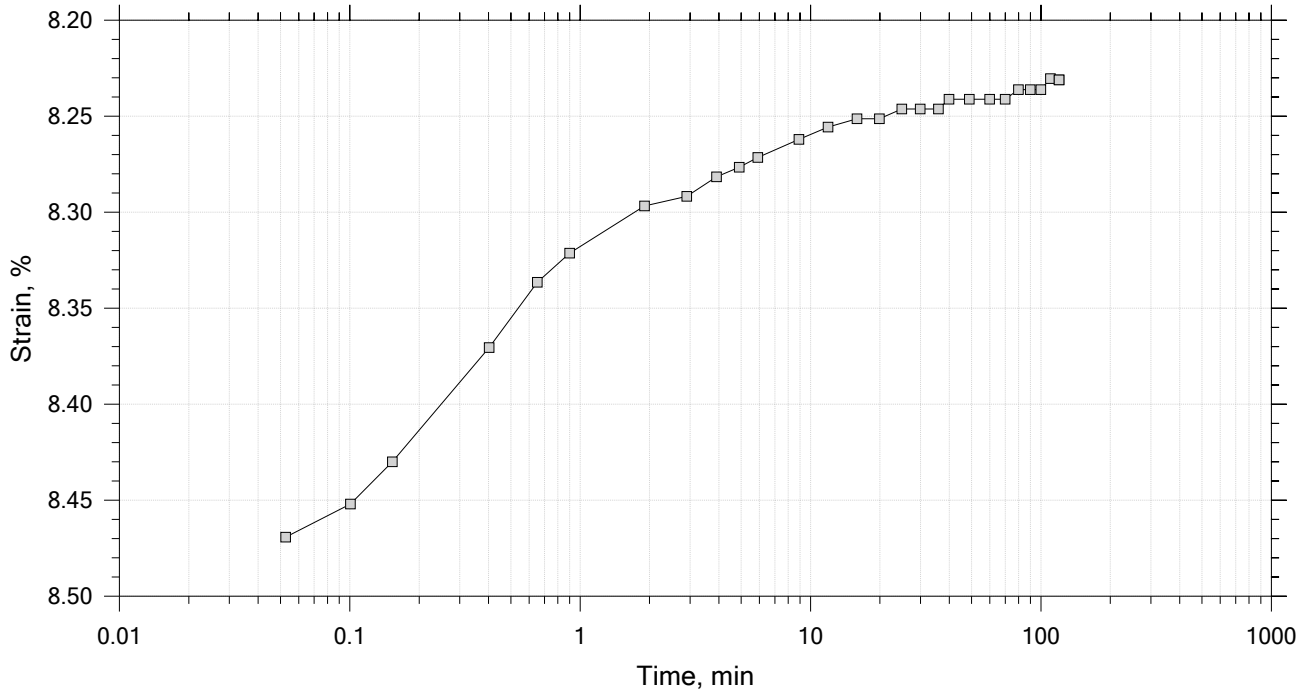


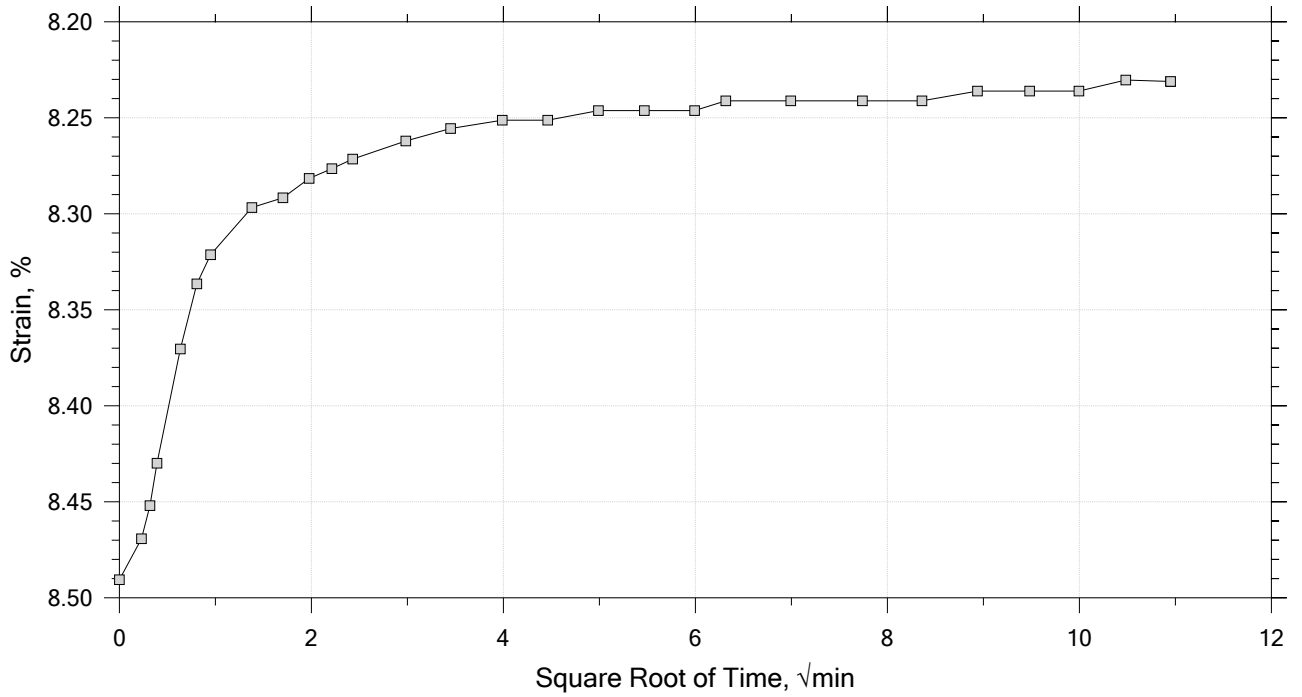


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.71	Liquid Limit: NP
Initial Height: 1.00 in	Initial Void Ratio: 0.328	Plastic Limit: NP
Final Height: 0.95 in	Final Void Ratio: 0.262	Plasticity Index: NP

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-2564	RING		E3662
Mass Container, gm	8.16	110.05	110.05	8.41
Mass Container + Wet Soil, gm	52.23	295.37	289.75	187.59
Mass Container + Dry Soil, gm	47.24	273.9	273.9	171.79
Mass Dry Soil, gm	39.08	163.85	163.85	163.38
Water Content, %	12.77	13.10	9.67	9.67
Void Ratio	---	0.33	0.26	---
Degree of Saturation, %	---	108.04	100.00	---
Dry Unit Weight, pcf	---	127.16	133.86	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
	Test No.: IP-16-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System X, Swell Pressure = 0.0722 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0722	0.01512	0.308	1.51	87.524	2.76e-07	2.09e-01	1.56e-04
2	0.125	0.01971	0.302	1.97	1.230	1.93e-05	8.70e-02	4.52e-03
3	0.250	0.03818	0.277	3.82	10.180	2.27e-06	1.48e-01	9.05e-04
4	0.500	0.04335	0.270	4.34	10.196	2.21e-06	2.07e-02	1.24e-04
5	1.00	0.04825	0.264	4.82	28.244	7.91e-07	9.78e-03	2.09e-05
6	2.00	0.05485	0.255	5.49	3.803	5.80e-06	6.61e-03	1.03e-04
7	4.00	0.06023	0.248	6.02	4.906	4.44e-06	2.69e-03	3.22e-05
8	8.00	0.06790	0.238	6.79	2.933	7.33e-06	1.92e-03	3.79e-05
9	16.0	0.07879	0.223	7.88	7.065	2.98e-06	1.36e-03	1.10e-05
10	32.0	0.09663	0.200	9.66	18.860	1.08e-06	1.11e-03	3.26e-06
11	16.0	0.09143	0.207	9.14	88.345	2.28e-07	3.25e-04	2.00e-07
12	4.00	0.08775	0.211	8.77	0.000	0.00e+00	3.07e-04	0.00e+00
13	1.00	0.08477	0.215	8.48	103.676	1.98e-07	9.94e-04	5.30e-07
14	0.250	0.08231	0.219	8.23	2.400	8.59e-06	3.28e-03	7.59e-05

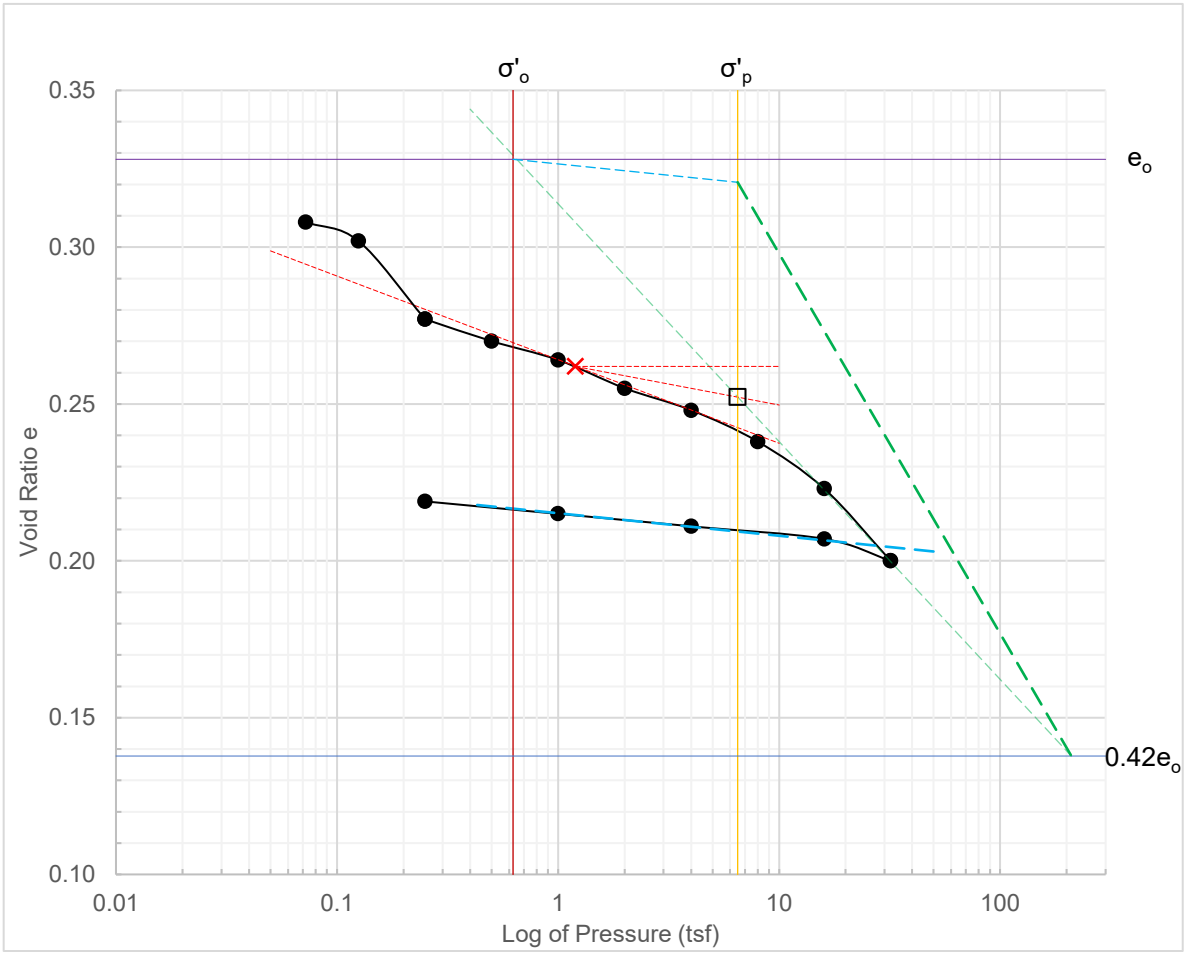
GeoTesting EXPRESS

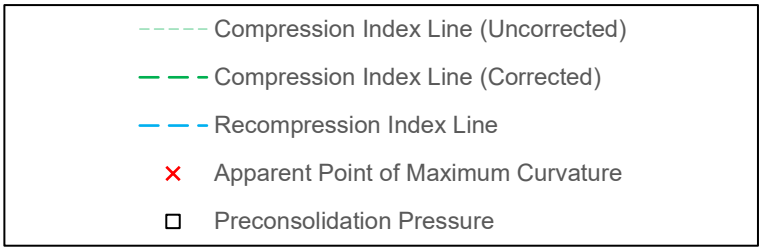
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 13.5-13.6
Test No.: IP-16-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System X, Swell Pressure = 0.0722 tsf		
Displacement at End of Increment		

Boring: B-4.15

Depth: 13.5'-13.6'

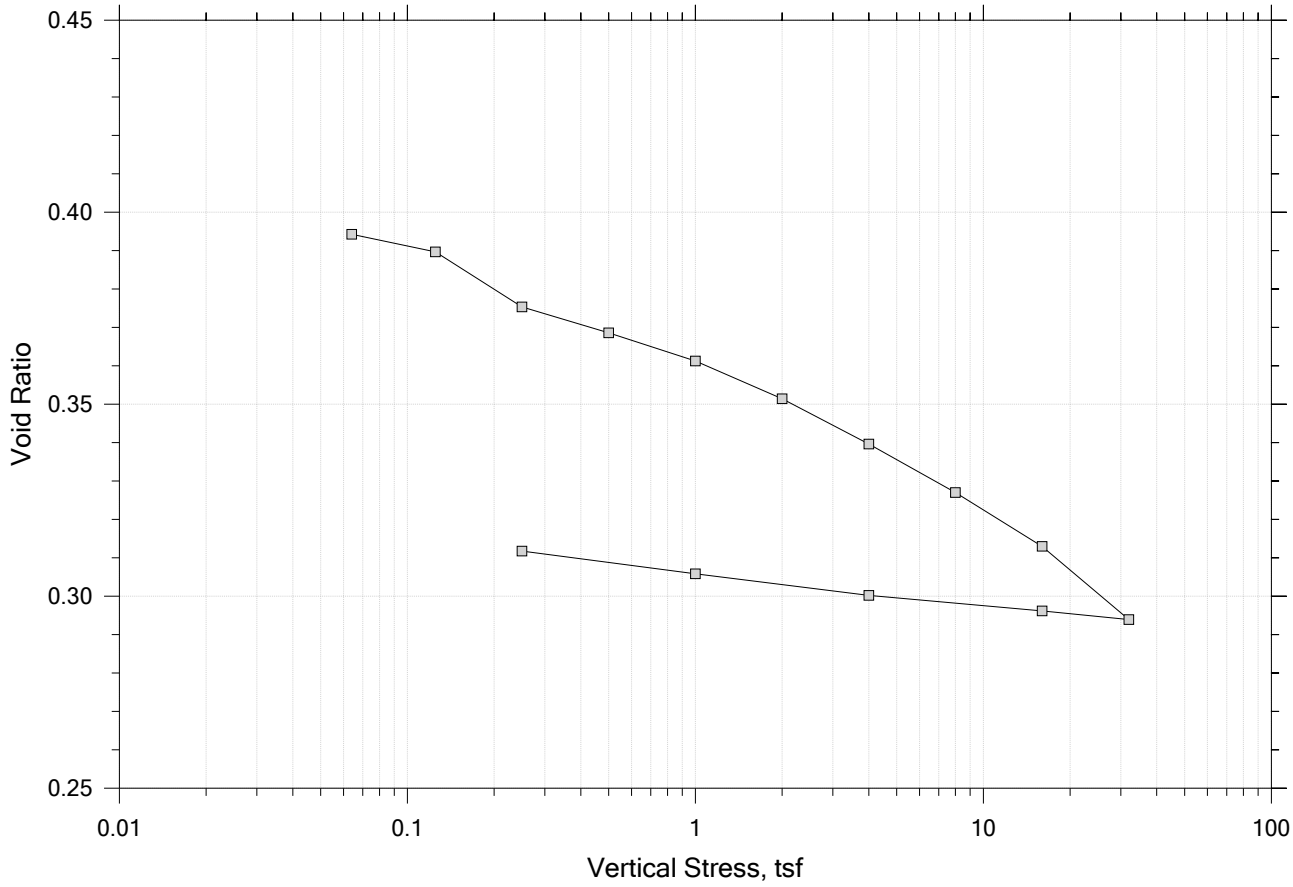
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.62
Preconsolidation Pressure, σ'_p (tsf) = 6.49
Compression Index, C_c = 0.12
Recompression Index, C_r = 0.0072

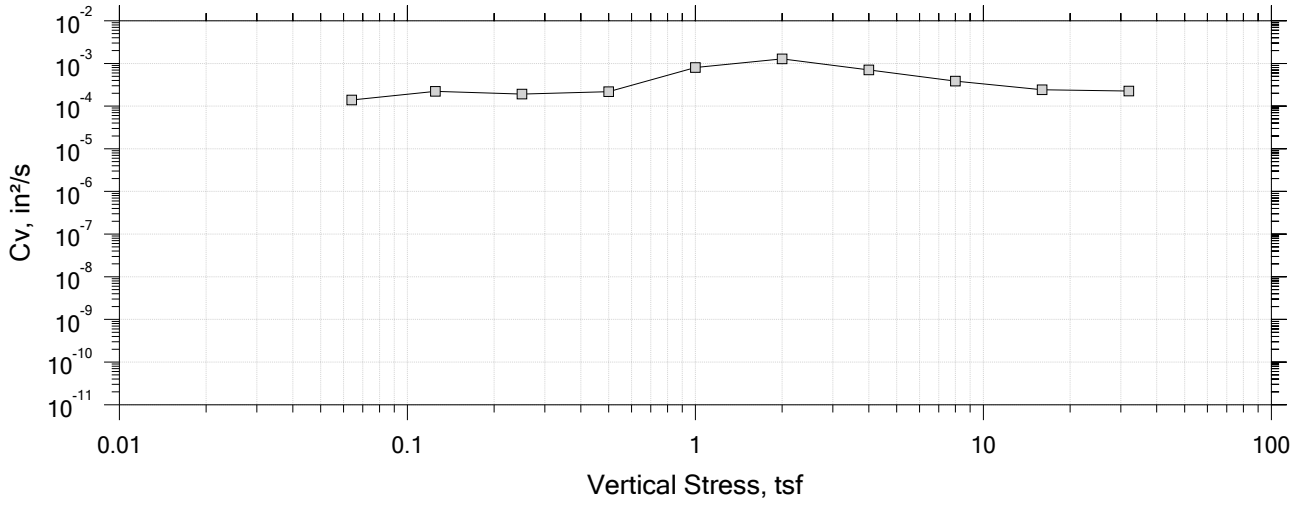




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

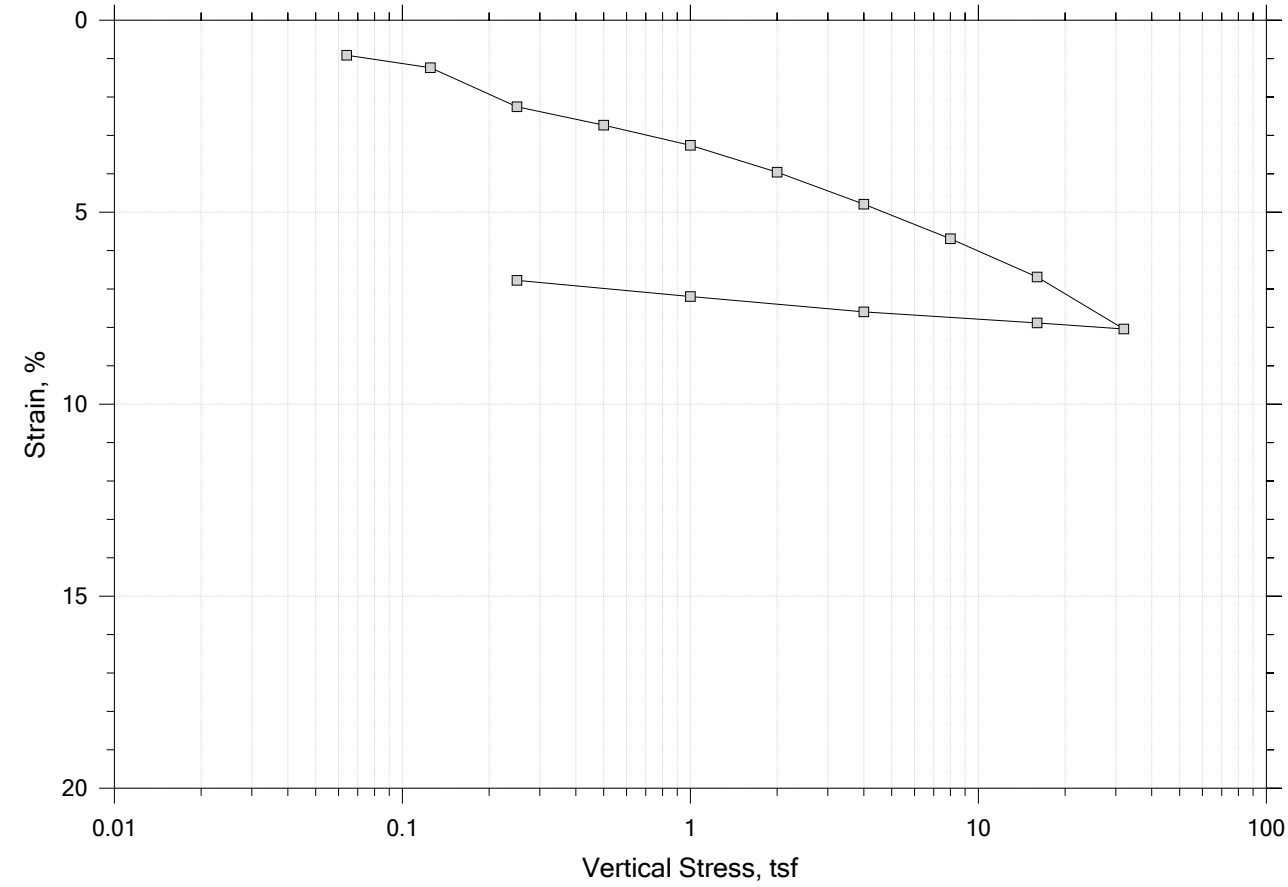


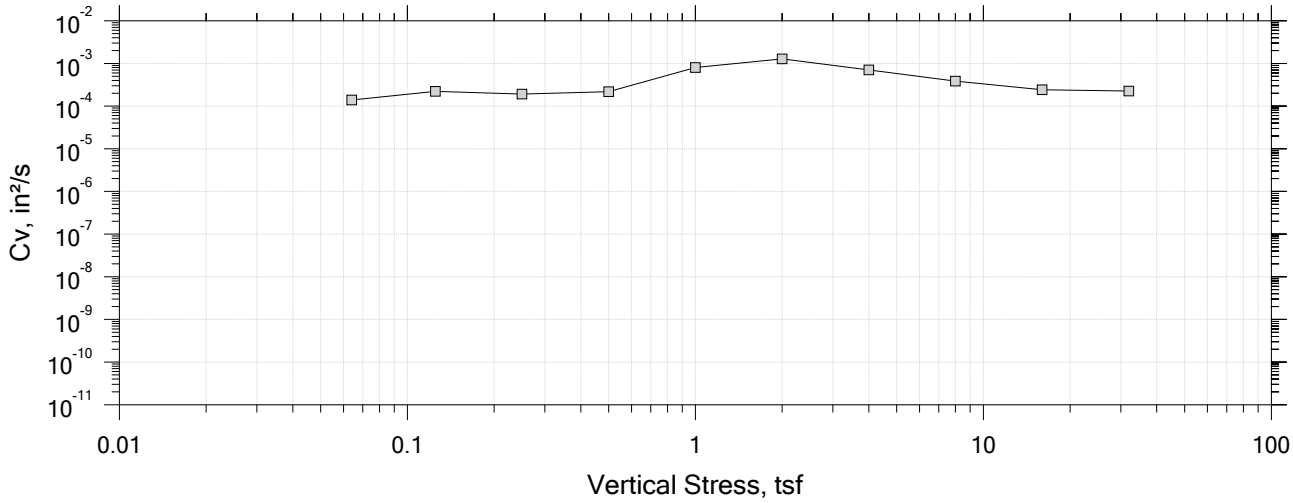


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

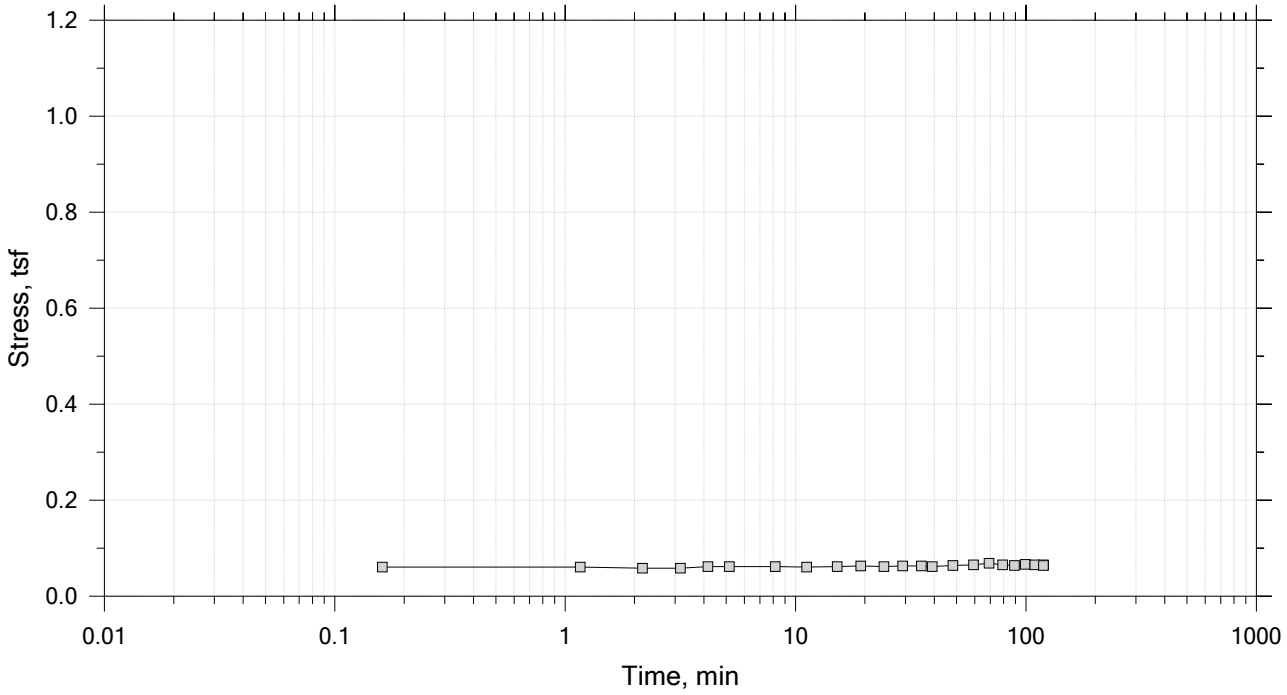


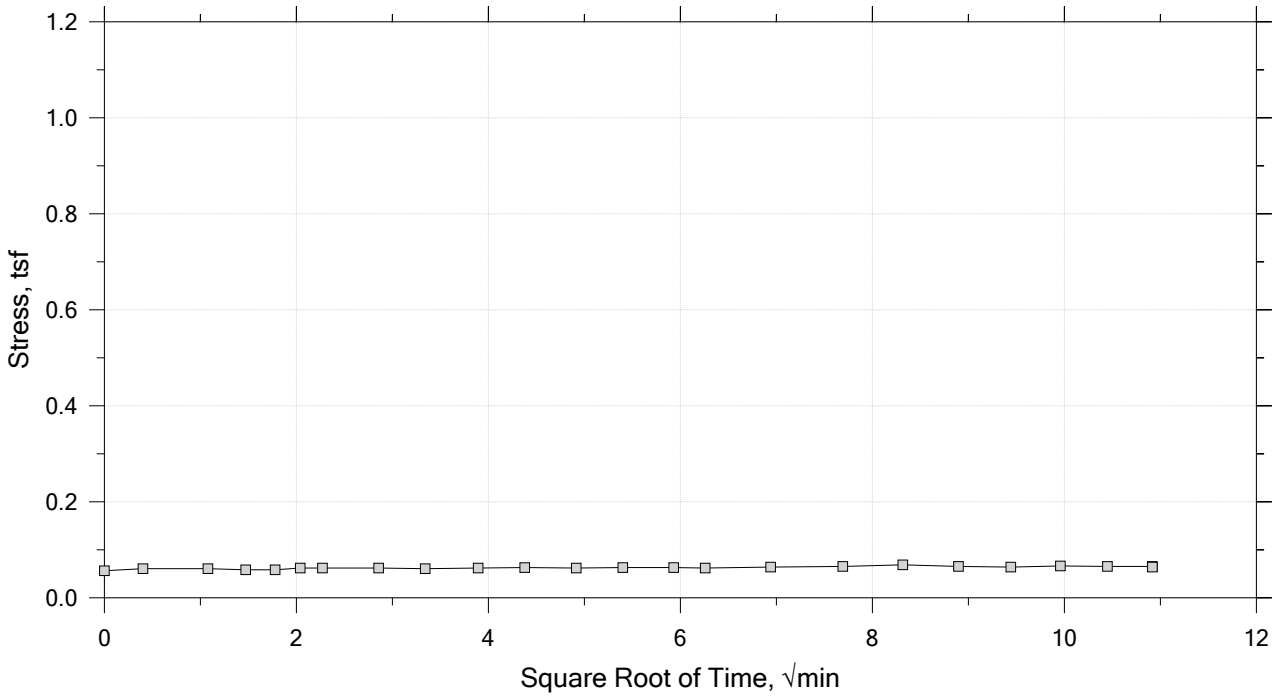


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0641 tsf

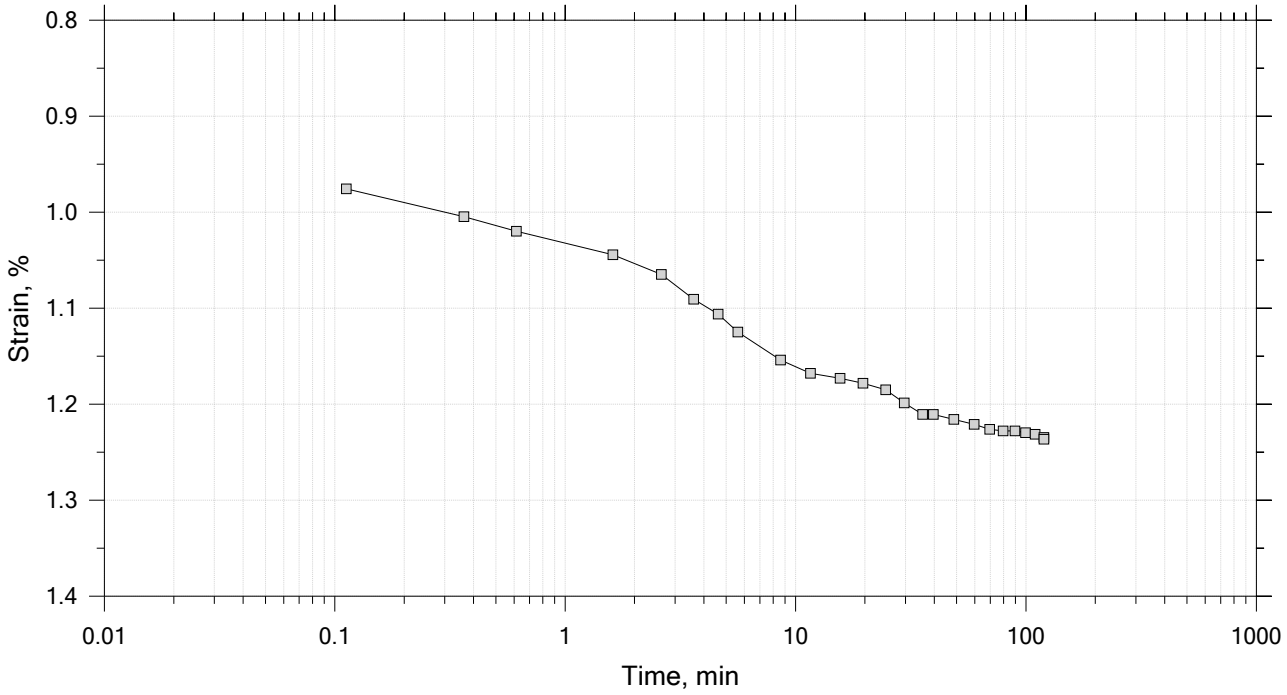


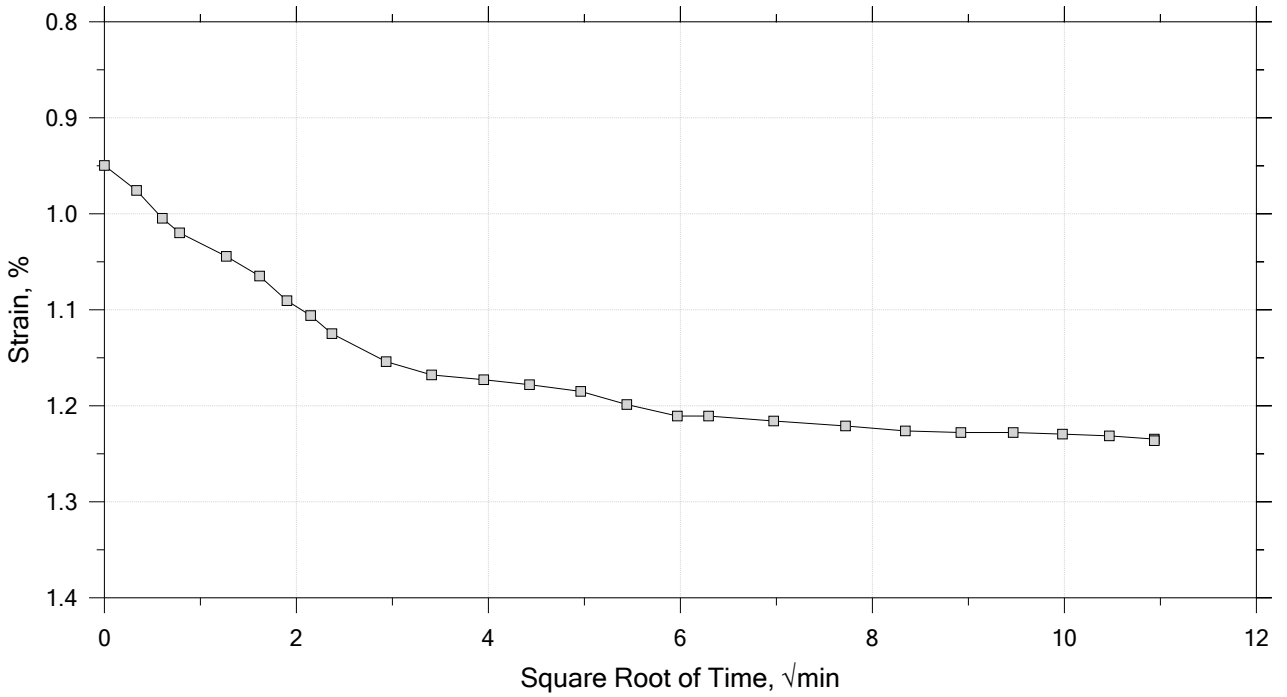


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

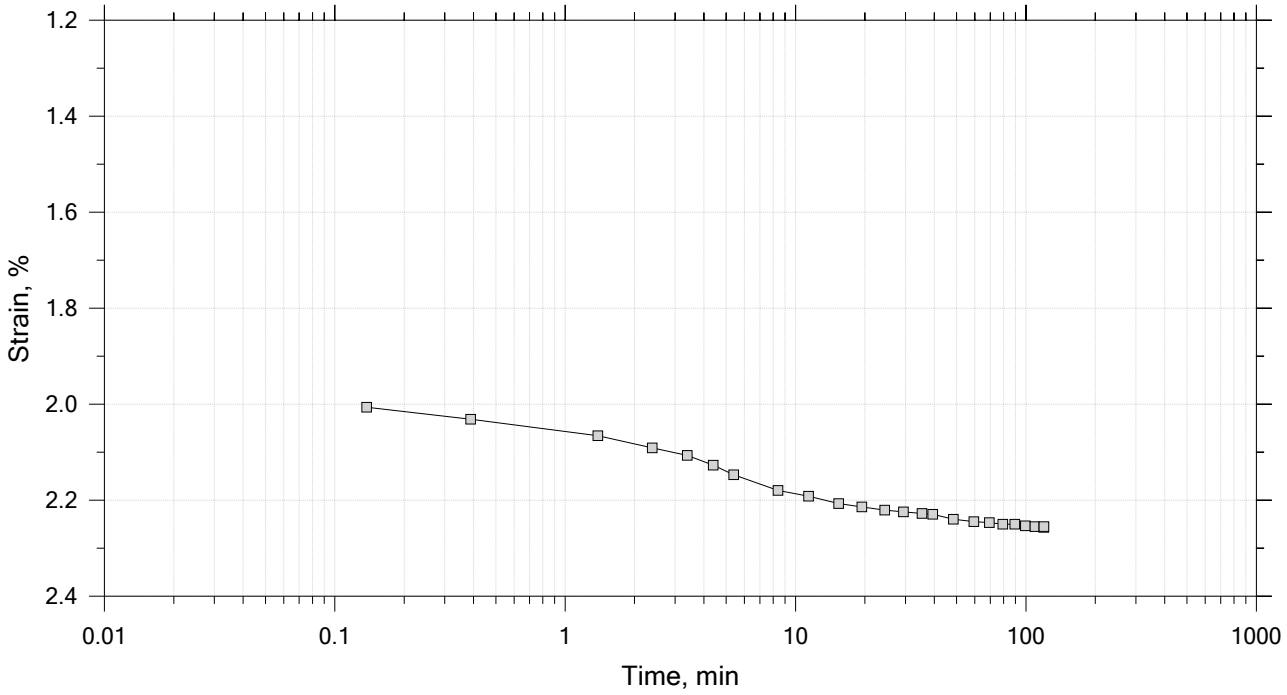


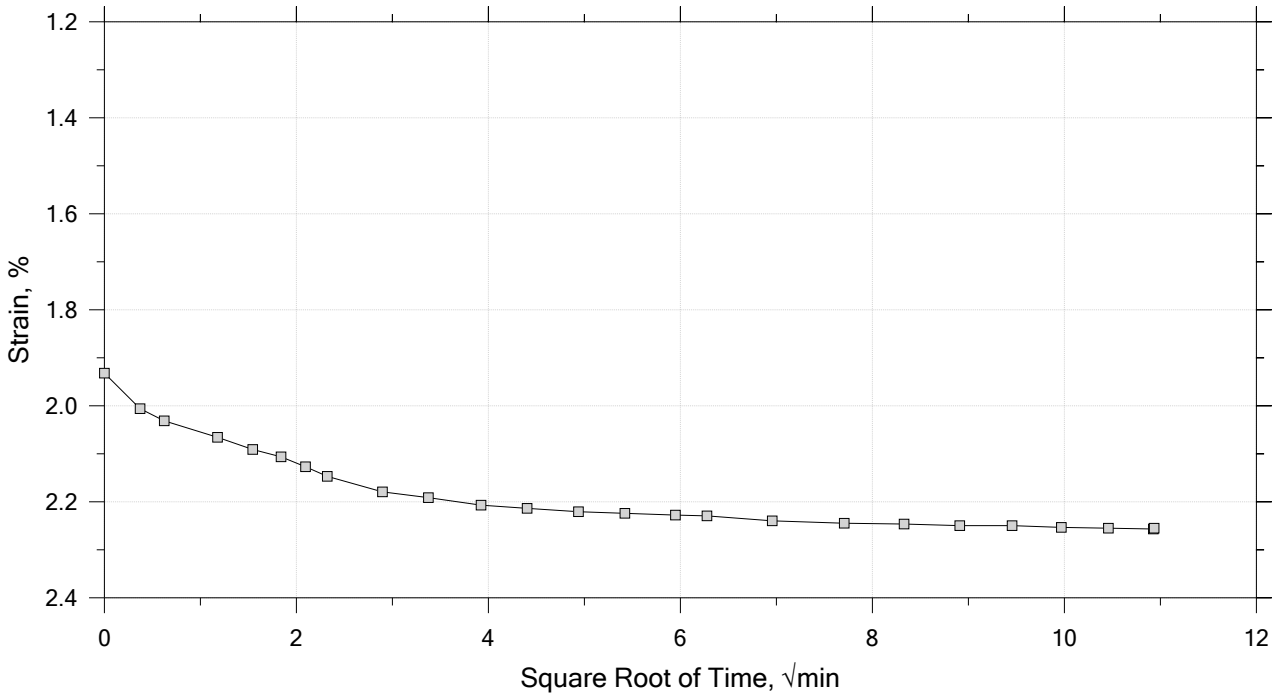


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

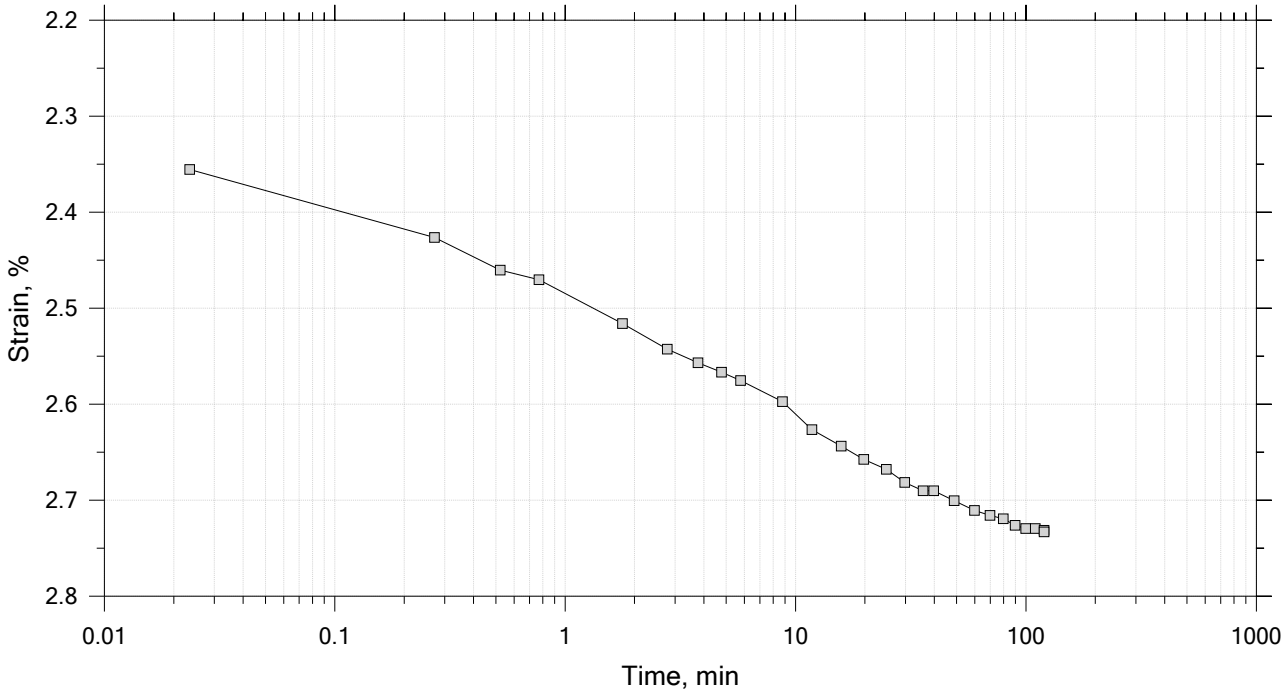


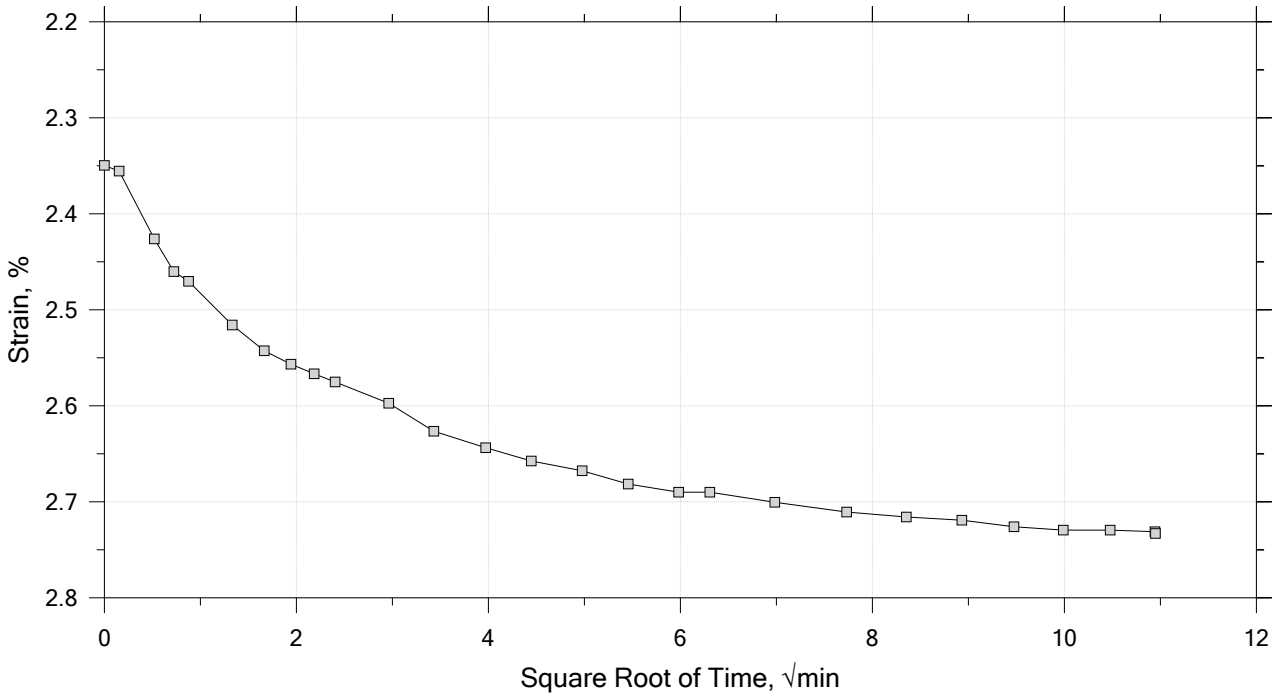


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





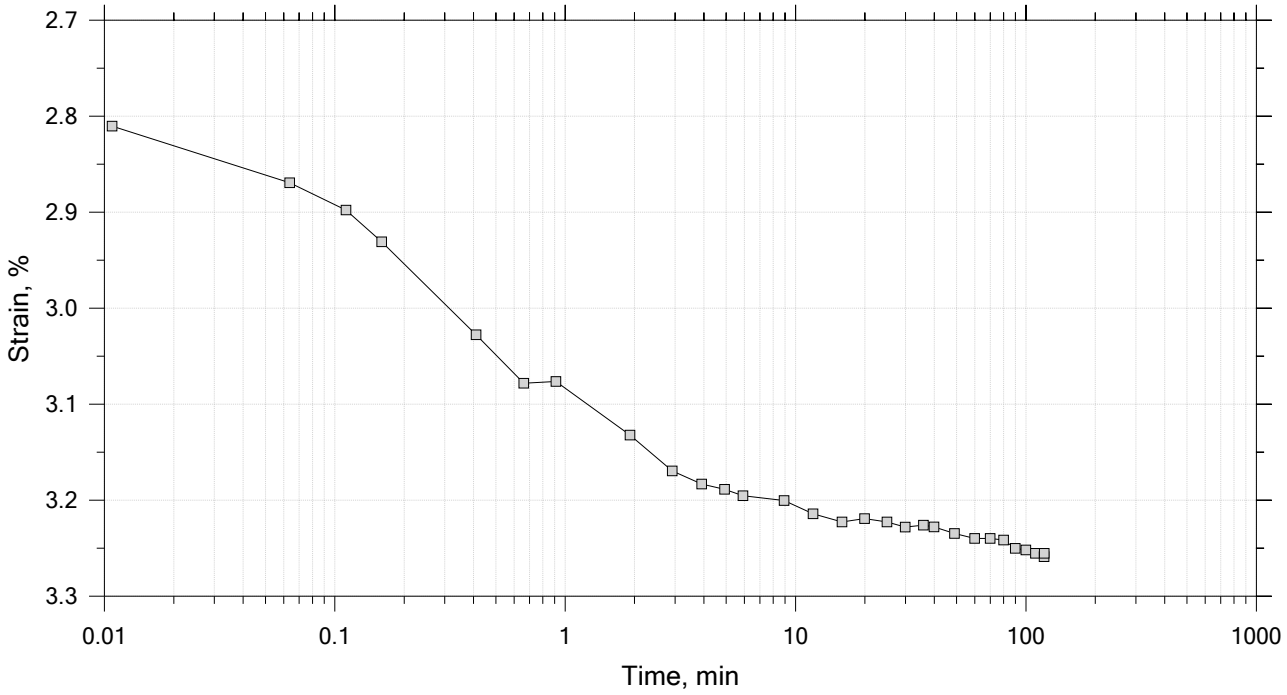
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

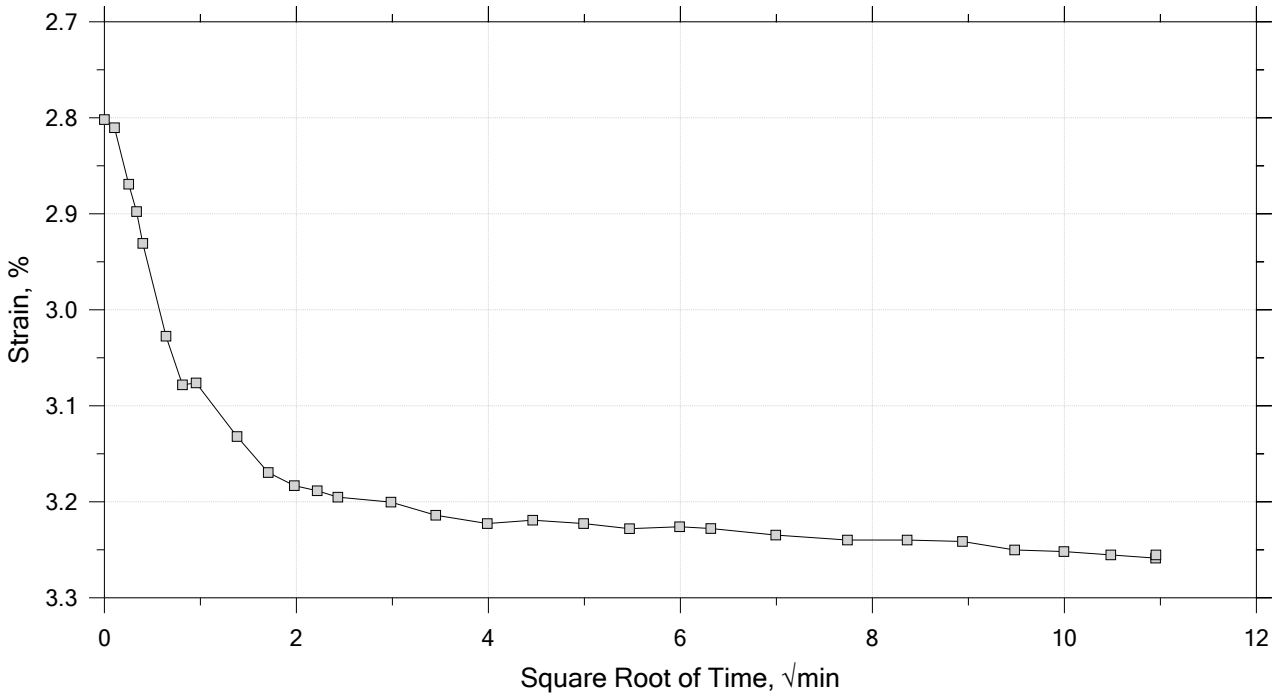
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





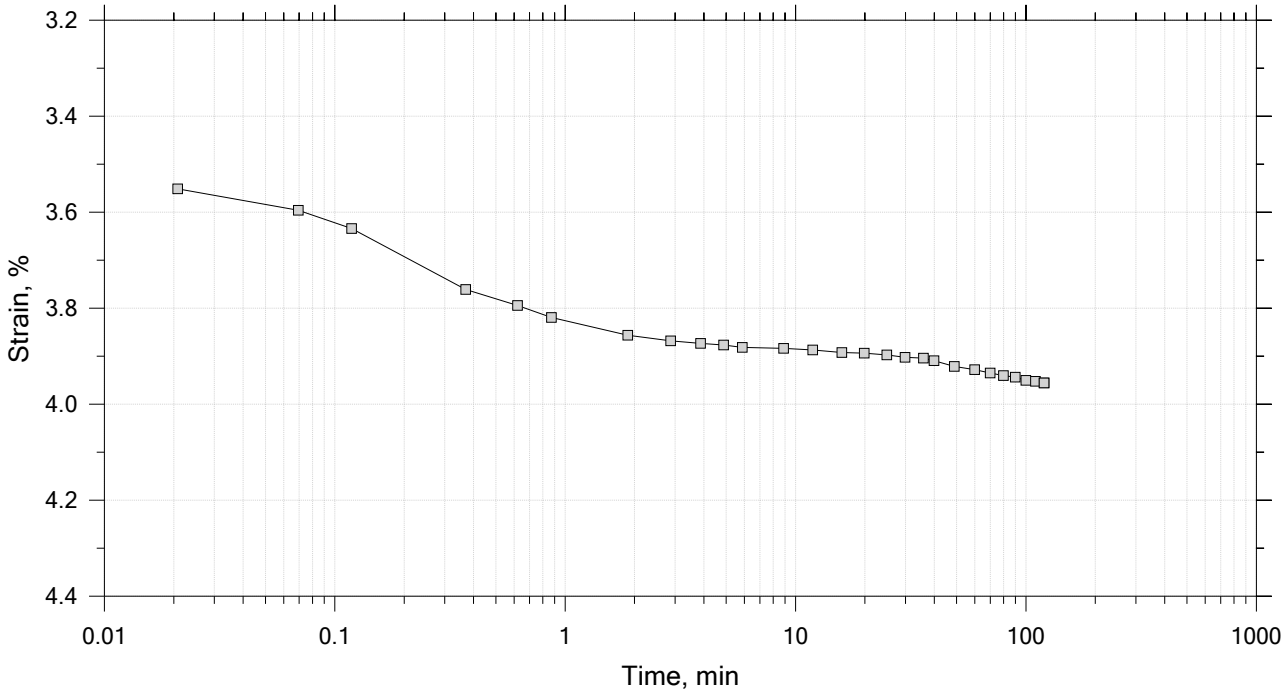
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

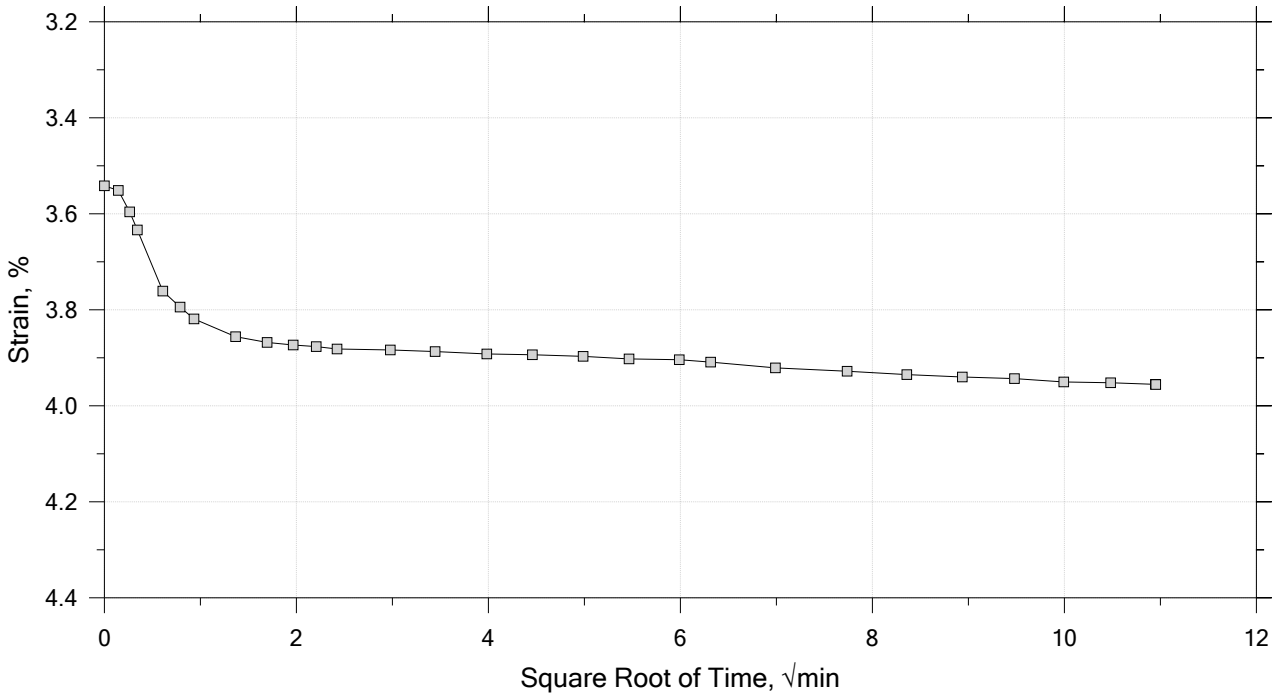
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





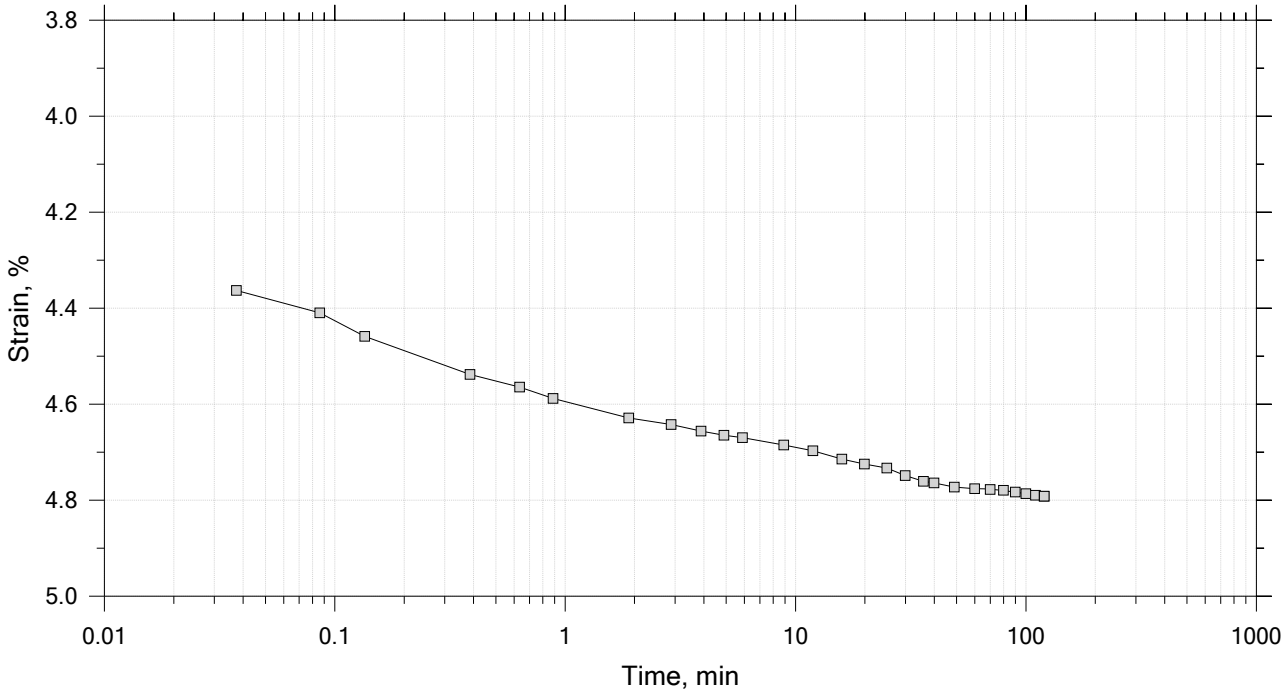
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

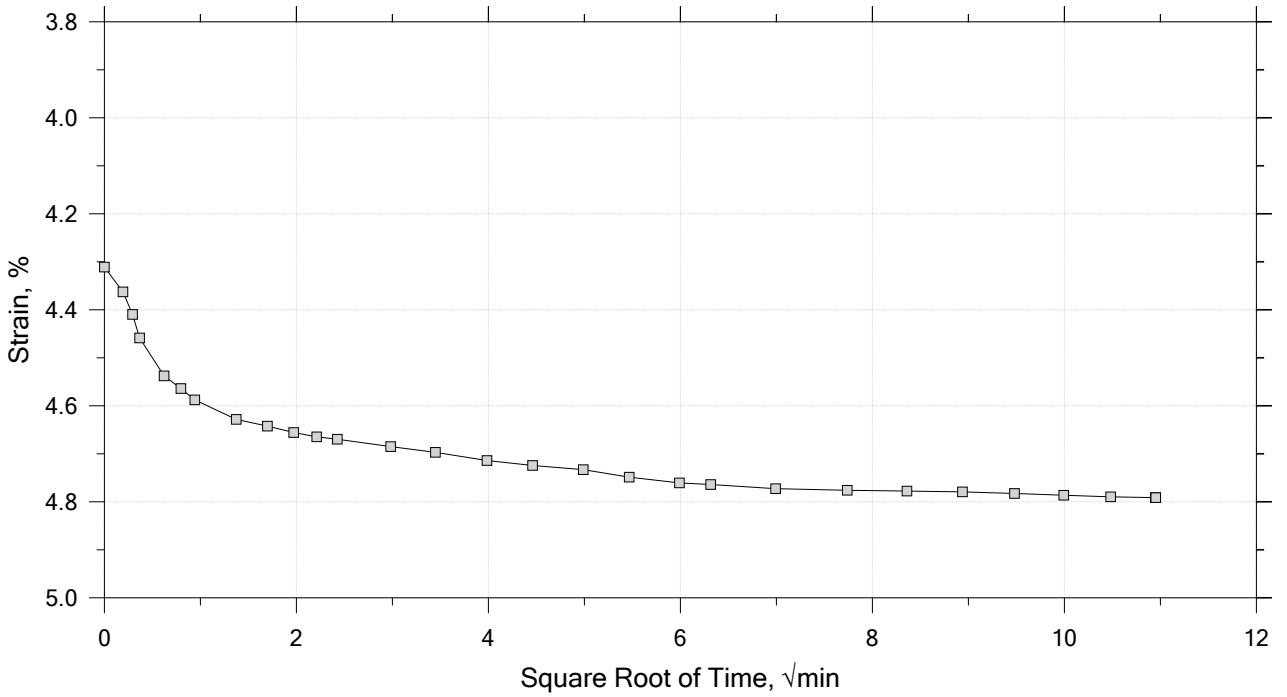
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





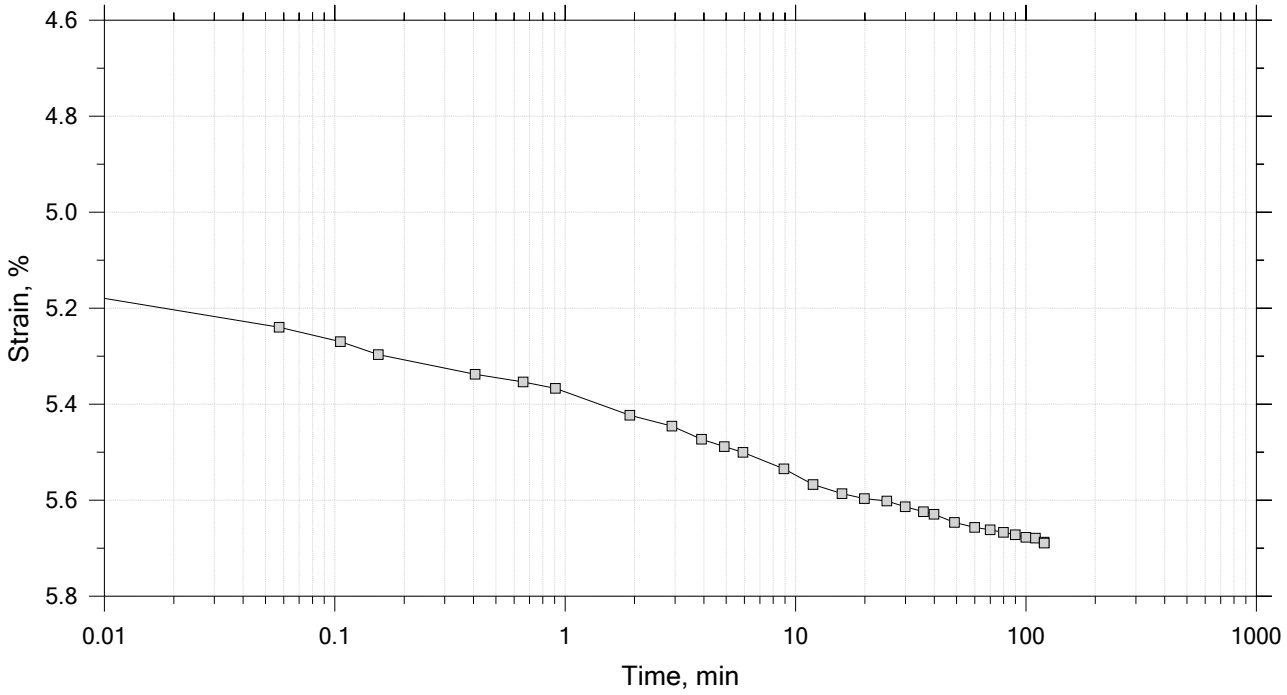
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

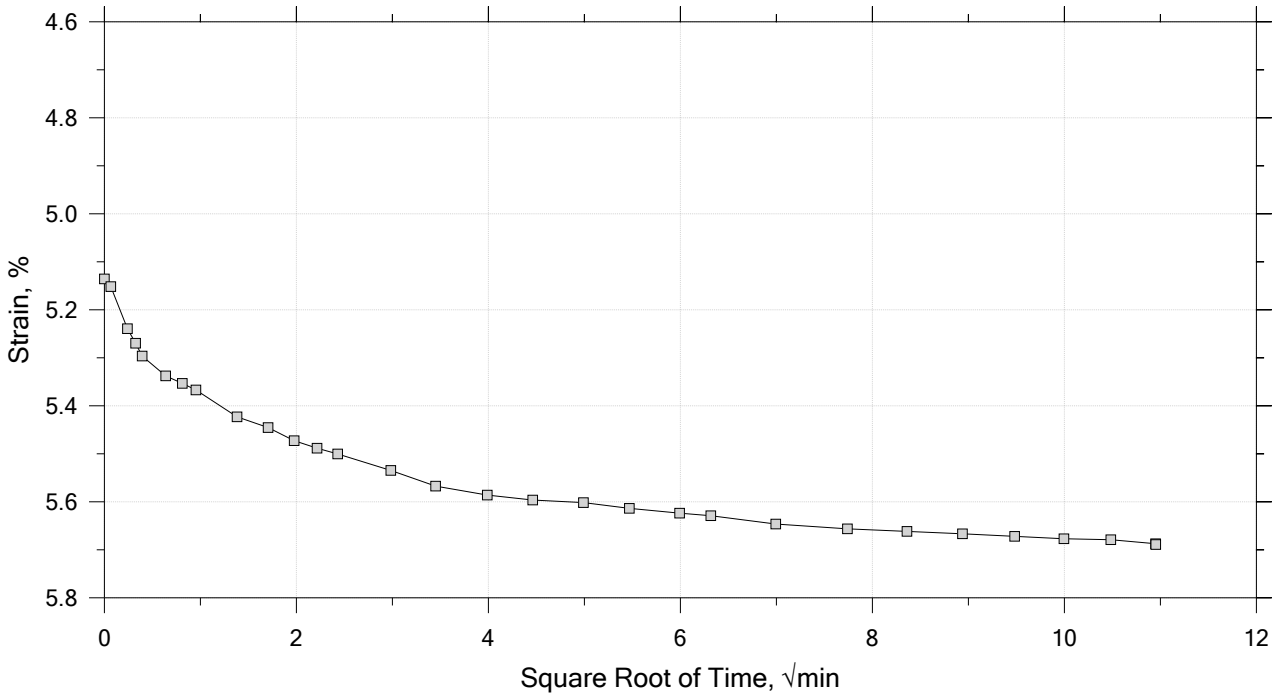
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





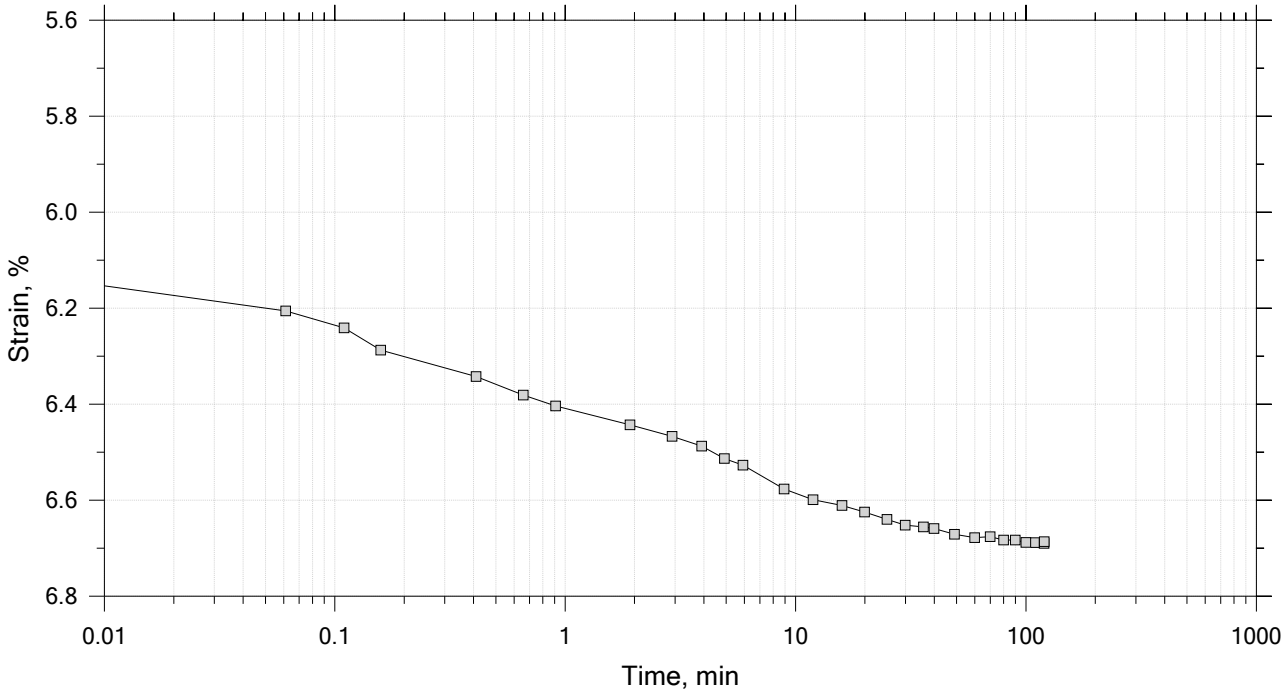
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

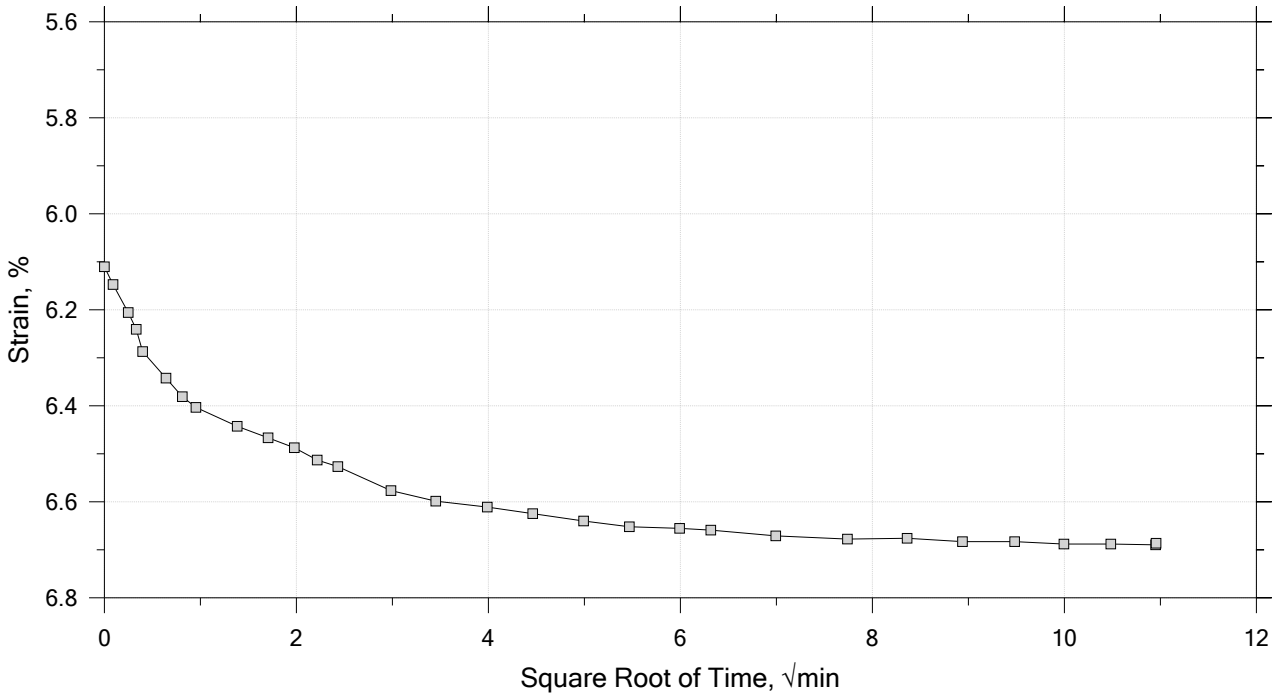
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

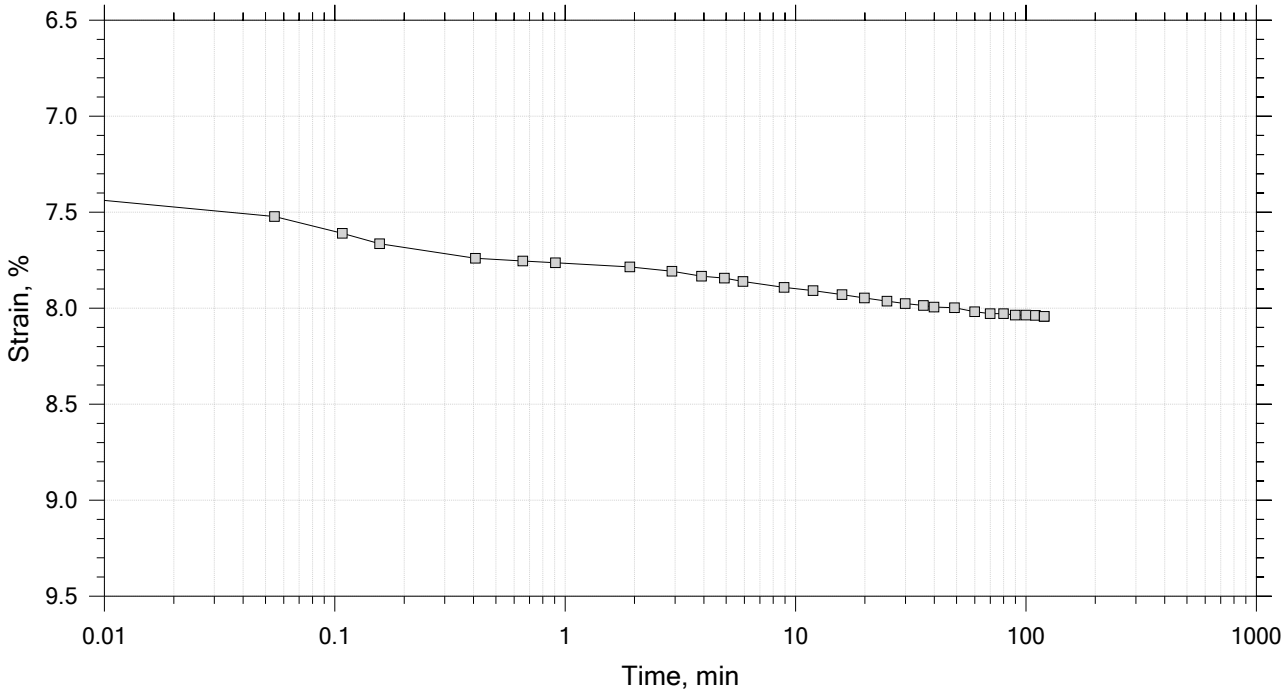


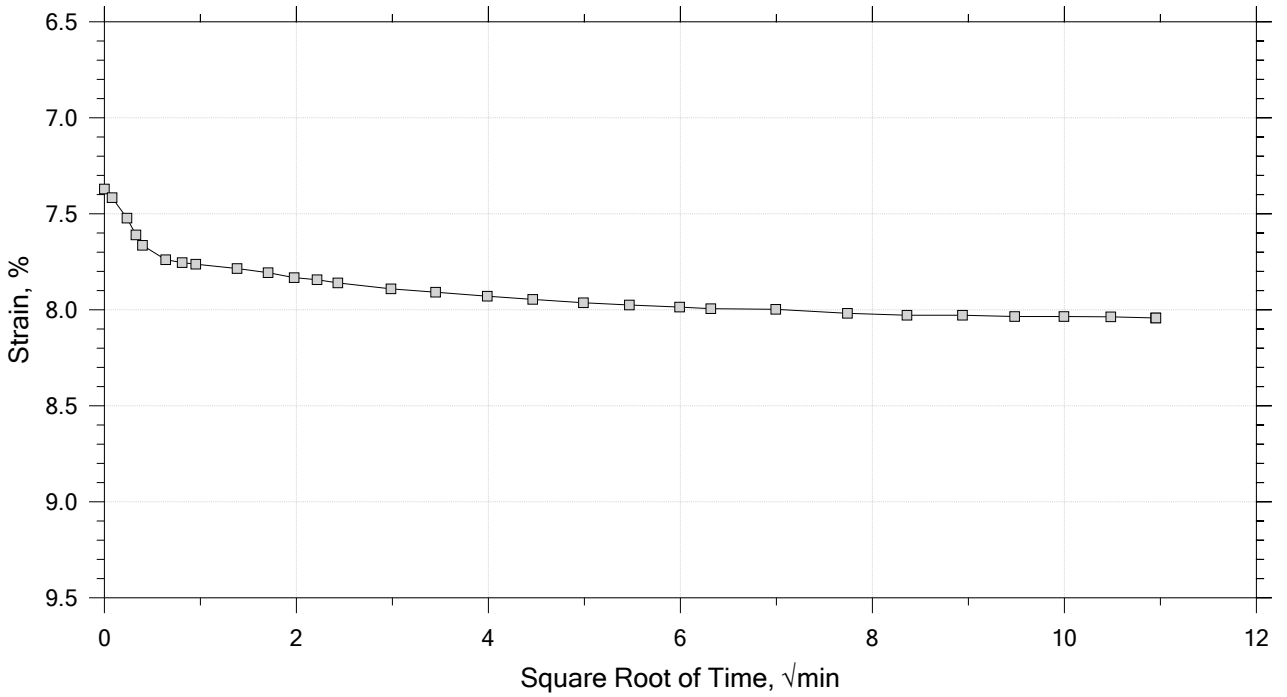


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

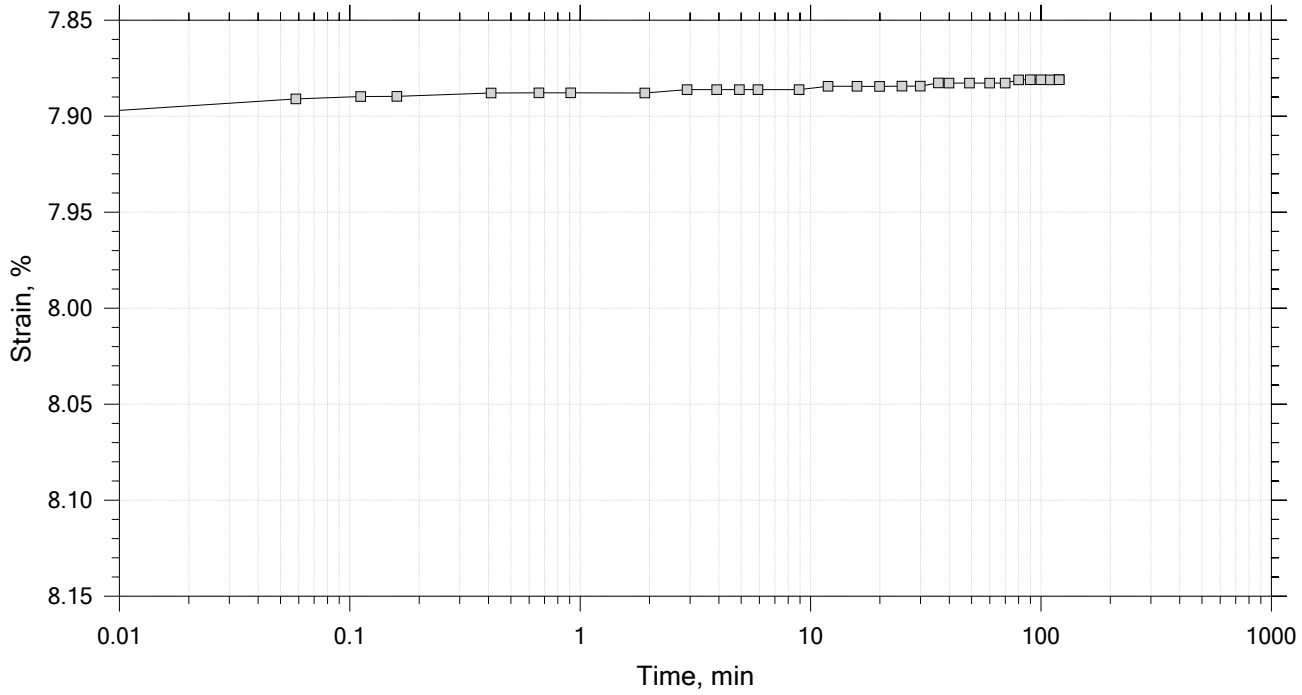


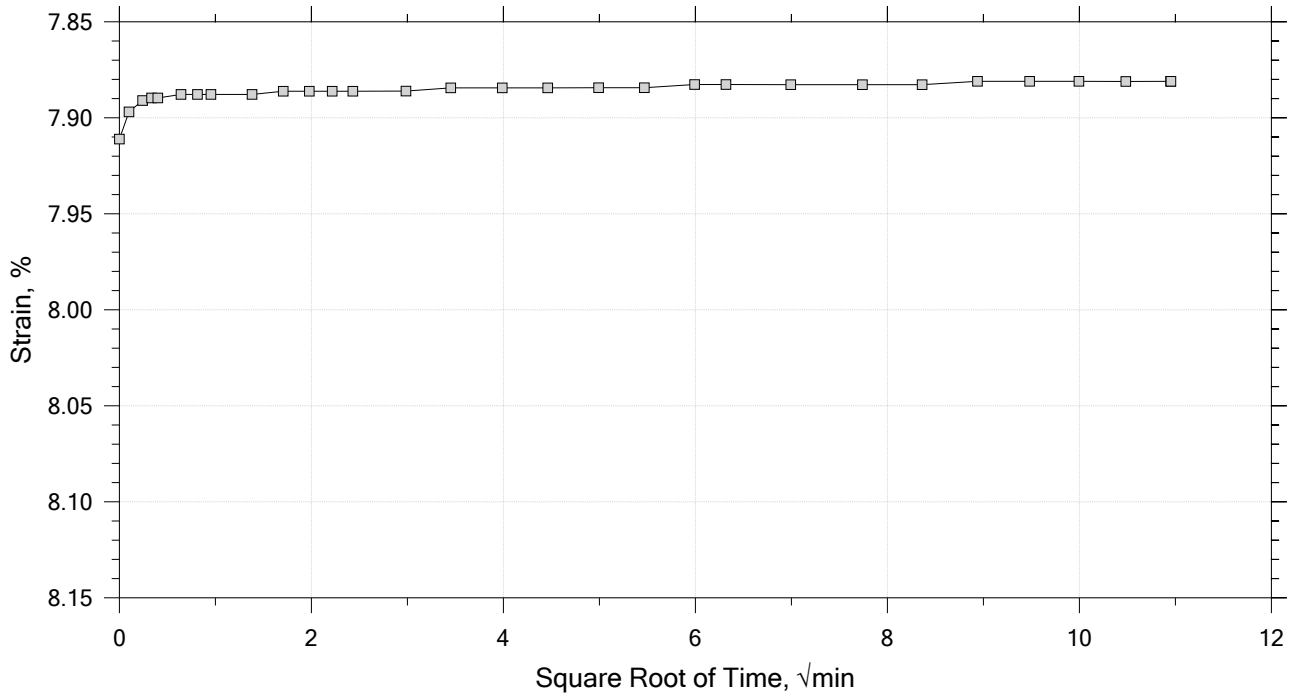


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
Test No.: IP-16-3	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

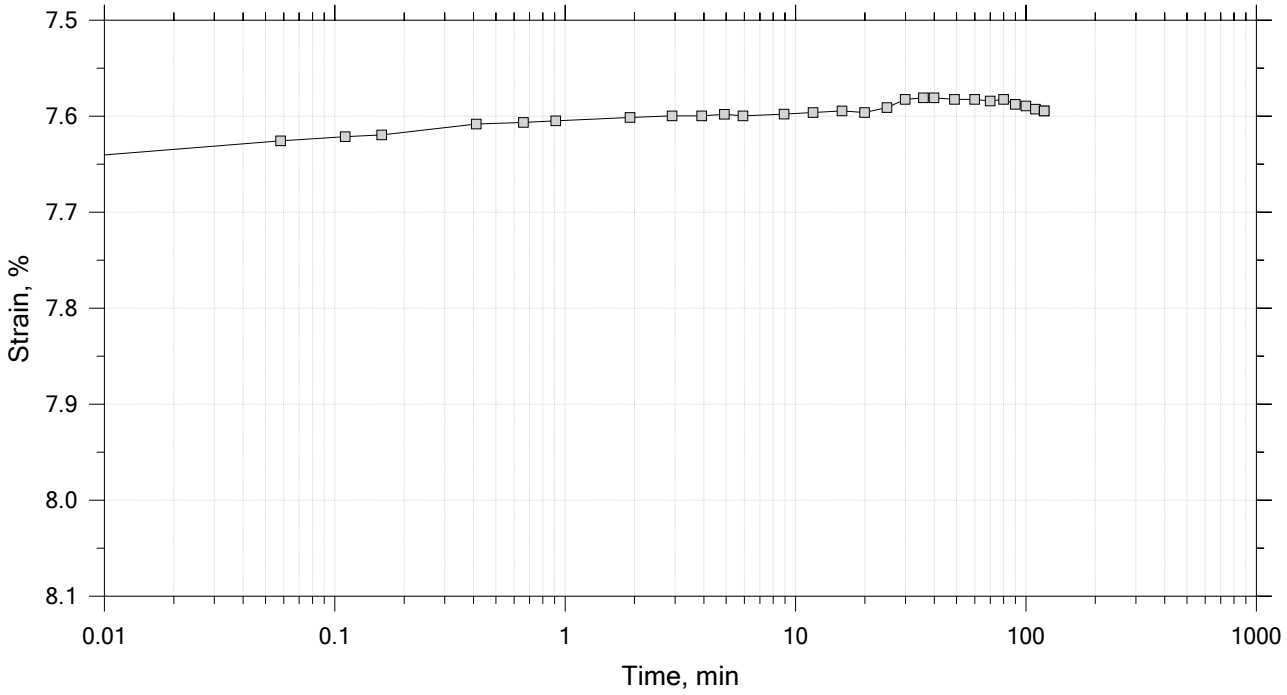


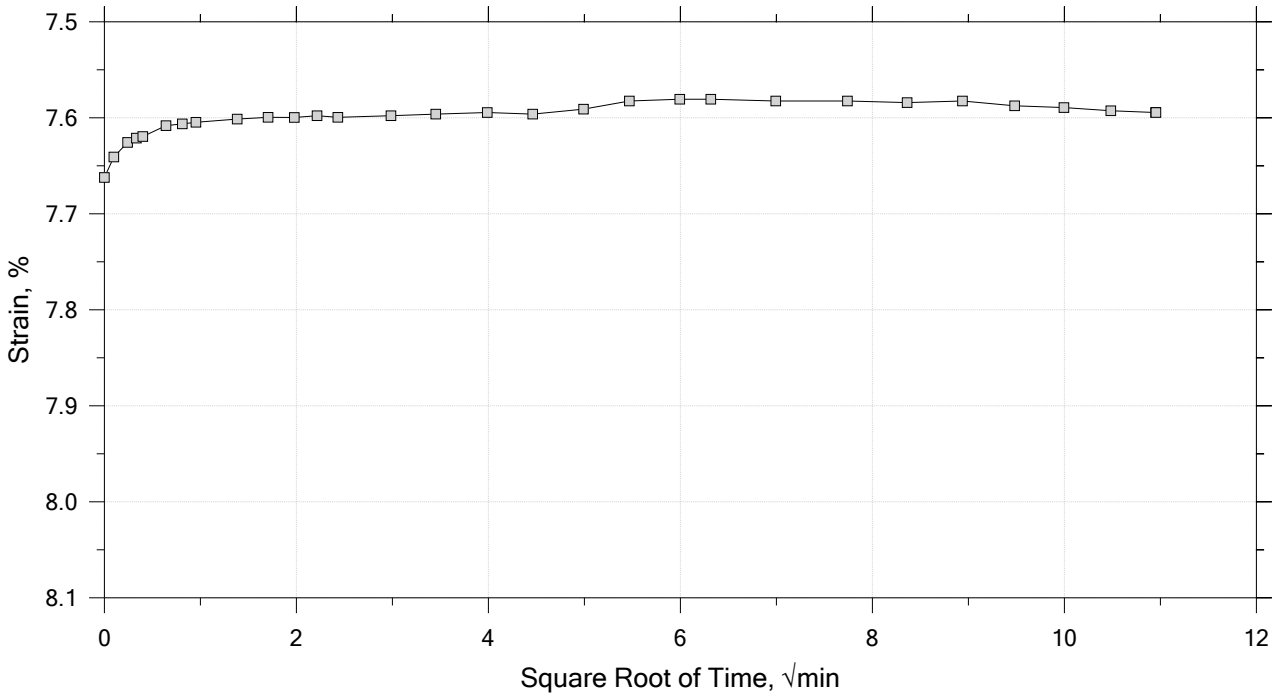


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.15	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
Test No.: IP-16-3	Sample Type: intact	Elevation: ---
Description: Moist, dark gray sandy silt		
Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

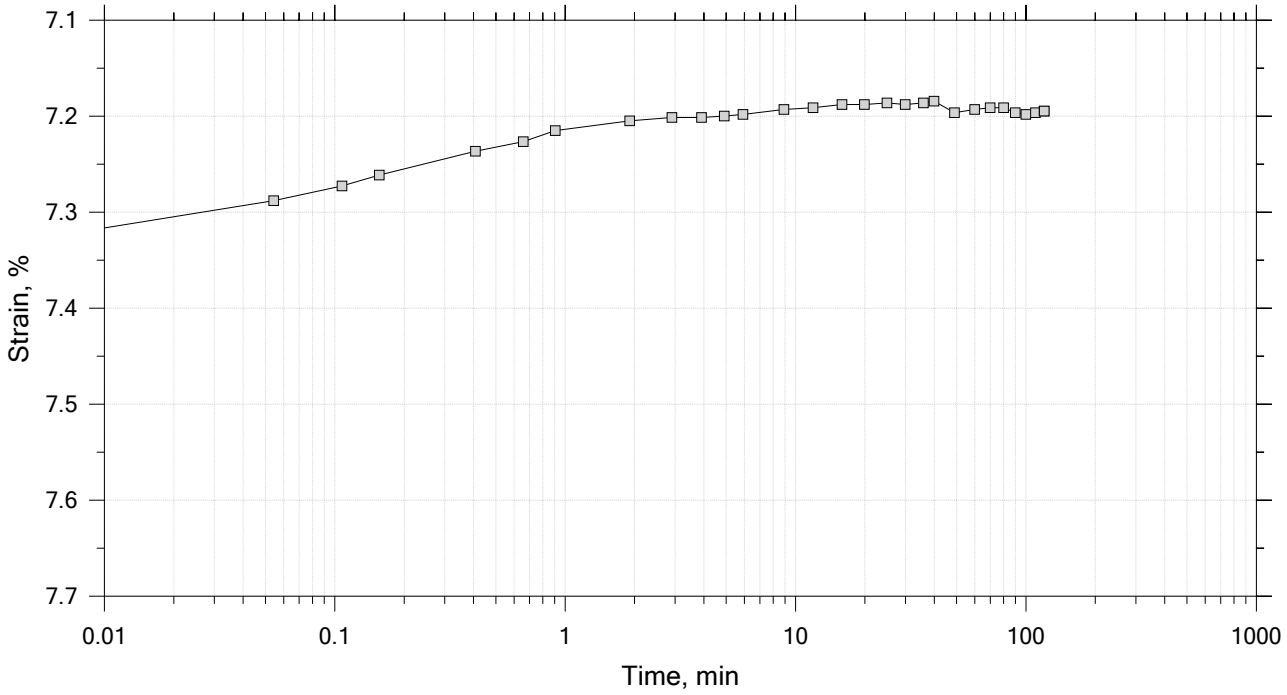


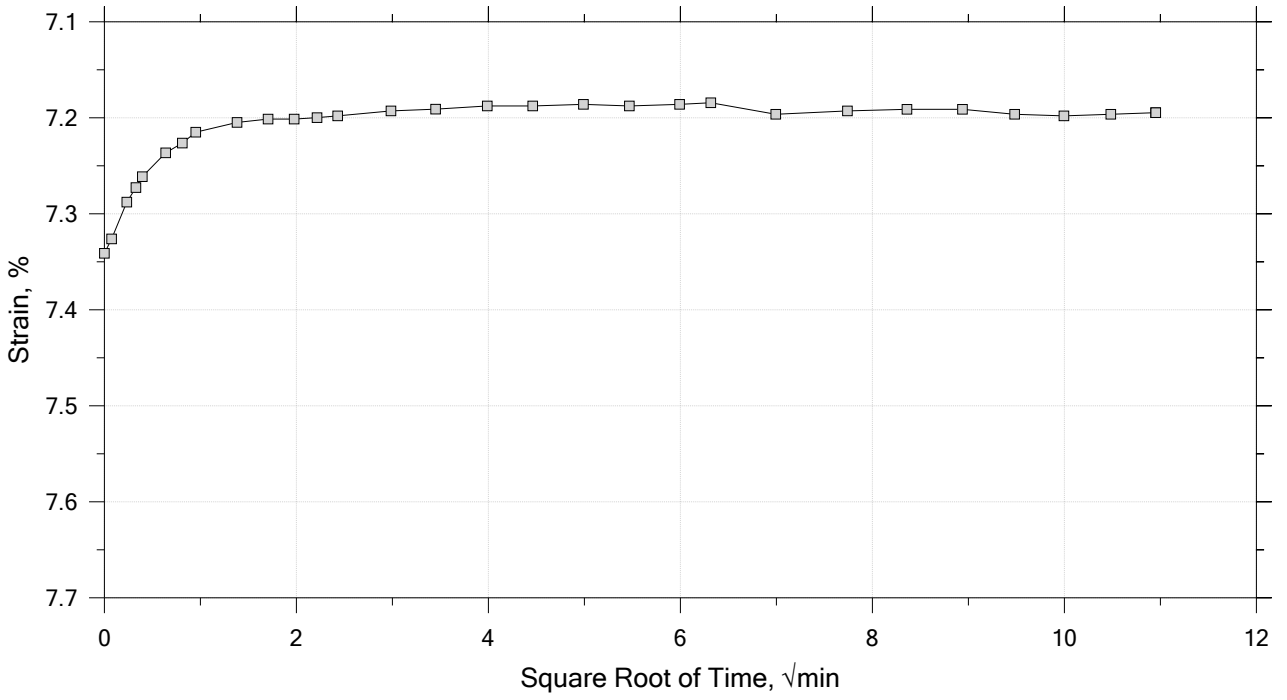


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

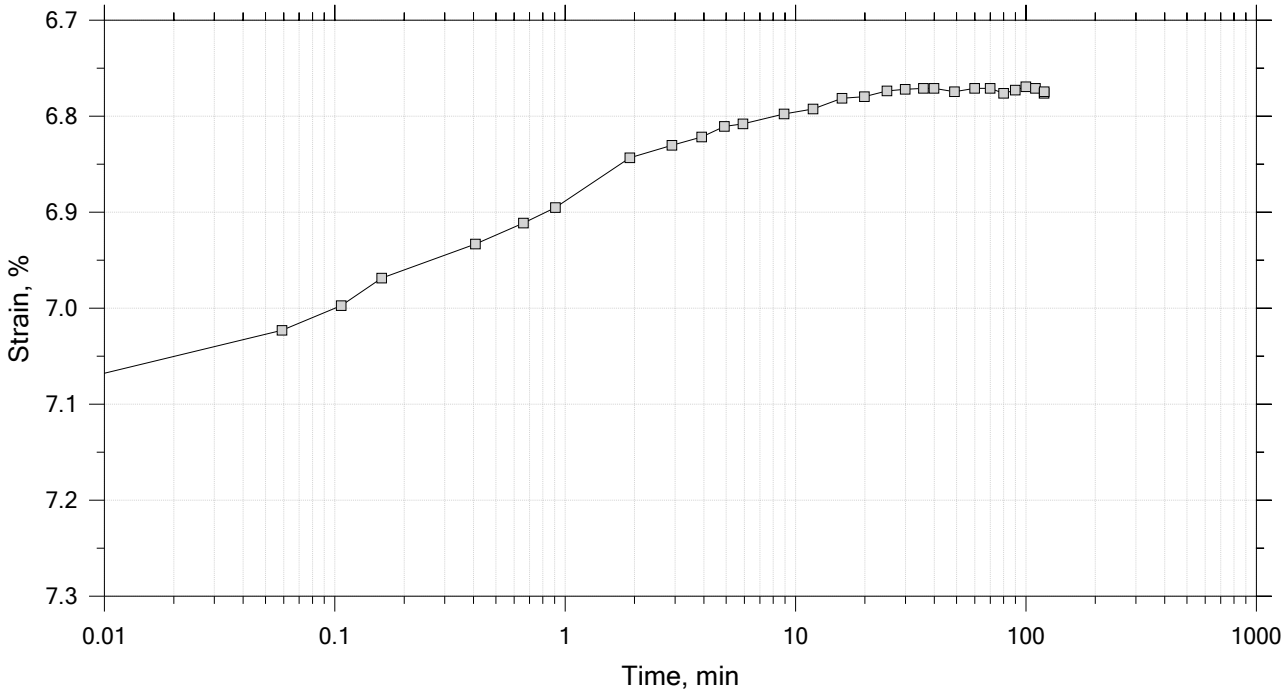


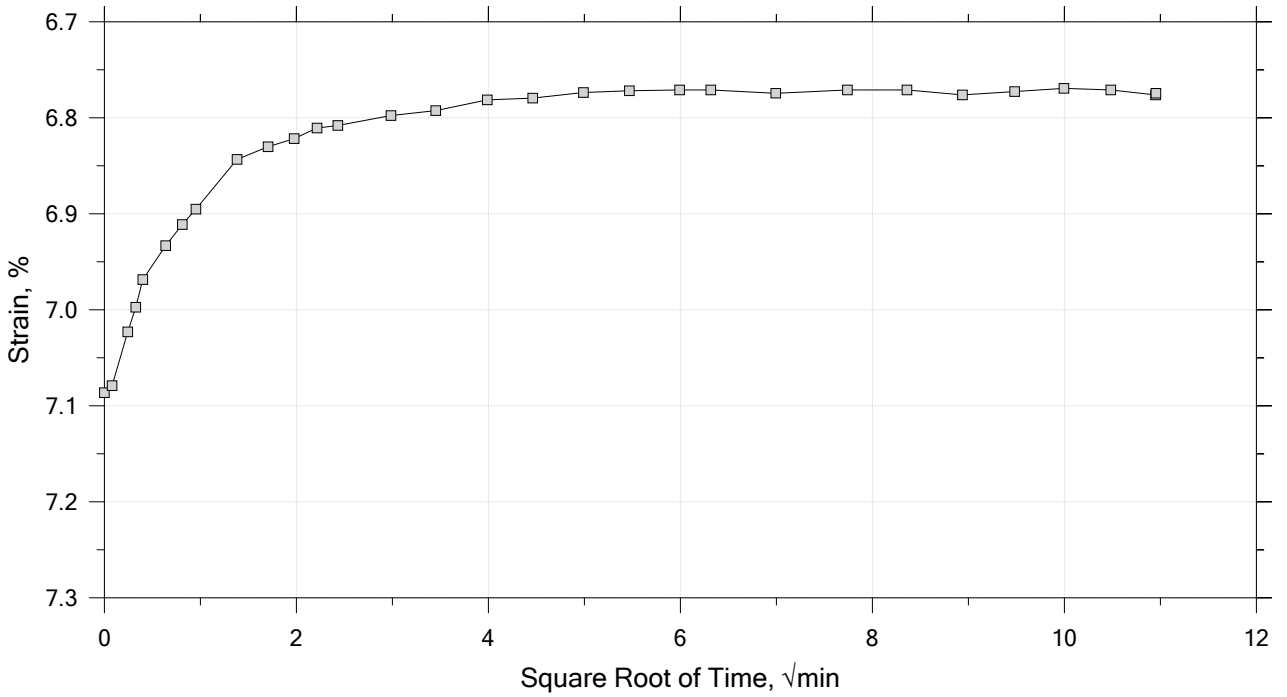


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: NP
Initial Height: 1.00 in	Initial Void Ratio: 0.407	Plastic Limit: NP
Final Height: 0.93 in	Final Void Ratio: 0.312	Plasticity Index: NP

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E2955	RING		E5684
Mass Container, gm	8.57	109.81	109.81	8.31
Mass Container + Wet Soil, gm	148.8	289.08	284.77	182.76
Mass Container + Dry Soil, gm	130.57	266.95	266.95	164.99
Mass Dry Soil, gm	122	157.14	157.14	156.68
Water Content, %	14.94	14.08	11.34	11.34
Void Ratio	---	0.41	0.31	---
Degree of Saturation, %	---	95.10	100.00	---
Dry Unit Weight, pcf	---	121.95	130.81	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

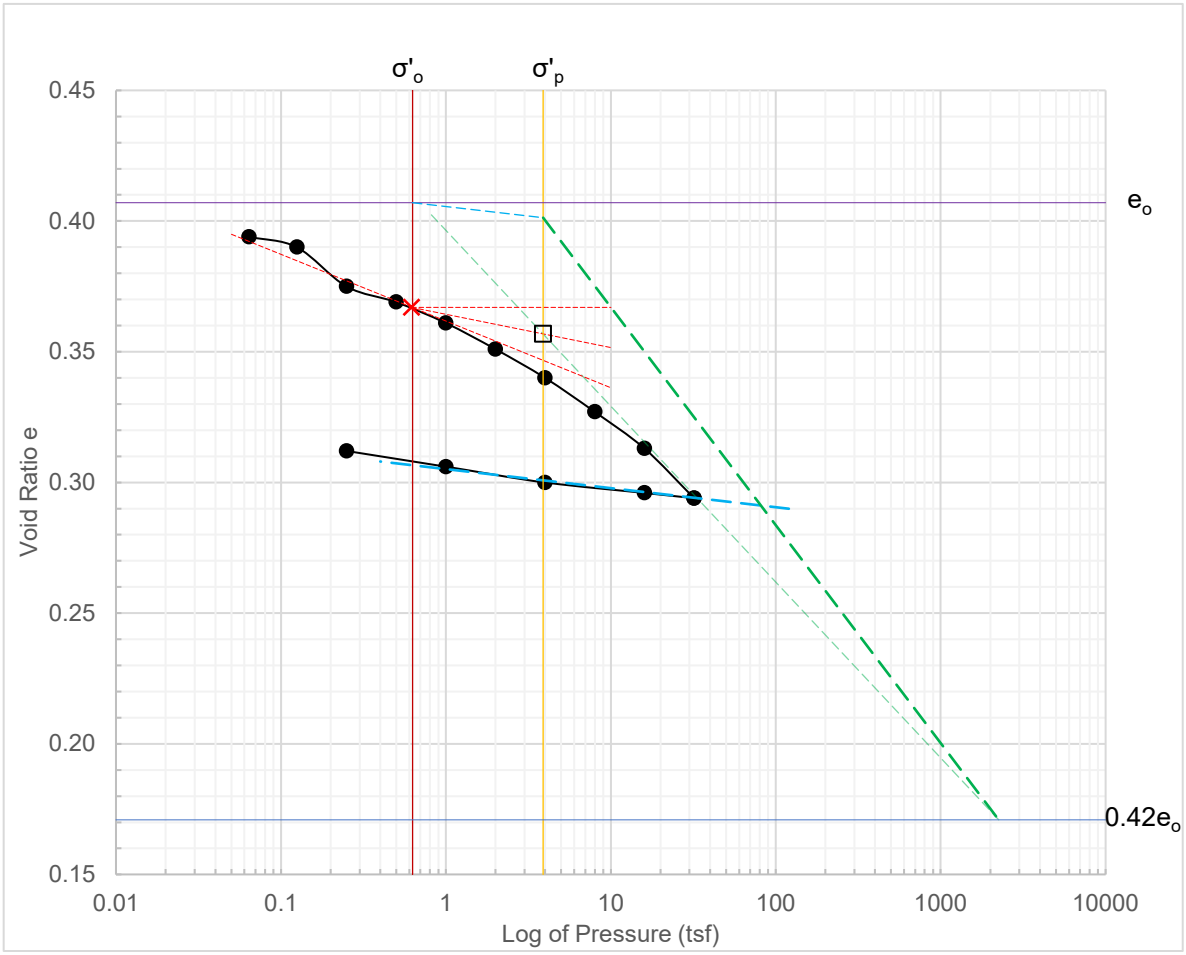
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0641	0.009108	0.394	0.911	25.182	1.39e-04	1.42e-01	3.70e-04
2	0.125	0.01236	0.390	1.24	15.595	2.22e-04	5.34e-02	2.22e-04
3	0.250	0.02255	0.375	2.26	17.800	1.92e-04	8.15e-02	2.92e-04
4	0.500	0.02733	0.369	2.73	15.389	2.18e-04	1.91e-02	7.82e-05
5	1.00	0.03255	0.361	3.26	4.127	8.06e-04	1.04e-02	1.58e-04
6	2.00	0.03956	0.351	3.96	2.573	1.28e-03	7.00e-03	1.67e-04
7	4.00	0.04791	0.340	4.79	4.568	7.07e-04	4.18e-03	5.54e-05
8	8.00	0.05689	0.327	5.69	8.263	3.84e-04	2.24e-03	1.61e-05
9	16.0	0.06686	0.313	6.69	12.817	2.43e-04	1.25e-03	5.66e-06
10	32.0	0.08042	0.294	8.04	13.500	2.25e-04	8.47e-04	3.56e-06
11	16.0	0.07881	0.296	7.88	88.329	3.39e-05	1.01e-04	6.40e-08
12	4.00	0.07594	0.300	7.59	0.000	0.00e+00	2.39e-04	0.00e+00
13	1.00	0.07195	0.306	7.19	0.668	4.54e-03	1.33e-03	1.13e-04
14	0.250	0.06774	0.312	6.77	1.812	1.69e-03	5.60e-03	1.77e-04

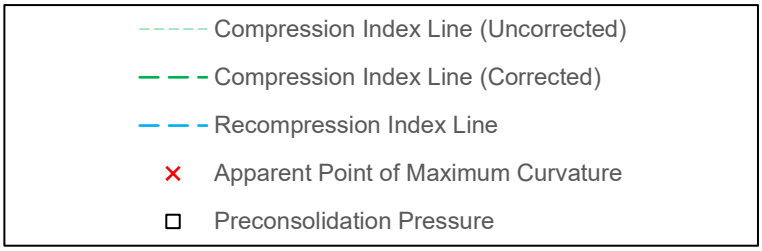
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.15	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.6-13.7
	Test No.: IP-16-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray sandy silt		
	Remarks: System LTIII-A, Swell Pressure = 0.0641 tsf		
	Displacement at End of Increment		

Boring: B-4.15

Depth: 13.6'-13.7'

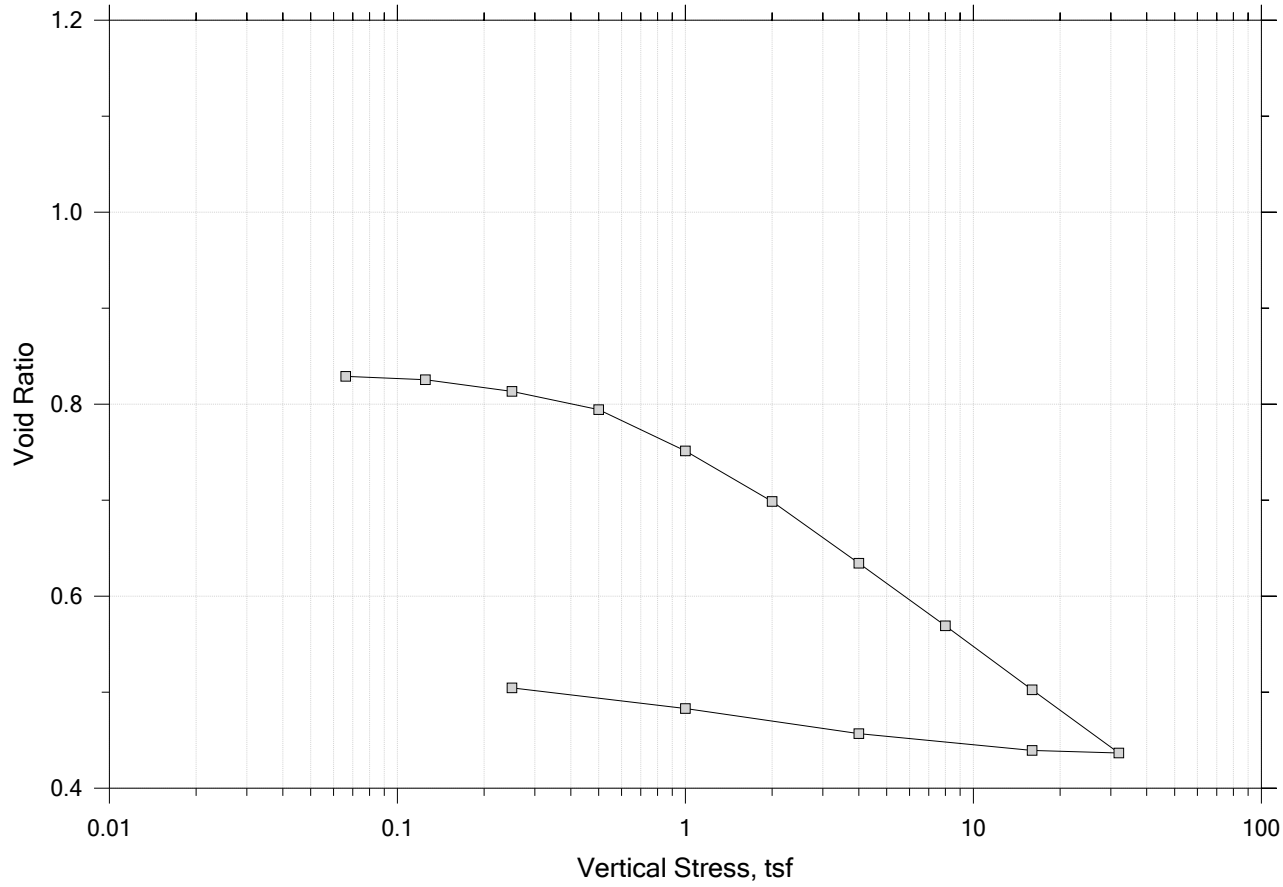
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.63
Preconsolidation Pressure, σ'_p (tsf) = 3.88
Compression Index, C_c = 0.083
Recompression Index, C_r = 0.0073

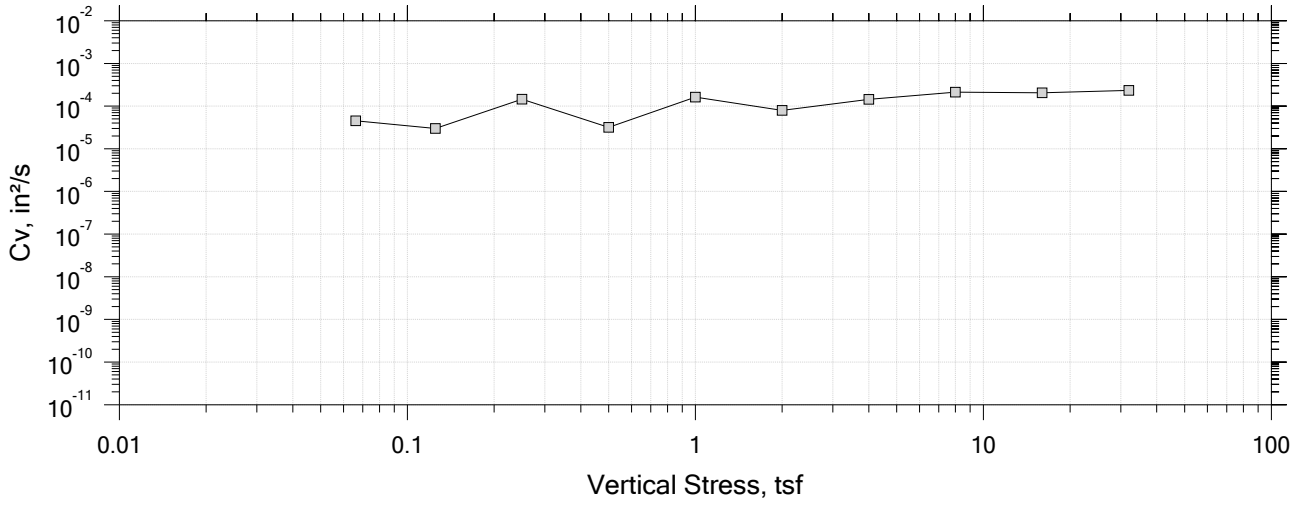




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

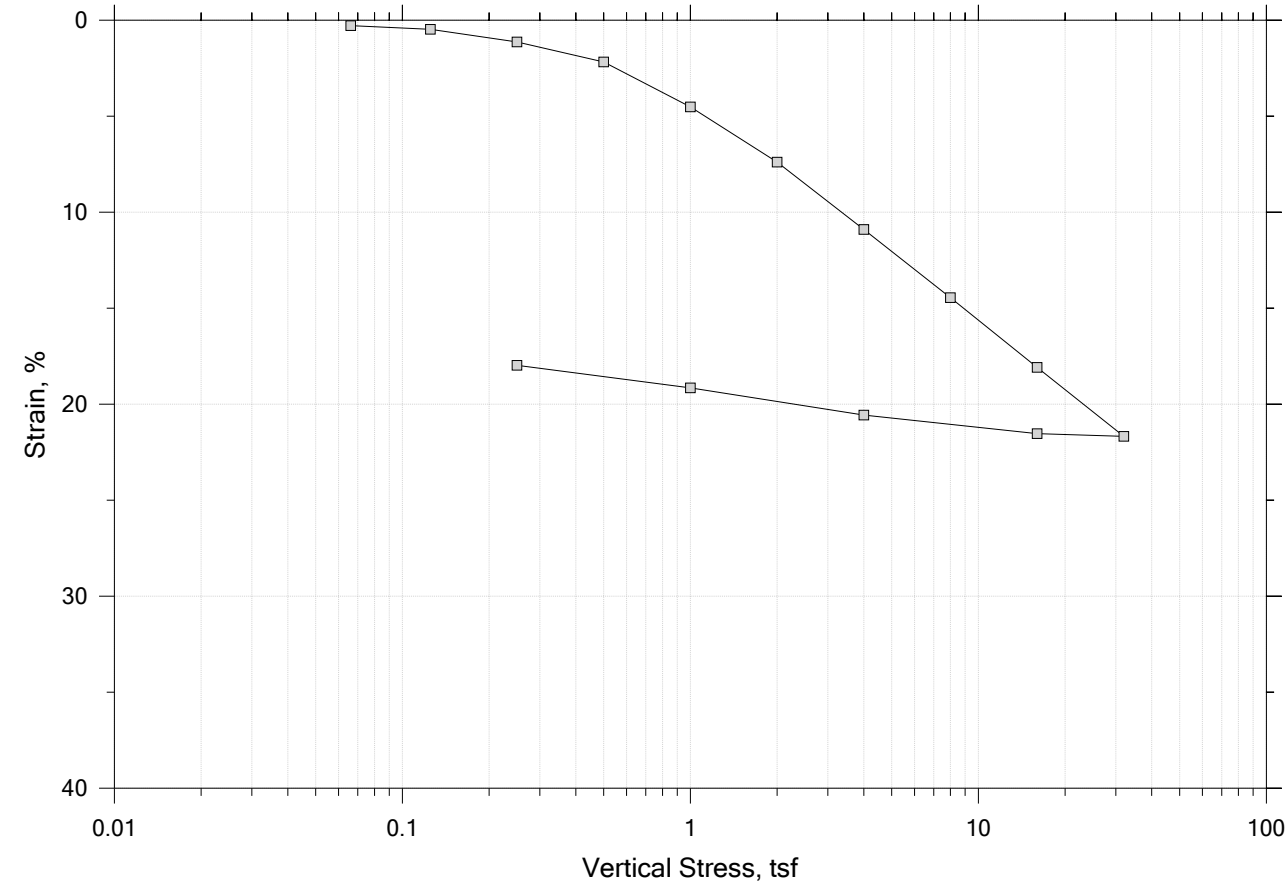


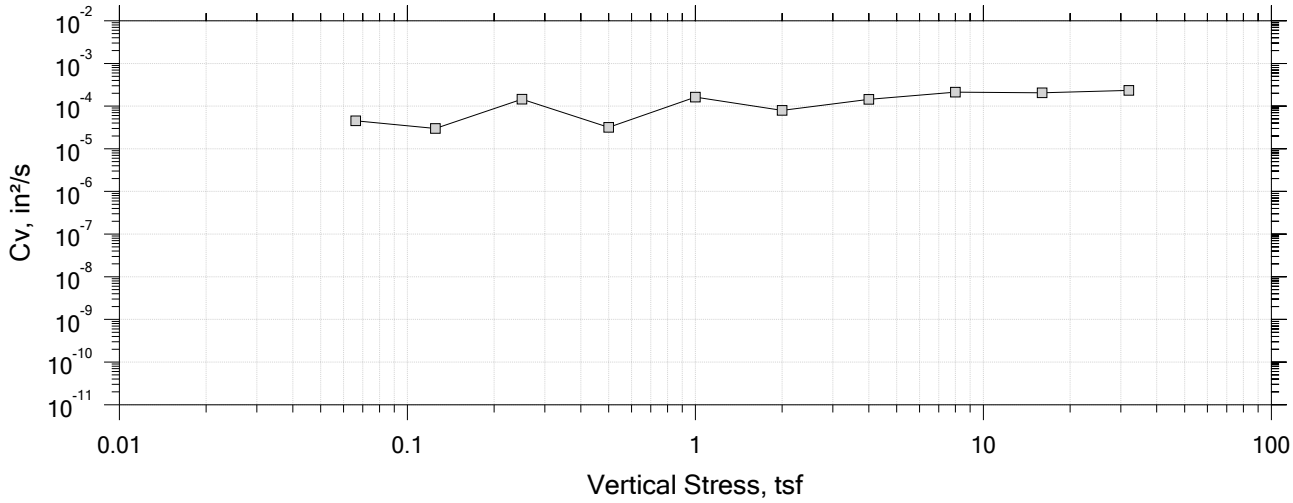


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

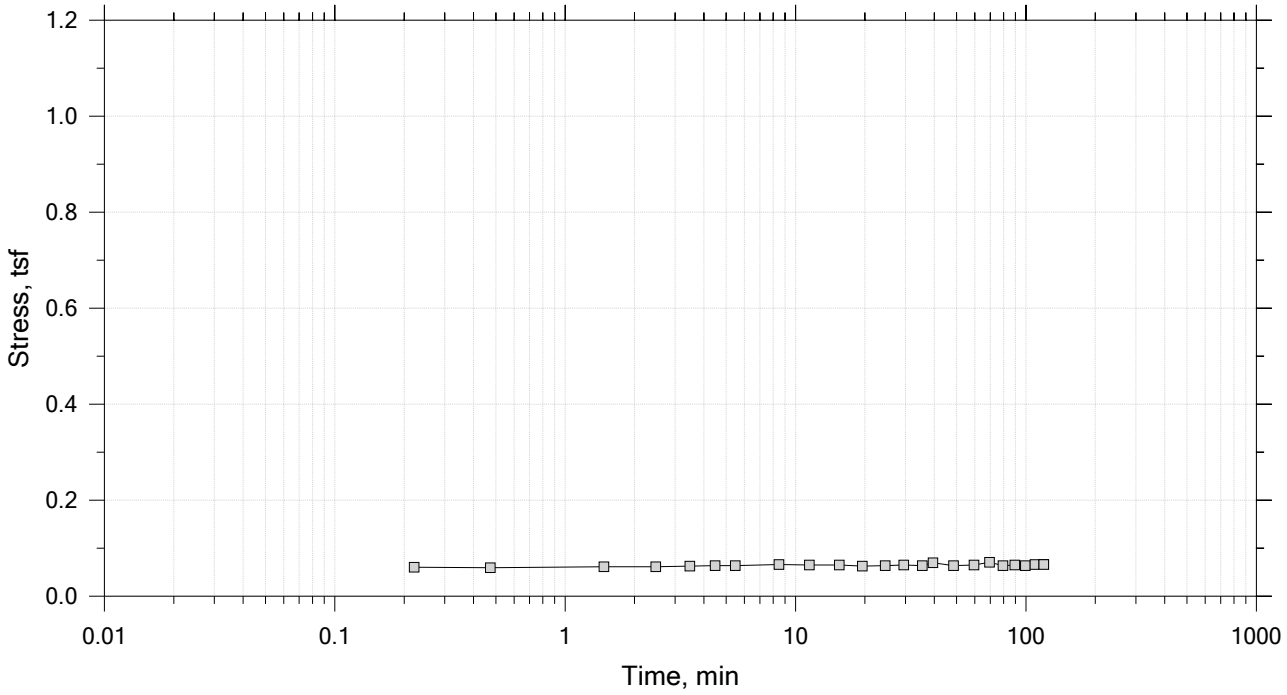


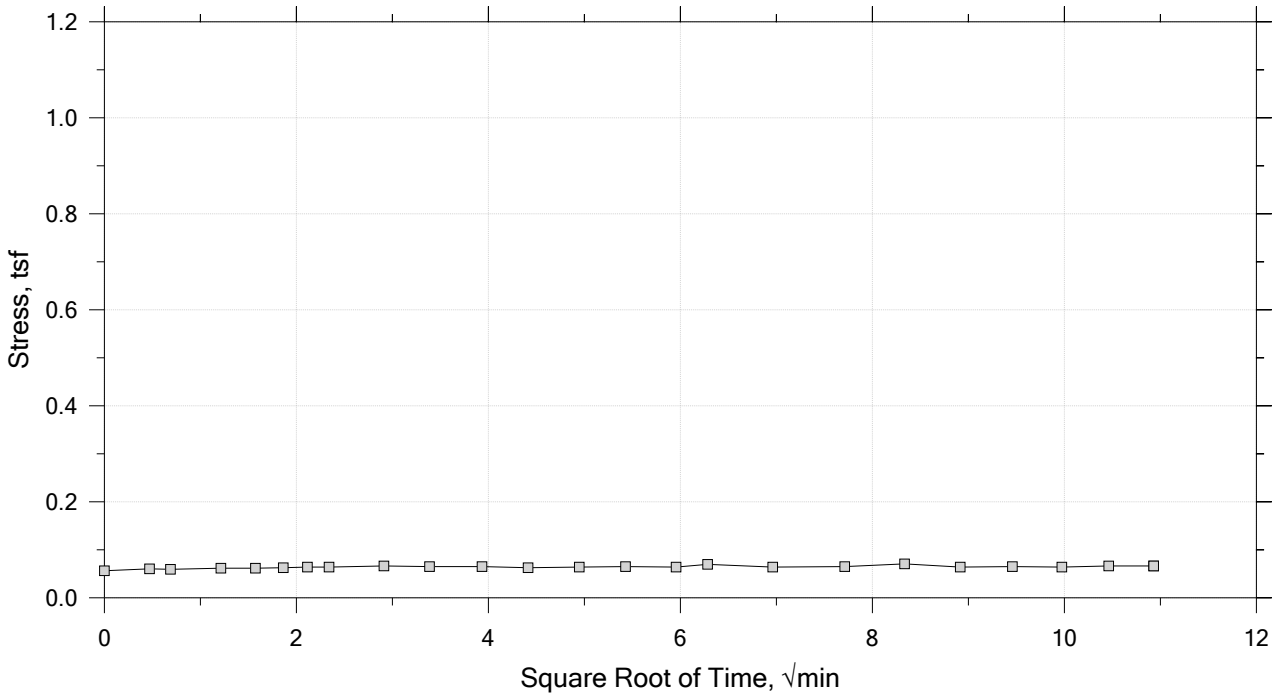


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0661 tsf

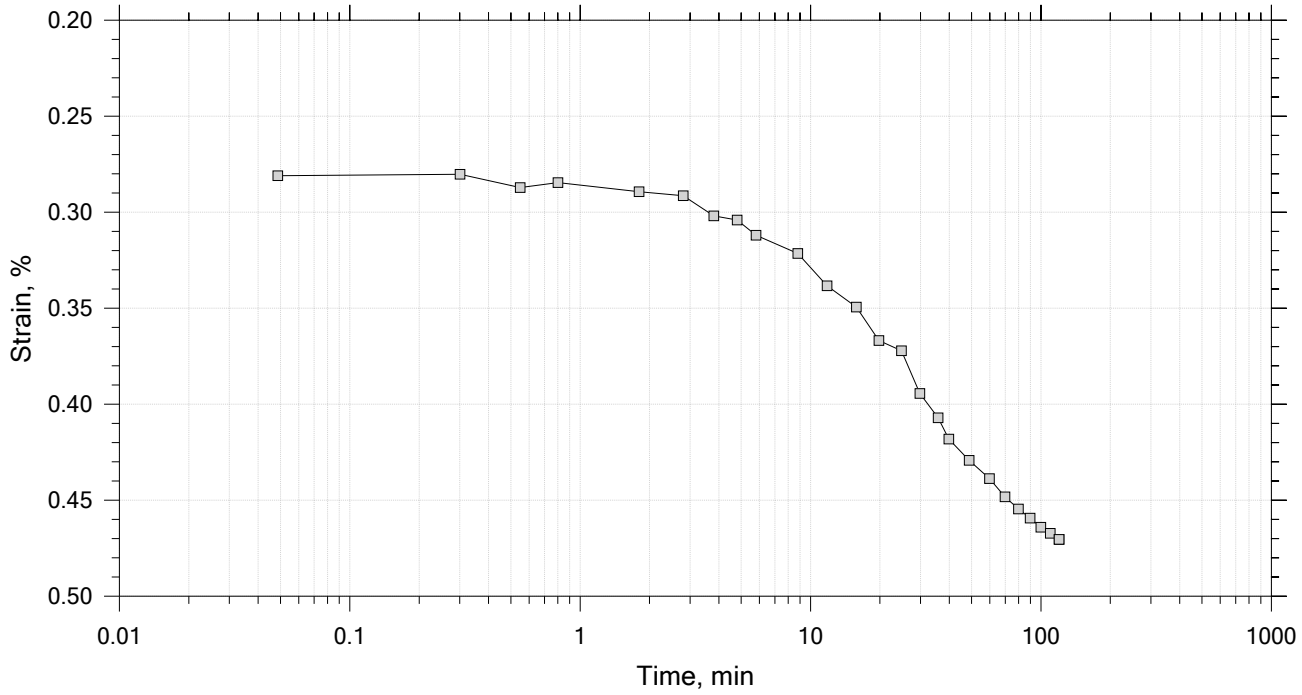


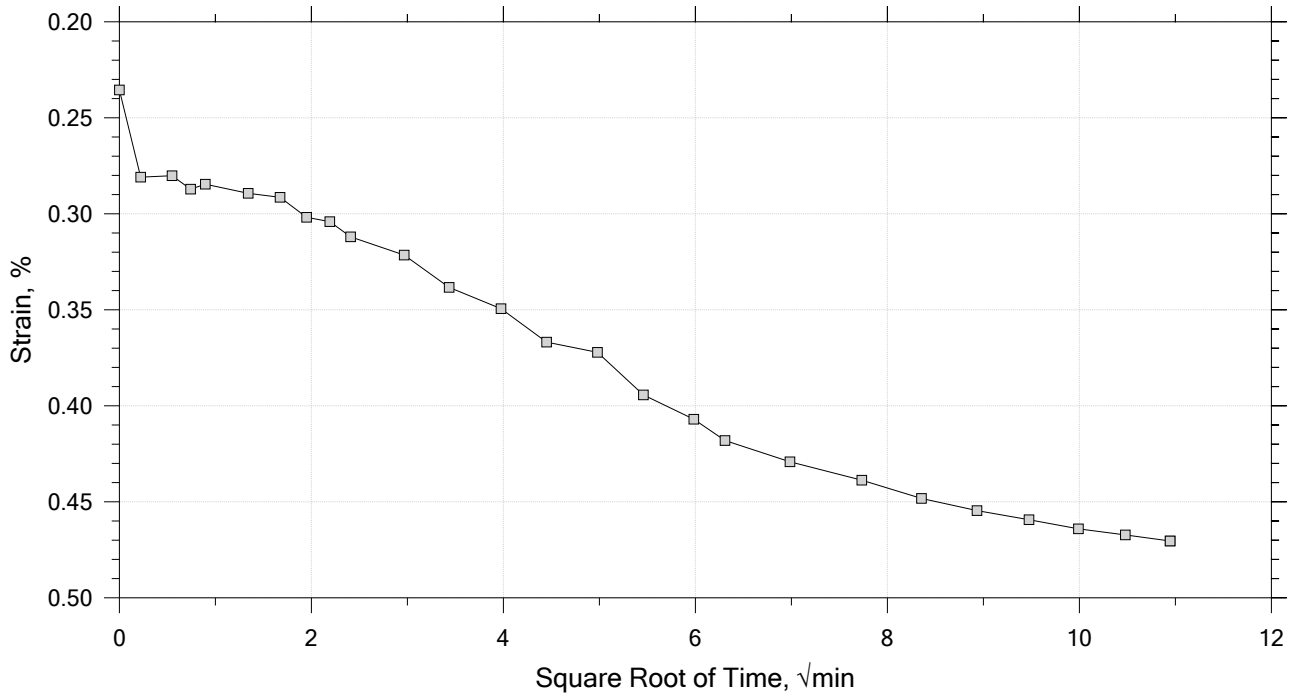


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

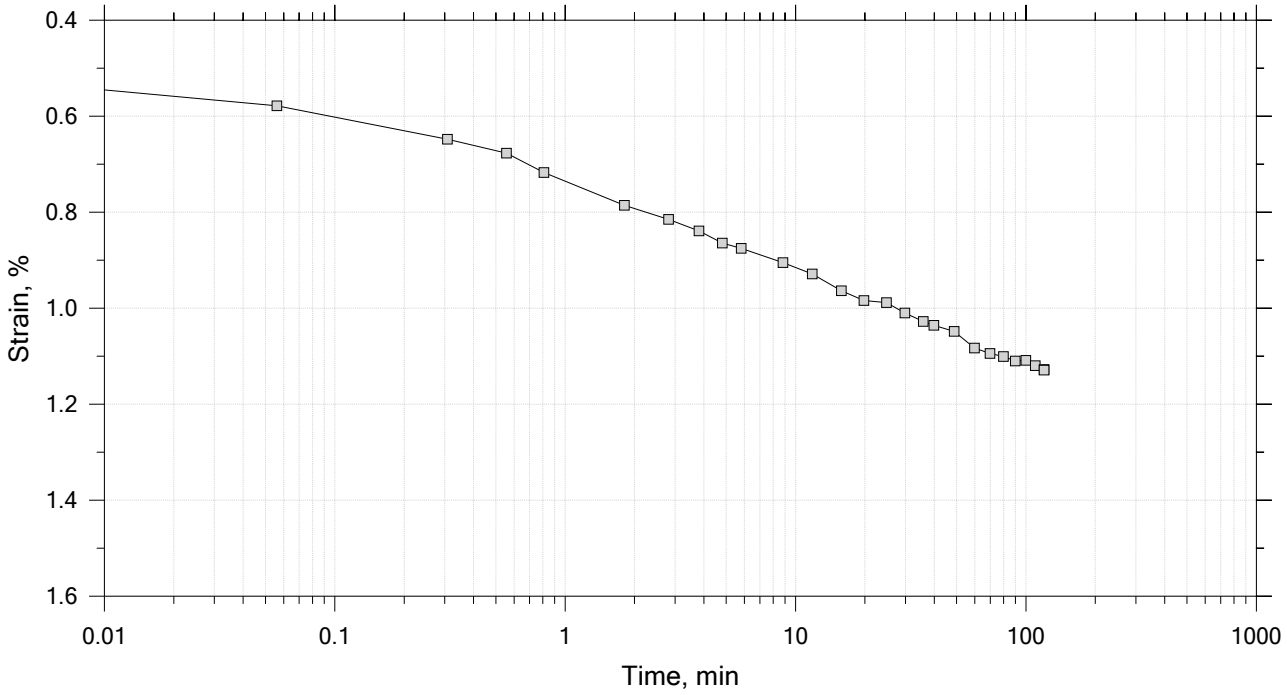


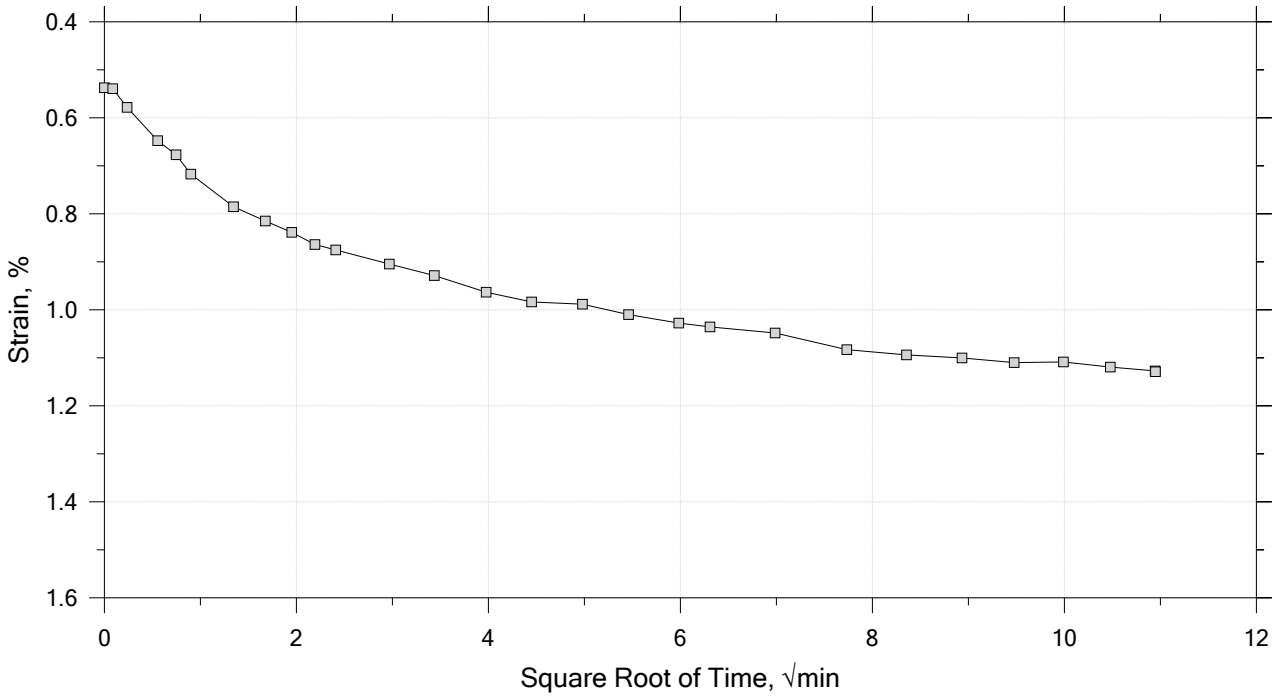


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

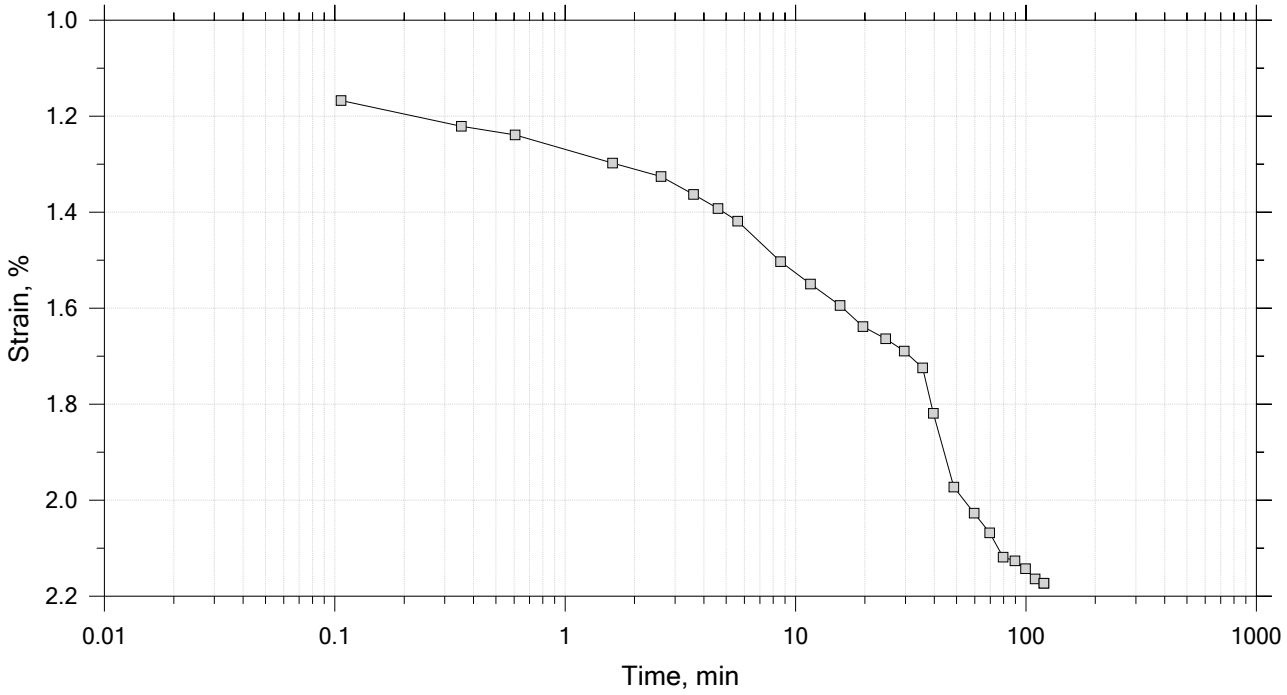


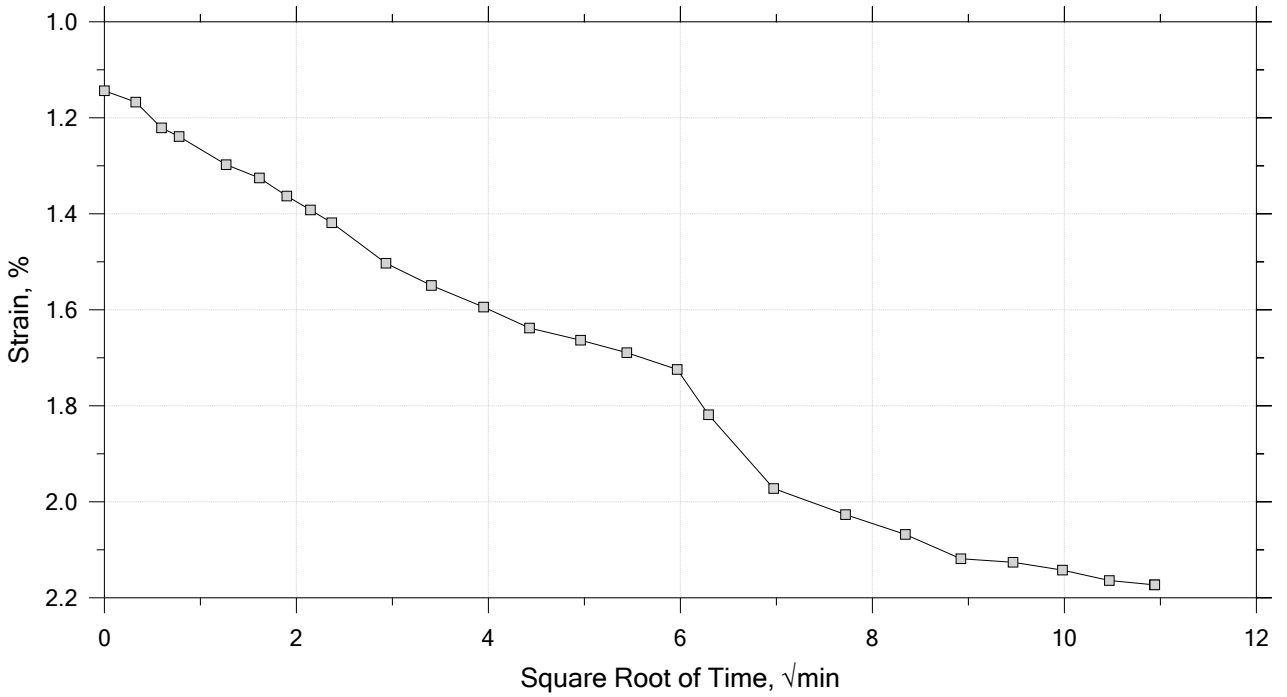


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





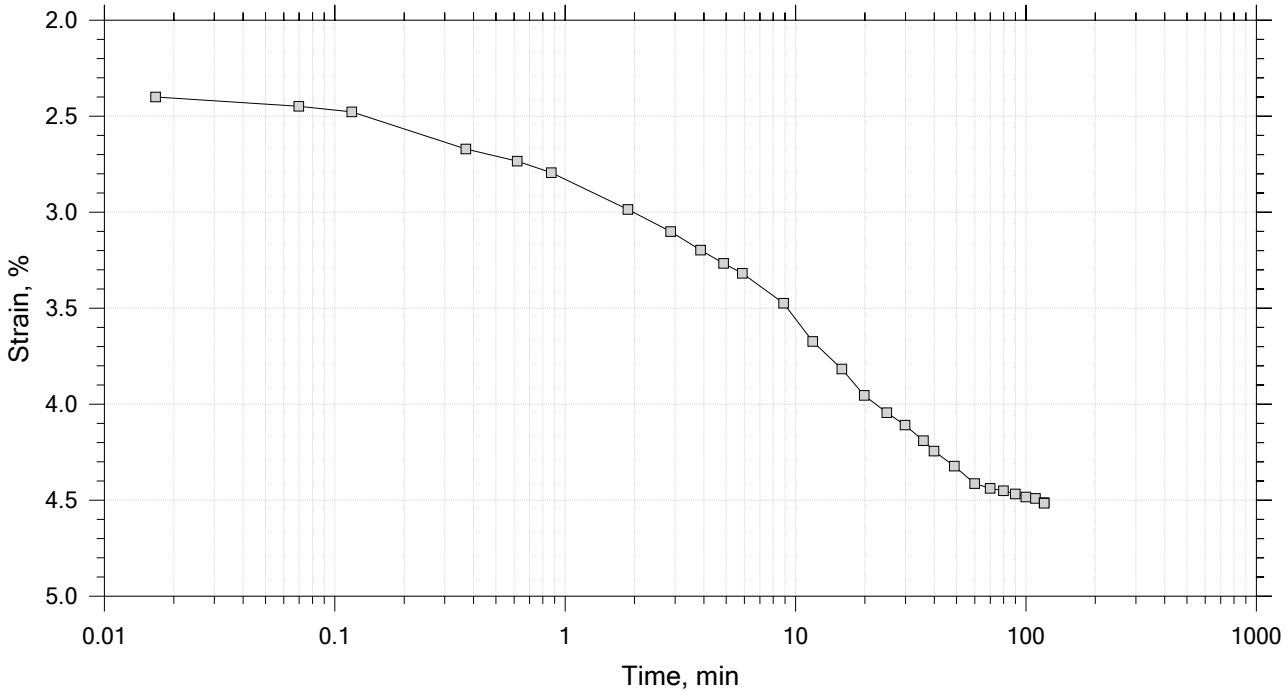
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

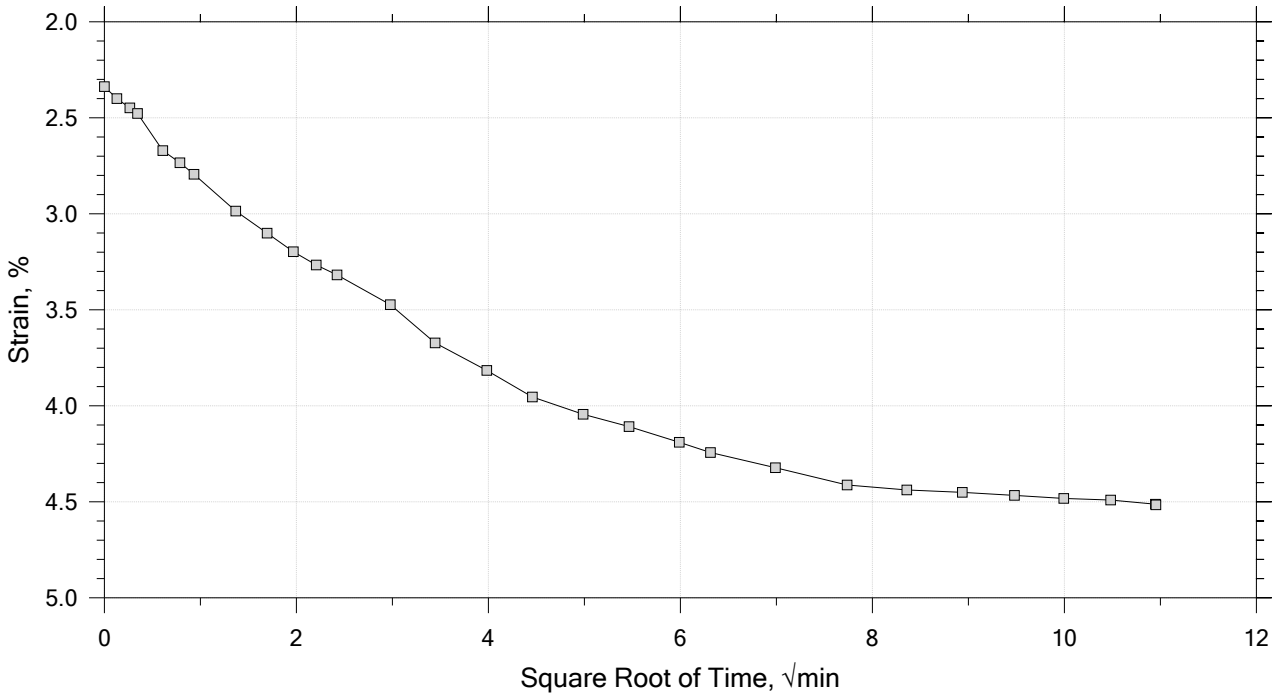
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





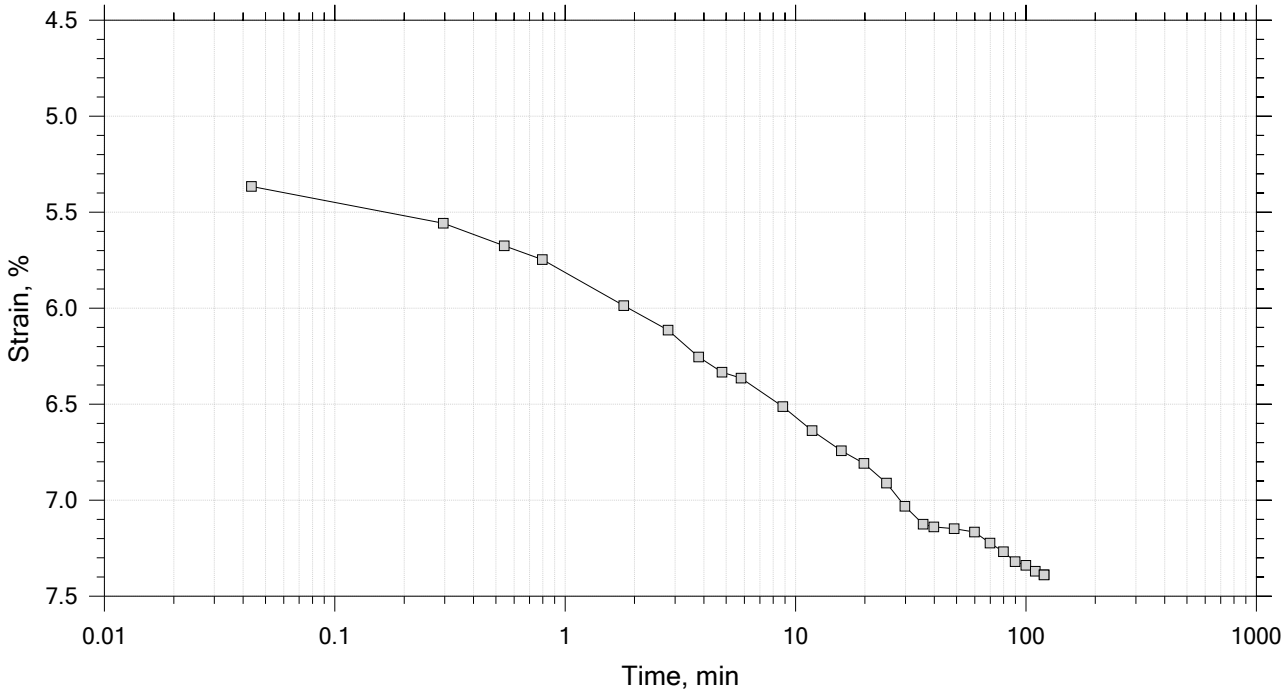
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

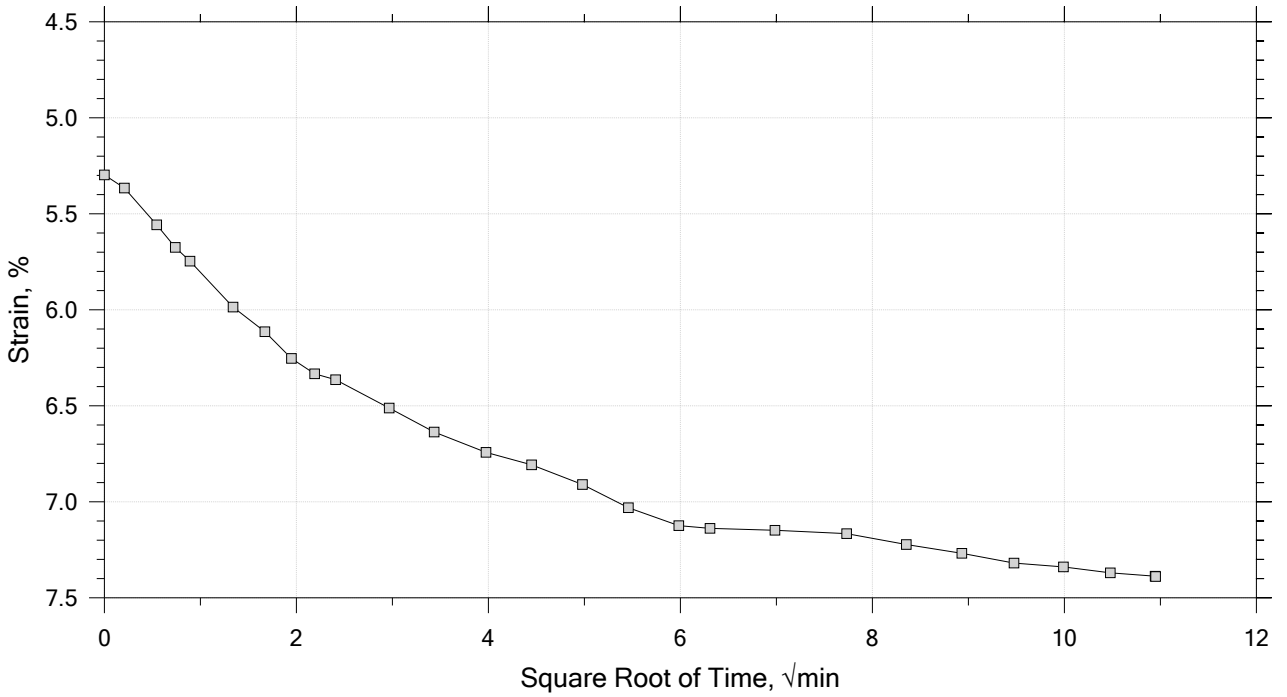
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





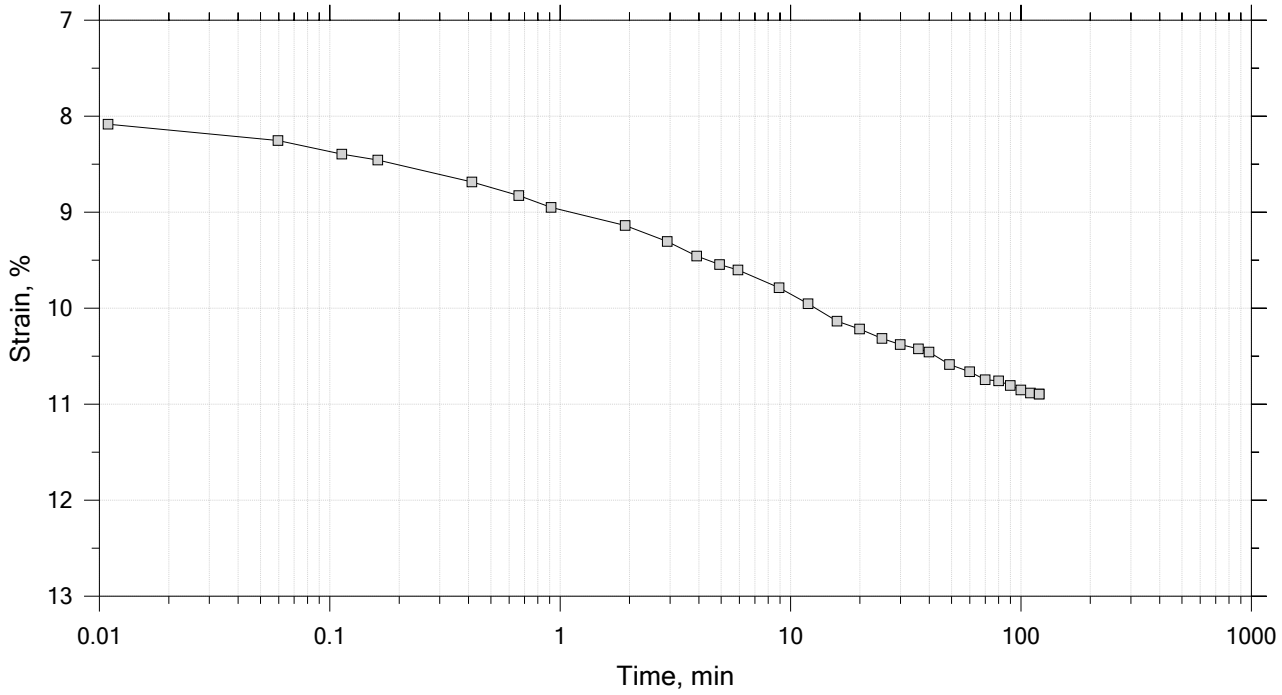
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

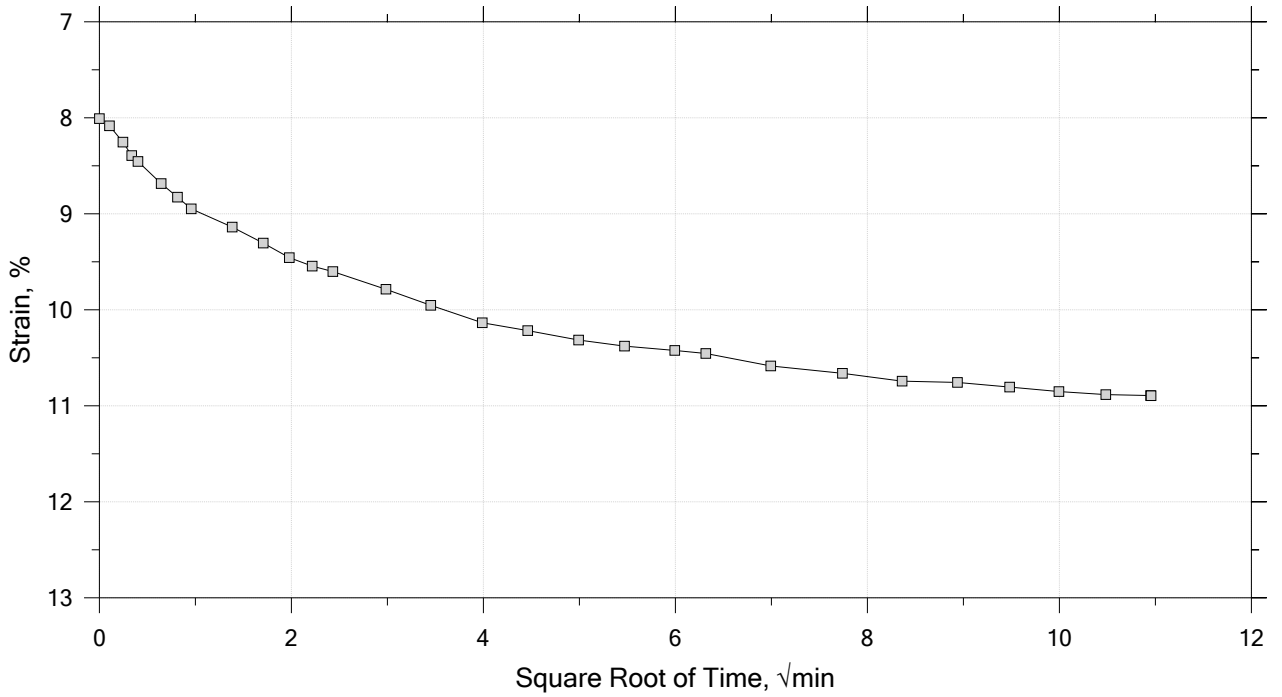
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





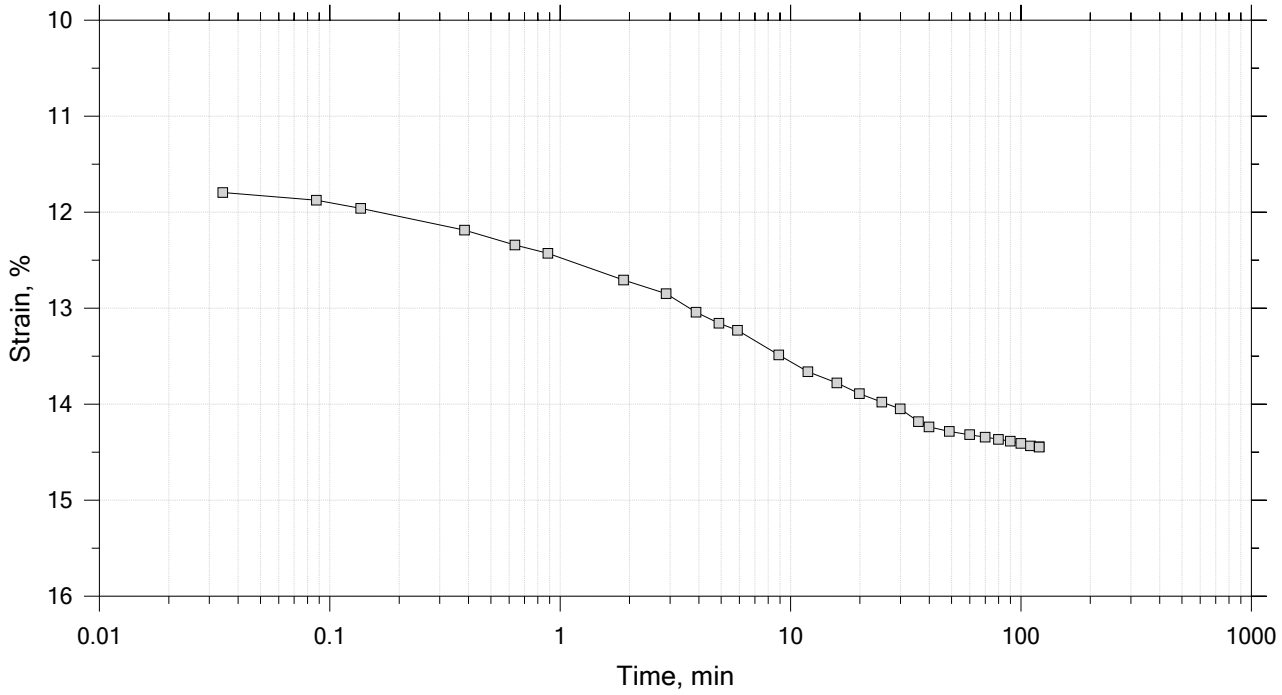
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

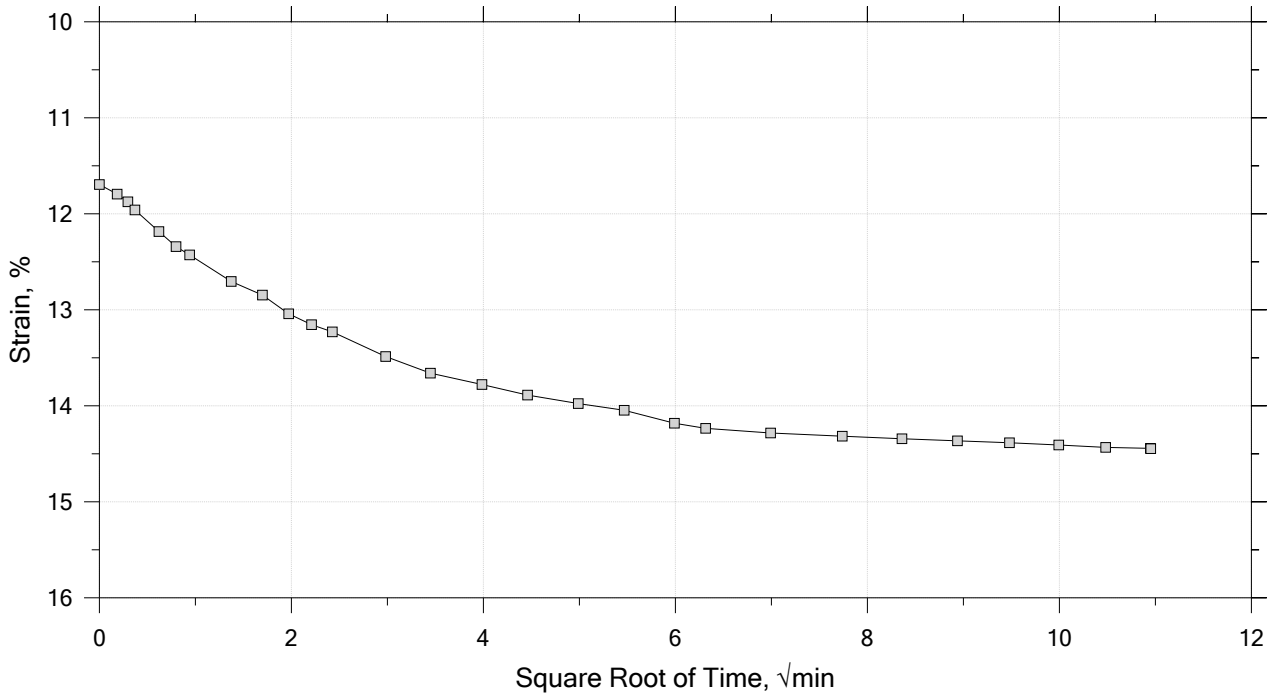
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





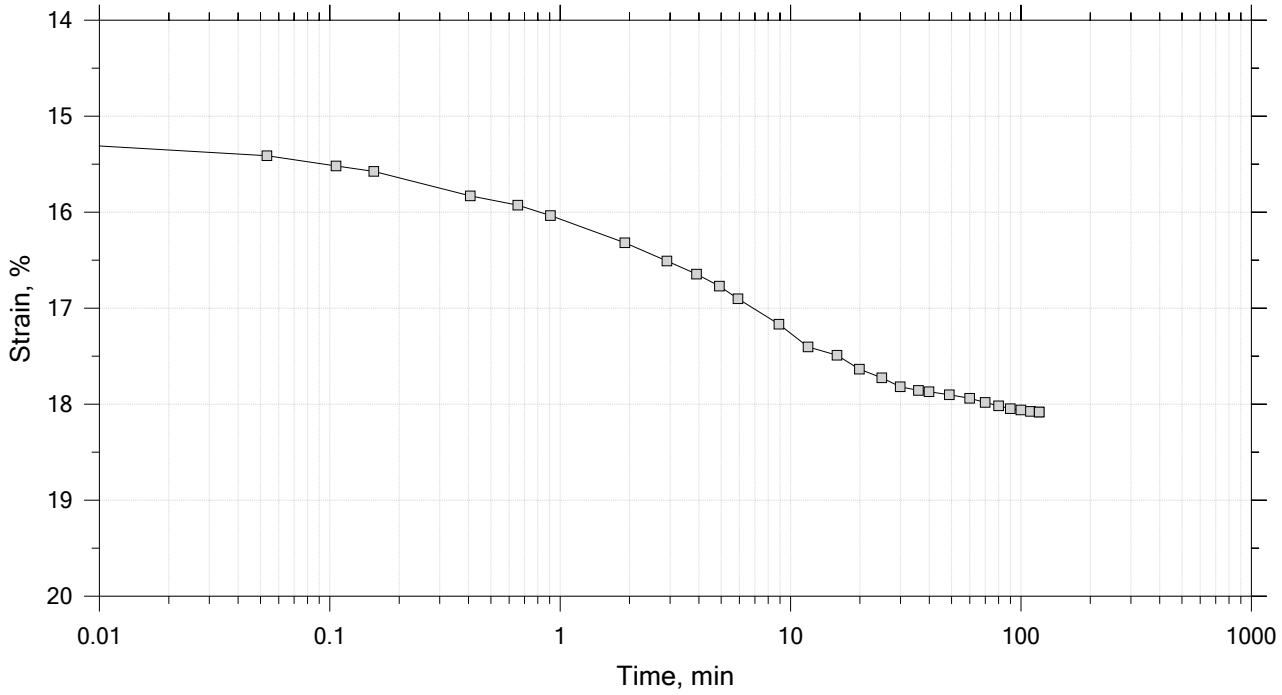
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

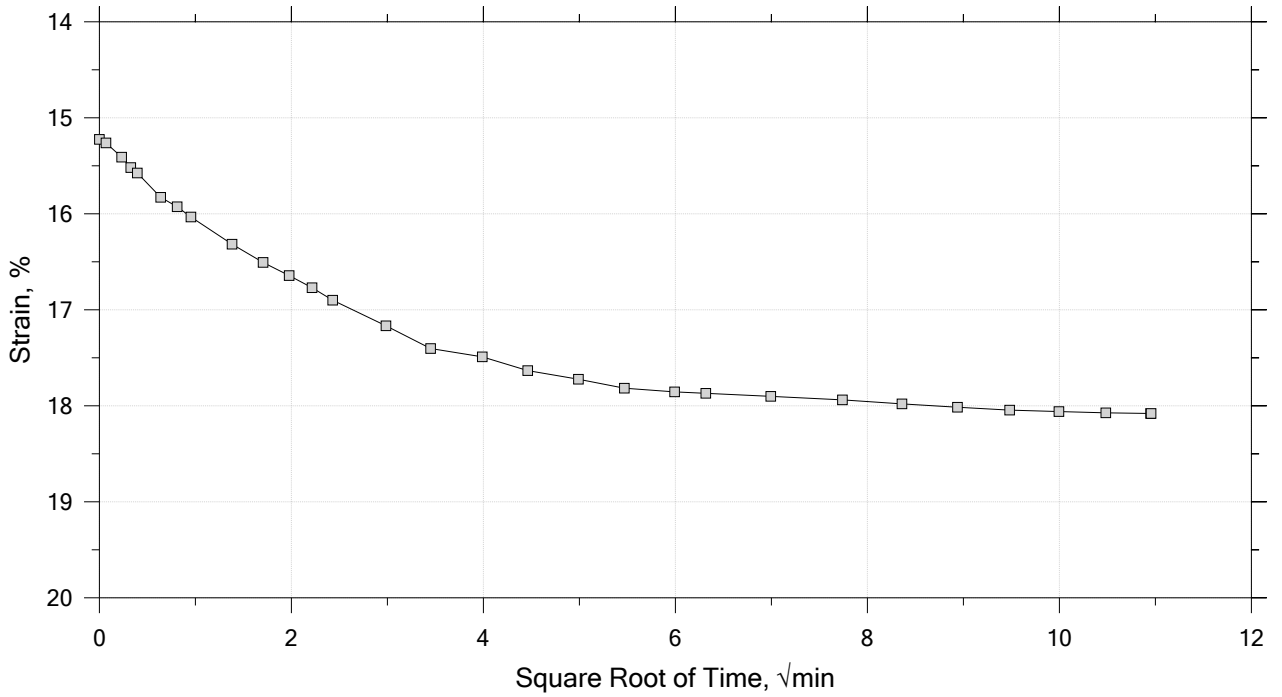
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf





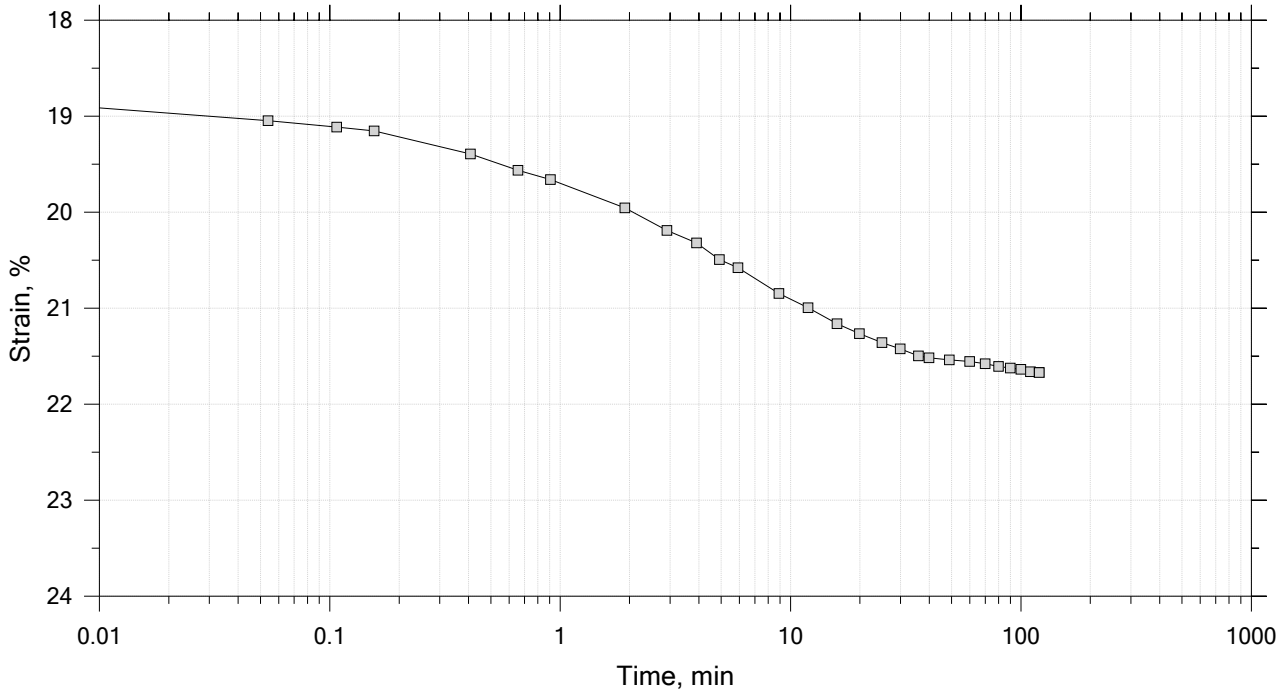
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

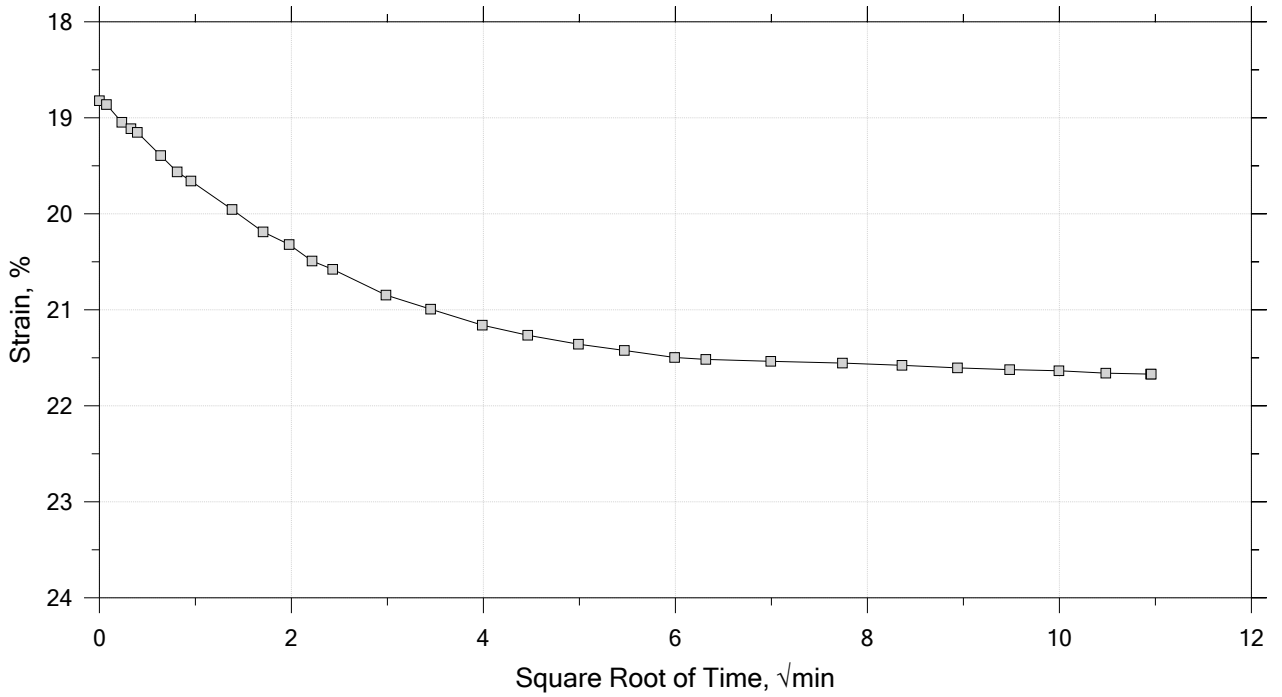
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14

Constant Load Step

Stress: 32 tsf

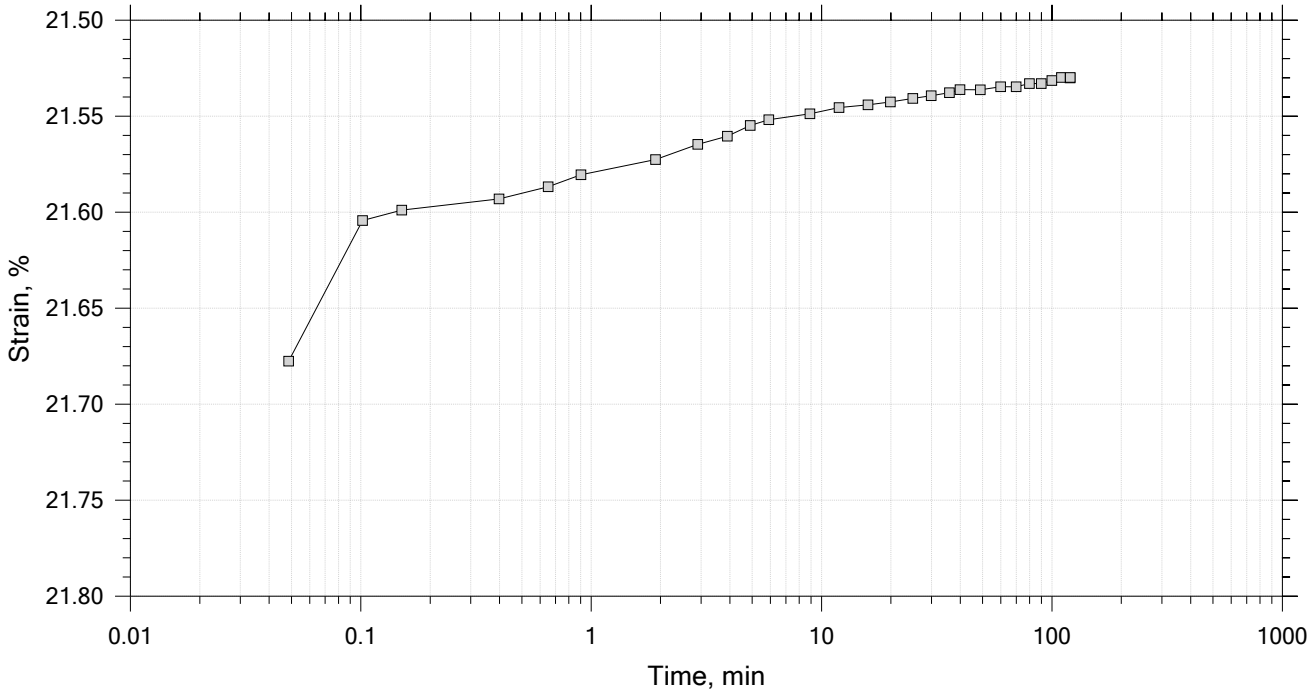


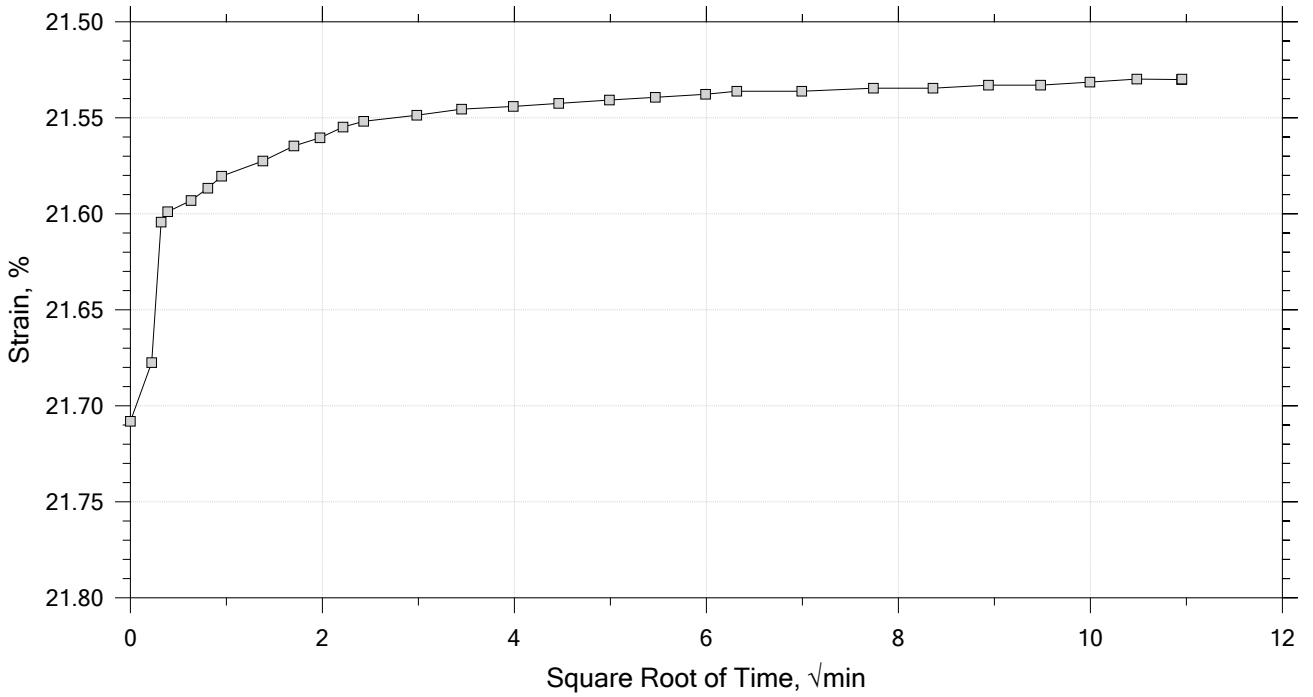


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

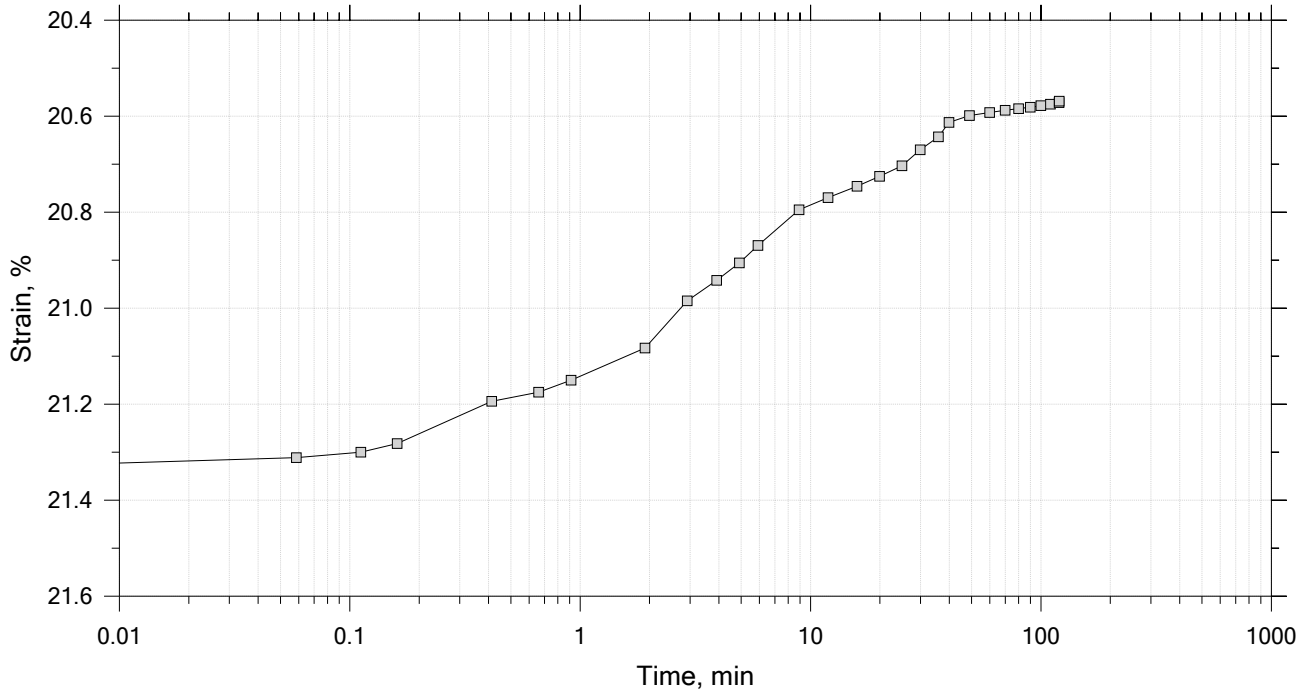


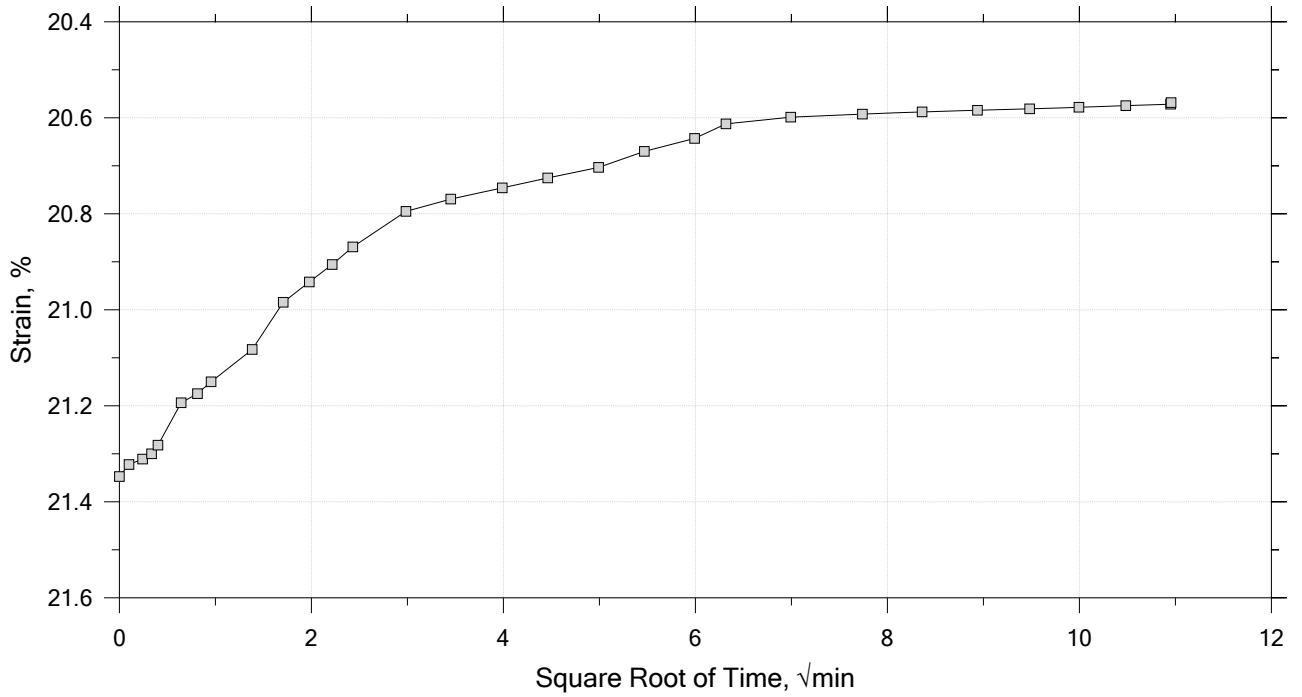


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

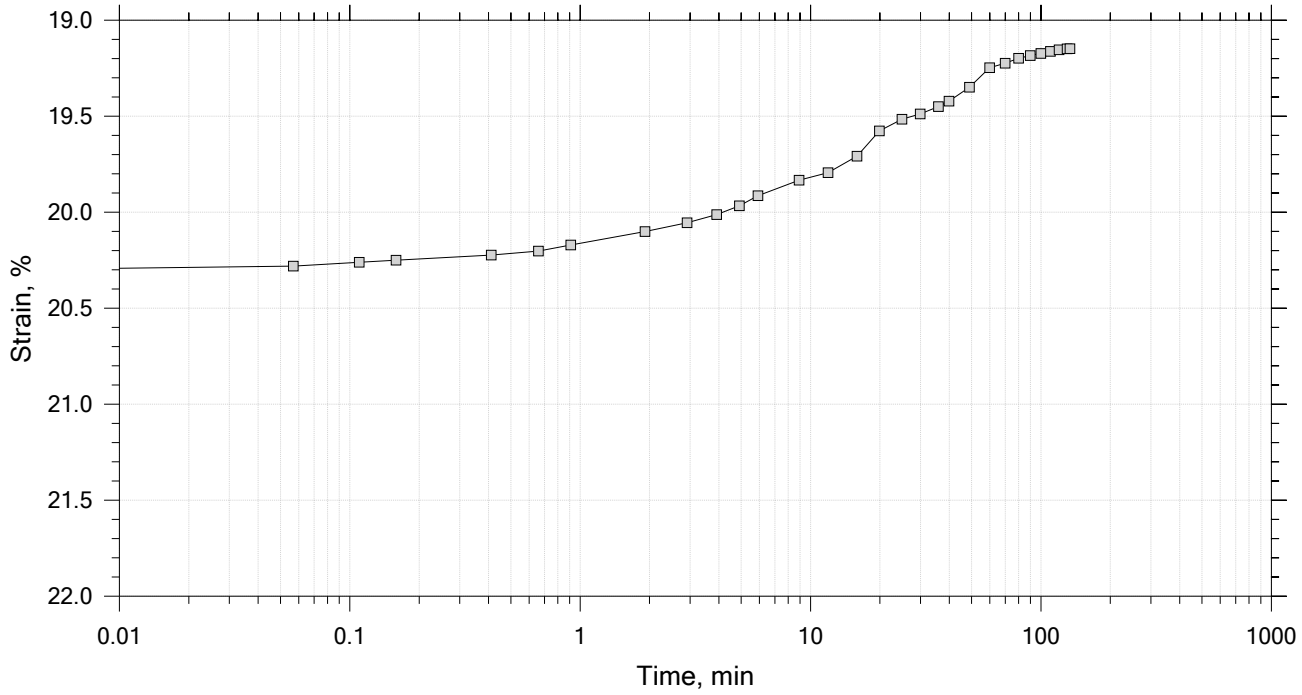


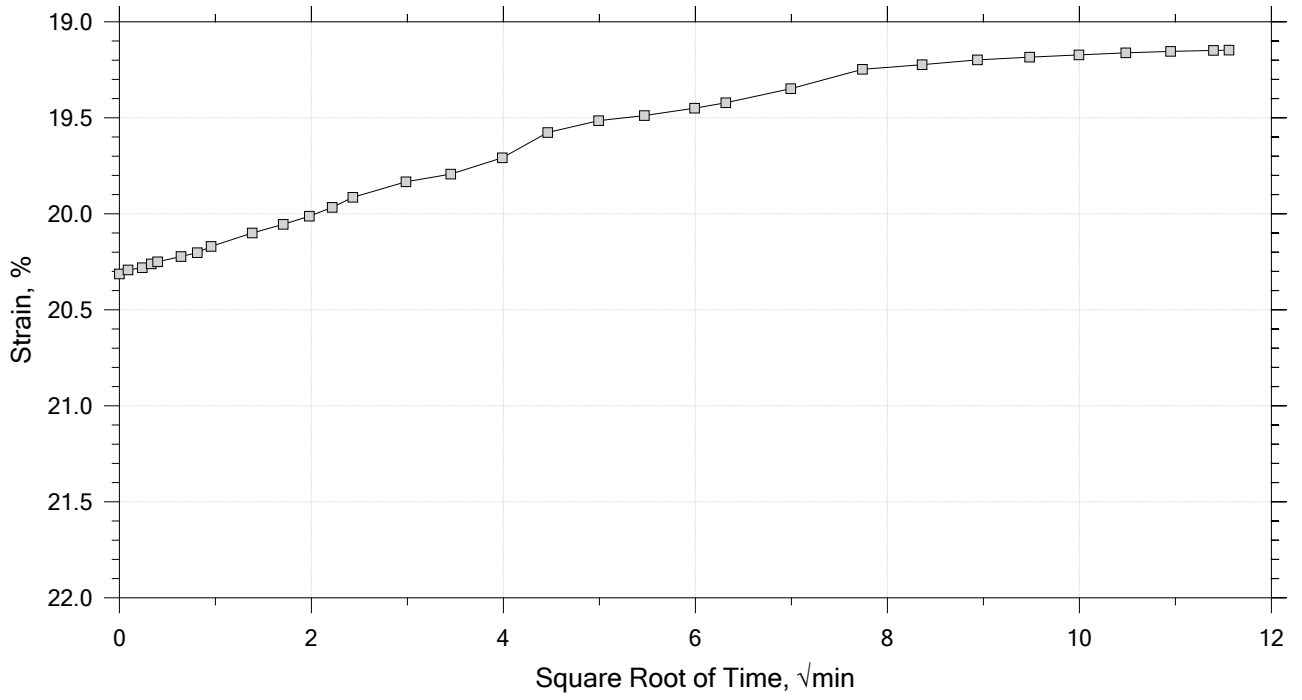


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

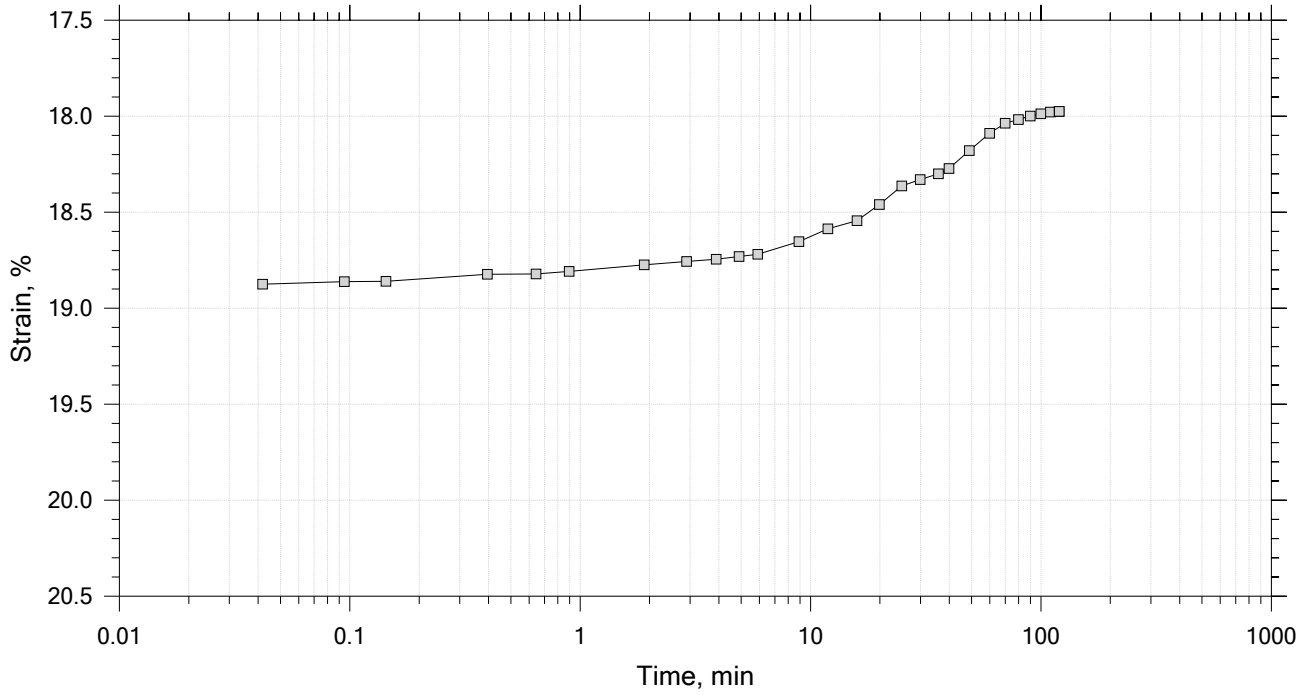


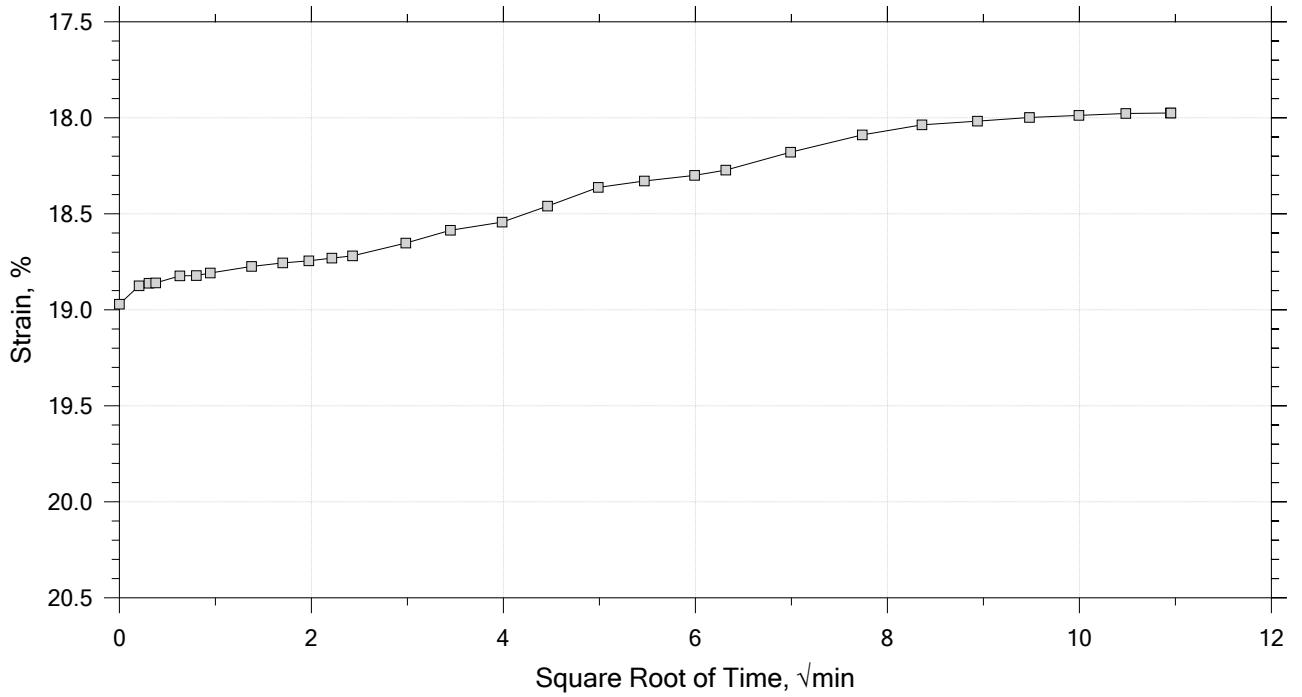


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
Test No.: IP-17-1	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 42
Initial Height: 1.00 in	Initial Void Ratio: 0.834	Plastic Limit: 22
Final Height: 0.82 in	Final Void Ratio: 0.504	Plasticity Index: 20

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E1794	RING		E5365
Mass Container, gm	8.63	109.96	109.96	8.4
Mass Container + Wet Soil, gm	106.58	263.81	252.51	150.15
Mass Container + Dry Soil, gm	85.23	230.39	230.39	128.15
Mass Dry Soil, gm	76.6	120.43	120.43	119.75
Water Content, %	27.87	27.75	18.37	18.37
Void Ratio	---	0.83	0.50	---
Degree of Saturation, %	---	91.37	100.00	---
Dry Unit Weight, pcf	---	93.46	113.94	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

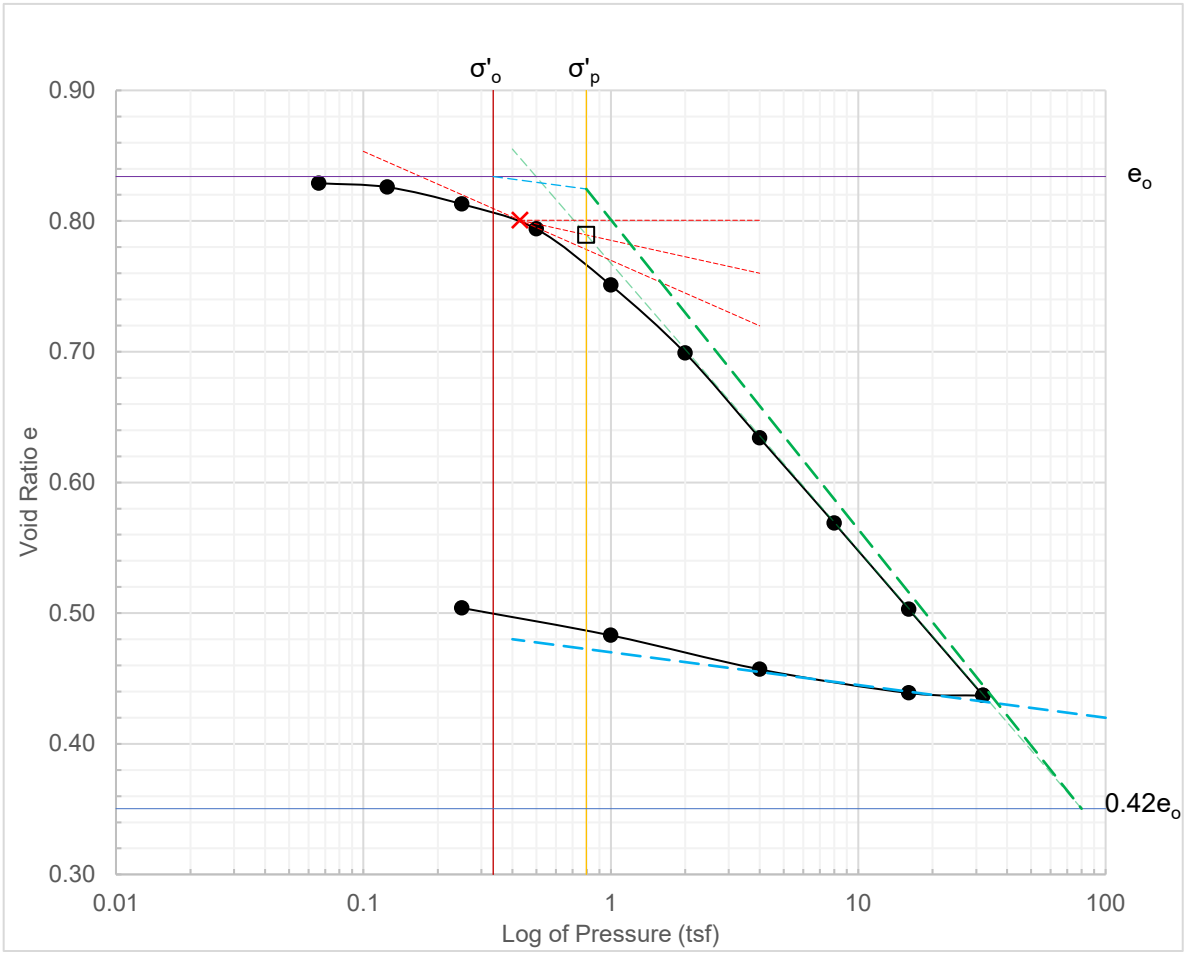
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0661	0.002819	0.829	0.282	77.970	4.52e-05	4.26e-02	3.61e-05
2	0.125	0.004704	0.826	0.470	117.588	2.98e-05	3.20e-02	1.79e-05
3	0.250	0.01129	0.813	1.13	24.032	1.45e-04	5.27e-02	1.43e-04
4	0.500	0.02173	0.794	2.17	107.425	3.18e-05	4.18e-02	2.49e-05
5	1.00	0.04516	0.751	4.52	20.239	1.63e-04	4.69e-02	1.43e-04
6	2.00	0.07389	0.699	7.39	39.301	7.95e-05	2.87e-02	4.28e-05
7	4.00	0.1089	0.634	10.9	20.270	1.44e-04	1.75e-02	4.72e-05
8	8.00	0.1445	0.569	14.4	12.717	2.12e-04	8.88e-03	3.52e-05
9	16.0	0.1808	0.503	18.1	12.078	2.05e-04	4.54e-03	1.75e-05
10	32.0	0.2167	0.437	21.7	9.727	2.33e-04	2.24e-03	9.80e-06
11	16.0	0.2153	0.439	21.5	2.670	8.13e-04	8.79e-05	1.34e-06
12	4.00	0.2057	0.457	20.6	12.686	1.74e-04	8.01e-04	2.60e-06
13	1.00	0.1915	0.483	19.1	72.986	3.11e-05	4.74e-03	2.76e-06
14	0.250	0.1797	0.504	18.0	112.799	2.08e-05	1.56e-02	6.09e-06

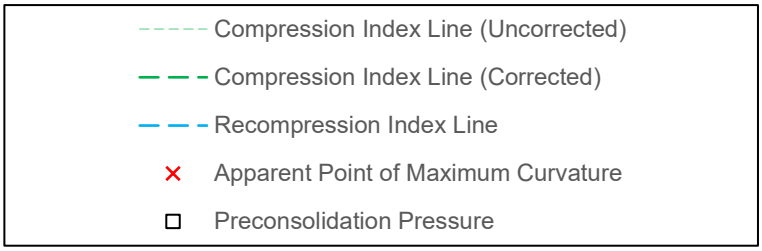
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.5-5.6
	Test No.: IP-17-1	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTIII-E, Swell Pressure = 0.0661 tsf		
	Displacement at End of Increment		

Boring: B-4.16

Depth: 5.5'-5.6'

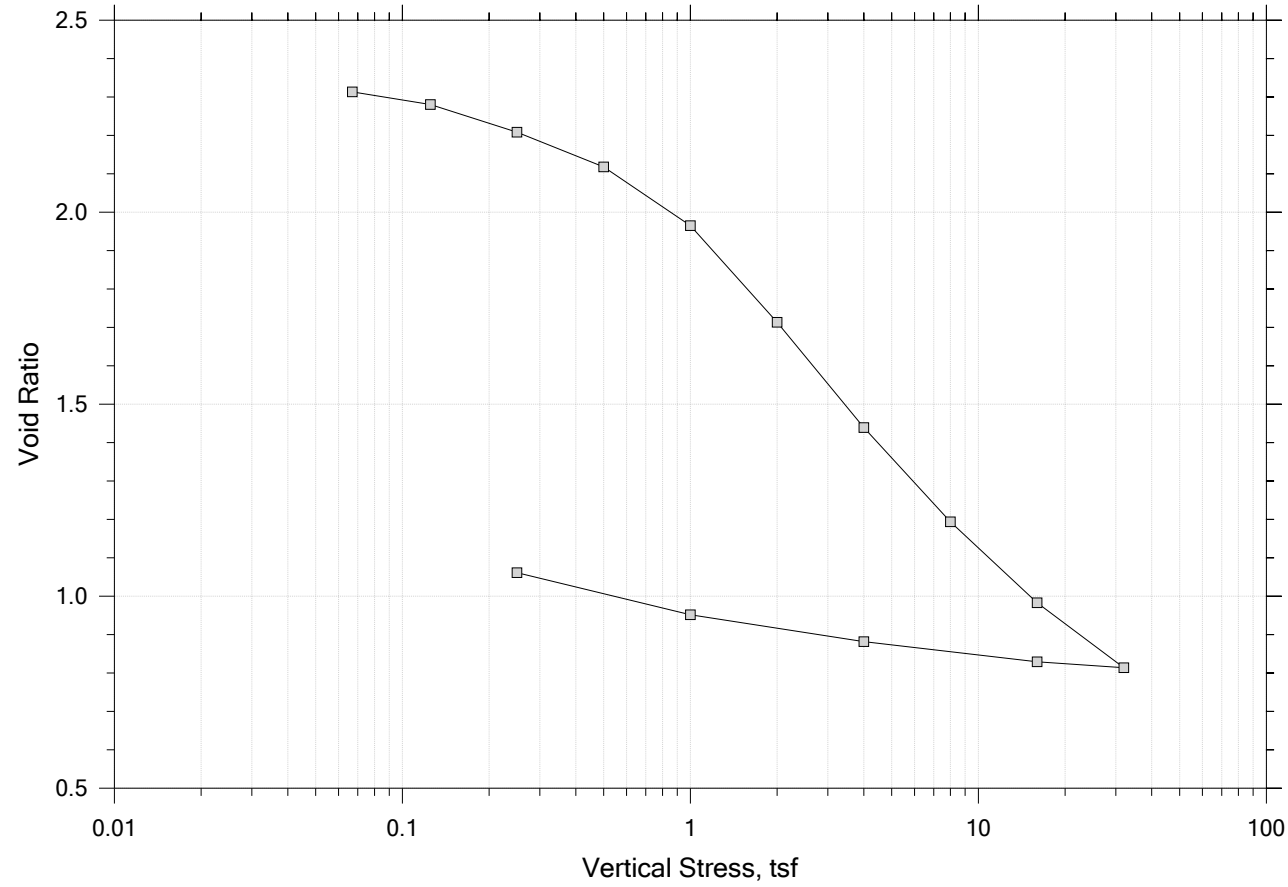
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.33
Preconsolidation Pressure, σ'_p (tsf) = 0.80
Compression Index, C_c = 0.24
Recompression Index, C_r = 0.025

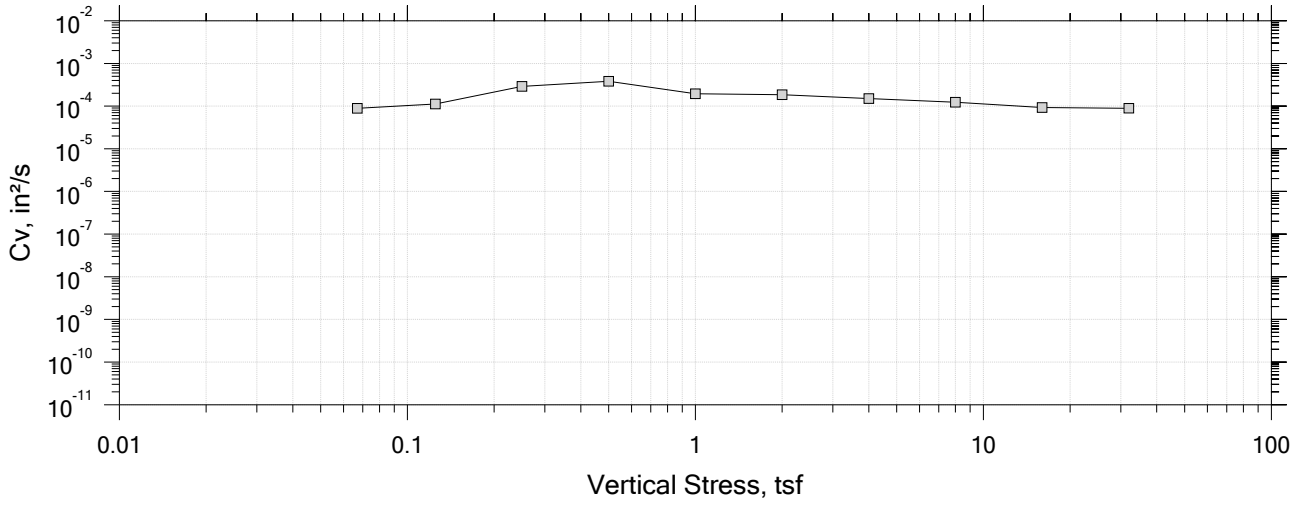




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

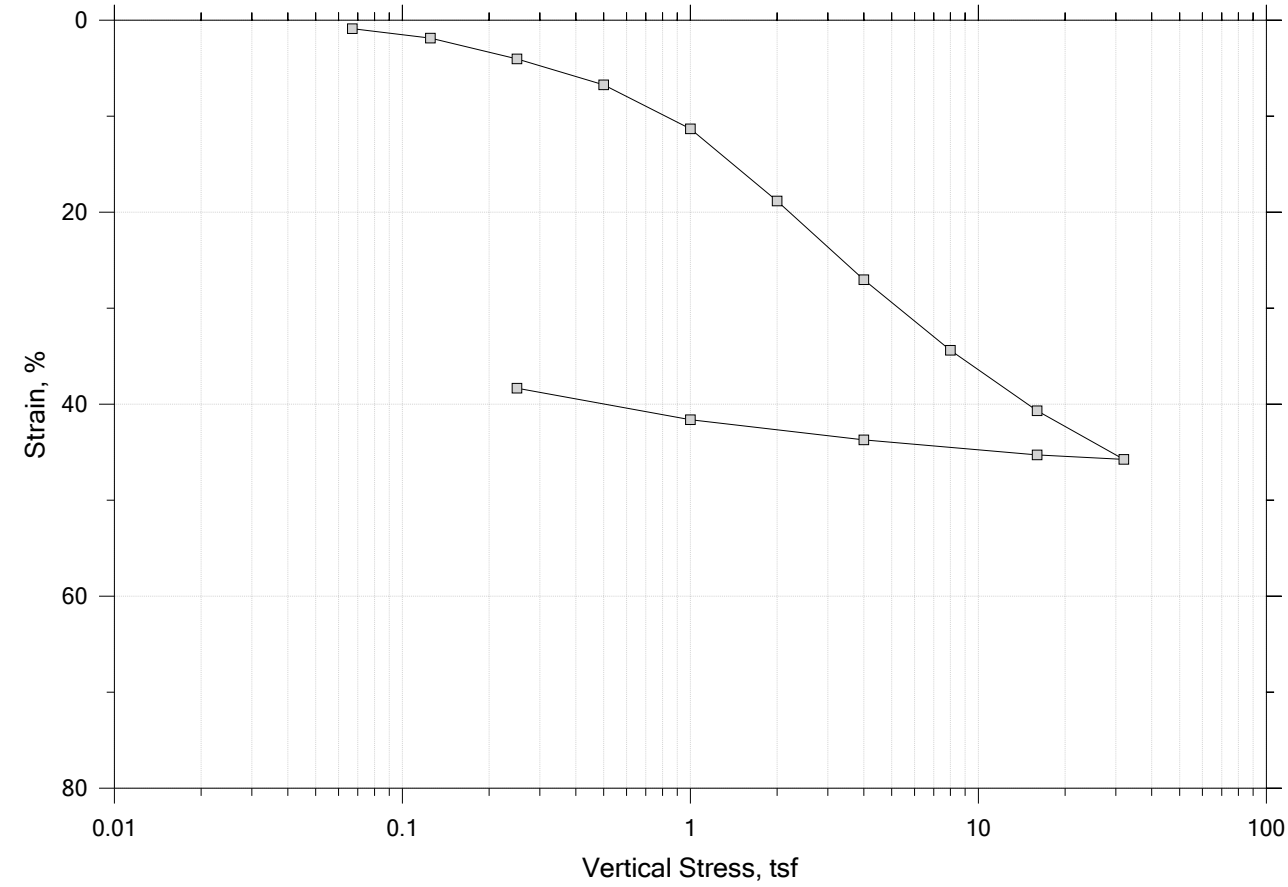


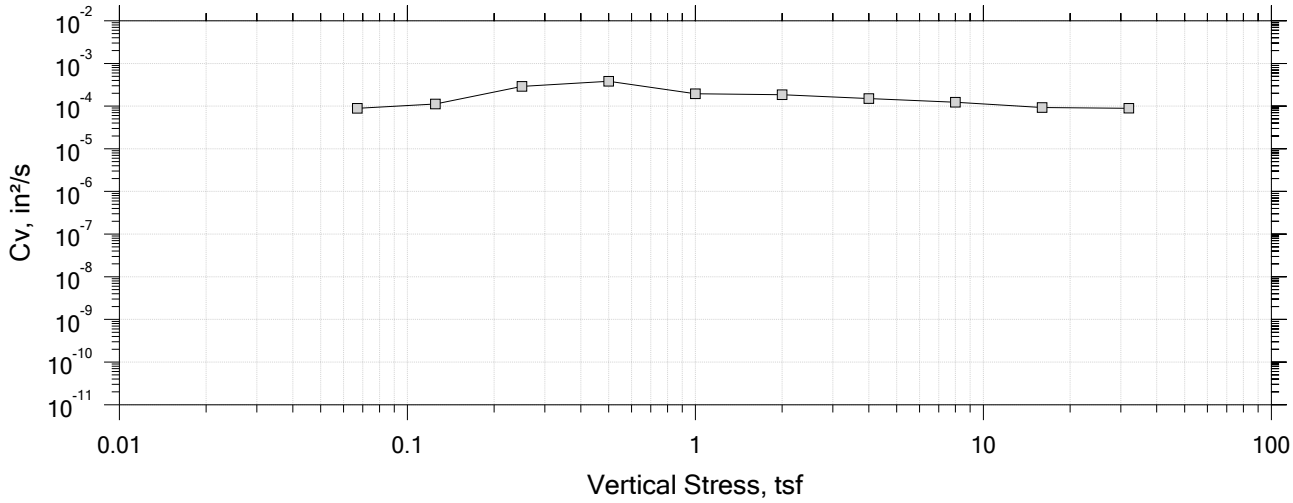


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

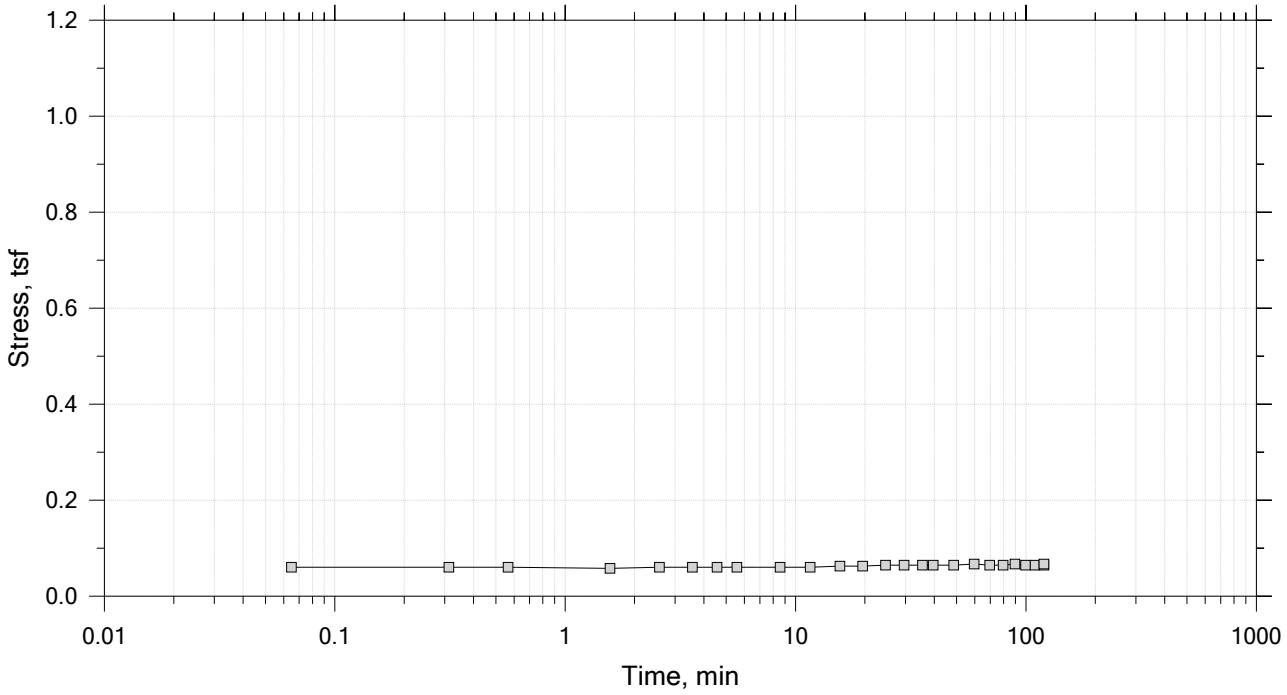


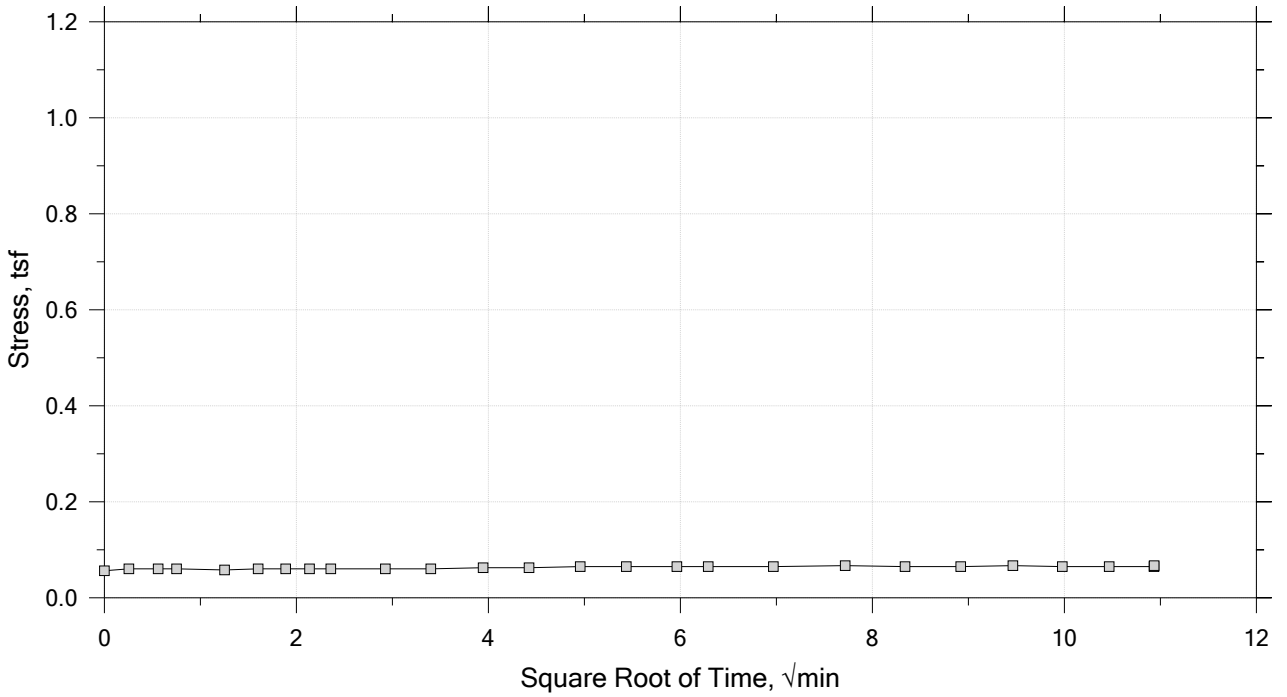


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.067 tsf

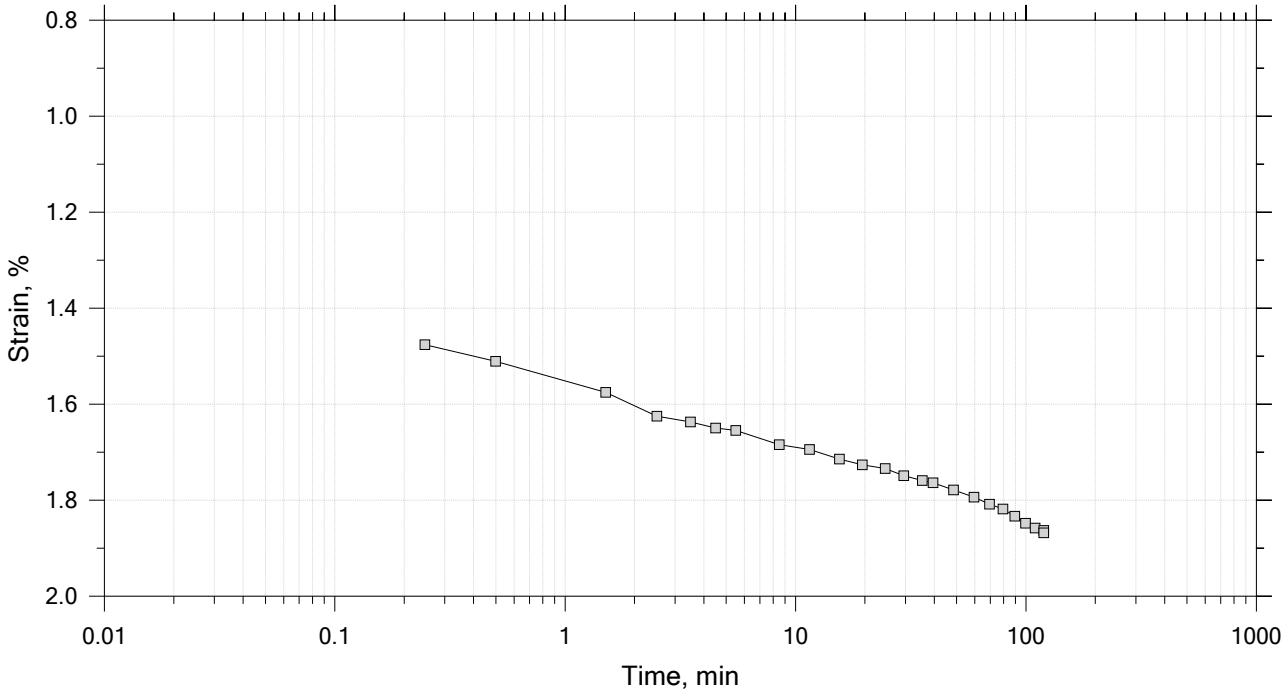


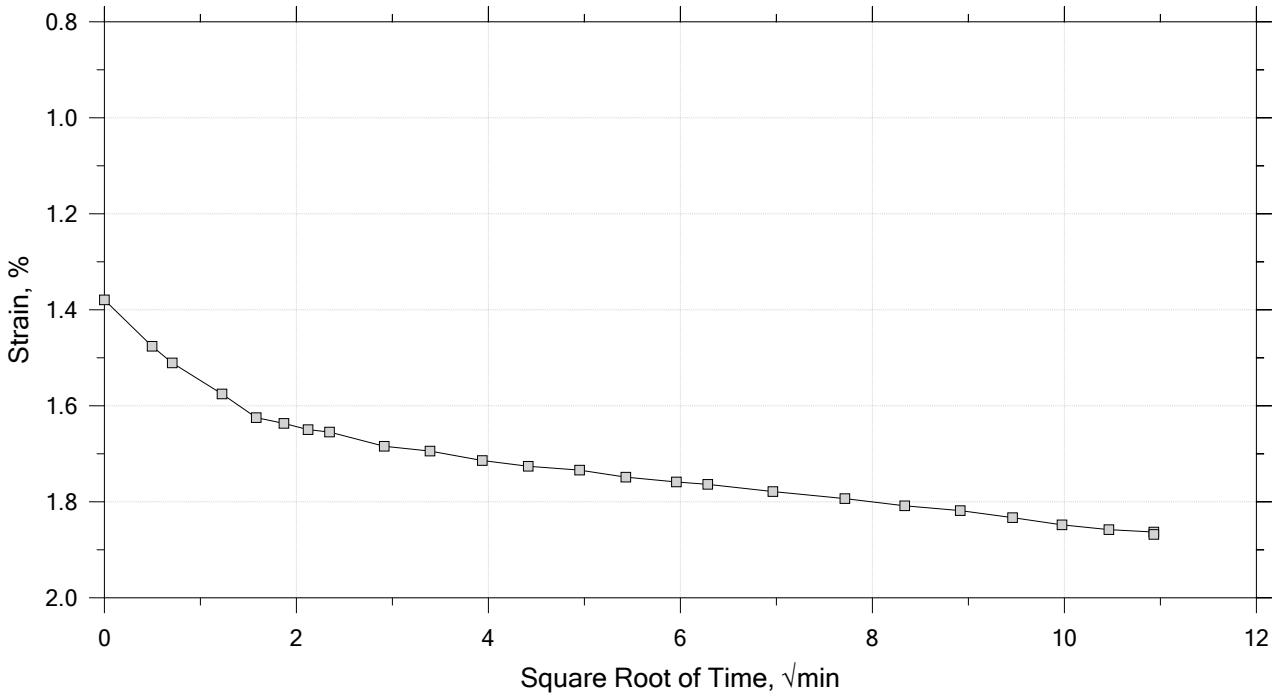


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

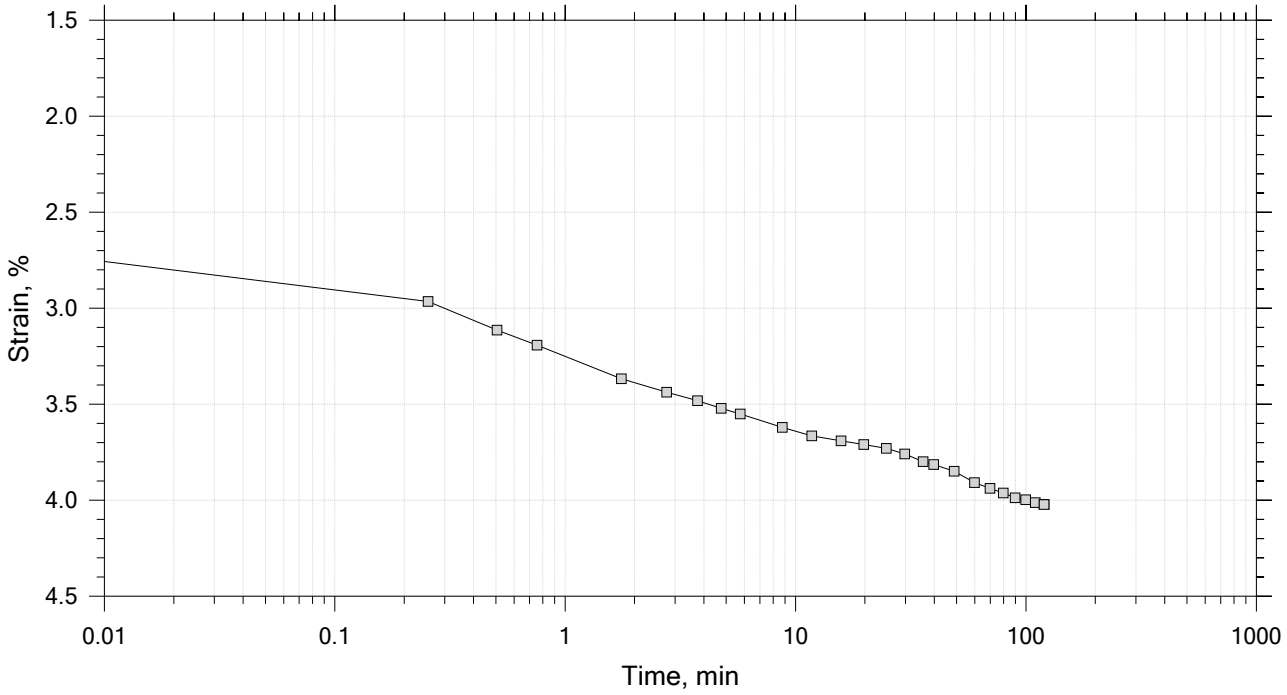


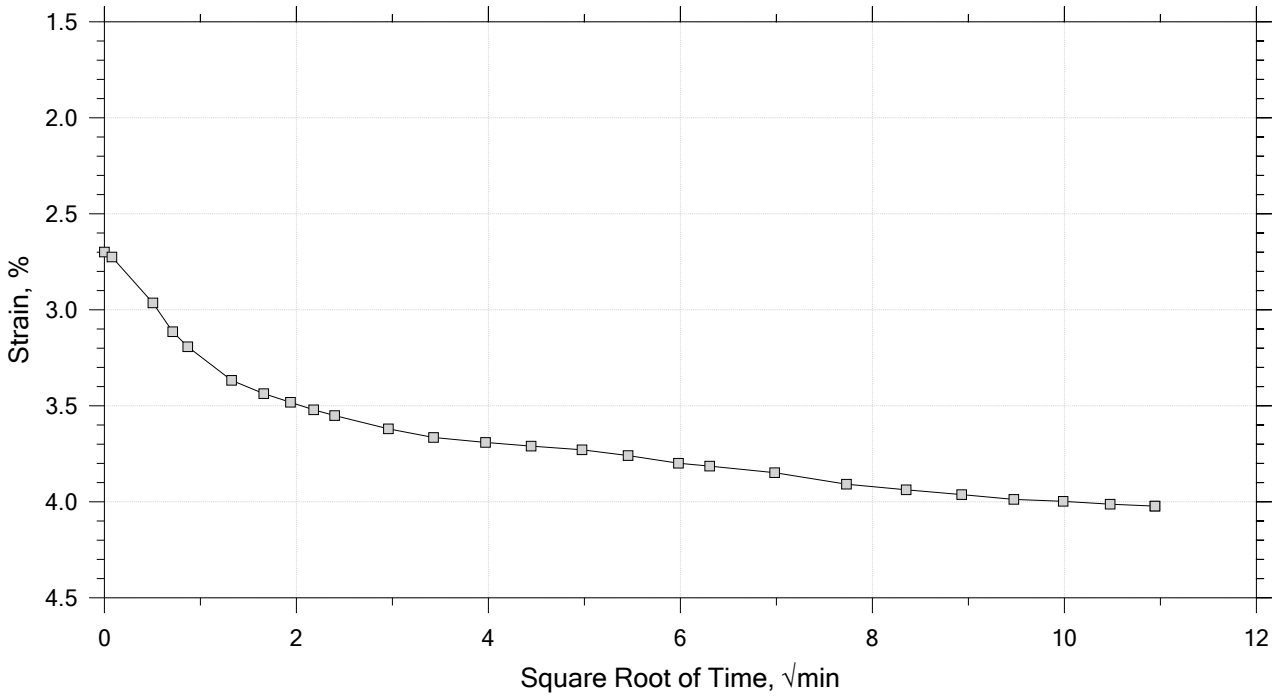


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

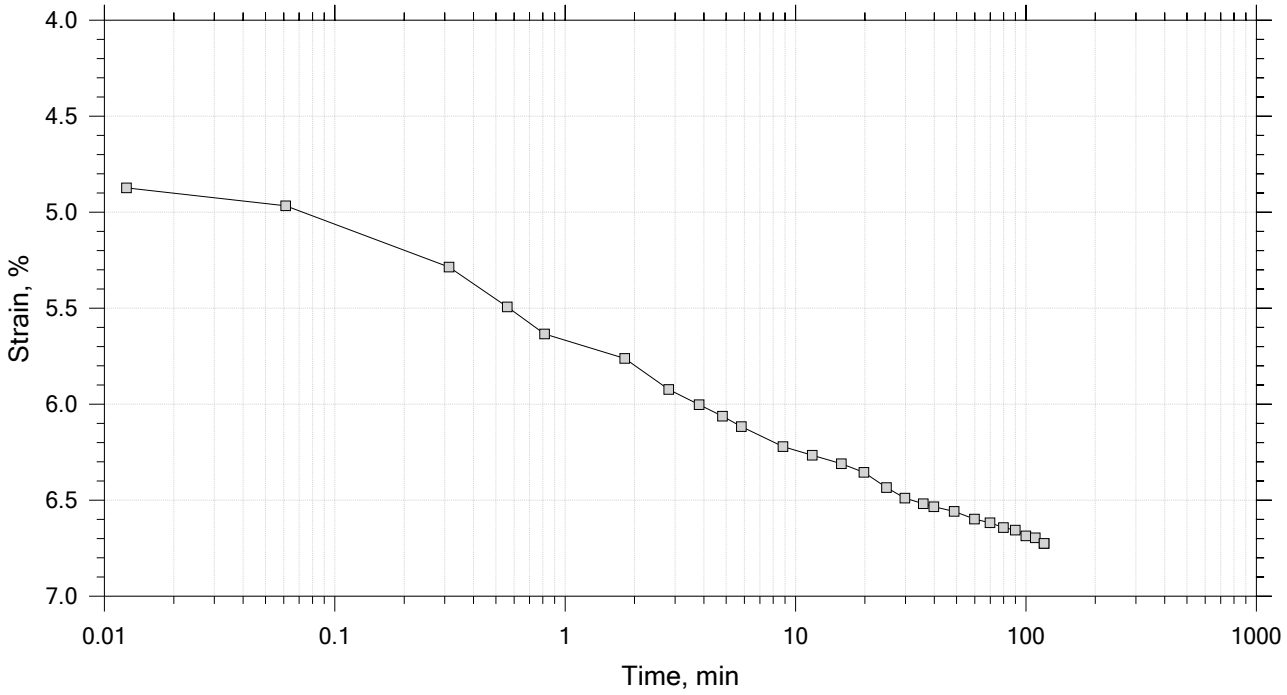


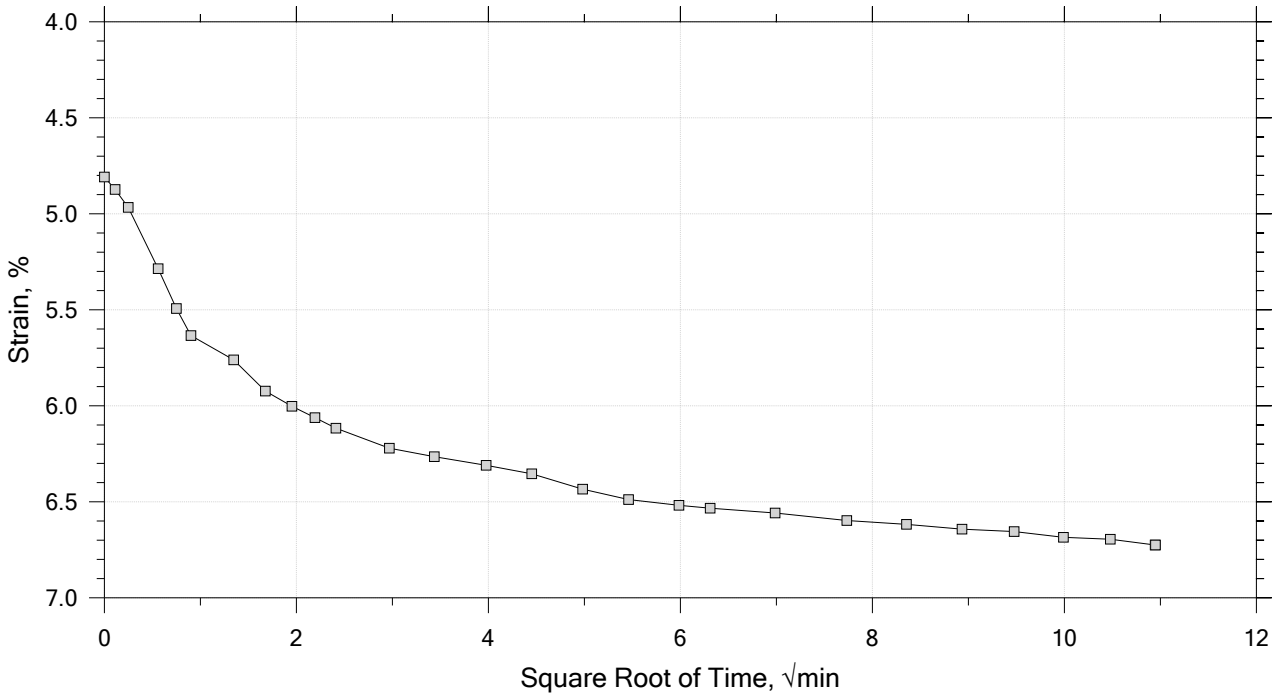


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





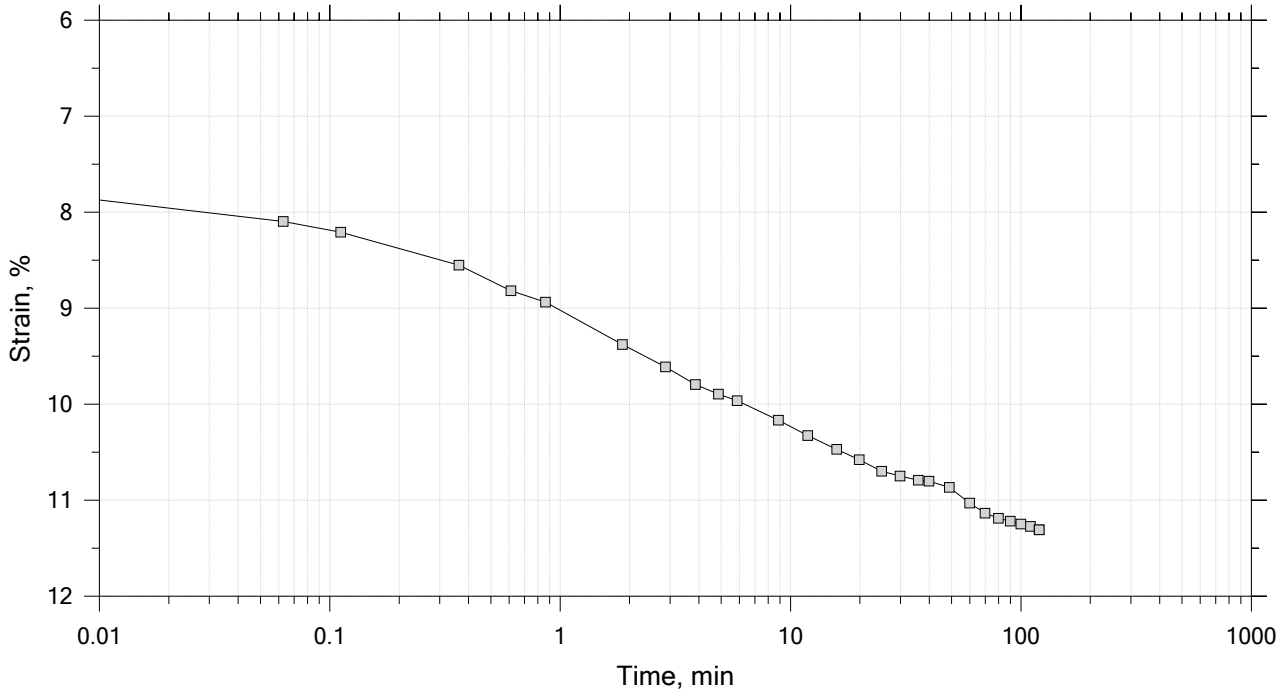
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

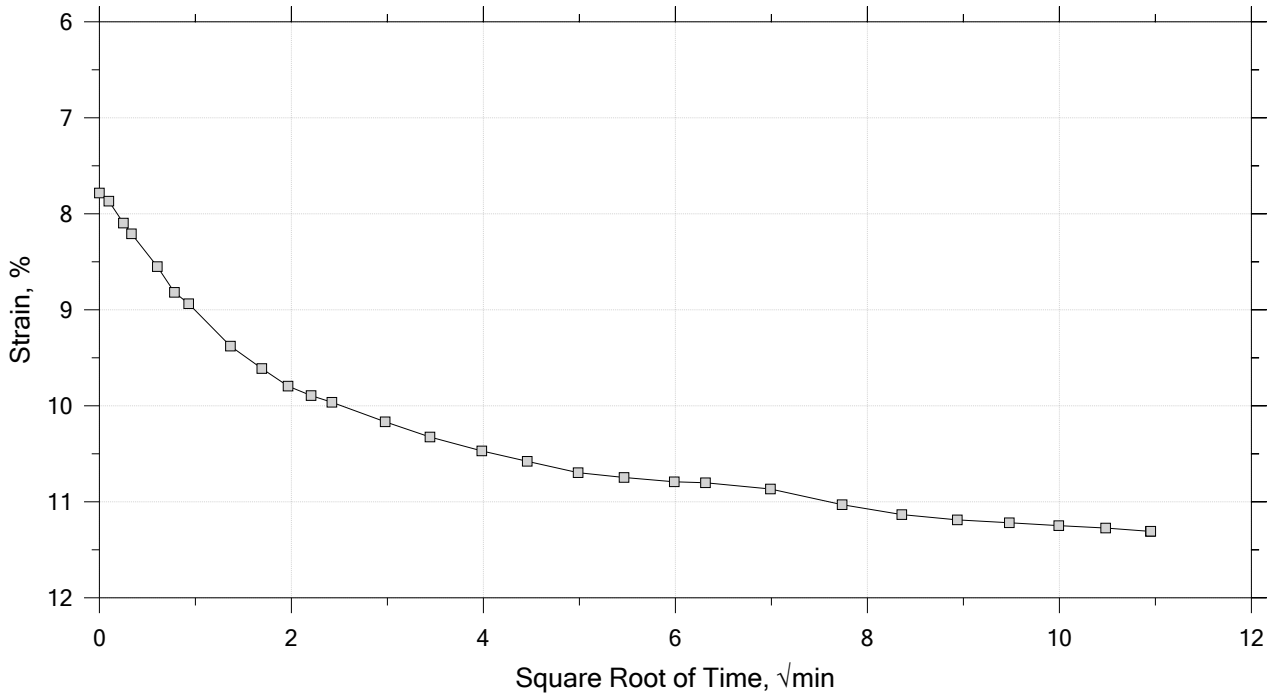
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





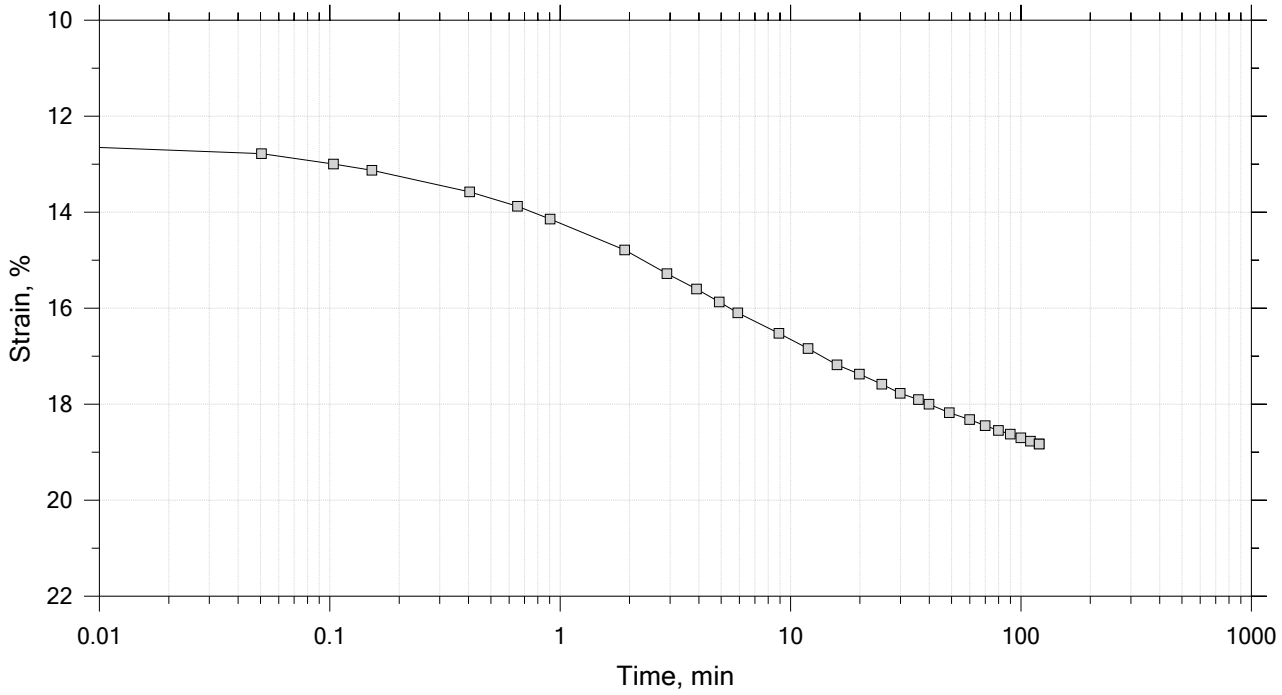
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

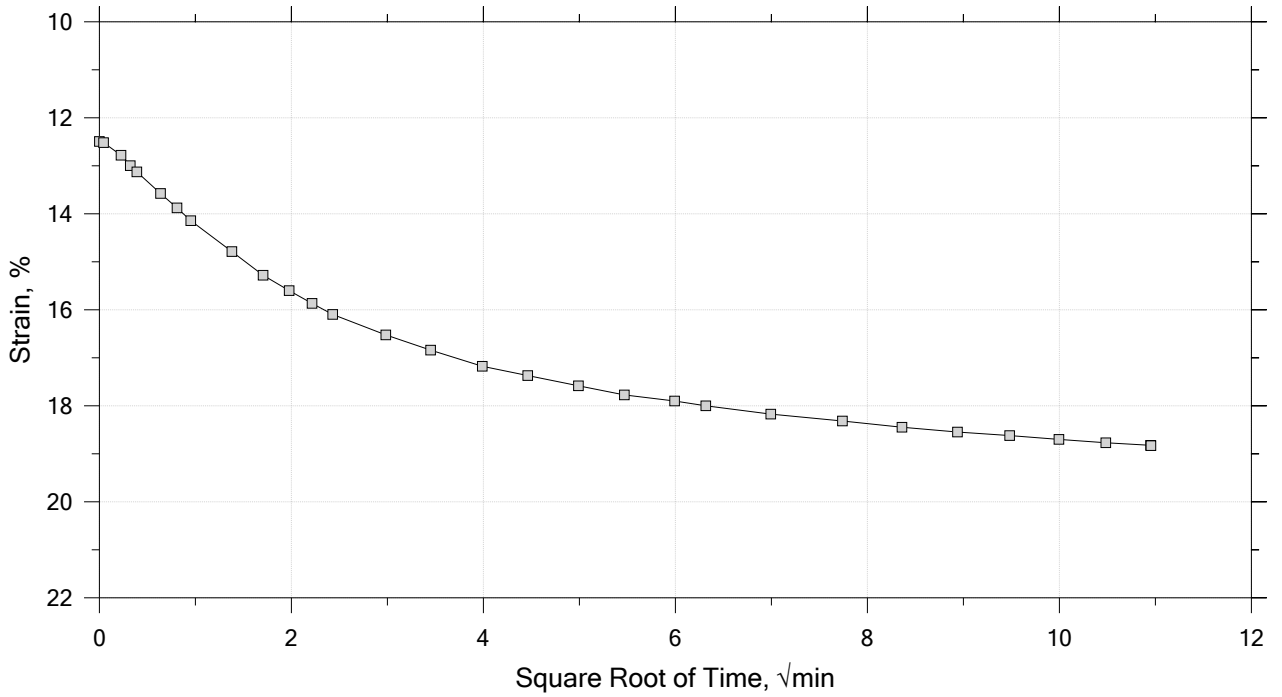
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





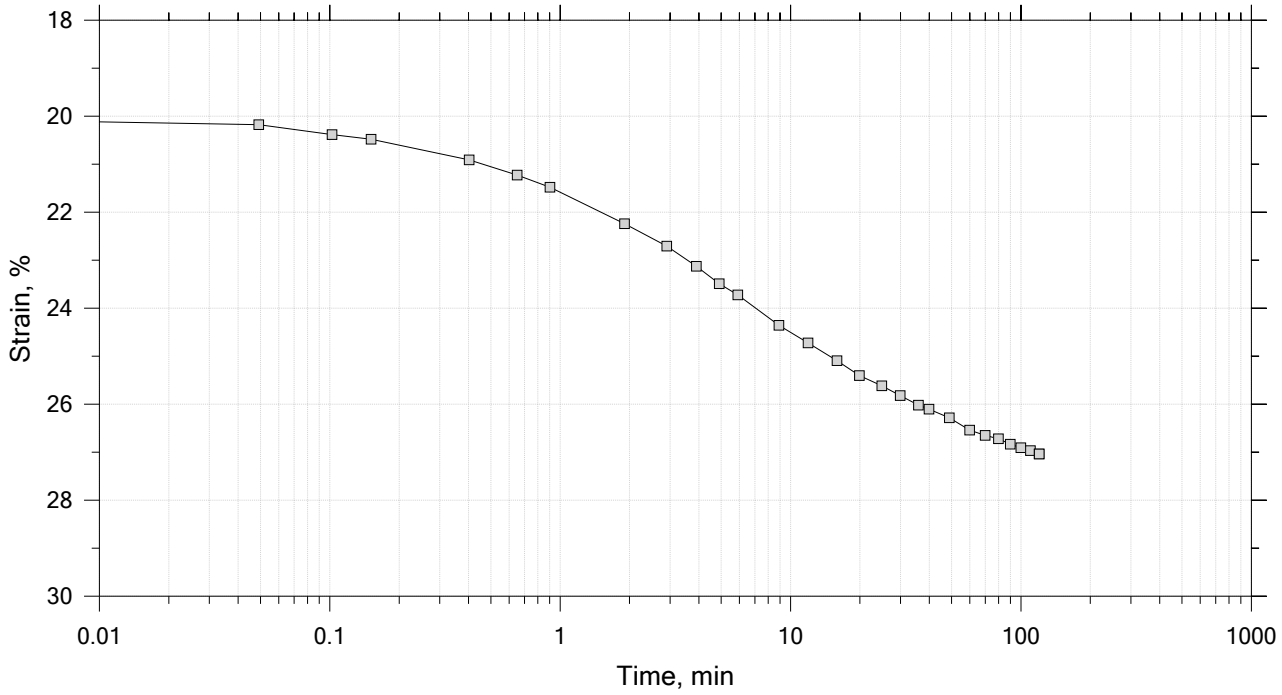
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

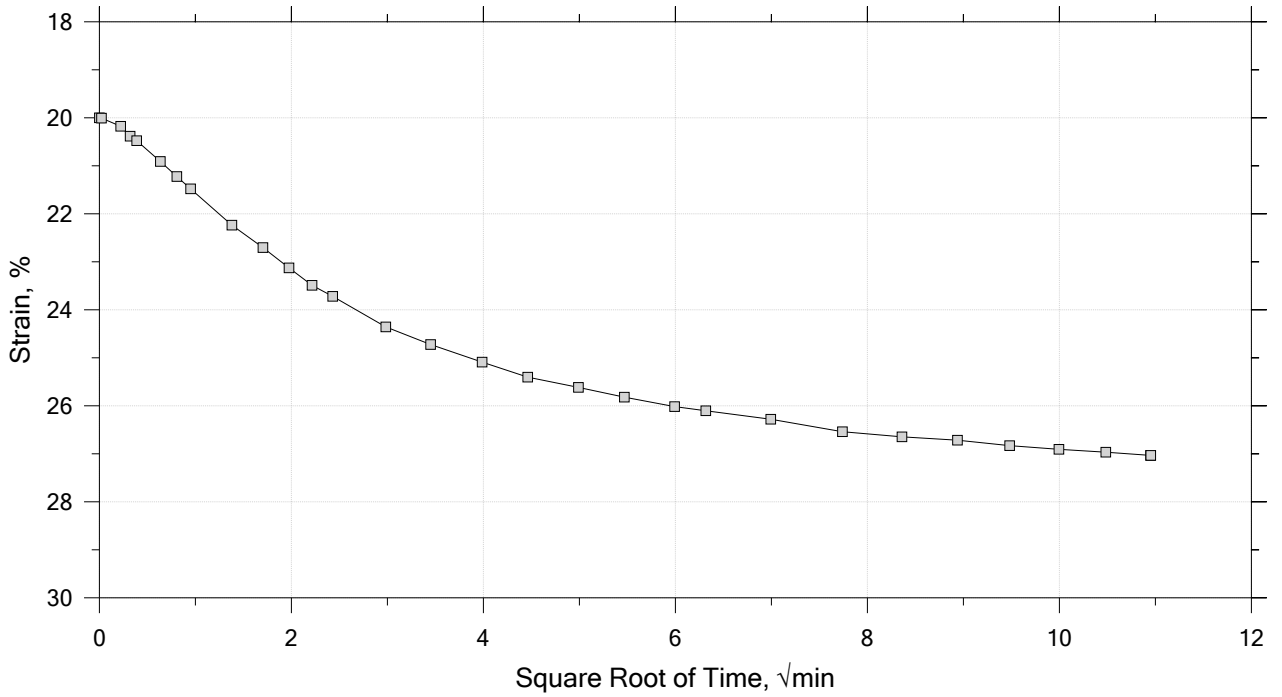
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





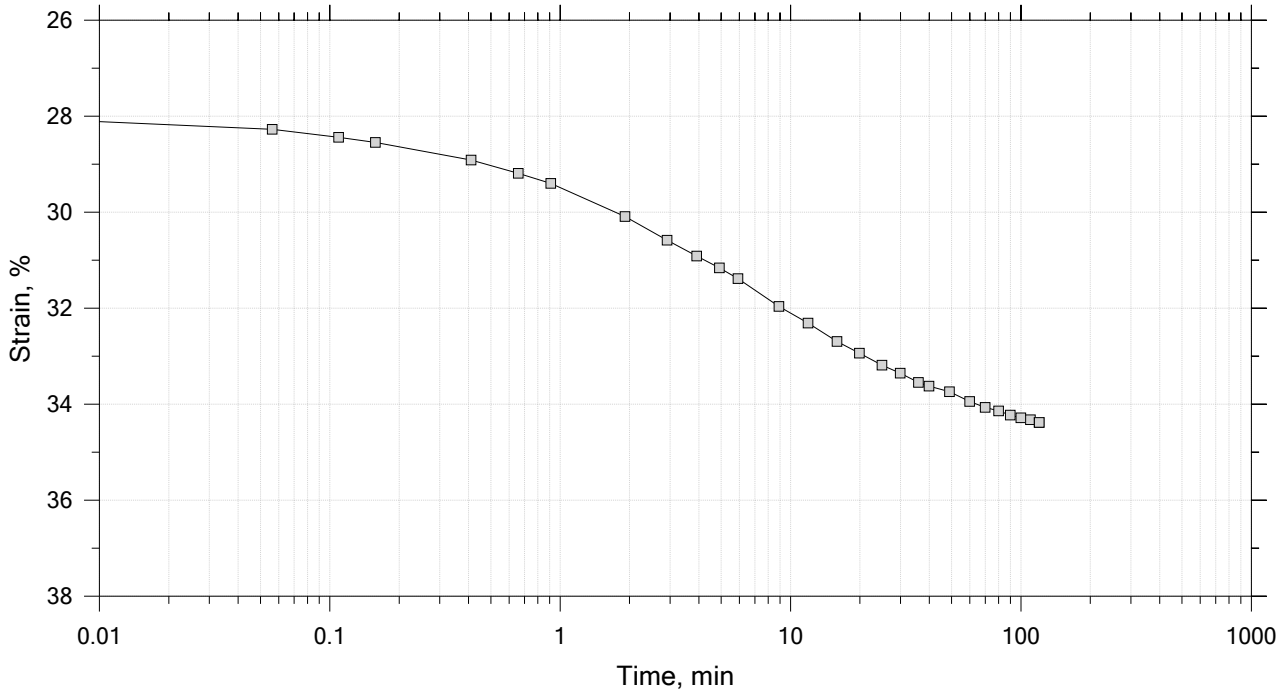
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

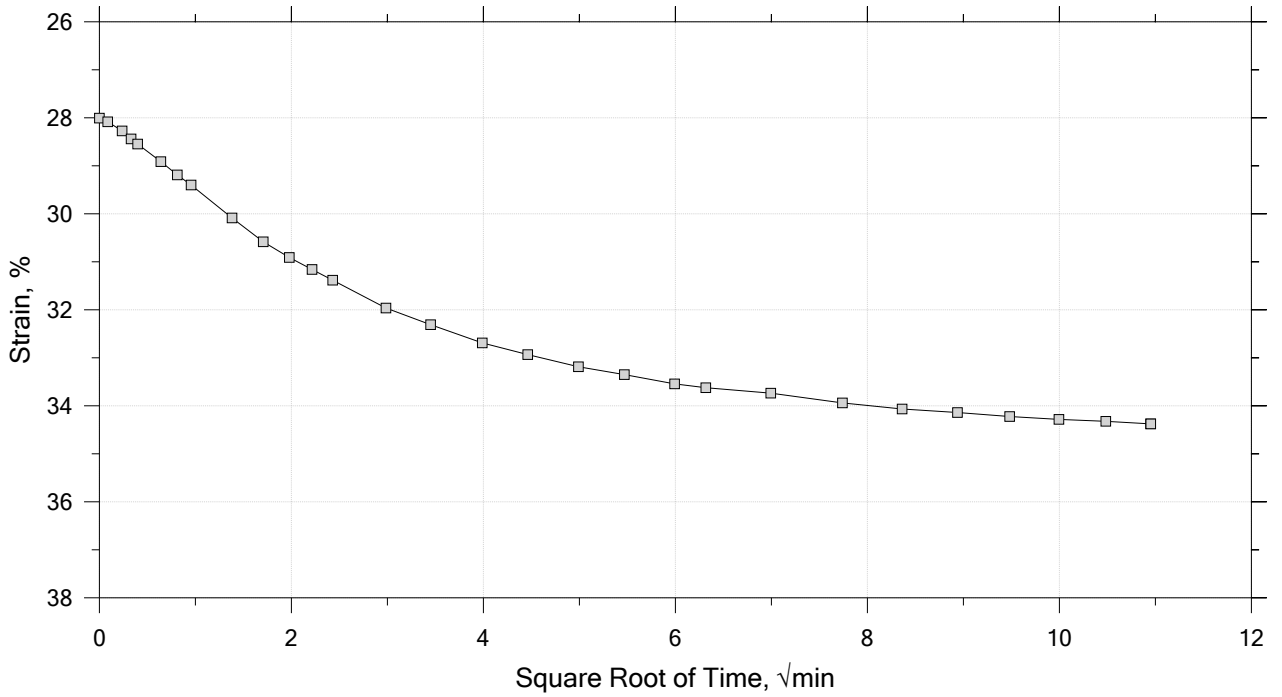
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





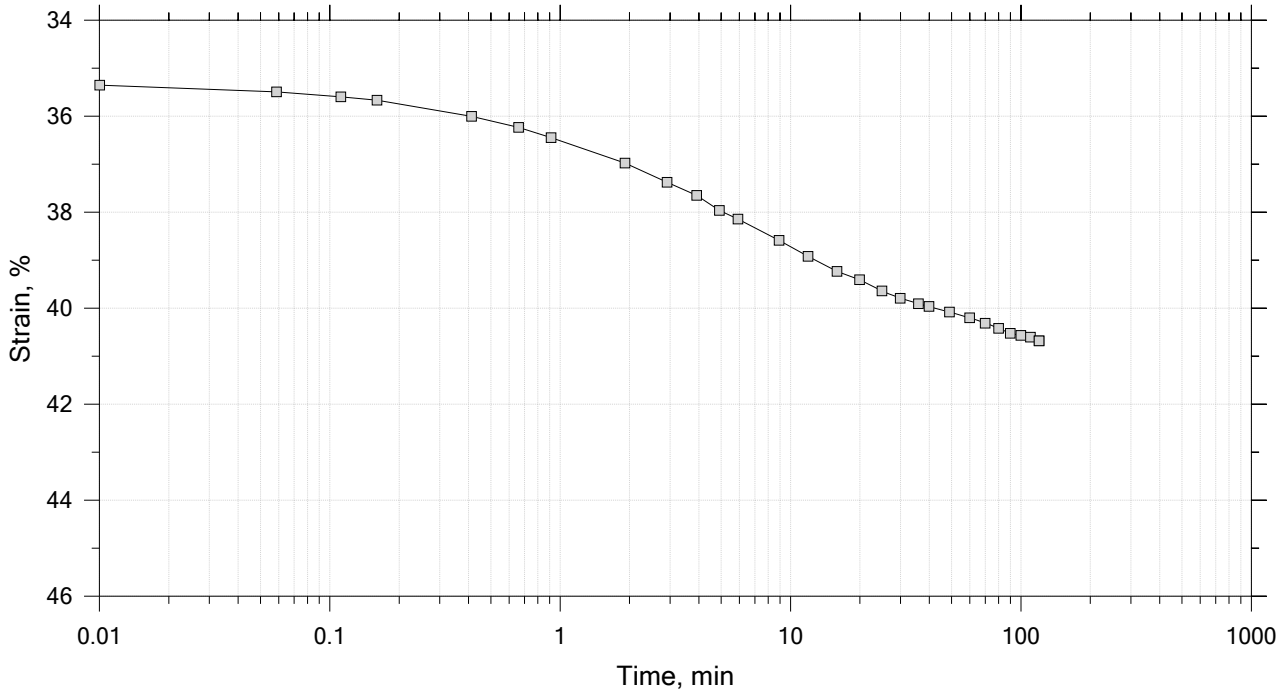
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

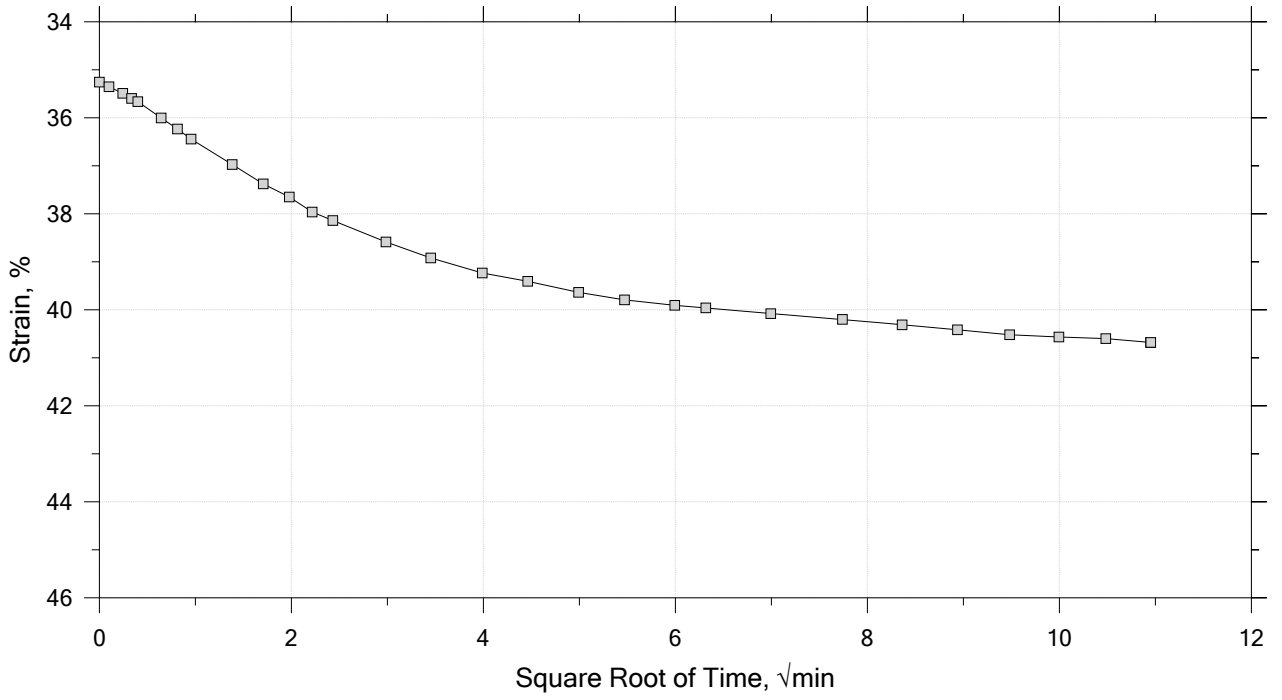
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

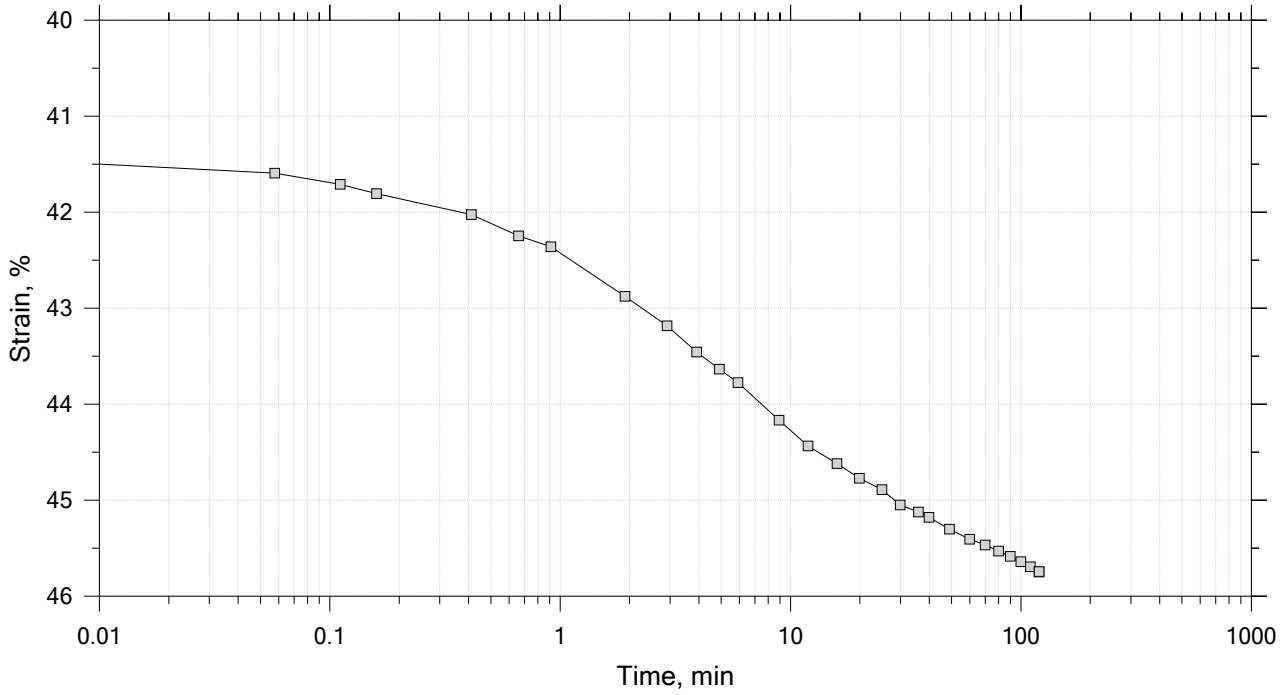


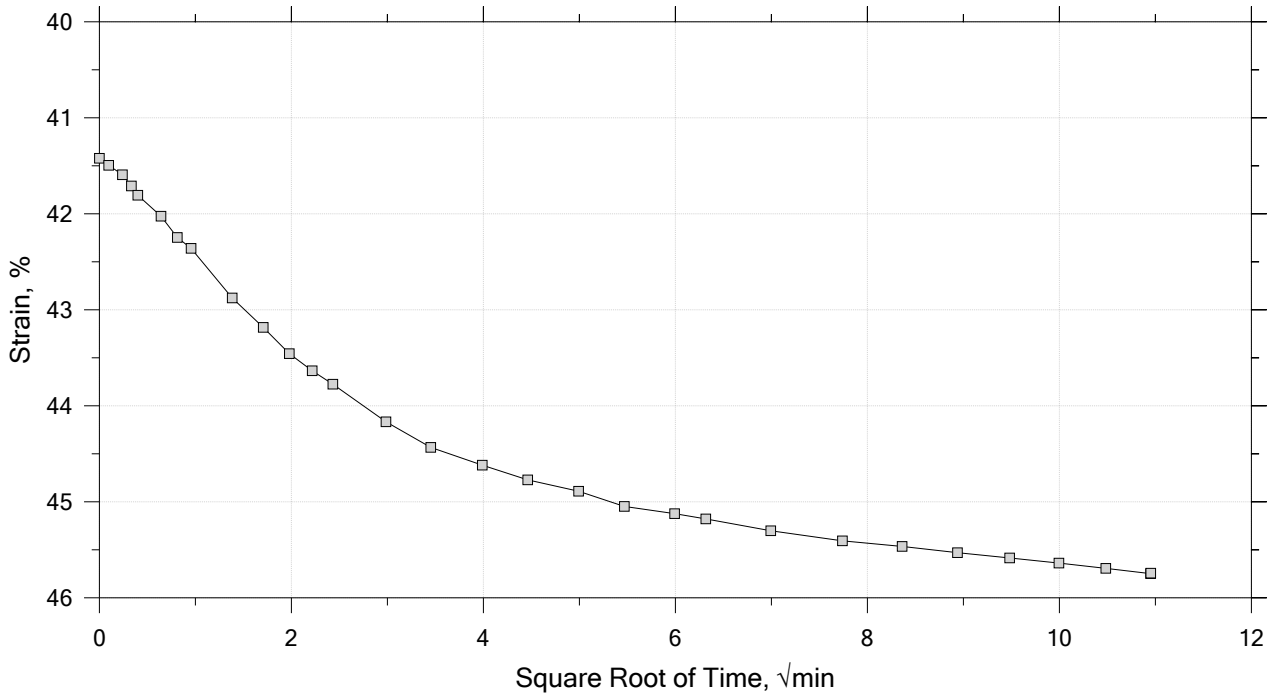


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

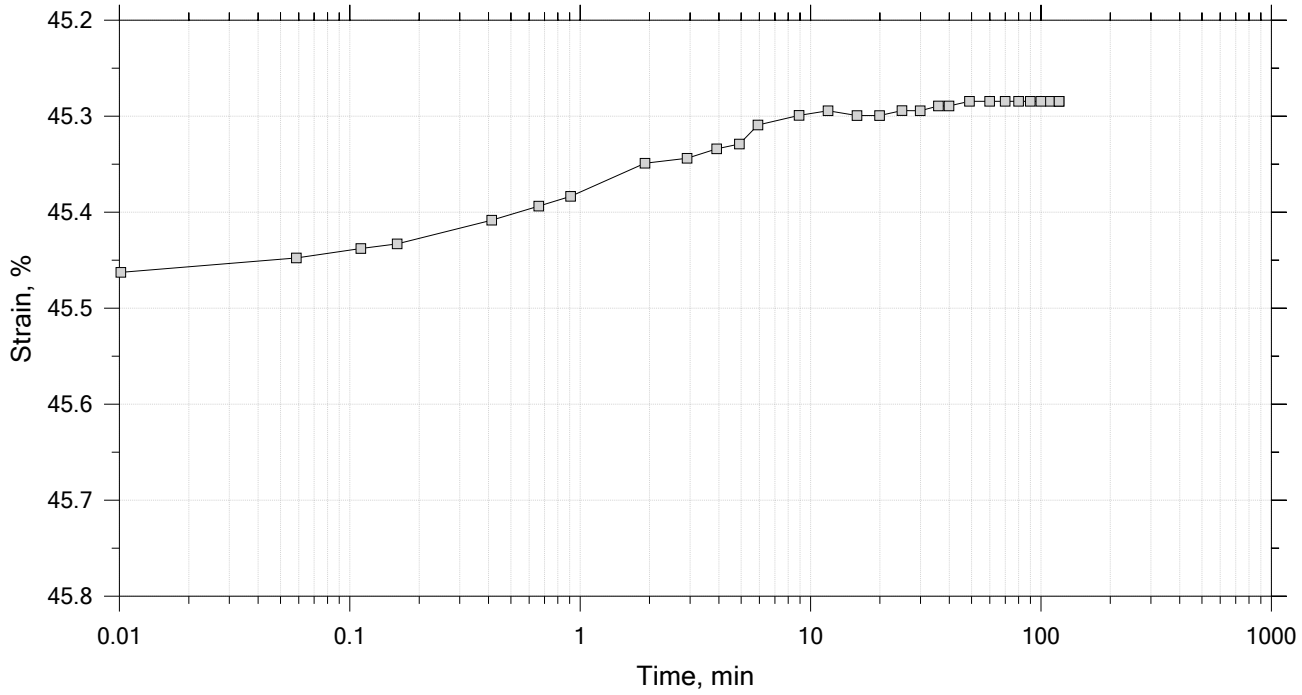


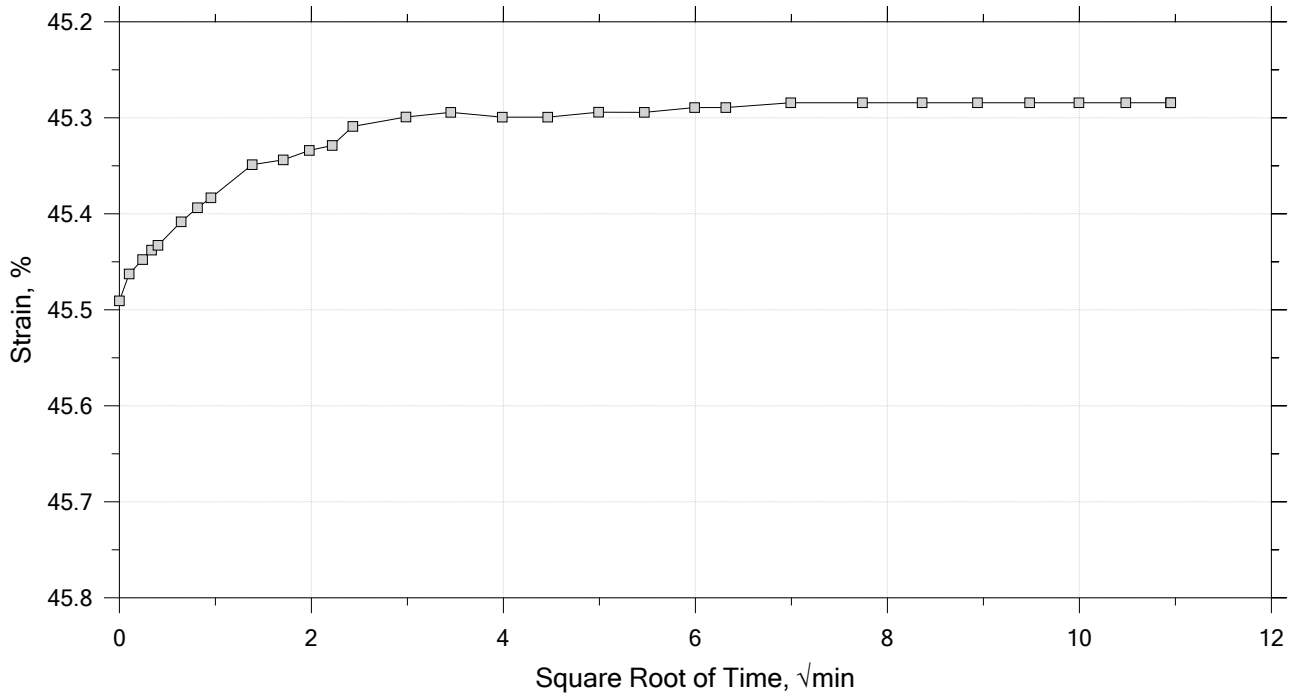


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

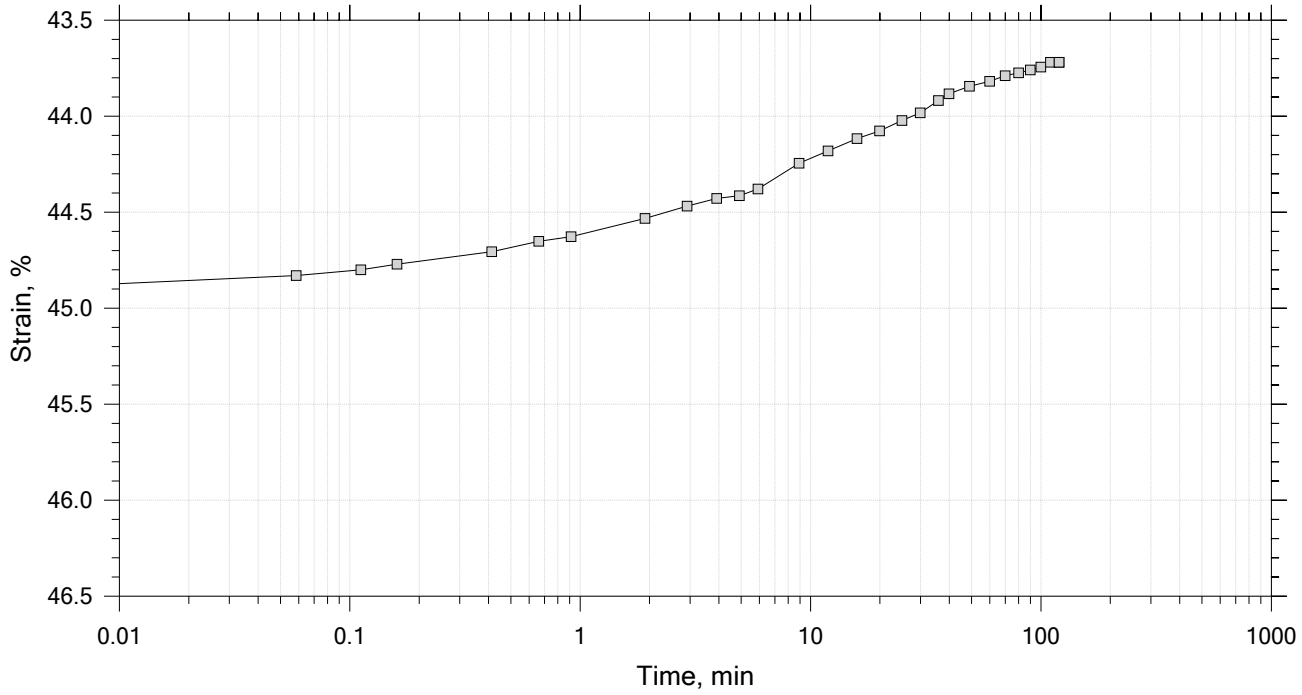


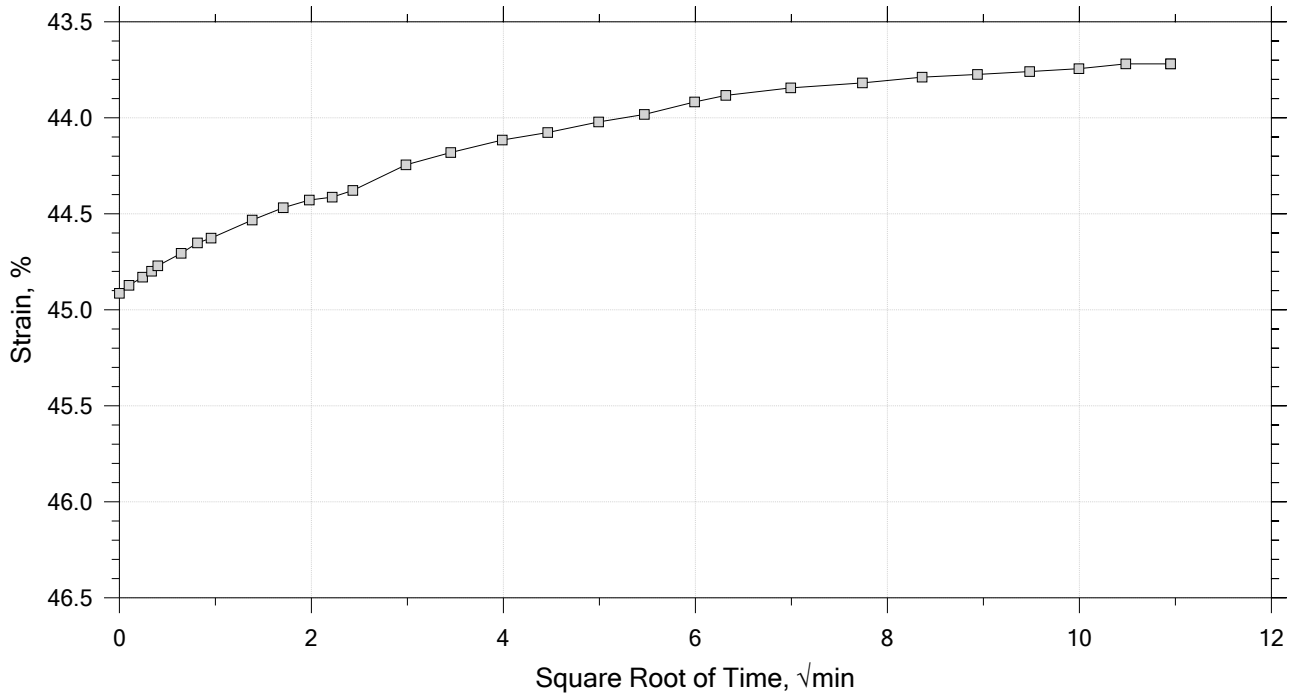


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





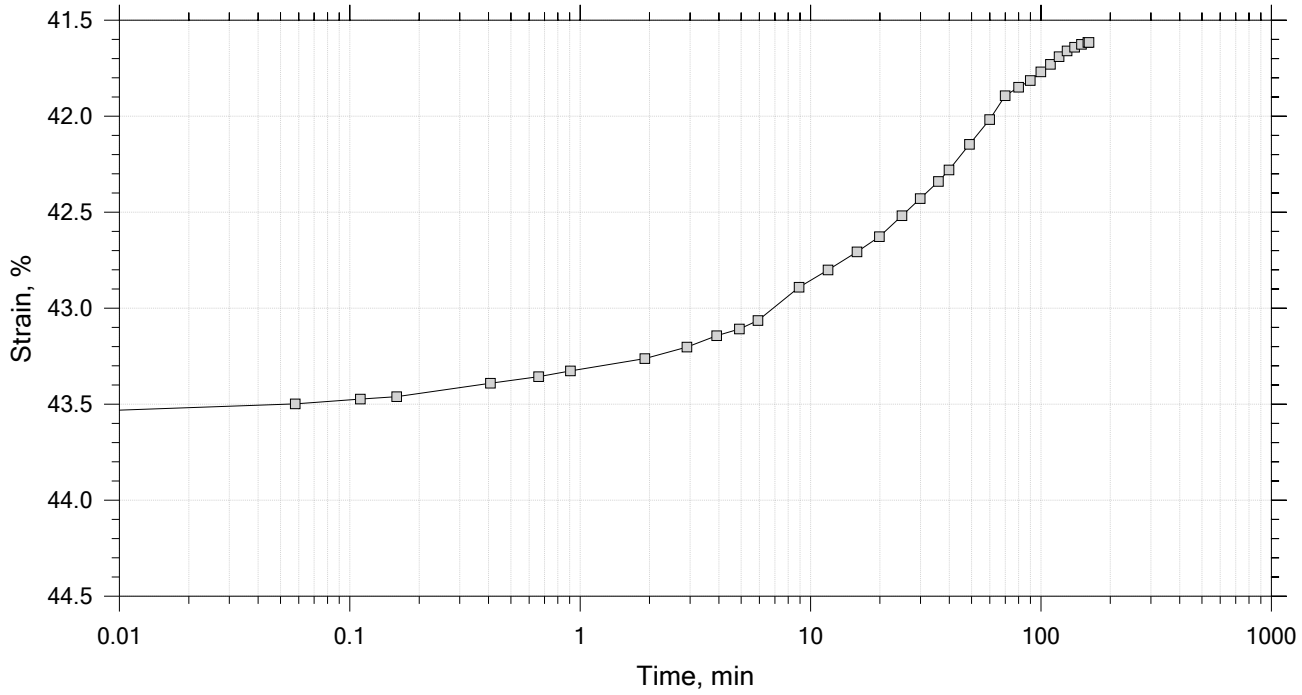
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

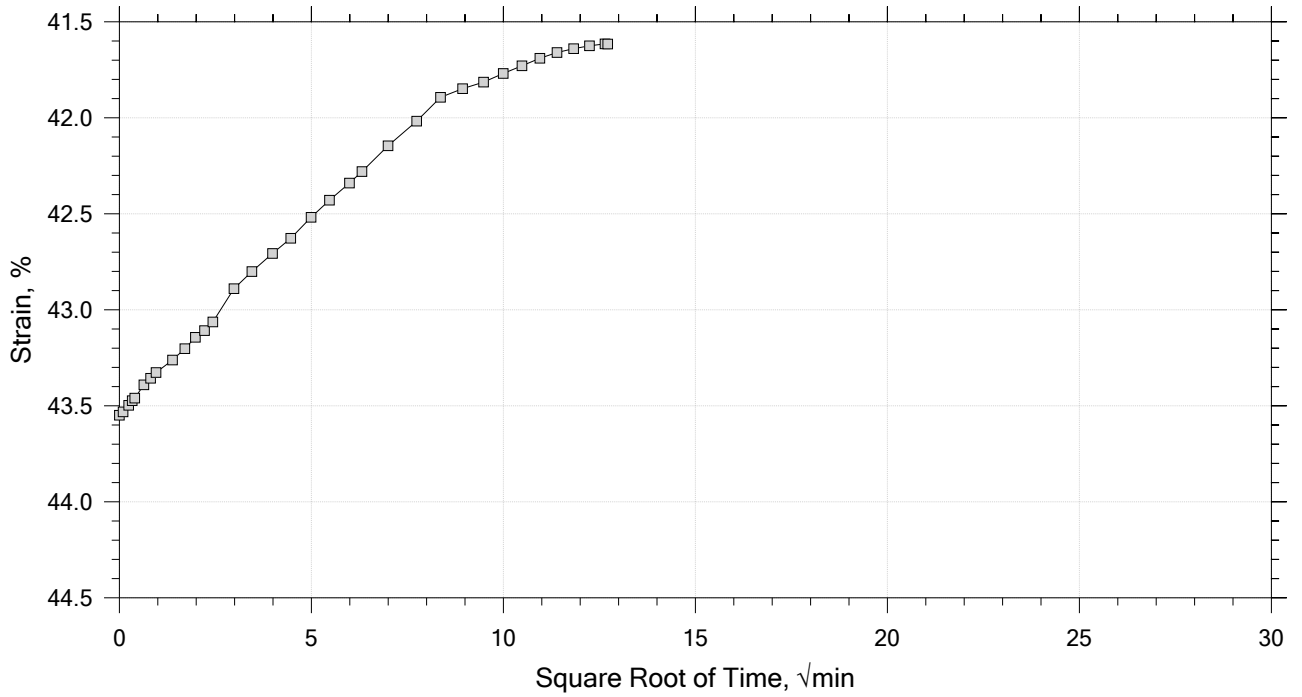
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

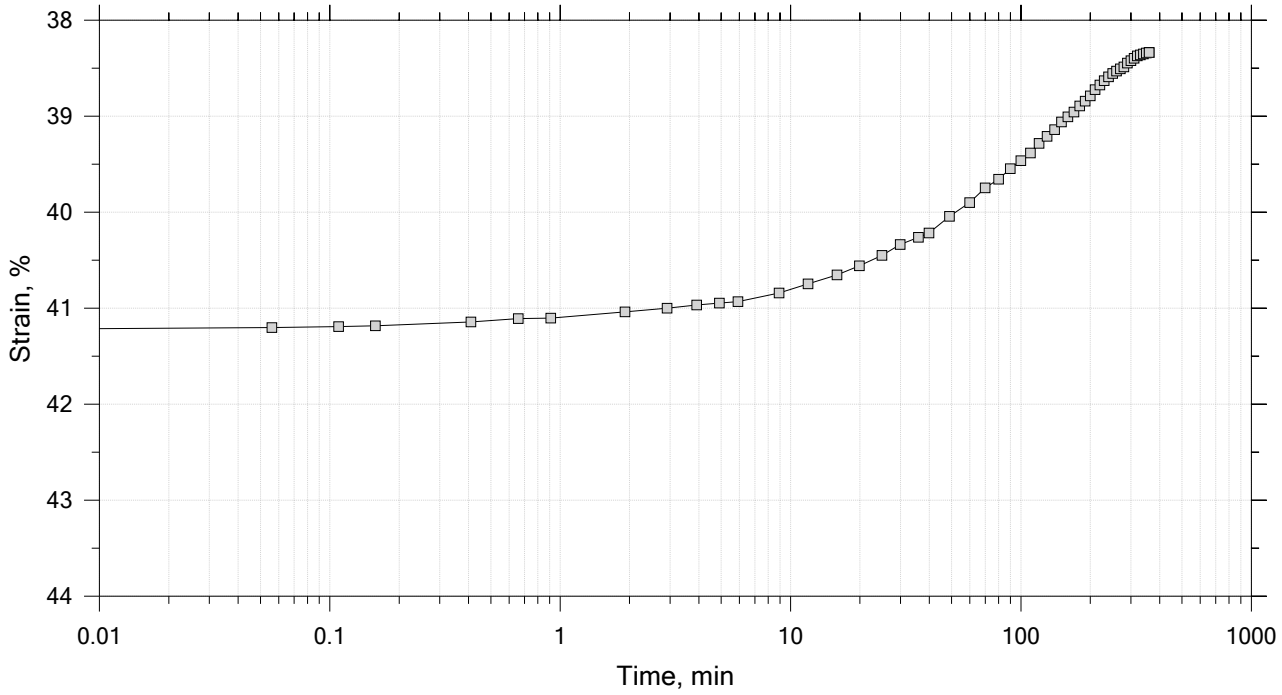


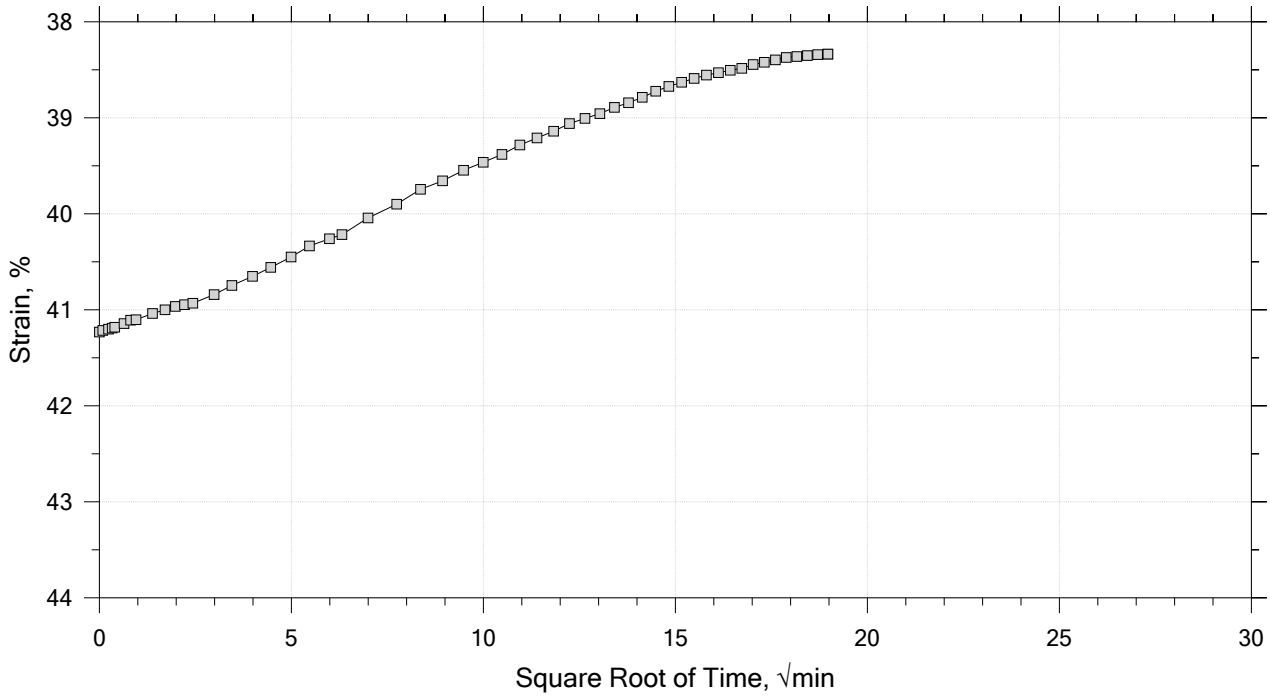


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.71	Liquid Limit: 42
Initial Height: 1.00 in	Initial Void Ratio: 2.34	Plastic Limit: 22
Final Height: 0.62 in	Final Void Ratio: 1.06	Plasticity Index: 20

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E5271	RING		E1023
Mass Container, gm	8.44	108	108	8.27
Mass Container + Wet Soil, gm	88.74	221.5	198.64	98.52
Mass Container + Dry Soil, gm	54.22	173.1	173.1	73.09
Mass Dry Soil, gm	45.78	65.1	65.1	64.82
Water Content, %	75.40	74.35	39.23	39.23
Void Ratio	---	2.34	1.06	---
Degree of Saturation, %	---	85.85	100.00	---
Dry Unit Weight, pcf	---	50.523	81.934	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
Test No.: IP-7-2	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

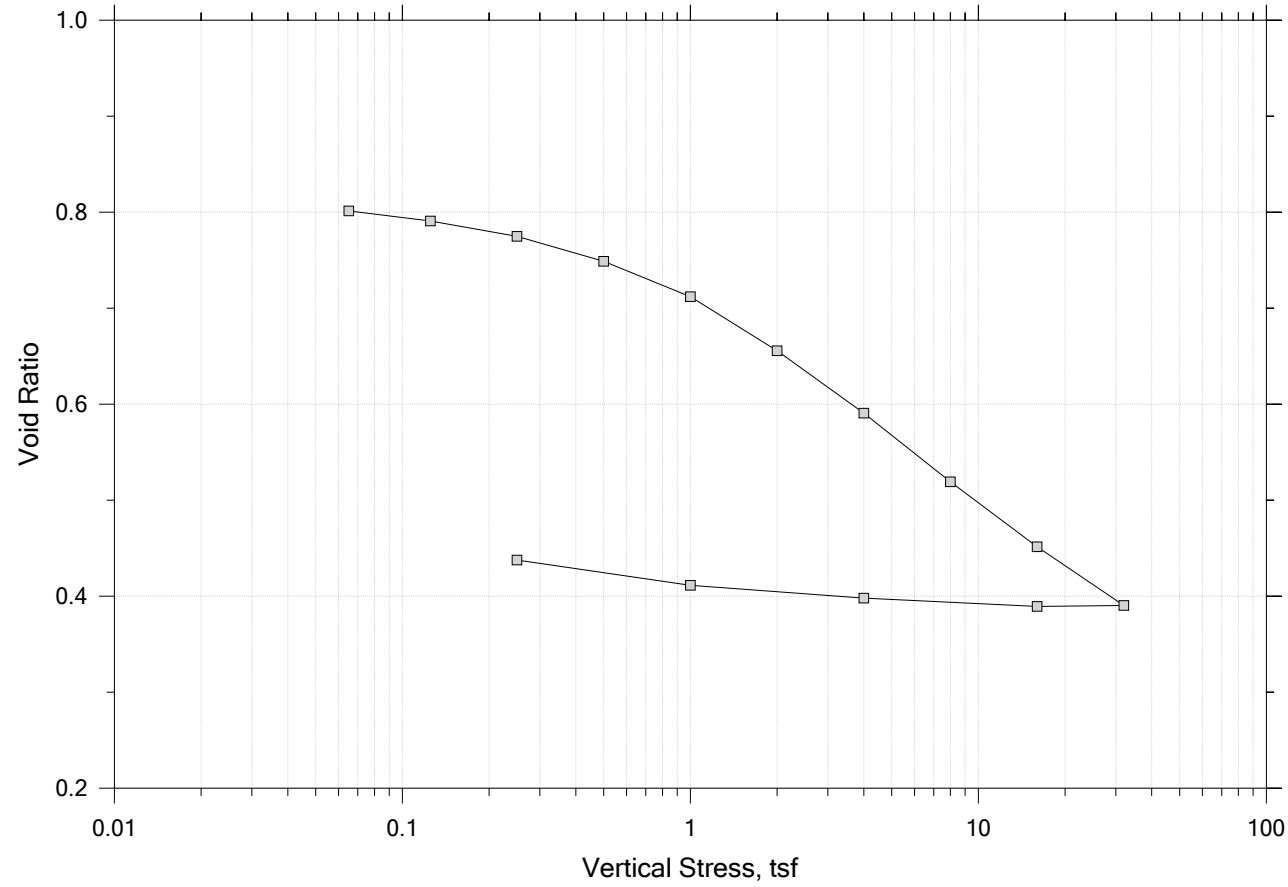
Square Root of Time Coefficients

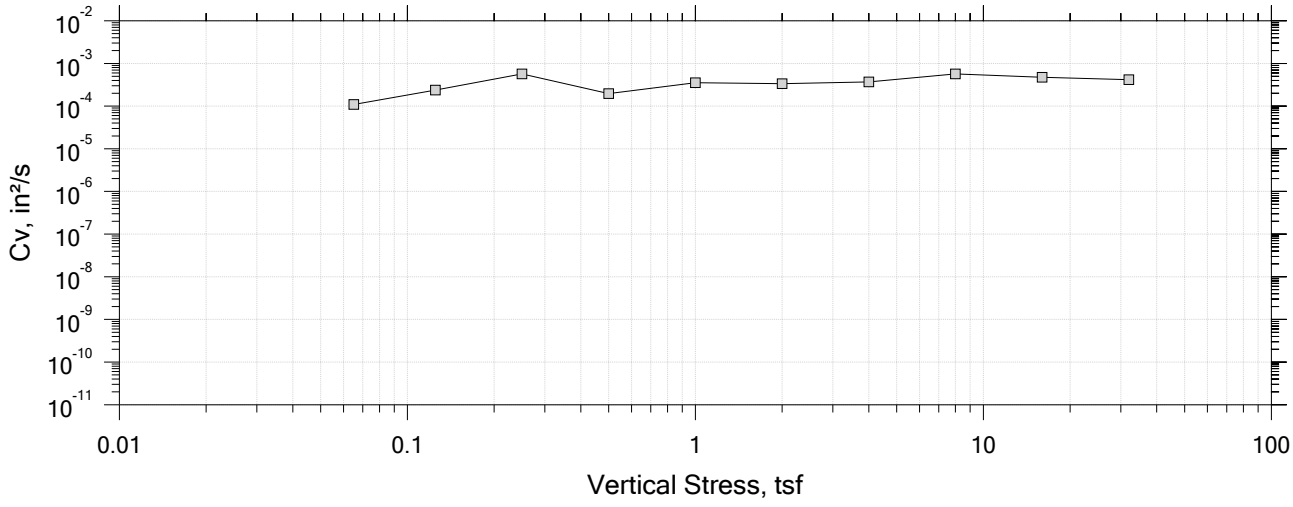
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0670	0.008829	2.31	0.883	39.561	8.85e-05	1.32e-01	2.18e-04
2	0.125	0.01868	2.28	1.87	30.737	1.12e-04	1.70e-01	3.56e-04
3	0.250	0.04022	2.21	4.02	11.524	2.89e-04	1.72e-01	9.32e-04
4	0.500	0.06725	2.12	6.73	8.268	3.83e-04	1.08e-01	7.75e-04
5	1.00	0.1131	1.97	11.3	15.069	1.94e-04	9.17e-02	3.33e-04
6	2.00	0.1883	1.71	18.8	13.791	1.85e-04	7.52e-02	2.60e-04
7	4.00	0.2704	1.44	27.0	13.987	1.50e-04	4.10e-02	1.15e-04
8	8.00	0.3438	1.19	34.4	13.751	1.23e-04	1.84e-02	4.24e-05
9	16.0	0.4068	0.983	40.7	14.869	9.27e-05	7.88e-03	1.37e-05
10	32.0	0.4574	0.814	45.7	12.784	8.91e-05	3.16e-03	5.28e-06
11	16.0	0.4528	0.829	45.3	6.716	1.56e-04	2.87e-04	8.40e-07
12	4.00	0.4372	0.881	43.7	21.324	5.10e-05	1.30e-03	1.25e-06
13	1.00	0.4162	0.952	41.6	96.909	1.20e-05	7.01e-03	1.57e-06
14	0.250	0.3834	1.06	38.3	357.404	3.56e-06	4.37e-02	2.92e-06

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.6-5.7
	Test No.: IP-7-2	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.067 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

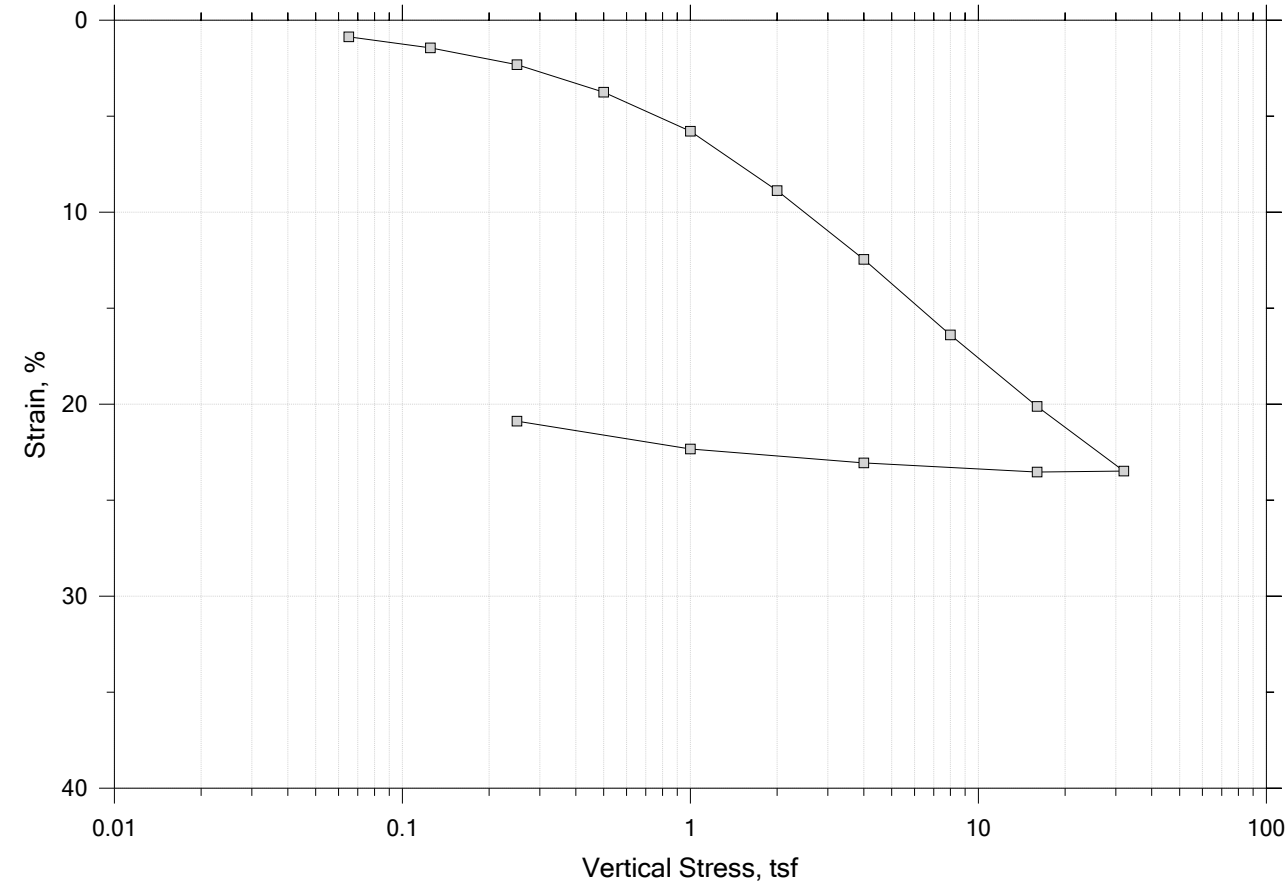


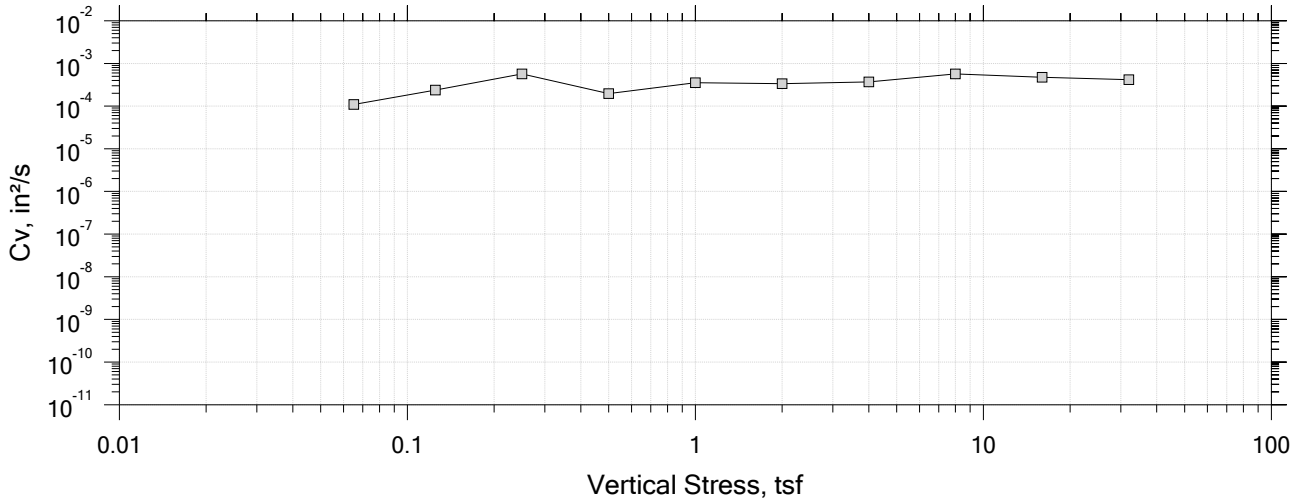


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

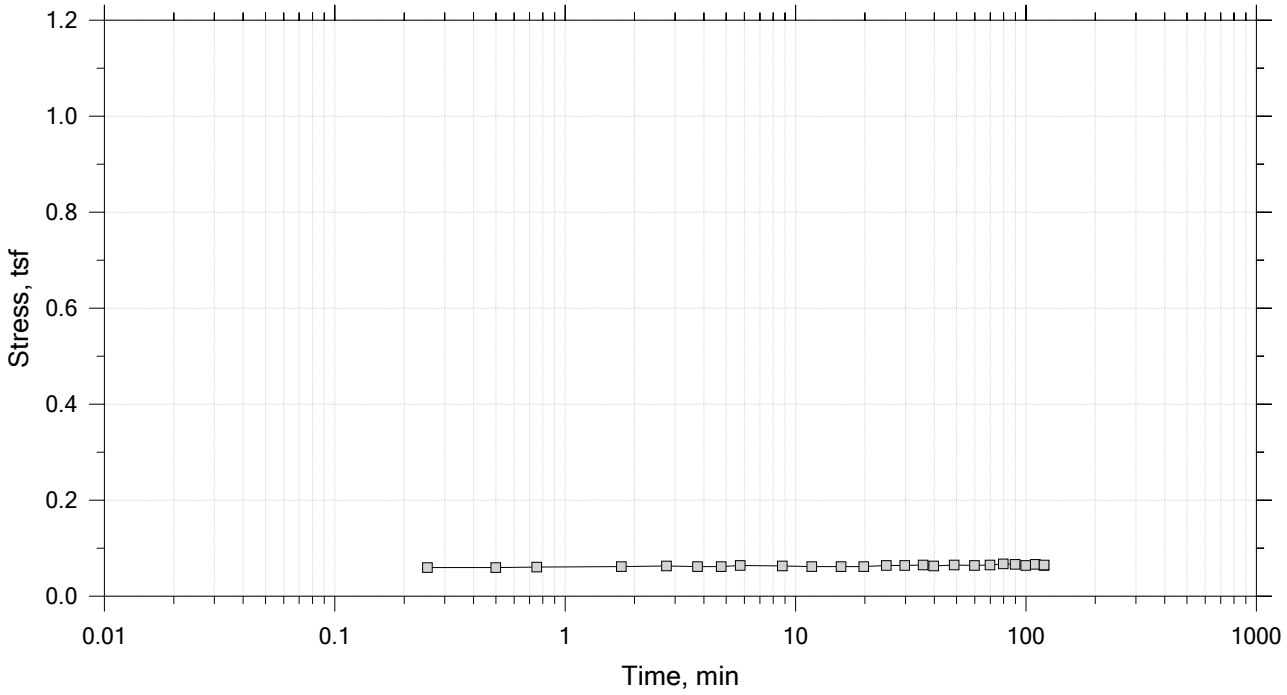


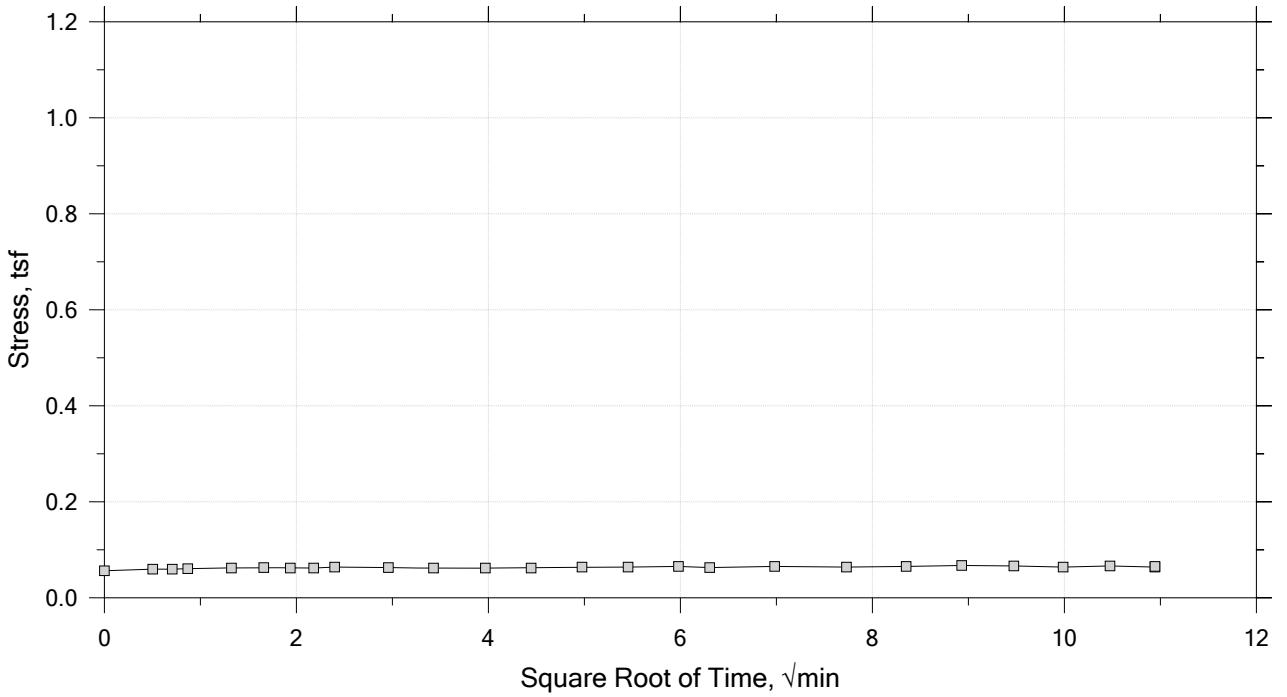


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0651 tsf

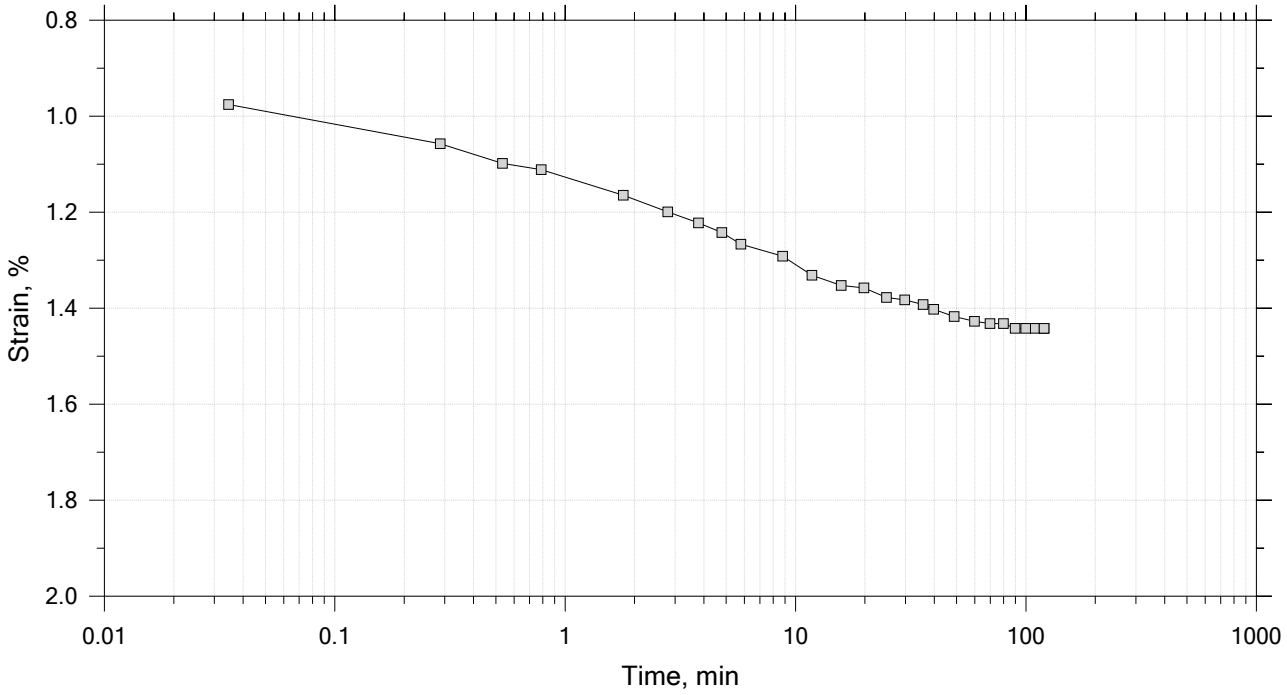


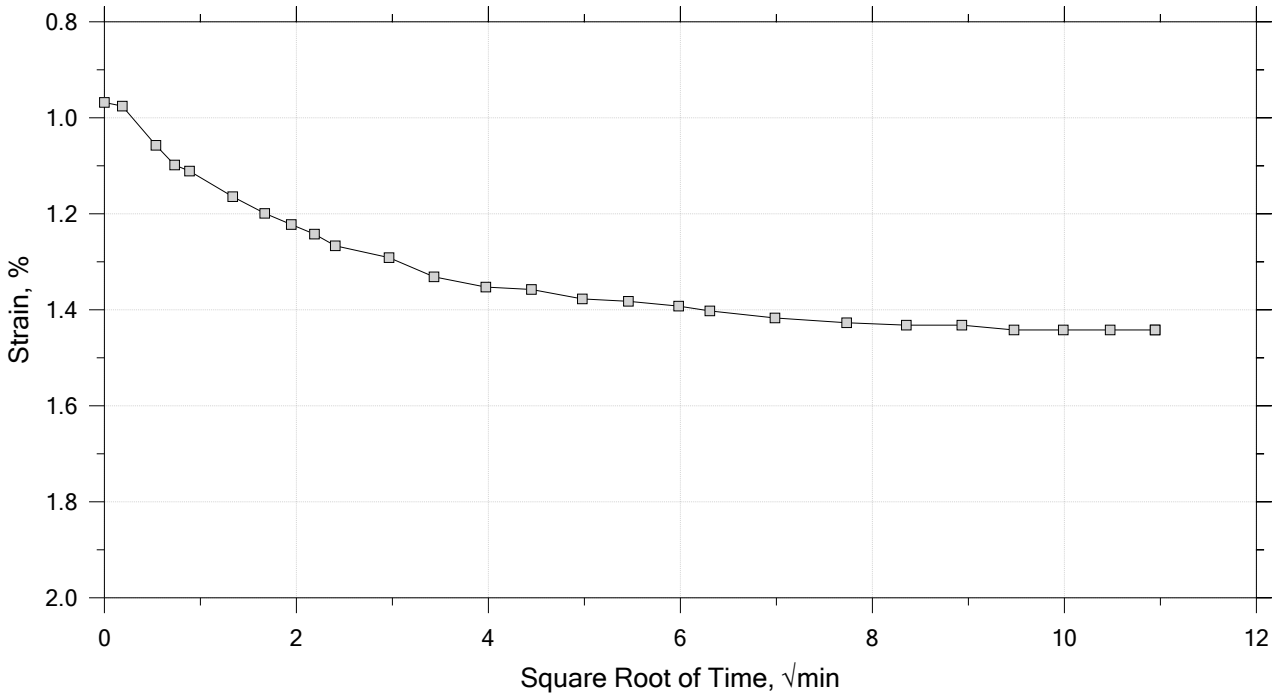


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

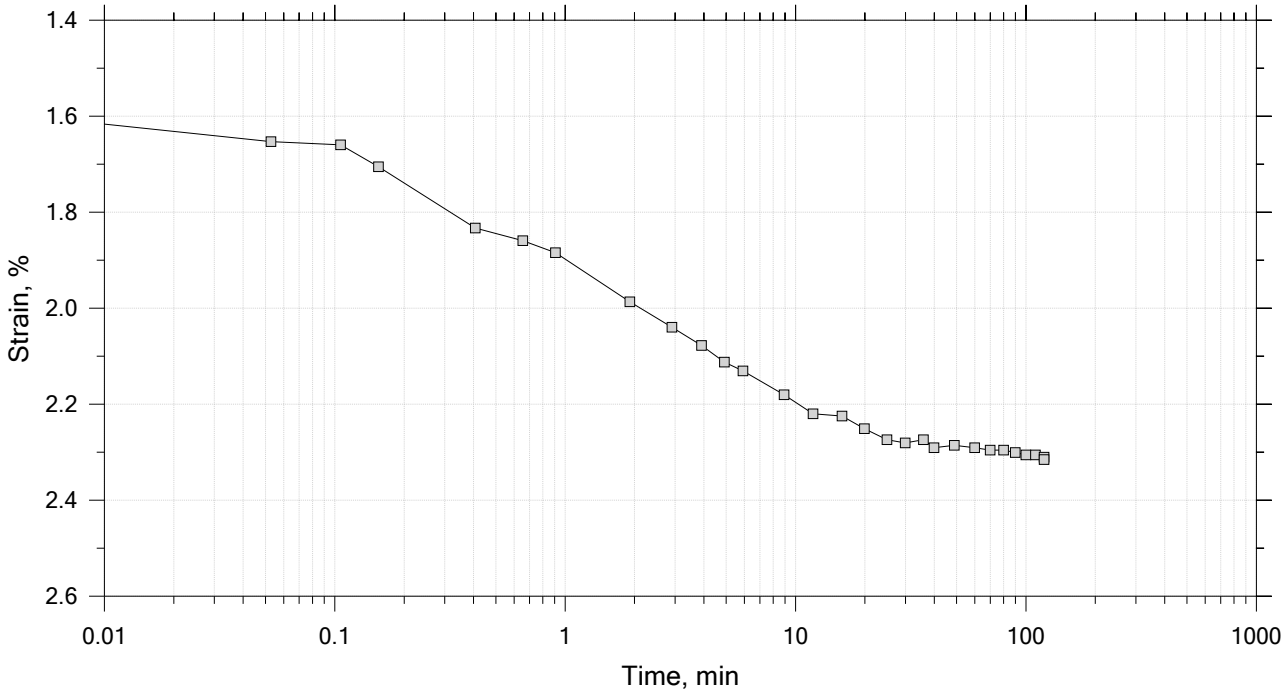


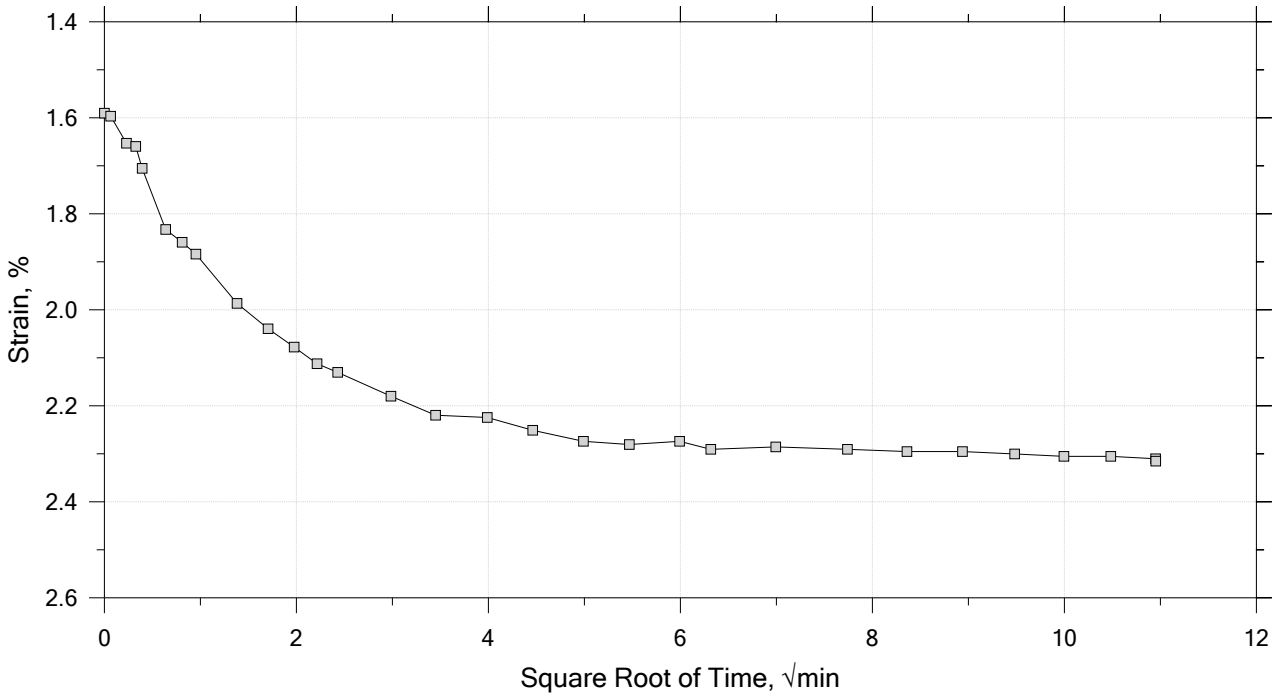


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

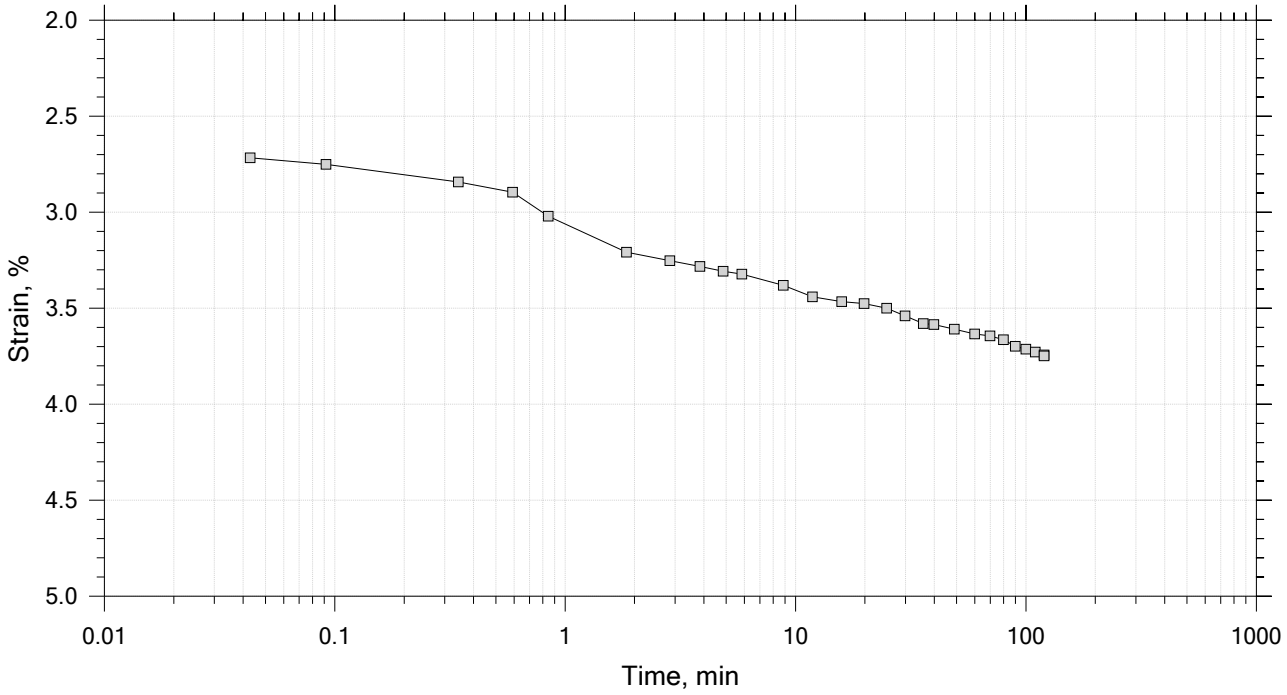


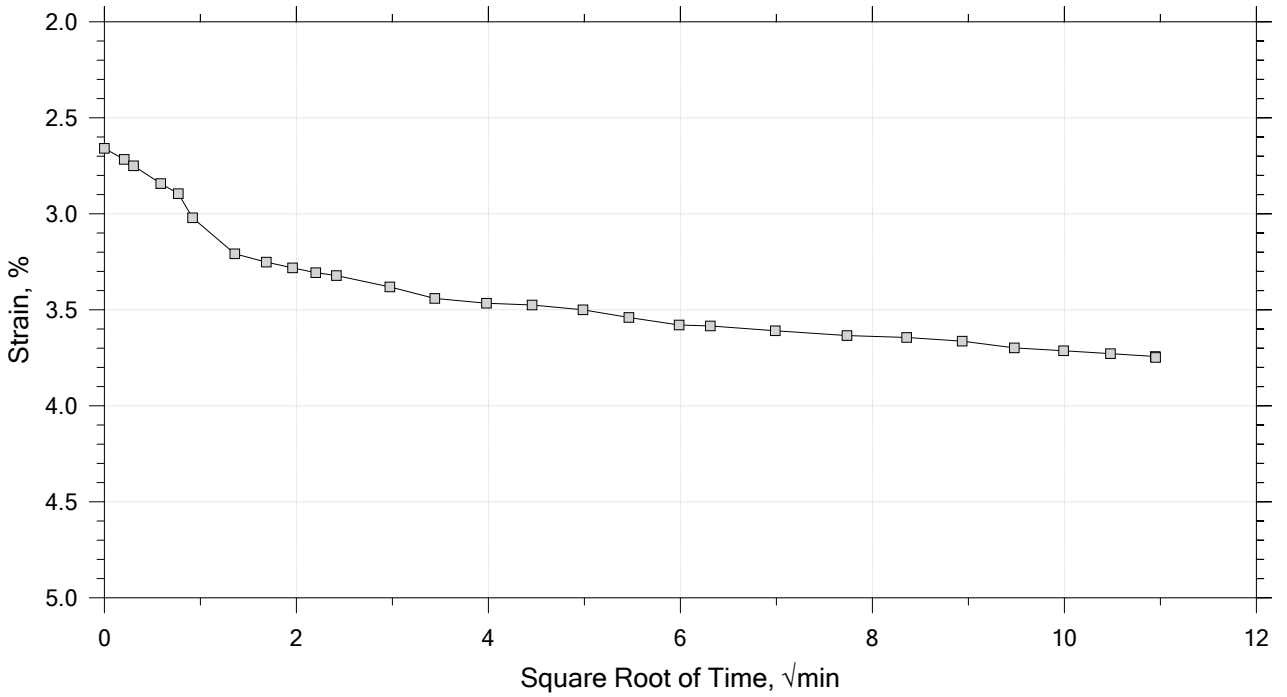


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





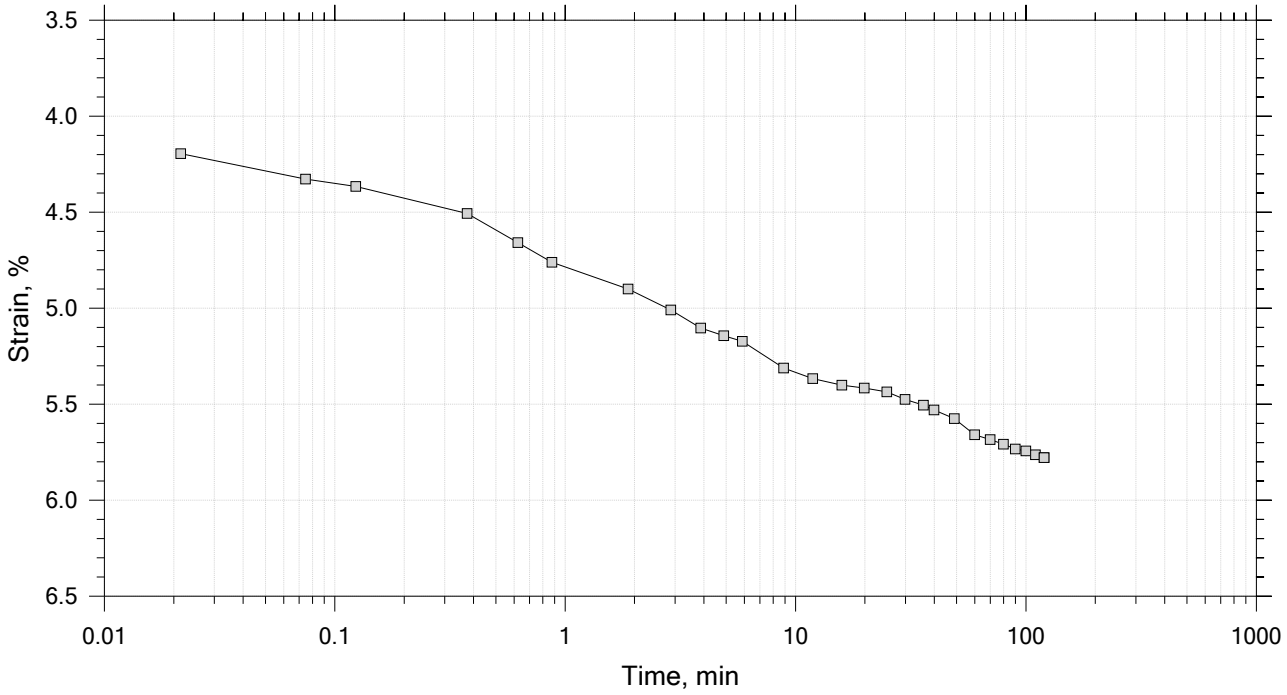
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

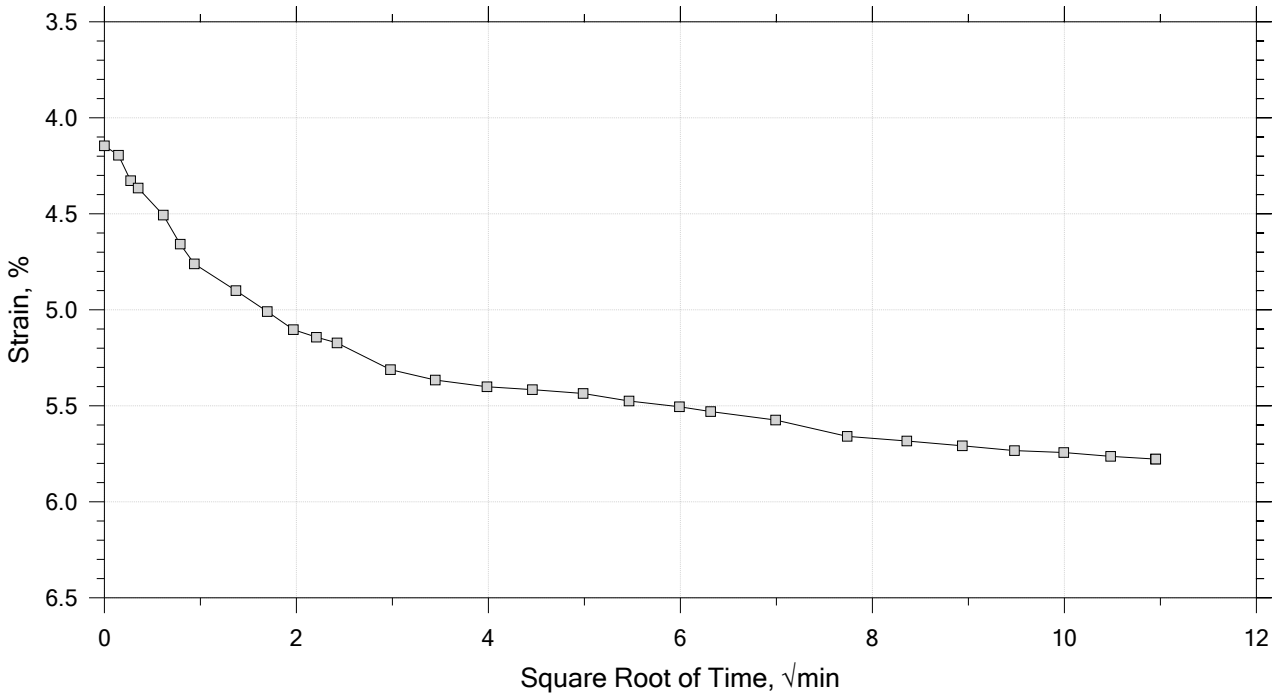
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf

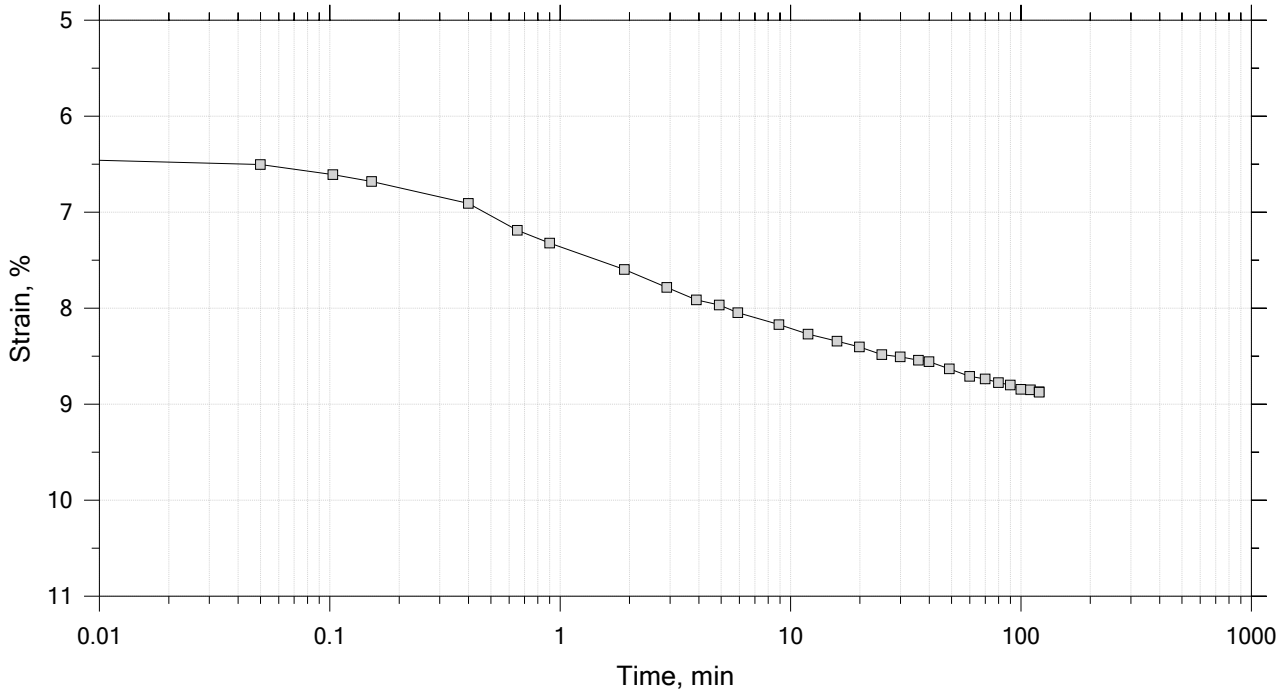


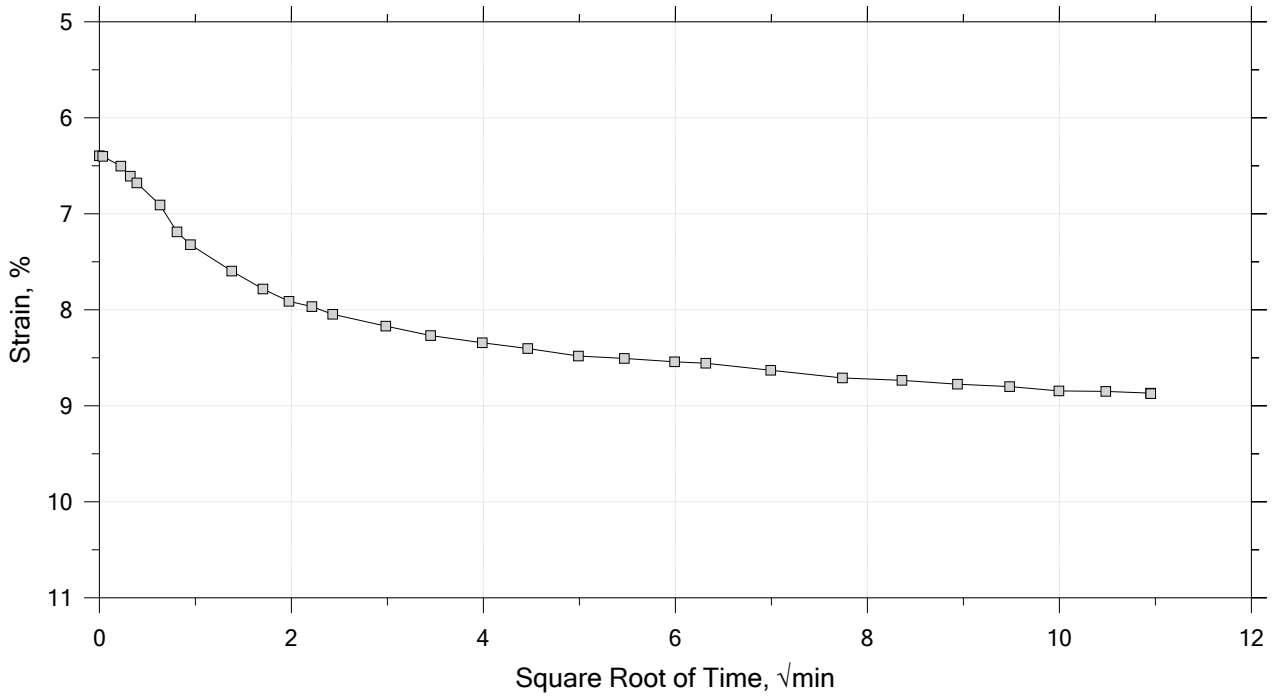


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14
Constant Load Step
Stress: 2 tsf

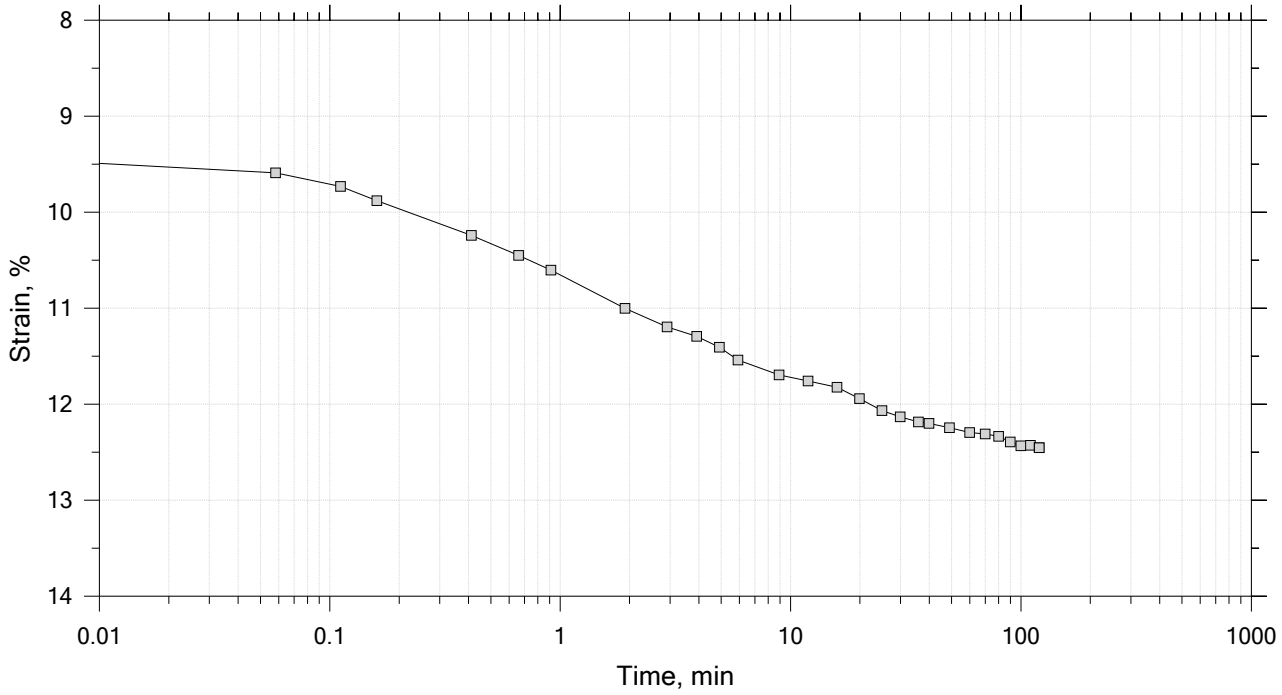


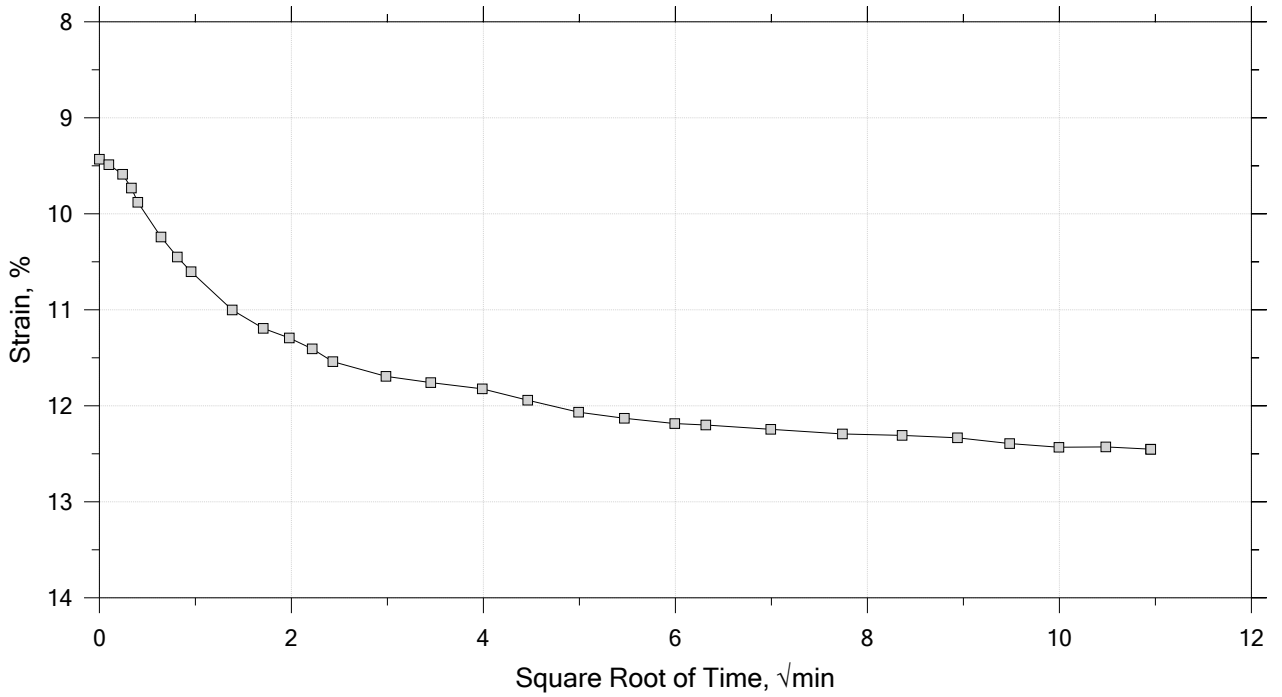


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf





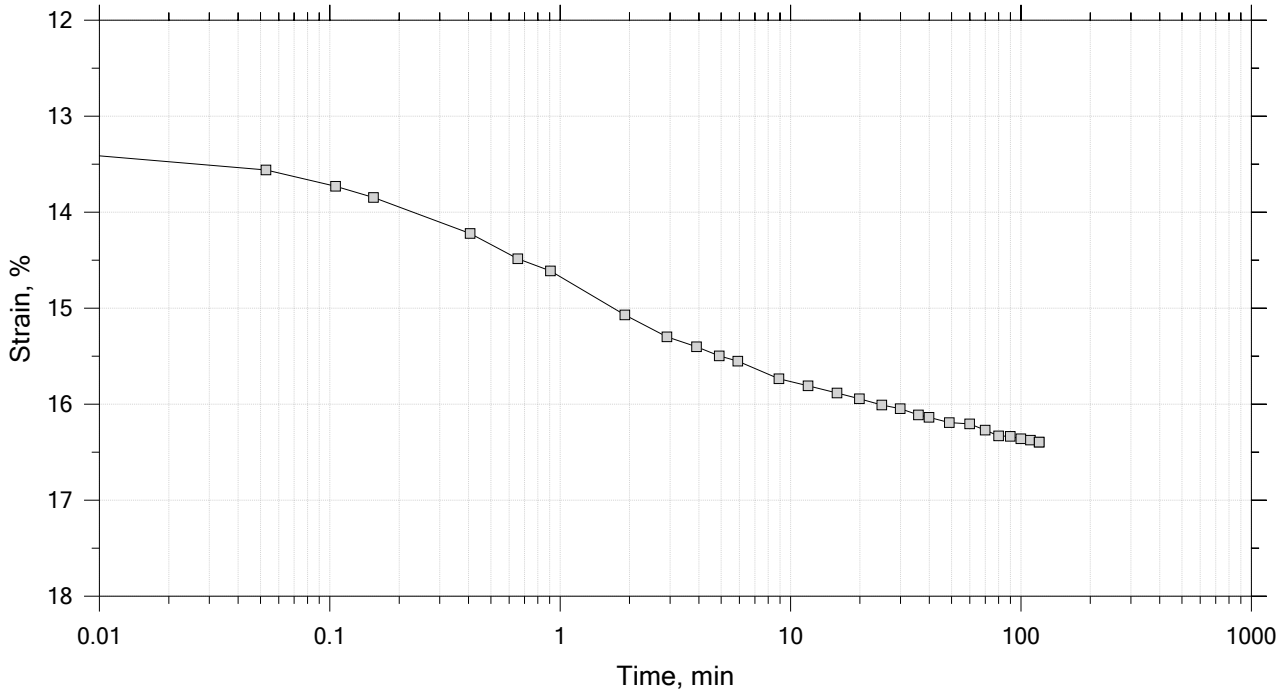
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

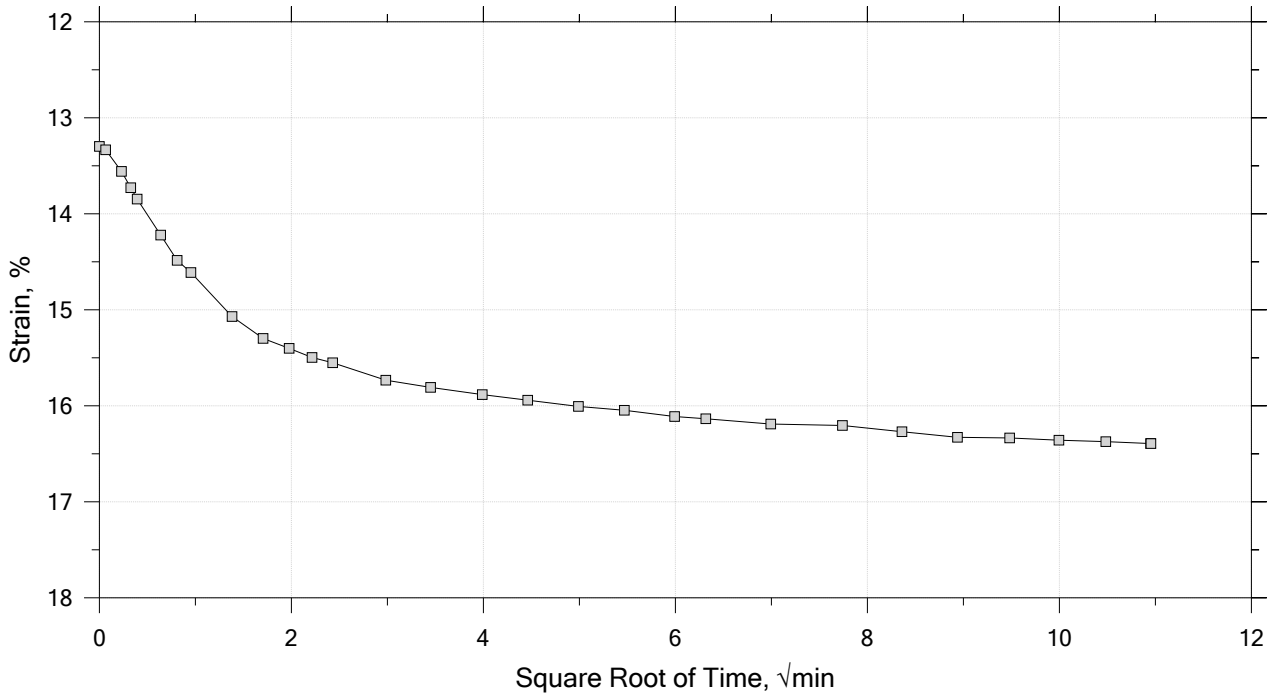
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

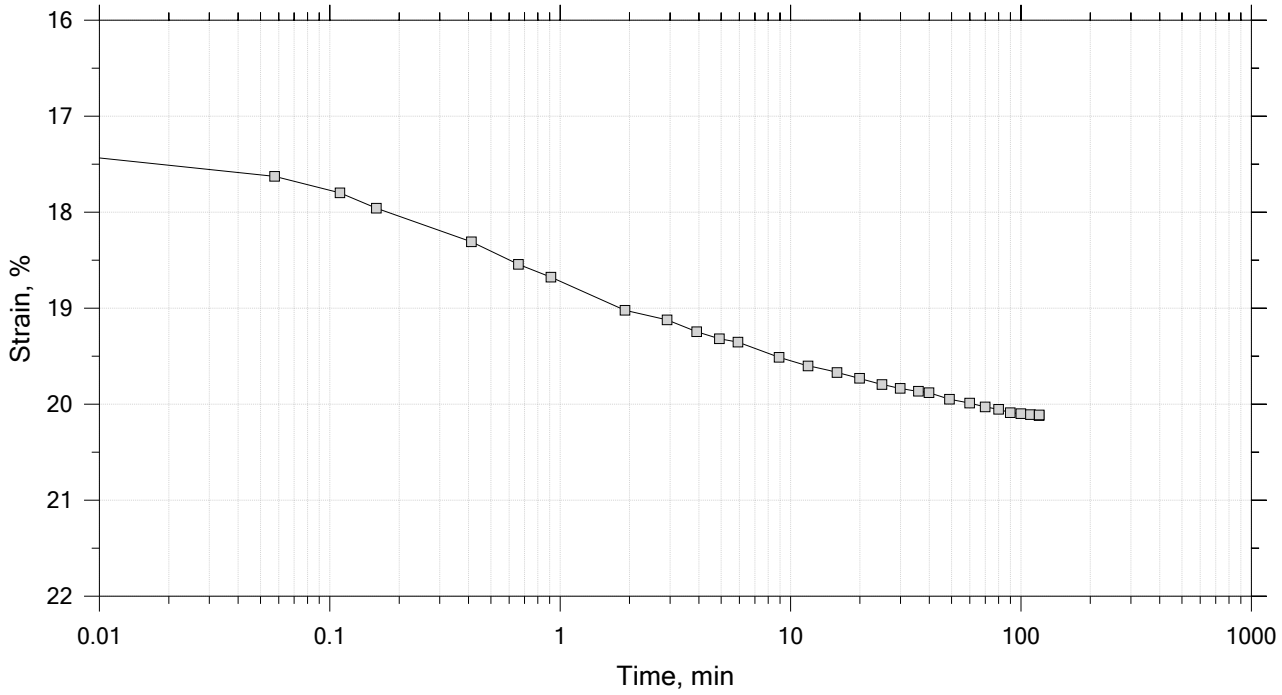


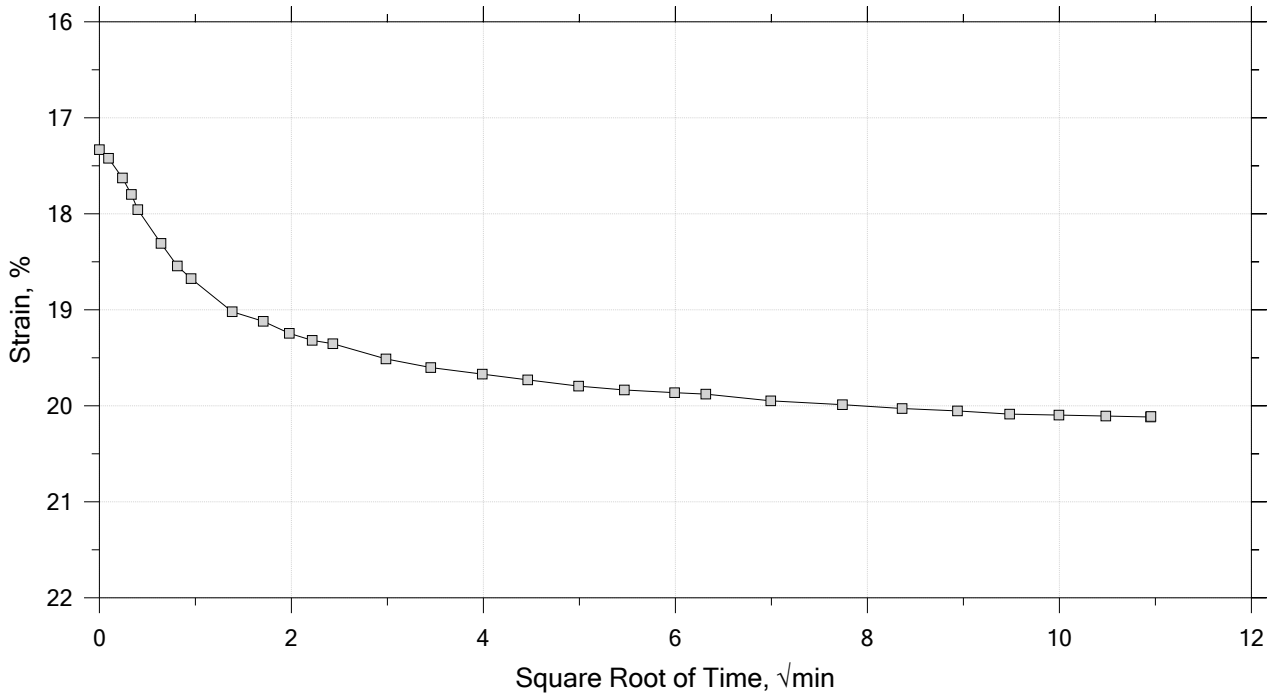


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf





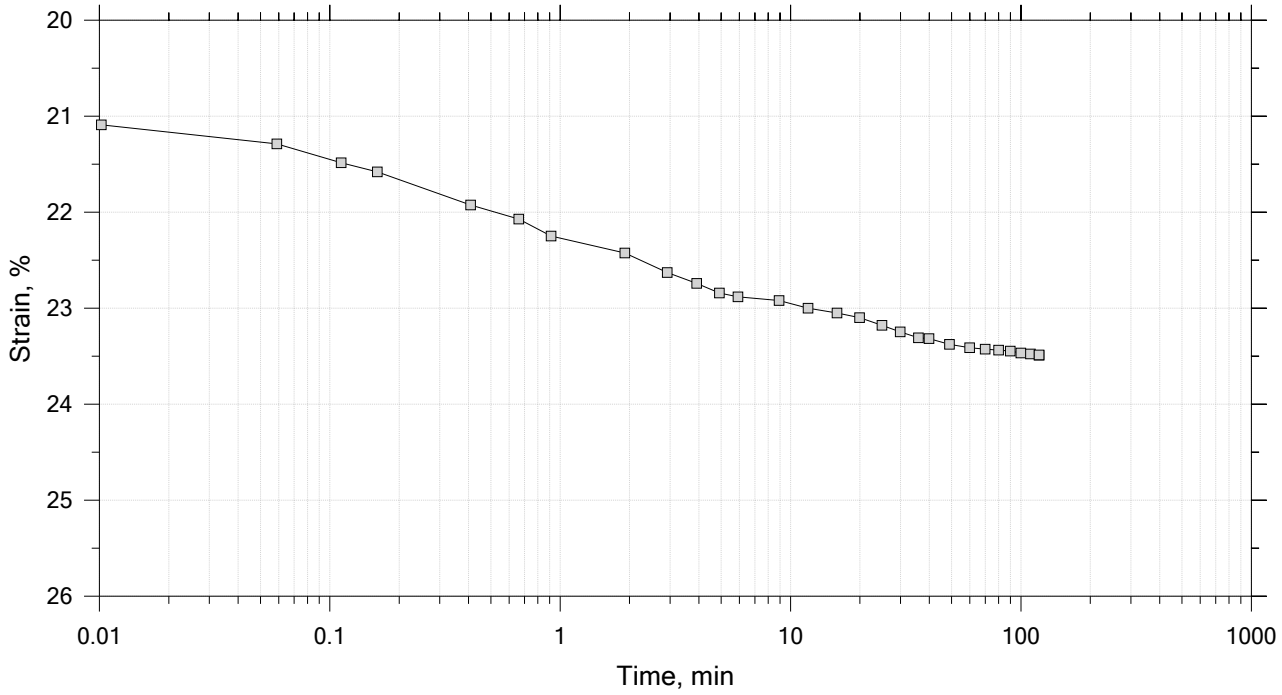
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

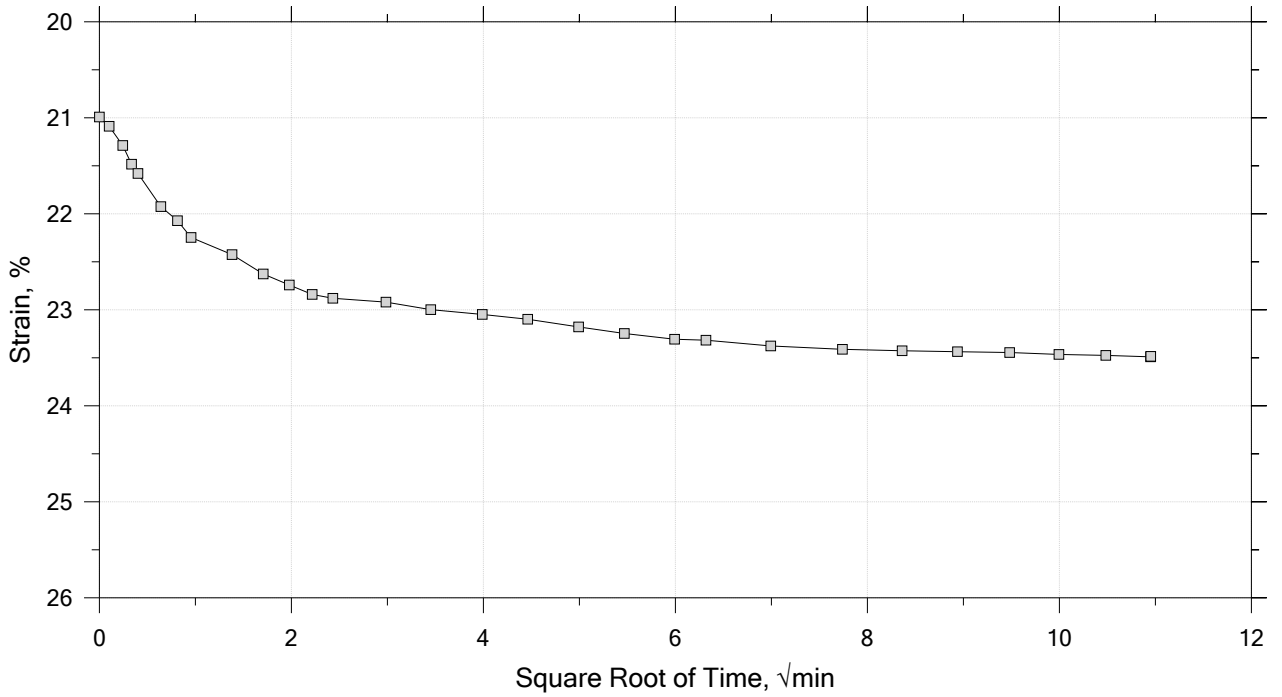
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14

Constant Load Step

Stress: 32 tsf

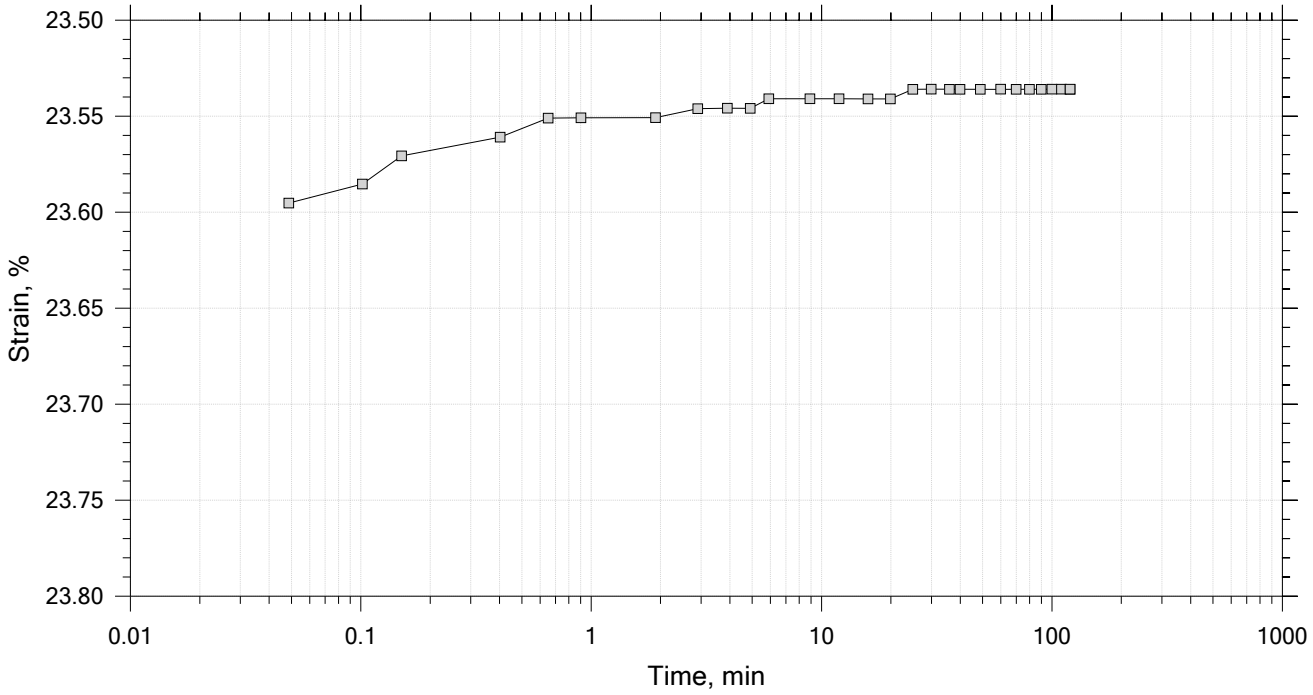


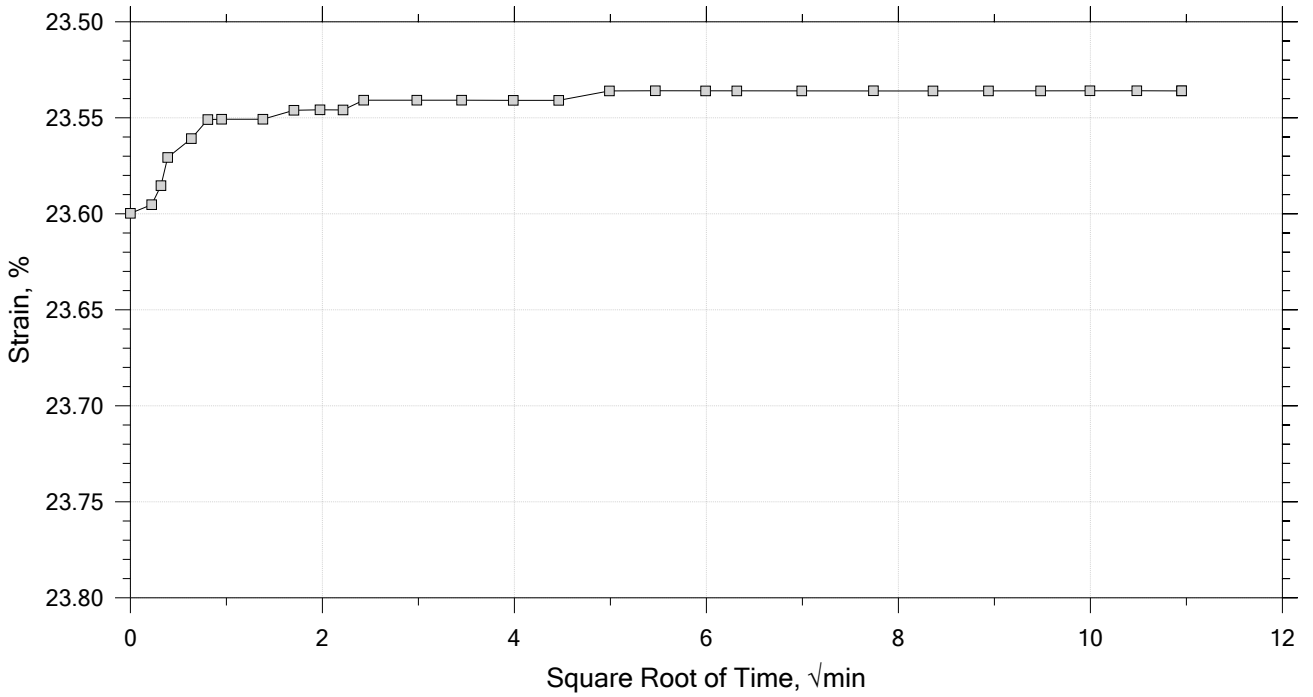


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

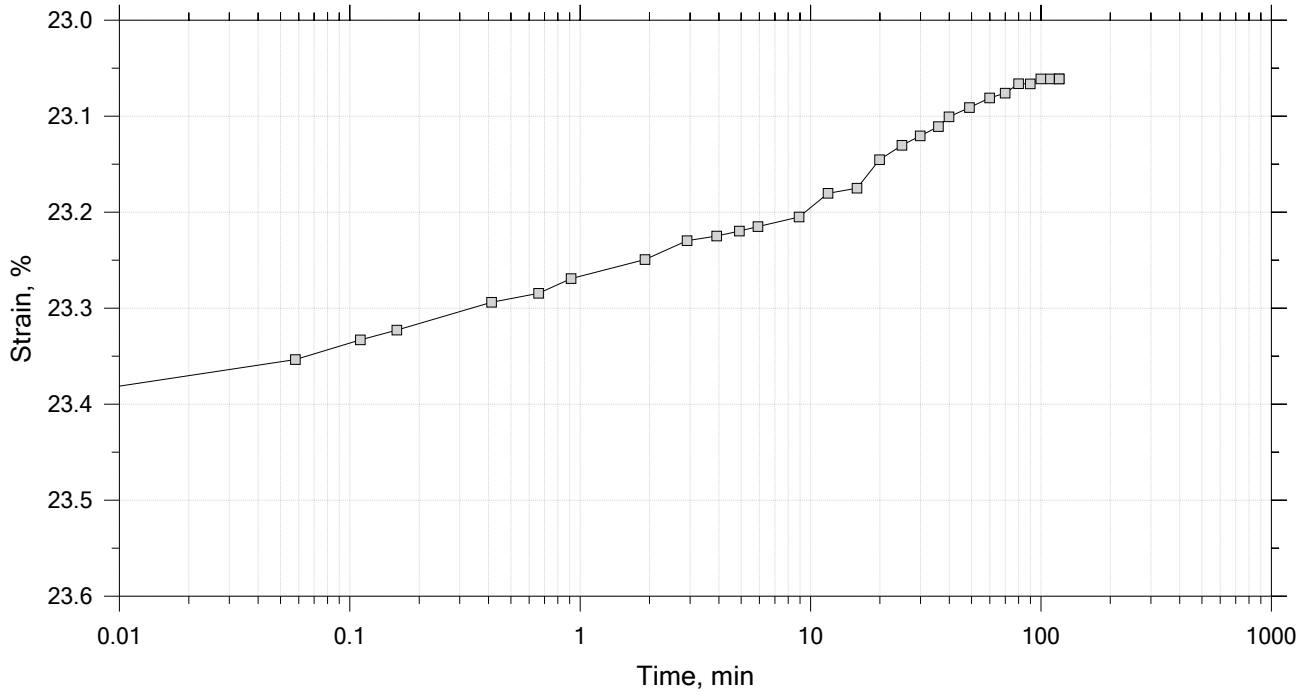


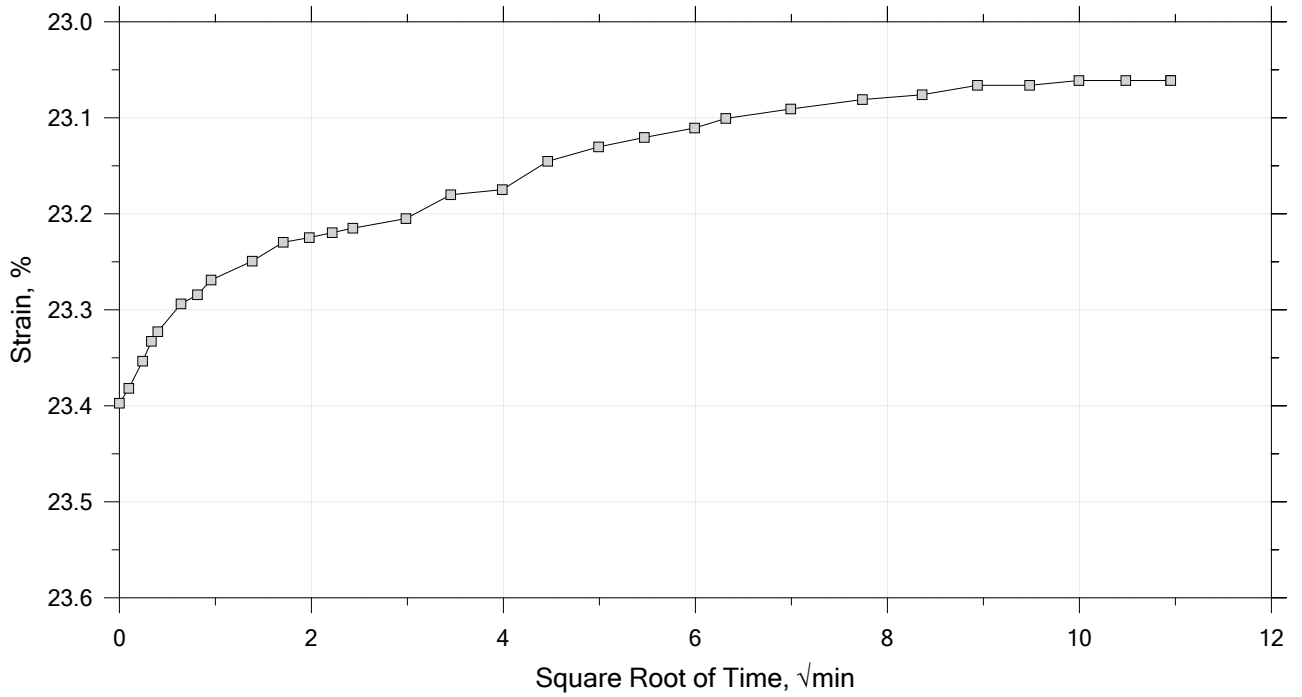


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

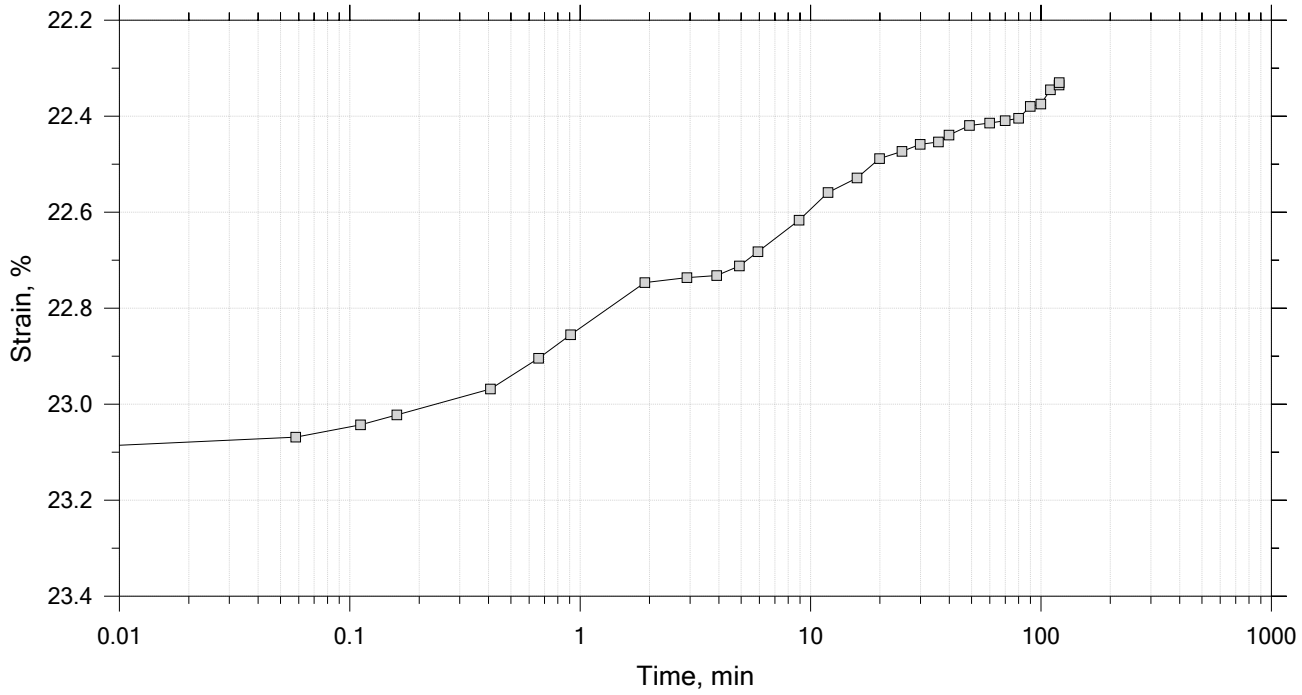


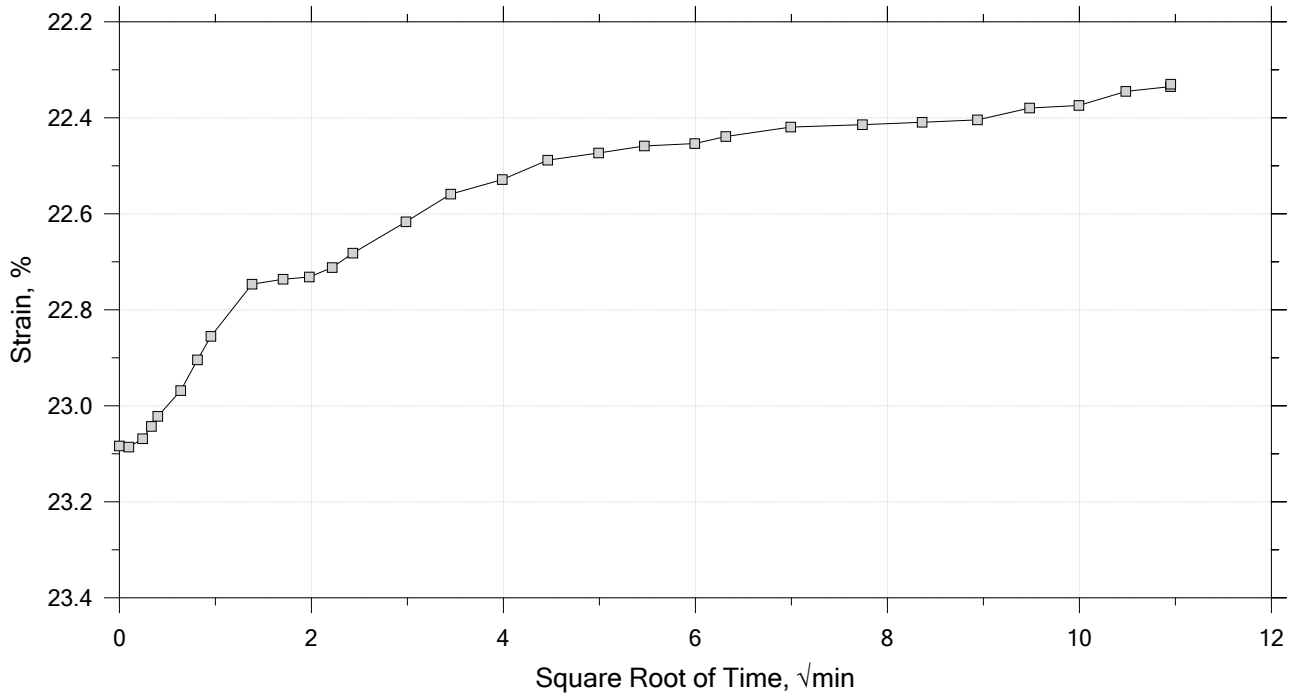


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

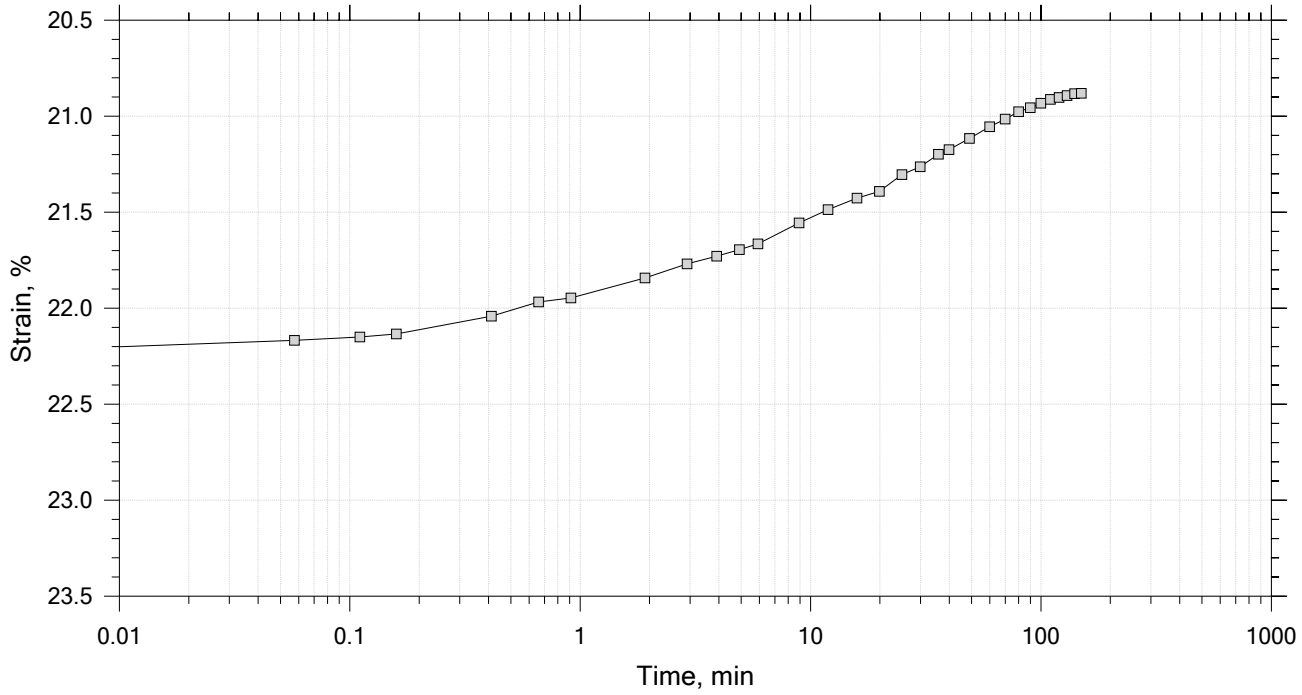


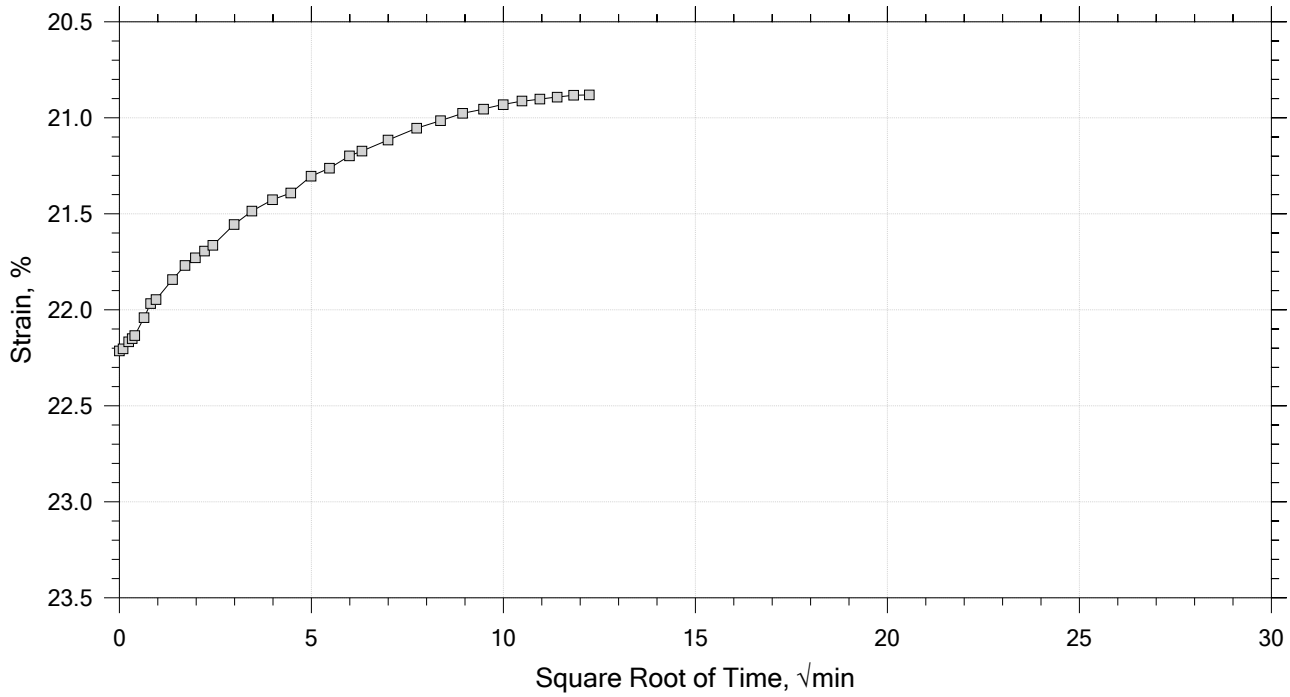


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16	Tested By: trm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
Test No.: IP-17-3	Sample Type: intact	Elevation: ---
Description: Moist, grayish brown clay		
Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 42
Initial Height: 1.00 in	Initial Void Ratio: 0.817	Plastic Limit: 22
Final Height: 0.81 in	Final Void Ratio: 0.472	Plasticity Index: 20

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E3613	RING		E5729
Mass Container, gm	8.46	109.06	109.06	8.52
Mass Container + Wet Soil, gm	113.52	259.91	251.82	140.92
Mass Container + Dry Soil, gm	93.82	230.93	230.93	121.55
Mass Dry Soil, gm	85.36	121.87	121.87	113.03
Water Content, %	23.08	23.78	17.14	17.14
Void Ratio	---	0.82	0.47	---
Degree of Saturation, %	---	80.11	100.00	---
Dry Unit Weight, pcf	---	94.585	116.77	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

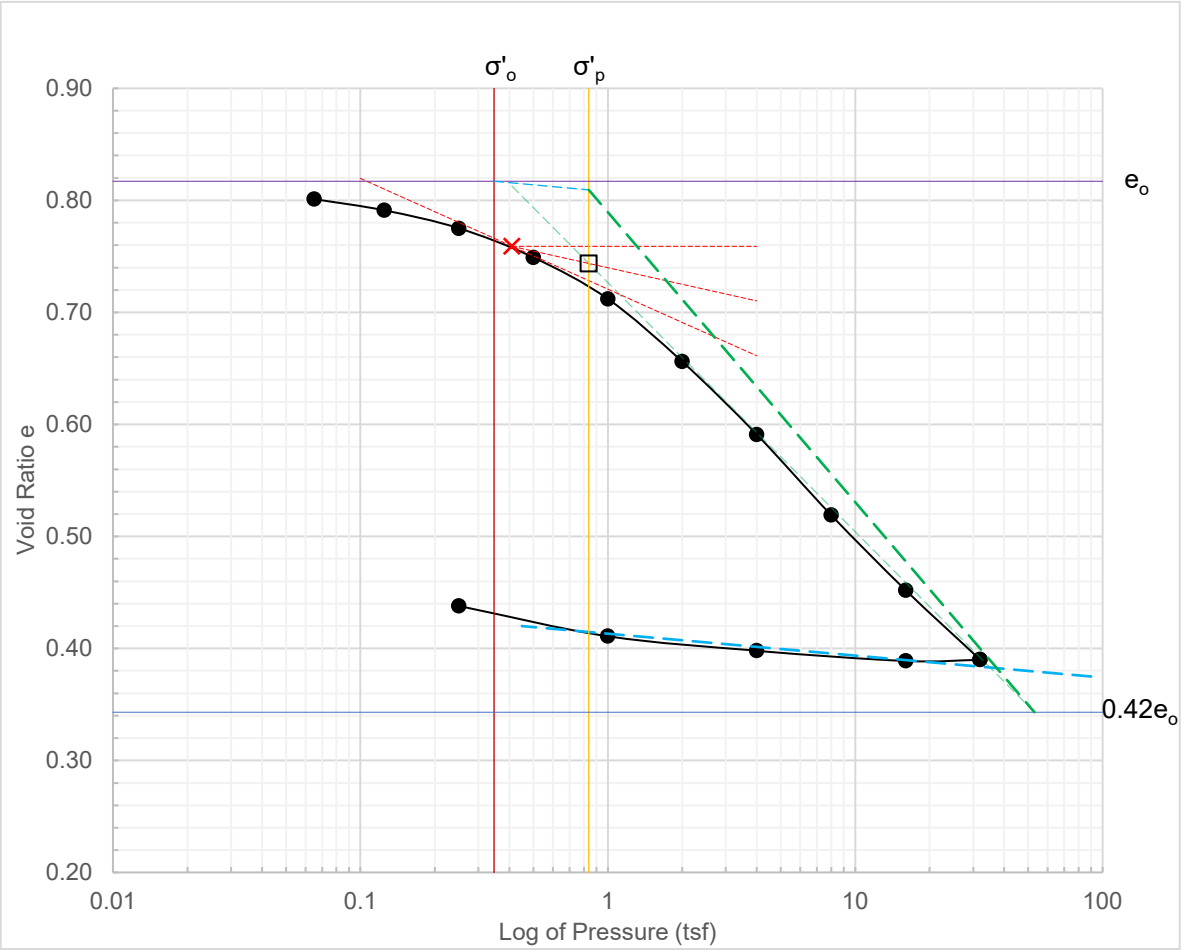
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0651	0.008639	0.801	0.864	32.188	1.09e-04	1.33e-01	2.70e-04
2	0.125	0.01442	0.791	1.44	14.518	2.38e-04	9.65e-02	4.30e-04
3	0.250	0.02315	0.775	2.32	5.967	5.70e-04	6.99e-02	7.46e-04
4	0.500	0.03748	0.749	3.75	16.849	1.97e-04	5.73e-02	2.12e-04
5	1.00	0.05778	0.712	5.78	9.036	3.55e-04	4.06e-02	2.70e-04
6	2.00	0.08874	0.656	8.87	9.056	3.35e-04	3.10e-02	1.94e-04
7	4.00	0.1245	0.591	12.5	7.618	3.70e-04	1.79e-02	1.24e-04
8	8.00	0.1639	0.519	16.4	4.542	5.70e-04	9.85e-03	1.05e-04
9	16.0	0.2011	0.452	20.1	4.977	4.74e-04	4.65e-03	4.13e-05
10	32.0	0.2349	0.390	23.5	5.177	4.17e-04	2.11e-03	1.65e-05
11	16.0	0.2354	0.389	23.5	1.054	1.96e-03	-3.14e-05	-1.16e-06
12	4.00	0.2306	0.398	23.1	47.731	4.35e-05	3.96e-04	3.23e-07
13	1.00	0.2233	0.411	22.3	22.019	9.59e-05	2.44e-03	4.38e-06
14	0.250	0.2088	0.438	20.9	28.412	7.64e-05	1.93e-02	2.77e-05

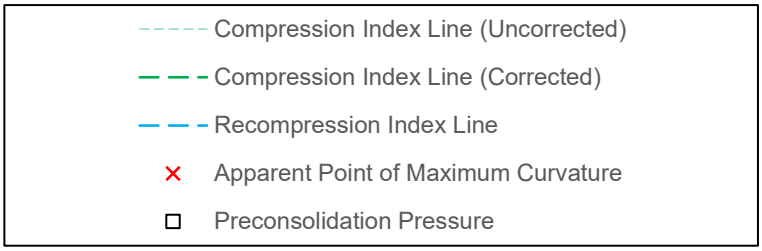
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16	Tested By: trm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 5.7-5.8
	Test No.: IP-17-3	Sample Type: intact	Elevation: ---
	Description: Moist, grayish brown clay		
	Remarks: TX-011, Swell Pressure = 0.0651 tsf		
	Displacement at End of Increment		

Boring: B-4.16

Depth: 5.7'-5.8'

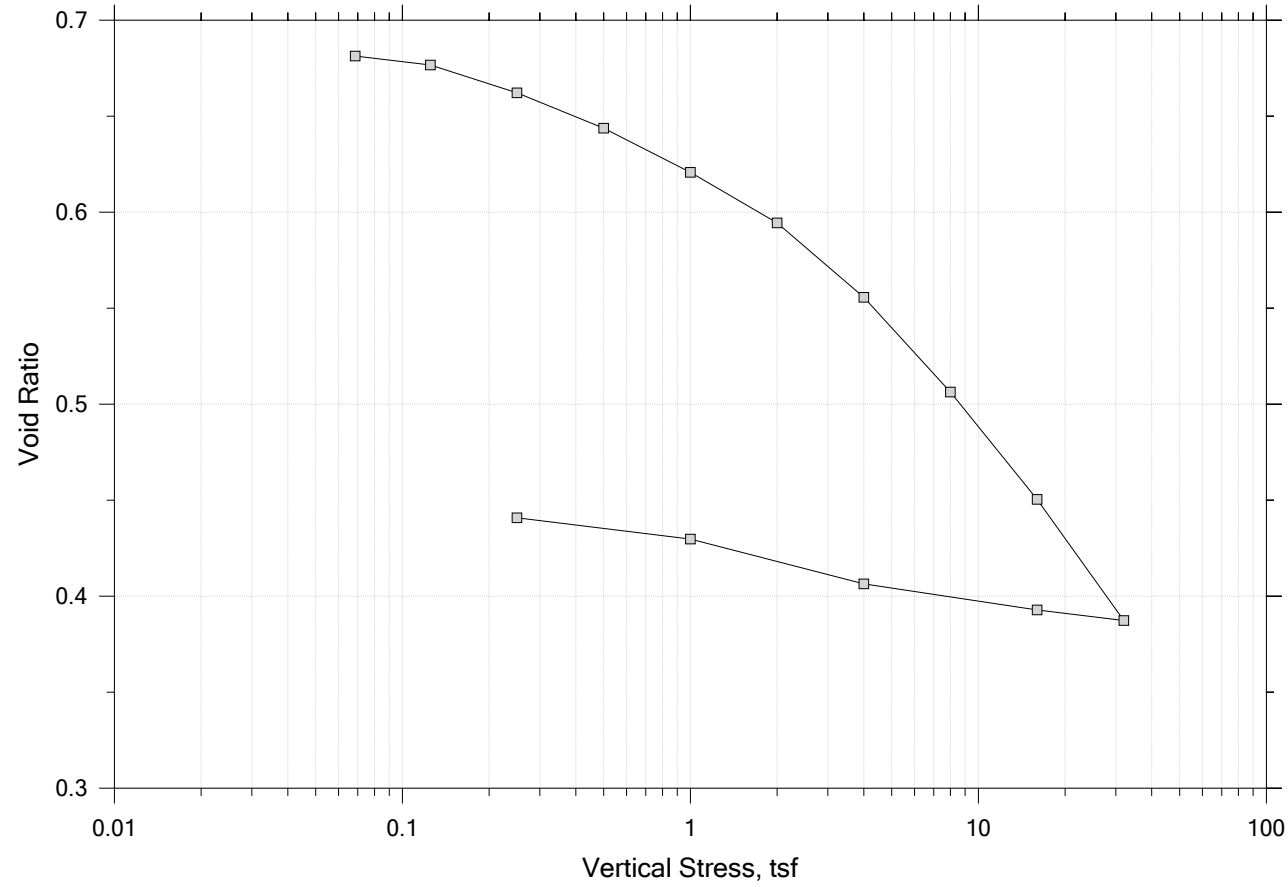
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.35
Preconsolidation Pressure, σ'_p (tsf) = 0.84
Compression Index, C_c = 0.26
Recompression Index, C_r = 0.020

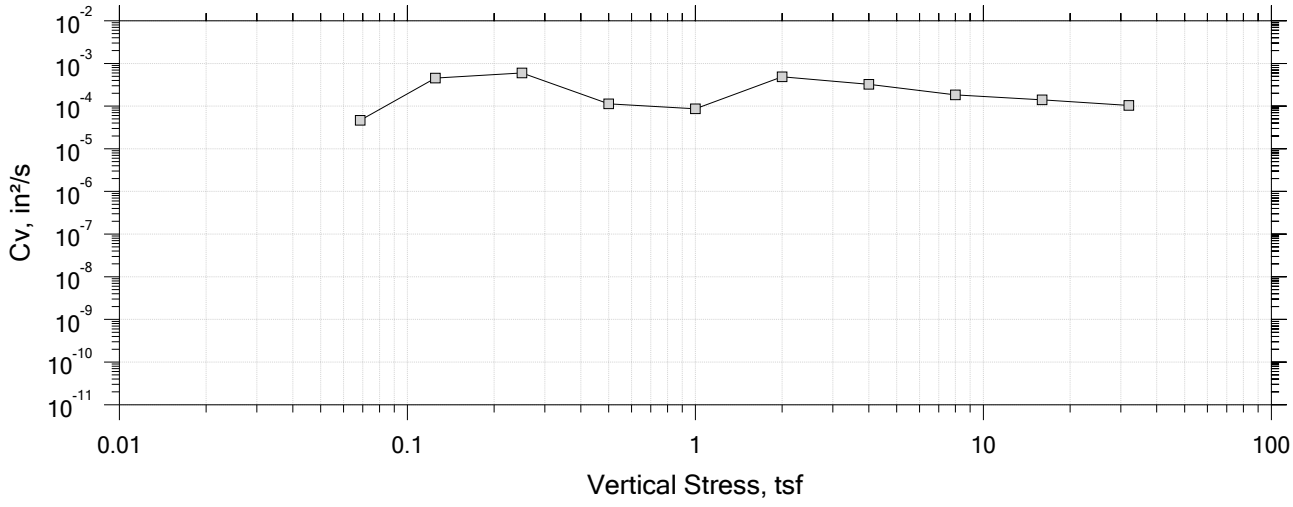




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

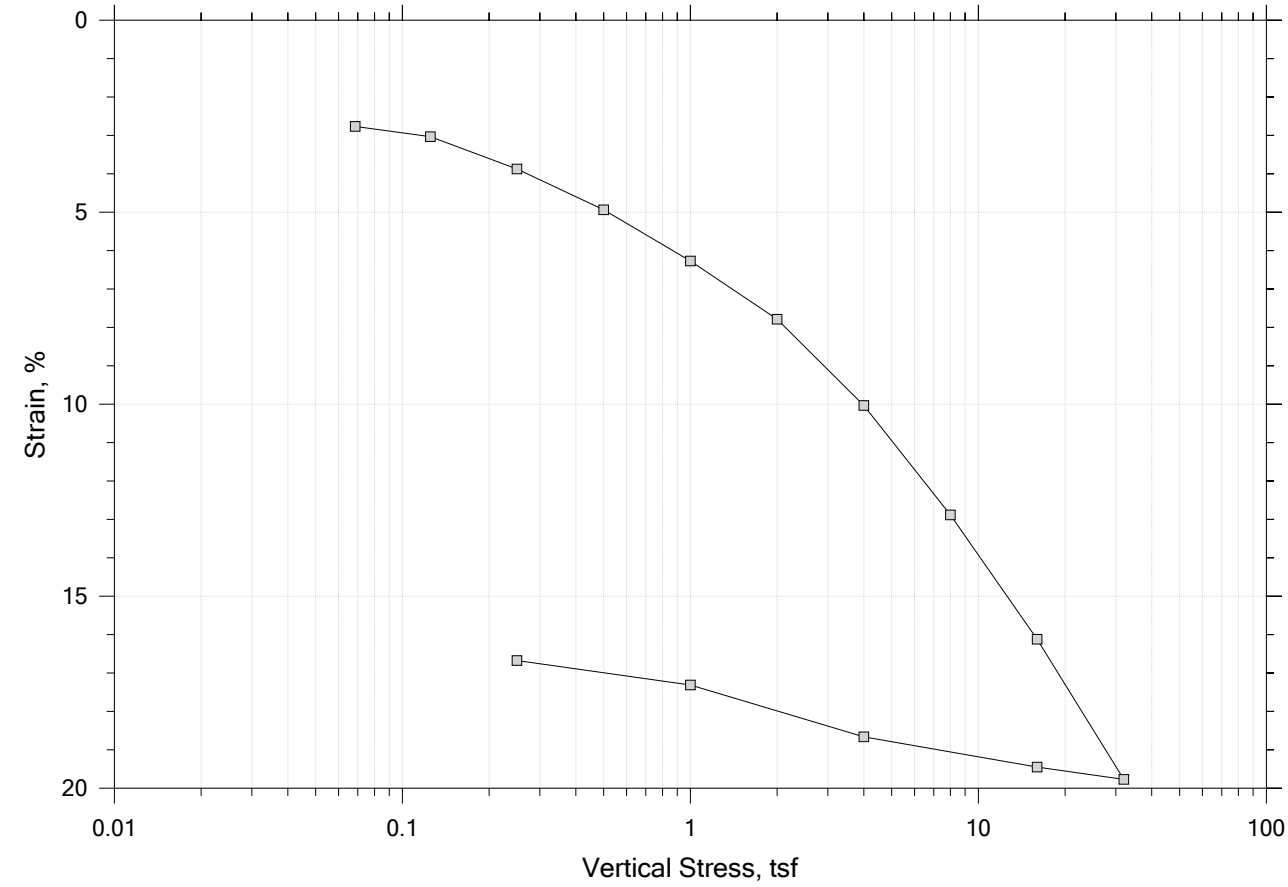


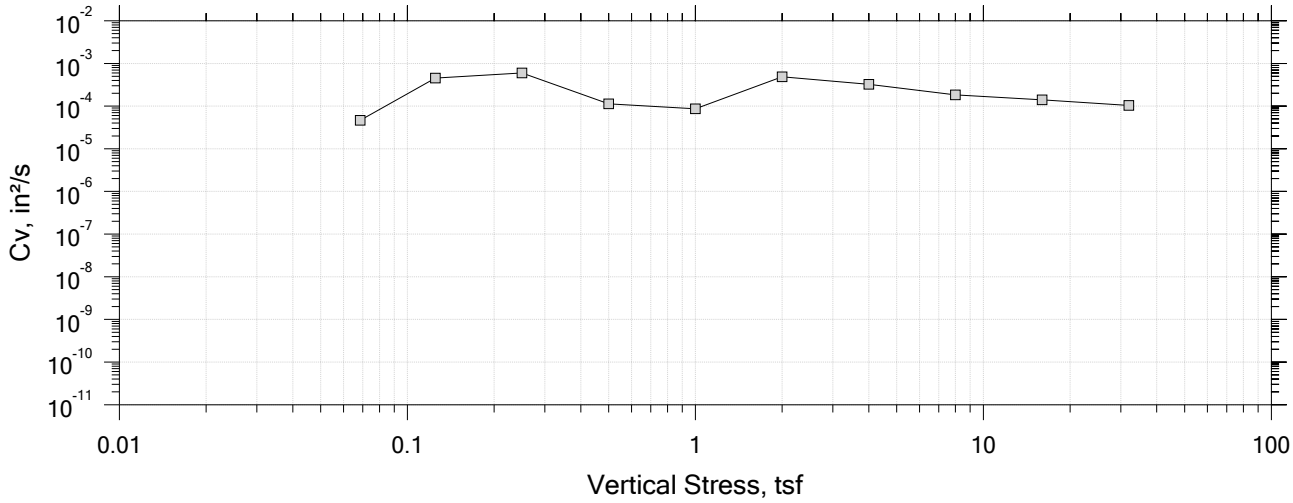


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

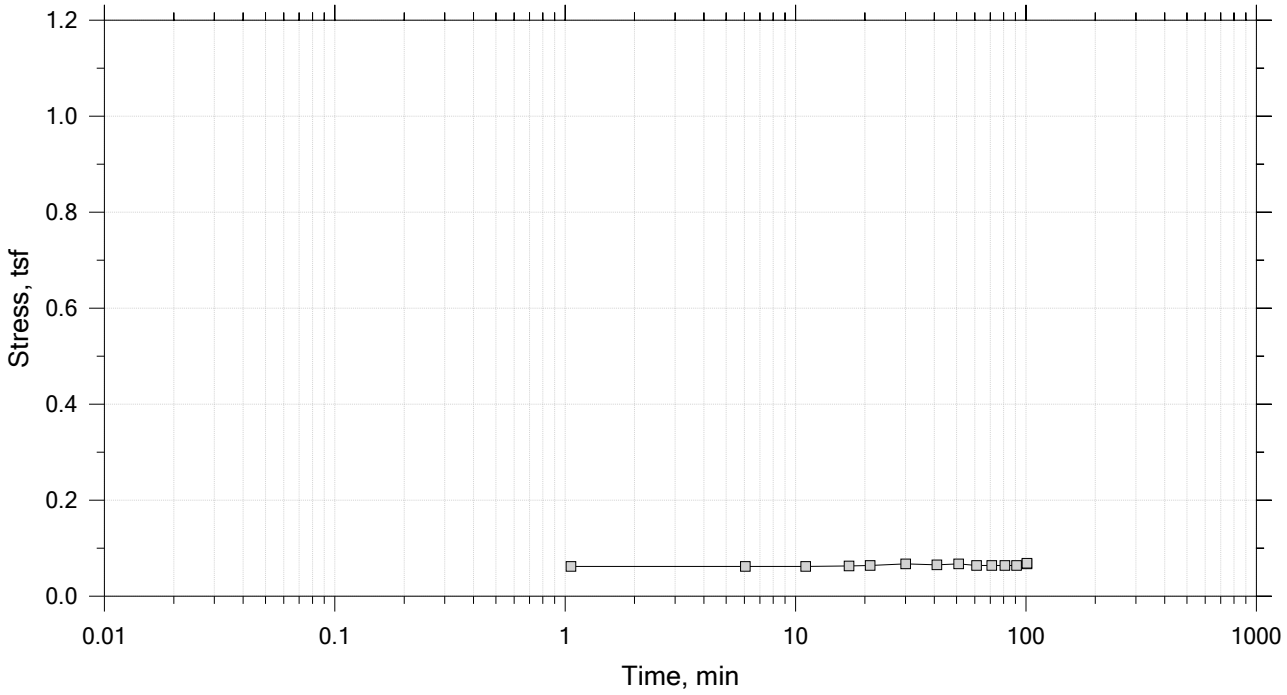


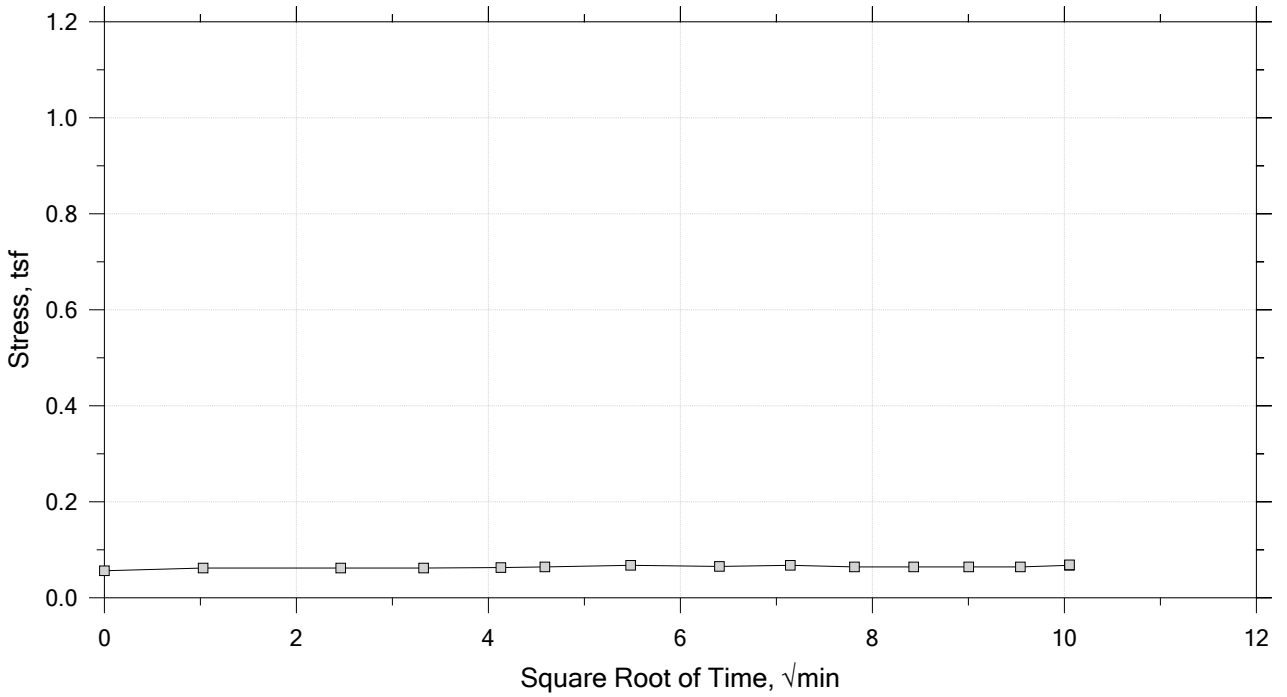


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0686 tsf

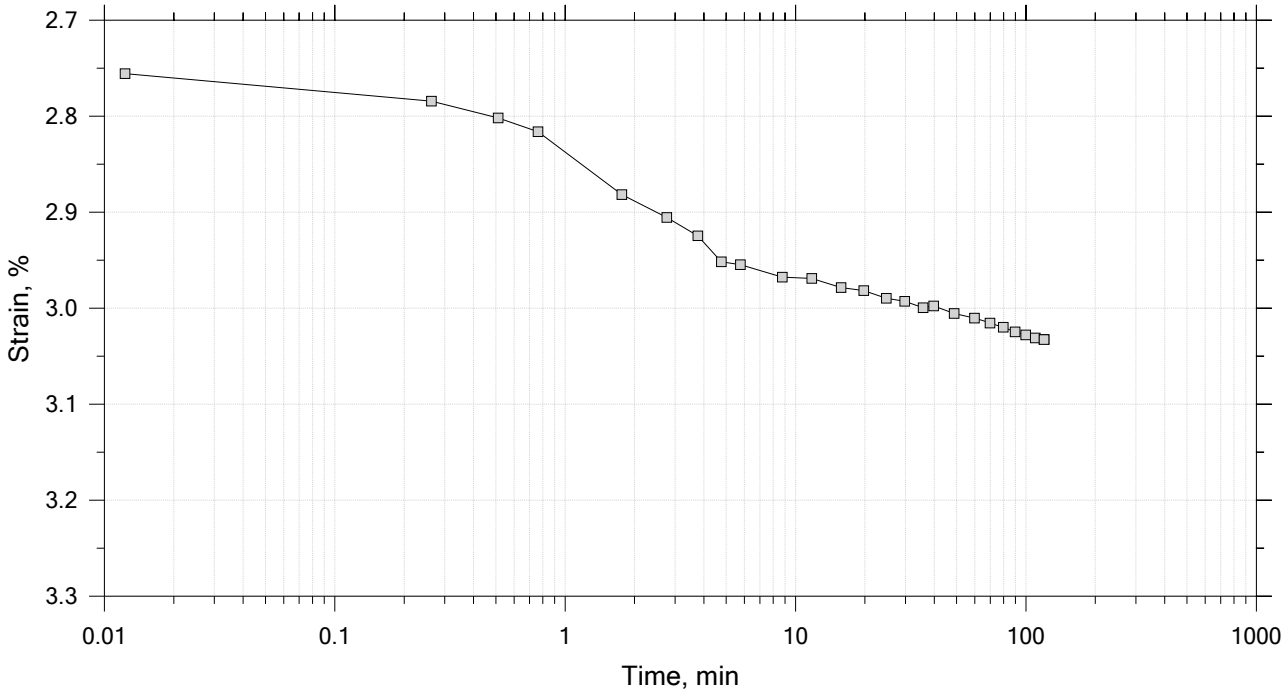


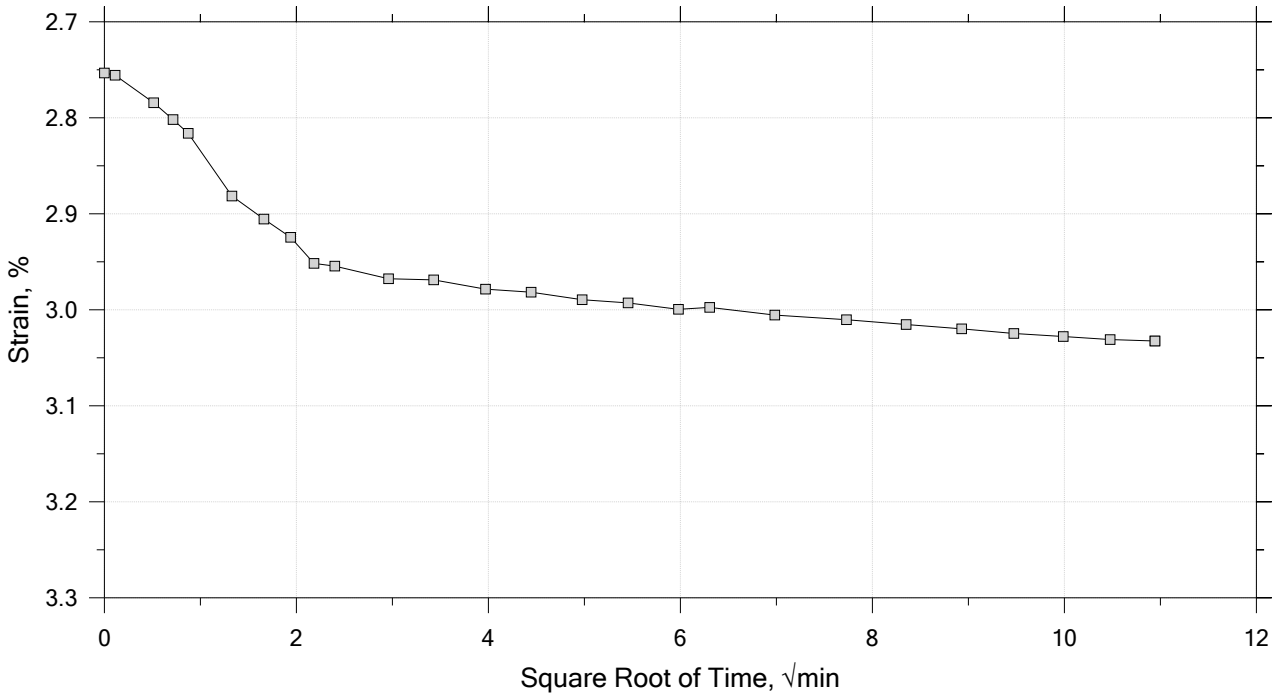


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





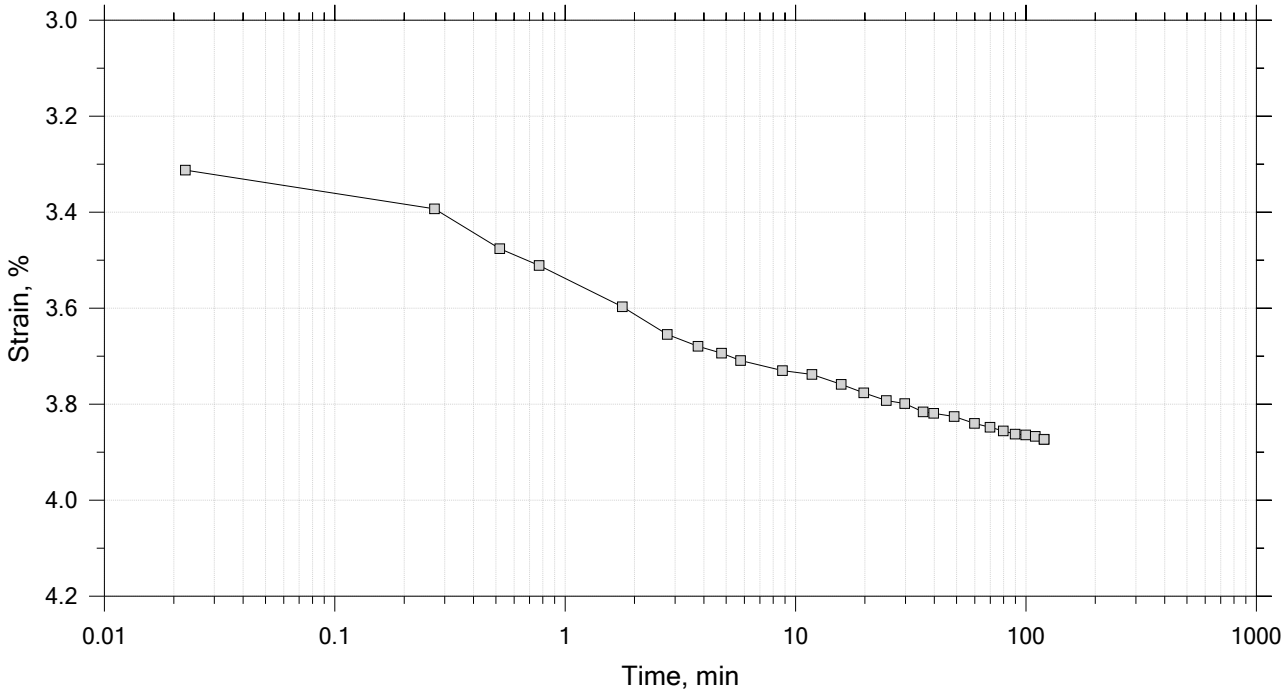
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

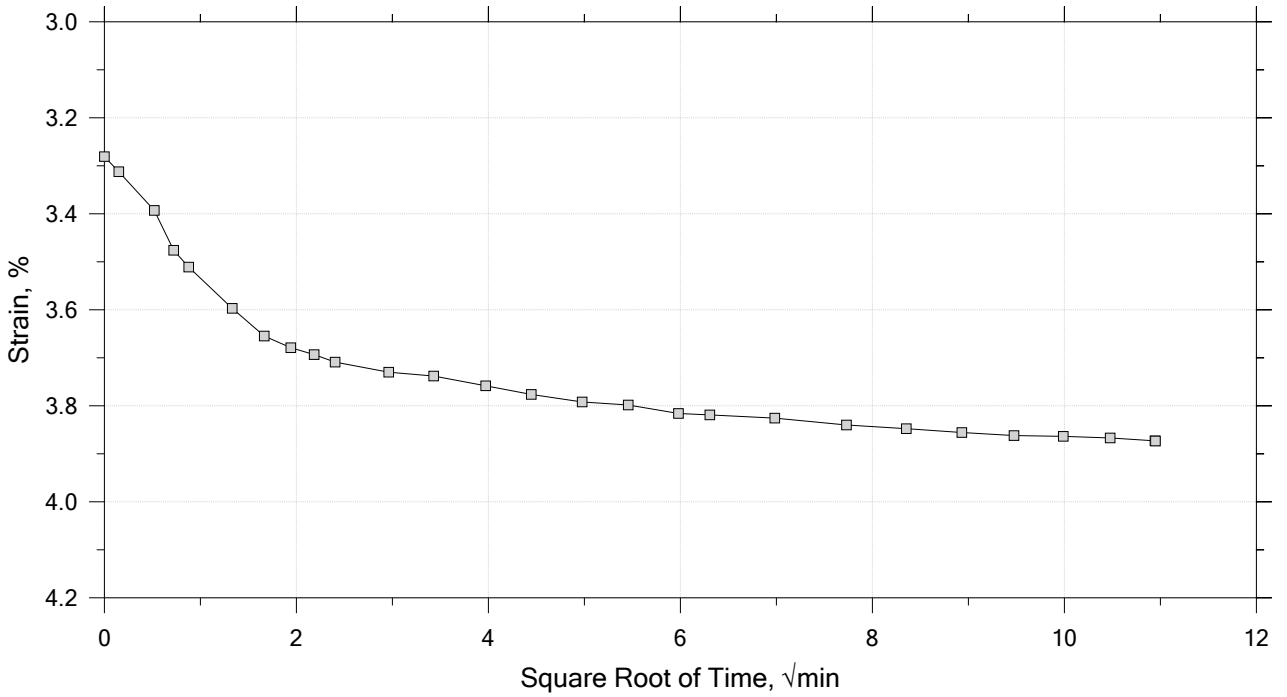
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





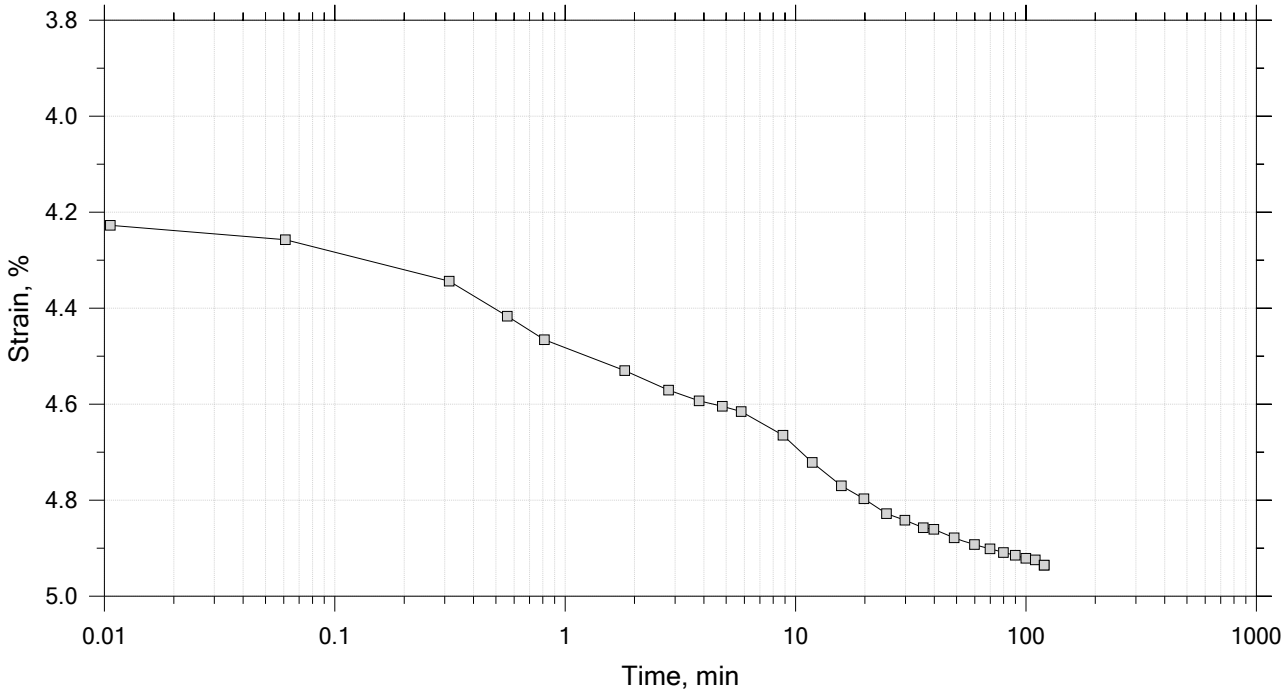
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

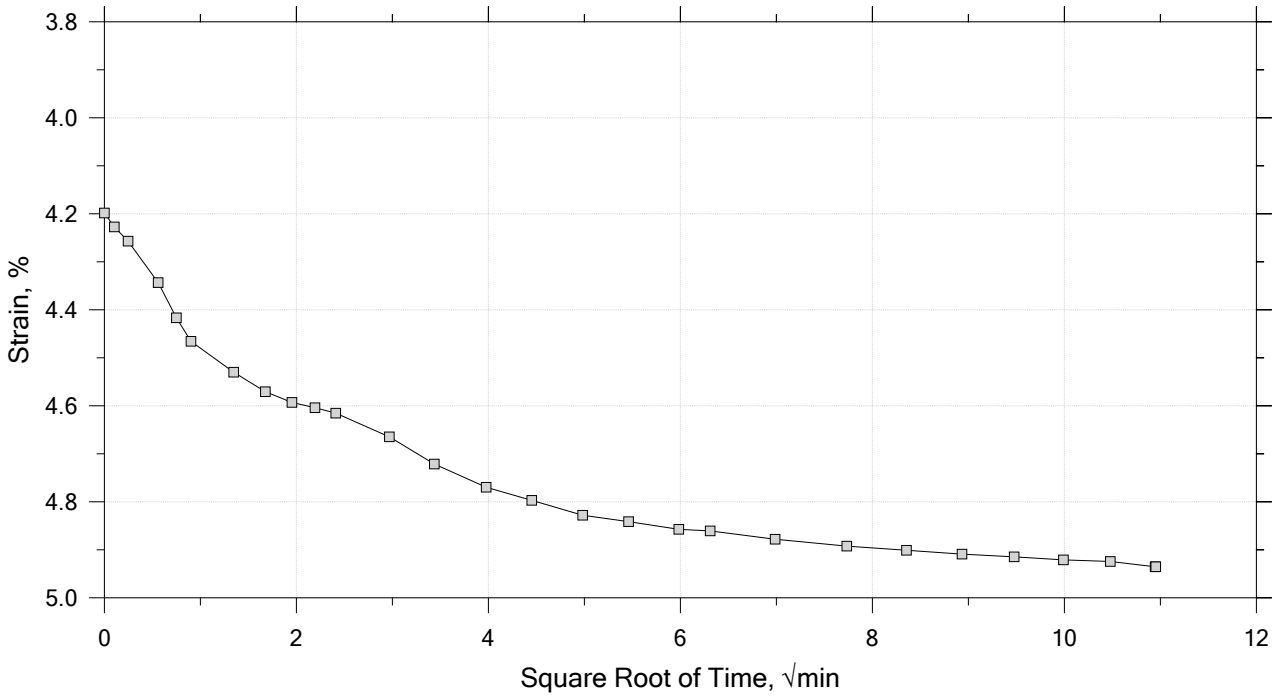
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





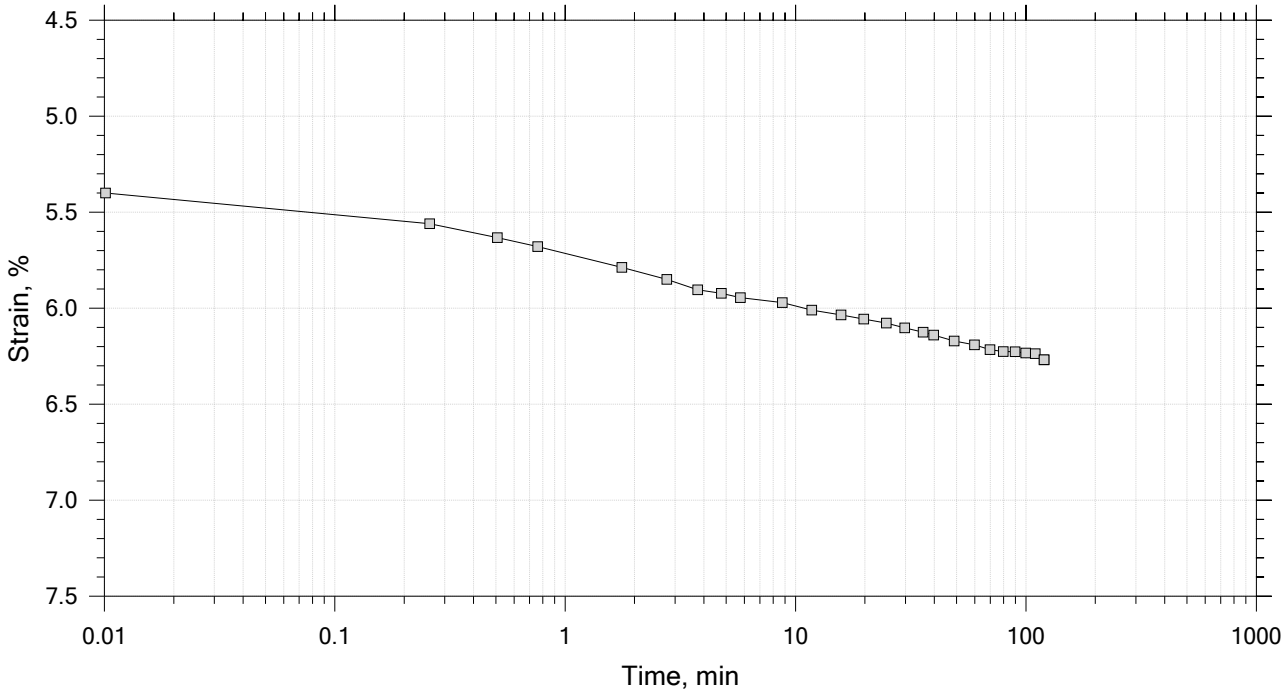
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

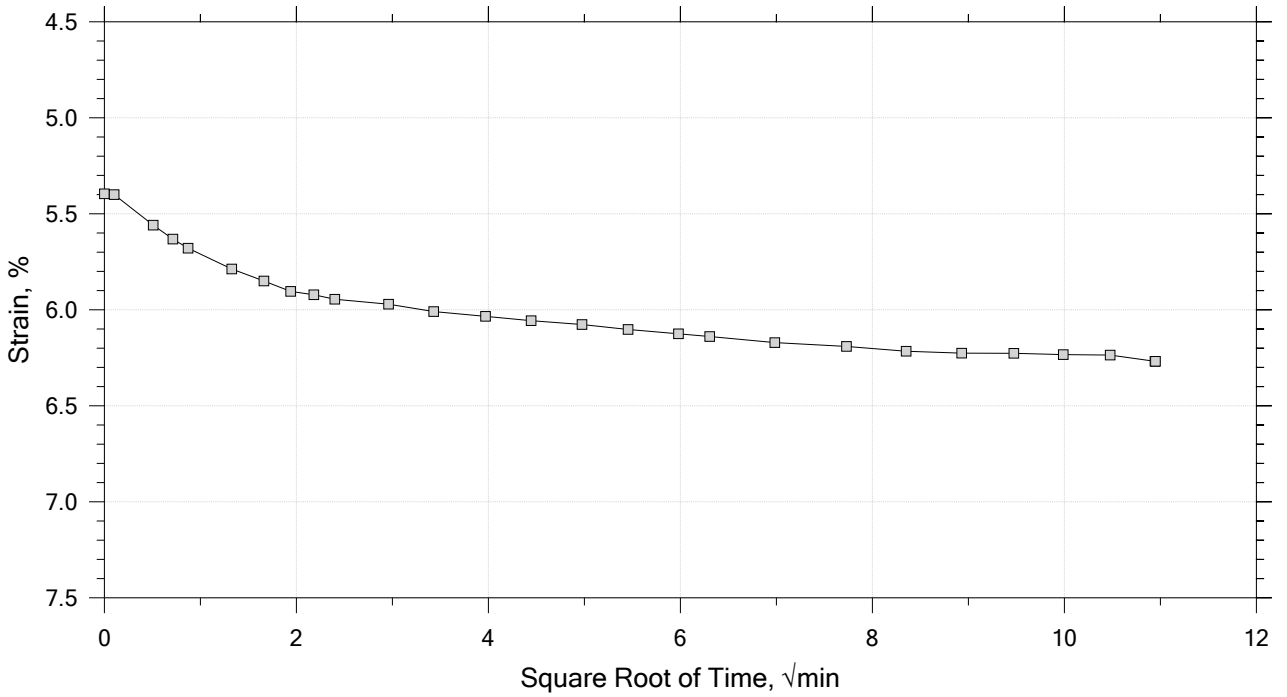
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





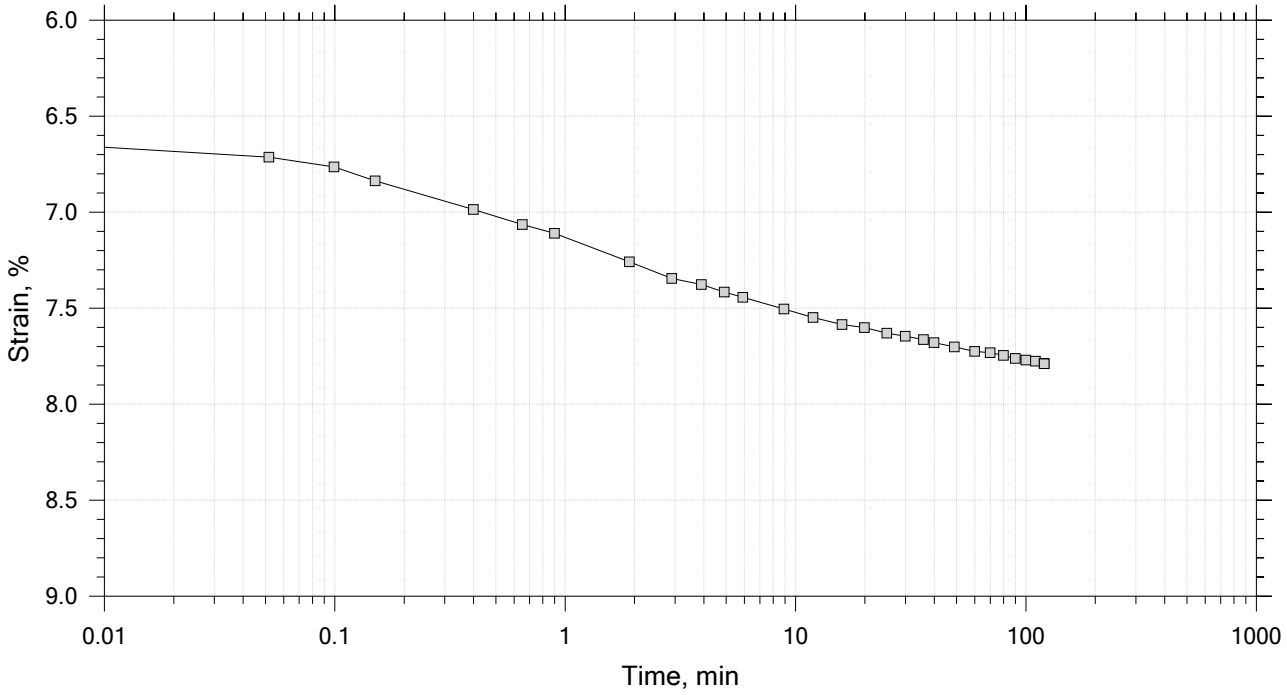
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

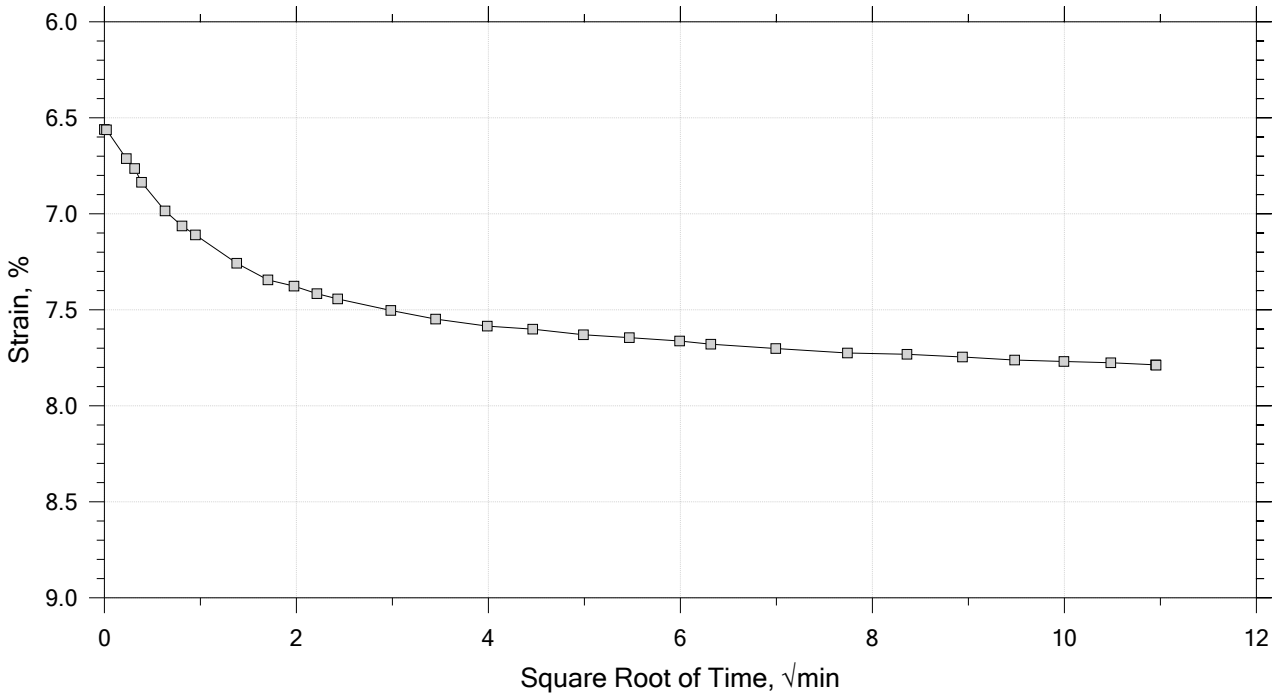
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





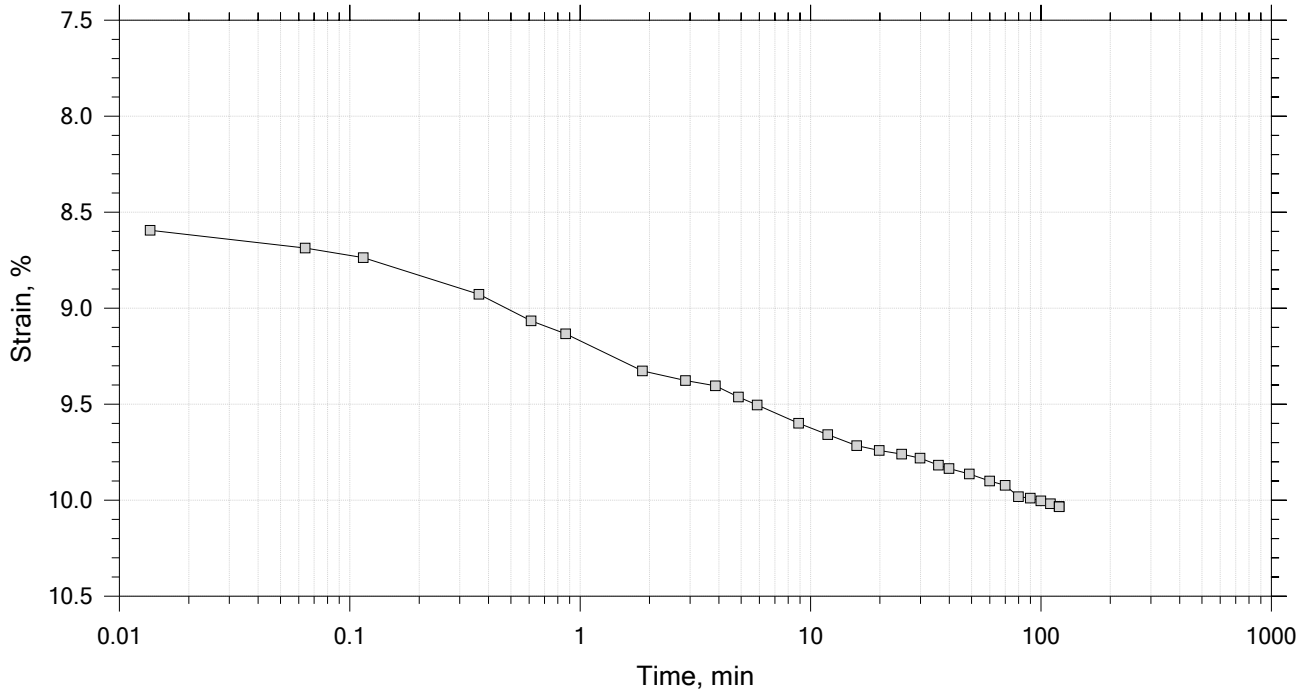
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

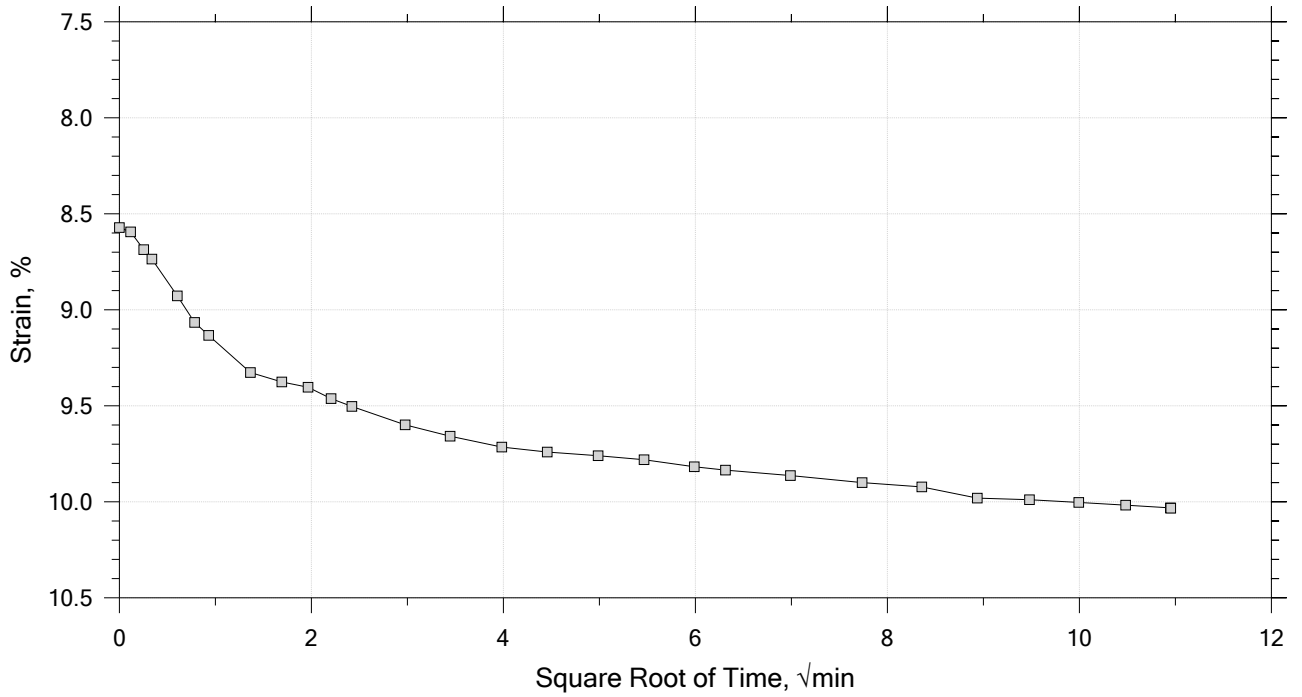
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





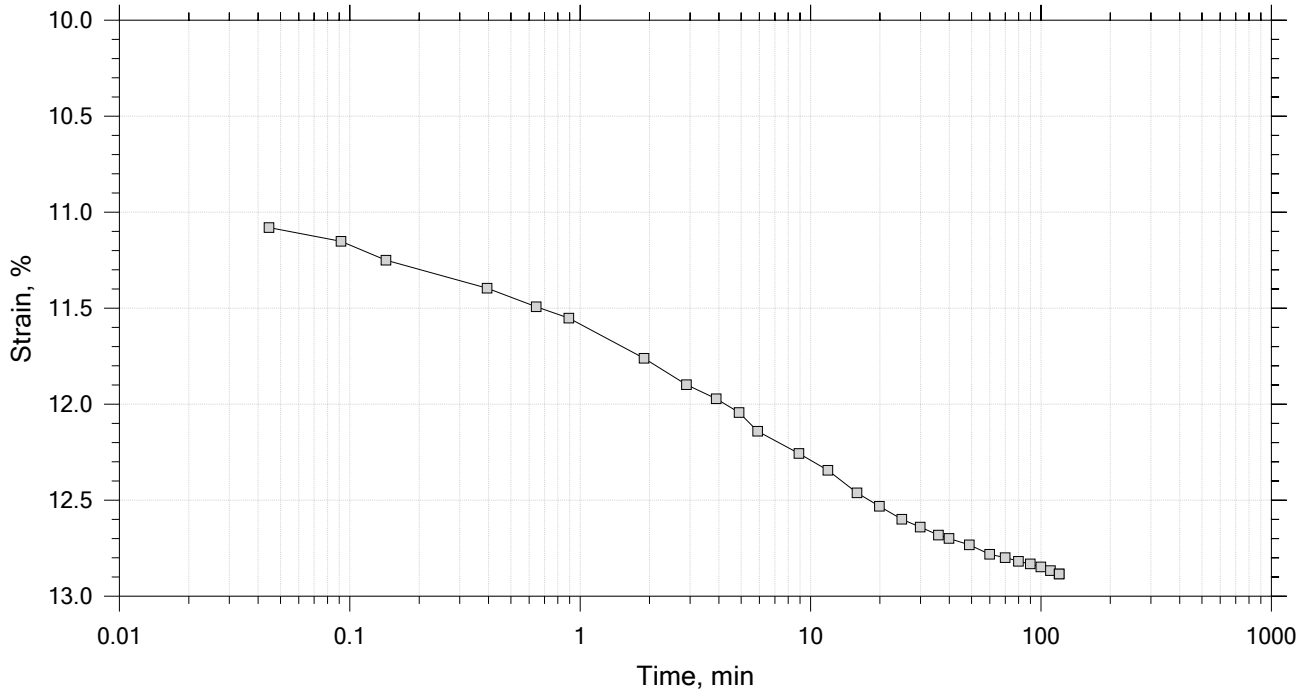
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

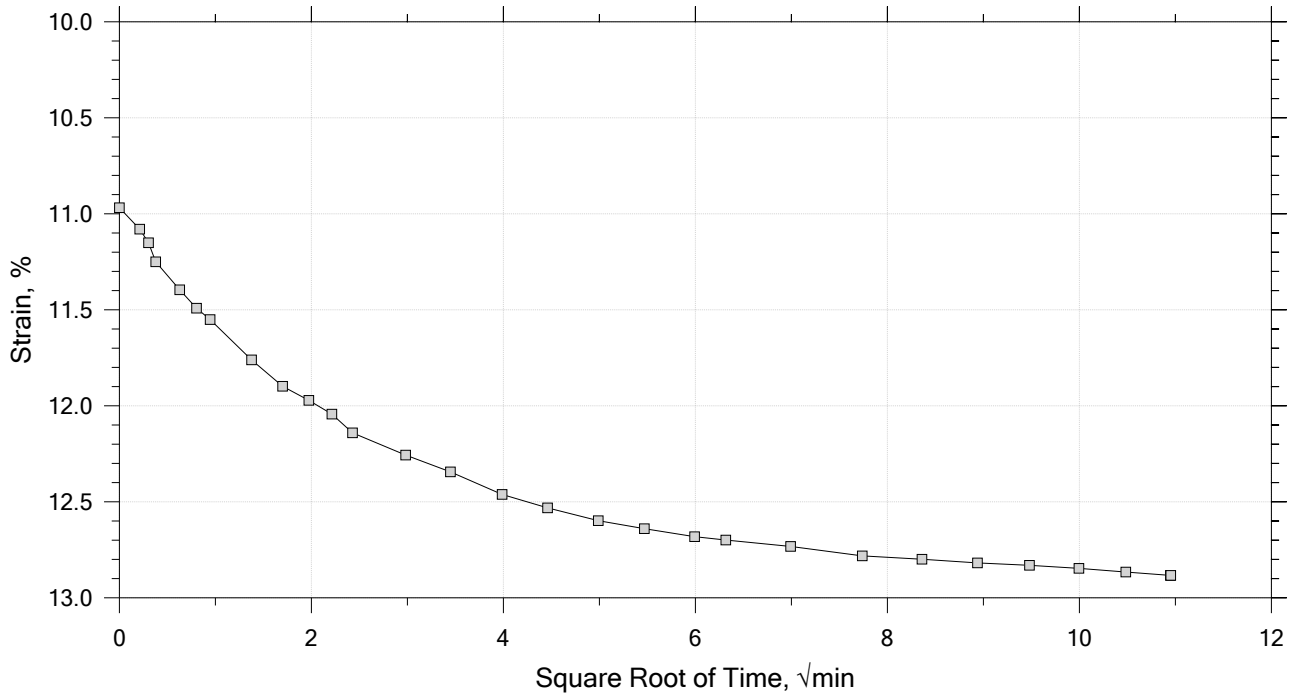
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





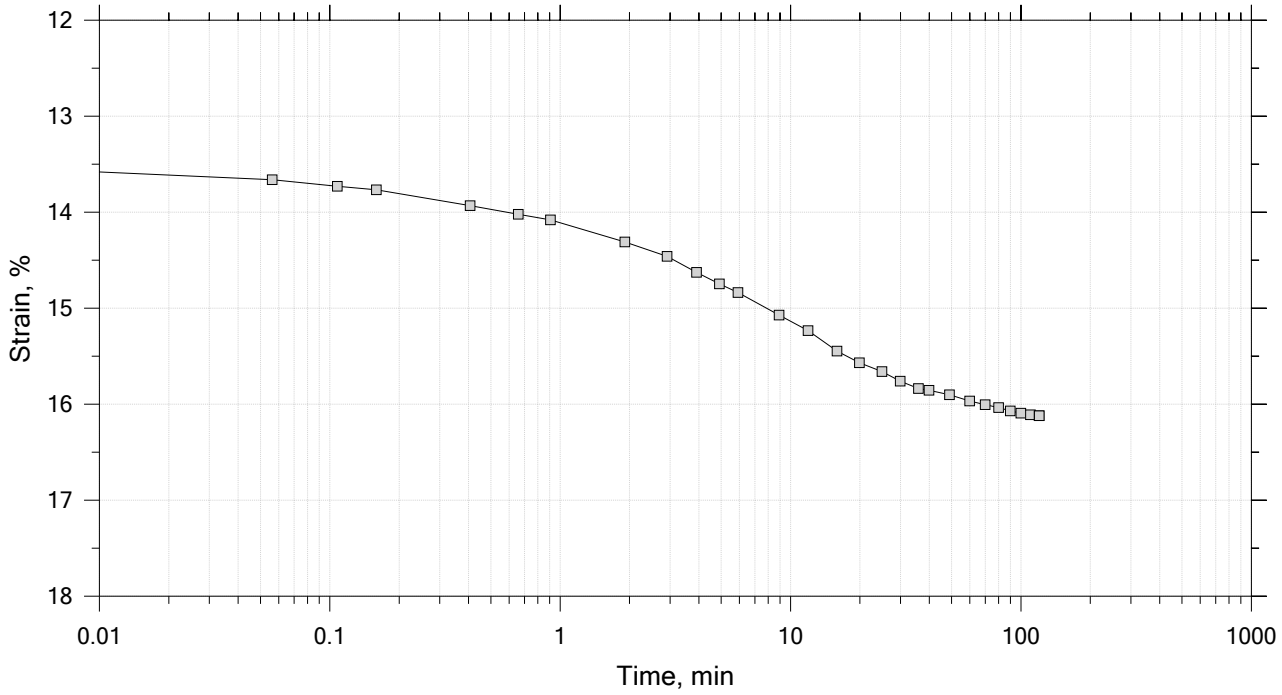
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

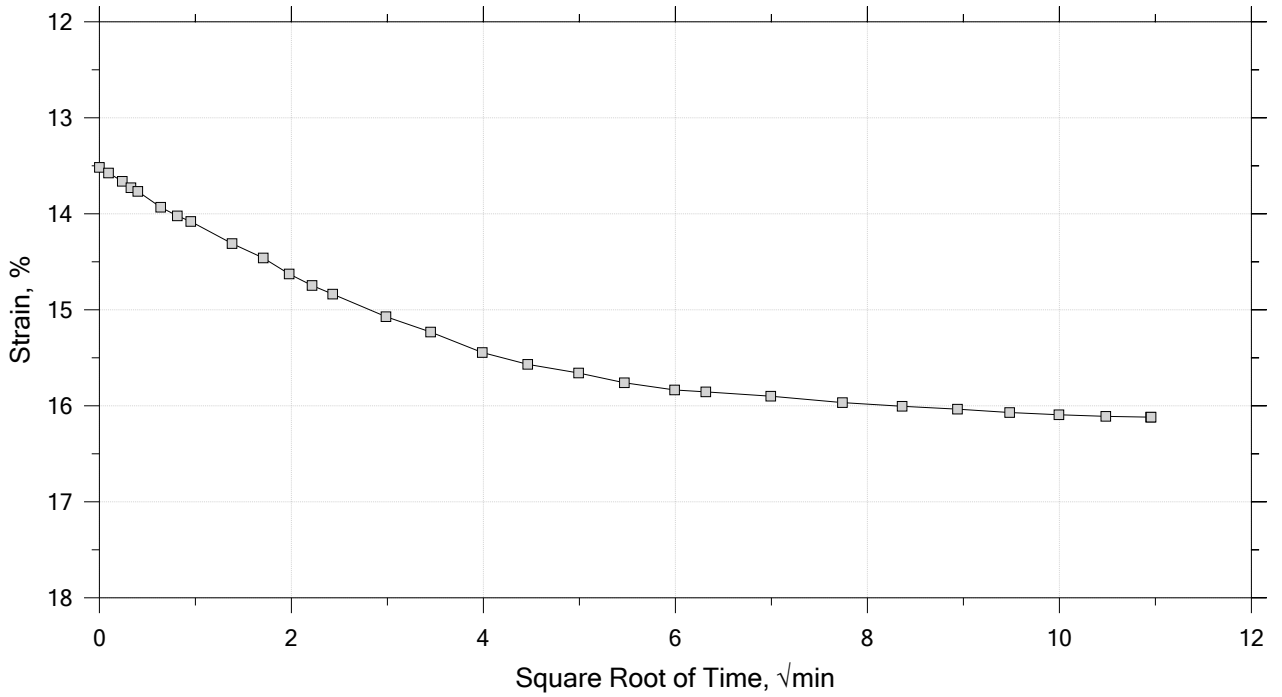
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

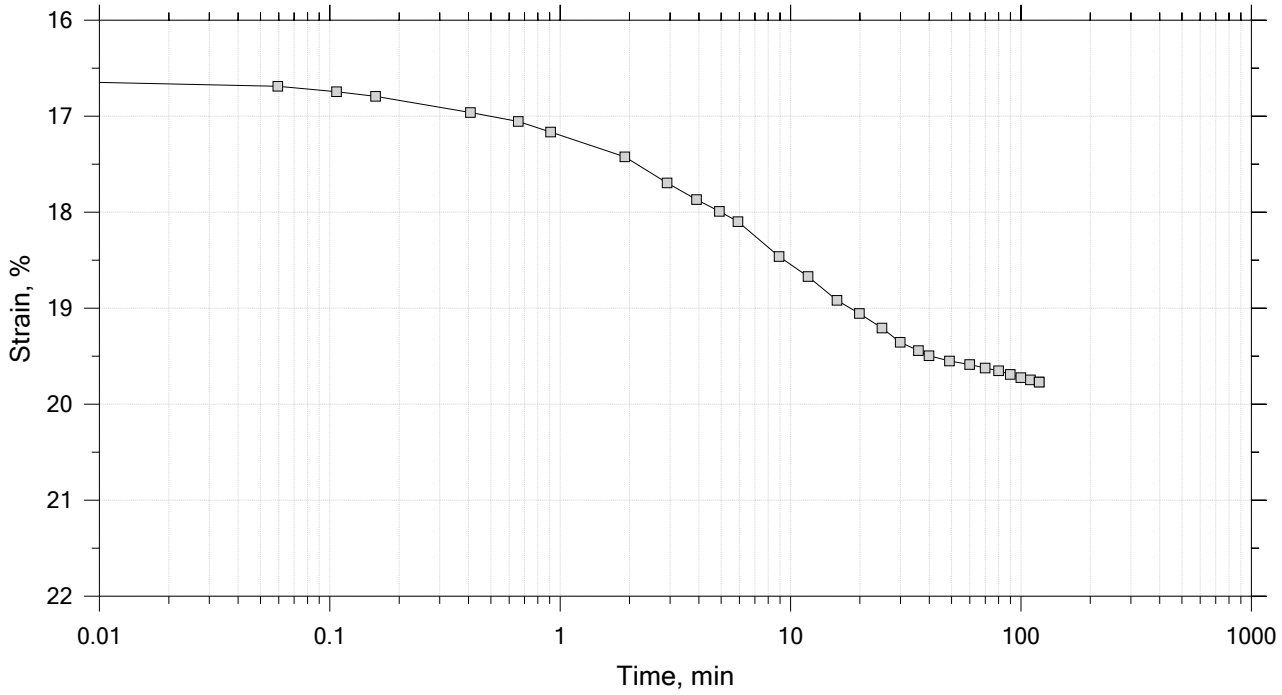


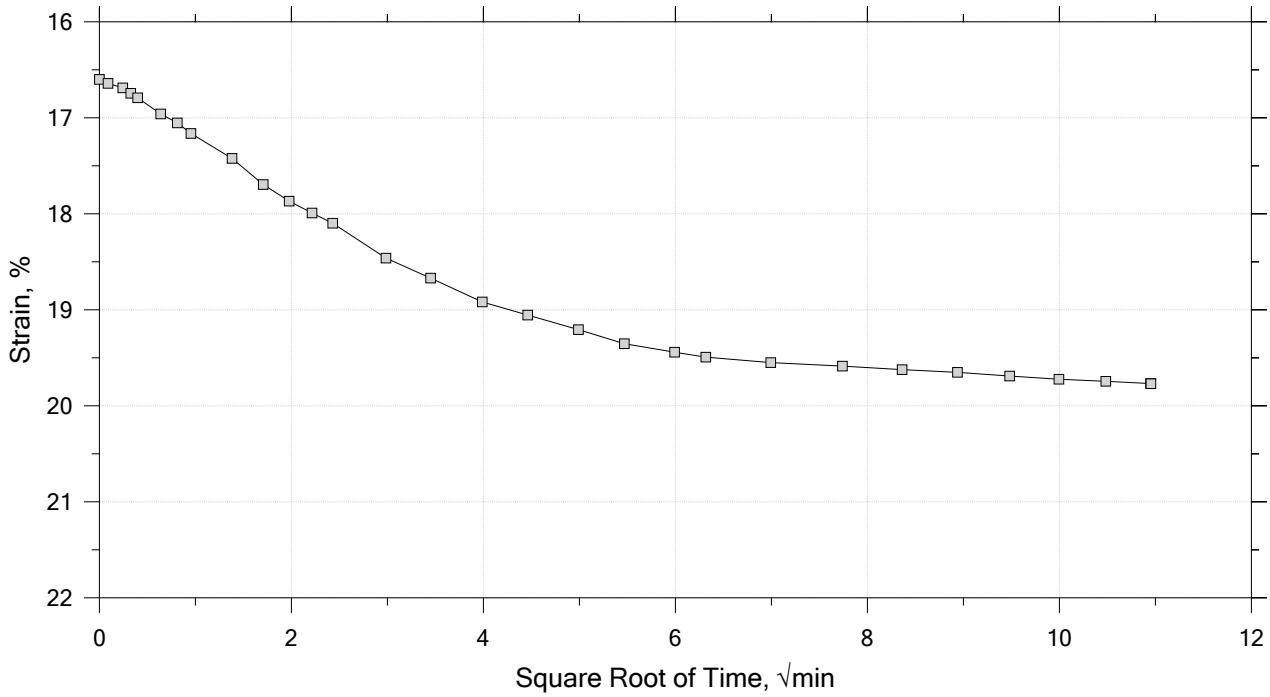


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

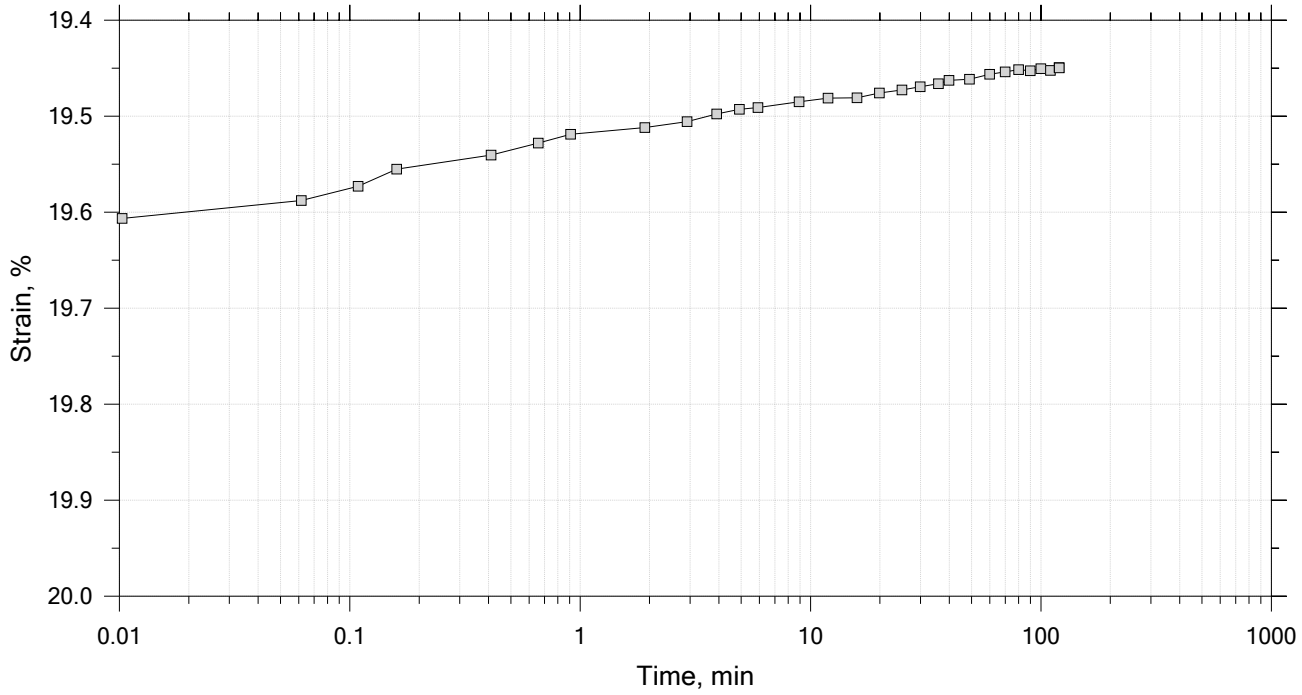


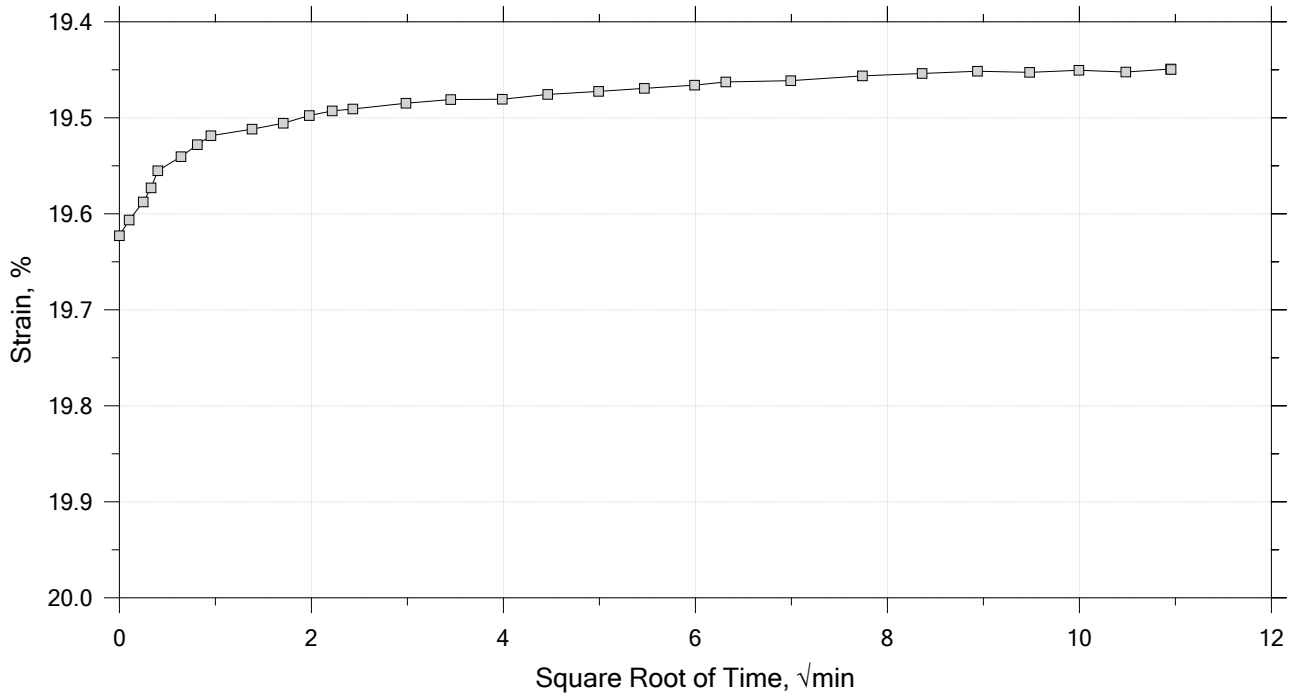


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

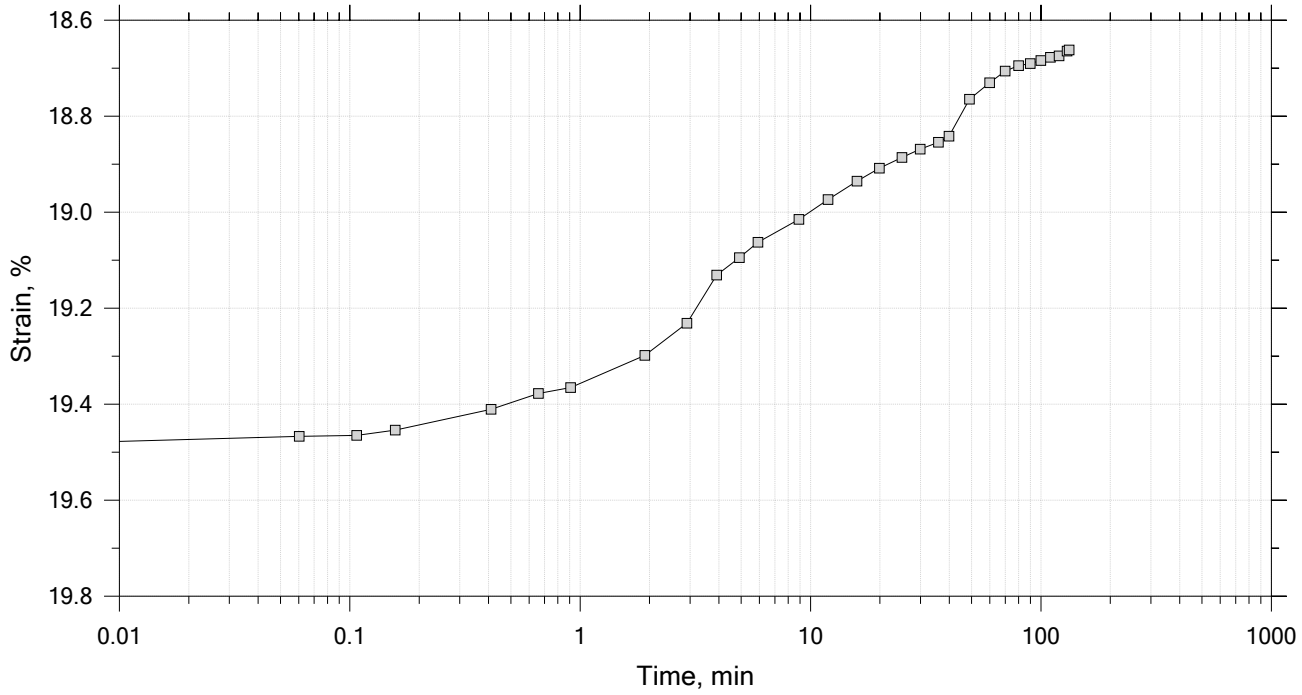


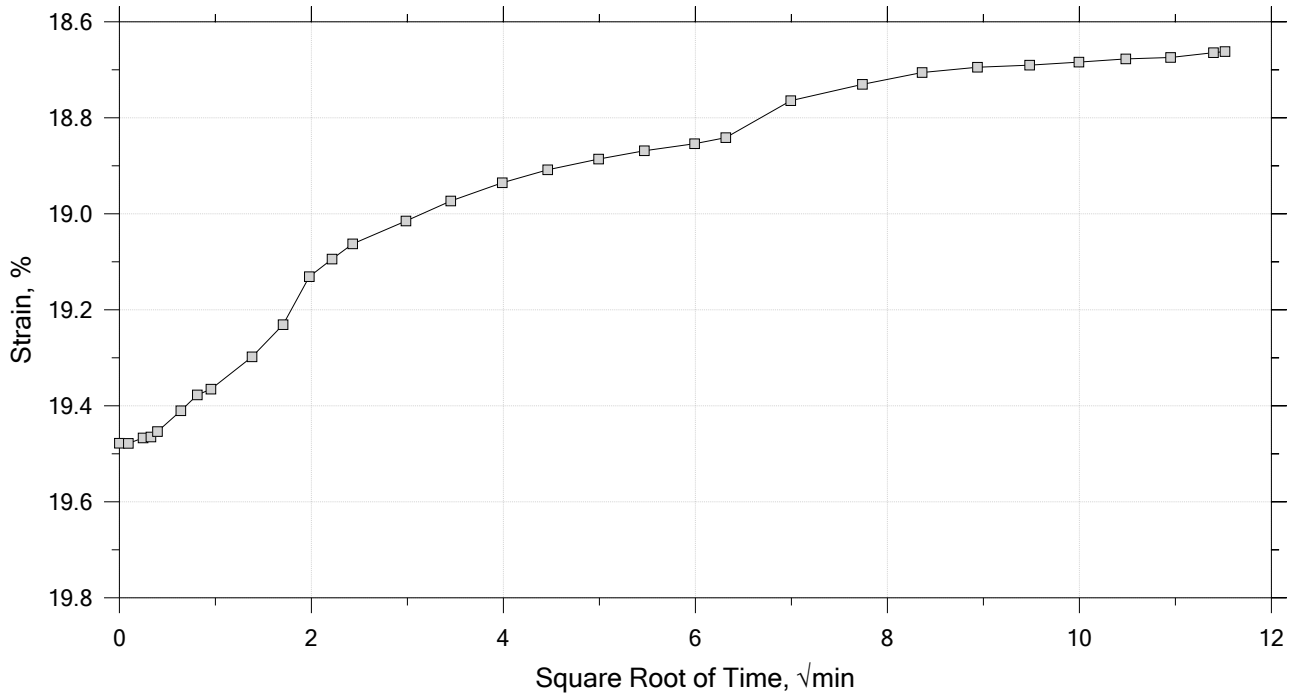


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





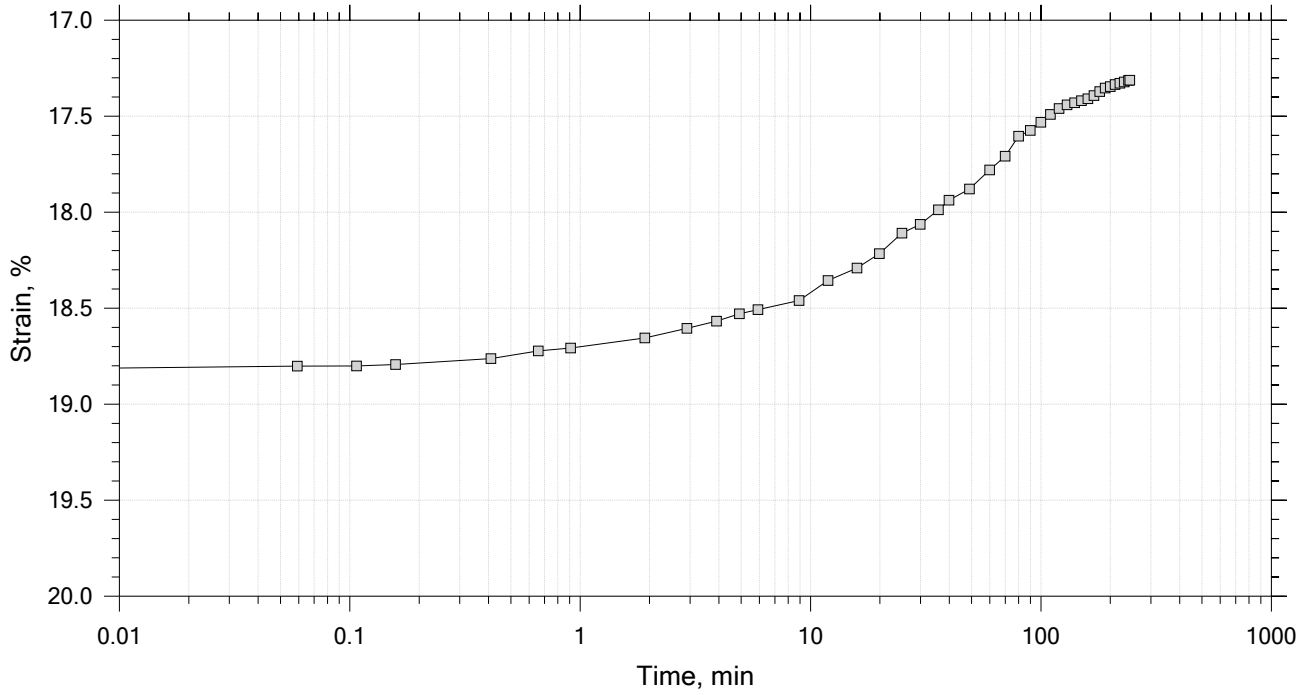
Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
Test No.: IP-18-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

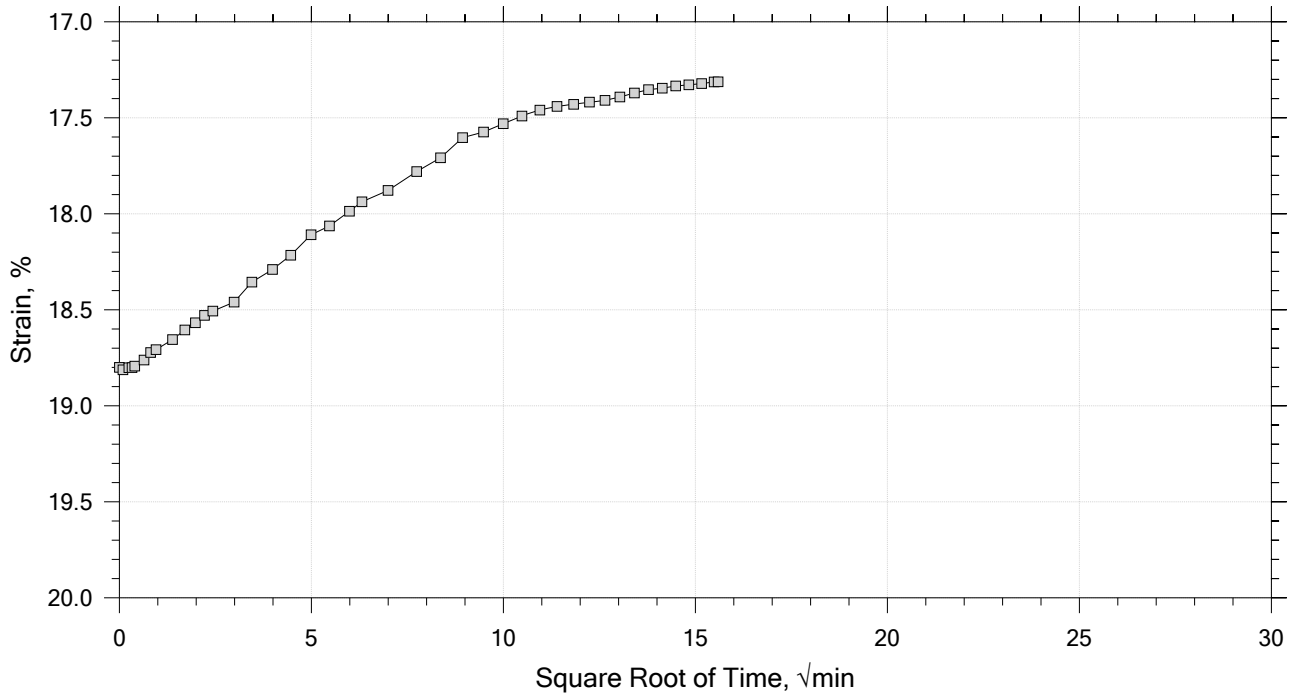
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

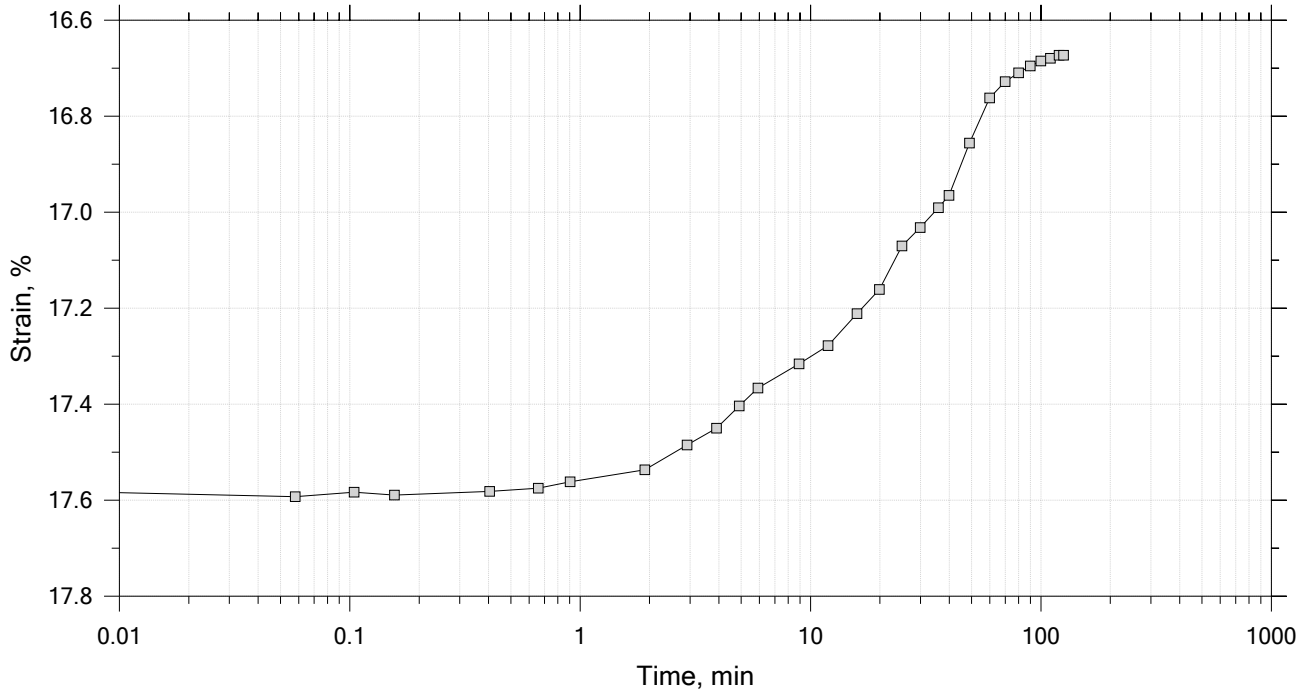


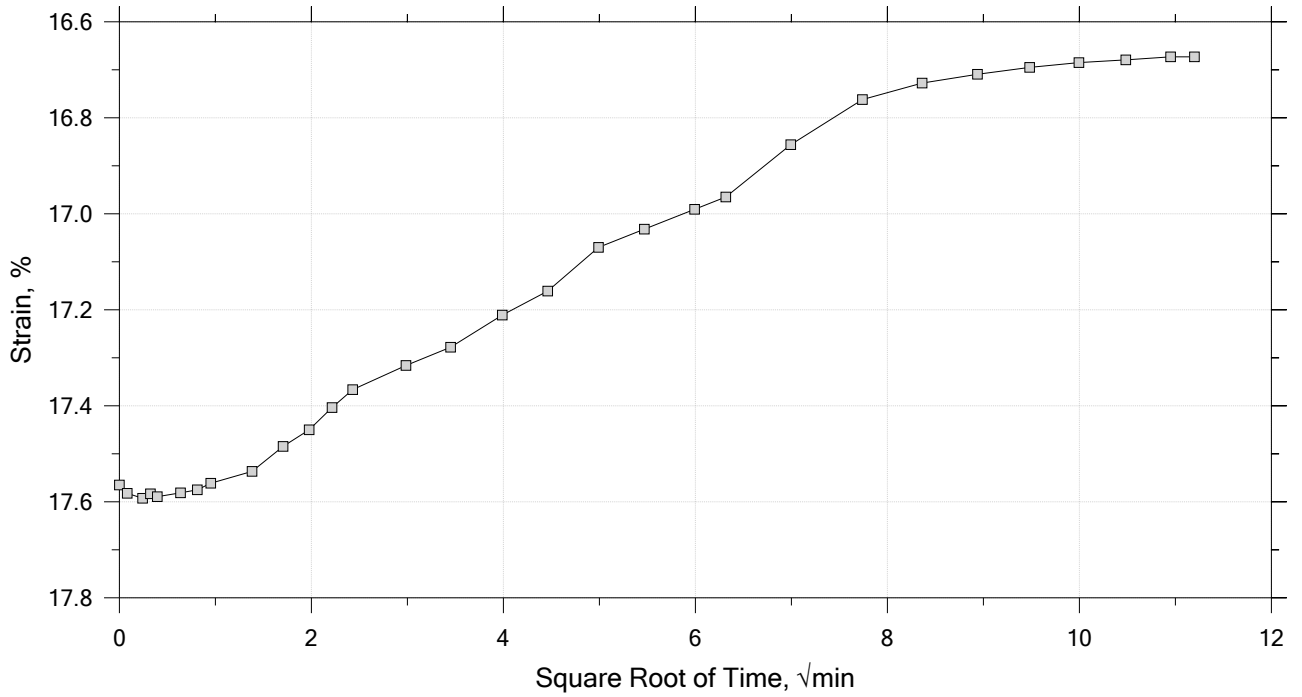


Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
Test No.: IP-18-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
Test No.: IP-18-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.78	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.729	Plastic Limit: 22
Final Height: 0.86 in	Final Void Ratio: 0.487	Plasticity Index: 24

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-7022	RING		E5815
Mass Container, gm	8.59	111.18	111.18	8.45
Mass Container + Wet Soil, gm	143.1	269.3	263.22	159.83
Mass Container + Dry Soil, gm	118.12	240.56	240.56	137.27
Mass Dry Soil, gm	109.53	129.38	129.38	128.82
Water Content, %	22.81	22.21	17.51	17.51
Void Ratio	---	0.73	0.49	---
Degree of Saturation, %	---	84.72	100.00	---
Dry Unit Weight, pcf	---	100.41	116.76	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

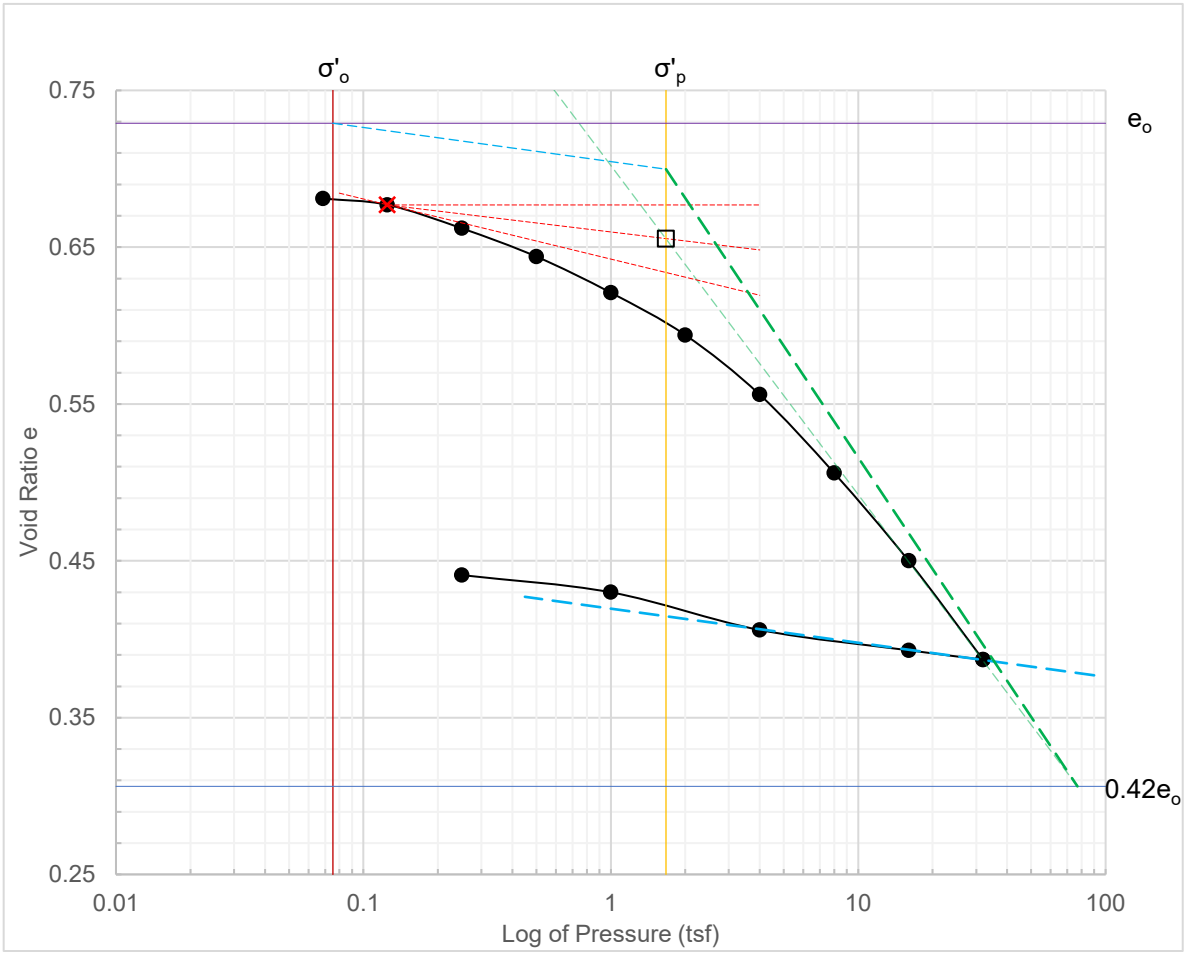
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0686	0.02764	0.681	2.76	73.874	4.65e-05	4.03e-01	3.51e-04
2	0.125	0.03033	0.677	3.03	7.310	4.56e-04	4.77e-02	4.07e-04
3	0.250	0.03873	0.662	3.87	5.491	6.00e-04	6.73e-02	7.56e-04
4	0.500	0.04935	0.644	4.94	28.525	1.13e-04	4.25e-02	9.01e-05
5	1.00	0.06268	0.621	6.27	36.336	8.67e-05	2.67e-02	4.33e-05
6	2.00	0.07789	0.594	7.79	6.255	4.88e-04	1.52e-02	1.39e-04
7	4.00	0.1003	0.556	10.0	9.051	3.24e-04	1.12e-02	6.81e-05
8	8.00	0.1288	0.506	12.9	15.137	1.83e-04	7.12e-03	2.44e-05
9	16.0	0.1612	0.450	16.1	18.355	1.41e-04	4.04e-03	1.07e-05
10	32.0	0.1977	0.387	19.8	22.931	1.04e-04	2.28e-03	4.43e-06
11	16.0	0.1945	0.393	19.4	8.272	2.76e-04	2.00e-04	1.03e-06
12	4.00	0.1866	0.406	18.7	26.463	8.75e-05	6.56e-04	1.08e-06
13	1.00	0.1731	0.430	17.3	138.342	1.72e-05	4.50e-03	1.45e-06
14	0.250	0.1667	0.441	16.7	110.670	2.20e-05	8.53e-03	3.51e-06

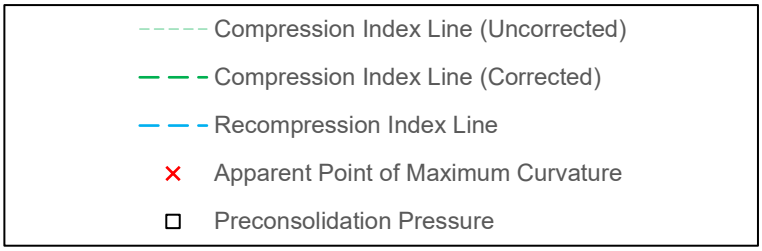
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock county	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.2-1.3
	Test No.: IP-18-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTIII-C, Swell Pressure = 0.0686 tsf		
	Displacement at End of Increment		

Boring: B-4.16A

Depth: 1.2'-1.3'

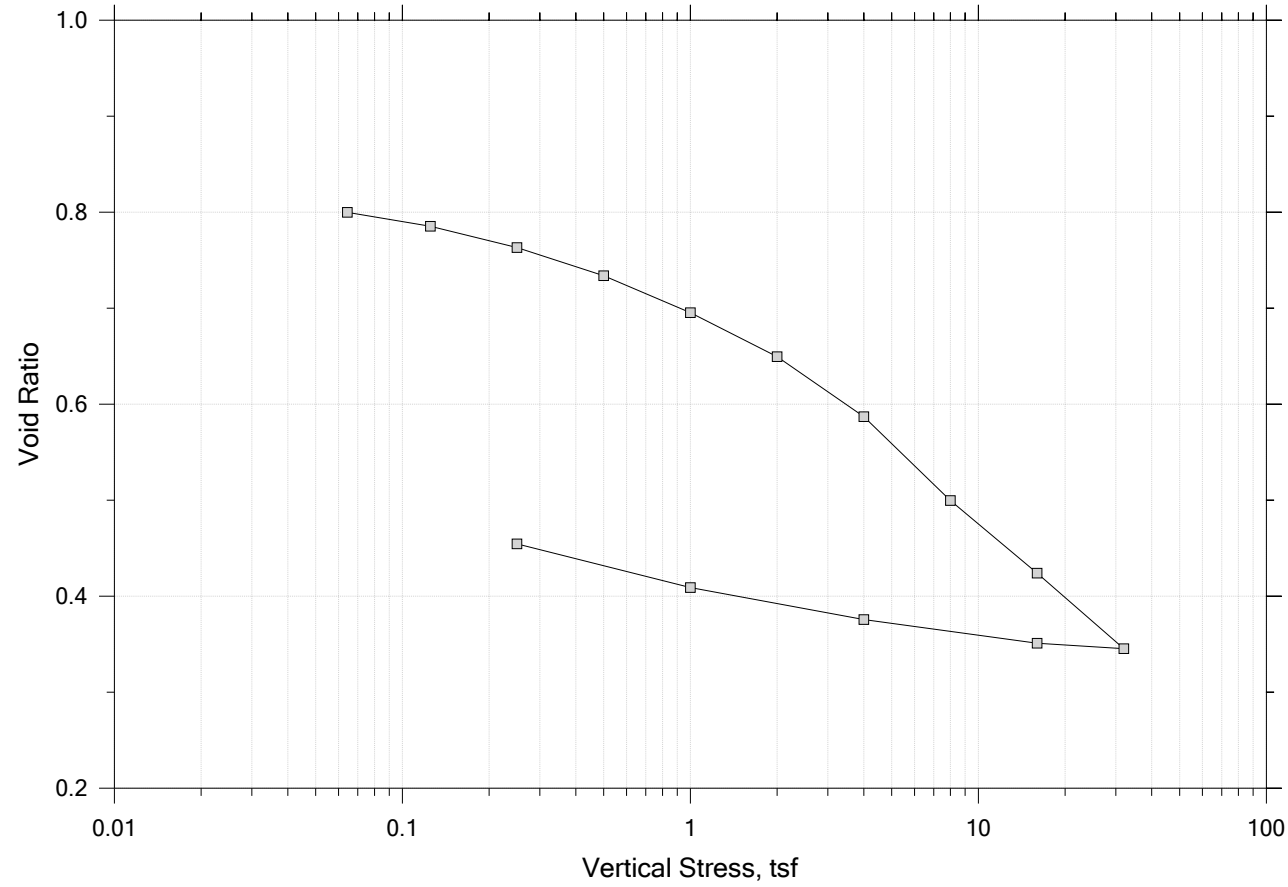
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.075
Preconsolidation Pressure, σ'_p (tsf) = 1.67
Compression Index, C_c = 0.24
Recompression Index, C_r = 0.022

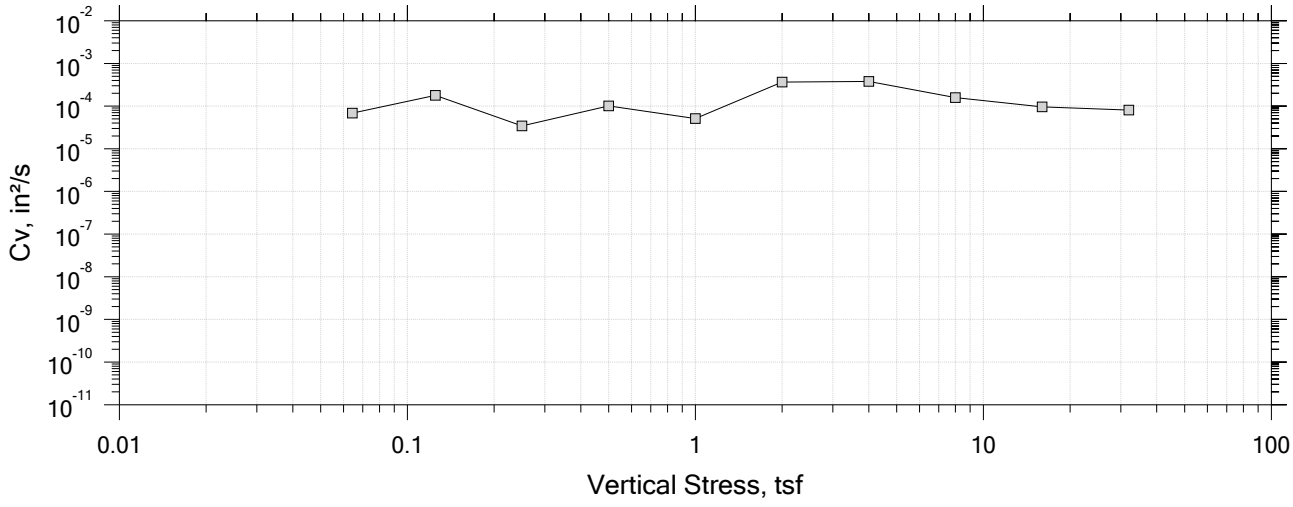




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

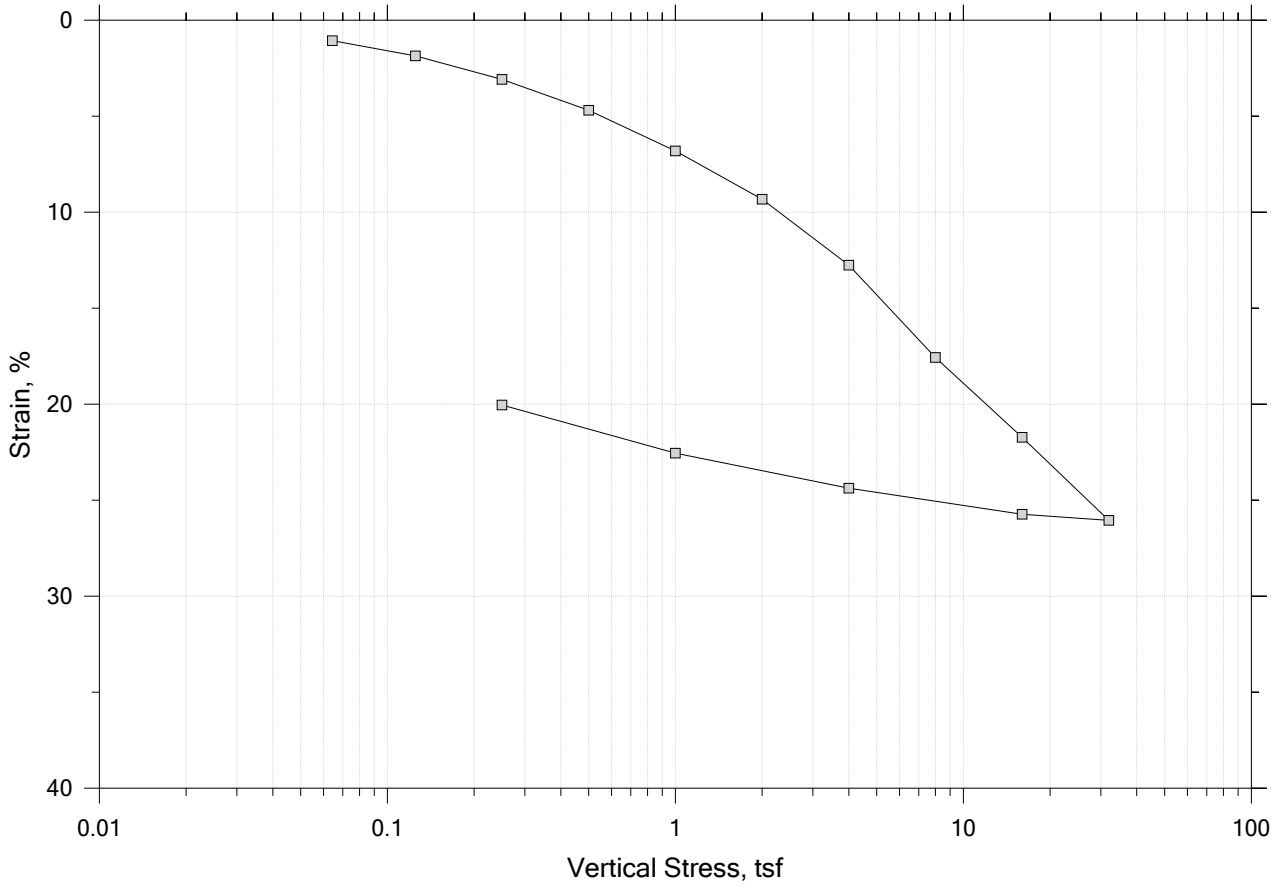


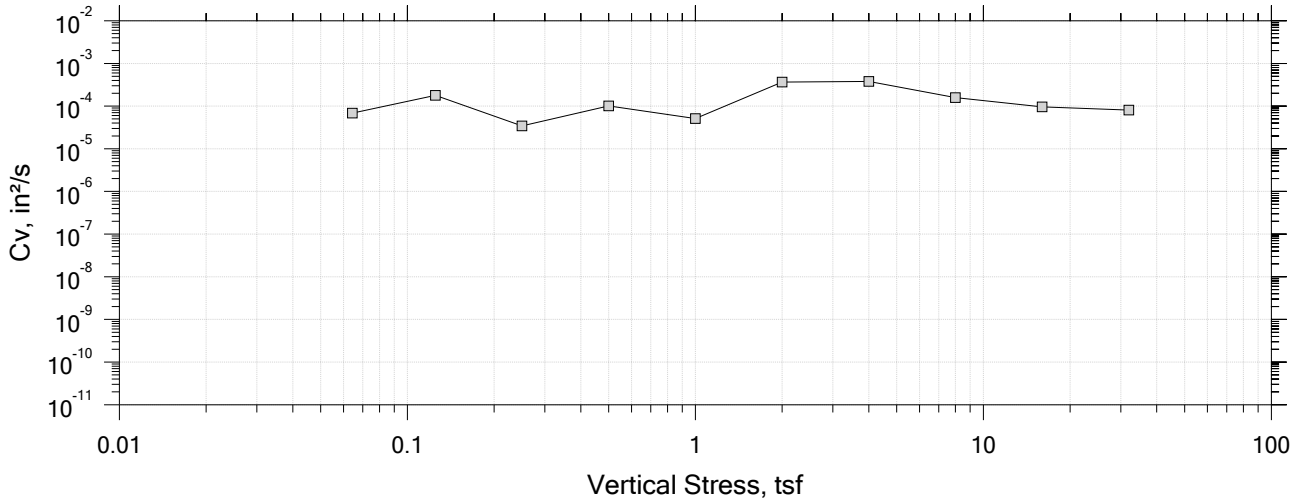


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

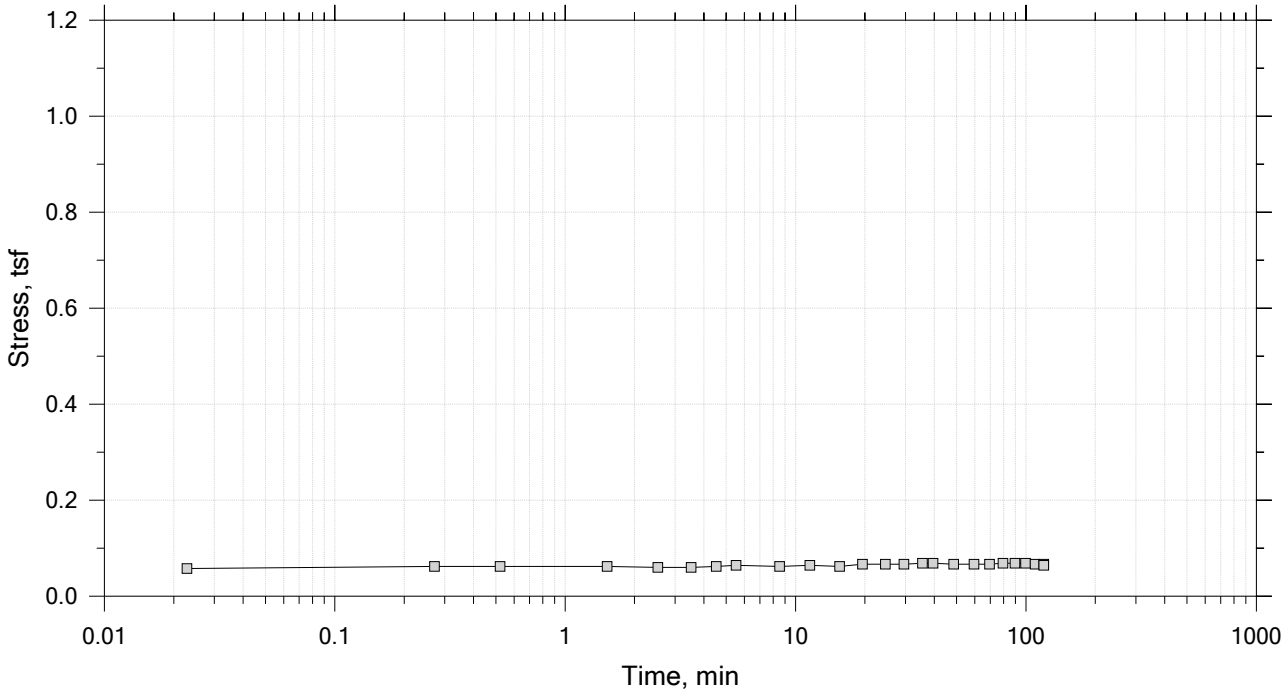


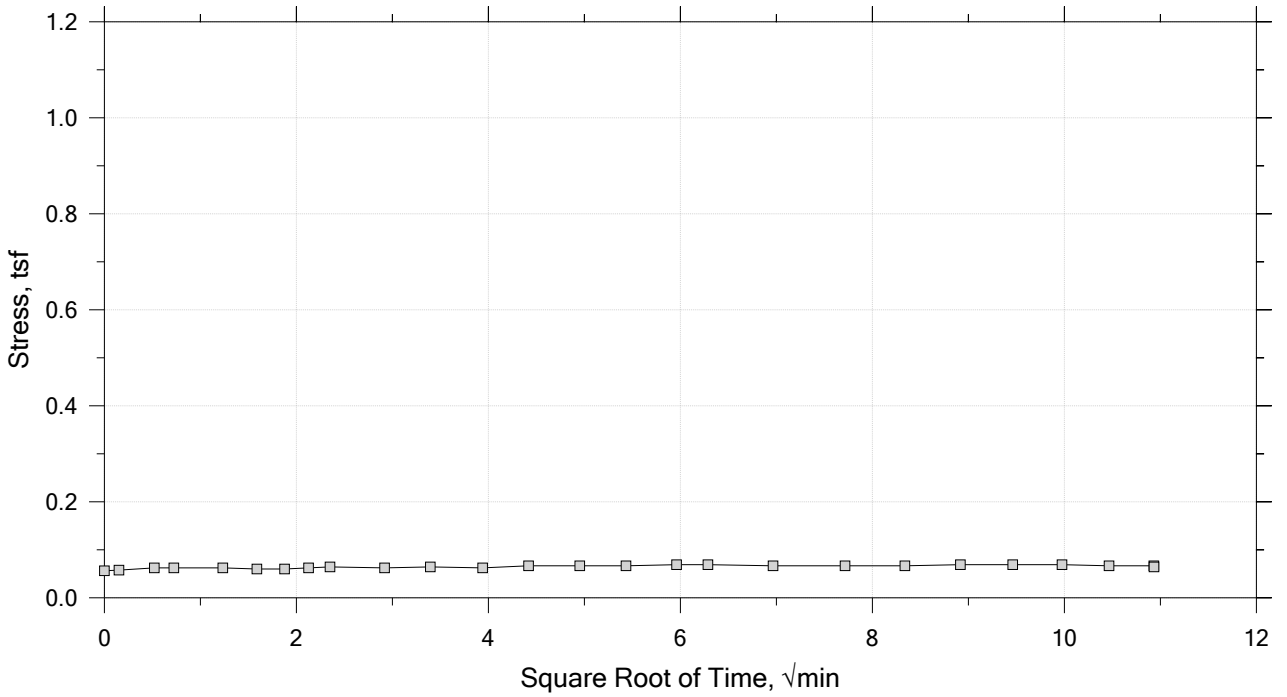


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0644 tsf

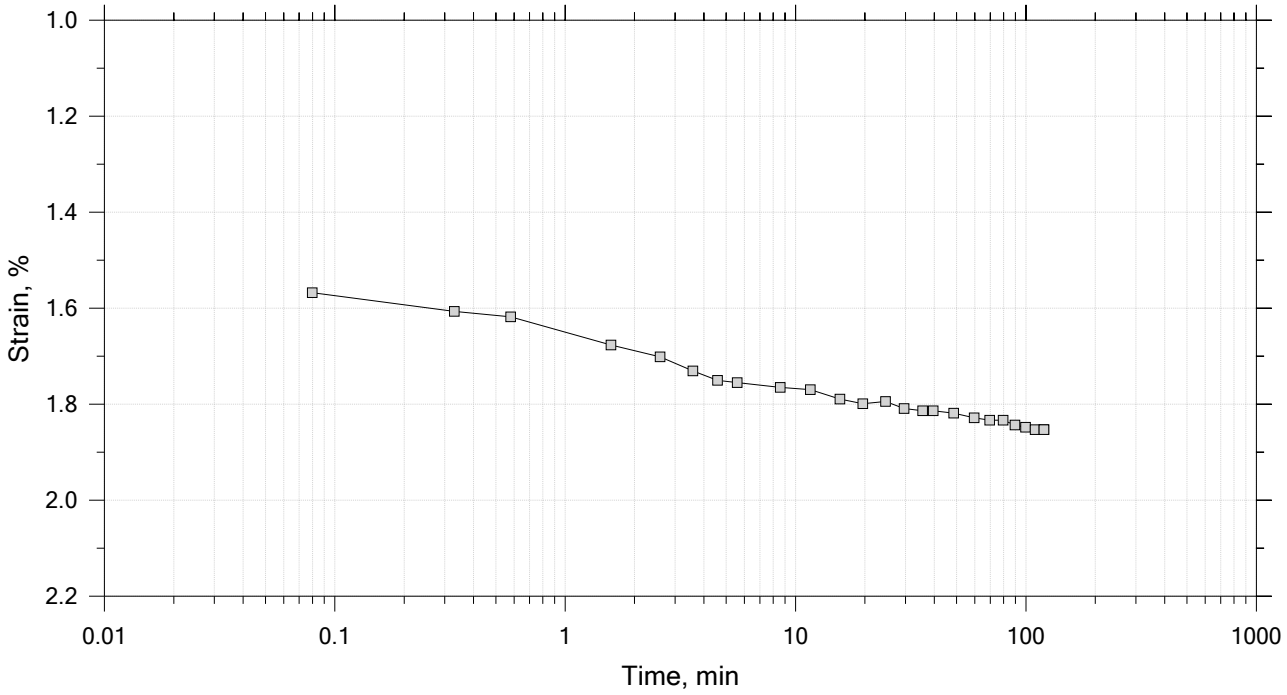


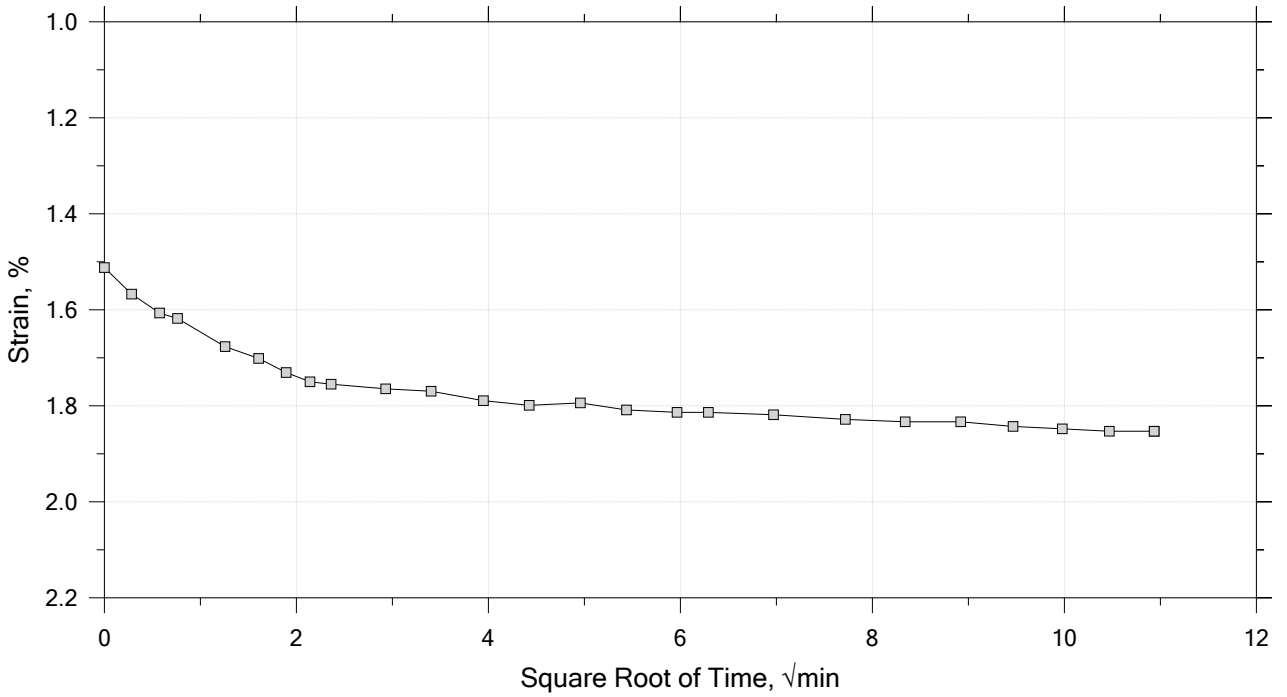


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





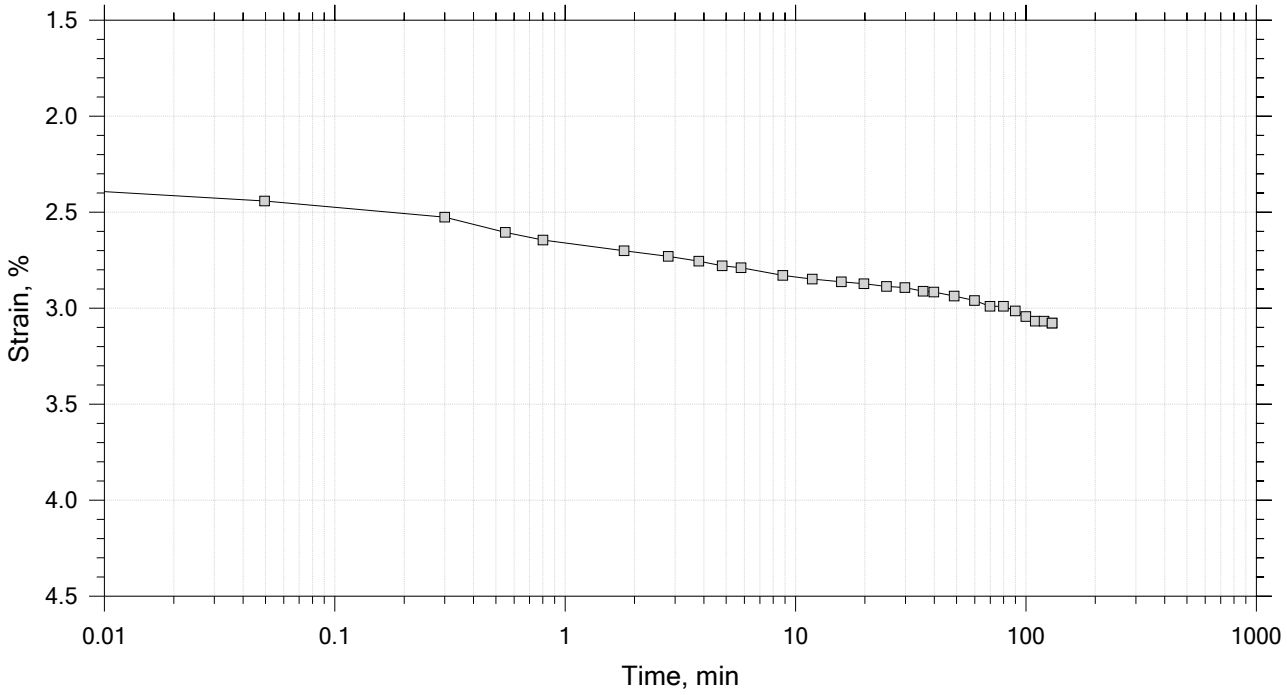
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

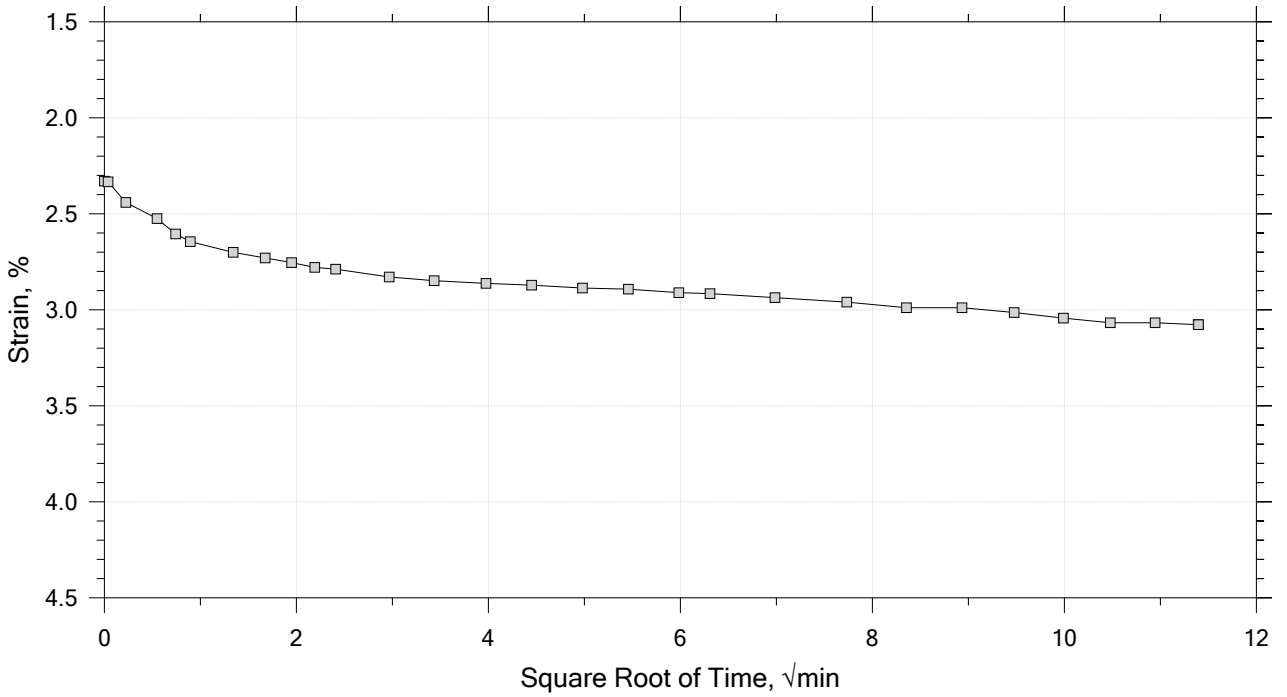
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





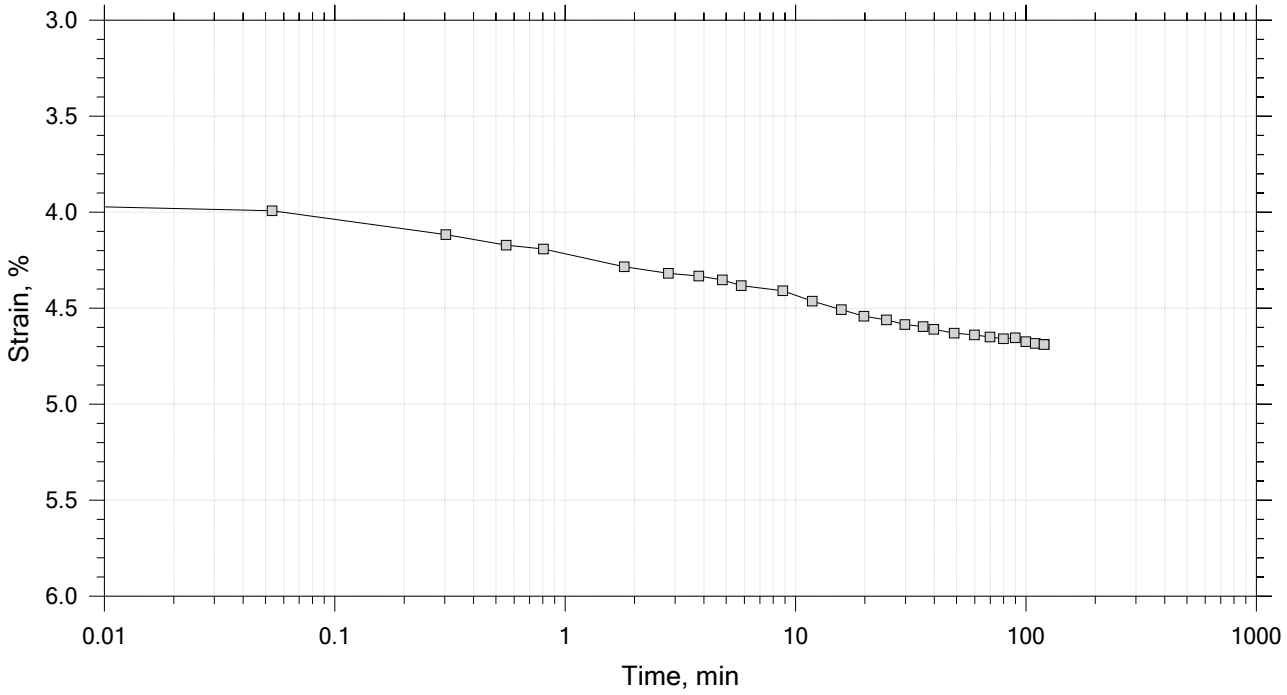
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

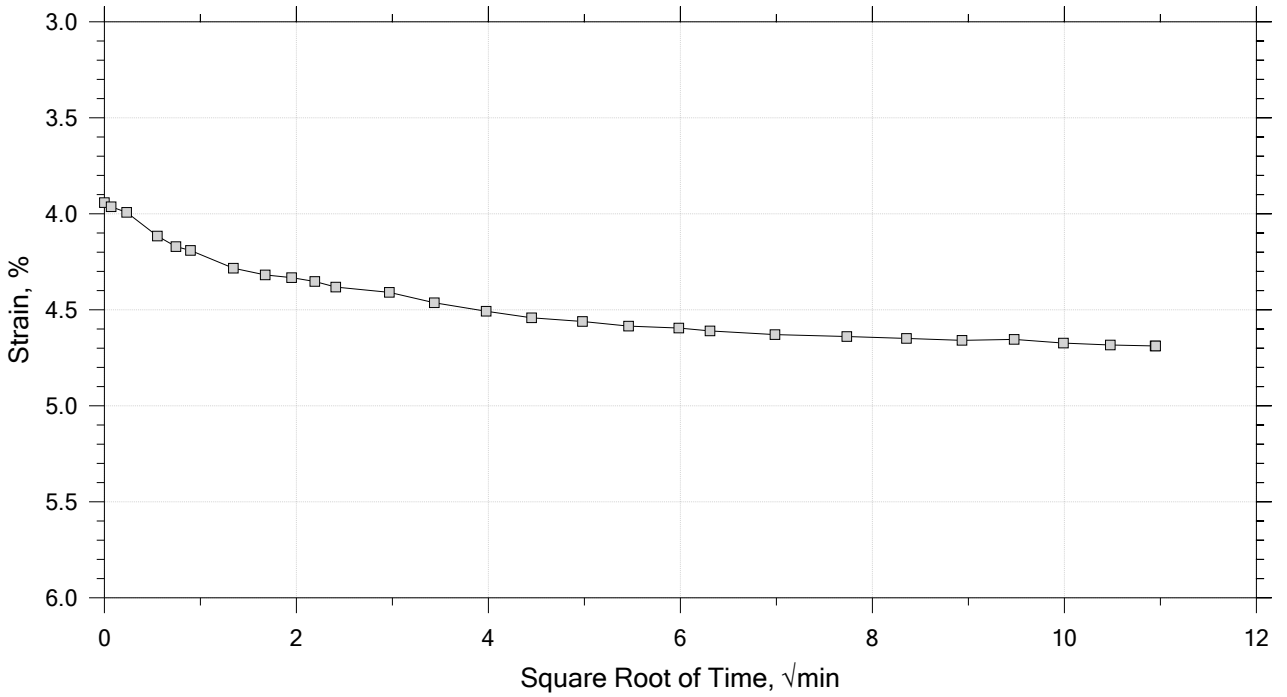
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





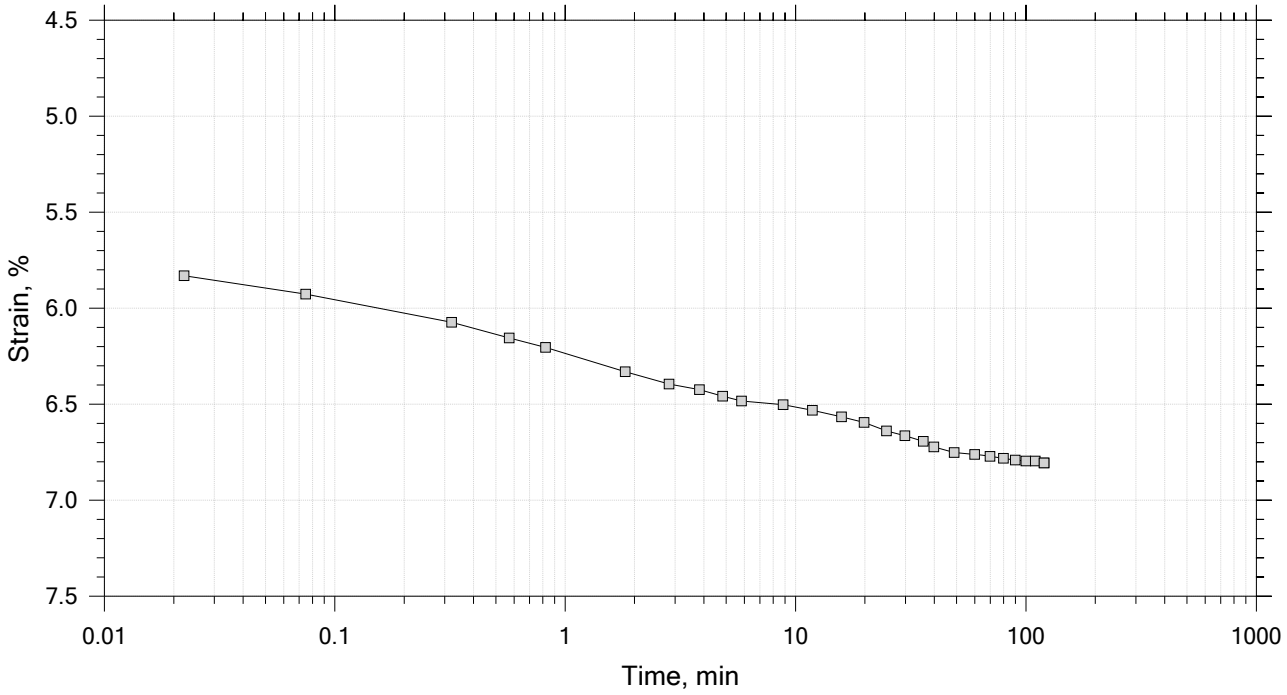
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

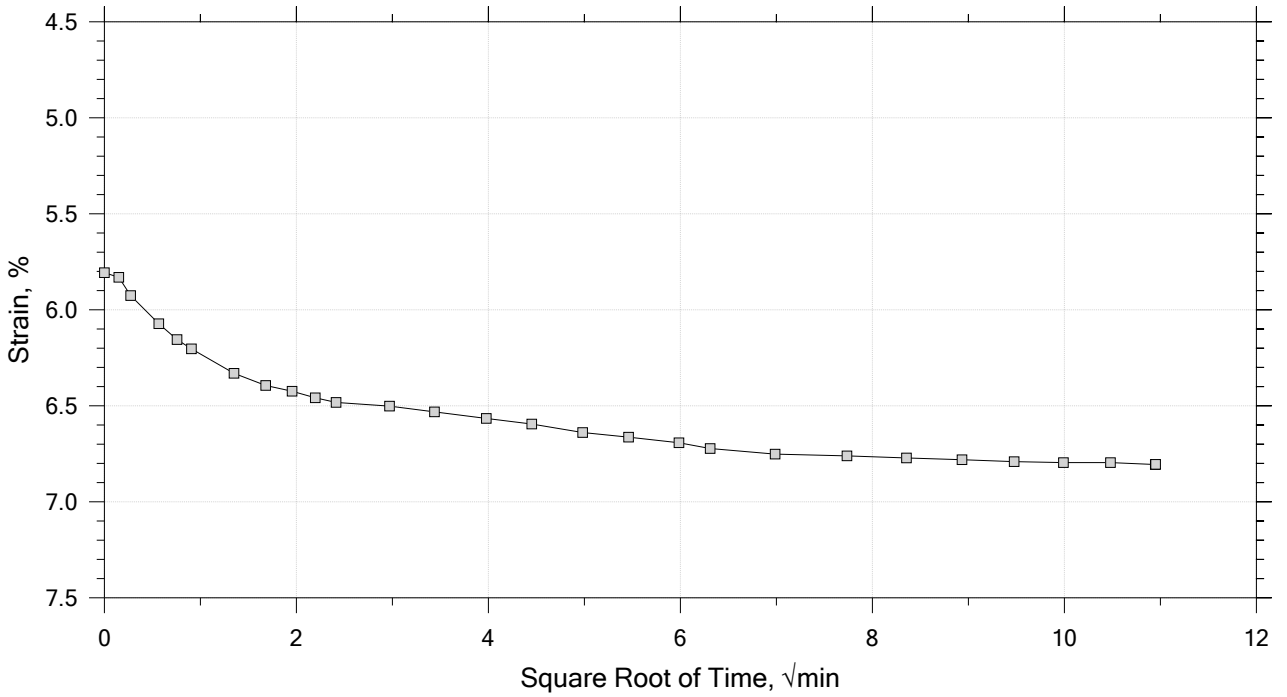
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





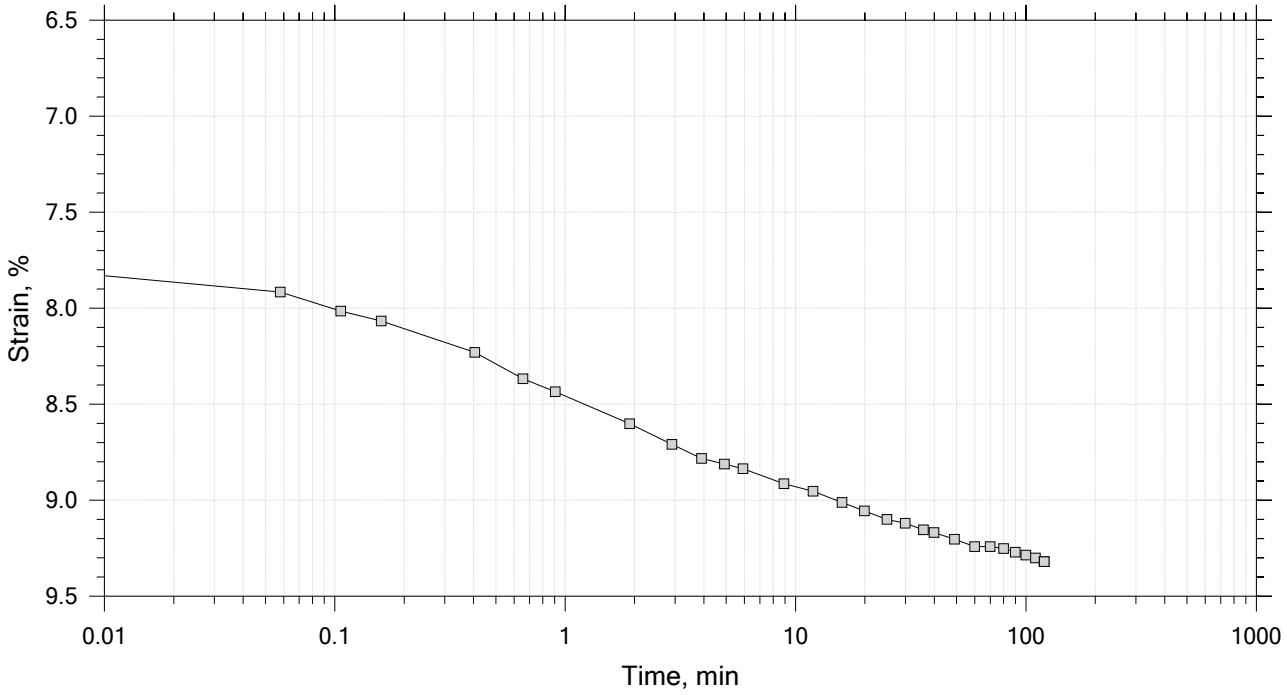
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

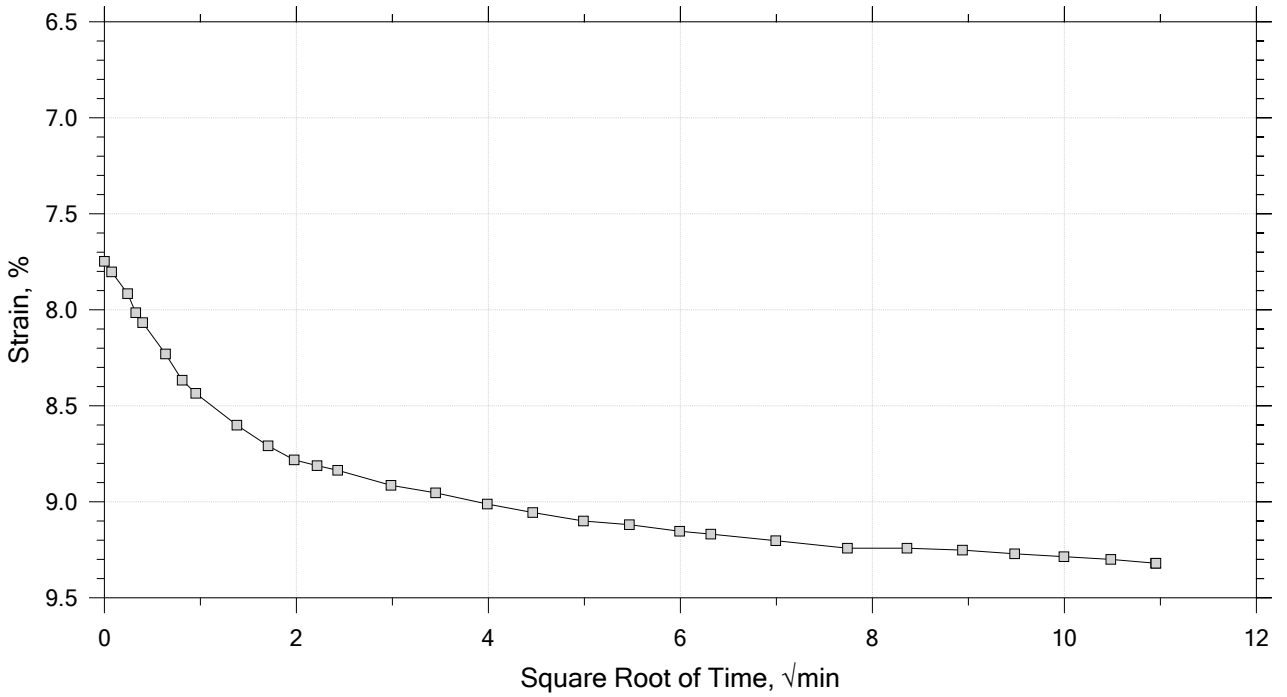
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





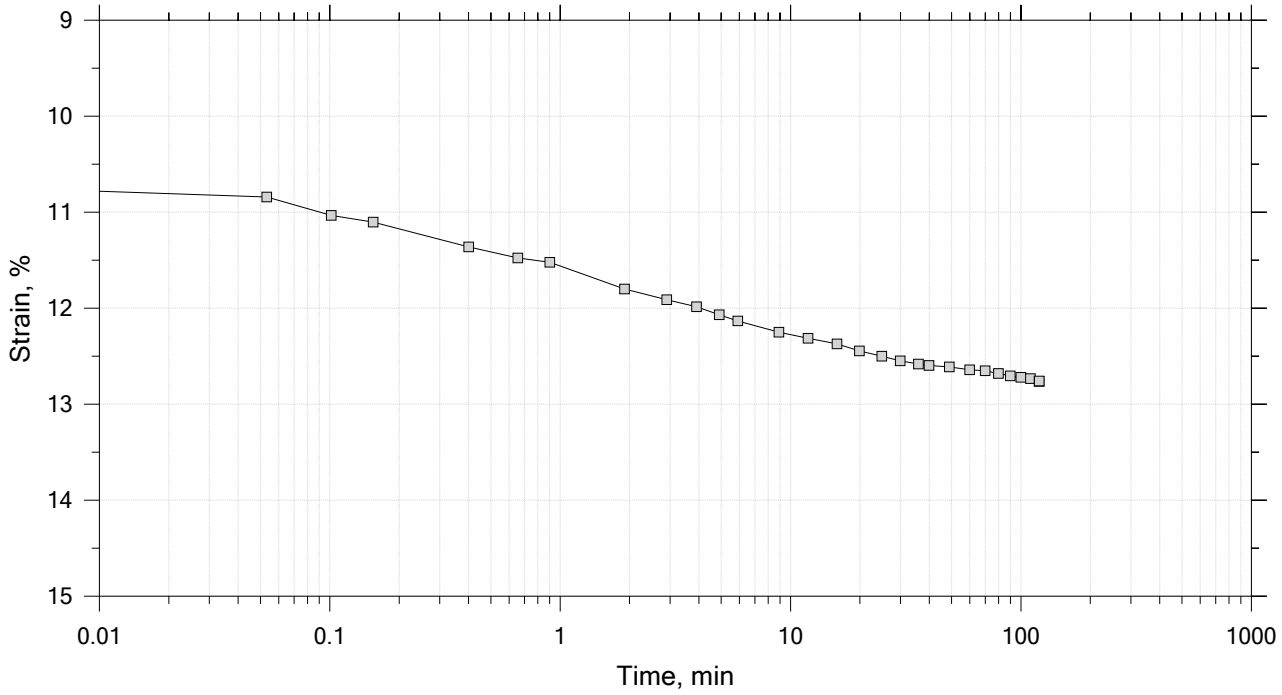
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

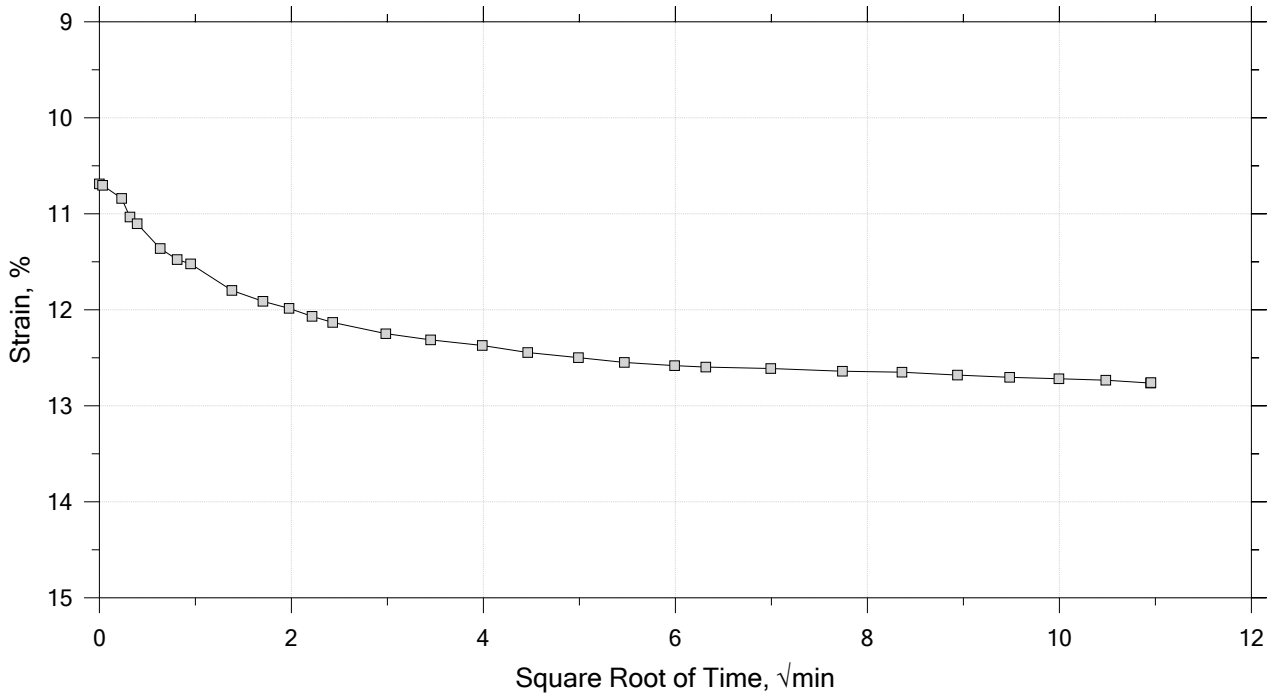
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





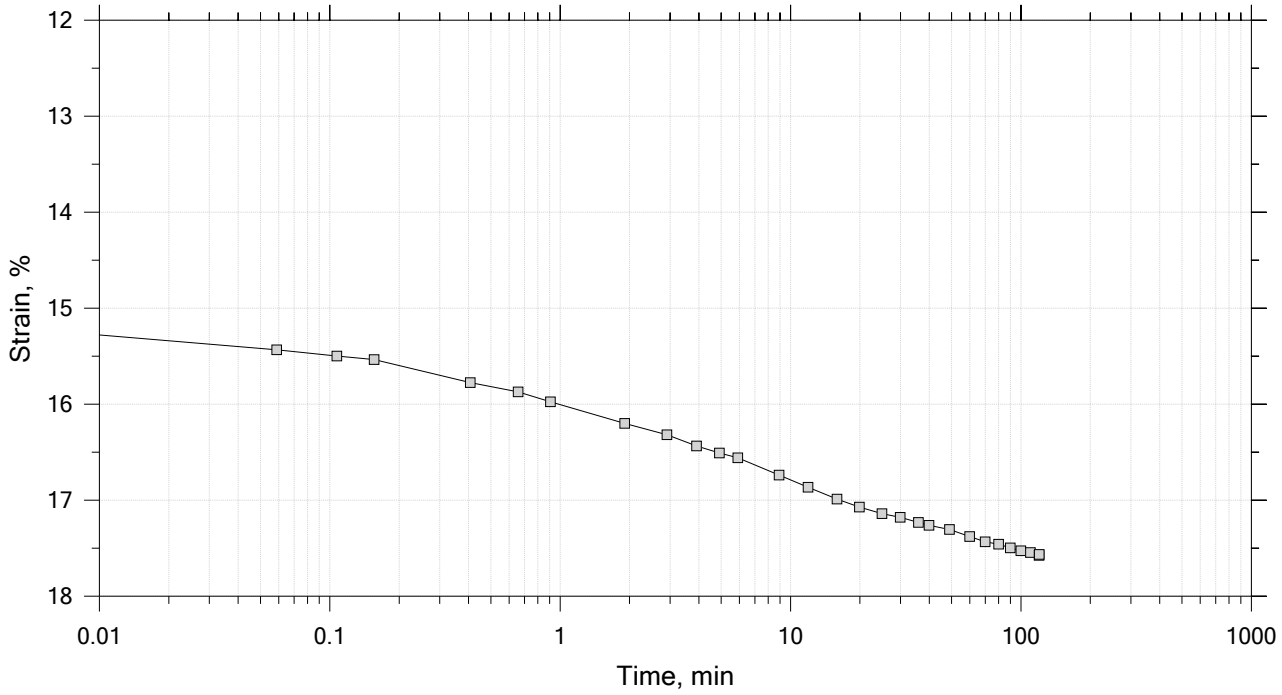
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

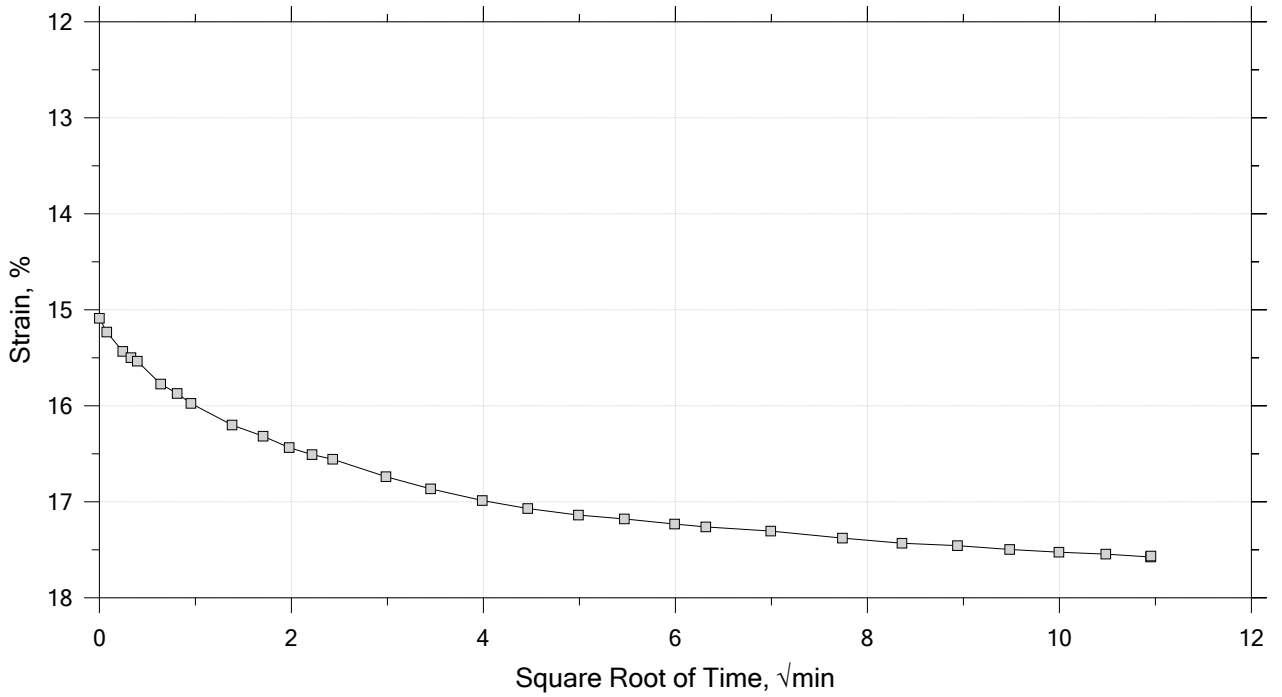
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





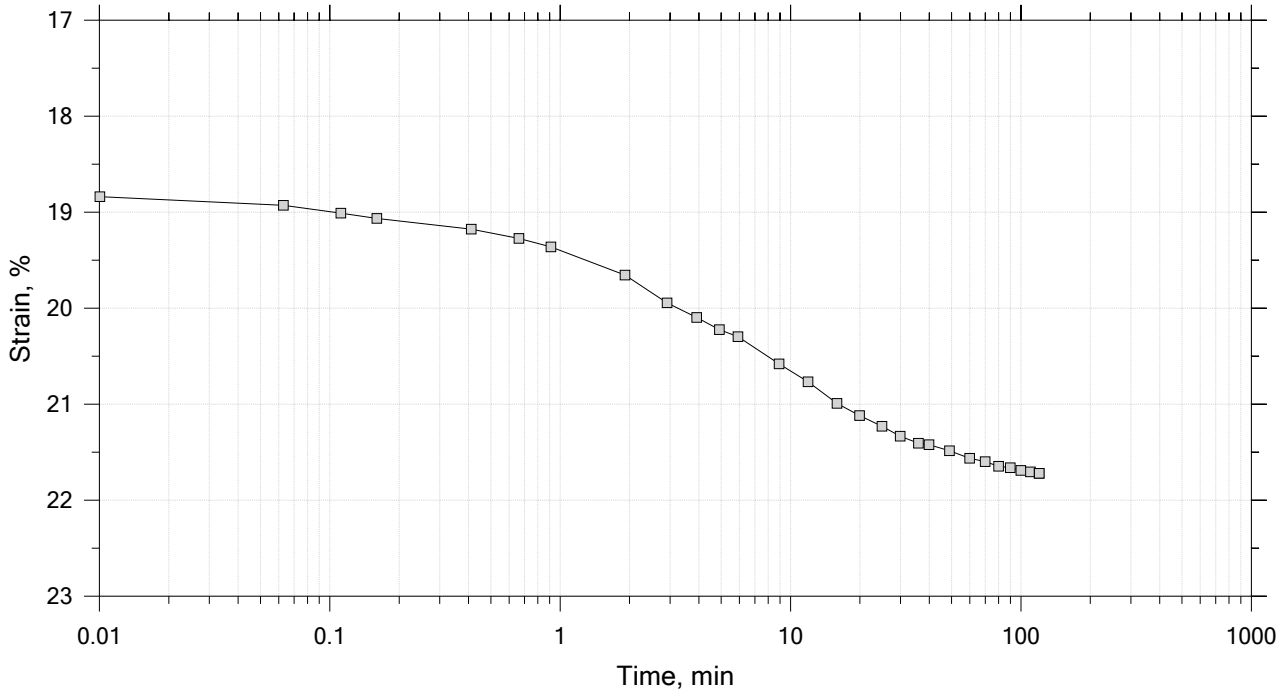
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

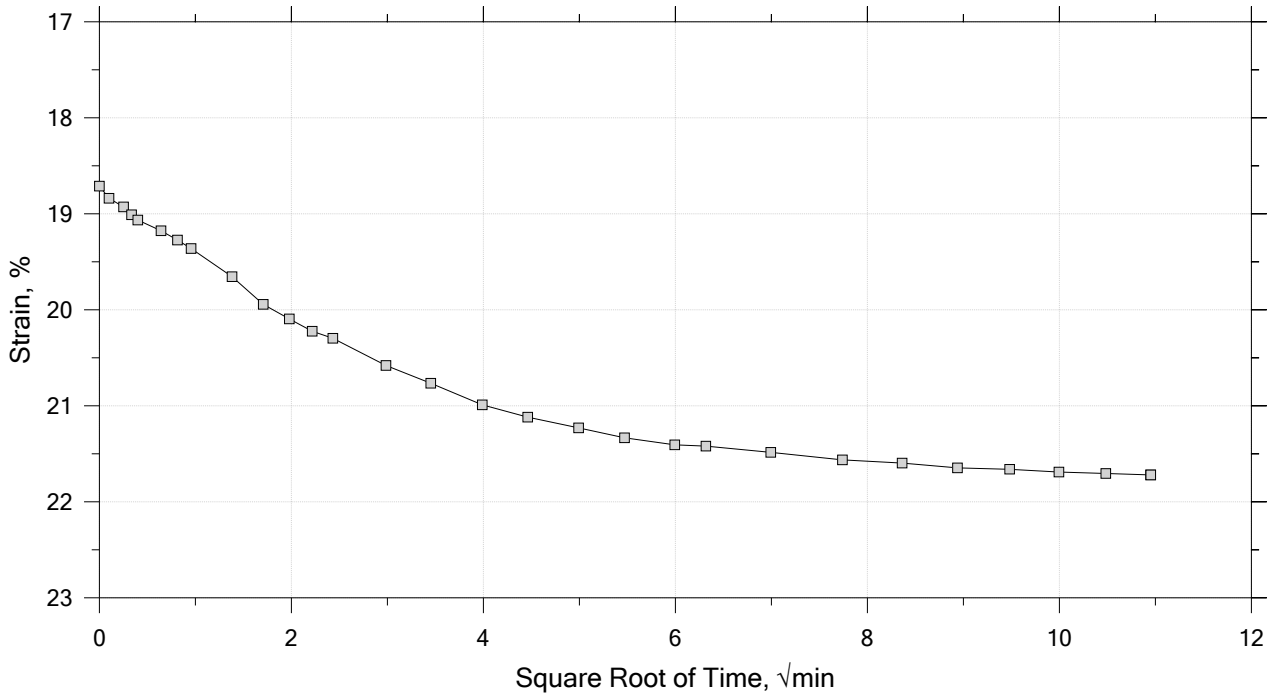
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

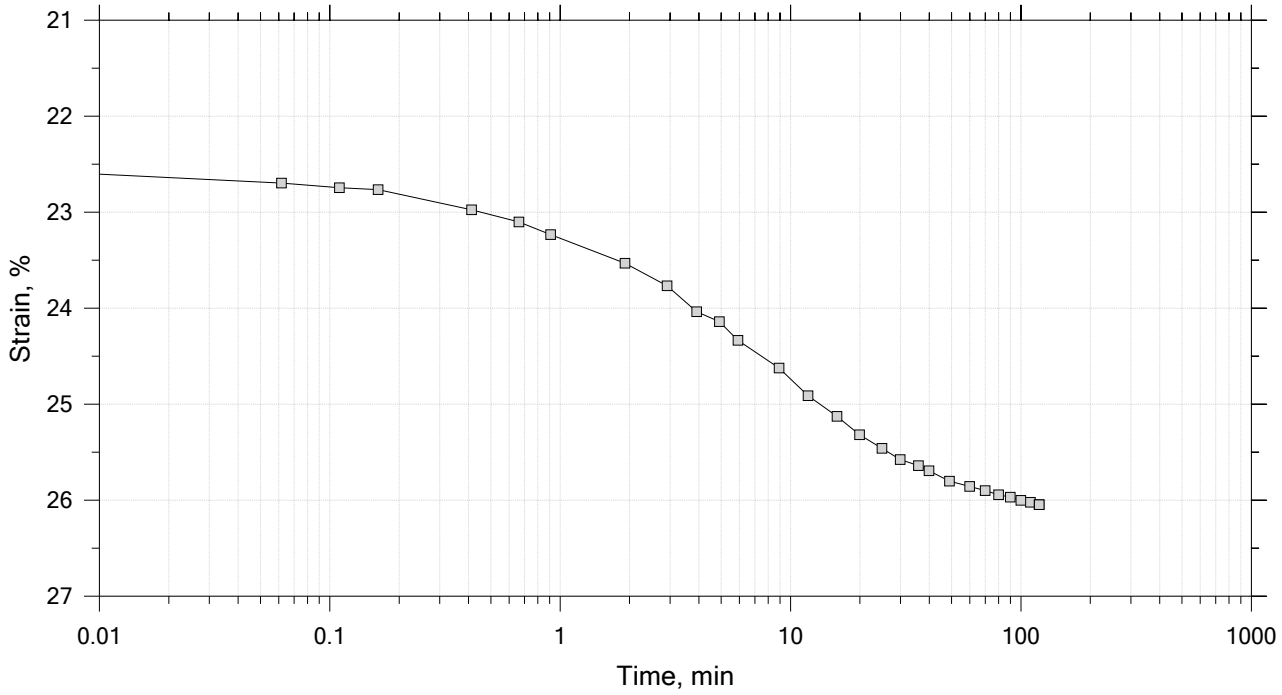


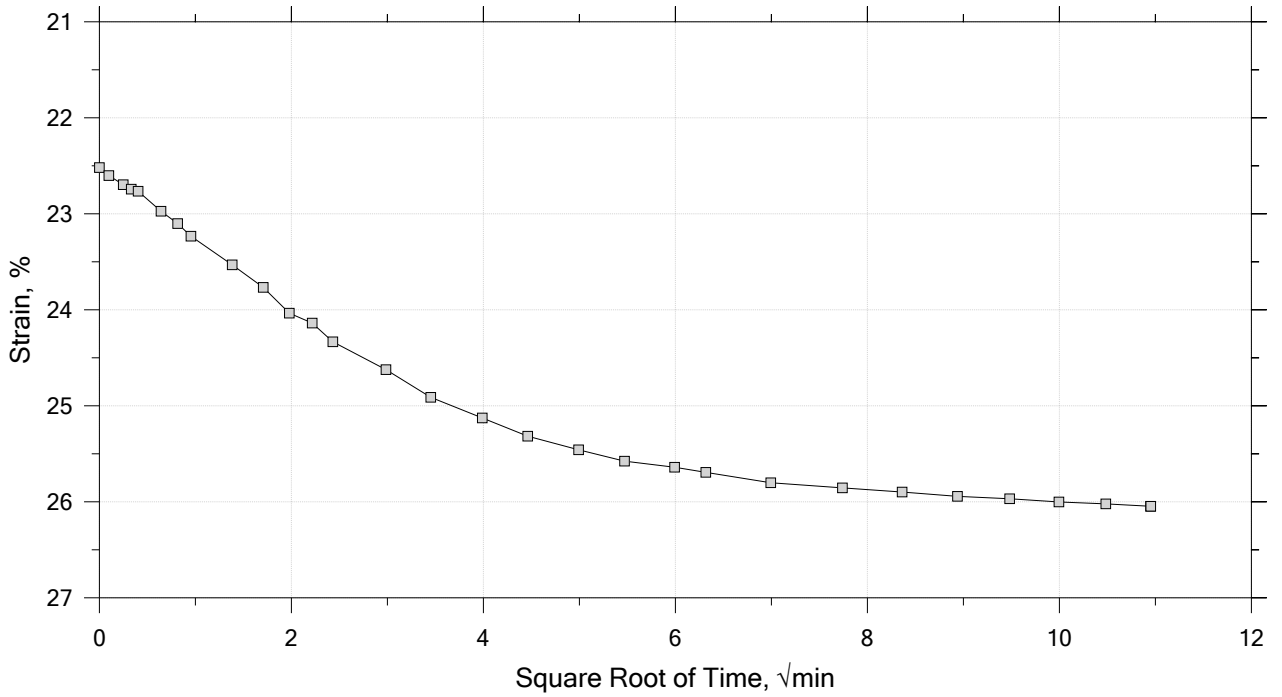


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

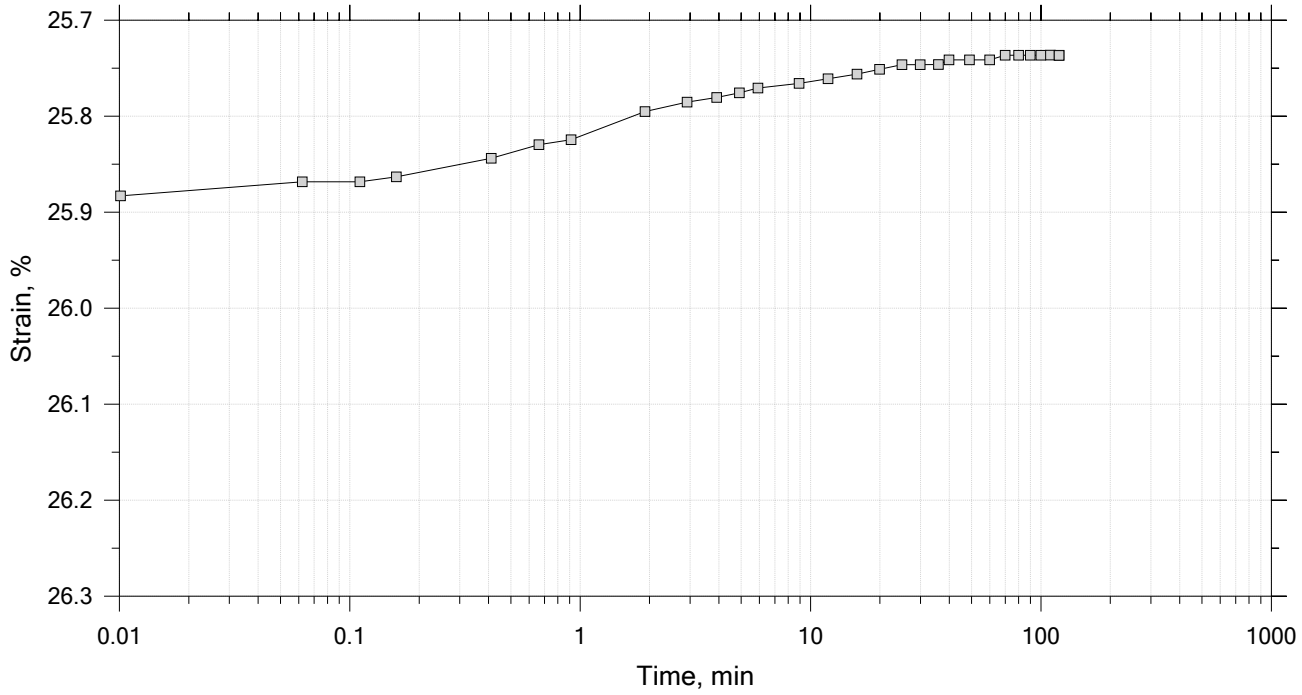


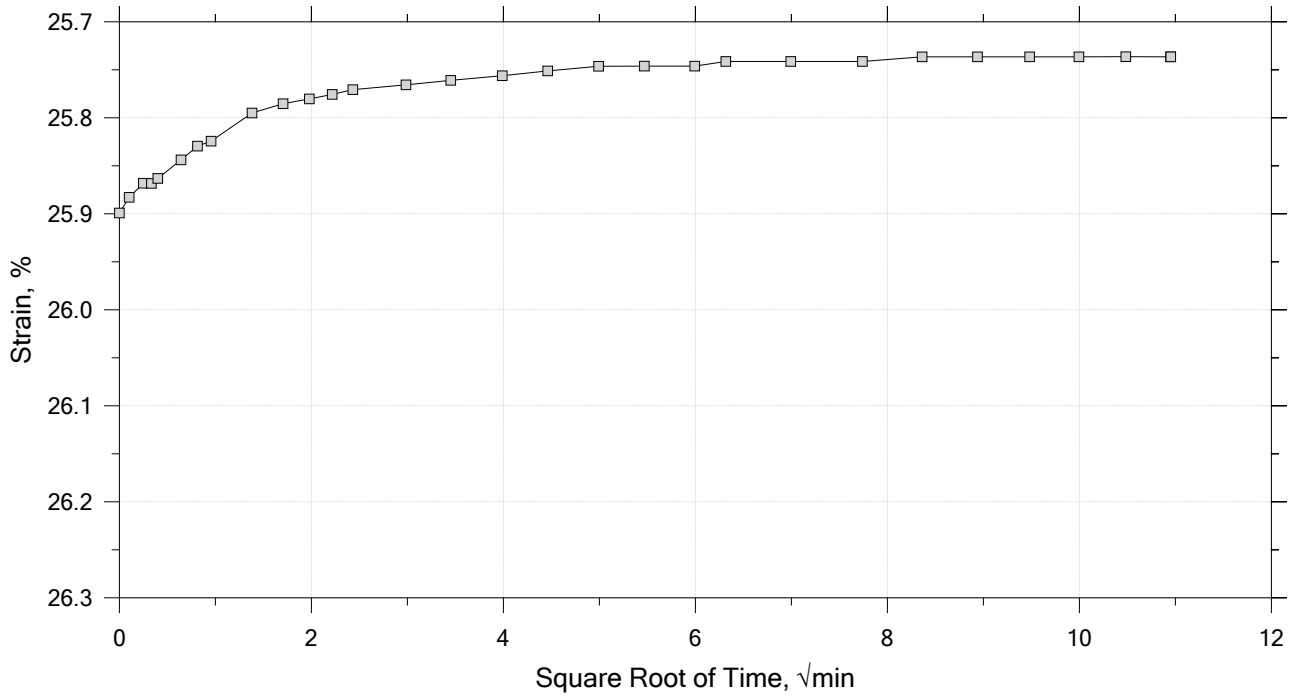


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

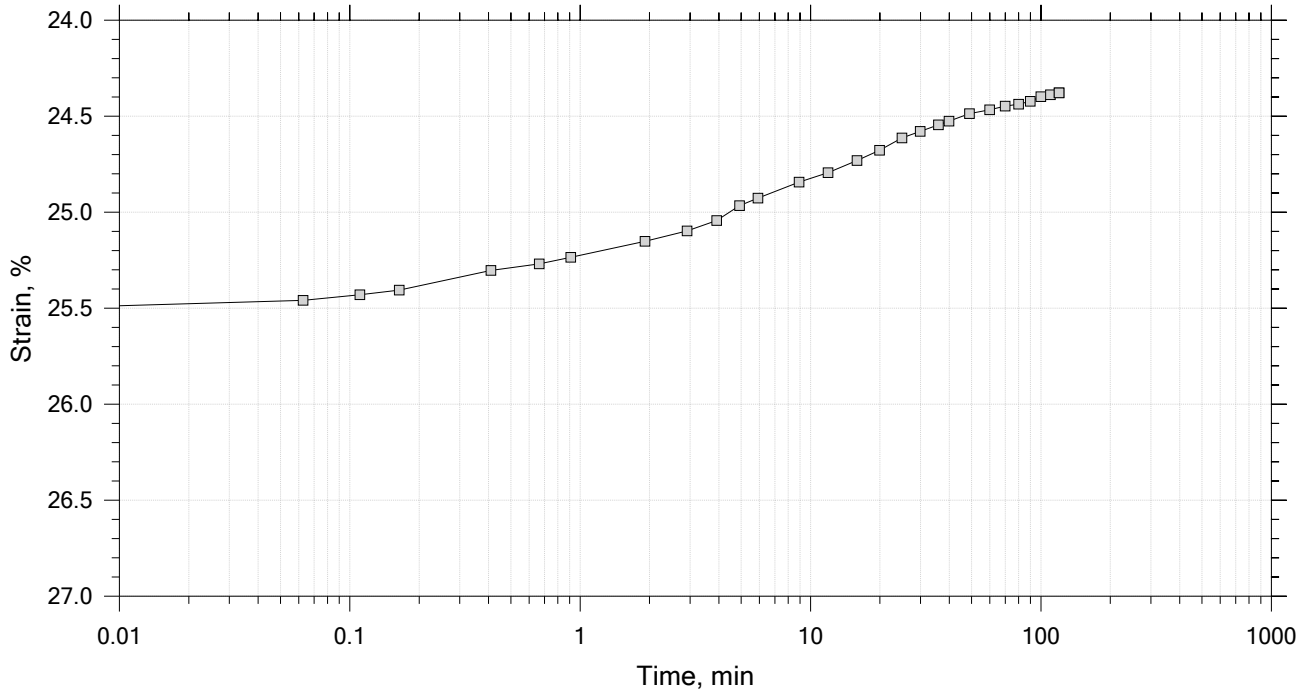


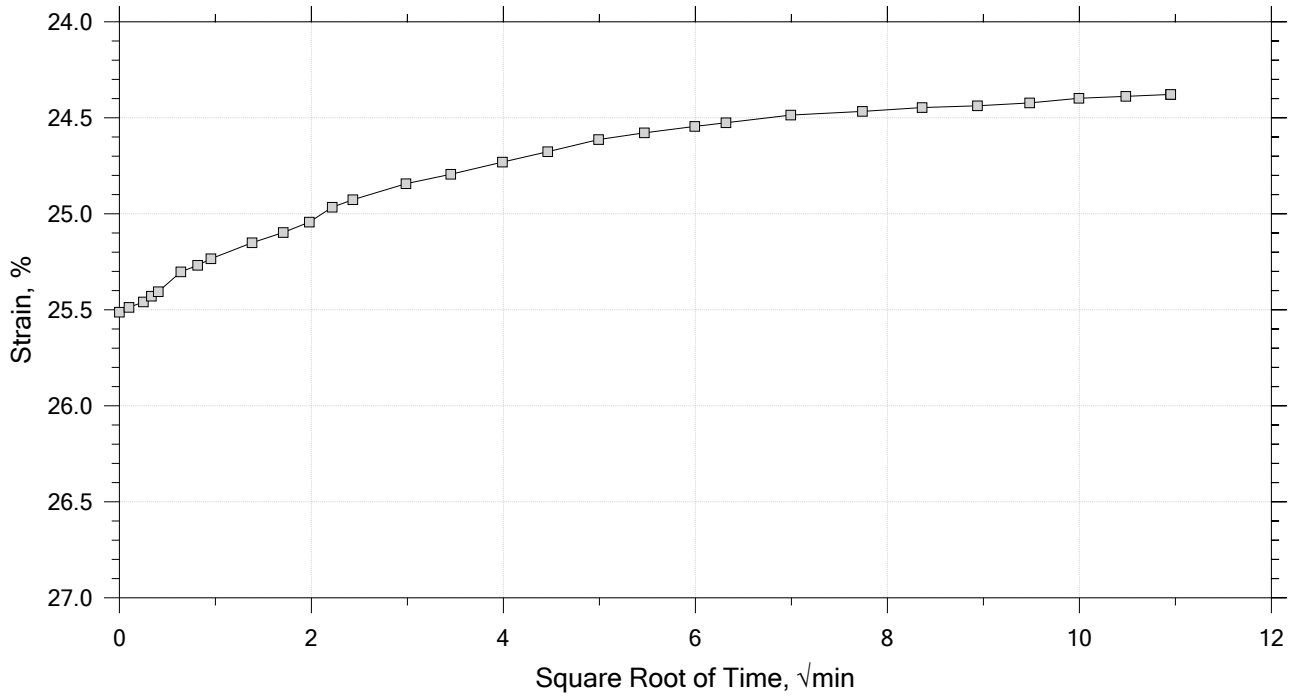


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





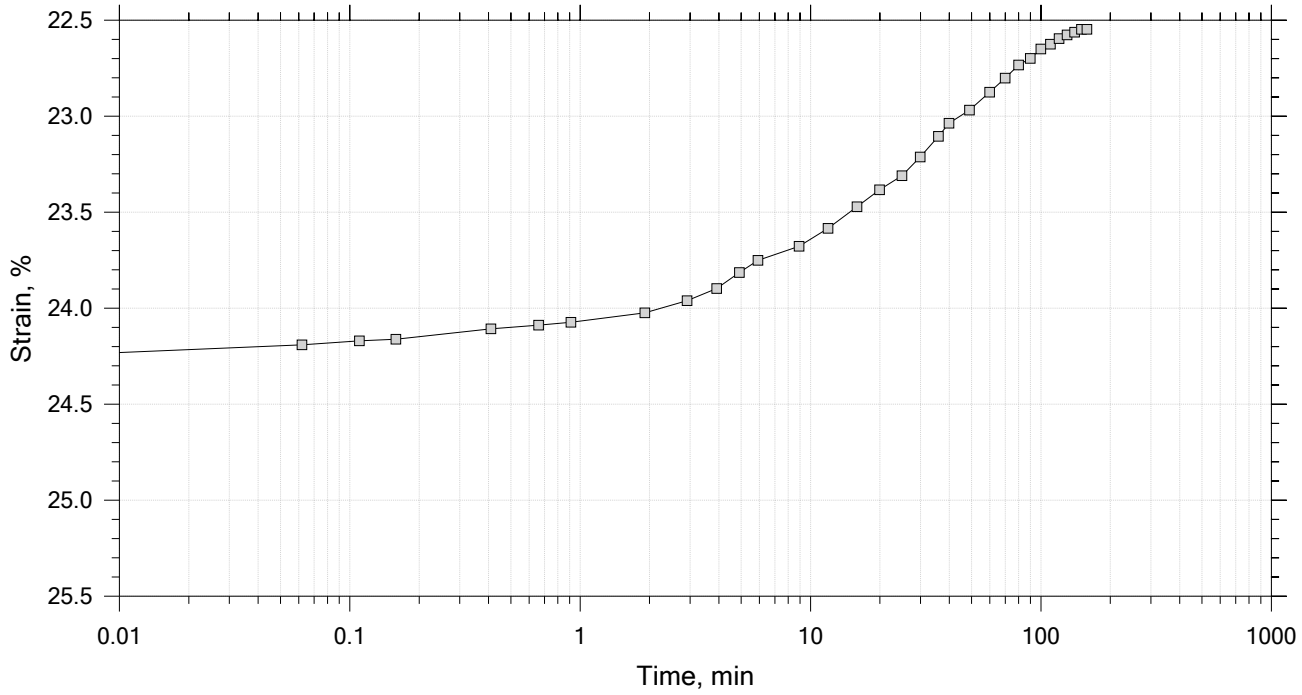
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
Test No.: IP-18-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

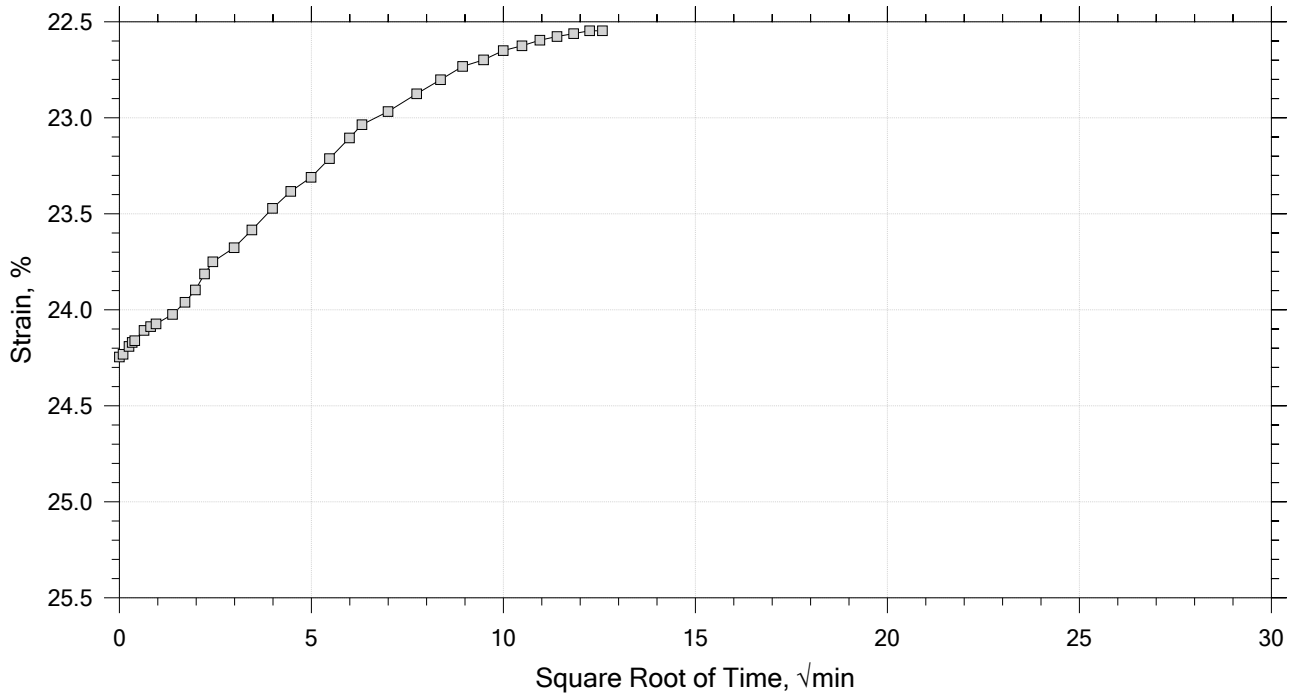
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

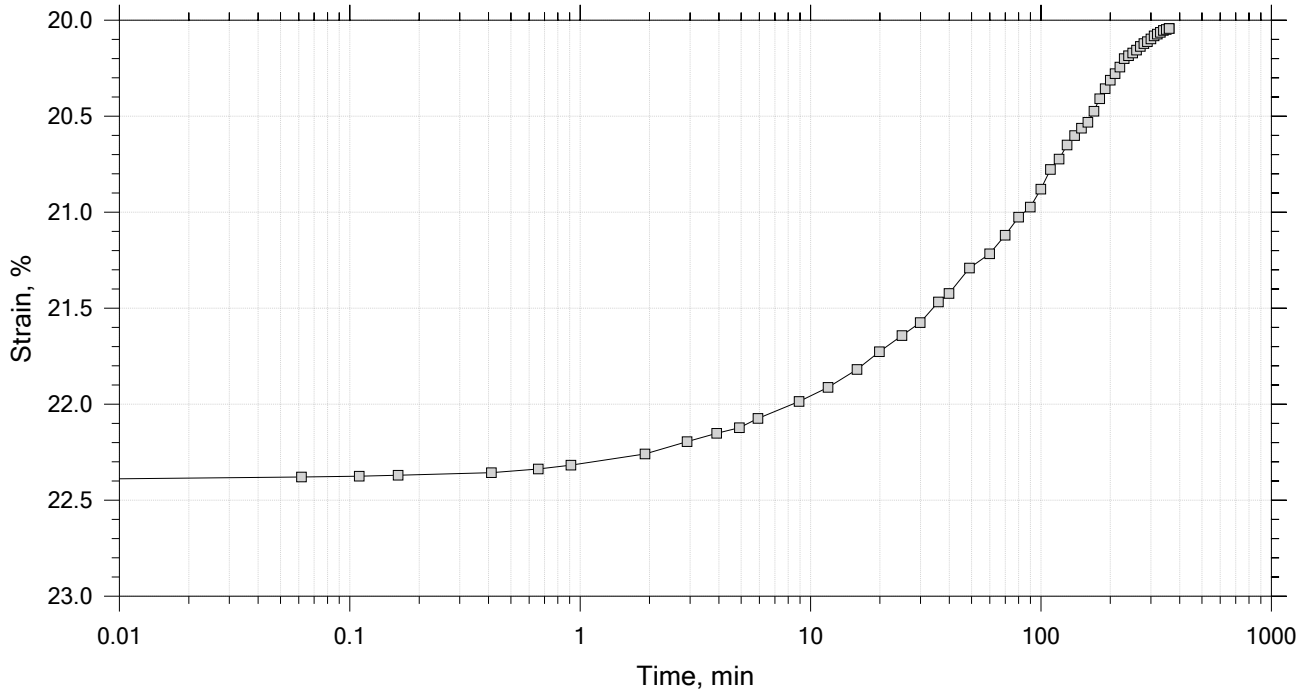


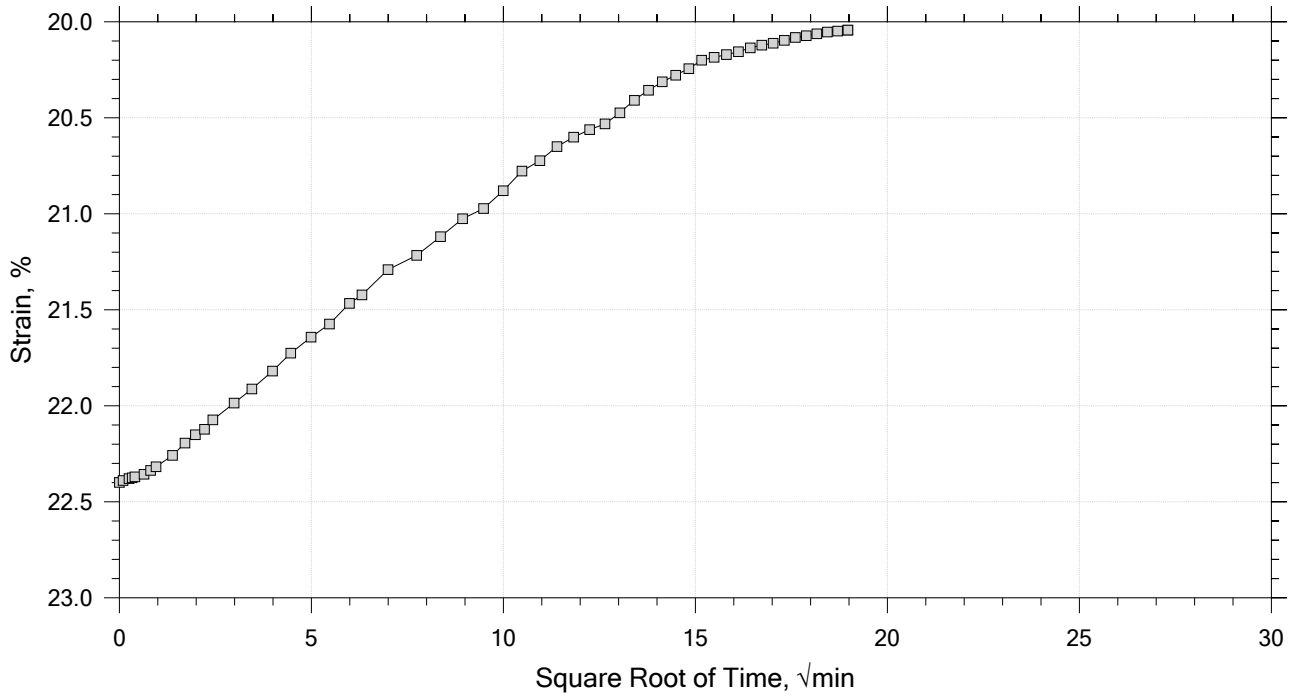


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
Test No.: IP-18-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.78	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.819	Plastic Limit: 22
Final Height: 0.85 in	Final Void Ratio: 0.546	Plasticity Index: 24

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-4442	RING		E3488
Mass Container, gm	8.14	109.7	109.7	8.49
Mass Container + Wet Soil, gm	117.87	261.8	256.64	154.73
Mass Container + Dry Soil, gm	96.82	232.48	232.48	130.69
Mass Dry Soil, gm	88.68	122.78	122.78	122.2
Water Content, %	23.74	23.88	19.67	19.67
Void Ratio	---	0.82	0.55	---
Degree of Saturation, %	---	80.93	100.00	---
Dry Unit Weight, pcf	---	95.291	112.11	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
	Test No.: IP-18-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay		
	Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0644	0.01062	0.800	1.06	51.100	6.84e-05	1.65e-01	2.11e-04
2	0.125	0.01853	0.785	1.85	19.168	1.79e-04	1.30e-01	4.37e-04
3	0.250	0.03078	0.763	3.08	98.103	3.43e-05	9.80e-02	6.29e-05
4	0.500	0.04689	0.734	4.69	32.323	1.01e-04	6.44e-02	1.22e-04
5	1.00	0.06805	0.695	6.81	61.586	5.10e-05	4.23e-02	4.04e-05
6	2.00	0.09320	0.650	9.32	8.131	3.67e-04	2.51e-02	1.73e-04
7	4.00	0.1276	0.587	12.8	7.378	3.79e-04	1.72e-02	1.22e-04
8	8.00	0.1756	0.500	17.6	16.066	1.58e-04	1.20e-02	3.56e-05
9	16.0	0.2172	0.424	21.7	23.853	9.57e-05	5.19e-03	9.30e-06
10	32.0	0.2605	0.345	26.0	25.260	8.10e-05	2.70e-03	4.10e-06
11	16.0	0.2574	0.351	25.7	4.150	4.68e-04	1.94e-04	1.70e-06
12	4.00	0.2438	0.376	24.4	17.688	1.12e-04	1.13e-03	2.38e-06
13	1.00	0.2255	0.409	22.5	85.761	2.41e-05	6.10e-03	2.76e-06
14	0.250	0.2004	0.455	20.0	304.134	7.20e-06	3.34e-02	4.50e-06

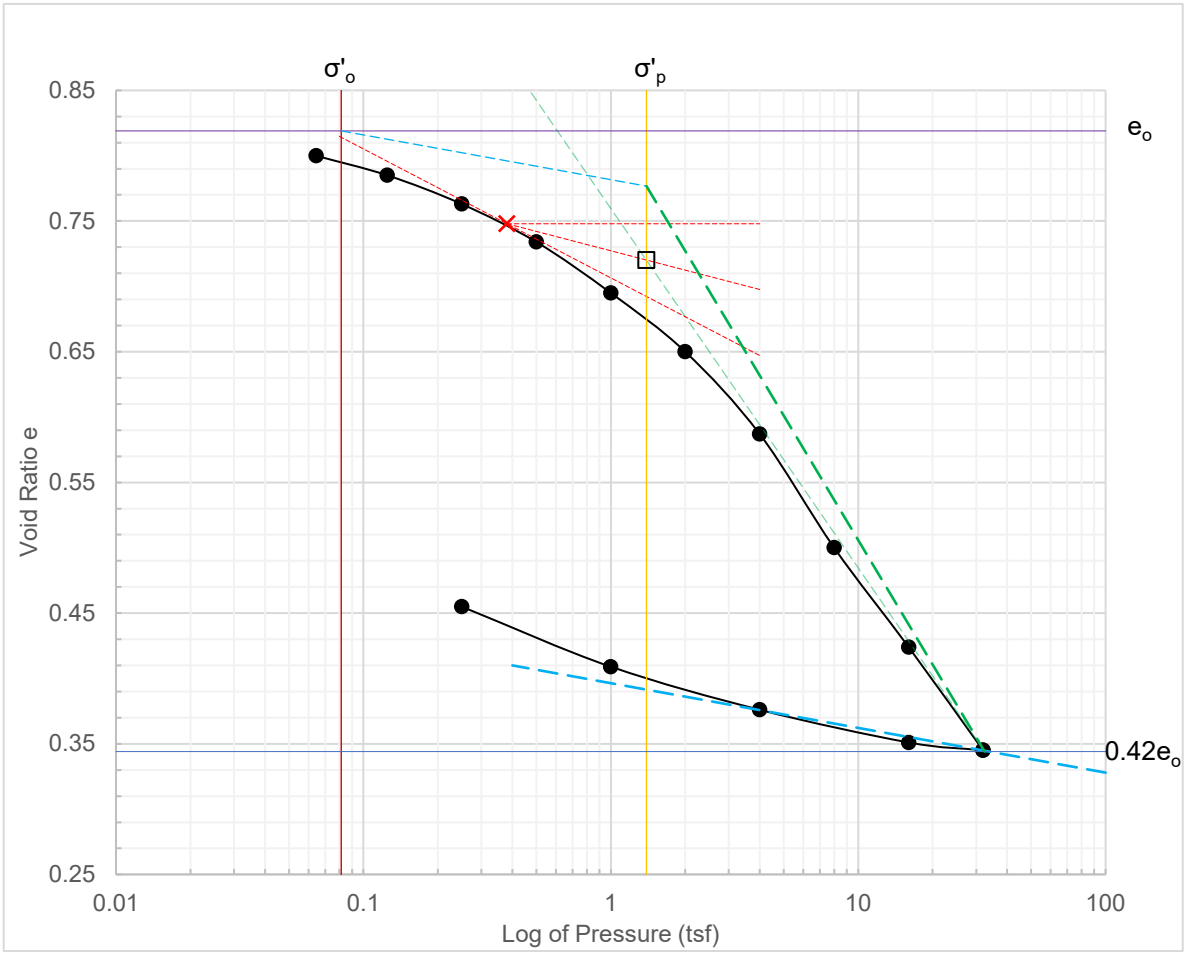
GeoTesting EXPRESS

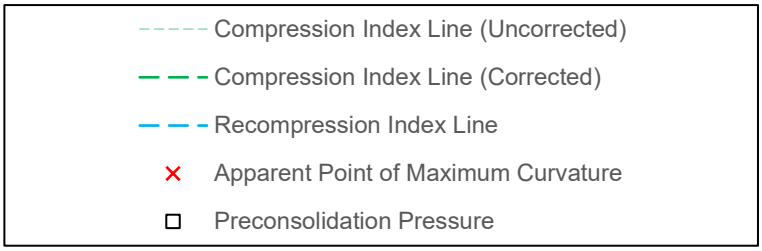
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.3-1.4
Test No.: IP-18-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay		
Remarks: System LTII-TX-012, Swell Pressure = 0.0644 tsf		
Displacement at End of Increment		

Boring: B-4.16A

Depth: 1.3'-1.4'

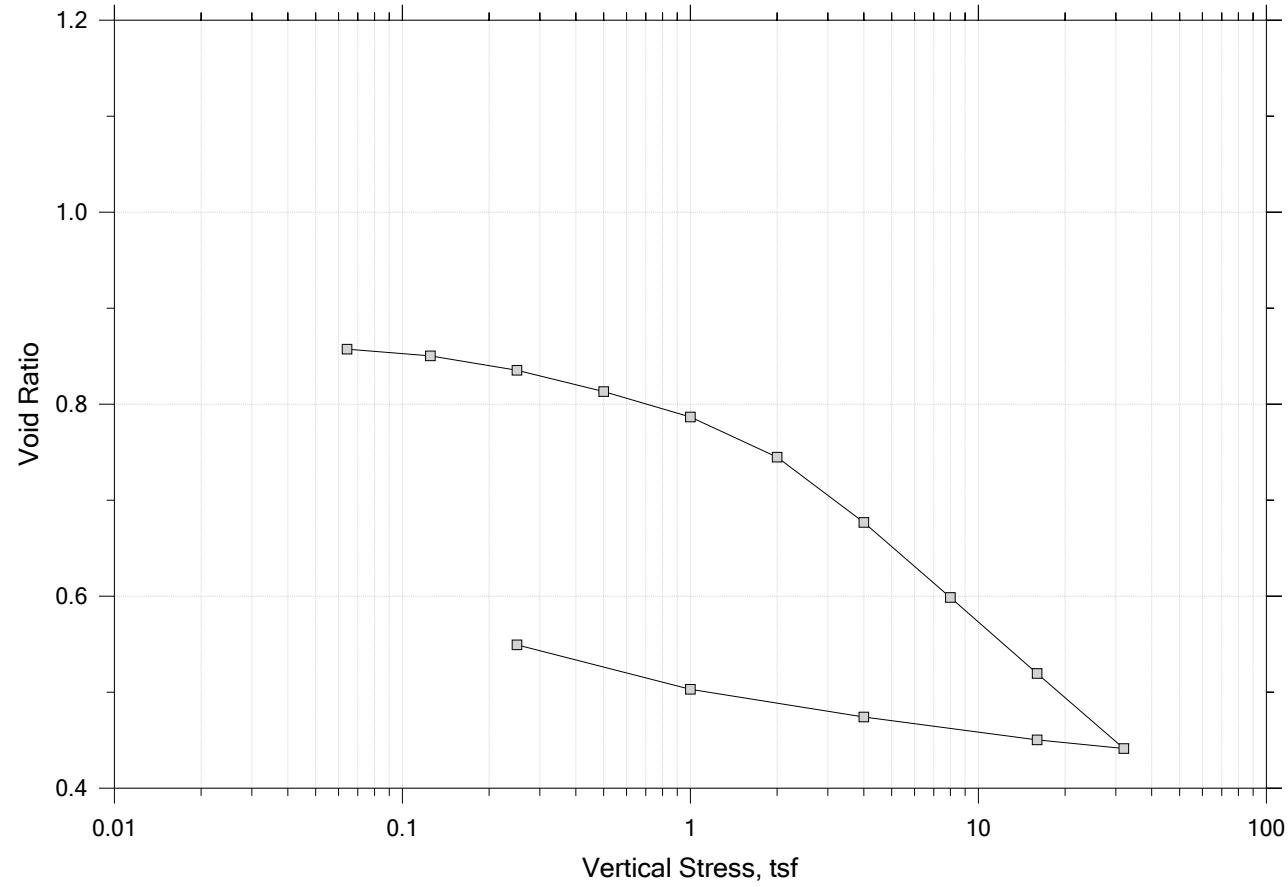
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.081
Preconsolidation Pressure, σ'_p (tsf) = 1.39
Compression Index, C_c = 0.32
Recompression Index, C_r = 0.034

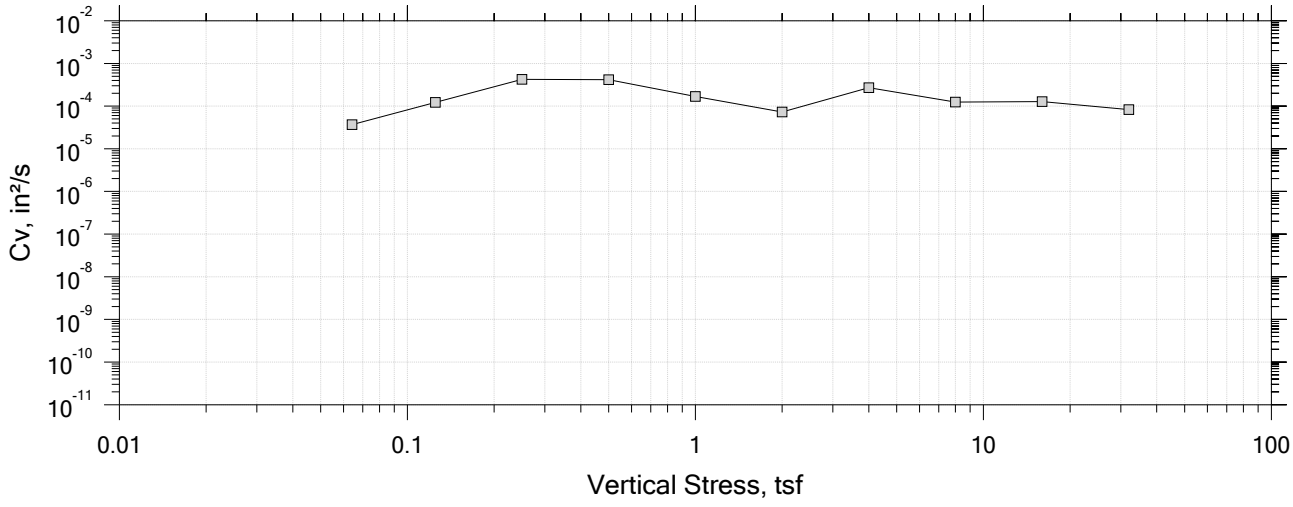




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

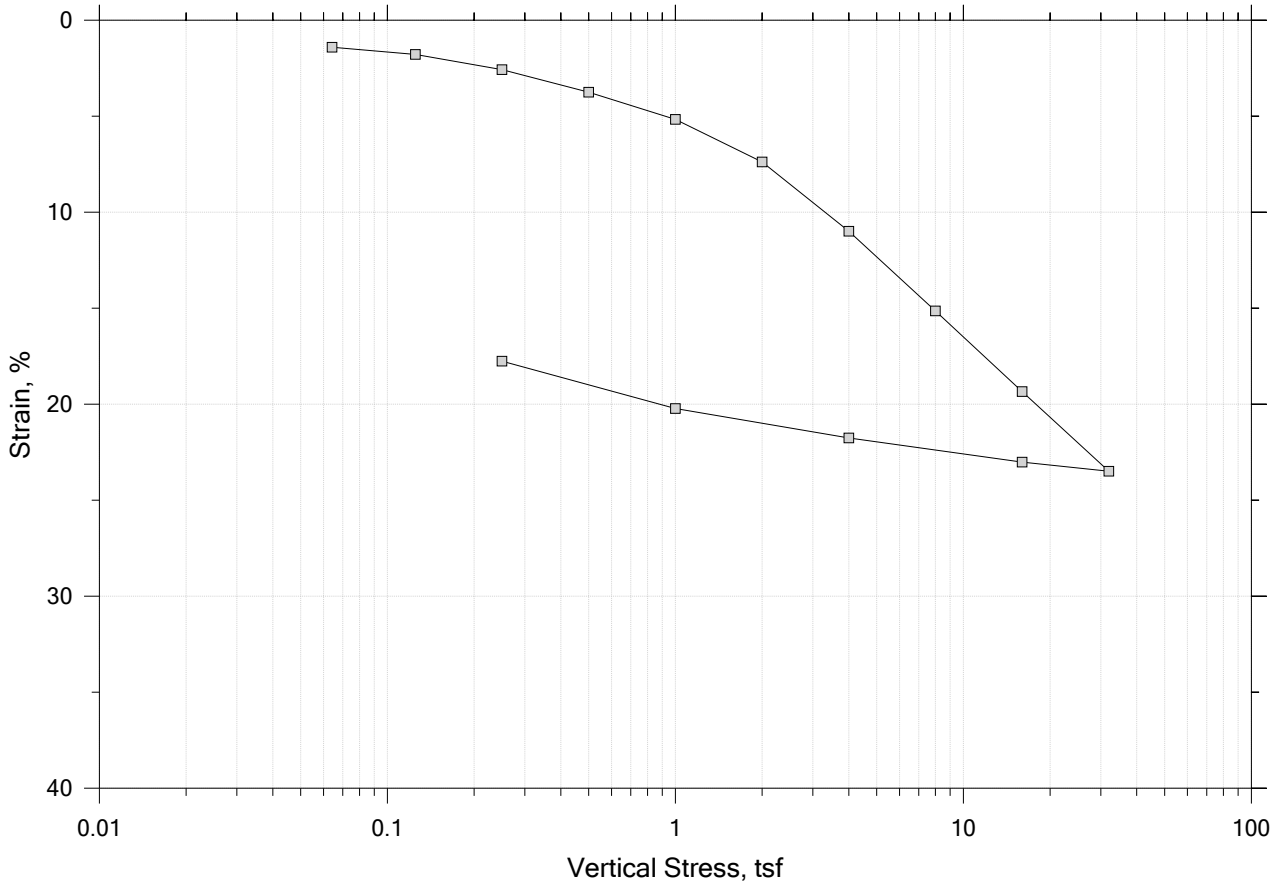


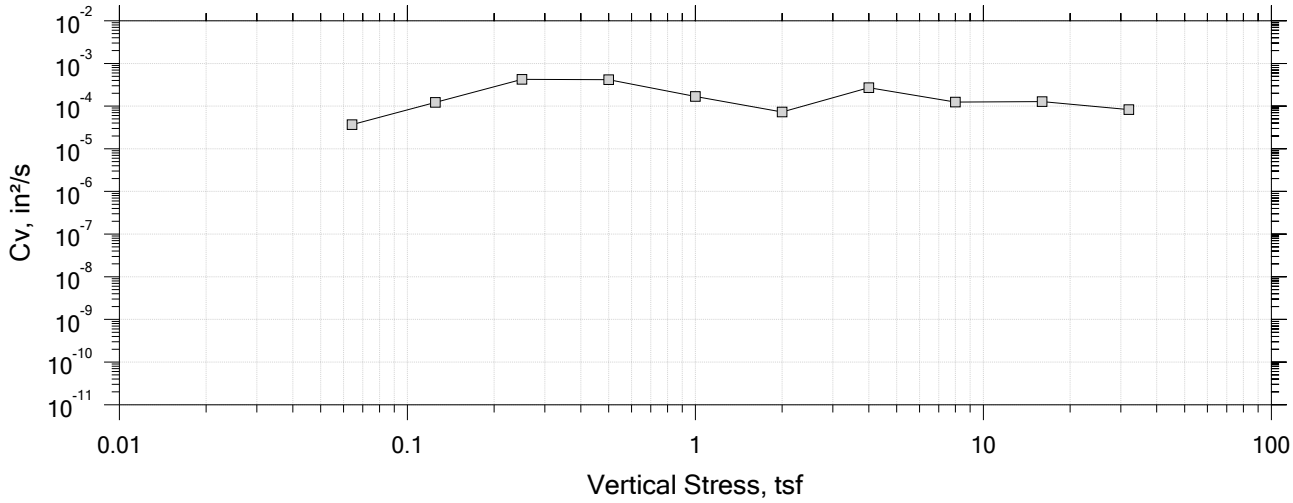


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

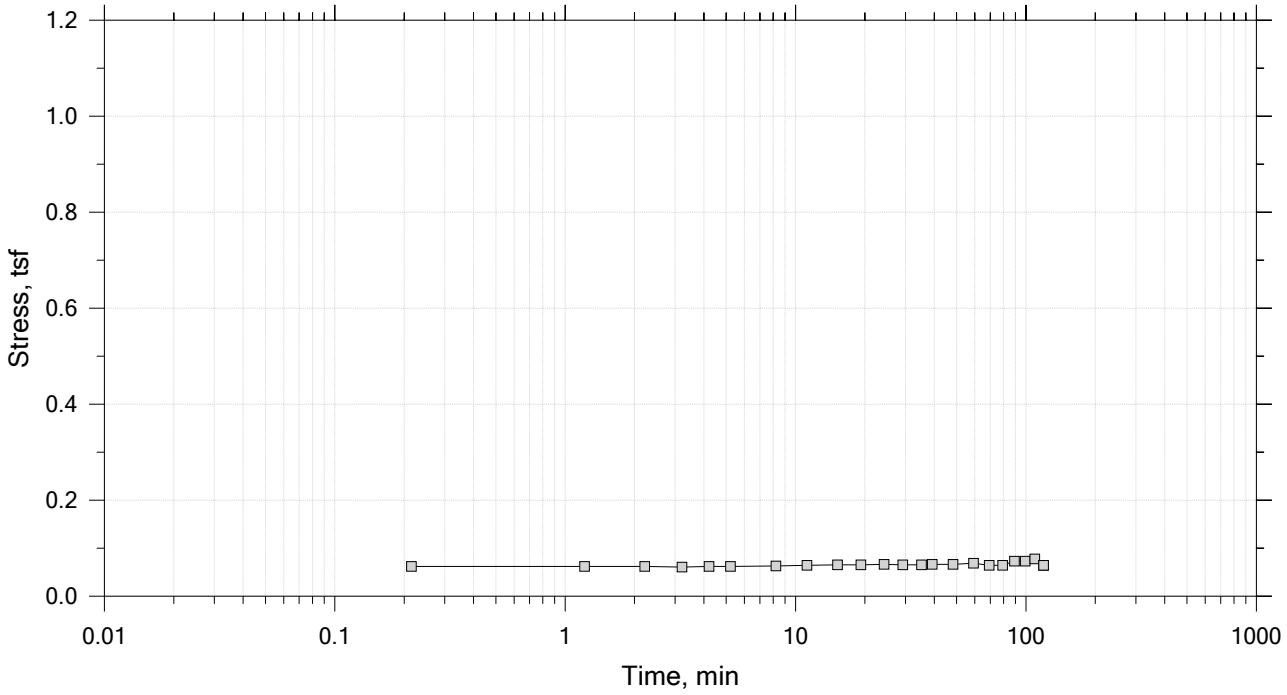


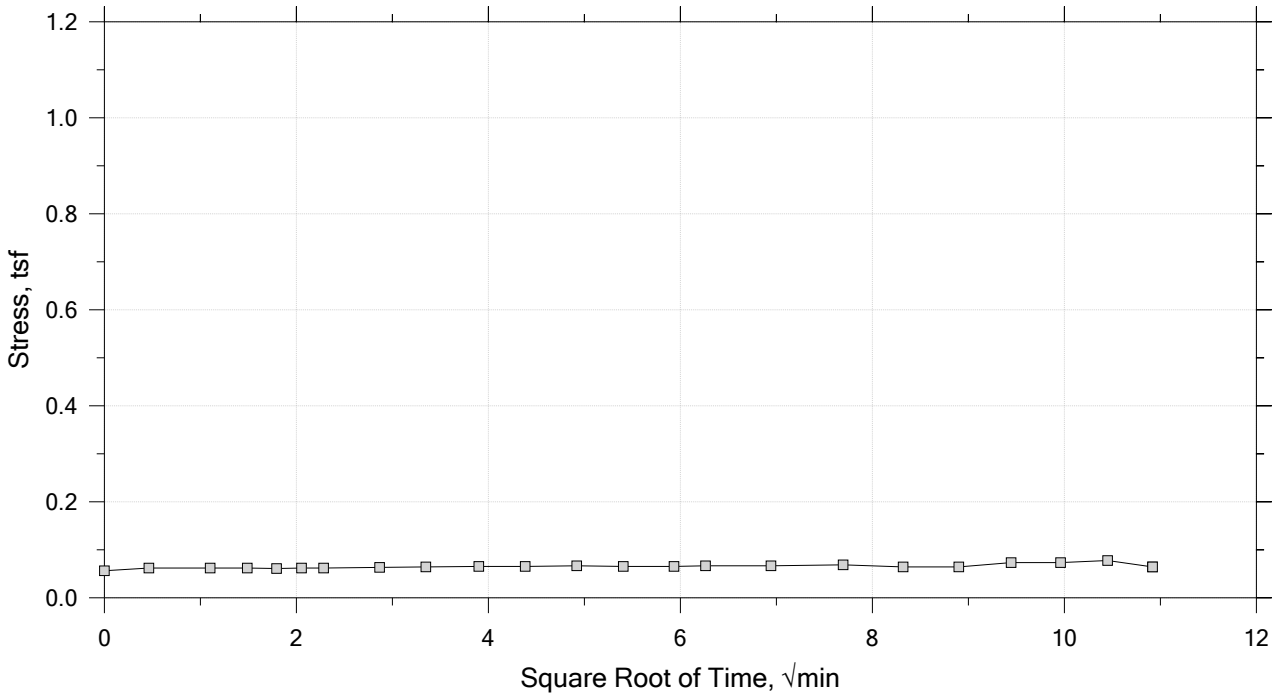


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0642 tsf

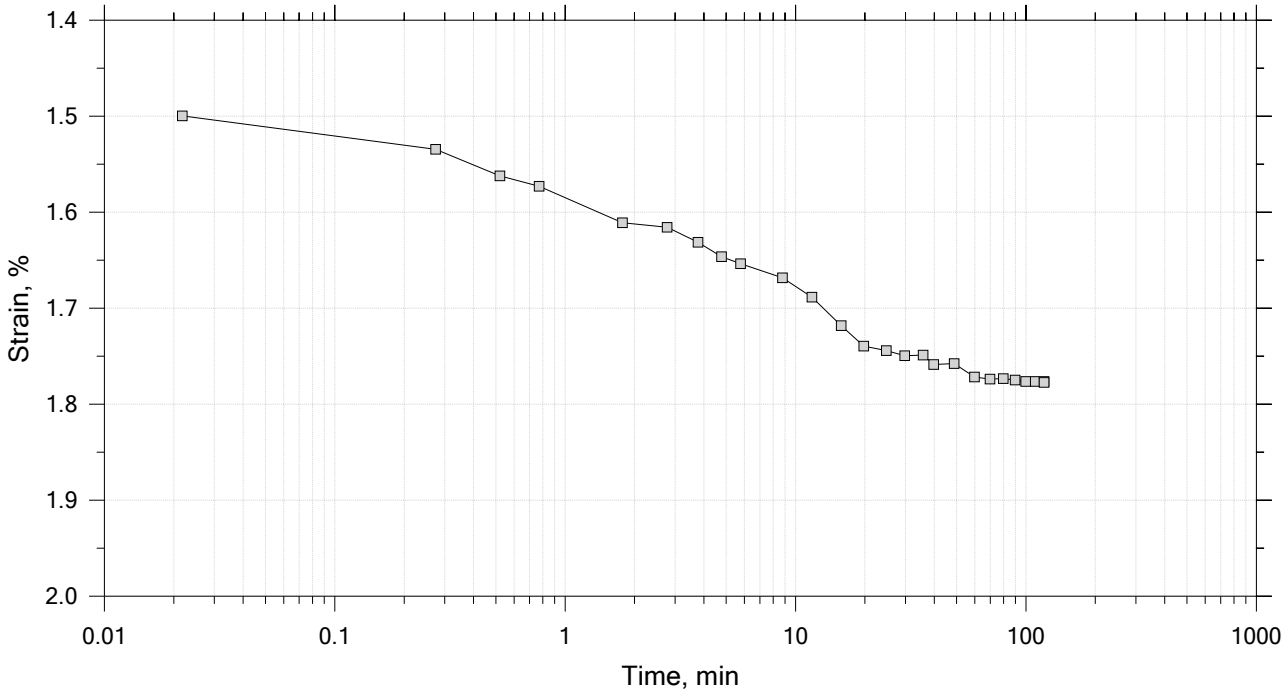


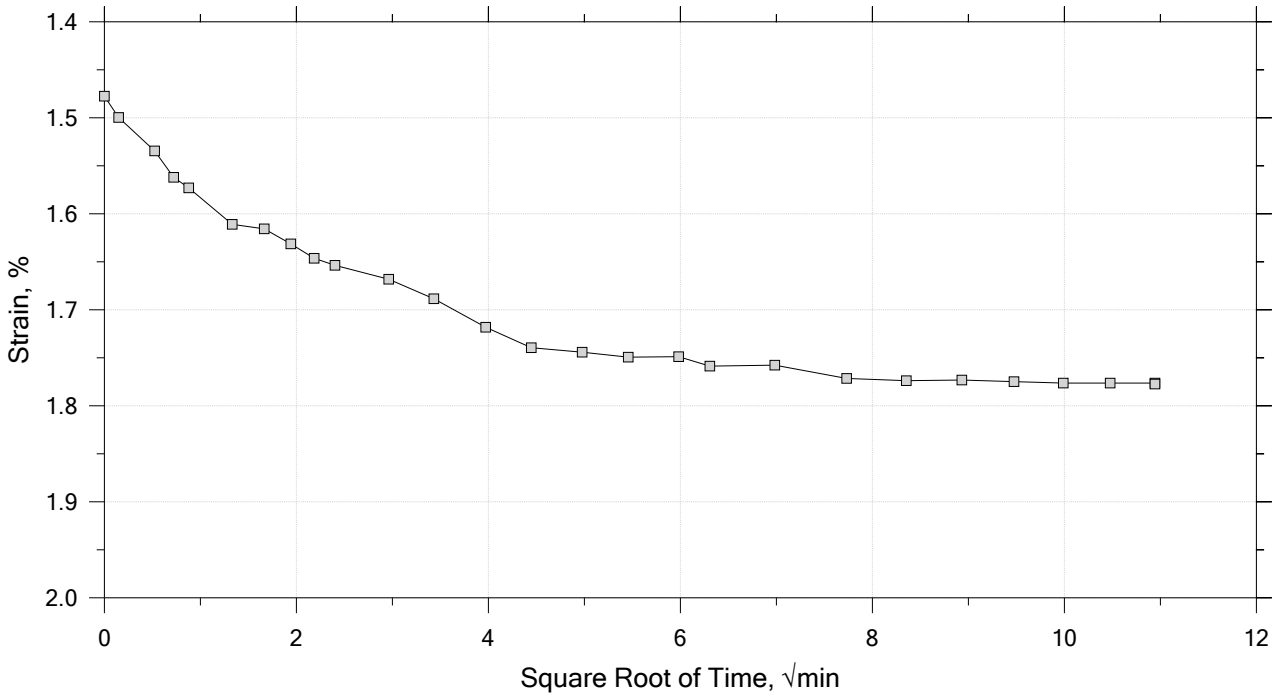


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

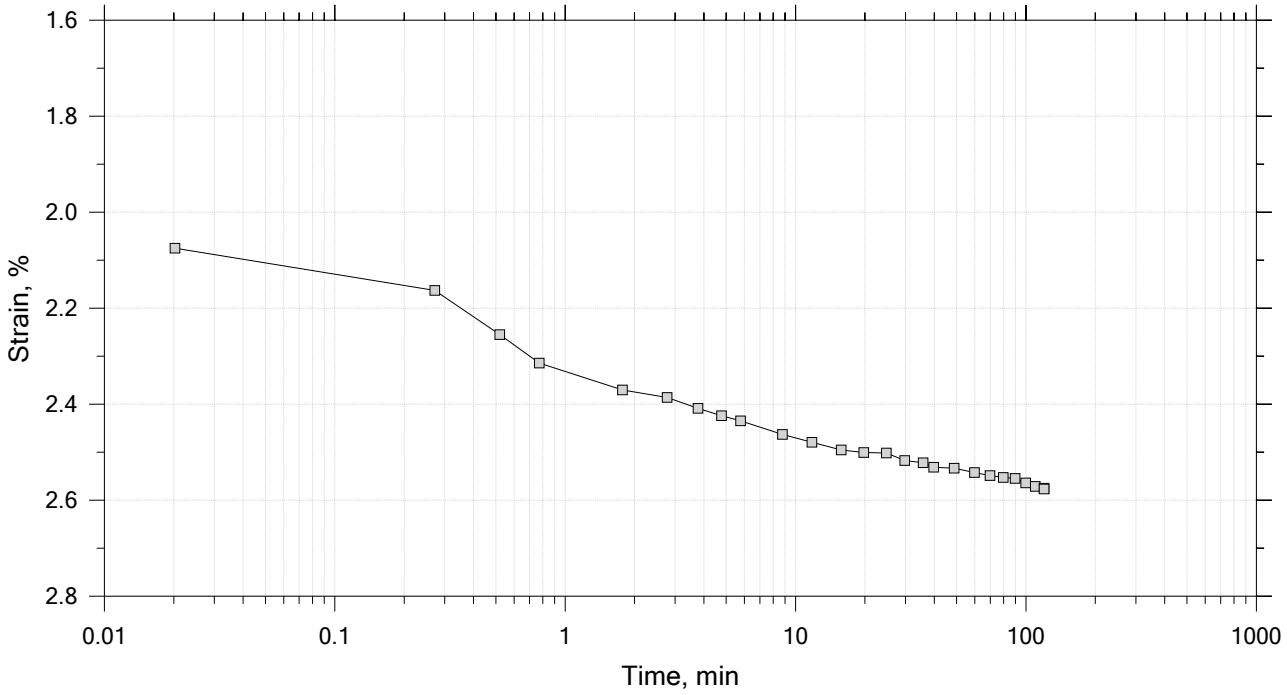


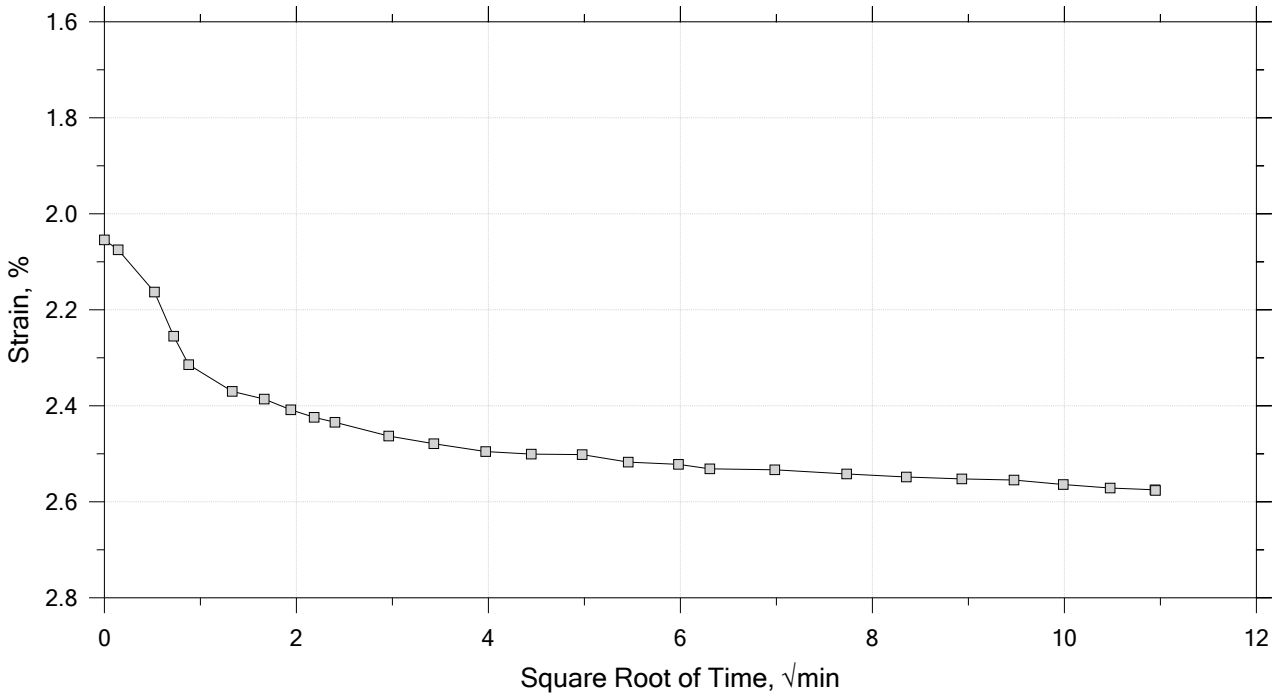


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





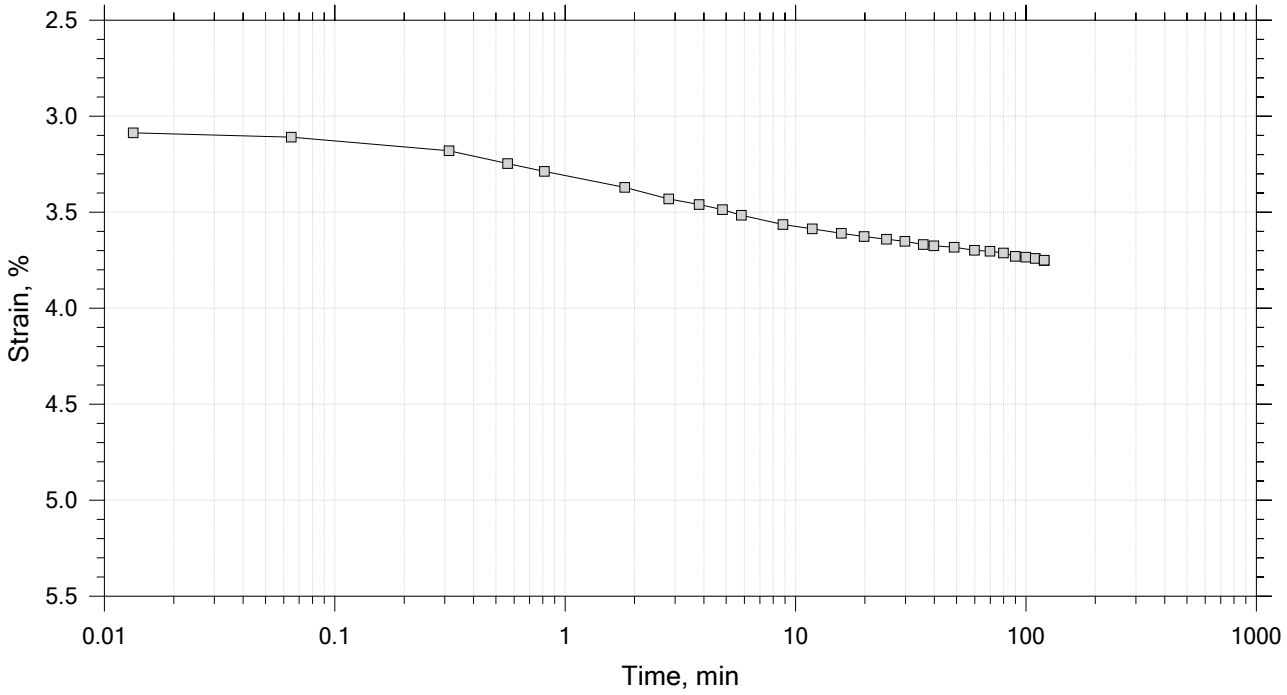
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

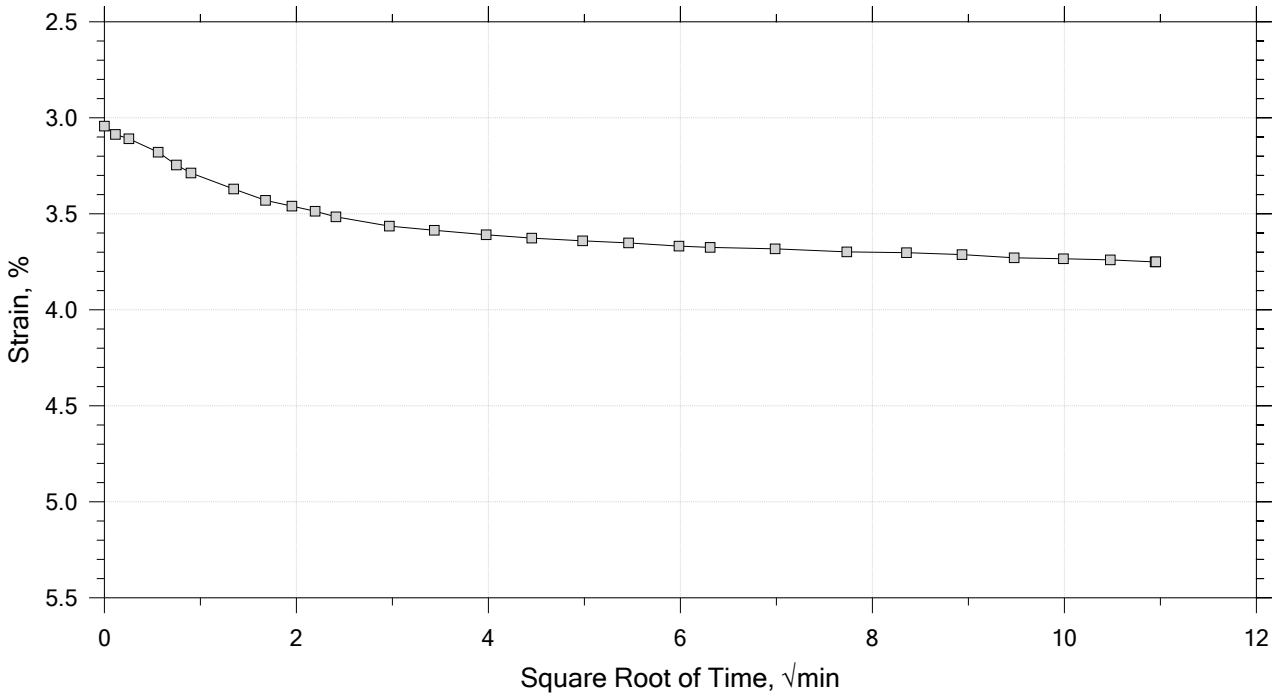
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





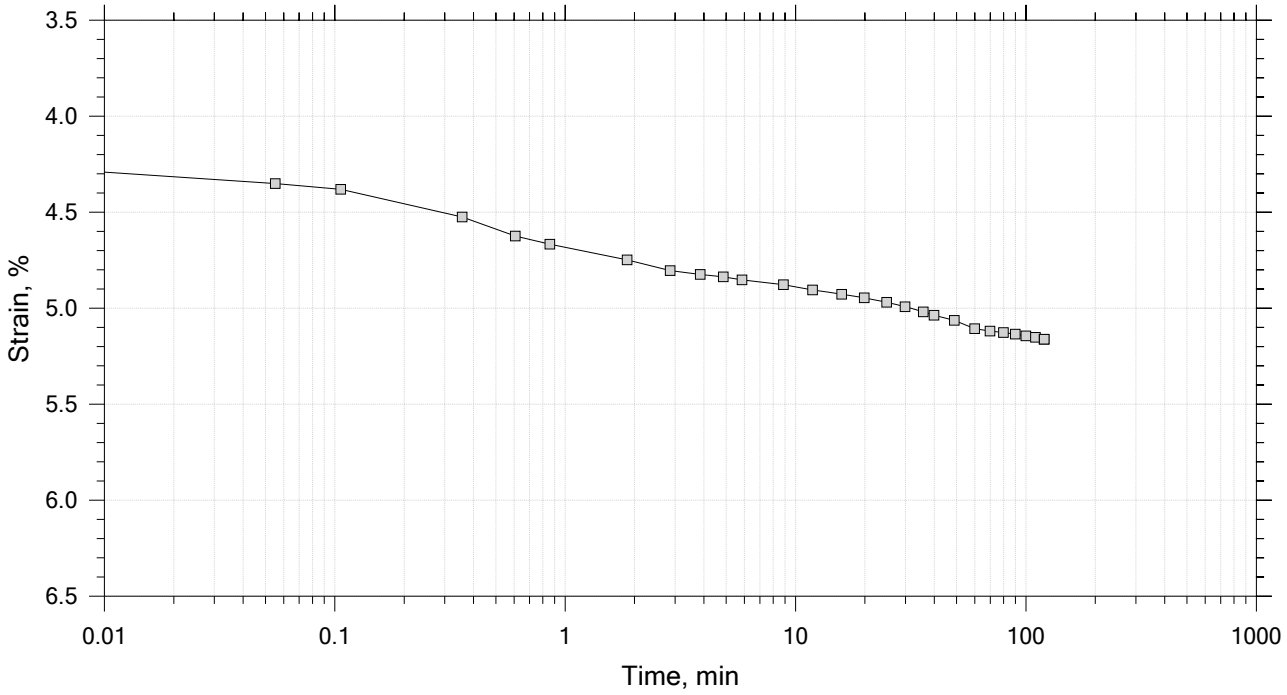
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

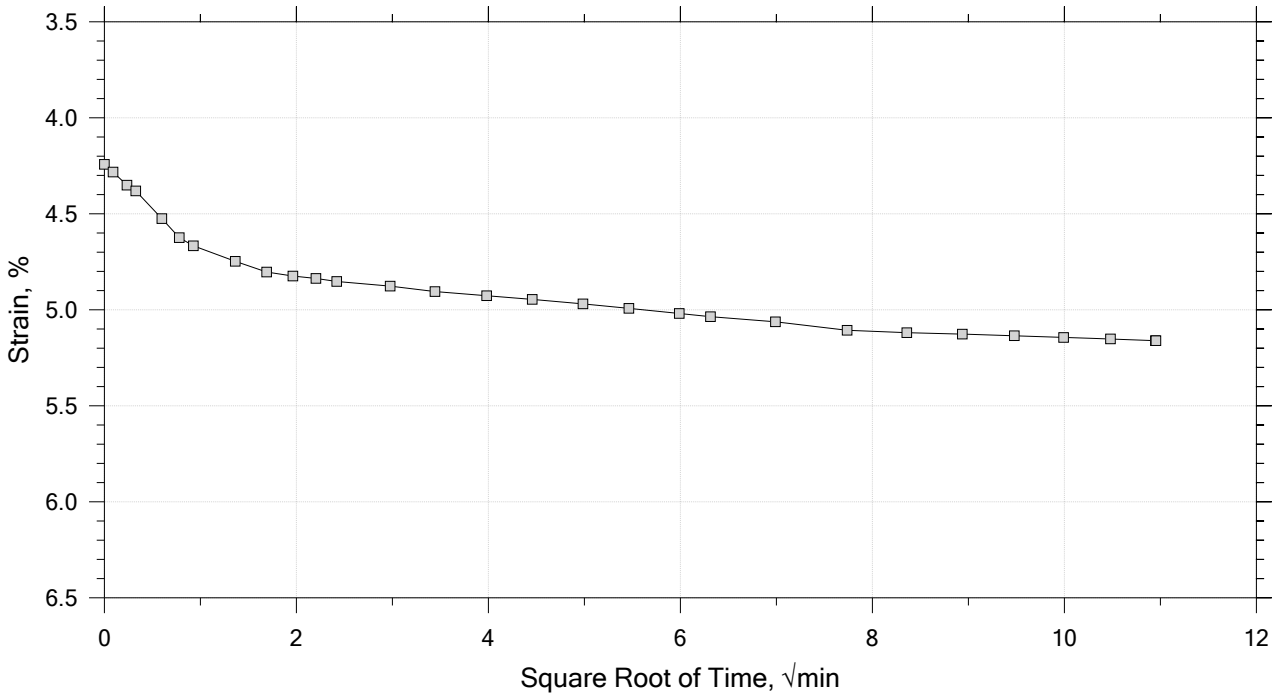
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





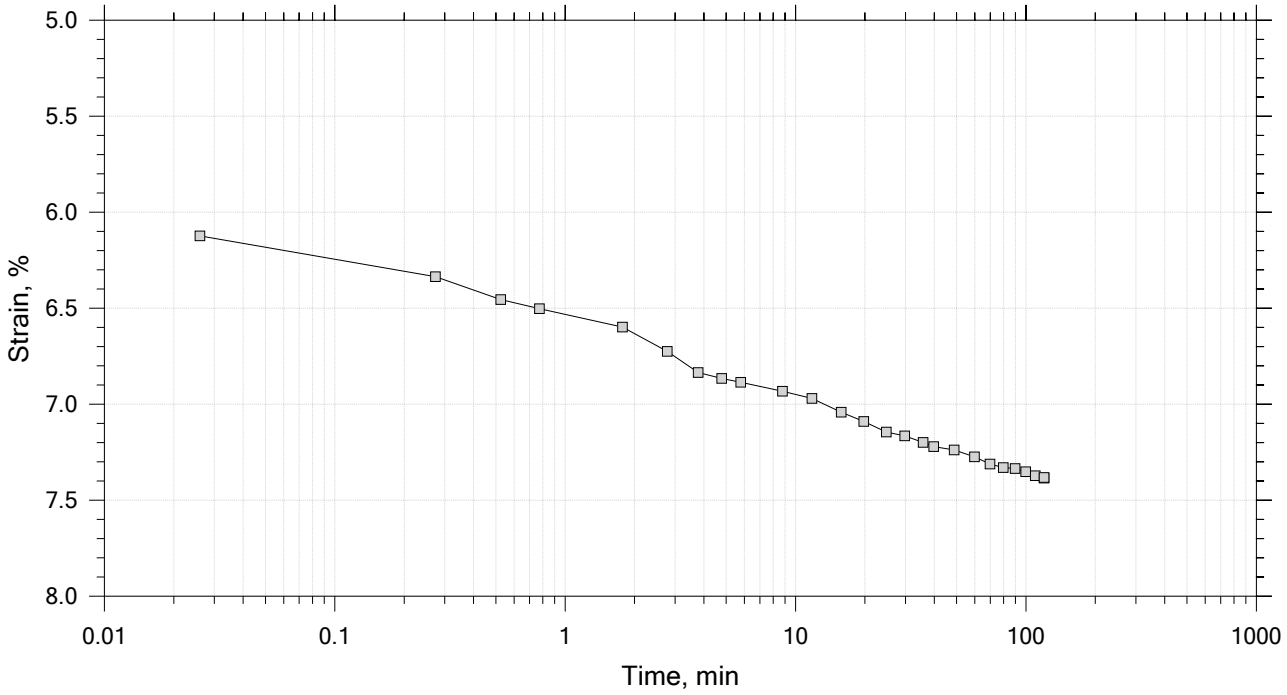
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

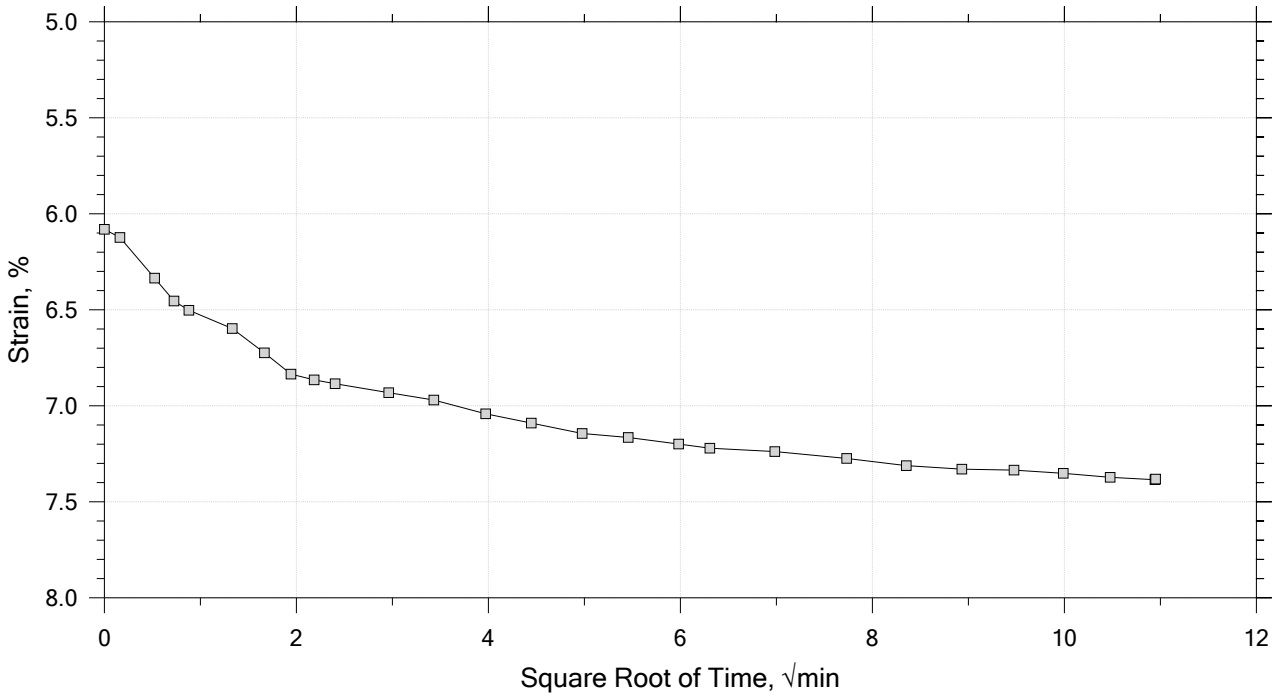
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





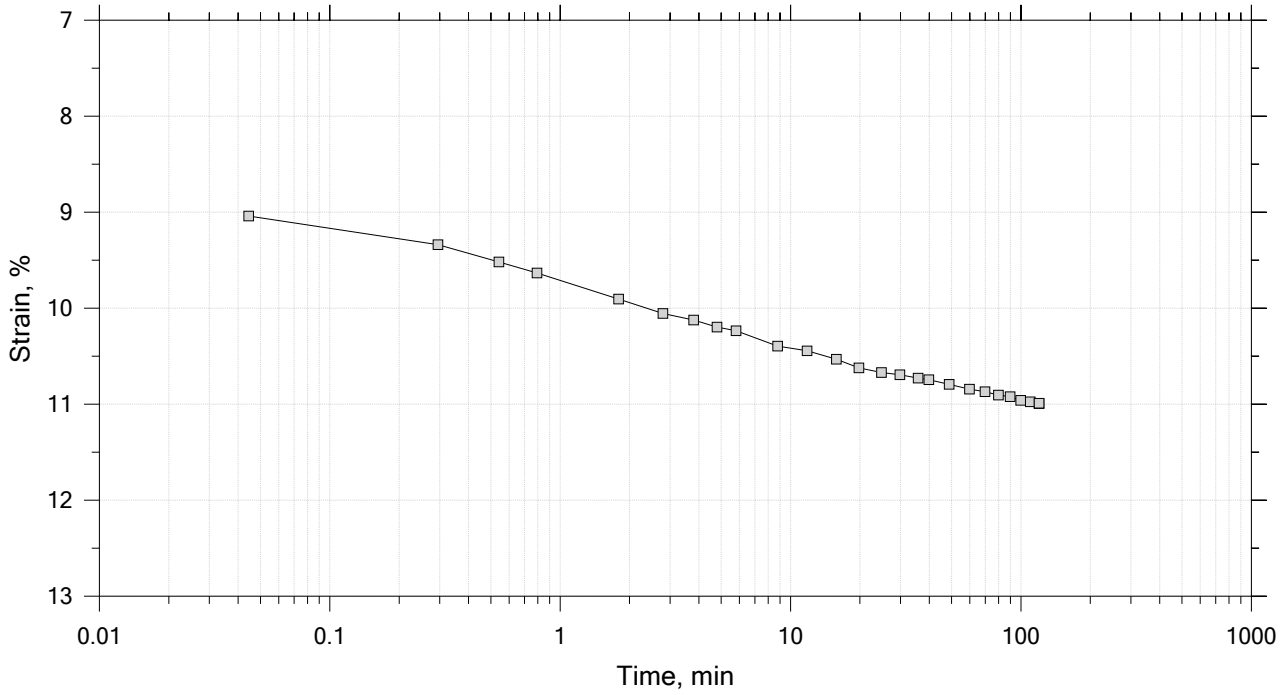
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

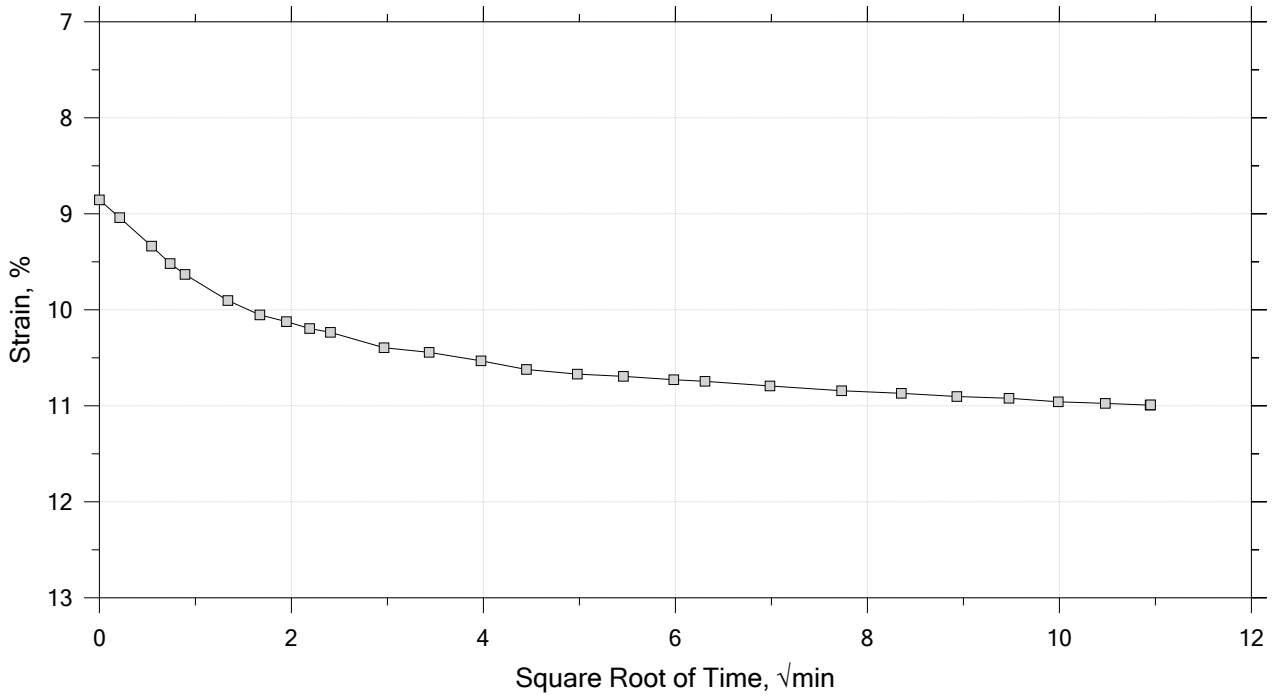
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





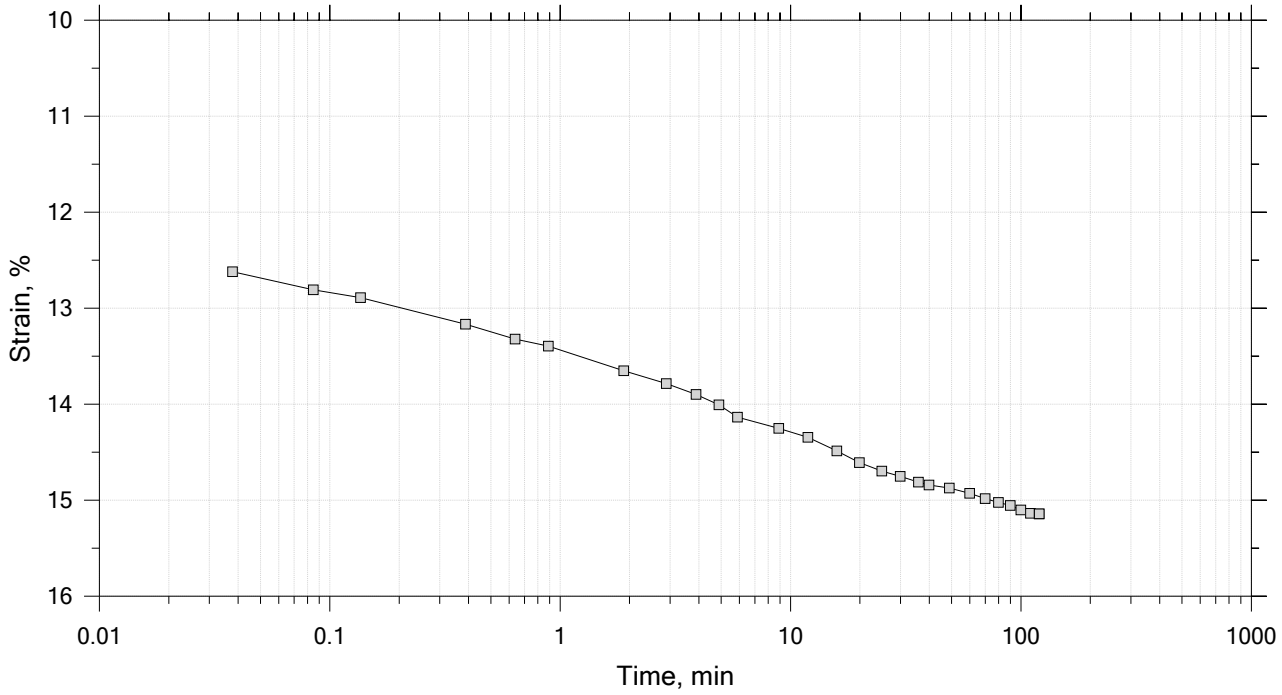
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

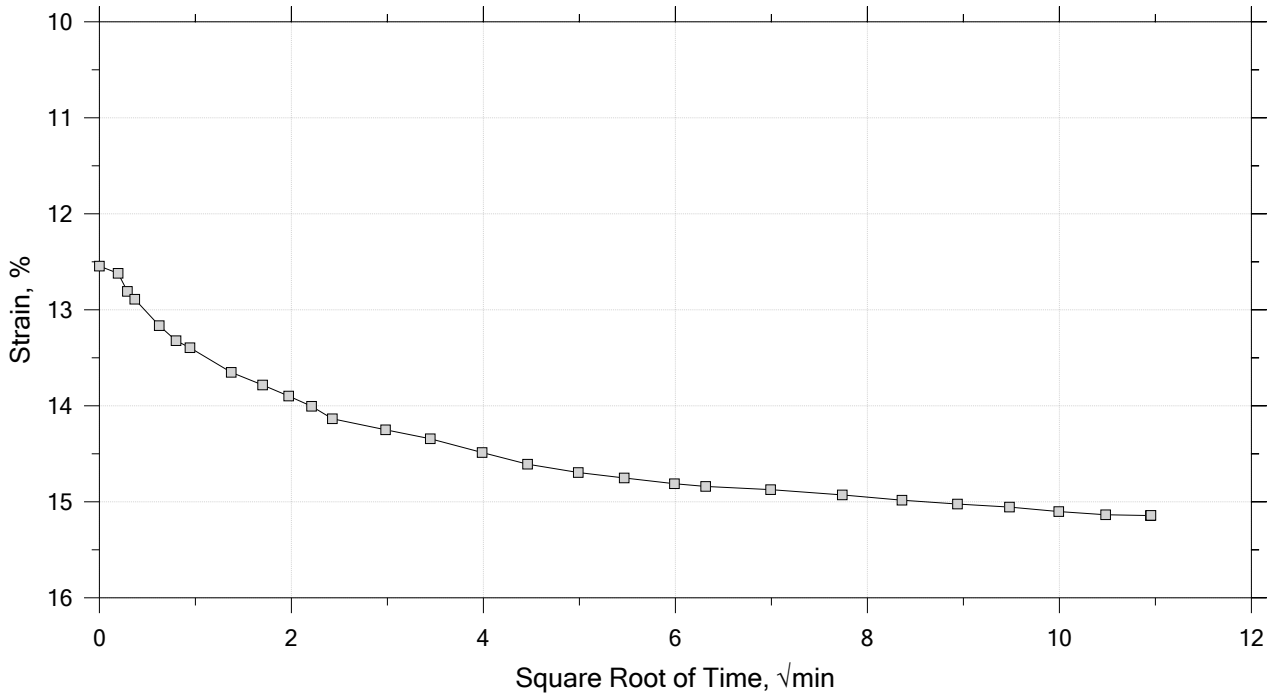
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





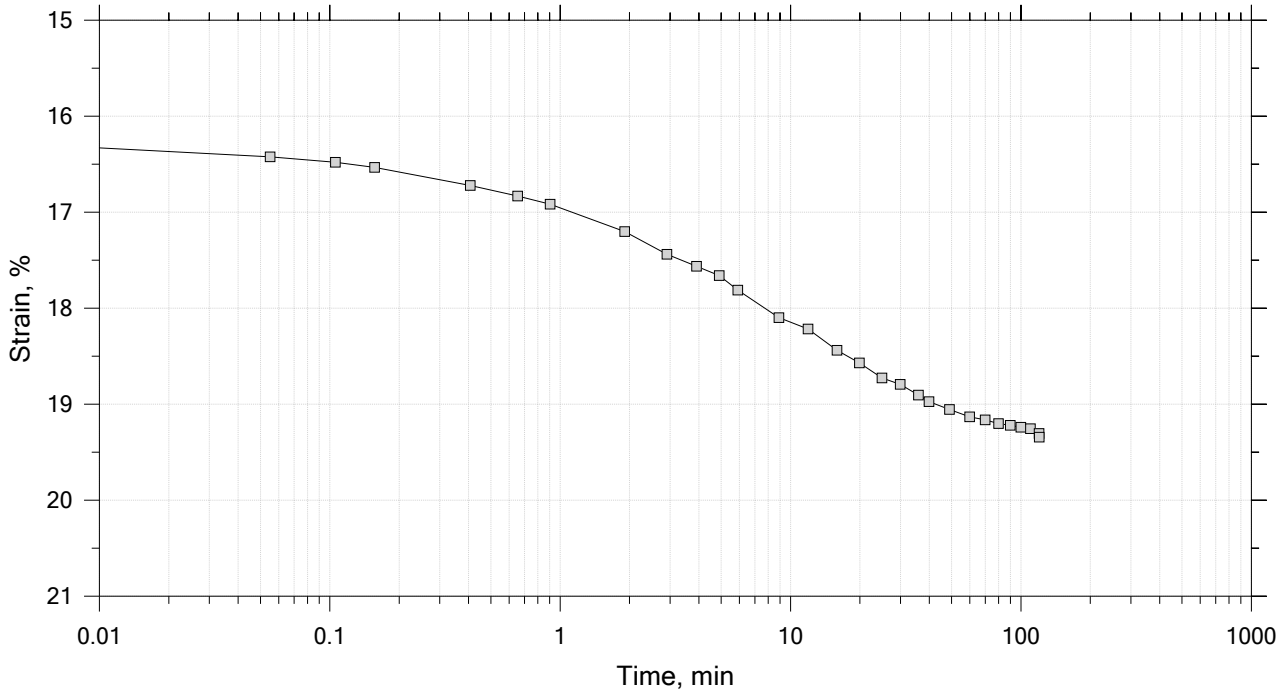
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

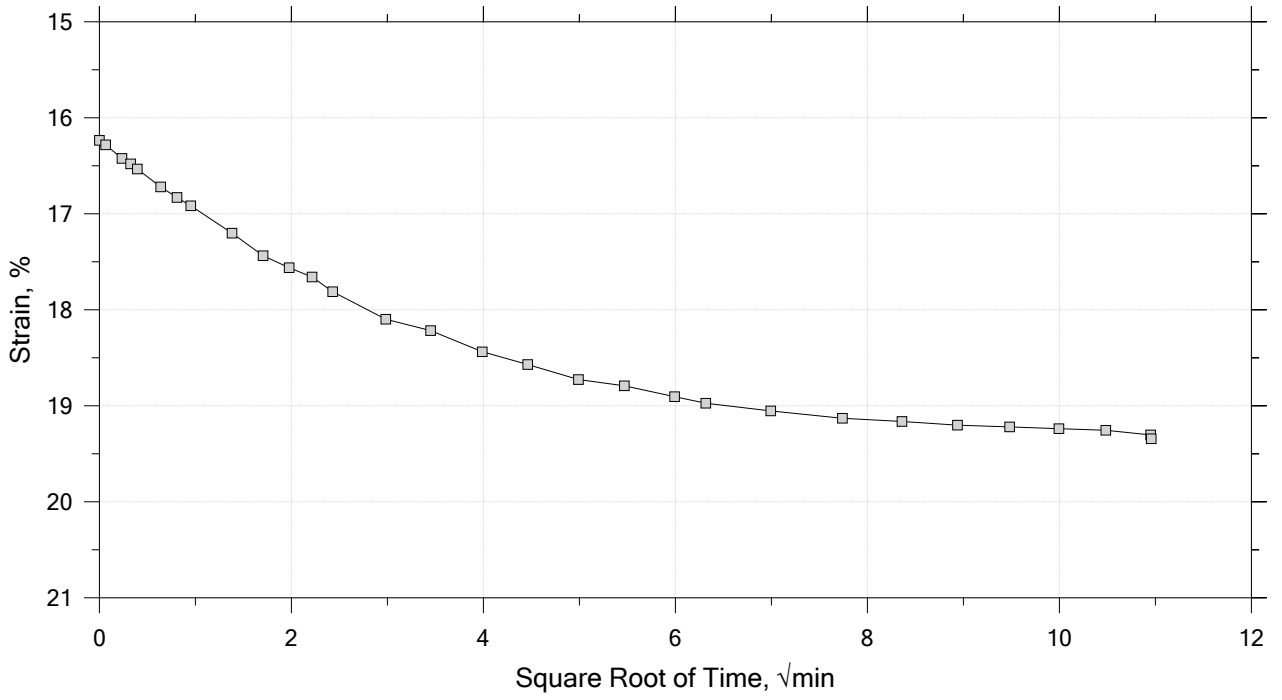
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

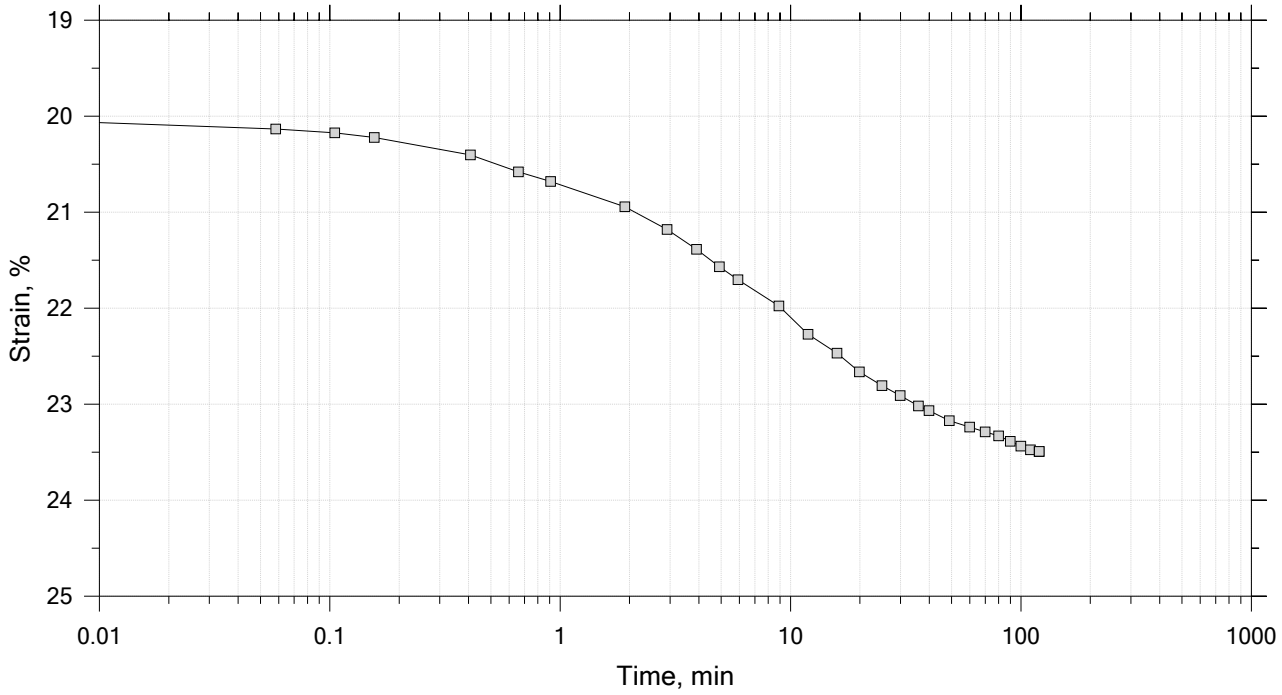


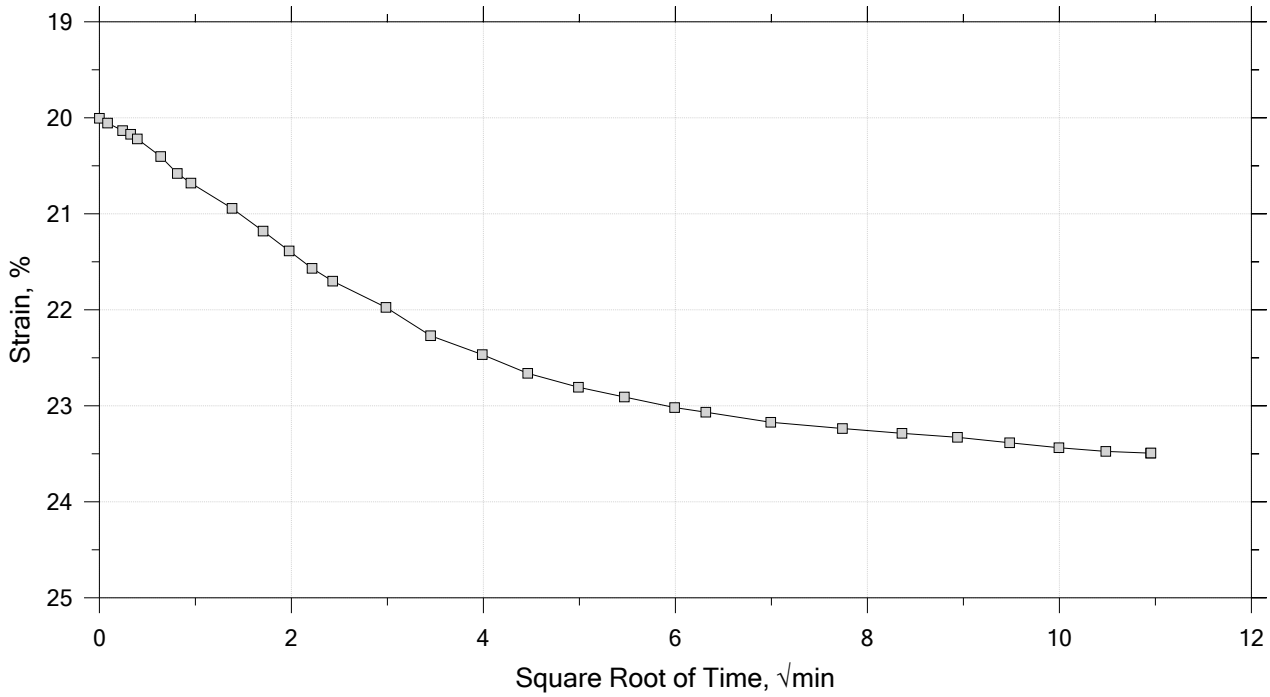


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

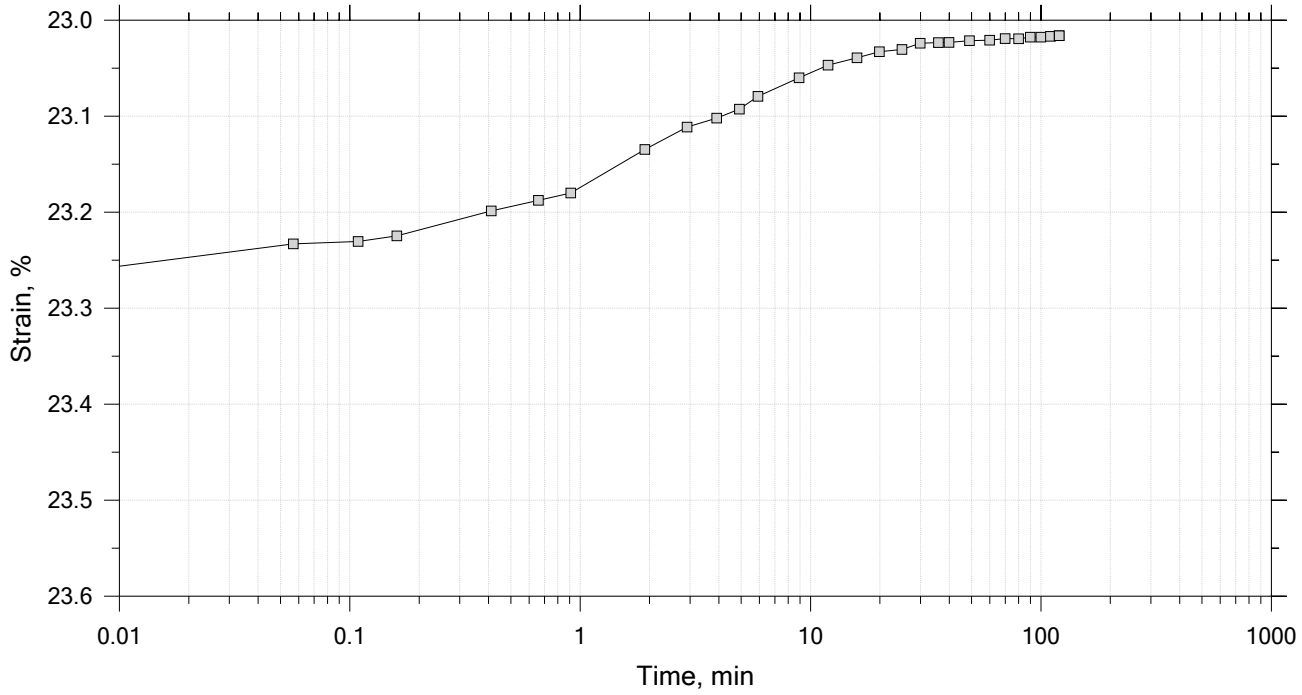


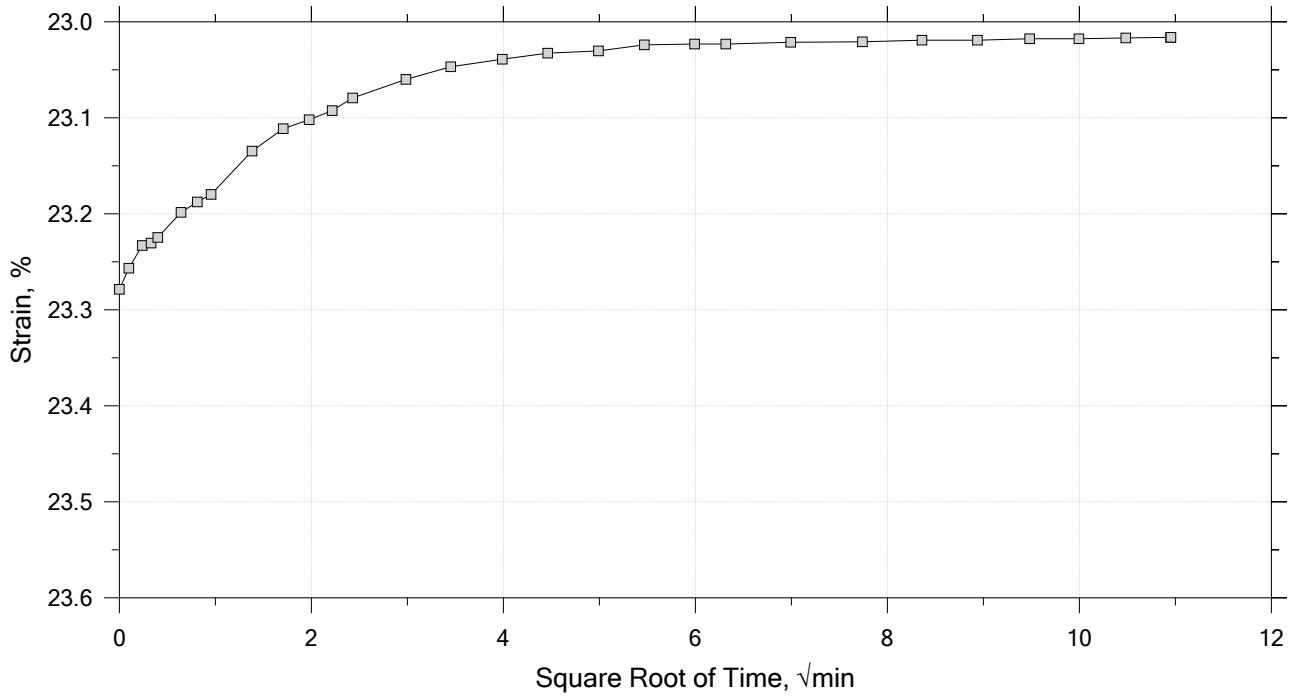


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf





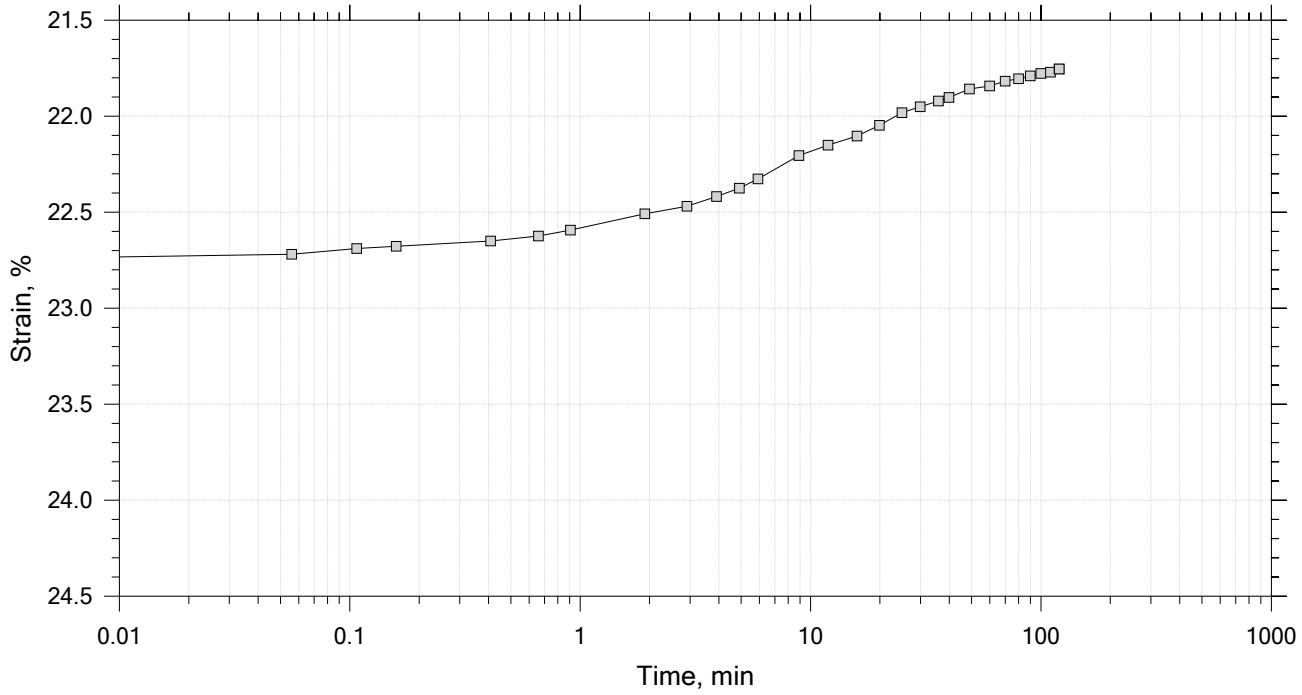
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

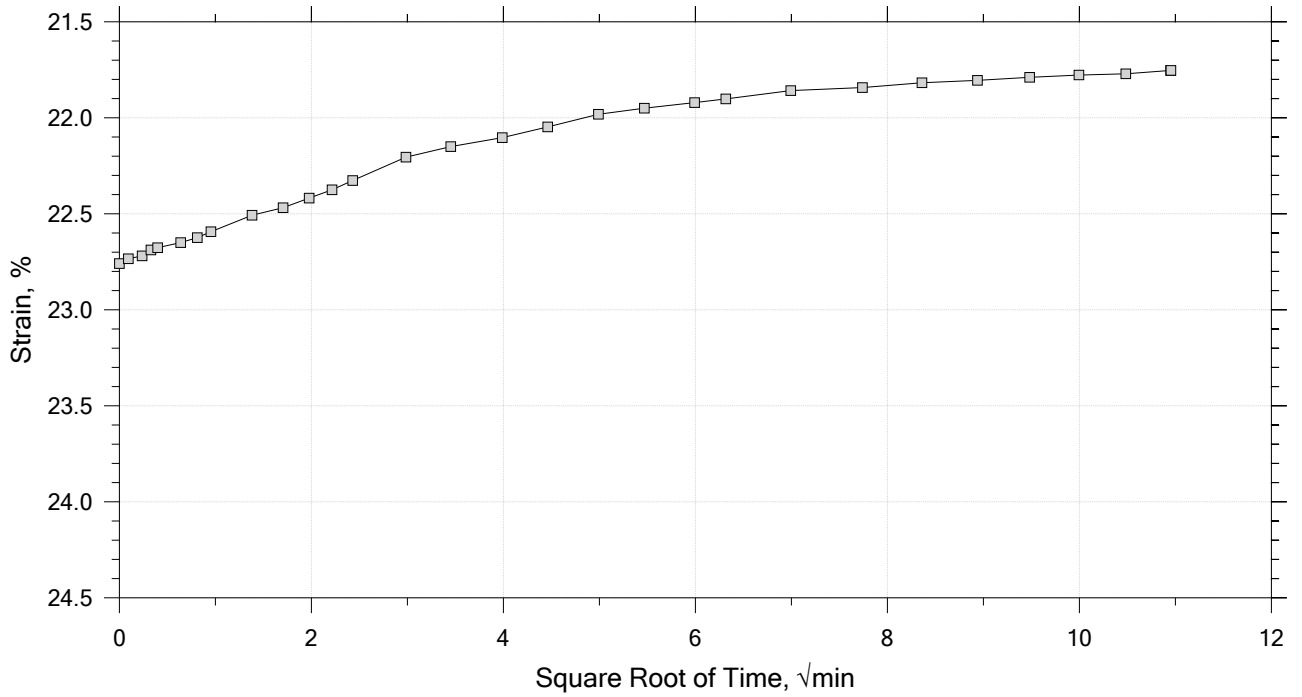
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 4 tsf

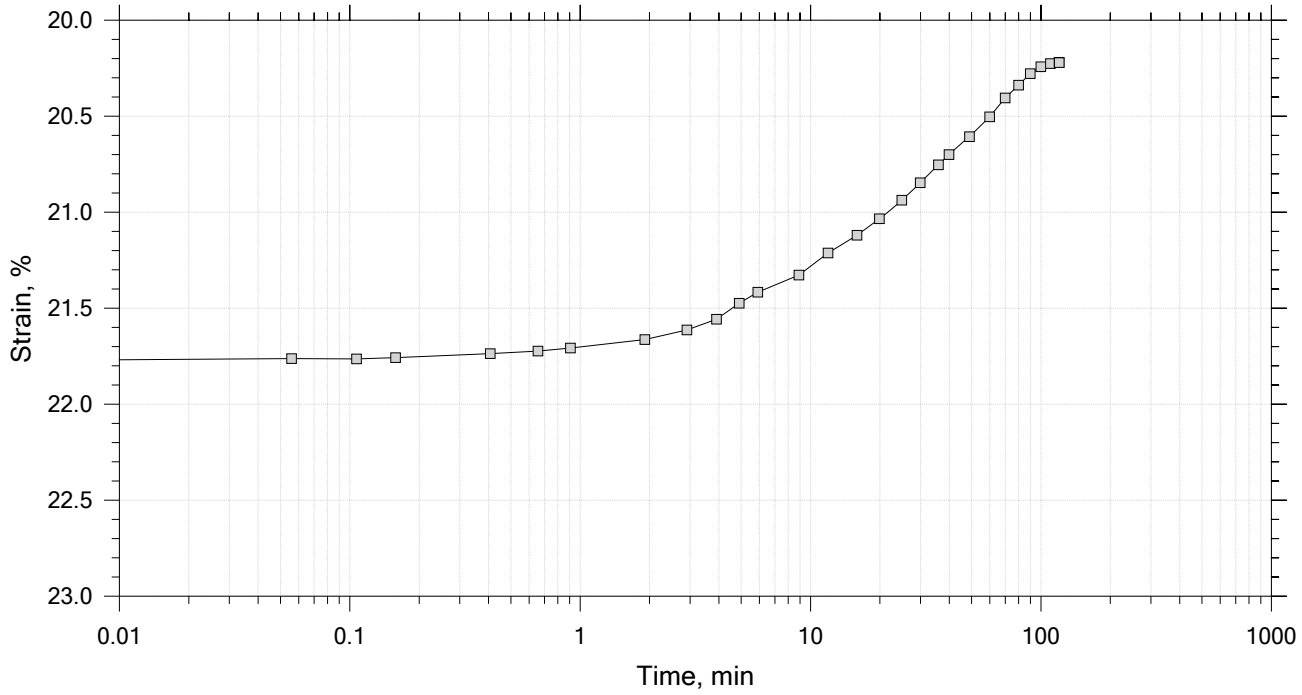


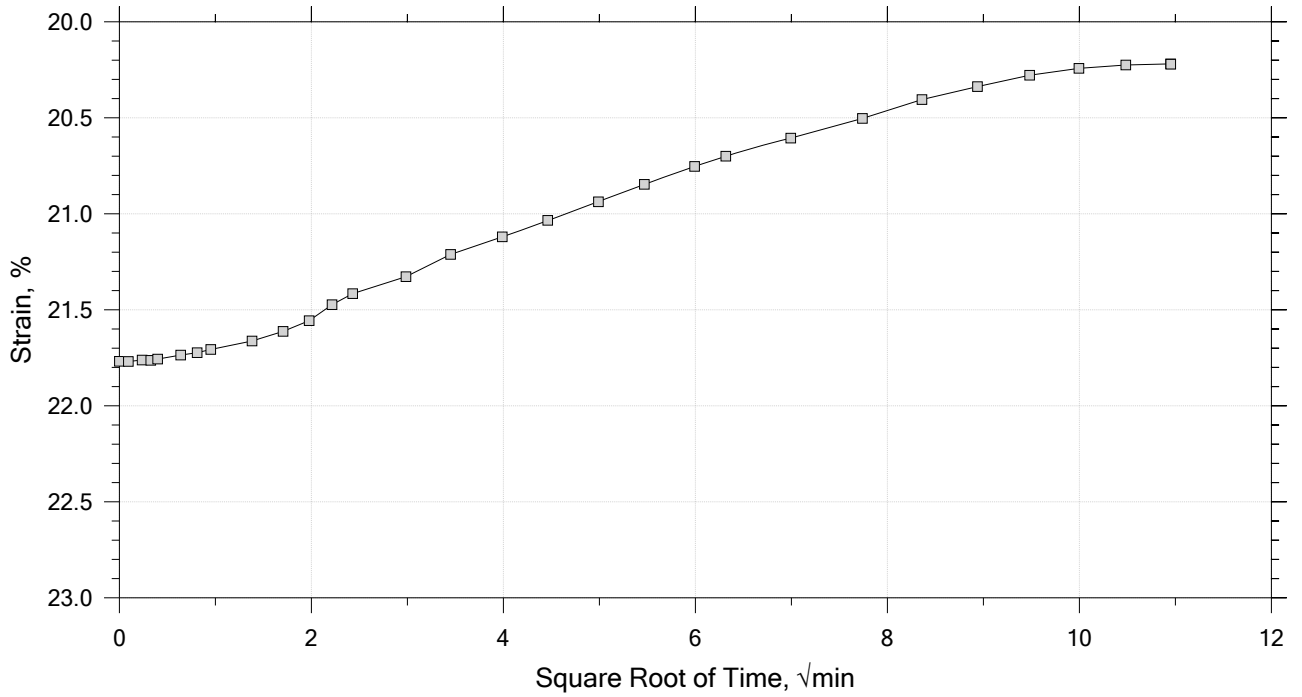


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

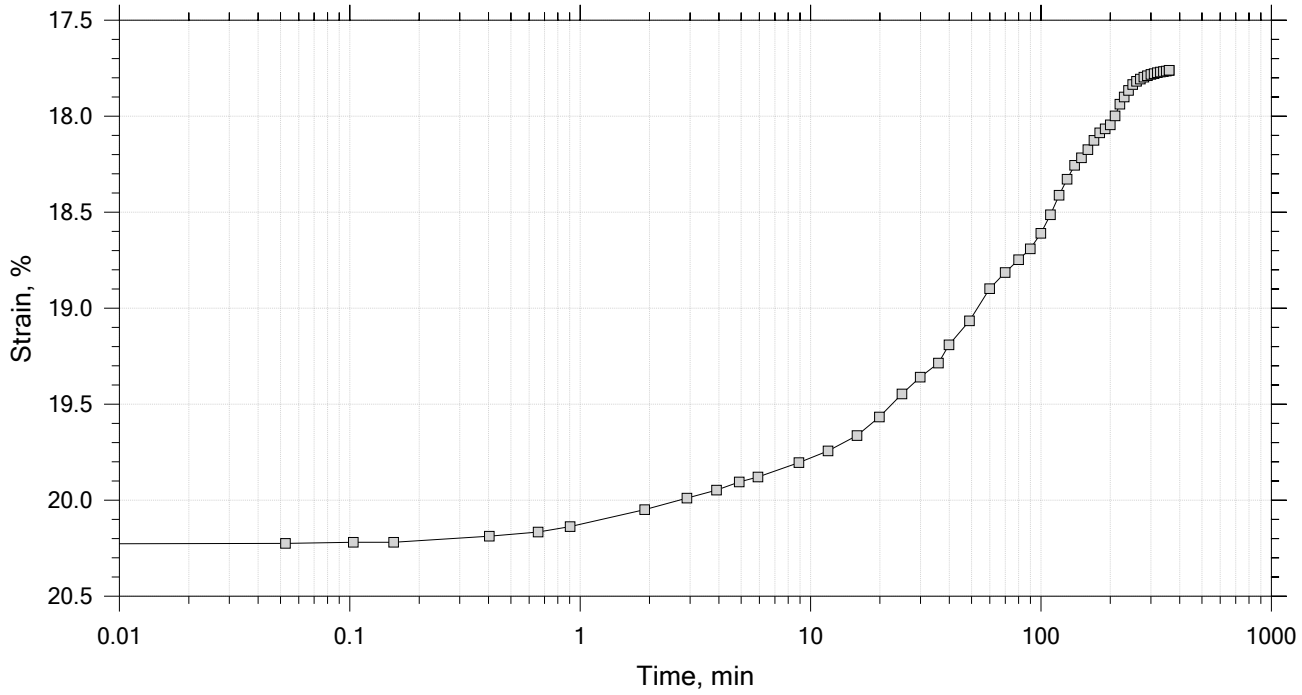


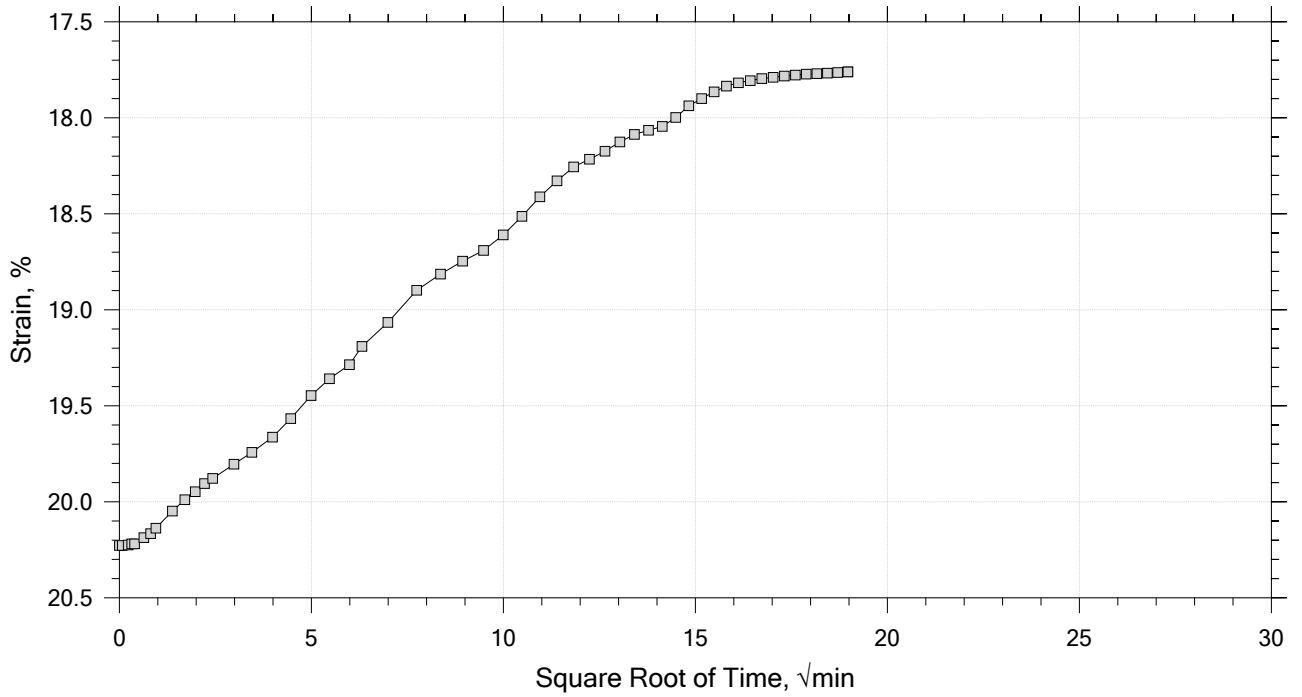


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.884	Plastic Limit: 22
Final Height: 0.84 in	Final Void Ratio: 0.582	Plasticity Index: 24

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	D-472	RING		E3805
Mass Container, gm	8.44	109.78	109.78	8.68
Mass Container + Wet Soil, gm	112.42	257	252.37	149.2
Mass Container + Dry Soil, gm	91.08	227.5	227.5	124.69
Mass Dry Soil, gm	82.64	117.72	117.72	116.01
Water Content, %	25.82	25.06	21.13	21.13
Void Ratio	---	0.88	0.58	---
Degree of Saturation, %	---	78.17	100.00	---
Dry Unit Weight, pcf	---	91.36	108.76	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
	Test No.: IP-18-3	Sample Type: intact	Elevation:
	Description: Moist, dark brown clay		
	Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0642	0.01409	0.857	1.41	94.977	3.67e-05	2.20e-01	1.51e-04
2	0.125	0.01777	0.850	1.78	28.047	1.22e-04	6.06e-02	1.38e-04
3	0.250	0.02576	0.835	2.58	7.991	4.23e-04	6.39e-02	5.07e-04
4	0.500	0.03750	0.813	3.75	7.947	4.17e-04	4.69e-02	3.66e-04
5	1.00	0.05161	0.787	5.16	19.143	1.68e-04	2.82e-02	8.91e-05
6	2.00	0.07382	0.745	7.38	42.673	7.27e-05	2.22e-02	3.03e-05
7	4.00	0.1099	0.677	11.0	10.757	2.71e-04	1.80e-02	9.15e-05
8	8.00	0.1514	0.599	15.1	21.552	1.24e-04	1.04e-02	2.41e-05
9	16.0	0.1934	0.520	19.3	19.043	1.27e-04	5.25e-03	1.25e-05
10	32.0	0.2349	0.441	23.5	26.269	8.31e-05	2.59e-03	4.03e-06
11	16.0	0.2302	0.450	23.0	6.761	3.08e-04	2.97e-04	1.71e-06
12	4.00	0.2175	0.474	21.8	34.705	6.13e-05	1.05e-03	1.21e-06
13	1.00	0.2022	0.503	20.2	117.091	1.88e-05	5.11e-03	1.80e-06
14	0.250	0.1776	0.549	17.8	295.587	7.84e-06	3.28e-02	4.82e-06

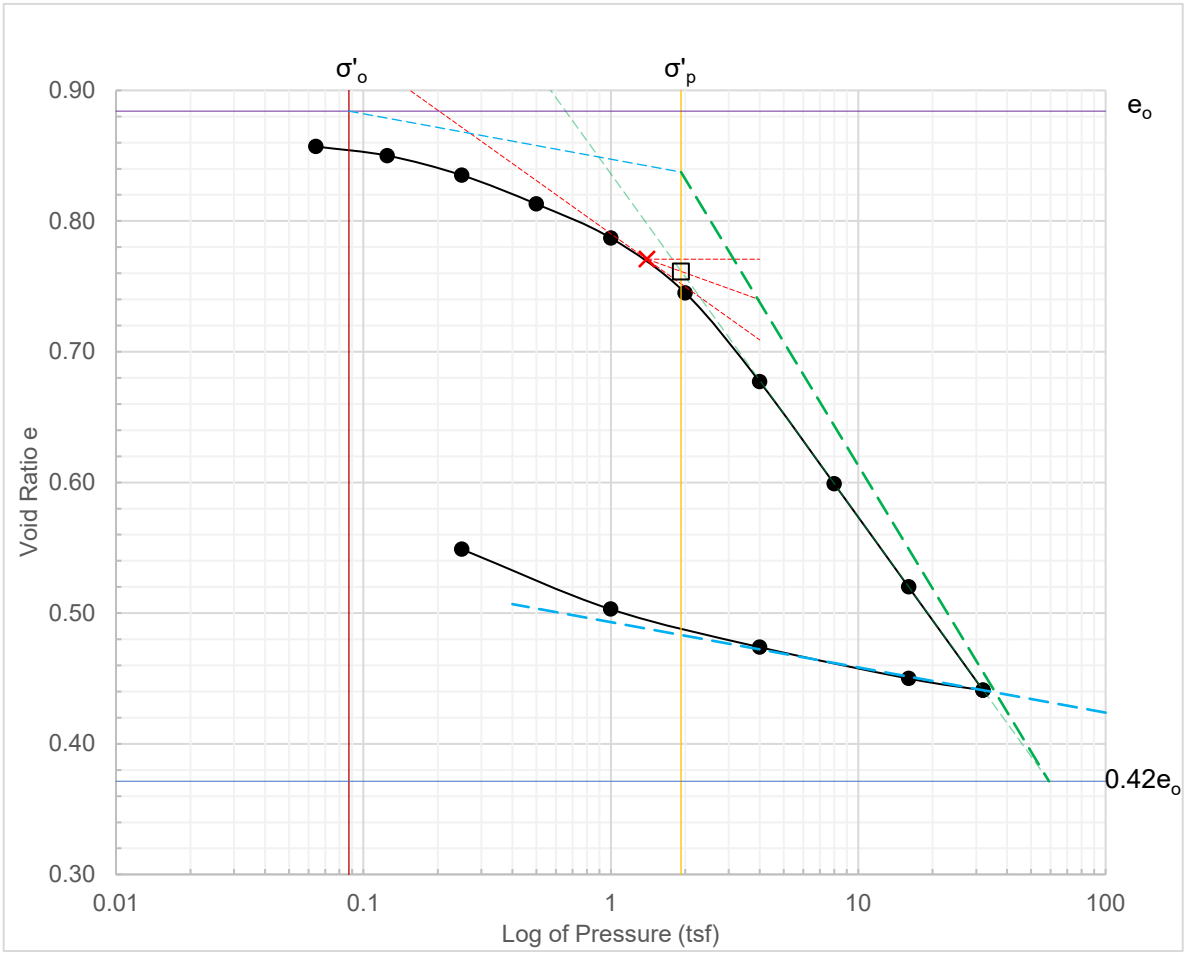
GeoTesting EXPRESS

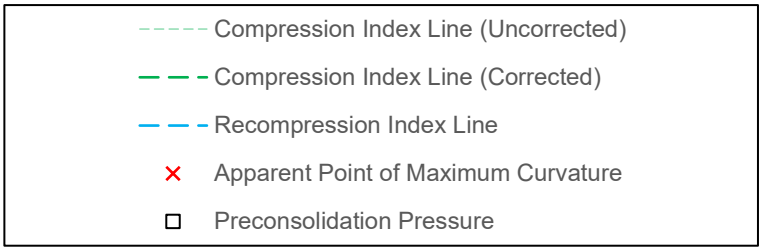
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/11/22	Depth: 1.4-1.5
Test No.: IP-18-3	Sample Type: intact	Elevation:
Description: Moist, dark brown clay		
Remarks: System LTIII-D, Swell Pressure = 0.0642 tsf		
Displacement at End of Increment		

Boring: B-4.16A

Depth: 1.4’-1.5’

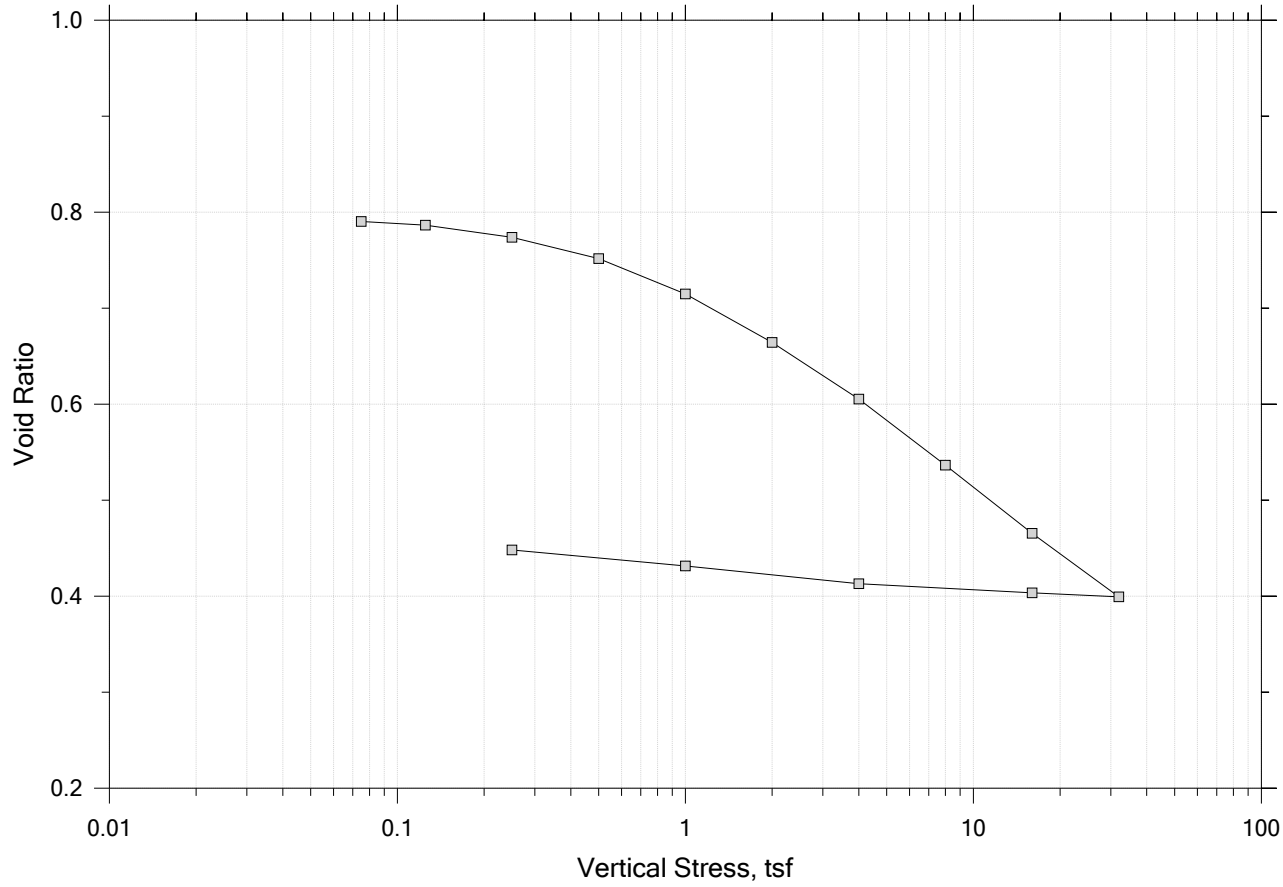
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.087
Preconsolidation Pressure, σ'_p (tsf) = 1.92
Compression Index, C_c = 0.31
Recompression Index, C_r = 0.035

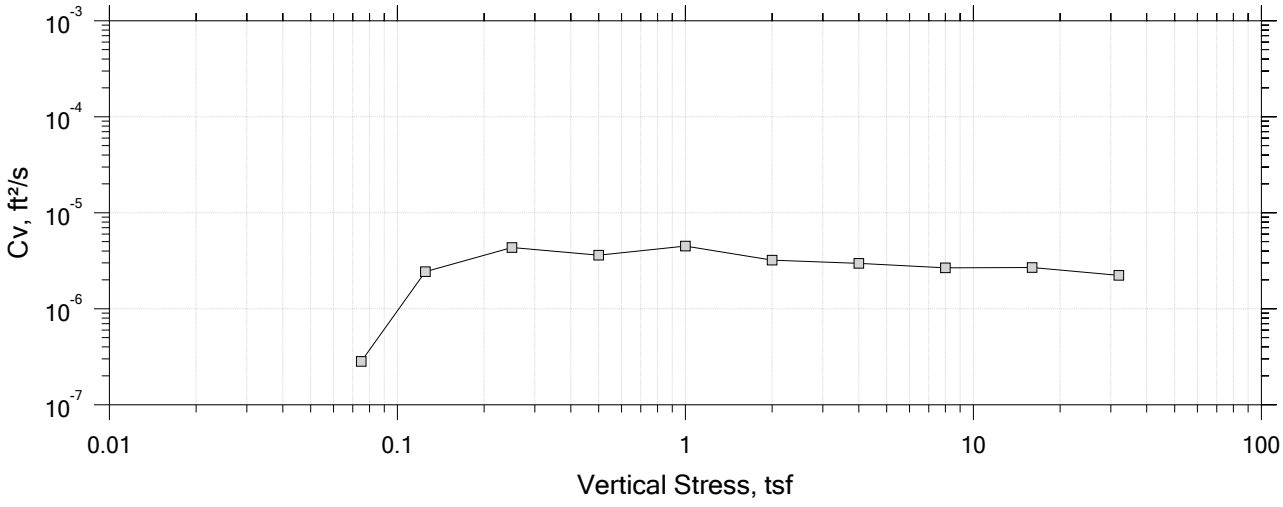




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

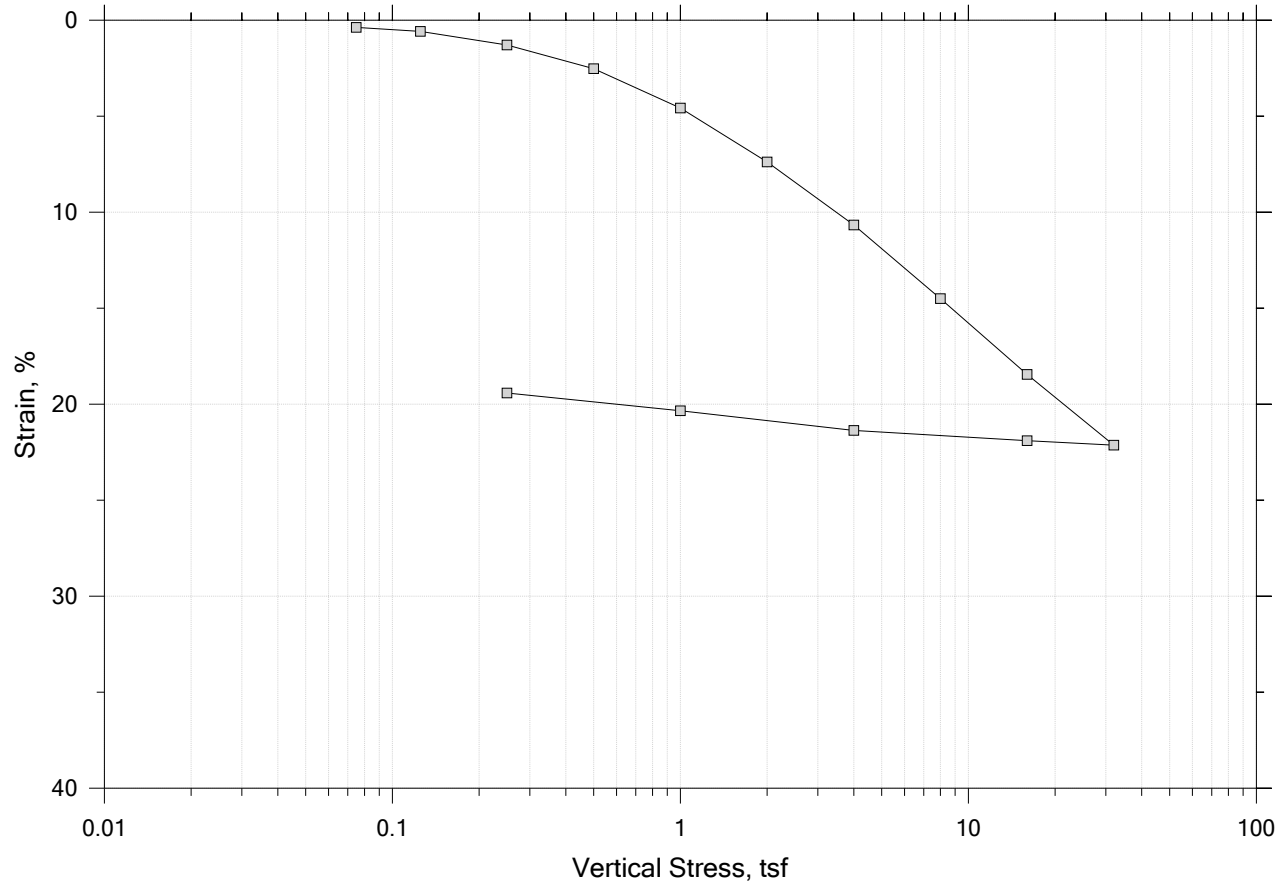


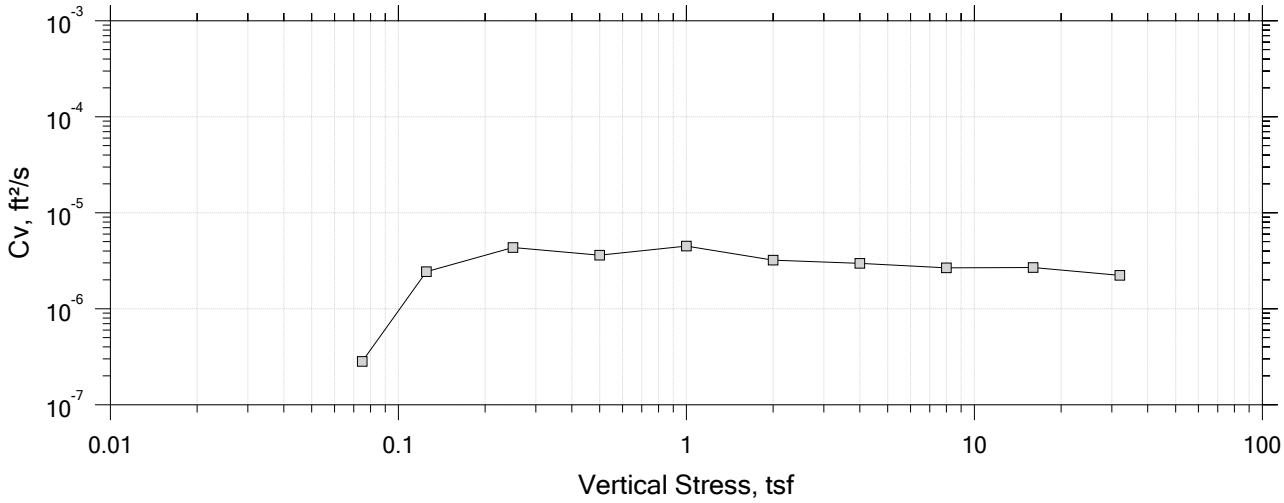


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

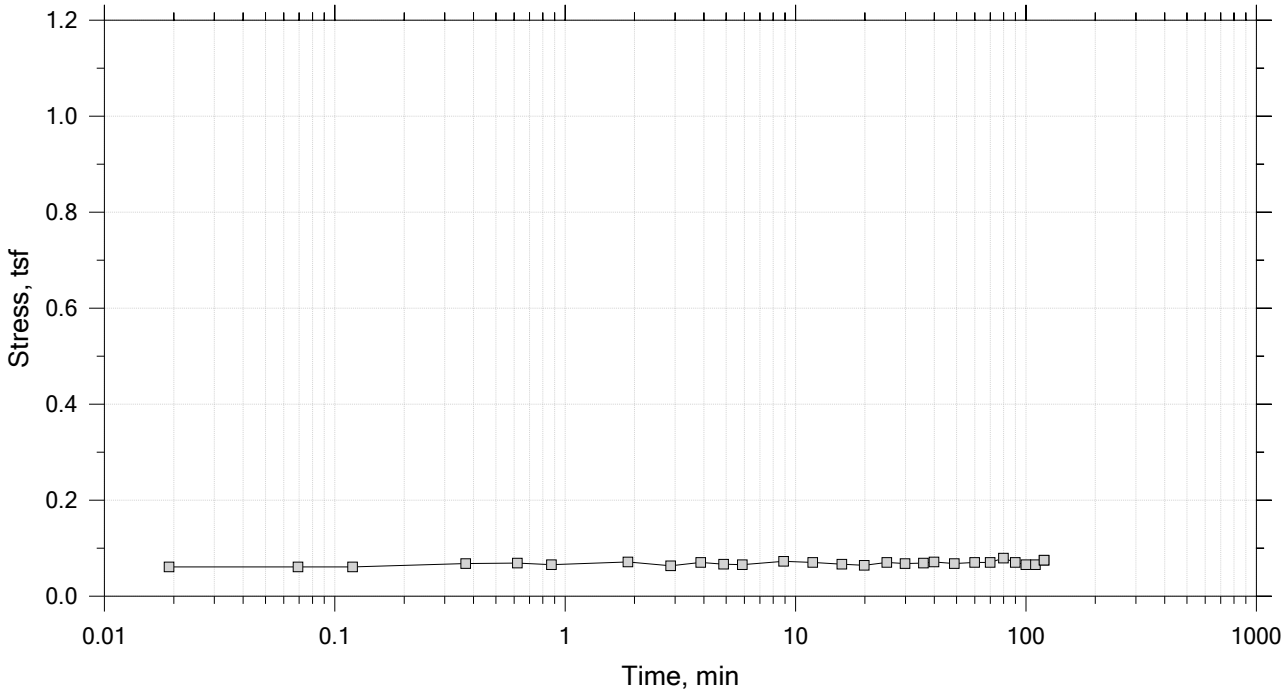


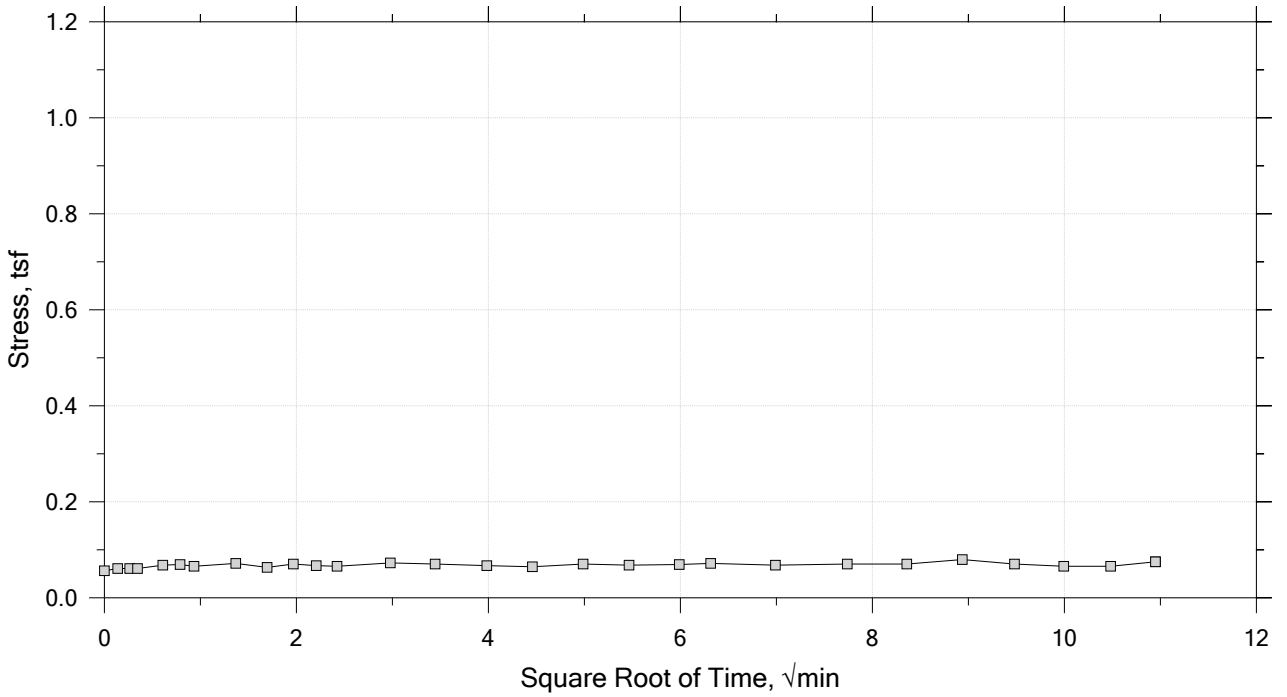


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0749 tsf





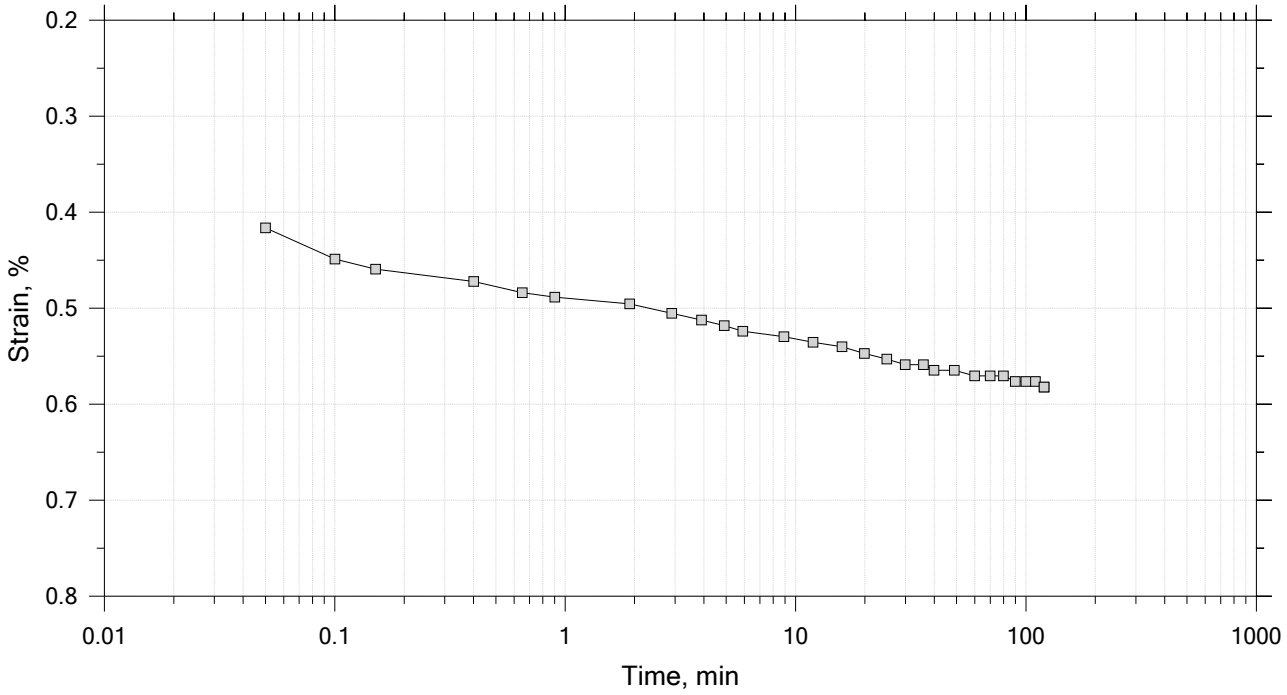
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

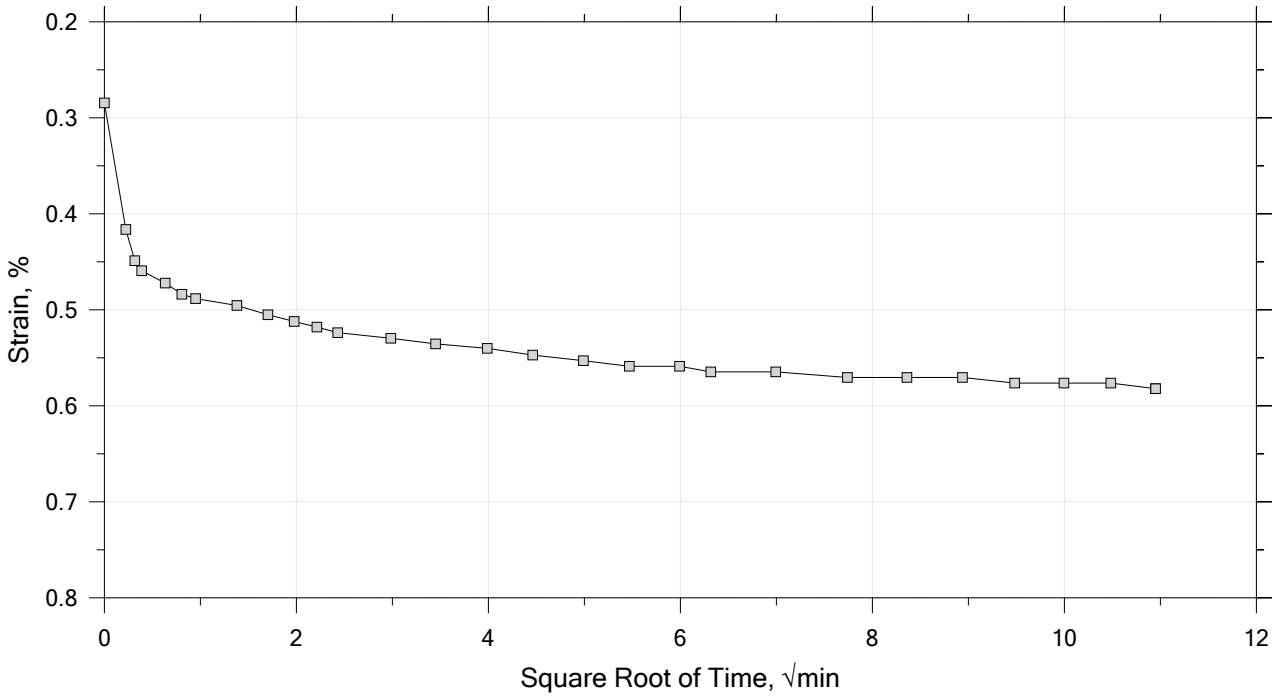
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf





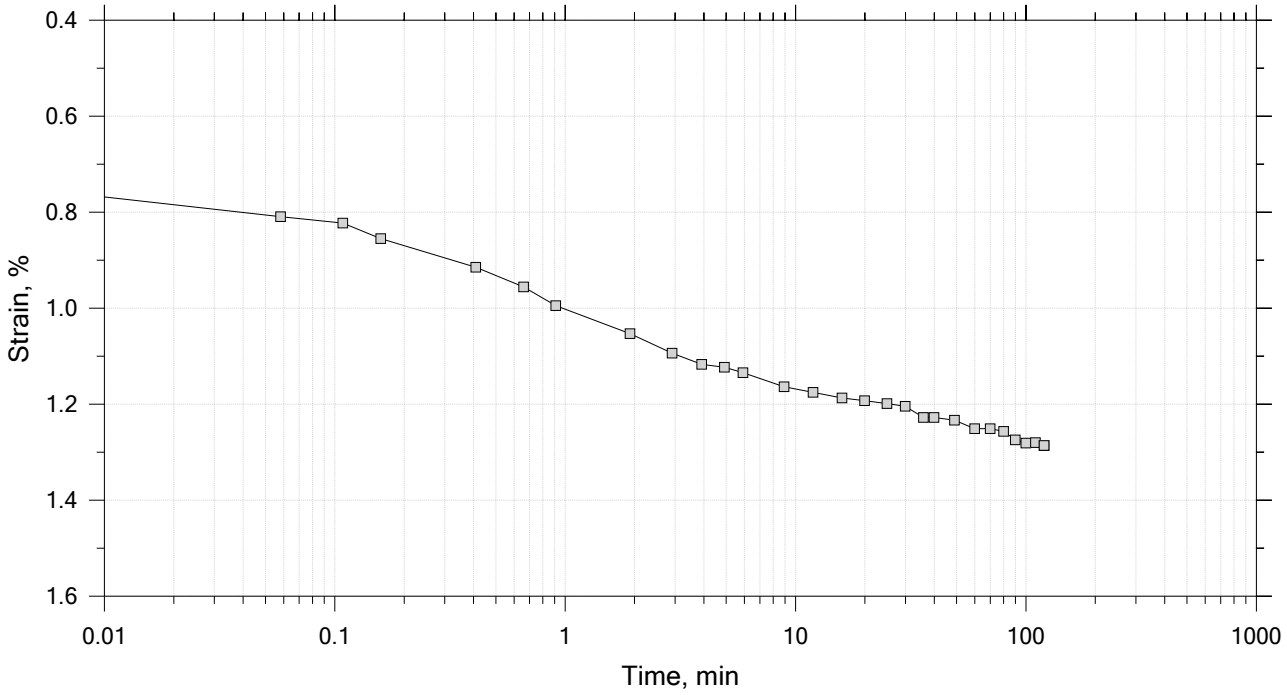
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

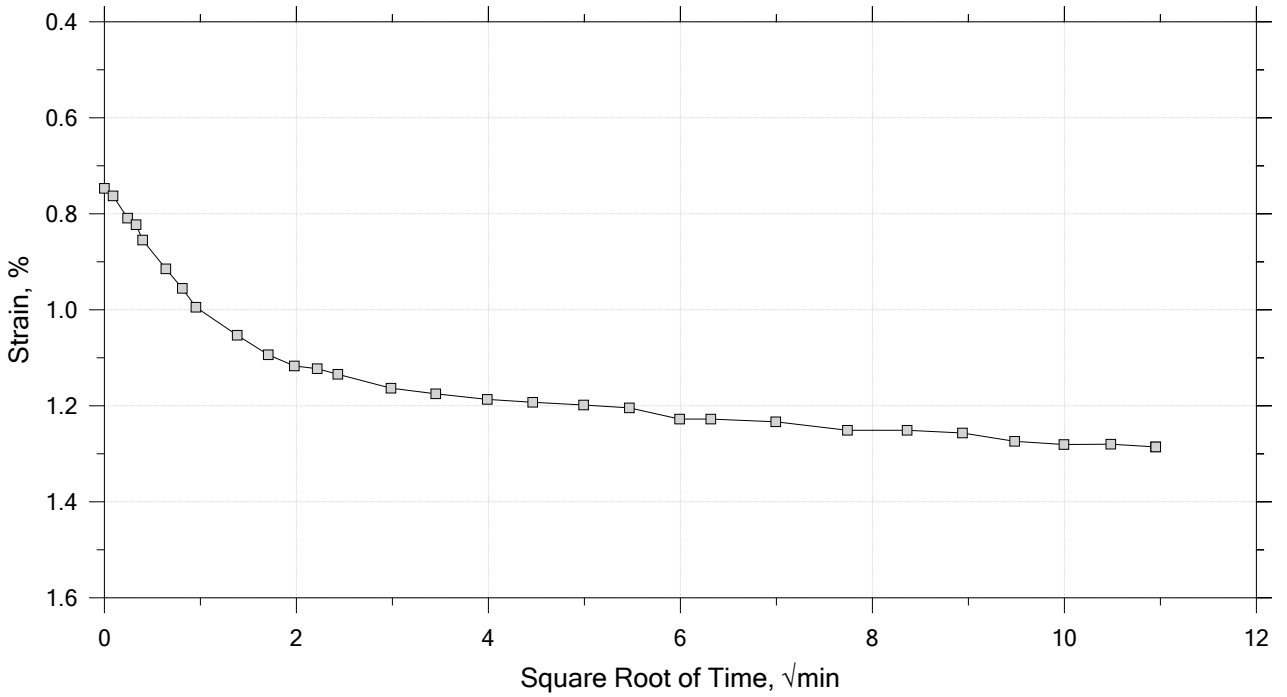
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





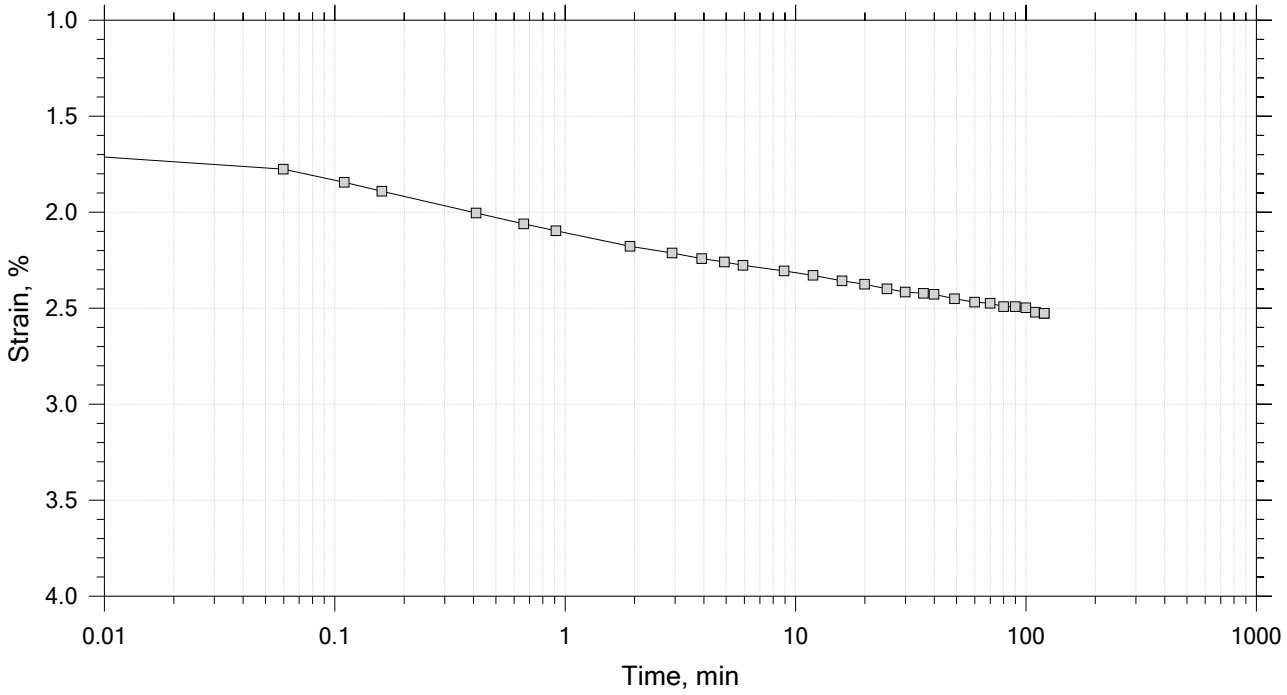
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

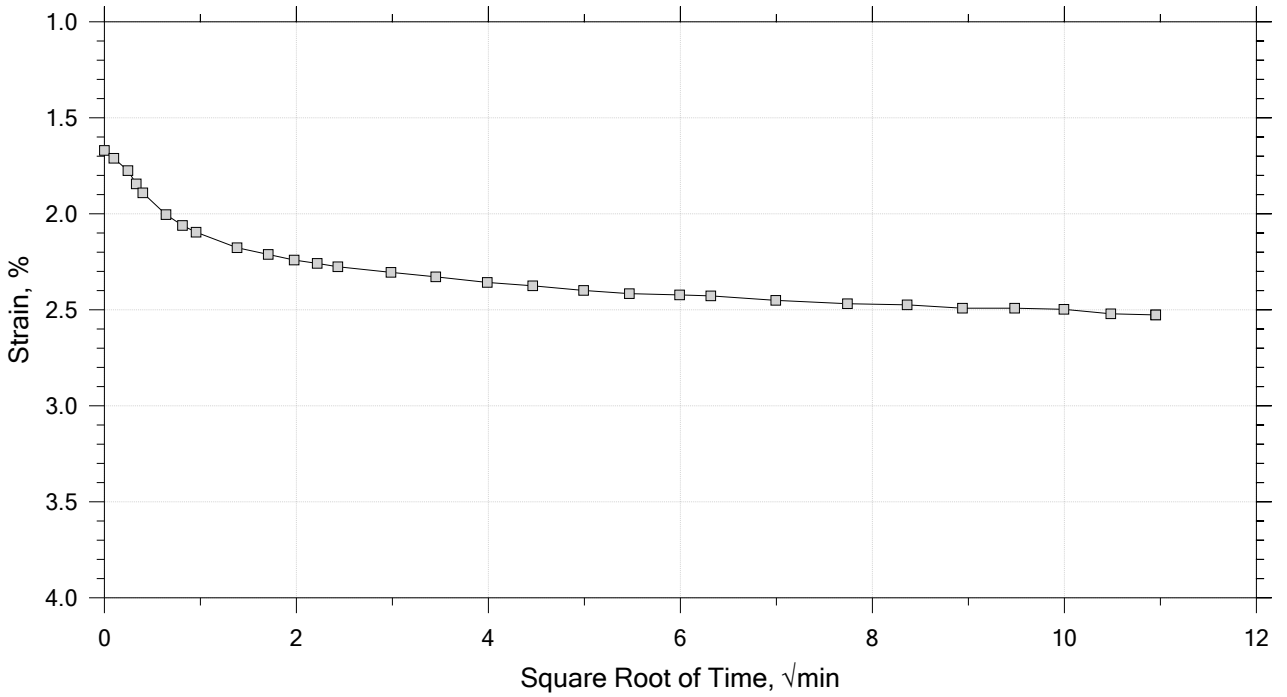
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





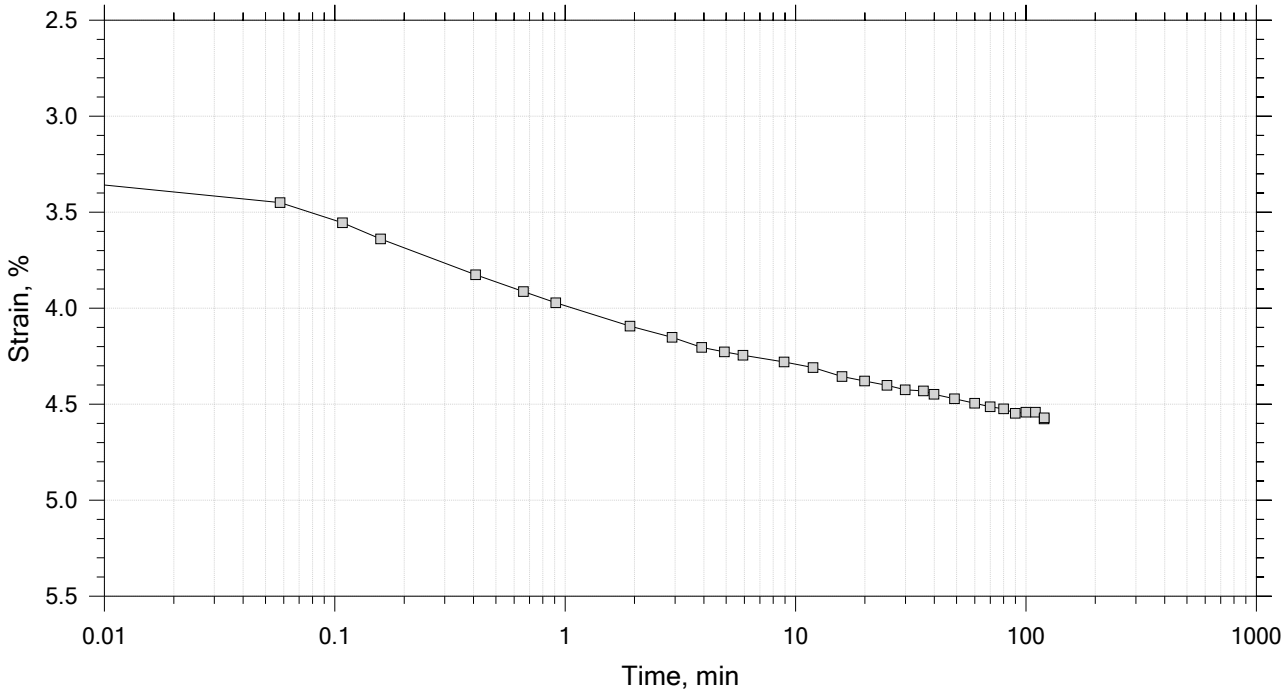
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

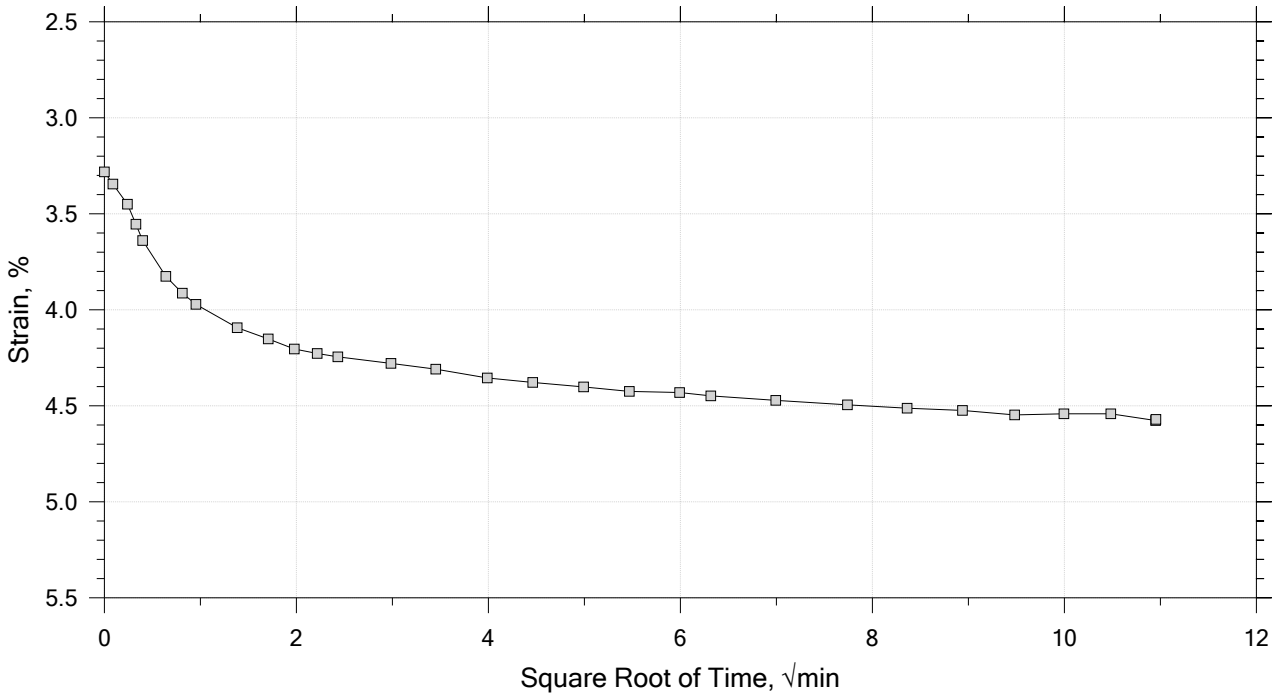
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





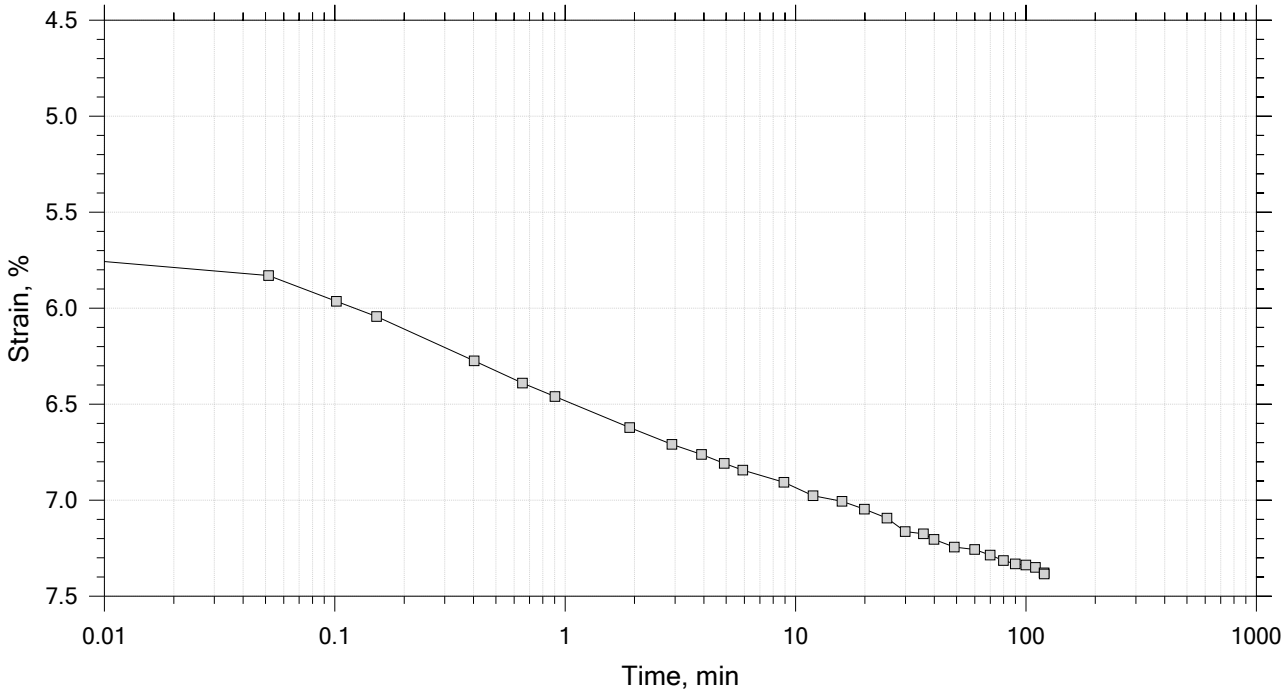
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

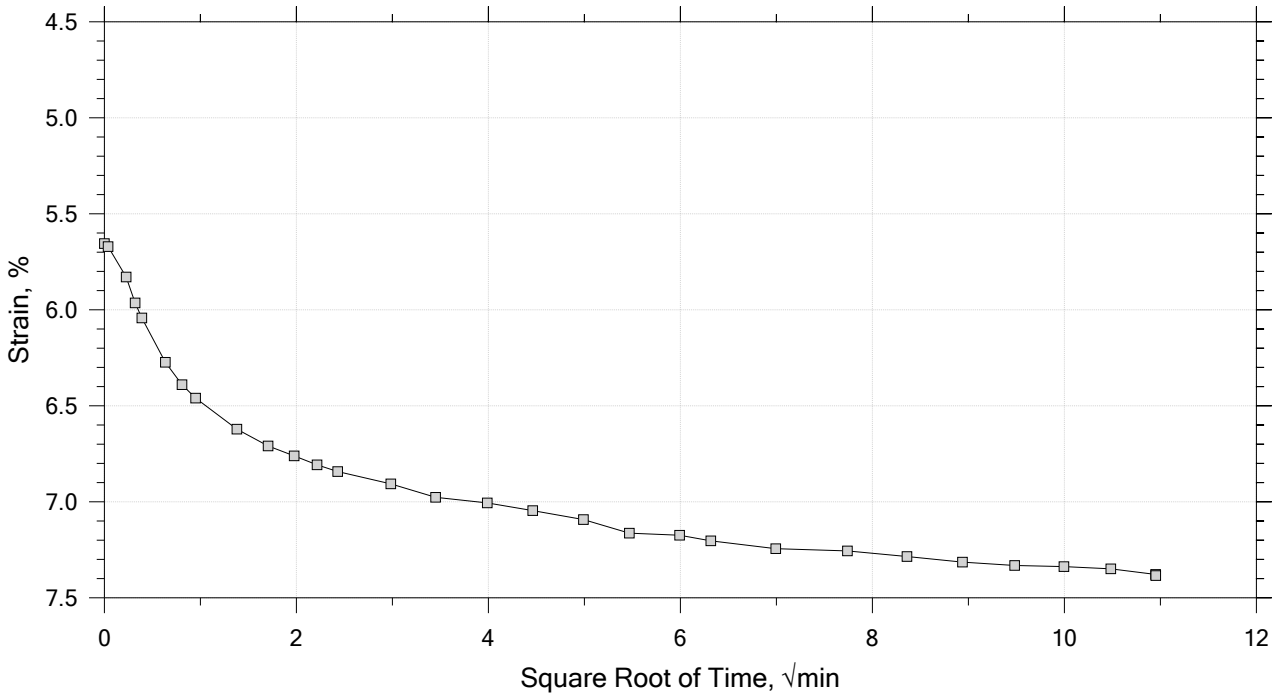
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





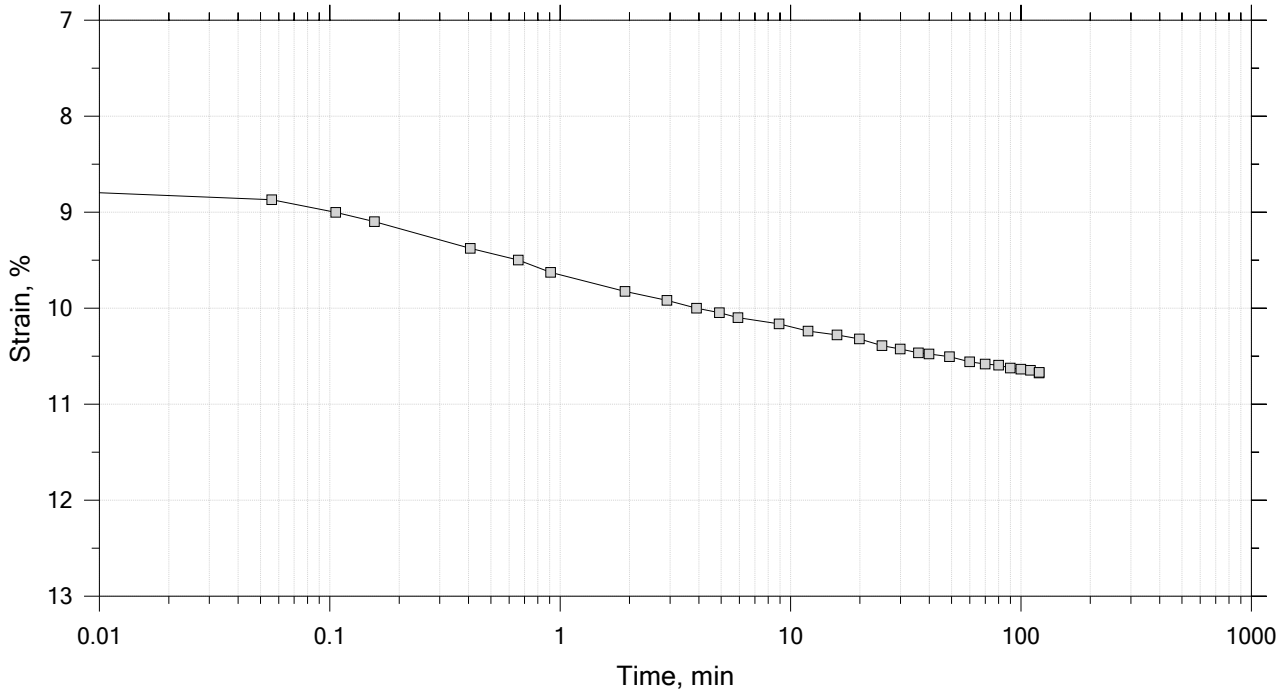
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

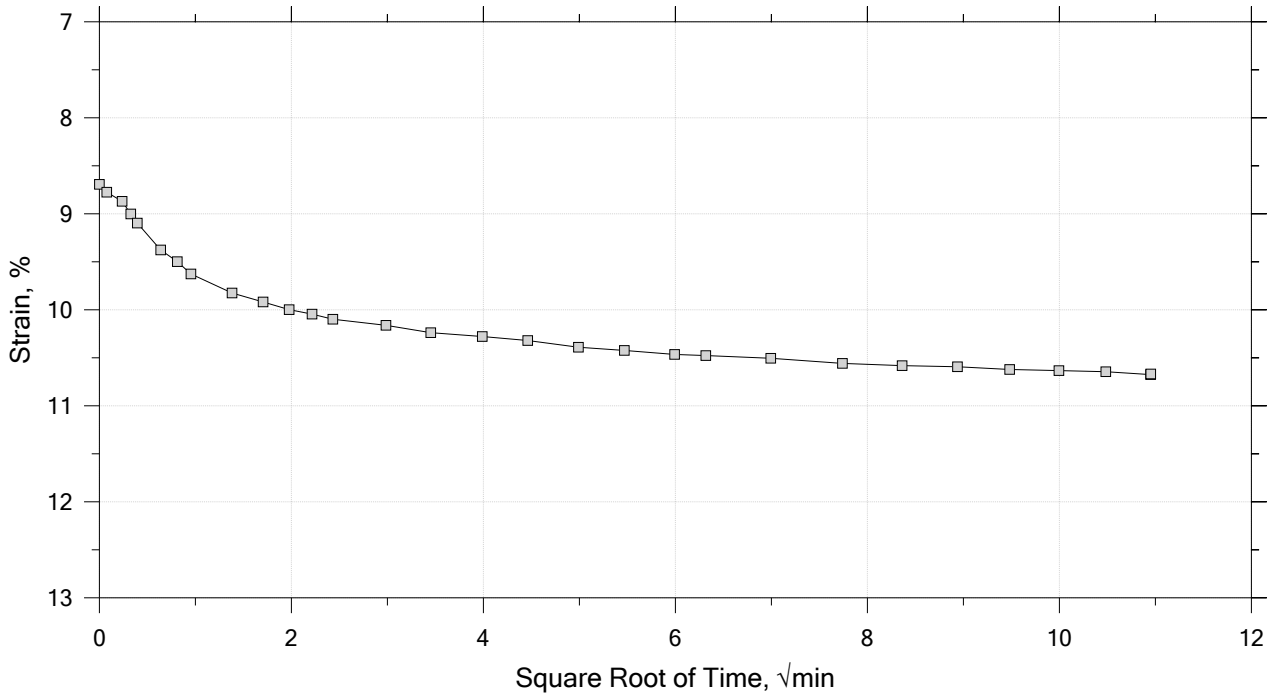
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





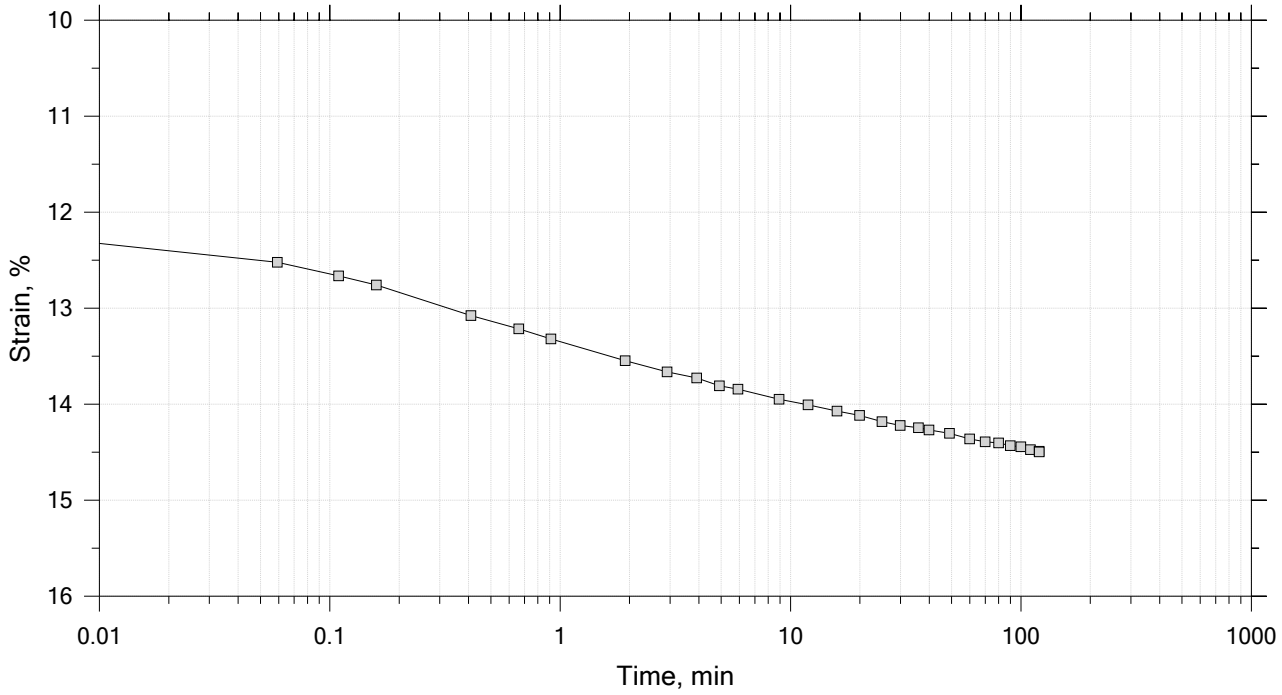
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

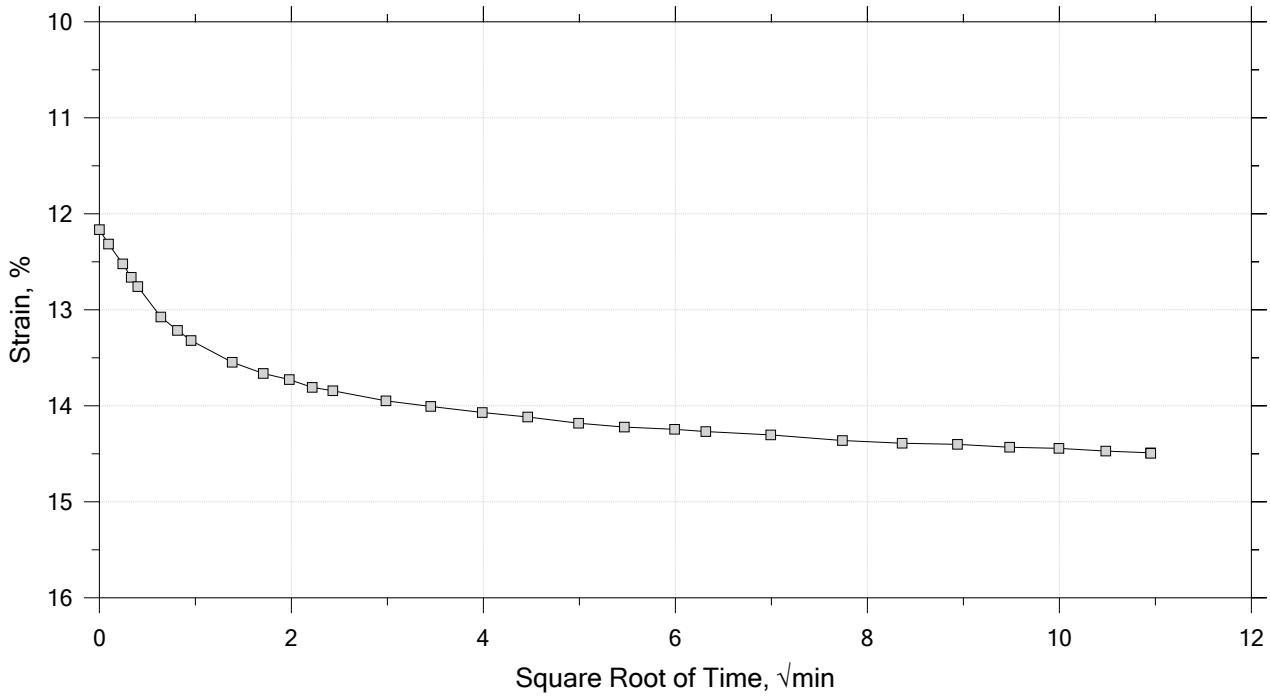
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





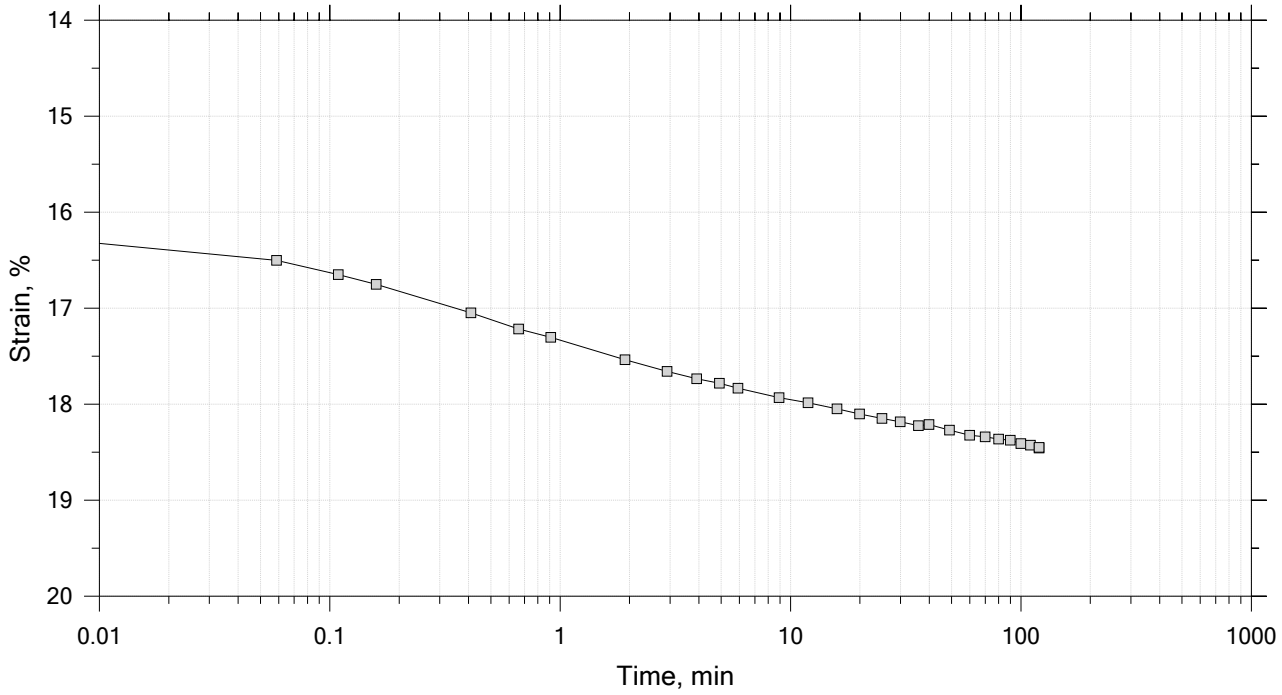
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

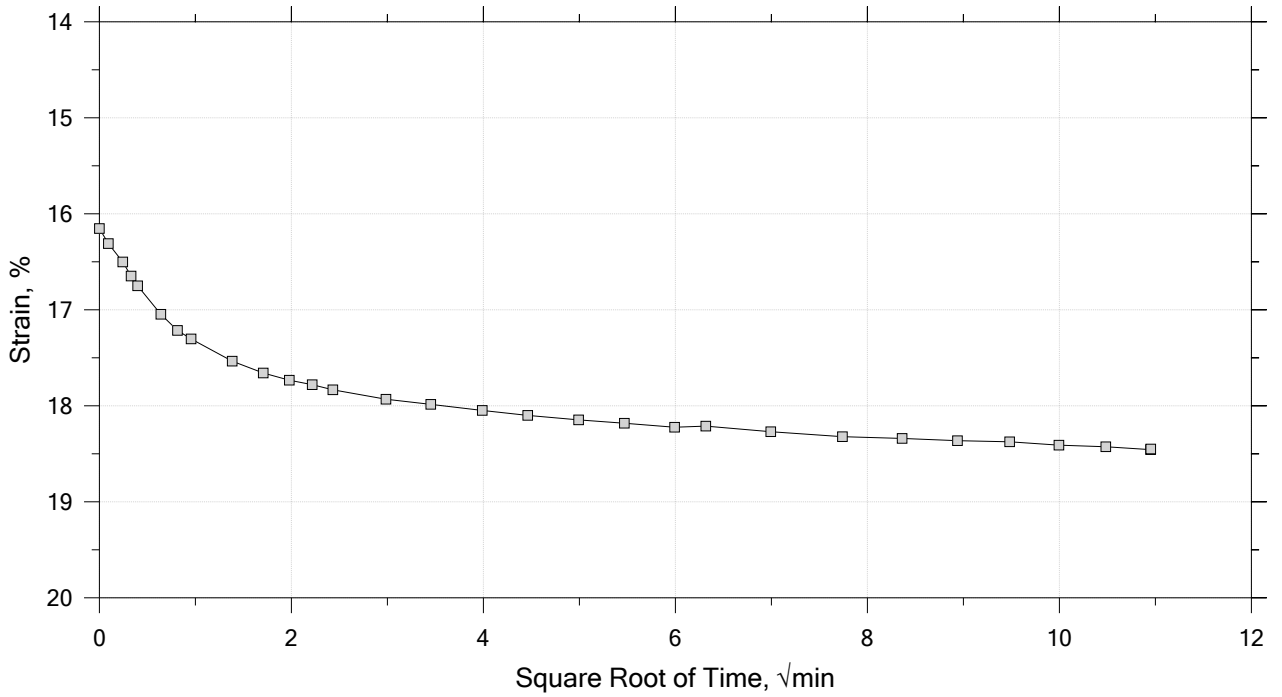
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

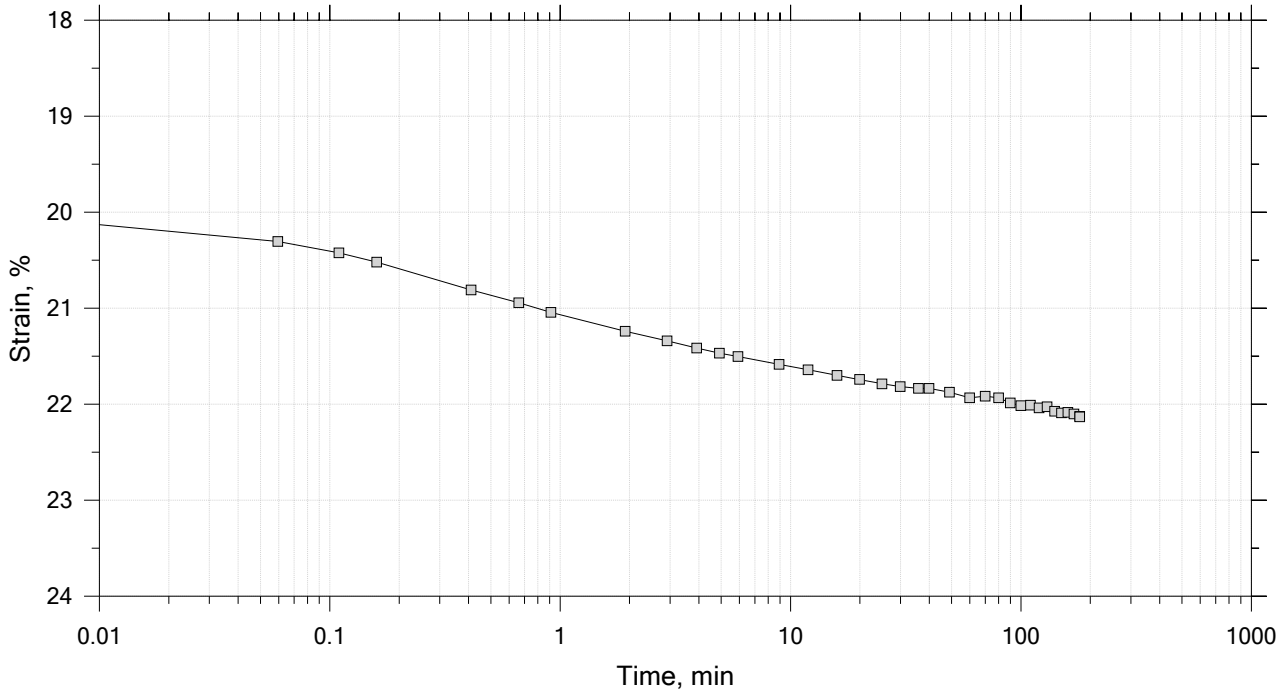


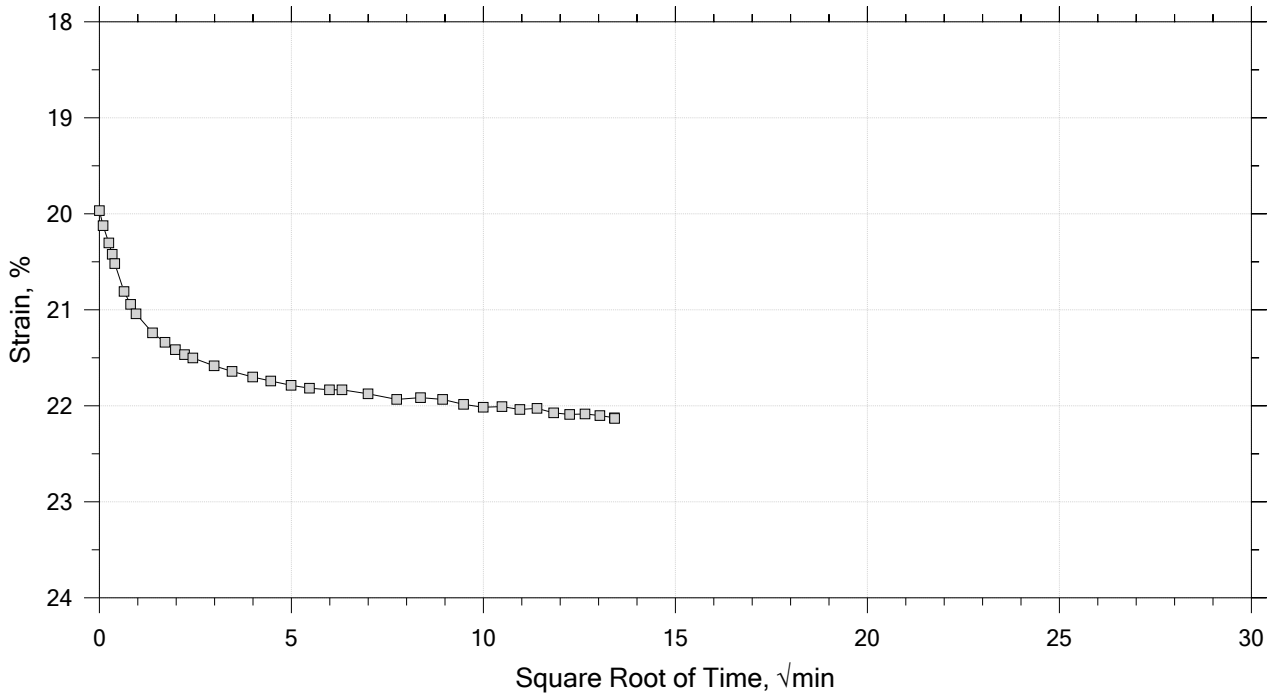


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

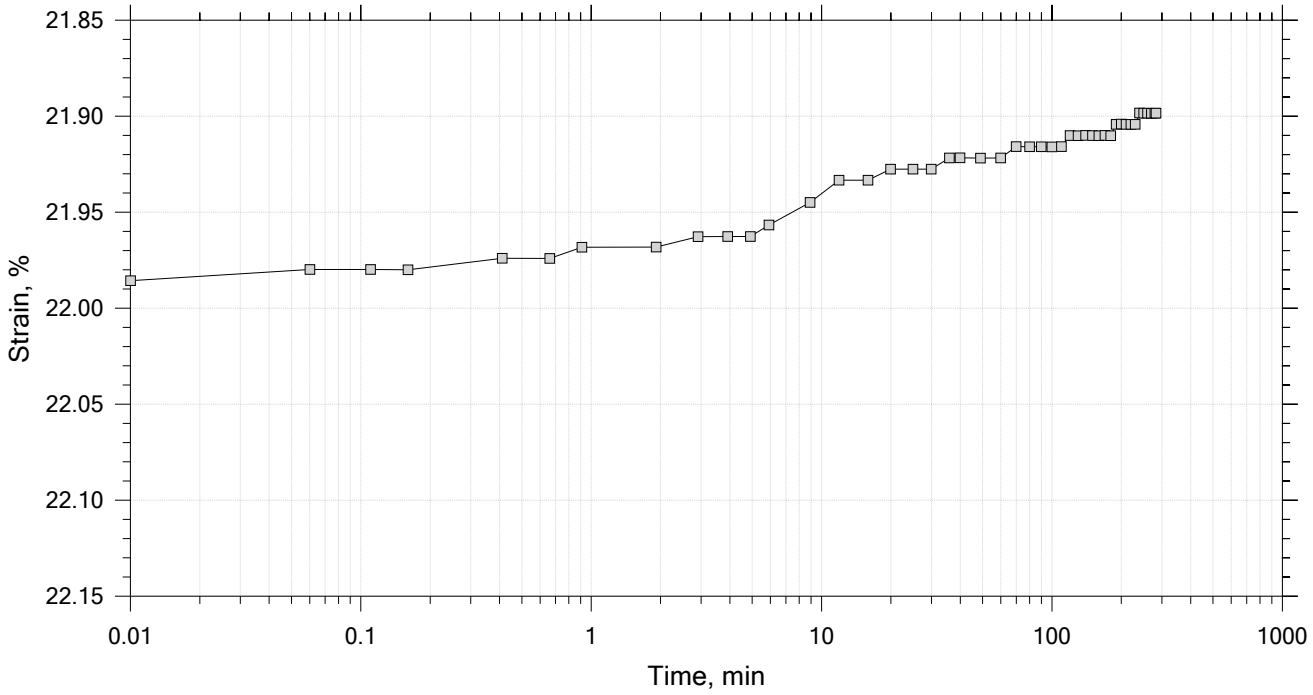


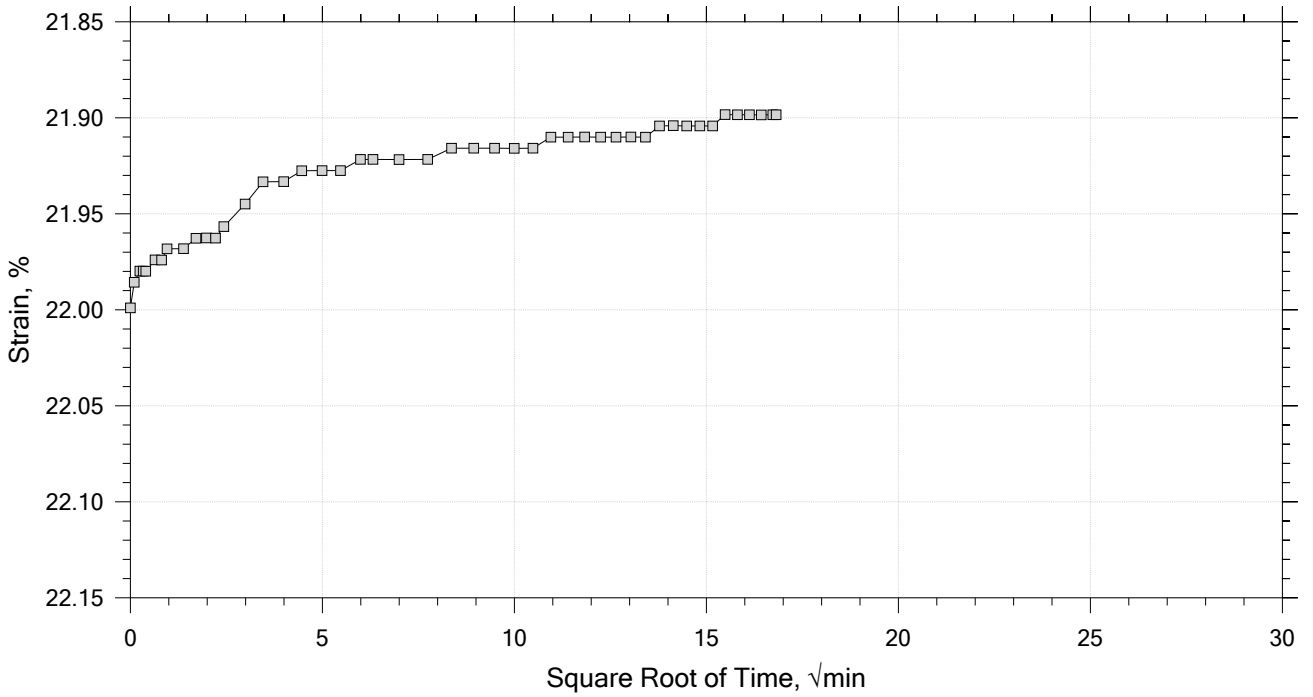


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

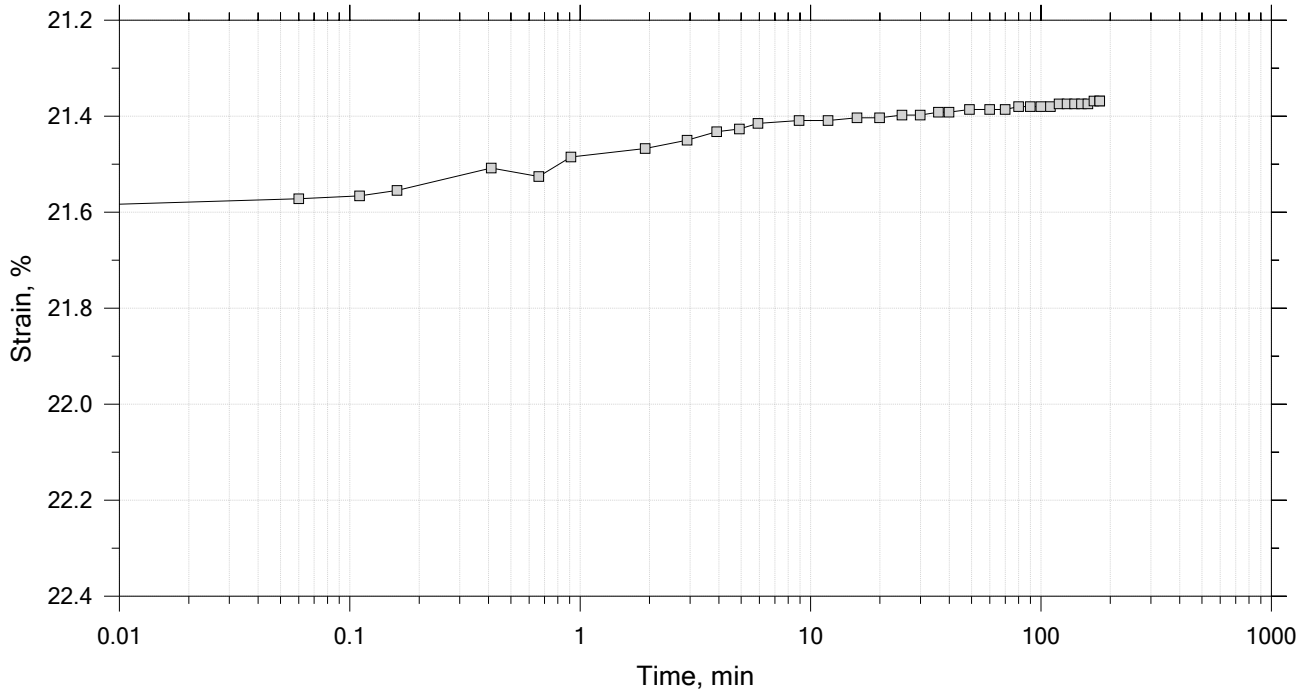


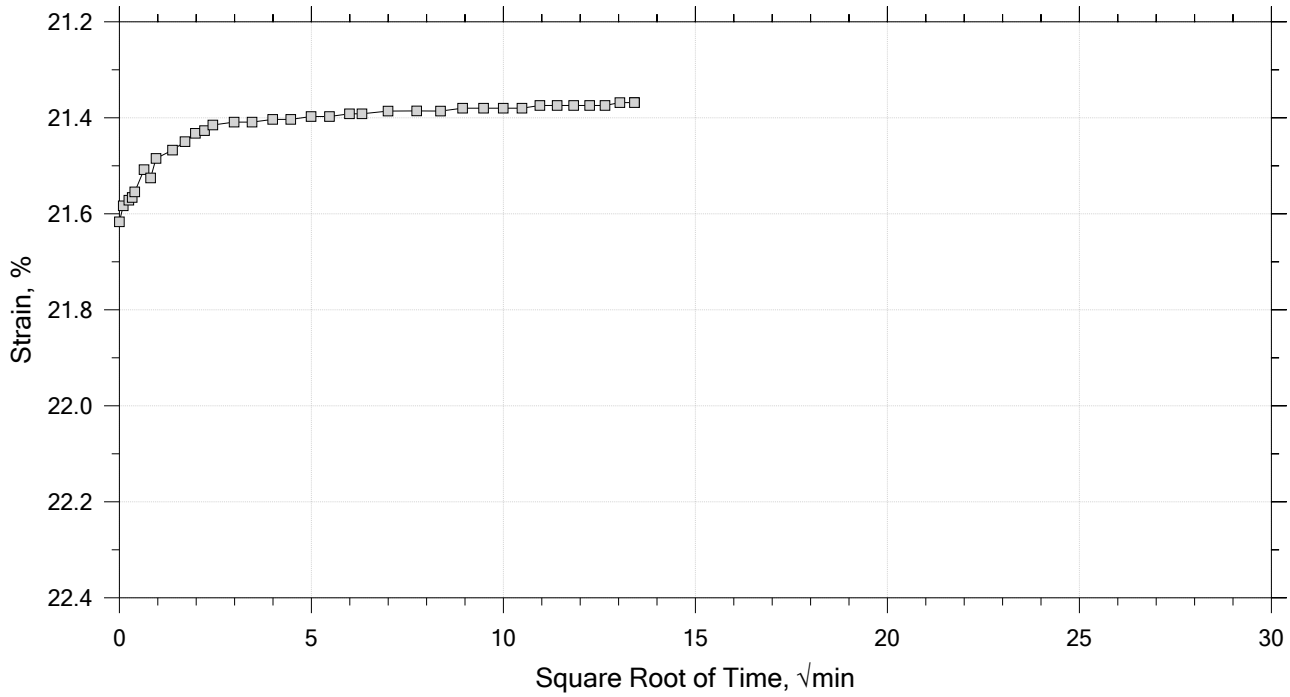


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
Description: Moist, very dark gray silt		
Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





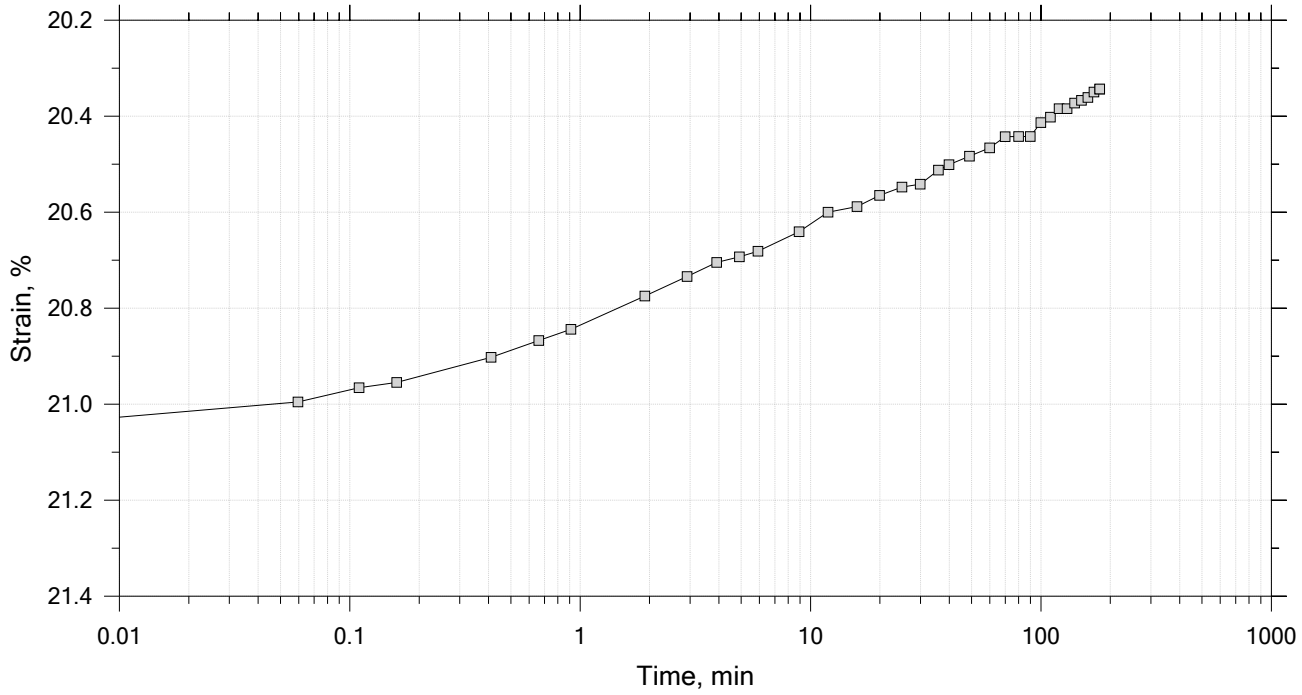
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

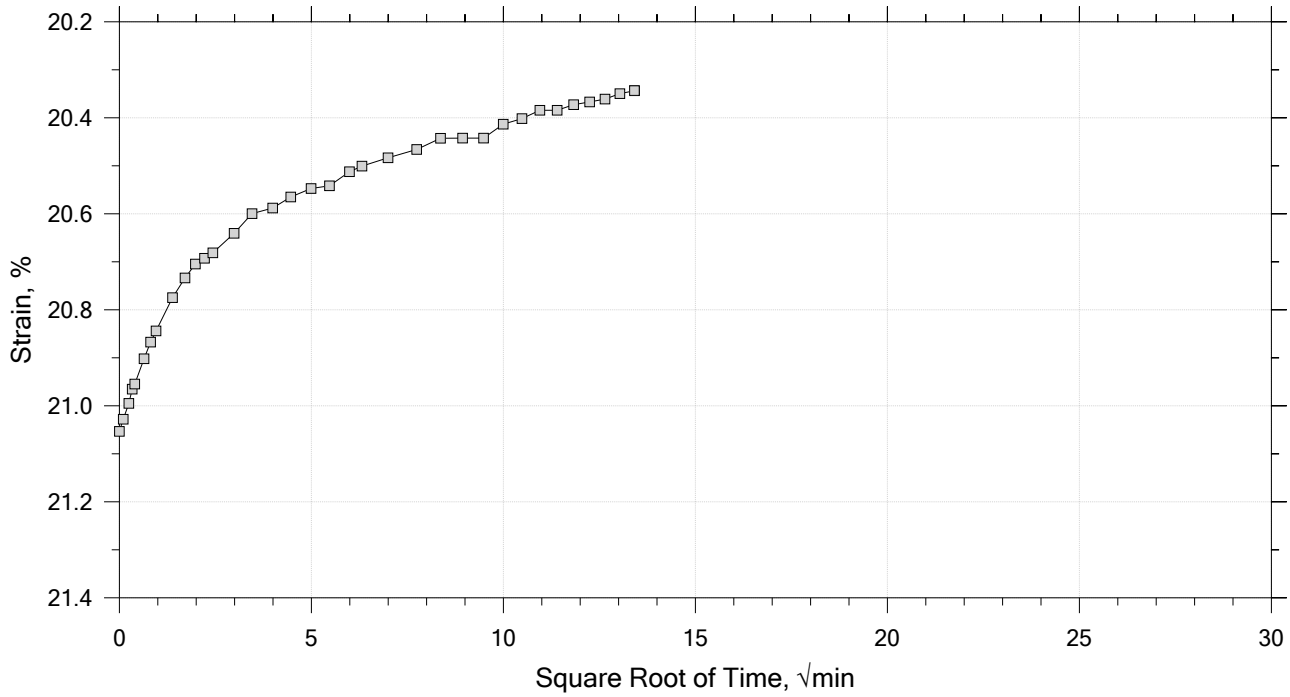
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

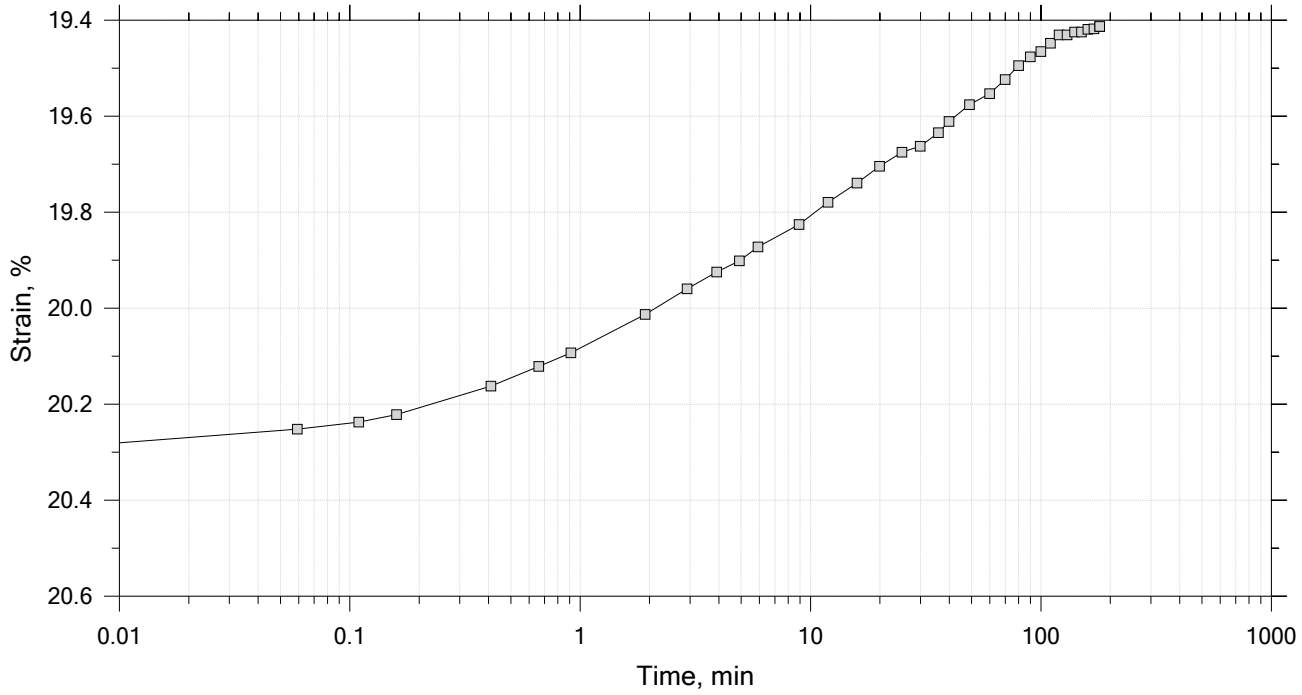


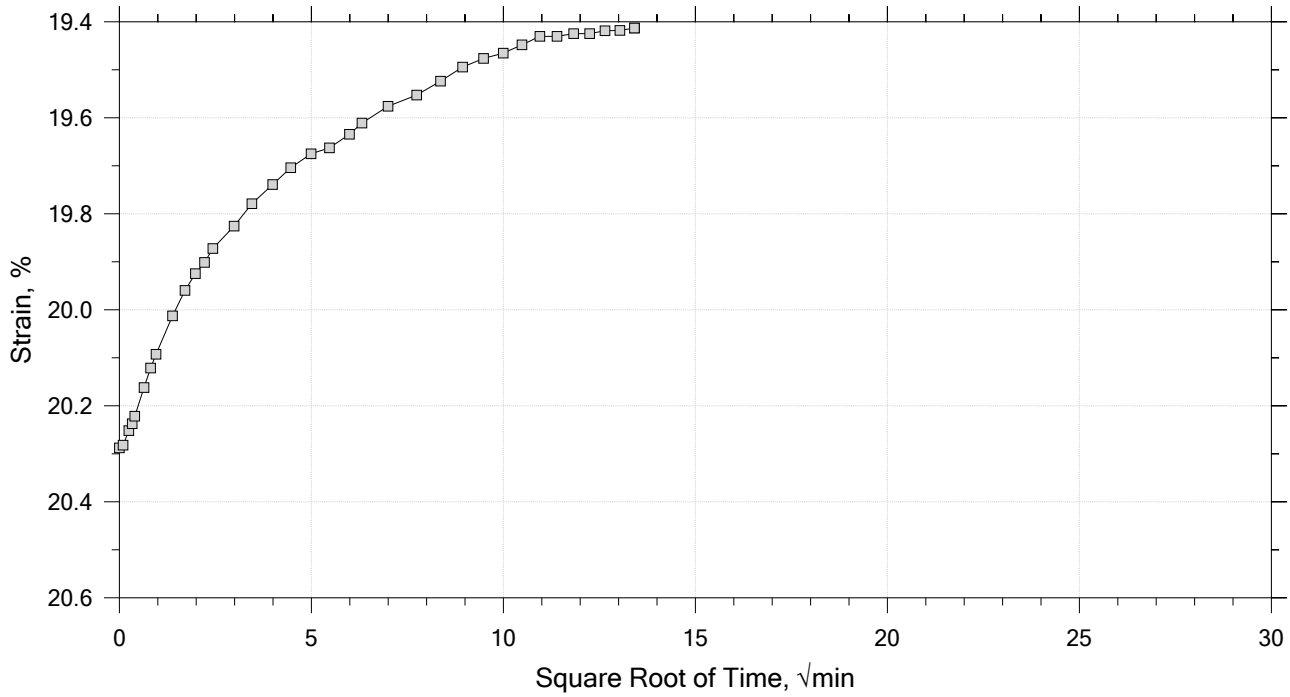


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 391
Initial Height: 1.00 in	Initial Void Ratio: 0.797	Plastic Limit: 293
Final Height: 0.83 in	Final Void Ratio: 0.492	Plasticity Index: 98

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	e0702	RING		4AJN
Mass Container, gm	8.19	108.02	108.02	8.21
Mass Container + Wet Soil, gm	142.66	260.39	253.12	153.03
Mass Container + Dry Soil, gm	122.33	231.12	231.12	131.07
Mass Dry Soil, gm	114.14	123.1	123.1	122.86
Water Content, %	17.81	23.78	17.87	17.87
Void Ratio	---	0.80	0.49	---
Degree of Saturation, %	---	82.05	100.00	---
Dry Unit Weight, pcf	---	95.534	115.1	---

Warning: The change in the sample wet weight during the test is not consistent with the change in the moisture content.

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

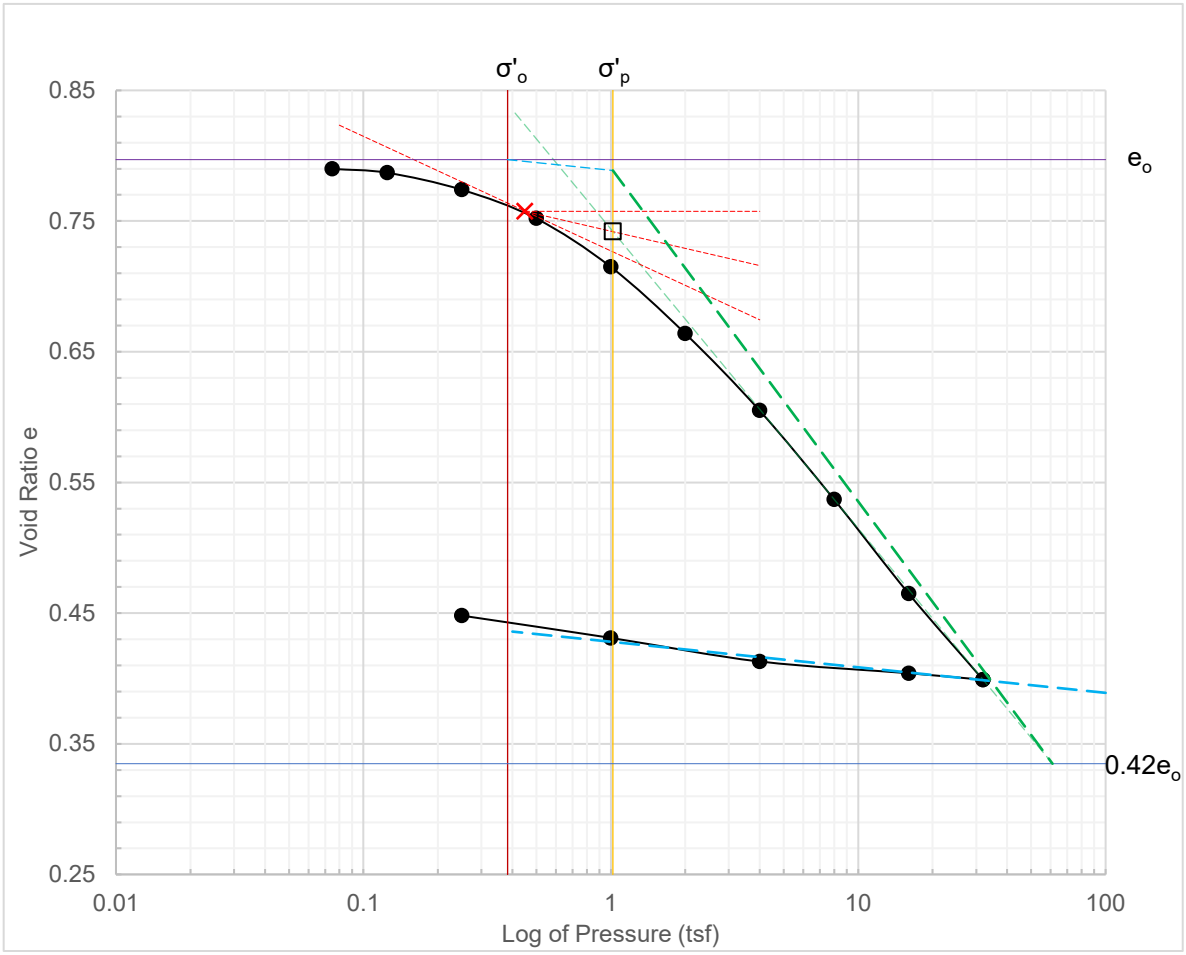
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0749	0.003706	0.790	0.371	86.357	2.83e-07	4.95e-02	3.78e-05
2	0.125	0.005821	0.787	0.582	10.003	2.43e-06	4.22e-02	2.76e-04
3	0.250	0.01286	0.774	1.29	5.547	4.34e-06	5.63e-02	6.59e-04
4	0.500	0.02527	0.752	2.53	6.537	3.61e-06	4.96e-02	4.83e-04
5	1.00	0.04571	0.715	4.57	5.080	4.49e-06	4.09e-02	4.95e-04
6	2.00	0.07384	0.664	7.38	6.770	3.20e-06	2.81e-02	2.43e-04
7	4.00	0.1067	0.605	10.7	6.825	2.98e-06	1.64e-02	1.32e-04
8	8.00	0.1450	0.537	14.5	7.032	2.67e-06	9.57e-03	6.88e-05
9	16.0	0.1845	0.465	18.5	6.368	2.69e-06	4.94e-03	3.58e-05
10	32.0	0.2213	0.399	22.1	7.004	2.23e-06	2.30e-03	1.38e-05
11	16.0	0.2190	0.404	21.9	38.220	3.90e-07	1.46e-04	1.53e-07
12	4.00	0.2137	0.413	21.4	5.305	2.84e-06	4.42e-04	3.38e-06
13	1.00	0.2034	0.431	20.3	27.198	5.65e-07	3.42e-03	5.21e-06
14	0.250	0.1941	0.448	19.4	26.773	5.88e-07	1.24e-02	1.97e-05

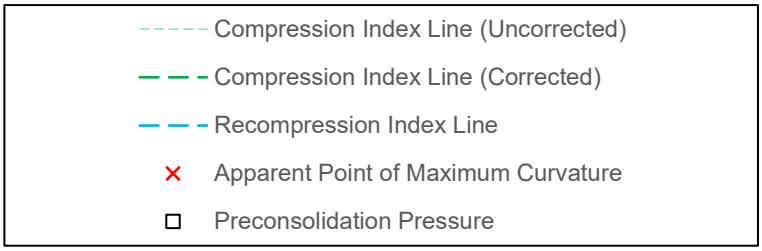
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/19/22	Depth: 6.3-6.4
	Test No.: IP-24-1A	Sample Type: intact	Elevation: ---
	Description: Moist, very dark gray silt		
	Remarks: System C, Swell Pressure = 0.0749 tsf		
	Displacement at End of Increment		

Boring: B-4.16A

Depth: 6.3'-6.4'

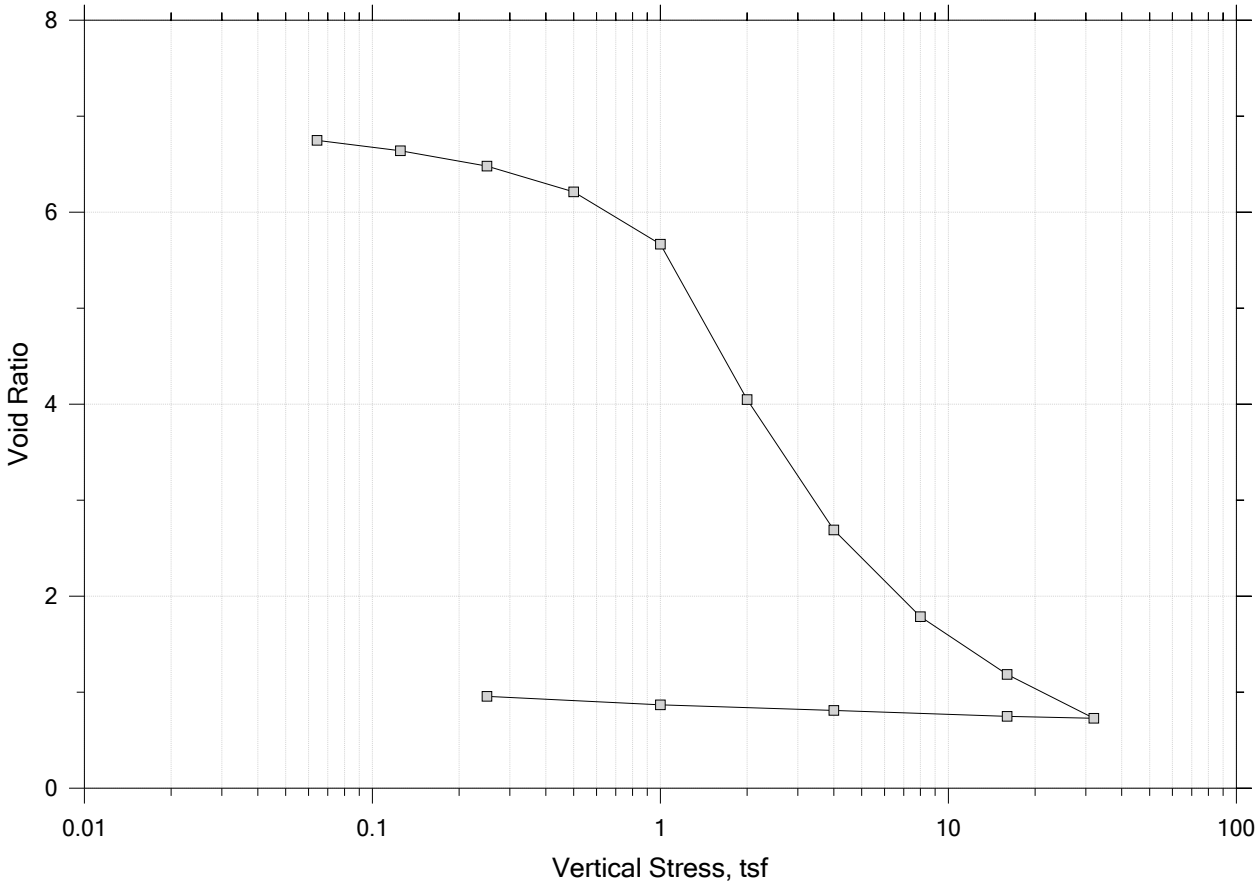
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.38
Preconsolidation Pressure, σ'_p (tsf) = 1.02
Compression Index, C_c = 0.26
Recompression Index, C_r = 0.020

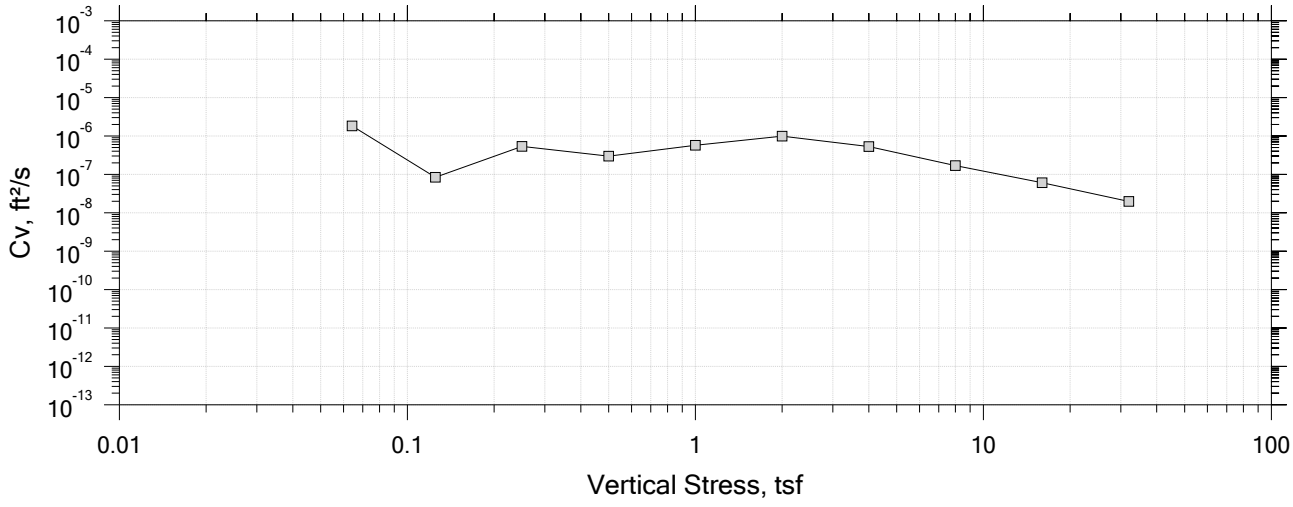




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

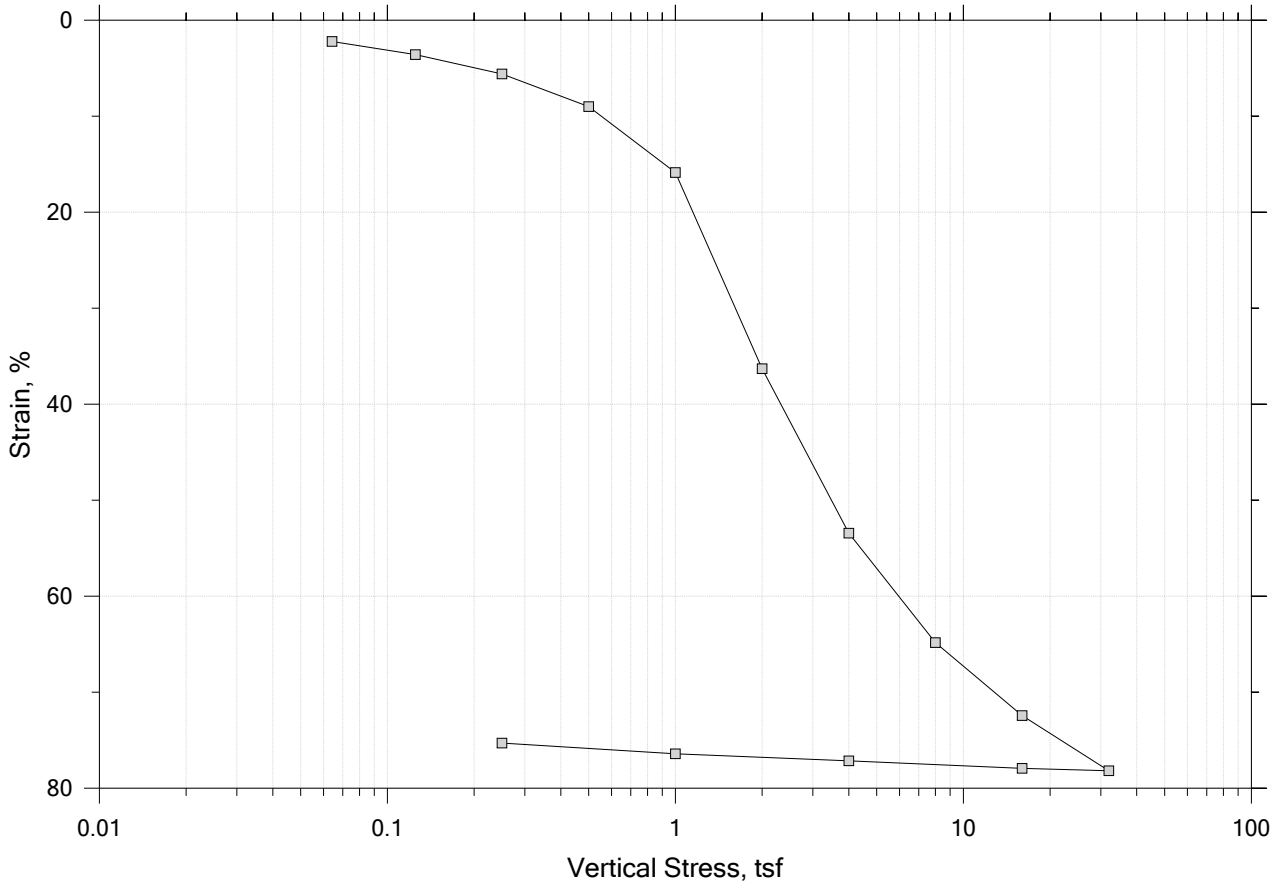


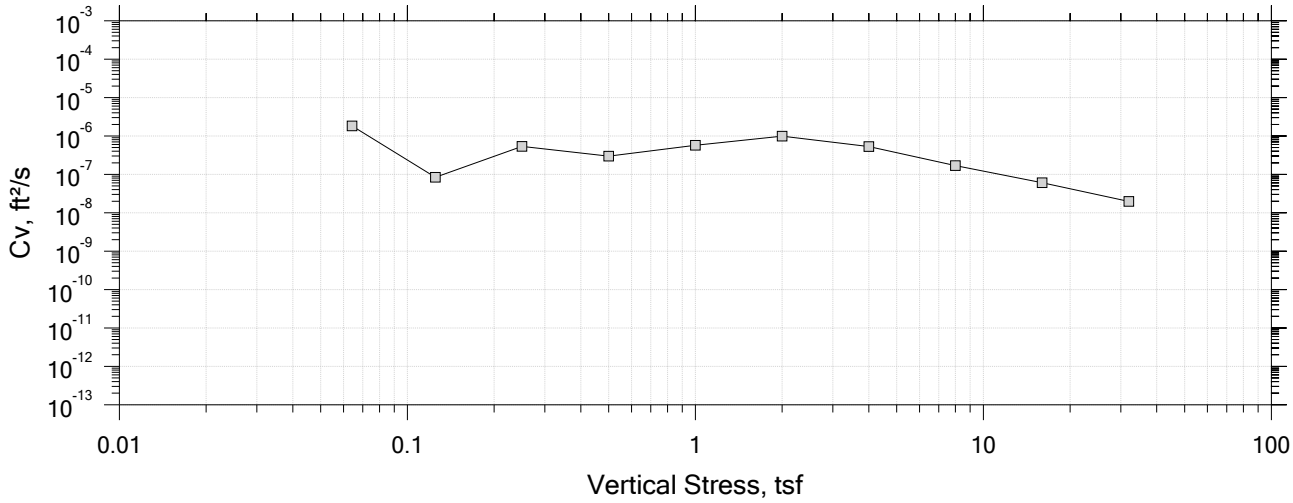


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

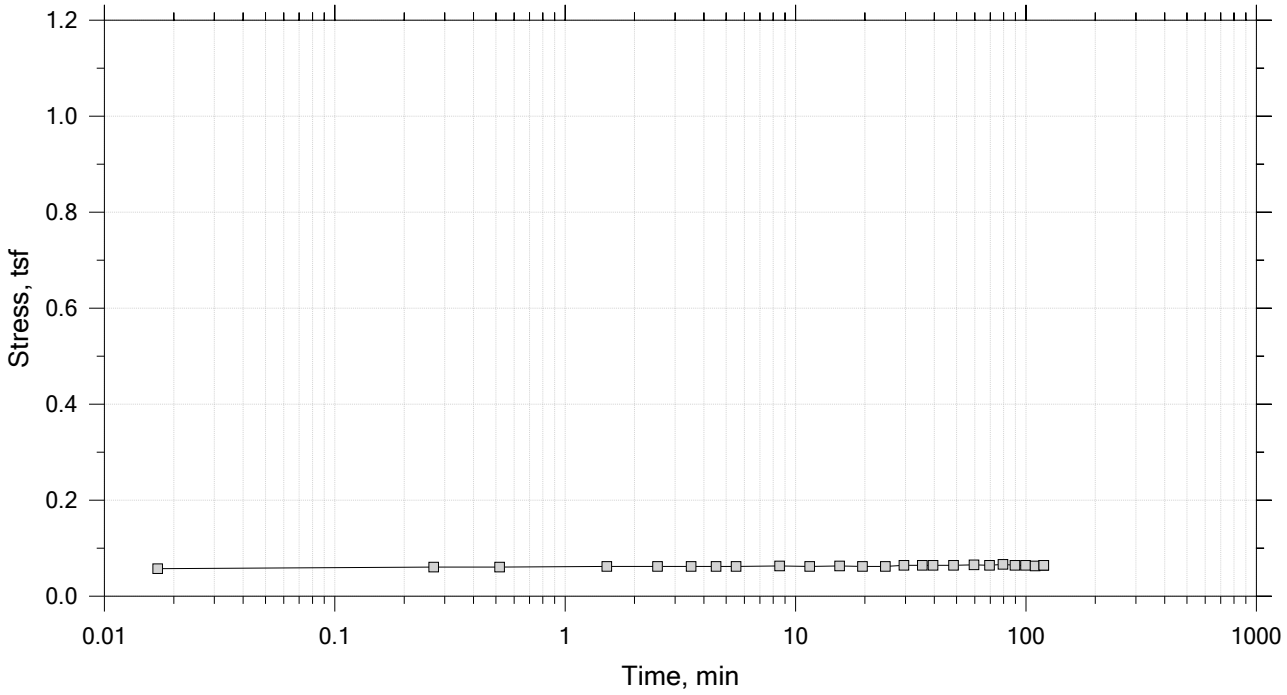


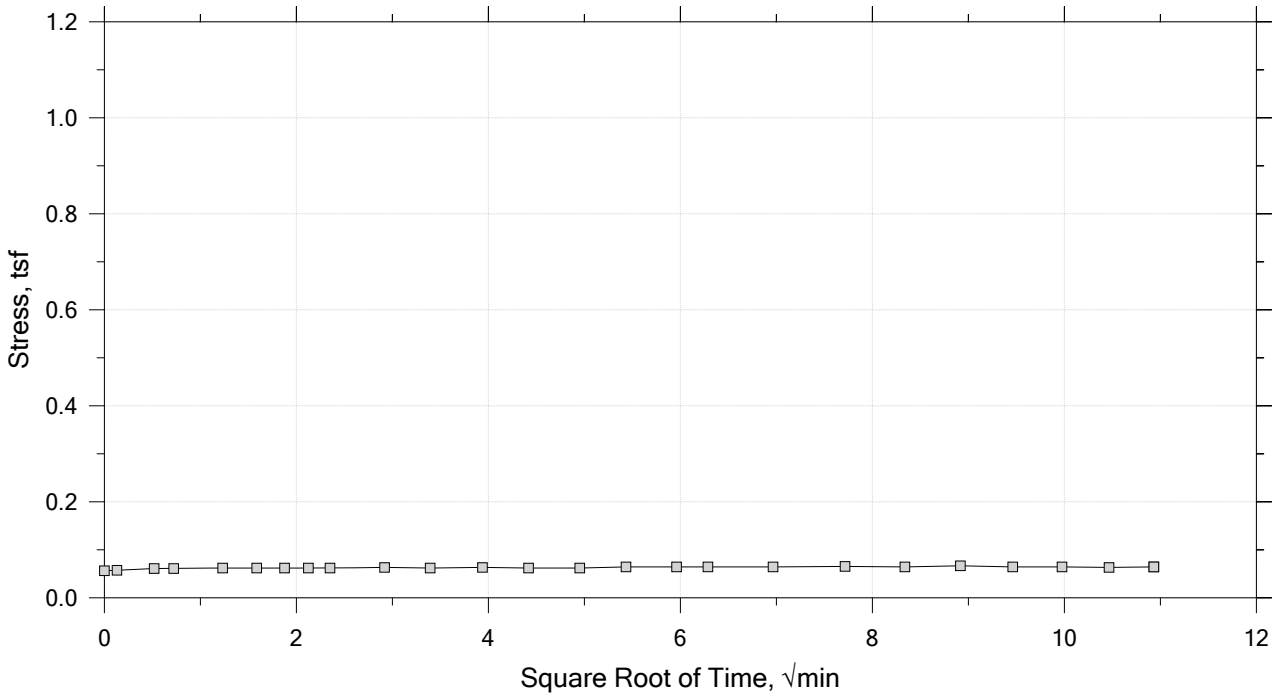


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0642 tsf





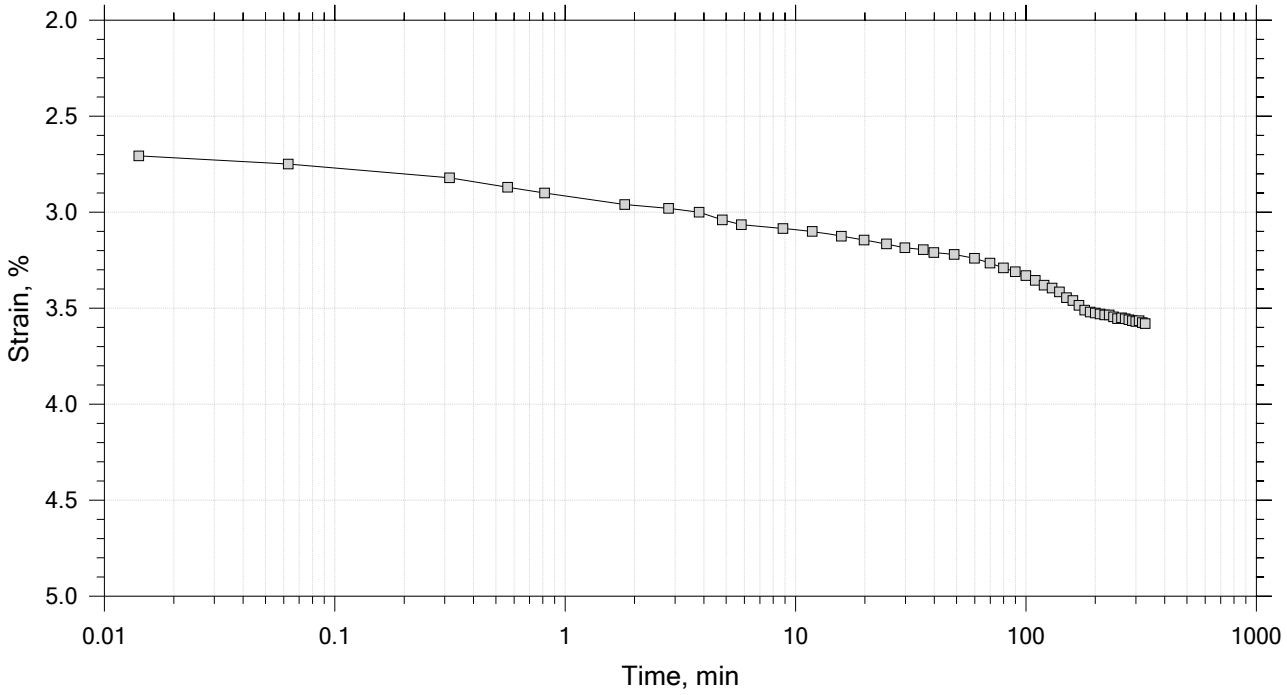
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

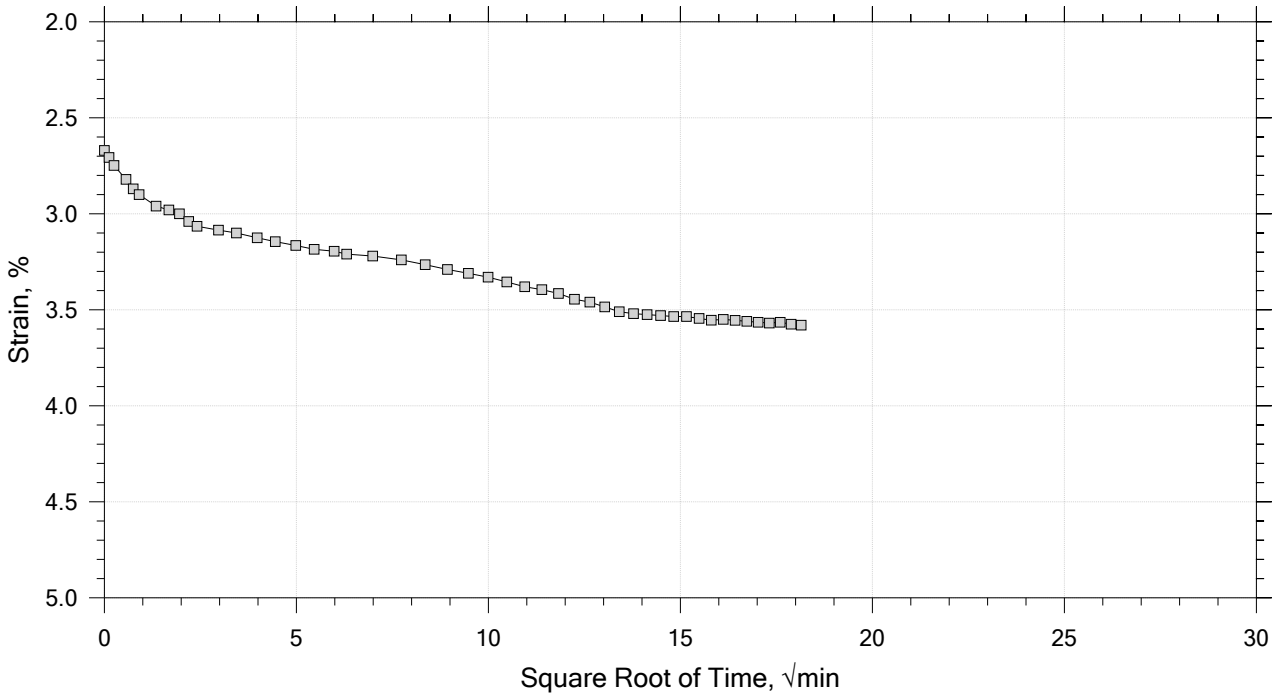
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

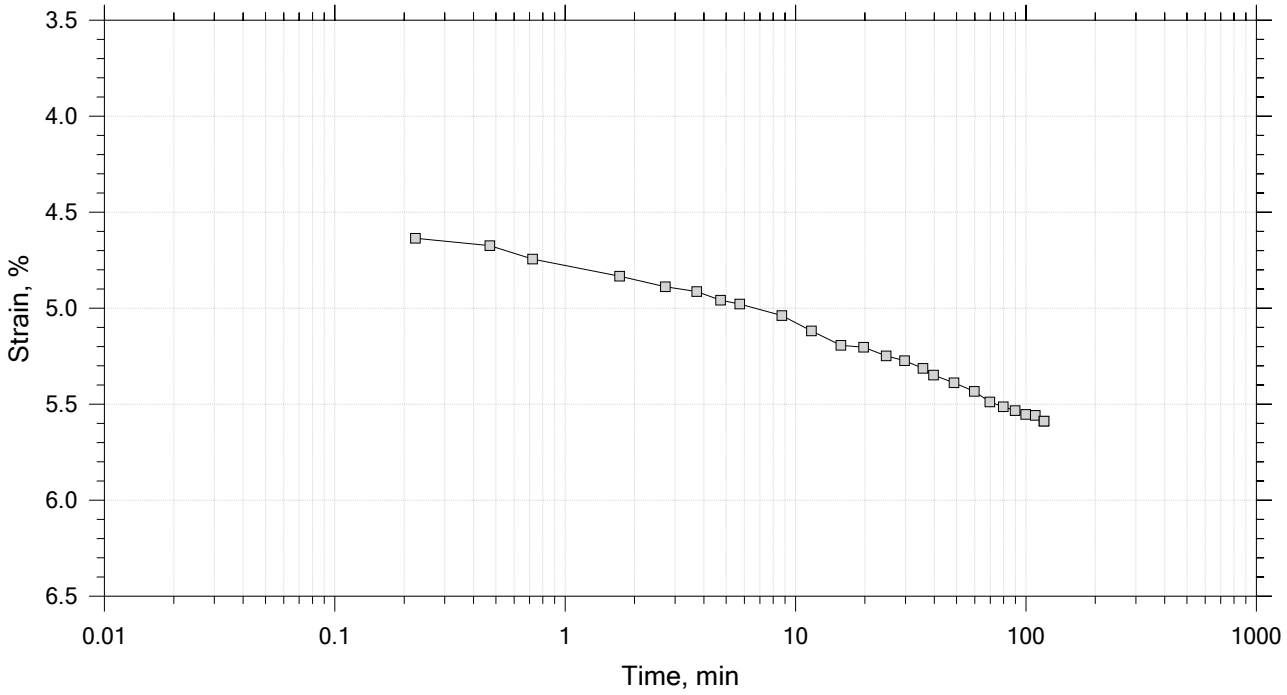


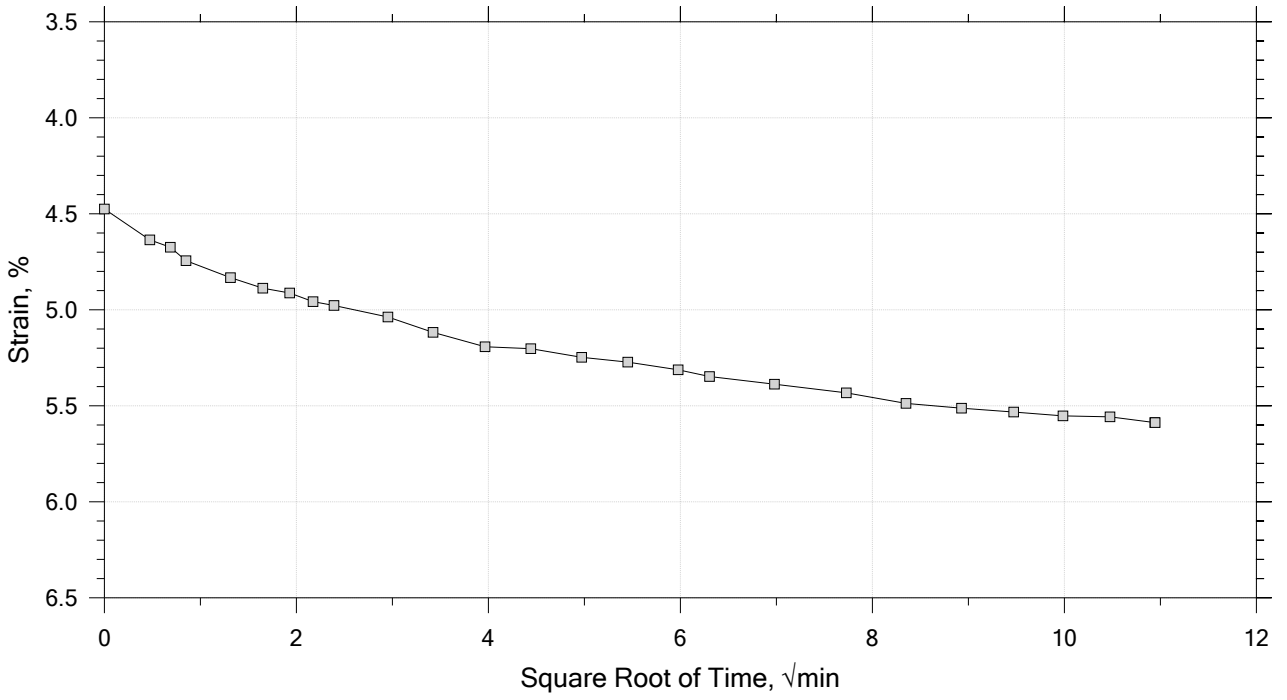


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





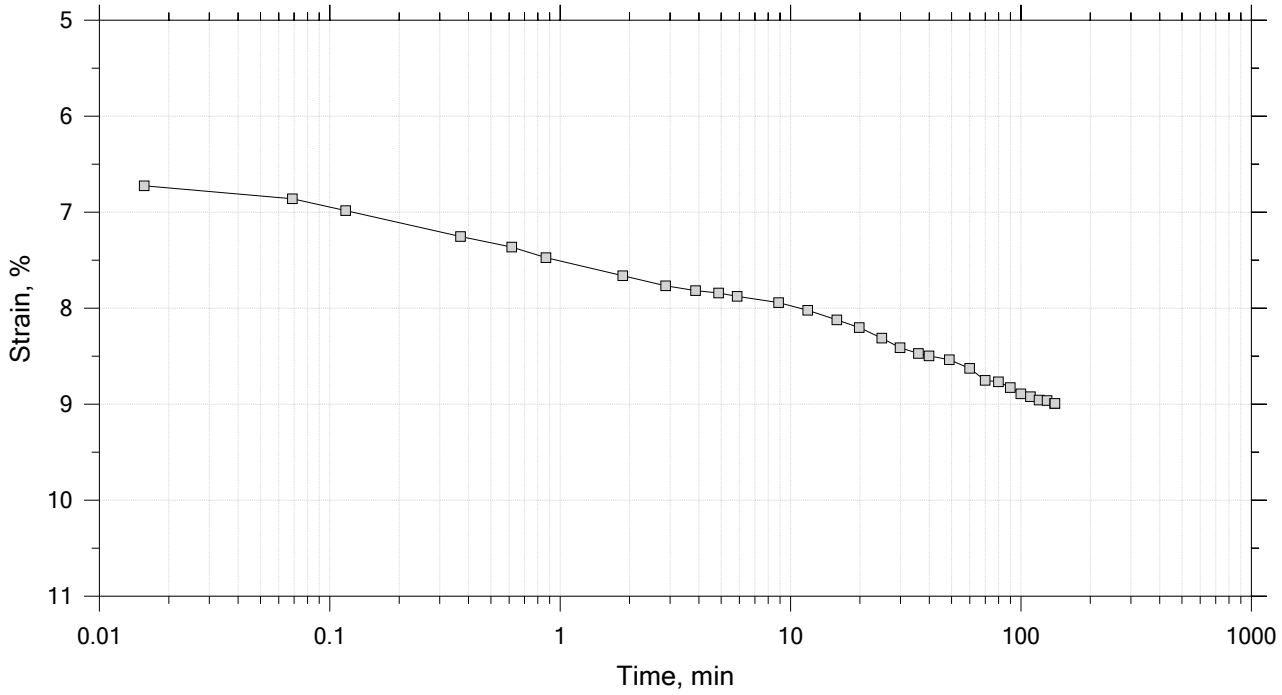
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

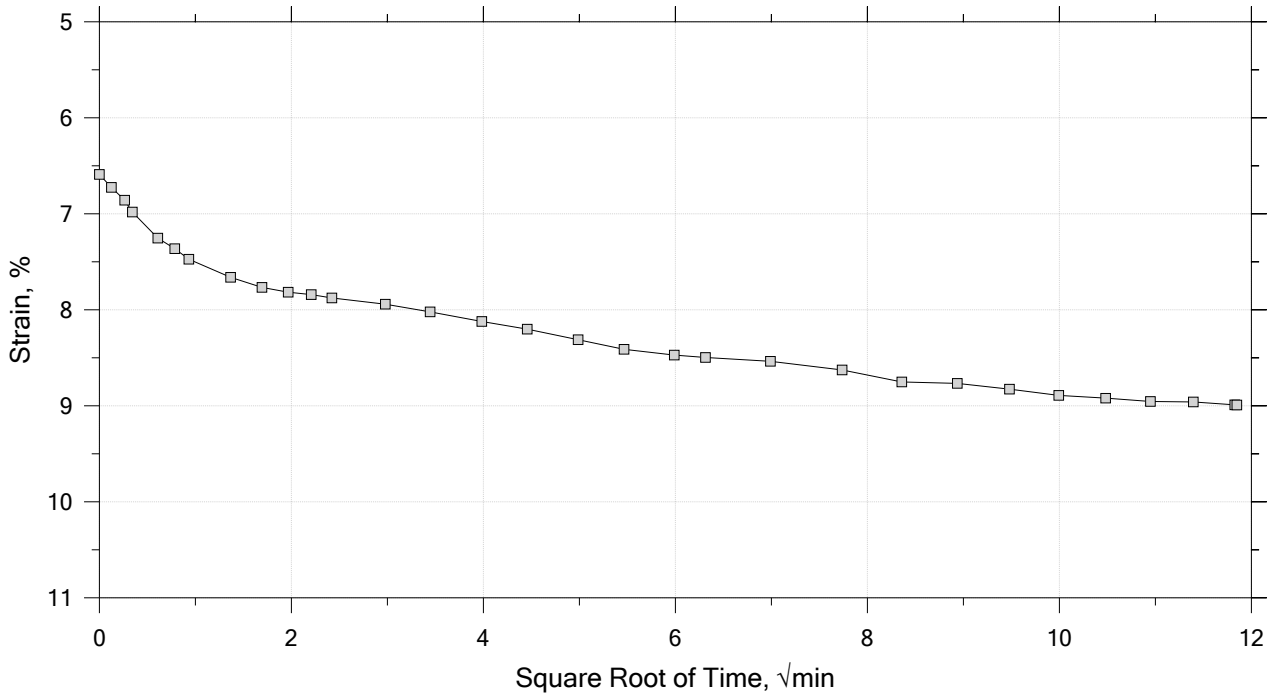
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





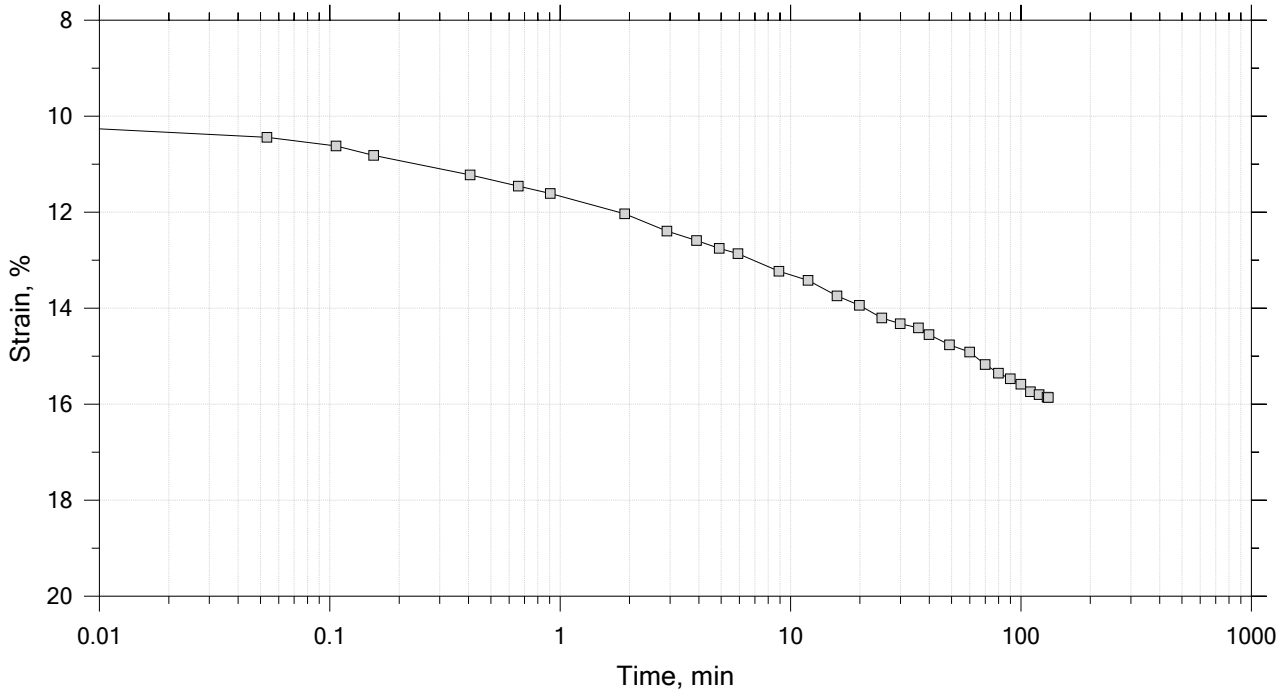
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

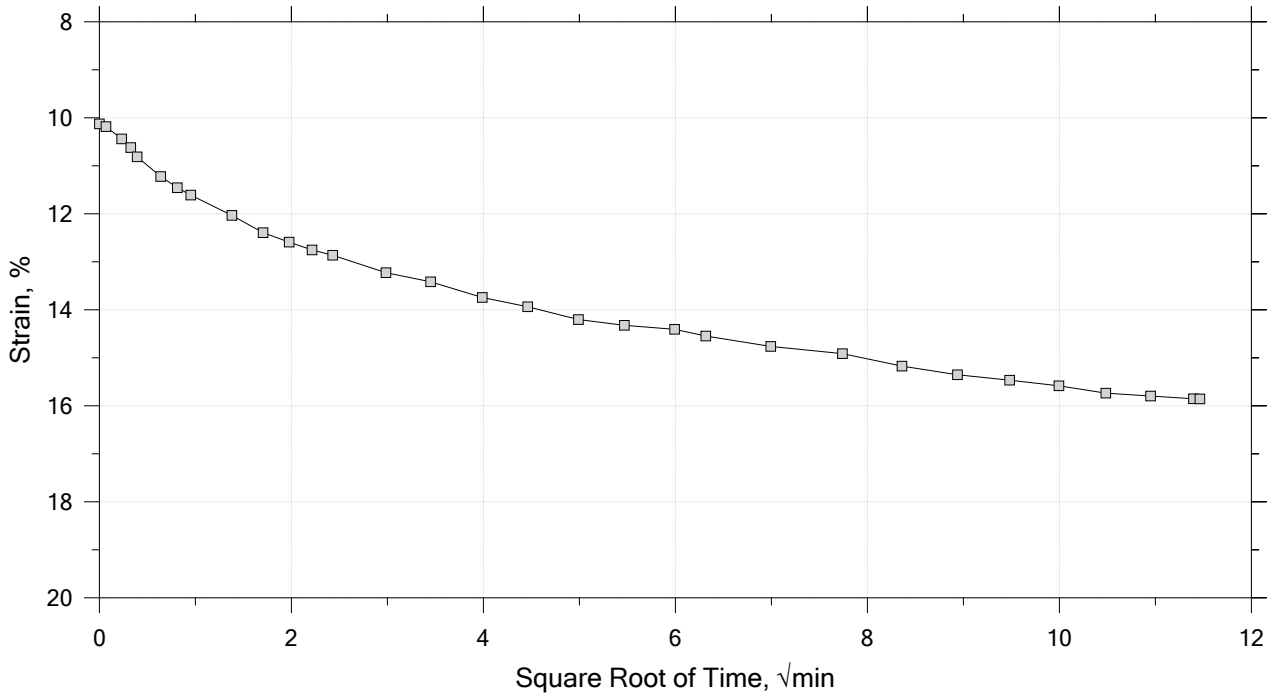
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





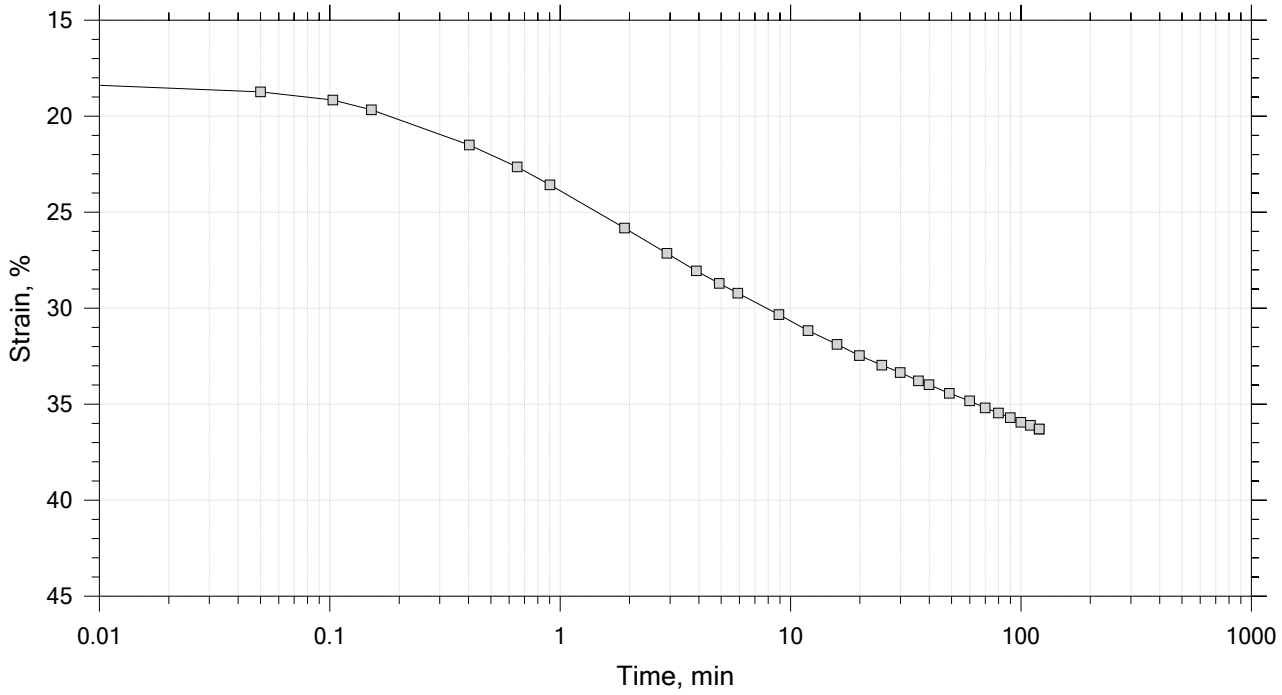
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

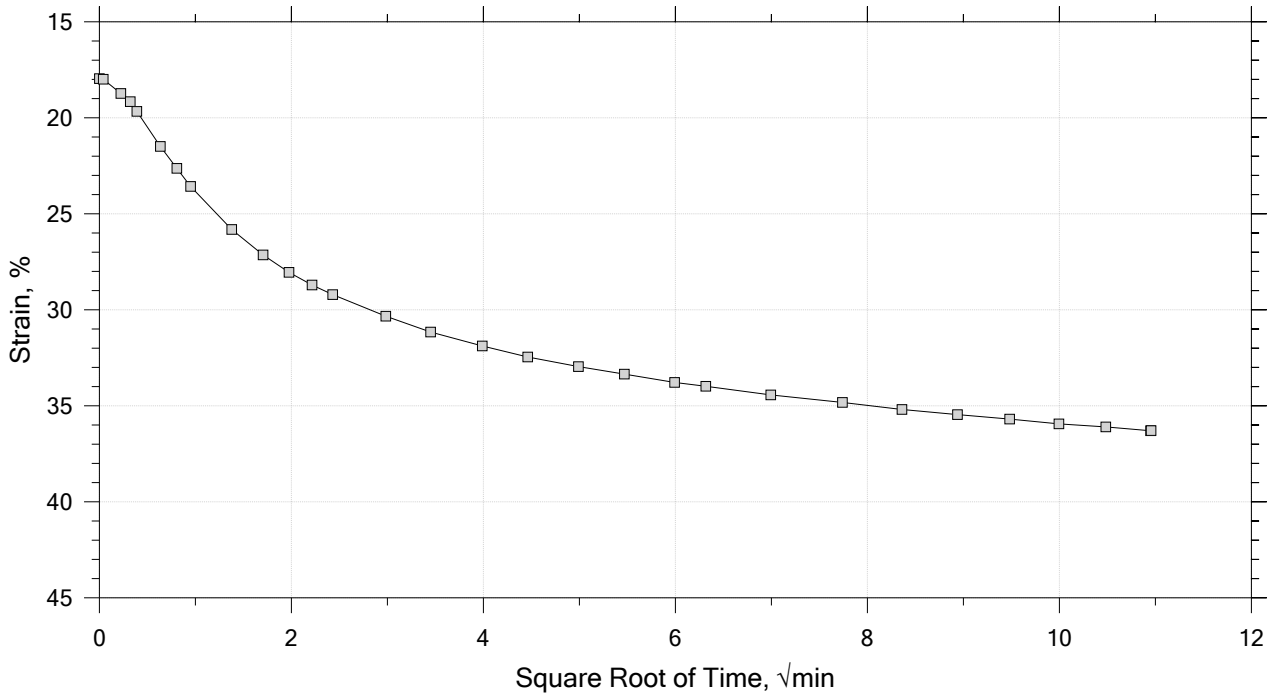
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





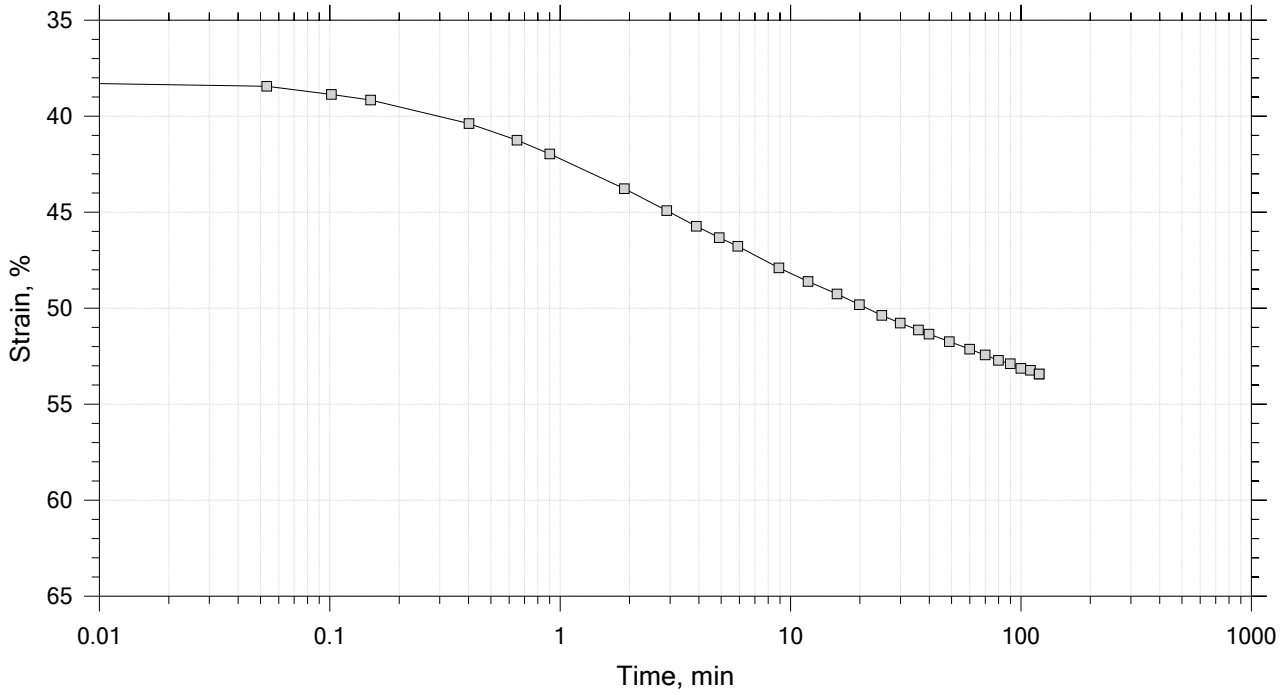
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

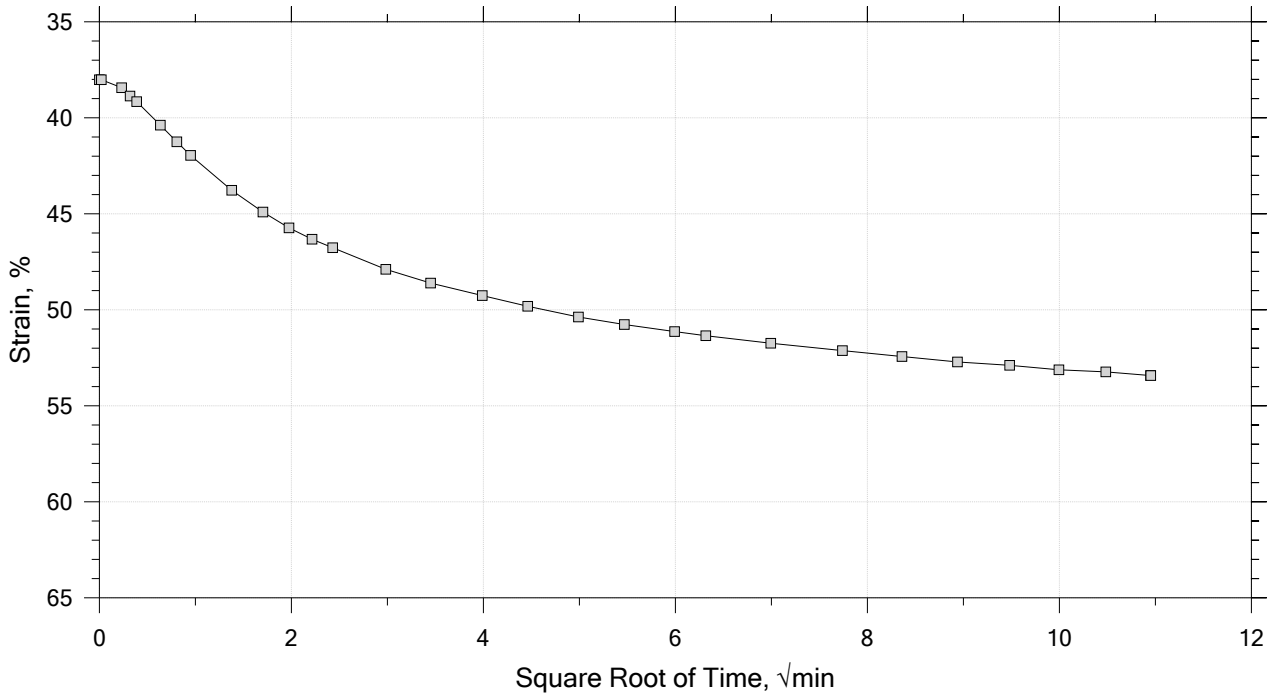
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

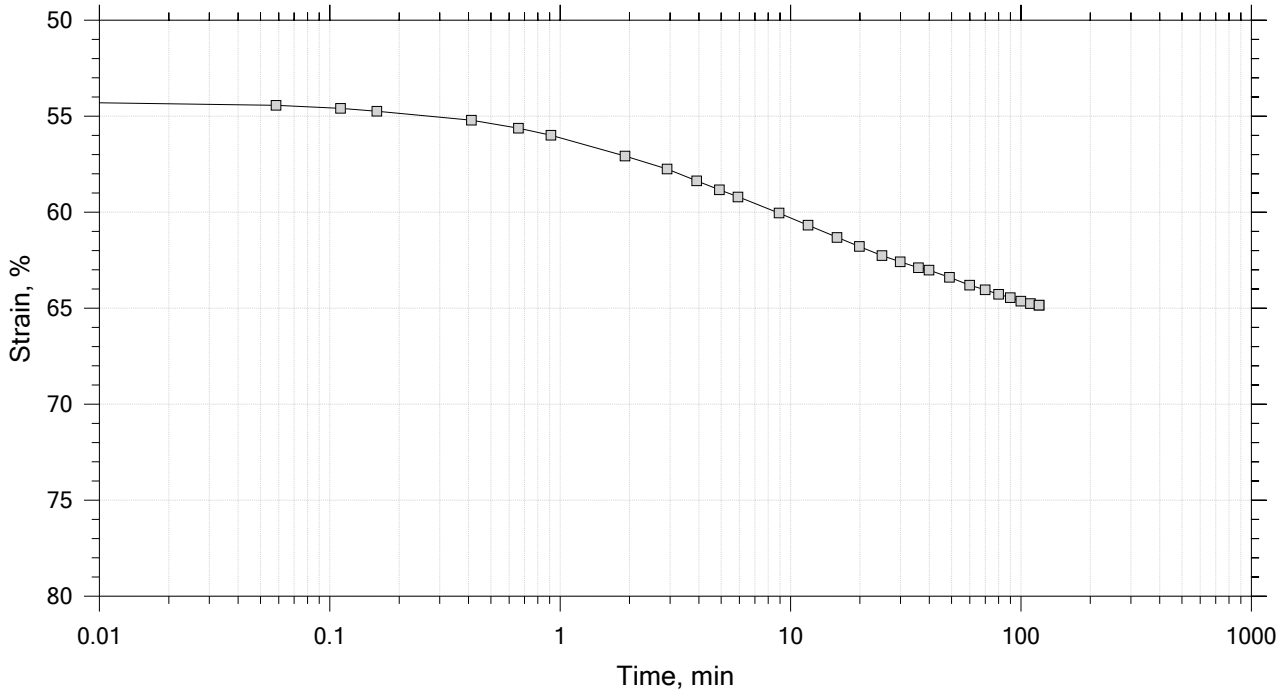


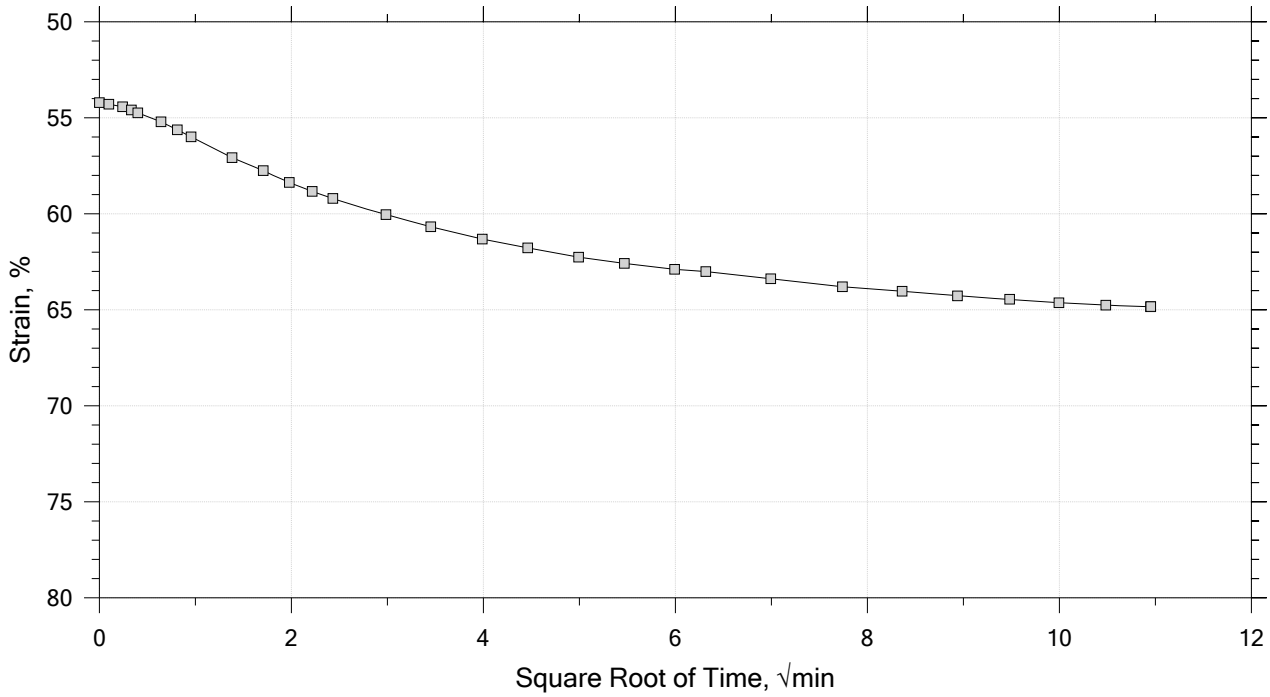


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

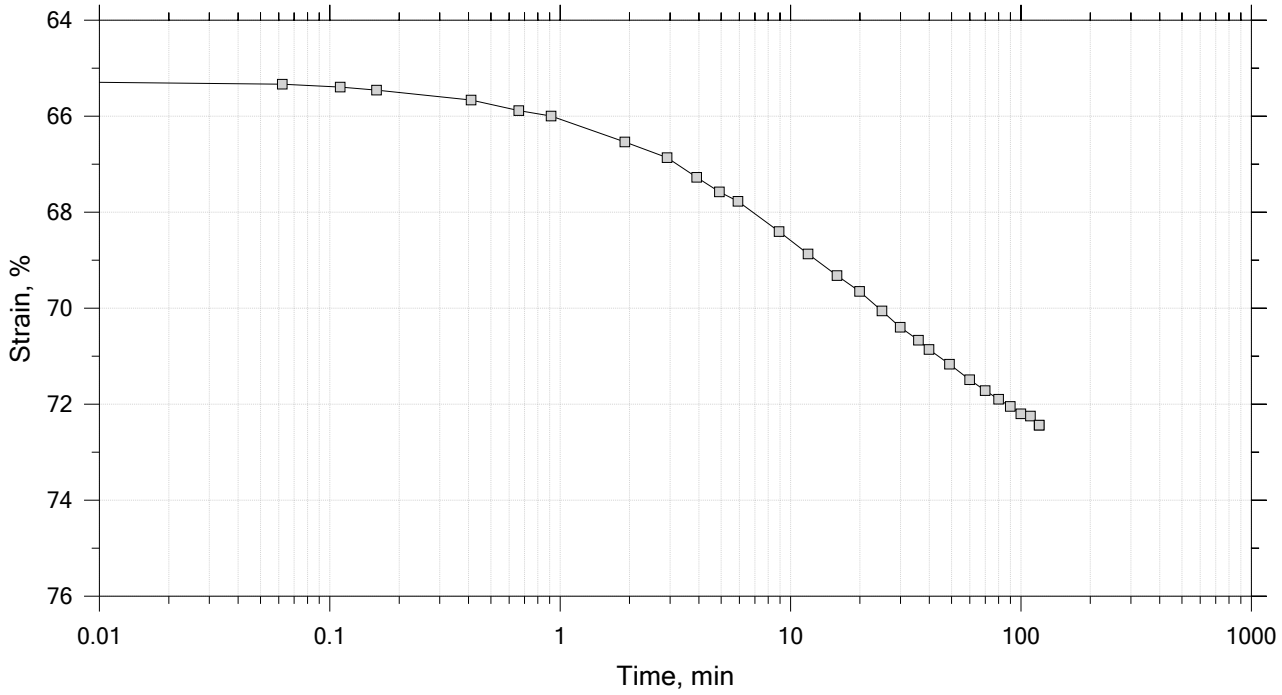


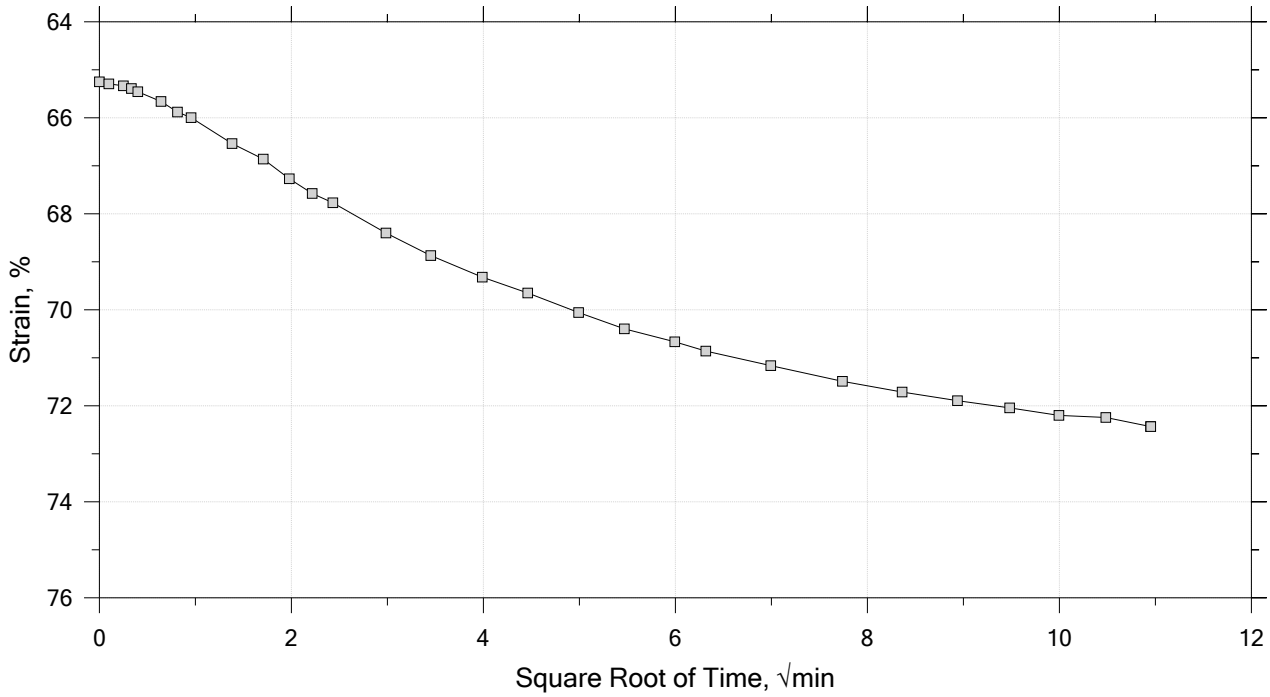


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

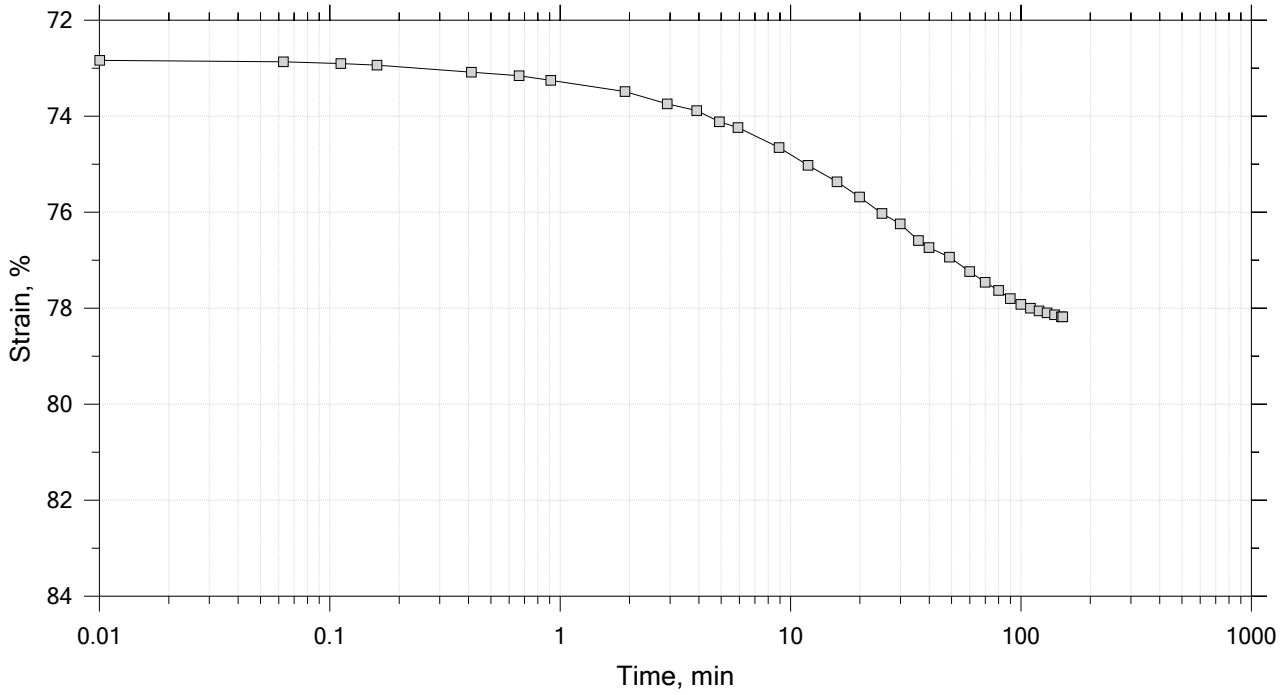


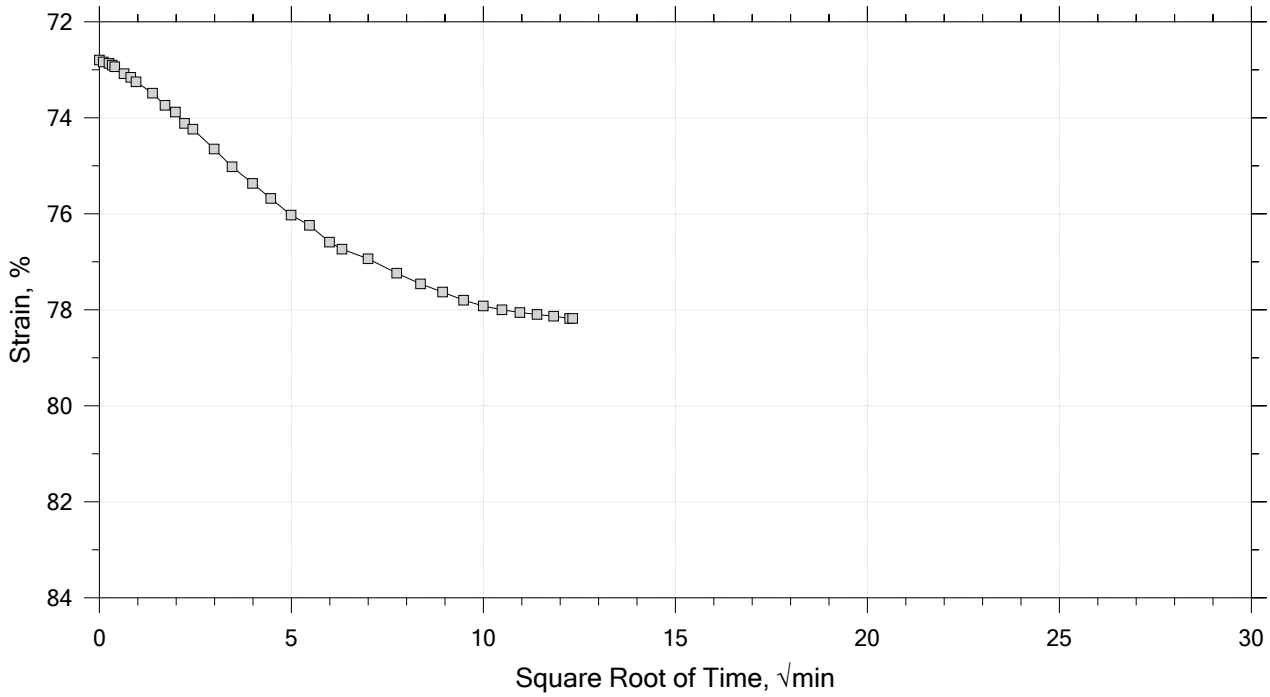


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

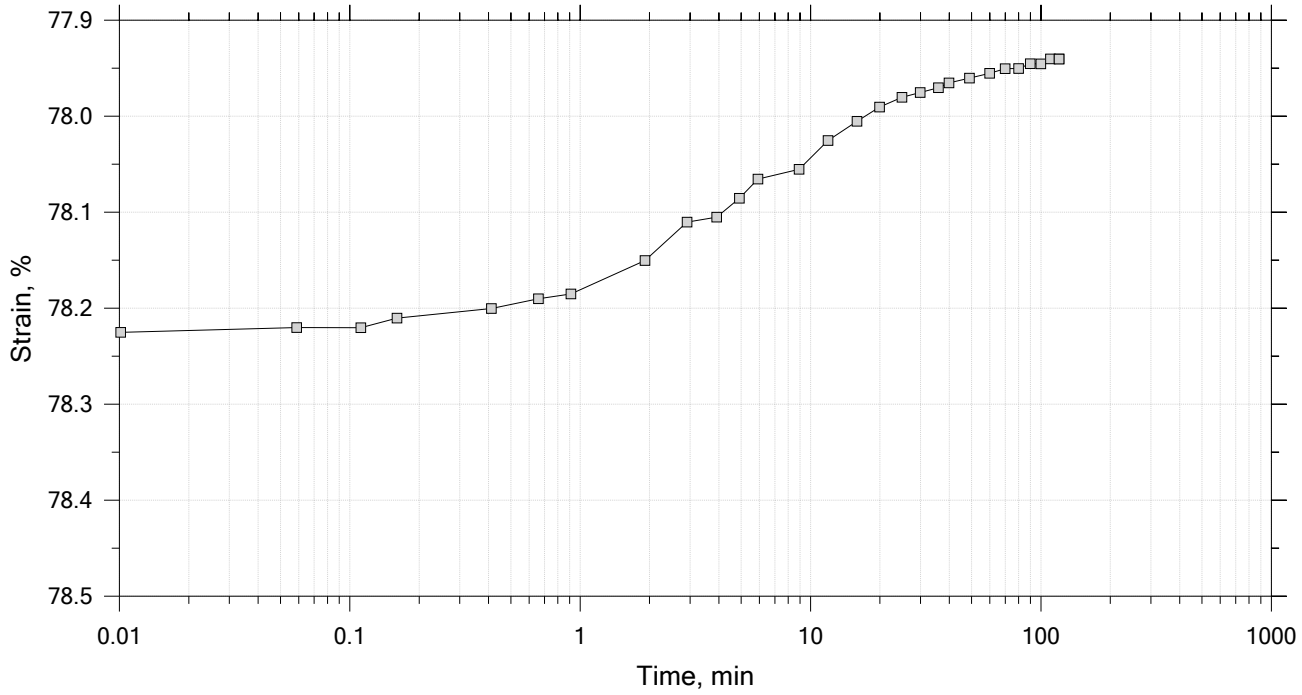


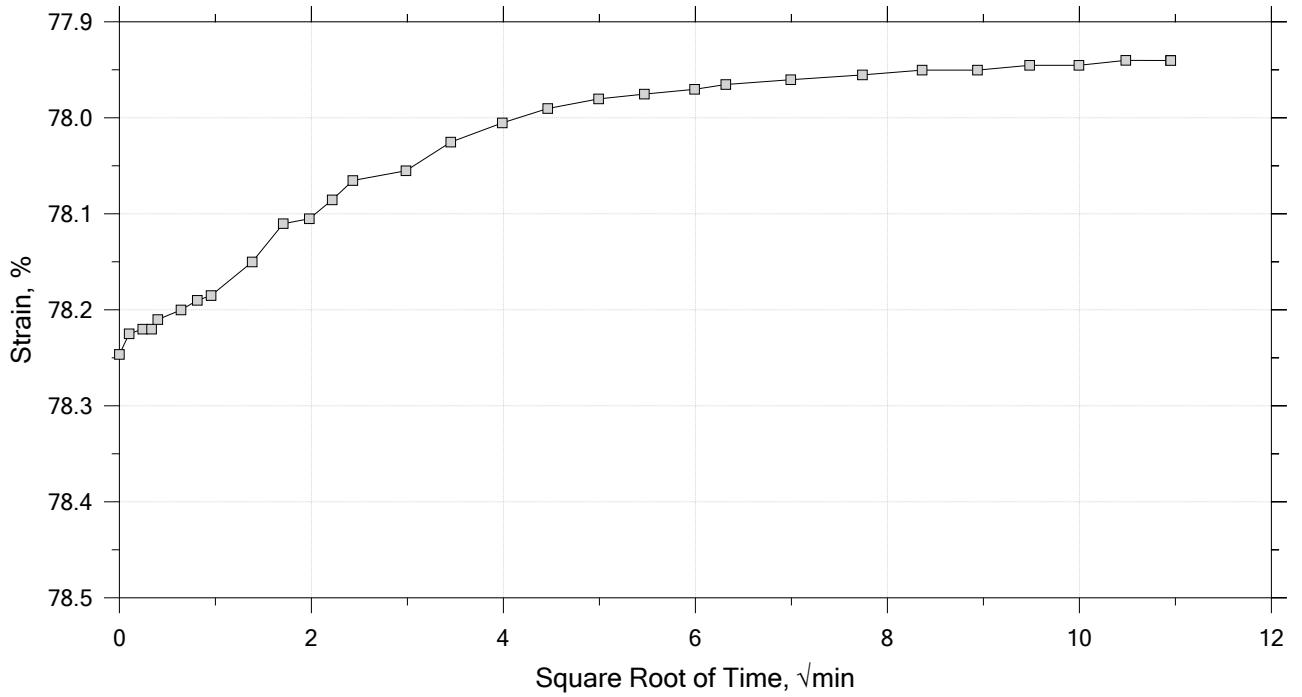


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

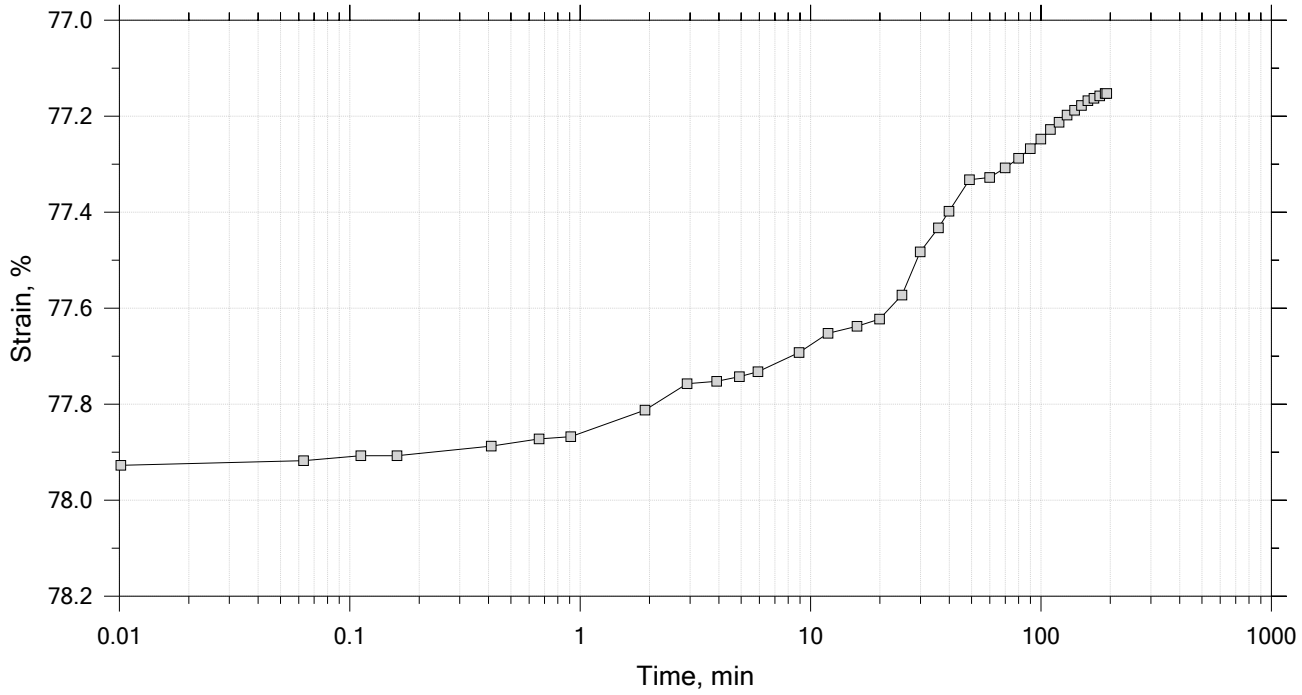


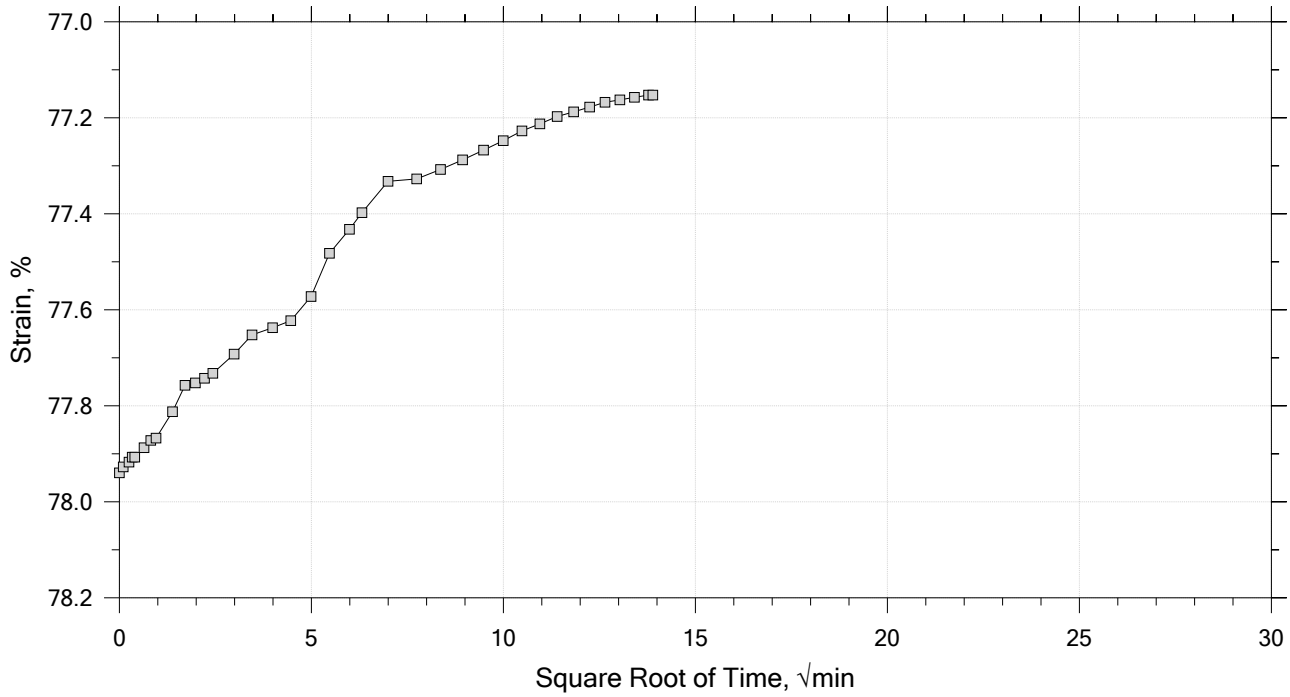


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

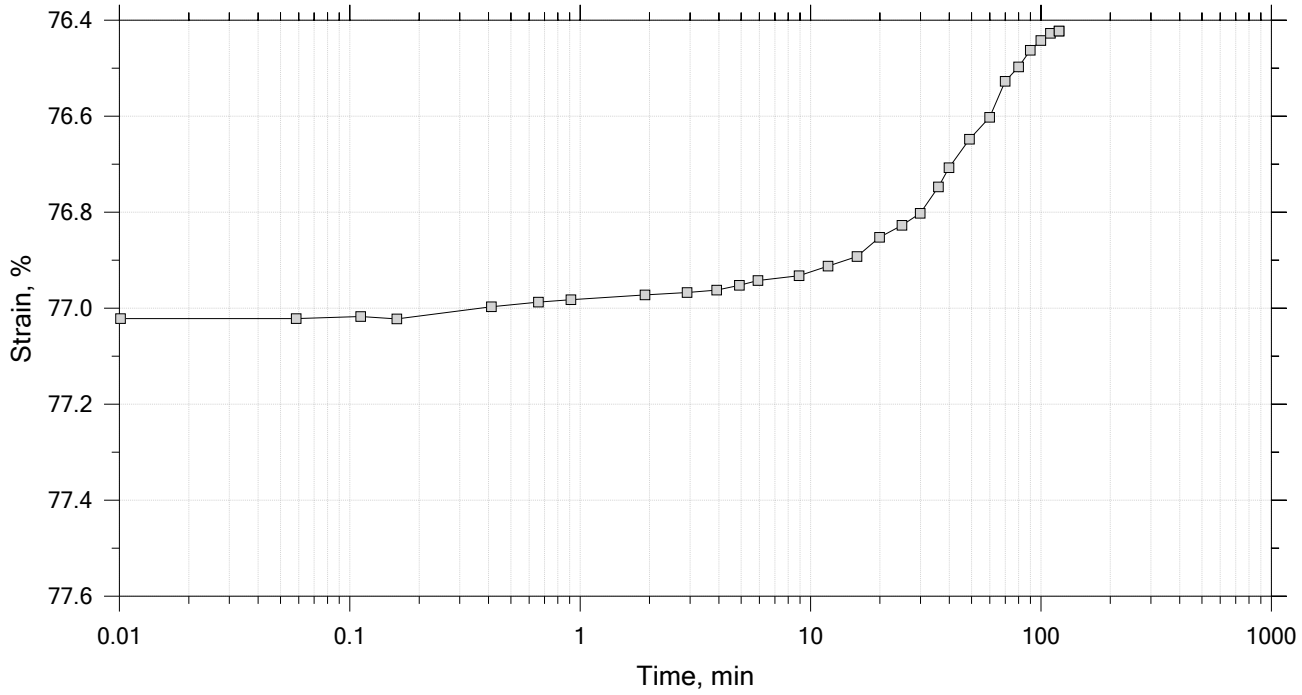


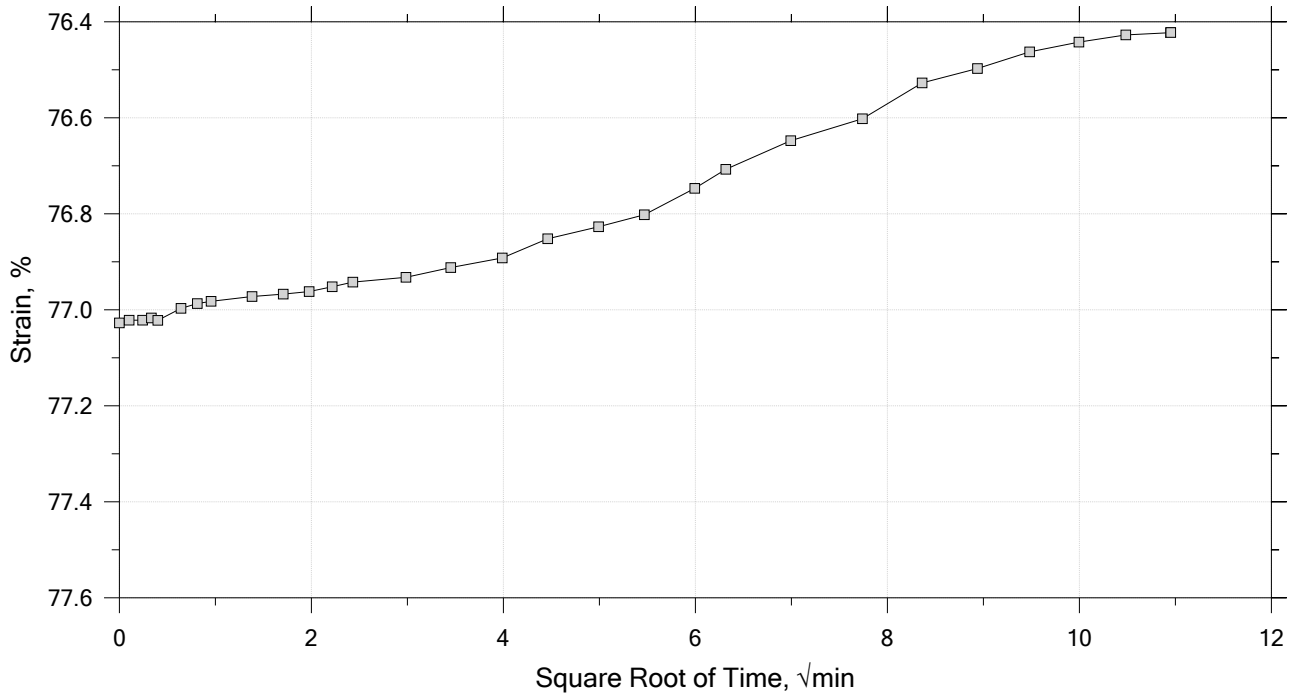


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

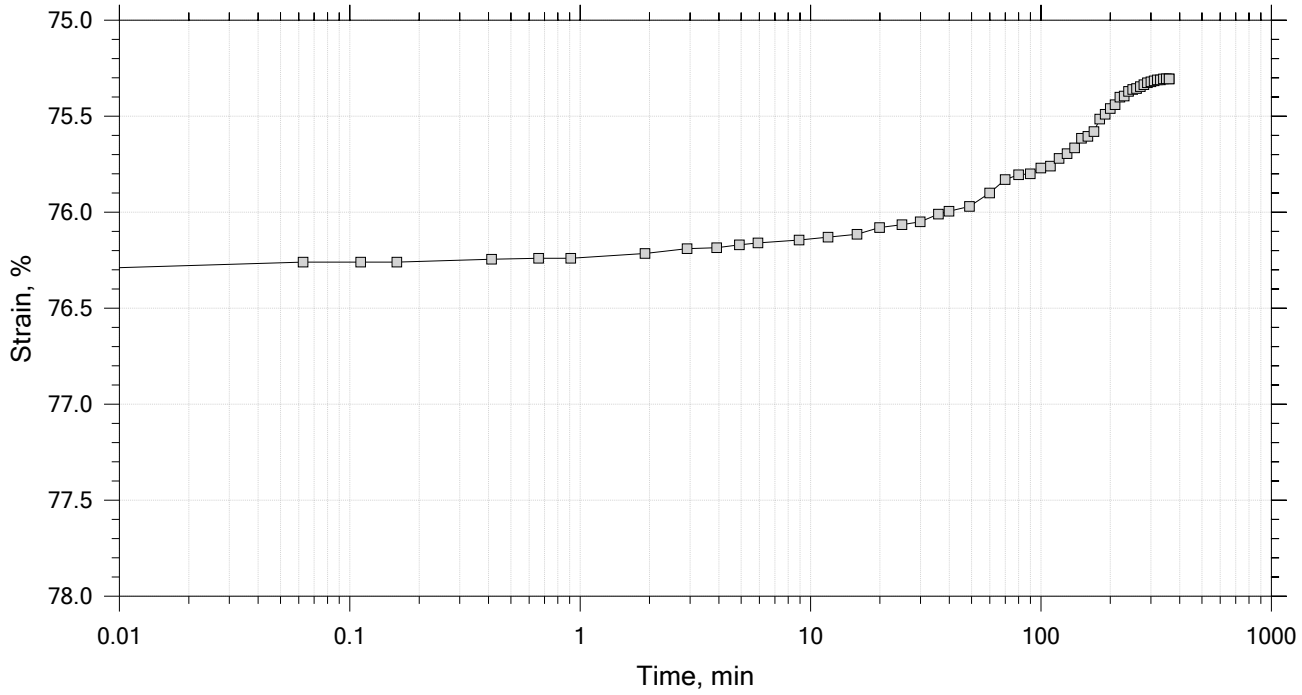


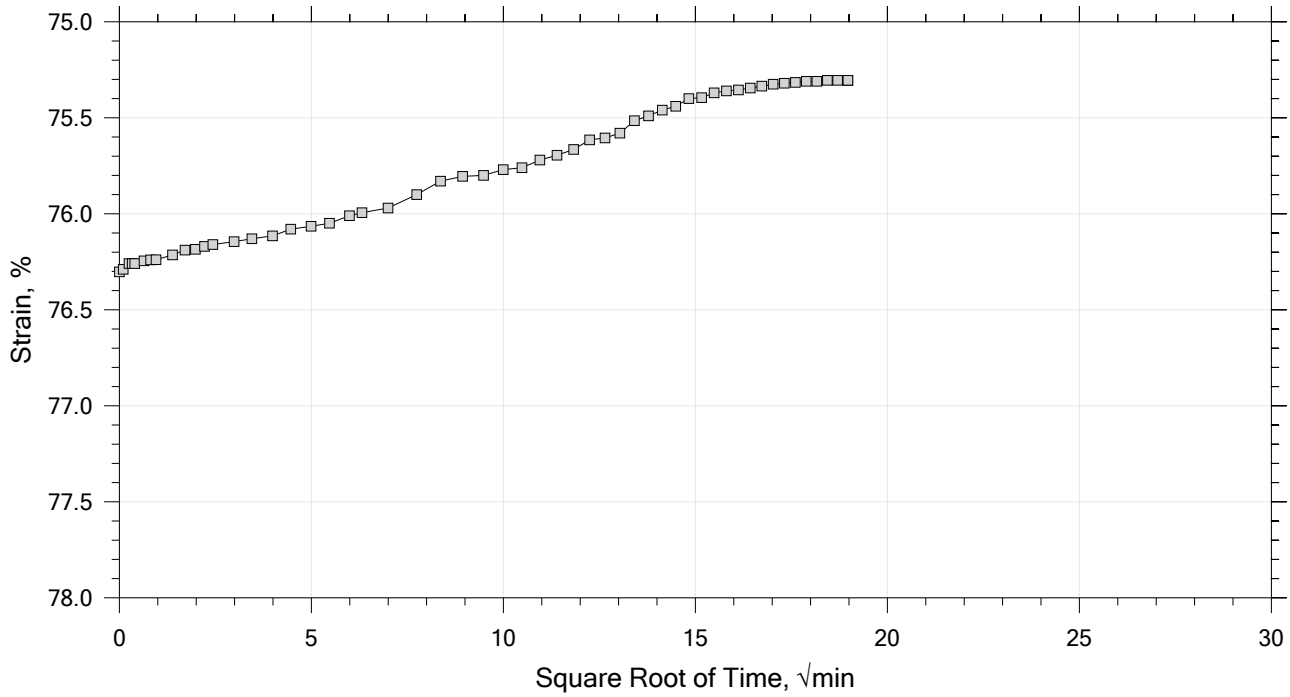


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
Test No.: IP-24-2	Sample Type: intact	Elevation: ---
Description: Moist, dark gray silt		
Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 1.95	Liquid Limit: 391
Initial Height: 1.00 in	Initial Void Ratio: 6.92	Plastic Limit: 293
Final Height: 0.25 in	Final Void Ratio: 0.957	Plasticity Index: 98

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5853	RING		E5877
Mass Container, gm	8.21	108.4	108.4	8.43
Mass Container + Wet Soil, gm	66.23	185.28	137.91	37.87
Mass Container + Dry Soil, gm	25.51	128.2	128.2	28.18
Mass Dry Soil, gm	17.3	19.797	19.797	19.75
Water Content, %	235.38	288.34	49.06	49.06
Void Ratio	---	6.92	0.96	---
Degree of Saturation, %	---	81.21	100.00	---
Dry Unit Weight, pcf	---	15.364	62.216	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

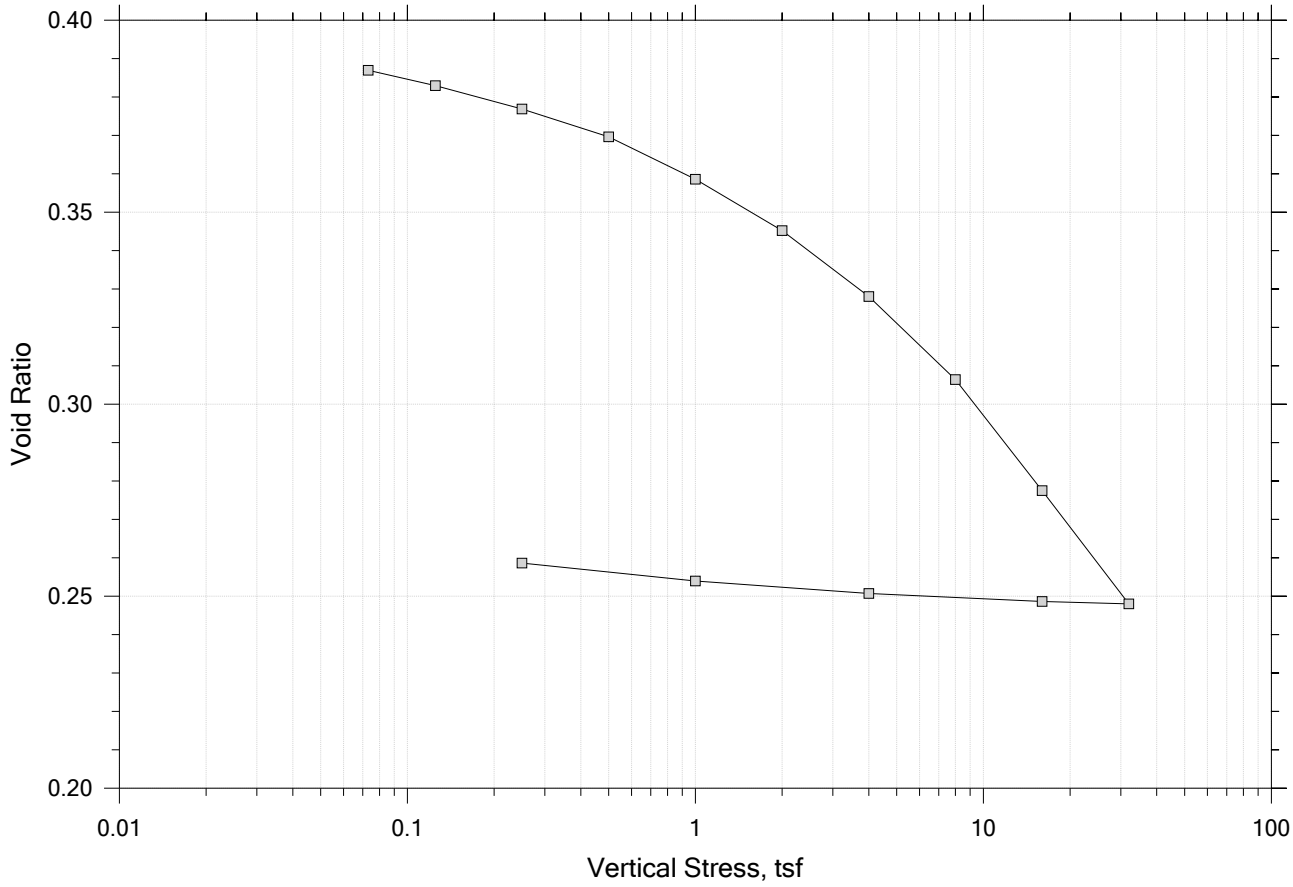
Square Root of Time Coefficients

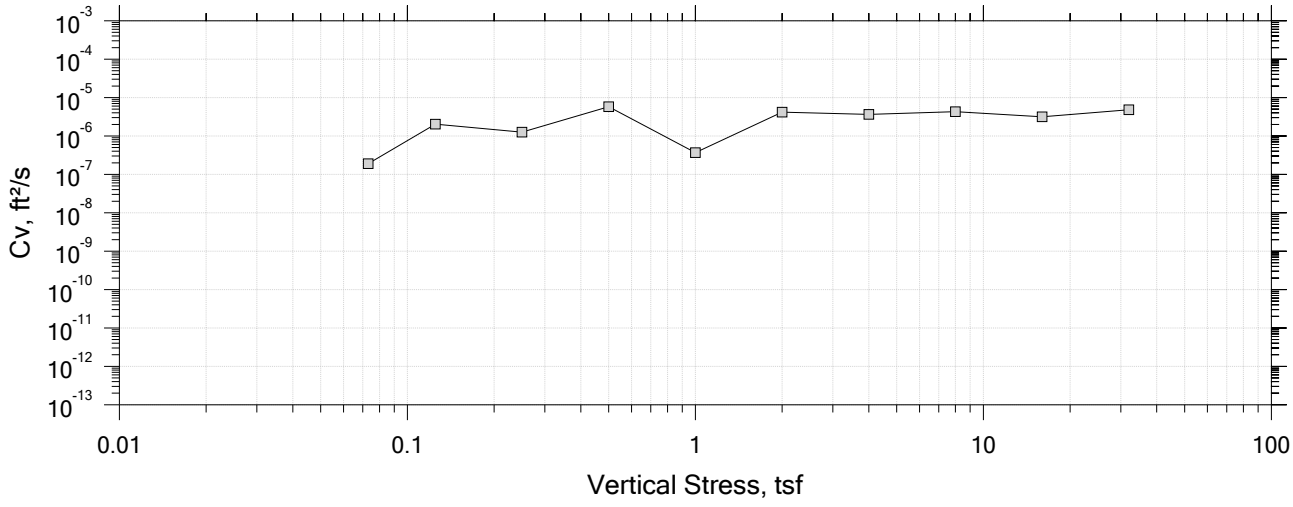
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0642	0.02212	6.75	2.21	13.179	1.82e-06	3.45e-01	1.69e-03
2	0.125	0.03580	6.64	3.58	276.219	8.38e-08	2.25e-01	5.08e-05
3	0.250	0.05588	6.48	5.59	41.762	5.35e-07	1.61e-01	2.32e-04
4	0.500	0.08991	6.21	8.99	71.003	2.97e-07	1.36e-01	1.09e-04
5	1.00	0.1586	5.67	15.9	32.792	5.74e-07	1.37e-01	2.13e-04
6	2.00	0.3629	4.05	36.3	13.531	9.91e-07	2.04e-01	5.46e-04
7	4.00	0.5342	2.69	53.4	14.130	5.28e-07	8.57e-02	1.22e-04
8	8.00	0.6484	1.79	64.8	24.175	1.70e-07	2.85e-02	1.30e-05
9	16.0	0.7244	1.18	72.4	39.850	6.06e-08	9.50e-03	1.55e-06
10	32.0	0.7818	0.729	78.2	75.758	1.97e-08	3.59e-03	1.91e-07
11	16.0	0.7794	0.748	77.9	15.431	7.65e-08	1.50e-04	3.10e-08
12	4.00	0.7715	0.810	77.2	126.782	9.76e-09	6.56e-04	1.73e-08
13	1.00	0.7642	0.868	76.4	89.242	1.48e-08	2.43e-03	9.73e-08
14	0.250	0.7531	0.957	75.3	291.812	4.90e-09	1.49e-02	1.97e-07

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 6.9-7.0
	Test No.: IP-24-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silt		
	Remarks: TX-028, Swell Pressure = 0.0642 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

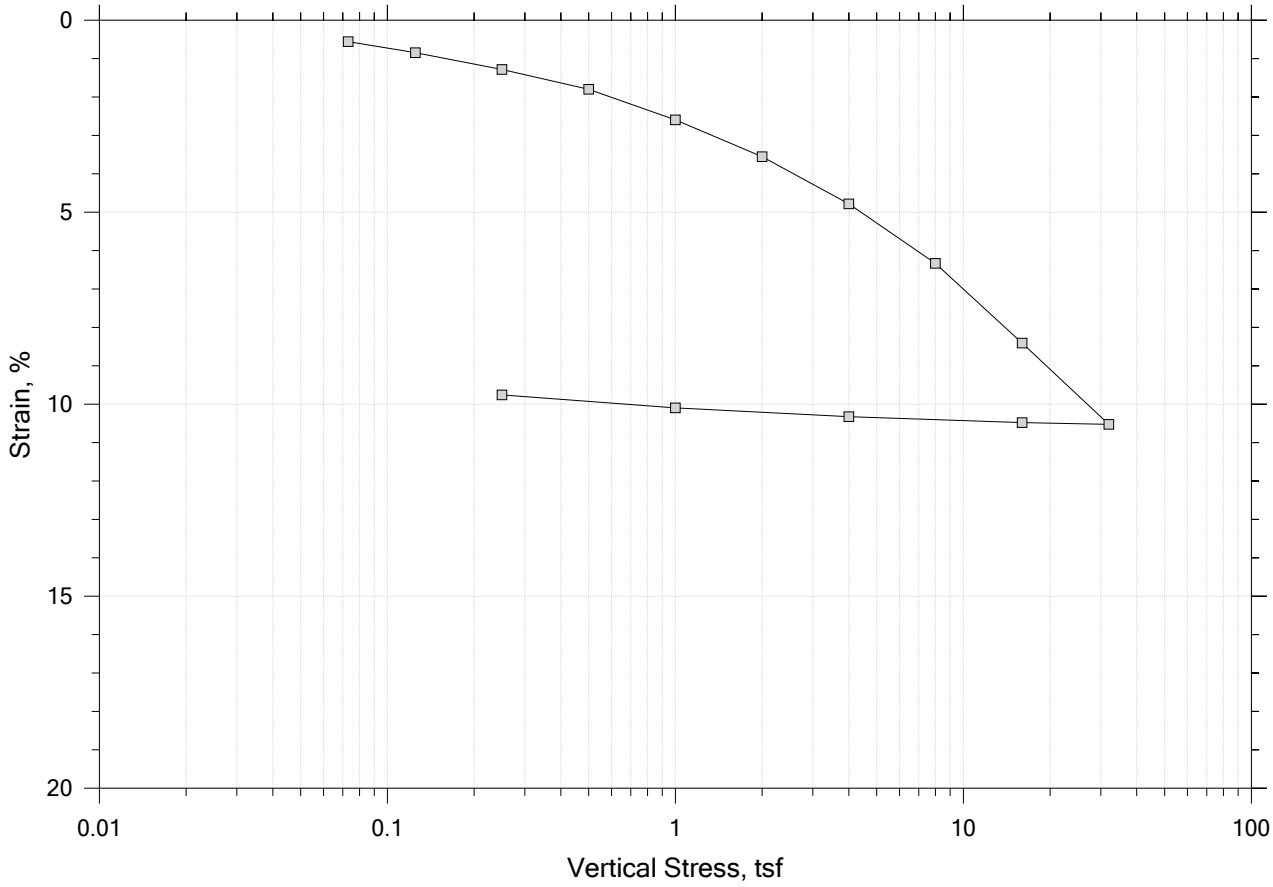


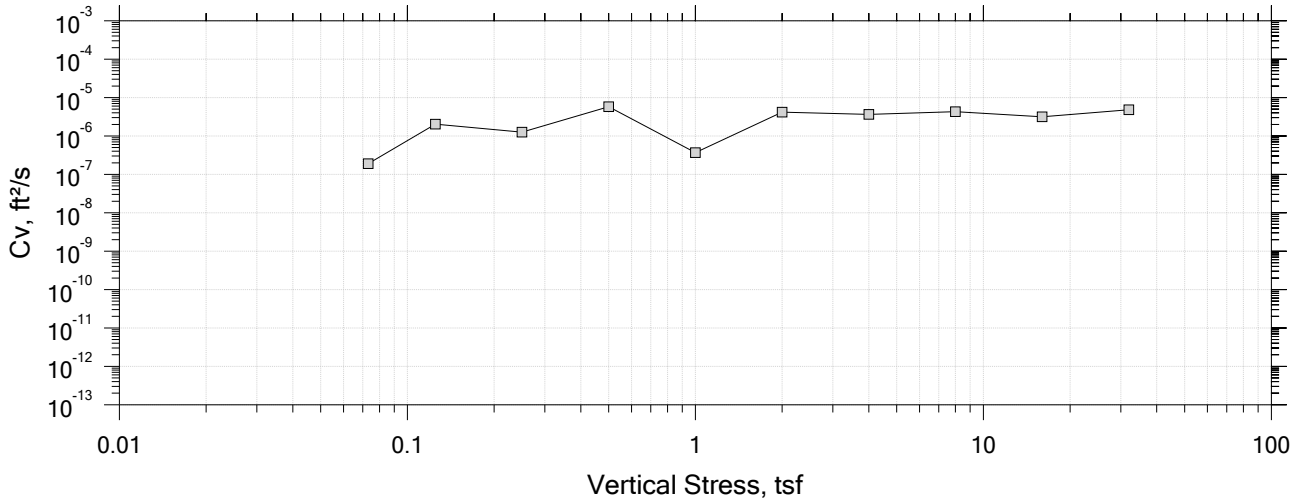


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

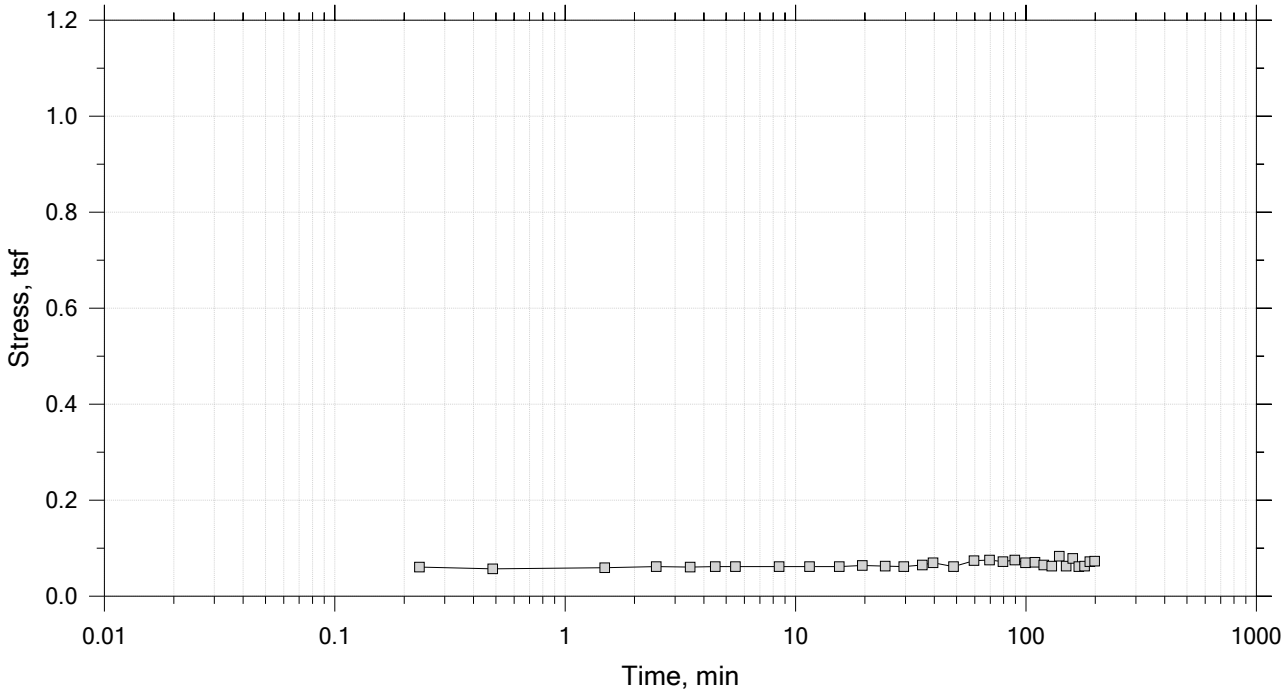


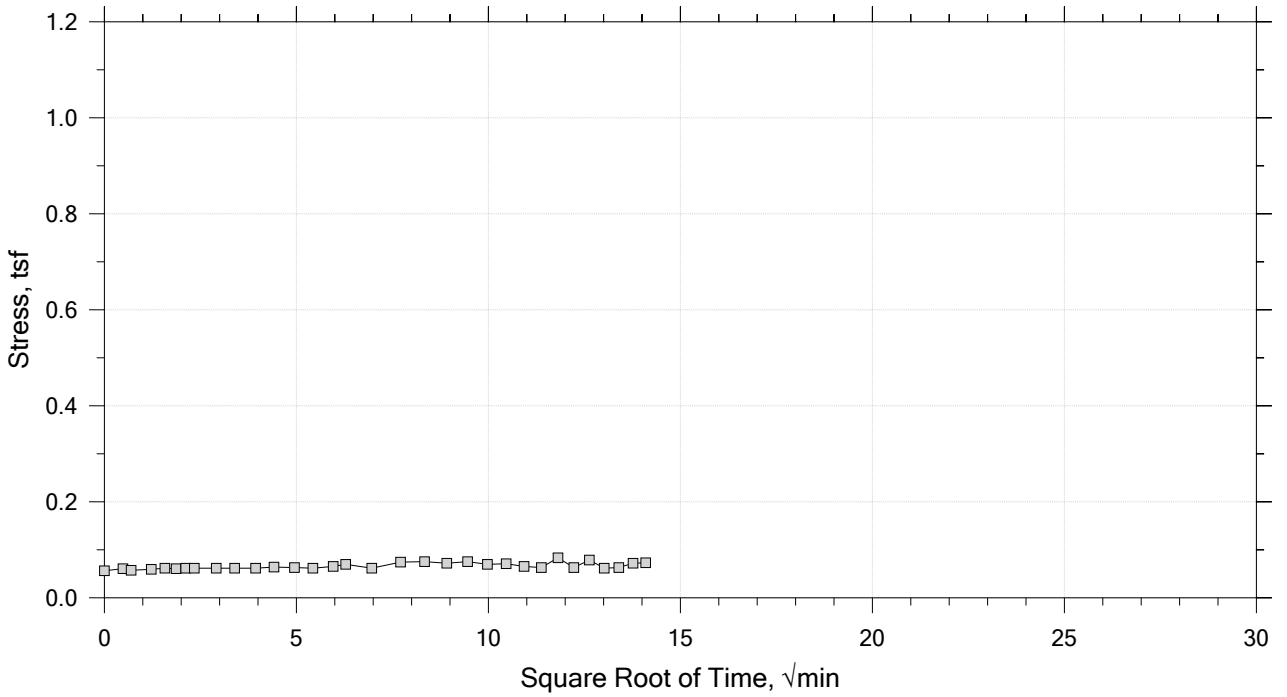


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0731 tsf





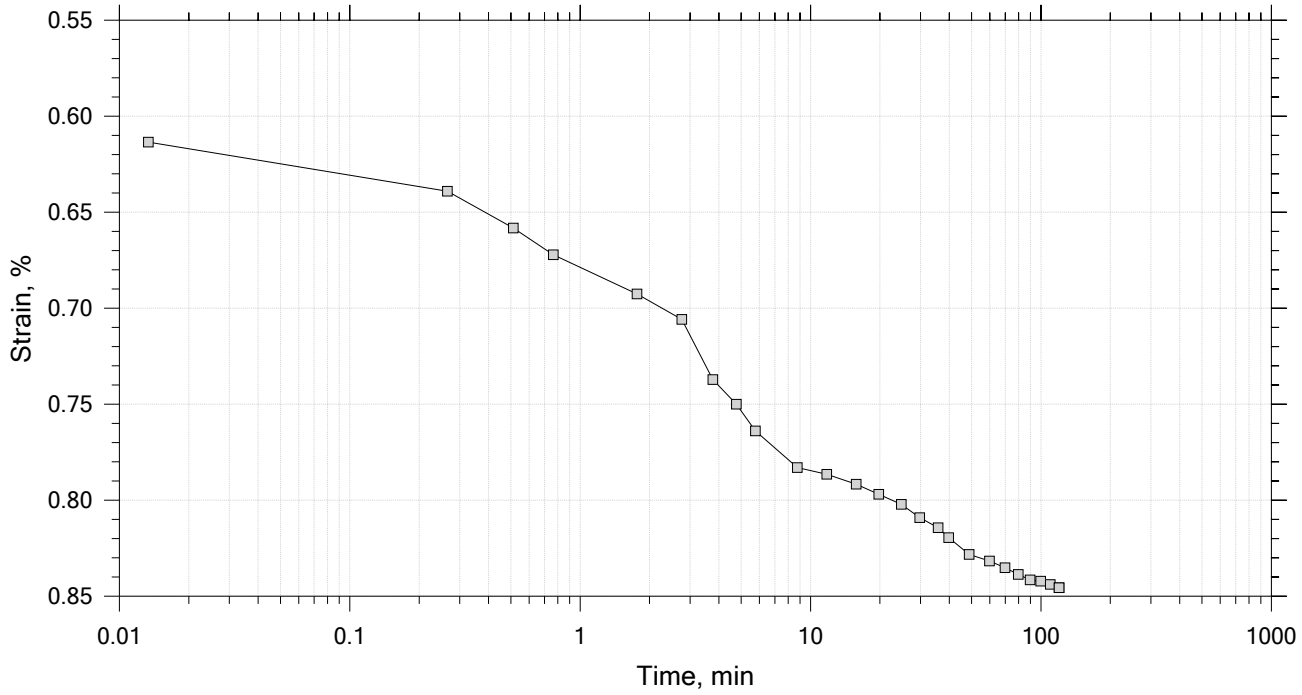
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

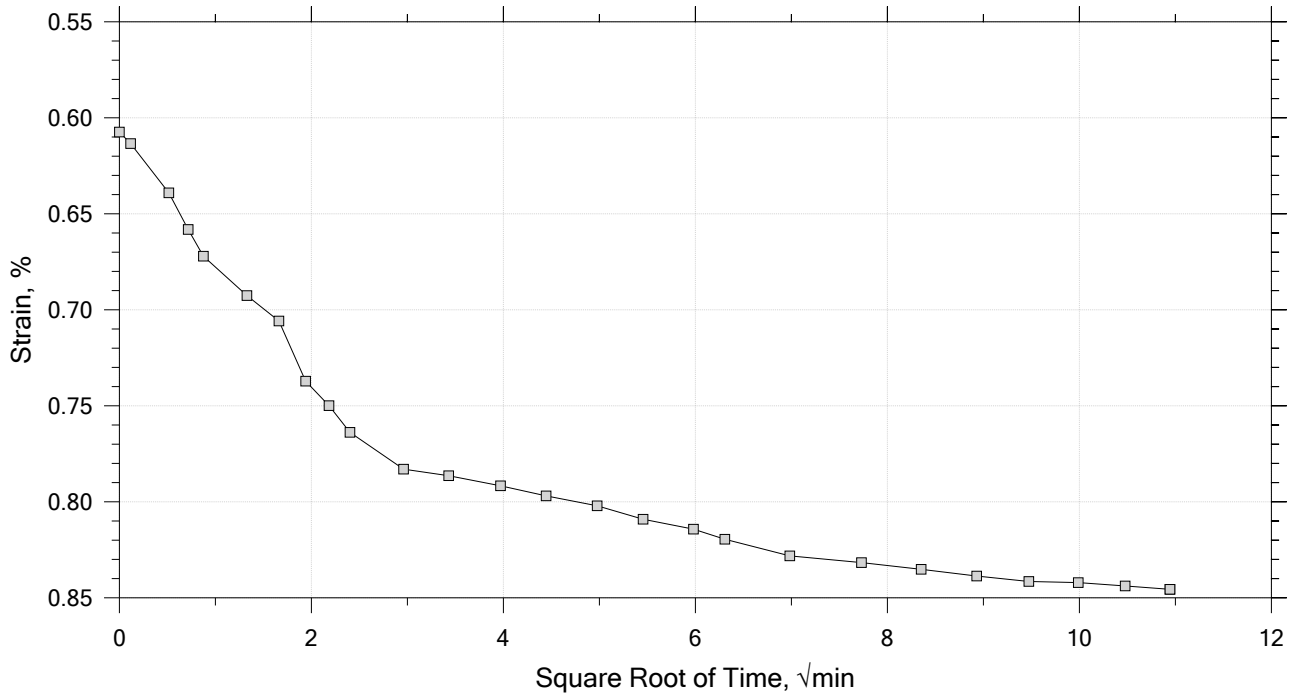
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf





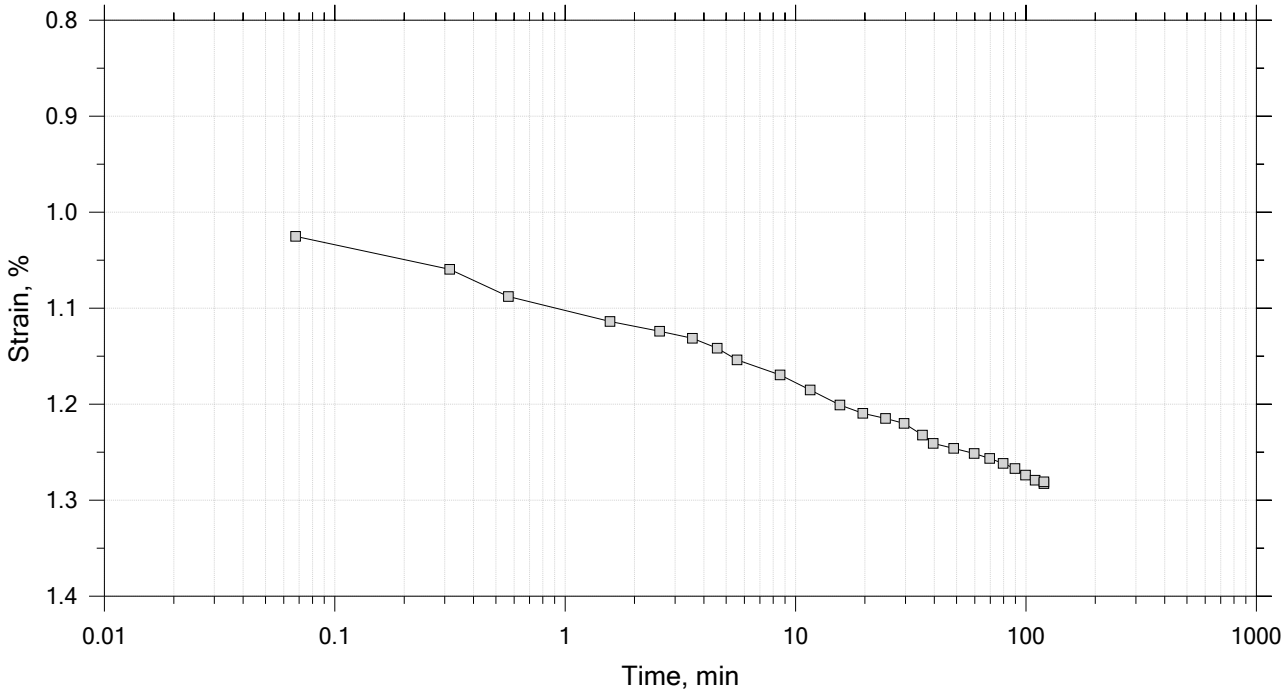
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

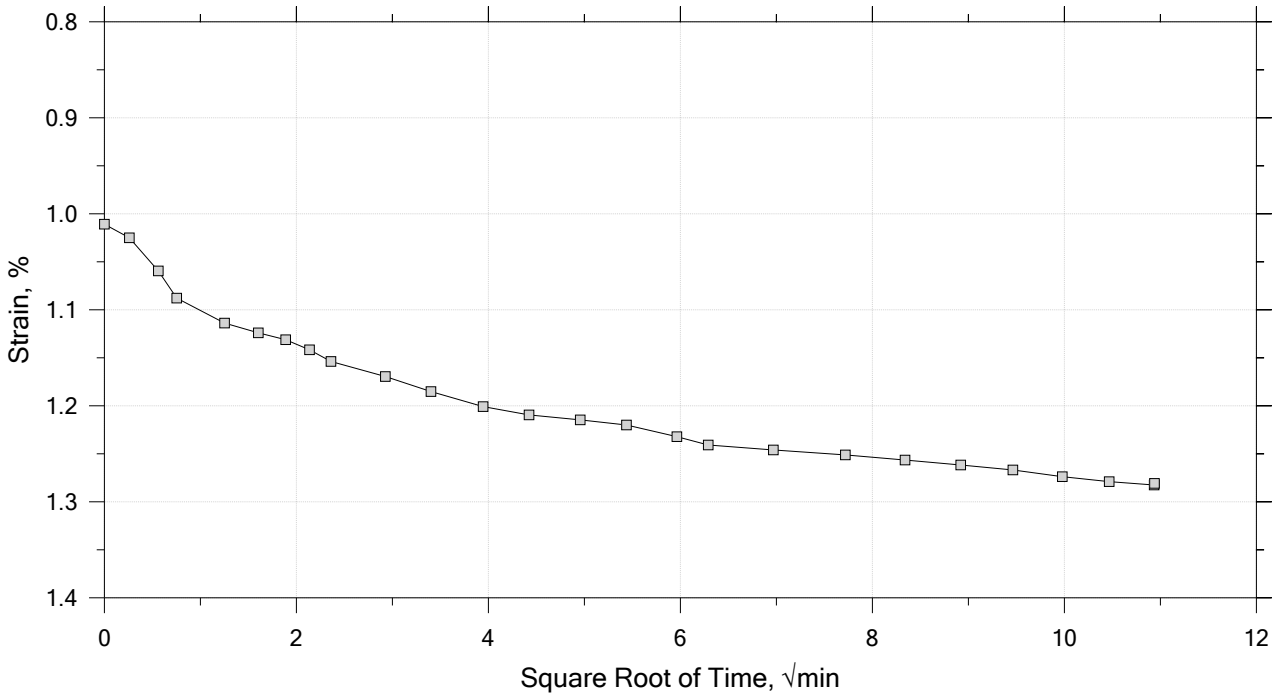
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf

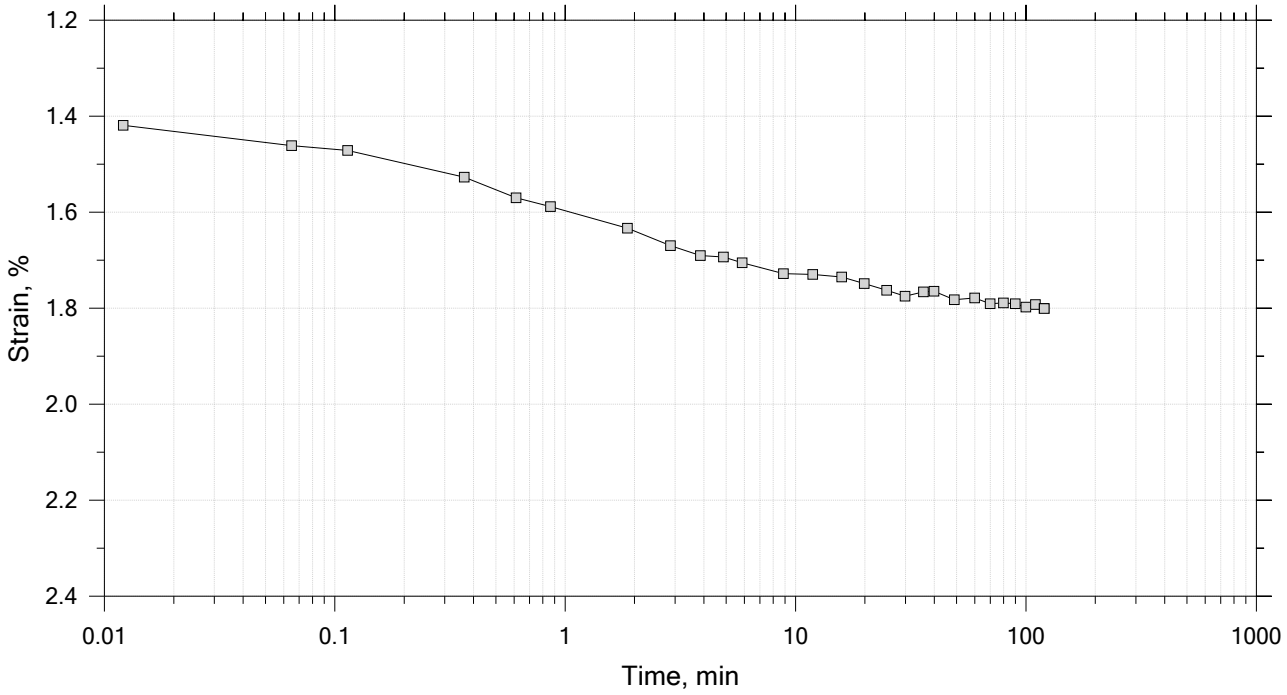


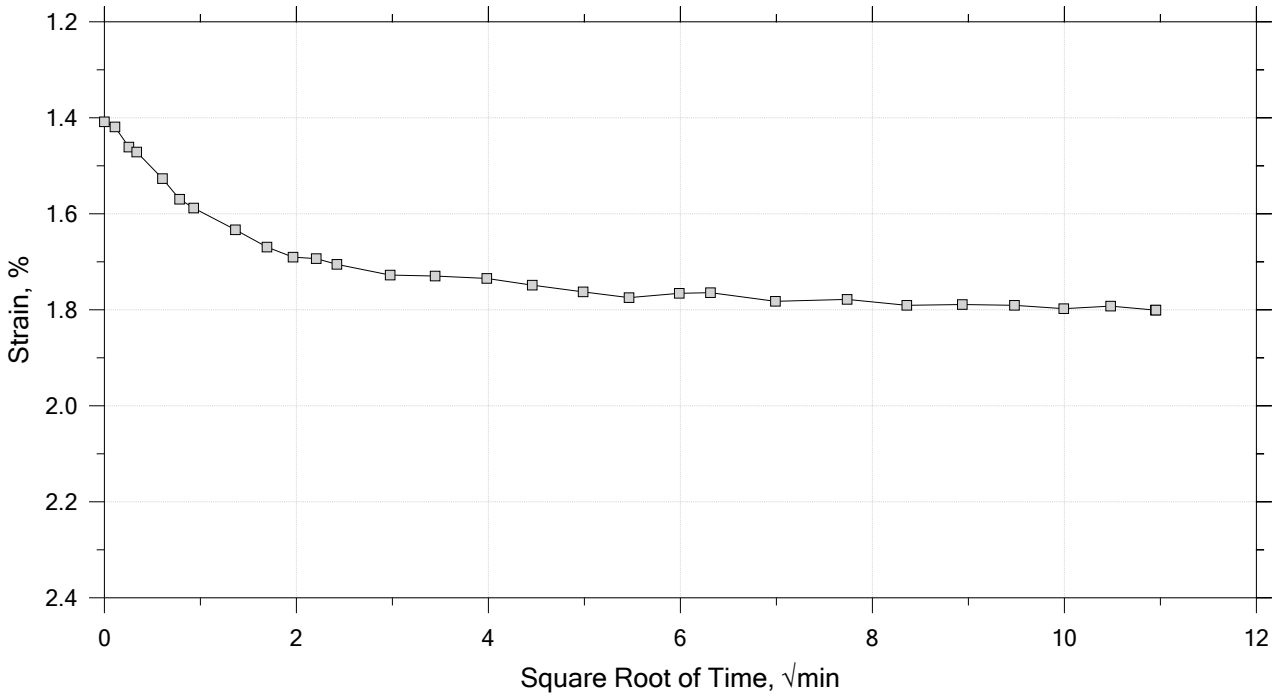


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





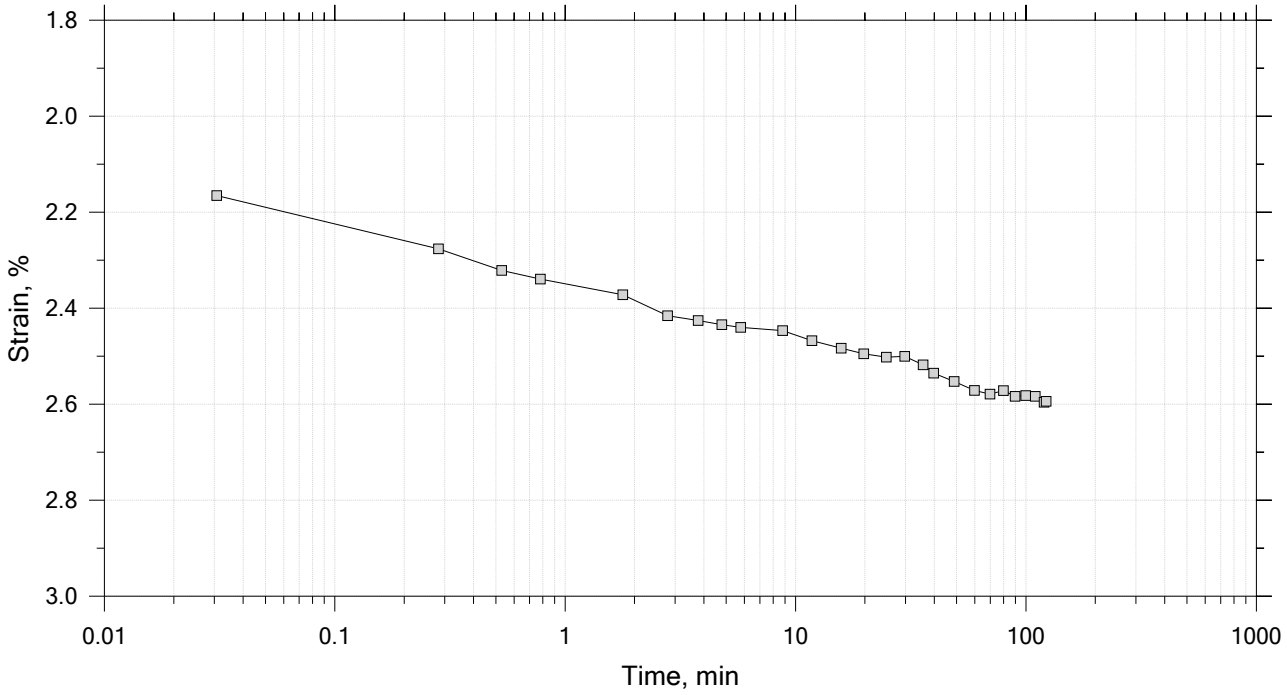
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

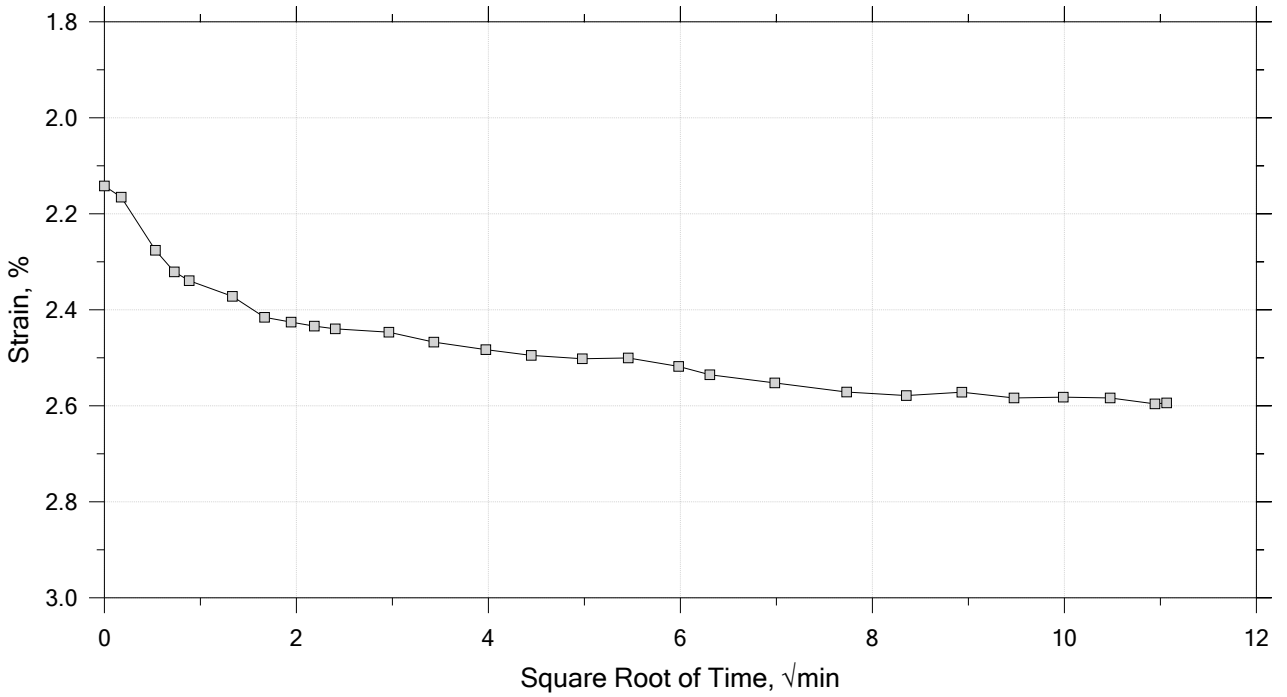
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





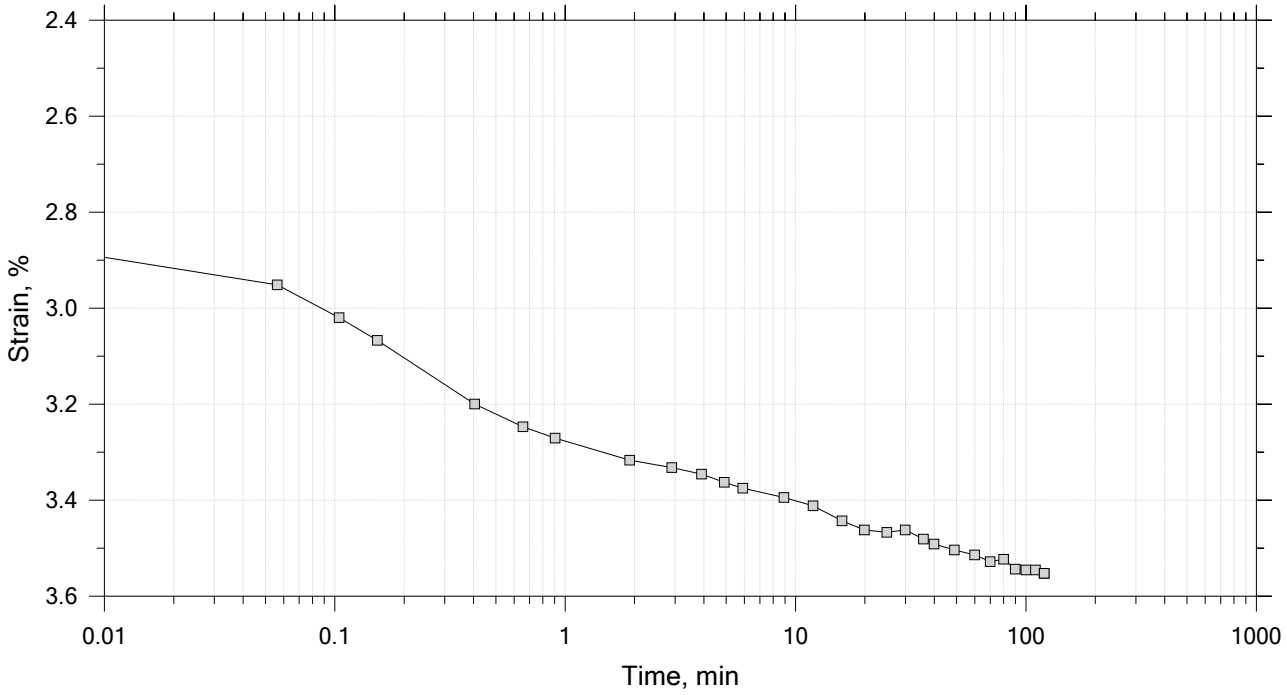
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
Test No.: IP-19-1	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.0731 tsf		

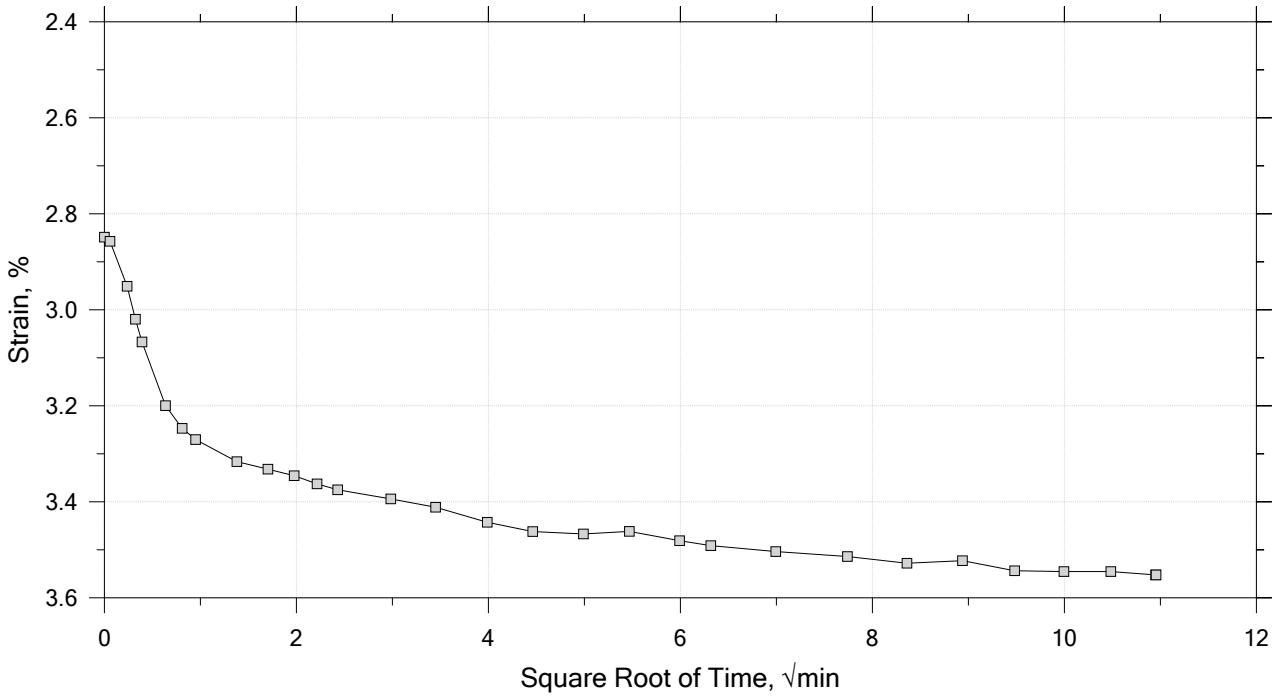
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf

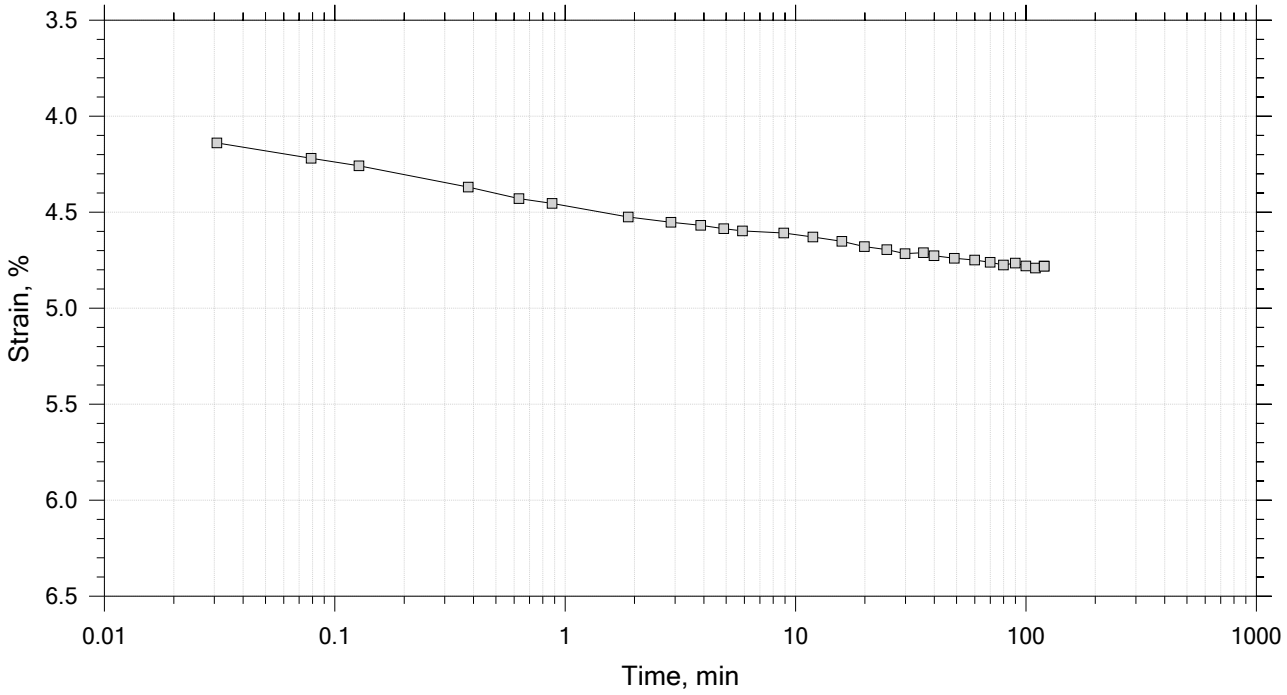


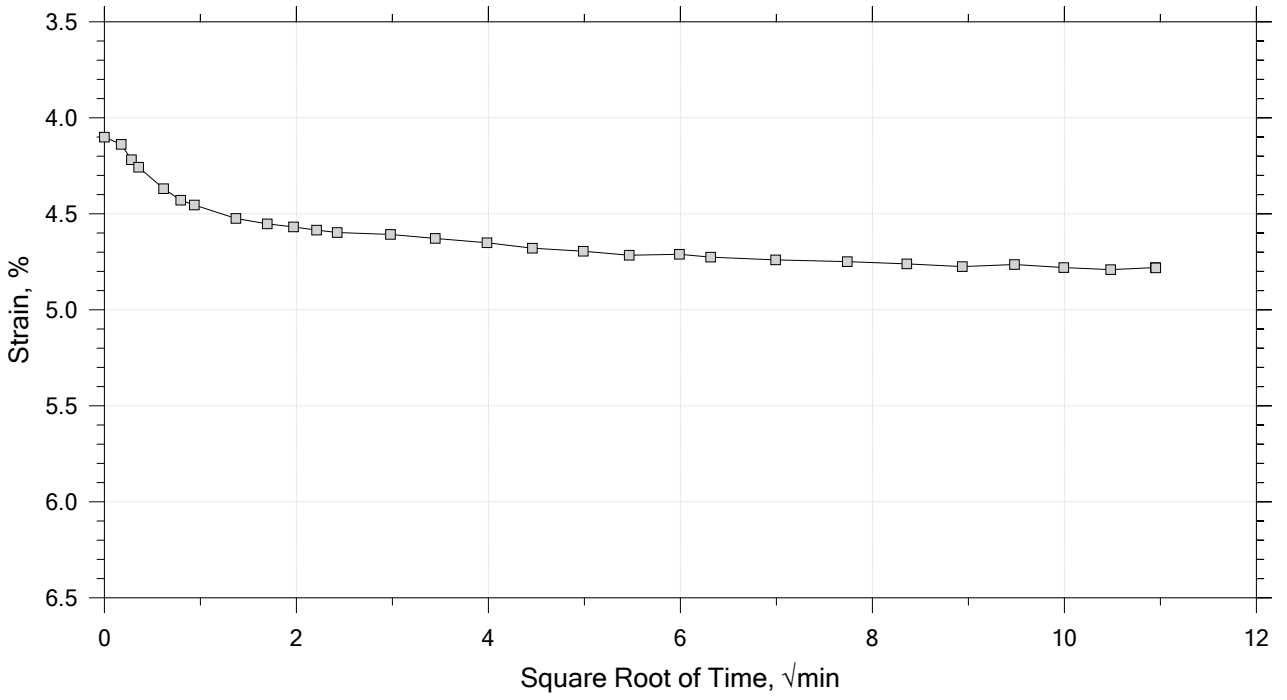


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf





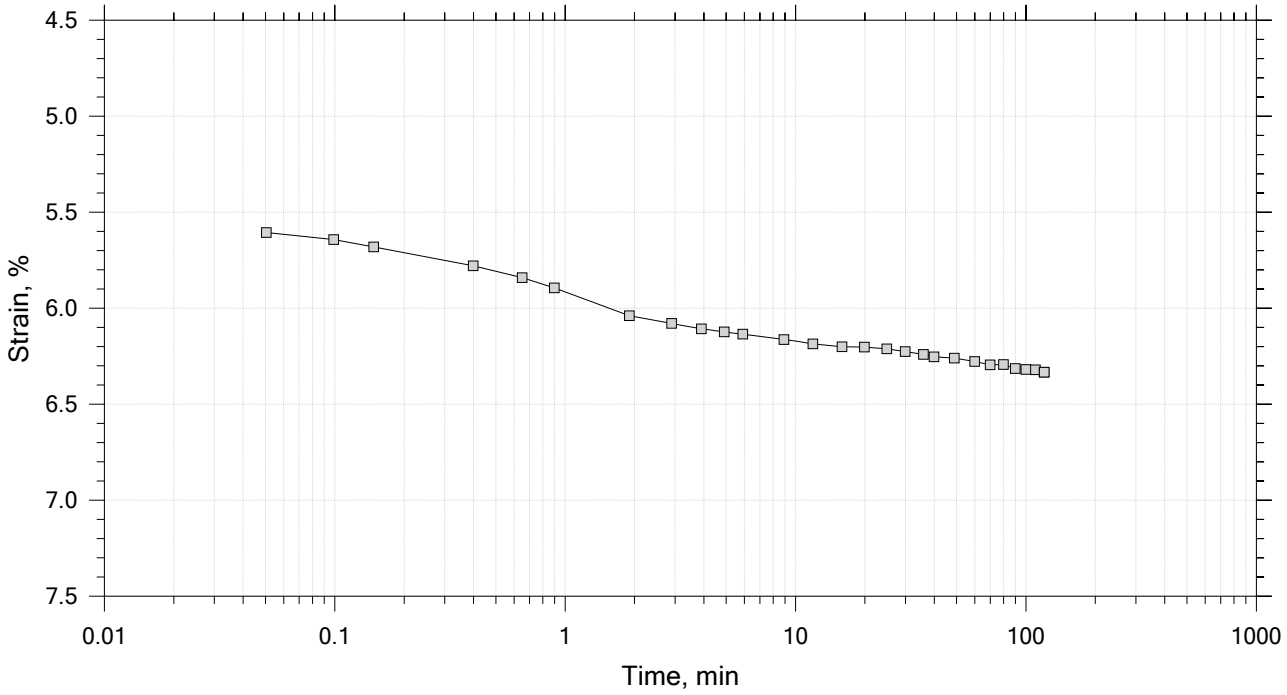
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

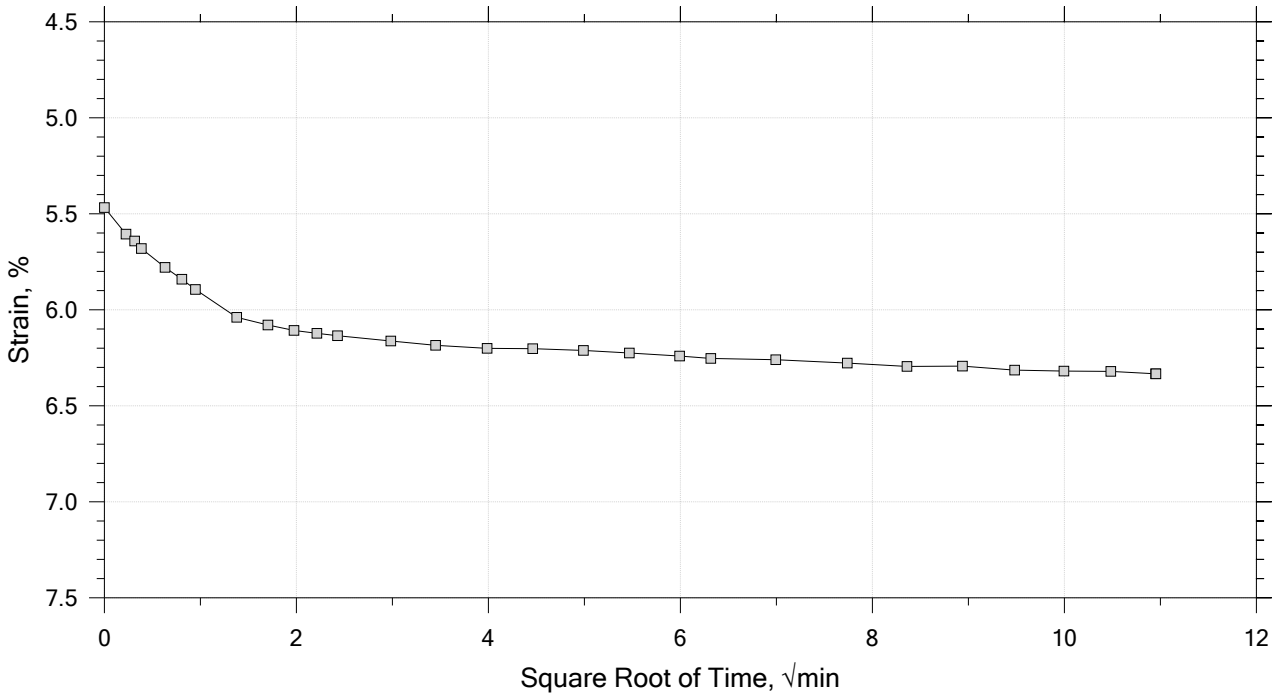
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





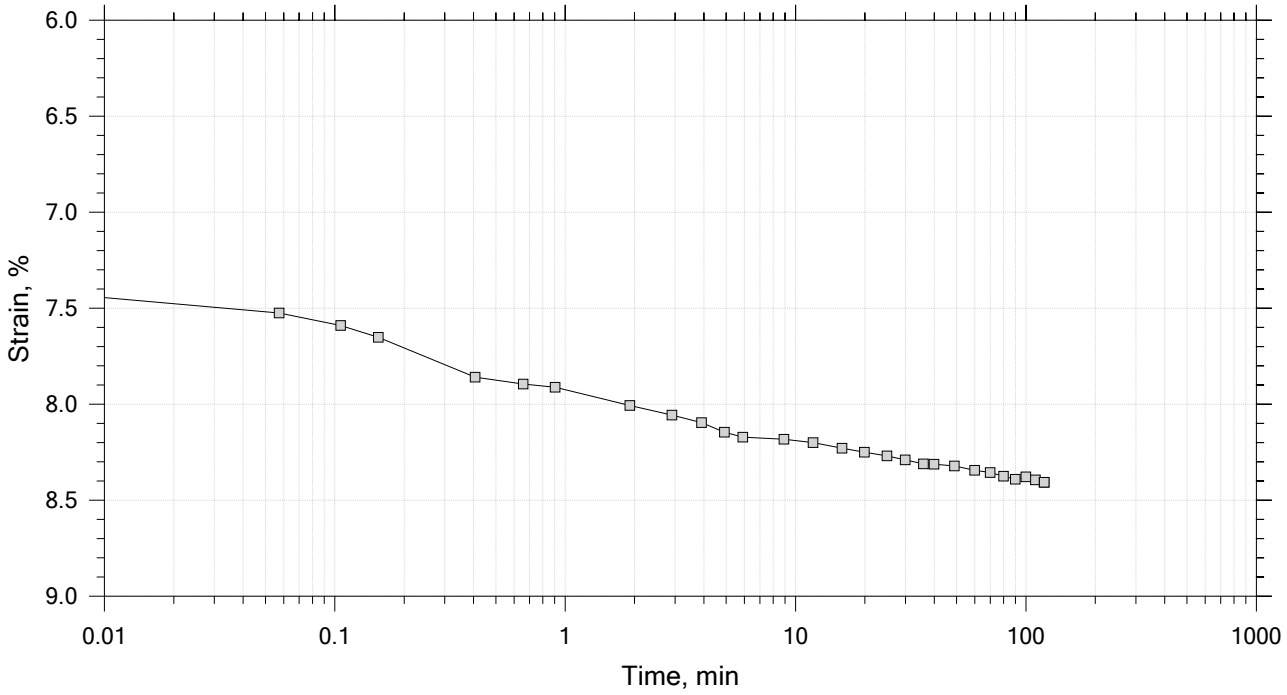
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

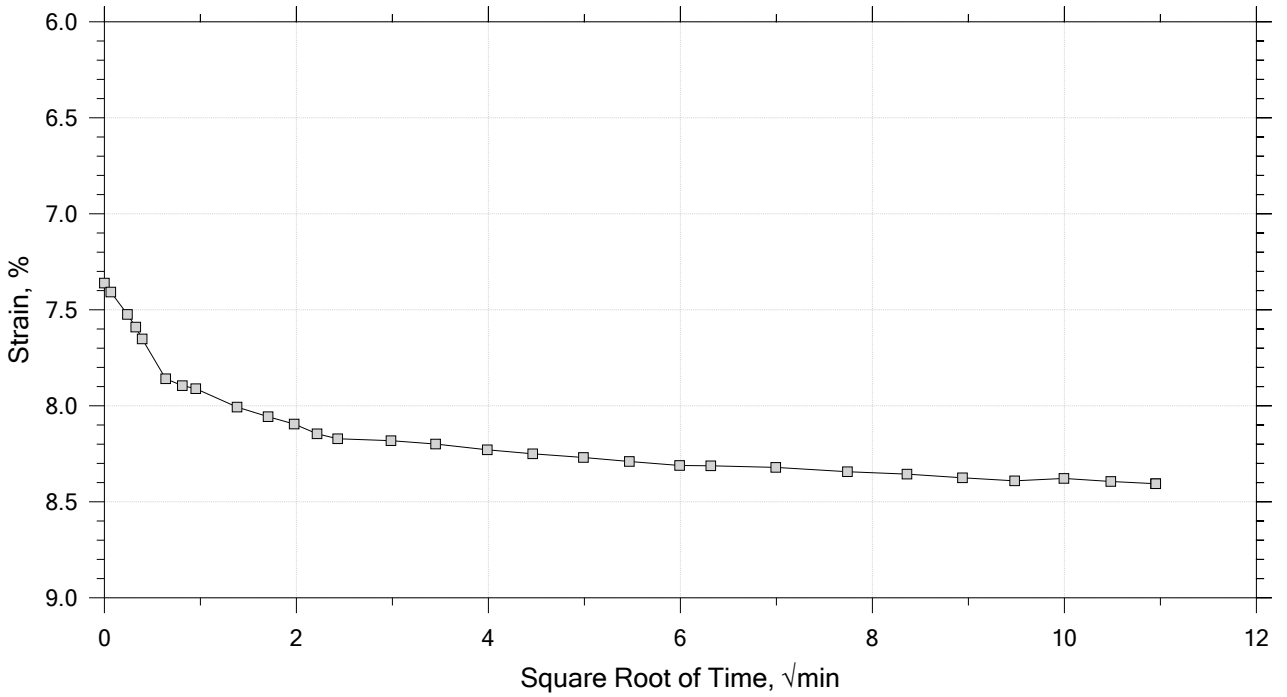
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

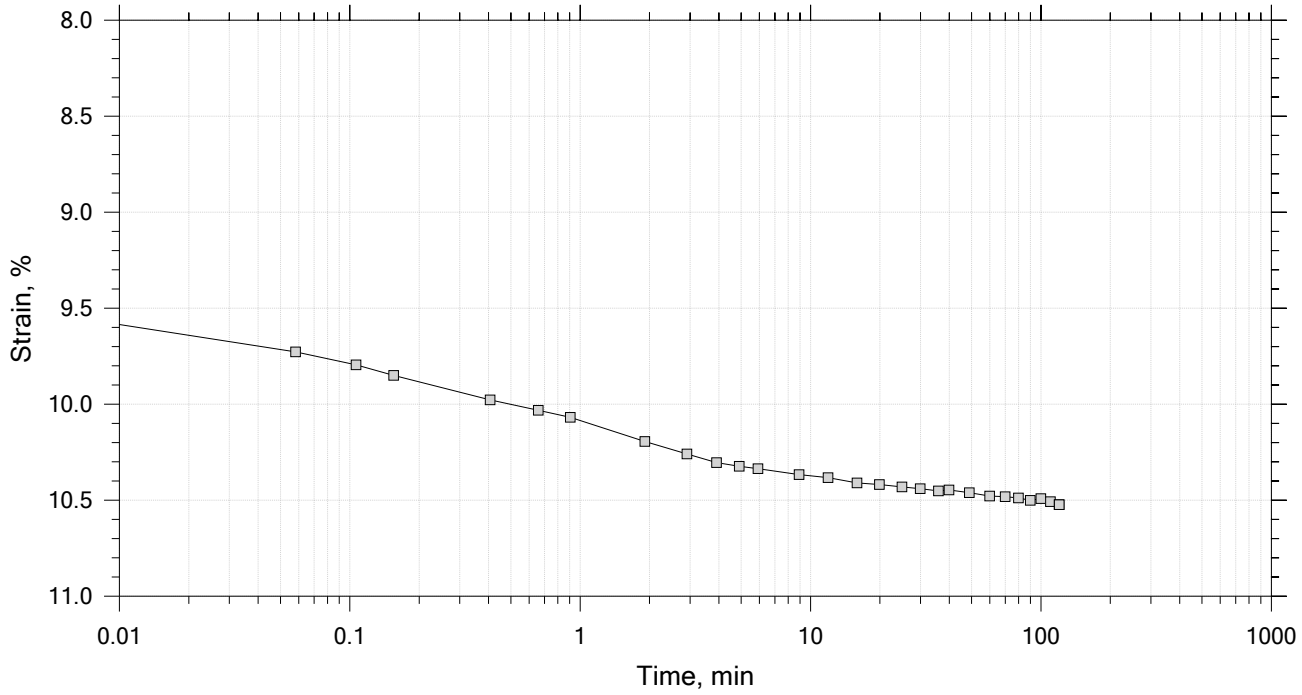


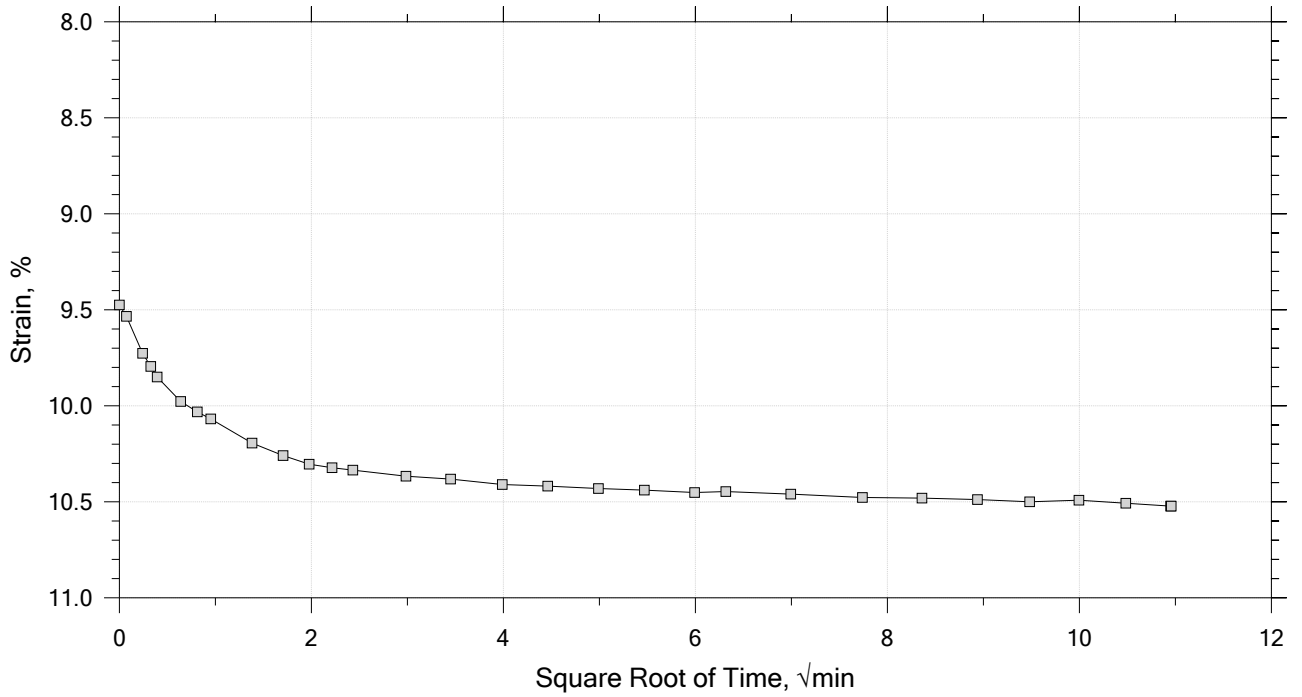


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
Test No.: IP-19-1	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

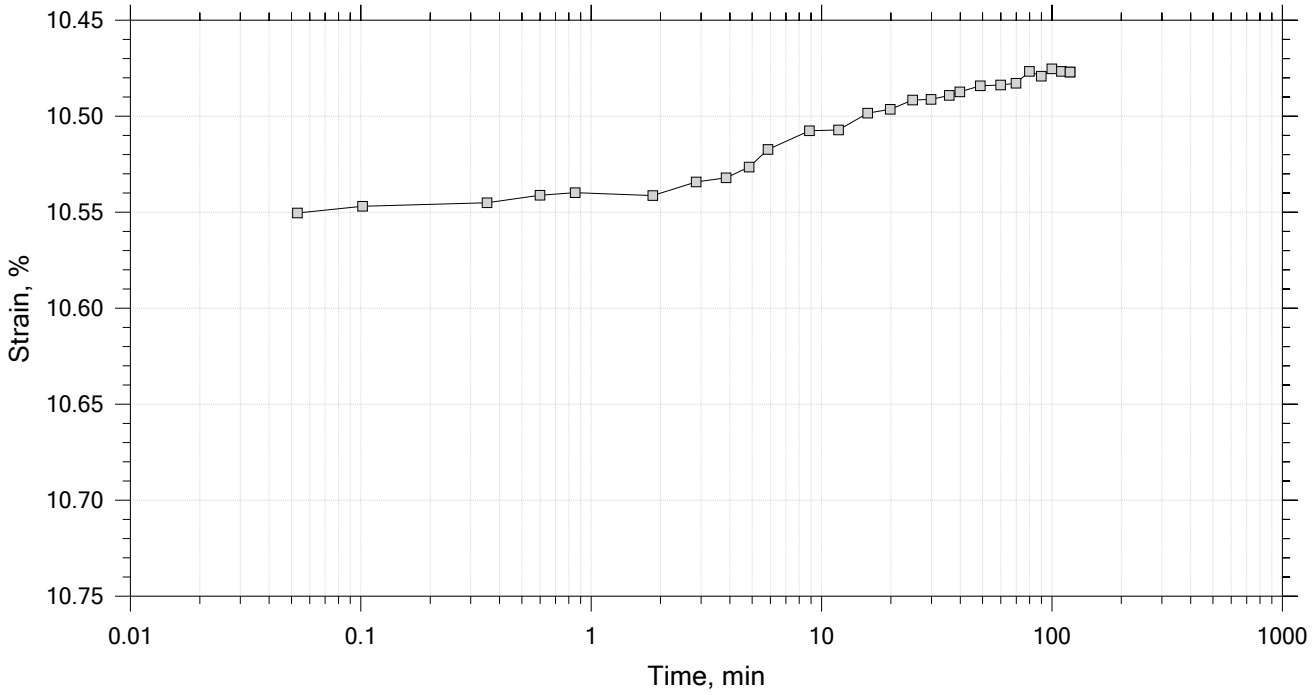


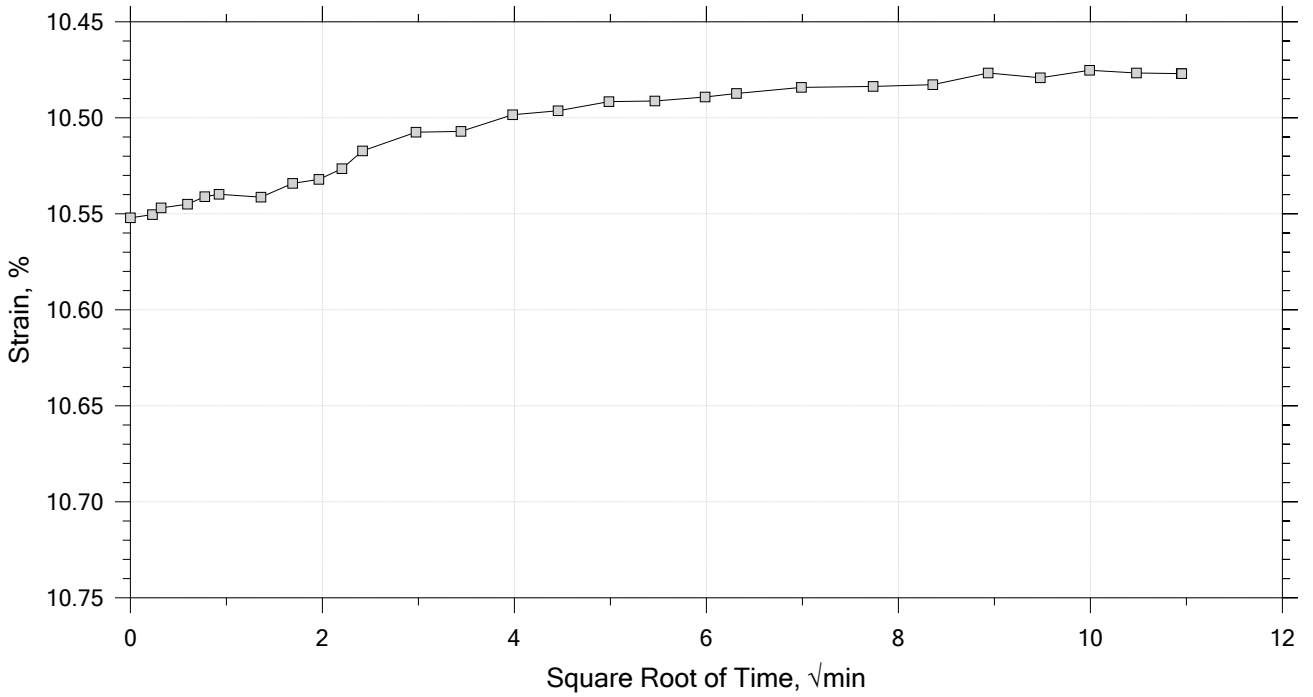


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
Test No.: IP-19-1	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf





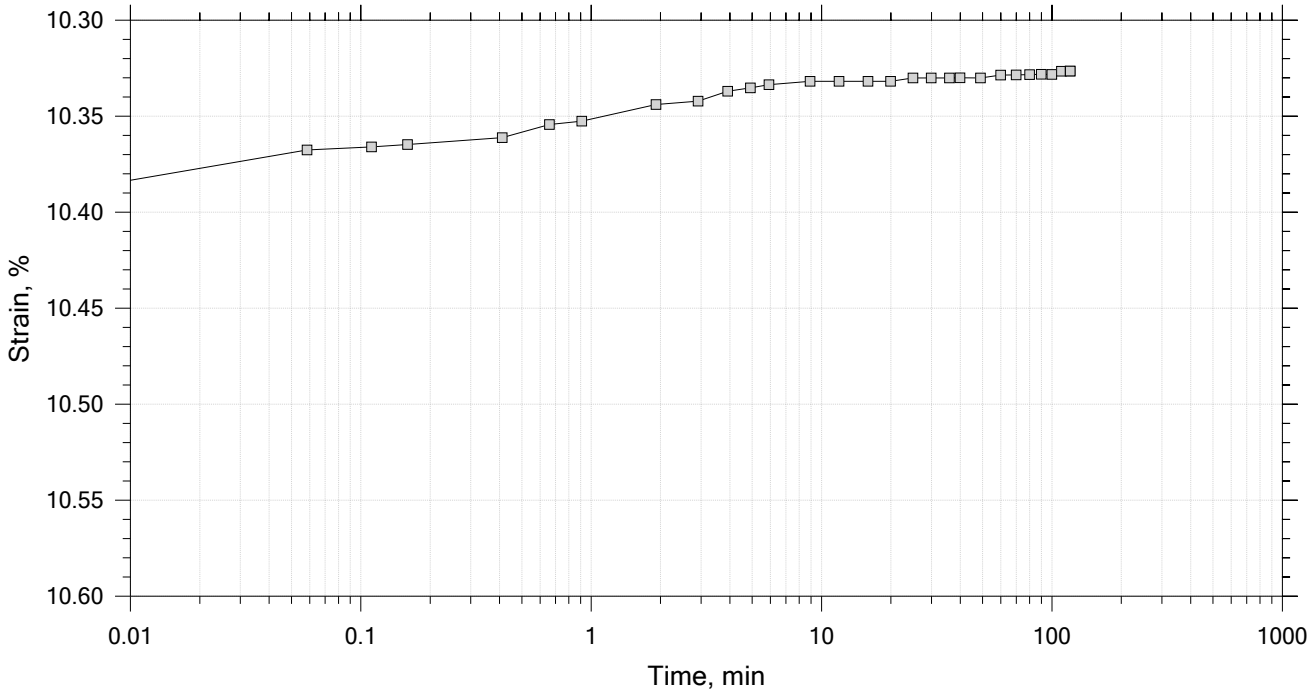
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

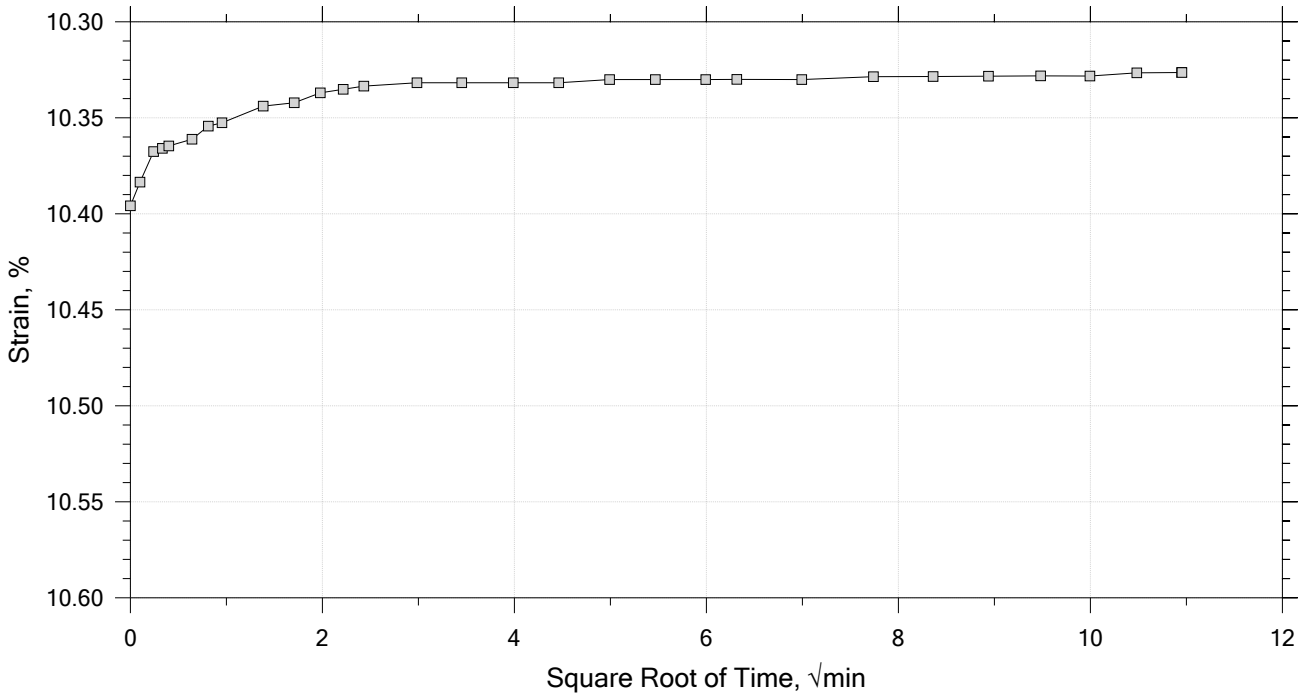
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 4 tsf





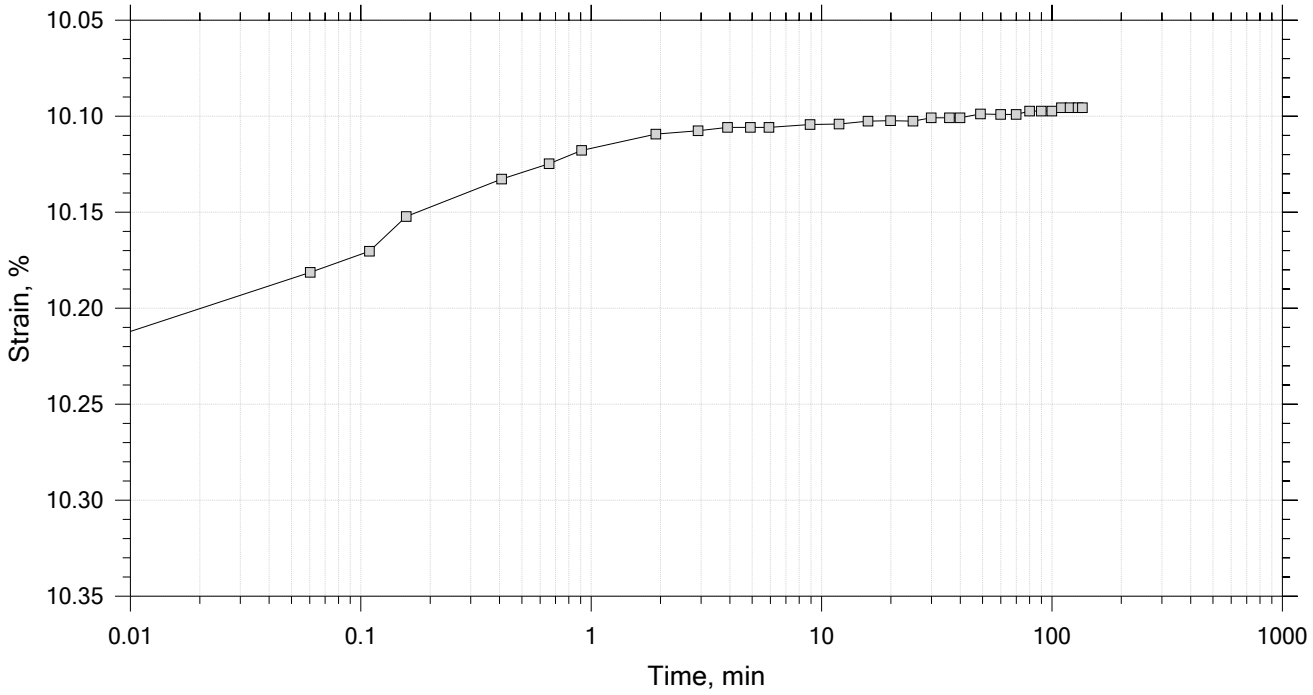
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

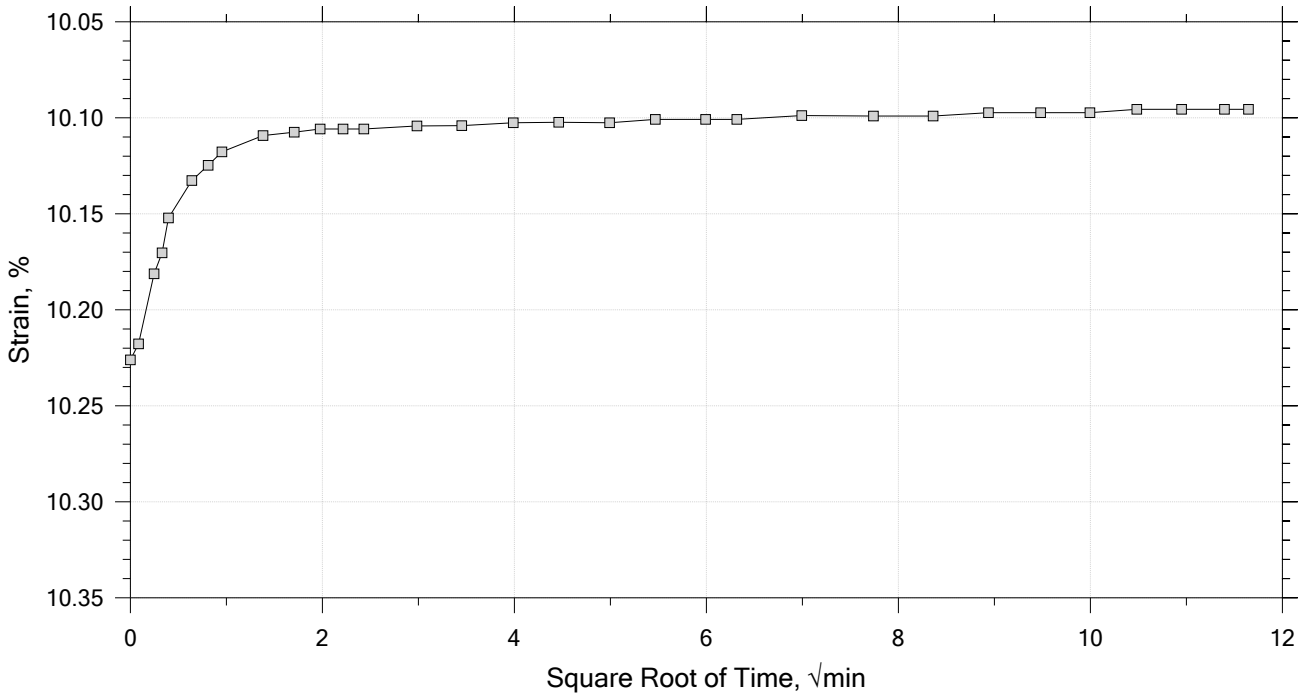
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

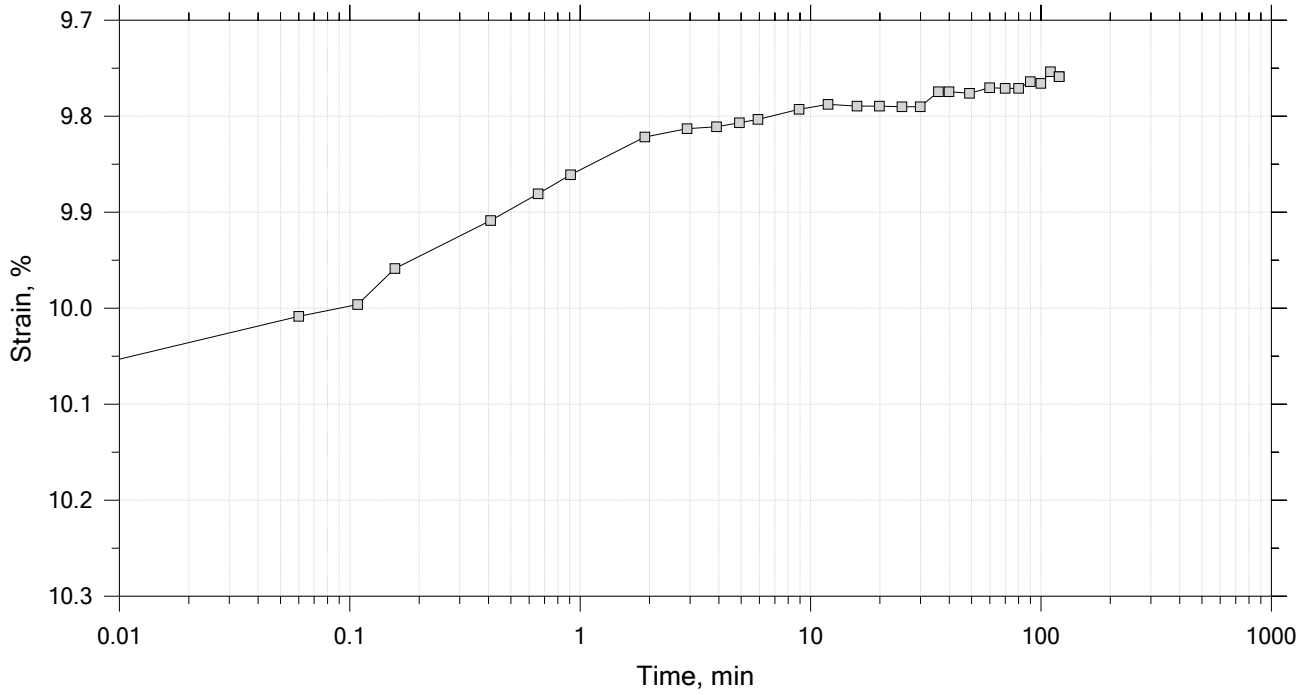


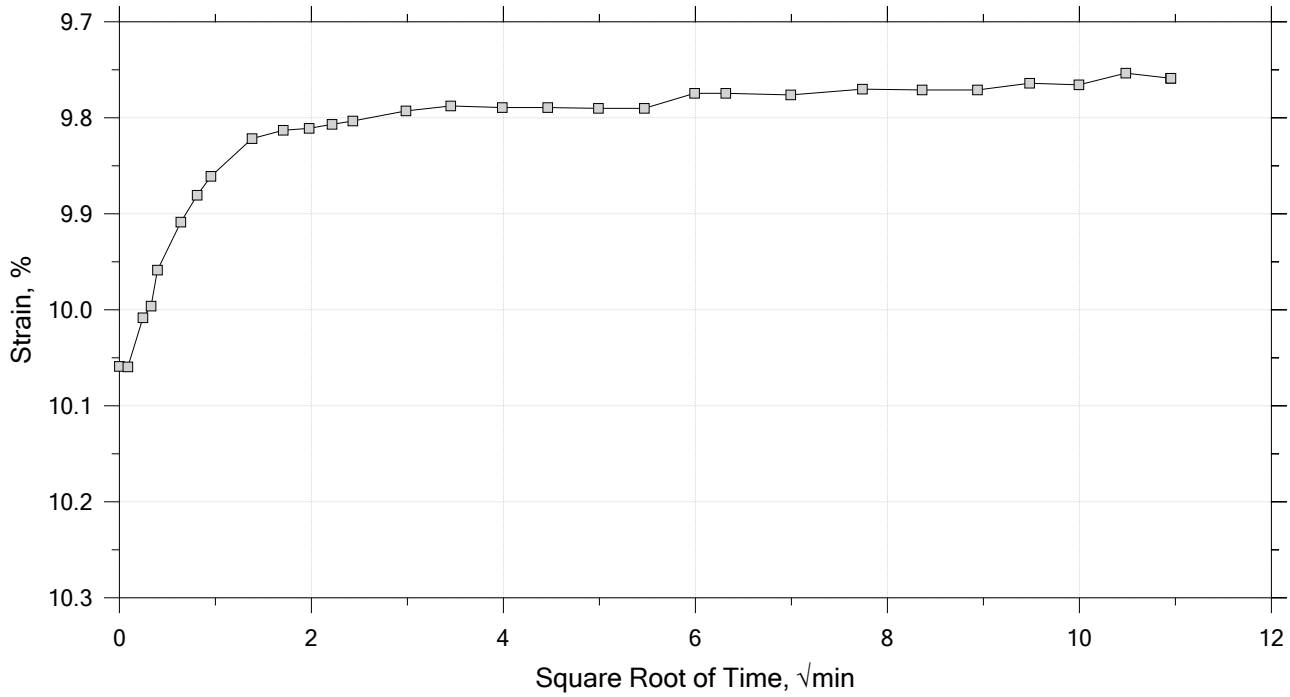


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.77	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.395	Plastic Limit: 21
Final Height: 0.92 in	Final Void Ratio: 0.283	Plasticity Index: 25

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	fsc	RING		PHC
Mass Container, gm	8.22	108.32	108.32	8.2
Mass Container + Wet Soil, gm	101.9	290.09	284.31	184.28
Mass Container + Dry Soil, gm	90.82	267.98	267.98	167.94
Mass Dry Soil, gm	82.6	159.66	159.66	159.74
Water Content, %	13.41	13.85	10.23	10.23
Void Ratio	---	0.39	0.28	---
Degree of Saturation, %	---	97.12	100.00	---
Dry Unit Weight, pcf	---	123.91	134.68	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
	Test No.: IP-19-1	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System F, Swell Pressure = 0.0731 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0731	0.005591	0.387	0.559	128.404	1.90e-07	7.65e-02	3.92e-05
2	0.125	0.008456	0.383	0.846	11.927	2.03e-06	5.52e-02	3.02e-04
3	0.250	0.01281	0.377	1.28	19.083	1.26e-06	3.48e-02	1.18e-04
4	0.500	0.01801	0.370	1.80	4.101	5.80e-06	2.08e-02	3.25e-04
5	1.00	0.02594	0.359	2.59	63.944	3.67e-07	1.59e-02	1.57e-05
6	2.00	0.03552	0.345	3.55	5.507	4.19e-06	9.58e-03	1.08e-04
7	4.00	0.04782	0.328	4.78	6.174	3.65e-06	6.15e-03	6.05e-05
8	8.00	0.06333	0.306	6.33	5.101	4.29e-06	3.88e-03	4.49e-05
9	16.0	0.08406	0.278	8.41	6.640	3.17e-06	2.59e-03	2.22e-05
10	32.0	0.1052	0.248	10.5	4.181	4.81e-06	1.32e-03	1.72e-05
11	16.0	0.1048	0.249	10.5	28.723	6.84e-07	2.88e-05	5.32e-08
12	4.00	0.1033	0.251	10.3	2.424	8.13e-06	1.25e-04	2.75e-06
13	1.00	0.1010	0.254	10.1	0.740	2.67e-05	7.69e-04	5.54e-05
14	0.250	0.09759	0.259	9.76	1.574	1.26e-05	4.49e-03	1.53e-04

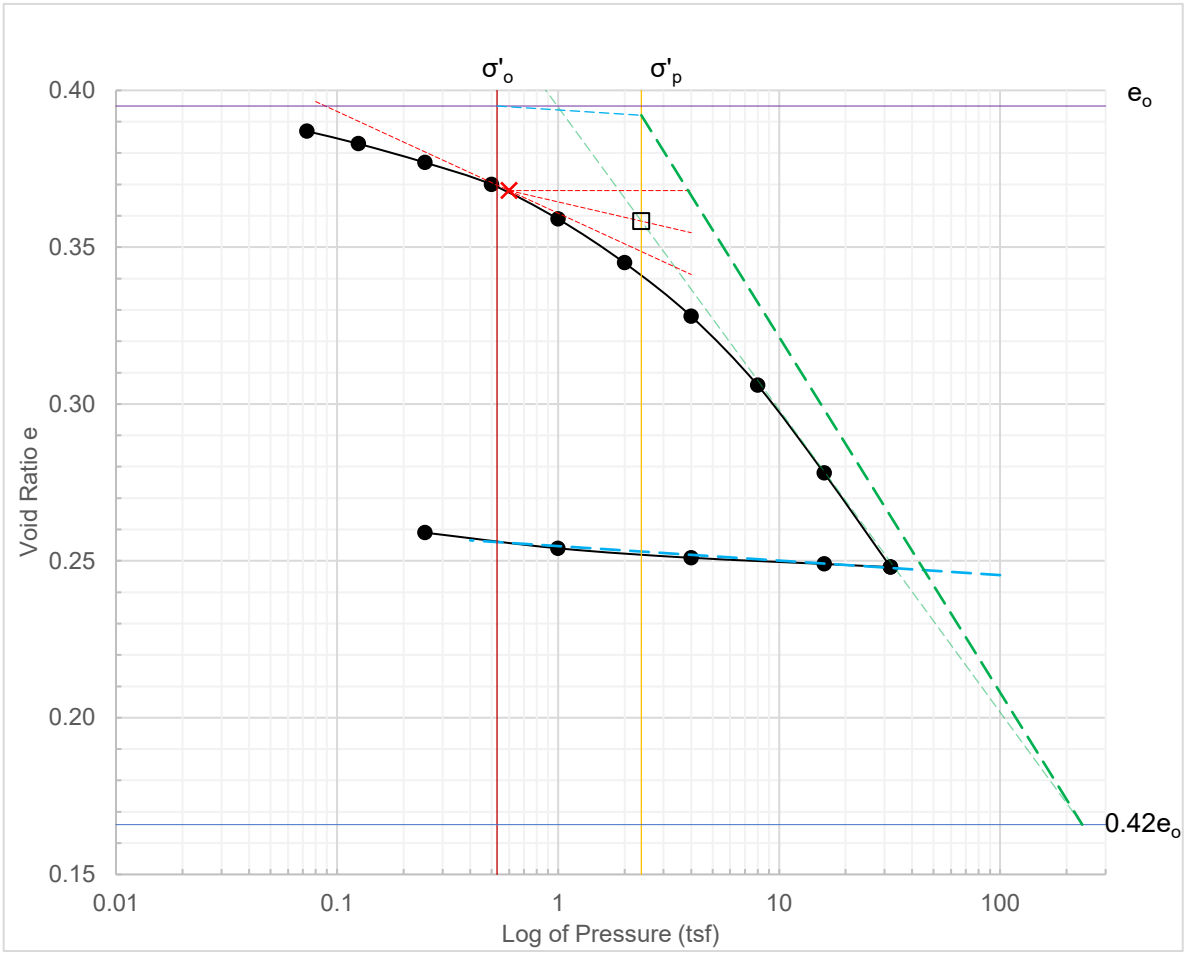
GeoTesting EXPRESS

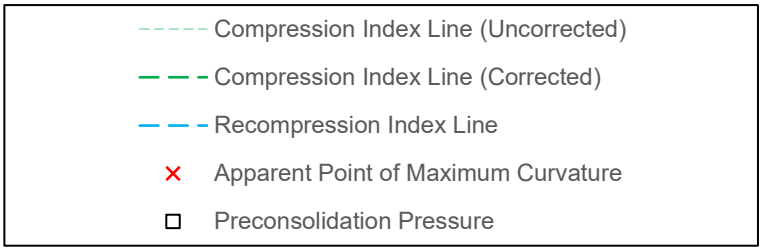
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.2-10.3
Test No.: IP-19-1	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System F, Swell Pressure = 0.0731 tsf		
Displacement at End of Increment		

Boring: B-4.16A

Depth: 10.2'-10.3'

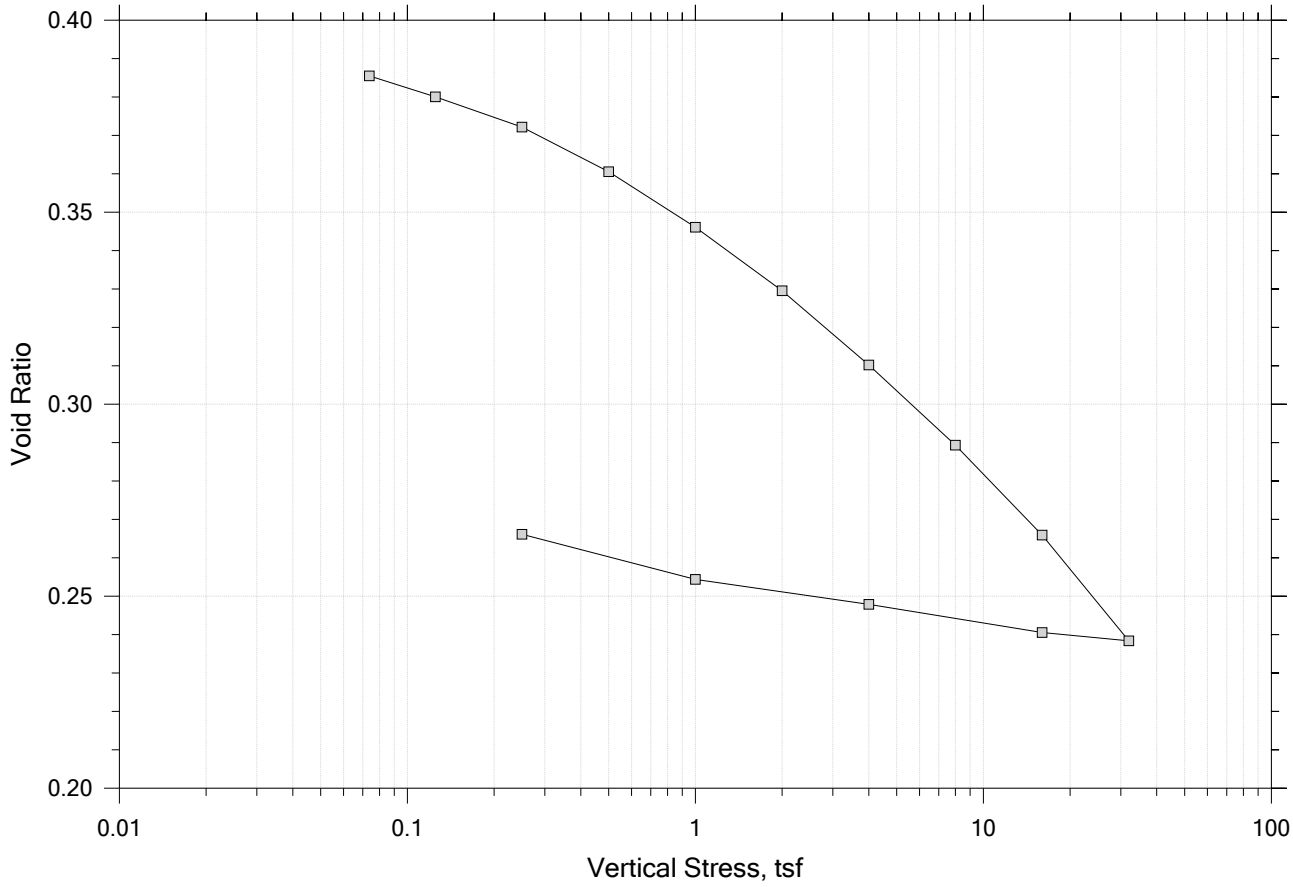
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.53
Preconsolidation Pressure, σ'_p (tsf) = 2.38
Compression Index, C_c = 0.11
Recompression Index, C_r = 0.0046

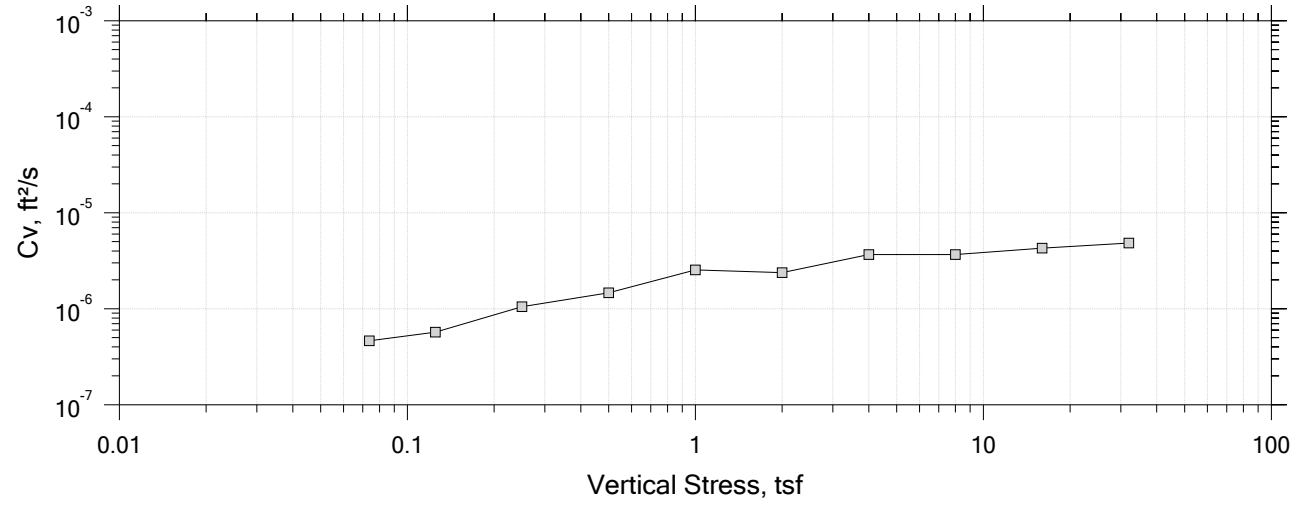




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

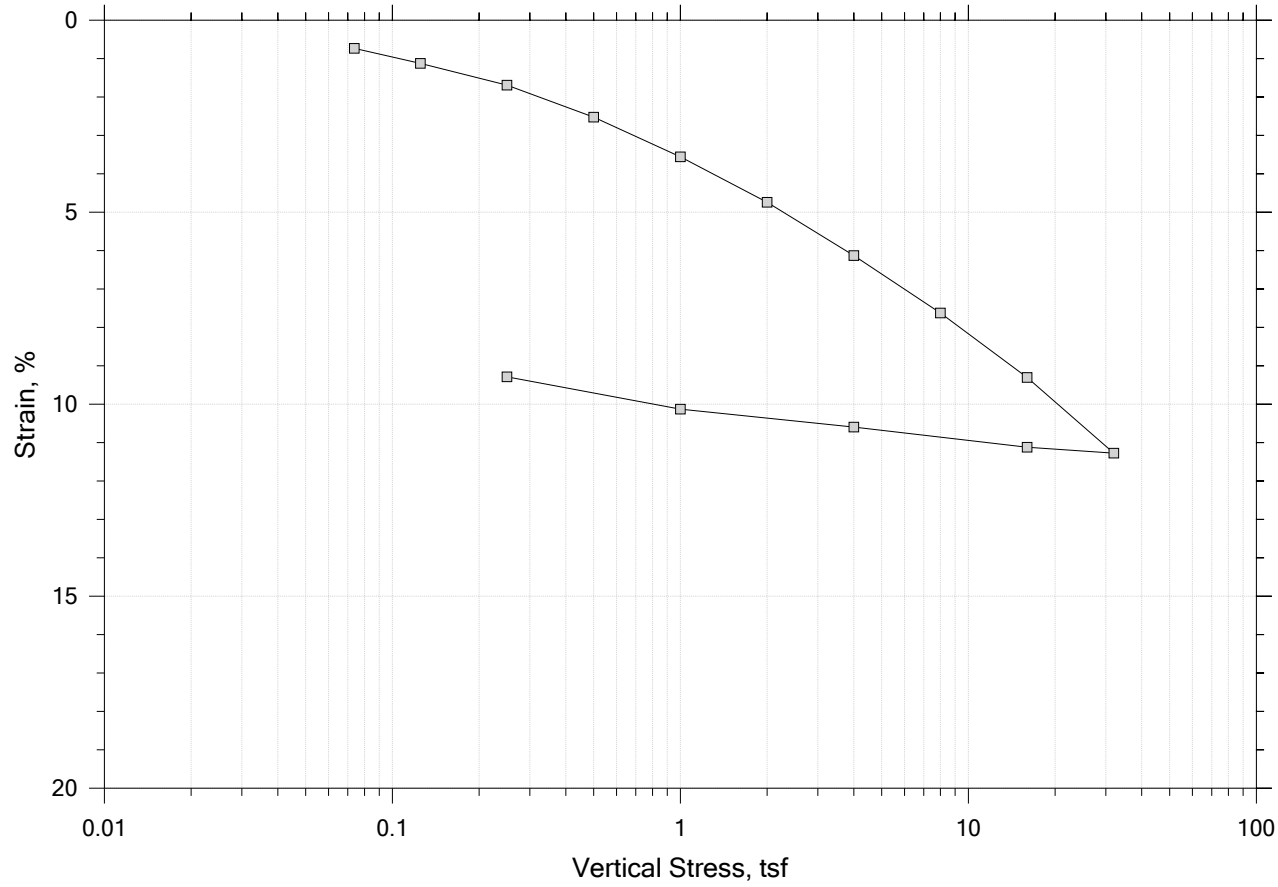


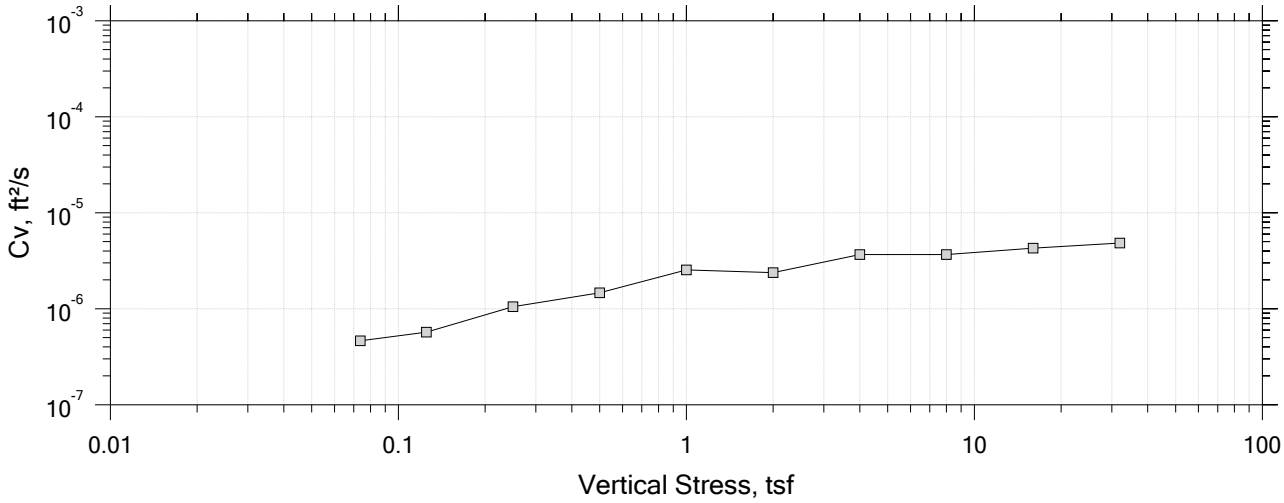


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

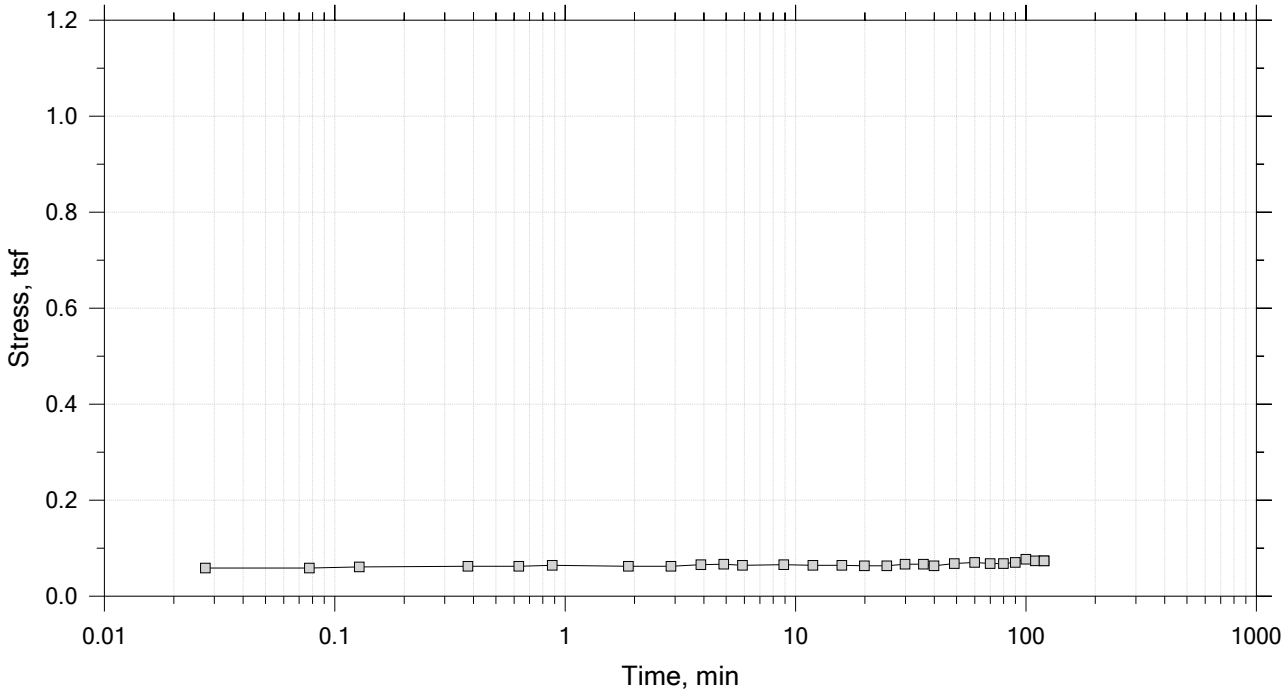


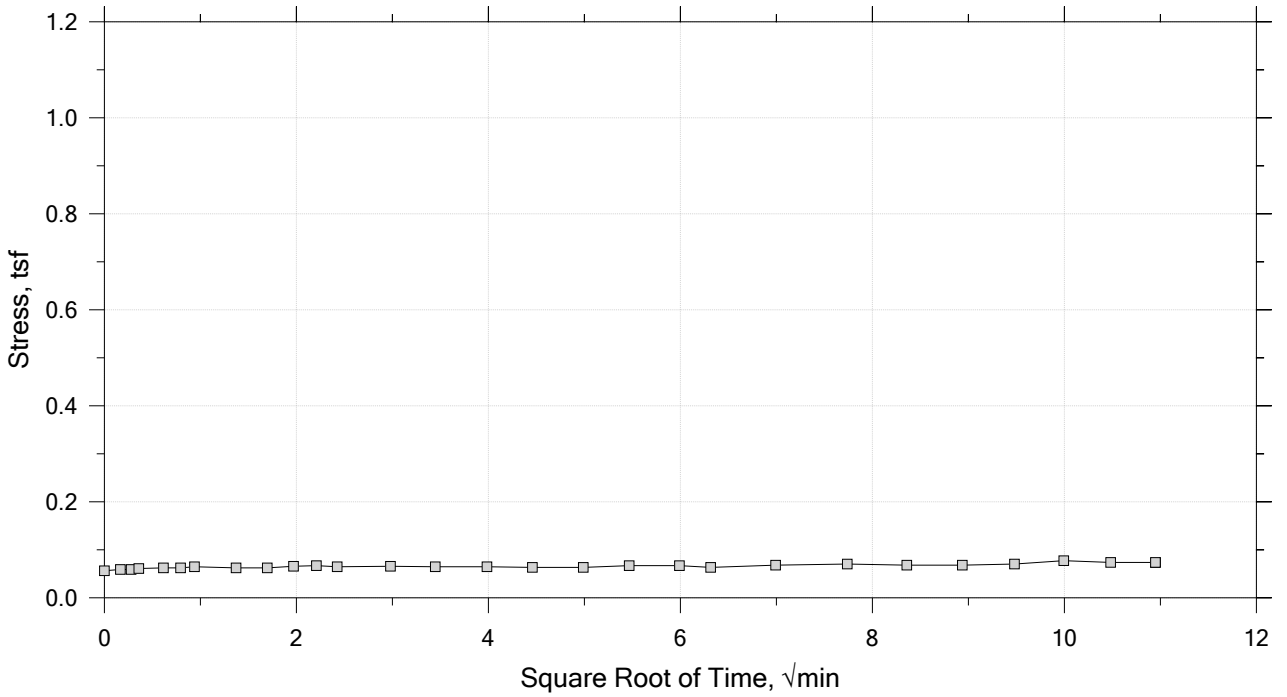


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0737 tsf

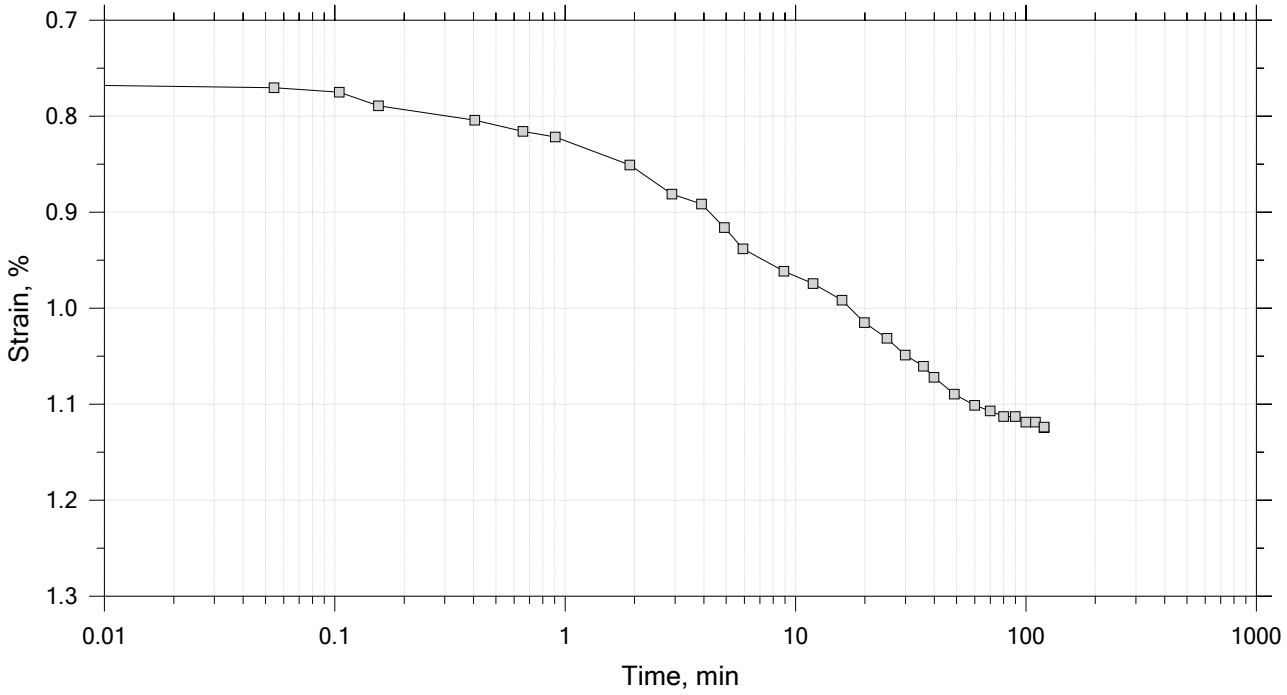


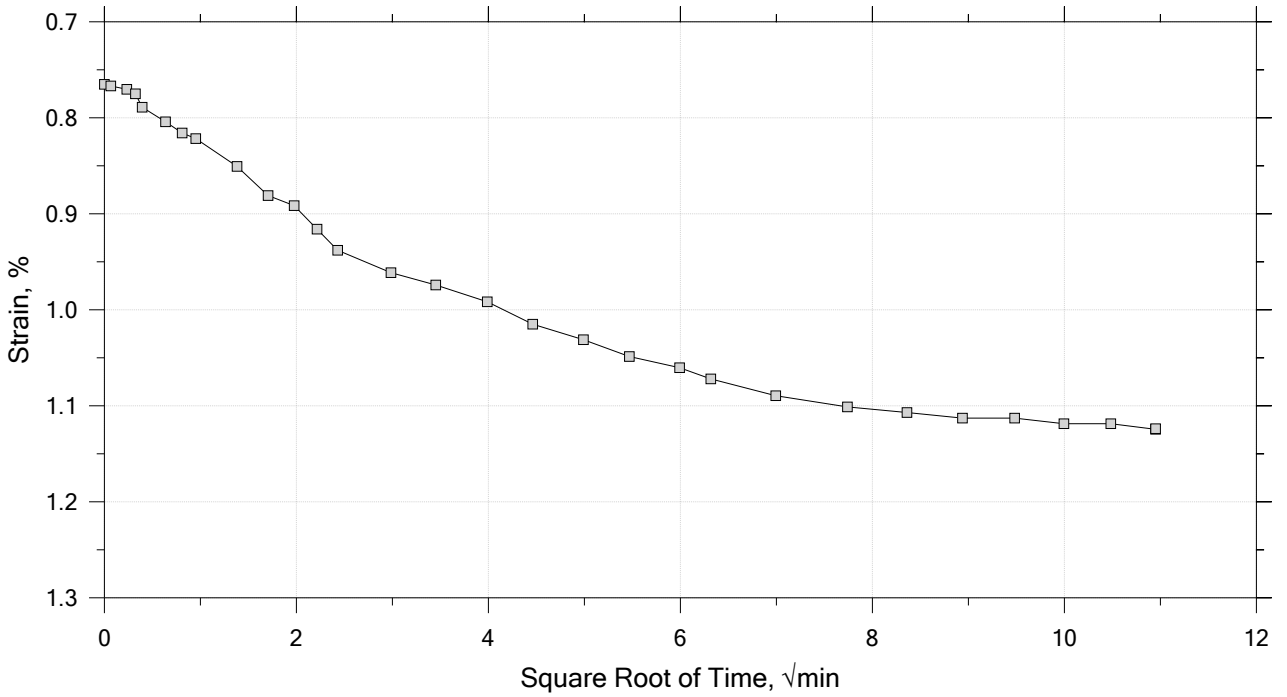


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





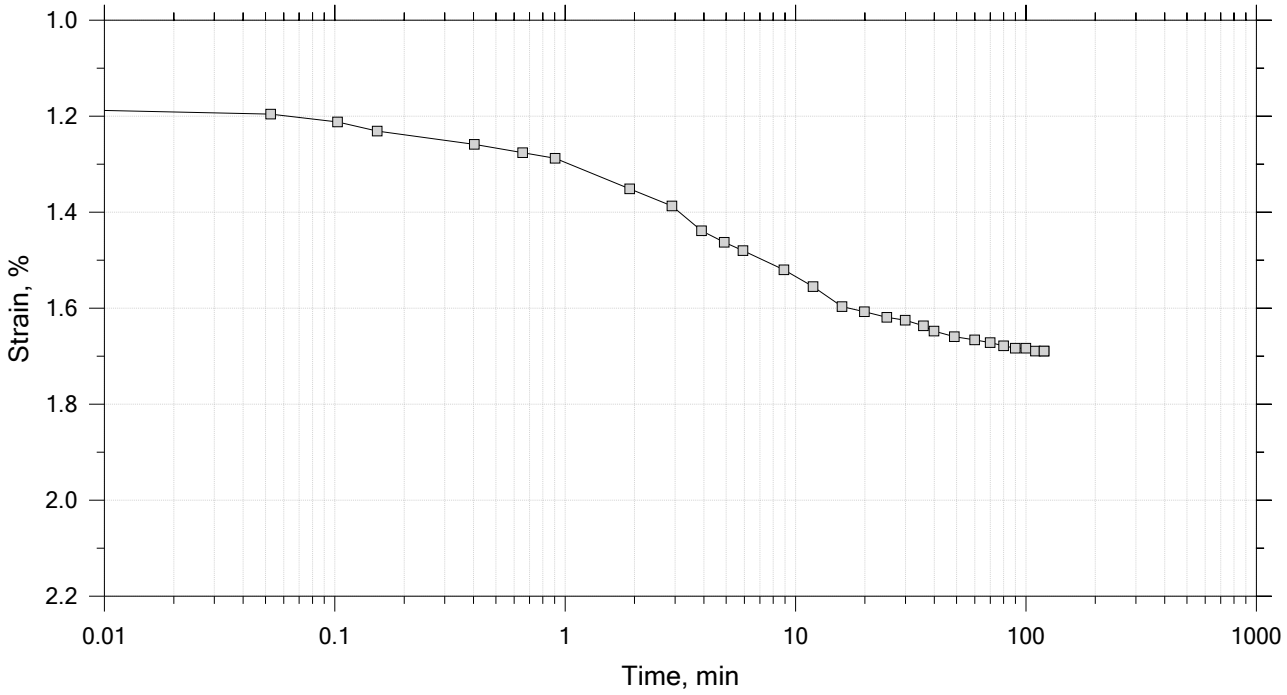
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

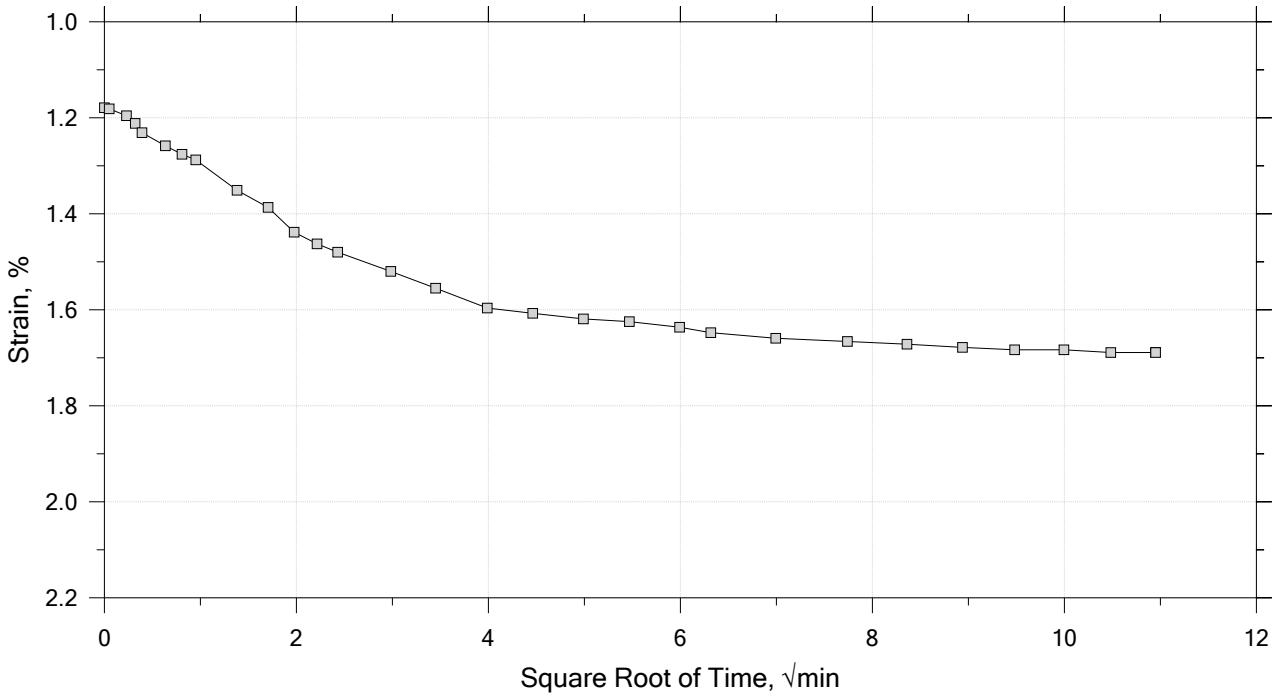
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf





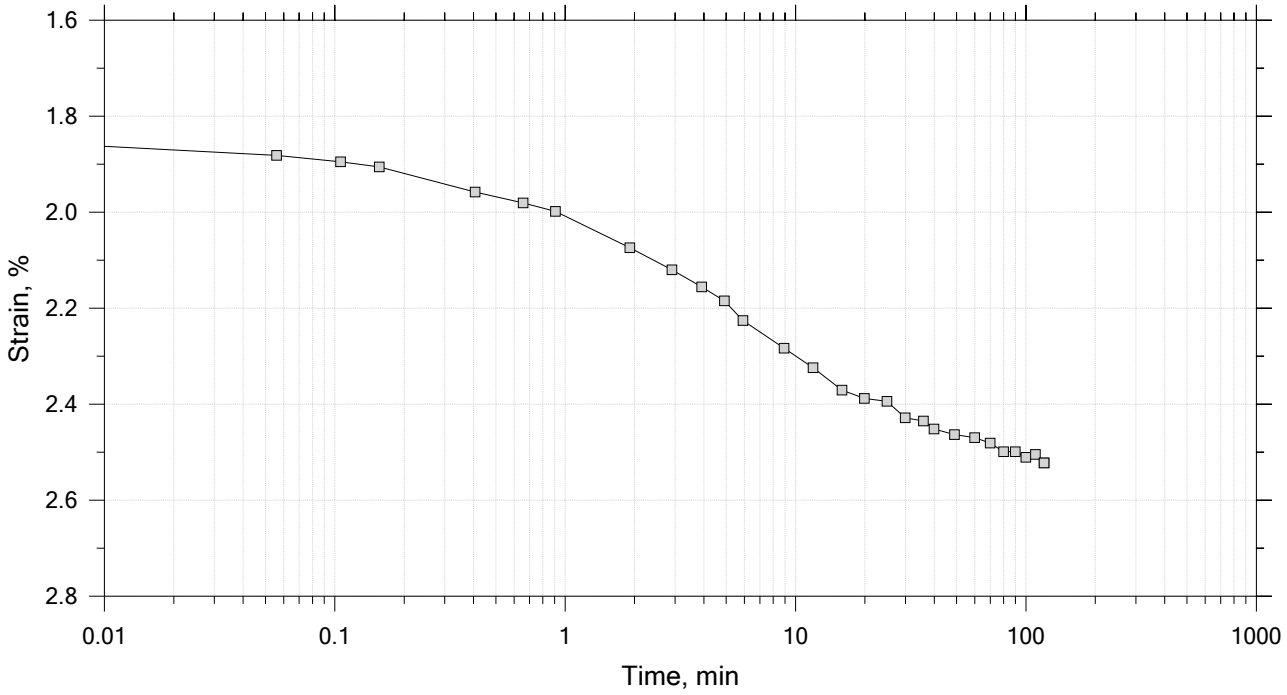
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

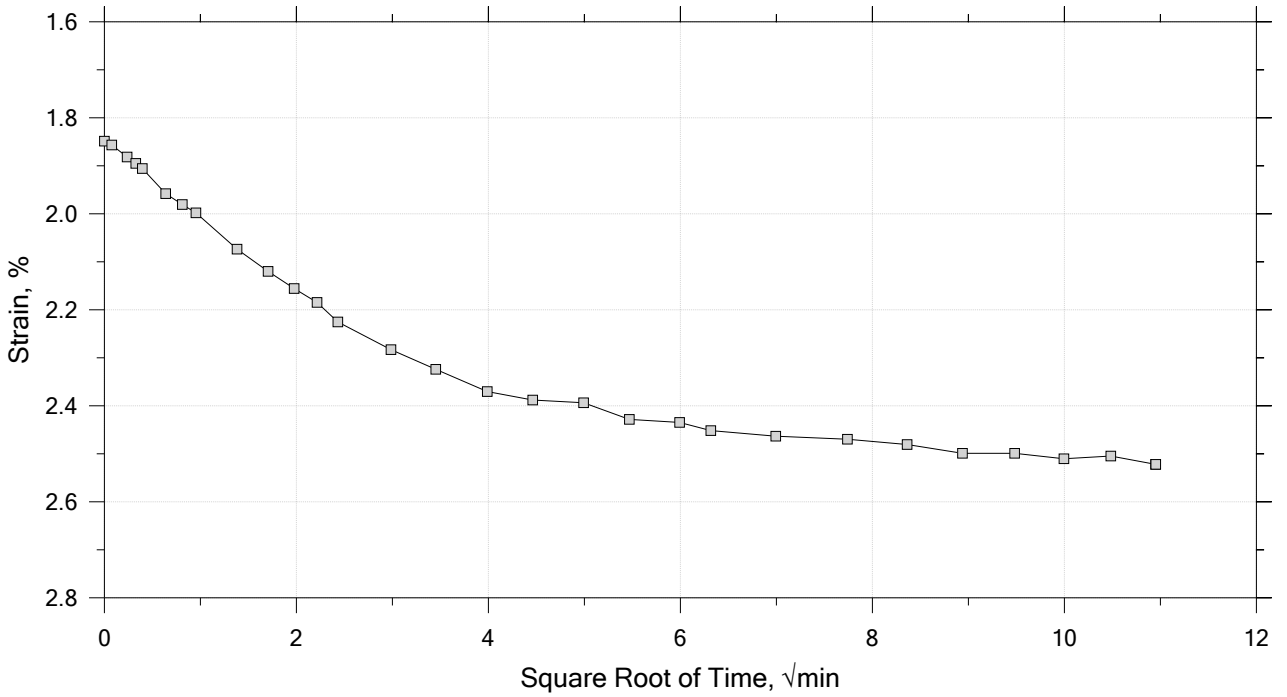
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf

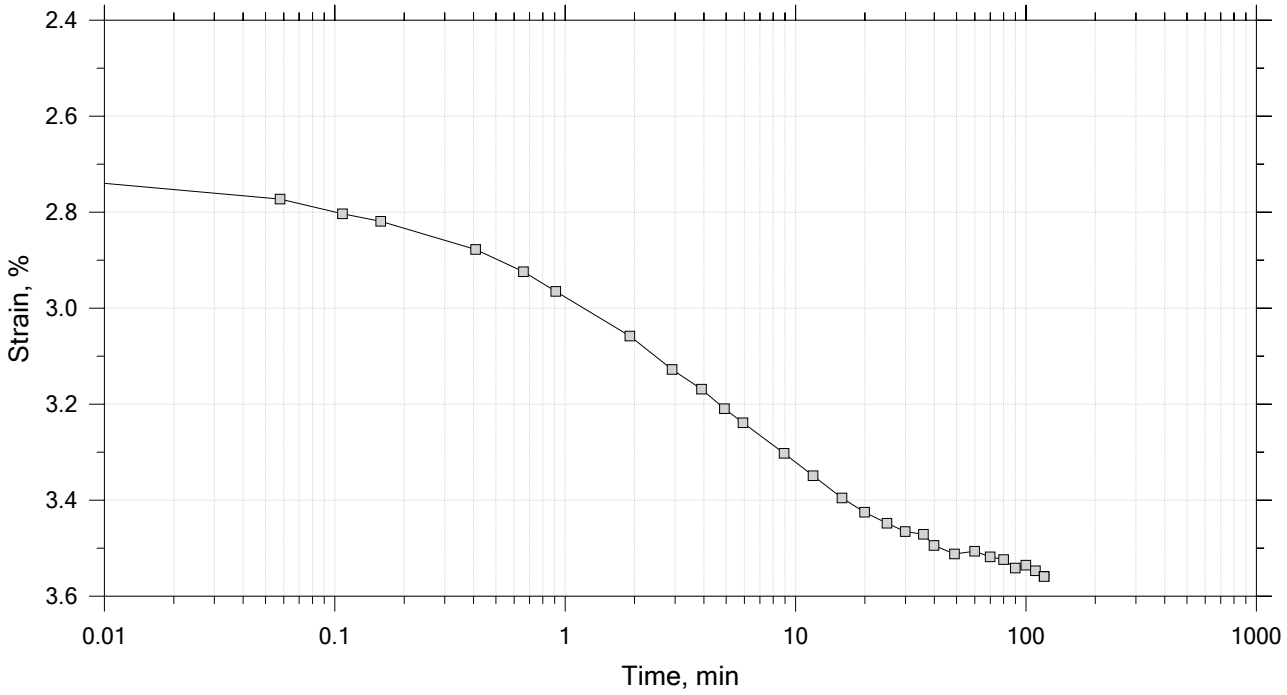


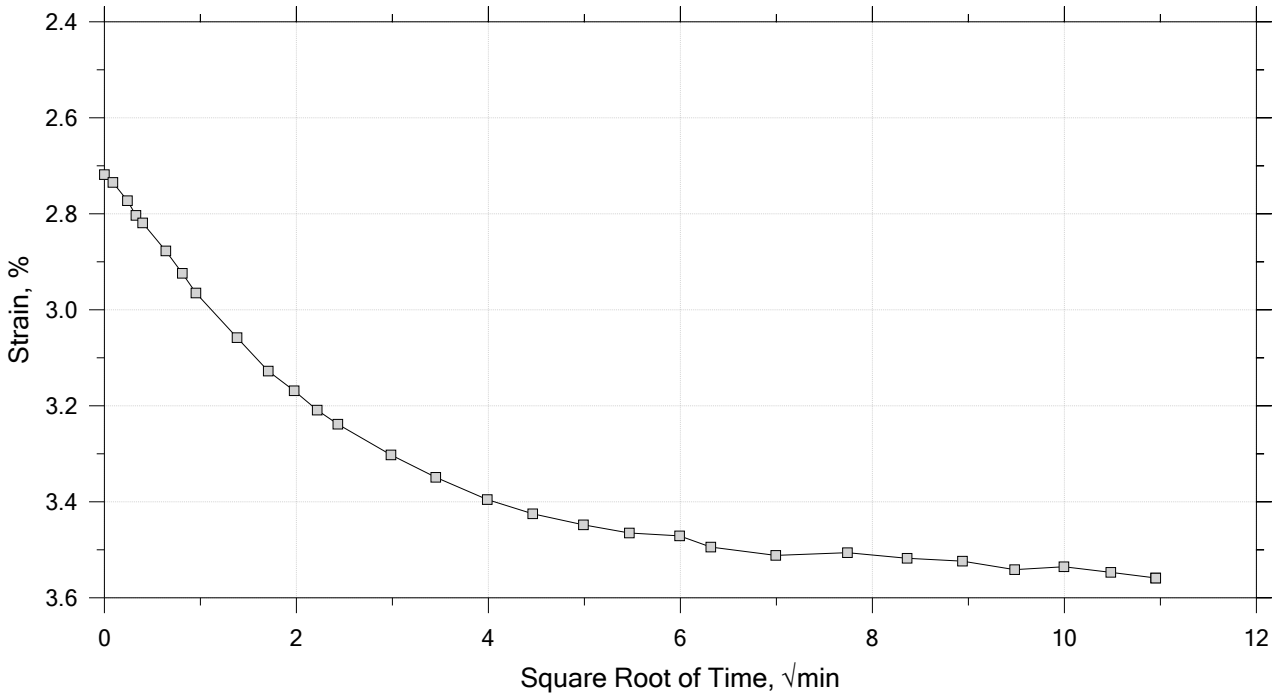


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





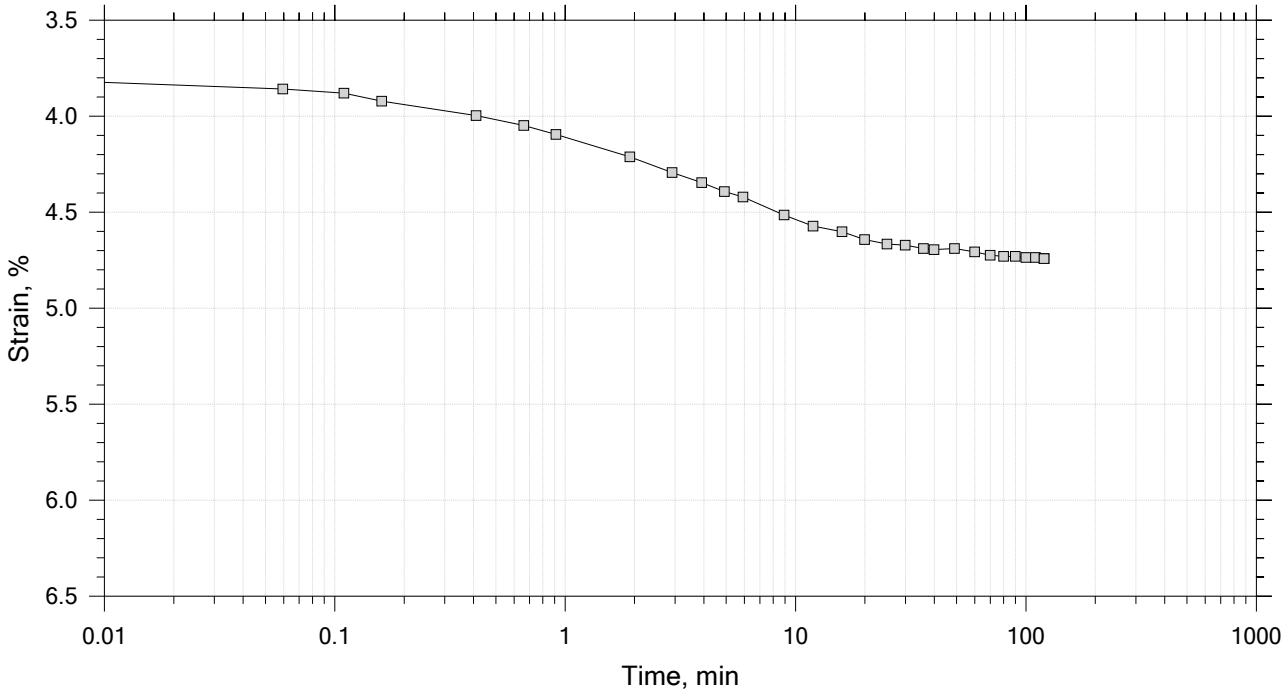
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

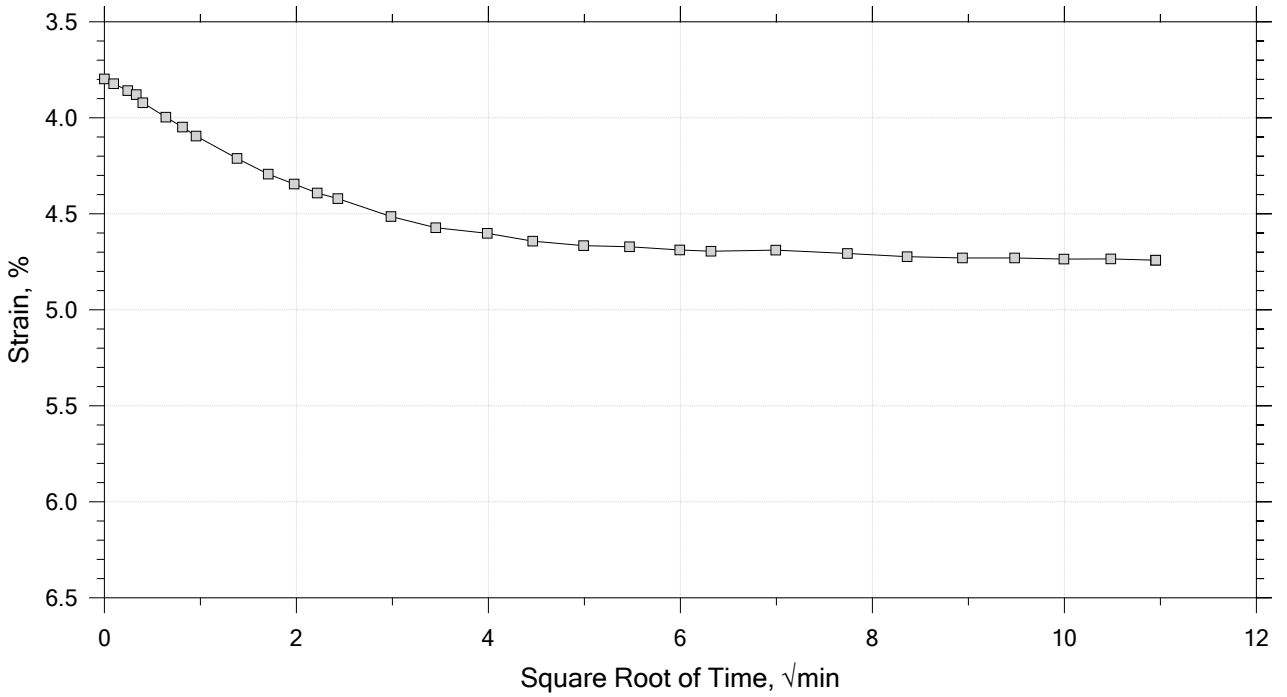
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





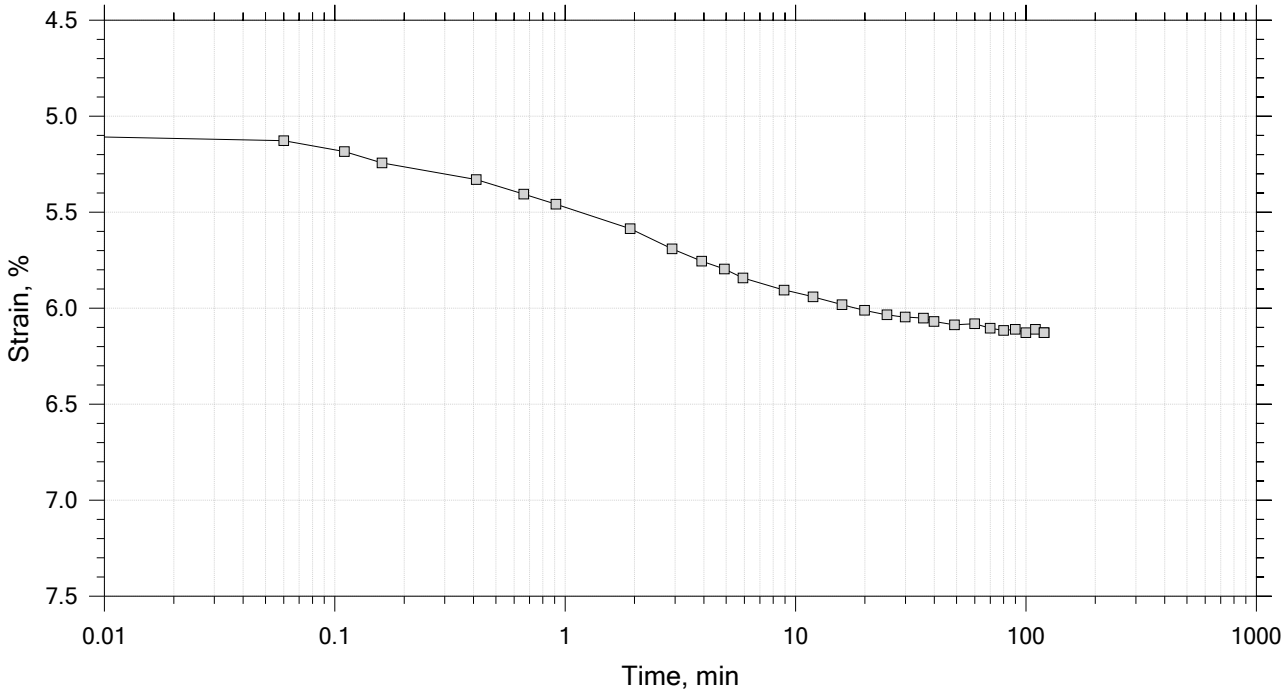
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
Test No.: IP-19-2	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System C, Swell Pressure = 0.0737 tsf		

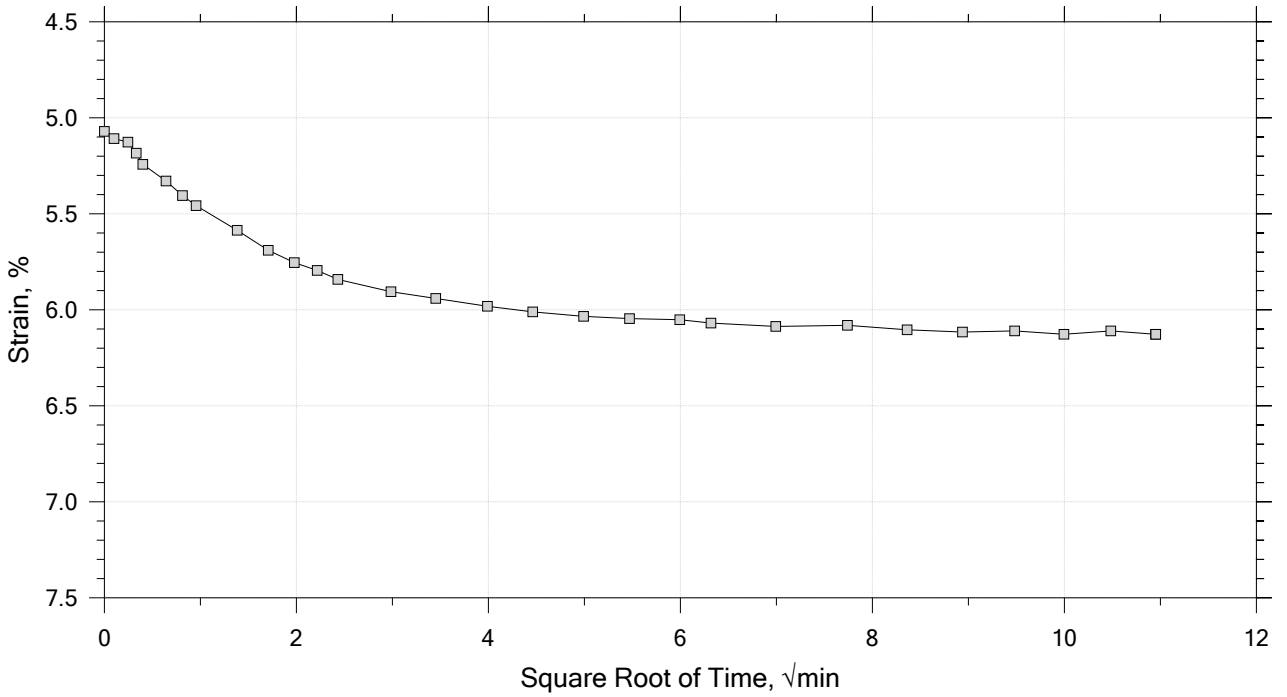
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





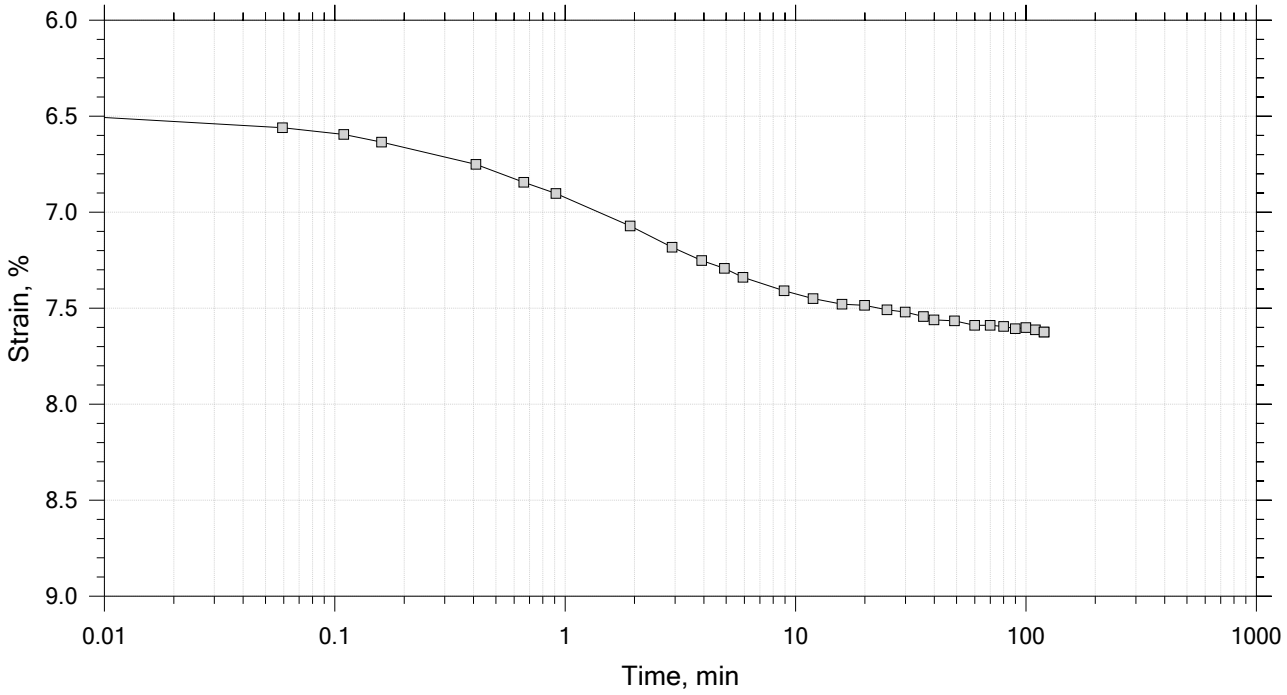
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

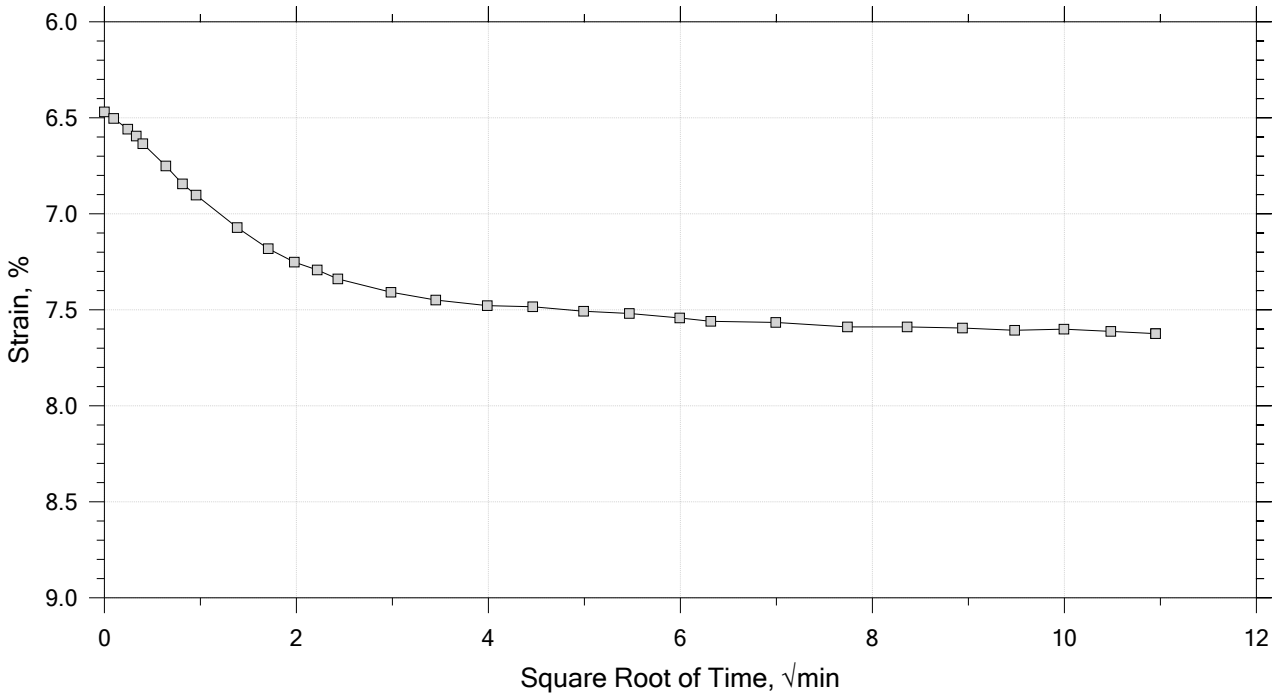
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

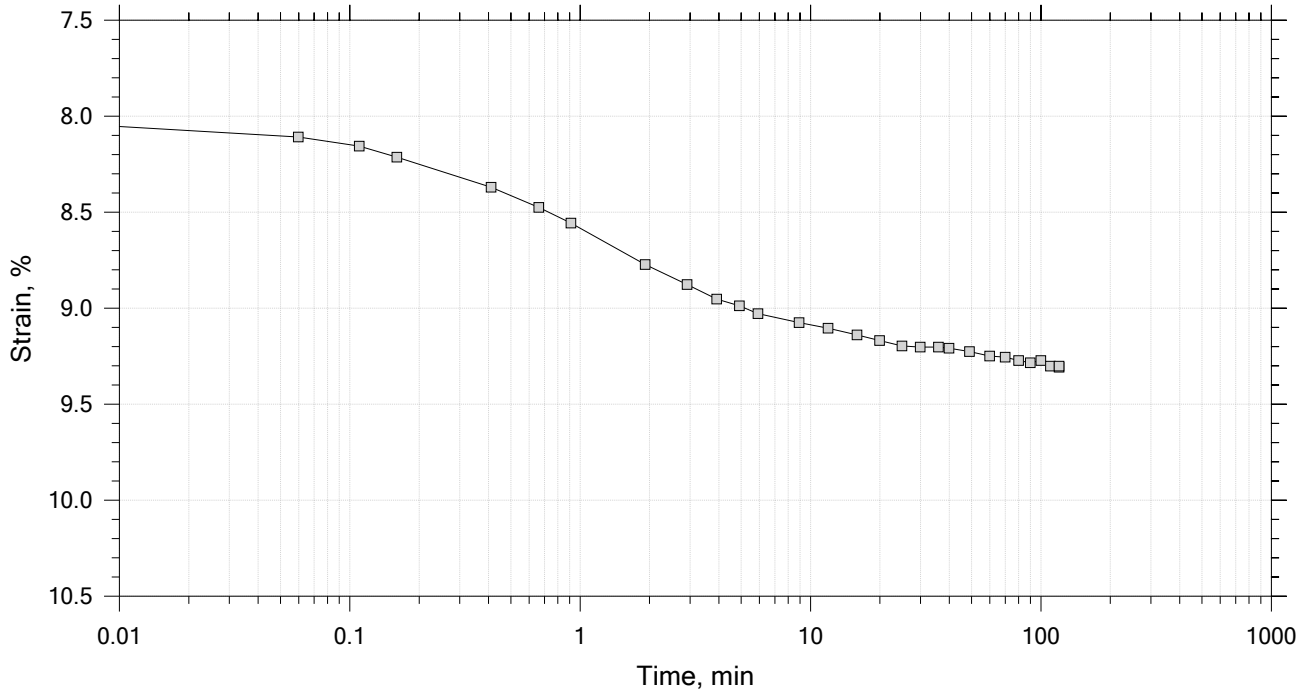


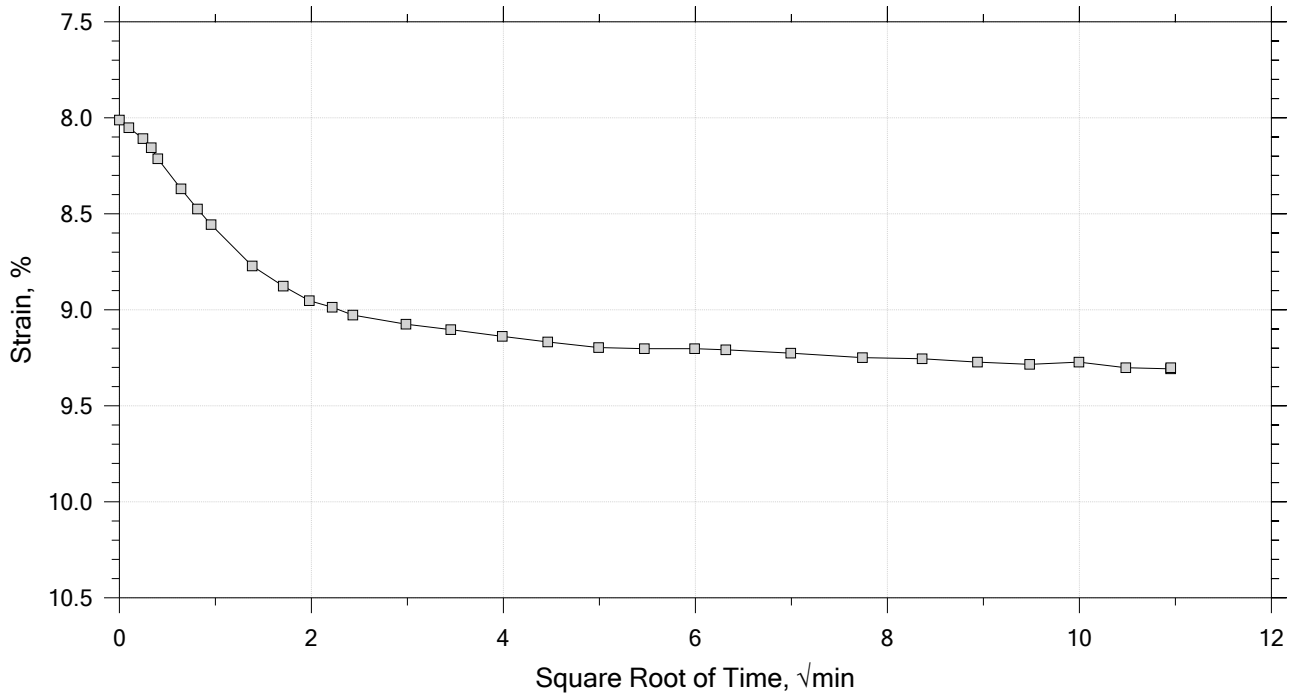


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

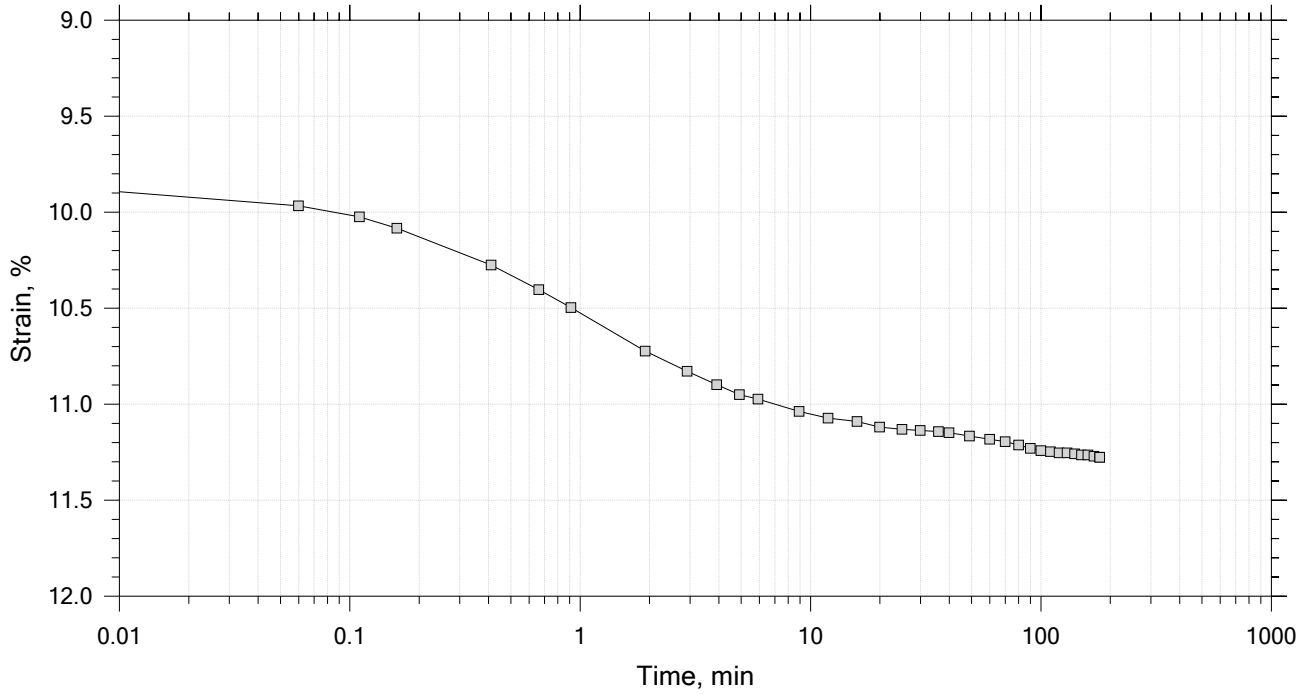


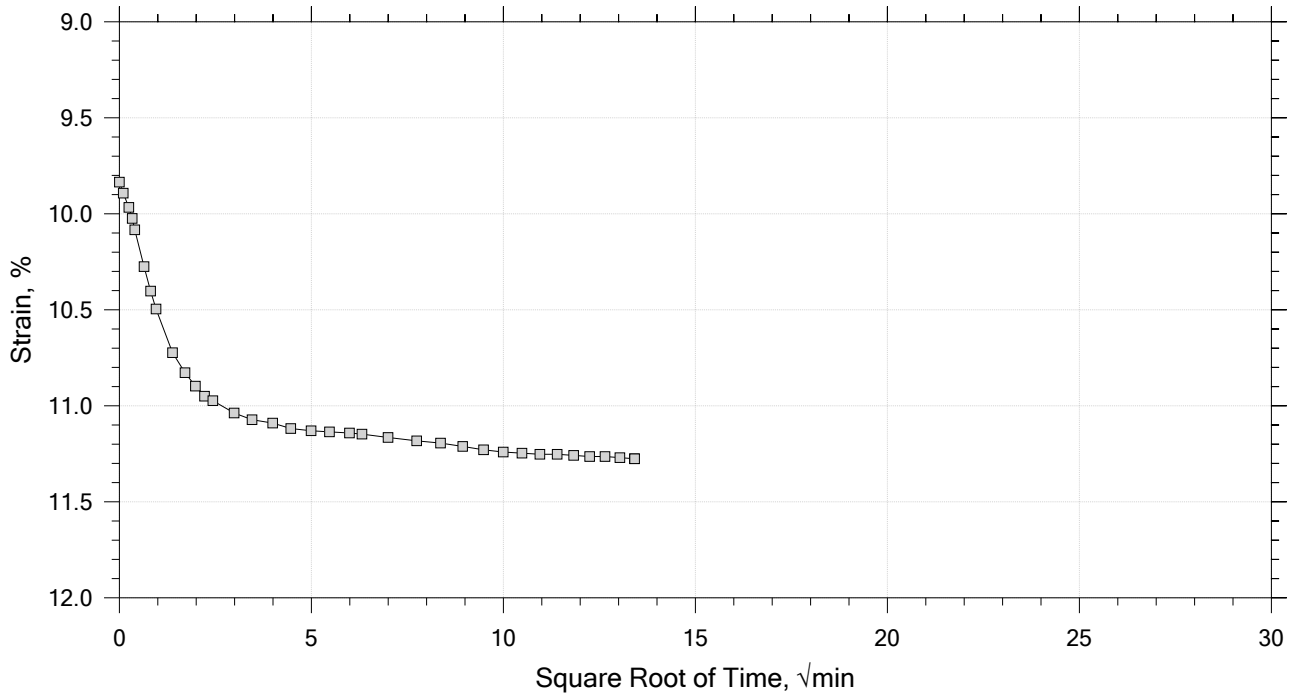


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





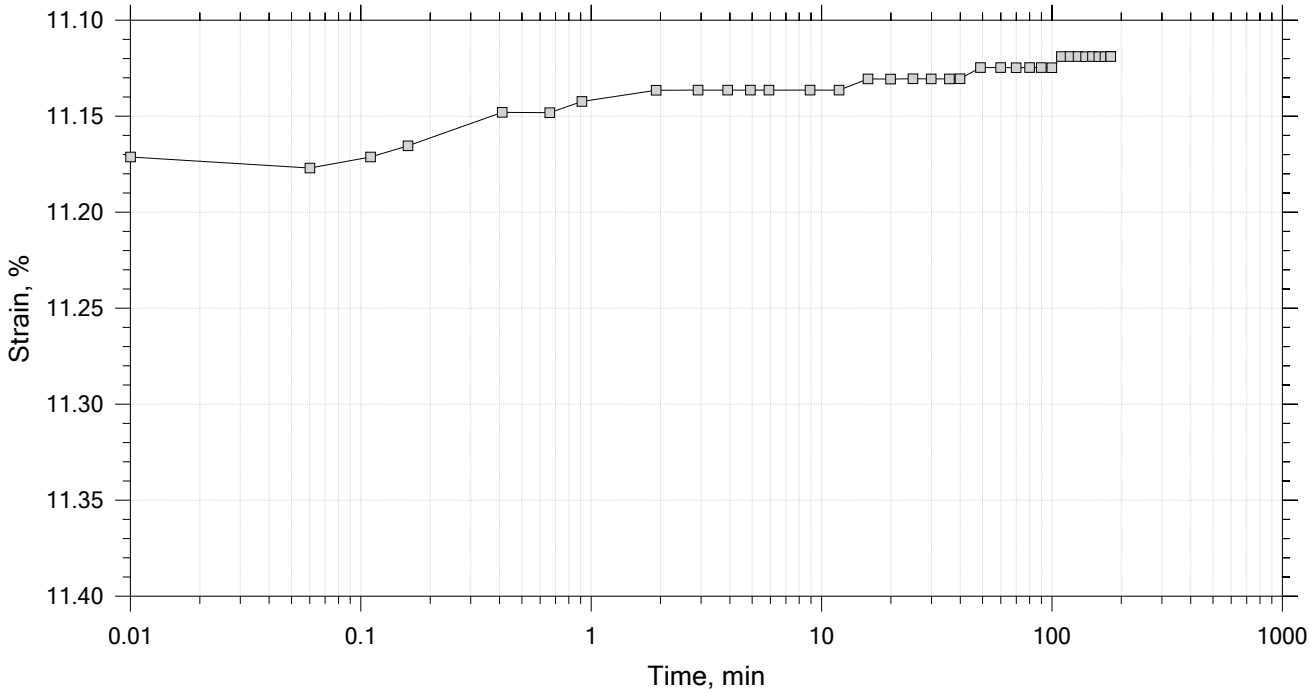
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

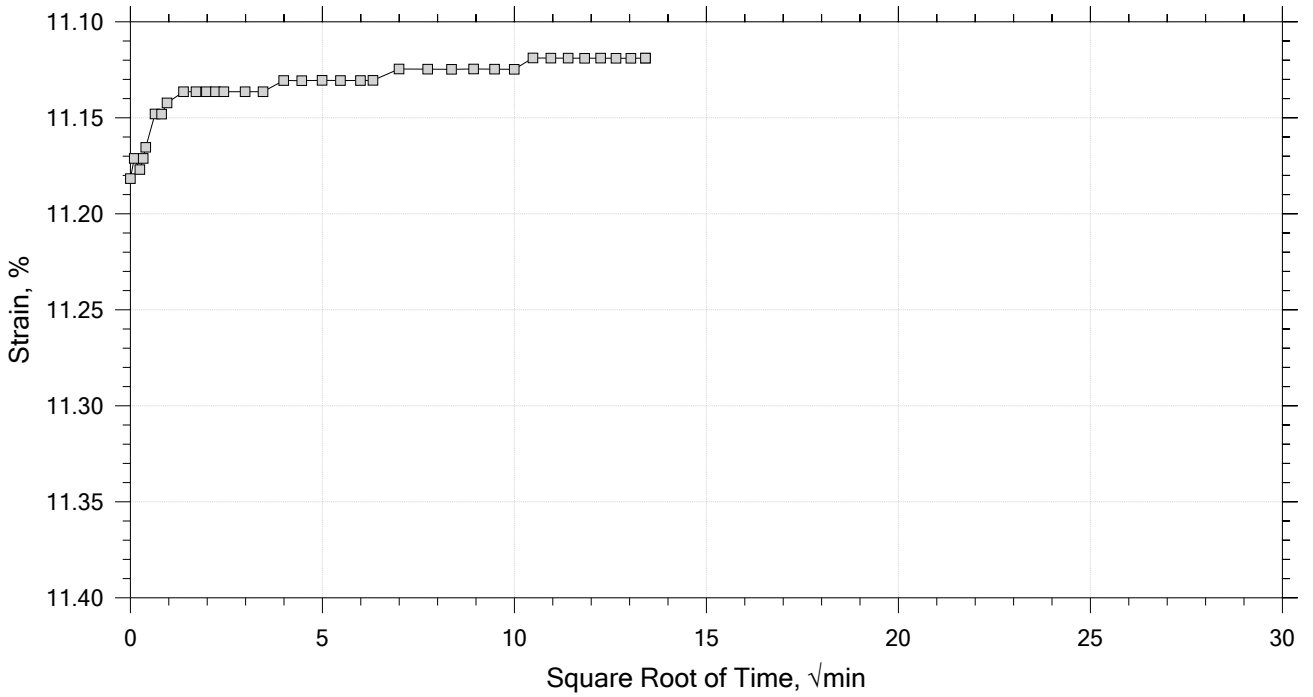
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf

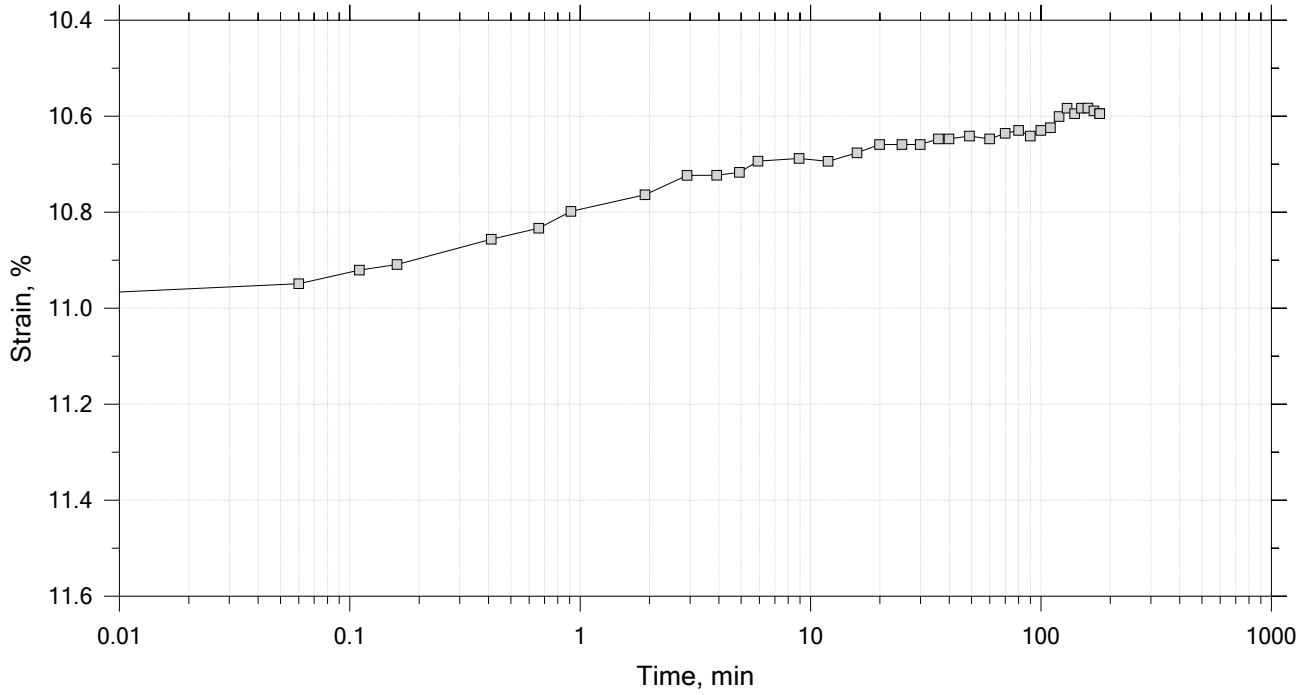


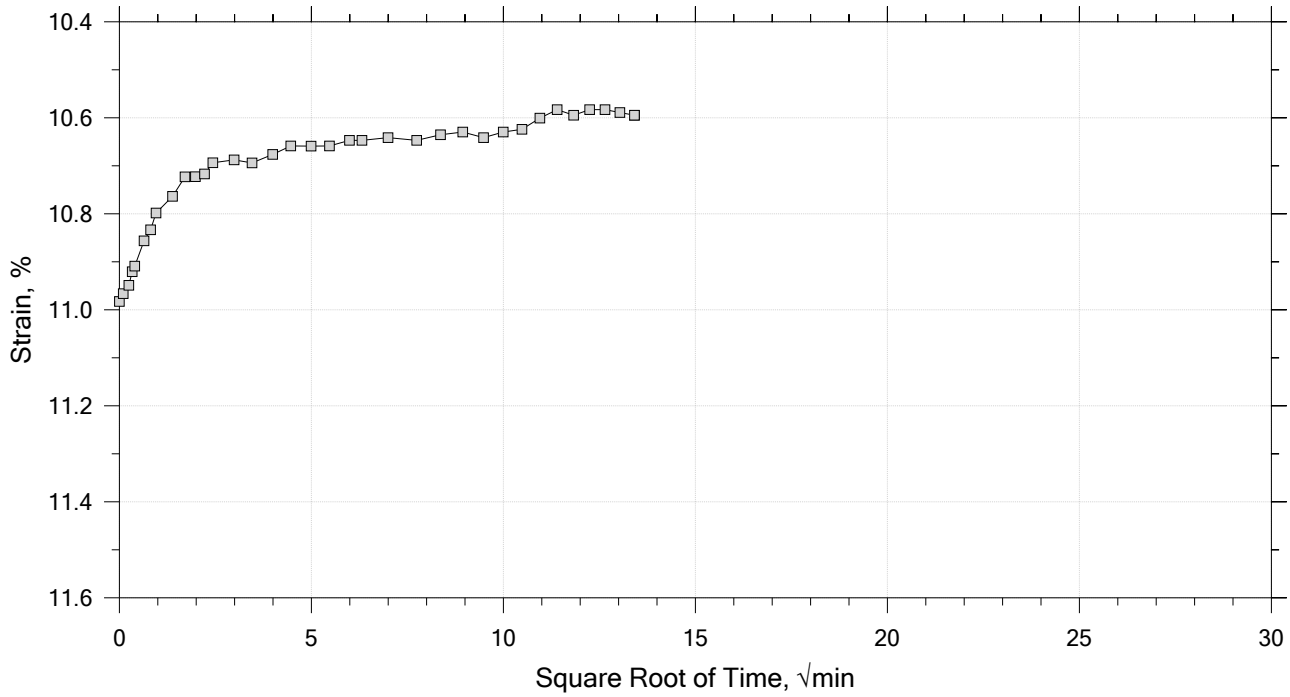


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

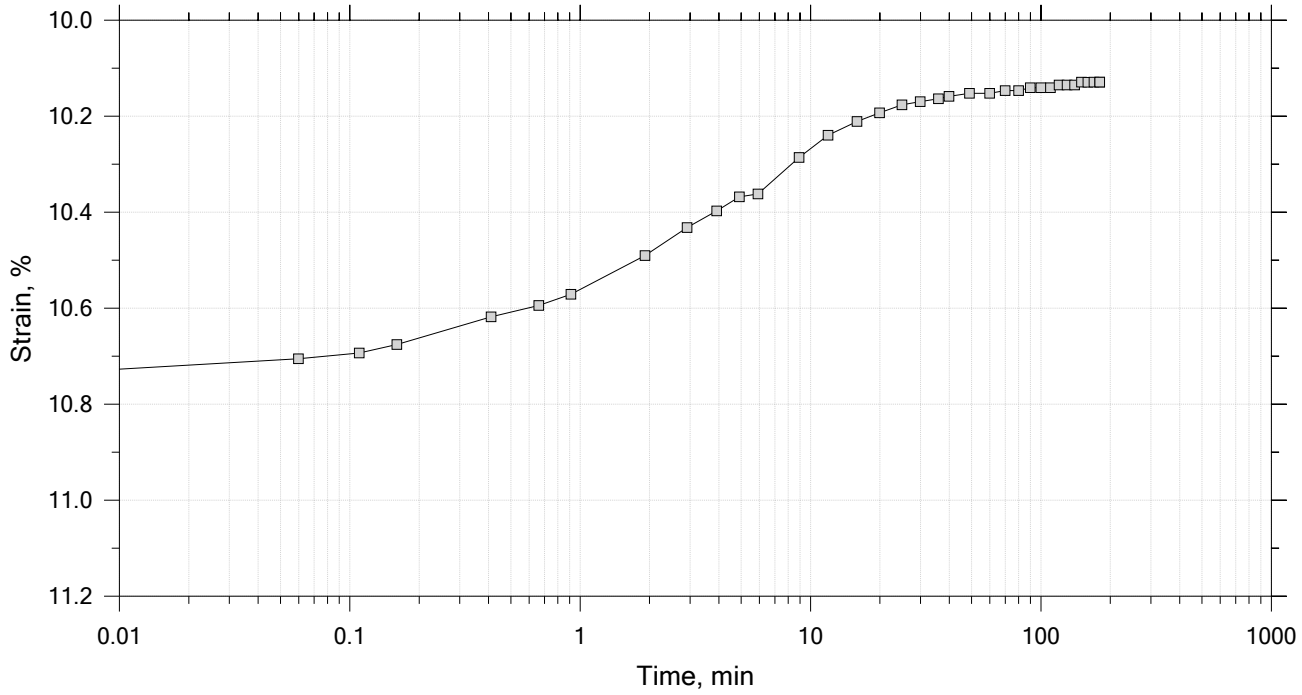


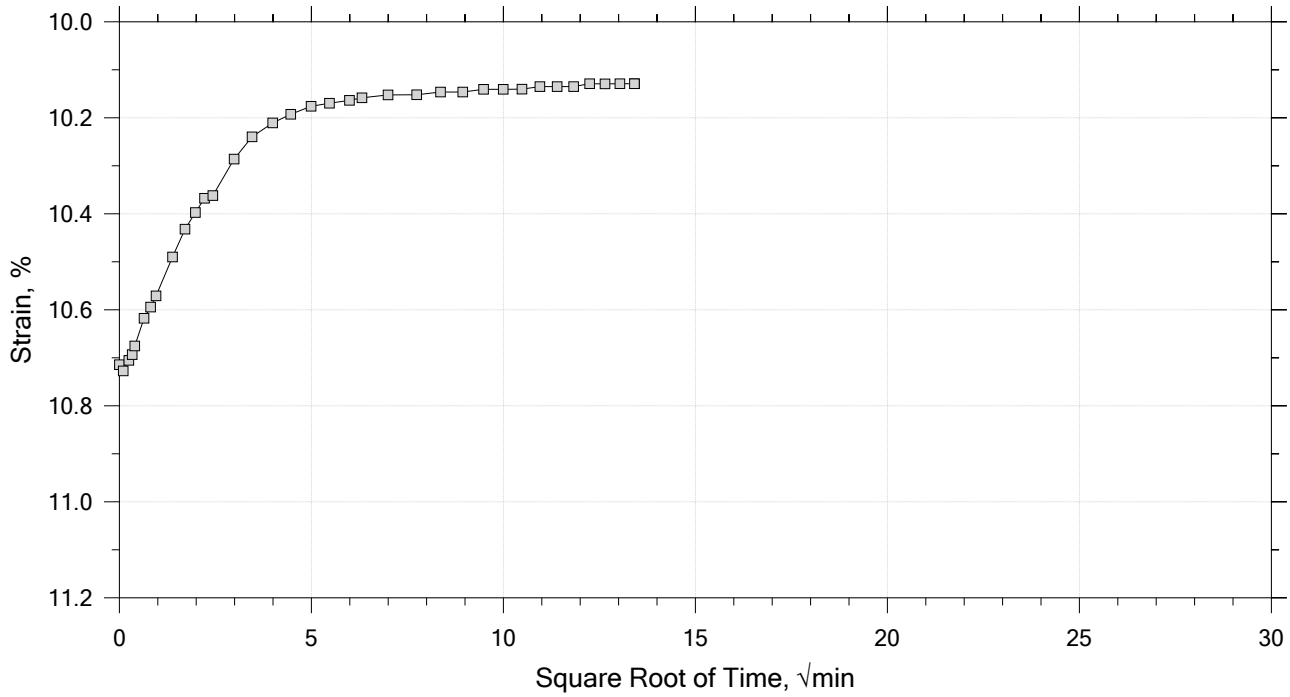


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

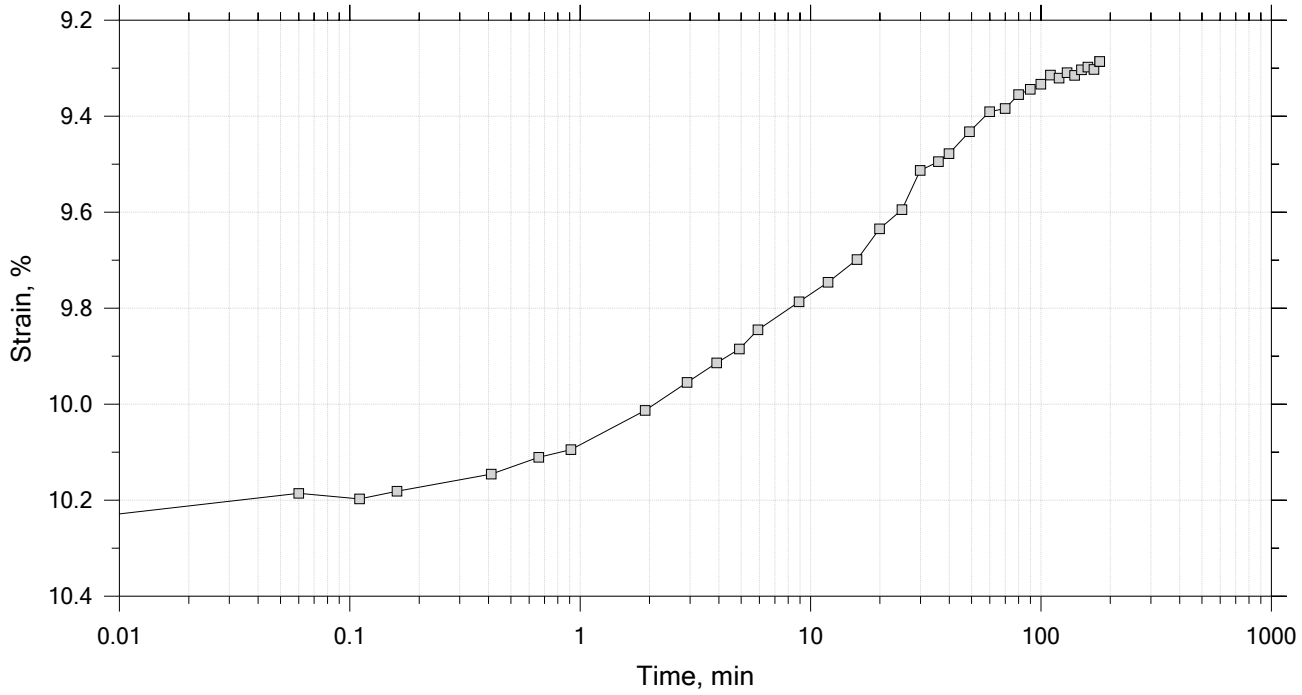


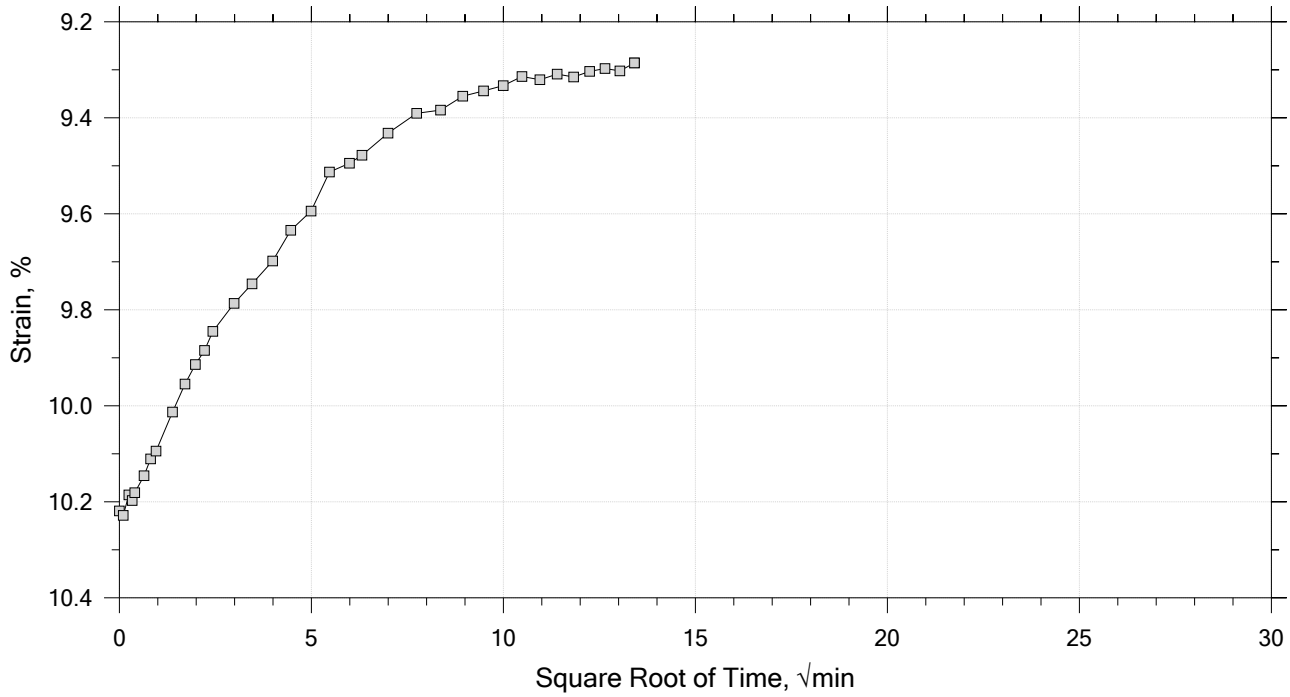


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
Test No.: IP-19-2	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
Test No.: IP-19-2	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.77	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.396	Plastic Limit: 21
Final Height: 0.93 in	Final Void Ratio: 0.298	Plasticity Index: 25

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	vc88	RING		E0808
Mass Container, gm	8.31	108.01	108.01	8.2
Mass Container + Wet Soil, gm	82.4	289.68	284.79	184.6
Mass Container + Dry Soil, gm	73.9	267.61	267.61	167.46
Mass Dry Soil, gm	65.59	159.6	159.6	159.26
Water Content, %	12.96	13.83	10.76	10.76
Void Ratio	---	0.40	0.30	---
Degree of Saturation, %	---	96.75	100.00	---
Dry Unit Weight, pcf	---	123.87	133.19	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

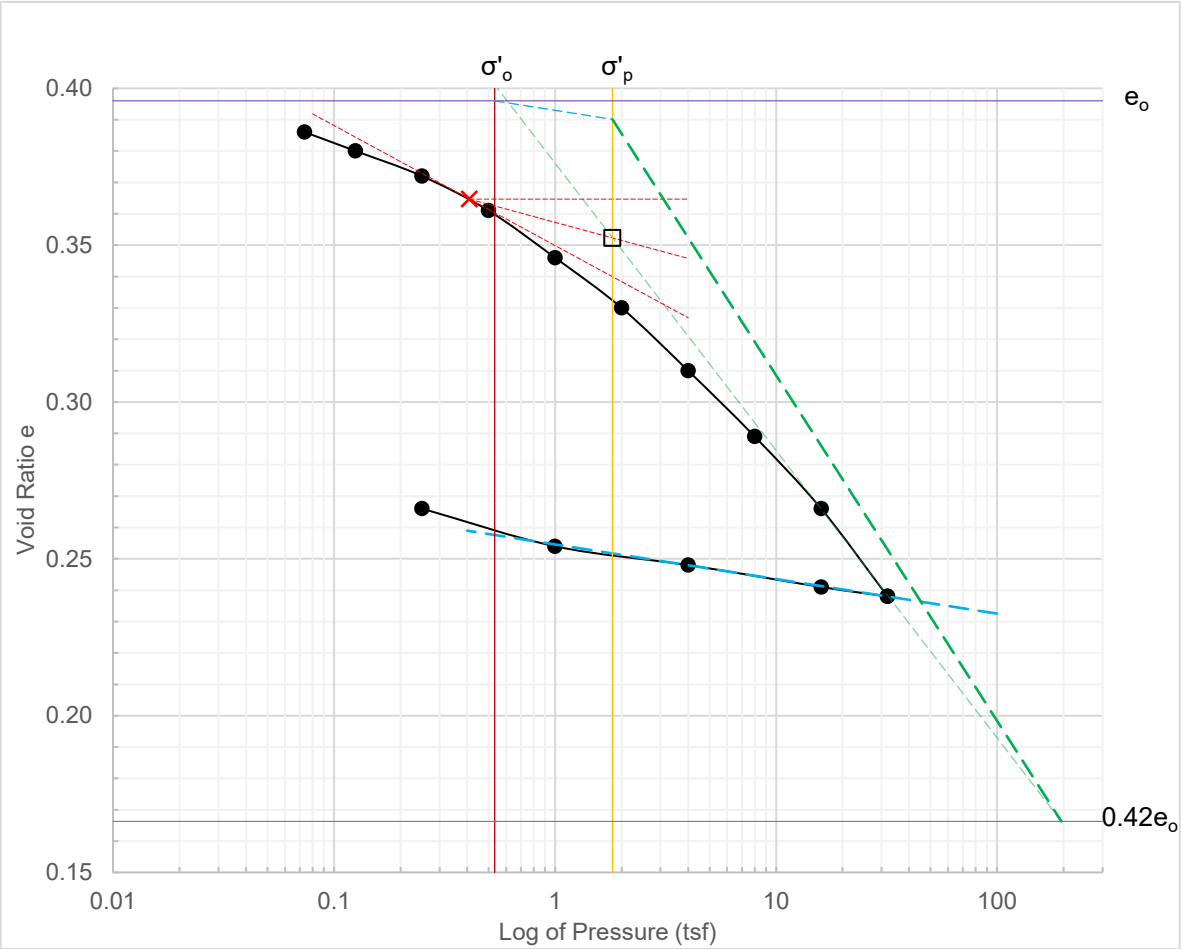
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0737	0.007340	0.386	0.734	52.496	4.64e-07	9.96e-02	1.25e-04
2	0.125	0.01124	0.380	1.12	42.238	5.70e-07	7.60e-02	1.17e-04
3	0.250	0.01689	0.372	1.69	22.742	1.05e-06	4.52e-02	1.28e-04
4	0.500	0.02522	0.361	2.52	16.062	1.46e-06	3.33e-02	1.32e-04
5	1.00	0.03559	0.346	3.56	9.094	2.54e-06	2.07e-02	1.42e-04
6	2.00	0.04741	0.330	4.74	9.472	2.38e-06	1.18e-02	7.59e-05
7	4.00	0.06127	0.310	6.13	5.985	3.67e-06	6.93e-03	6.85e-05
8	8.00	0.07624	0.289	7.62	5.797	3.67e-06	3.74e-03	3.71e-05
9	16.0	0.09302	0.266	9.30	4.799	4.28e-06	2.10e-03	2.42e-05
10	32.0	0.1128	0.238	11.3	4.088	4.83e-06	1.23e-03	1.61e-05
11	16.0	0.1112	0.241	11.1	109.678	1.76e-07	9.83e-05	4.68e-08
12	4.00	0.1059	0.248	10.6	7.317	2.66e-06	4.37e-04	3.14e-06
13	1.00	0.1013	0.254	10.1	10.256	1.92e-06	1.55e-03	8.05e-06
14	0.250	0.09286	0.266	9.29	31.643	6.32e-07	1.12e-02	1.92e-05

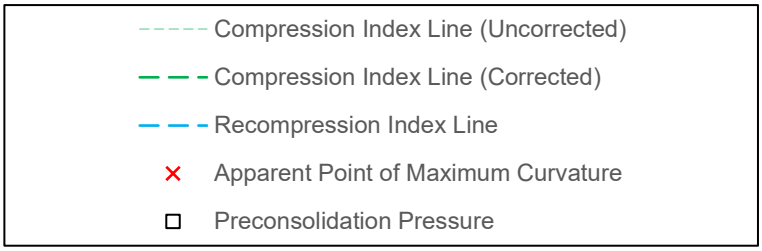
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.3-10.4
	Test No.: IP-19-2	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System C, Swell Pressure = 0.0737 tsf		
	Displacement at End of Increment		

Boring: B-4.16A

Depth: 10.3'-10.4'

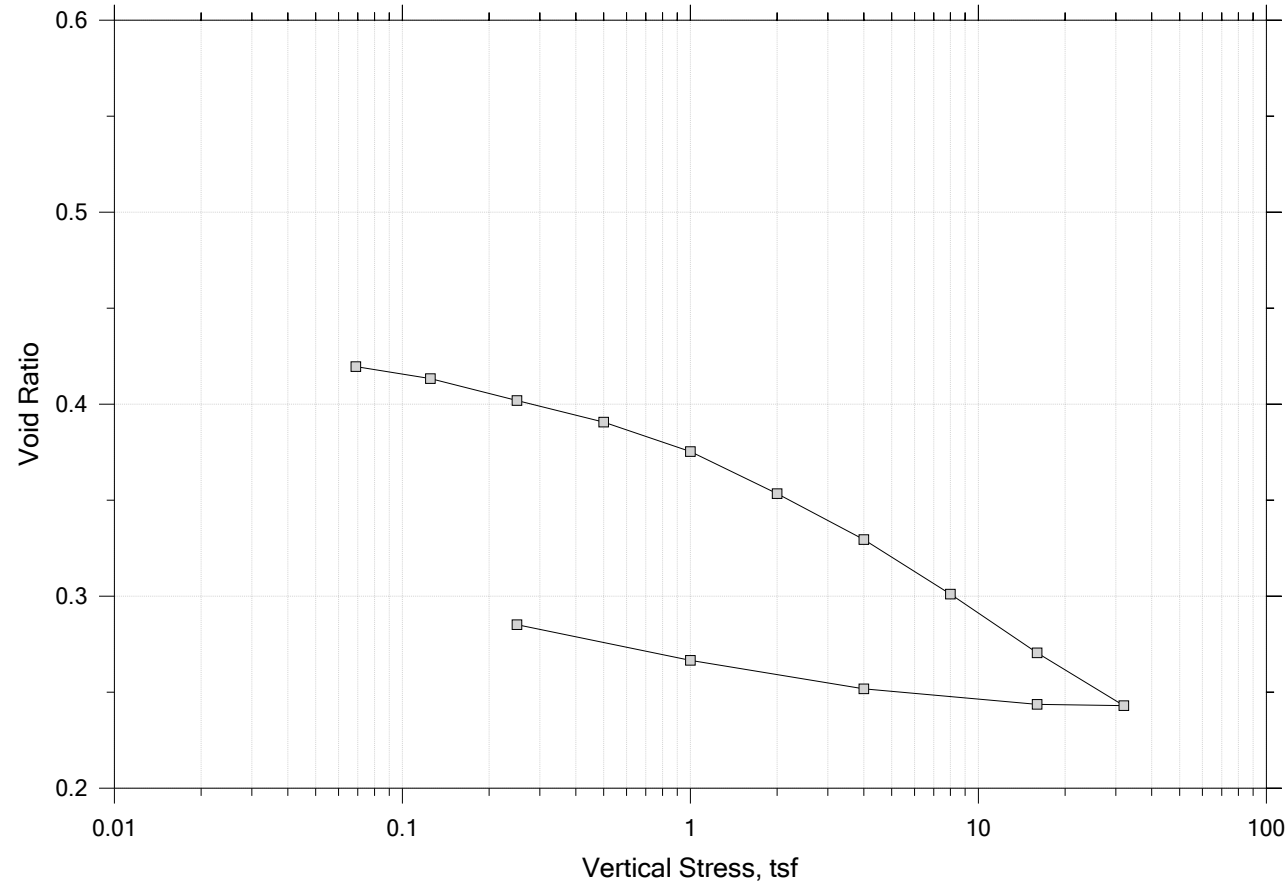
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.53
Preconsolidation Pressure, σ'_p (tsf) = 1.82
Compression Index, C_c = 0.11
Recompression Index, C_r = 0.011

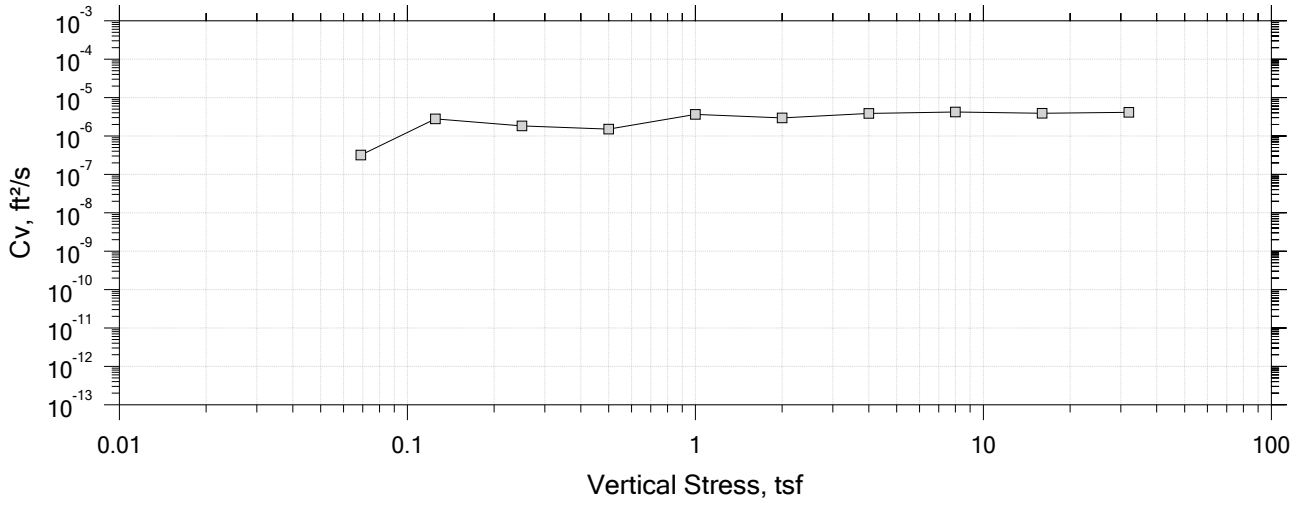




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

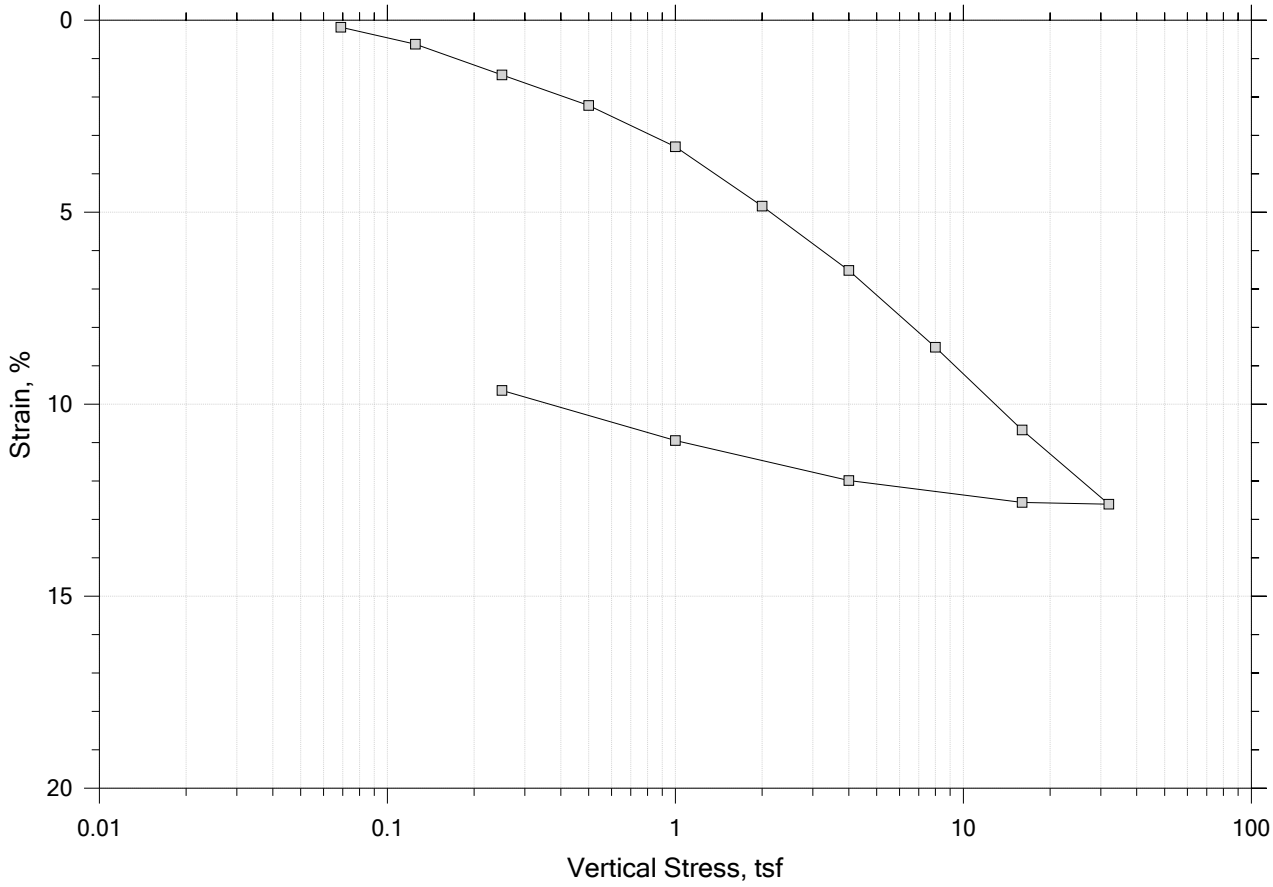


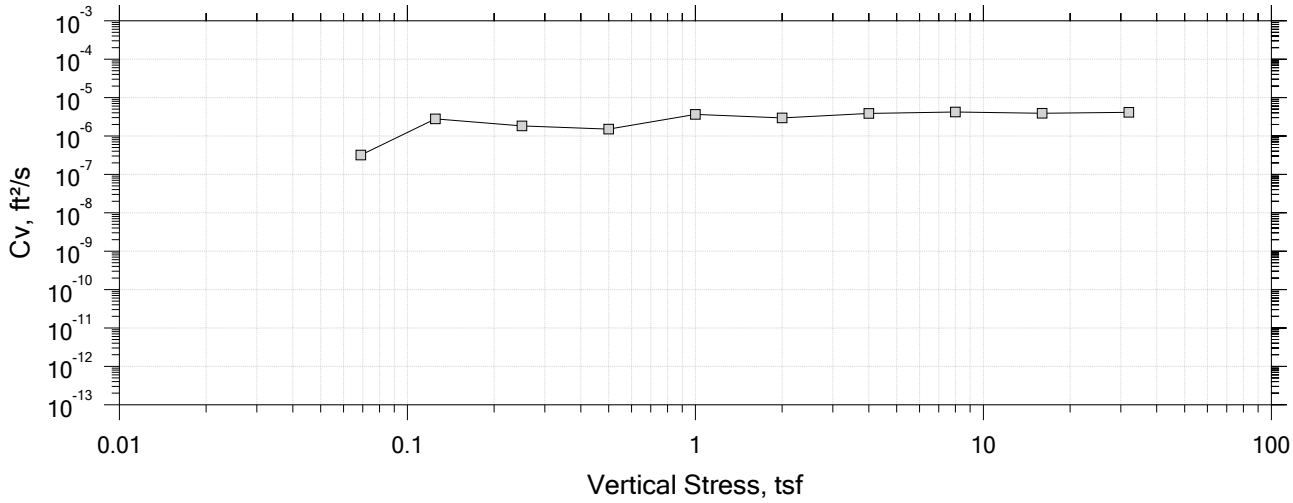


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

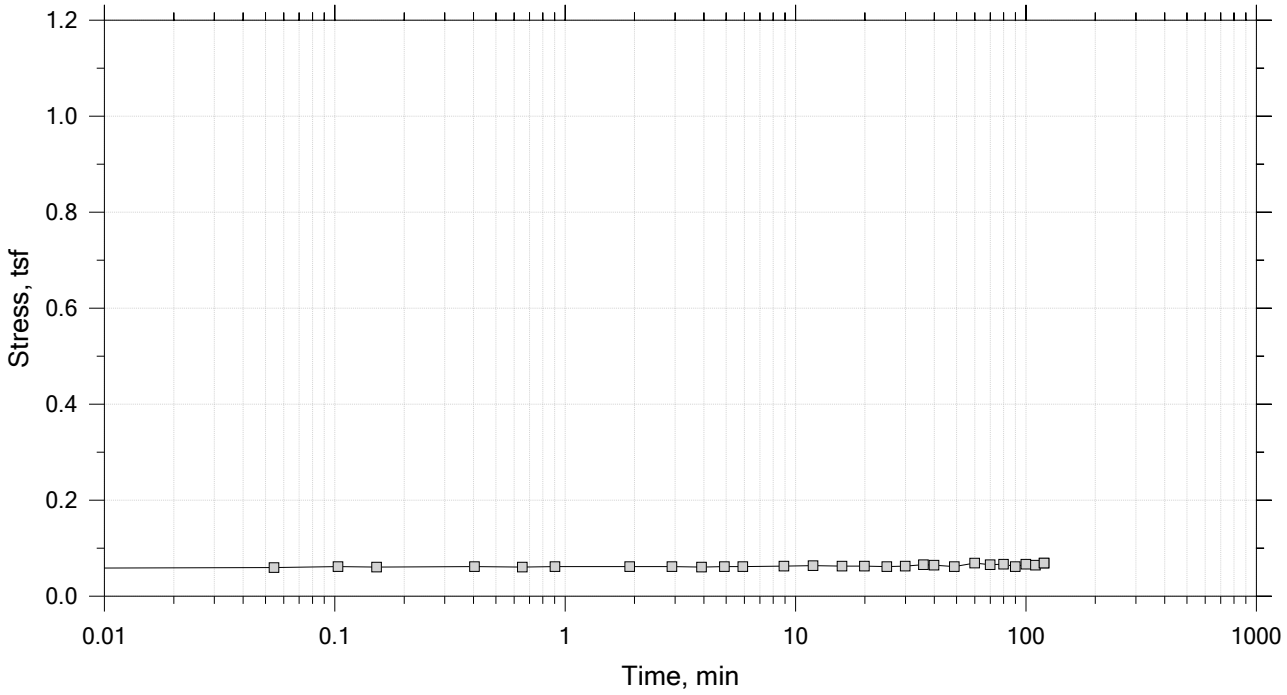


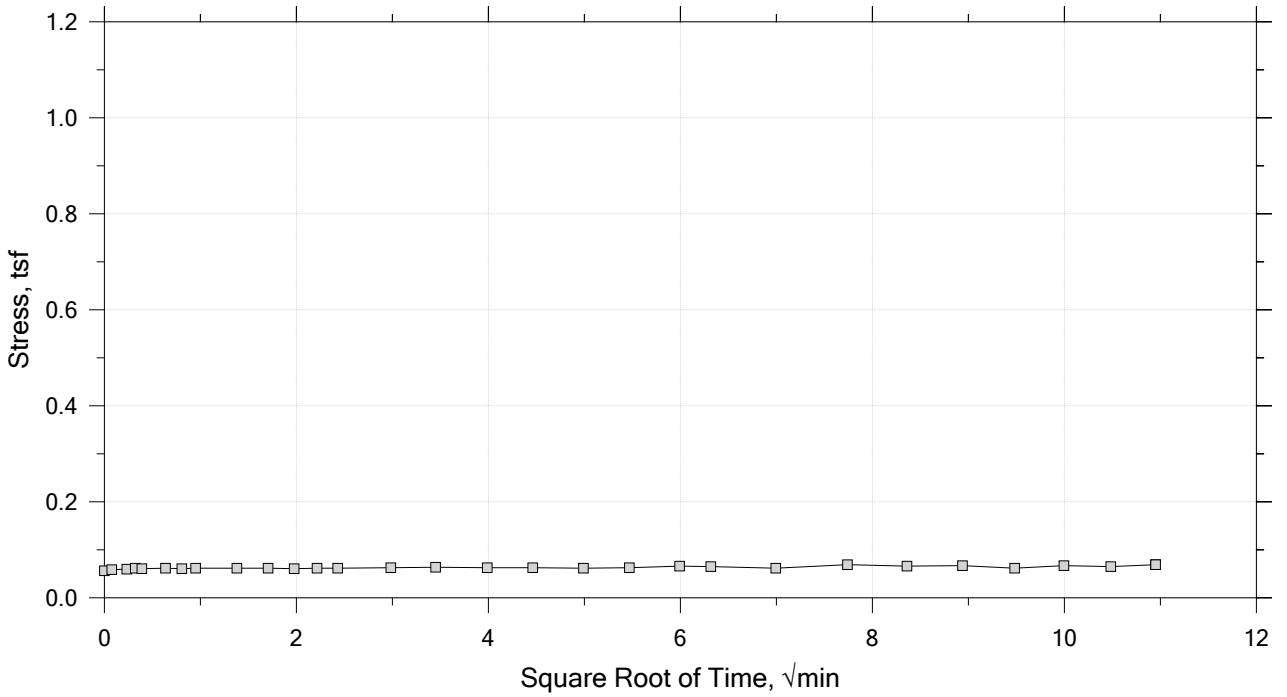


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0689 tsf





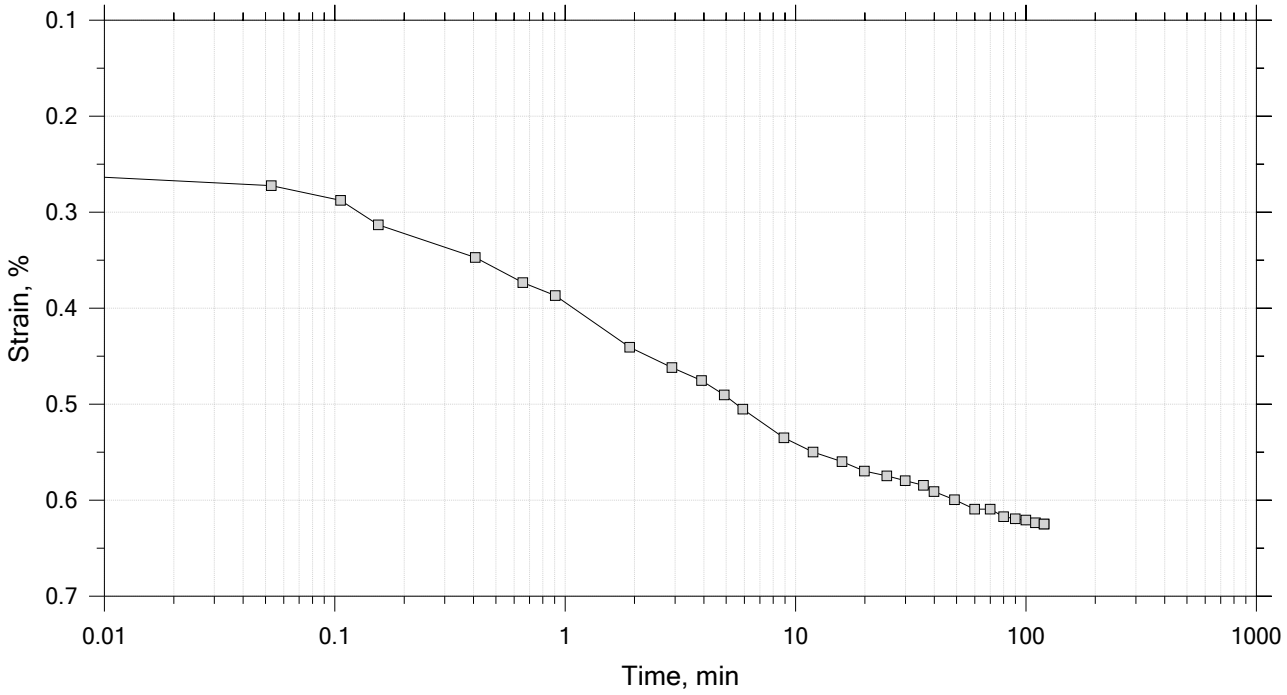
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

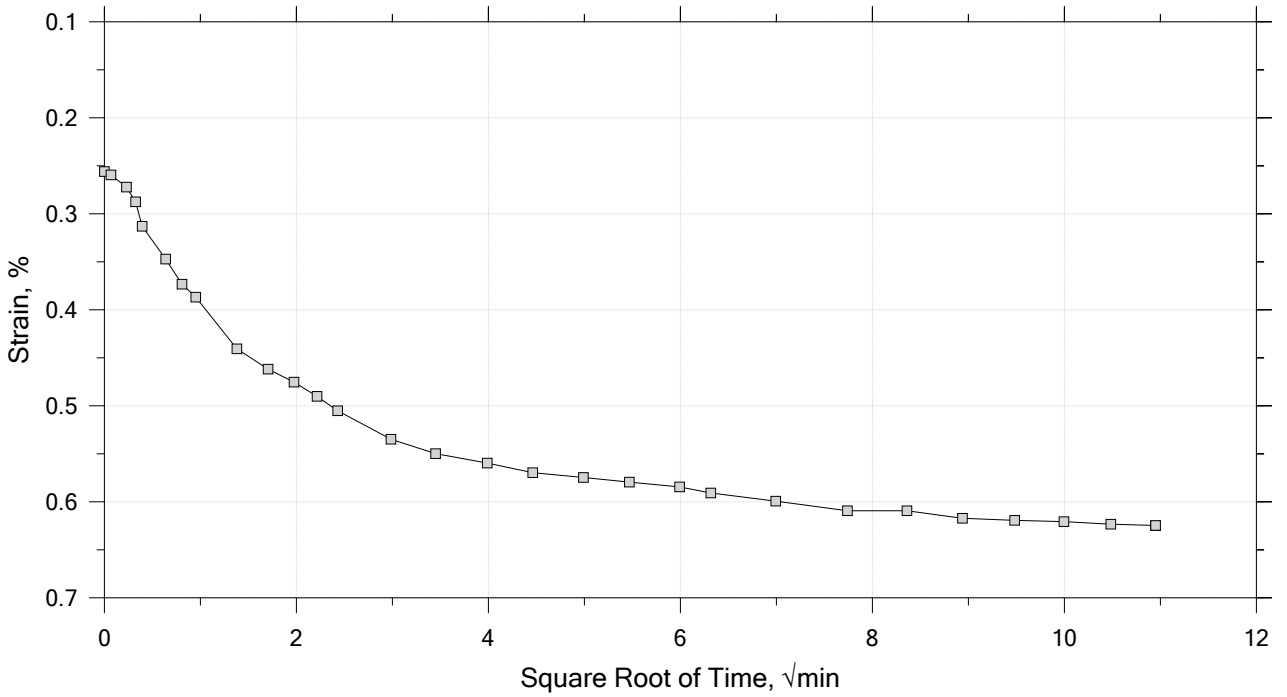
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

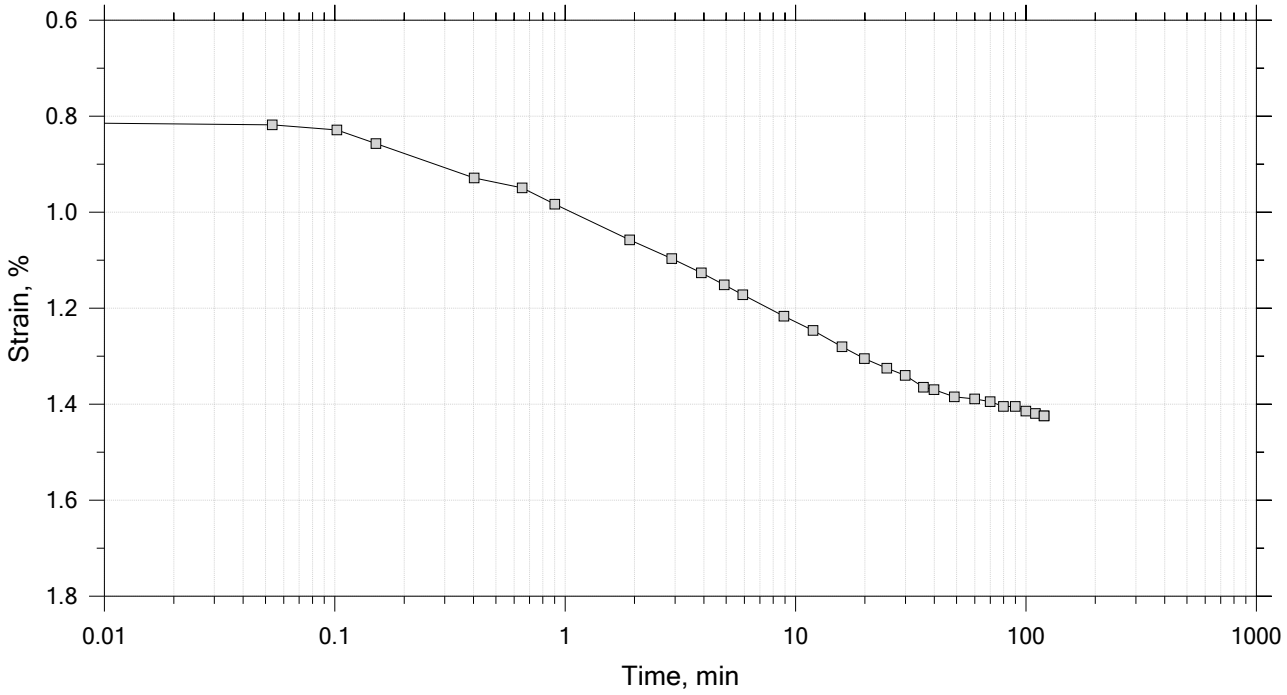


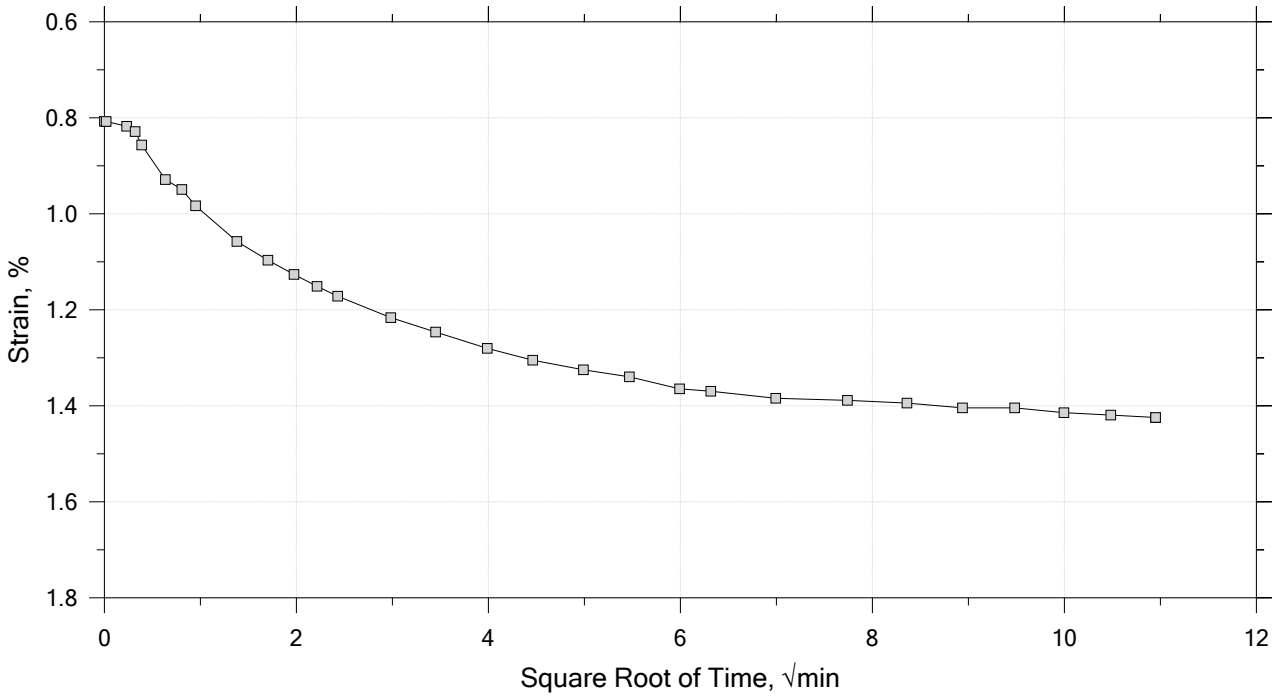


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





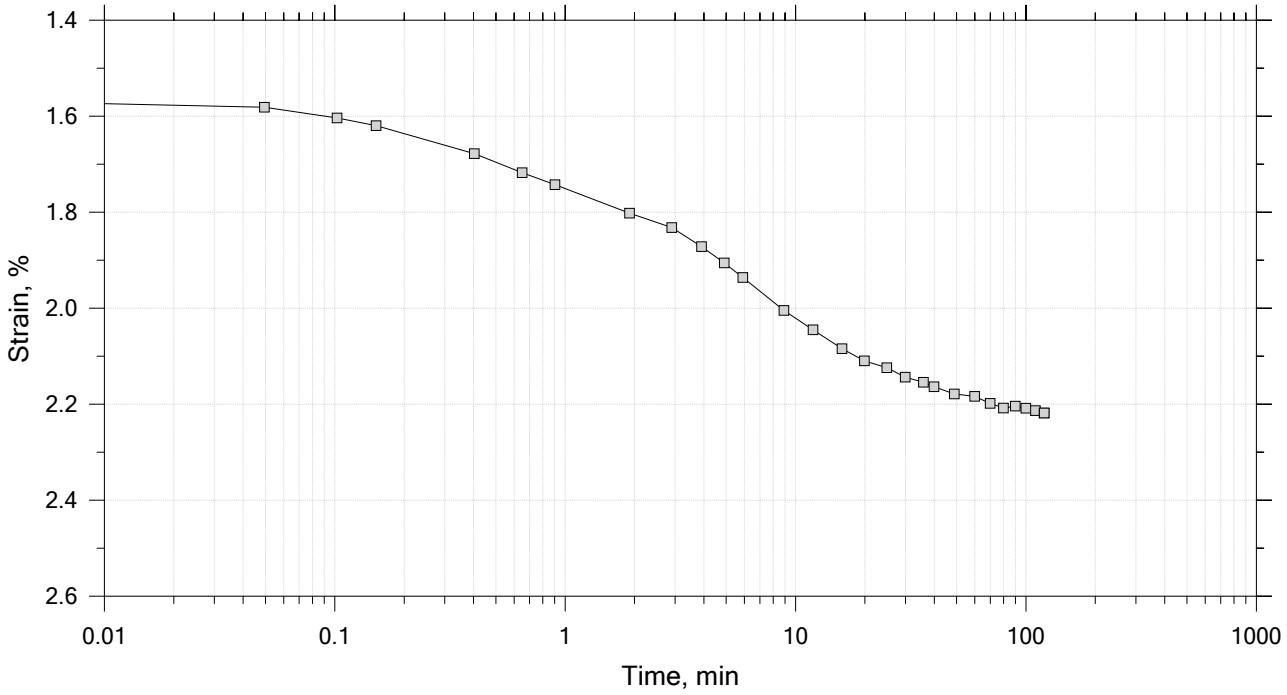
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

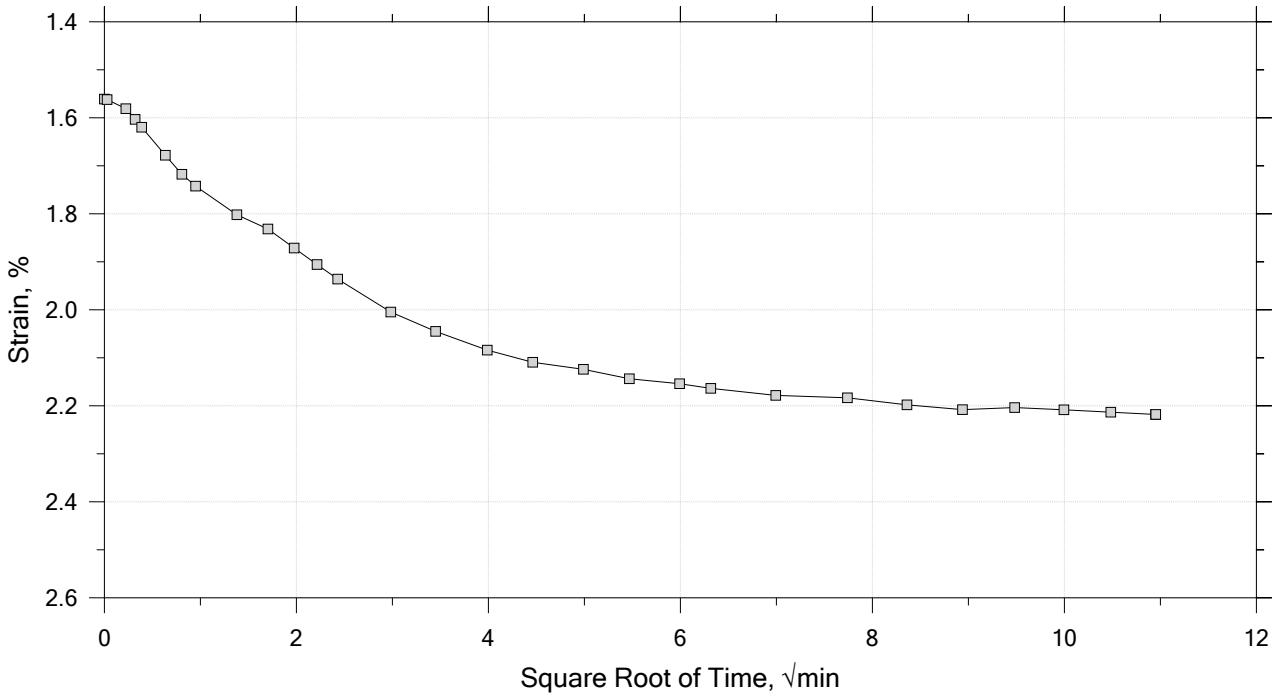
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





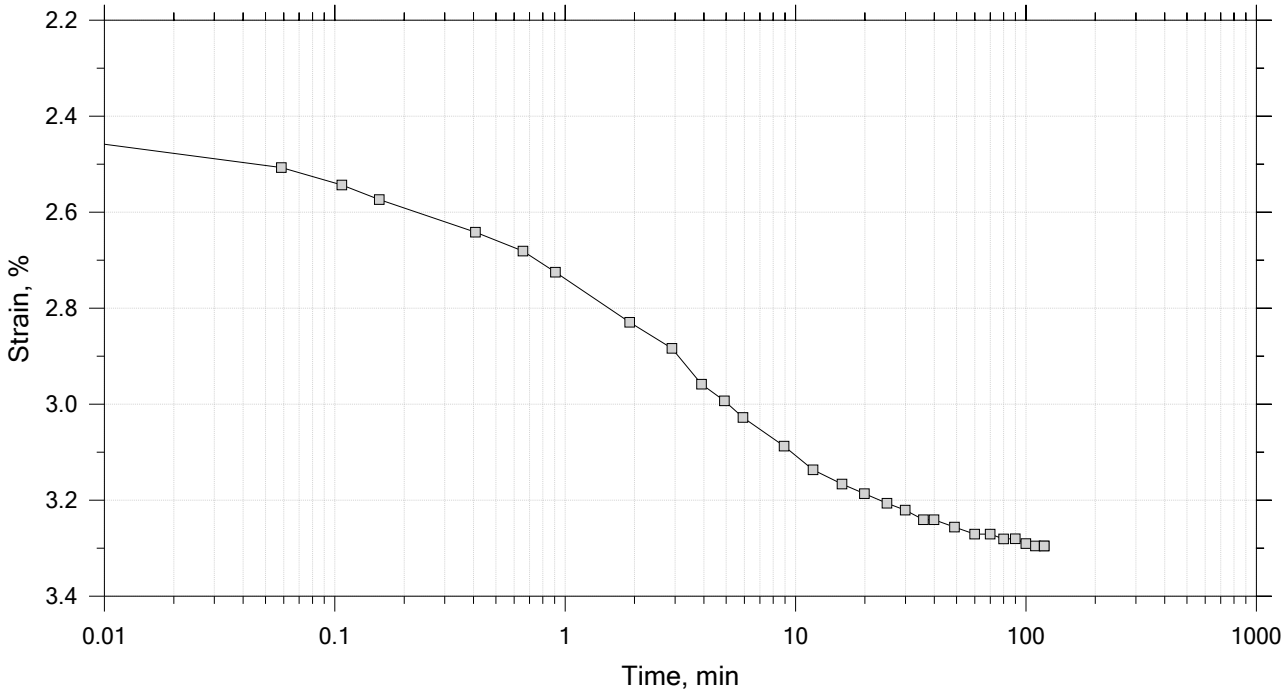
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

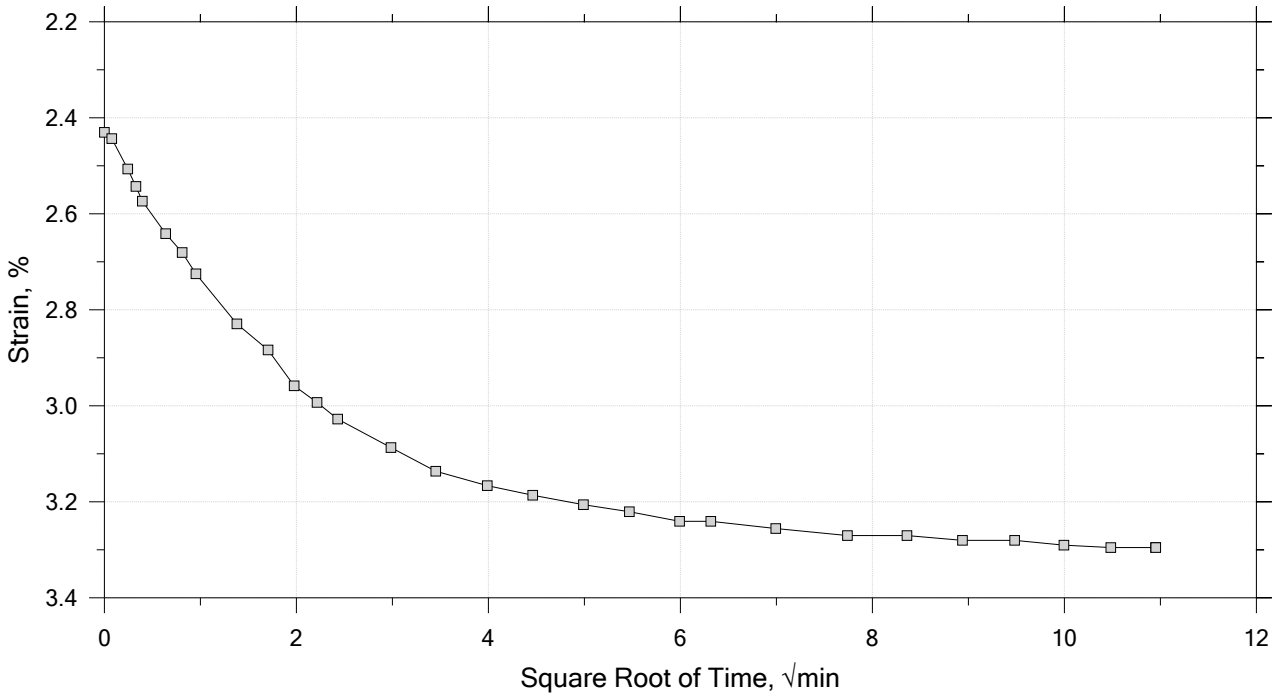
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





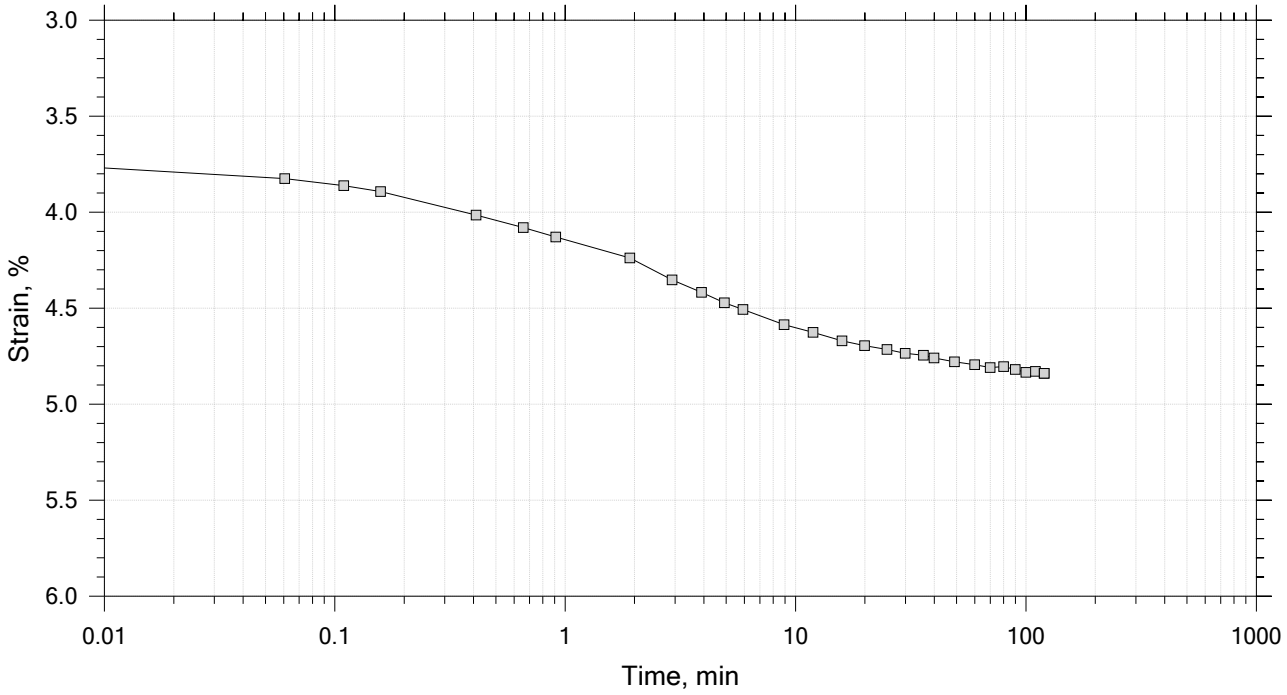
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

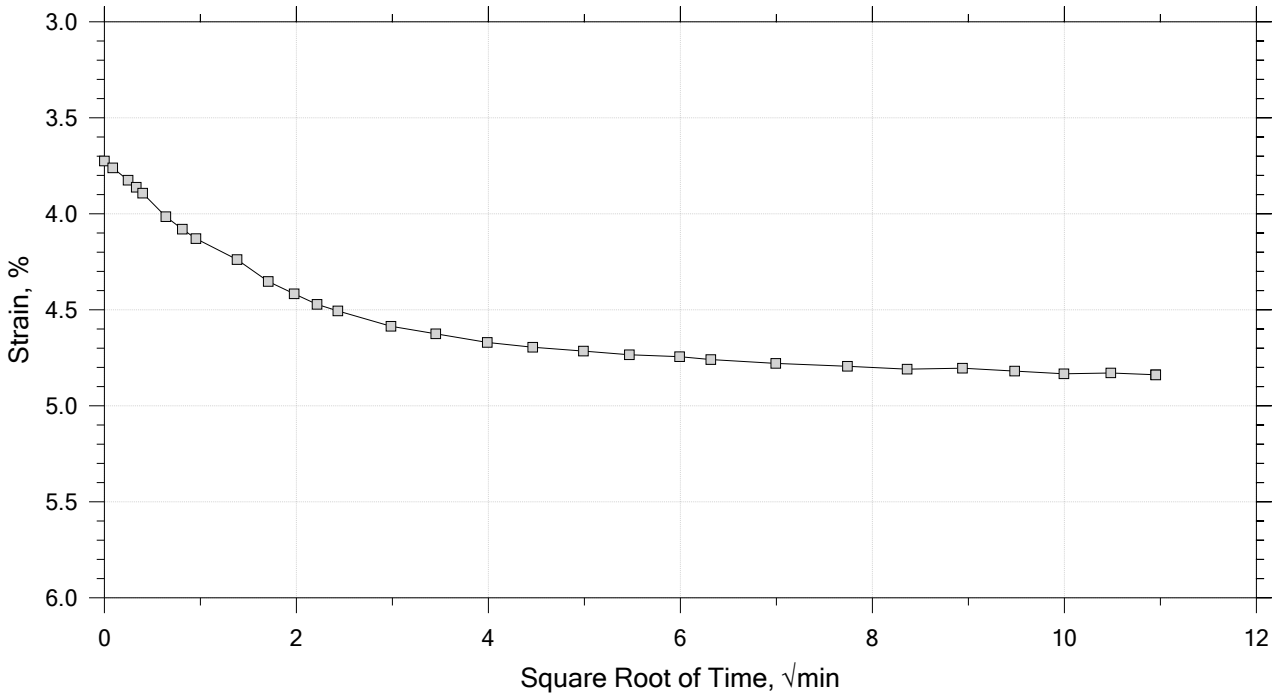
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





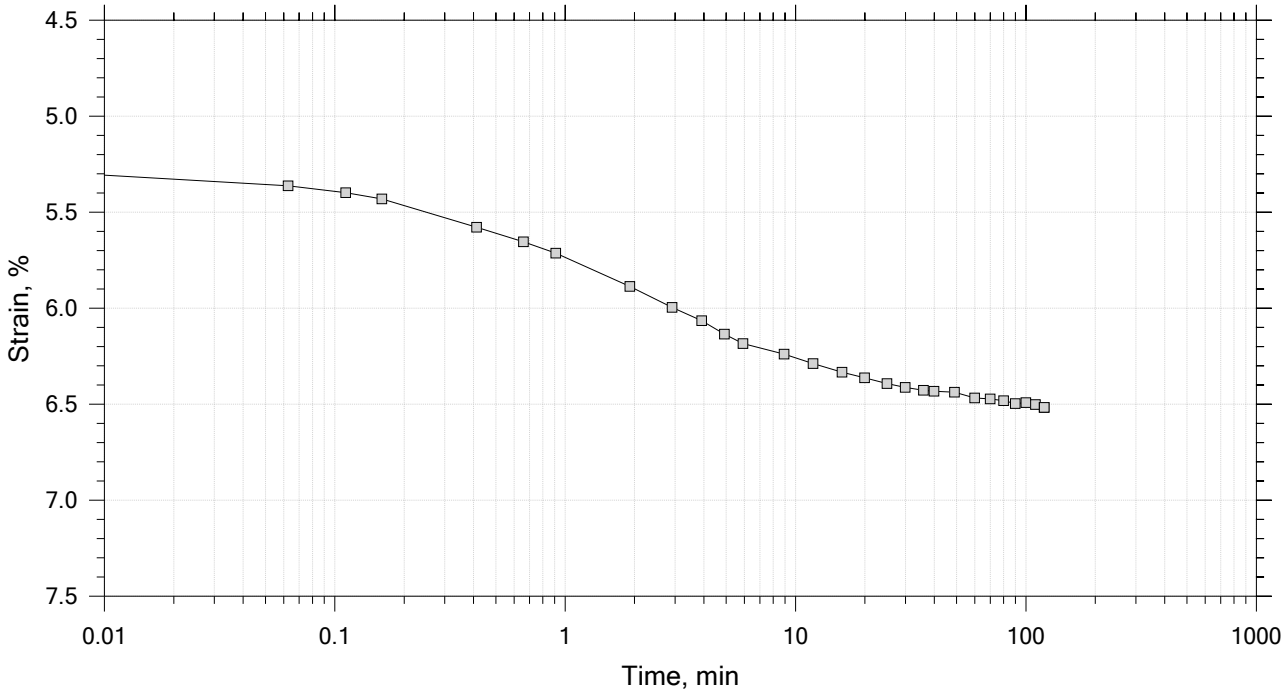
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

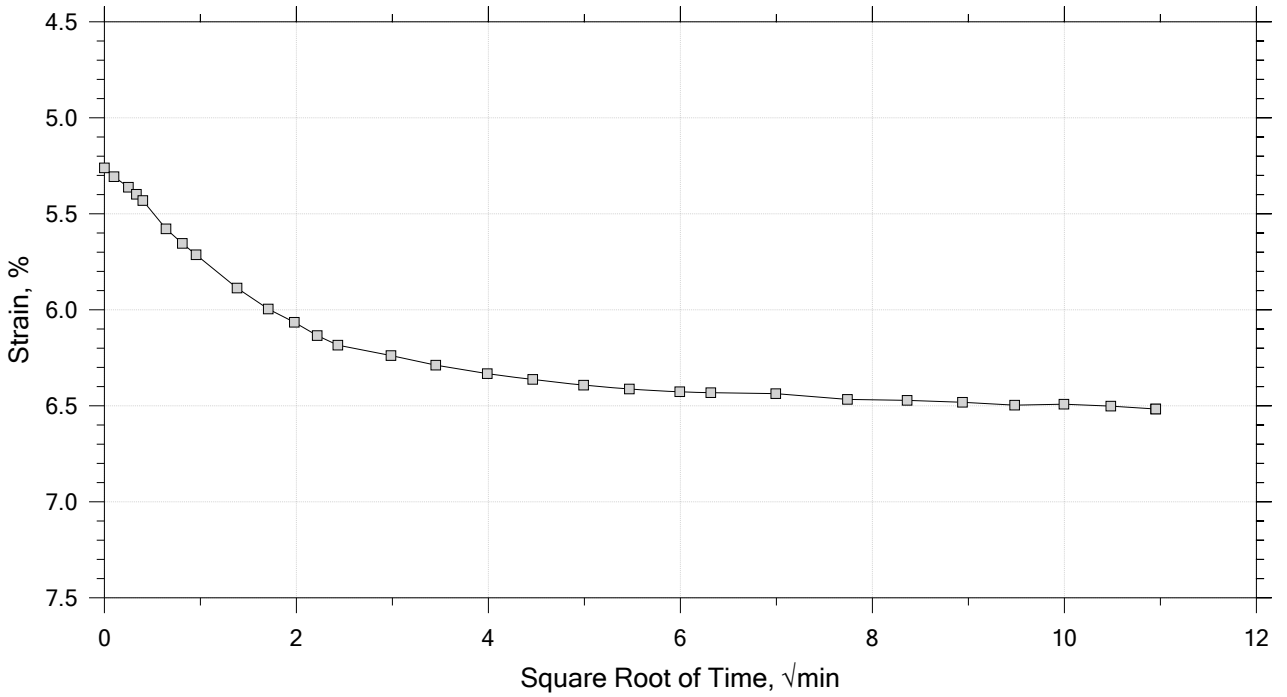
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





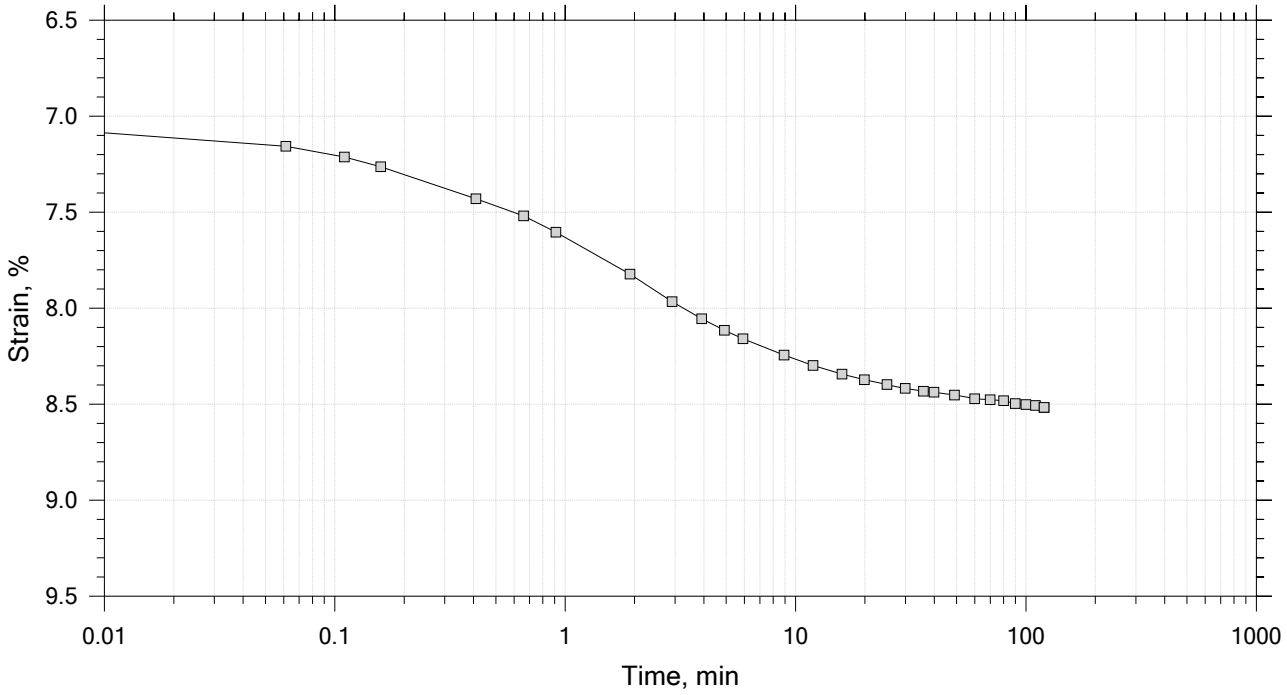
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

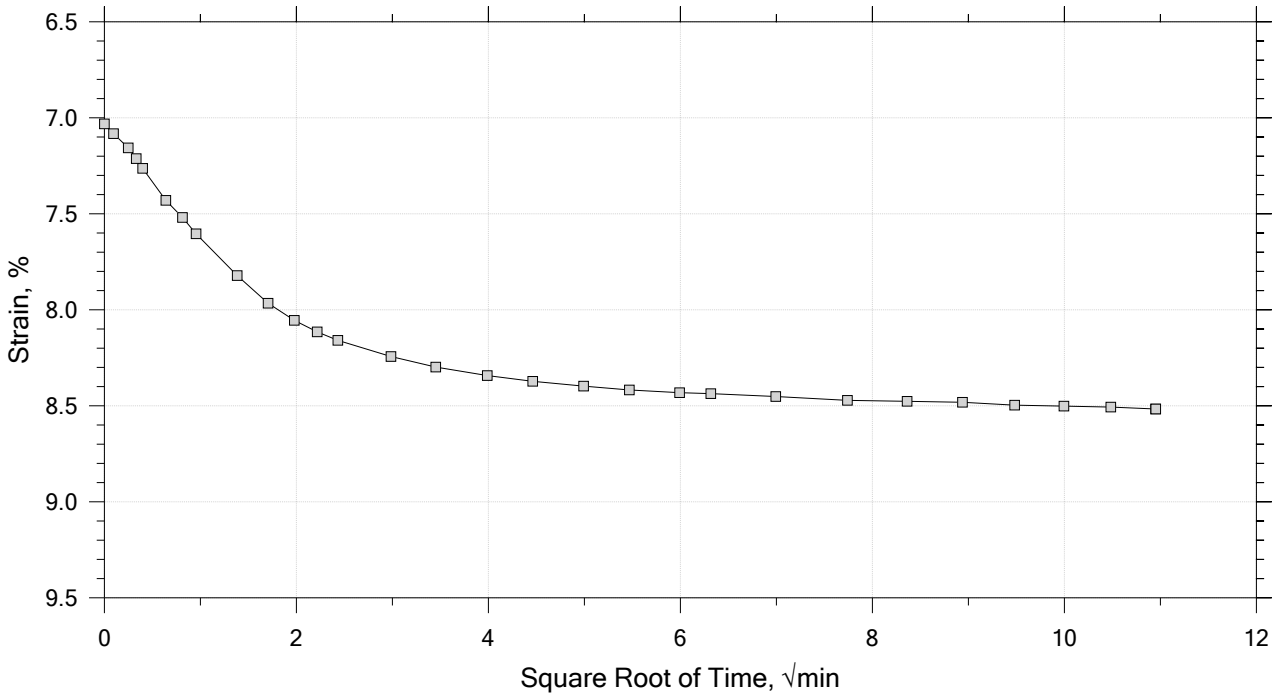
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





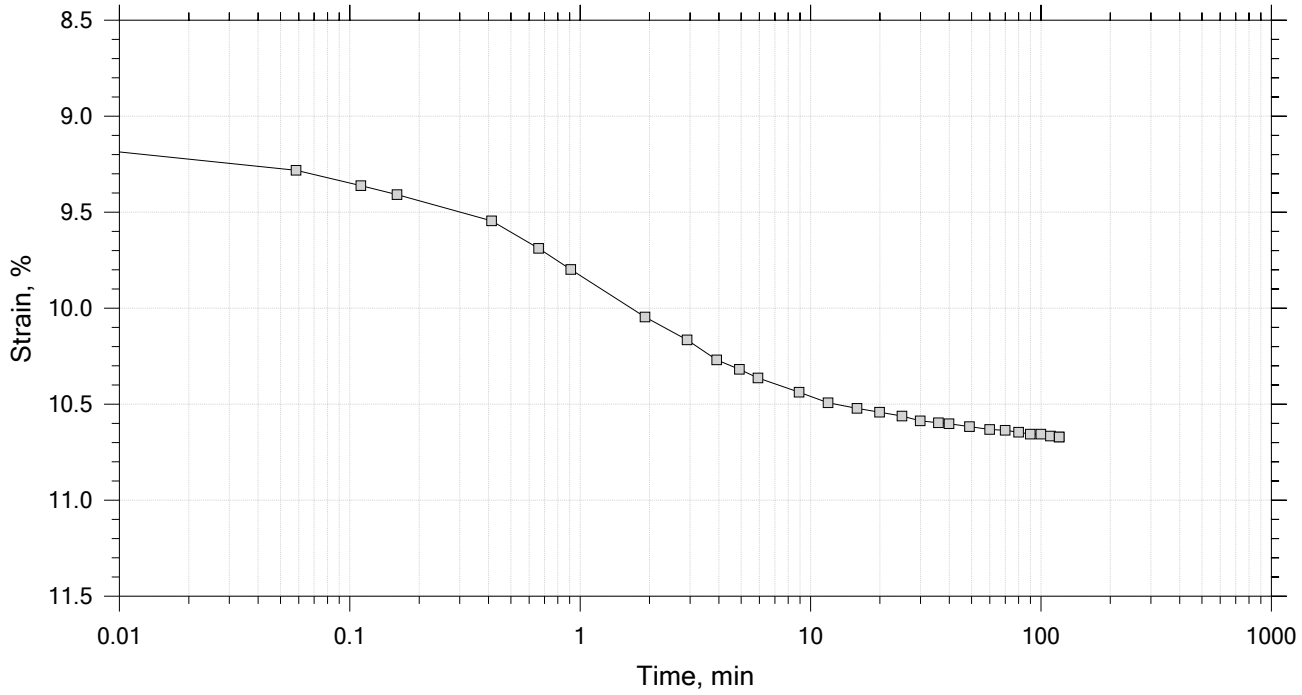
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
Test No.: IP-19-3	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System A, Swell Pressure = 0.0689 tsf		

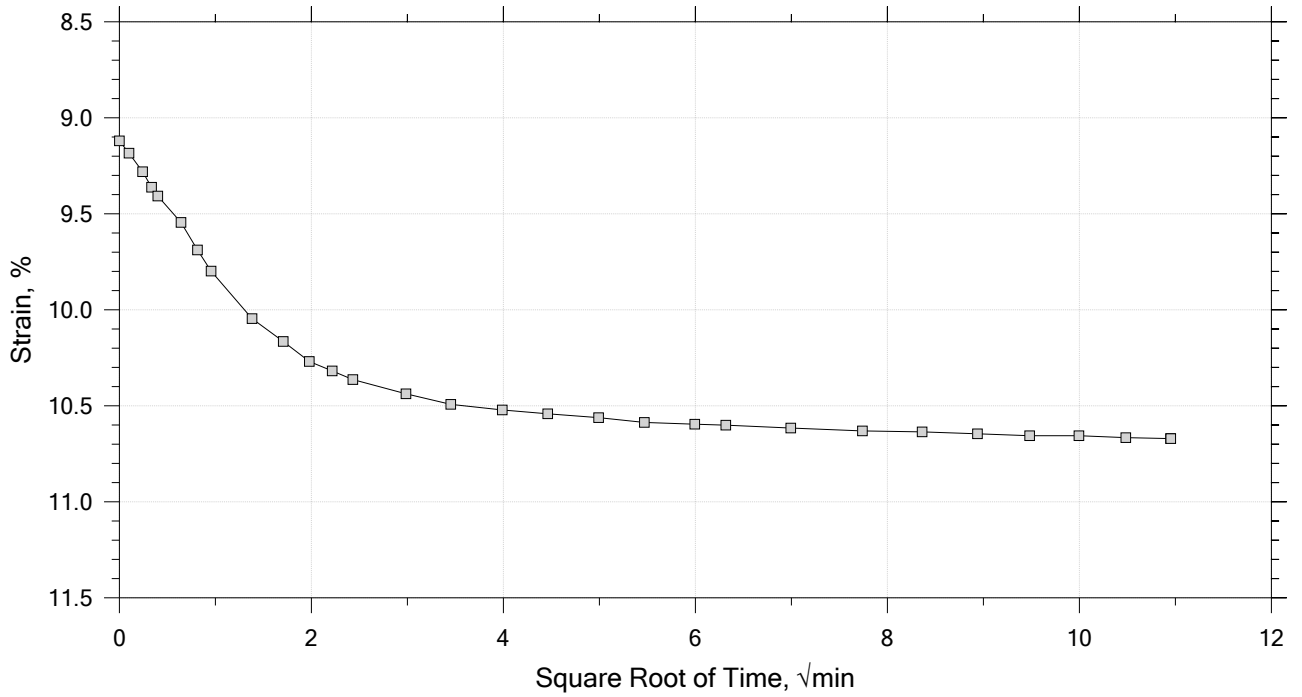
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

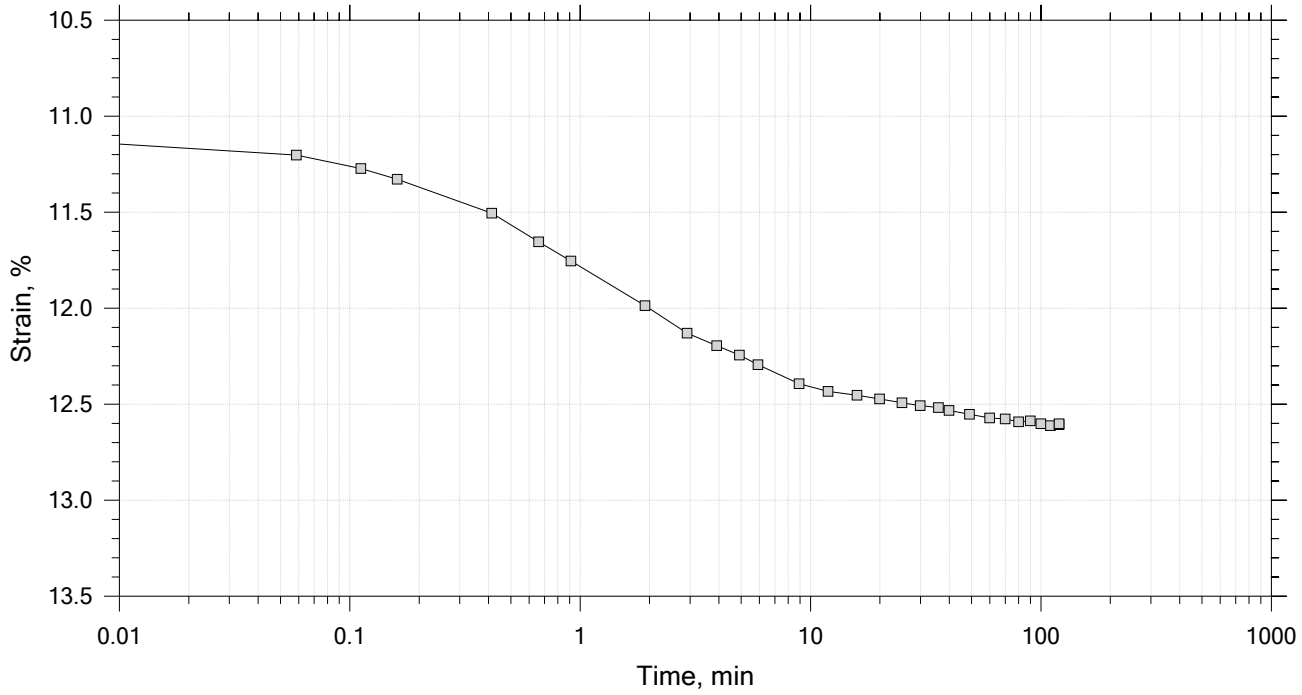


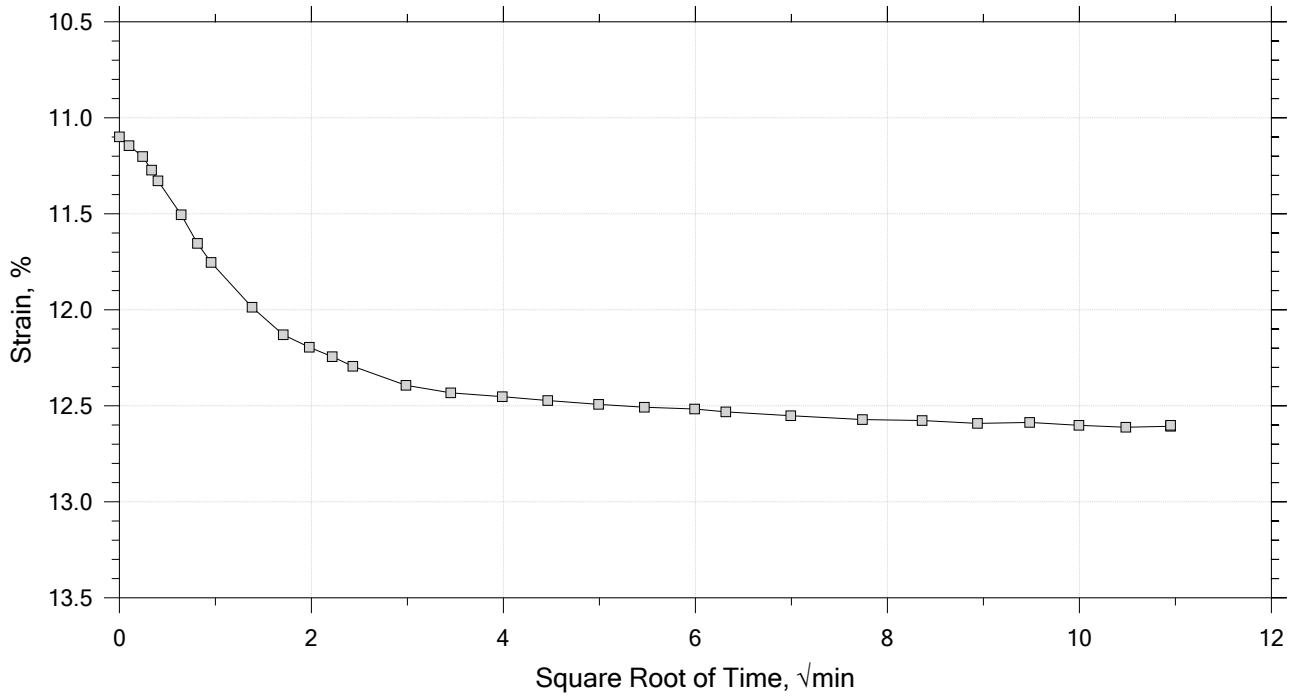


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
Test No.: IP-19-3	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





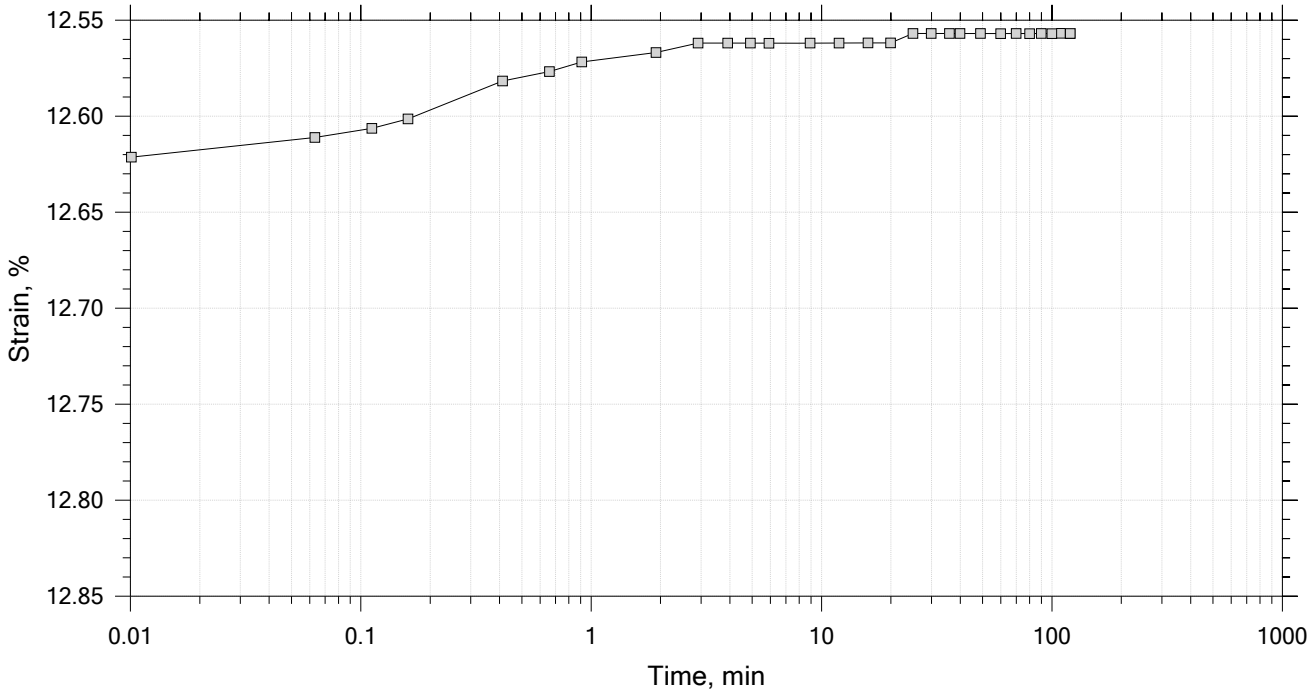
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

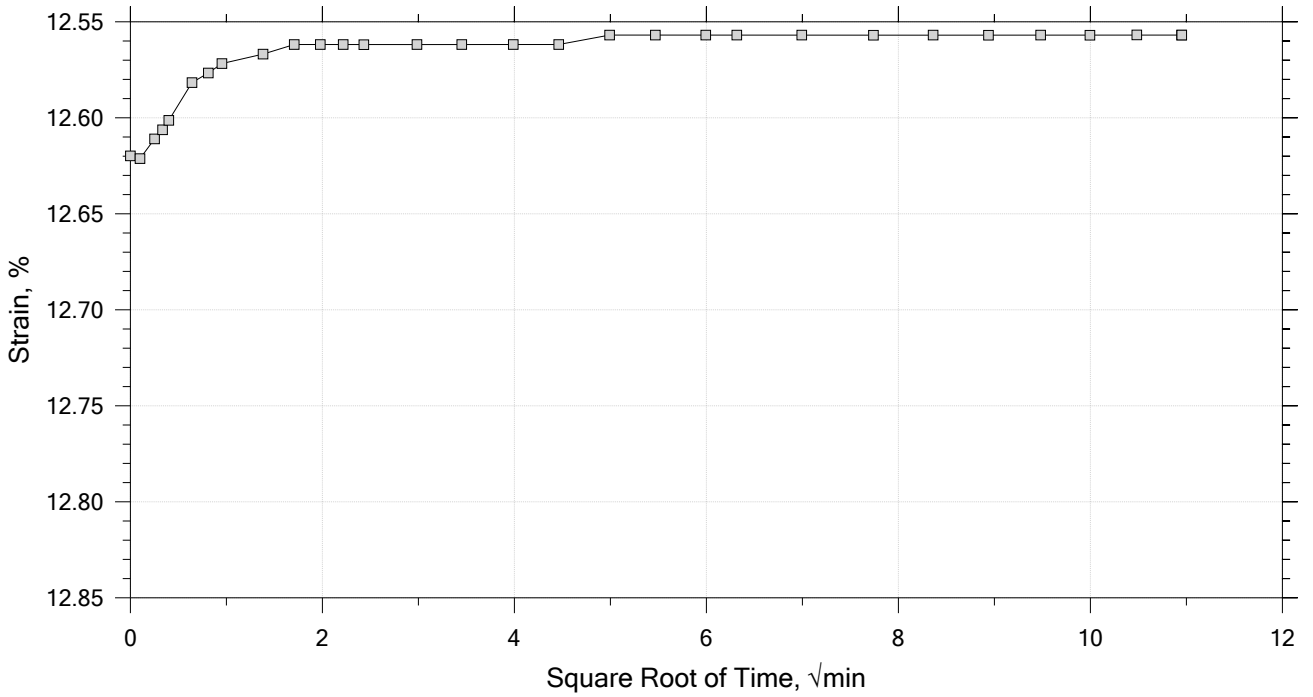
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf

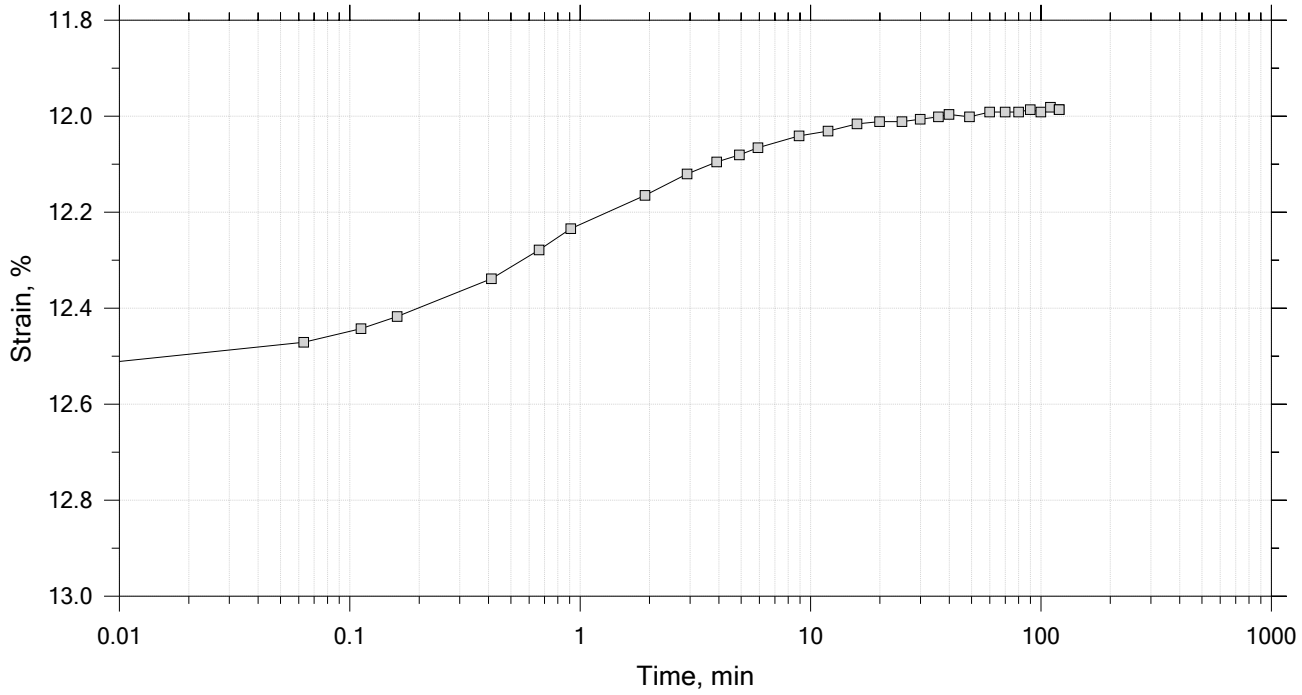


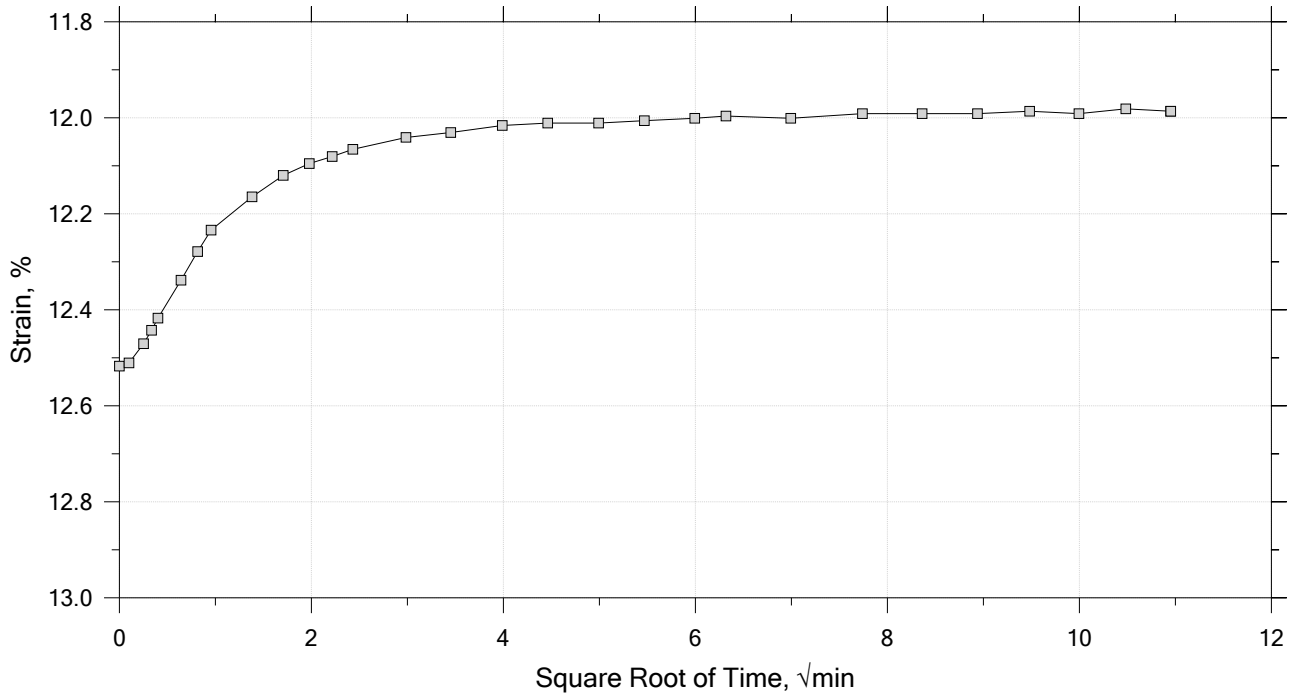


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





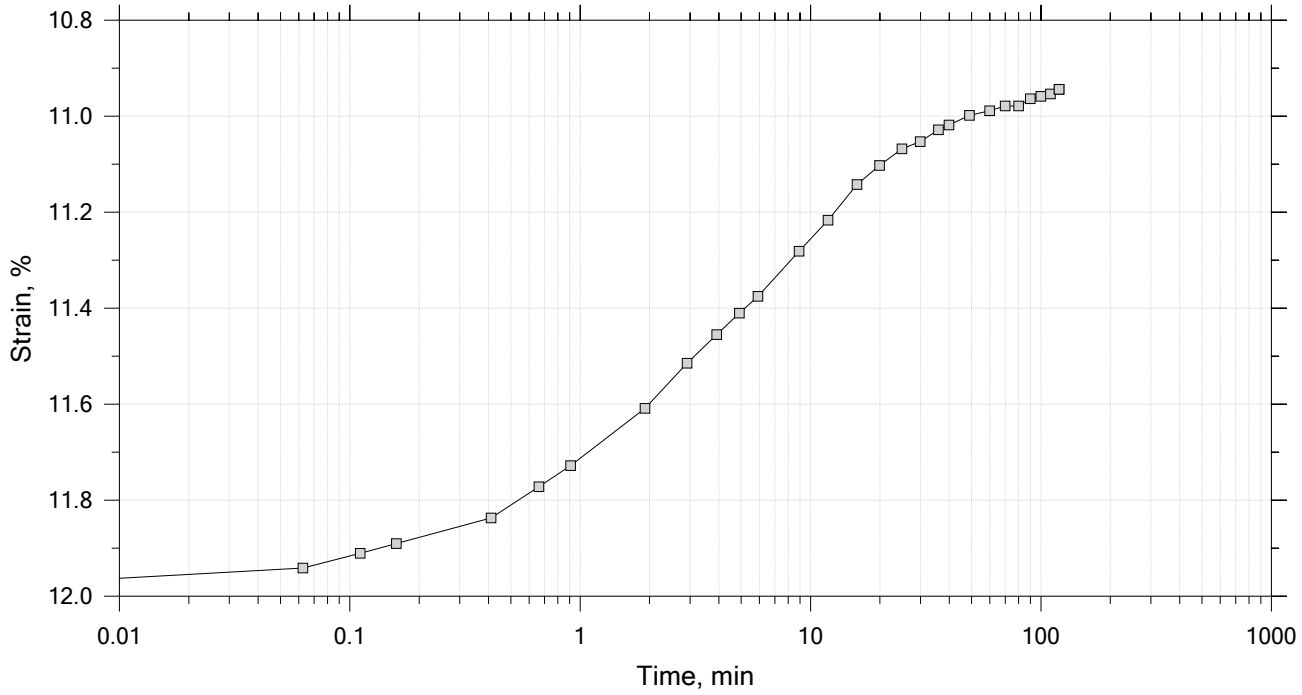
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

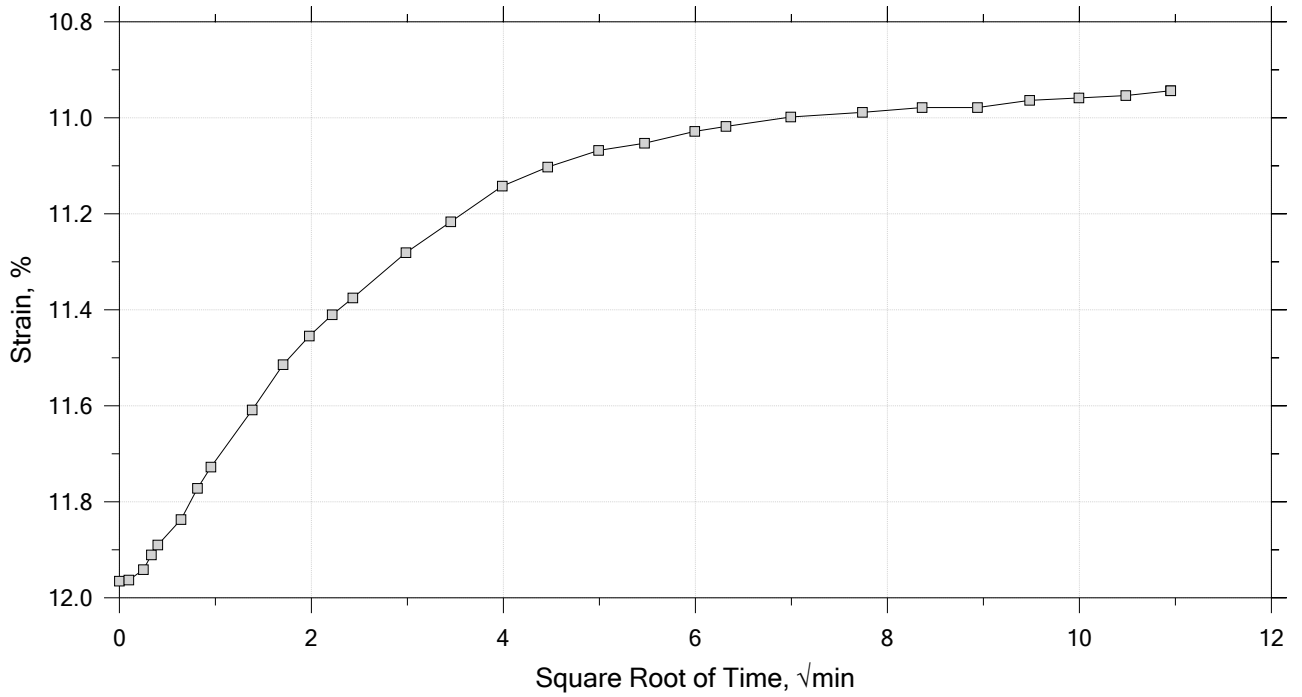
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

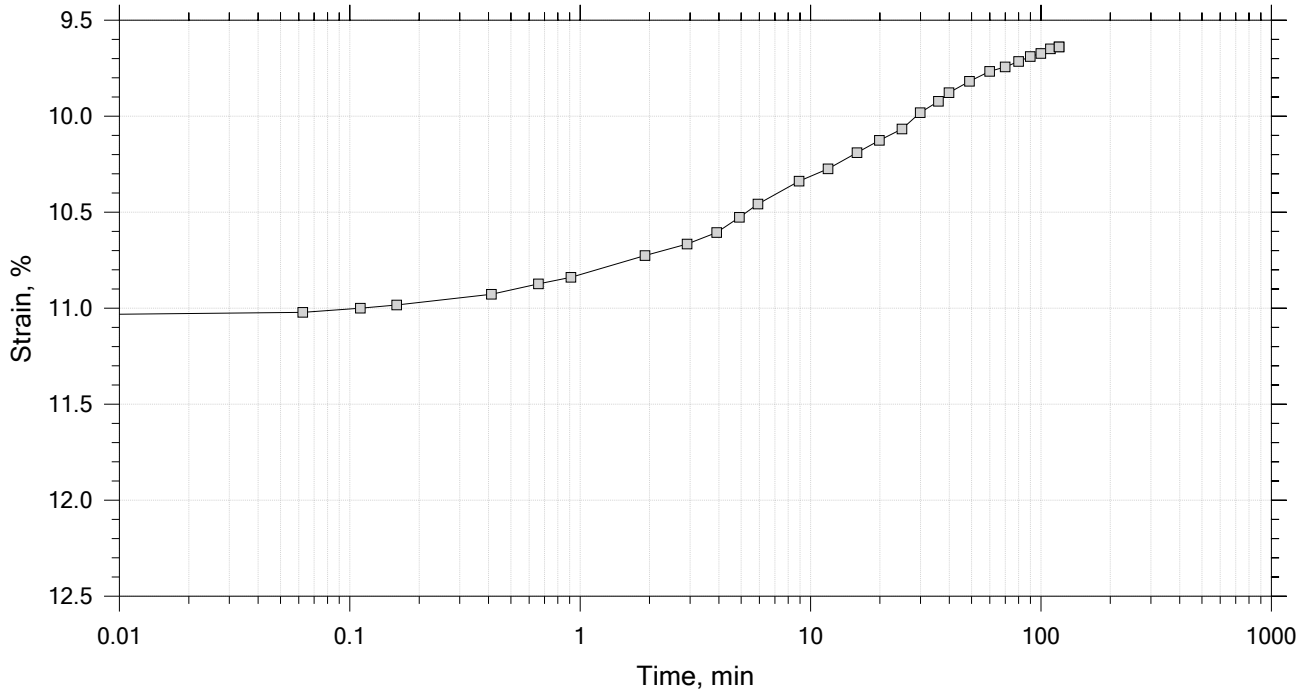


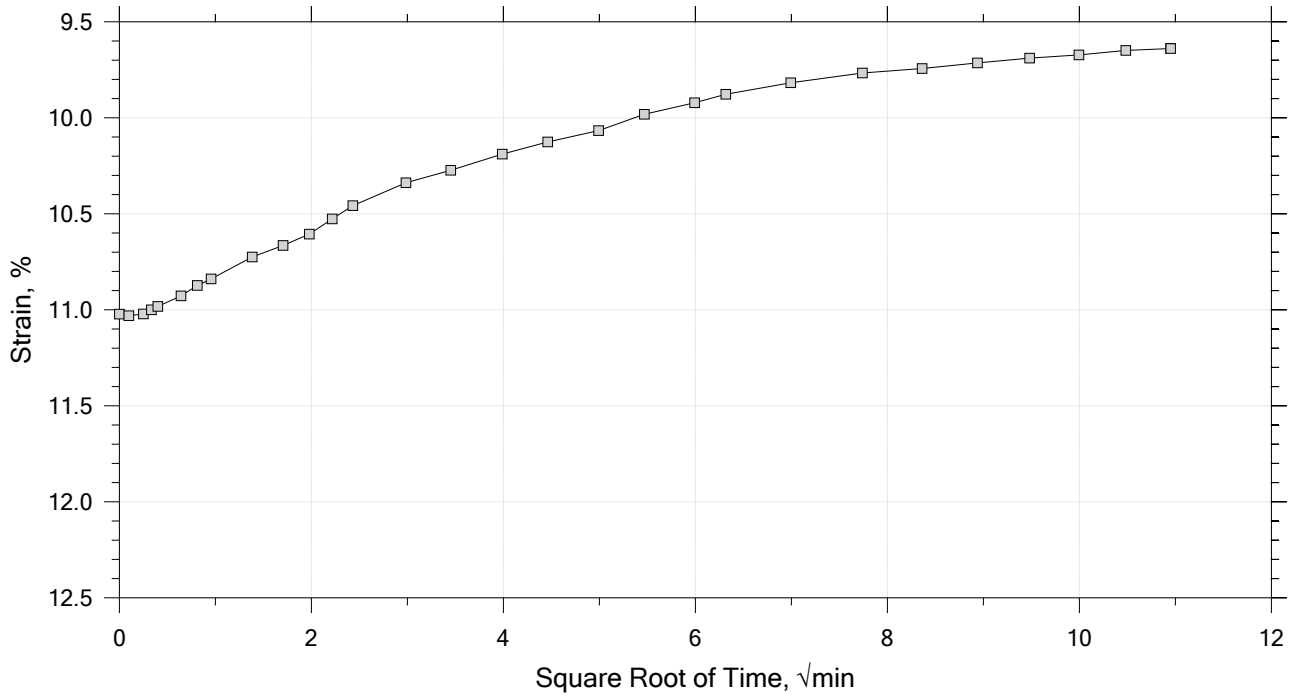


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.74	Liquid Limit: 46
Initial Height: 1.00 in	Initial Void Ratio: 0.422	Plastic Limit: 21
Final Height: 0.90 in	Final Void Ratio: 0.285	Plasticity Index: 25

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	pr3	RING		LZEP
Mass Container, gm	8.14	210.31	210.31	8.2
Mass Container + Wet Soil, gm	102.53	386.46	381.4	179.11
Mass Container + Dry Soil, gm	91.51	365.27	365.27	163
Mass Dry Soil, gm	83.37	154.96	154.96	154.8
Water Content, %	13.22	13.67	10.41	10.41
Void Ratio	---	0.42	0.29	---
Degree of Saturation, %	---	88.72	100.00	---
Dry Unit Weight, pcf	---	120.26	133.09	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
	Test No.: IP-19-3	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown clay with sand		
	Remarks: System A, Swell Pressure = 0.0689 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k cm/s
1	0.0689	0.001824	0.420	0.182	77.204	3.17e-07	2.65e-02	7.99e-09
2	0.125	0.006248	0.413	0.625	8.752	2.78e-06	7.89e-02	2.09e-07
3	0.250	0.01424	0.402	1.42	13.101	1.83e-06	6.40e-02	1.12e-07
4	0.500	0.02218	0.391	2.22	15.753	1.50e-06	3.18e-02	4.54e-08
5	1.00	0.03295	0.375	3.30	6.356	3.65e-06	2.15e-02	7.48e-08
6	2.00	0.04839	0.353	4.84	7.676	2.94e-06	1.54e-02	4.32e-08
7	4.00	0.06517	0.330	6.52	5.643	3.87e-06	8.39e-03	3.09e-08
8	8.00	0.08517	0.301	8.52	4.965	4.23e-06	5.00e-03	2.01e-08
9	16.0	0.1067	0.270	10.7	5.155	3.89e-06	2.69e-03	9.97e-09
10	32.0	0.1260	0.243	12.6	4.652	4.12e-06	1.21e-03	4.73e-09
11	16.0	0.1256	0.244	12.6	1.169	1.60e-05	2.80e-05	4.27e-10
12	4.00	0.1199	0.252	12.0	3.330	5.67e-06	4.76e-04	2.57e-09
13	1.00	0.1094	0.267	10.9	11.847	1.62e-06	3.47e-03	5.37e-09
14	0.250	0.09639	0.285	9.64	32.586	6.06e-07	1.74e-02	1.00e-08

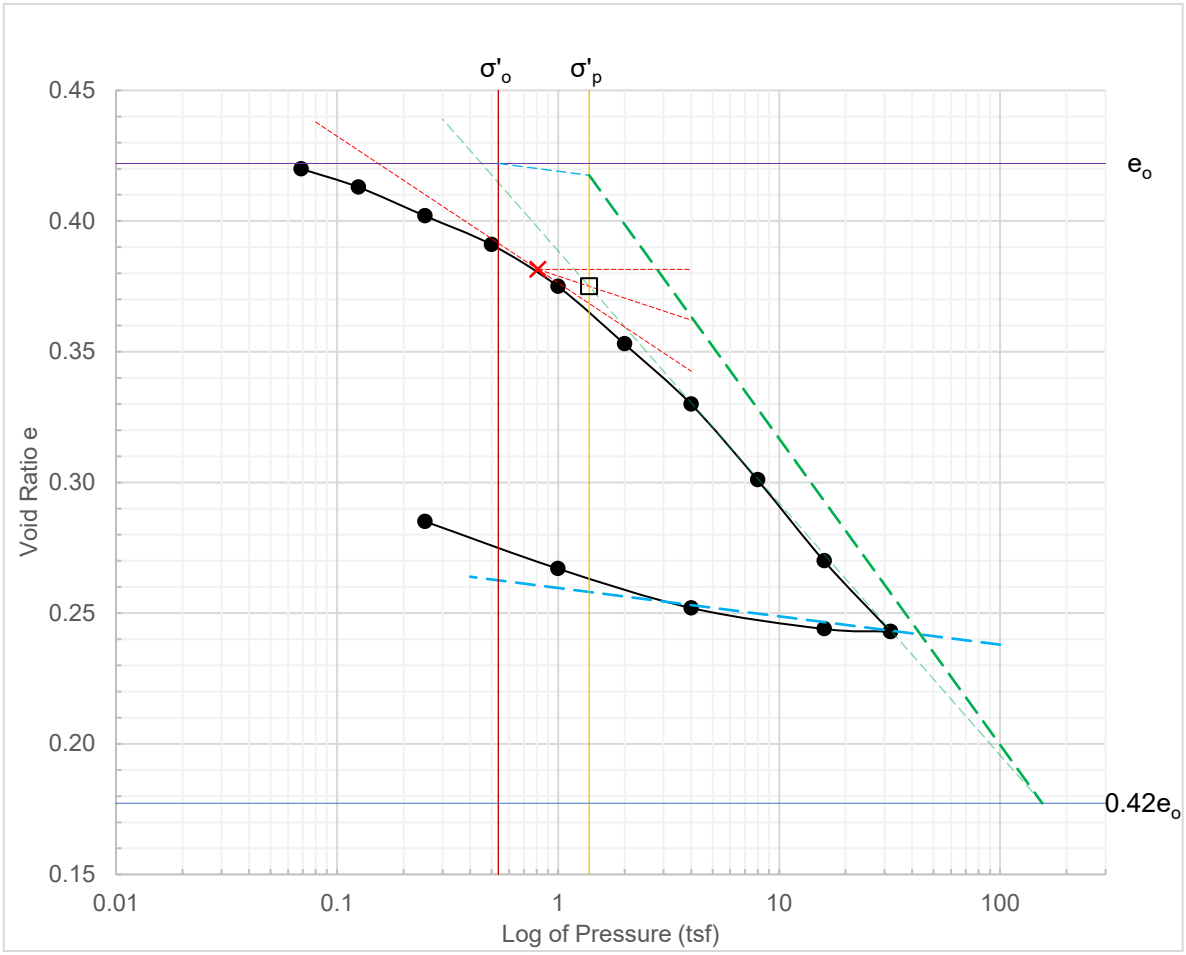
GeoTesting EXPRESS

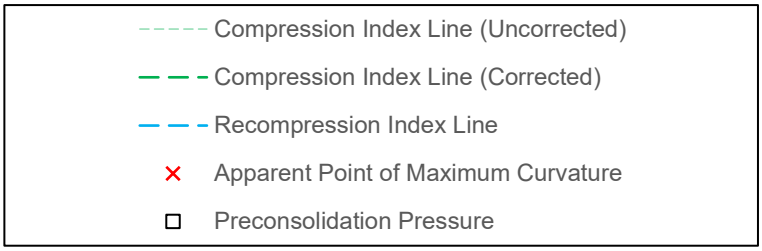
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 10.4-10.5
Test No.: IP-19-3	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown clay with sand		
Remarks: System A, Swell Pressure = 0.0689 tsf		
Displacement at End of Increment		

Boring: B-4.16A

Depth: 10.4'-10.5'

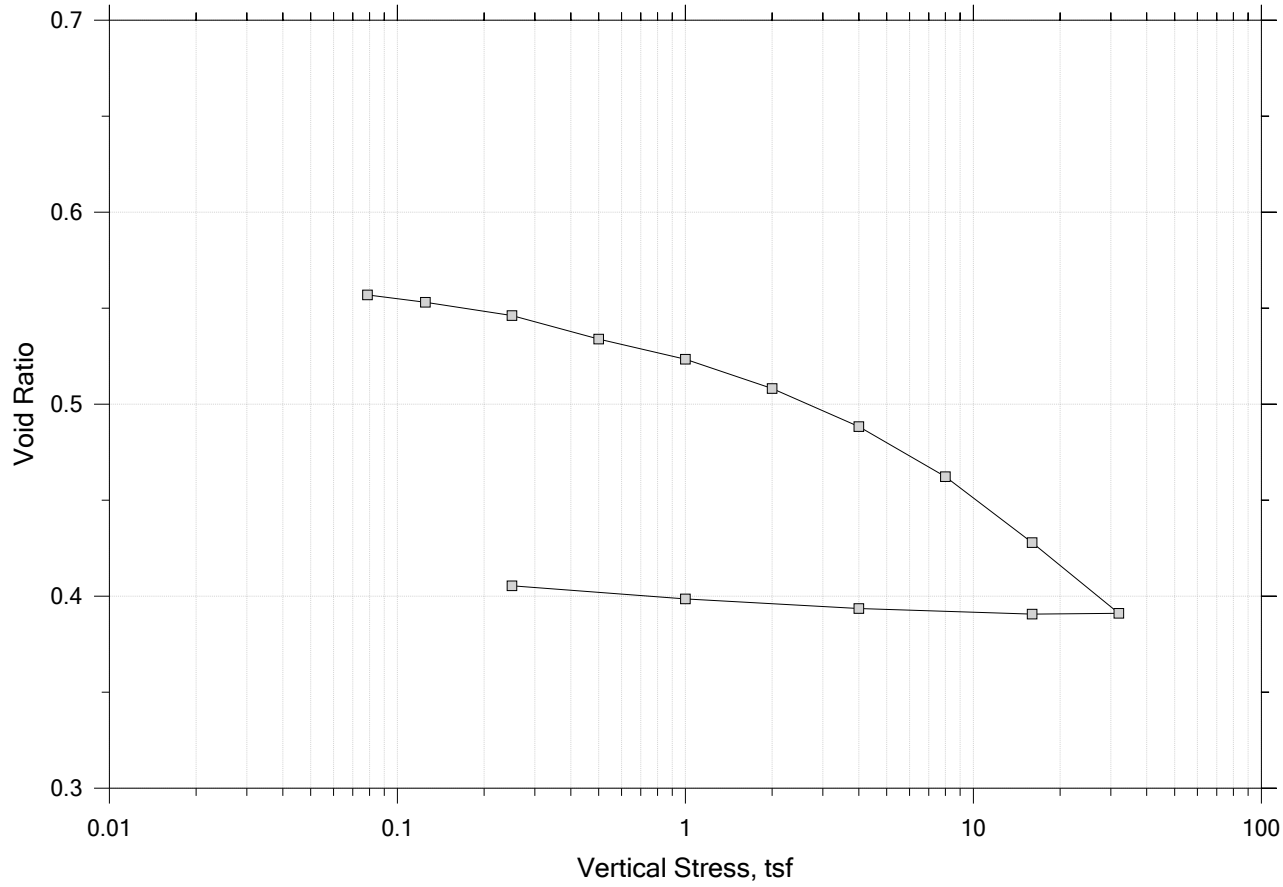
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.54
Preconsolidation Pressure, σ'_p (tsf) = 1.38
Compression Index, C_c = 0.12
Recompression Index, C_r = 0.011

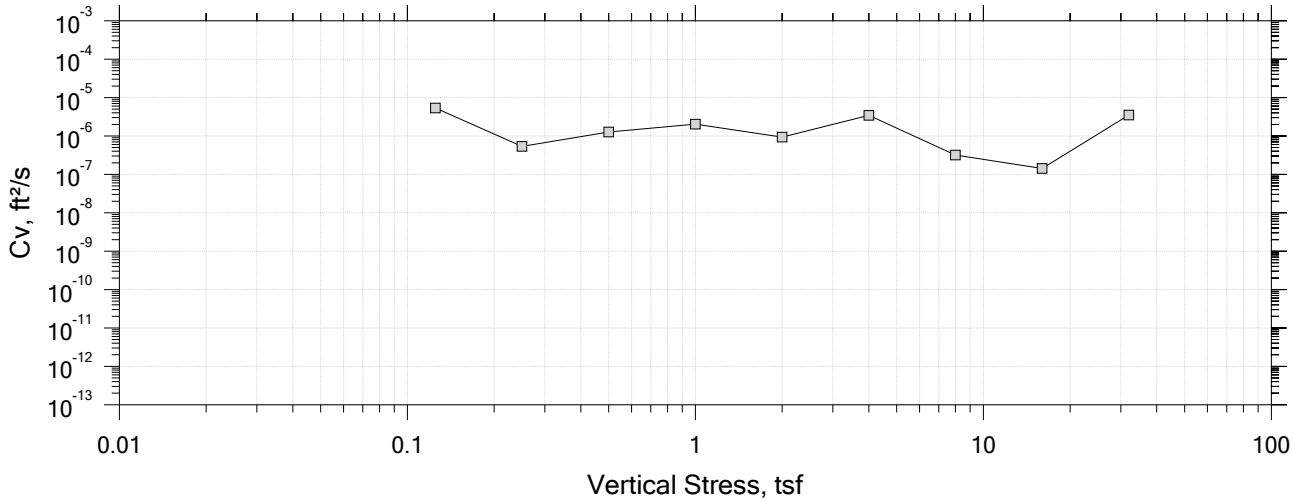




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

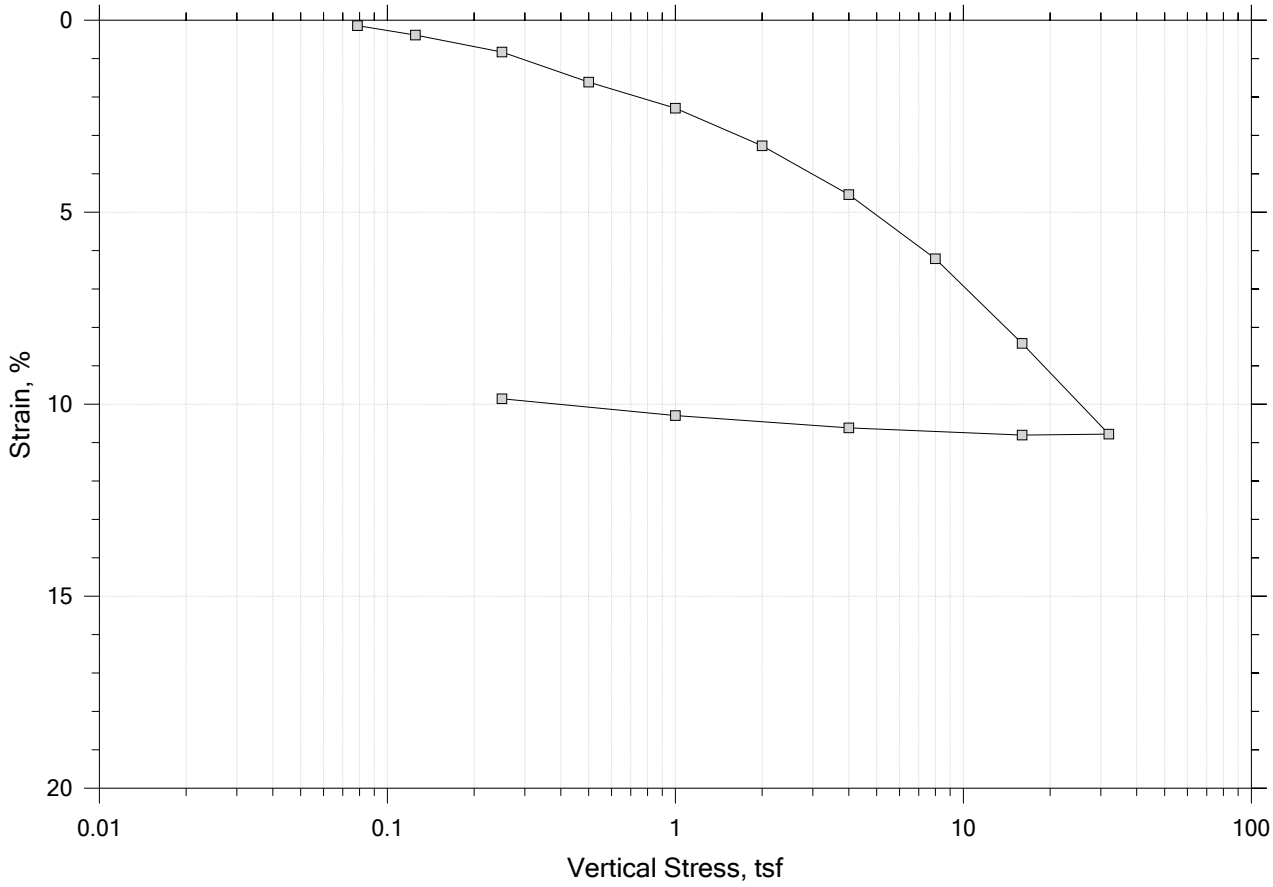


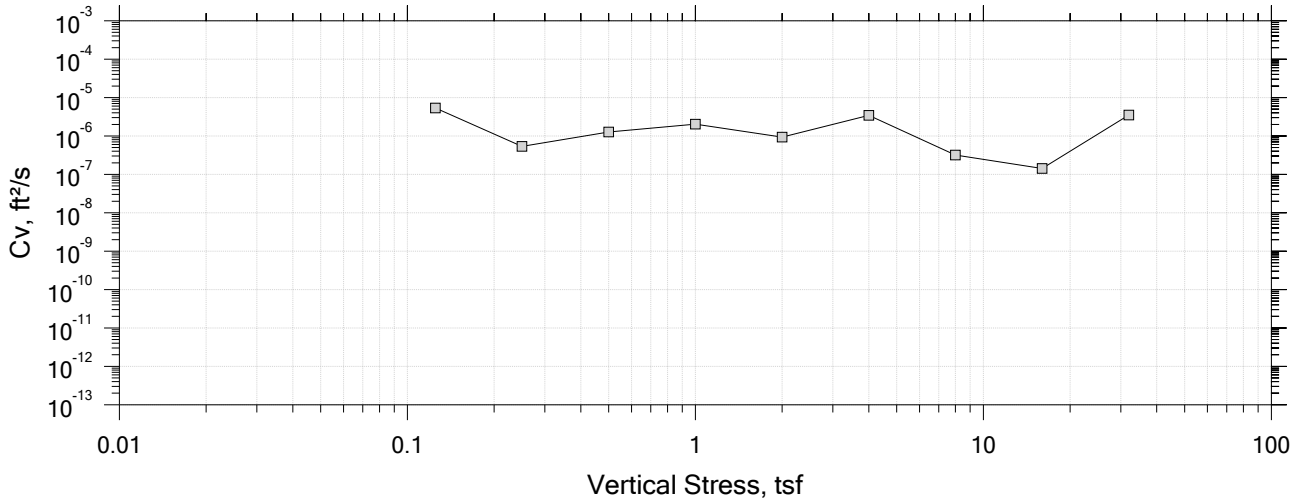


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

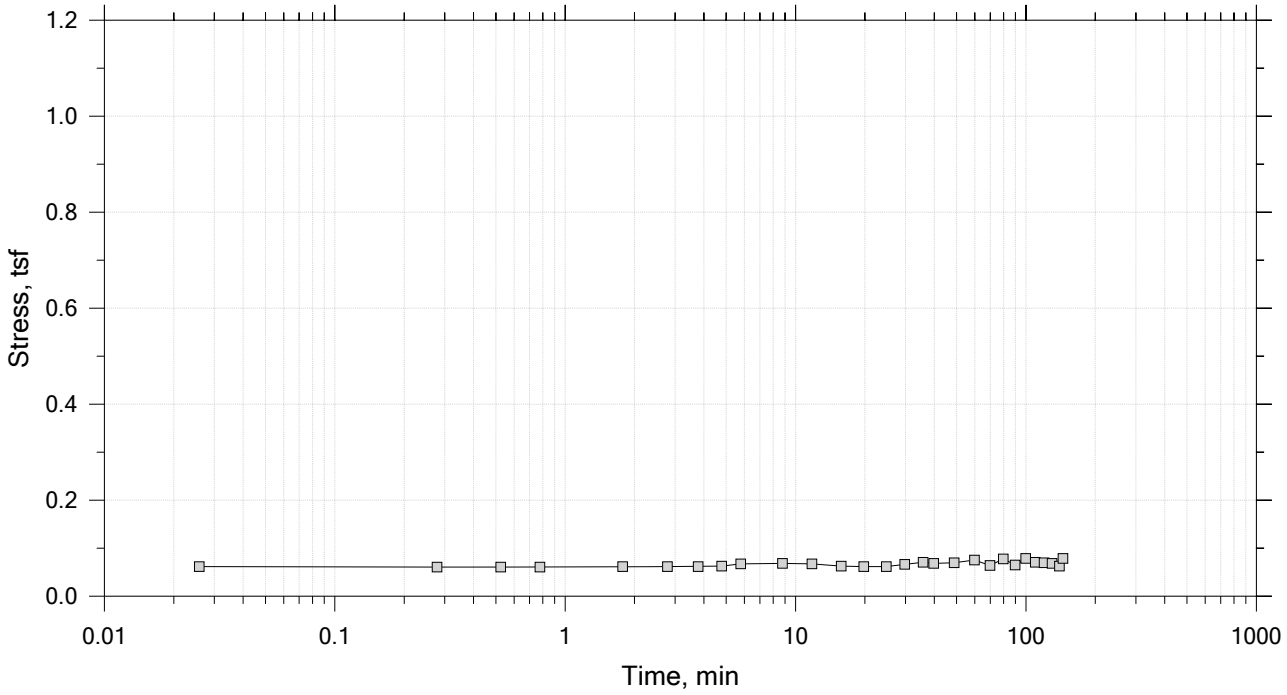


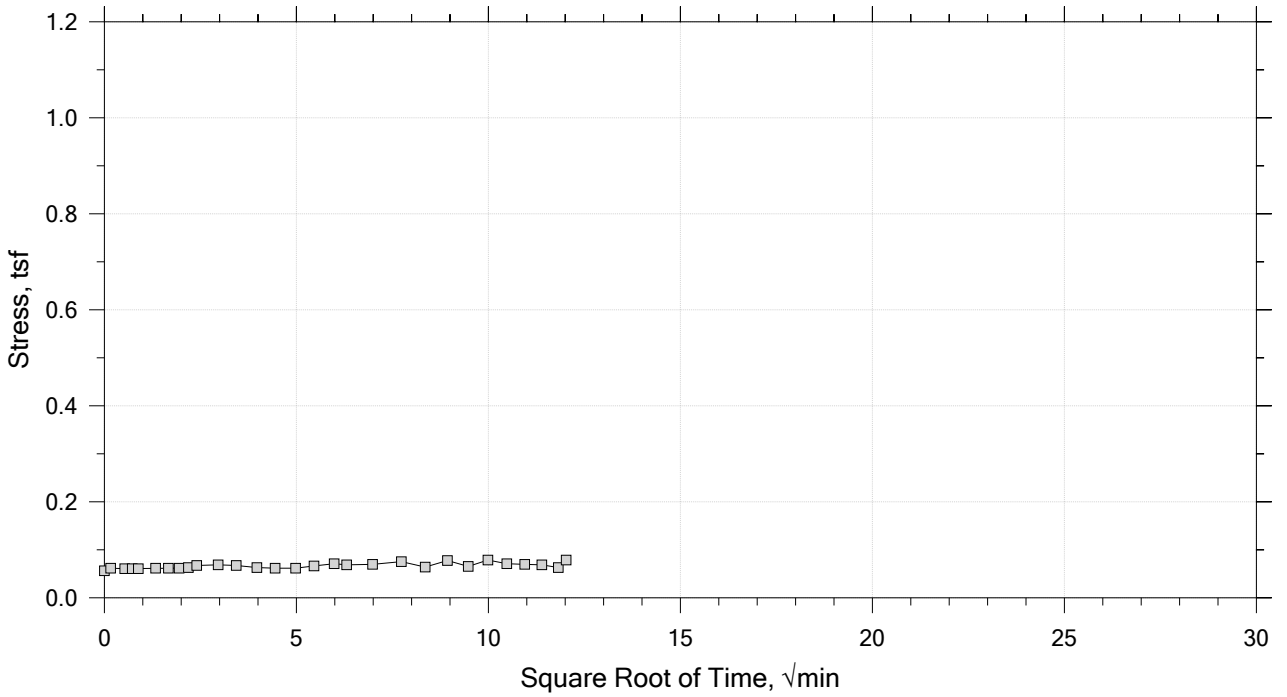


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0787 tsf





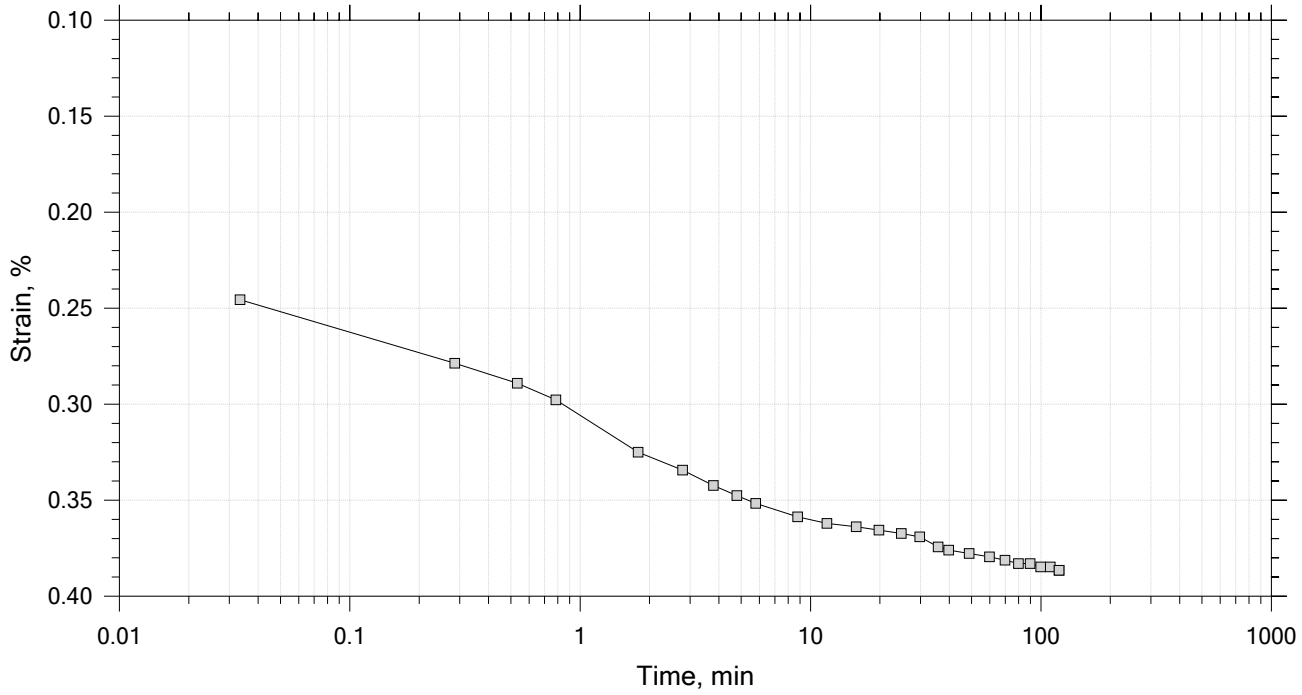
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

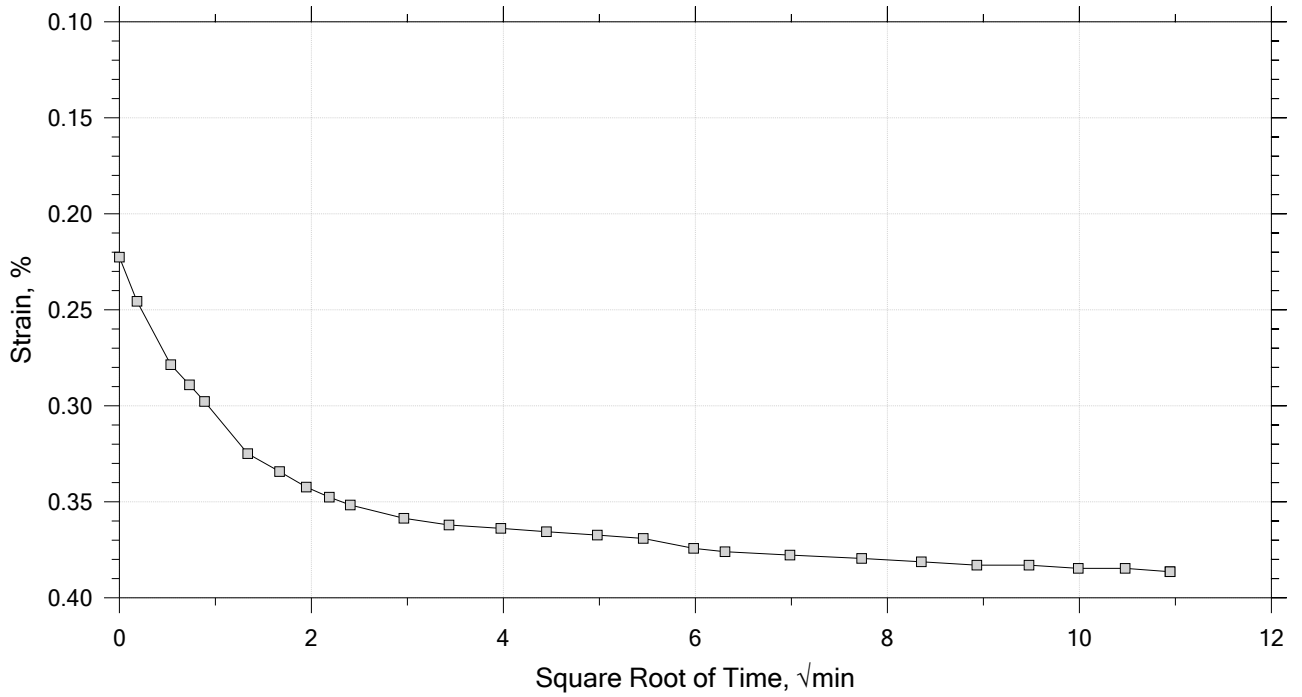
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

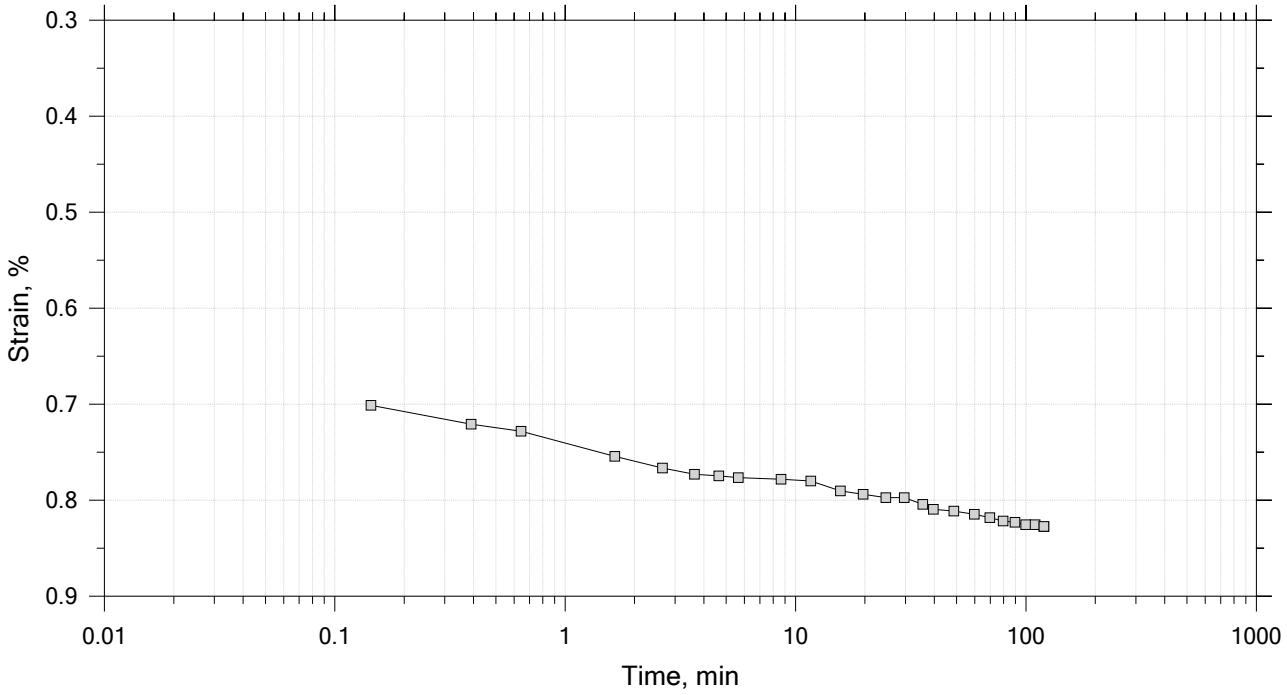


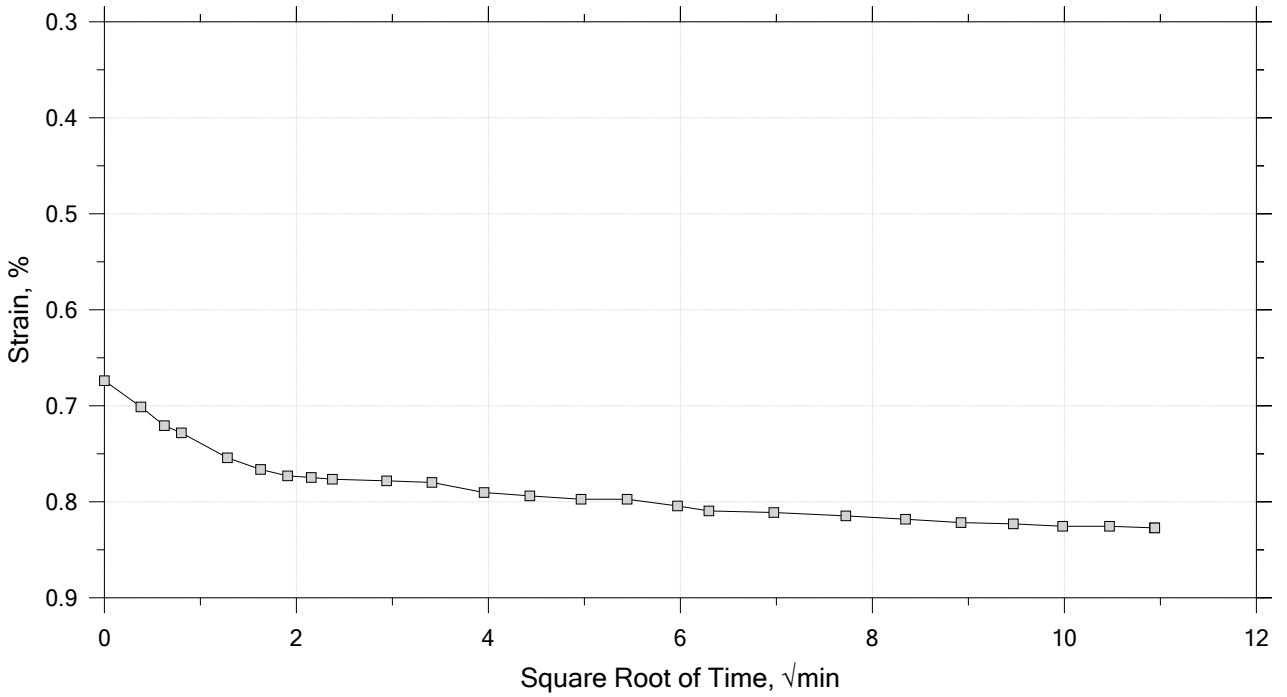


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

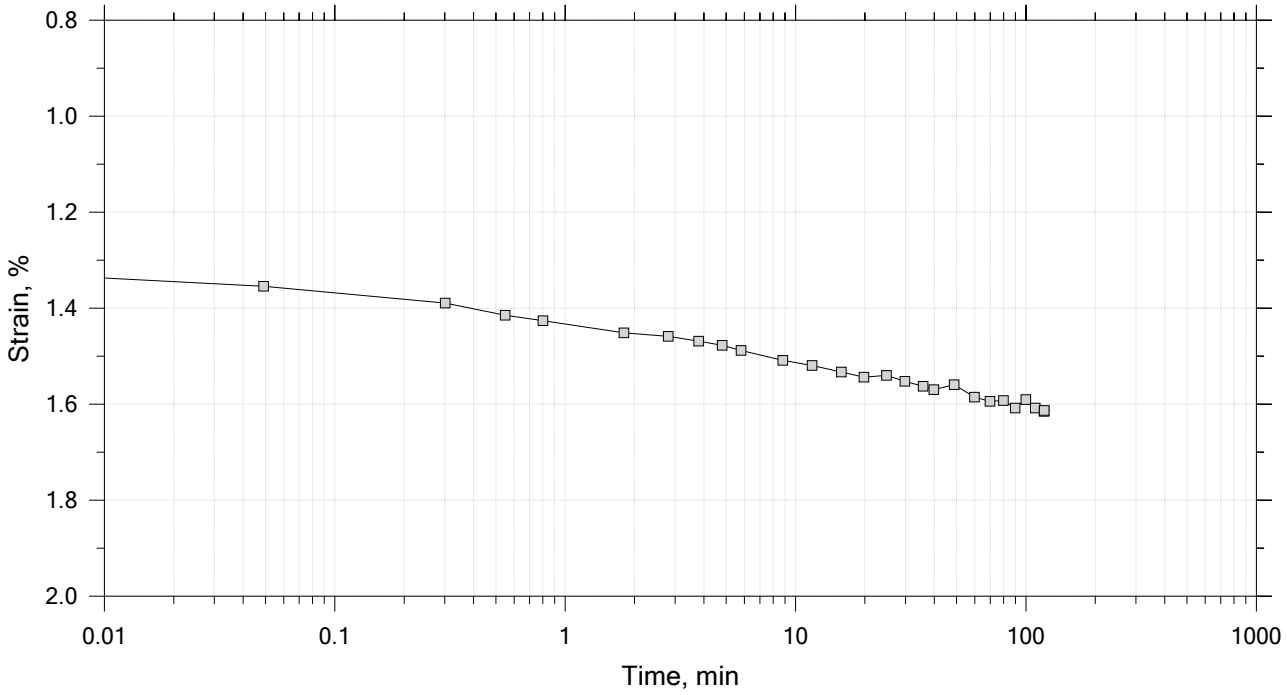


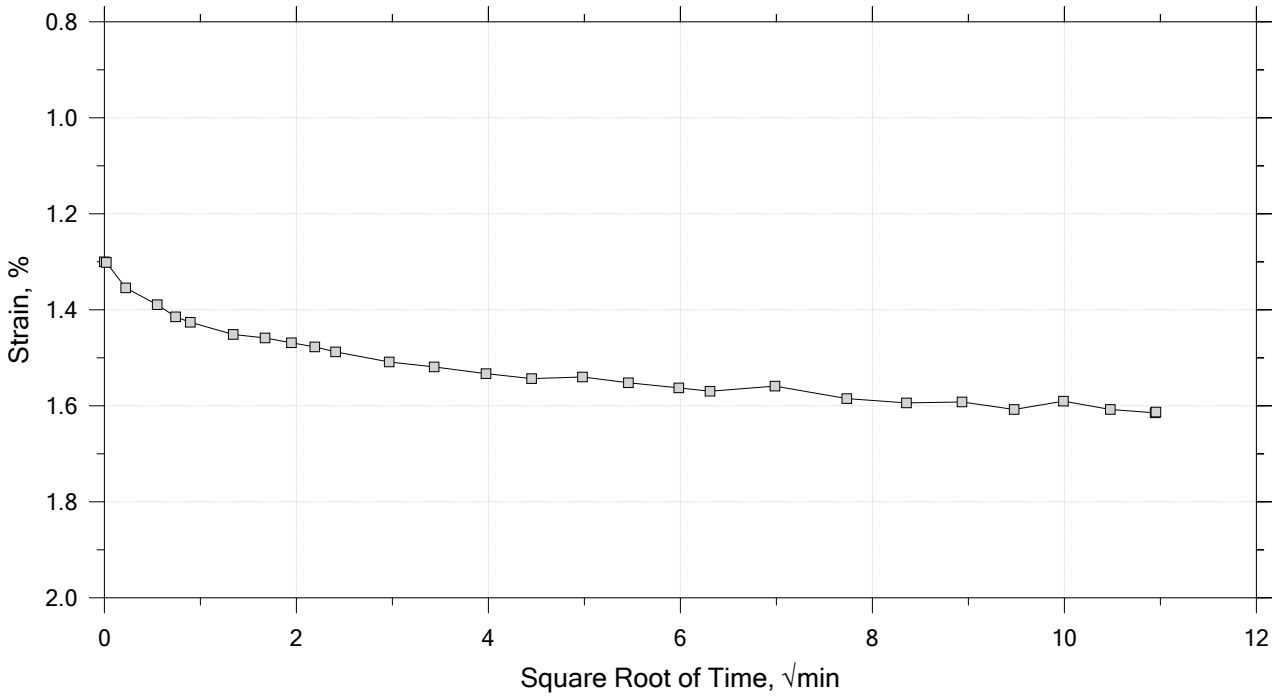


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





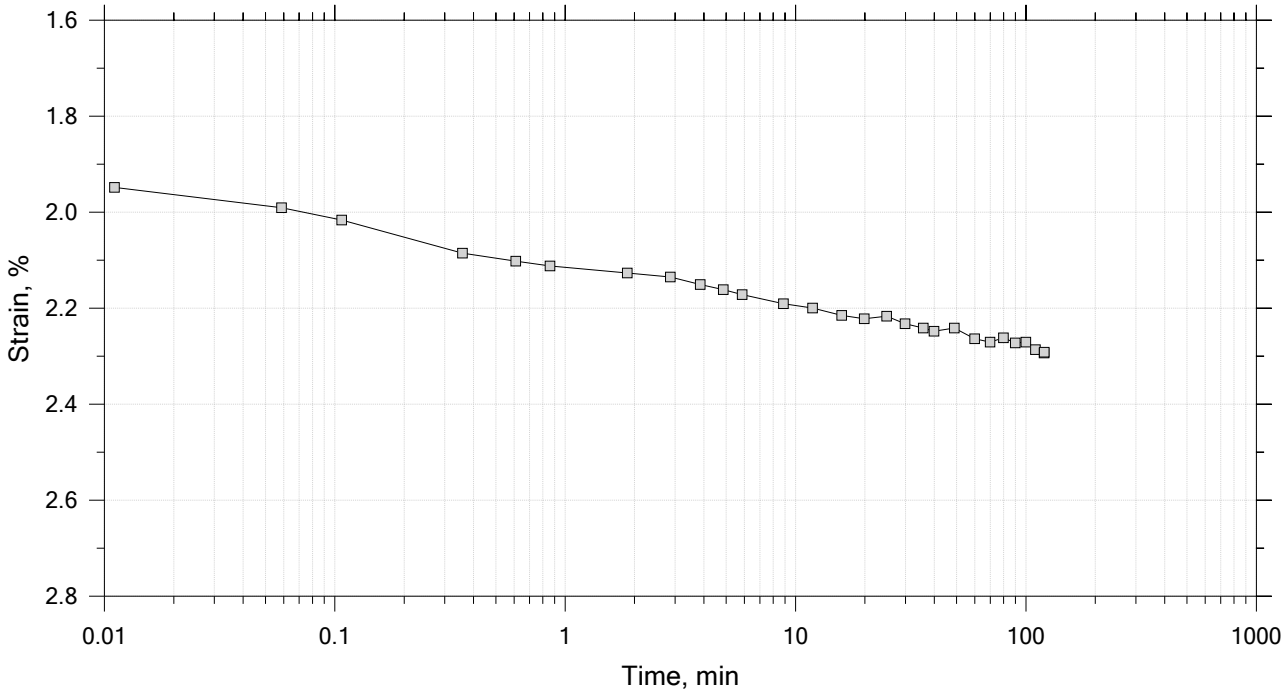
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

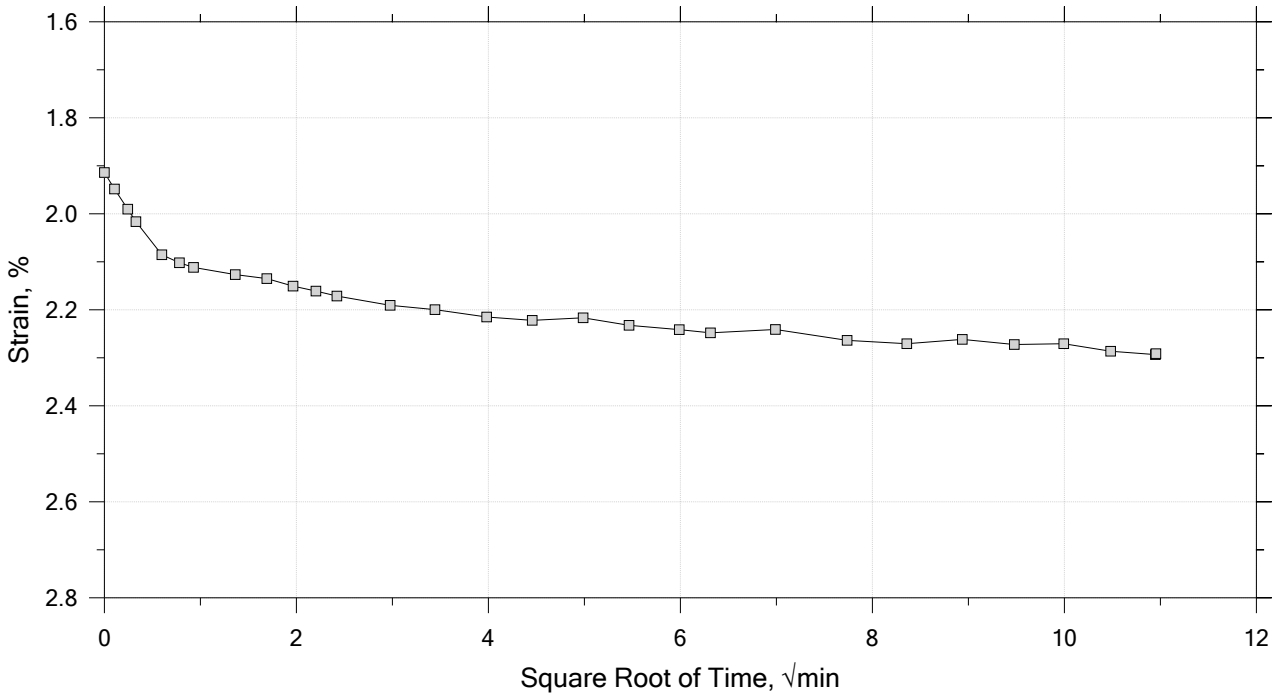
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





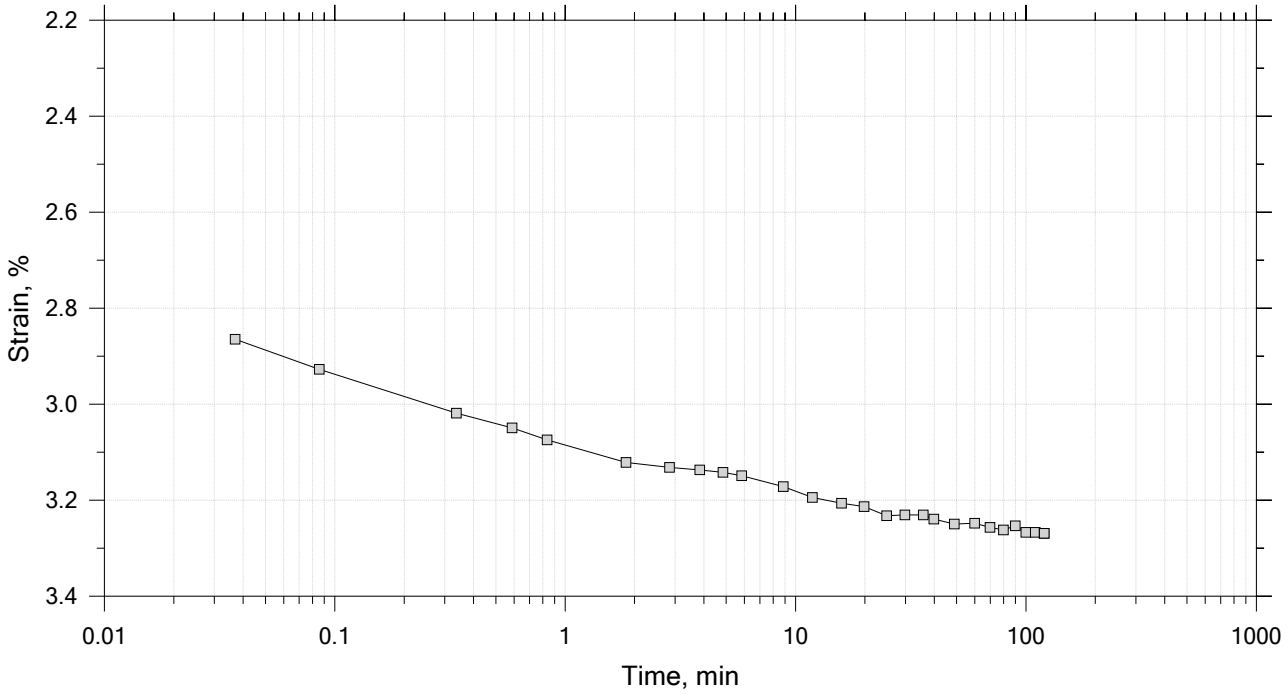
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

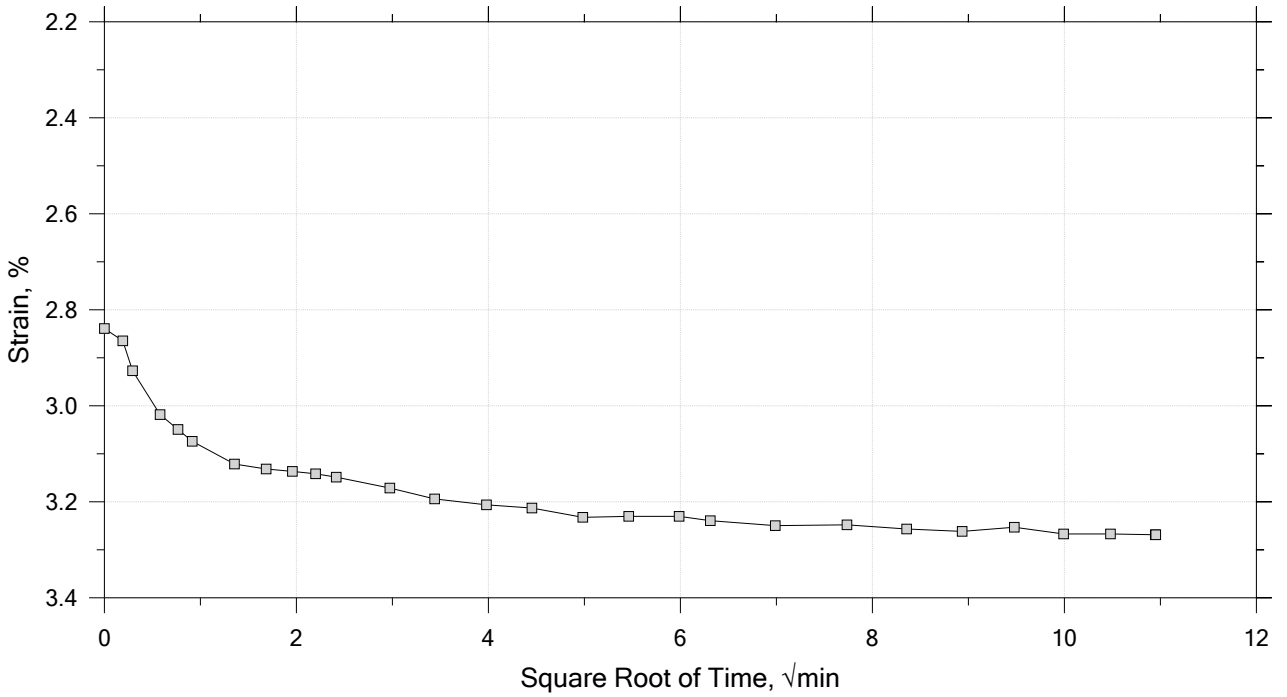
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





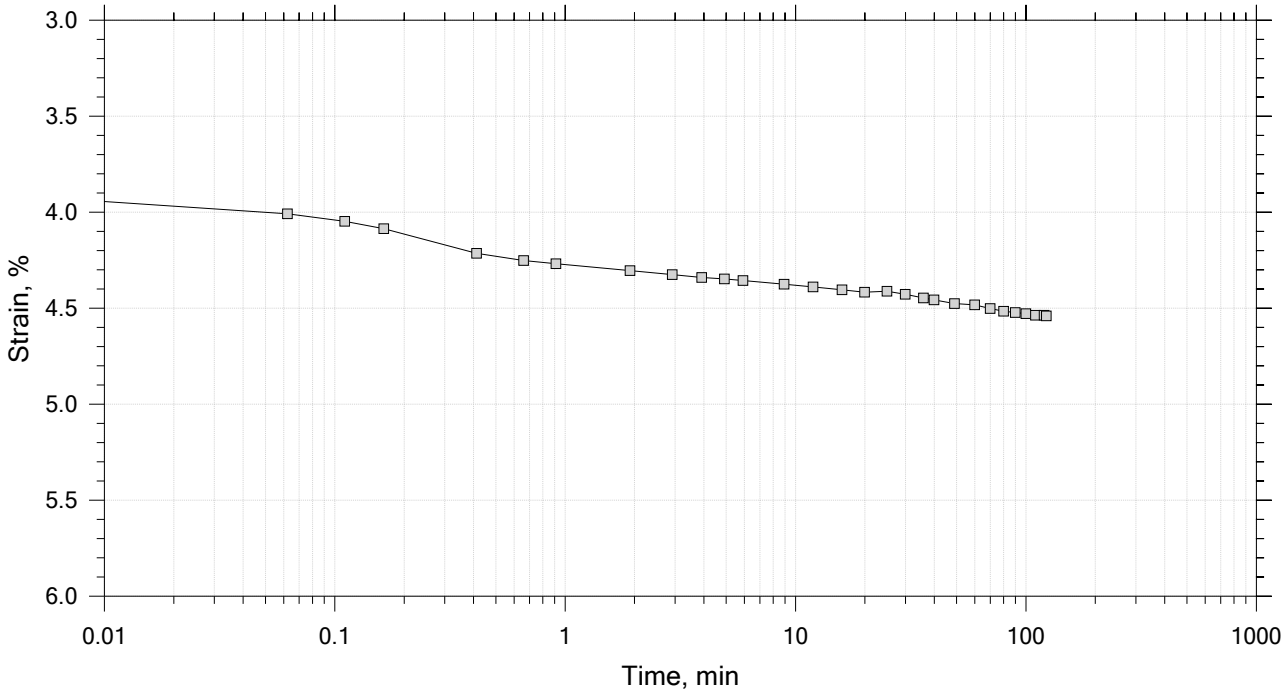
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

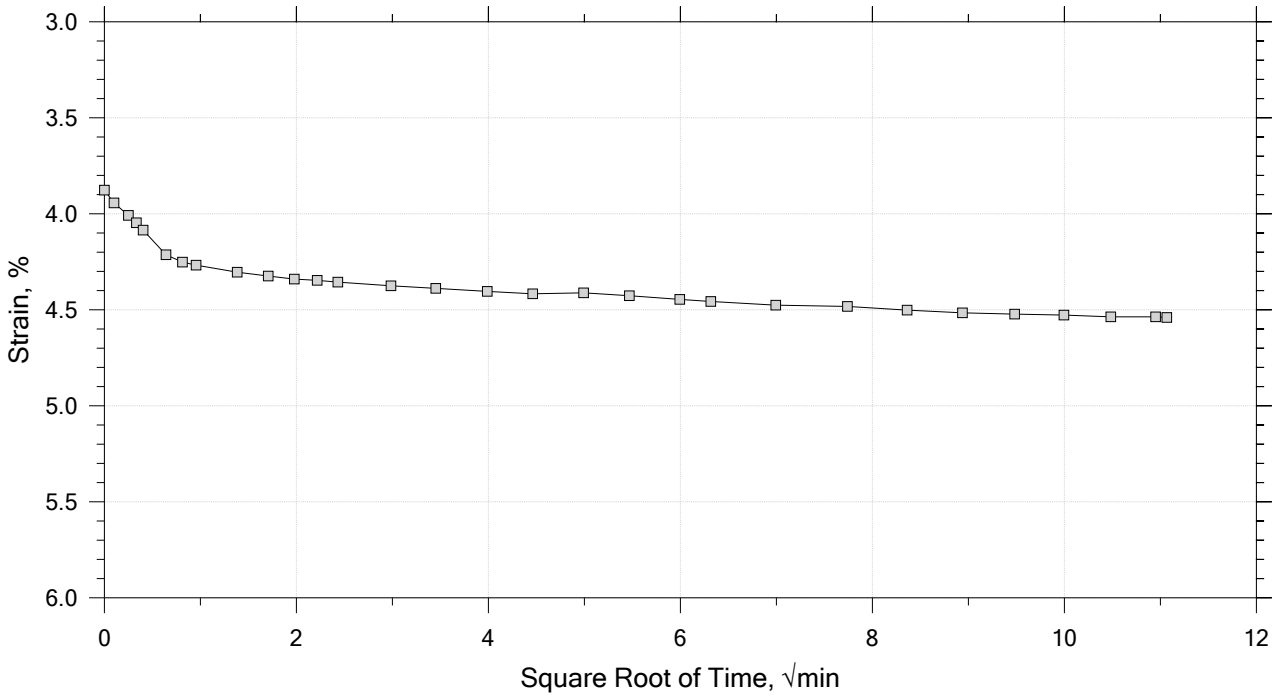
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





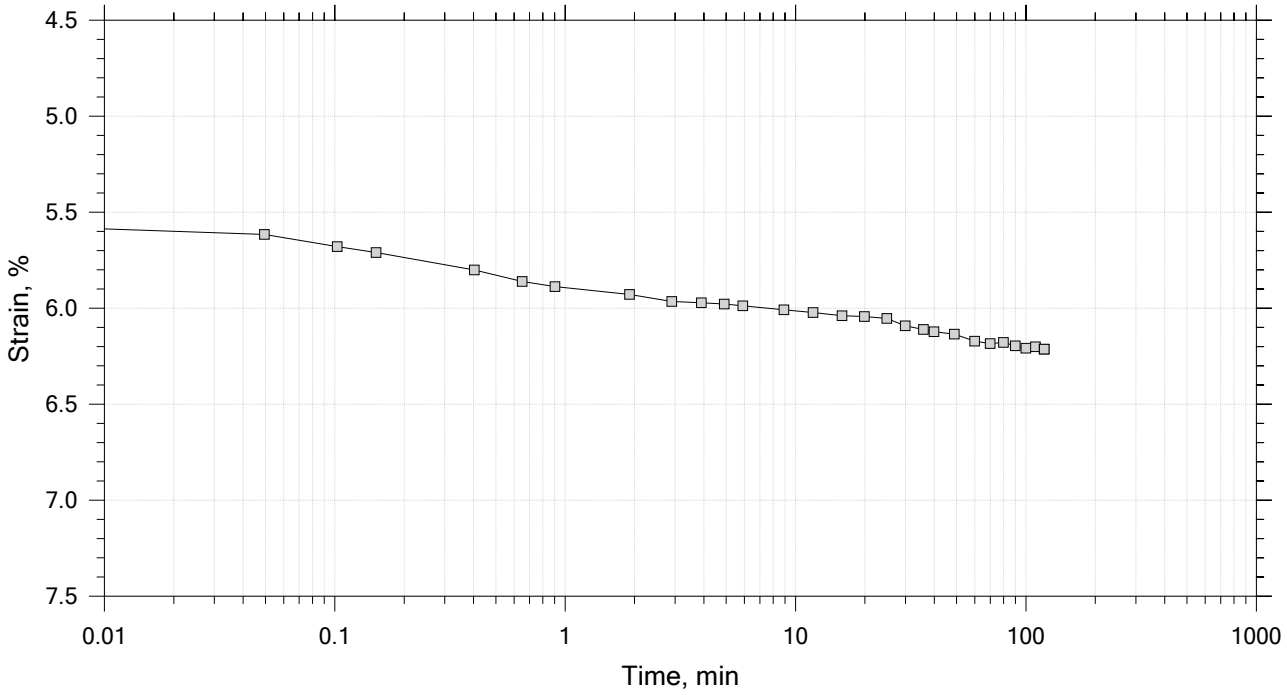
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

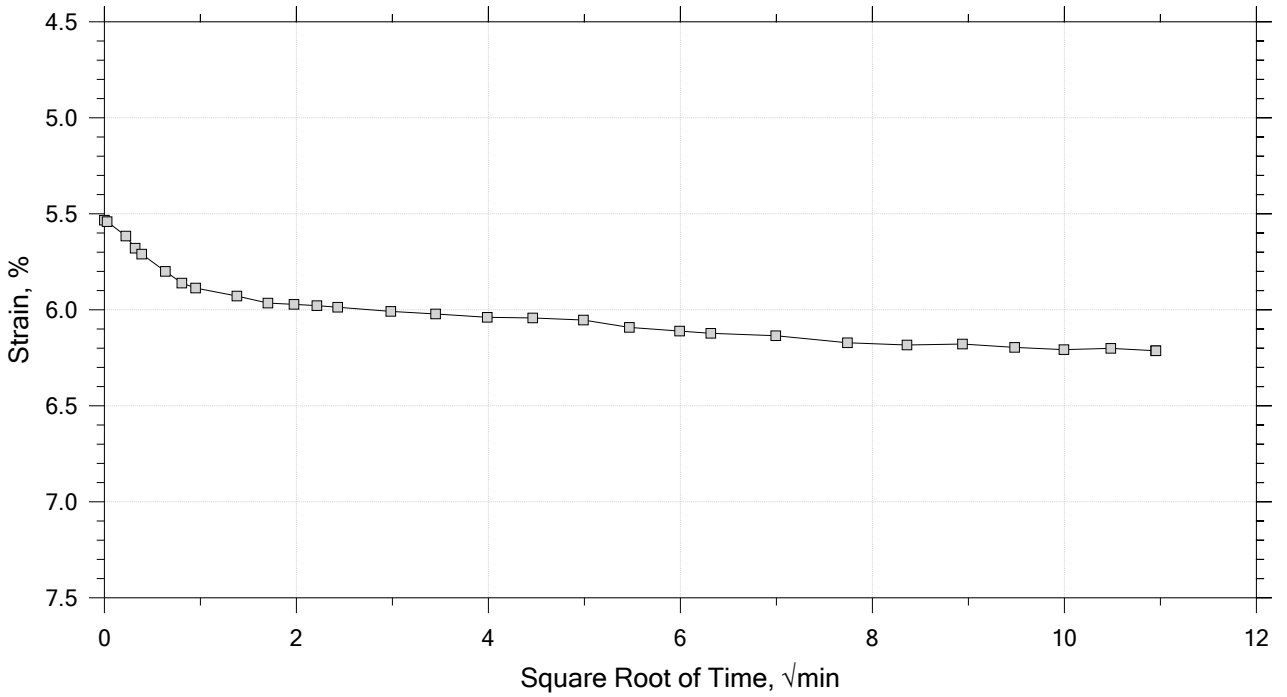
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





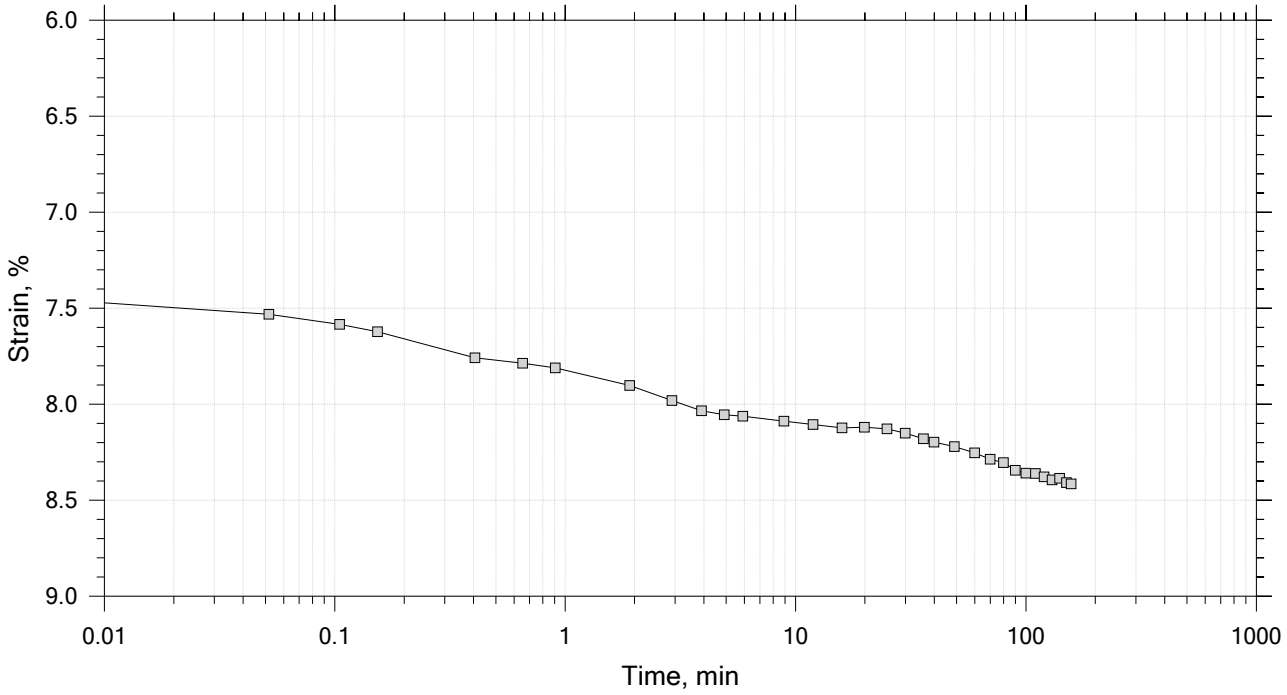
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

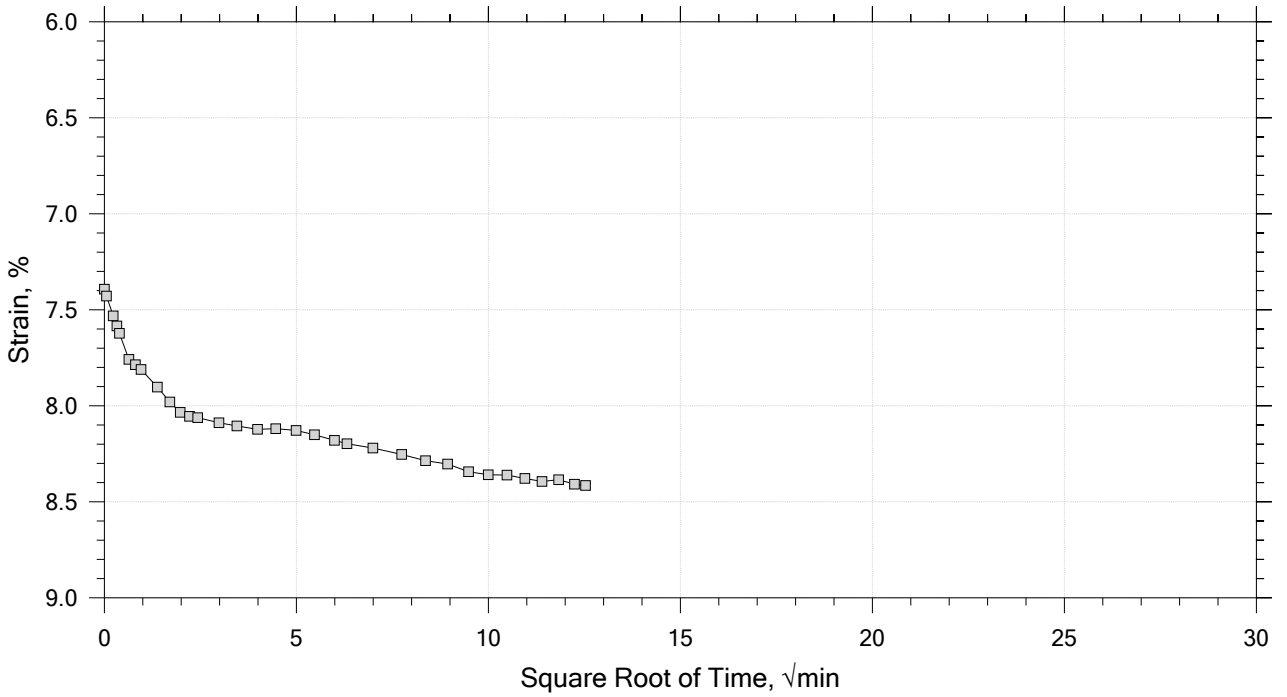
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

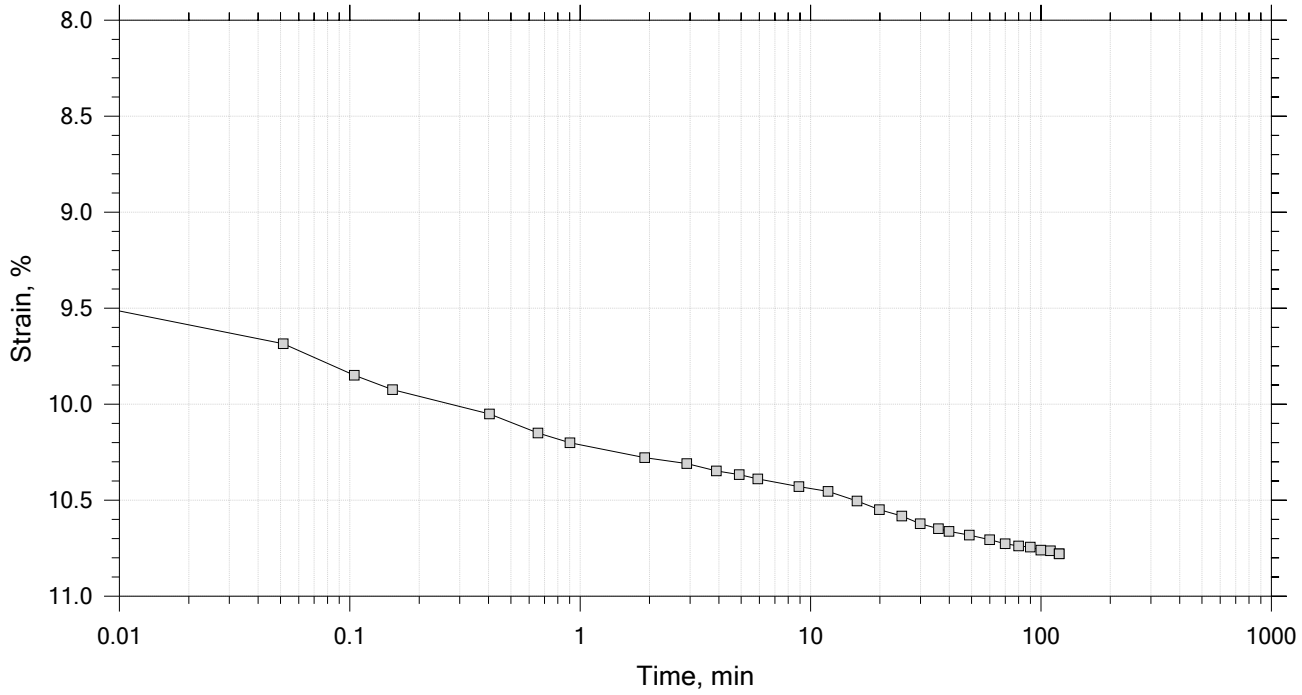


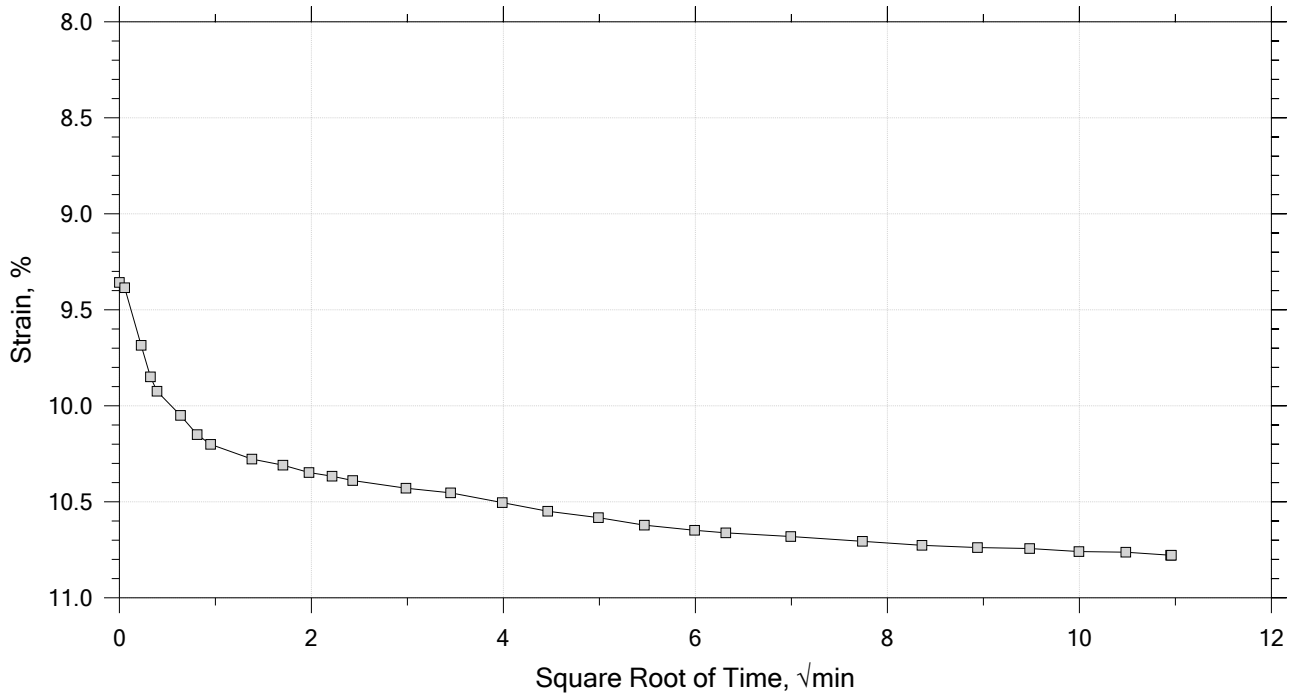


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





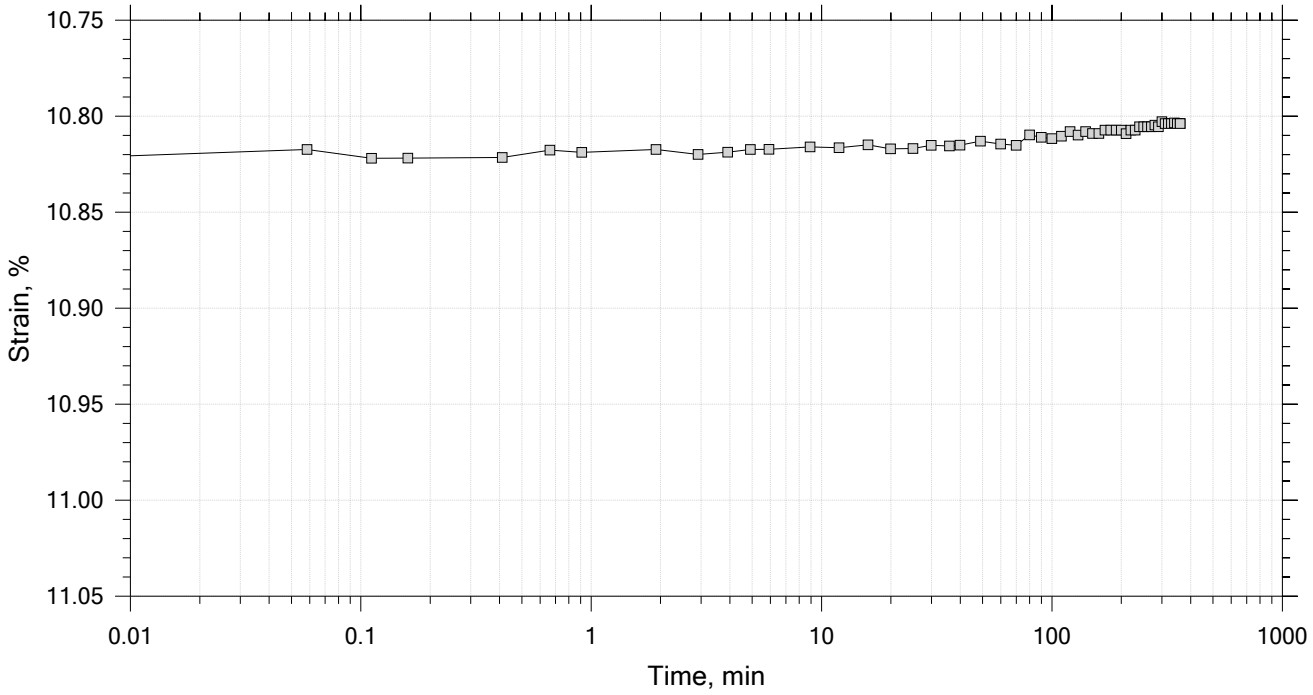
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
Test No.: IP-20	Sample Type: intact	Elevation: ---
Description: Moist, dark gray silty sand		
Remarks: System F, Swell Pressure = 0.0787		

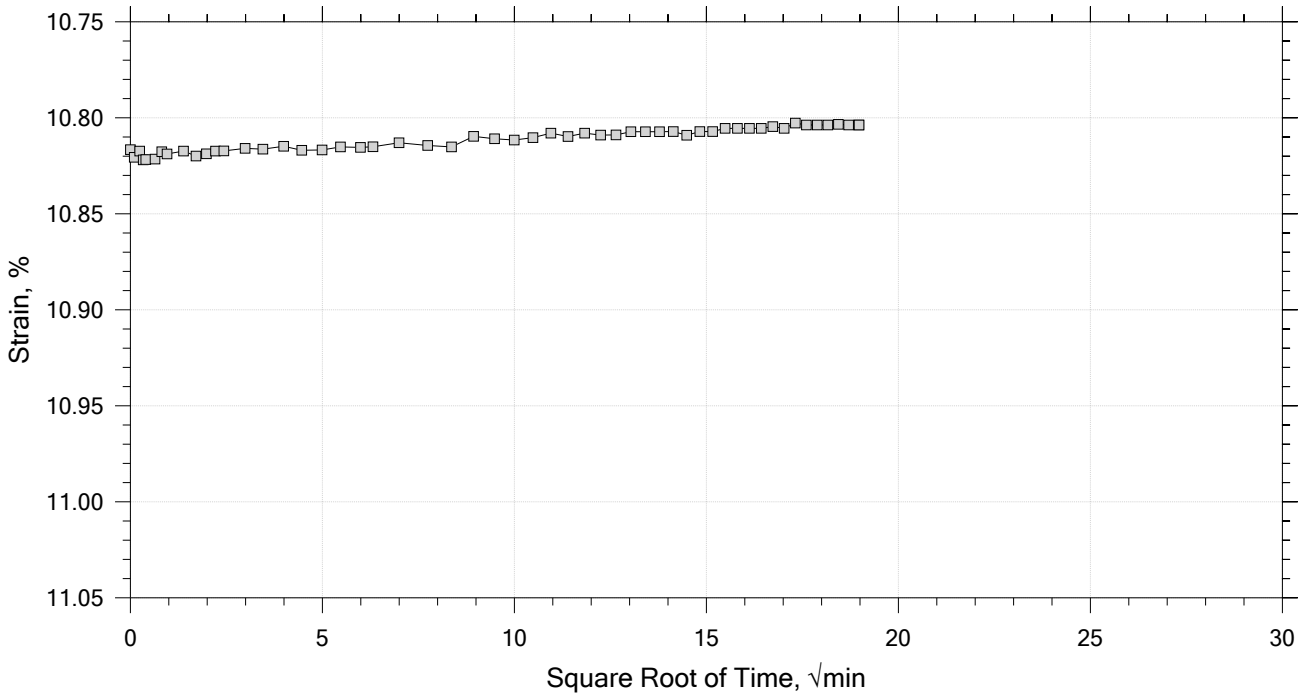
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf





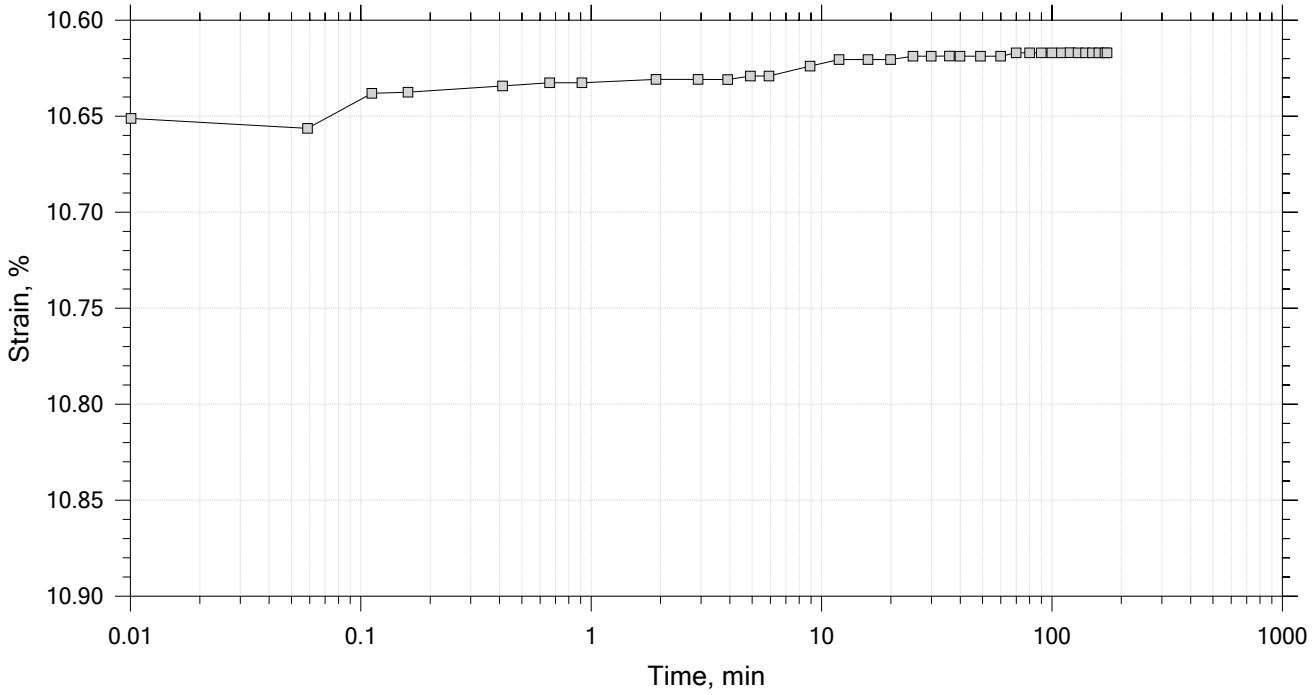
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

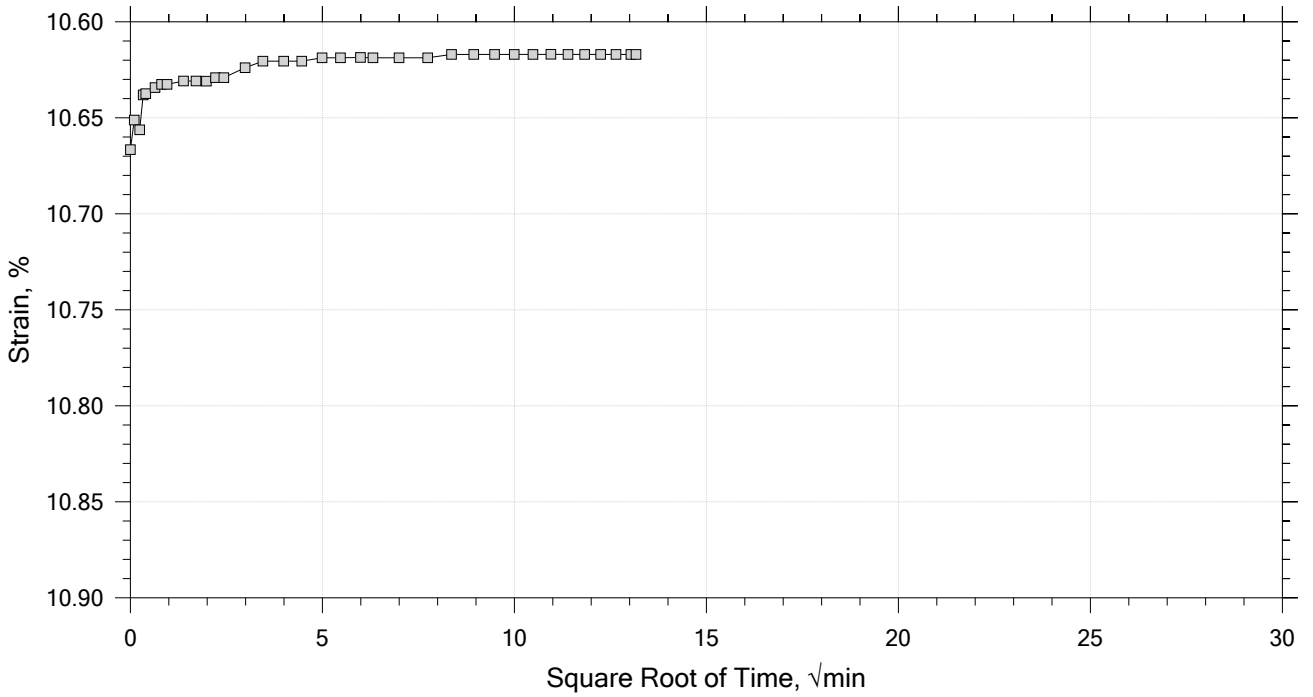
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 4 tsf





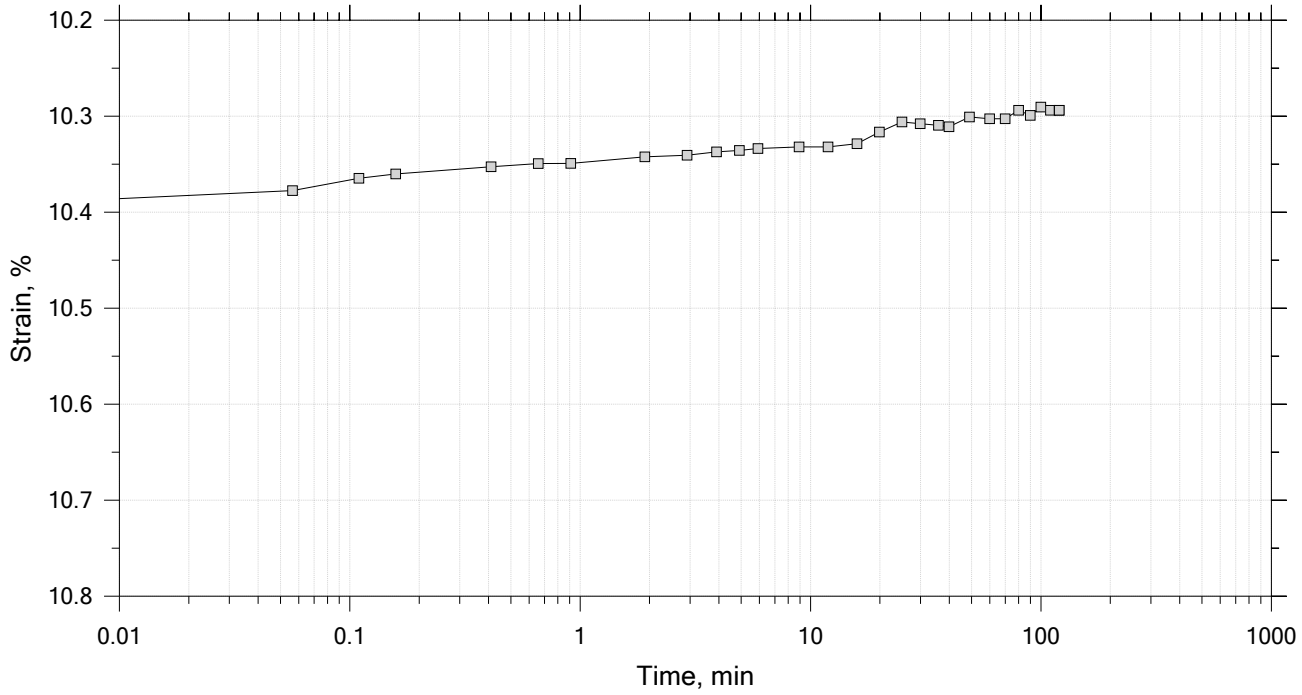
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

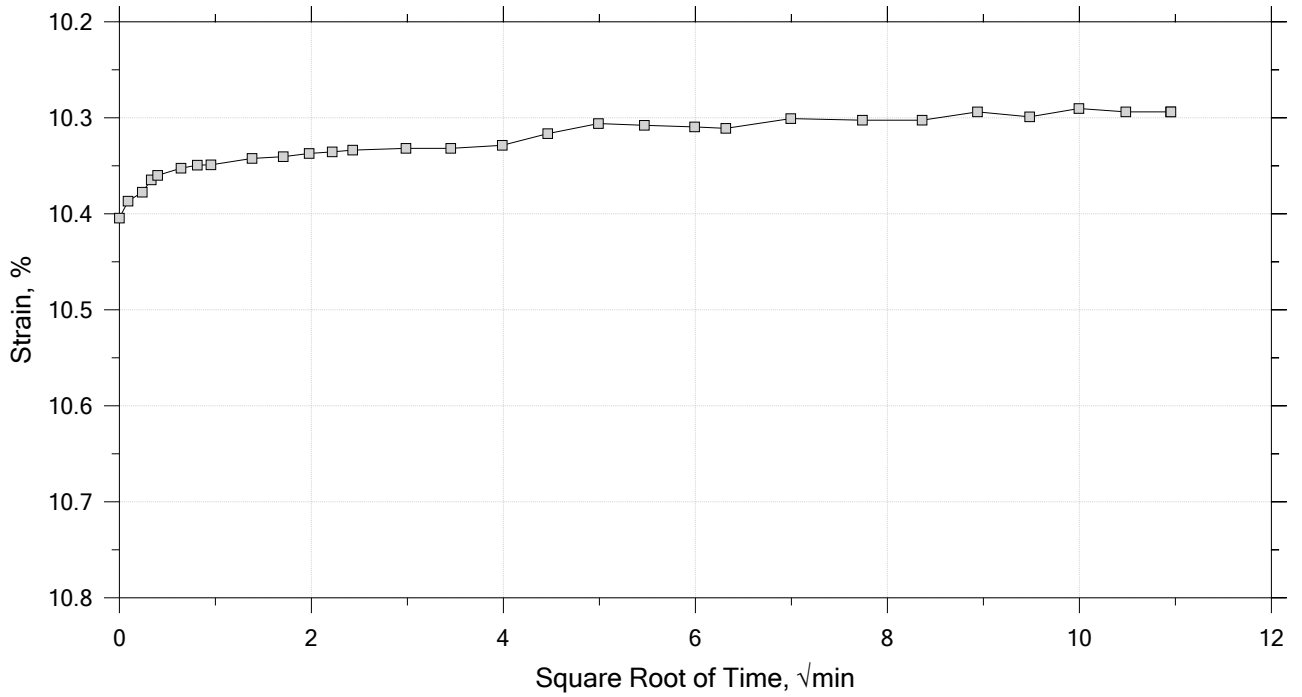
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

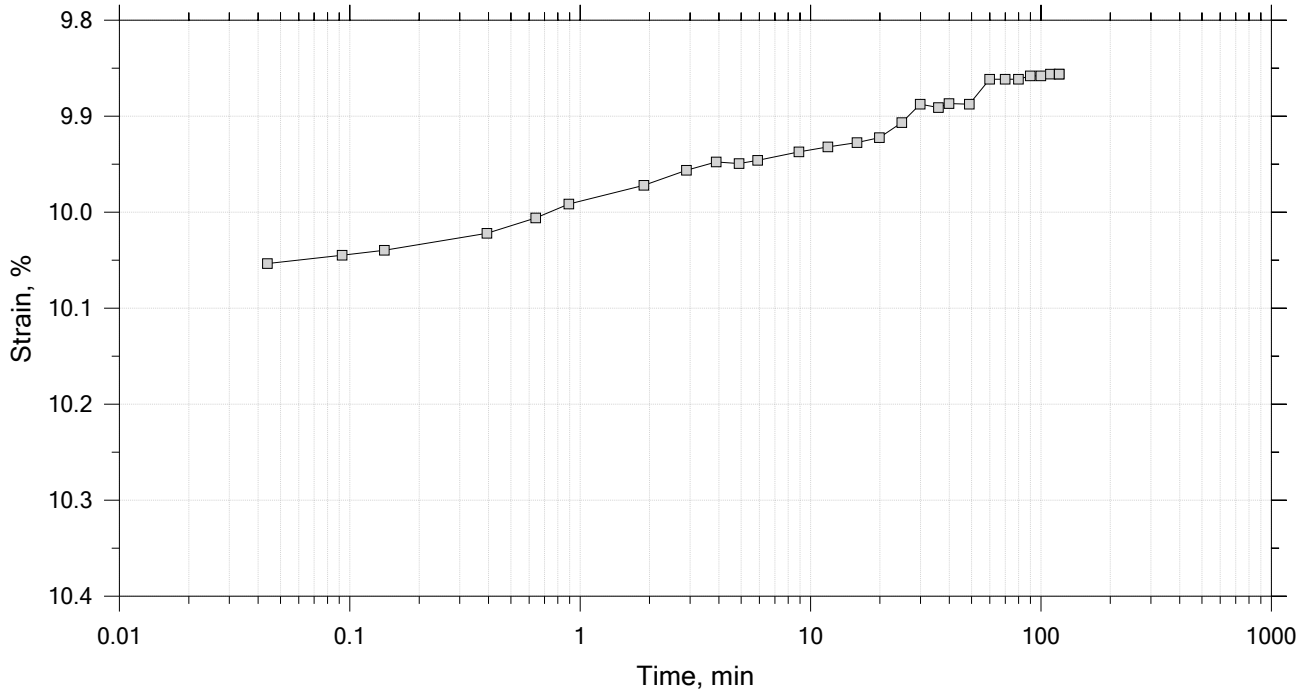


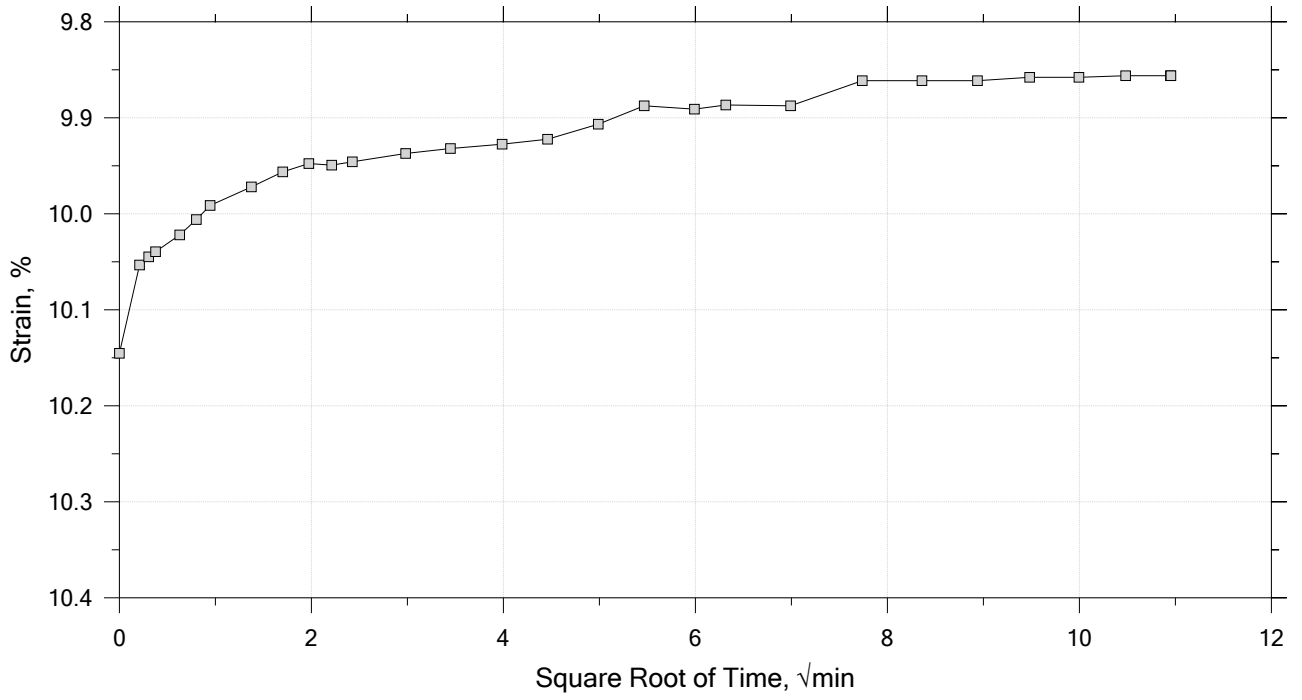


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
Test No.: IP-20	Sample Type: intact	Elevation: ---
Description: Moist, dark gray silty sand		
Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.67	Liquid Limit: NP
Initial Height: 1.00 in	Initial Void Ratio: 0.559	Plastic Limit: NP
Final Height: 0.90 in	Final Void Ratio: 0.405	Plasticity Index: NP

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	e0726	RING		ASH321
Mass Container, gm	8.18	108.06	108.06	8.29
Mass Container + Wet Soil, gm	68.94	268.8	266.7	166.26
Mass Container + Dry Soil, gm	59.96	245.78	245.78	145.43
Mass Dry Soil, gm	51.78	137.72	137.72	137.14
Water Content, %	17.34	16.71	15.19	15.19
Void Ratio	---	0.56	0.41	---
Degree of Saturation, %	---	79.80	100.00	---
Dry Unit Weight, pcf	---	106.88	118.57	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

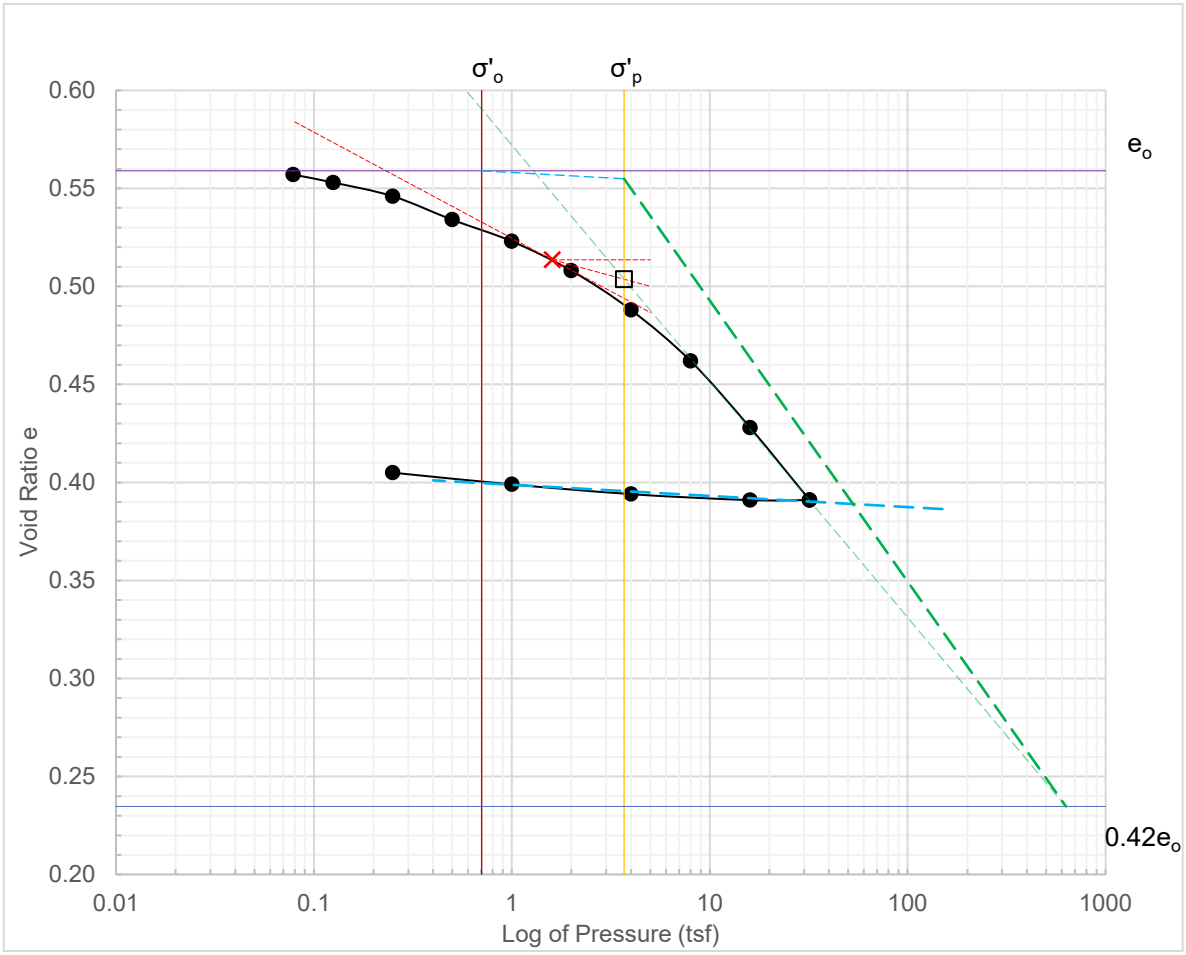
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k ft/day
1	0.0787	0.001399	0.557	0.140	0.000	0.00e+00	1.78e-02	0.00e+00
2	0.125	0.003865	0.553	0.386	4.552	5.36e-06	5.33e-02	7.71e-04
3	0.250	0.008272	0.546	0.827	45.420	5.34e-07	3.53e-02	5.08e-05
4	0.500	0.01613	0.534	1.61	18.925	1.27e-06	3.14e-02	1.07e-04
5	1.00	0.02292	0.523	2.29	11.631	2.03e-06	1.36e-02	7.42e-05
6	2.00	0.03269	0.508	3.27	24.789	9.36e-07	9.77e-03	2.47e-05
7	4.00	0.04540	0.488	4.54	6.583	3.44e-06	6.36e-03	5.90e-05
8	8.00	0.06213	0.462	6.21	68.648	3.20e-07	4.18e-03	3.61e-06
9	16.0	0.08415	0.428	8.42	147.909	1.43e-07	2.75e-03	1.06e-06
10	32.0	0.1078	0.391	10.8	5.740	3.49e-06	1.48e-03	1.39e-05
11	16.0	0.1080	0.391	10.8	275.045	7.10e-08	-1.57e-05	-3.00e-09
12	4.00	0.1062	0.394	10.6	11.909	1.64e-06	1.56e-04	6.90e-07
13	1.00	0.1029	0.399	10.3	23.370	8.42e-07	1.08e-03	2.45e-06
14	0.250	0.09856	0.405	9.86	39.754	4.99e-07	5.84e-03	7.86e-06

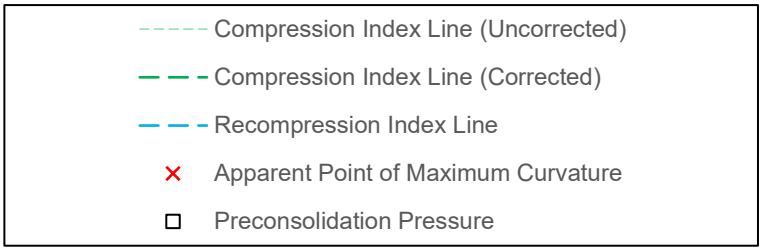
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.16A	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/15/22	Depth: 15.0-15.1
	Test No.: IP-20	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty sand		
	Remarks: System F, Swell Pressure = 0.0787		
	Displacement at End of Increment		

Boring: B-4.16A

Depth: 15.0'-15.1'

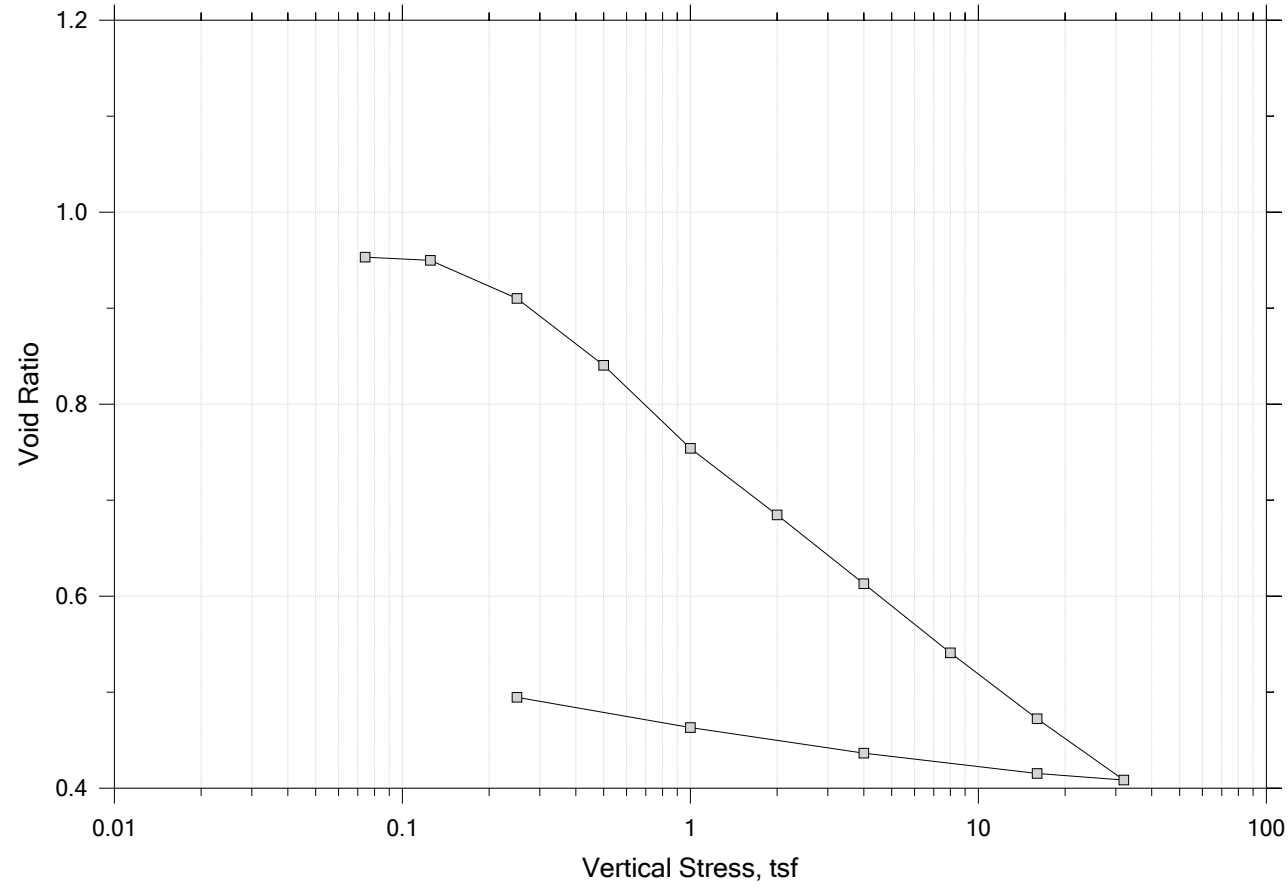
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.70
Preconsolidation Pressure, σ'_p (tsf) = 3.70
Compression Index, C_c = 0.14
Recompression Index, C_r = 0.0056

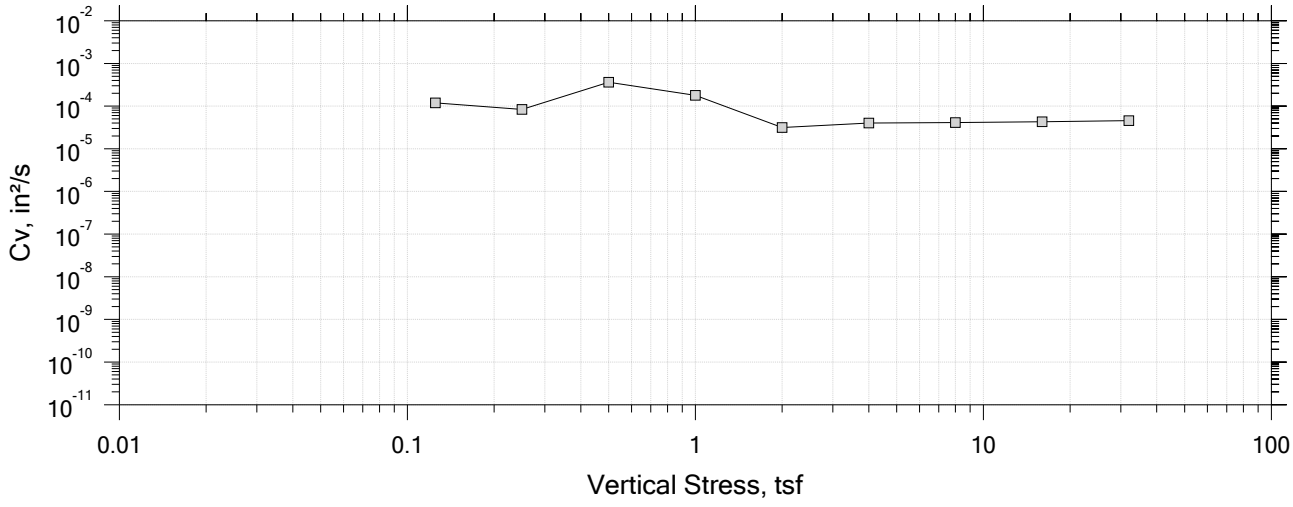




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

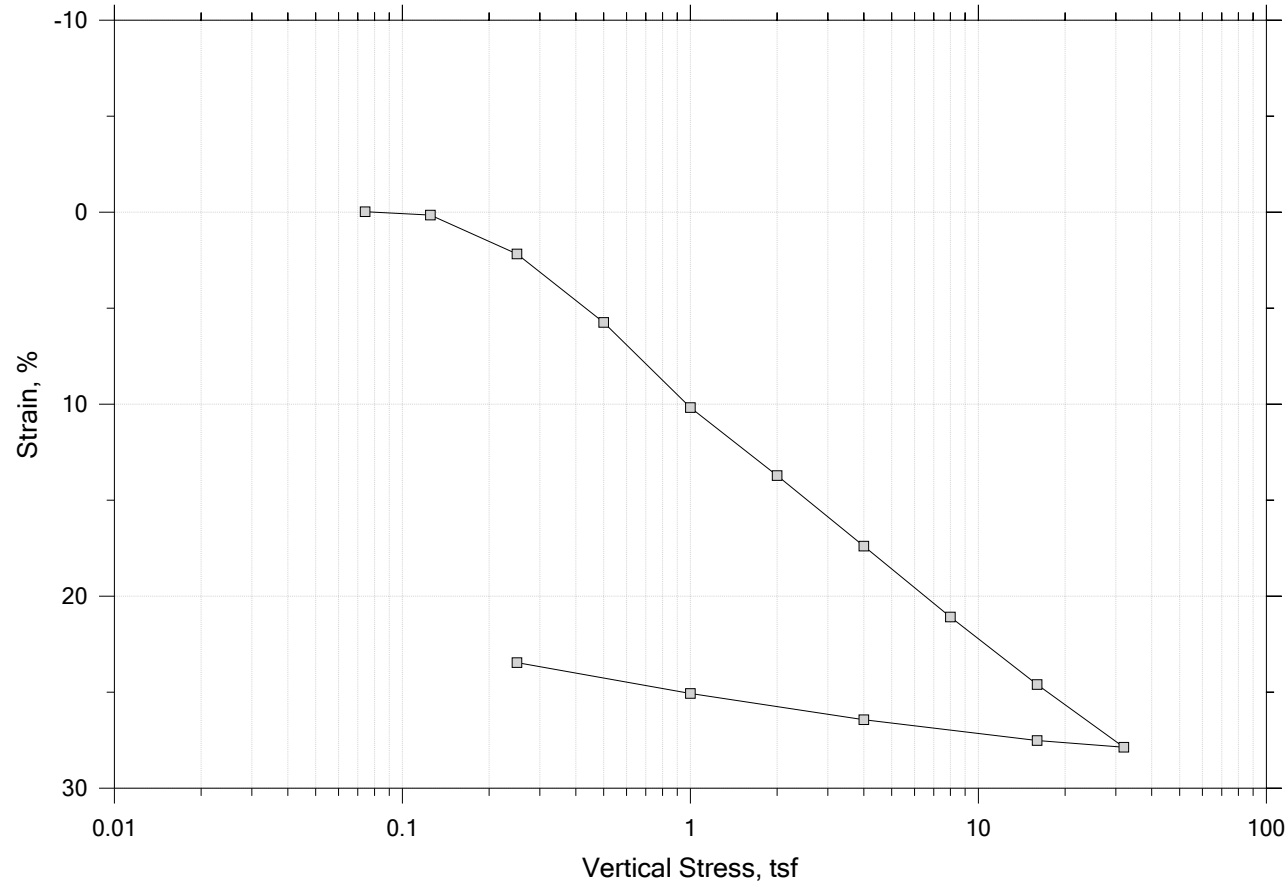


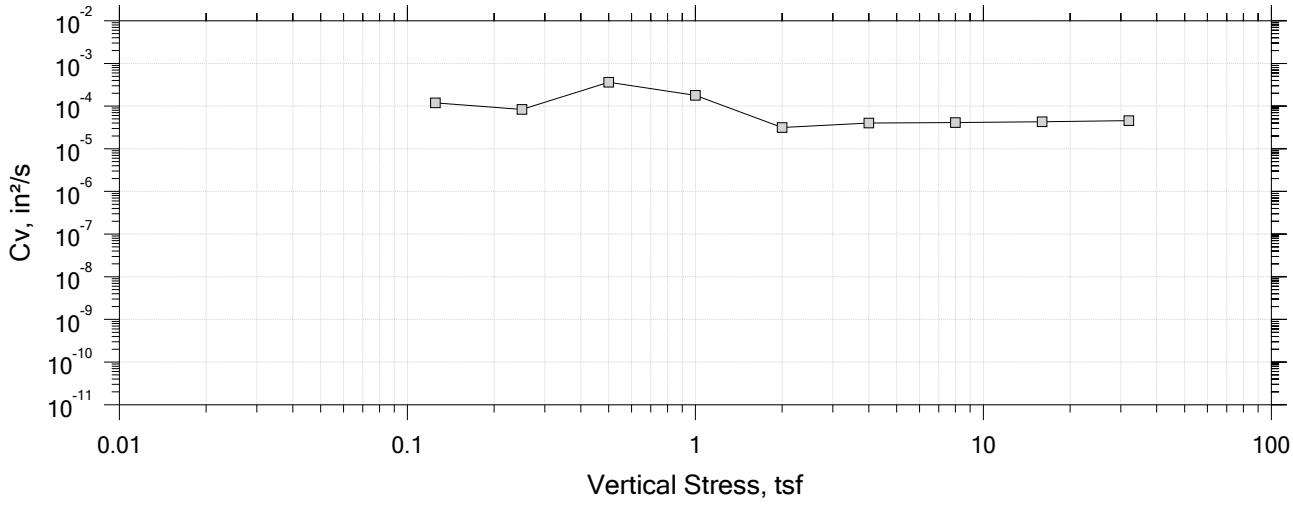


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

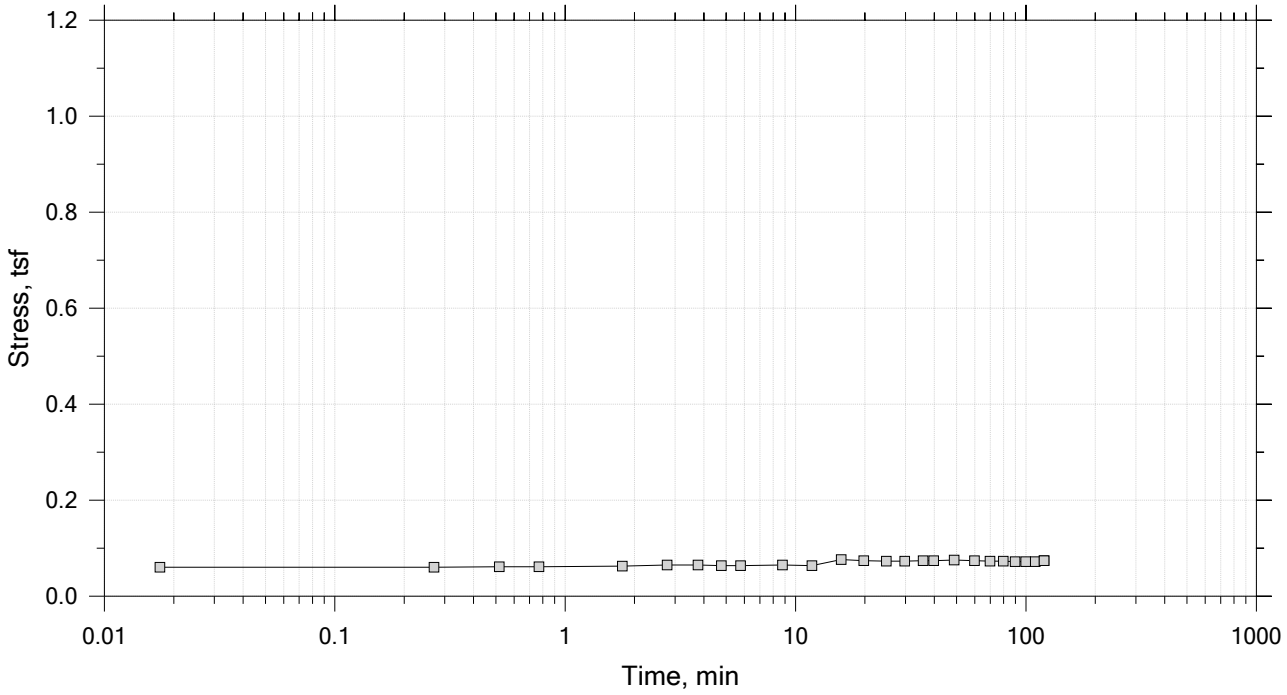


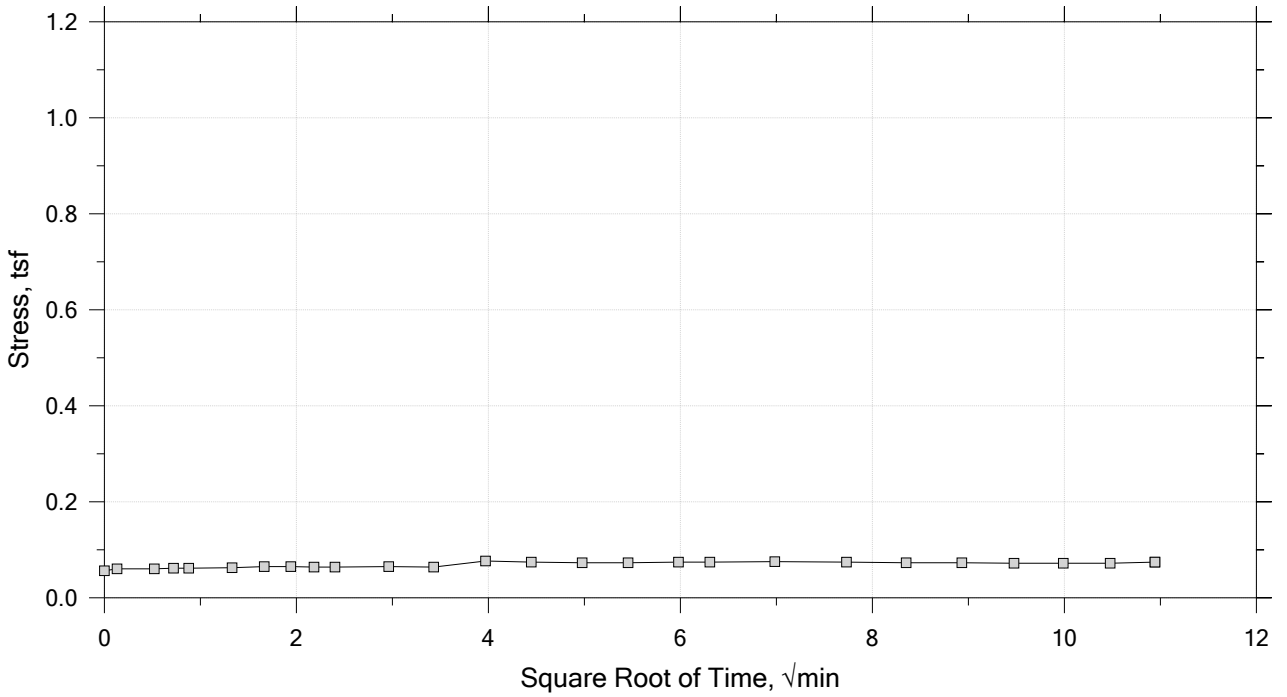


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0742 tsf





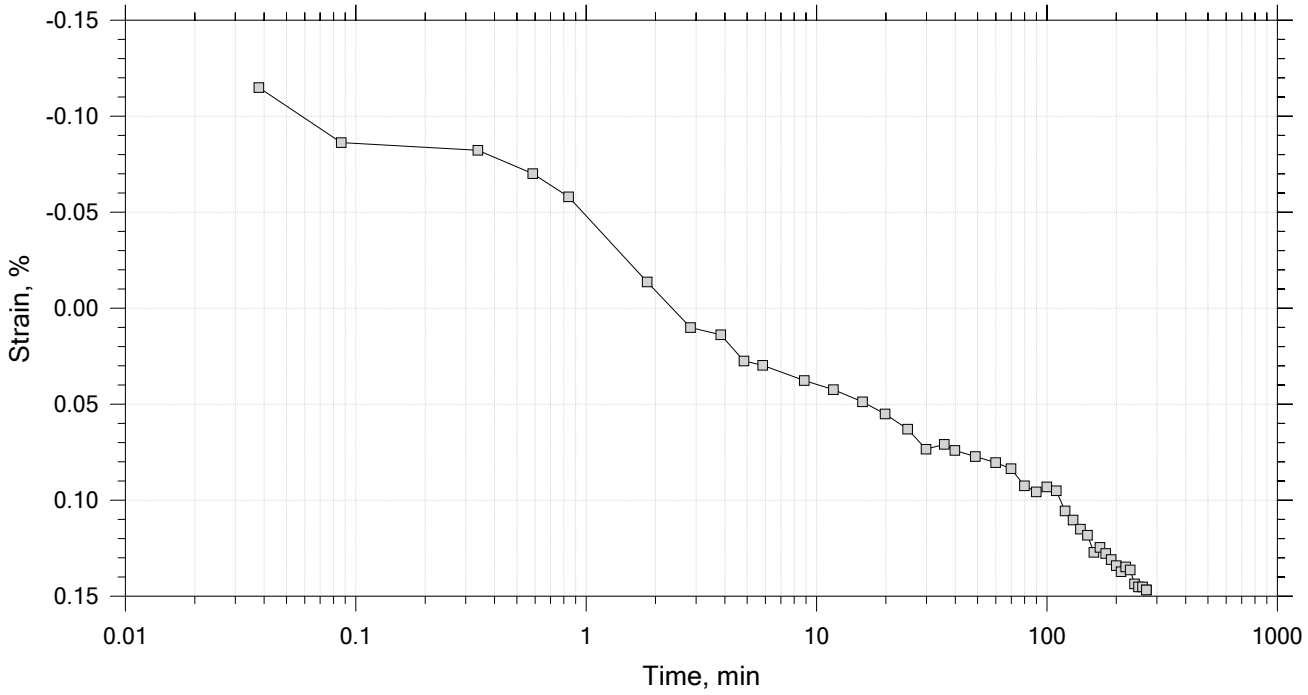
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

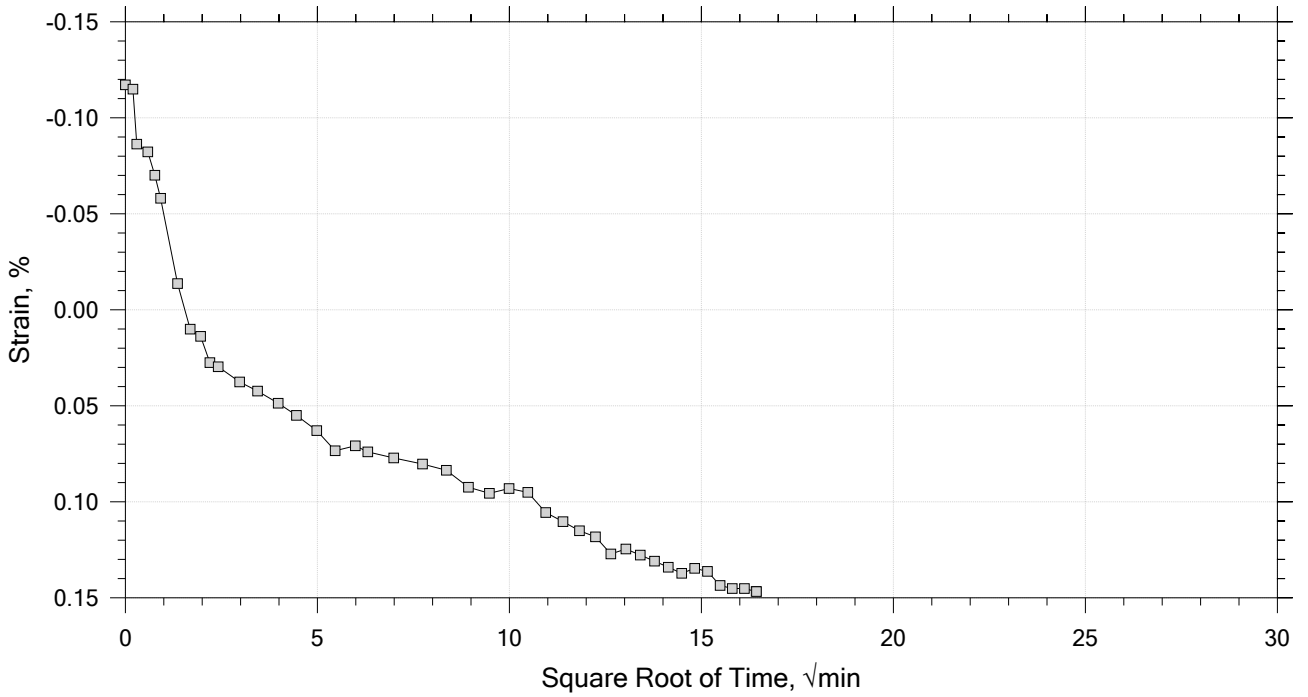
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

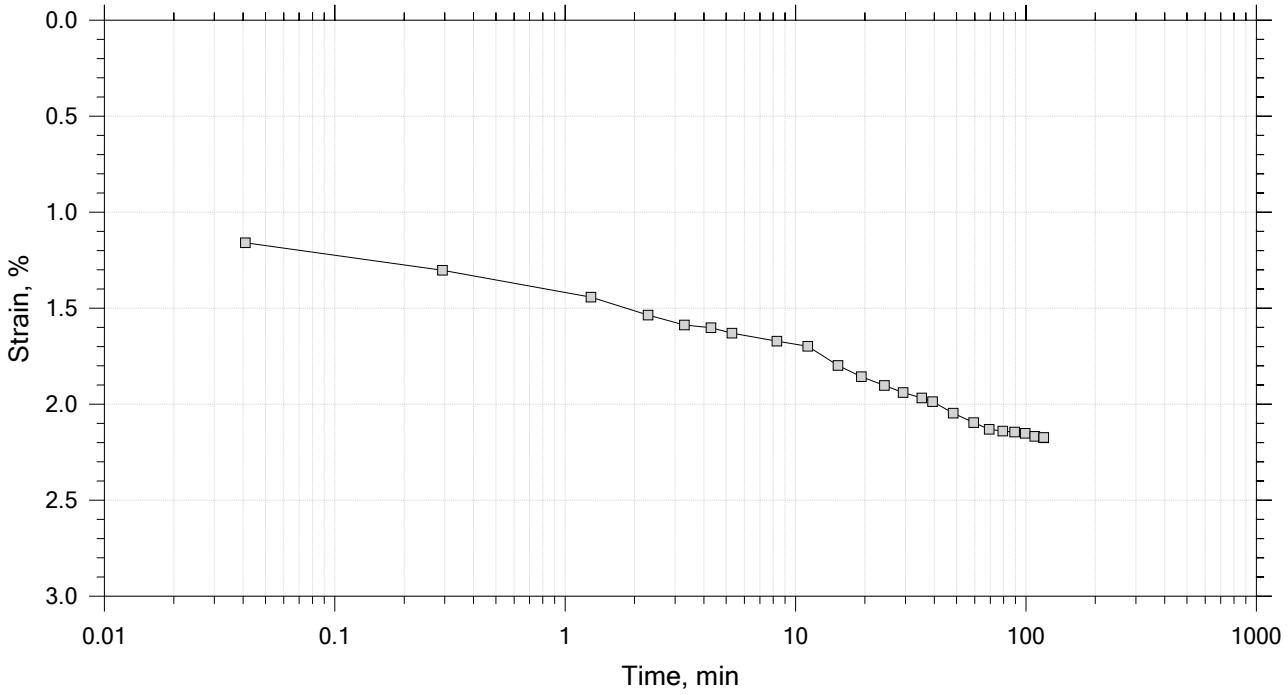


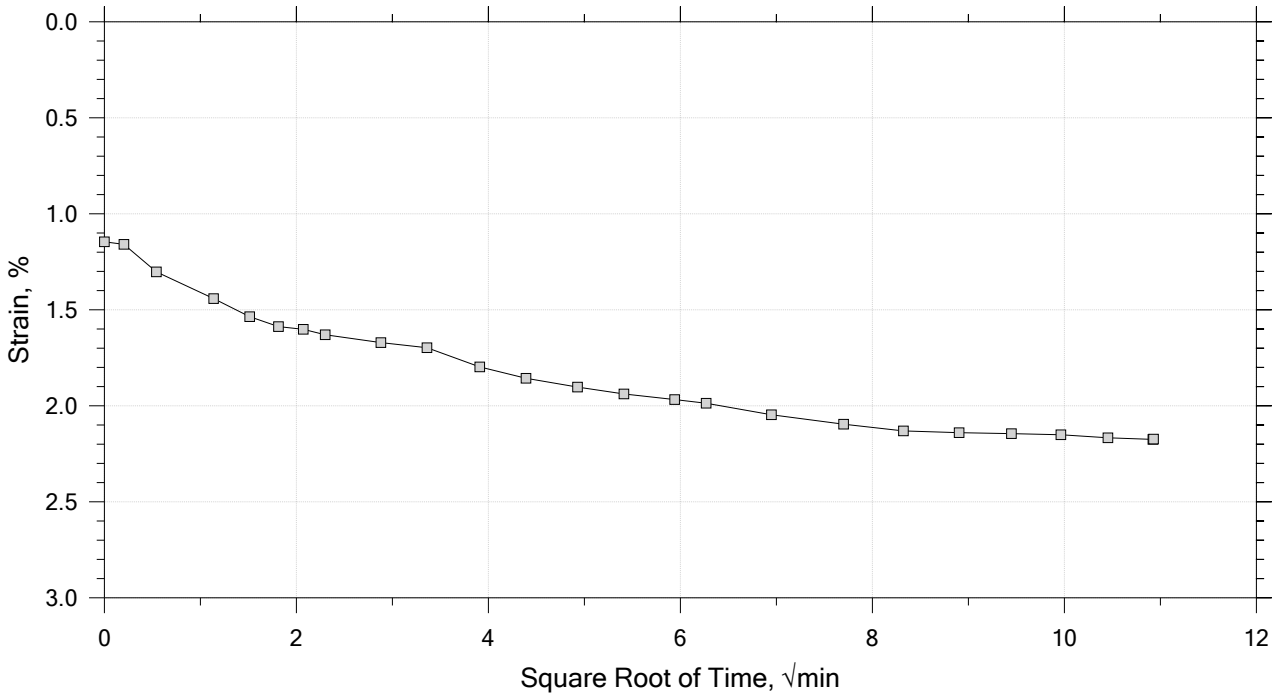


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
Test No.: IP-21-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

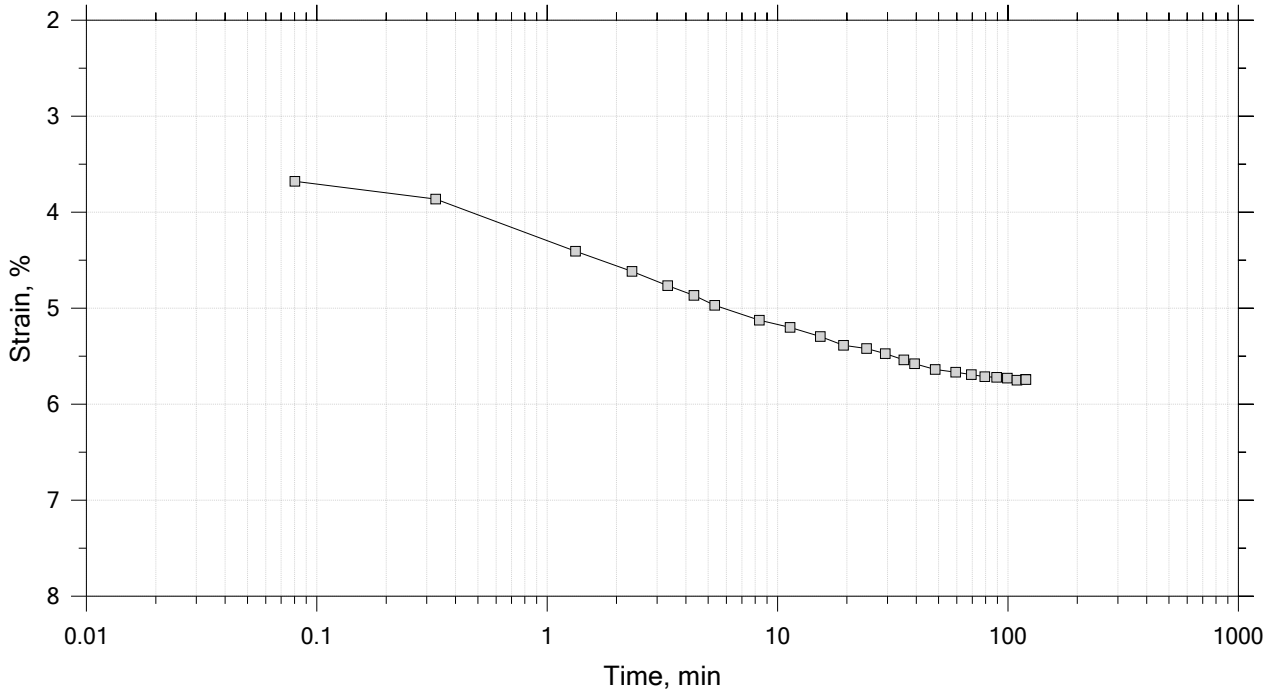


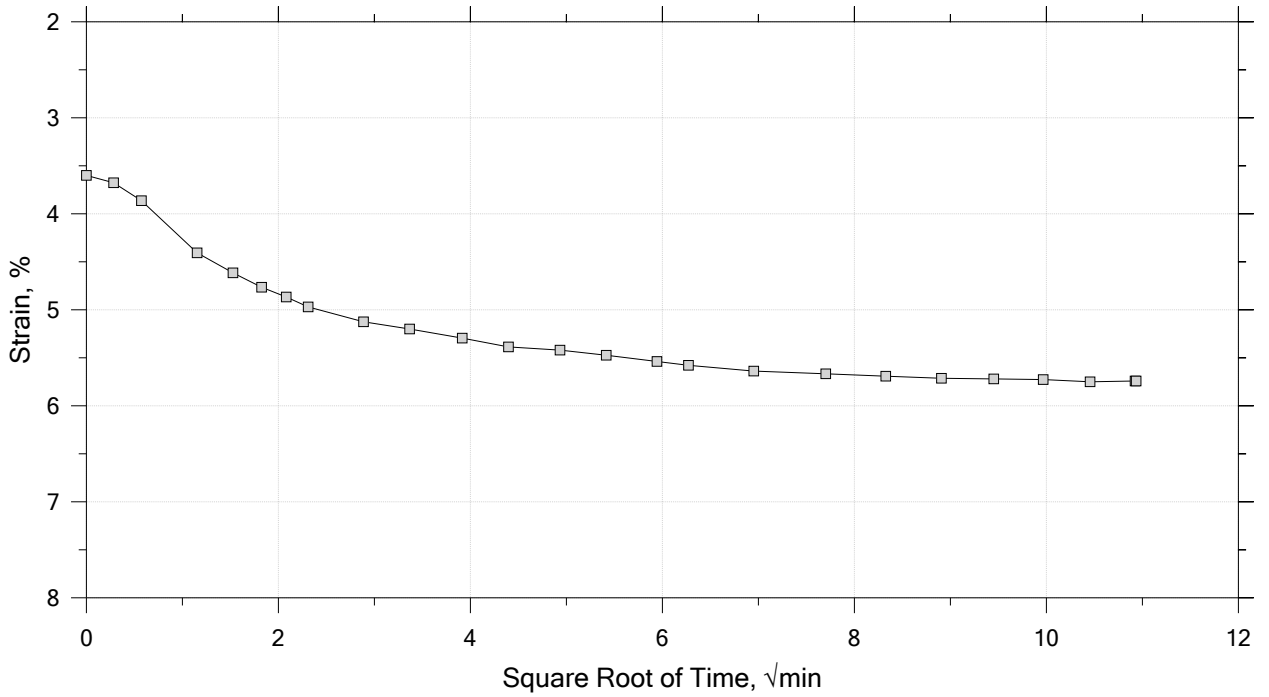


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf

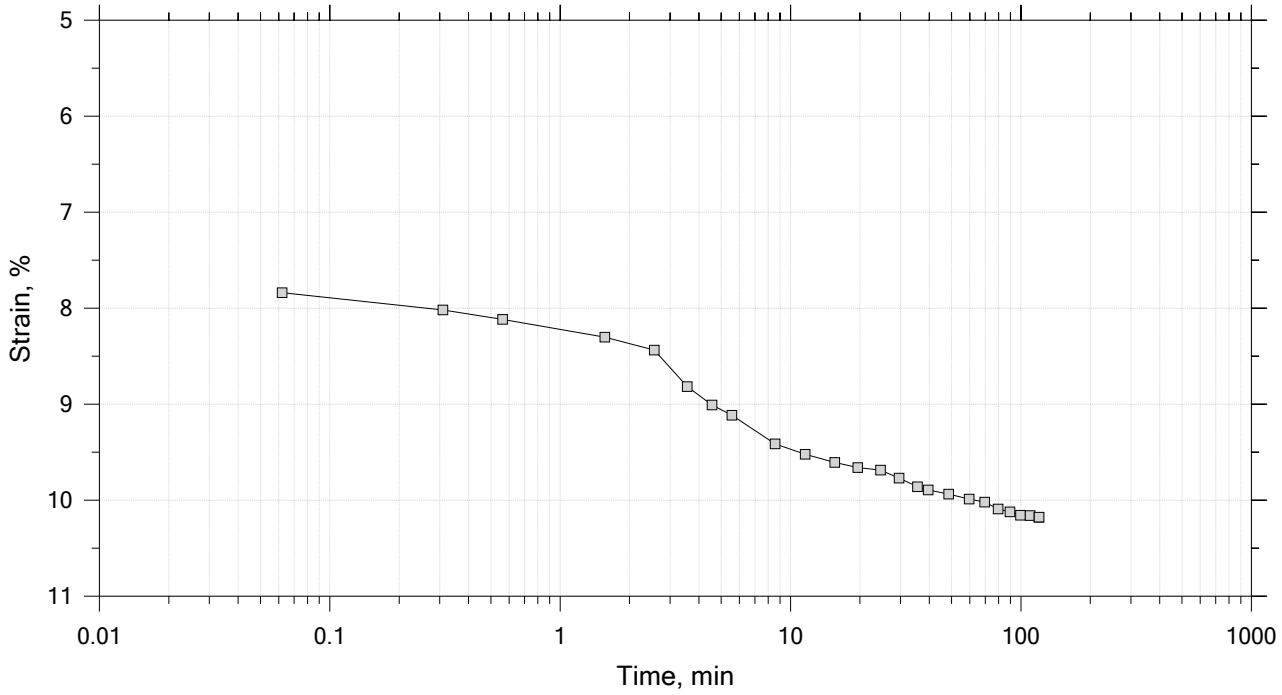


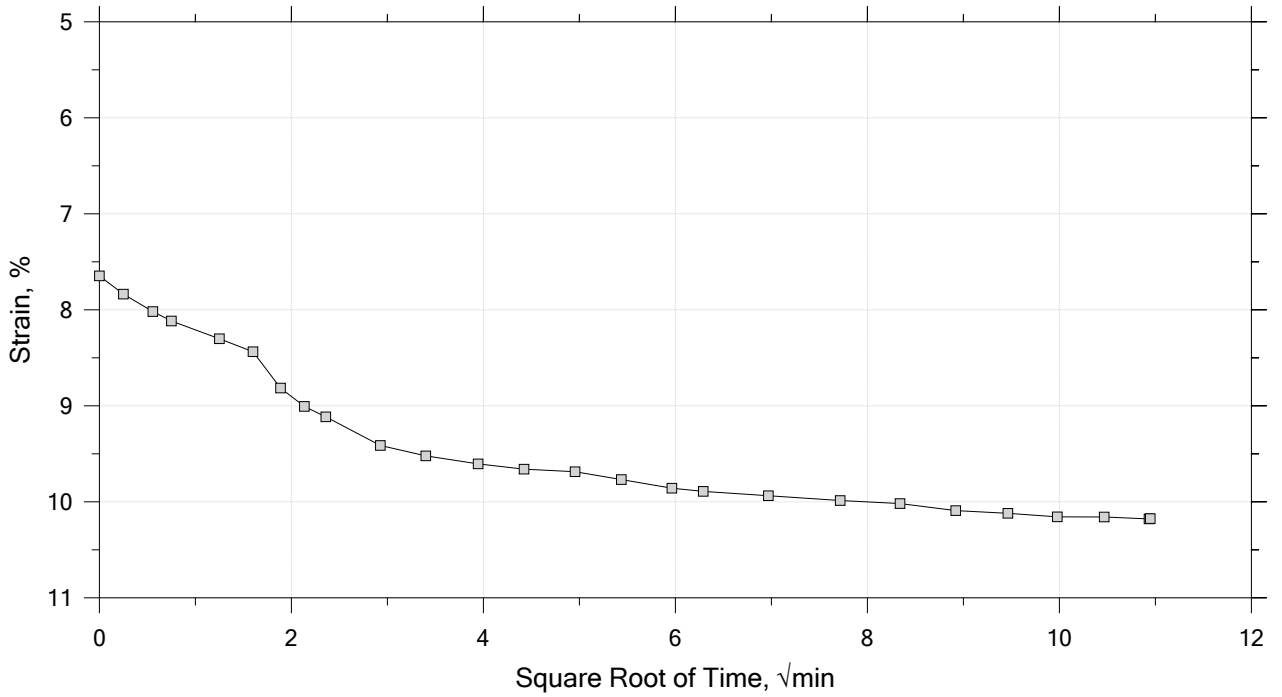


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14
Constant Load Step
Stress: 1 tsf





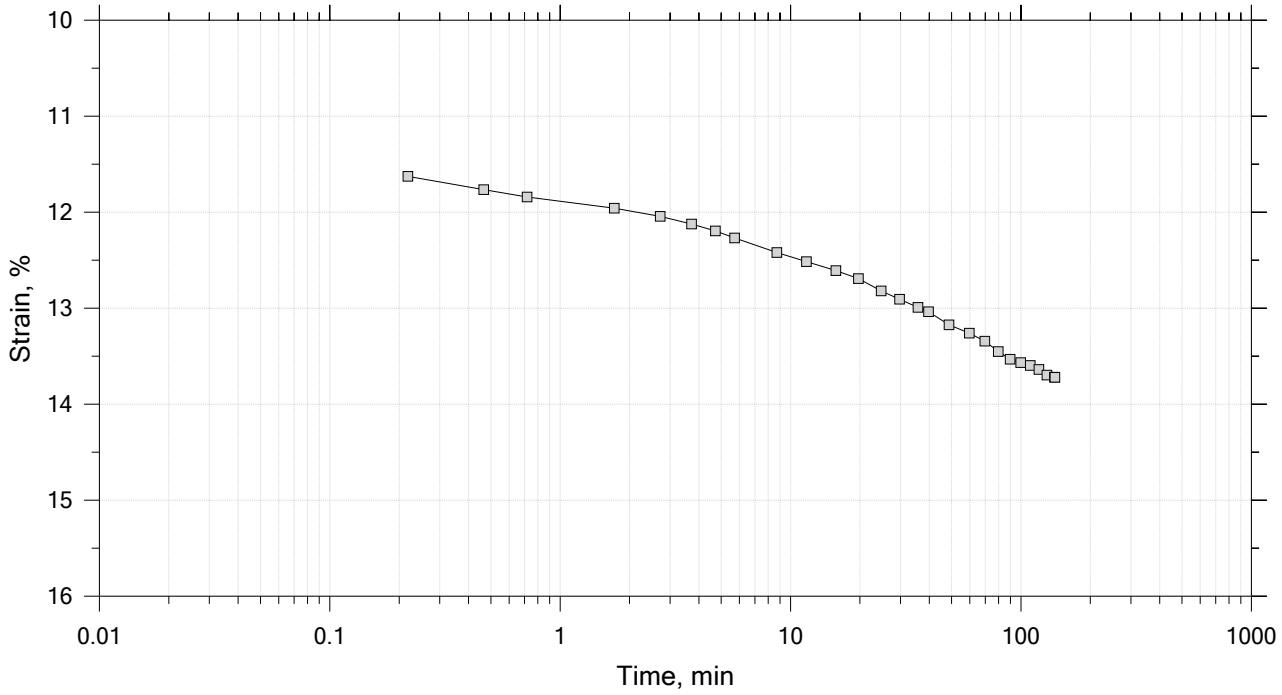
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

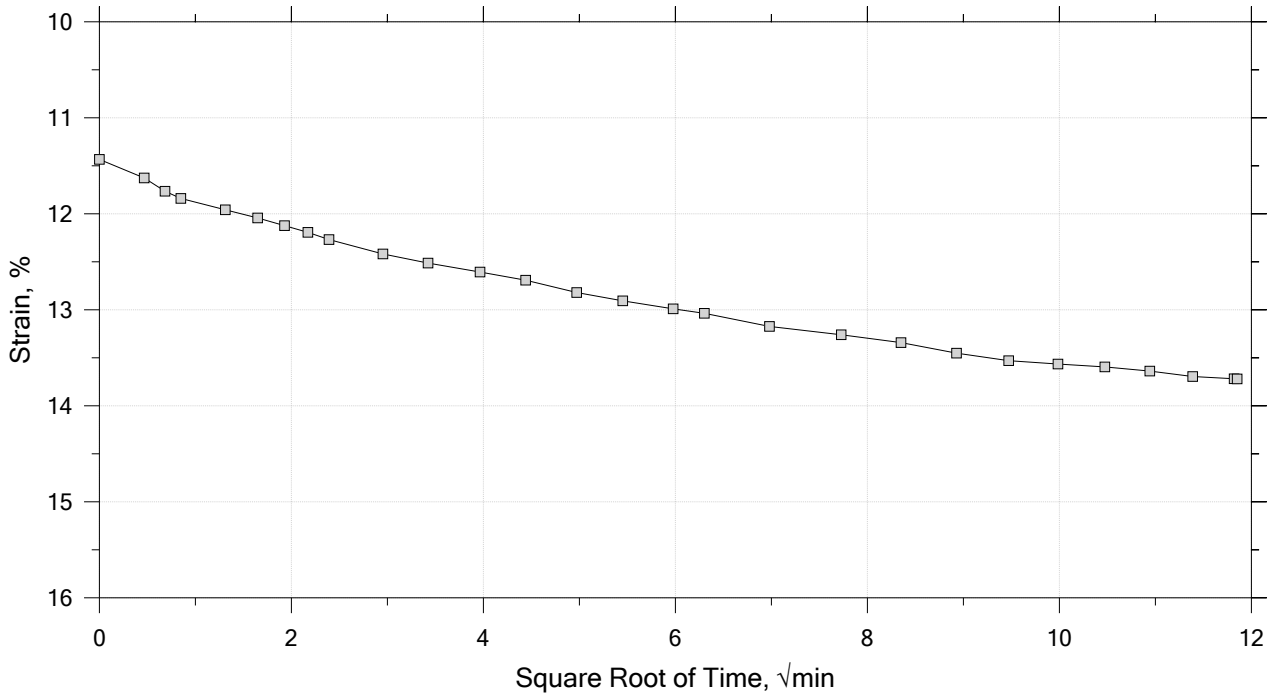
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf

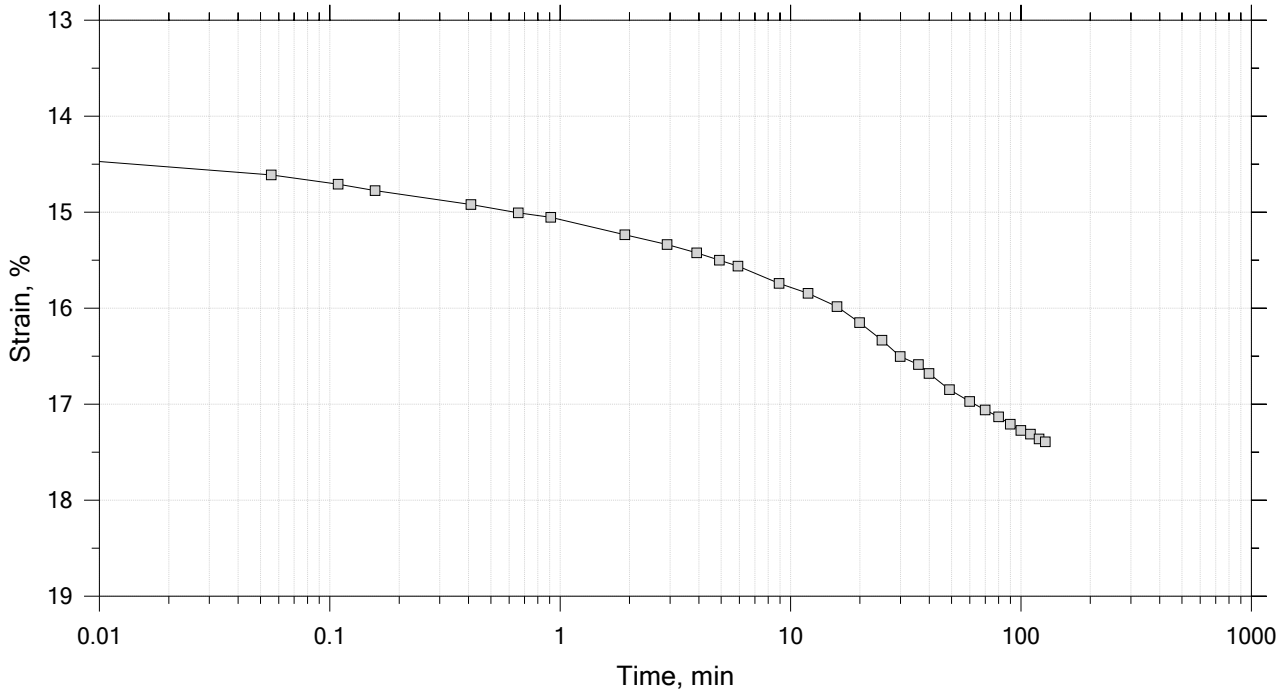


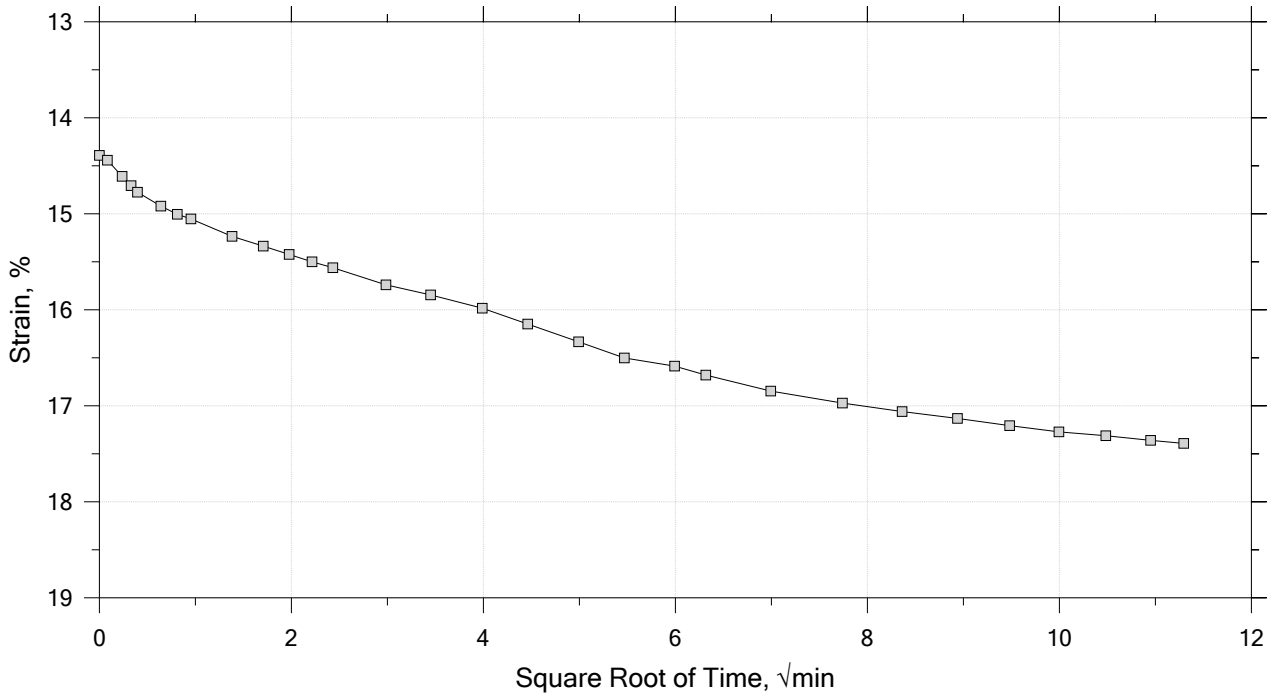


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14
Constant Load Step
Stress: 4 tsf

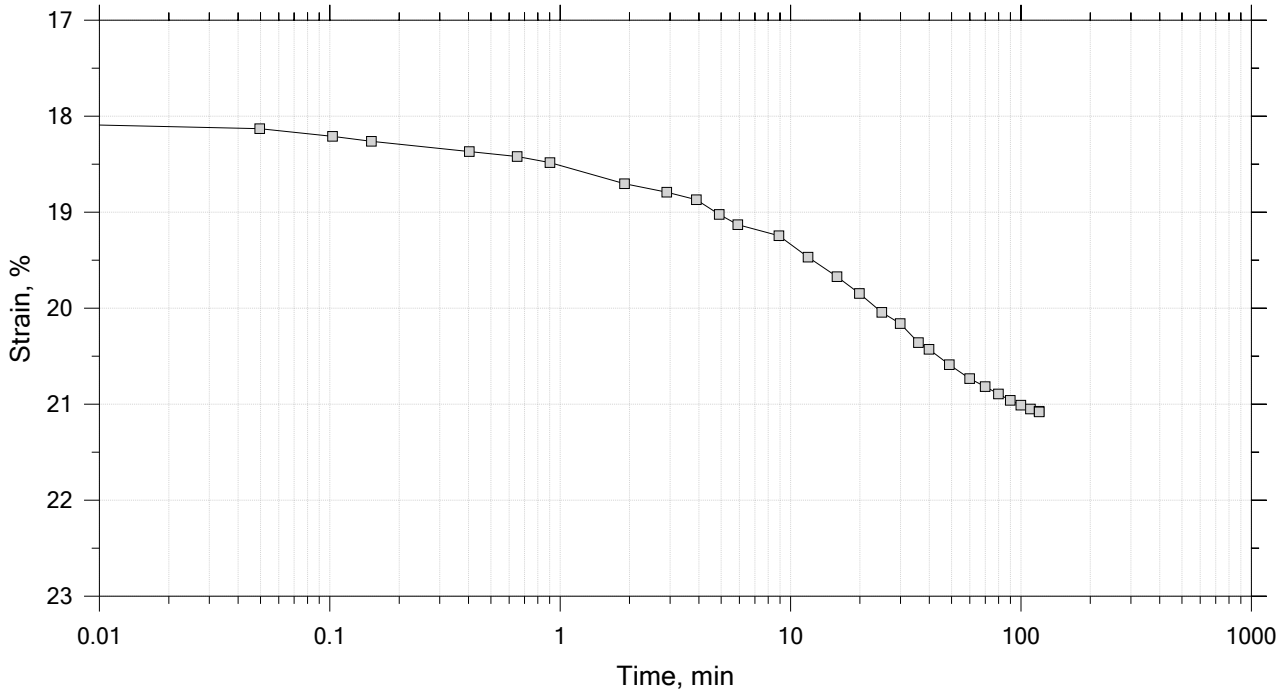


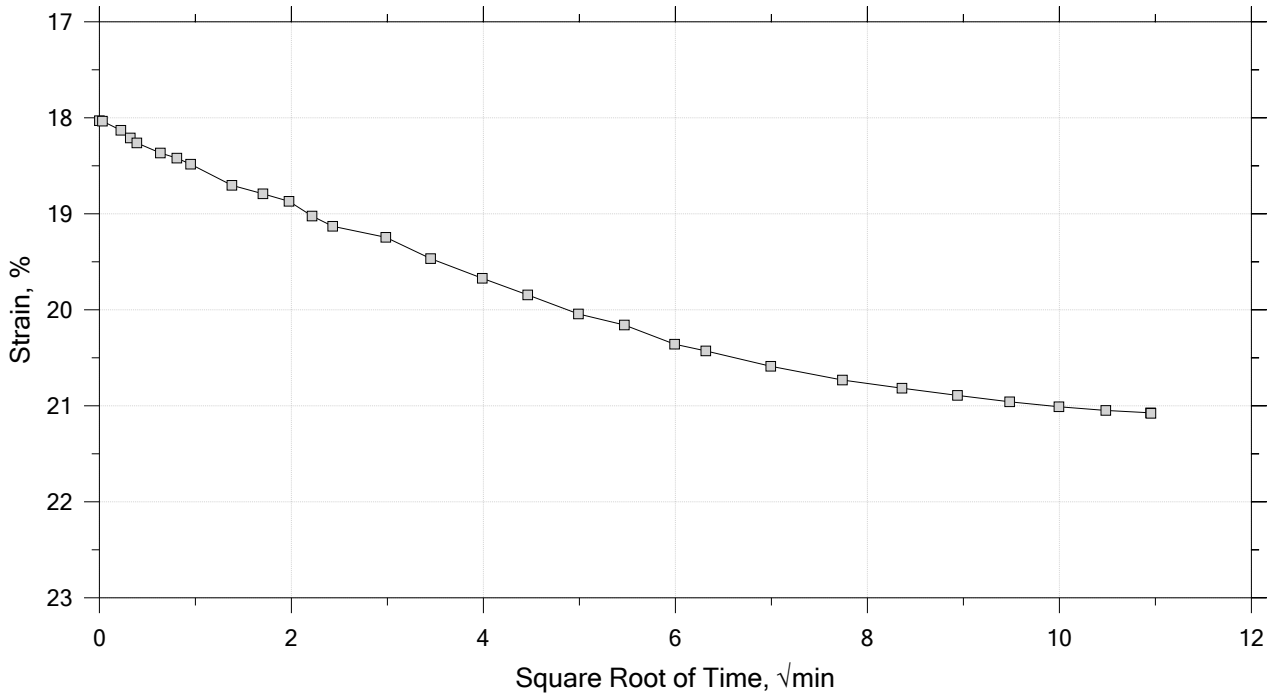


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

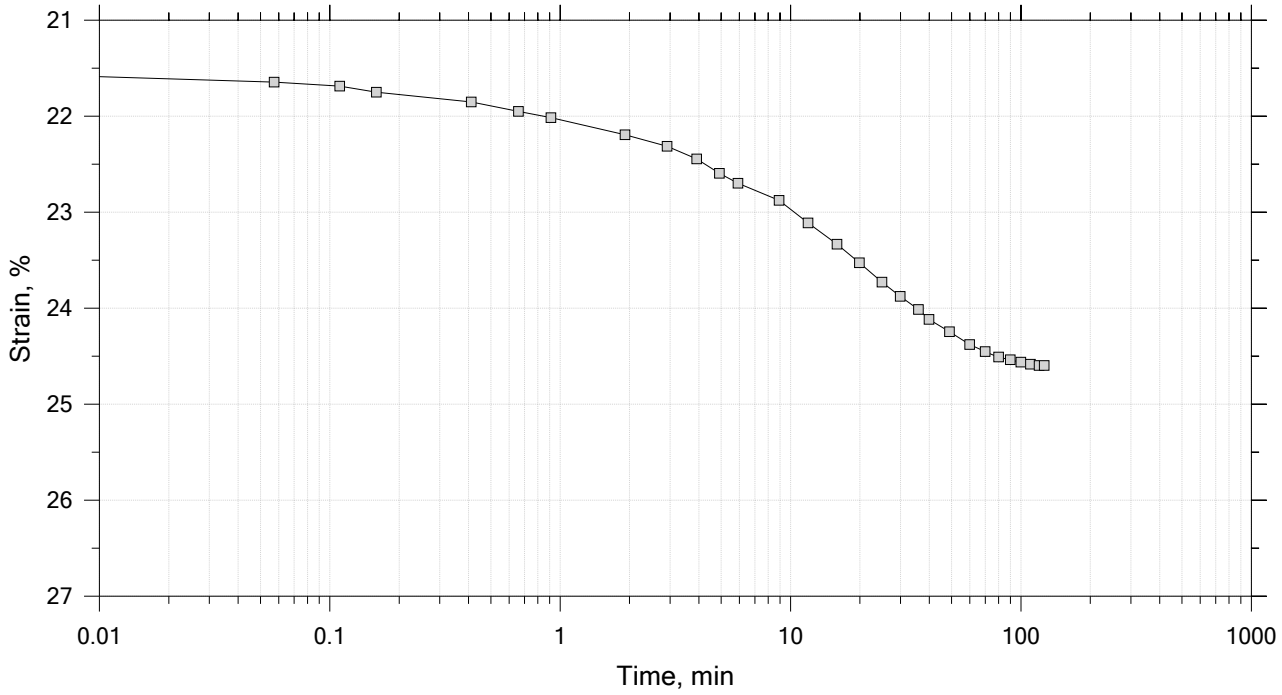


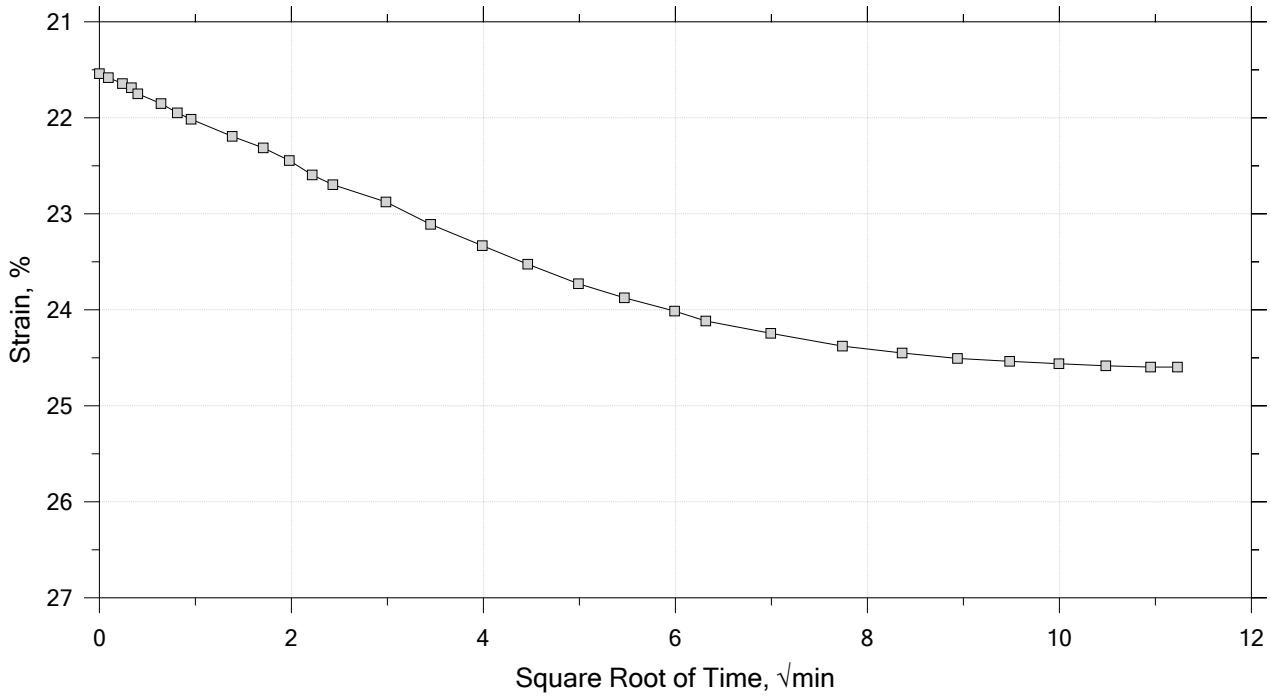


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

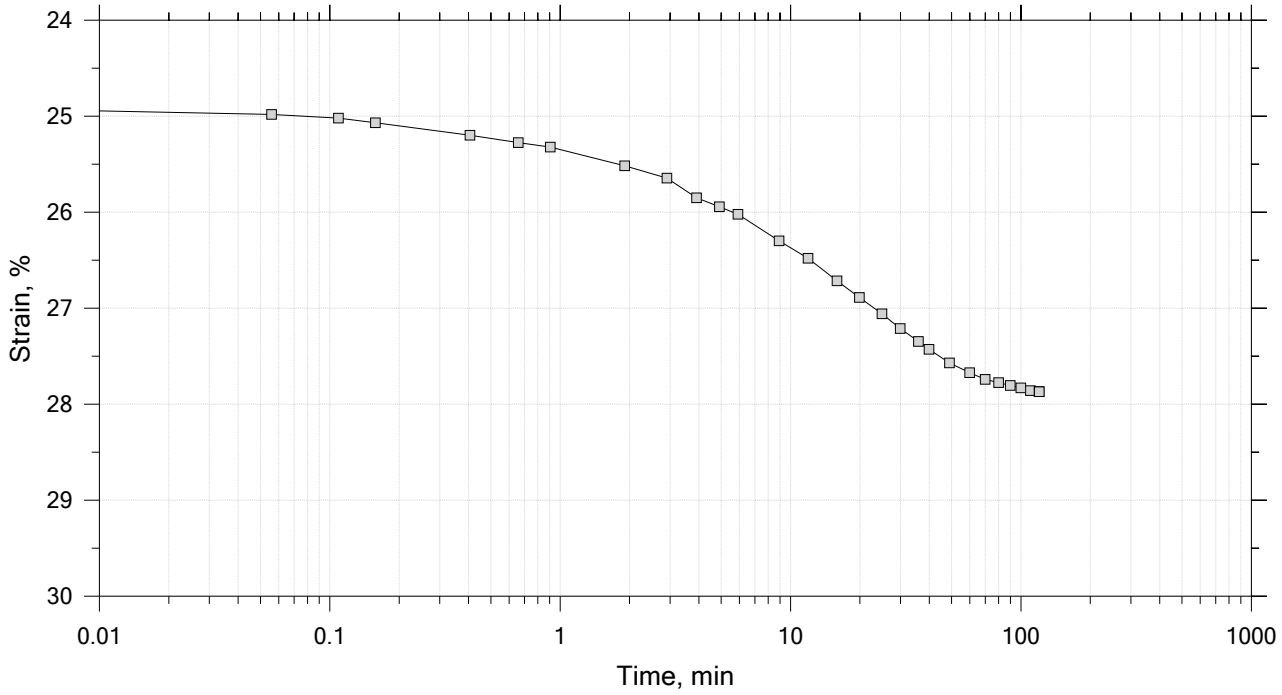


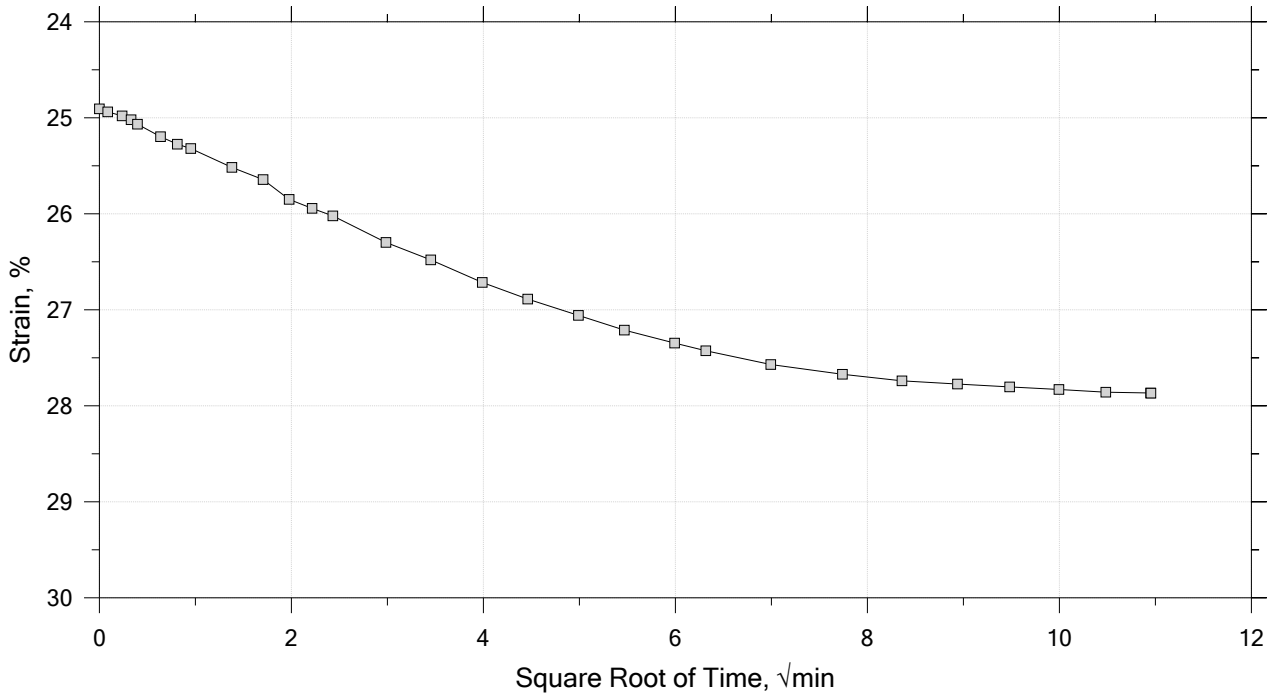


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

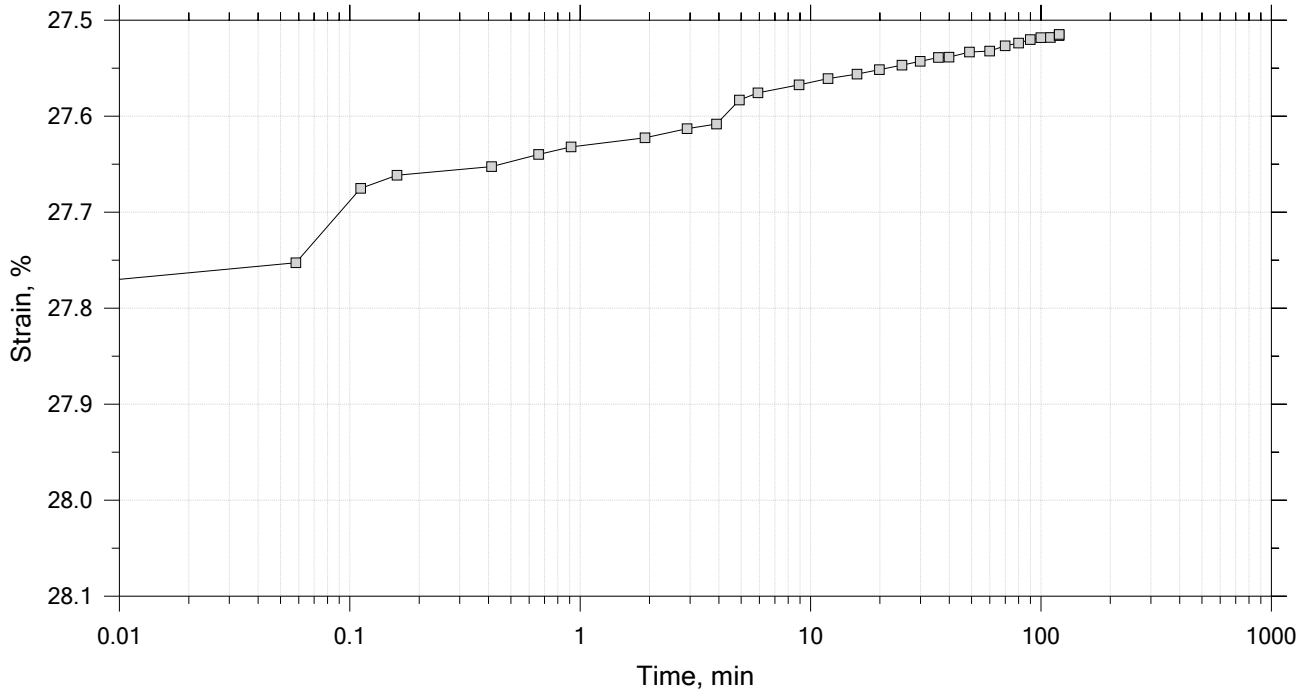


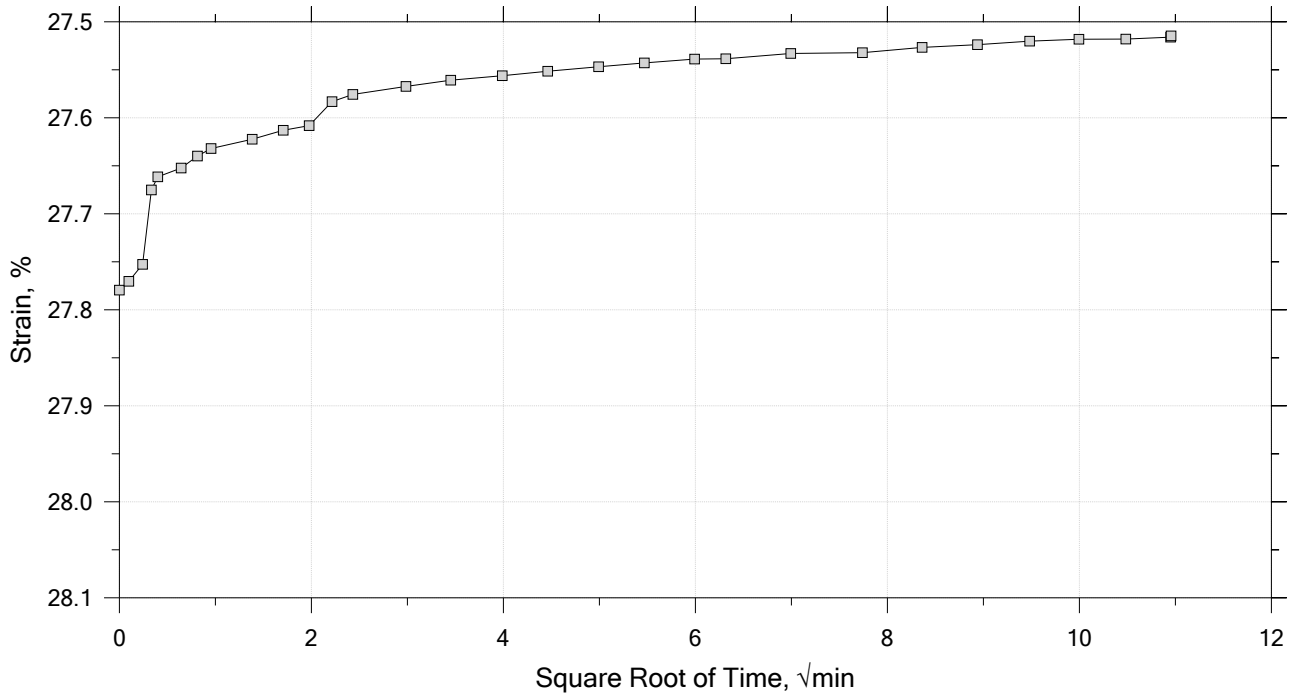


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

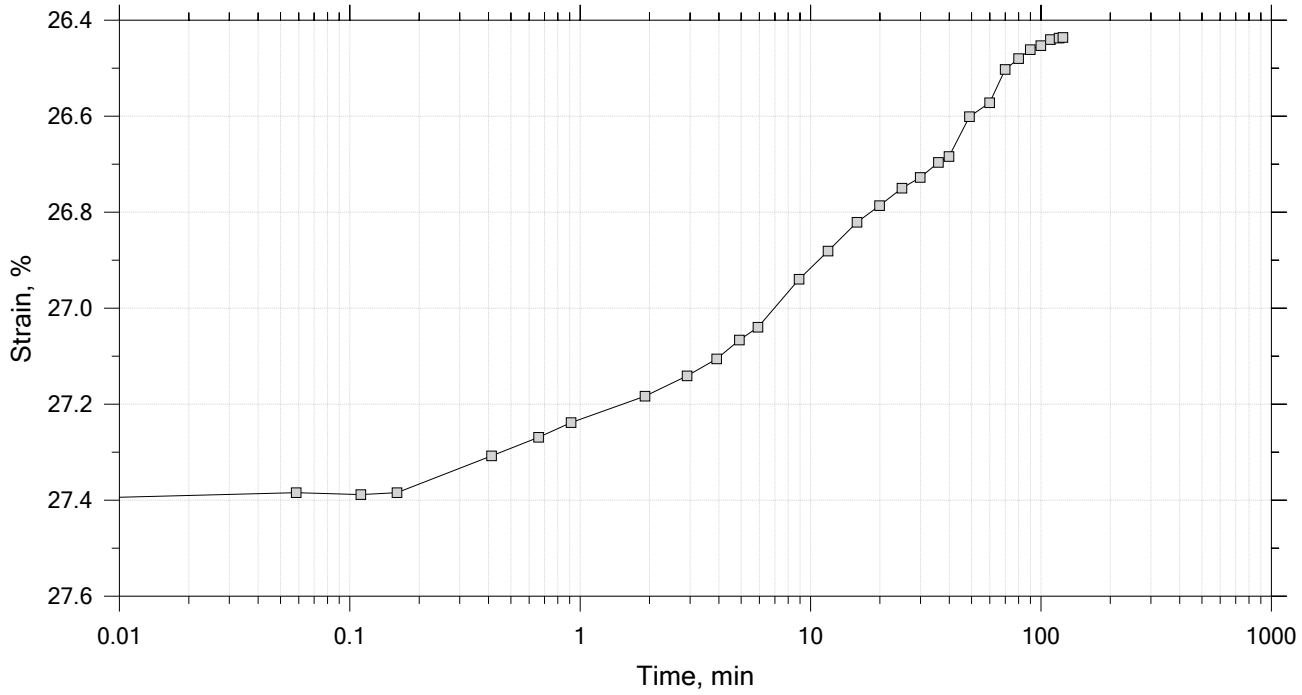


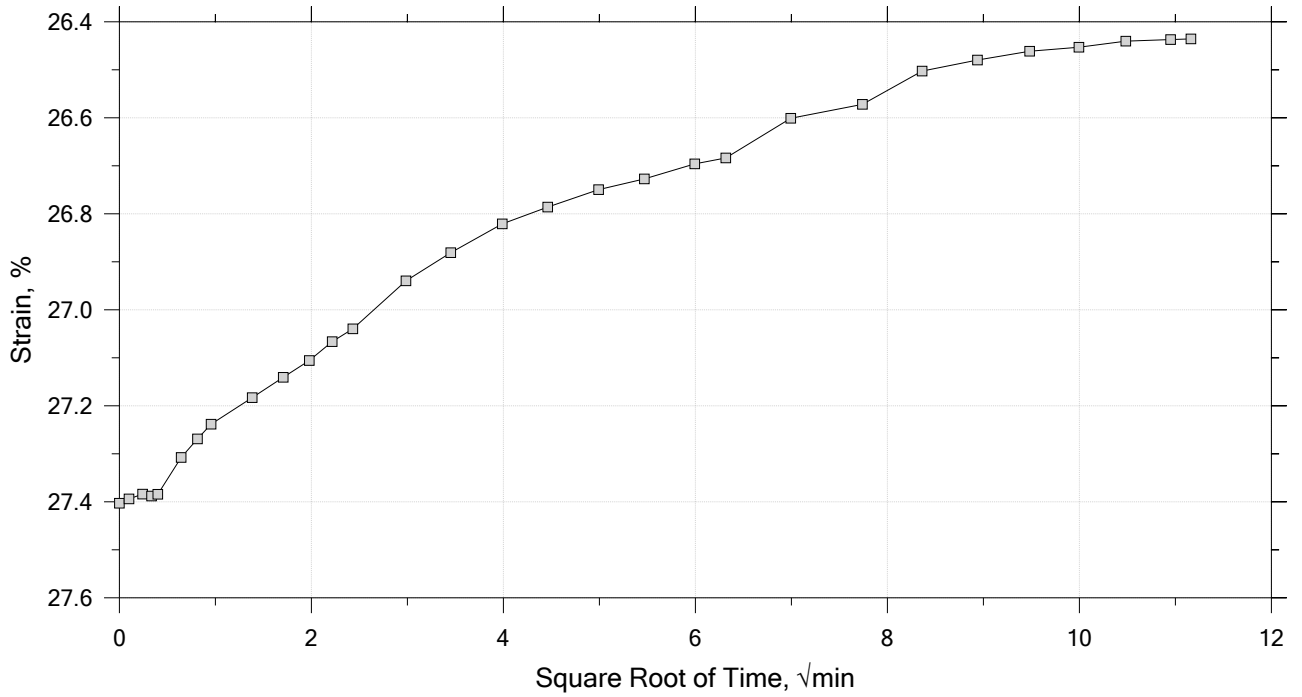


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





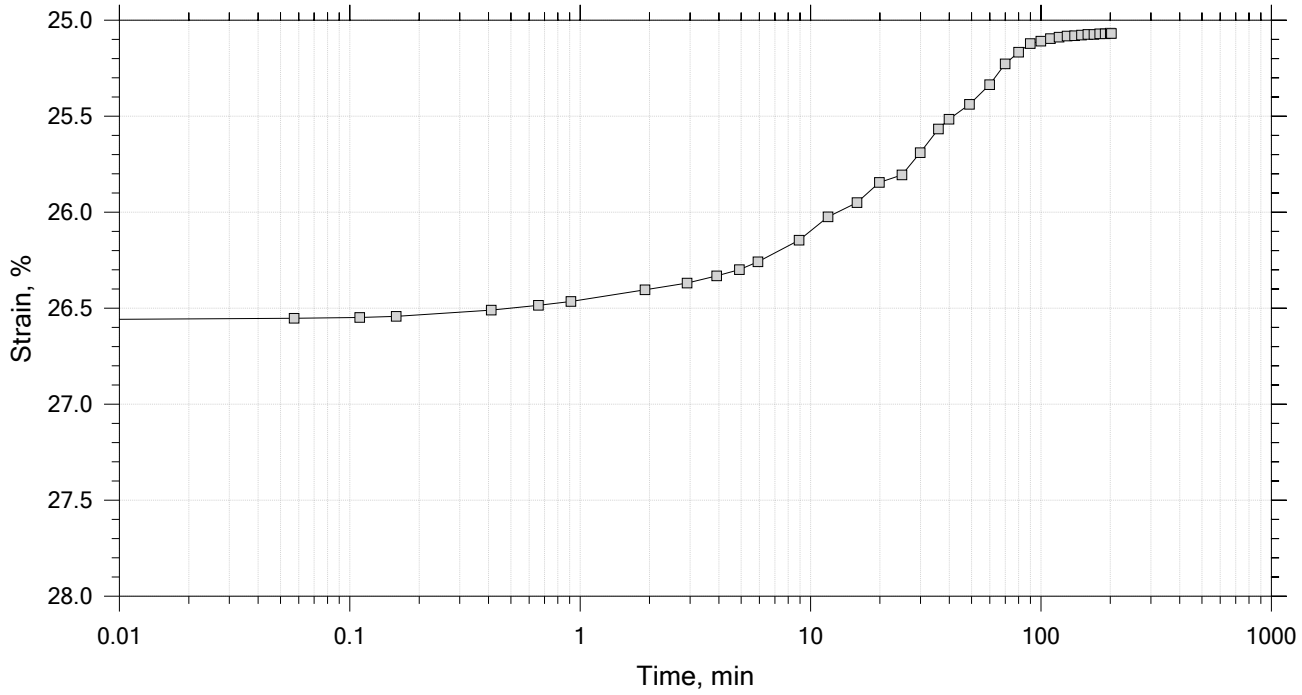
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

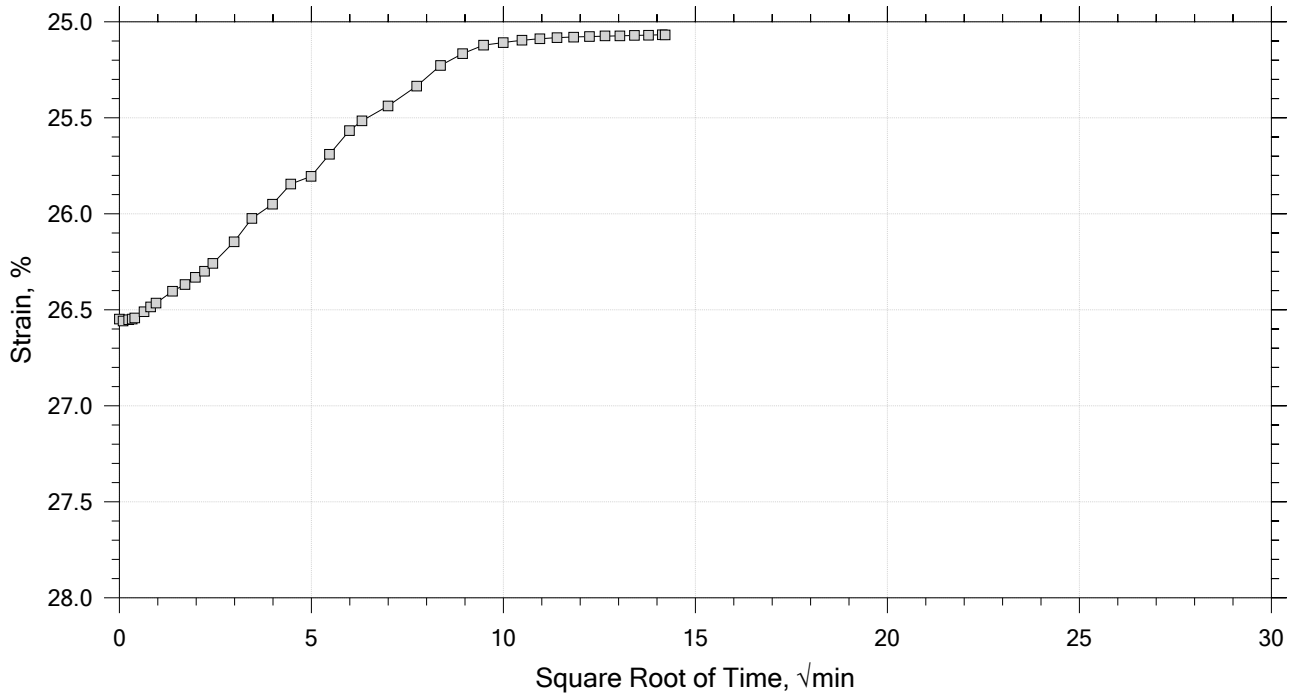
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

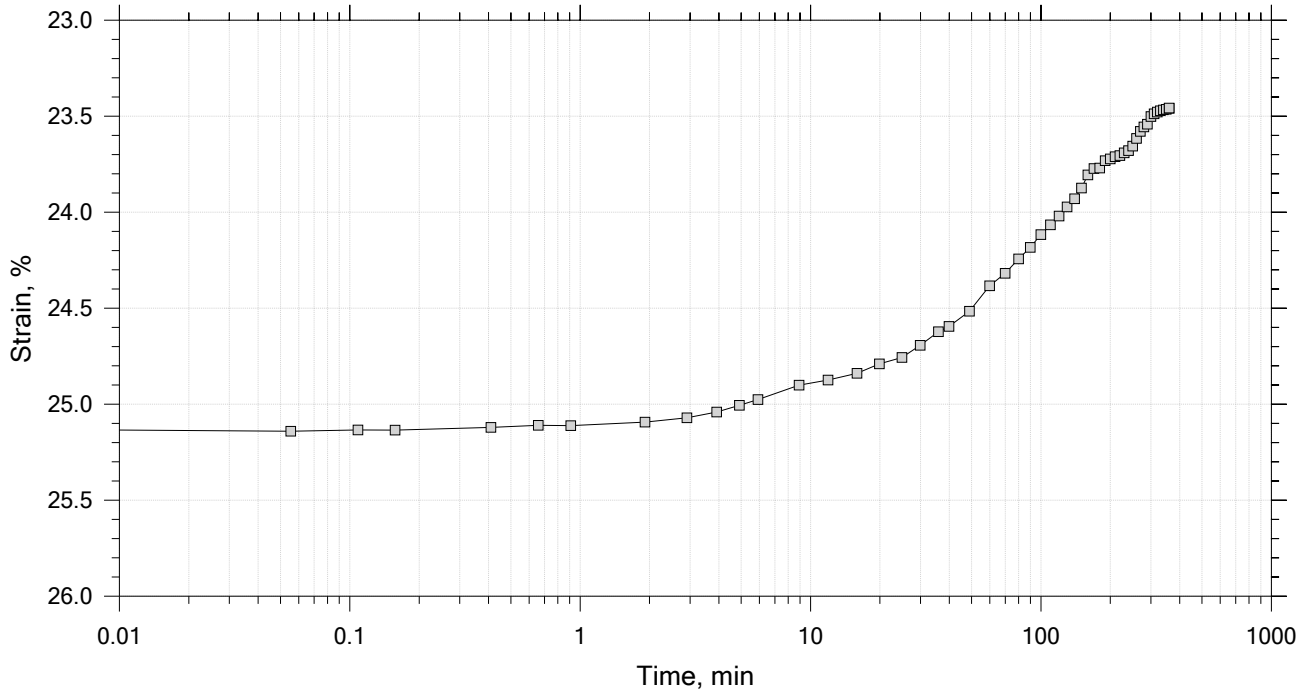


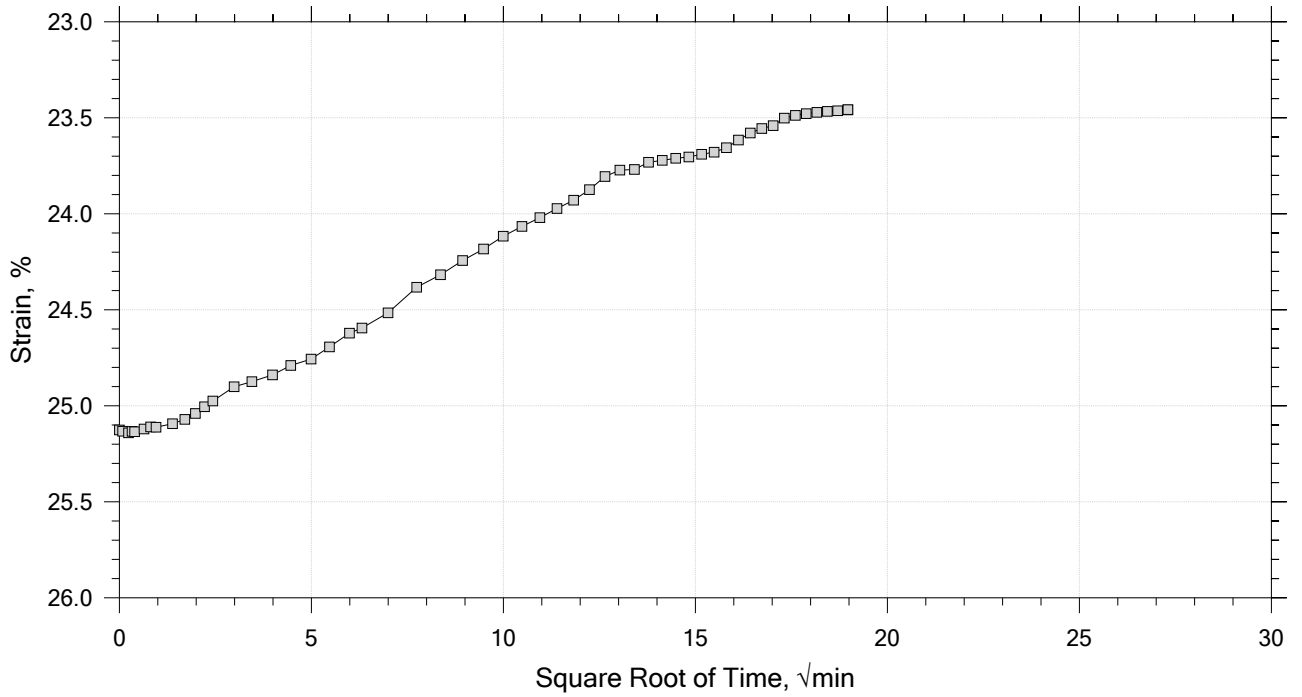


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
Test No.: IP-21-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
Test No.: IP-21-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.74	Liquid Limit: 43
Initial Height: 1.00 in	Initial Void Ratio: 0.953	Plastic Limit: 20
Final Height: 0.77 in	Final Void Ratio: 0.495	Plasticity Index: 23

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-5663	RING		E3172
Mass Container, gm	8.27	109.88	109.88	8.32
Mass Container + Wet Soil, gm	54.97	250.96	243.27	141.28
Mass Container + Dry Soil, gm	45.89	222.89	222.89	120.97
Mass Dry Soil, gm	37.62	113.01	113.01	112.65
Water Content, %	24.14	24.83	18.03	18.03
Void Ratio	---	0.95	0.49	---
Degree of Saturation, %	---	71.51	100.00	---
Dry Unit Weight, pcf	---	87.708	114.59	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
	Test No.: IP-21-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0742	-0.0002352	0.953	-0.0235	0.000	0.00e+00	-3.17e-03	-0.00e+00
2	0.125	0.001468	0.950	0.147	29.651	1.19e-04	3.35e-02	7.47e-05
3	0.250	0.02174	0.910	2.17	41.208	8.38e-05	1.62e-01	2.54e-04
4	0.500	0.05742	0.841	5.74	8.976	3.63e-04	1.43e-01	9.71e-04
5	1.00	0.1018	0.754	10.2	16.743	1.79e-04	8.87e-02	2.97e-04
6	2.00	0.1372	0.685	13.7	86.638	3.16e-05	3.54e-02	2.10e-05
7	4.00	0.1739	0.613	17.4	62.603	4.02e-05	1.84e-02	1.38e-05
8	8.00	0.2108	0.541	21.1	56.157	4.10e-05	9.22e-03	7.09e-06
9	16.0	0.2460	0.472	24.6	49.167	4.28e-05	4.40e-03	3.52e-06
10	32.0	0.2787	0.408	27.9	42.020	4.58e-05	2.05e-03	1.75e-06
11	16.0	0.2751	0.415	27.5	8.665	2.13e-04	2.22e-04	8.85e-07
12	4.00	0.2644	0.436	26.4	51.259	3.68e-05	8.99e-04	6.19e-07
13	1.00	0.2507	0.463	25.1	113.643	1.71e-05	4.56e-03	1.46e-06
14	0.250	0.2346	0.495	23.5	357.724	5.67e-06	2.15e-02	2.28e-06

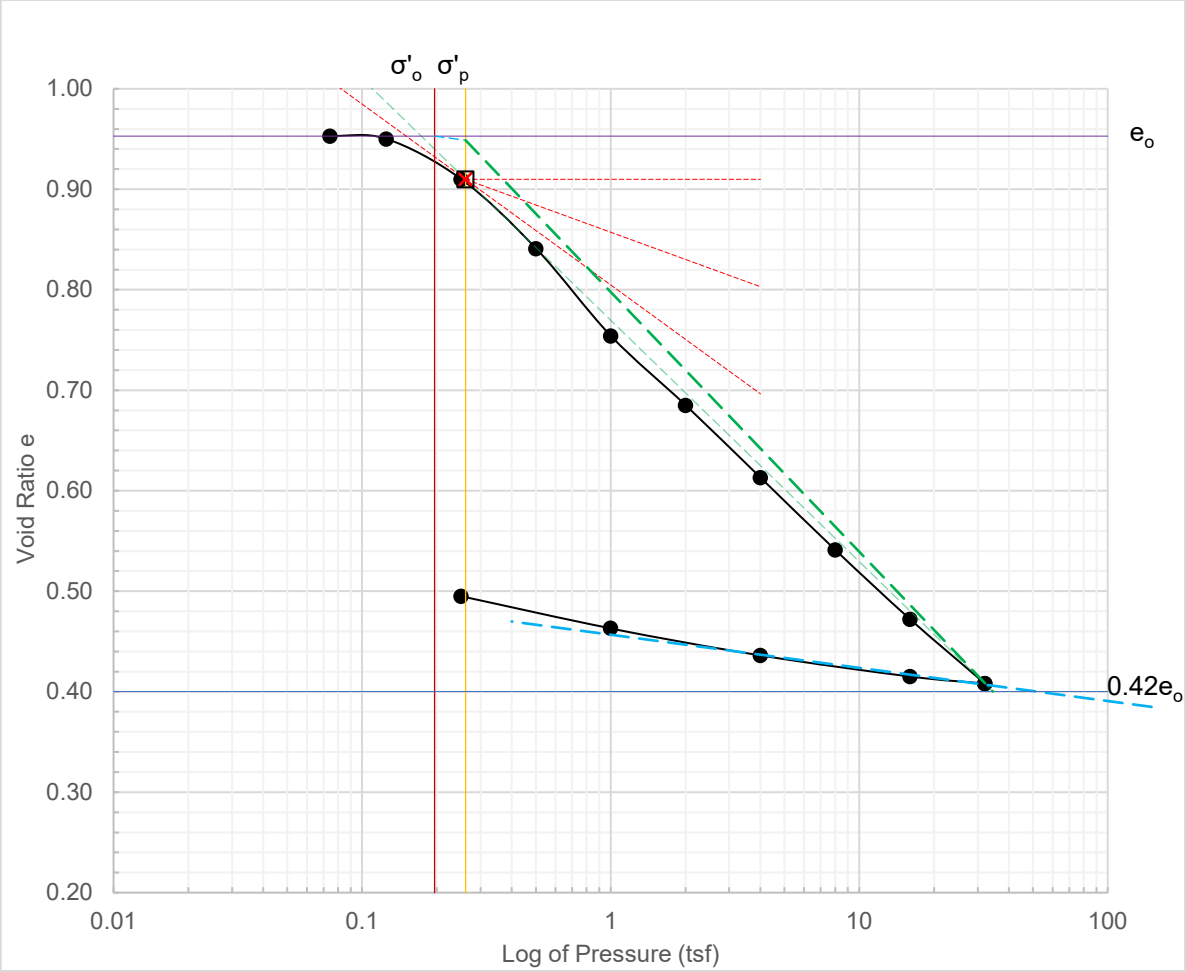
GeoTesting EXPRESS

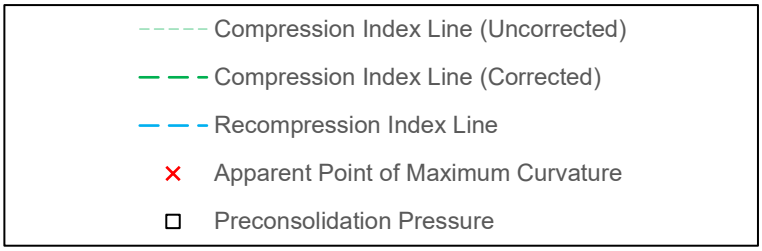
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.2-3.3
Test No.: IP-21-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-E, Swell Pressure = 0.0742 tsf		
Displacement at End of Increment		

Boring: B-4.17

Depth: 3.2'-3.3'

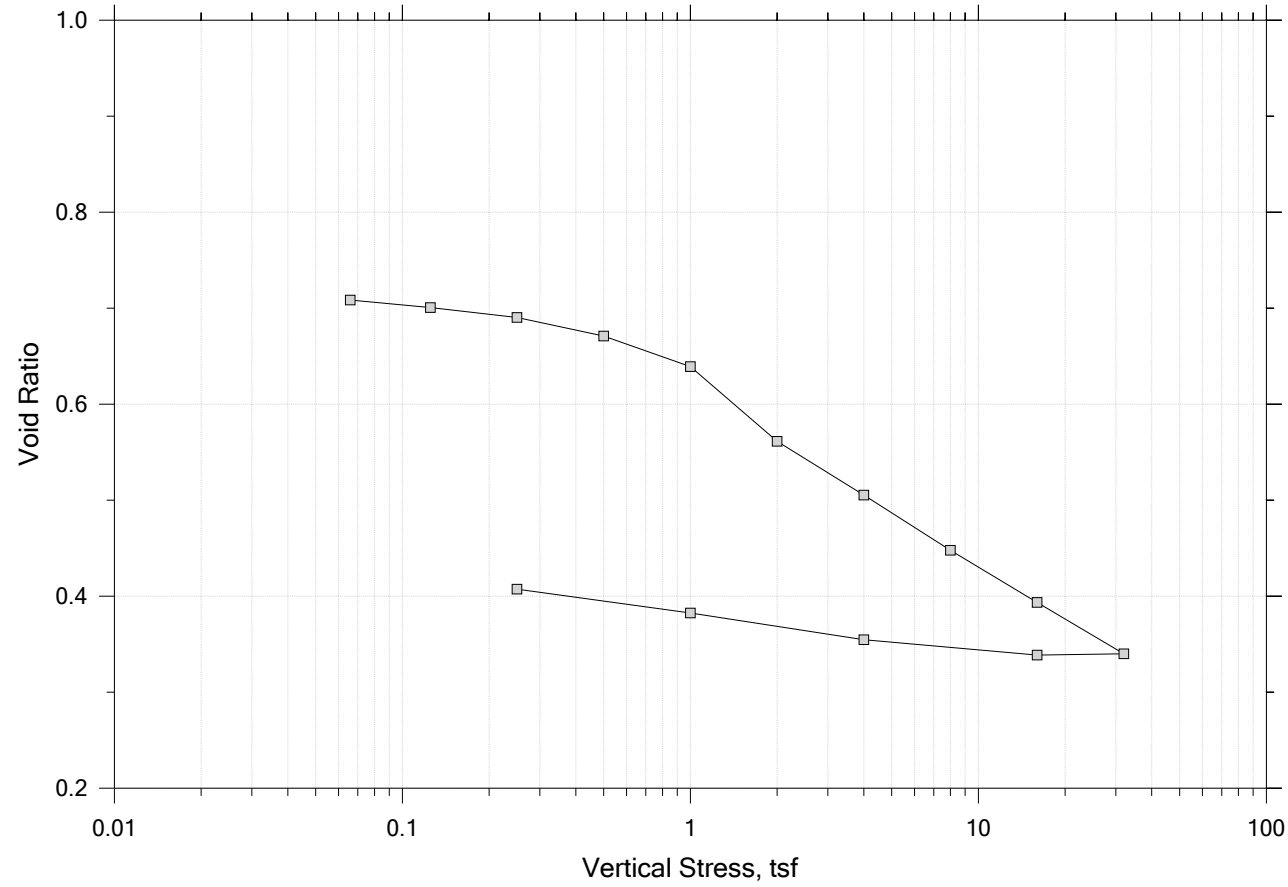
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.20
Preconsolidation Pressure, σ'_p (tsf) = 0.26
Compression Index, C_c = 0.26
Recompression Index, C_r = 0.033

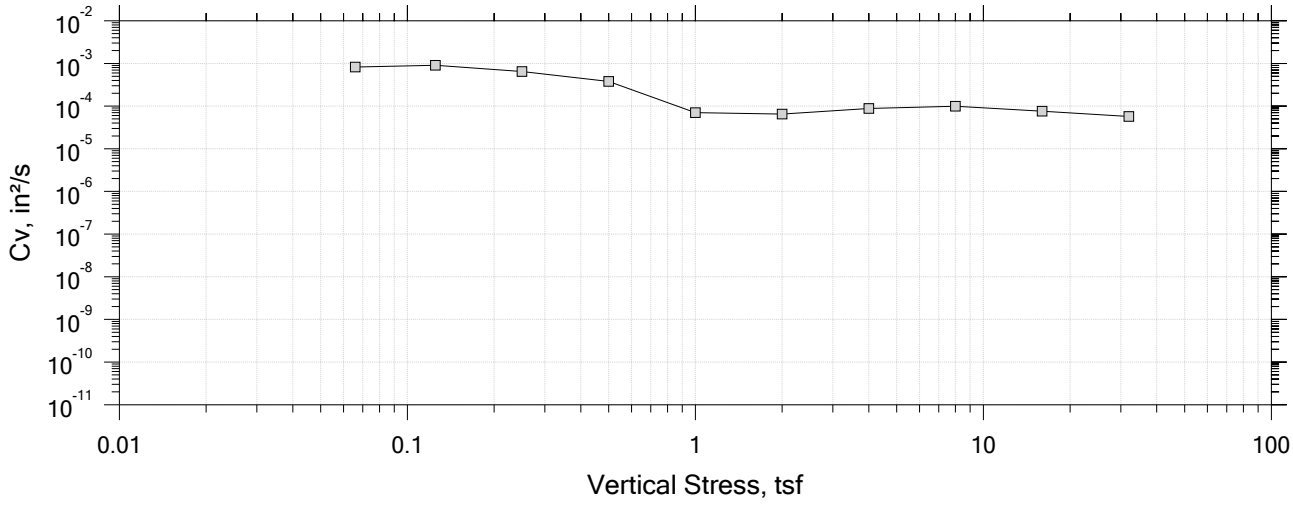




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

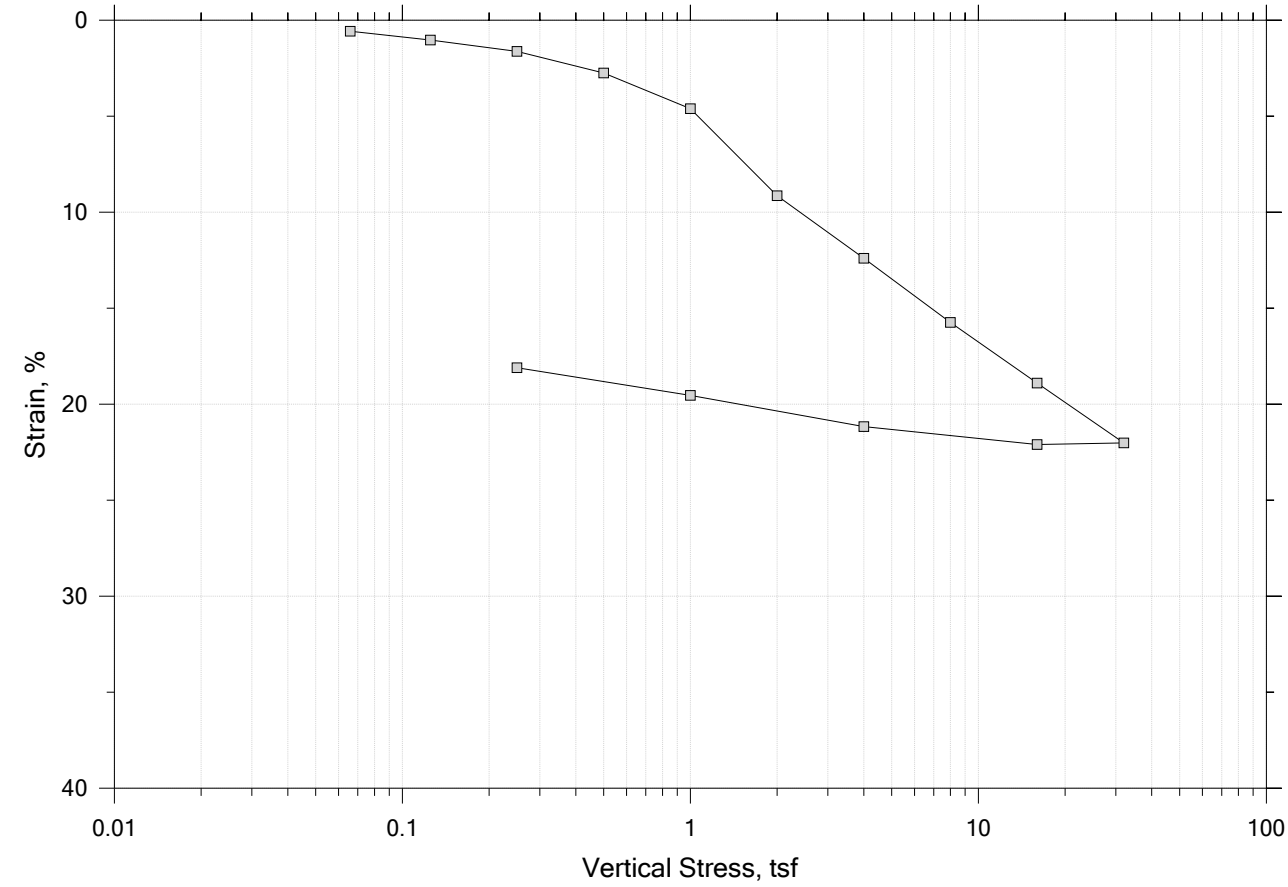


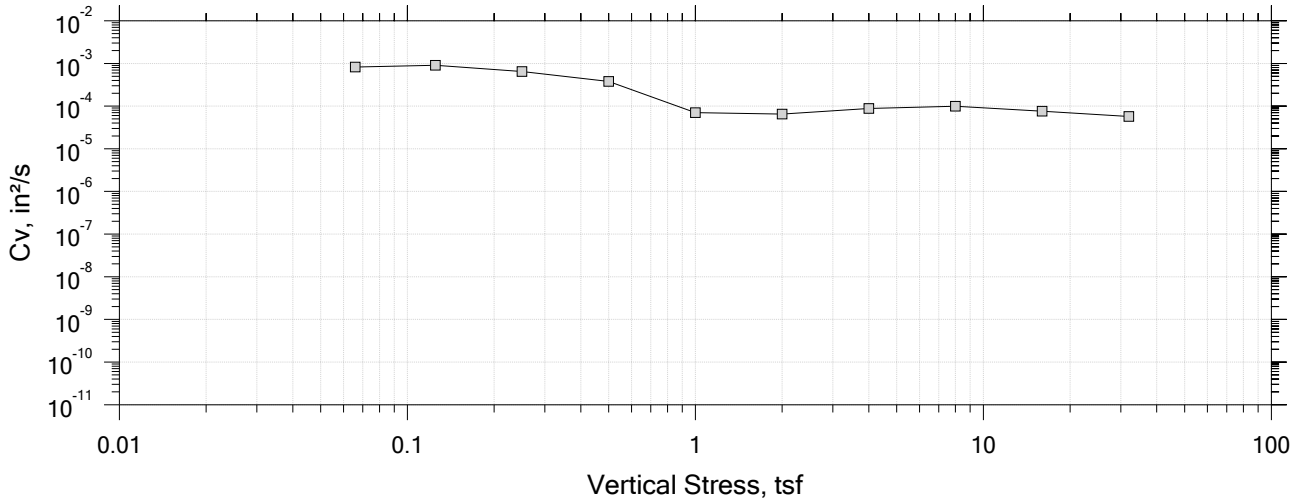


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

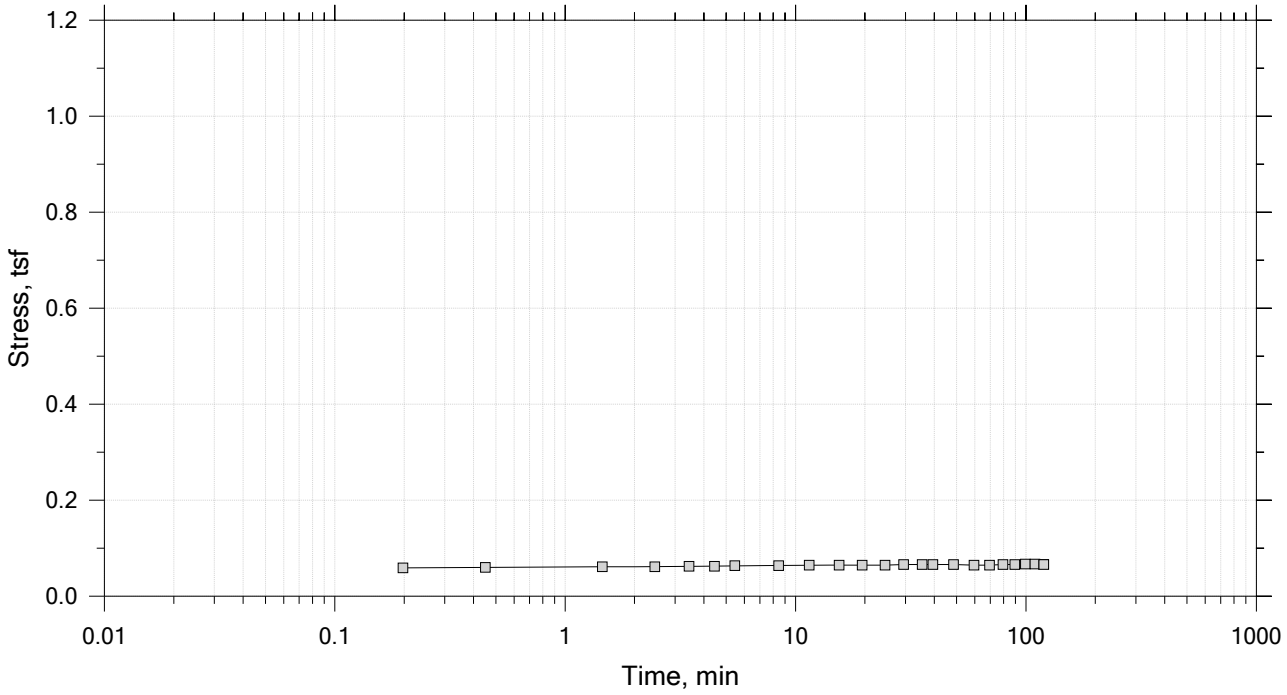


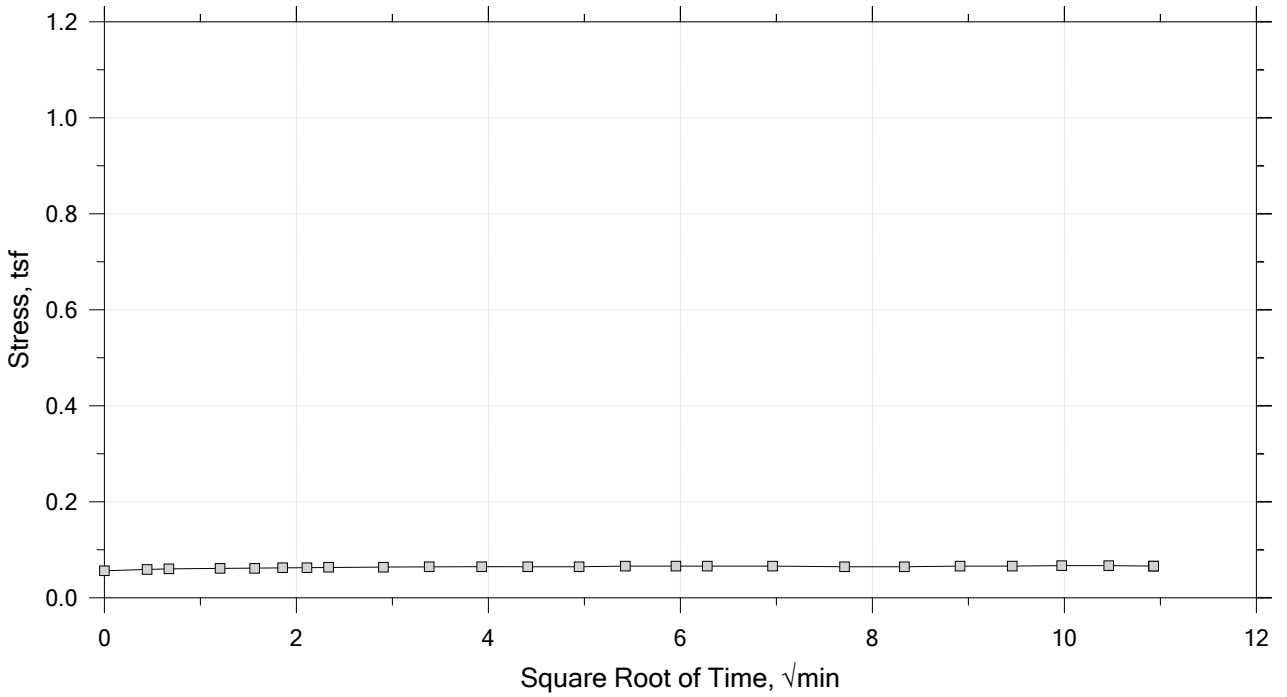


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0659 tsf

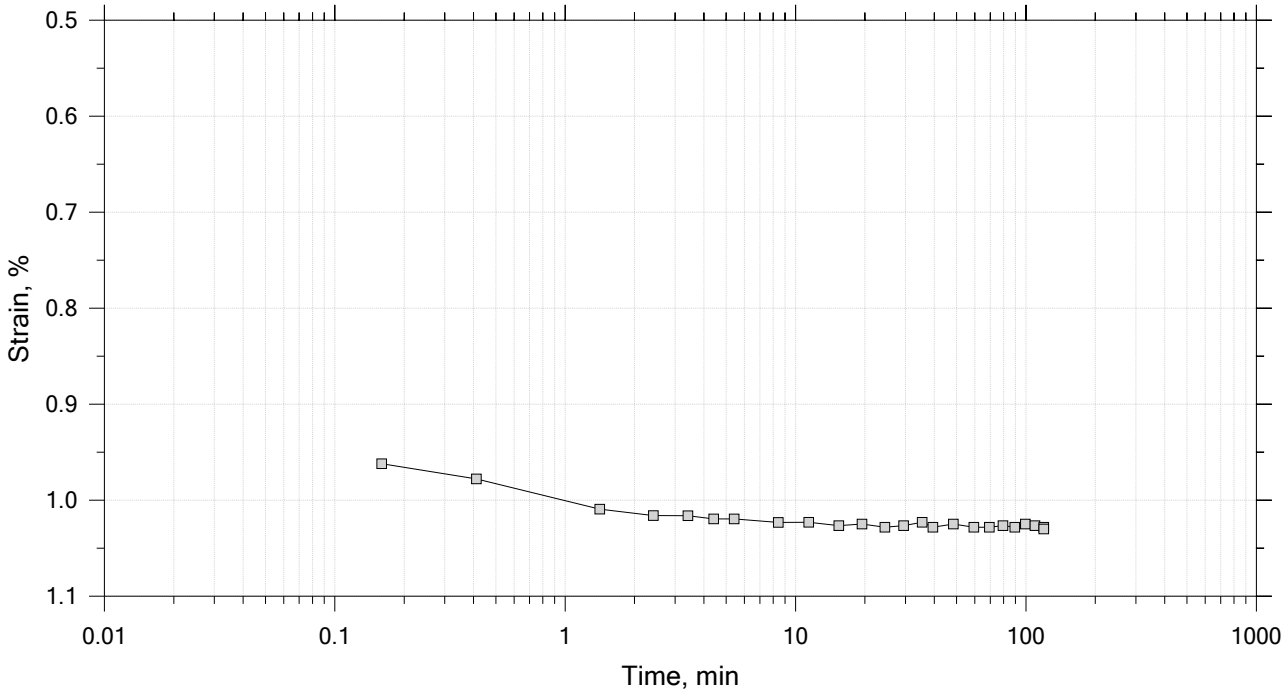


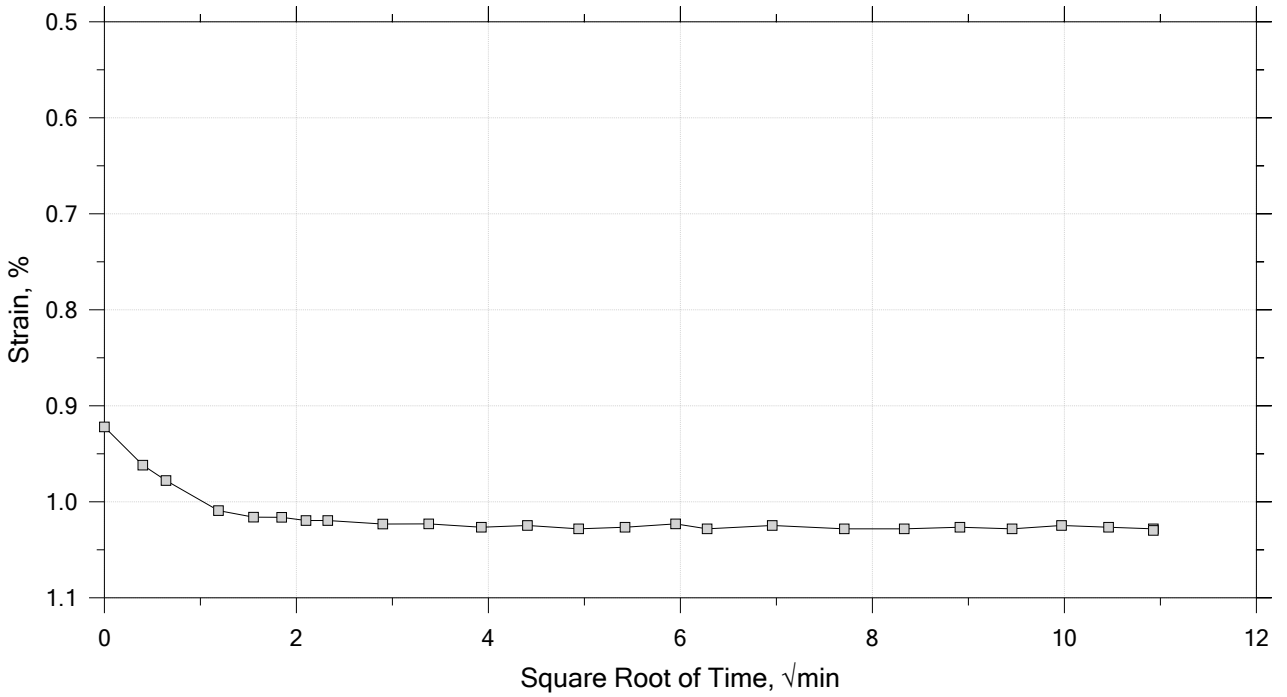


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

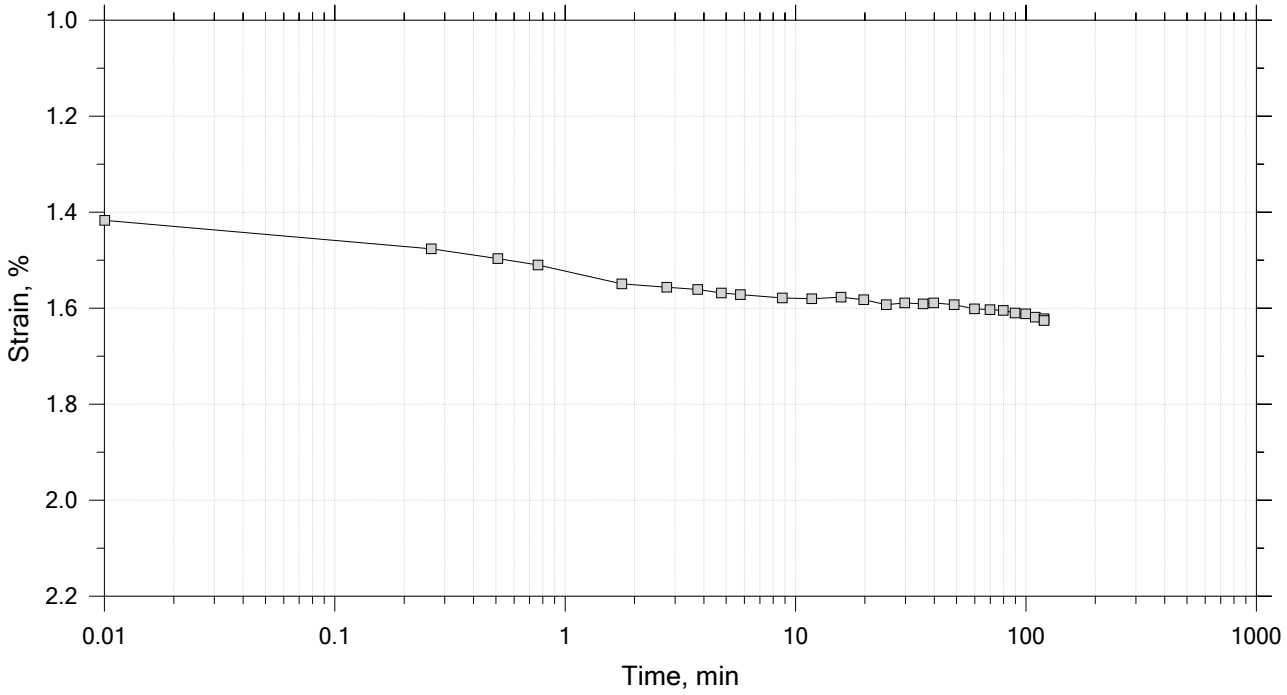


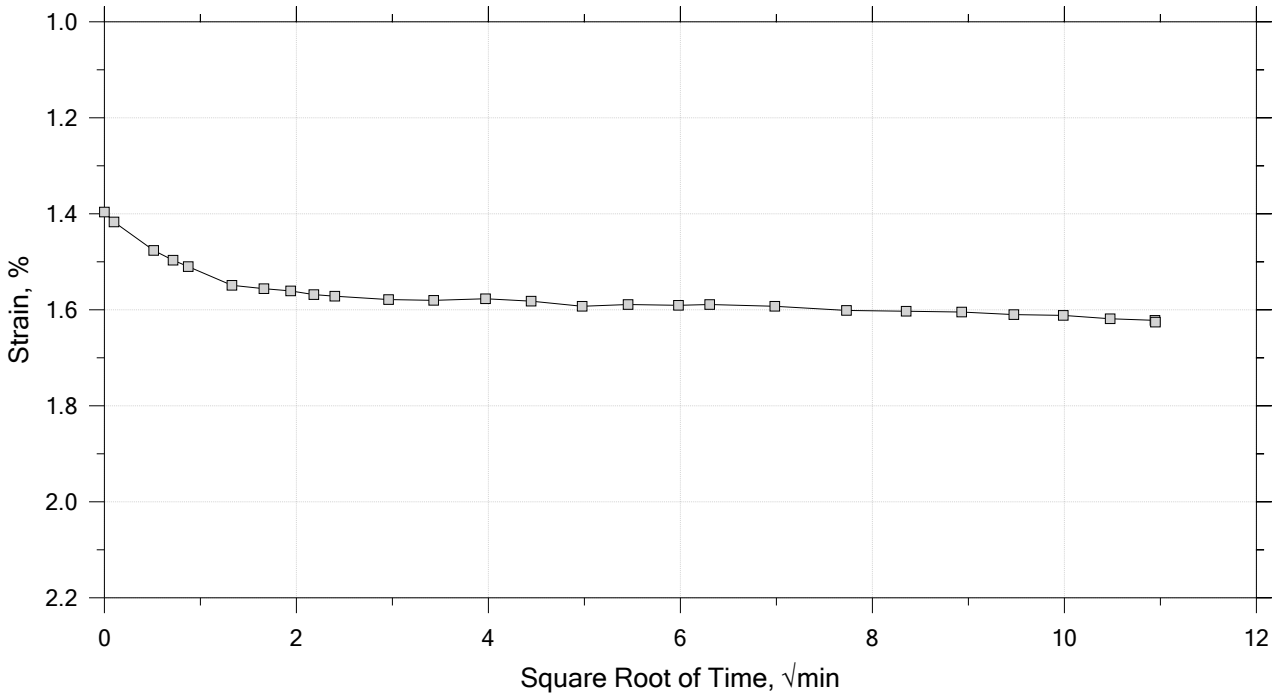


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

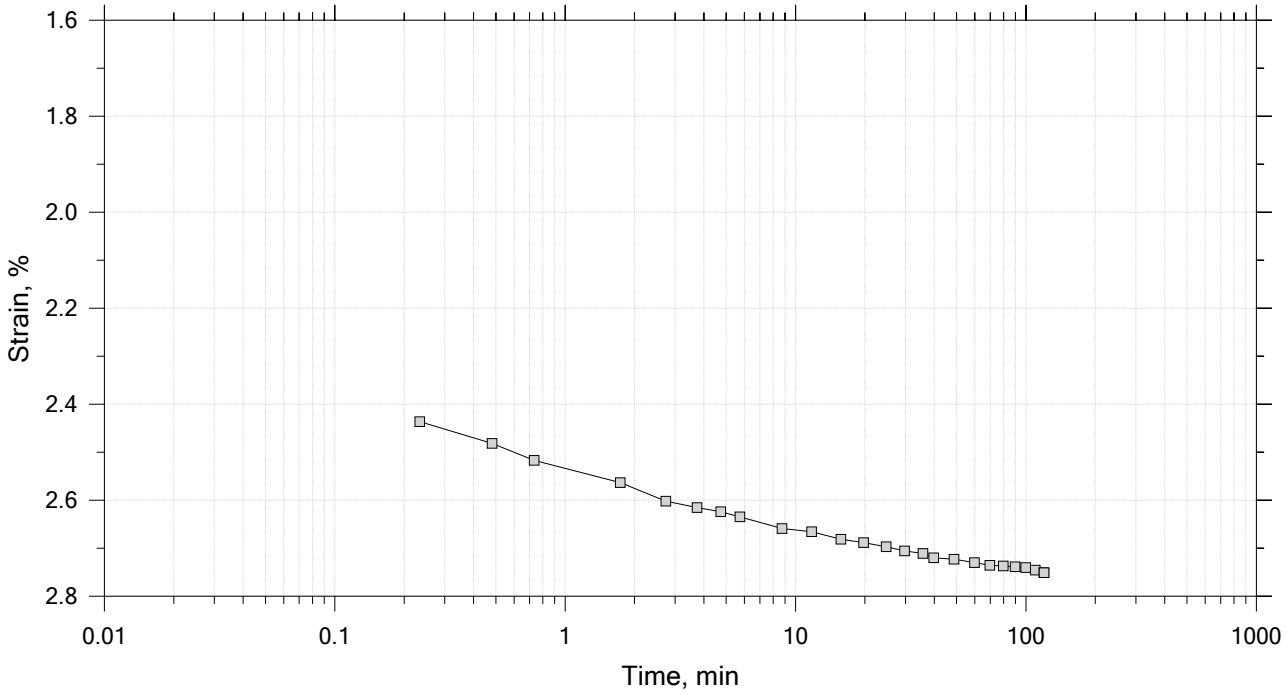


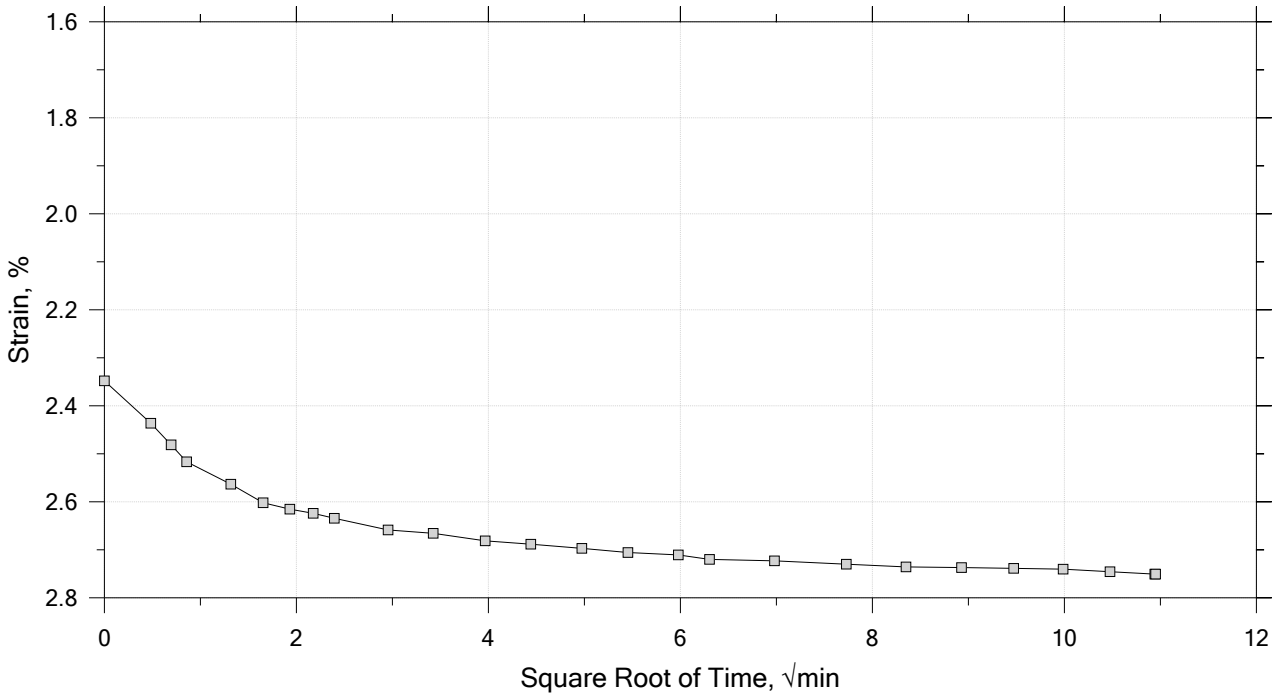


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





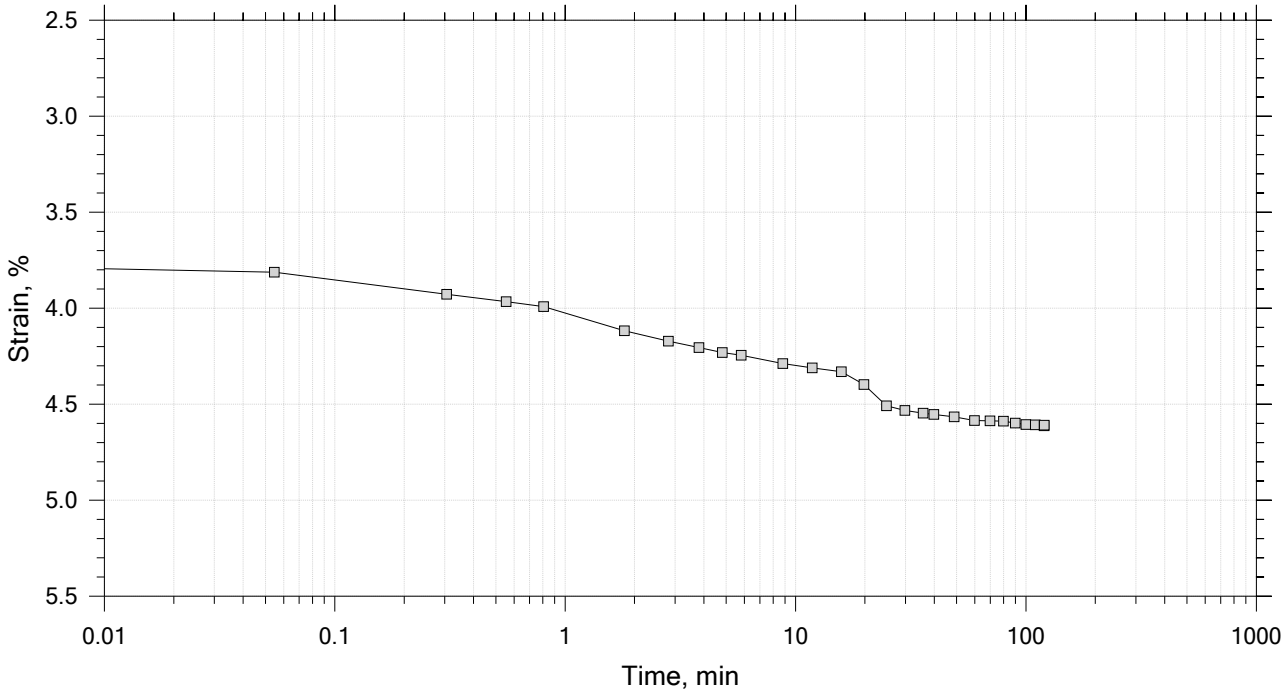
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

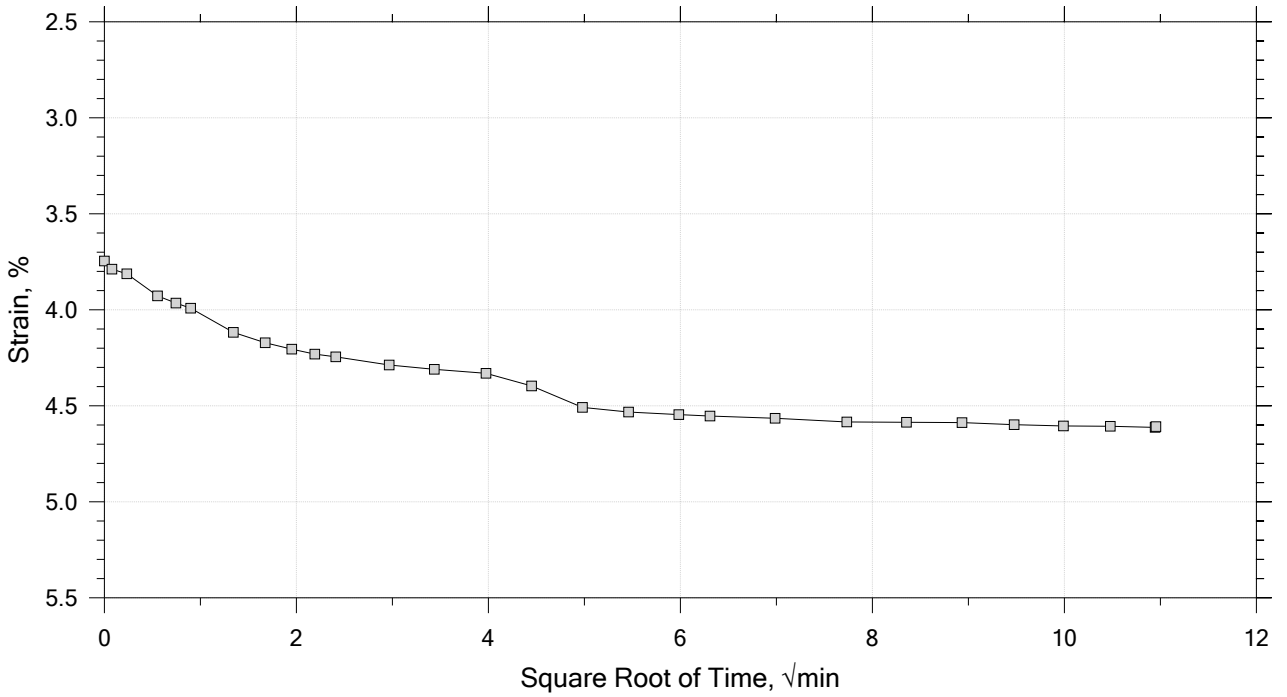
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





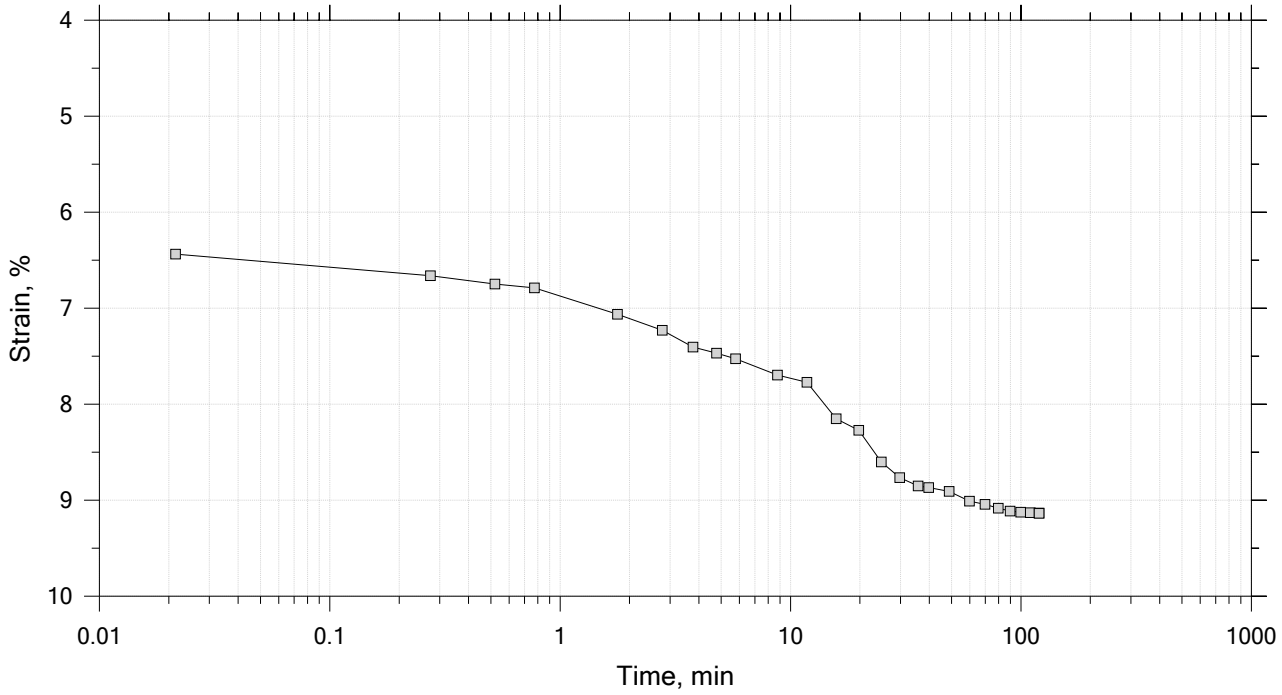
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

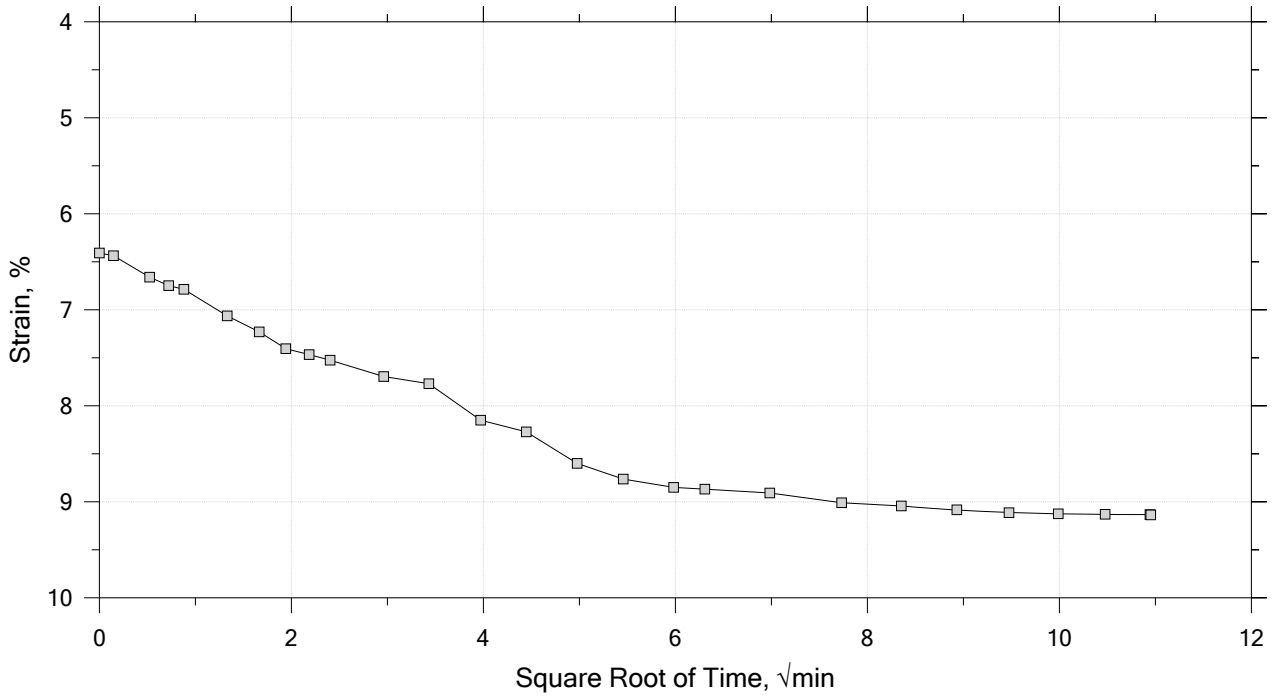
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





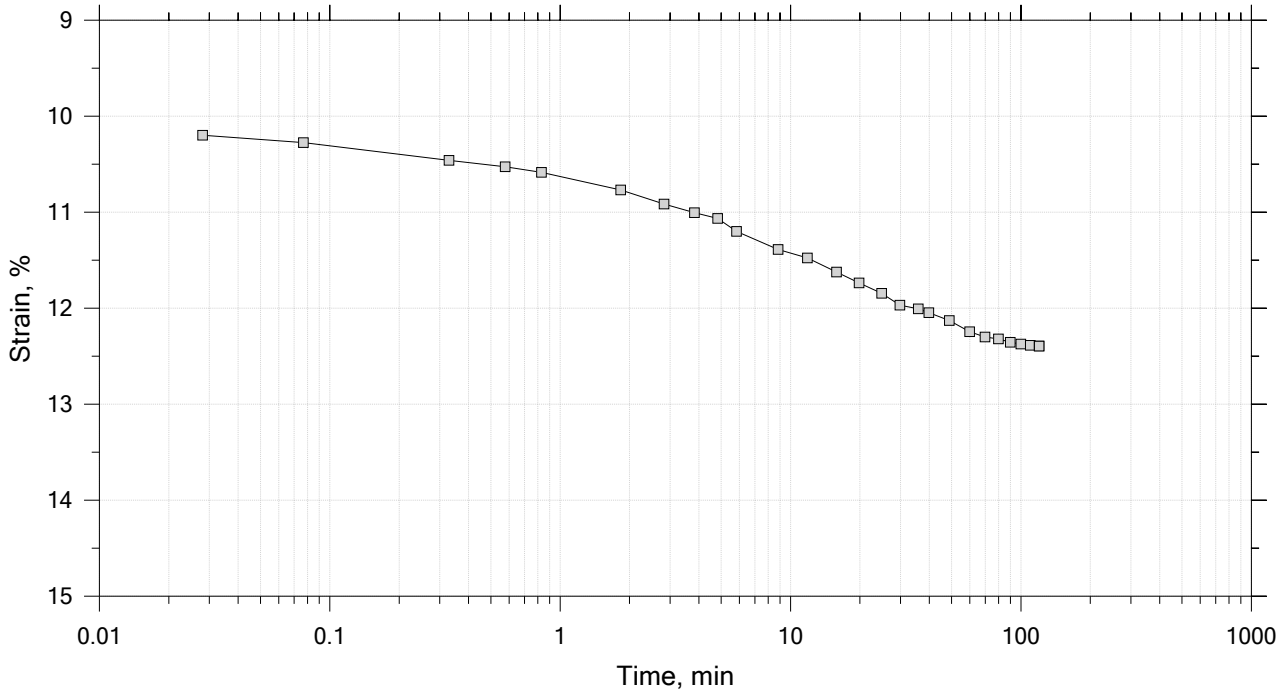
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

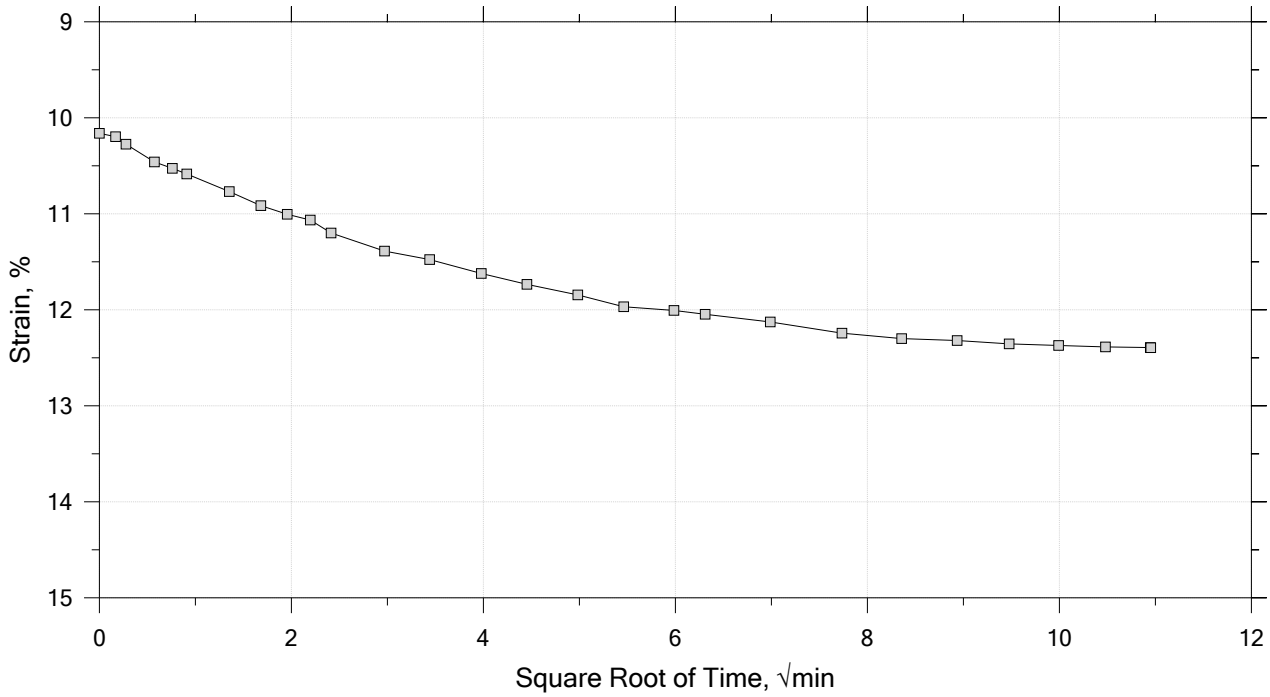
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





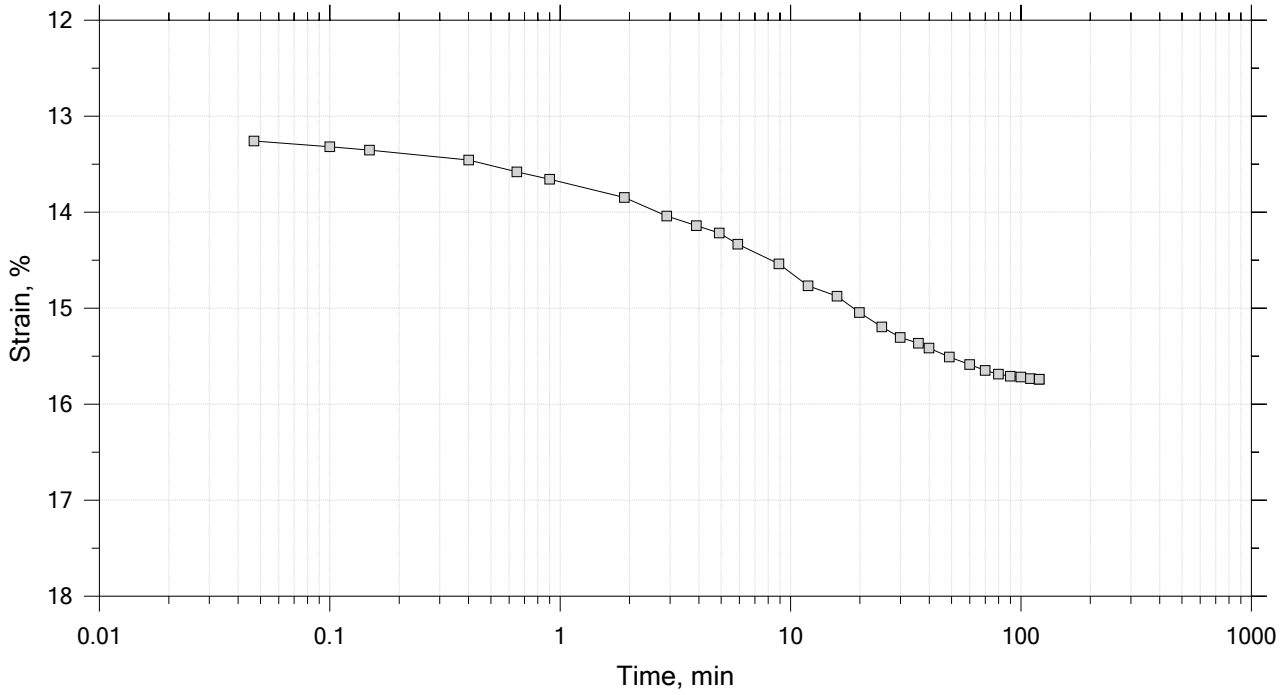
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

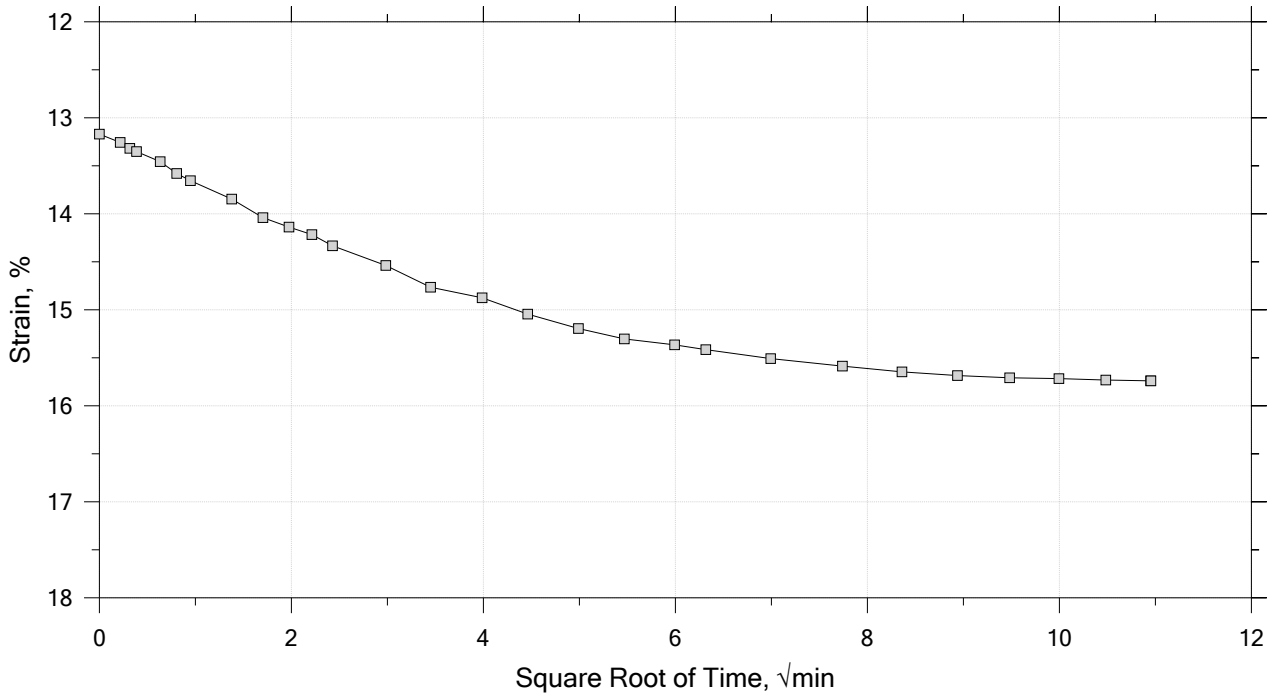
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf

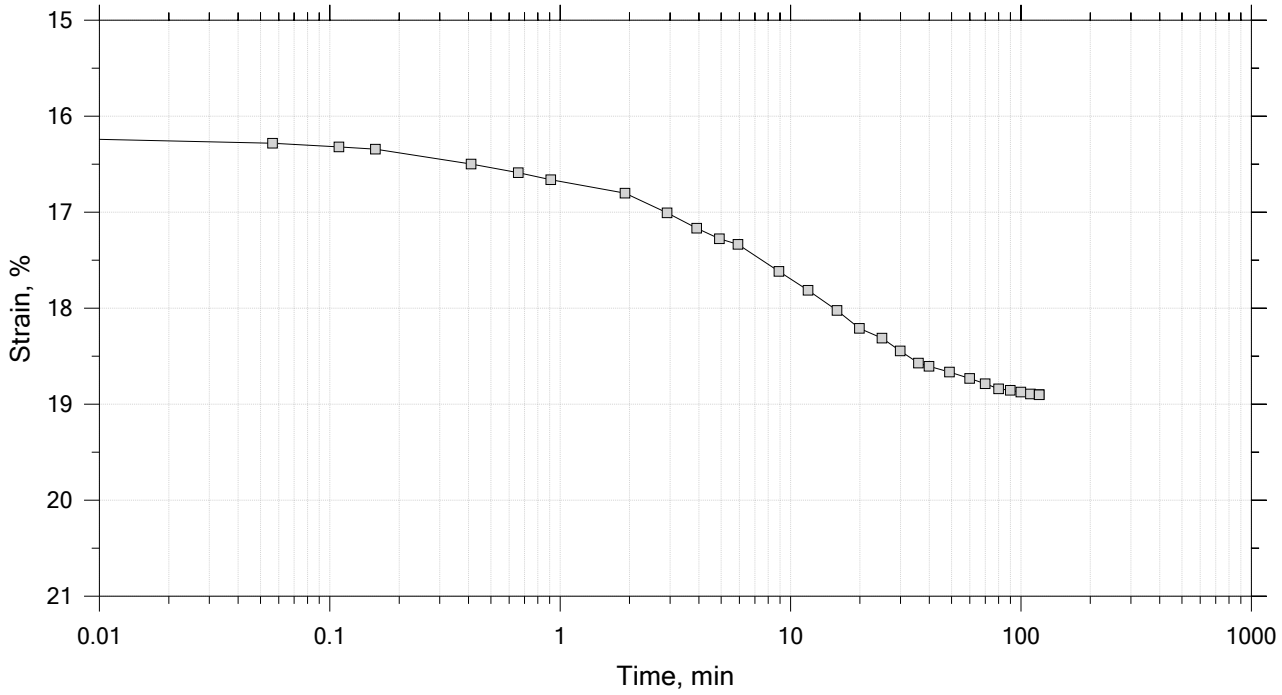


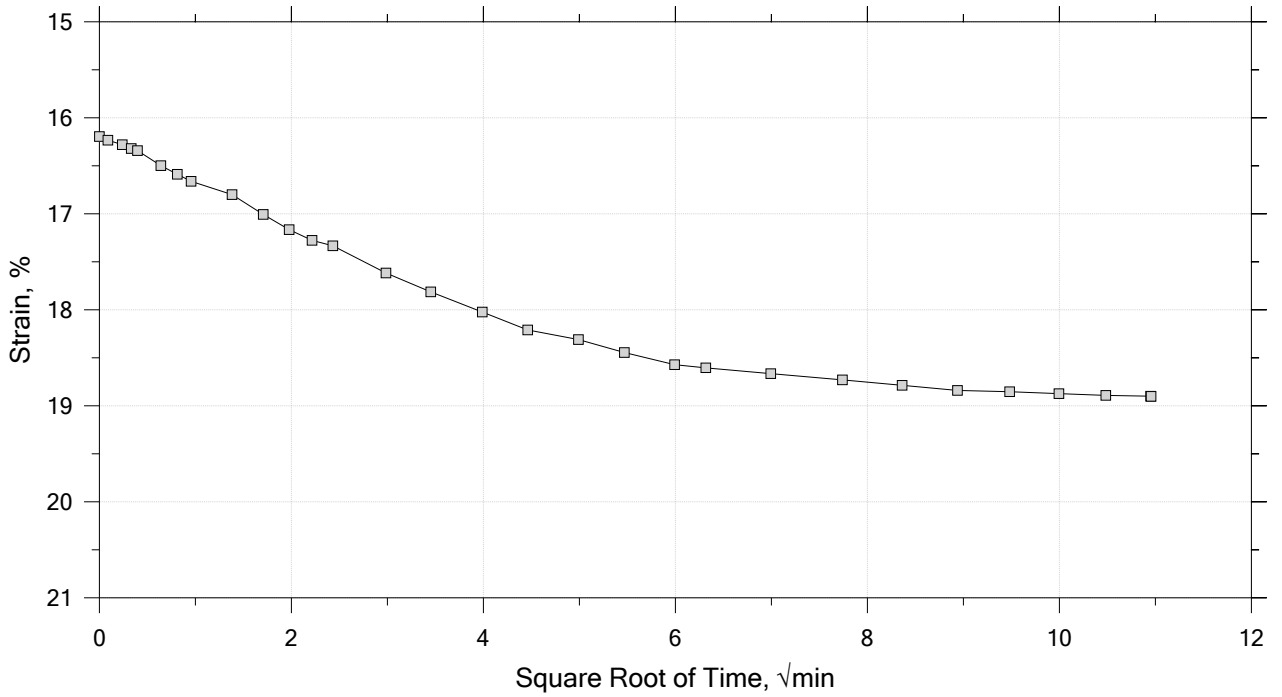


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

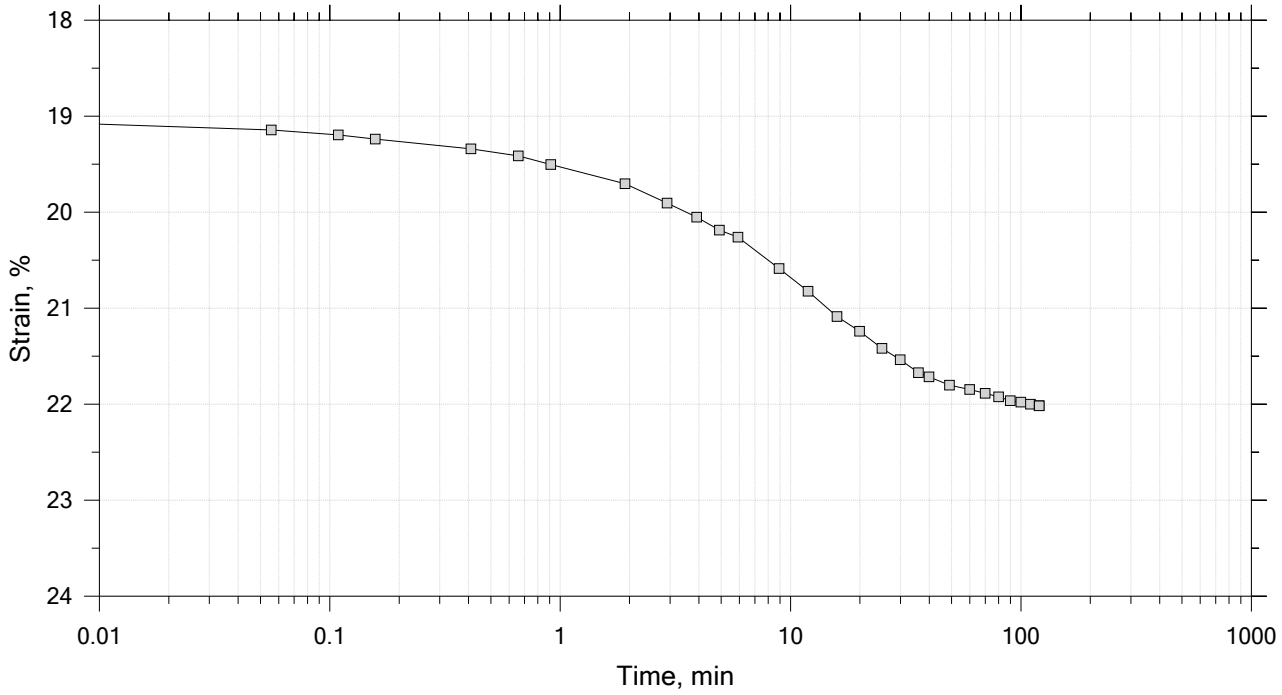


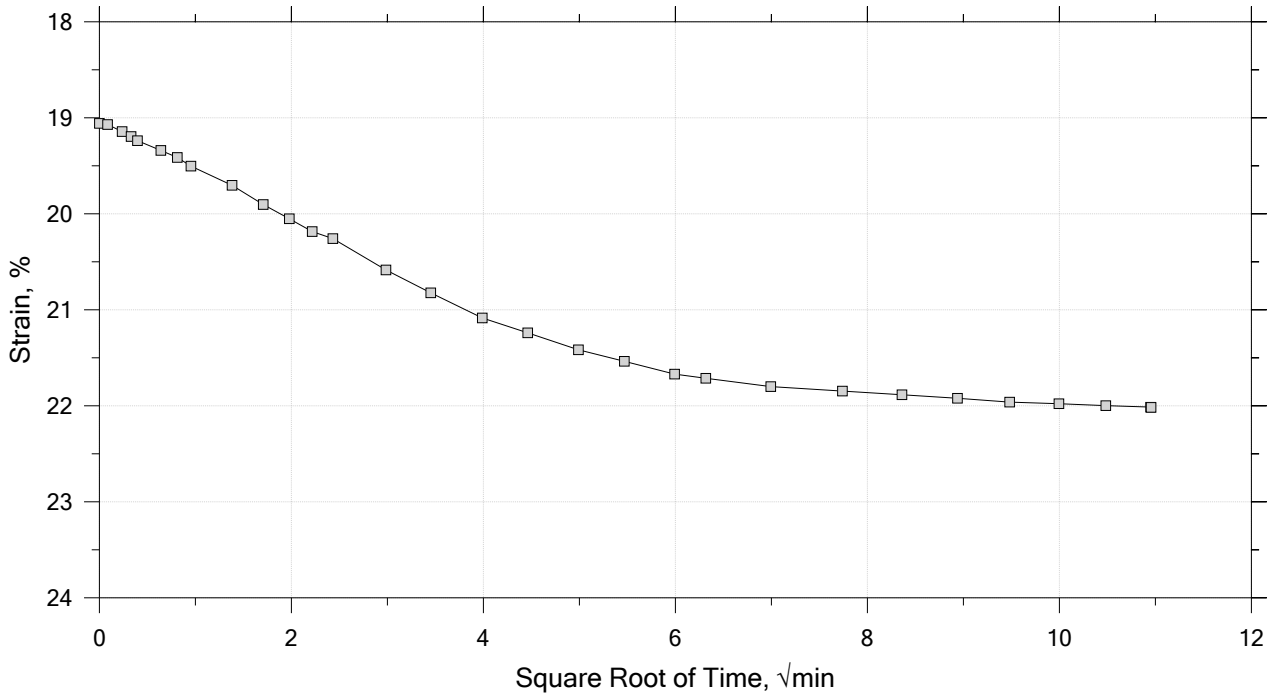


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

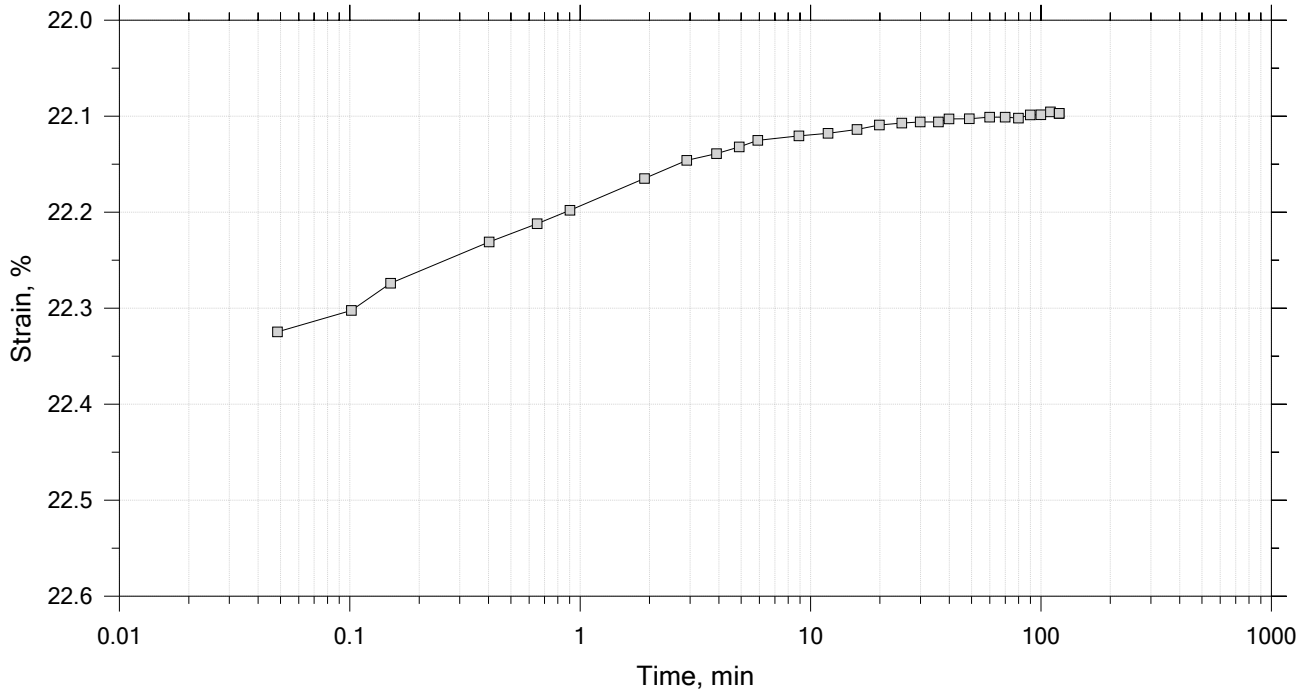


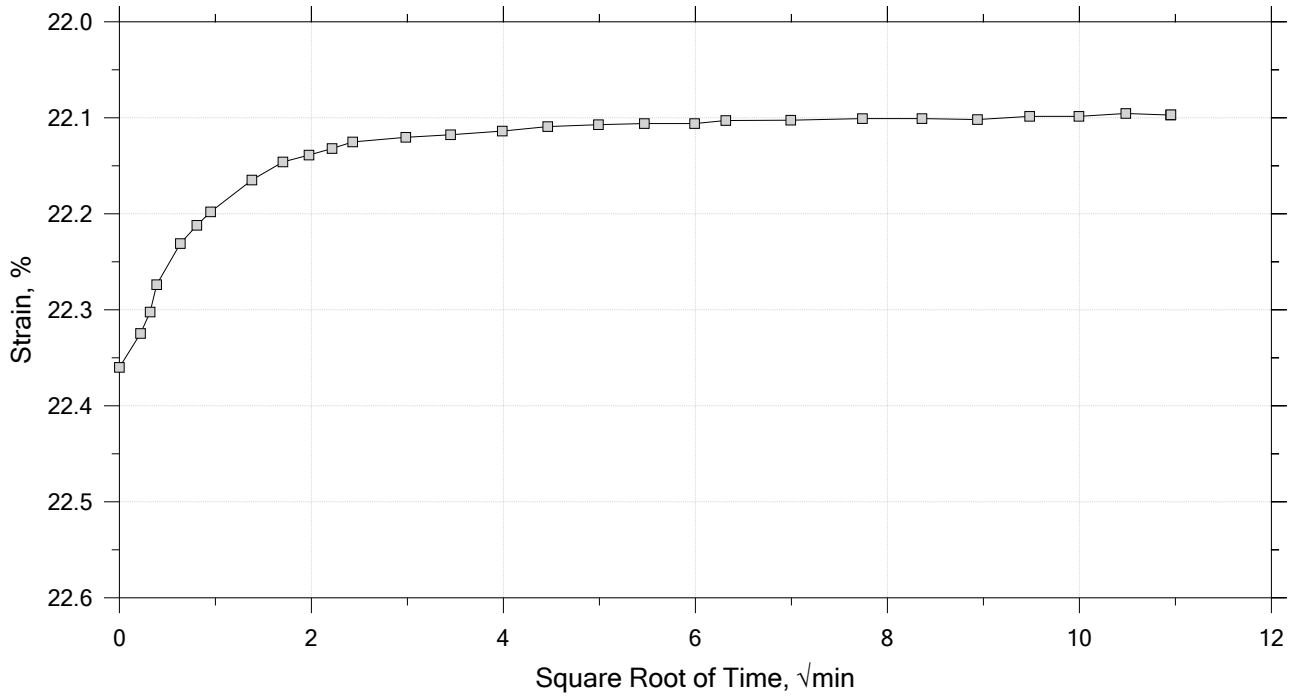


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

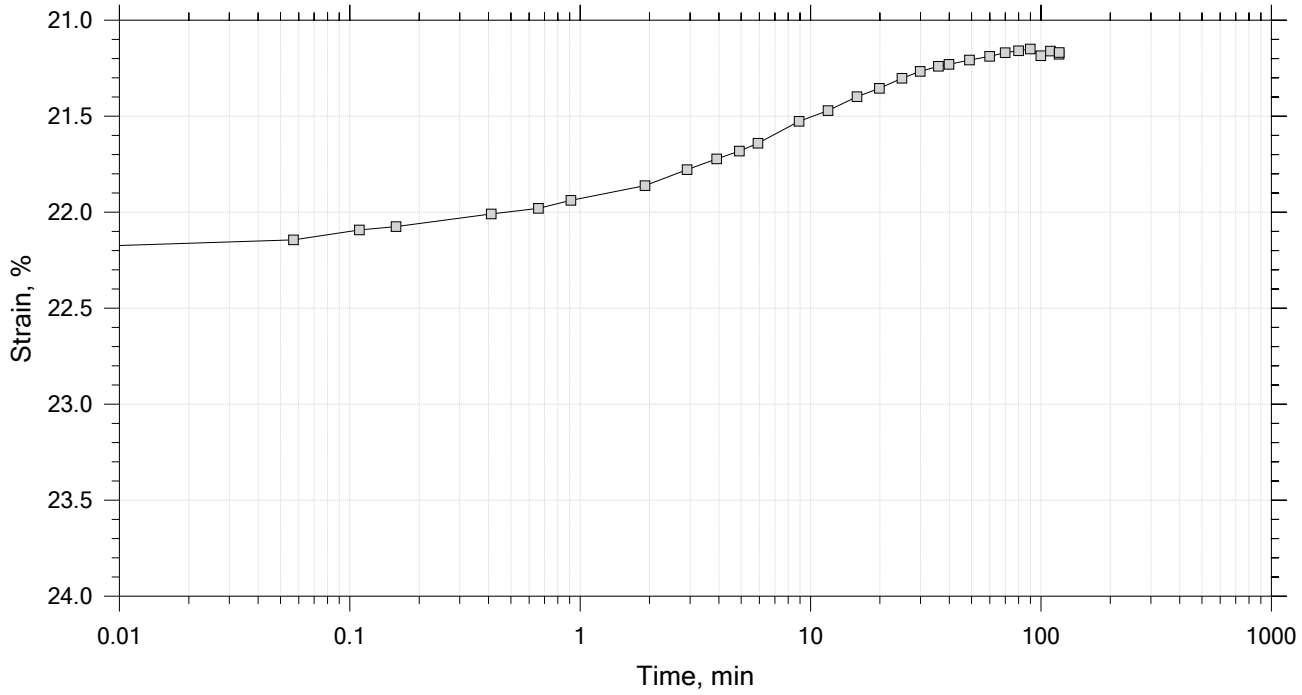


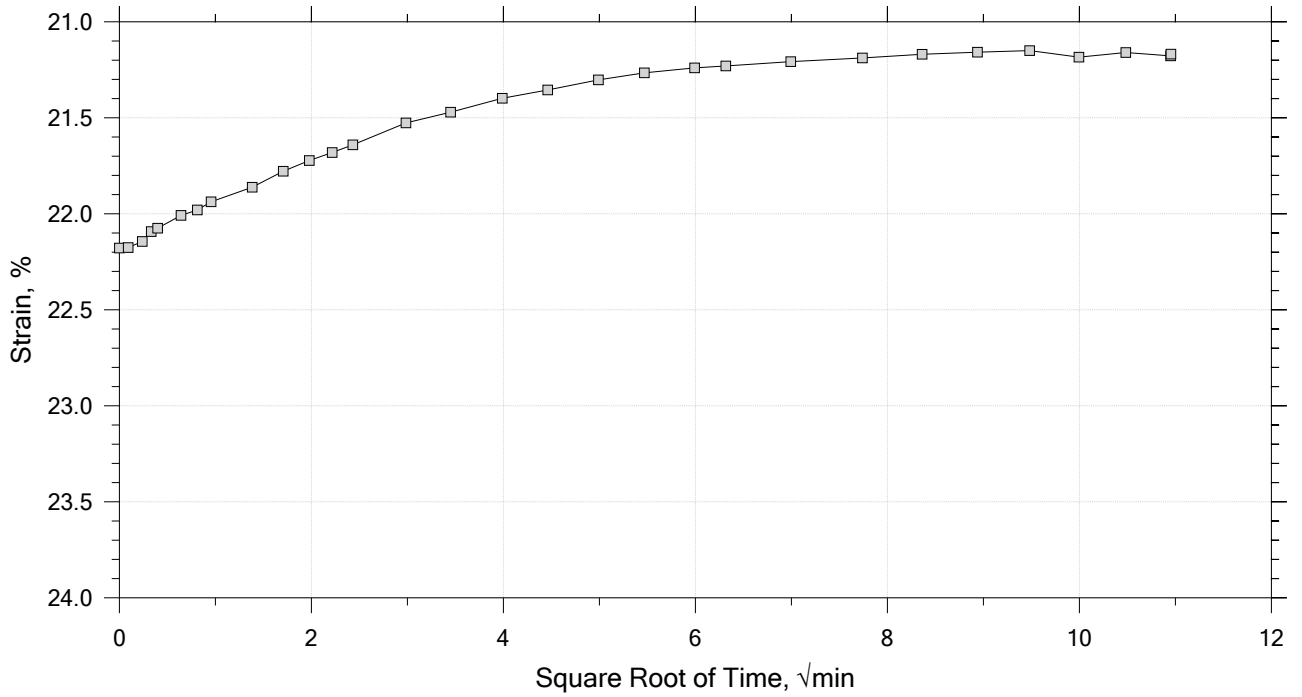


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





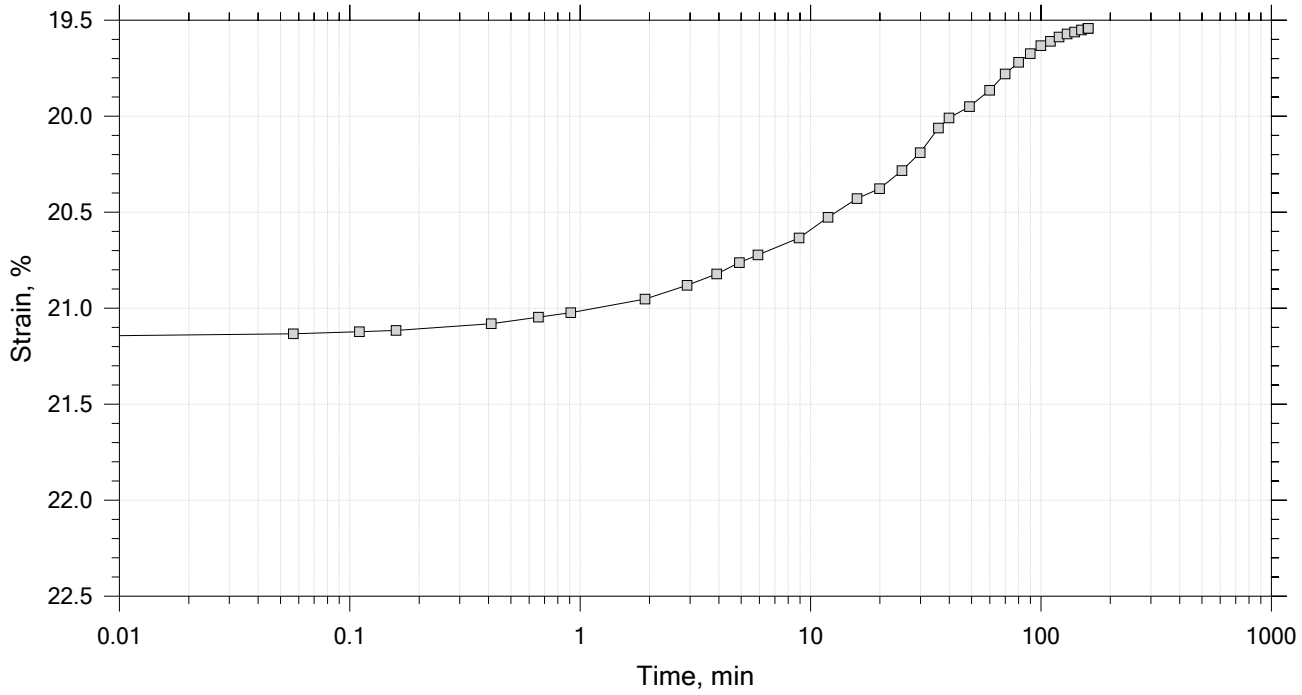
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
Test No.: IP-21-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

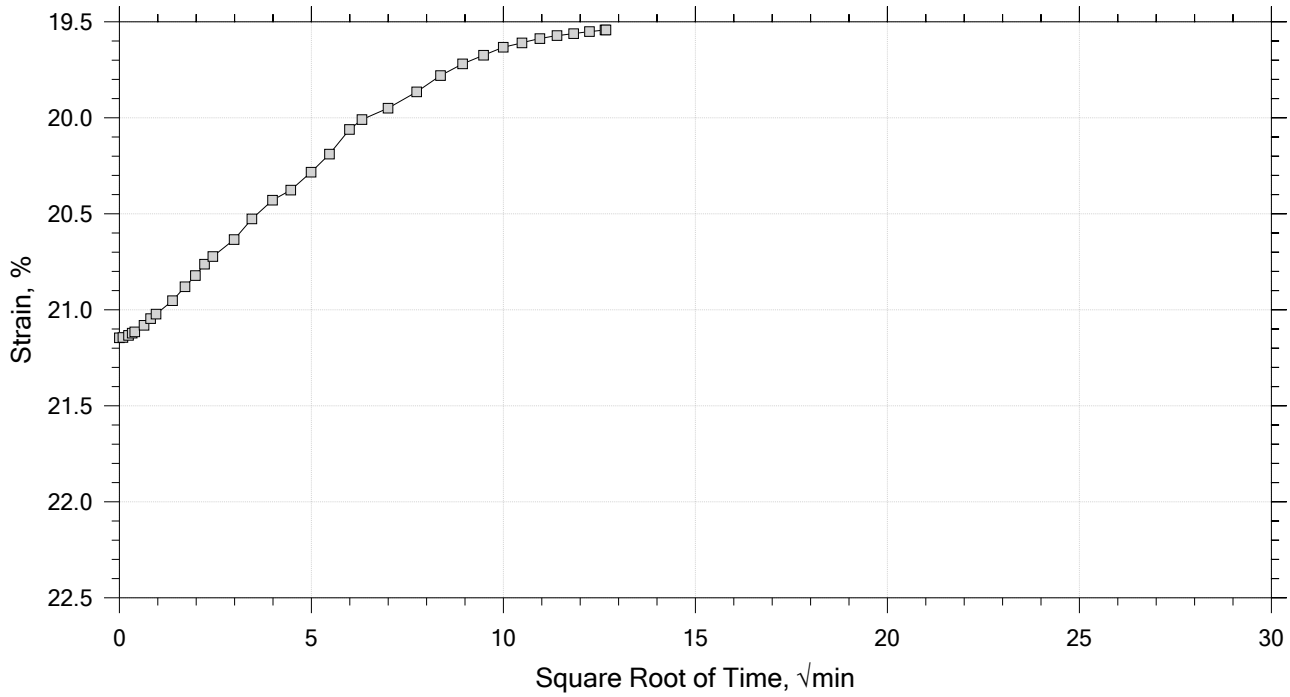
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

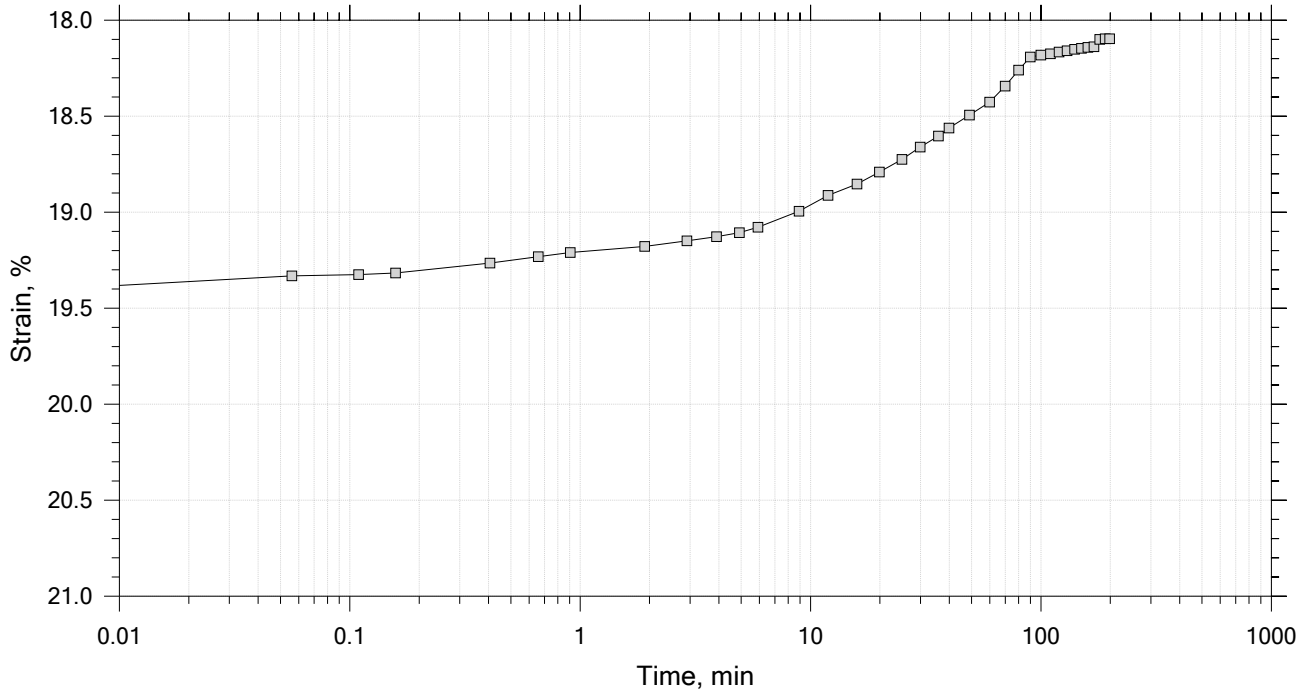


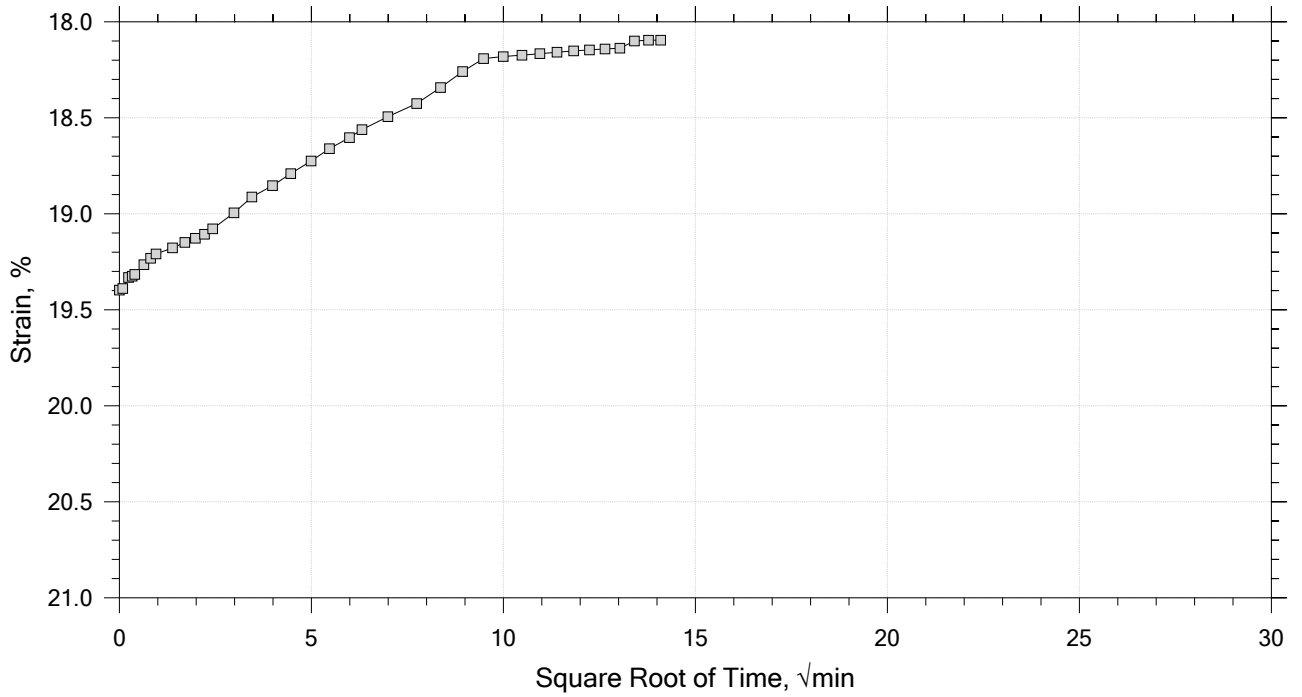


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
Test No.: IP-21-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.77	Liquid Limit: 43
Initial Height: 1.00 in	Initial Void Ratio: 0.718	Plastic Limit: 20
Final Height: 0.82 in	Final Void Ratio: 0.407	Plasticity Index: 23

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-2664	RING		E0902
Mass Container, gm	9.03	108.77	108.77	8.34
Mass Container + Wet Soil, gm	140.63	268.04	257.28	156.06
Mass Container + Dry Soil, gm	115.21	238.21	238.21	137.09
Mass Dry Soil, gm	106.18	129.44	129.44	128.75
Water Content, %	23.94	23.05	14.73	14.73
Void Ratio	---	0.72	0.41	---
Degree of Saturation, %	---	88.71	100.00	---
Dry Unit Weight, pcf	---	100.46	122.65	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

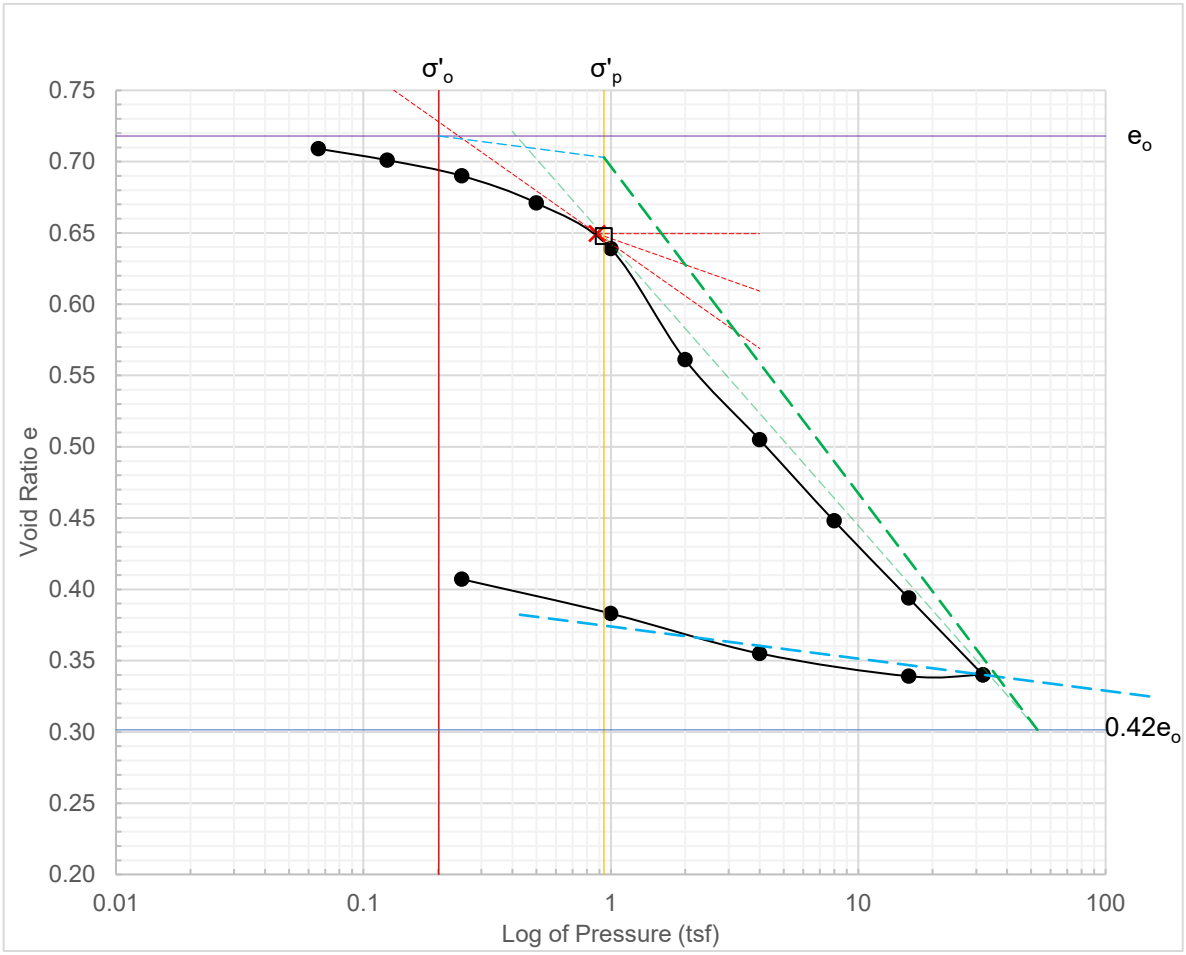
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0659	0.005724	0.709	0.572	4.255	8.26e-04	8.69e-02	1.34e-03
2	0.125	0.01030	0.701	1.03	3.824	9.09e-04	7.74e-02	1.32e-03
3	0.250	0.01626	0.690	1.63	5.334	6.45e-04	4.76e-02	5.76e-04
4	0.500	0.02751	0.671	2.75	8.943	3.78e-04	4.50e-02	3.19e-04
5	1.00	0.04609	0.639	4.61	46.501	7.05e-05	3.72e-02	4.91e-05
6	2.00	0.09137	0.561	9.14	46.973	6.52e-05	4.53e-02	5.53e-05
7	4.00	0.1240	0.505	12.4	31.946	8.81e-05	1.63e-02	2.69e-05
8	8.00	0.1574	0.448	15.7	26.346	9.90e-05	8.36e-03	1.55e-05
9	16.0	0.1890	0.394	18.9	31.900	7.57e-05	3.95e-03	5.60e-06
10	32.0	0.2202	0.340	22.0	39.234	5.70e-05	1.95e-03	2.08e-06
11	16.0	0.2210	0.339	22.1	3.510	6.12e-04	-5.04e-05	-5.77e-07
12	4.00	0.2117	0.355	21.2	16.343	1.33e-04	7.74e-04	1.92e-06
13	1.00	0.1954	0.383	19.5	114.670	1.95e-05	5.42e-03	1.98e-06
14	0.250	0.1810	0.407	18.1	111.549	2.09e-05	1.93e-02	7.54e-06

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.3-3.4
	Test No.: IP-21-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-F, Swell Pressure = 0.0659 tsf		
	Displacement at End of Increment		

Boring: B-4.17

Depth: 3.3'-3.4'

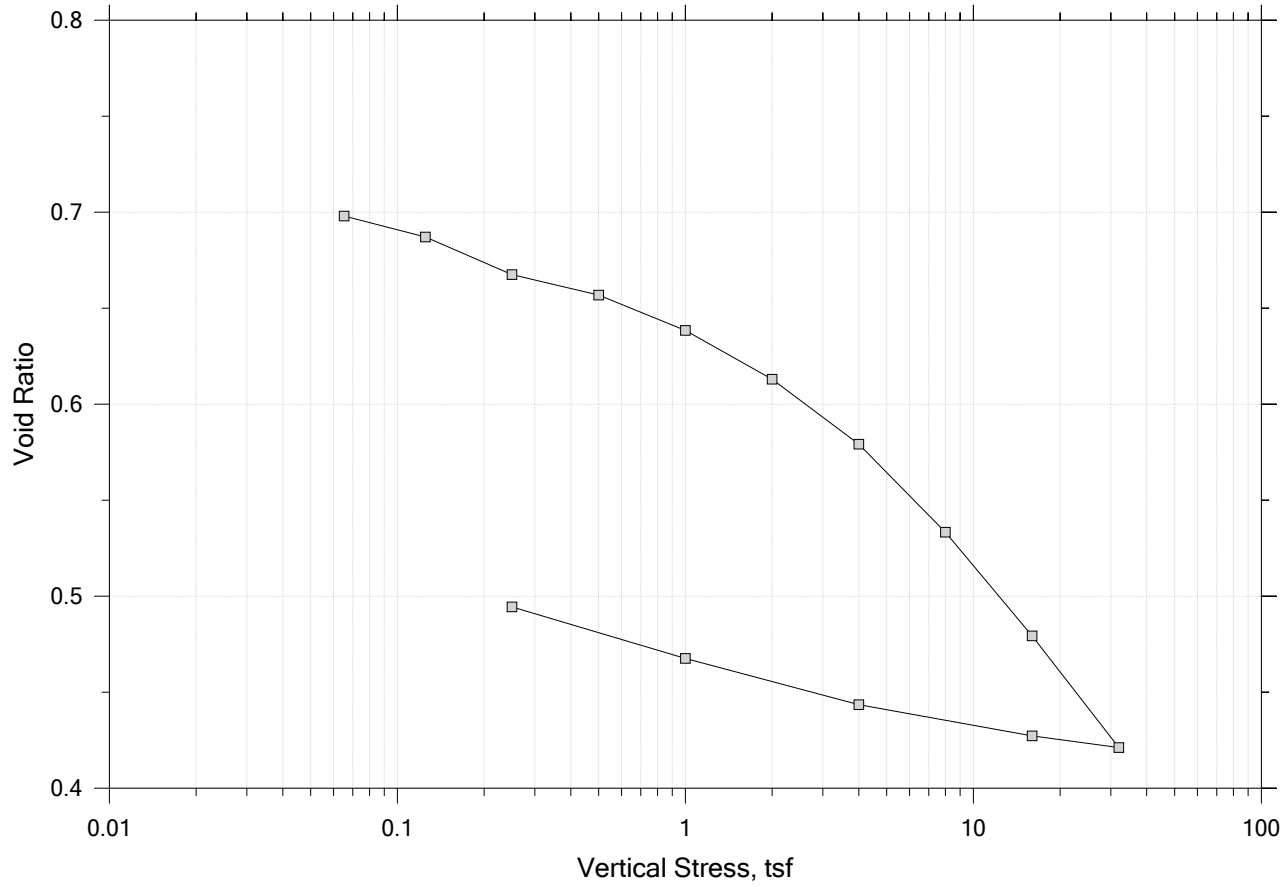
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.20
Preconsolidation Pressure, σ'_p (tsf) = 0.94
Compression Index, C_c = 0.23
Recompression Index, C_r = 0.023

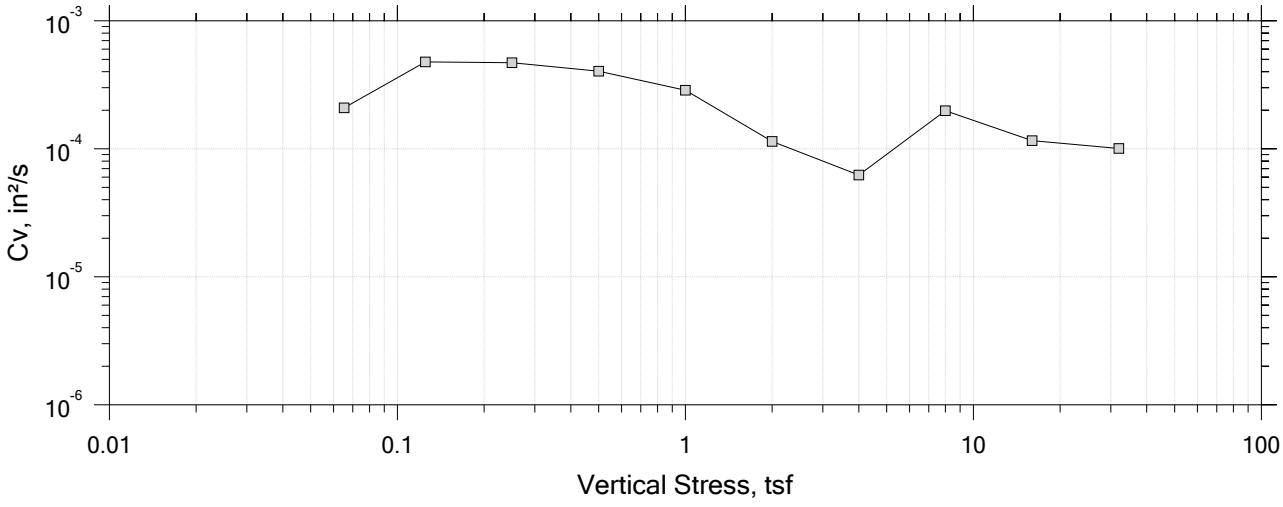


Compression Index Line (Uncorrected)
Compression Index Line (Corrected)
Recompression Index Line
Apparent Point of Maximum Curvature
Preconsolidation Pressure

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

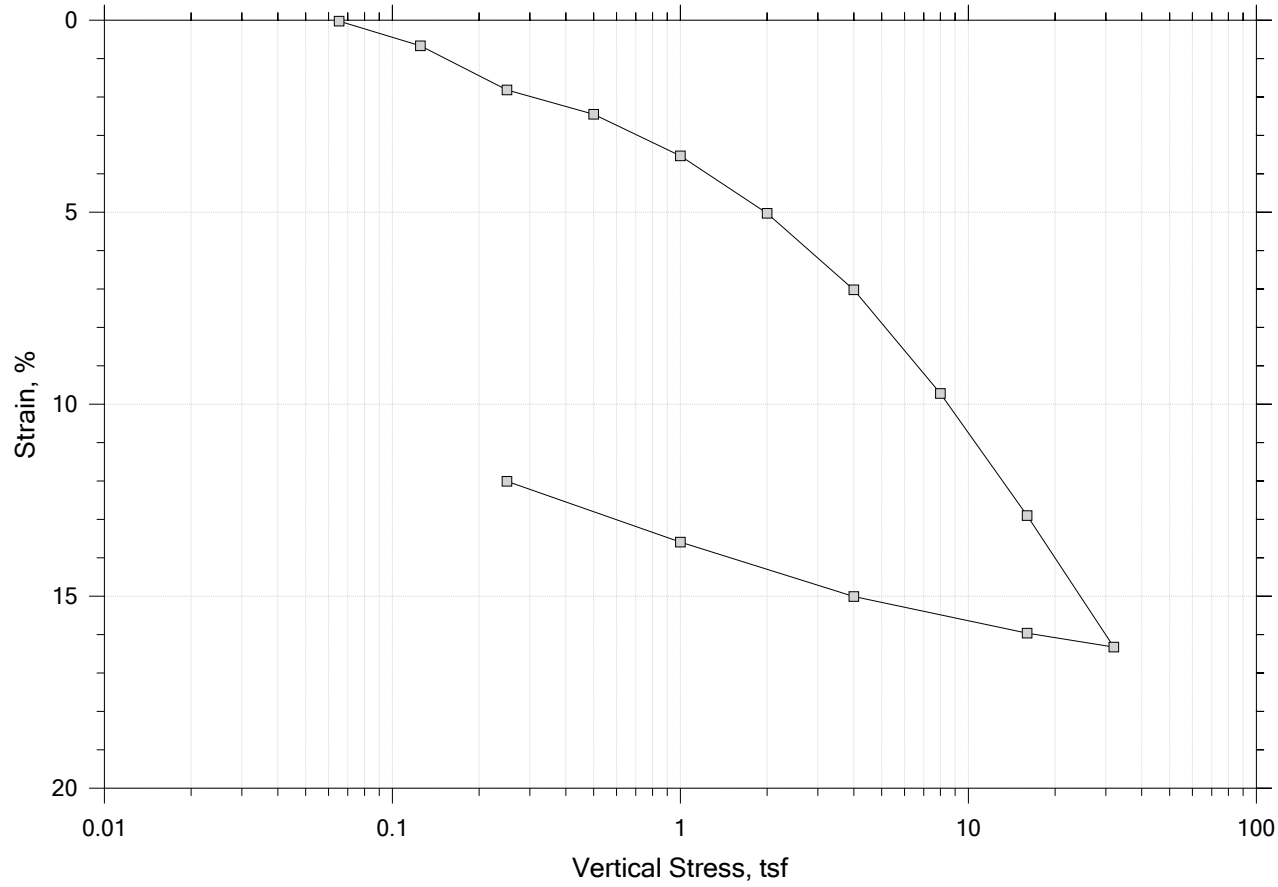


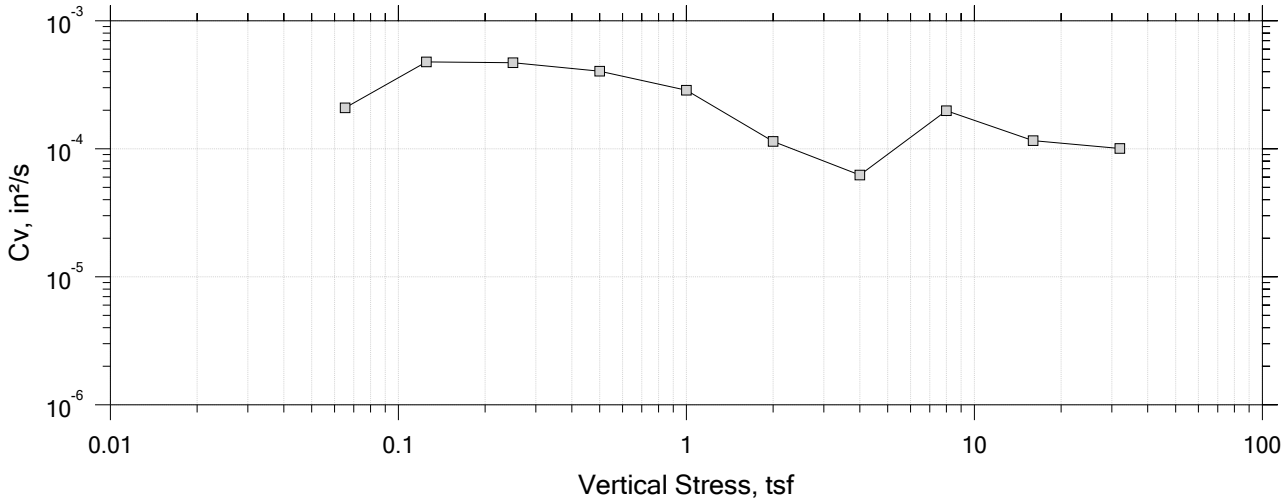


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report





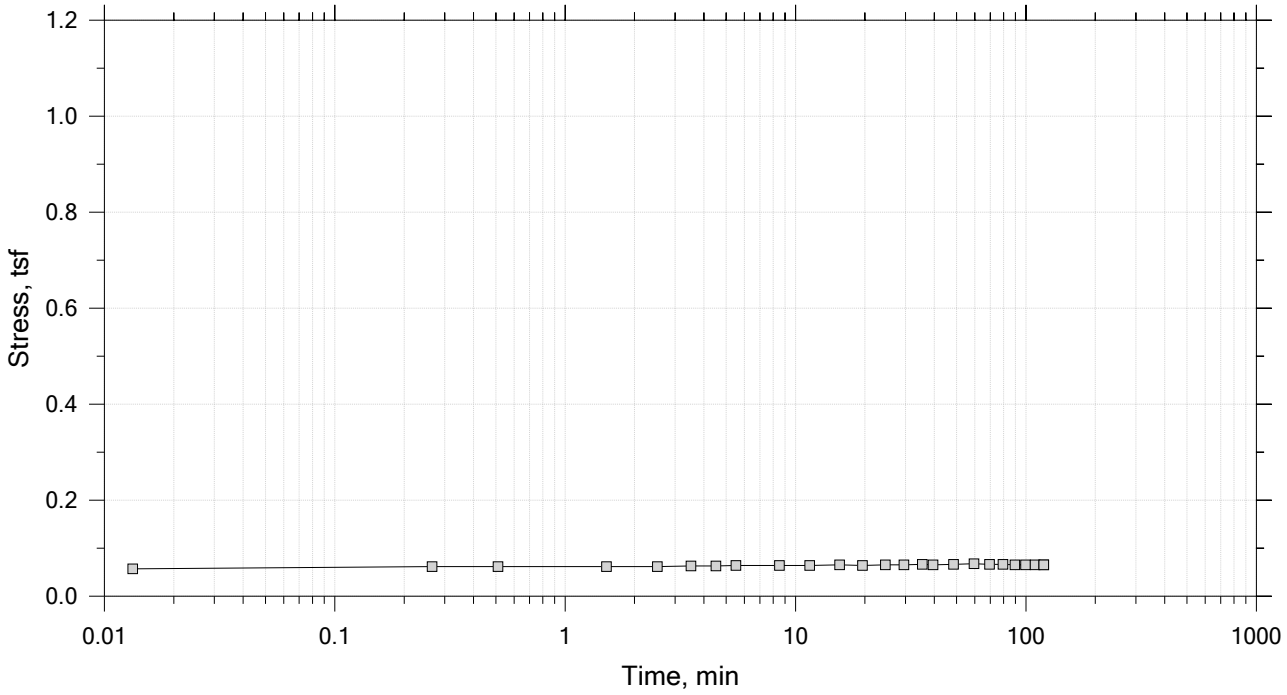
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		
	Displacement at End of Increment		

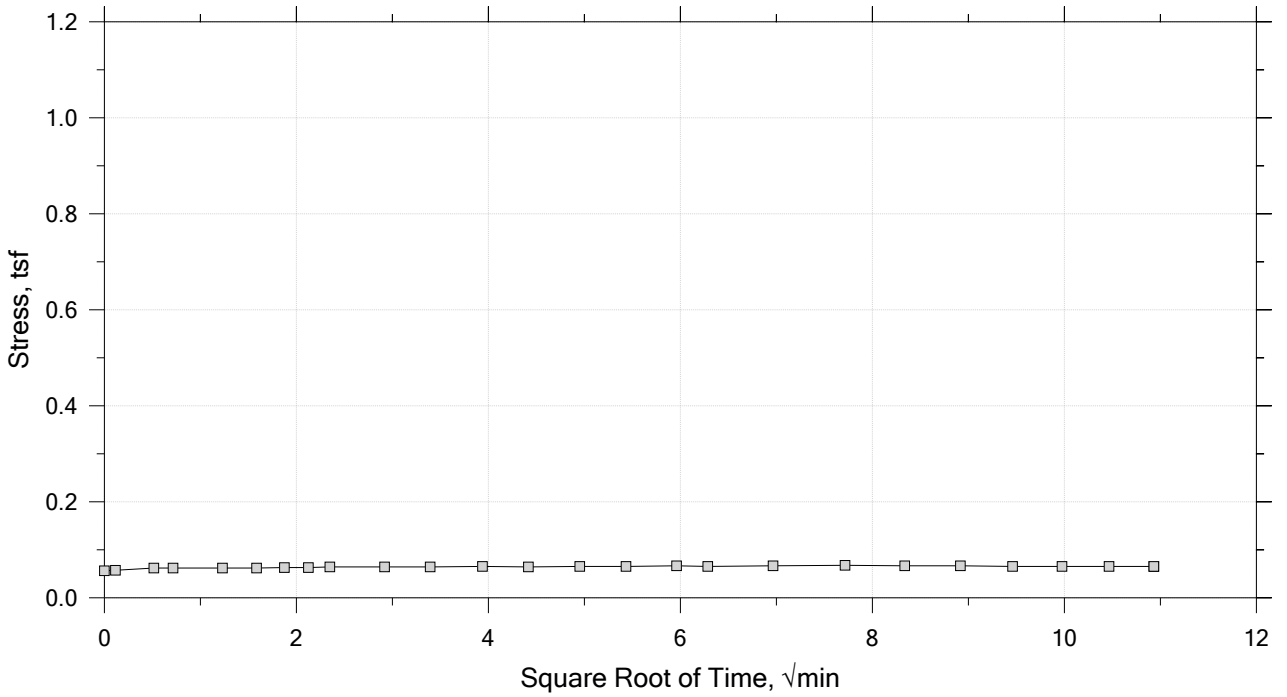
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14

Constant Volume Step

Stress: 0.0653 tsf





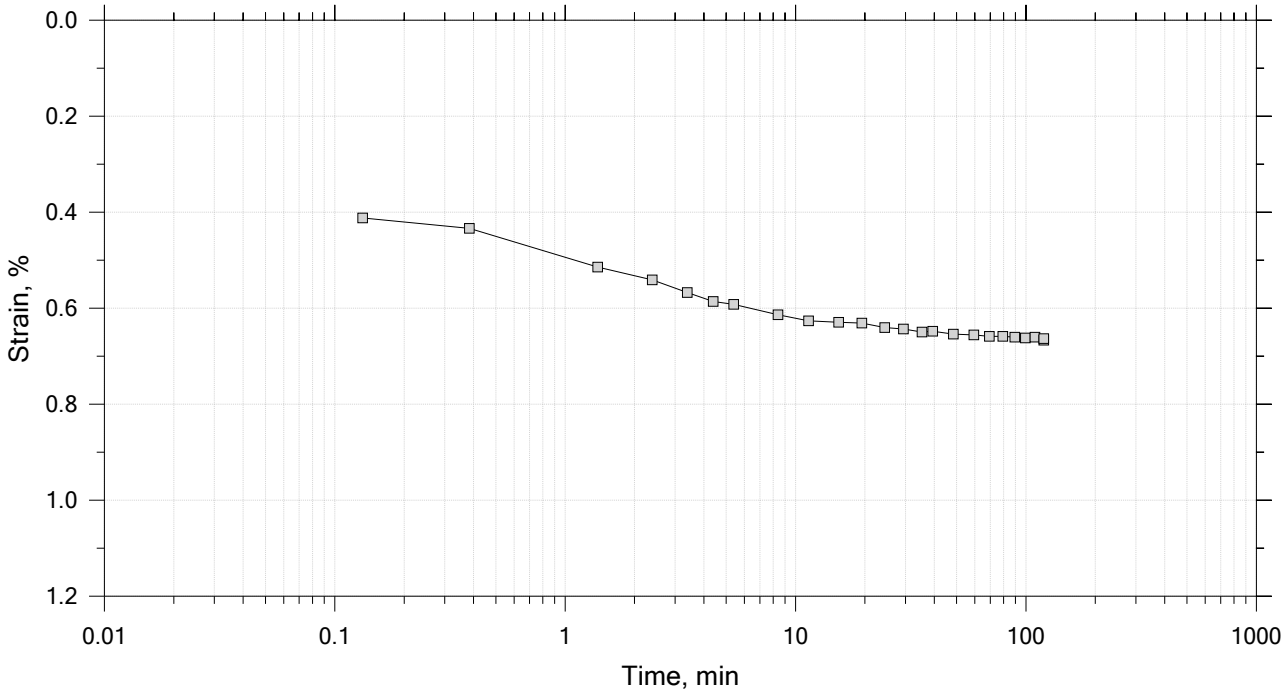
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

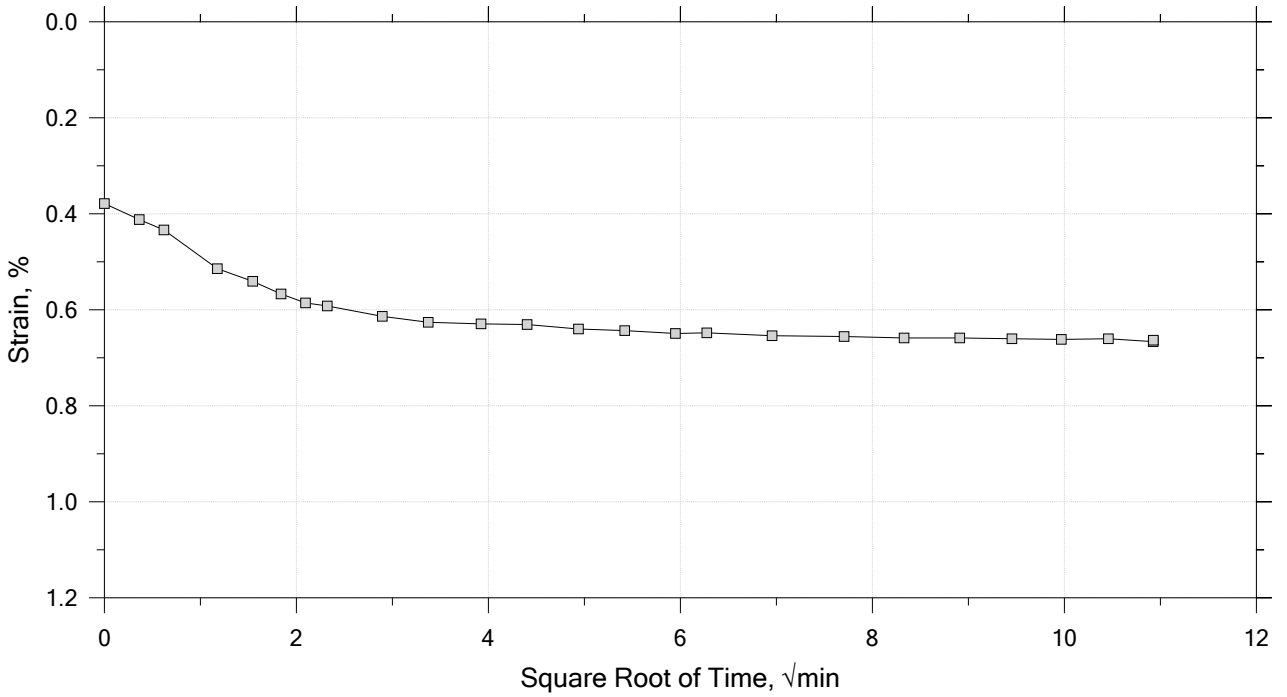
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14

Constant Load Step

Stress: 0.125 tsf

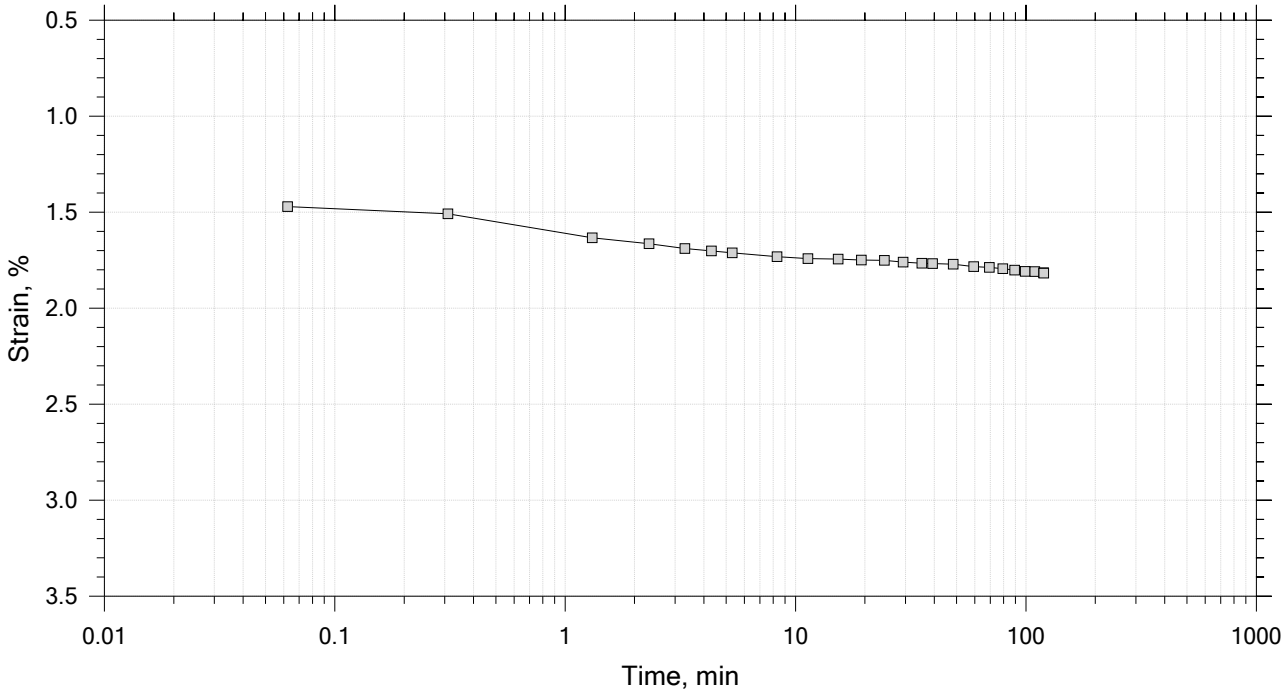


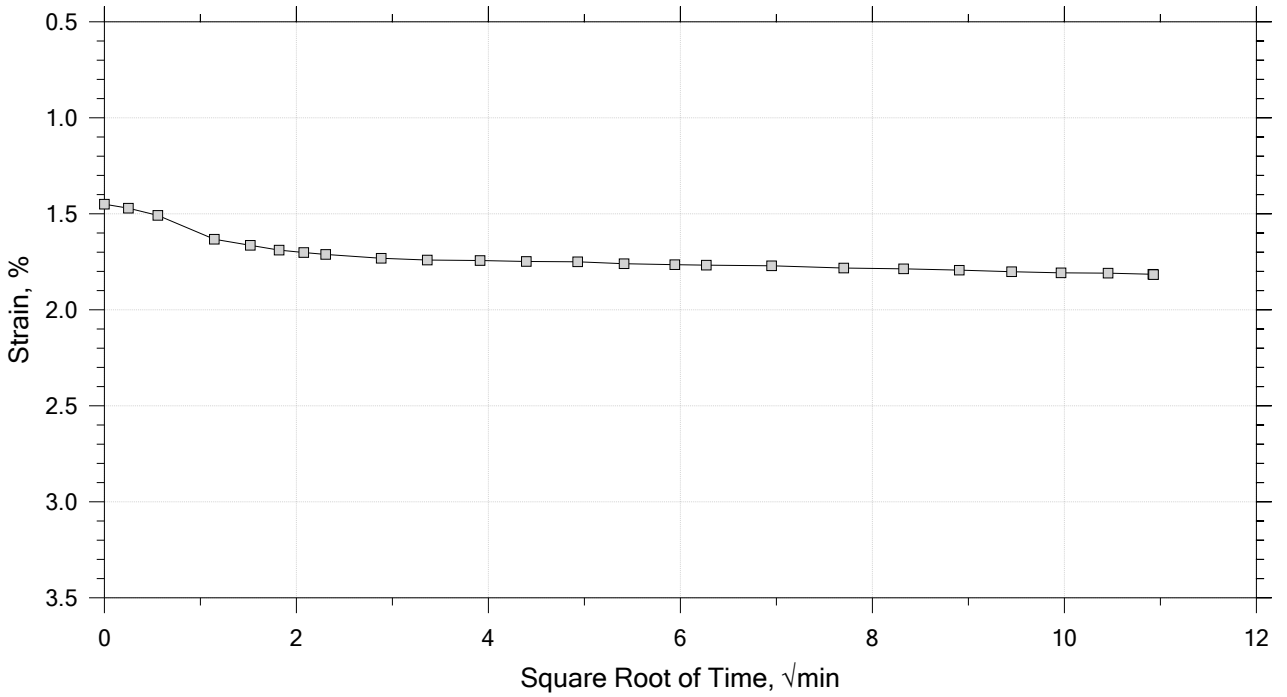


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

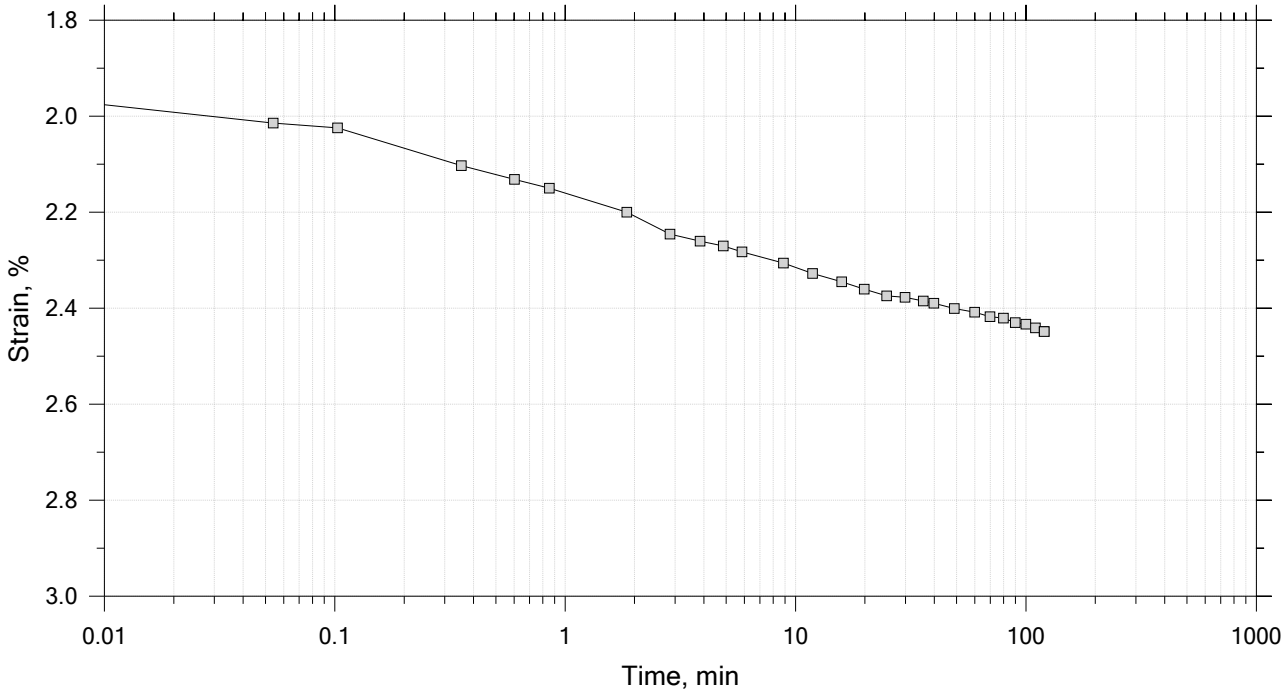


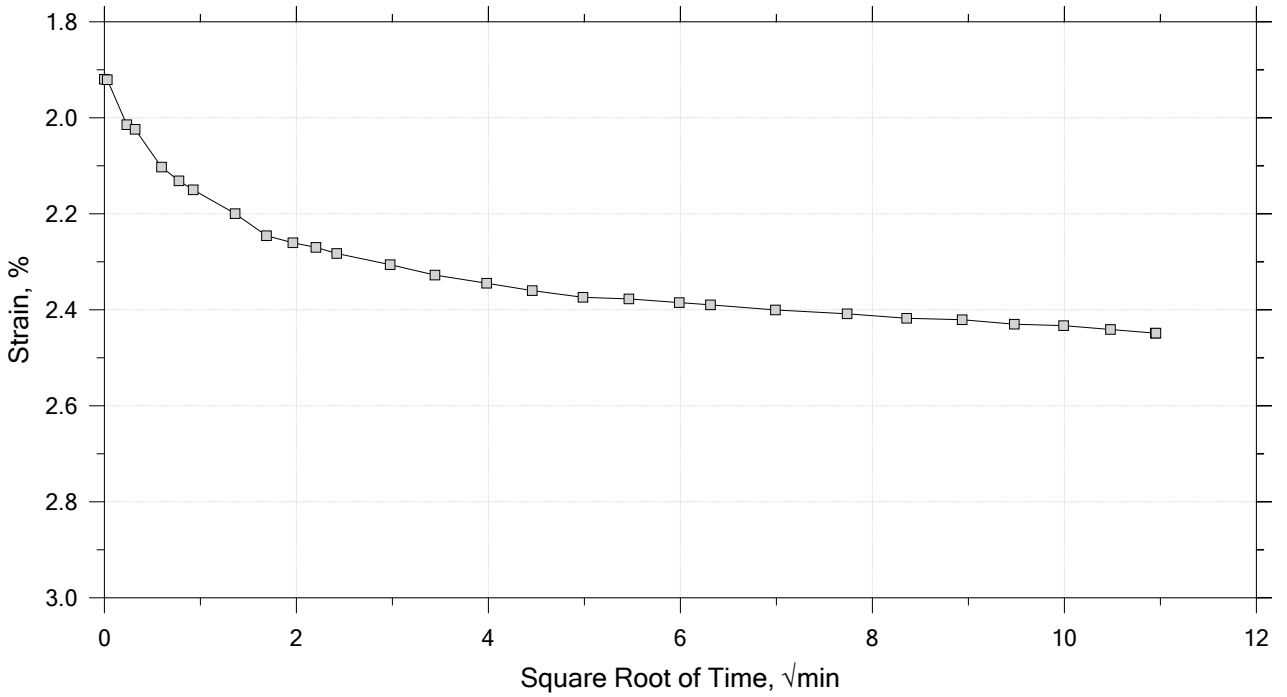


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





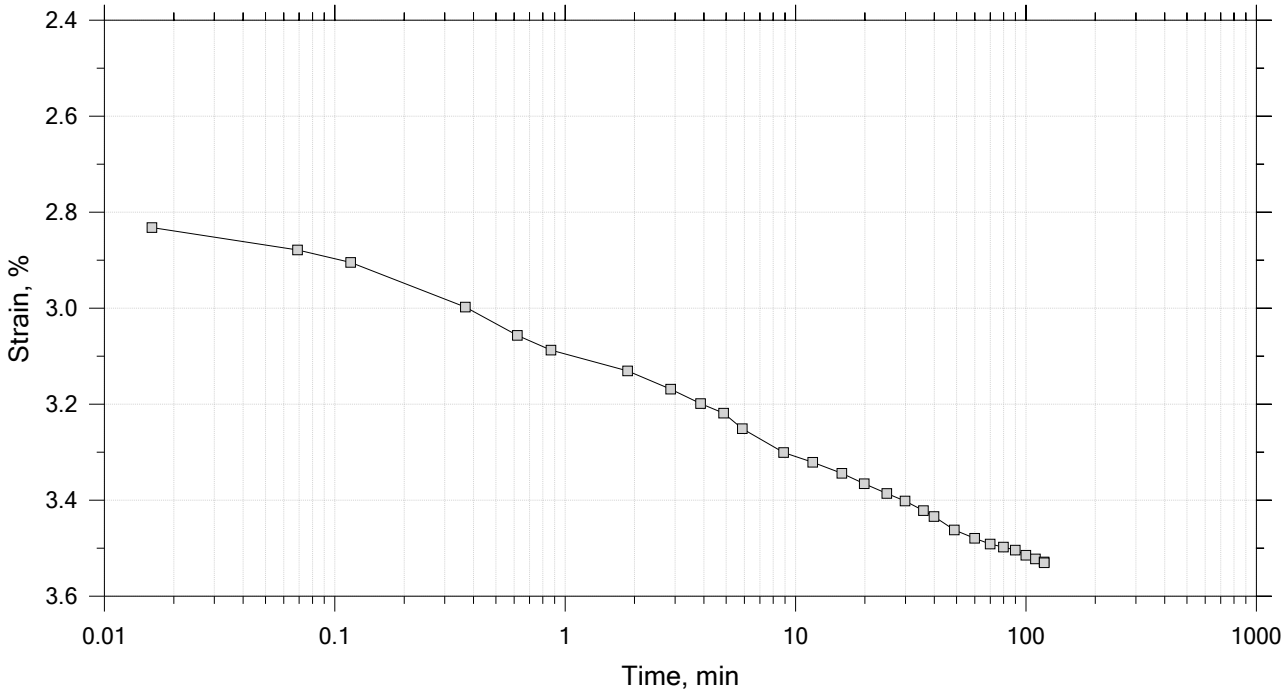
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

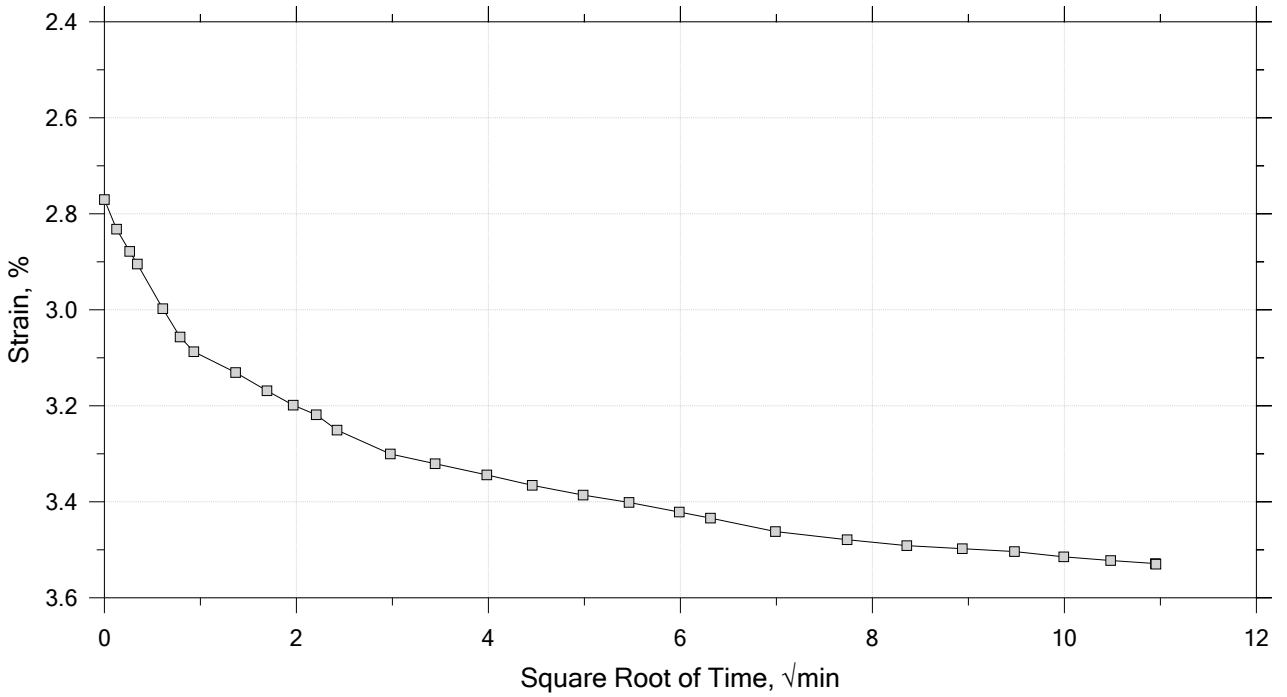
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





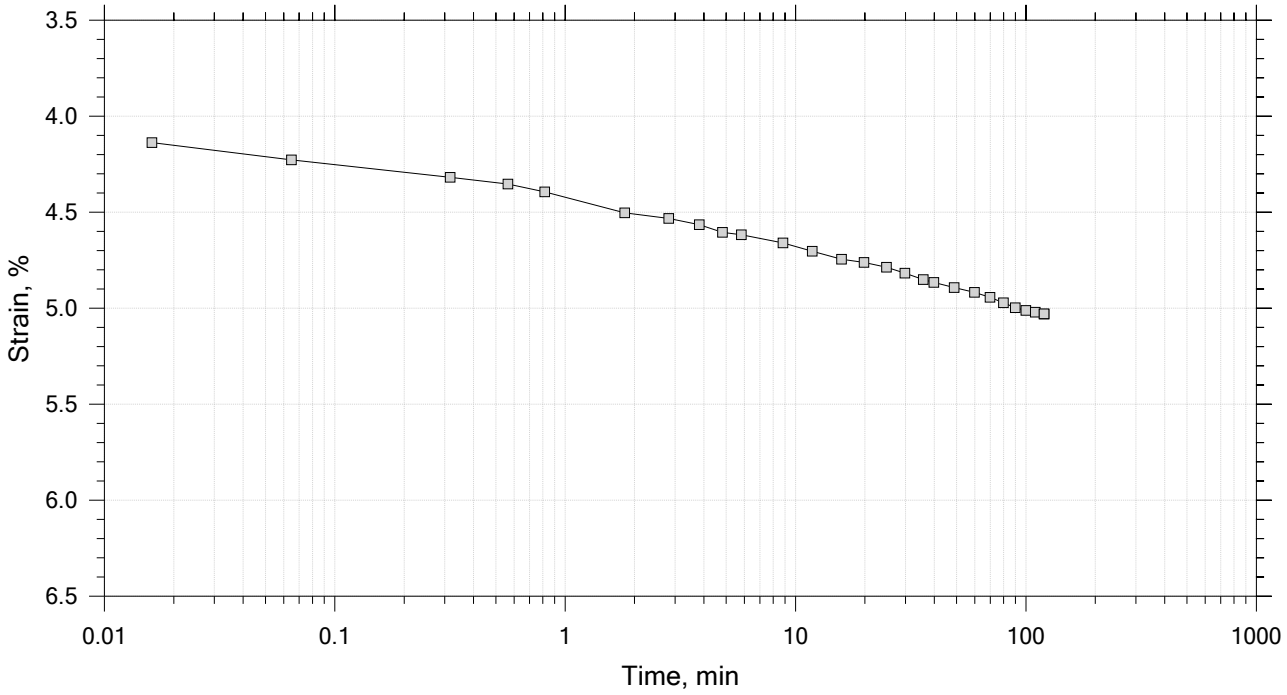
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

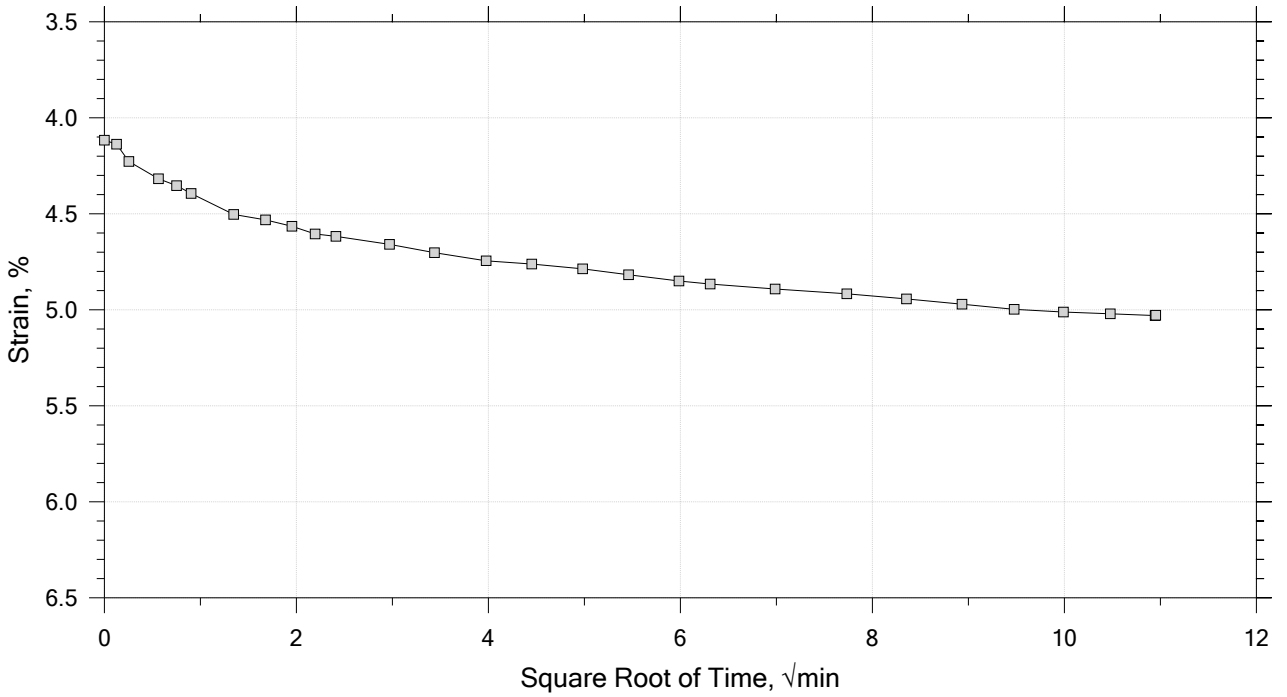
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





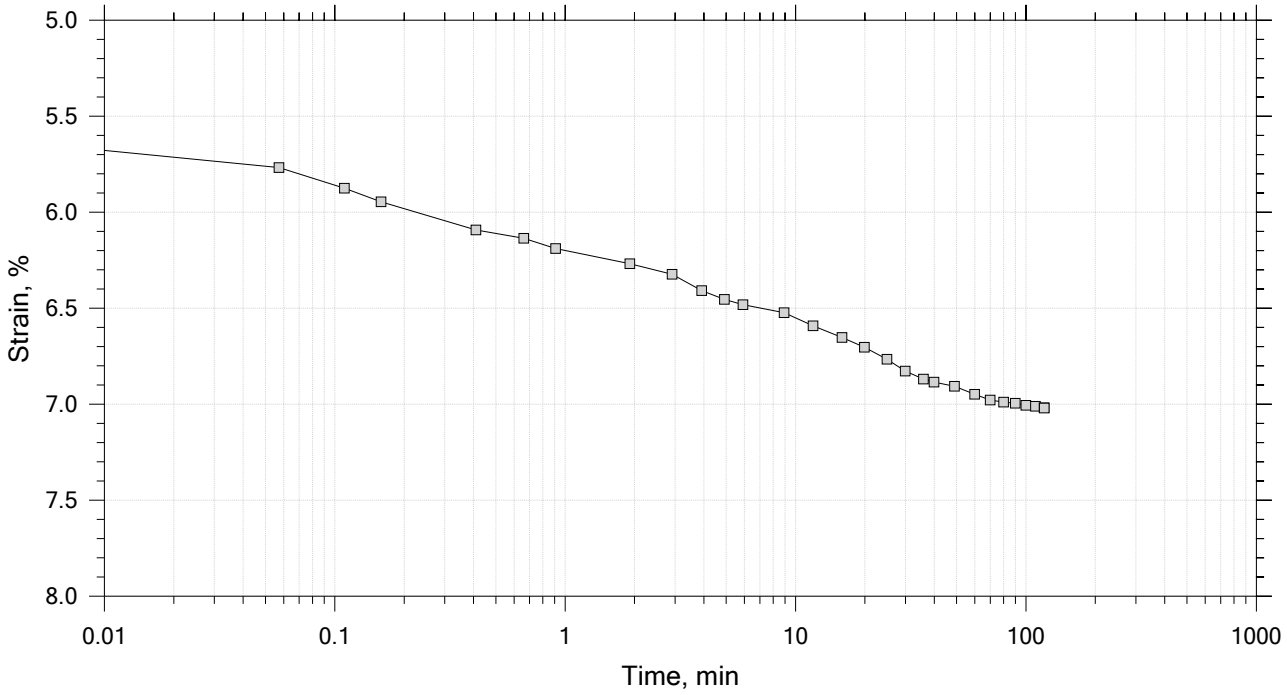
Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
Test No.: IP-21-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-G, Swell Pressure =		

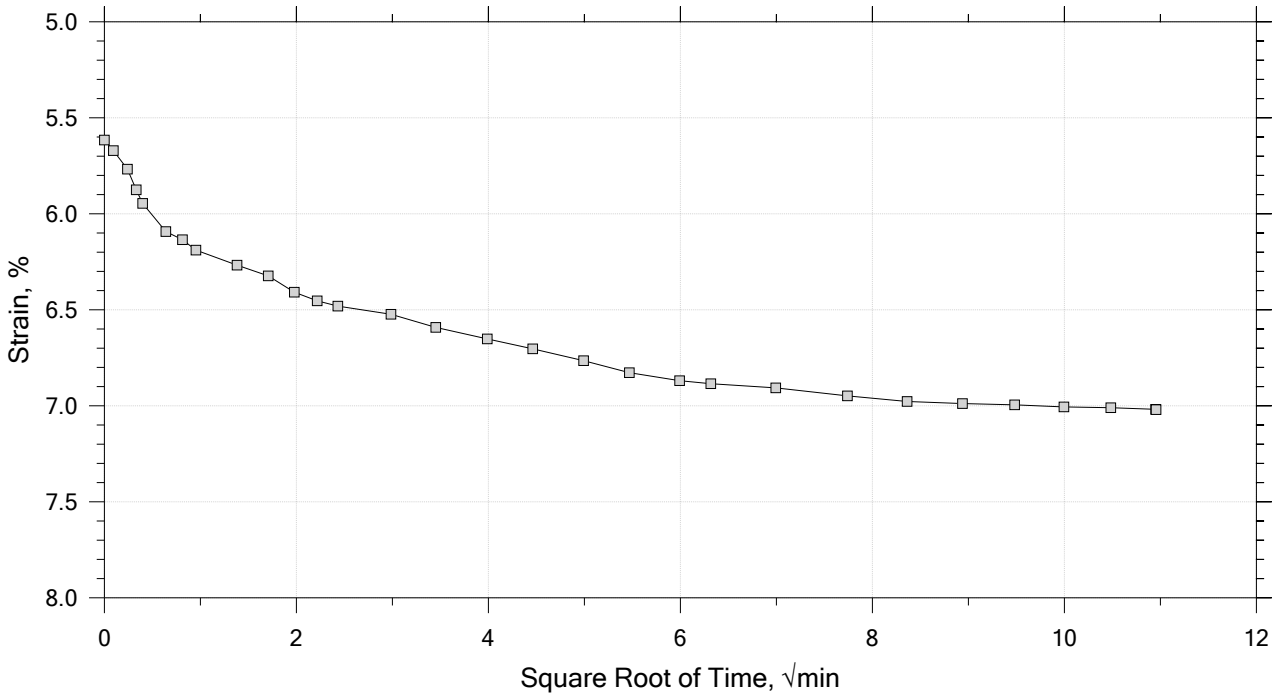
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

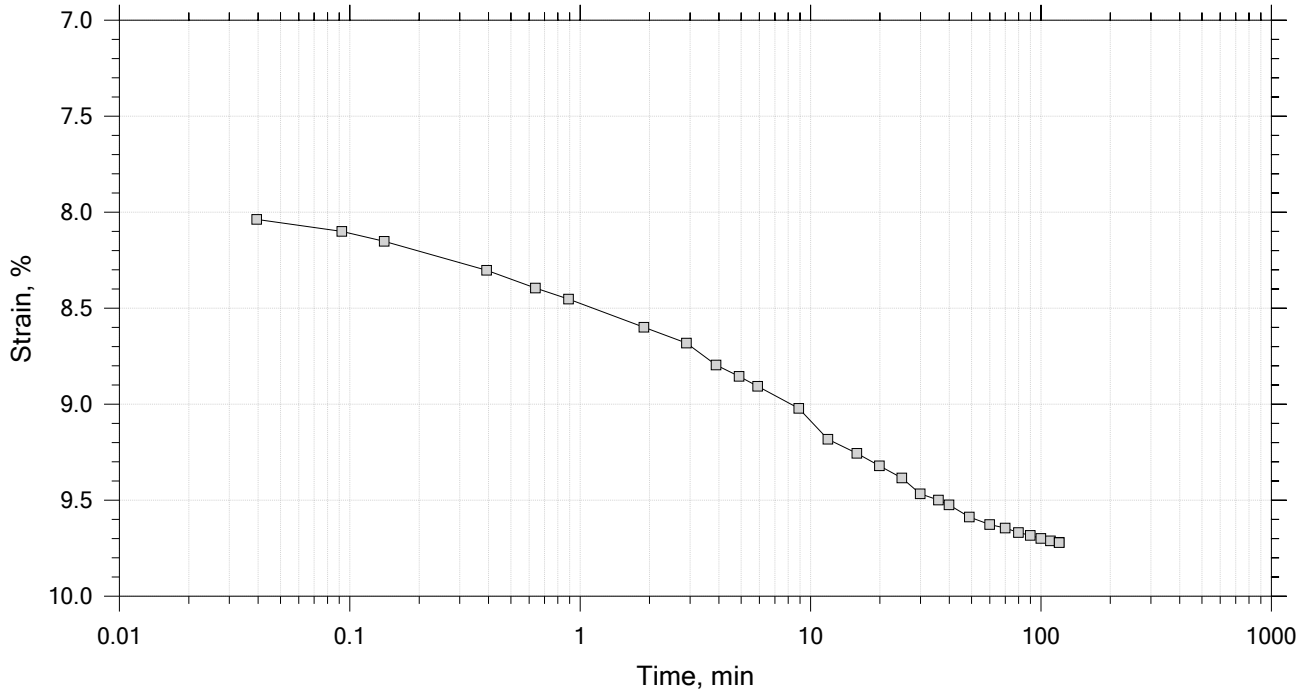


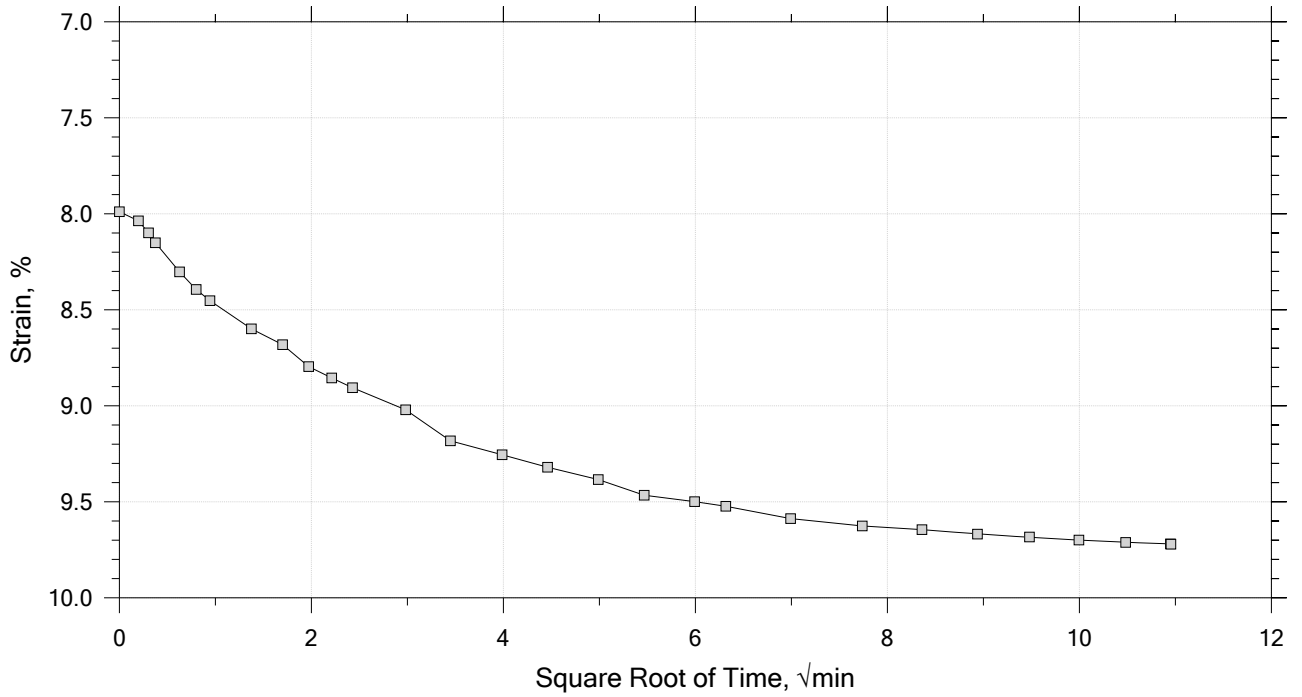


Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
Test No.: IP-21-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf





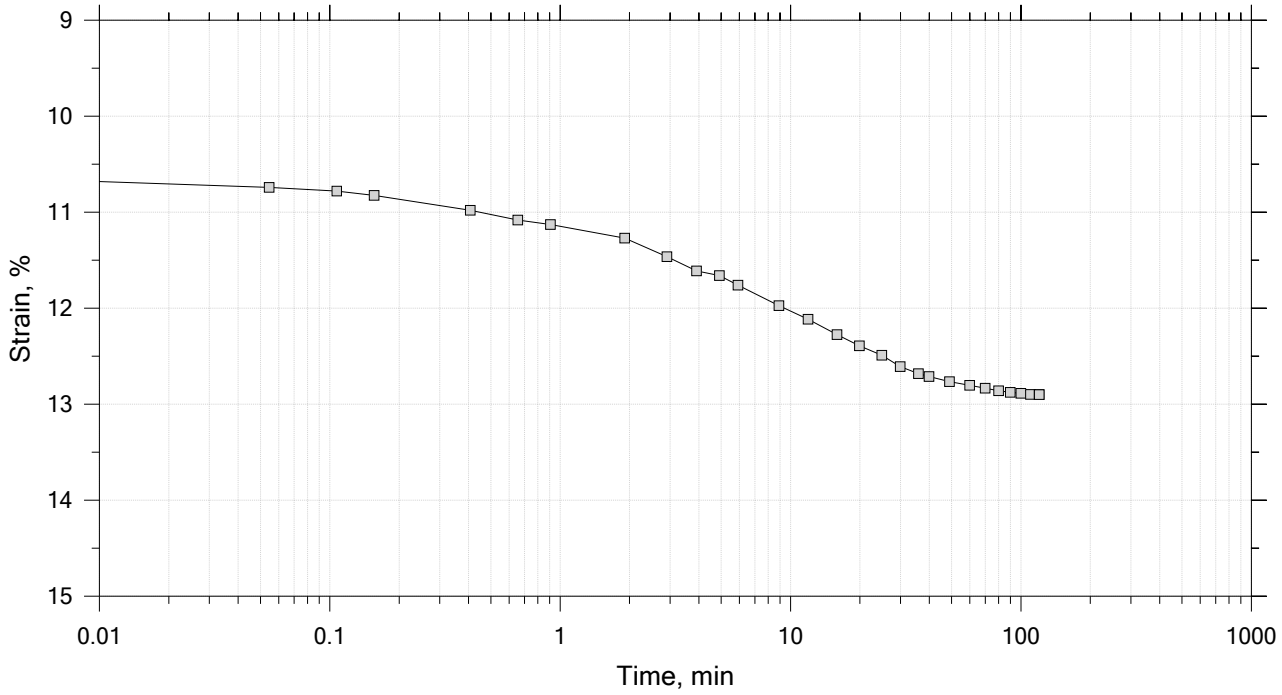
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

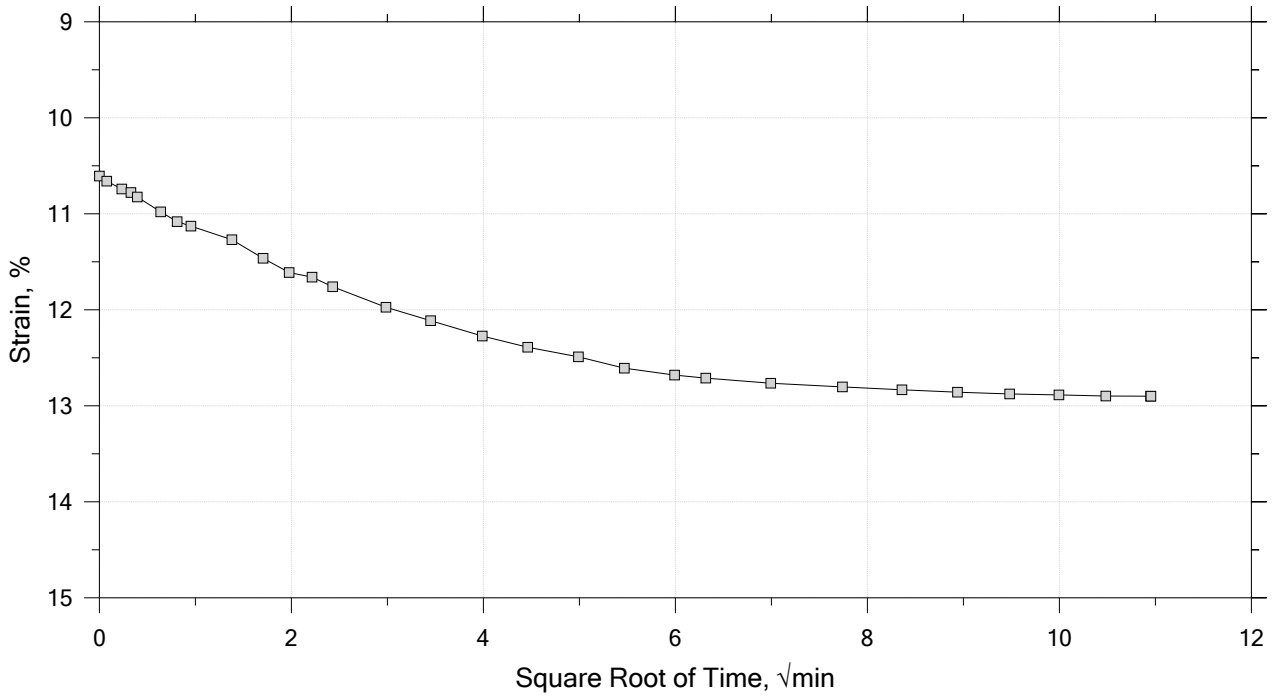
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

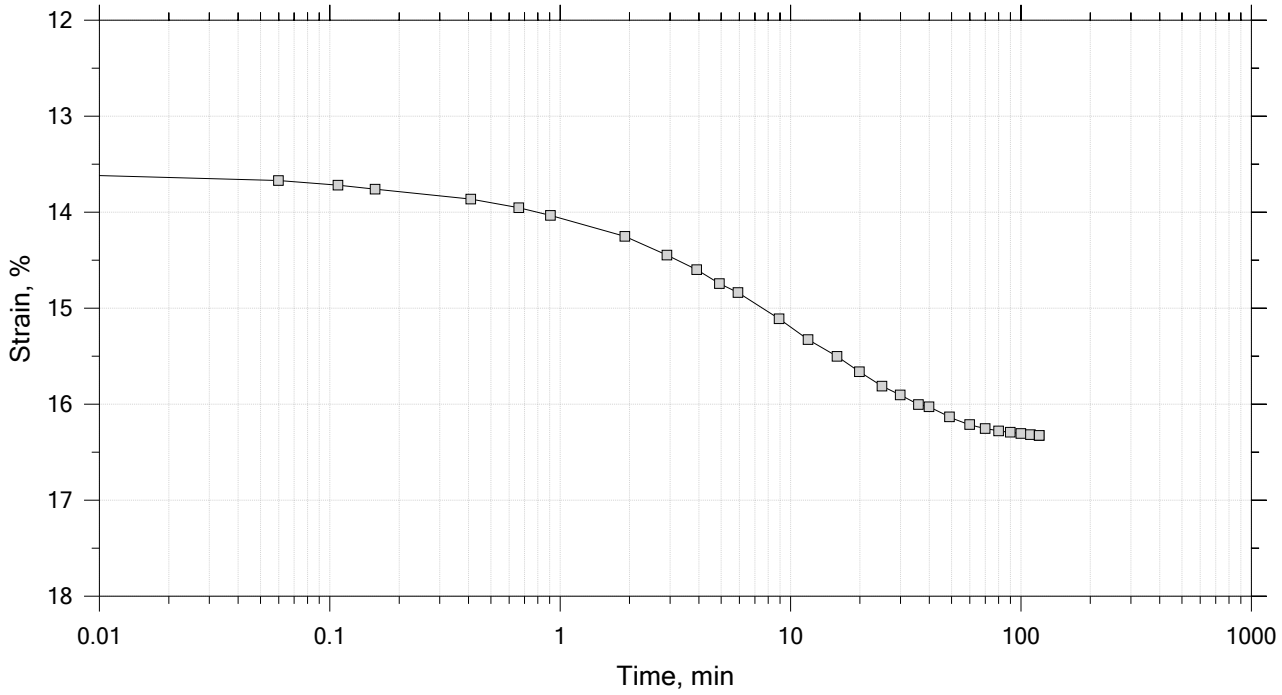


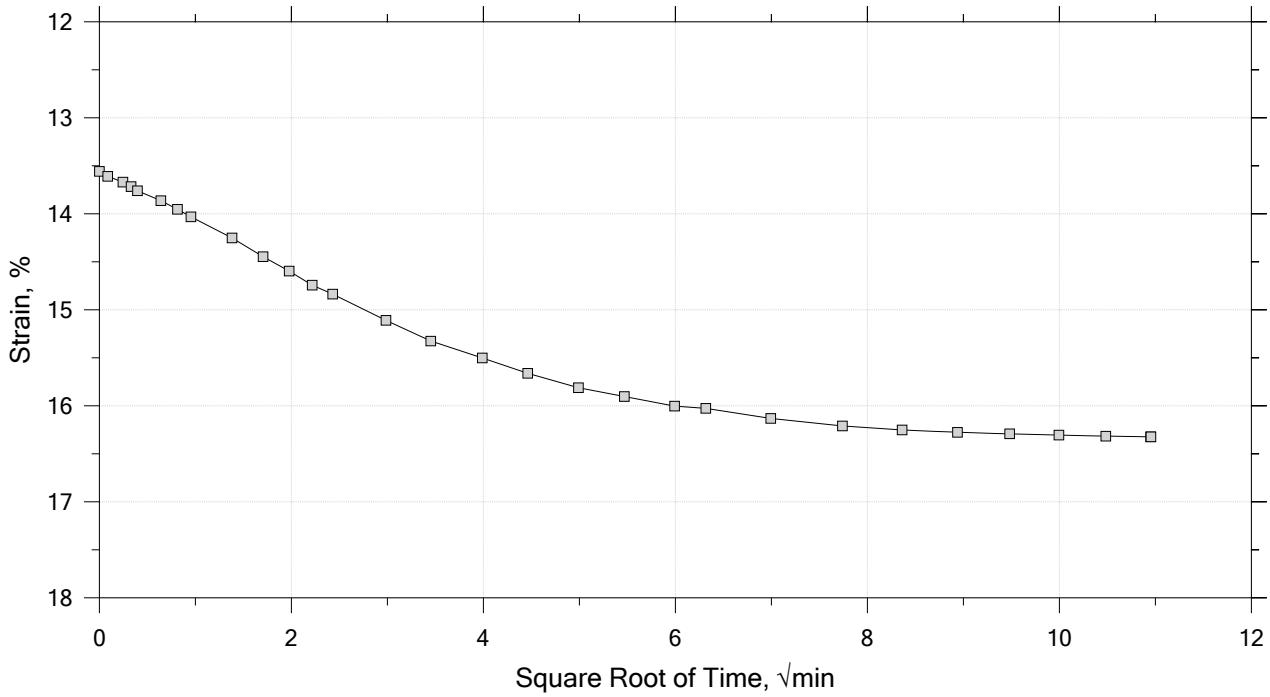


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

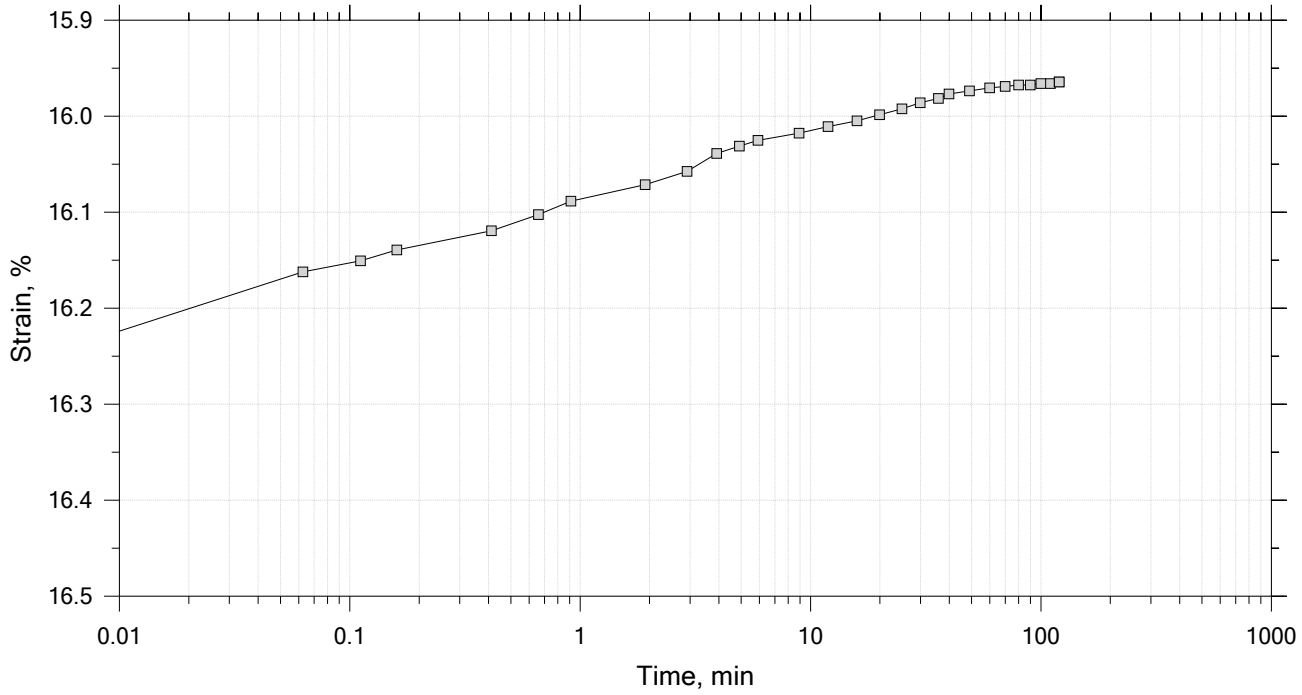


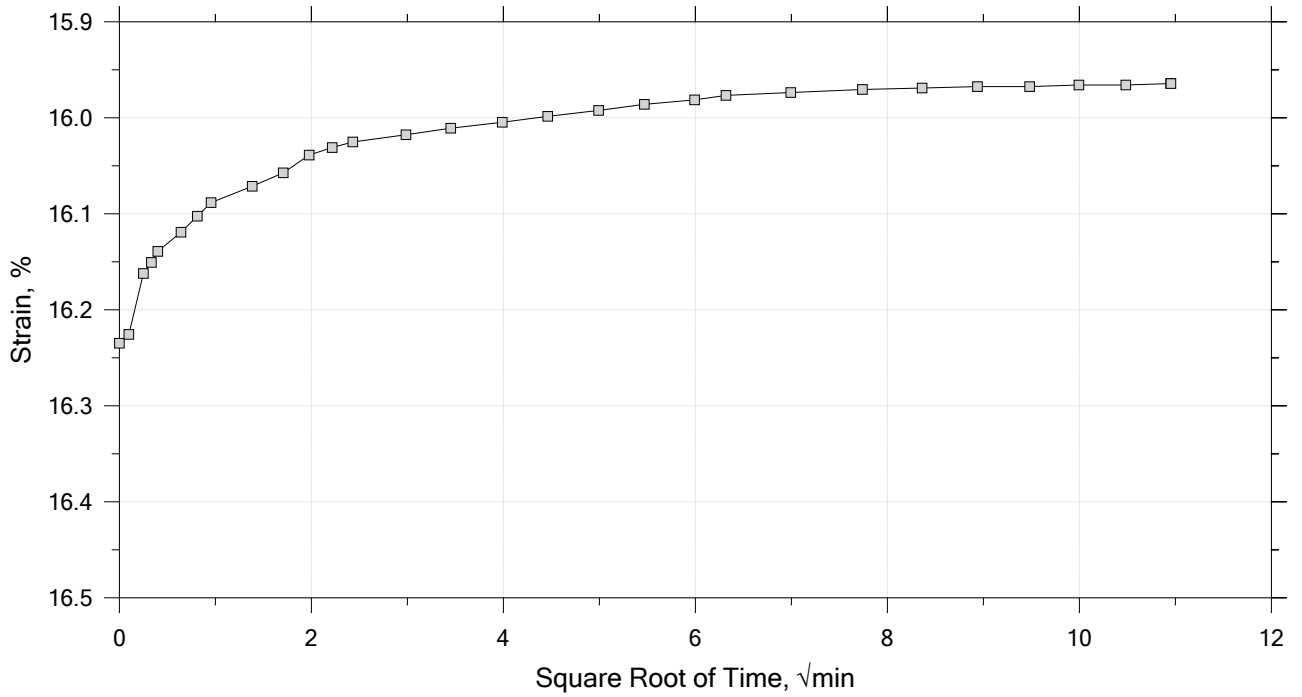


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

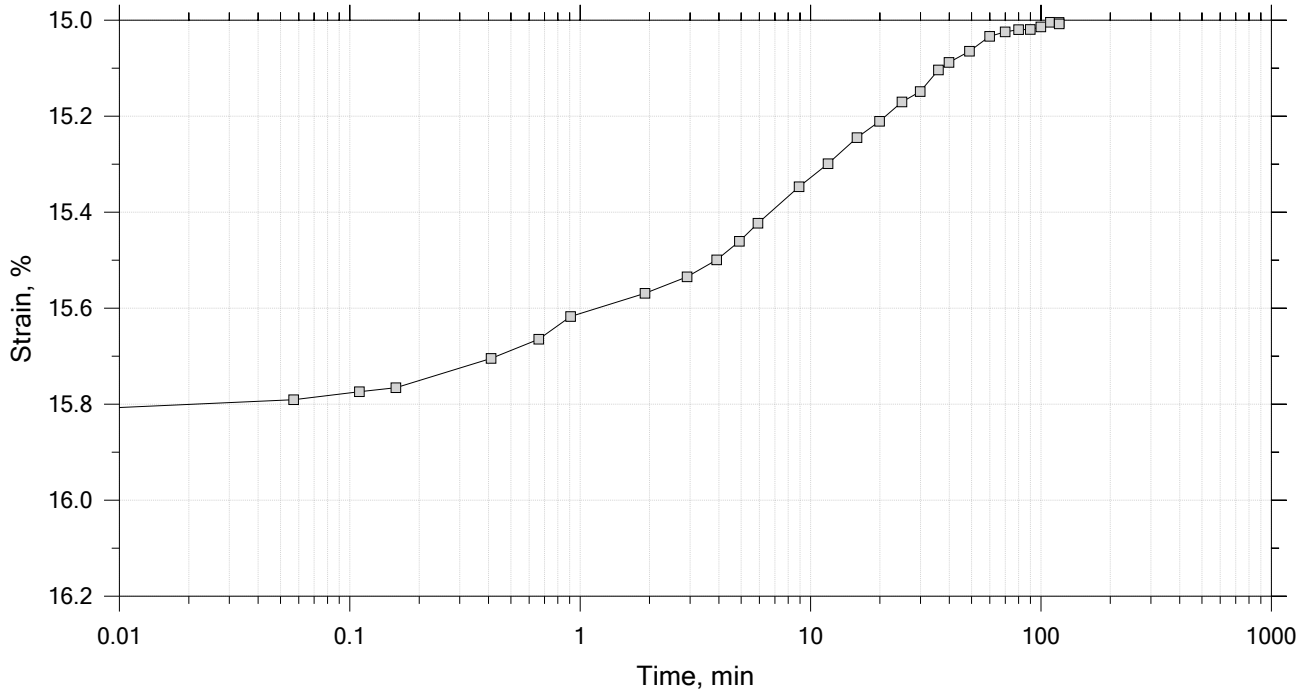


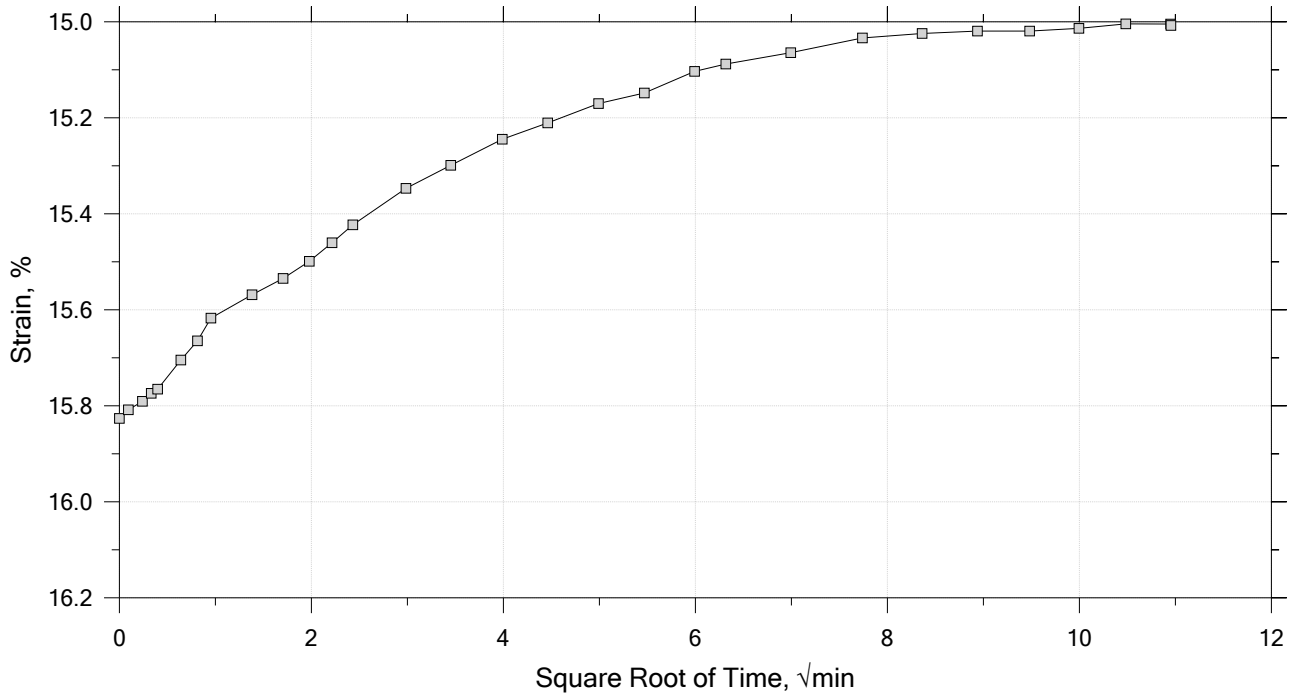


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

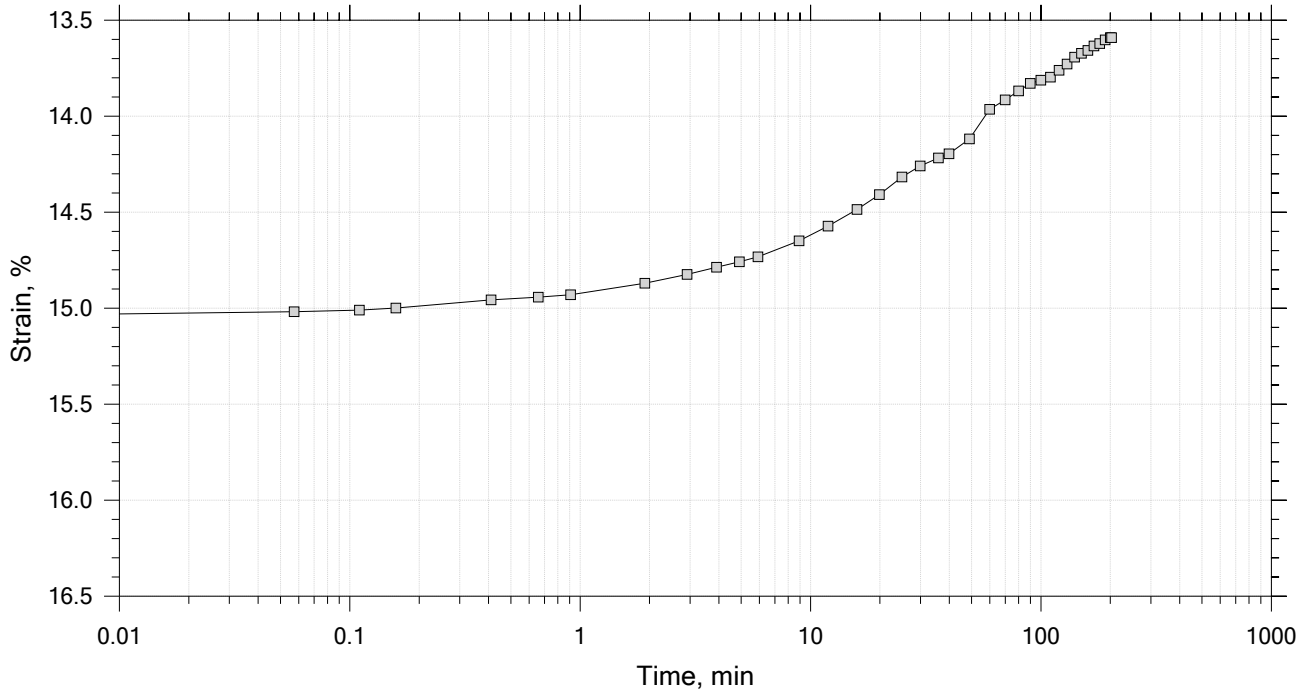


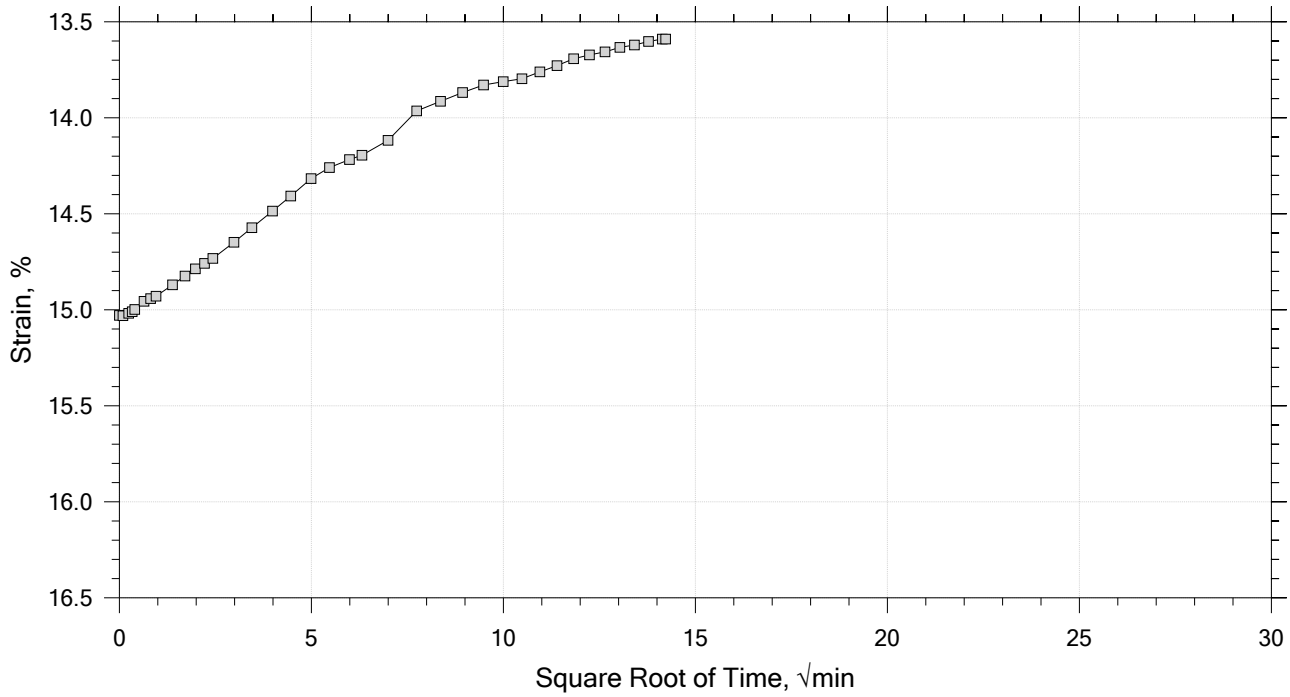


GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

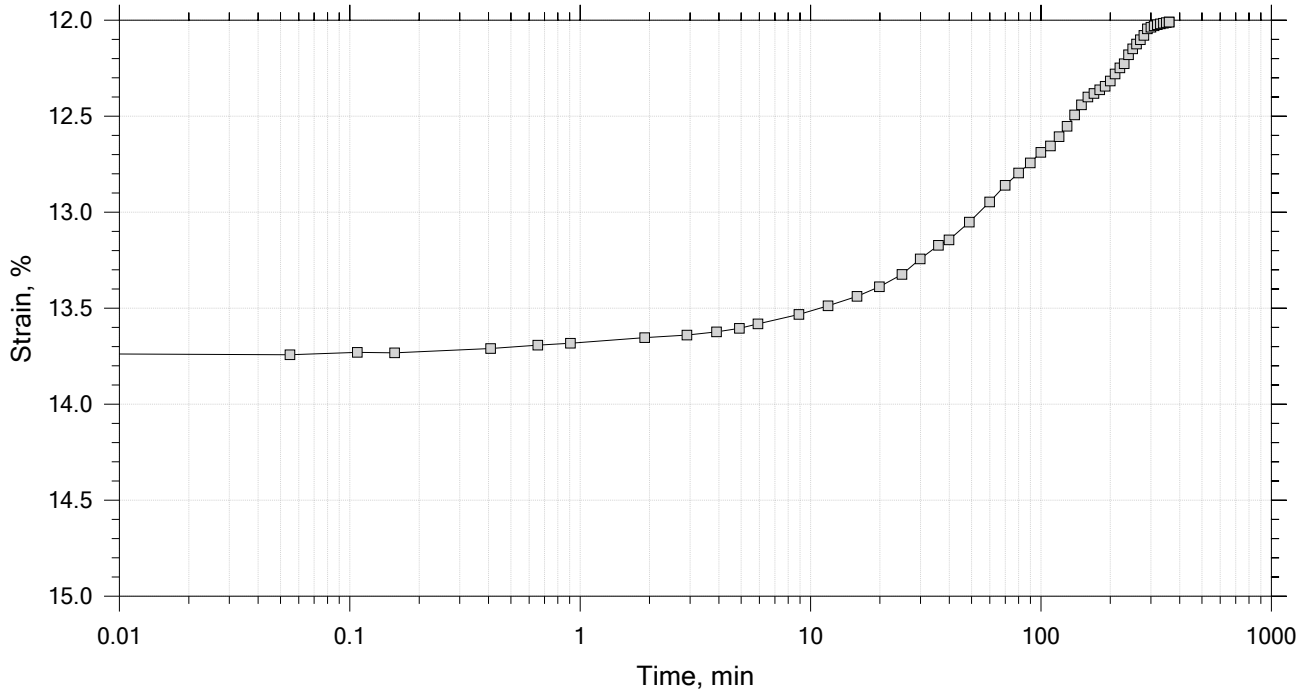


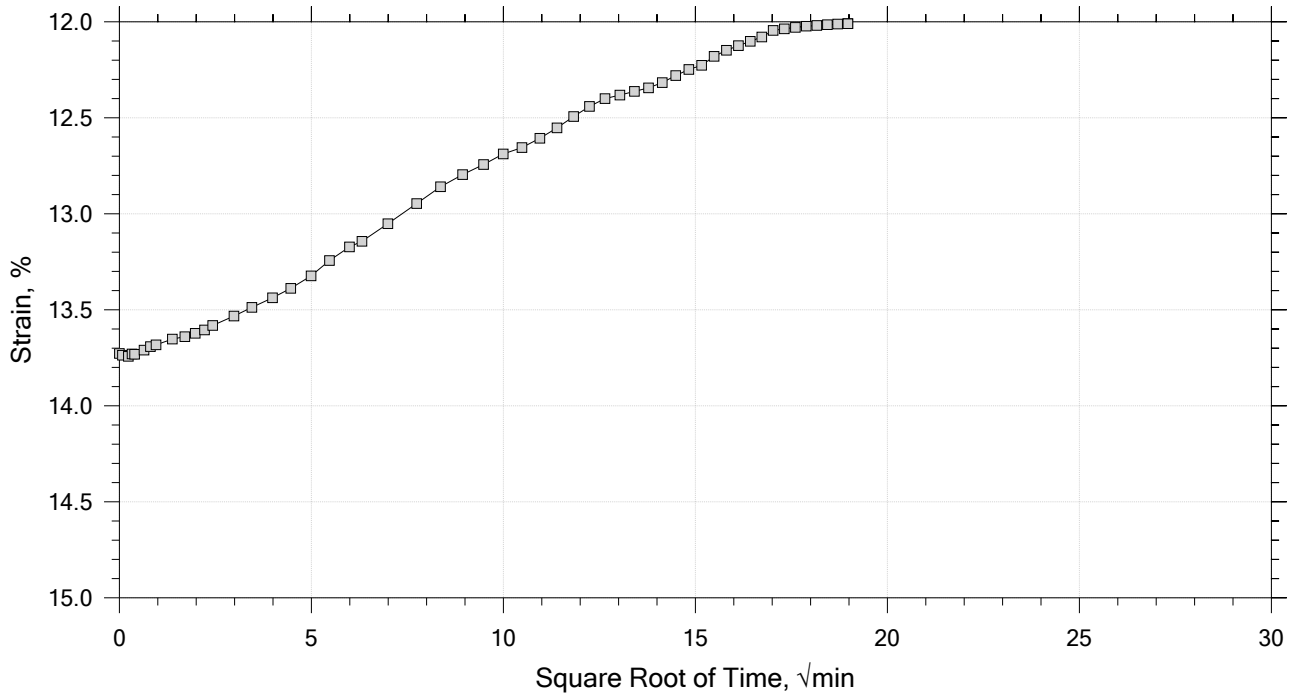


Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
Test No.: IP-21-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.17	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
Test No.: IP-21-3	Sample Type: intact	Elevation: ---
Description: Moist, dark brown clay with sand		
Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 43
Initial Height: 1.00 in	Initial Void Ratio: 0.698	Plastic Limit: 20
Final Height: 0.89 in	Final Void Ratio: 0.512	Plasticity Index: 23

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-4248	RING		E4833
Mass Container, gm	8.07	110.87	110.87	8.29
Mass Container + Wet Soil, gm	99.42	271.46	266	163.04
Mass Container + Dry Soil, gm	82.44	241.77	241.77	138.87
Mass Dry Soil, gm	74.37	130.9	130.9	130.58
Water Content, %	22.83	22.68	18.51	18.51
Void Ratio	---	0.70	0.51	---
Degree of Saturation, %	---	89.76	100.00	---
Dry Unit Weight, pcf	---	101.59	114.15	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

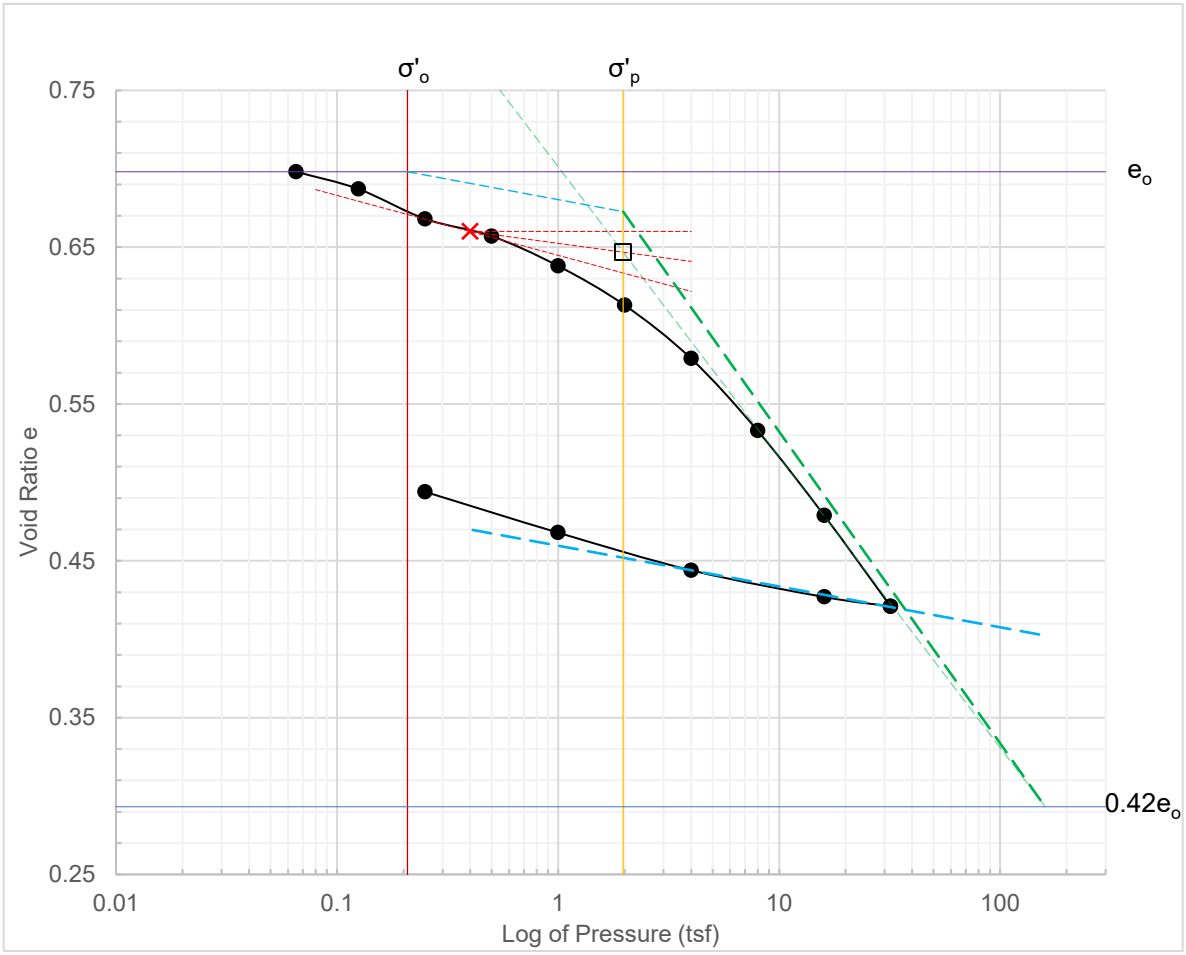
Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0653	0.0002203	0.698	0.0220	16.910	2.09e-04	3.38e-03	1.32e-05
2	0.125	0.006634	0.687	0.663	7.360	4.77e-04	1.07e-01	9.59e-04
3	0.250	0.01817	0.668	1.82	7.323	4.71e-04	9.23e-02	8.13e-04
4	0.500	0.02449	0.657	2.45	8.385	4.04e-04	2.53e-02	1.91e-04
5	1.00	0.03530	0.638	3.53	11.615	2.86e-04	2.16e-02	1.16e-04
6	2.00	0.05029	0.613	5.03	28.395	1.14e-04	1.50e-02	3.20e-05
7	4.00	0.07020	0.579	7.02	50.060	6.23e-05	9.96e-03	1.16e-05
8	8.00	0.09721	0.533	9.72	14.975	1.98e-04	6.75e-03	2.51e-05
9	16.0	0.1290	0.479	12.9	23.986	1.16e-04	3.97e-03	8.62e-06
10	32.0	0.1632	0.421	16.3	25.638	1.00e-04	2.14e-03	4.03e-06
11	16.0	0.1596	0.427	16.0	5.477	4.54e-04	2.25e-04	1.91e-06
12	4.00	0.1501	0.444	15.0	18.714	1.35e-04	7.97e-04	2.01e-06
13	1.00	0.1359	0.468	13.6	127.320	2.04e-05	4.72e-03	1.80e-06
14	0.250	0.1201	0.494	12.0	325.667	8.25e-06	2.11e-02	3.26e-06

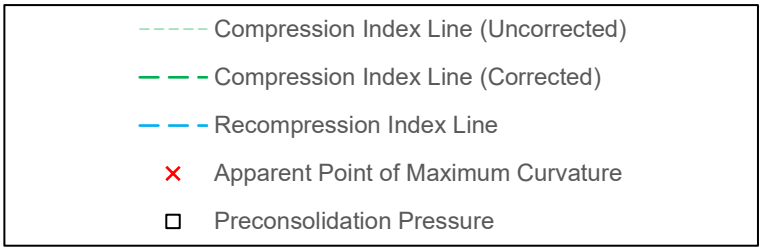
GeoTesting EXPRESS	Project: Eagle Point Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.17	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 3.4-3.5
	Test No.: IP-21-3	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown clay with sand		
	Remarks: System LTIII-G, Swell Pressure =		
	Displacement at End of Increment		

Boring: B-4.17

Depth: 3.4’-3.5’

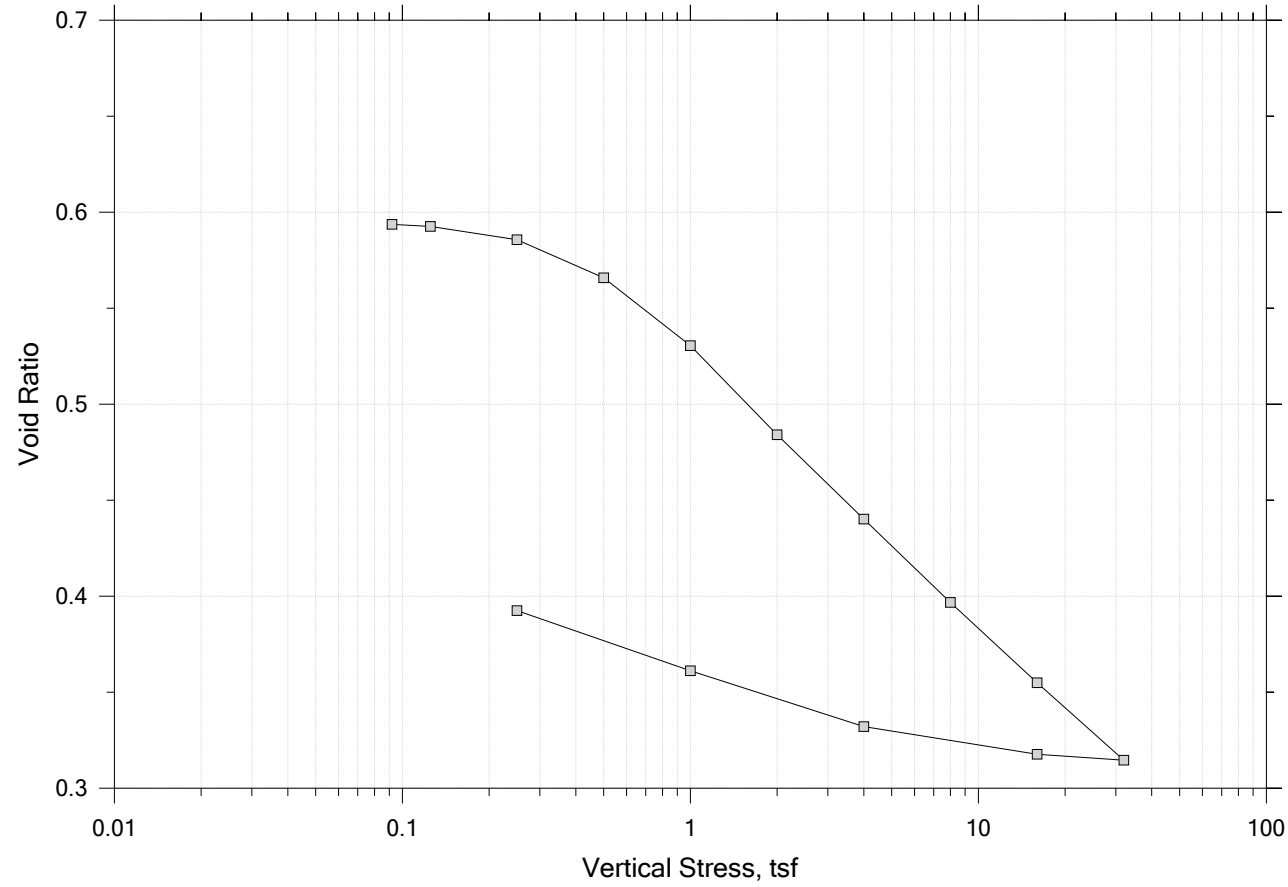
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.21
Preconsolidation Pressure, σ'_p (tsf) = 1.97
Compression Index, C_c = 0.20
Recompression Index, C_r = 0.026

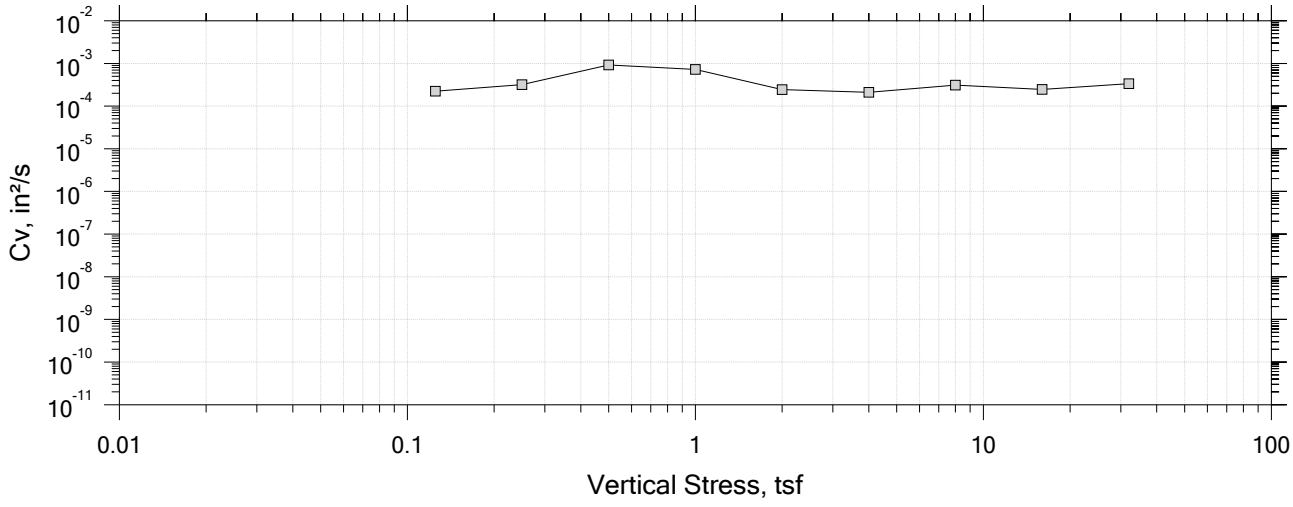




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

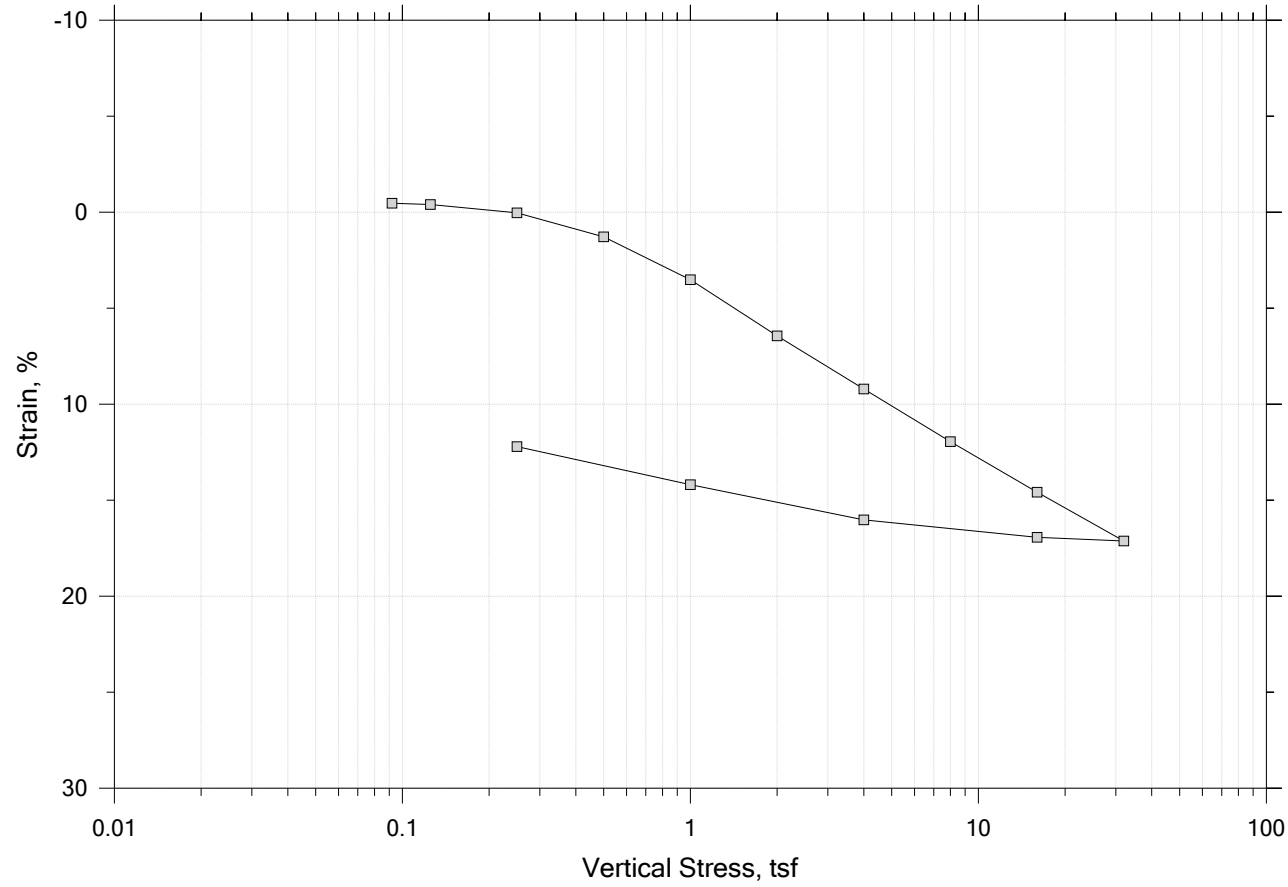


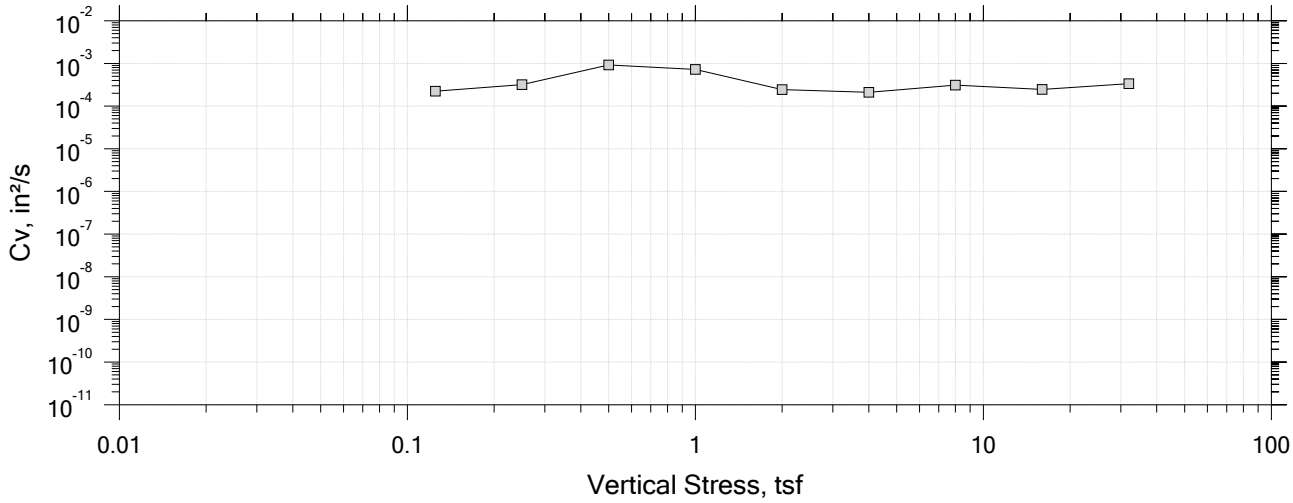


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report





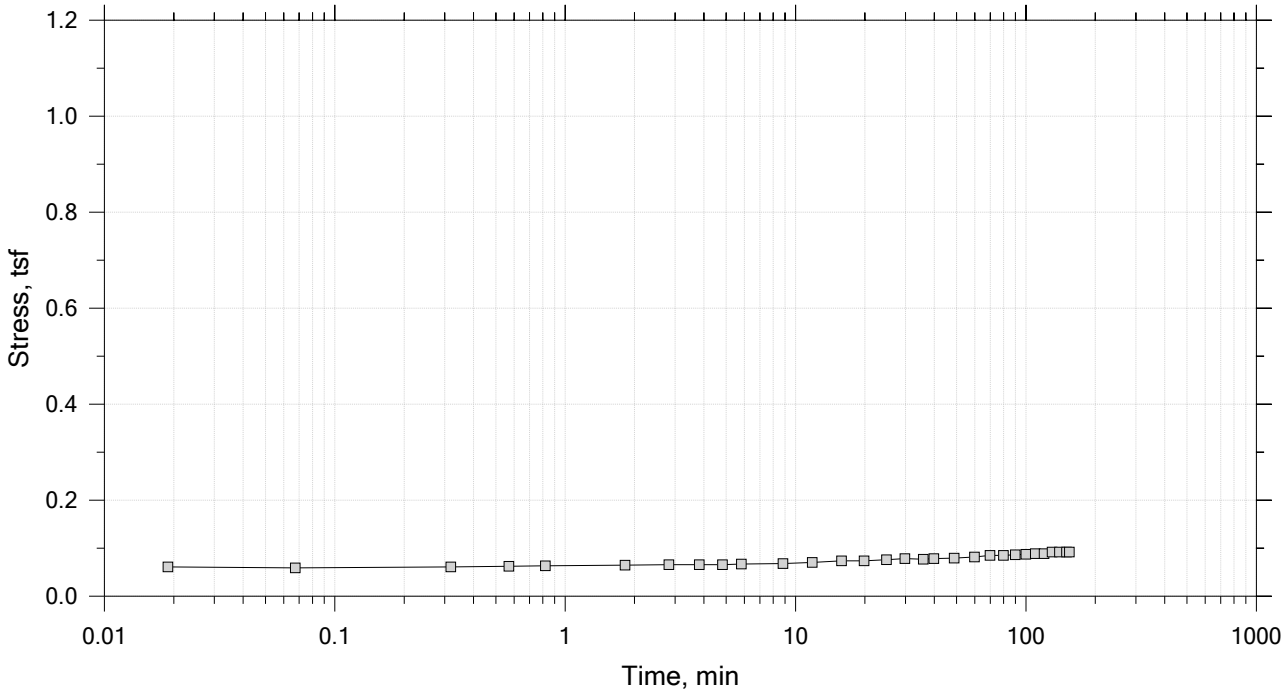
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		
	Displacement at End of Increment		

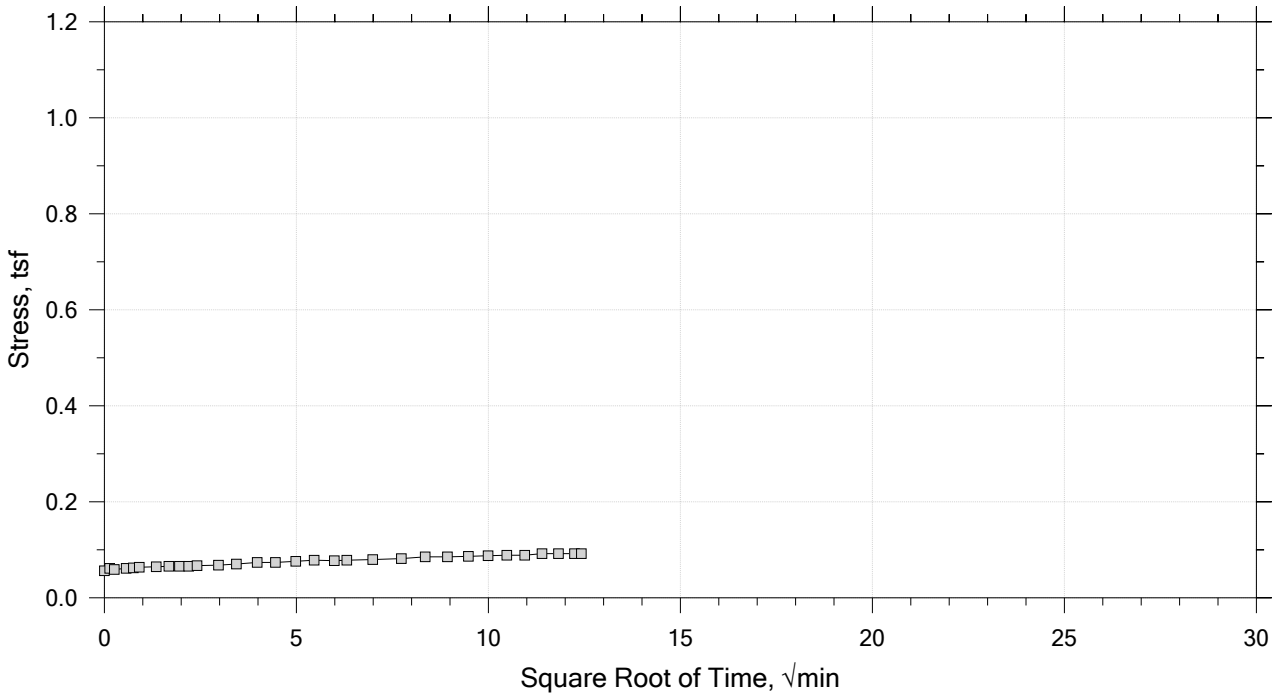
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14

Constant Volume Step

Stress: 0.092 tsf

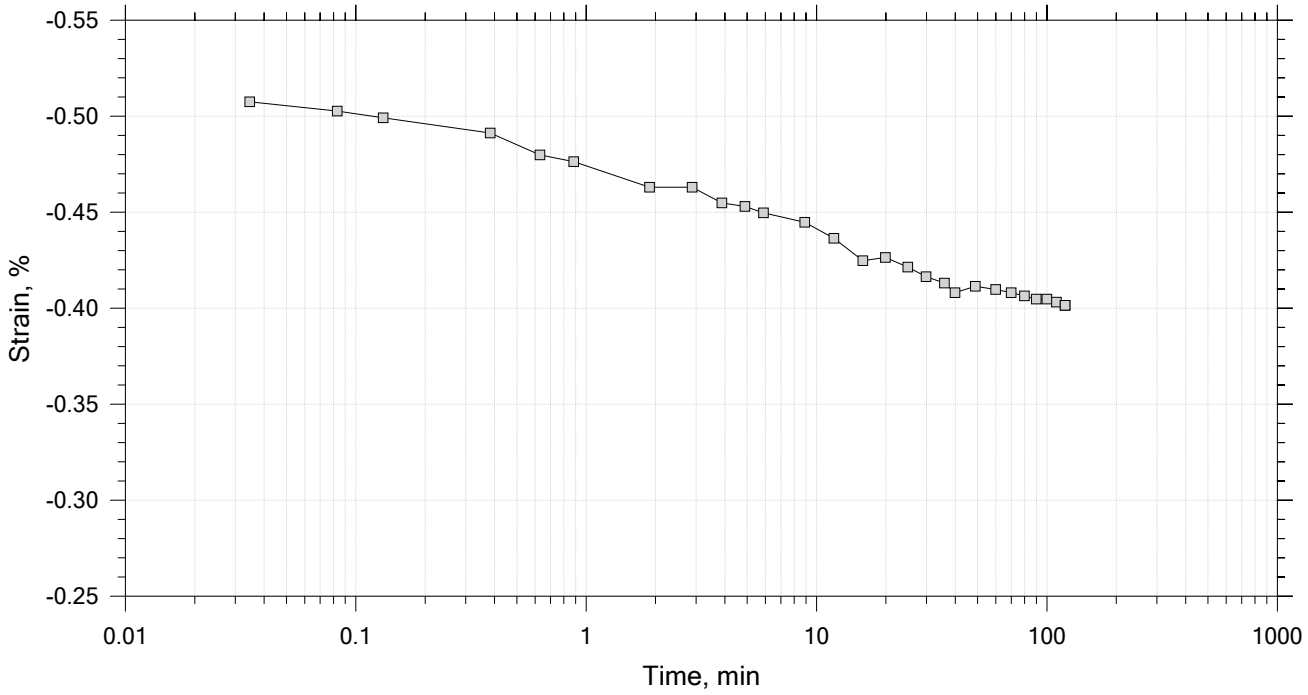


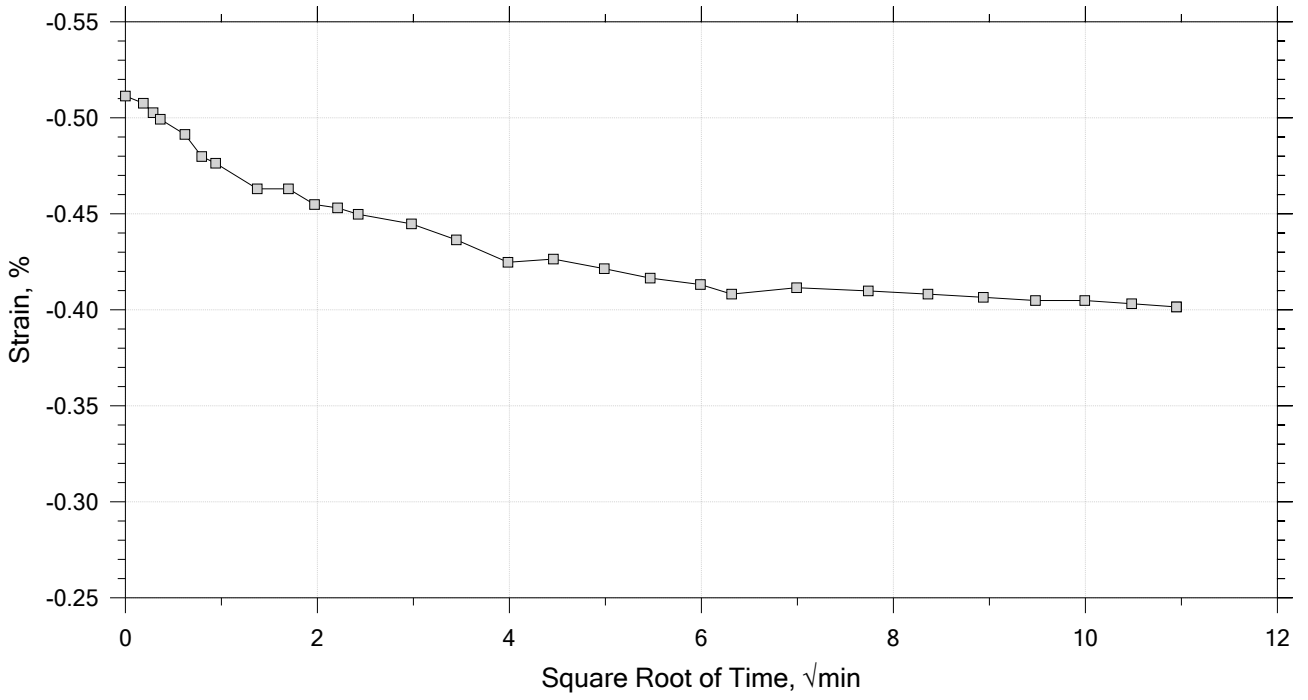


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf





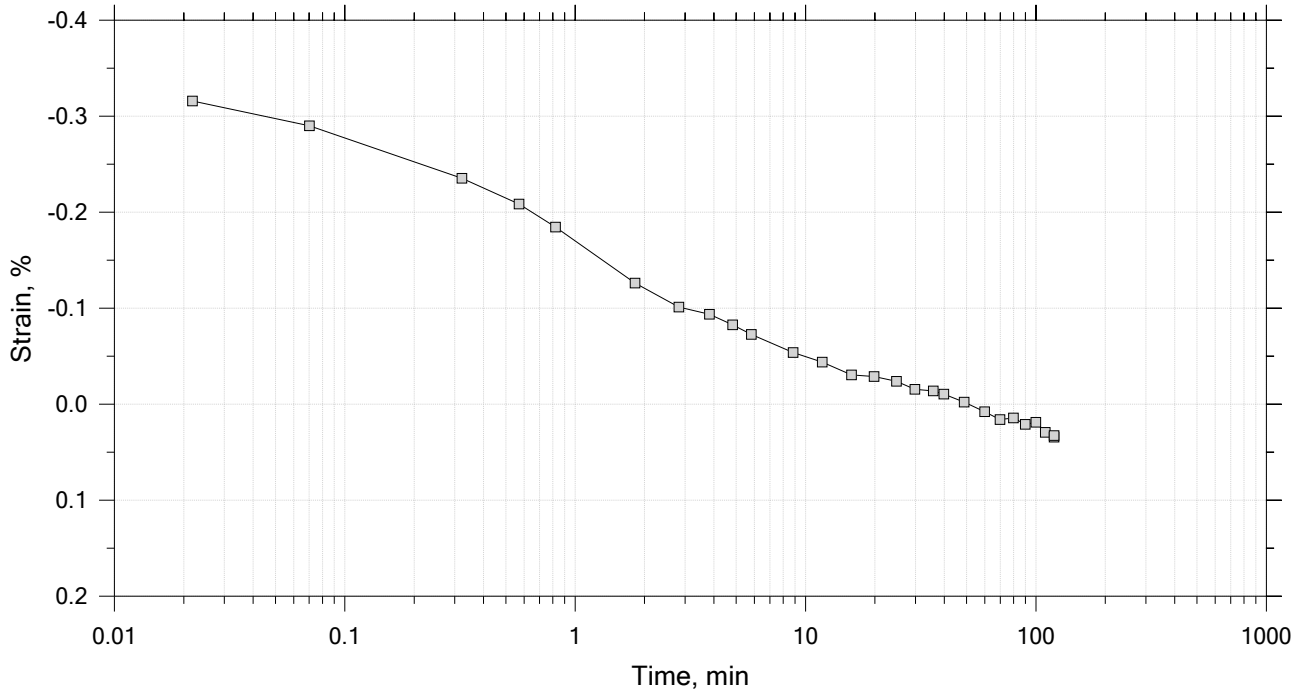
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

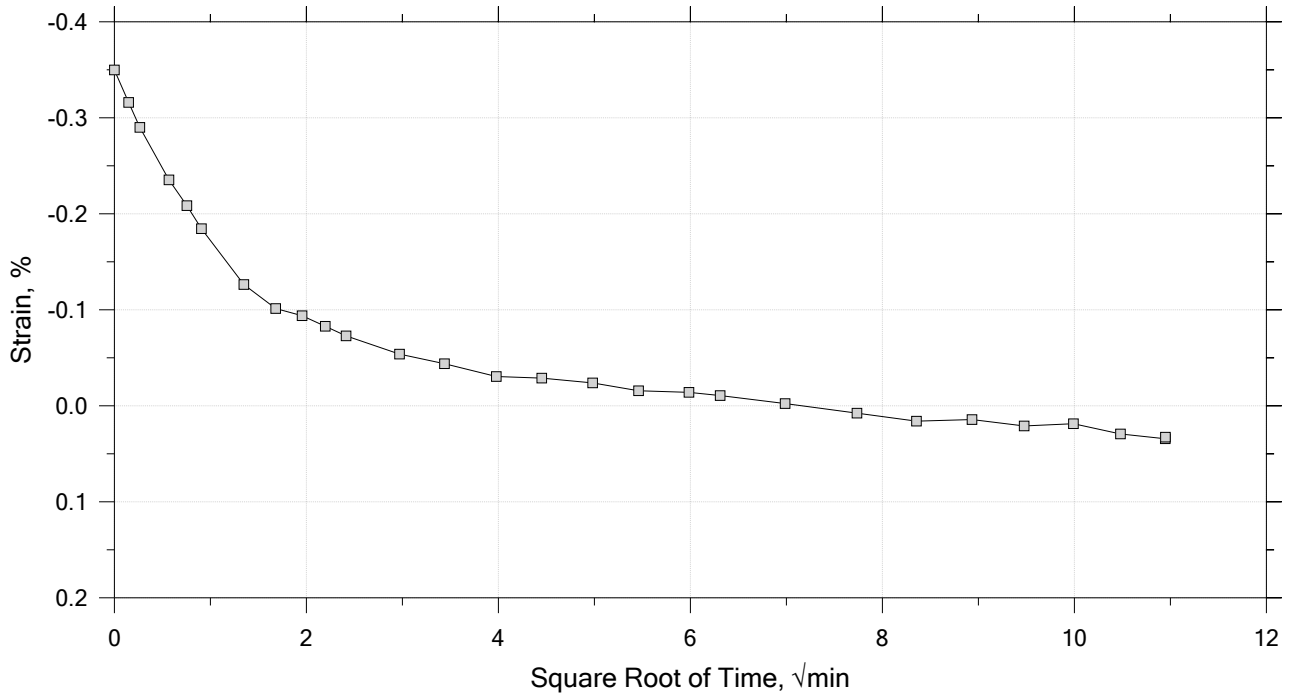
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf

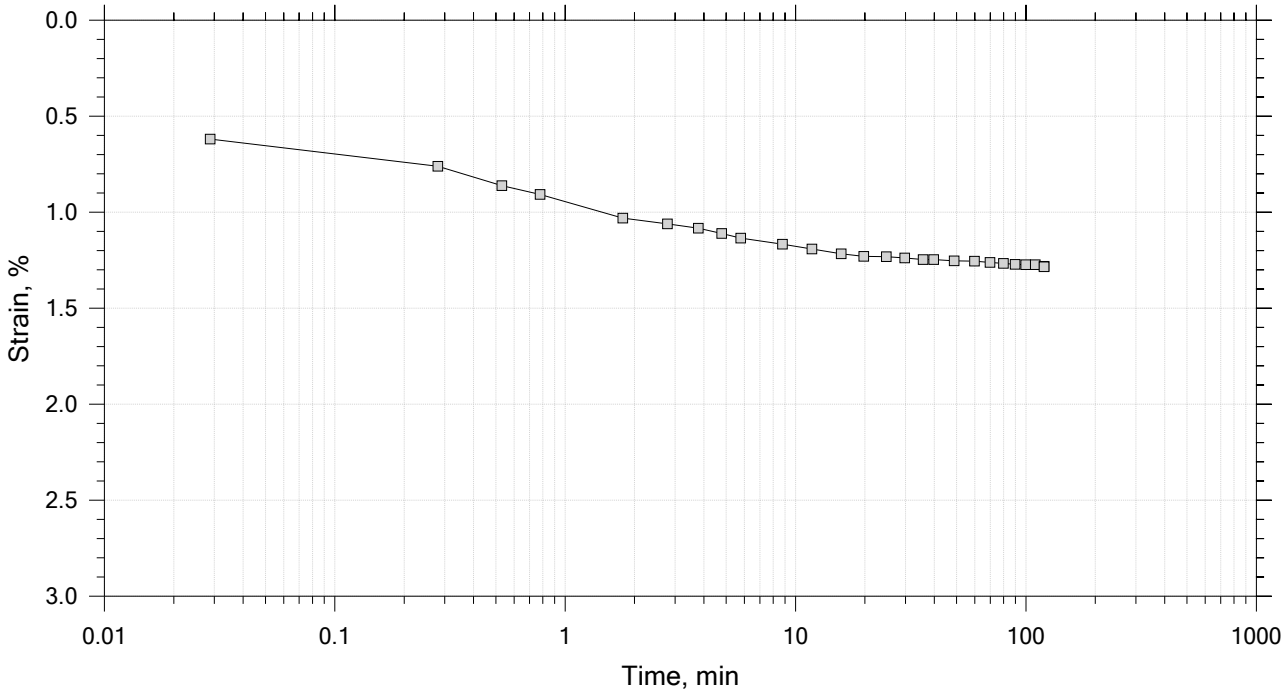


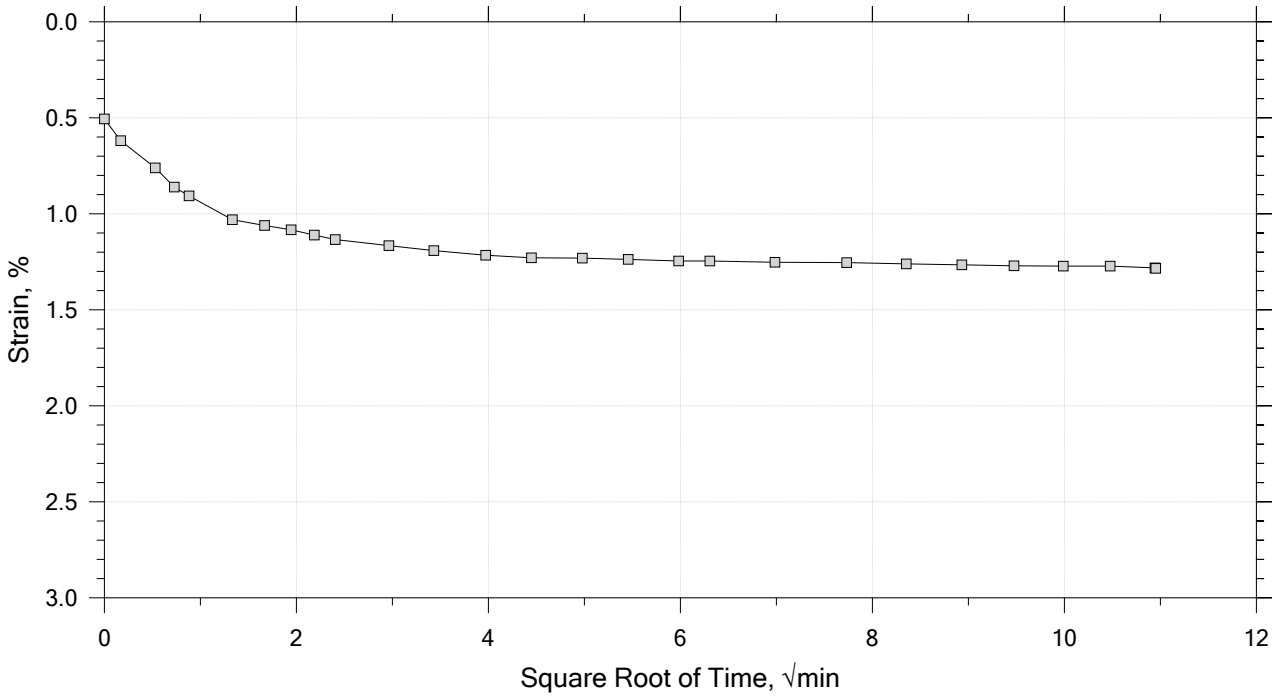


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





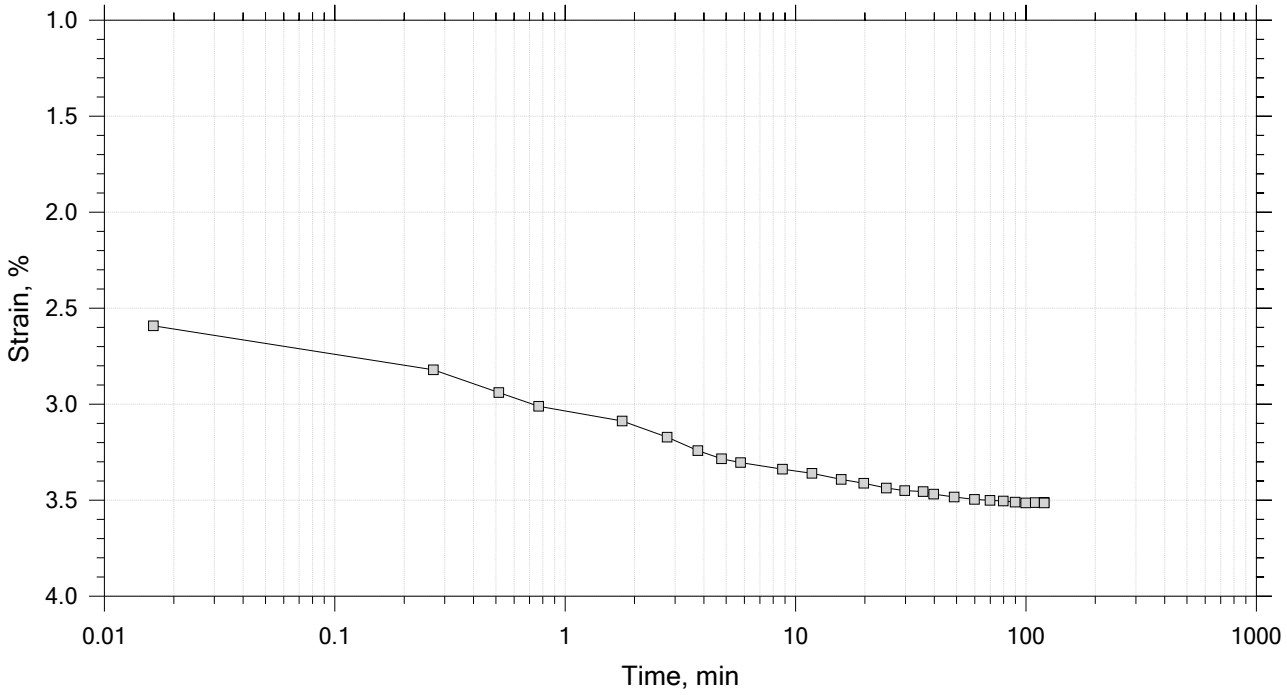
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

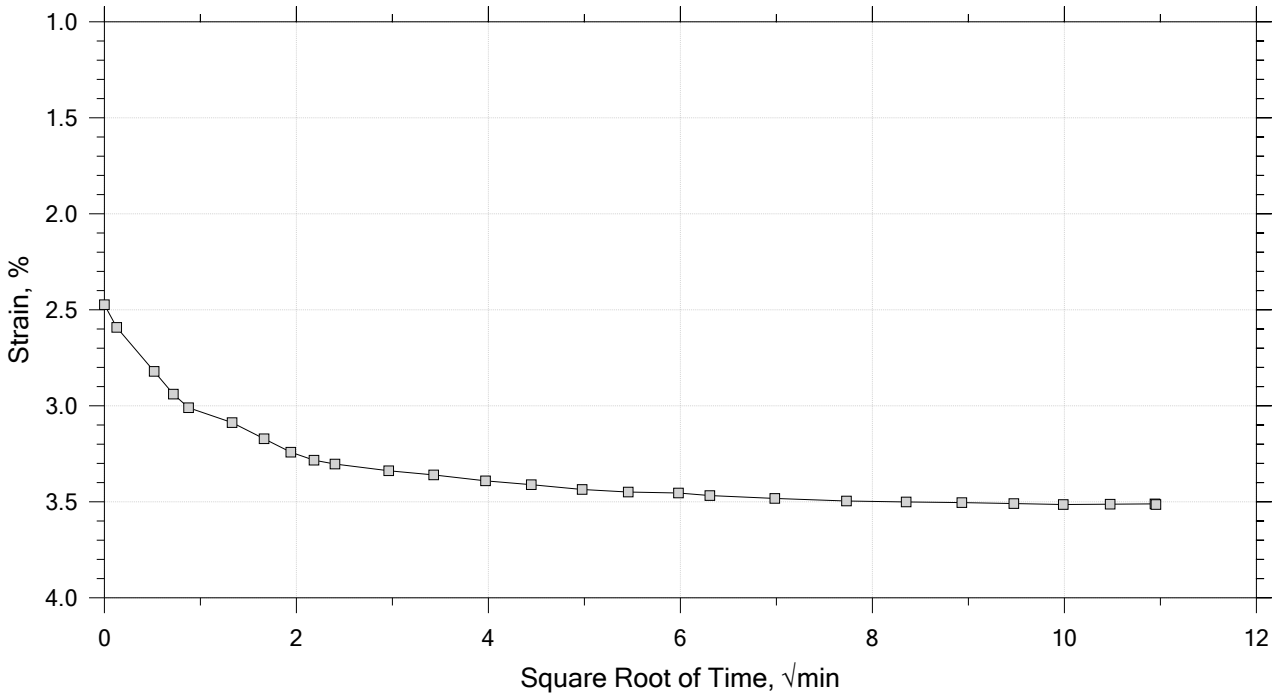
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





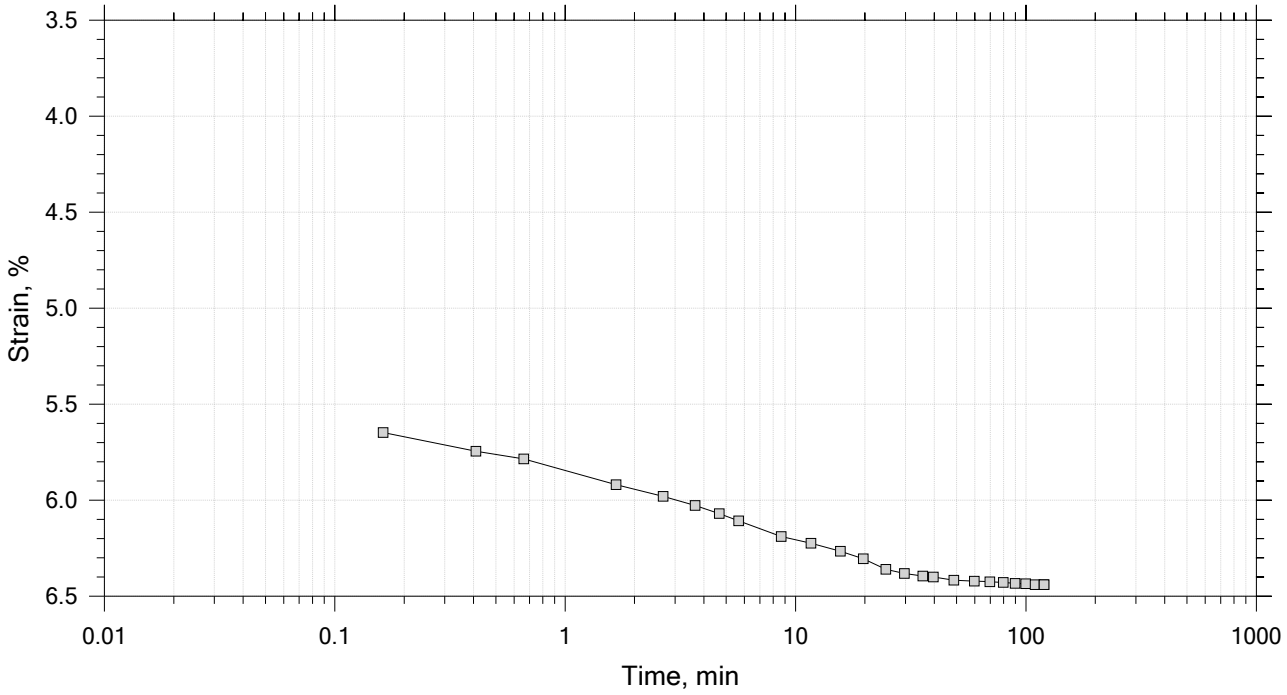
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

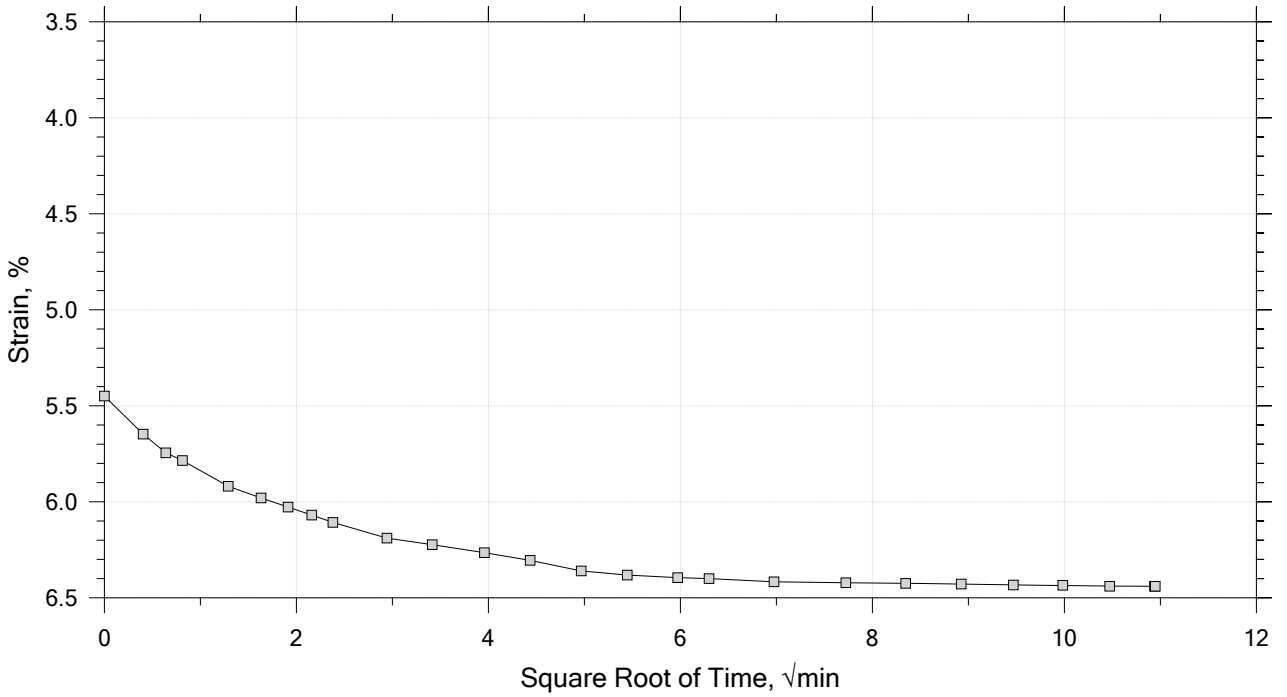
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





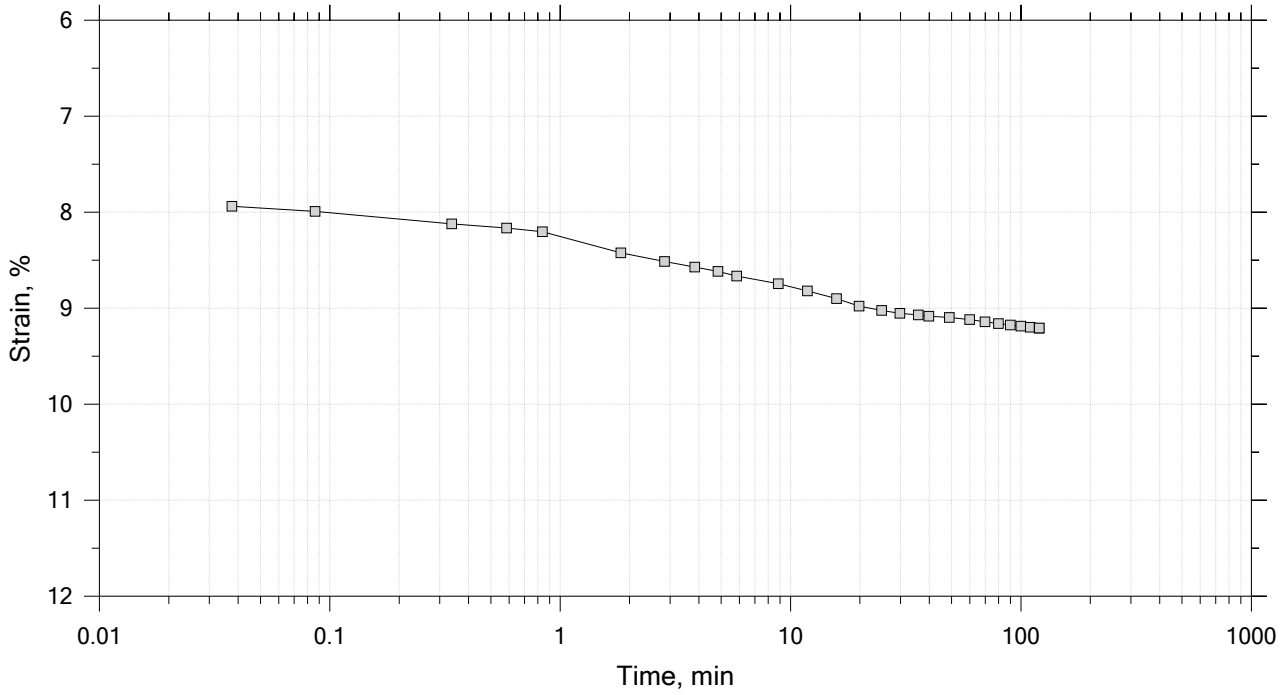
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

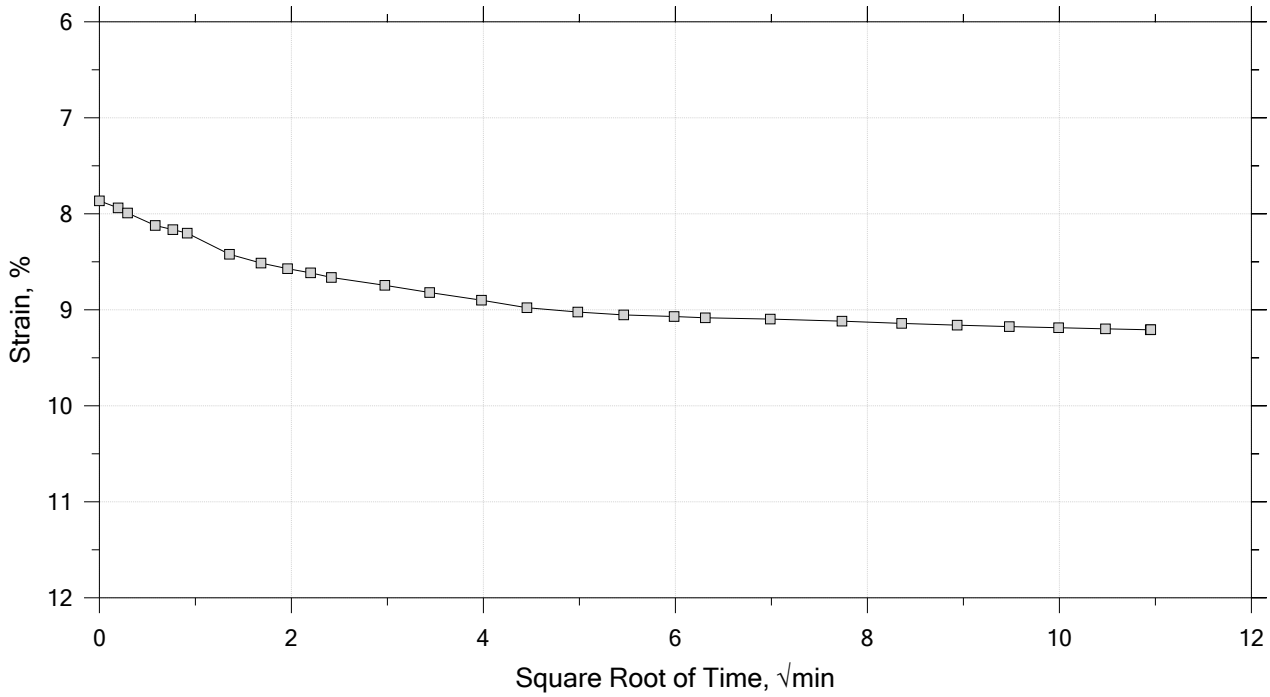
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf





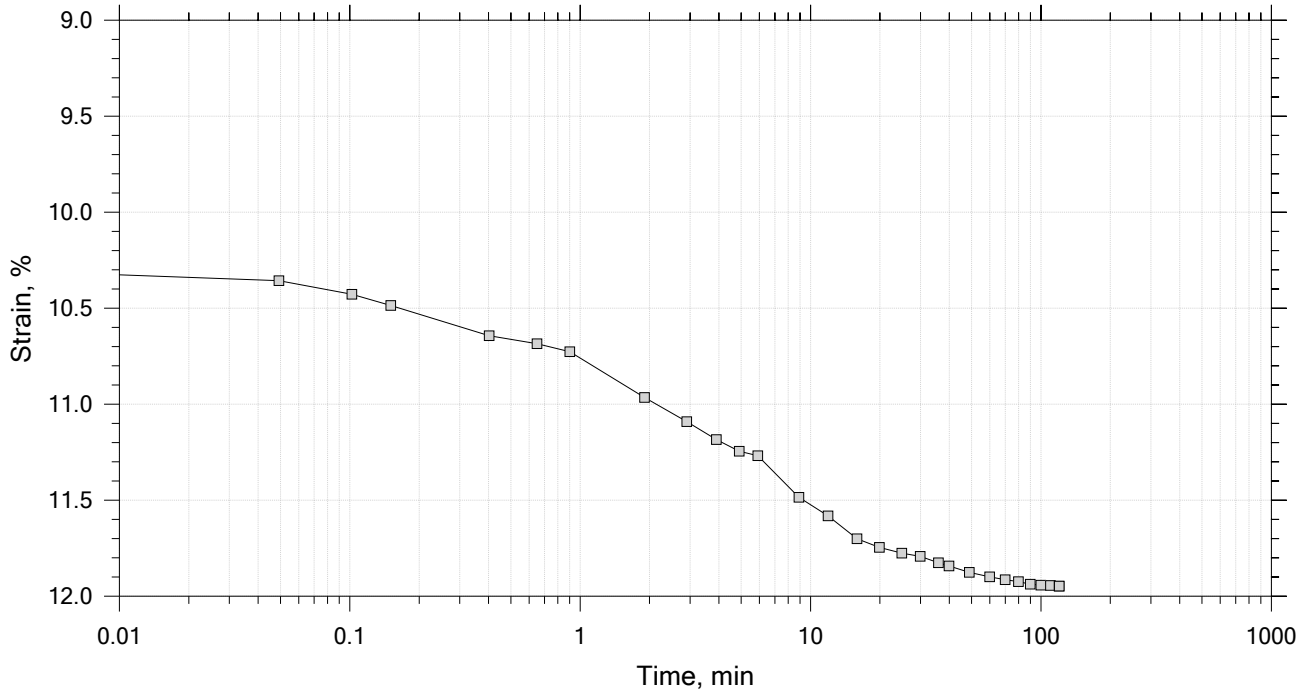
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

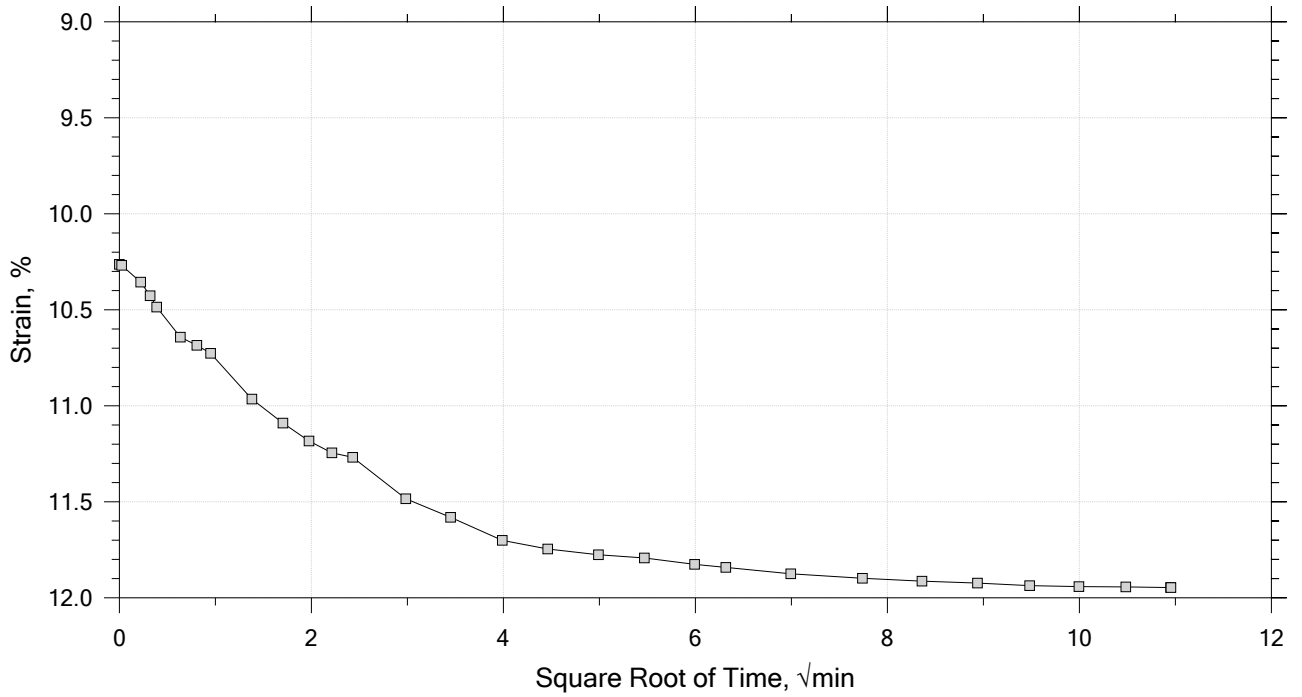
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

Stress: 8 tsf





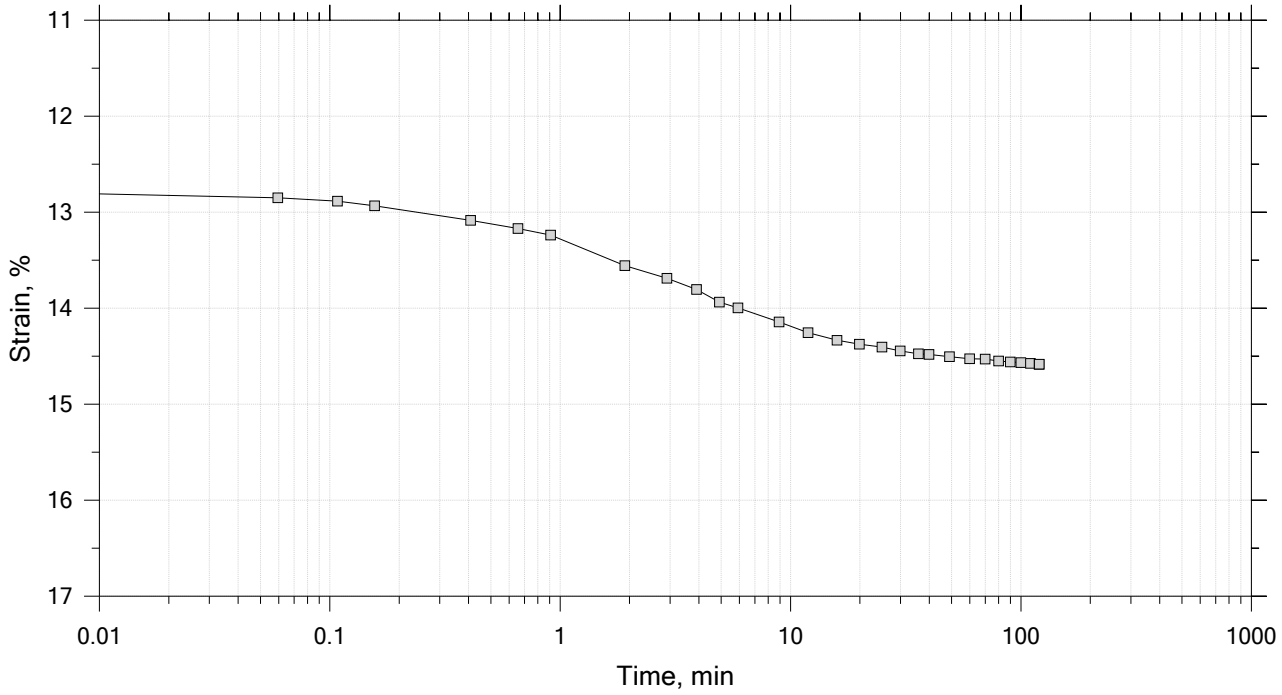
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

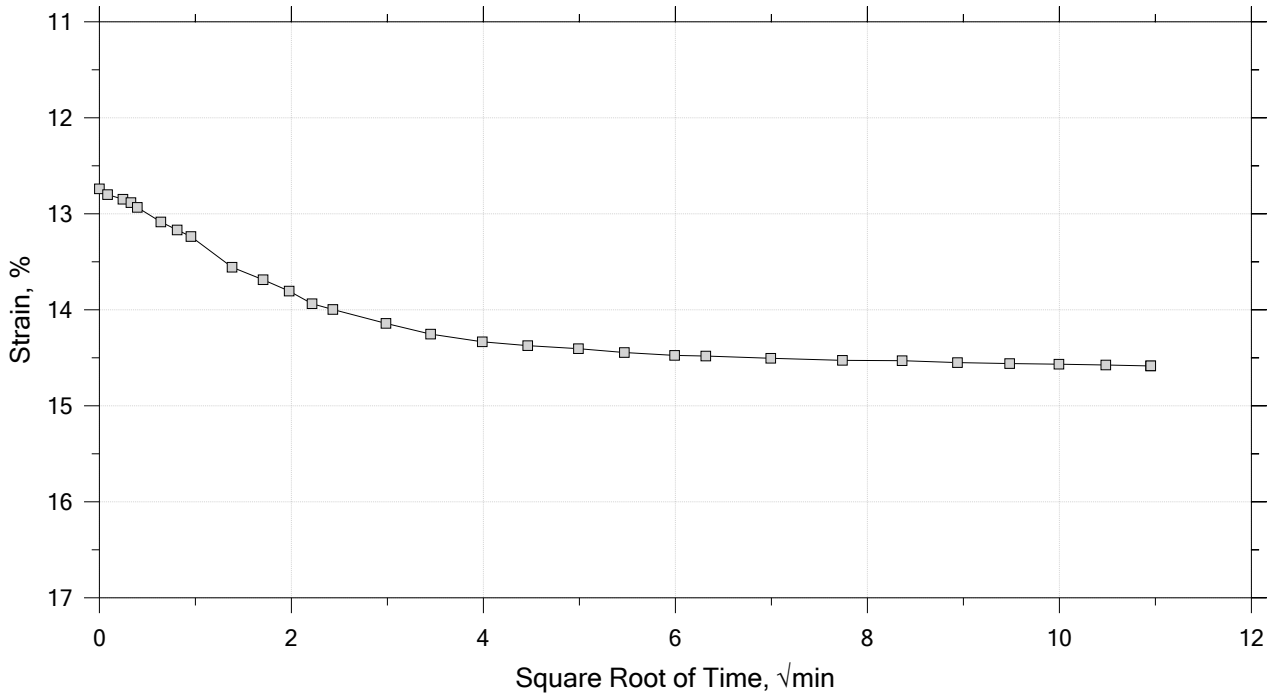
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

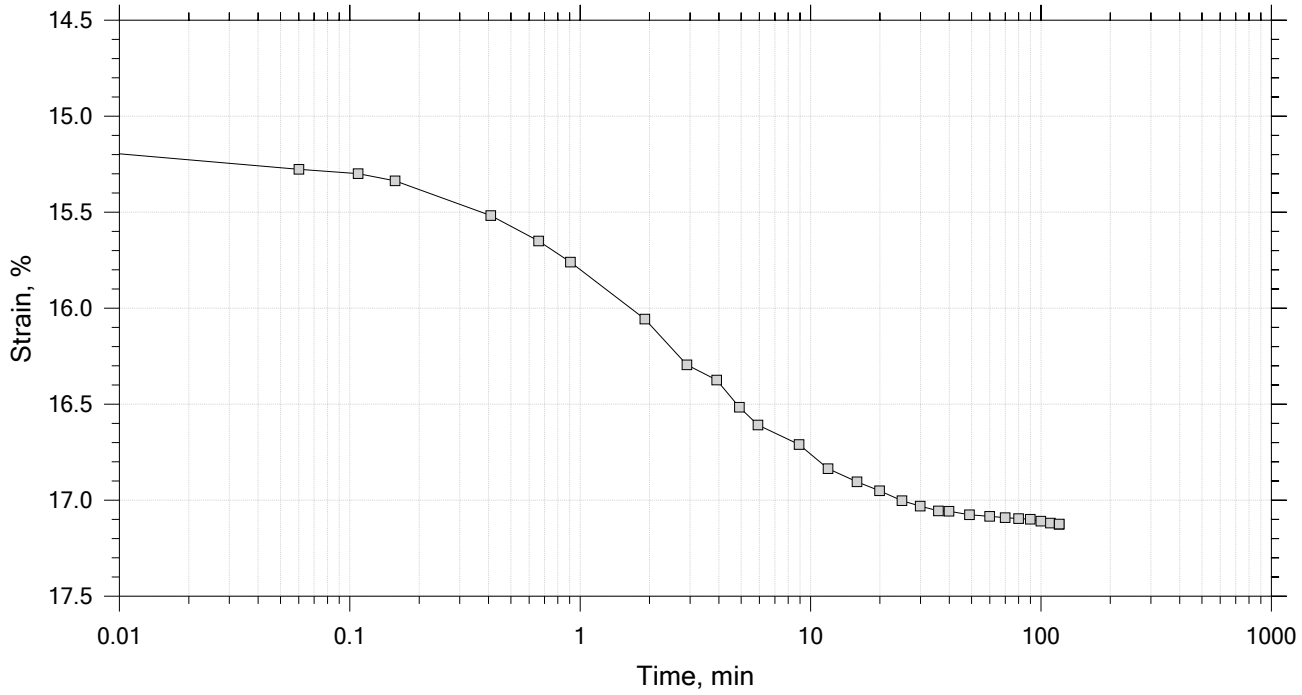


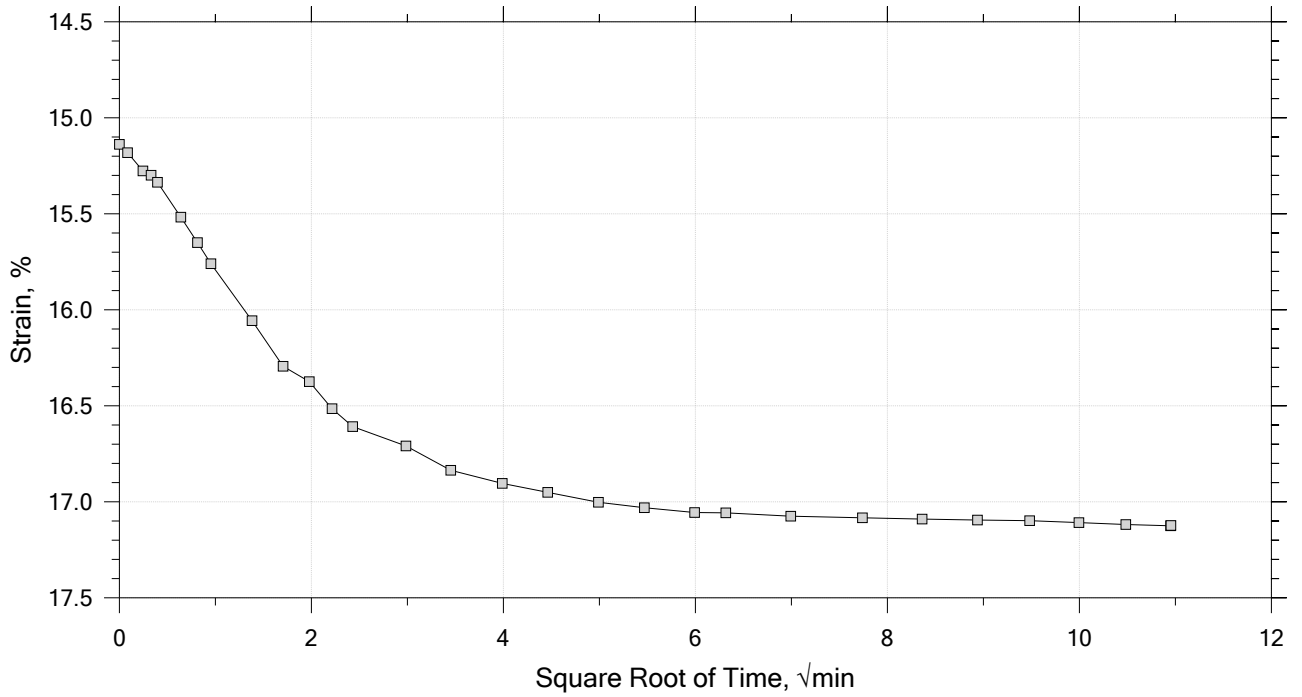


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

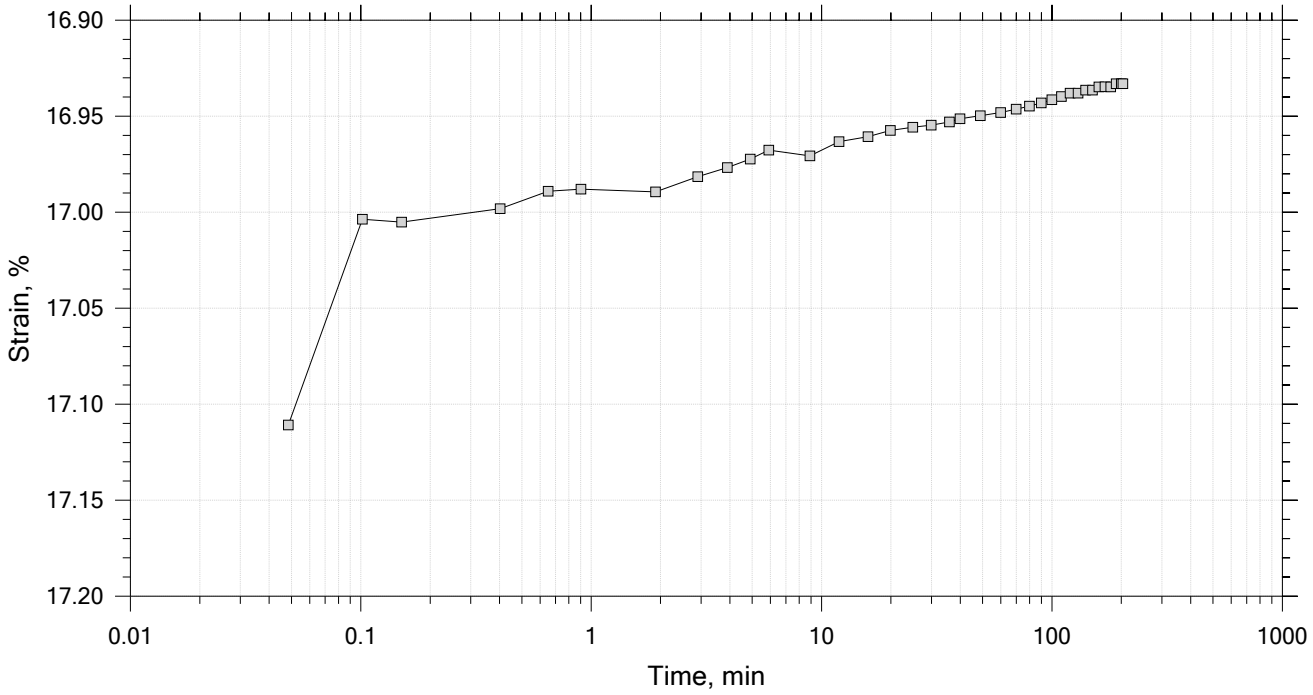


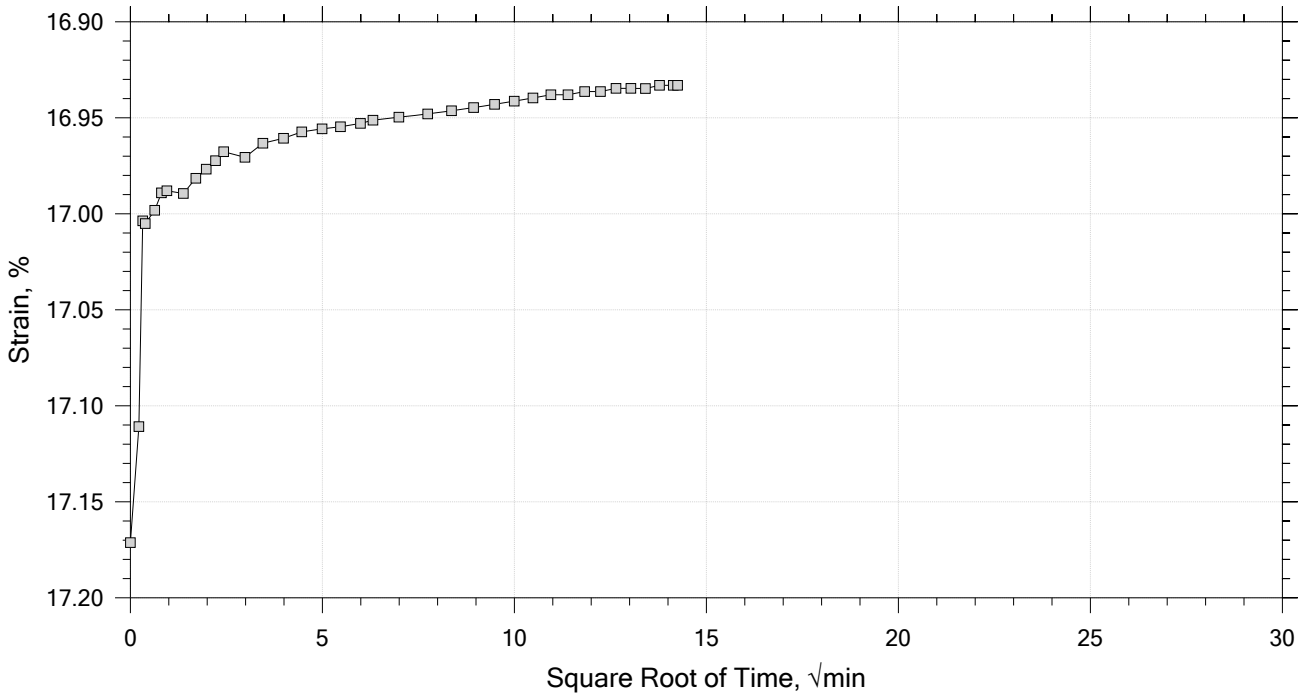


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

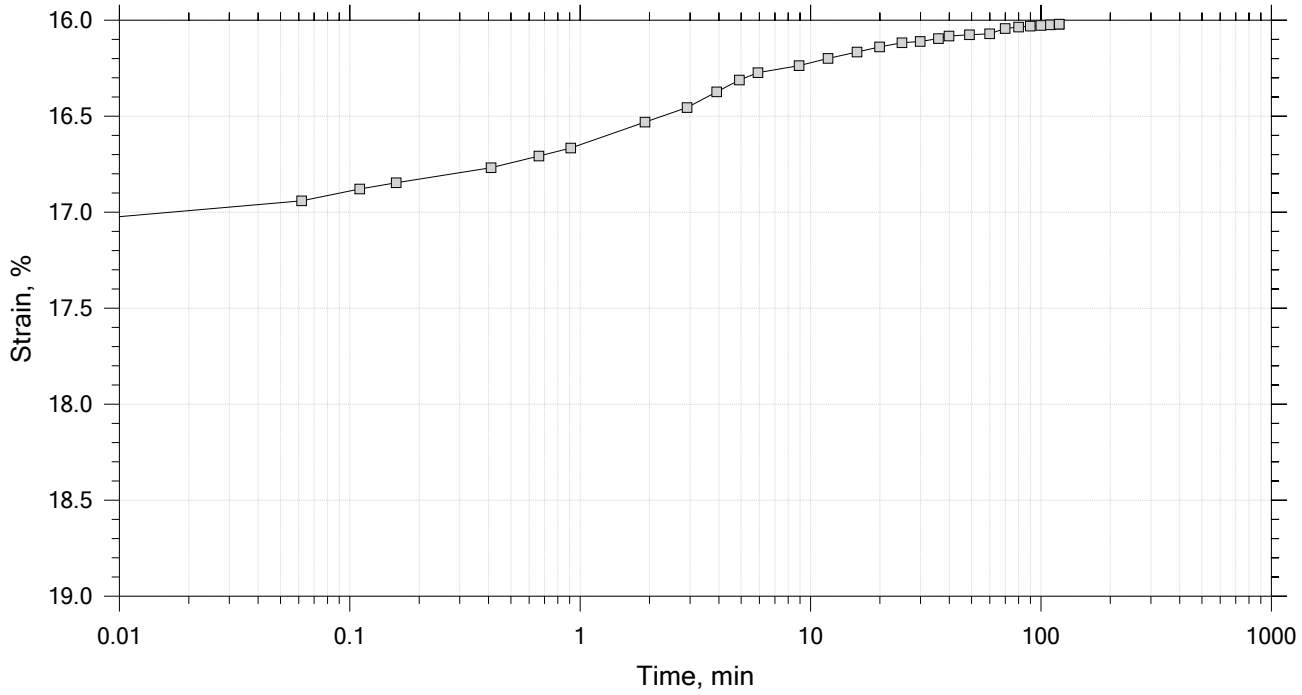


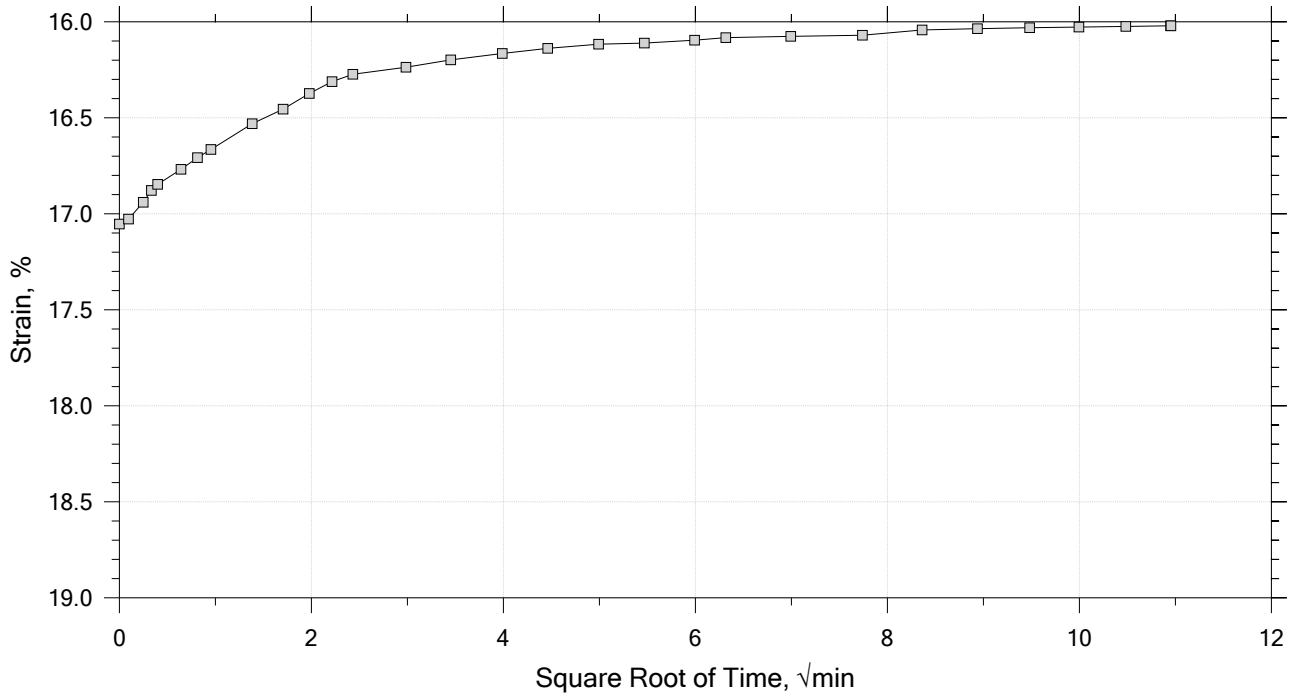


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
Test No.: IP-22-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf





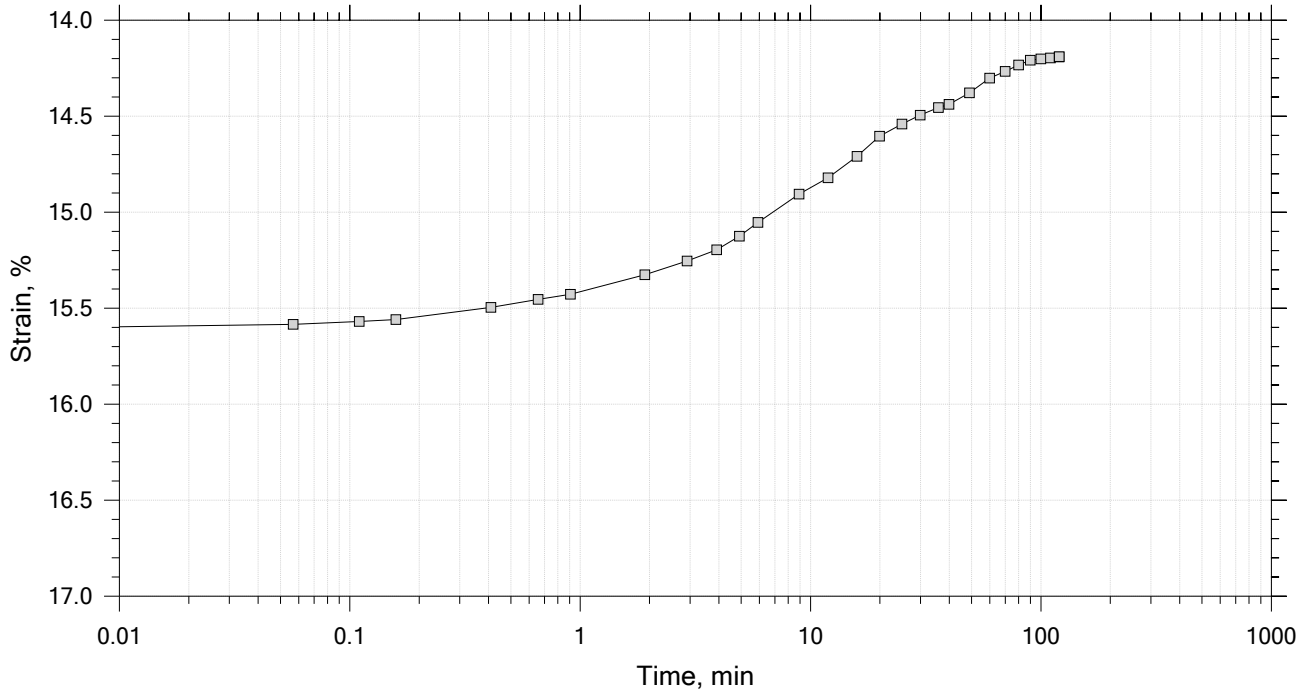
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
Test No.: IP-22-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

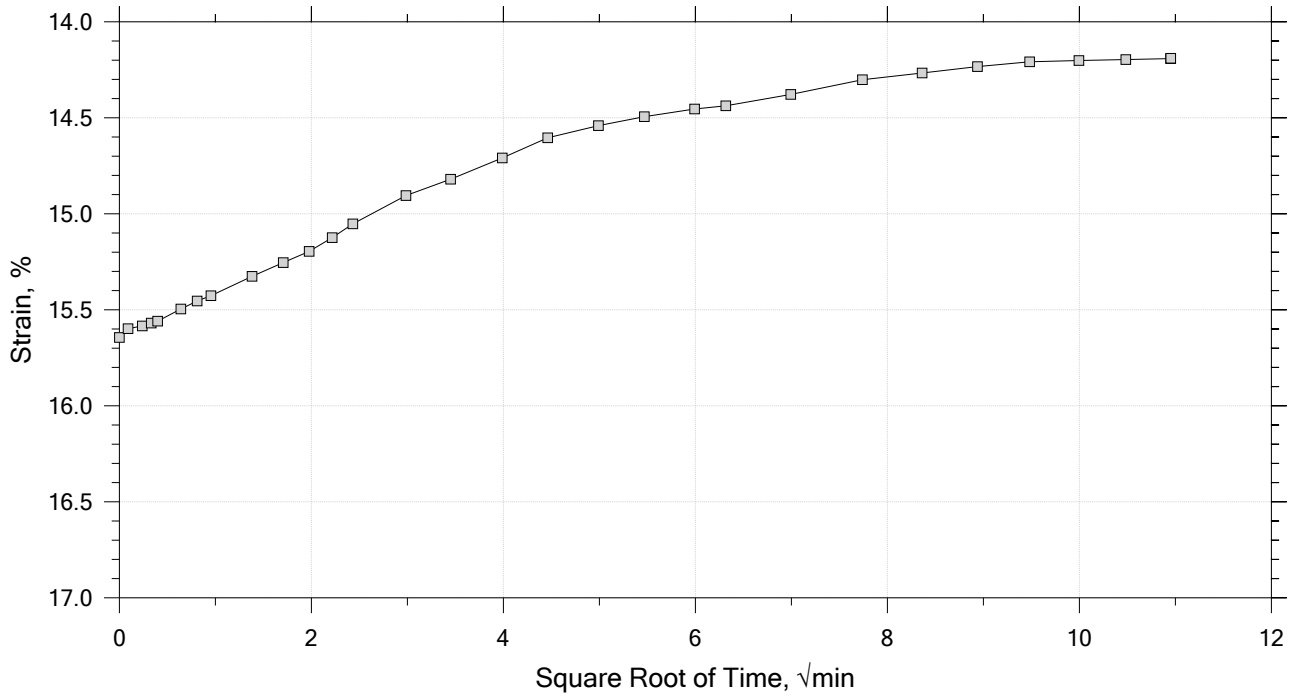
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 1 tsf

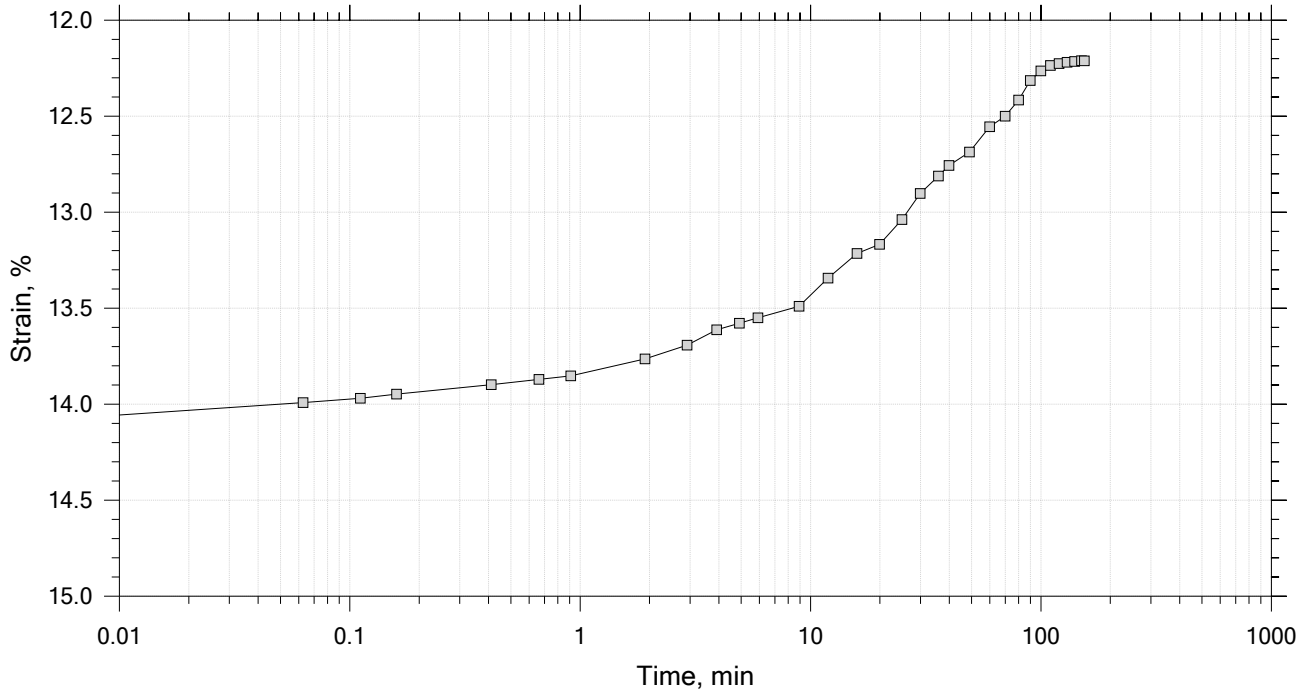


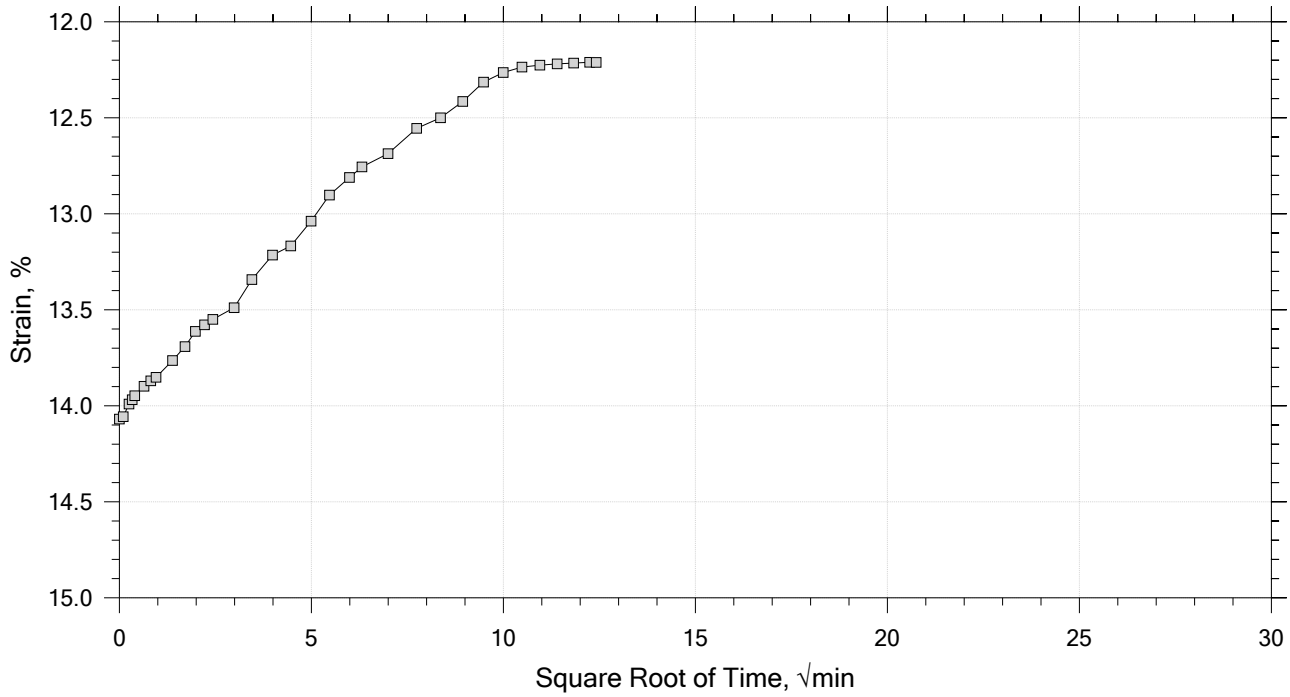


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
Test No.: IP-22-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
Test No.: IP-22-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.77	Liquid Limit: 39
Initial Height: 1.00 in	Initial Void Ratio: 0.586	Plastic Limit: 20
Final Height: 0.88 in	Final Void Ratio: 0.393	Plasticity Index: 19

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-4513	RING		E2647
Mass Container, gm	8.28	111.22	111.22	8.71
Mass Container + Wet Soil, gm	146.88	273.32	271.51	168.79
Mass Container + Dry Soil, gm	127.03	251.6	251.6	148.91
Mass Dry Soil, gm	118.75	140.38	140.38	140.2
Water Content, %	16.72	15.47	14.18	14.18
Void Ratio	---	0.59	0.39	---
Degree of Saturation, %	---	73.05	100.00	---
Dry Unit Weight, pcf	---	108.95	124.1	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
	Test No.: IP-22-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0920	-0.004690	0.594	-0.469	0.000	0.00e+00	-5.10e-02	-0.00e+00
2	0.125	-0.004015	0.593	-0.401	15.881	2.24e-04	2.05e-02	8.60e-05
3	0.250	0.0003268	0.586	0.0327	11.172	3.17e-04	3.47e-02	2.06e-04
4	0.500	0.01284	0.566	1.28	3.796	9.19e-04	5.01e-02	8.61e-04
5	1.00	0.03514	0.530	3.51	4.634	7.26e-04	4.46e-02	6.07e-04
6	2.00	0.06440	0.484	6.44	13.045	2.45e-04	2.93e-02	1.34e-04
7	4.00	0.09206	0.440	9.21	14.270	2.10e-04	1.38e-02	5.45e-05
8	8.00	0.1195	0.397	11.9	9.125	3.10e-04	6.85e-03	3.97e-05
9	16.0	0.1458	0.355	14.6	10.776	2.47e-04	3.30e-03	1.52e-05
10	32.0	0.1712	0.315	17.1	7.488	3.34e-04	1.59e-03	9.94e-06
11	16.0	0.1693	0.318	16.9	5.612	4.33e-04	1.19e-04	9.68e-07
12	4.00	0.1602	0.332	16.0	5.213	4.73e-04	7.60e-04	6.73e-06
13	1.00	0.1419	0.361	14.2	34.066	7.48e-05	6.10e-03	8.54e-06
14	0.250	0.1221	0.393	12.2	109.149	2.44e-05	2.64e-02	1.21e-05

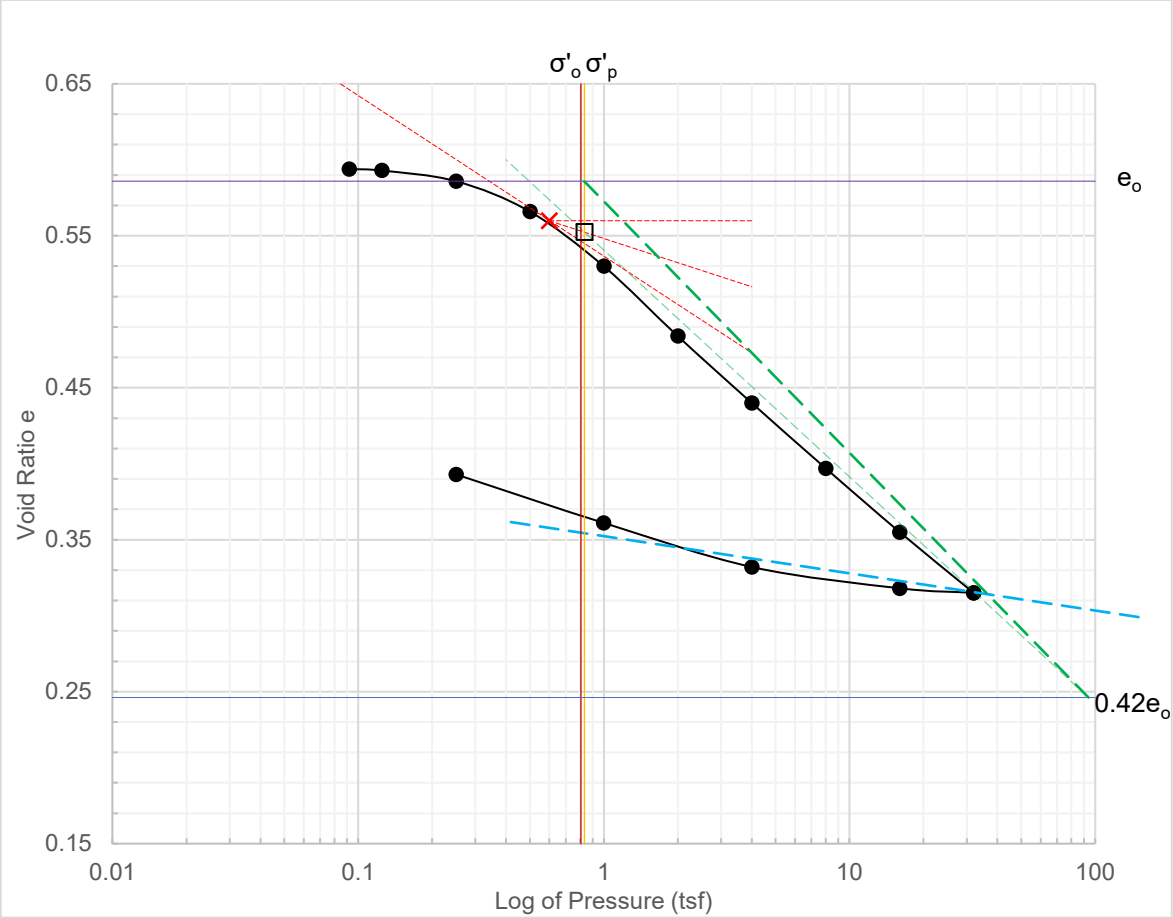
GeoTesting EXPRESS

Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.7-12.8
Test No.: IP-22-1	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-H, Swell Pressure = 0.092 tsf		
Displacement at End of Increment		

Boring: B-4.18

Depth: 12.7'-12.8'

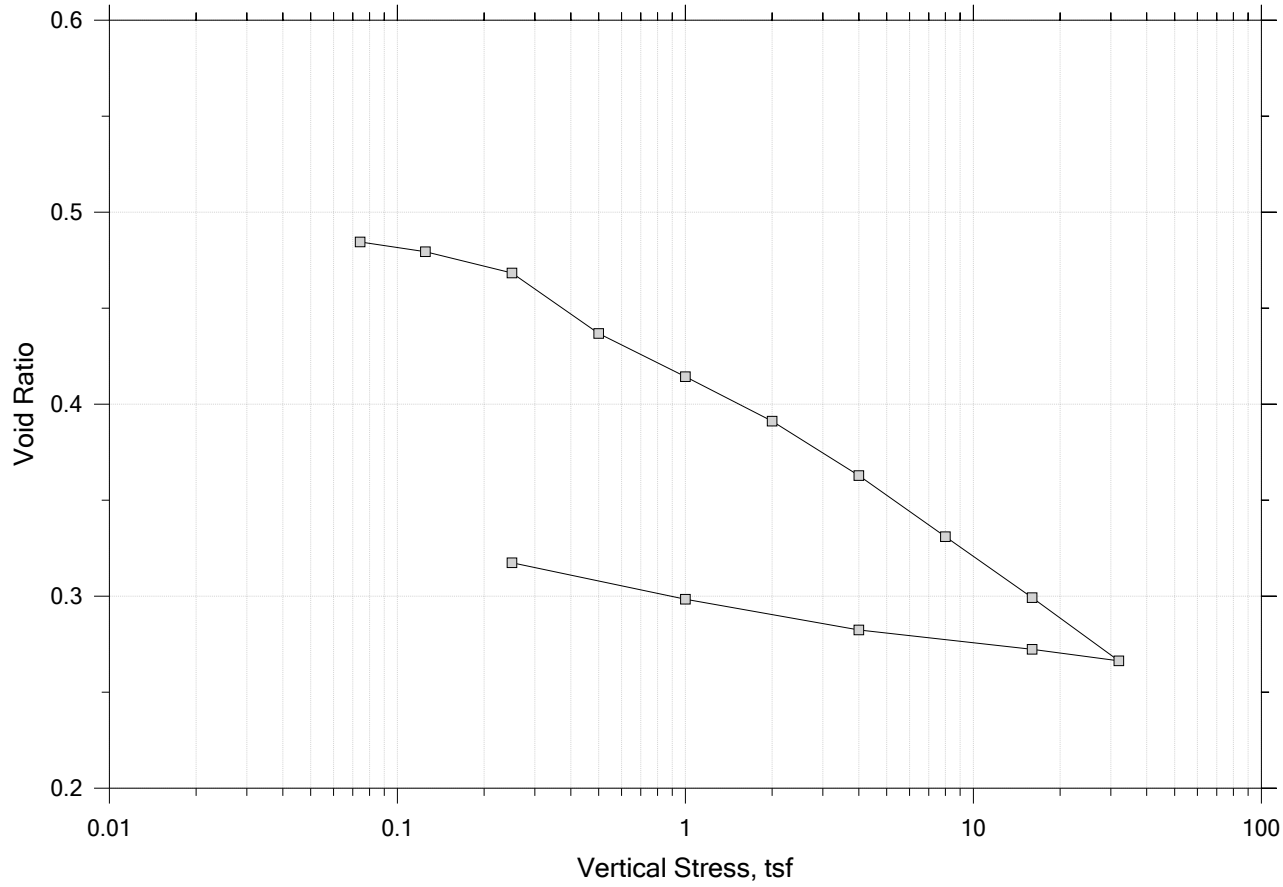
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.81
Preconsolidation Pressure, σ'_p (tsf) = 0.83
Compression Index, C_c = 0.17
Recompression Index, C_r = 0.024

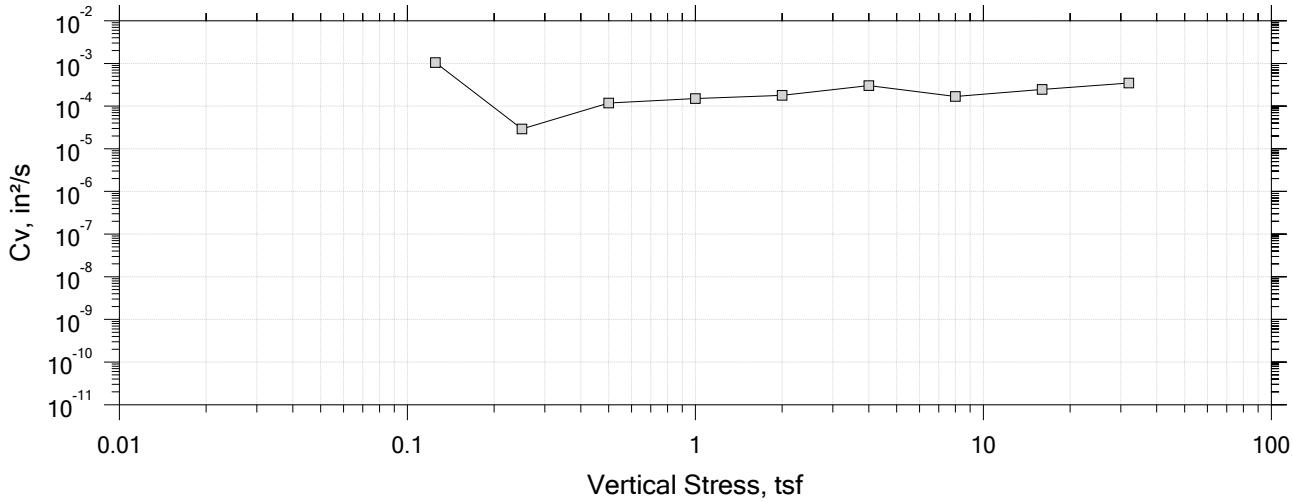


Compression Index Line (Uncorrected)
Compression Index Line (Corrected)
Recompression Index Line
Apparent Point of Maximum Curvature
Preconsolidation Pressure

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

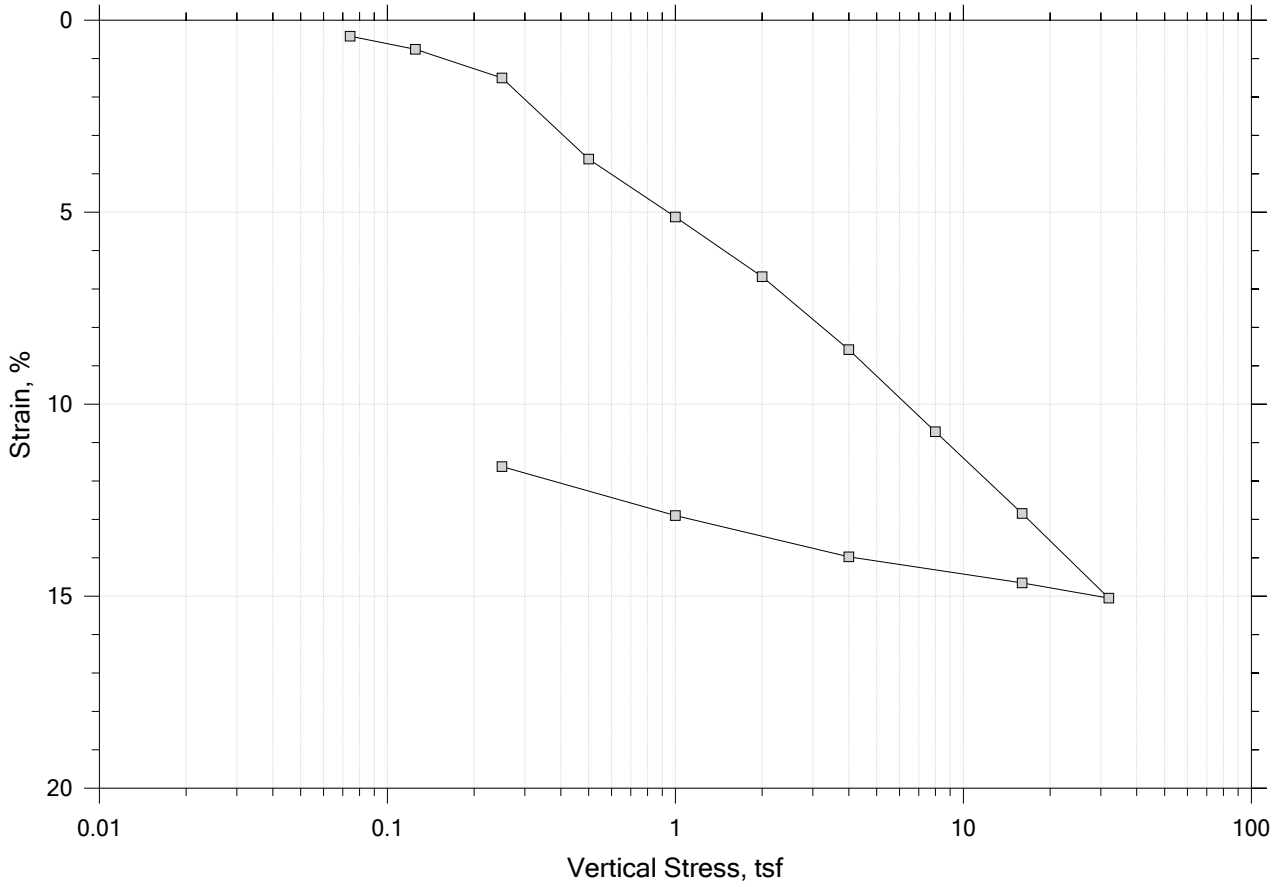


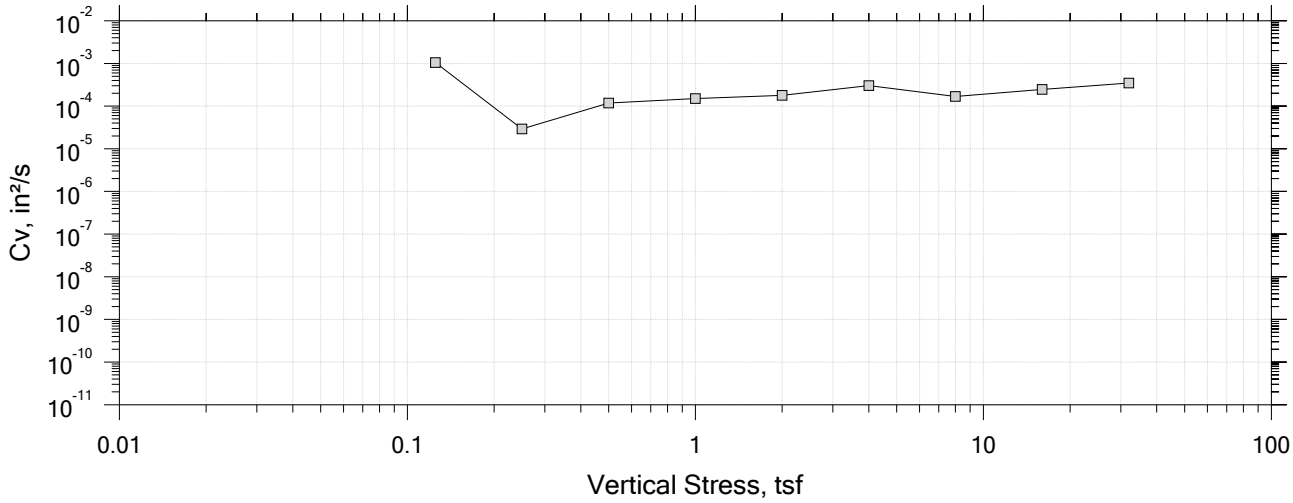


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

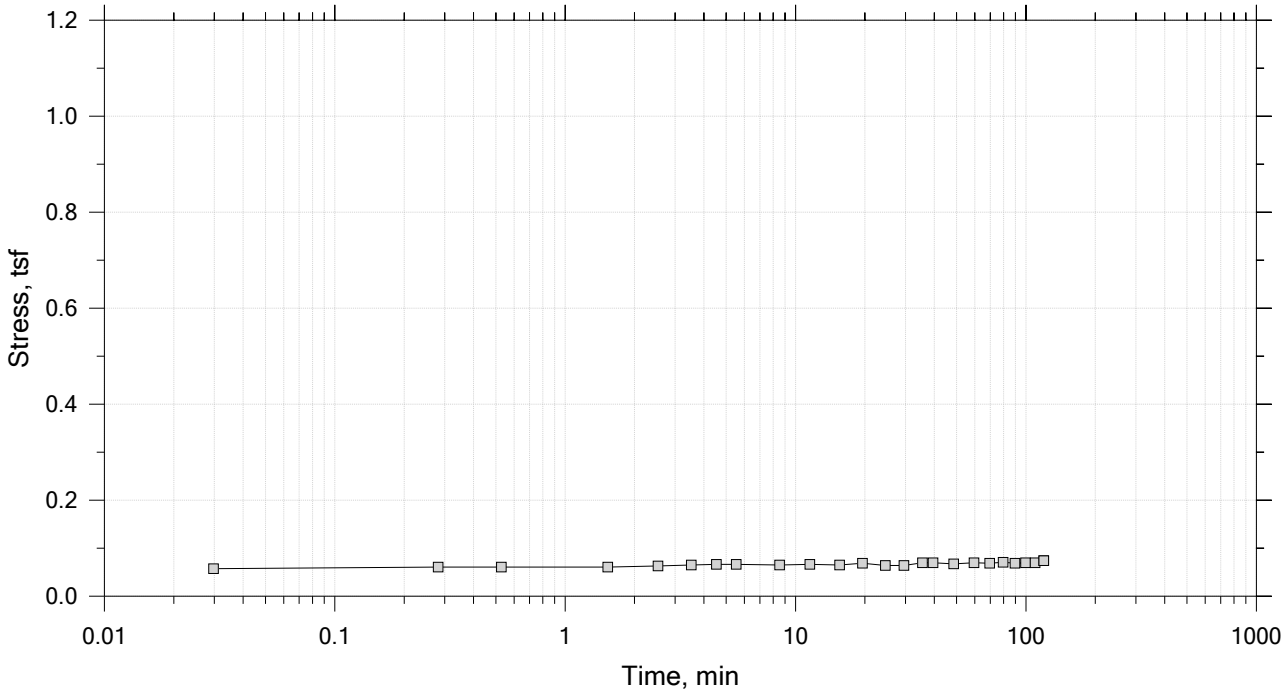


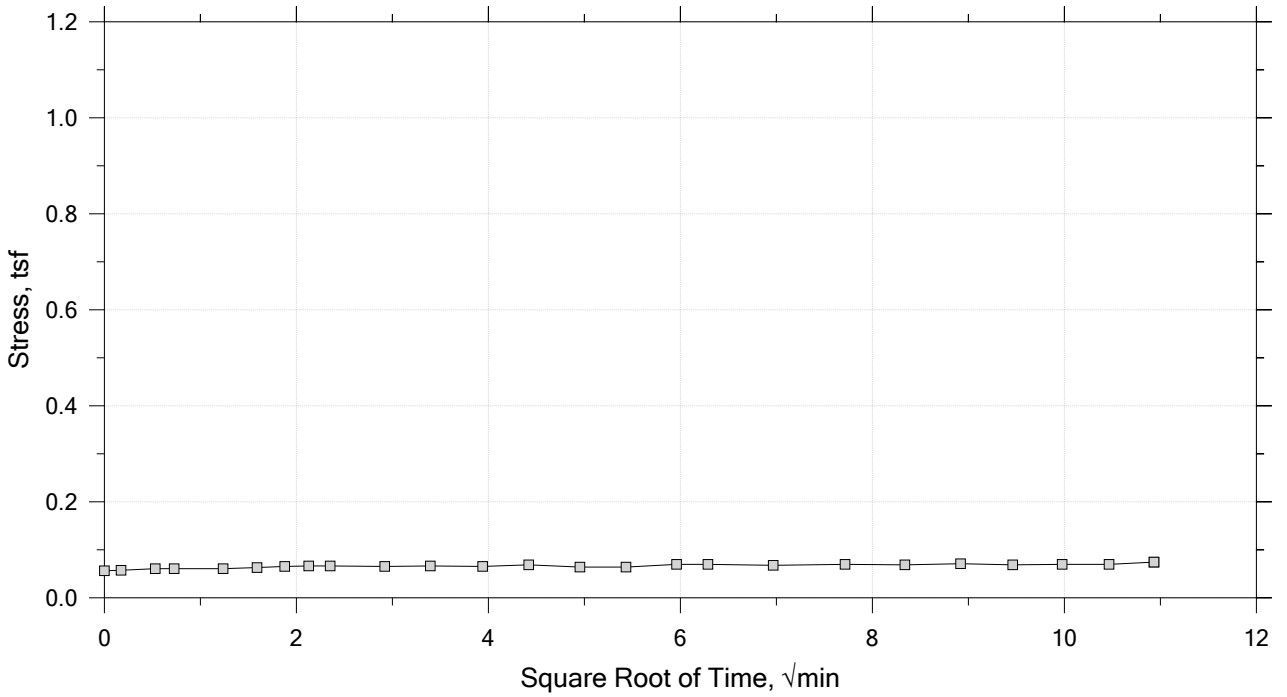


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0742 tsf

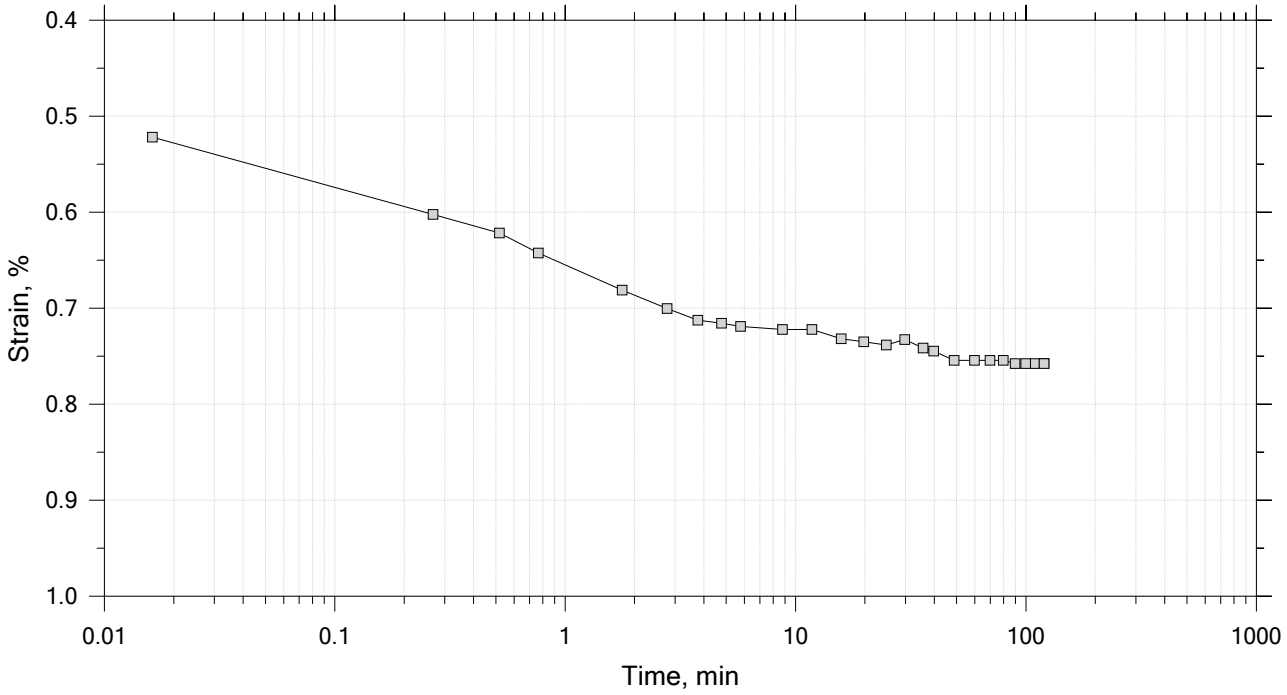


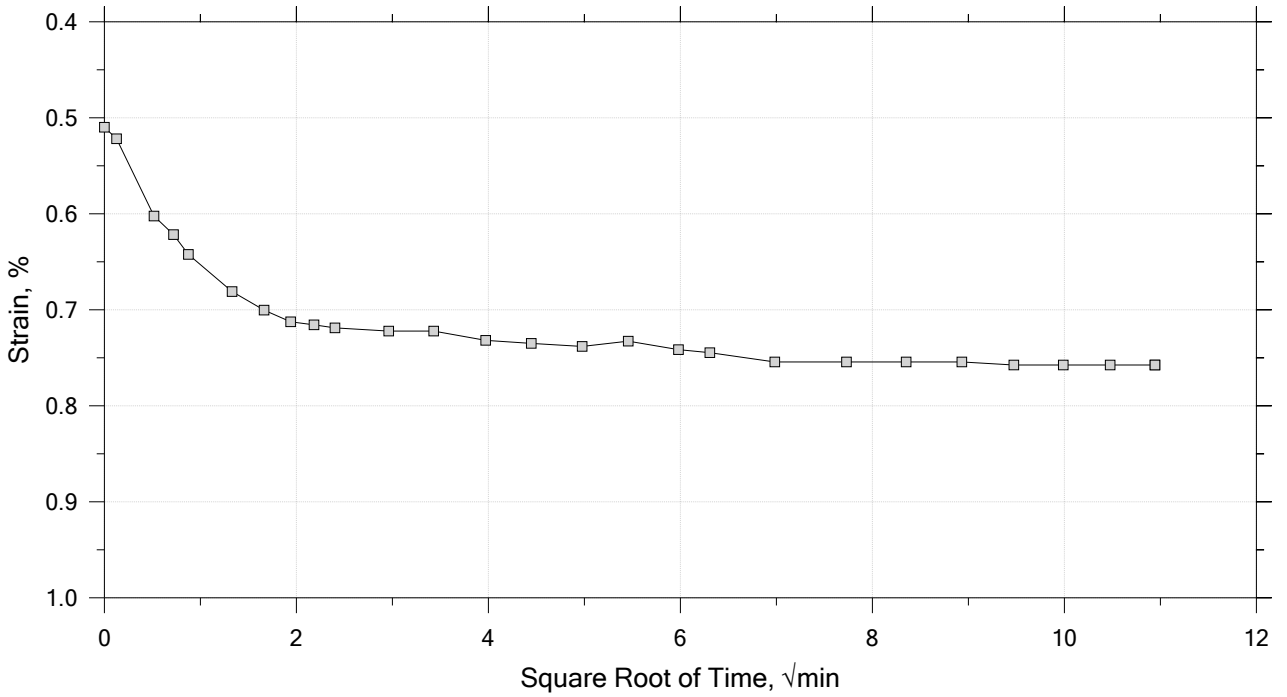


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

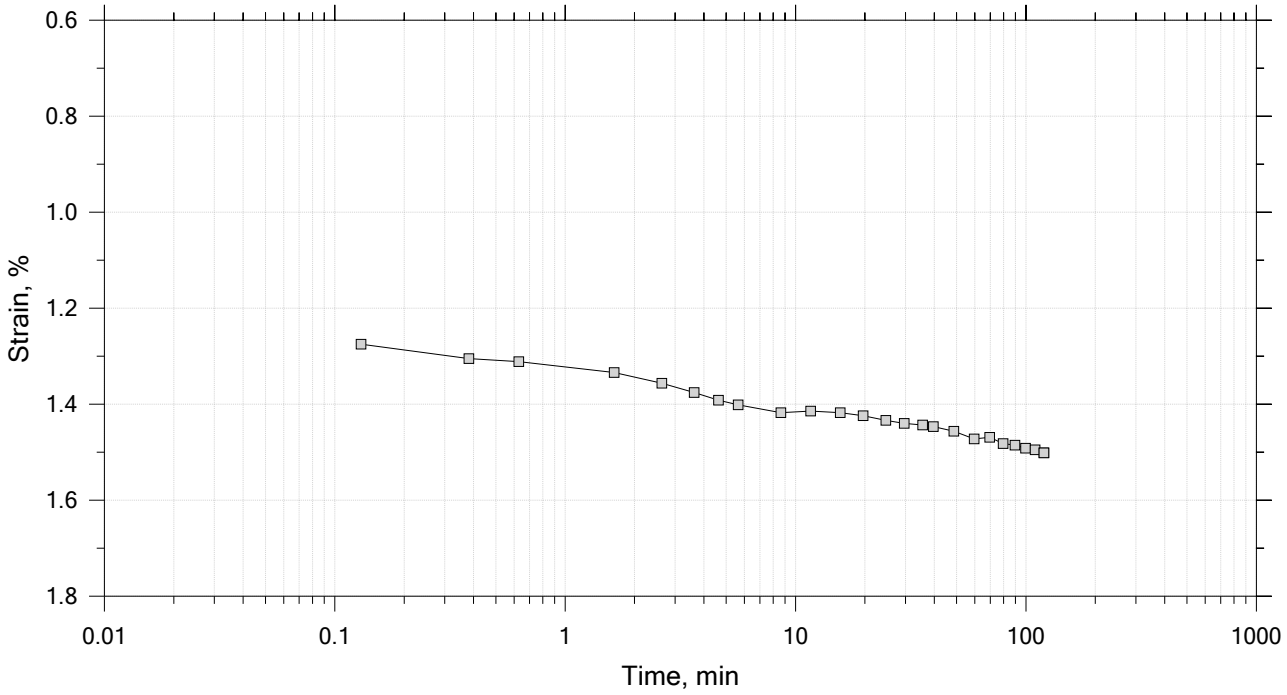


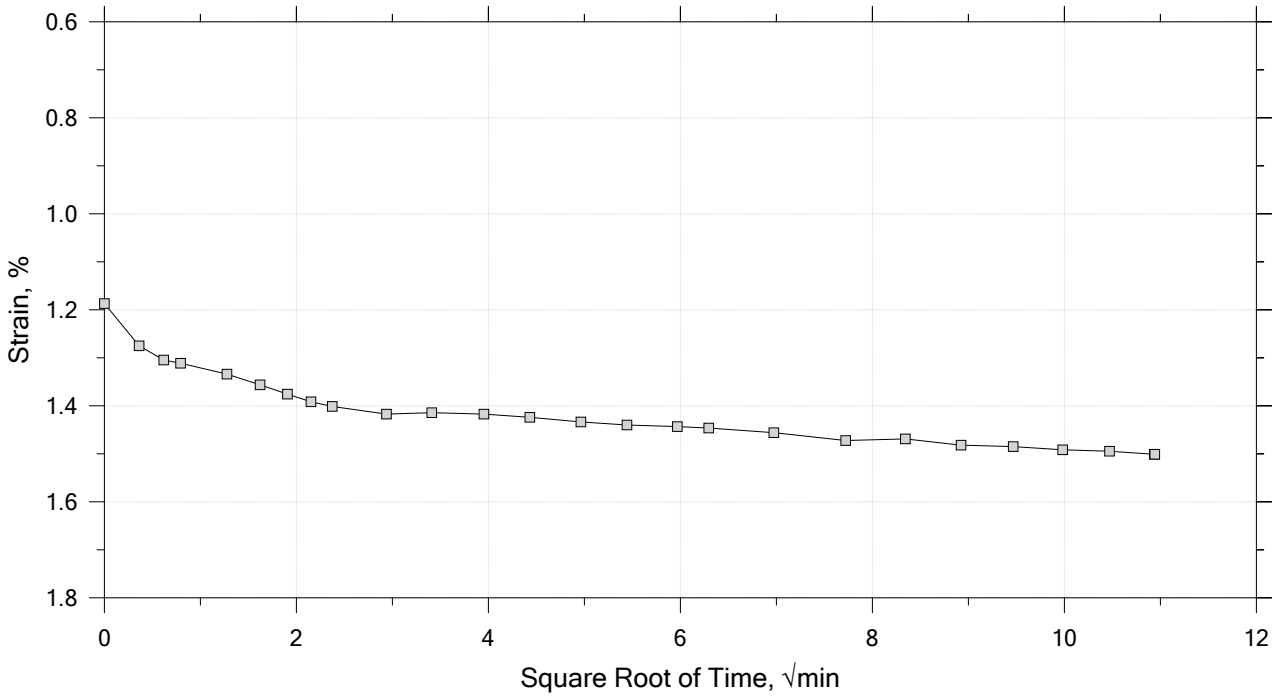


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf





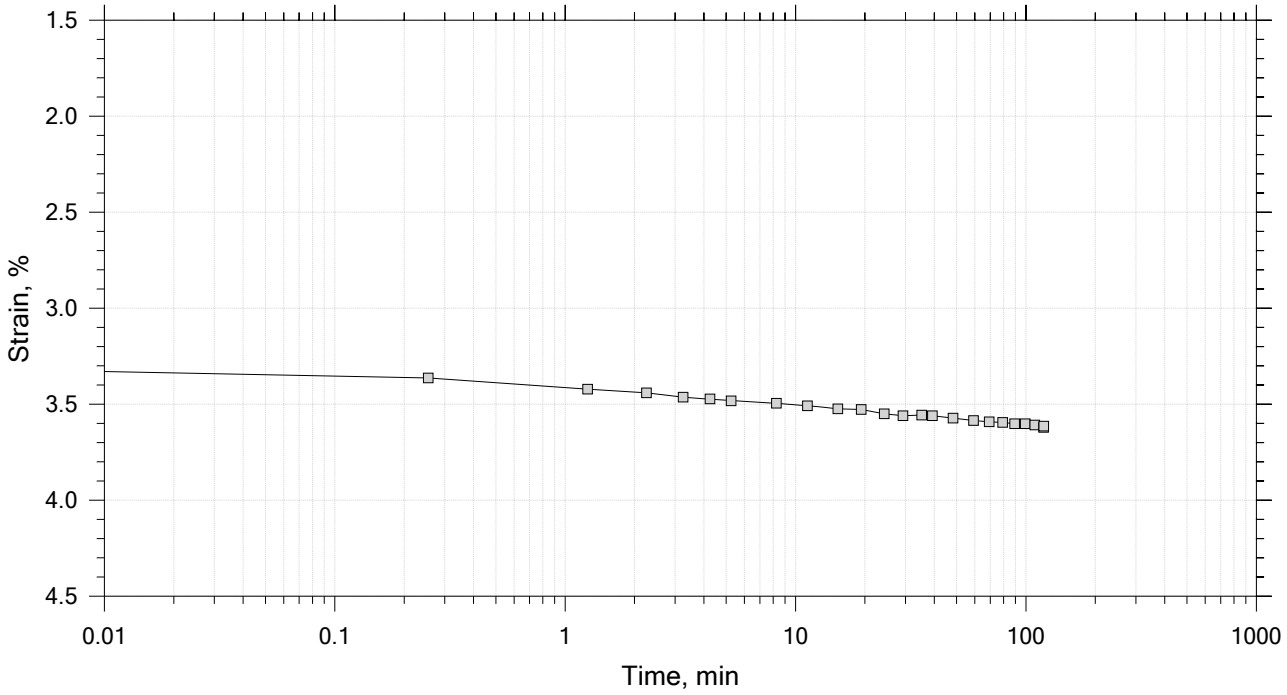
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

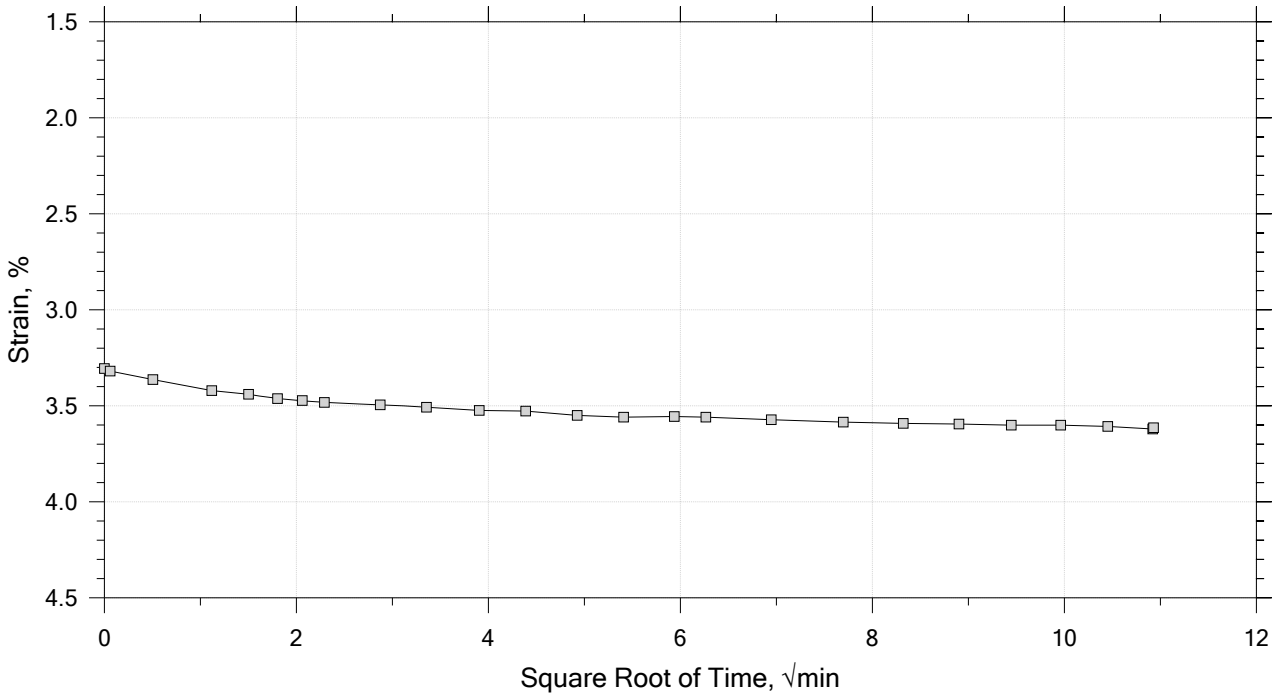
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf





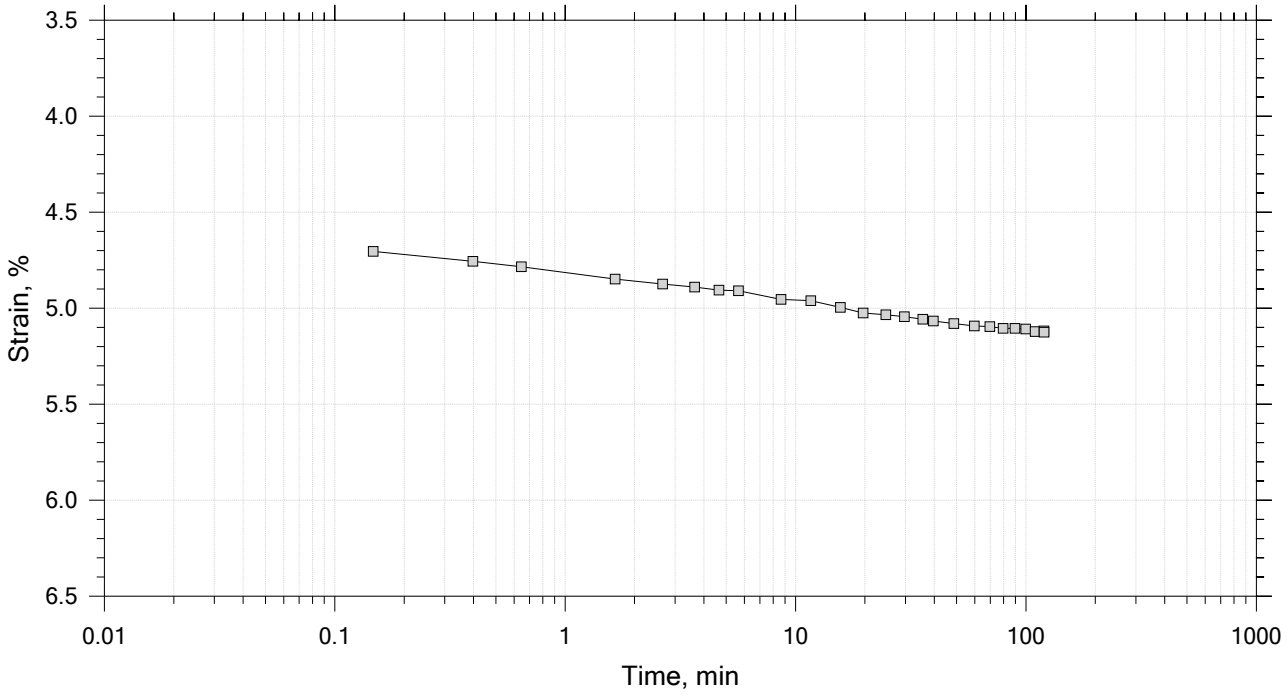
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

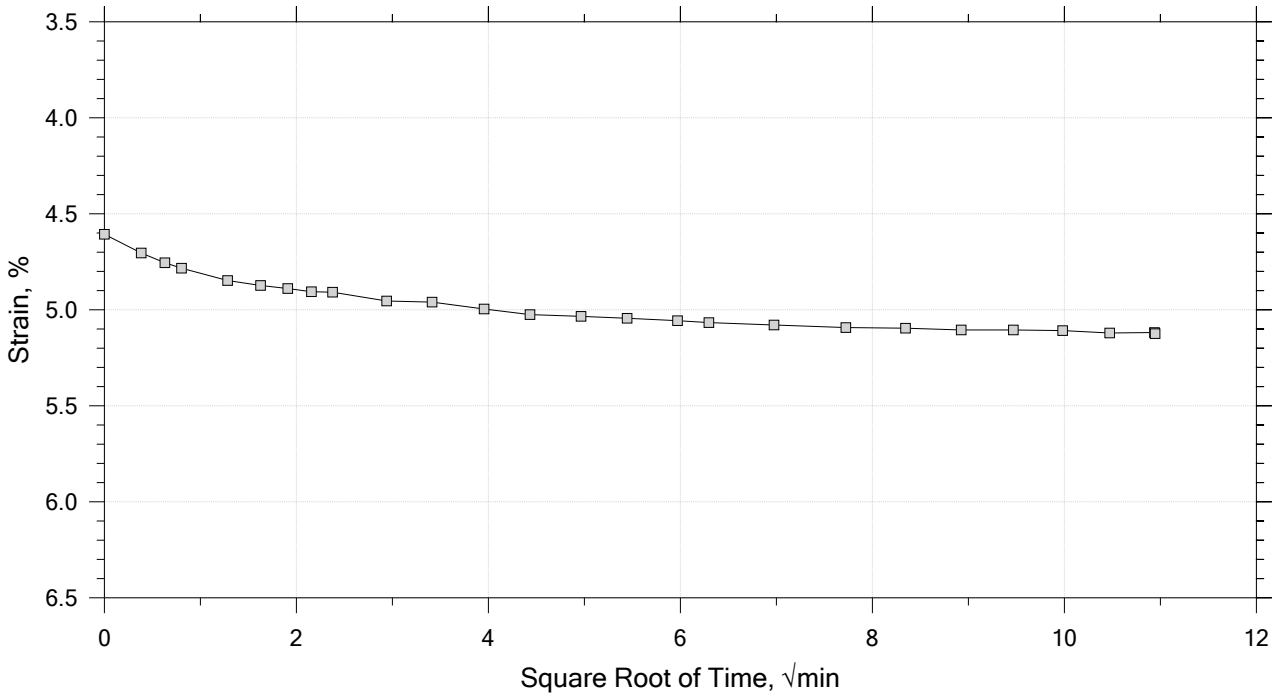
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





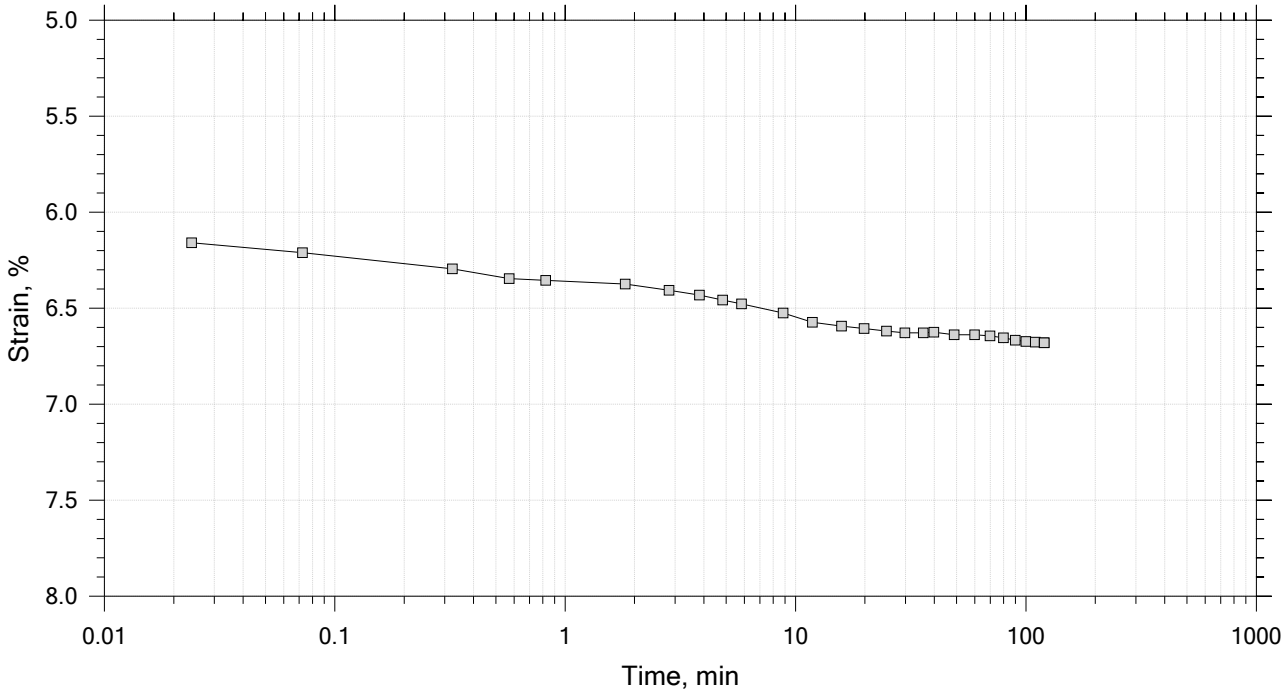
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

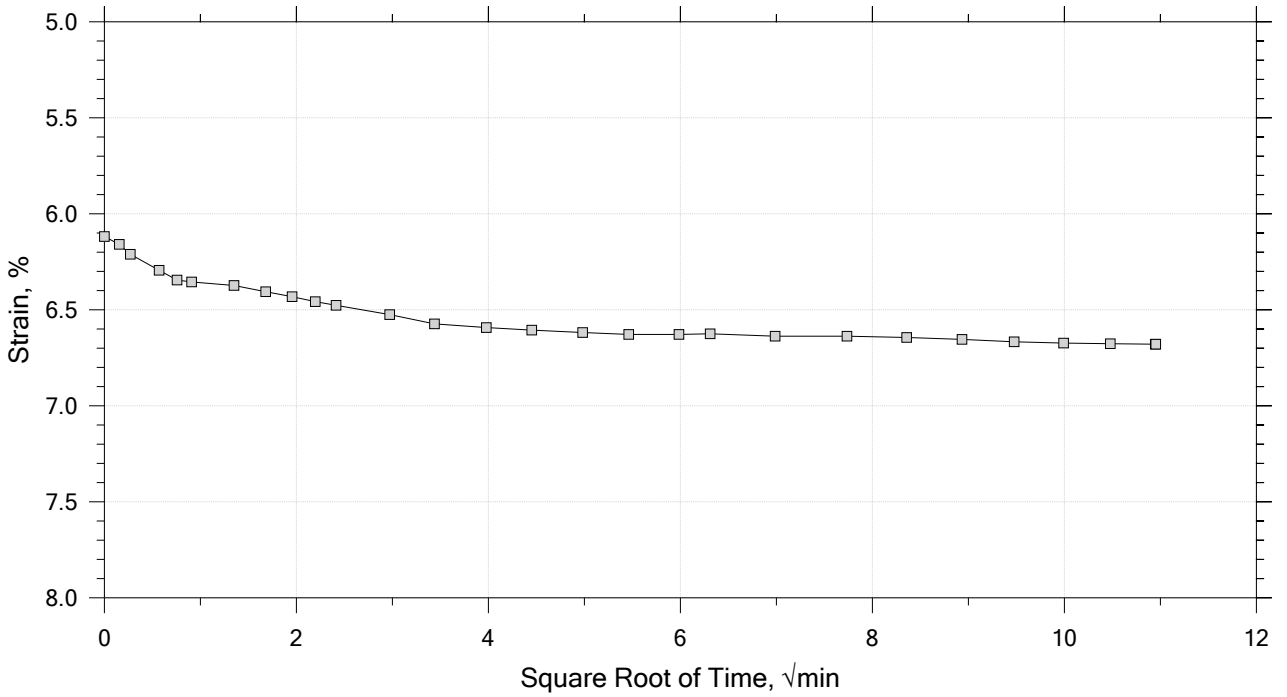
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





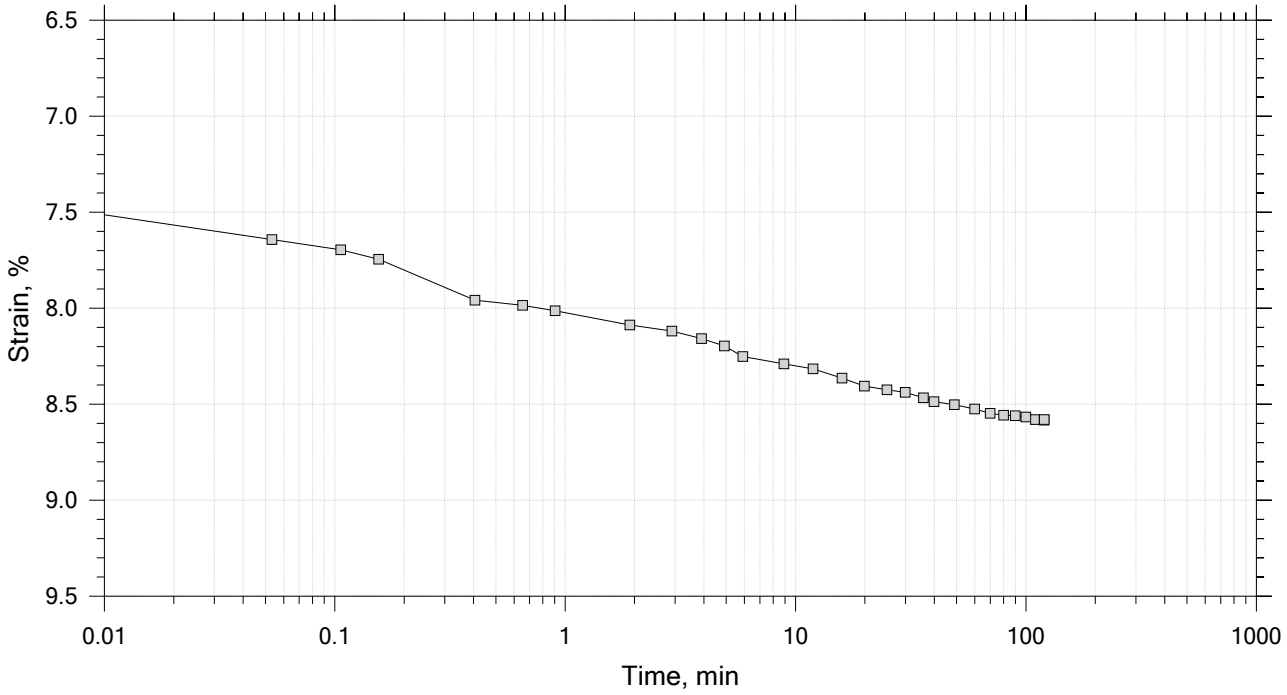
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
Test No.: IP-22-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

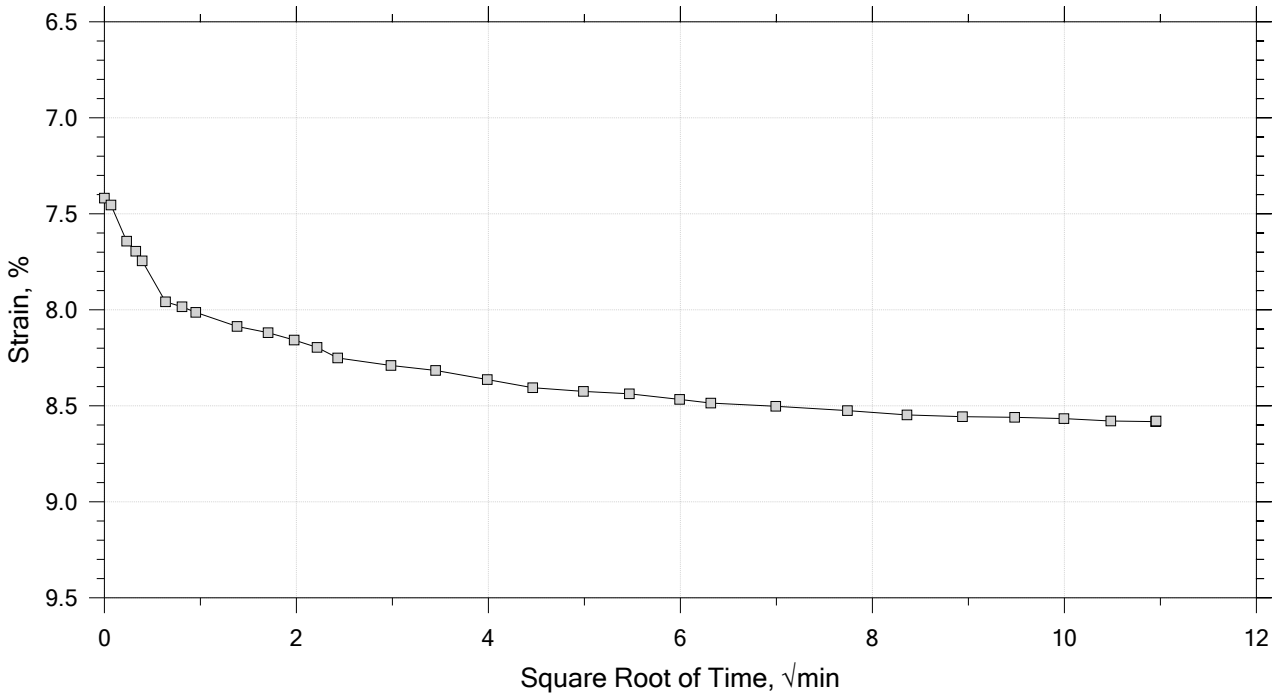
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

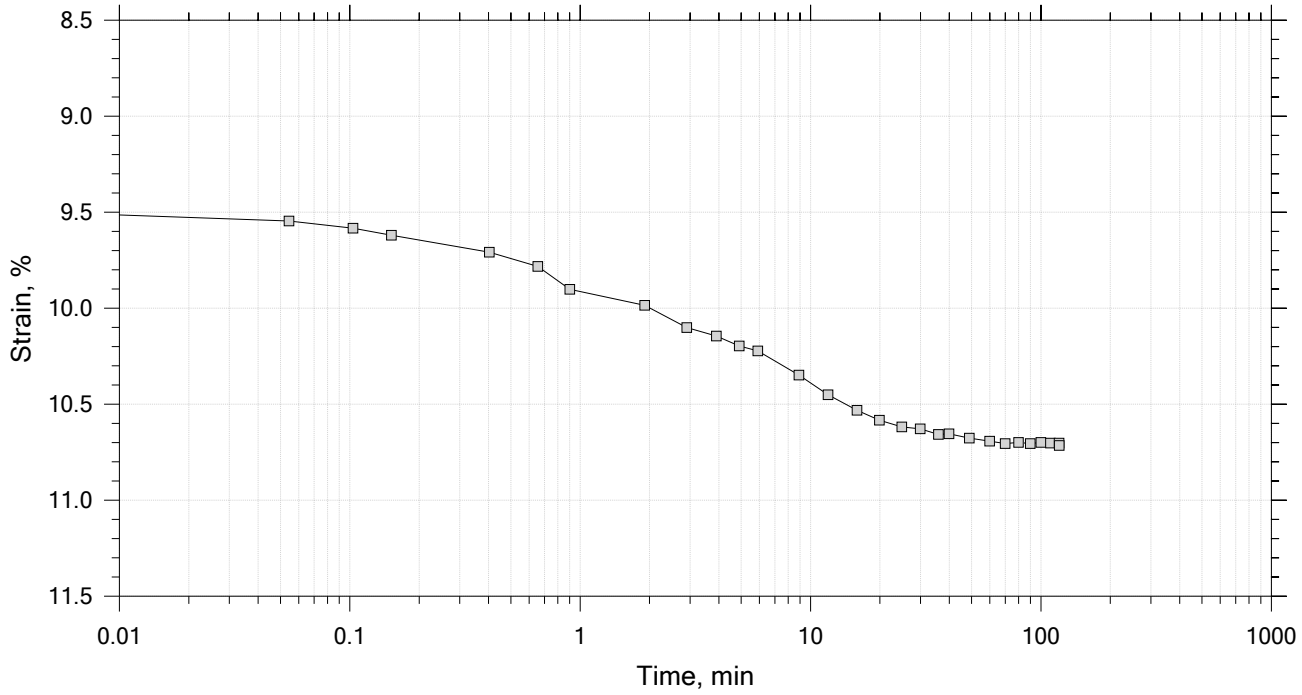


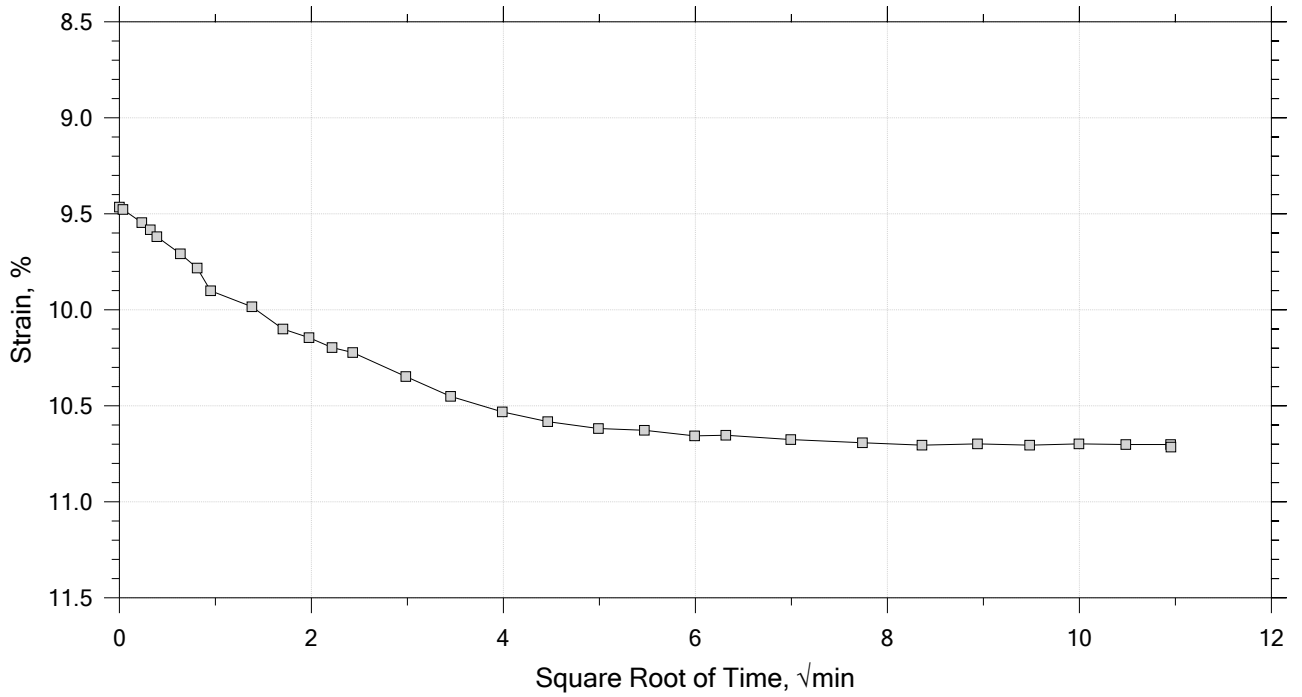


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
Test No.: IP-22-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf

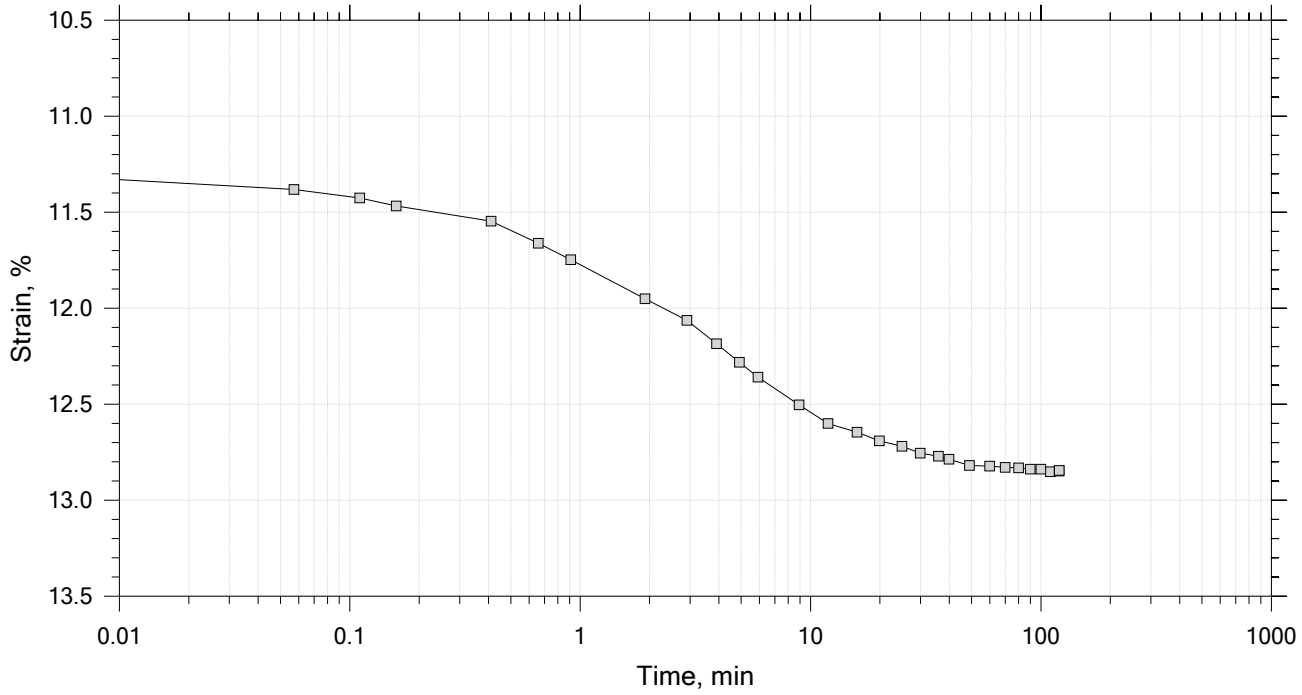


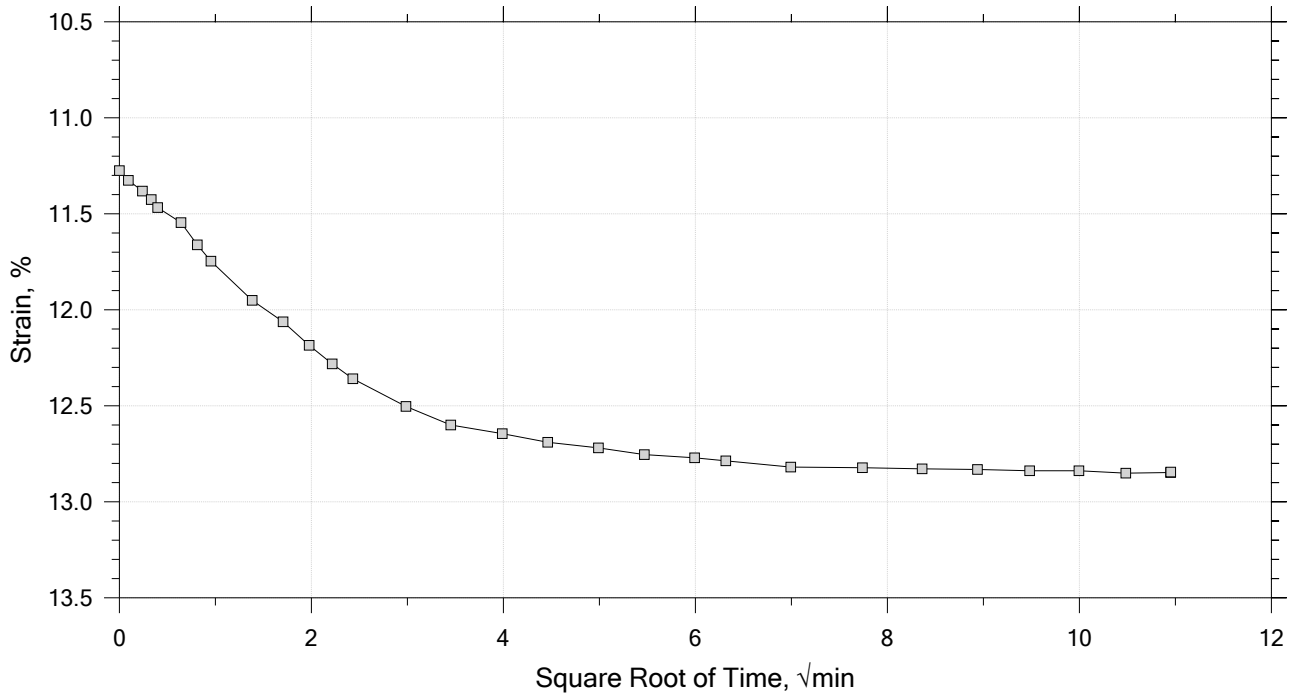


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
Test No.: IP-22-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14
Constant Load Step
Stress: 16 tsf

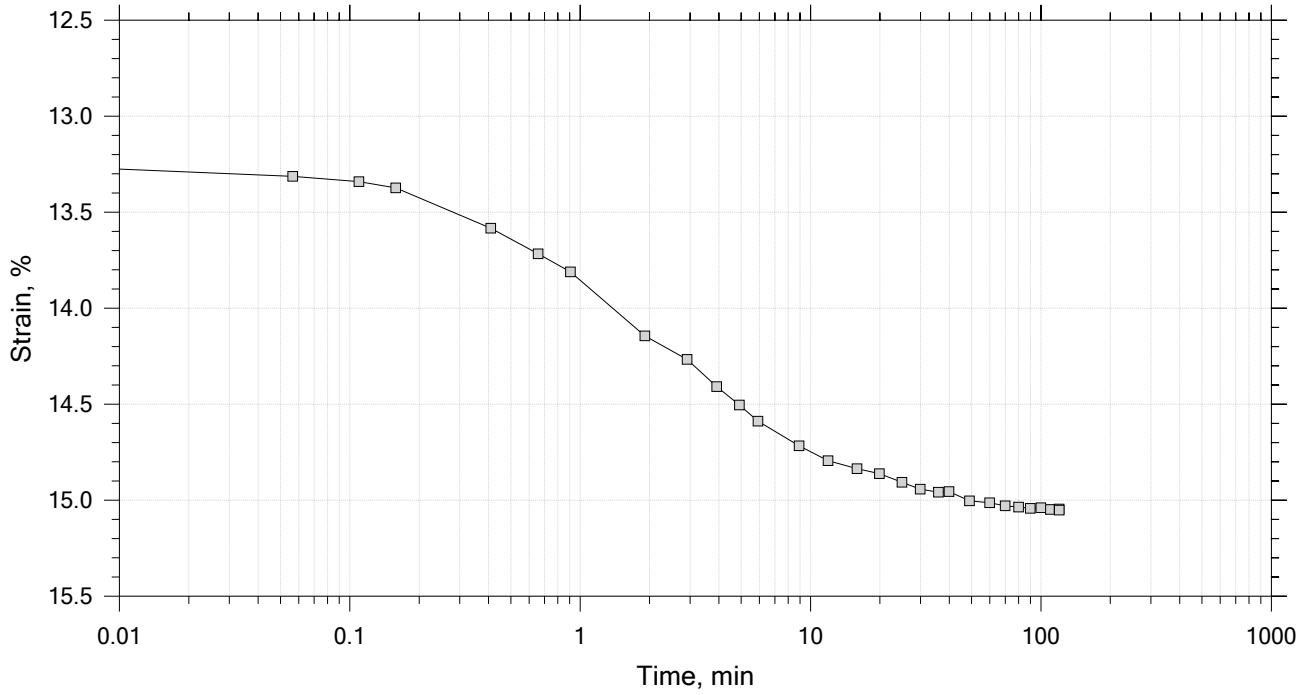


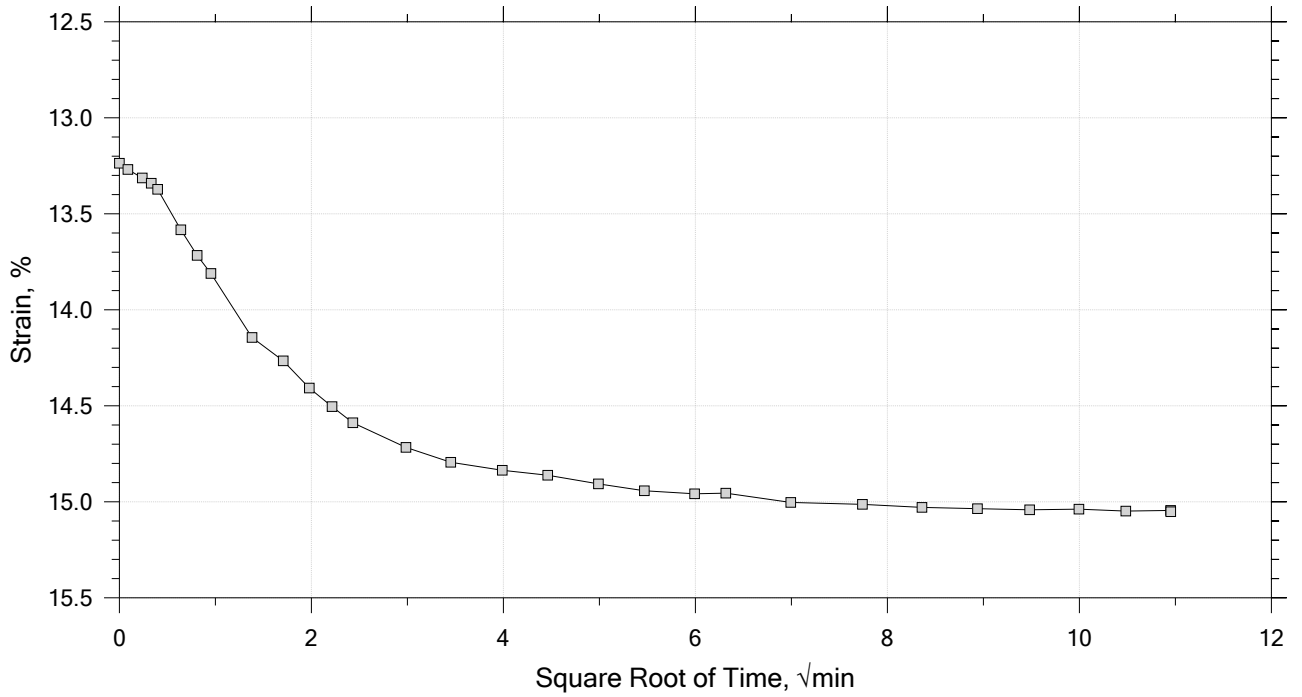


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf

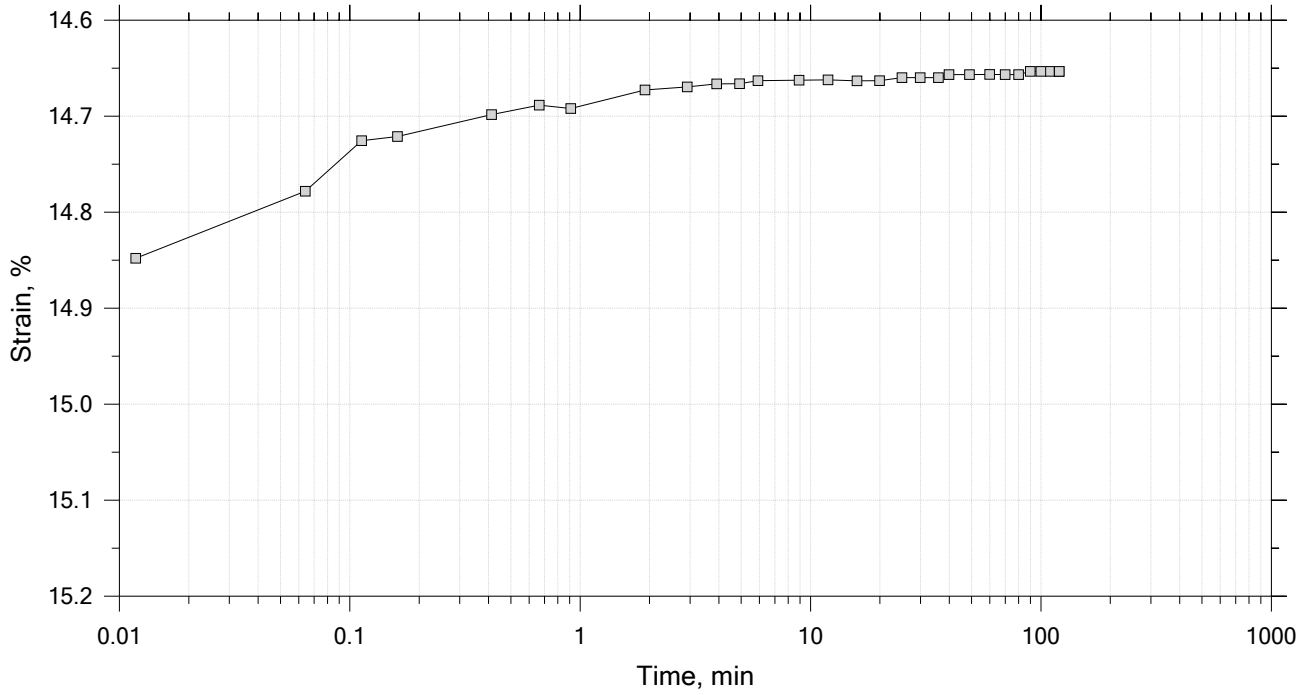


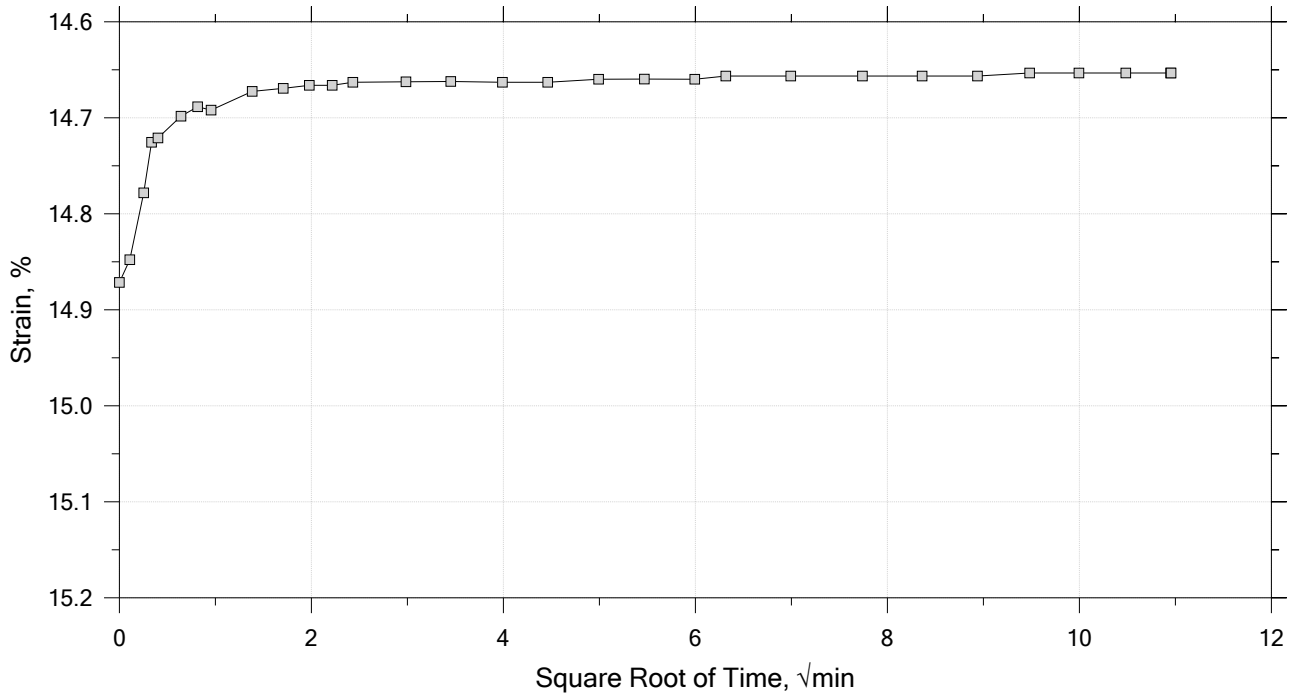


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14
Constant Load Step
Stress: 16 tsf

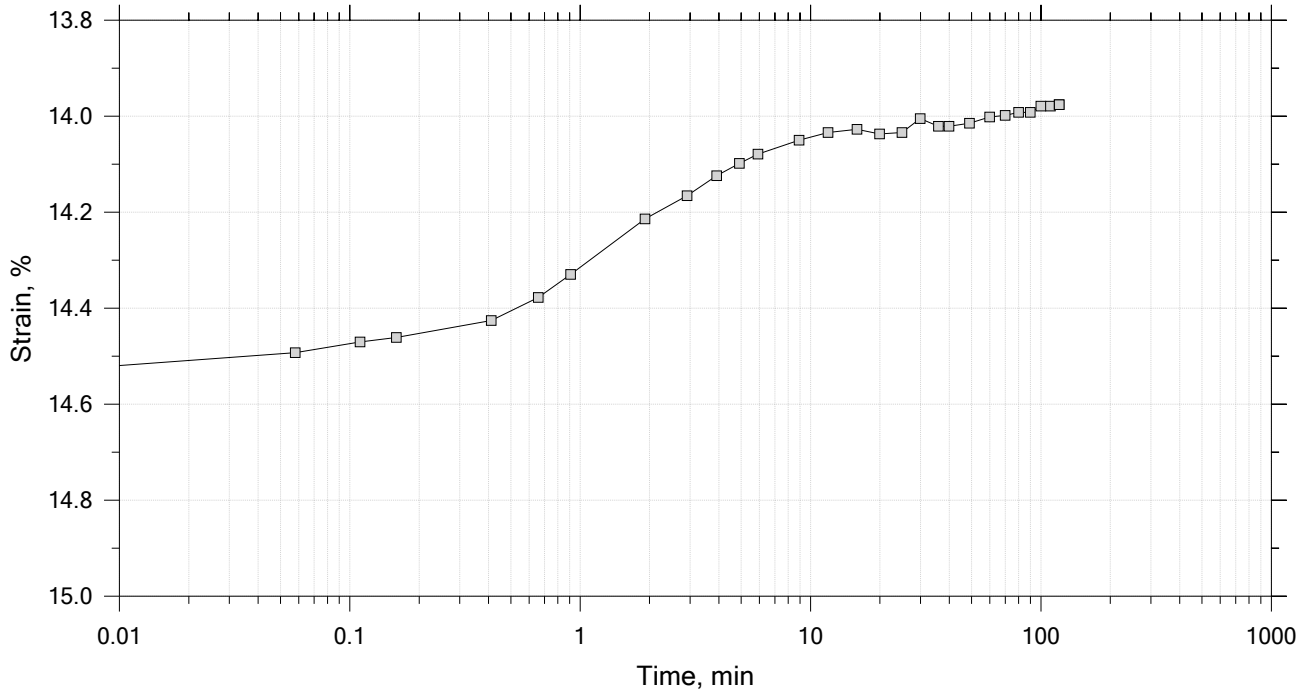


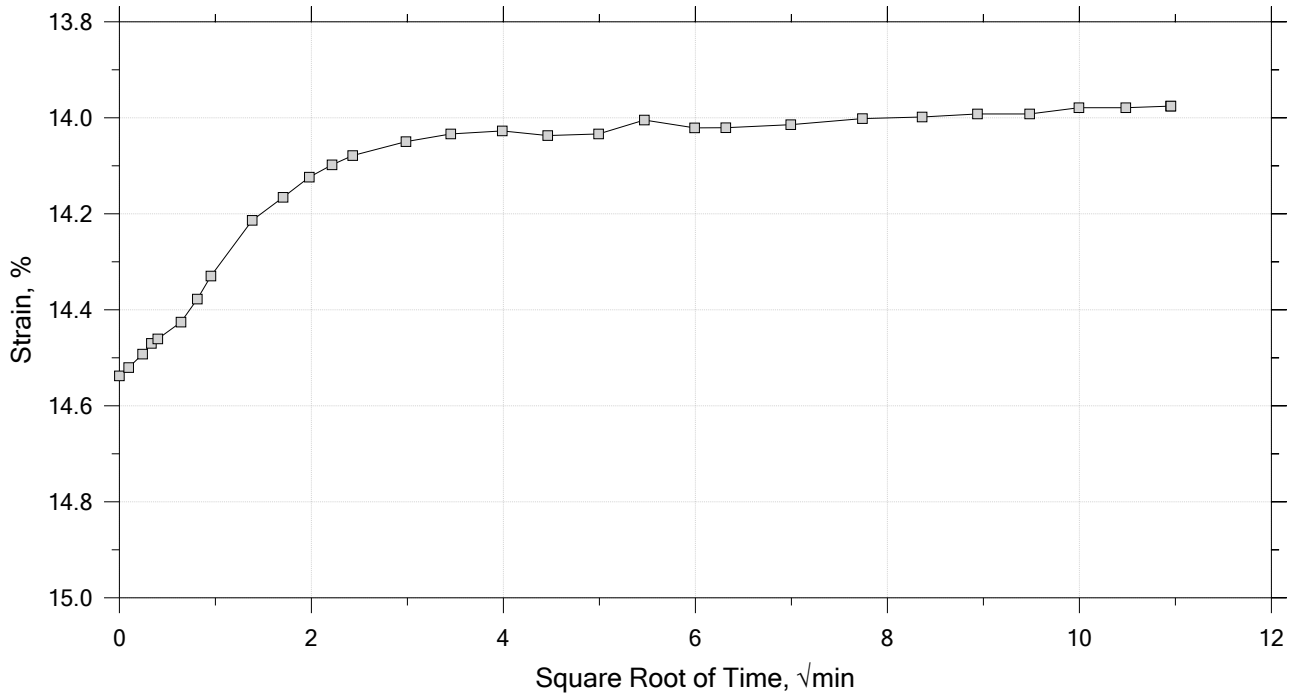


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14
Constant Load Step
Stress: 4 tsf

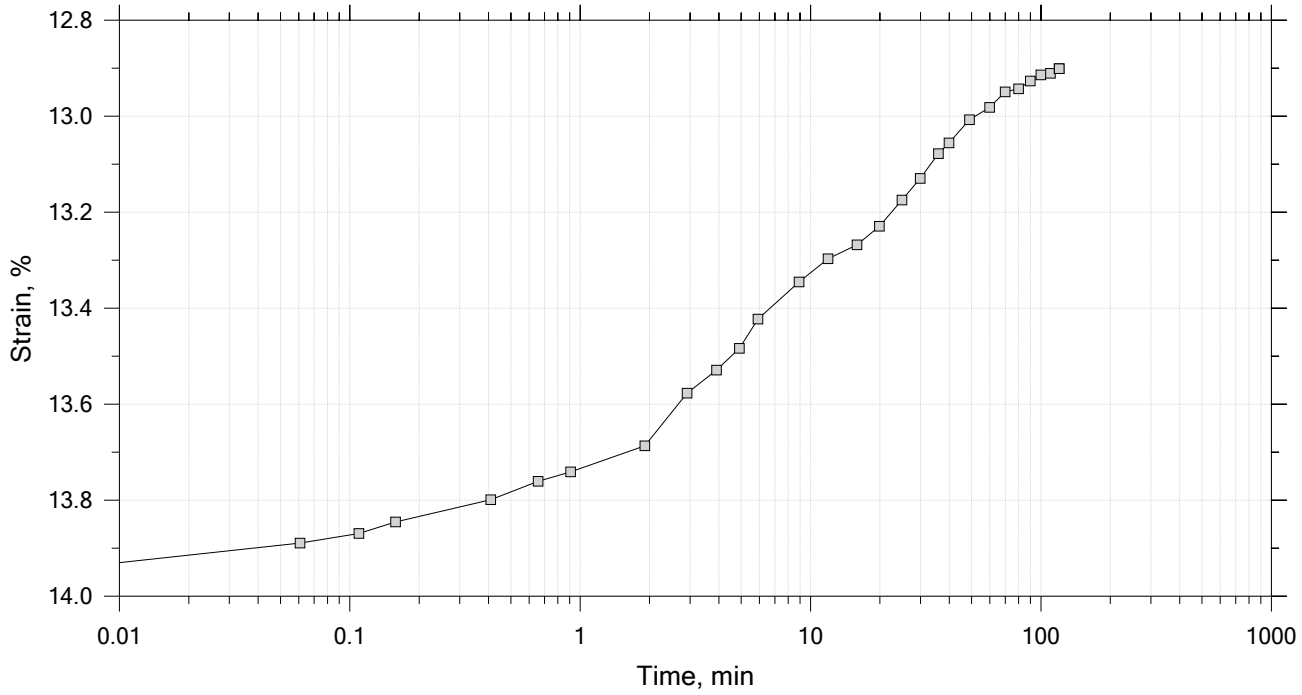


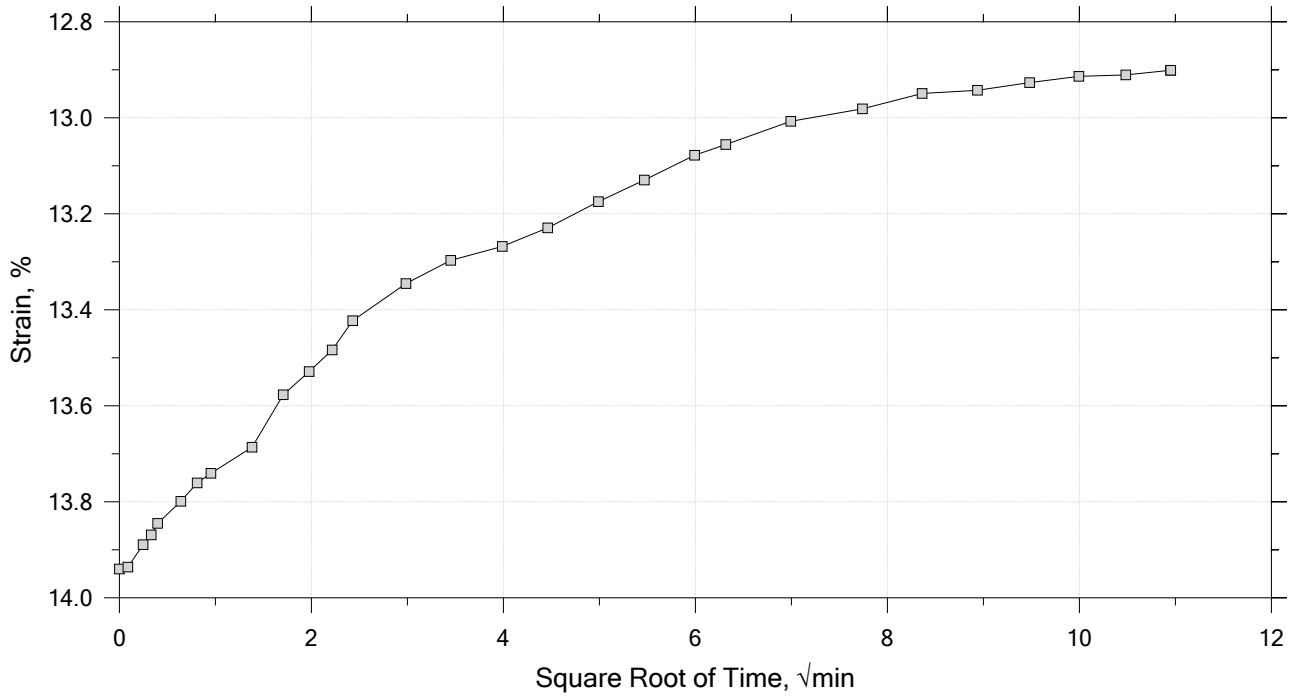


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

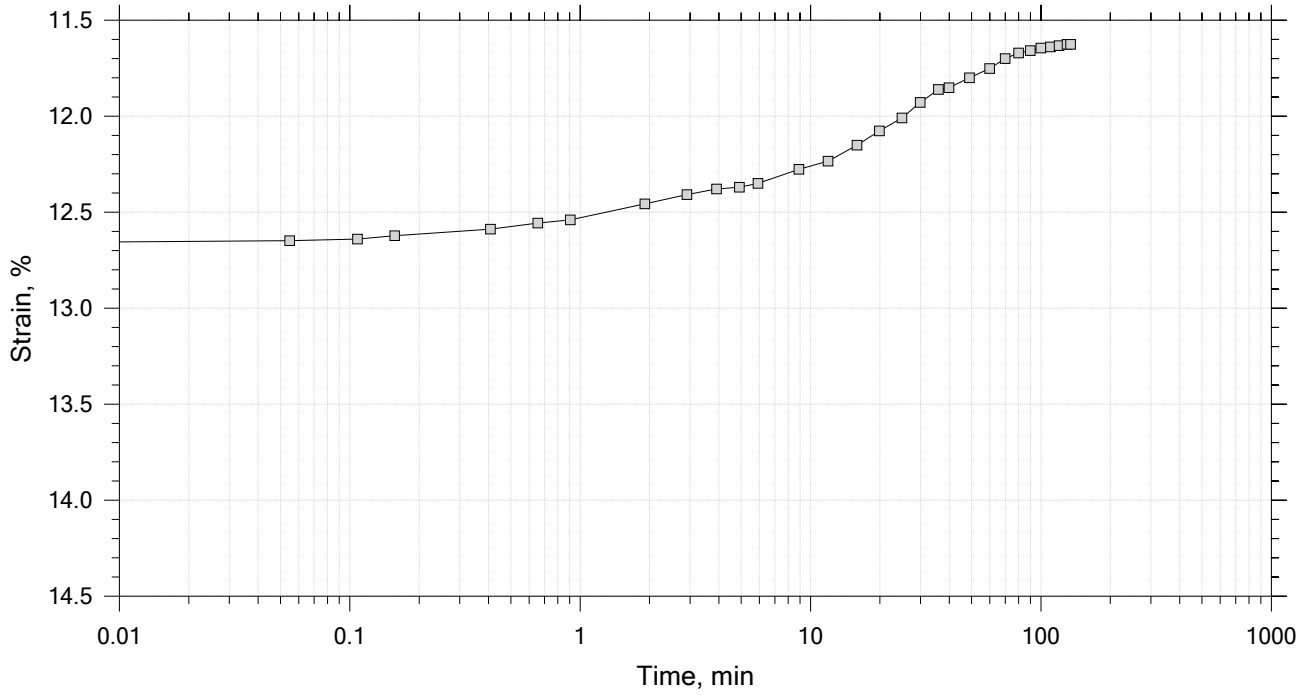


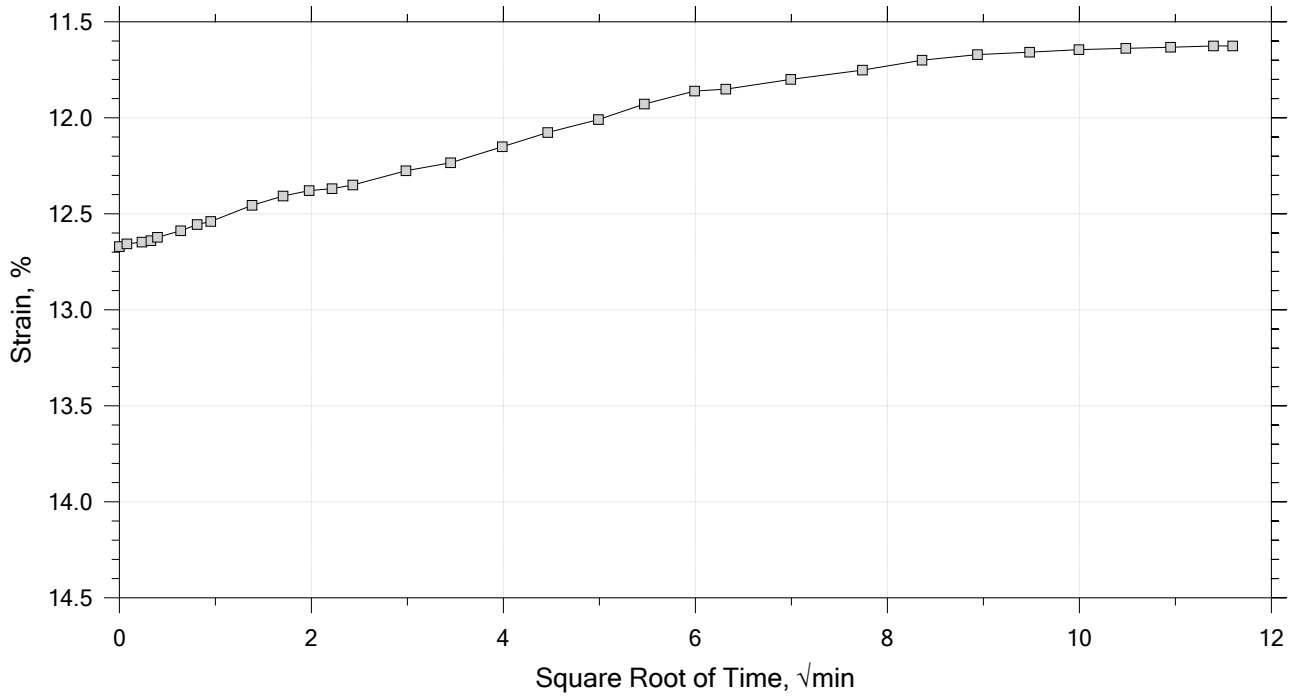


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
Test No.: IP-22-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.76	Liquid Limit: 39
Initial Height: 1.00 in	Initial Void Ratio: 0.491	Plastic Limit: 20
Final Height: 0.90 in	Final Void Ratio: 0.342	Plasticity Index: 19

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E-7055	RING		E4657
Mass Container, gm	8.85	108.03	108.03	8.22
Mass Container + Wet Soil, gm	104.43	277.22	275.41	175.09
Mass Container + Dry Soil, gm	93.15	256.97	256.97	156.71
Mass Dry Soil, gm	84.3	148.94	148.94	148.49
Water Content, %	13.38	13.59	12.38	12.38
Void Ratio	---	0.49	0.34	---
Degree of Saturation, %	---	76.46	100.00	---
Dry Unit Weight, pcf	---	115.59	128.44	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.18	Tested By: md	Checked By: mcm
	Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
	Test No.: IP-22-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark brown sandy clay		
	Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0742	0.004170	0.485	0.417	0.000	0.00e+00	5.62e-02	0.00e+00
2	0.125	0.007576	0.479	0.758	3.319	1.05e-03	6.70e-02	1.32e-03
3	0.250	0.01501	0.468	1.50	118.594	2.91e-05	5.95e-02	3.25e-05
4	0.500	0.03614	0.437	3.61	28.377	1.18e-04	8.45e-02	1.87e-04
5	1.00	0.05125	0.414	5.12	21.459	1.51e-04	3.02e-02	8.52e-05
6	2.00	0.06680	0.391	6.68	17.469	1.79e-04	1.56e-02	5.22e-05
7	4.00	0.08580	0.363	8.58	9.940	3.03e-04	9.50e-03	5.40e-05
8	8.00	0.1071	0.331	10.7	17.100	1.69e-04	5.34e-03	1.69e-05
9	16.0	0.1284	0.299	12.8	11.164	2.46e-04	2.66e-03	1.23e-05
10	32.0	0.1505	0.266	15.1	7.541	3.47e-04	1.38e-03	8.96e-06
11	16.0	0.1465	0.272	14.7	0.507	5.05e-03	2.49e-04	2.35e-05
12	4.00	0.1398	0.282	14.0	6.238	4.16e-04	5.65e-04	4.40e-06
13	1.00	0.1290	0.298	12.9	70.481	3.76e-05	3.58e-03	2.52e-06
14	0.250	0.1163	0.317	11.6	84.331	3.23e-05	1.70e-02	1.03e-05

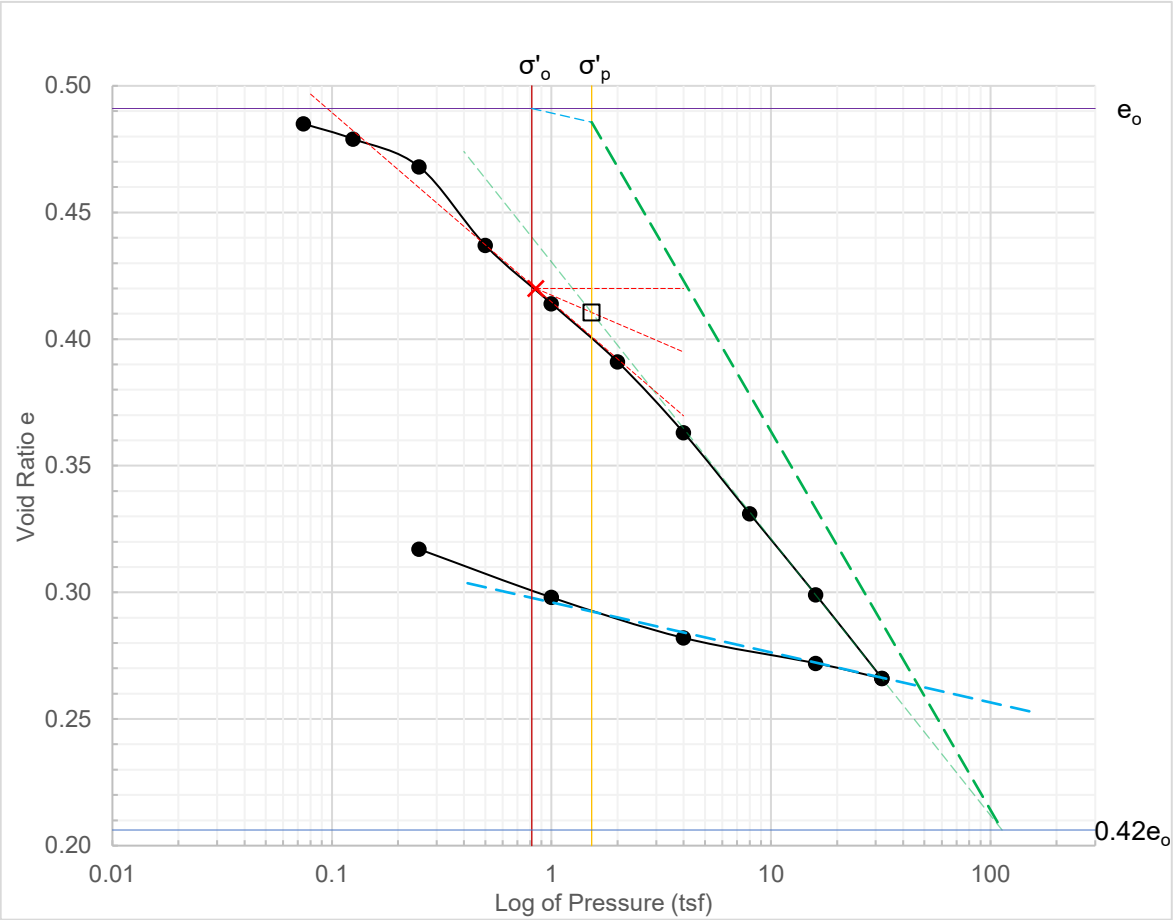
GeoTesting EXPRESS

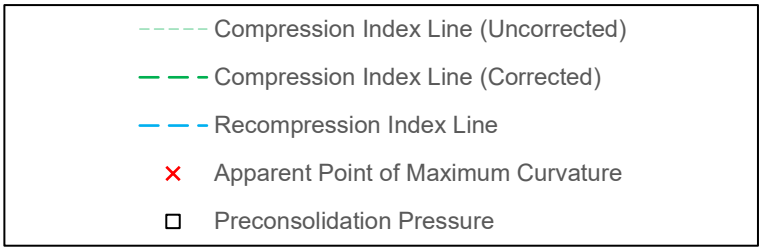
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.18	Tested By: md	Checked By: mcm
Sample No.: ST	Test Date: 08/16/22	Depth: 12.8-12.9
Test No.: IP-22-2	Sample Type: intact	Elevation: ---
Description: Moist, dark brown sandy clay		
Remarks: System LTIII-I, Swell Pressure = 0.0742 tsf		
Displacement at End of Increment		

Boring: B-4.18

Depth: 12.8’-12.9’

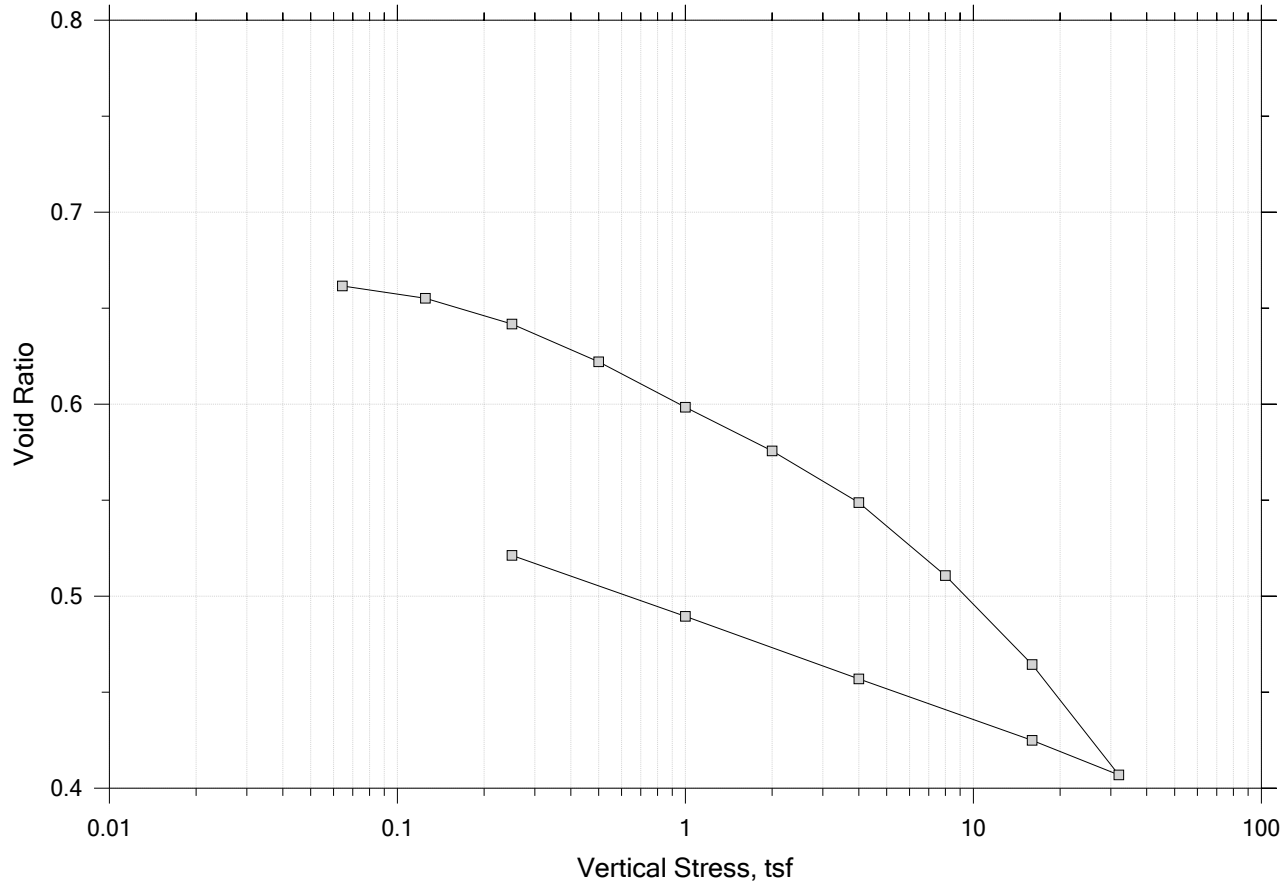
Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.81
Preconsolidation Pressure, σ'_p (tsf) = 1.52
Compression Index, C_c = 0.15
Recompression Index, C_r = 0.020

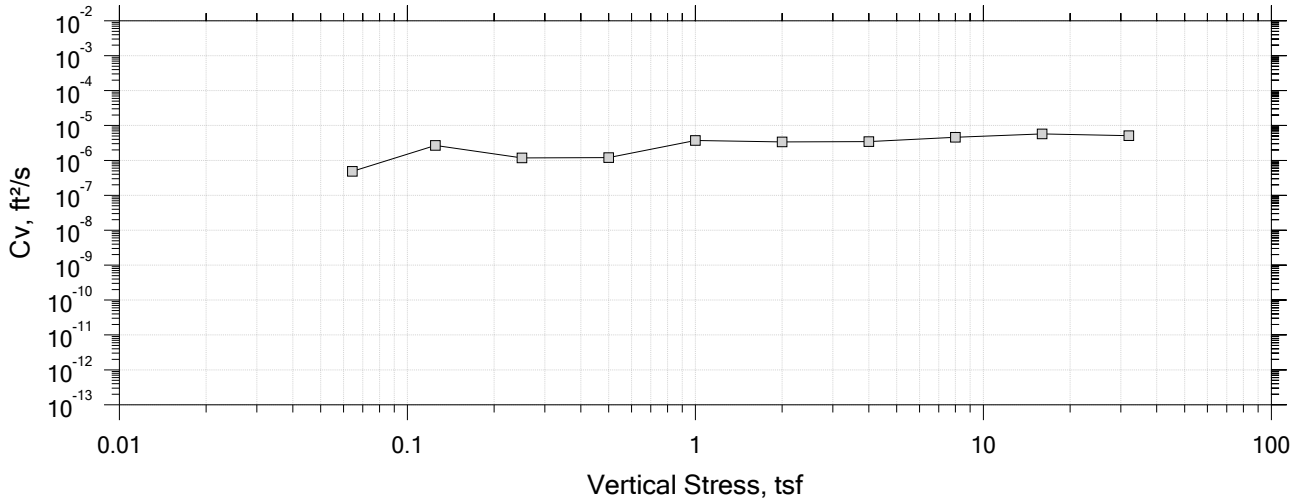




One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

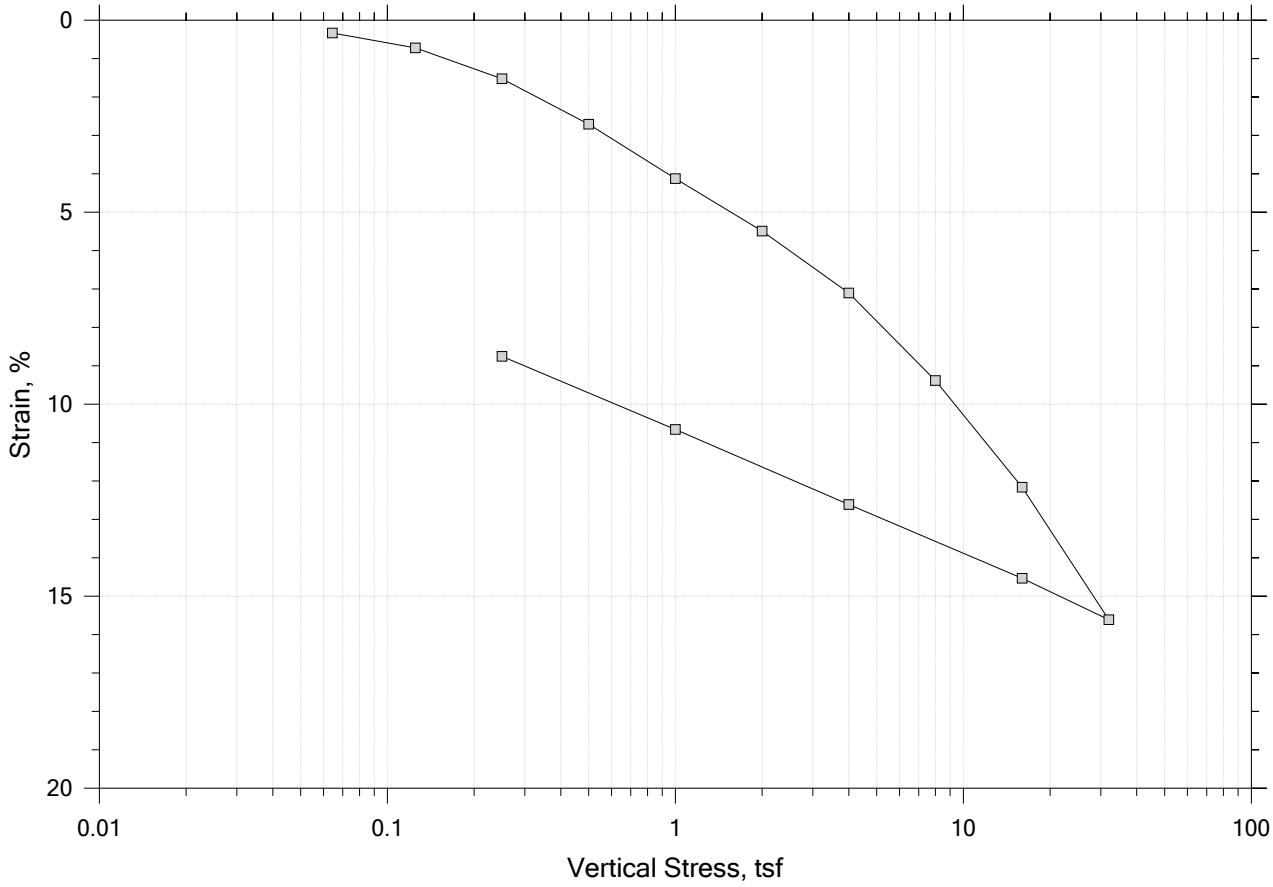


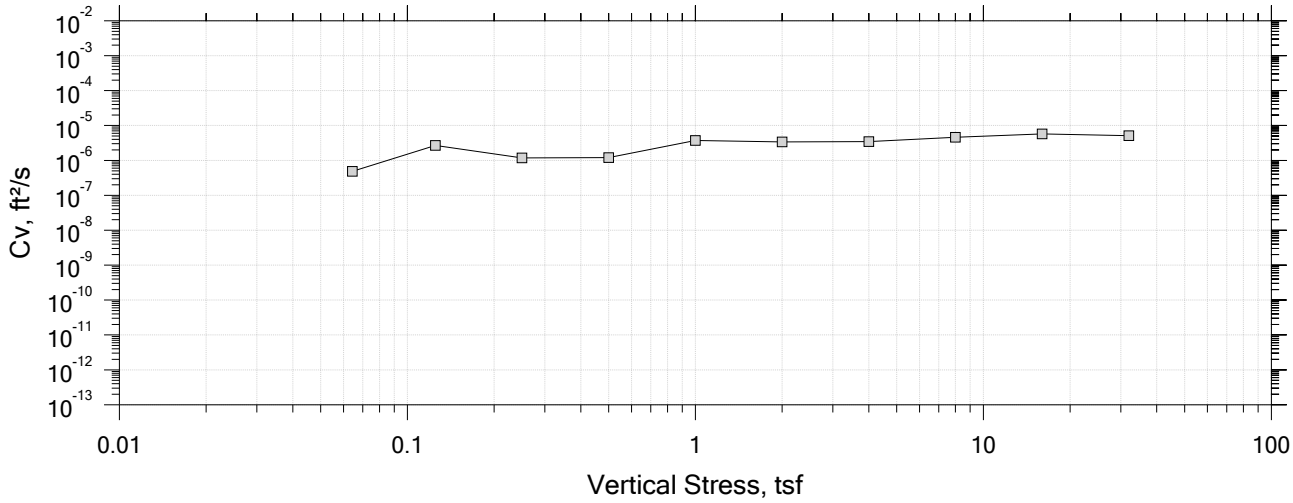


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

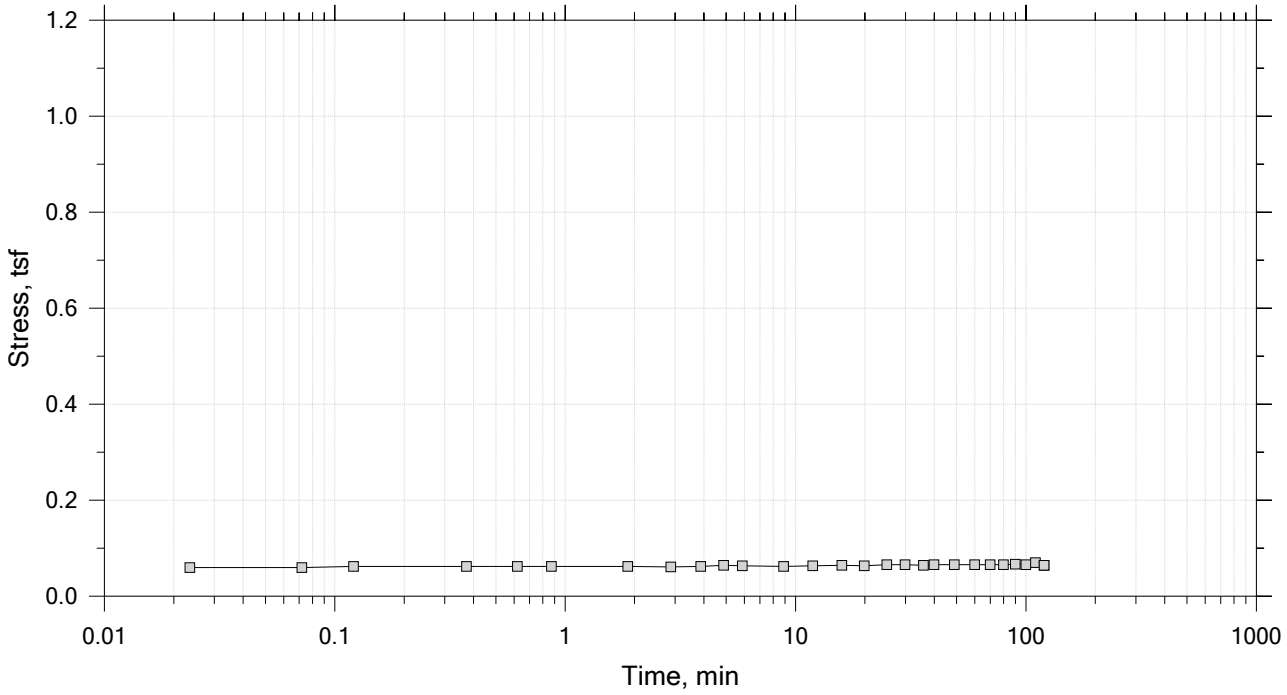


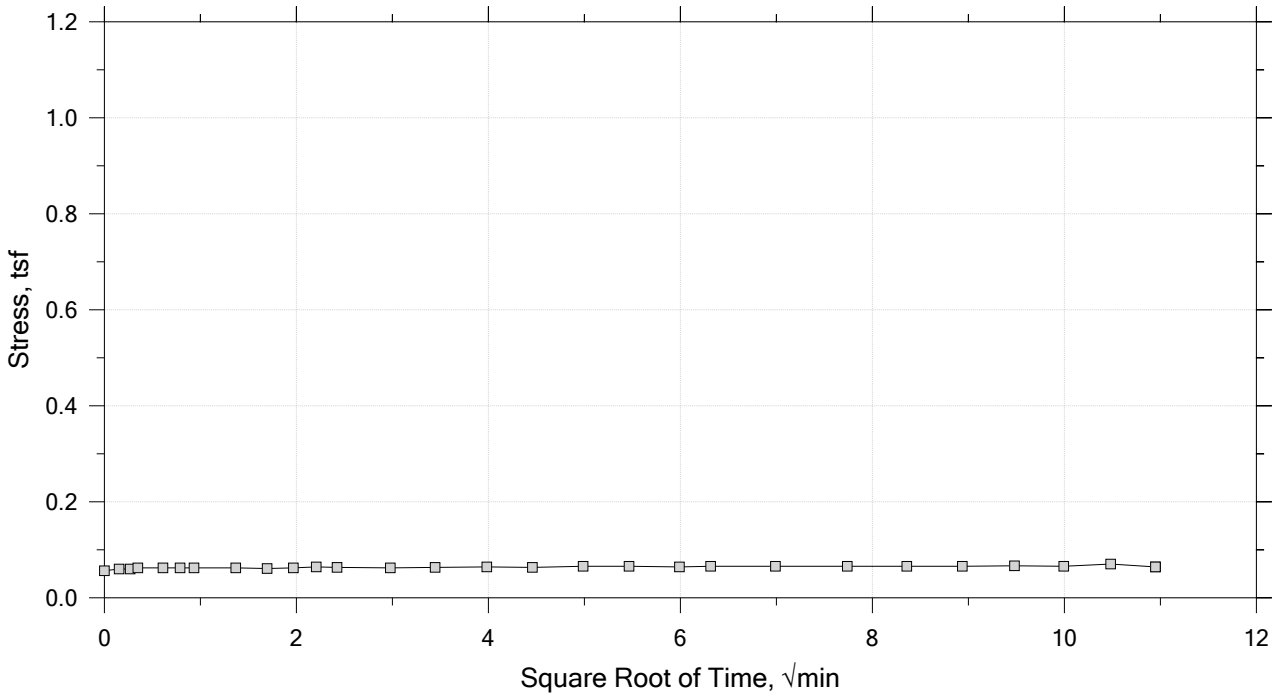


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 14
Constant Volume Step
Stress: 0.0644 tsf

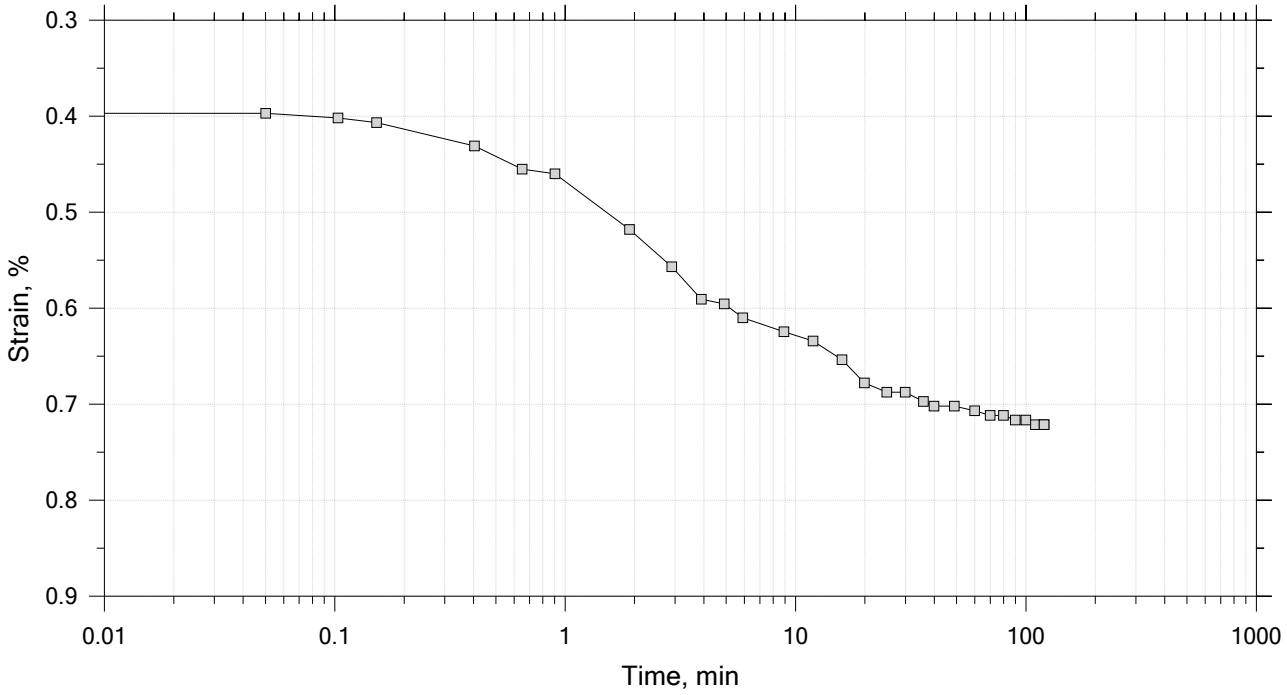


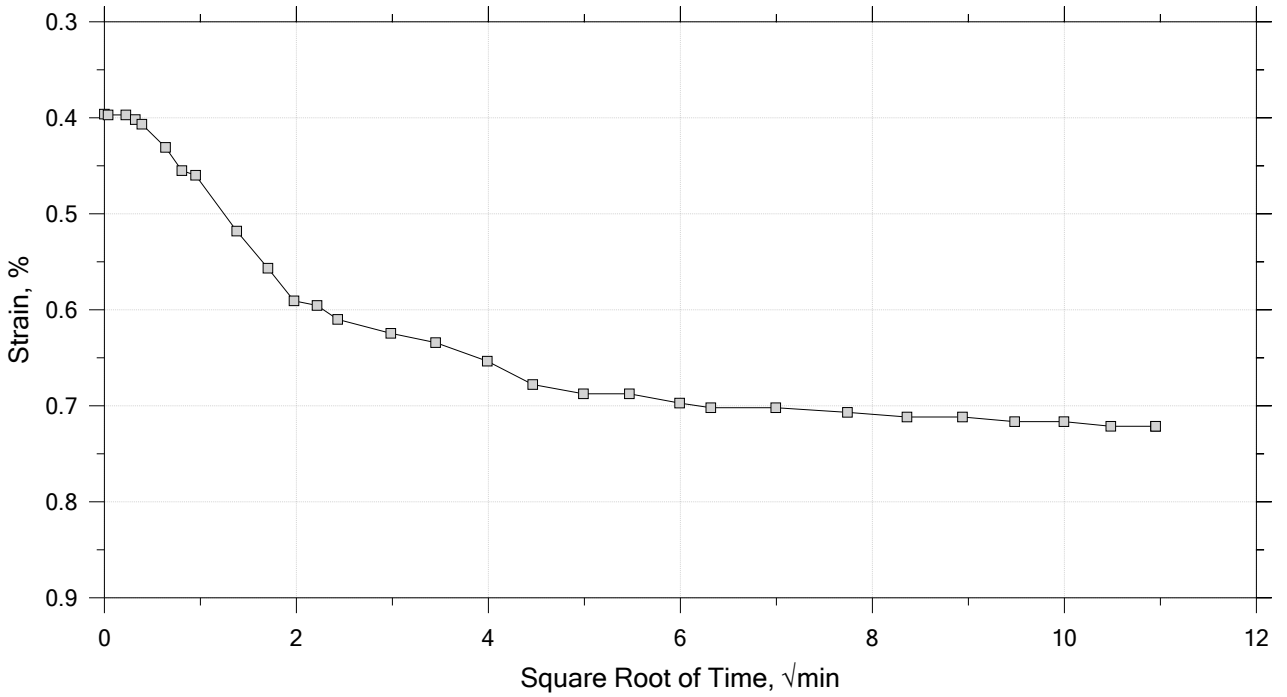


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14
Constant Load Step
Stress: 0.125 tsf

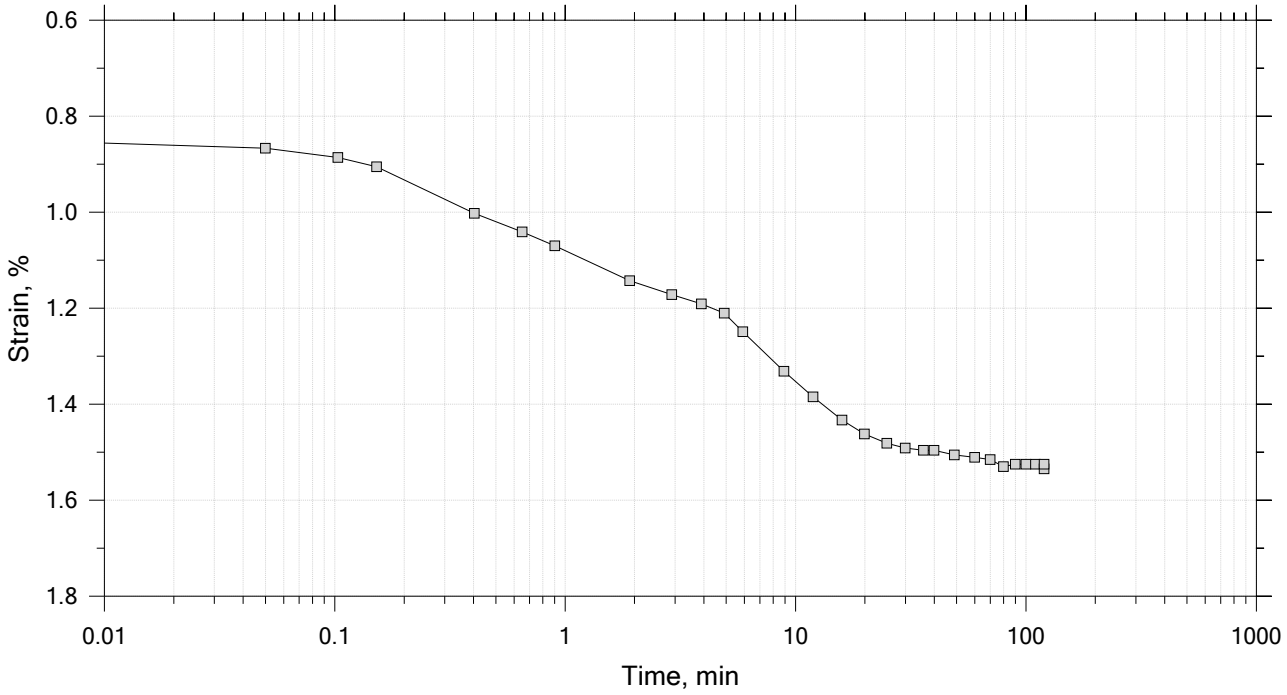


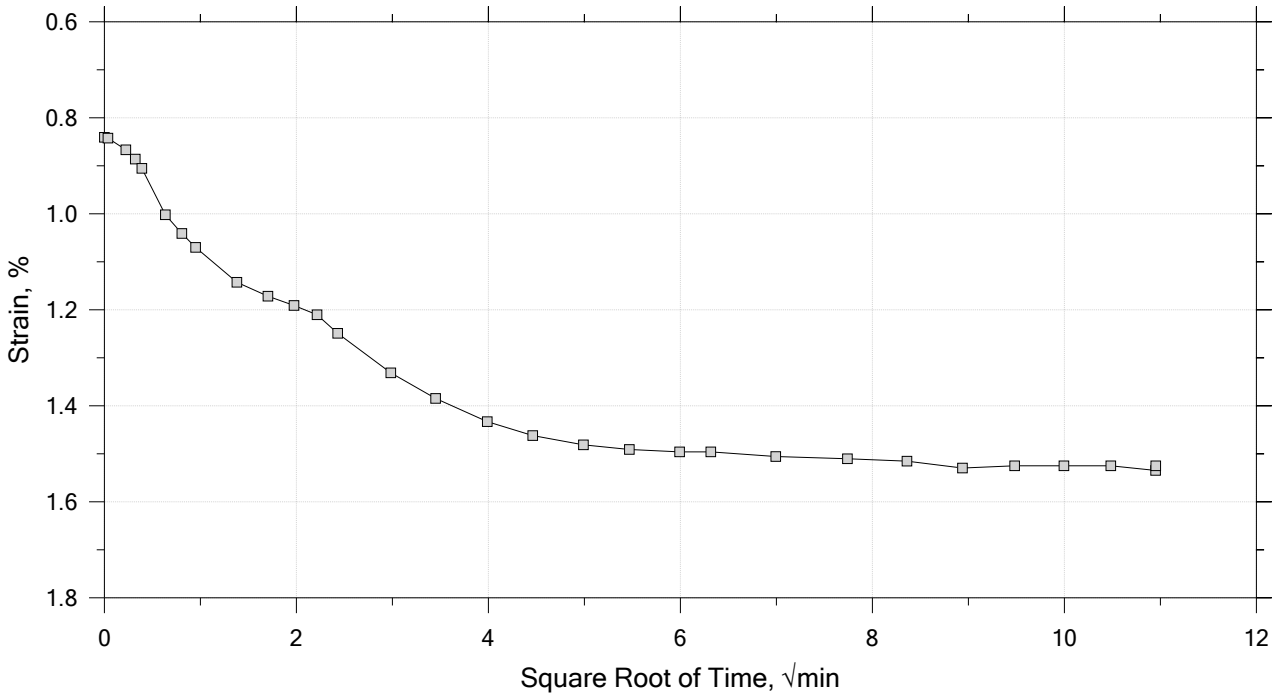


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14
Constant Load Step
Stress: 0.25 tsf

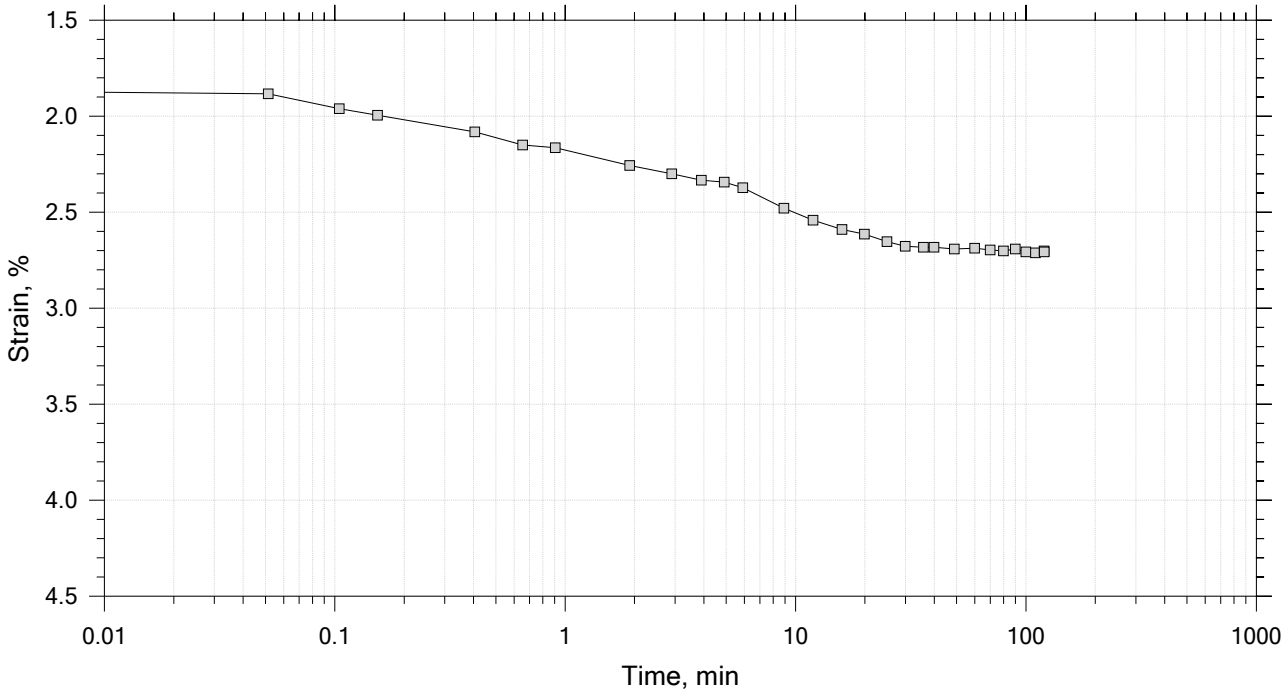


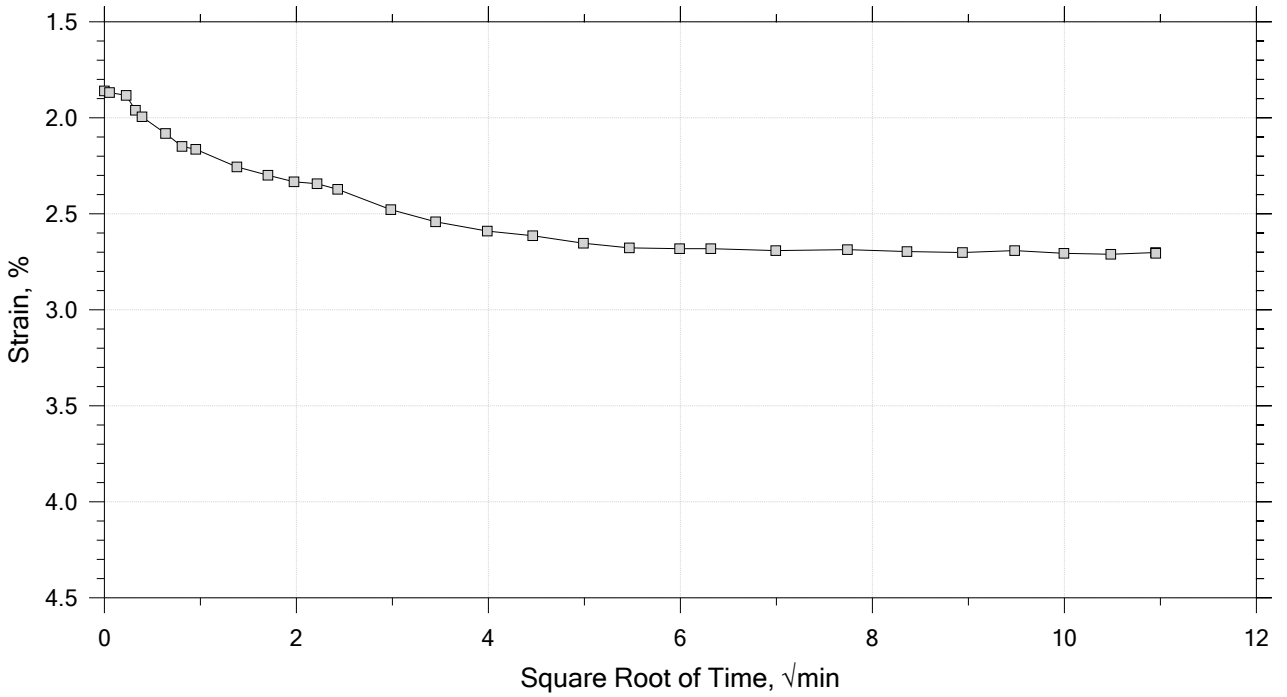


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14
Constant Load Step
Stress: 0.5 tsf





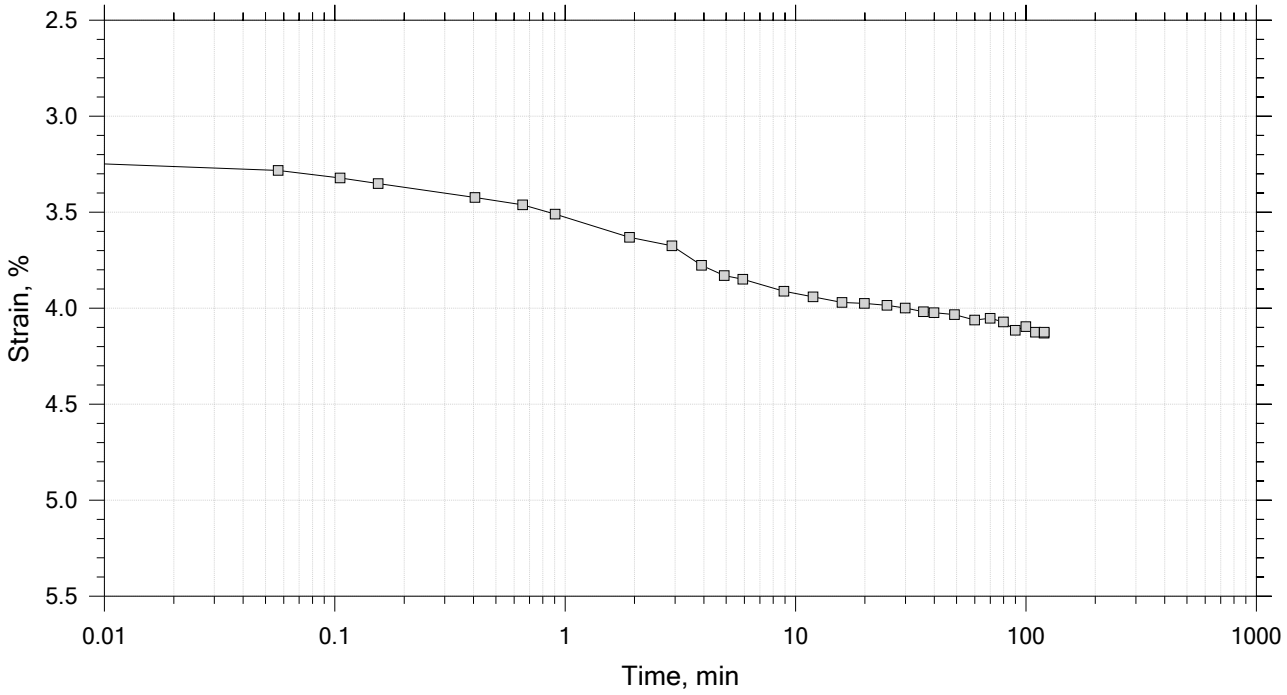
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

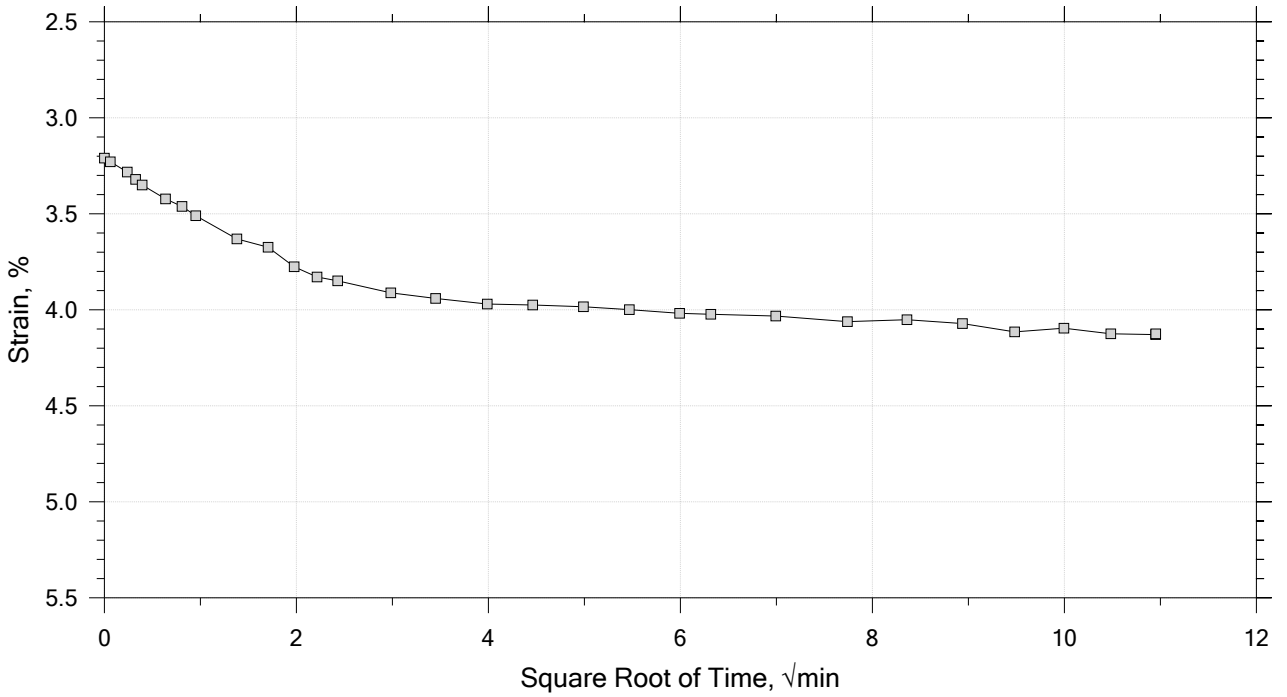
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf





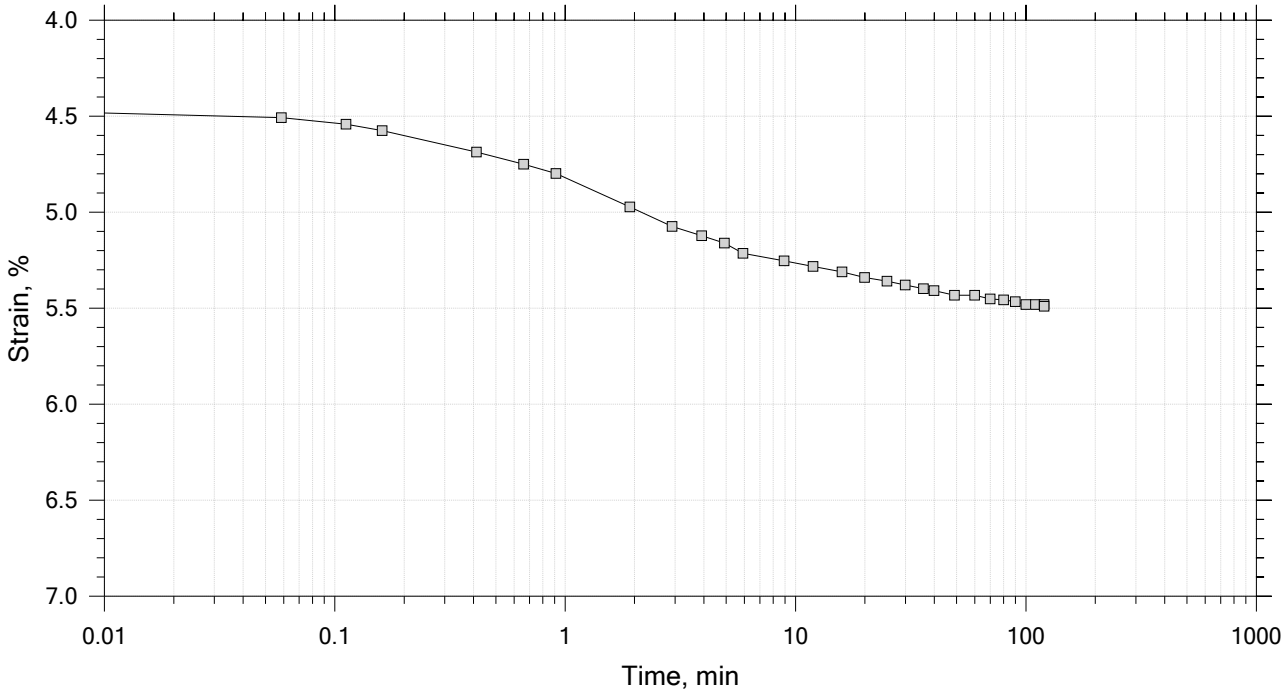
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		

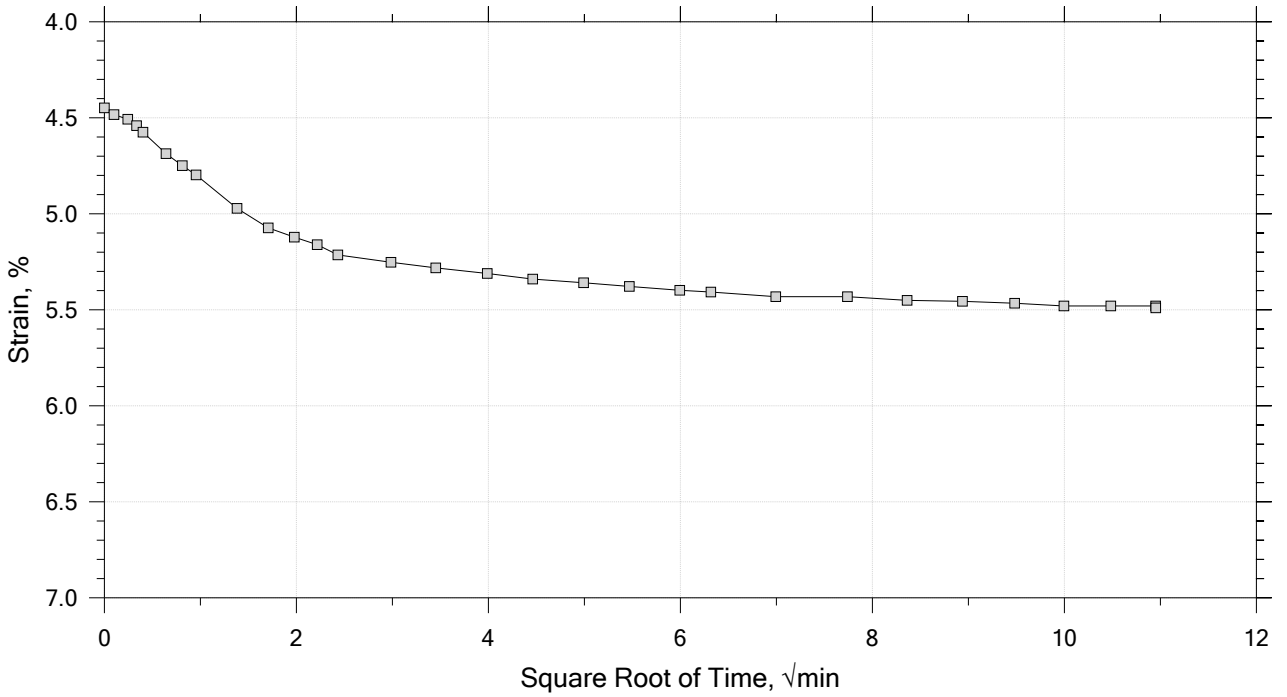
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf





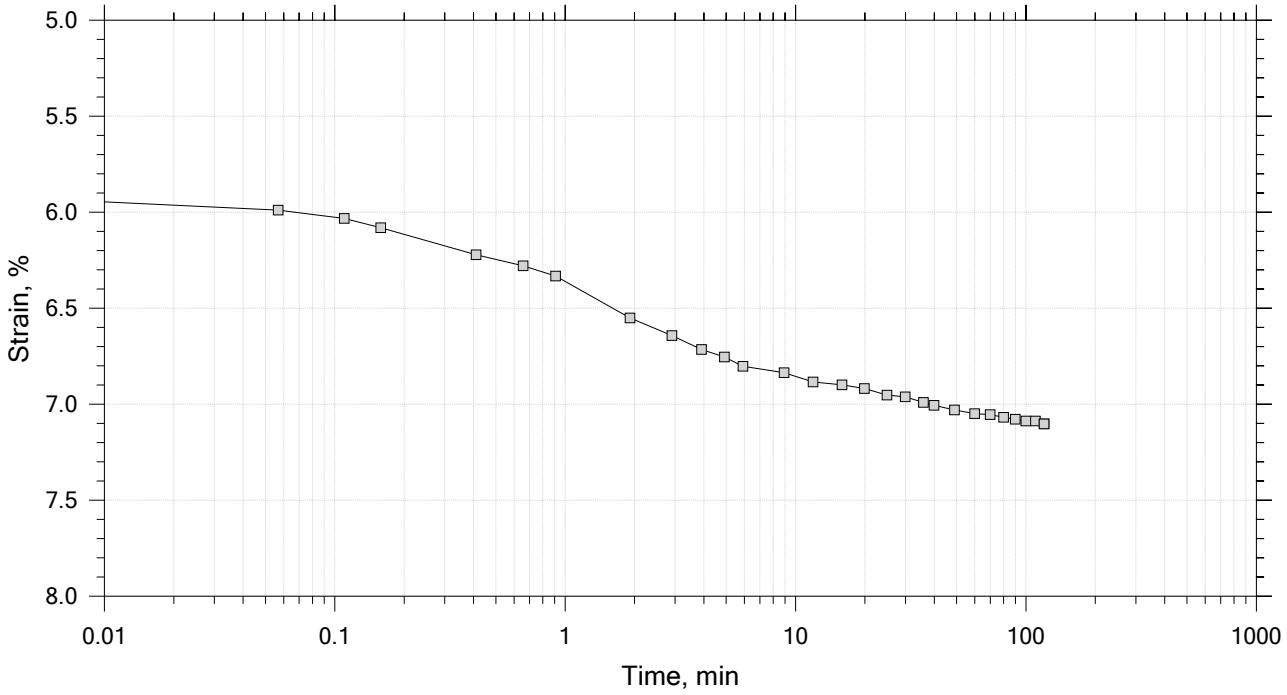
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

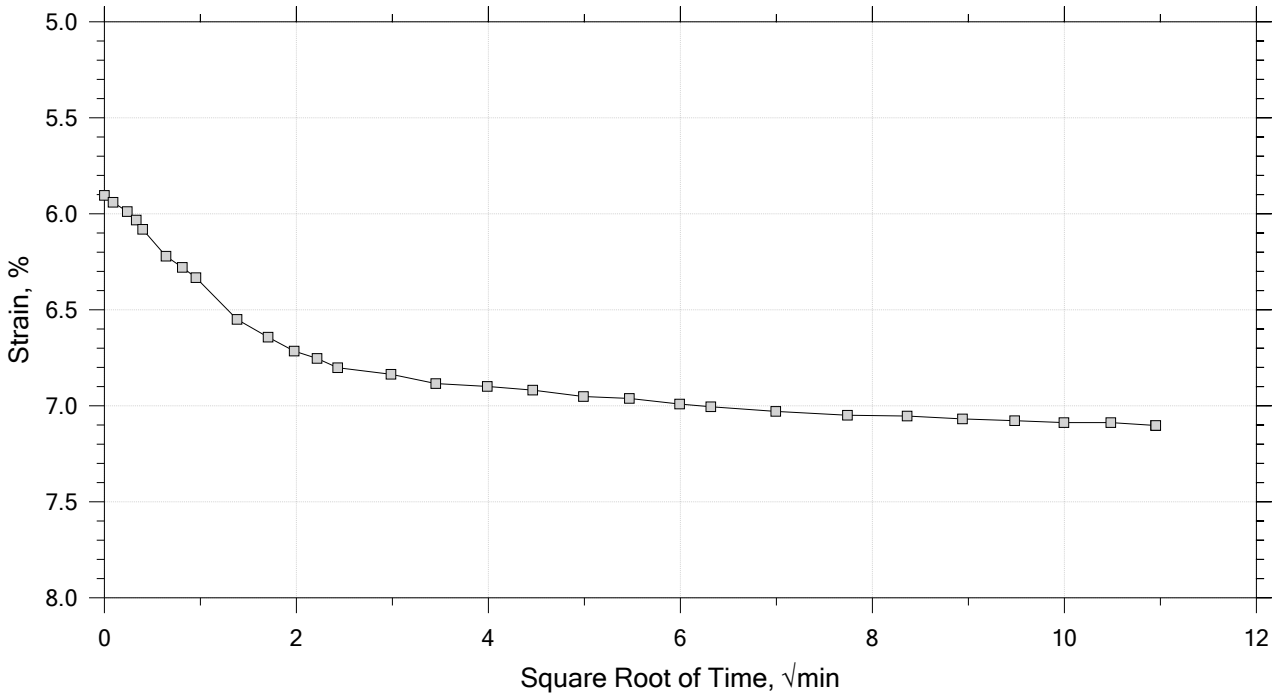
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf

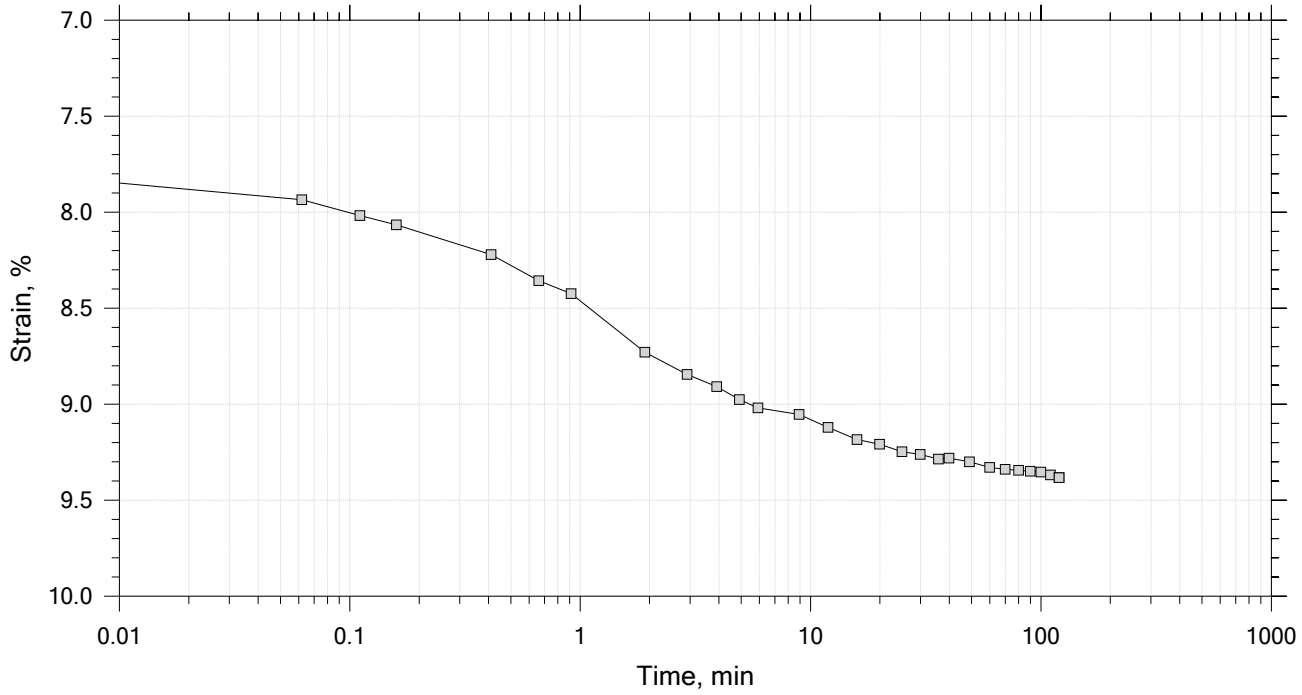


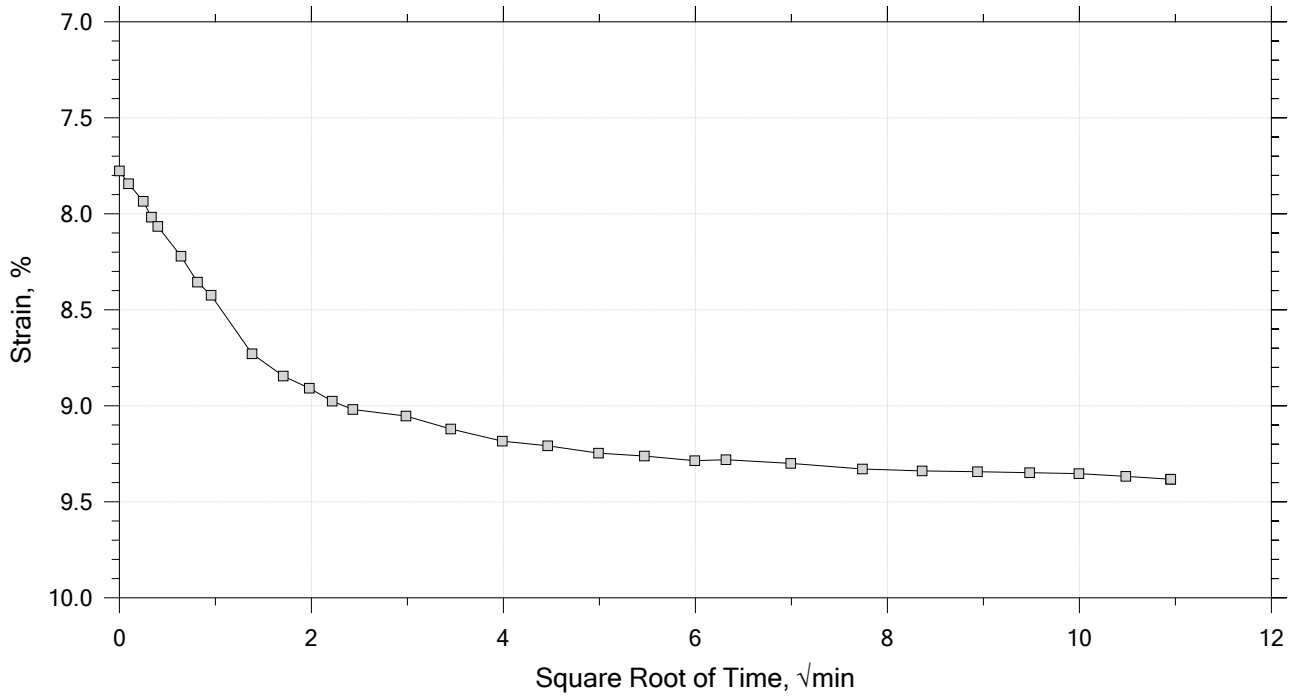


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14
Constant Load Step
Stress: 8 tsf





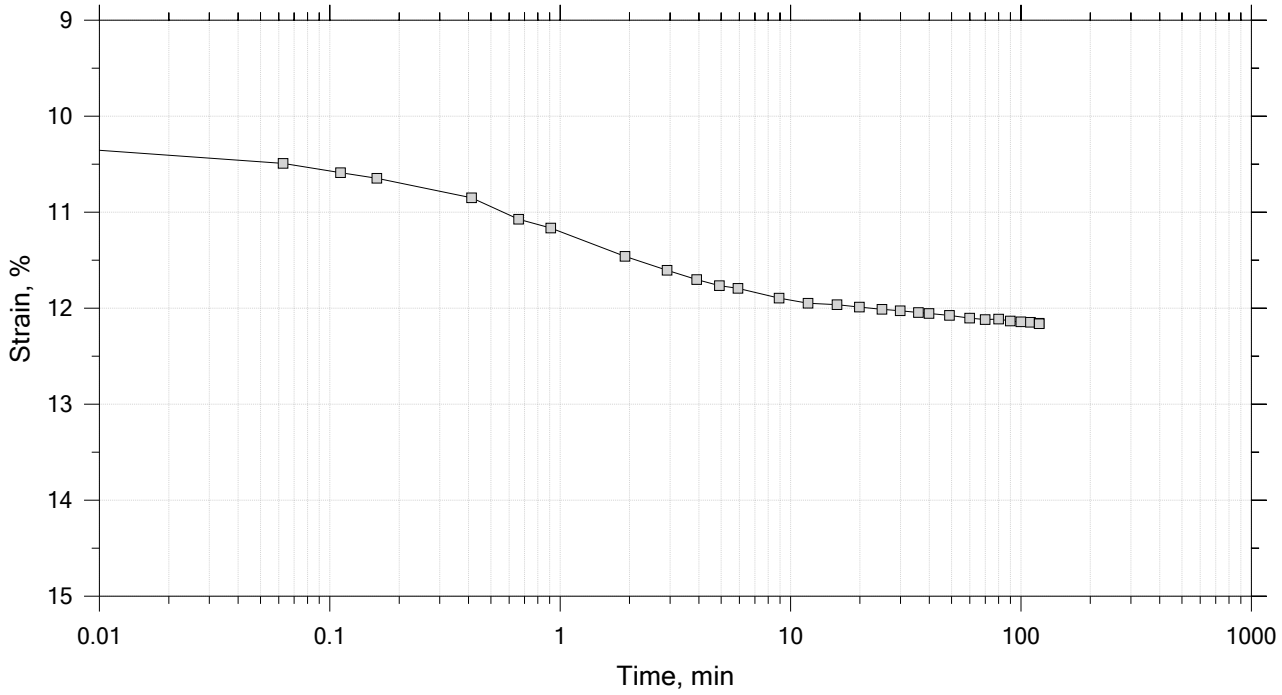
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

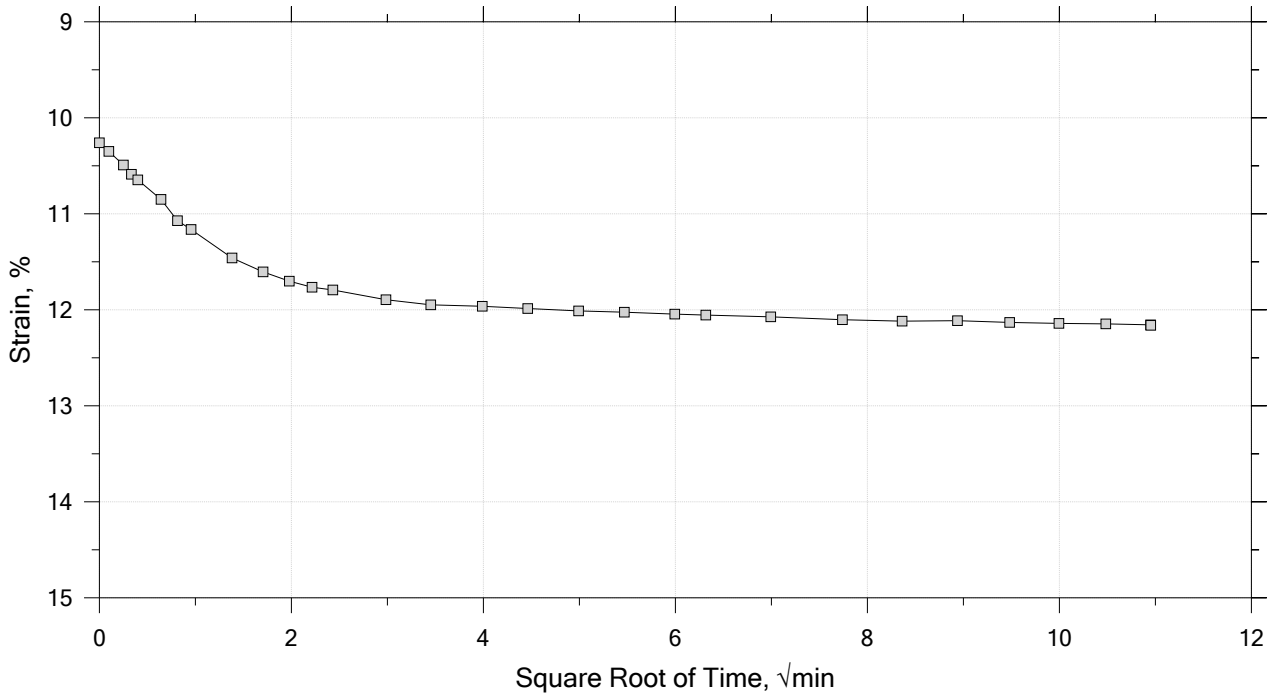
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14

Constant Load Step

Stress: 16 tsf

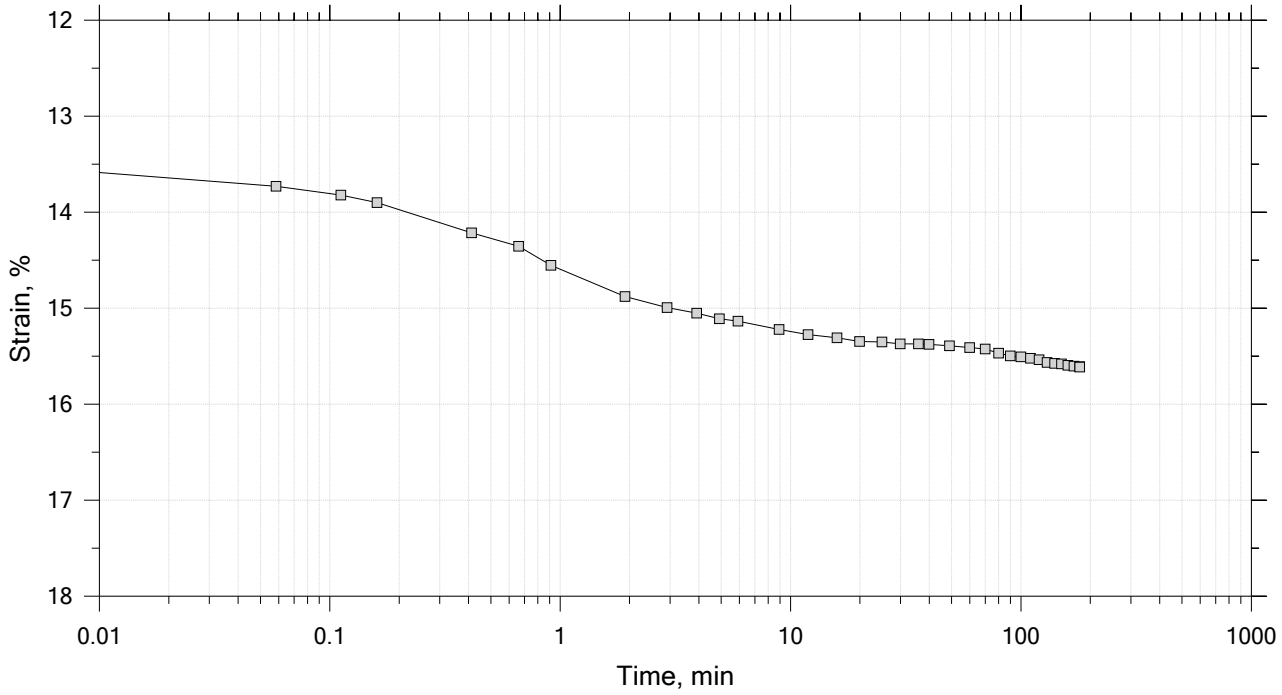


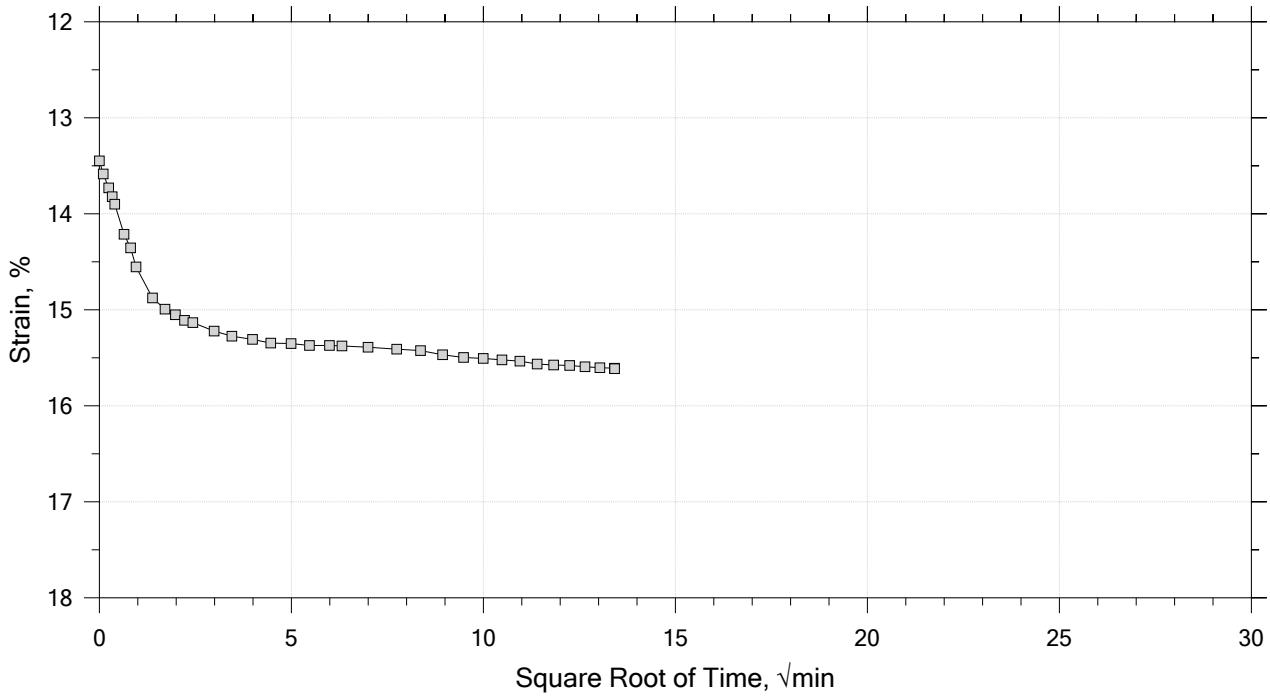


GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14
Constant Load Step
Stress: 32 tsf





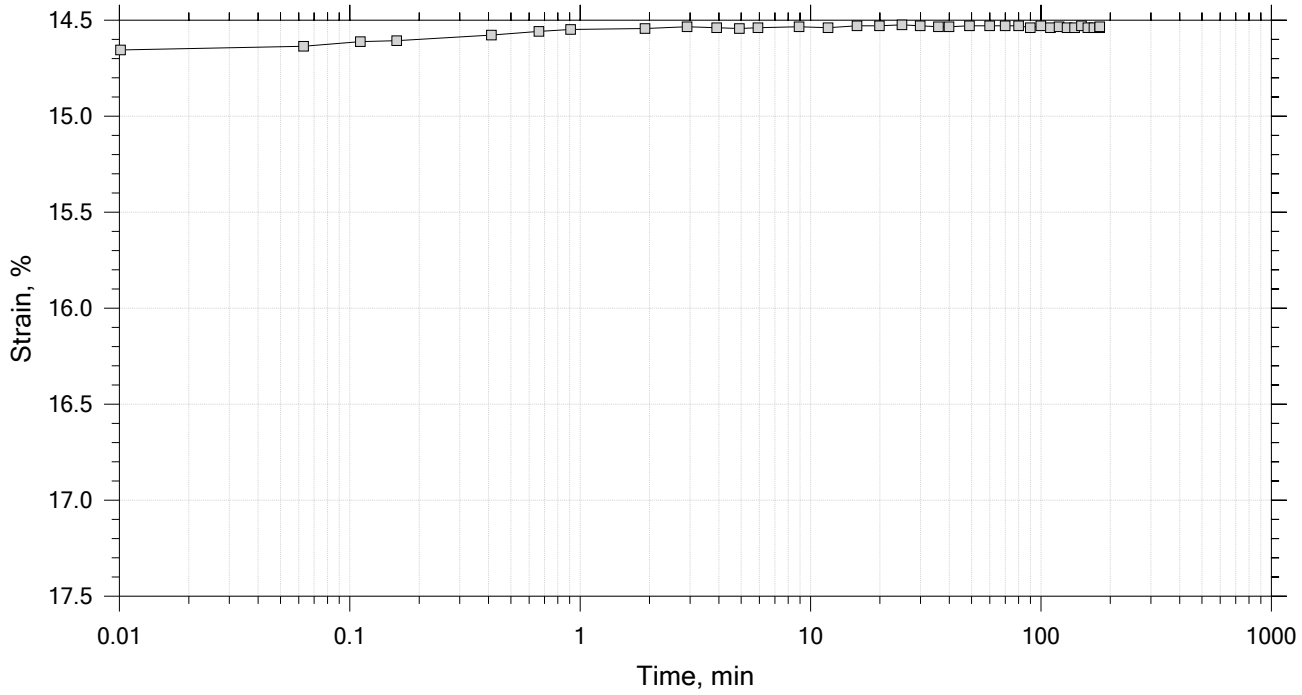
GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

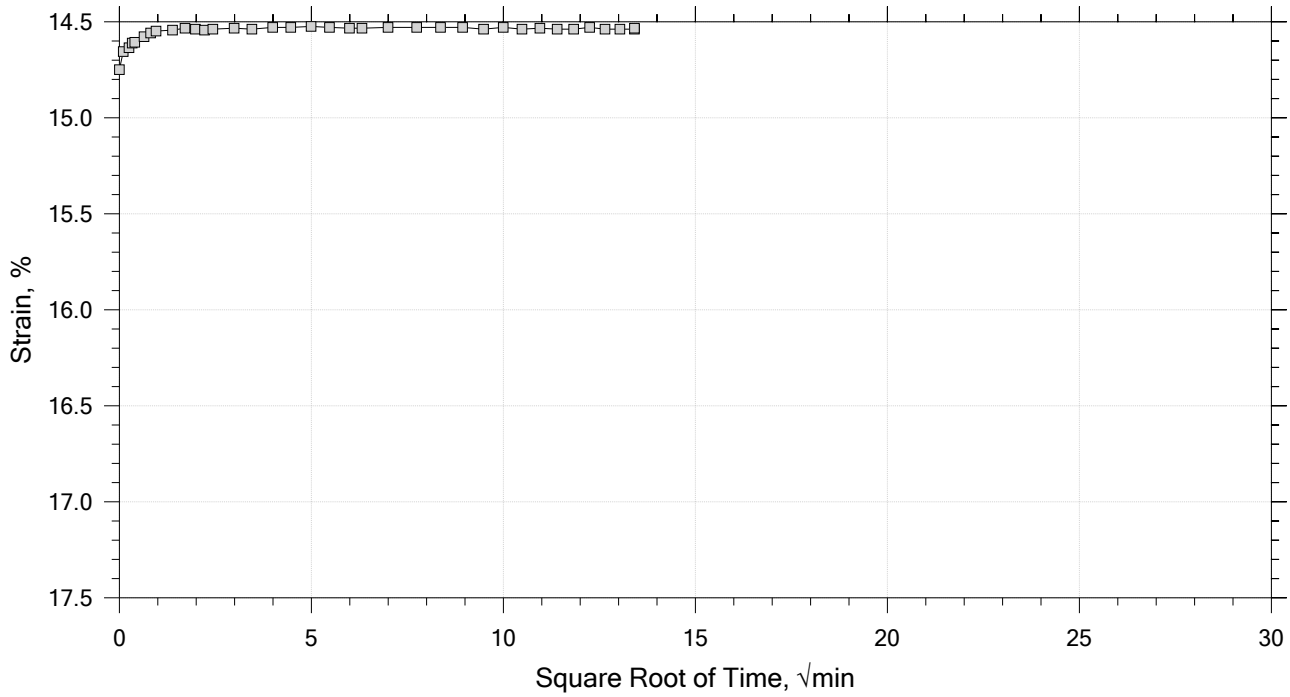
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 16 tsf





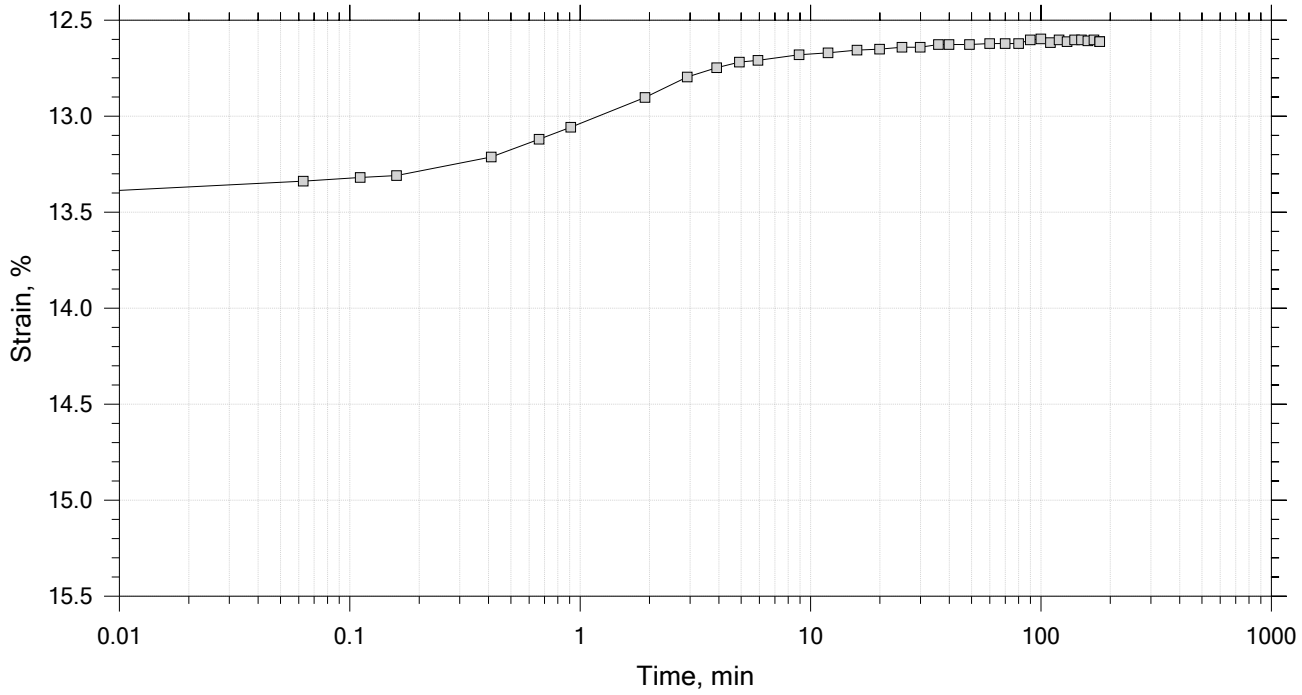
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		

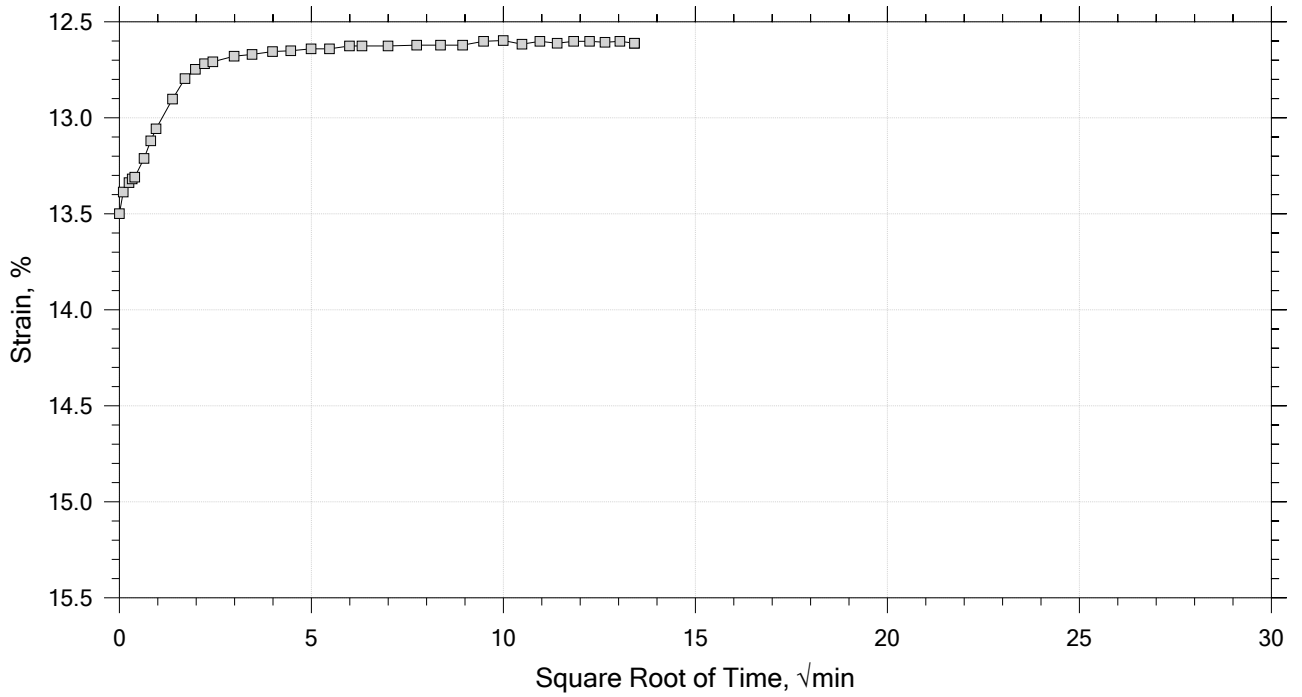
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 4 tsf

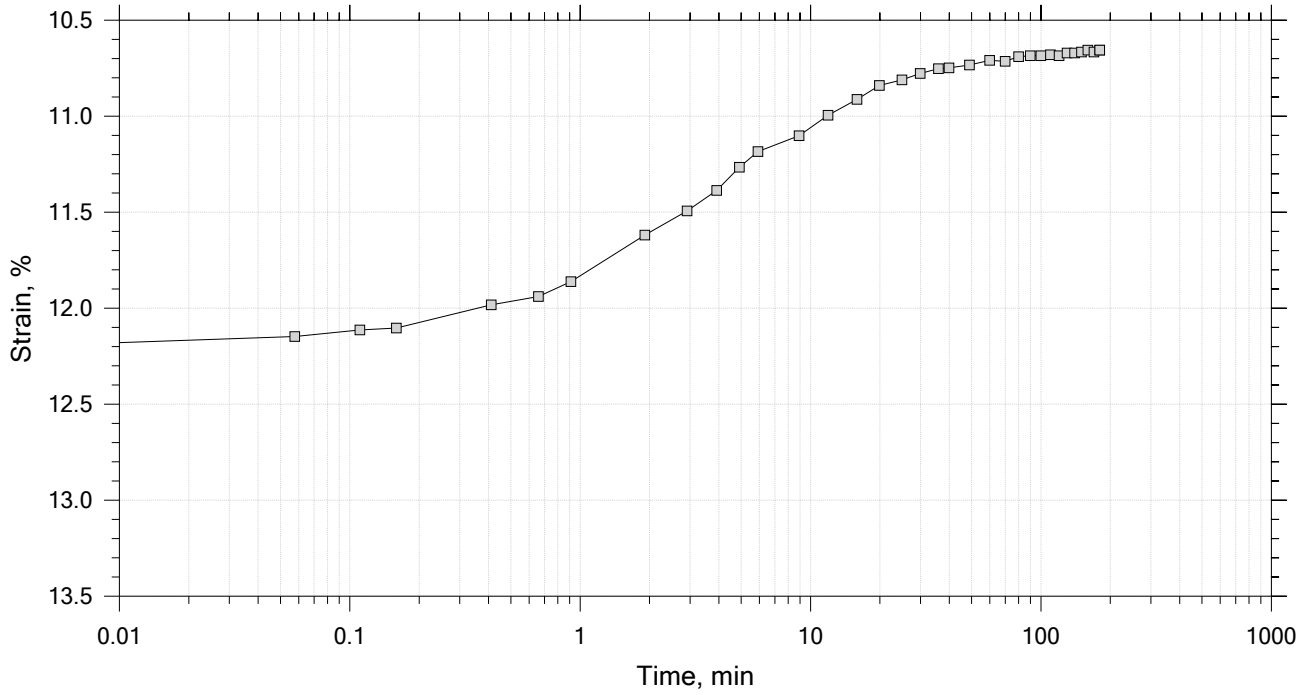


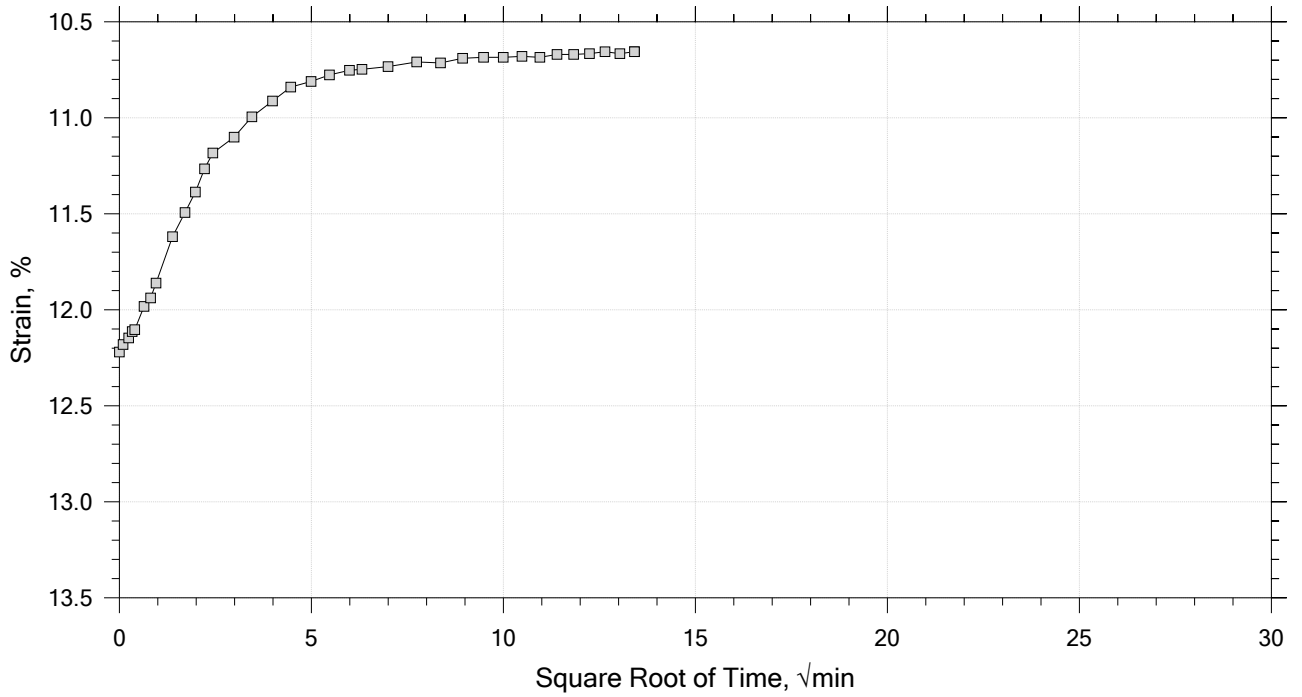


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14
Constant Load Step
Stress: 1 tsf

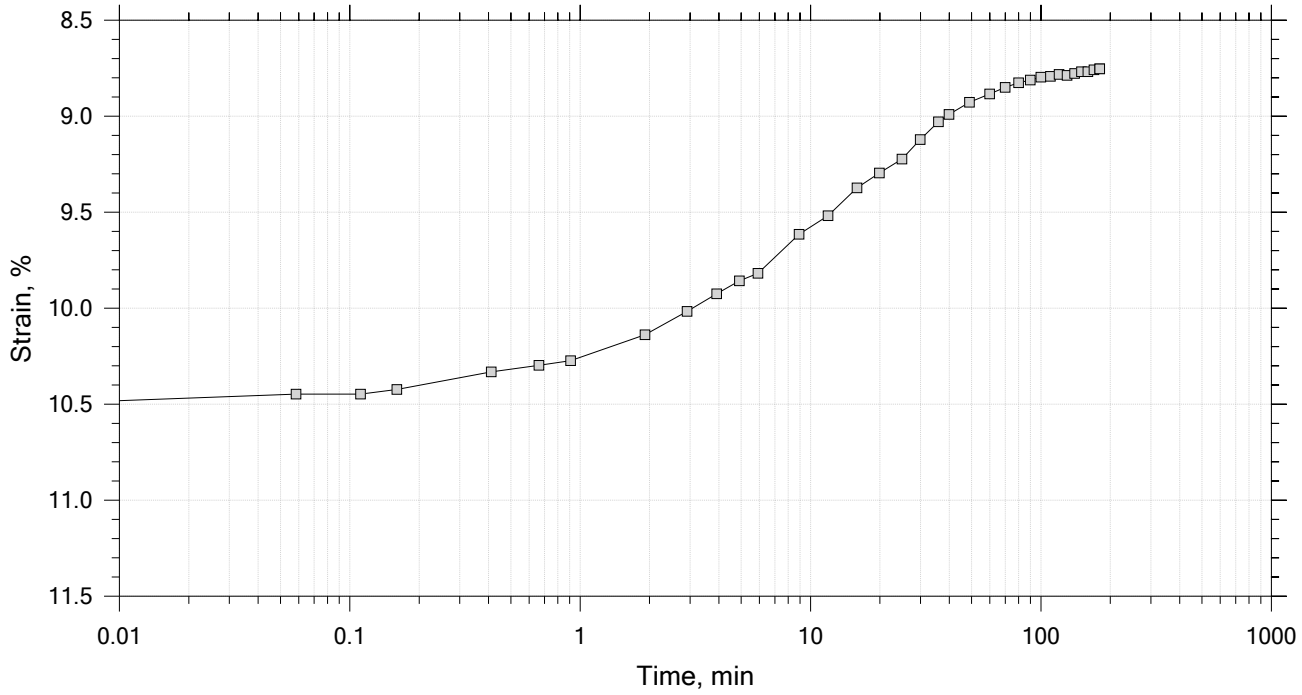


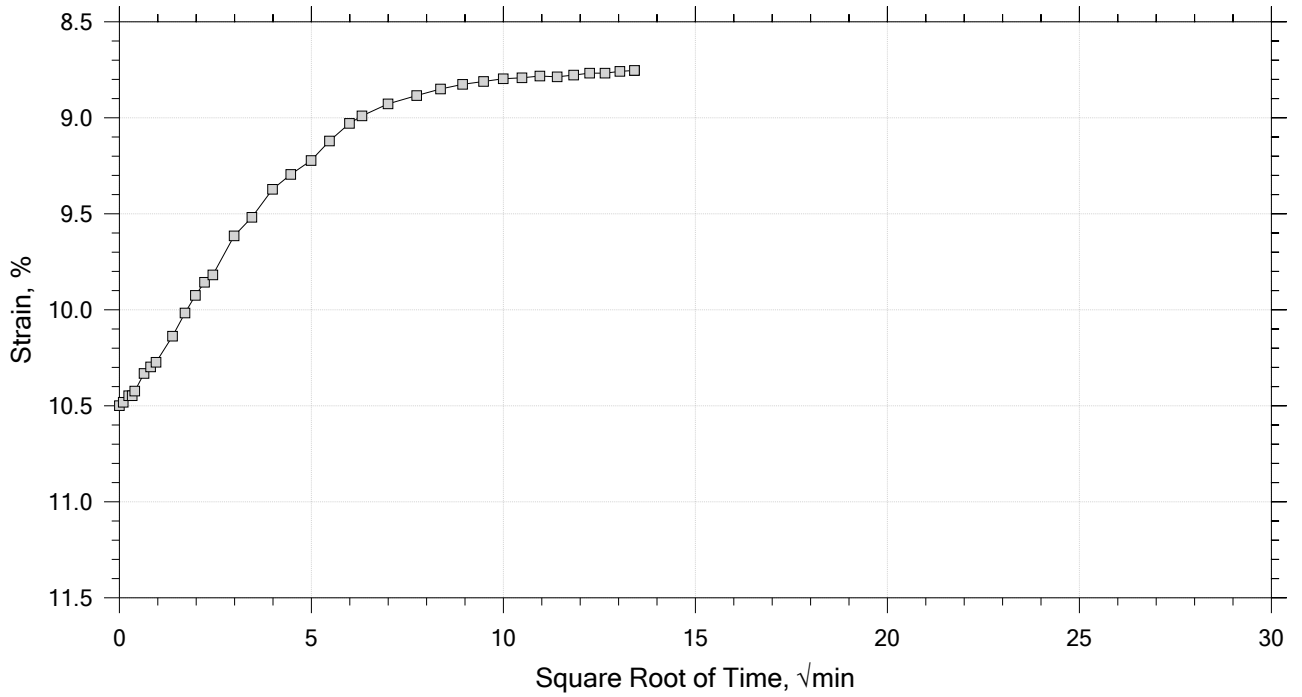


Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14
Constant Load Step
Stress: 0.25 tsf





GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.84	Liquid Limit: 36
Initial Height: 1.00 in	Initial Void Ratio: 0.667	Plastic Limit: 20
Final Height: 0.91 in	Final Void Ratio: 0.521	Plasticity Index: 16

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	bear	RING		Tbts
Mass Container, gm	8.2	108.09	108.09	8.2
Mass Container + Wet Soil, gm	119.52	275.64	270.38	170.49
Mass Container + Dry Soil, gm	101.05	245.23	245.23	145.34
Mass Dry Soil, gm	92.85	137.14	137.14	137.14
Water Content, %	19.89	22.17	18.34	18.34
Void Ratio	---	0.67	0.52	---
Degree of Saturation, %	---	94.47	100.00	---
Dry Unit Weight, pcf	---	106.43	116.64	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
	Boring No.: B-4.21	Tested By: jm	Checked By: mcm
	Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
	Test No.: IP-23	Sample Type: intact	Elevation: ---
	Description: Moist, greenish brown sandy clay		
	Remarks: System A, Swell Pressure = 0.0644 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft²/s	Mv 1/tsf	k cm/s
1	0.0644	0.003341	0.662	0.334	50.503	4.84e-07	5.19e-02	2.39e-08
2	0.125	0.007214	0.655	0.721	9.039	2.69e-06	6.39e-02	1.63e-07
3	0.250	0.01525	0.642	1.53	20.336	1.18e-06	6.43e-02	7.22e-08
4	0.500	0.02706	0.622	2.71	19.596	1.20e-06	4.73e-02	5.39e-08
5	1.00	0.04125	0.598	4.12	6.155	3.72e-06	2.84e-02	1.00e-07
6	2.00	0.05490	0.576	5.49	6.544	3.40e-06	1.37e-02	4.41e-08
7	4.00	0.07102	0.549	7.10	6.204	3.47e-06	8.06e-03	2.66e-08
8	8.00	0.09383	0.511	9.38	4.470	4.62e-06	5.70e-03	2.51e-08
9	16.0	0.1216	0.464	12.2	3.407	5.73e-06	3.47e-03	1.89e-08
10	32.0	0.1561	0.407	15.6	3.553	5.12e-06	2.16e-03	1.05e-08
11	16.0	0.1453	0.425	14.5	1.870	9.47e-06	6.75e-04	6.08e-09
12	4.00	0.1261	0.457	12.6	5.986	3.06e-06	1.60e-03	4.67e-09
13	1.00	0.1066	0.490	10.7	14.340	1.34e-06	6.52e-03	8.29e-09
14	0.250	0.08753	0.521	8.75	35.105	5.70e-07	2.54e-02	1.38e-08

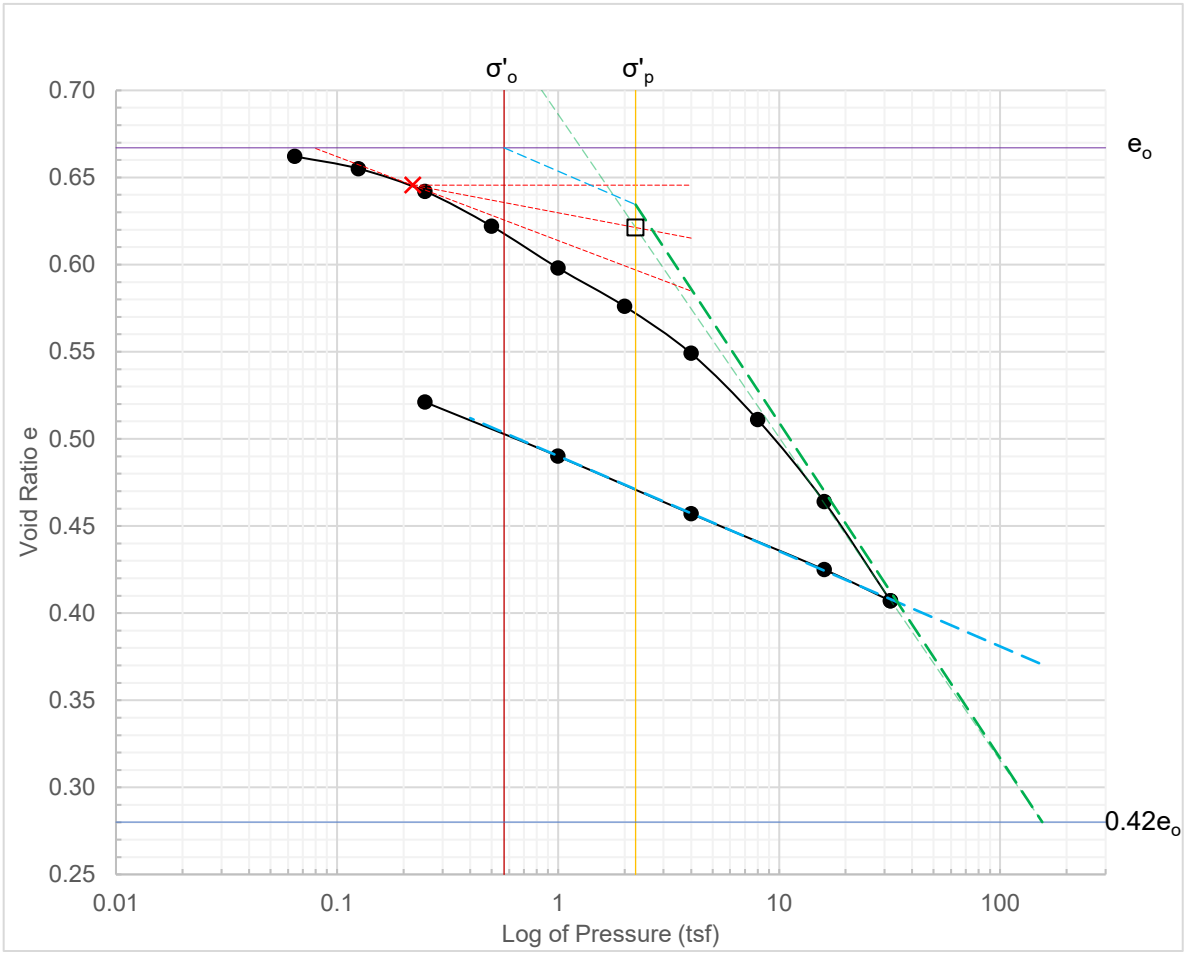
GeoTesting EXPRESS

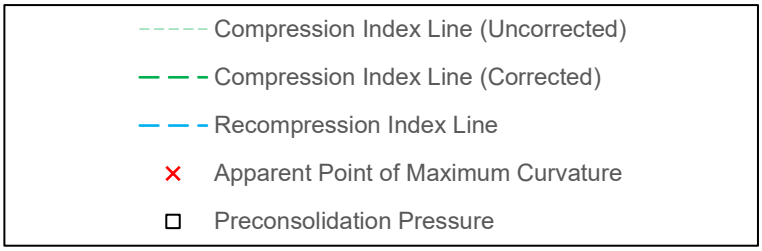
Project: Eagle Creek Flood Basin	Location: Hancock County	Project No.: GTX-315844
Boring No.: B-4.21	Tested By: jm	Checked By: mcm
Sample No.: ST	Test Date: 8/12/22	Depth: 13.9-14.0 ft
Test No.: IP-23	Sample Type: intact	Elevation: ---
Description: Moist, greenish brown sandy clay		
Remarks: System A, Swell Pressure = 0.0644 tsf		
Displacement at End of Increment		

Boring: B-4.21

Depth: 13.9'-14.0'

Estimated Values:
Effective Overburden Pressure, σ'_o (tsf) = 0.57
Preconsolidation Pressure, σ'_p (tsf) = 2.24
Compression Index, C_c = 0.19
Recompression Index, C_r = 0.055





Attachment E-2. Laboratory Testing Results

Soil Water Characteristic Curve

Client:	Stantec Inc.
Project:	Eagle Creek
Location:	Hancock Co.
GTX No.:	313582
Tested By:	jm
Checked By:	mcm
Date:	5/21/2021
Boring No.:	---
Sample No.:	B-3.45A
Sample Depth, ft:	2.4-3.1
Sample Description:	Moist, brown clay

Determination of the Soil Water Characteristic Curve for Desorption Using Hanging Column, Pressure Extractor, Chilled Mirror Hygrometer, or Centrifuge by ASTM D6836

Saturation Liquid:	Distilled Water	Method:	C
Saturation Method:	Tray	Porous Material:	Membrane
Temperature of Soil:	21 °C		

Initial Specimen:	Initial Moisture, %:	32.5	Specific Gravity:	2.62
	Initial Moisture, %/Vol:	43.4	Initial Saturation, %:	102.6
	Dry Unit Weight (pcf):	83.4		

Applied Suction:

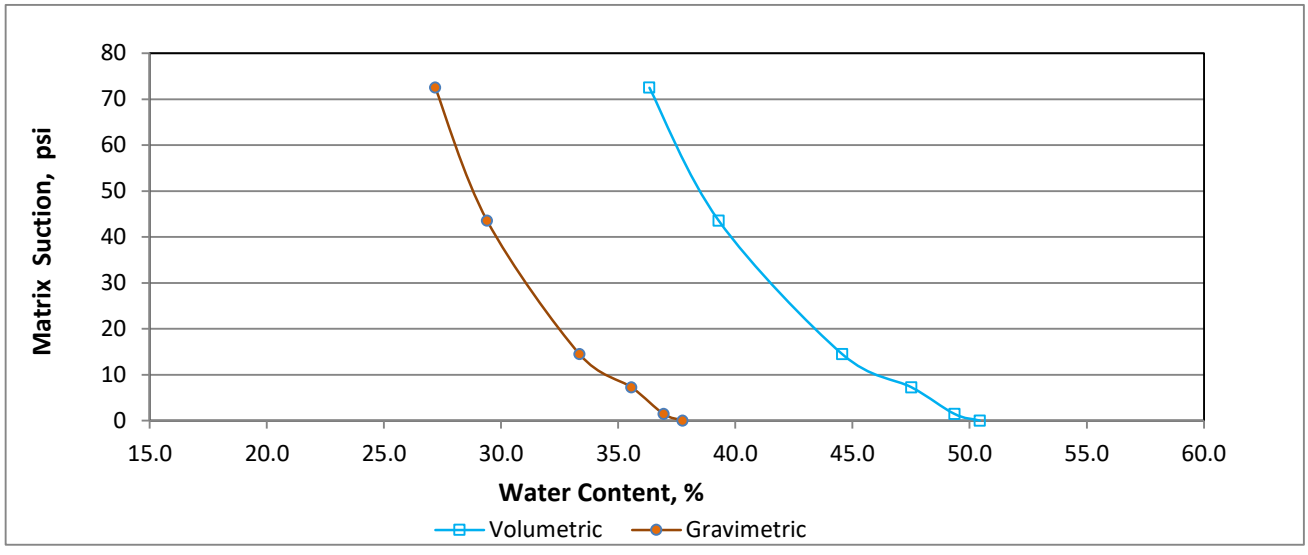
Point	1	2	3	4	5	6	
psi	0	1.45	7.25	14.5	43.5	72.5	
m	0	1.0	5.1	10.2	30.6	51.0	

Volumetric Water Content:

Point	1	2	3	4	5	6	
%	50.4	49.4	47.5	44.6	39.3	36.3	

Gravimetric Water Content:

Point	1	2	3	4	5	6	
%	37.7	36.9	35.6	33.3	29.4	27.2	



Client:	Stantec Inc.
Project:	Eagle Creek
Location:	Hancock Co.
GTX No.:	313582
Tested By:	jm
Checked By:	mcm
Date:	5/21/2021
Boring No.:	---
Sample No.:	B-3.48A
Sample Depth ft:	1.1-1.8
Sample Description:	Moist, brown clay

Determination of the Soil Water Characteristic Curve for Desorption Using Hanging Column, Pressure Extractor, Chilled Mirror Hygrometer, or Centrifuge by ASTM D6836

Saturation Liquid:	Distilled Water	Method:	C
Saturation Method:	Tray	Porous Material:	Membrane
Temperature of Soil:	21 °C		

Initial Specimen:	Initial Moisture, %:	23.1	Specific Gravity:	2.65
	Initial Moisture, %/Vol:	33.8	Initial Saturation, %:	101.9
	Dry Unit Weight (pcf):	91.3		

Applied Suction:

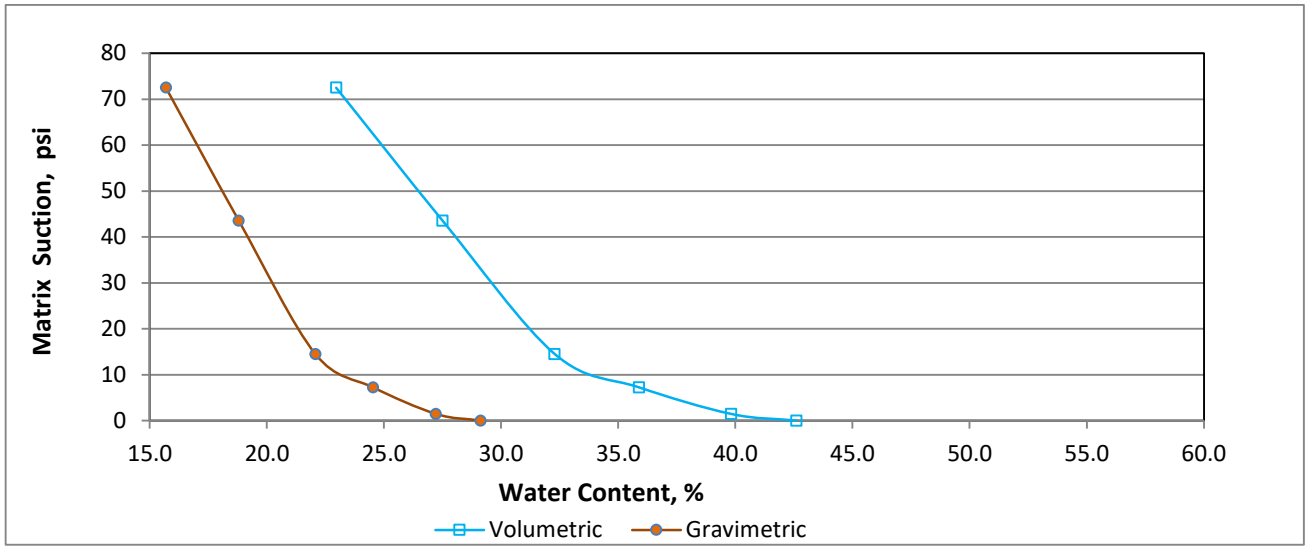
Point	1	2	3	4	5	6	
psi	0	1.45	7.25	14.5	43.5	72.5	
m	0	1.0	5.1	10.2	30.6	51.0	

Volumetric Water Content:

Point	1	2	3	4	5	6	
%	42.6	39.8	35.9	32.3	27.5	23.0	

Gravimetric Water Content:

Point	1	2	3	4	5	6	
%	29.1	27.2	24.5	22.1	18.8	15.7	



Client:	Stantec Inc.
Project:	Eagle Creek Flood Basin
Location:	Hancock County
GTX No.:	315844
Tested By:	jm
Checked By:	as
Date:	10/3/2022
Boring No.:	TP-4.3-B
Sample No.:	---
Sample Depth:	2.5-5.5 ft
Sample Description:	Moist, dark brown sandy clay

Determination of the Soil Water Characteristic Curve for Desorption Using Hanging Column, Pressure Extractor, Chilled Mirror Hygrometer, or Centrifuge by ASTM D6836

Saturation Liquid:	Distilled Water	Method:	C
Saturation Method:	Tray	Porous Material:	Membrane
Temperature of Soil:	21 °C		

Initial Specimen:	Initial Moisture, %:	18.3	Specific Gravity:	2.68
	Initial Moisture, %/Vol:	31.3	Initial Saturation, %:	99.3
	Dry Unit Weight (pcf):	106.6		

Applied Suction:

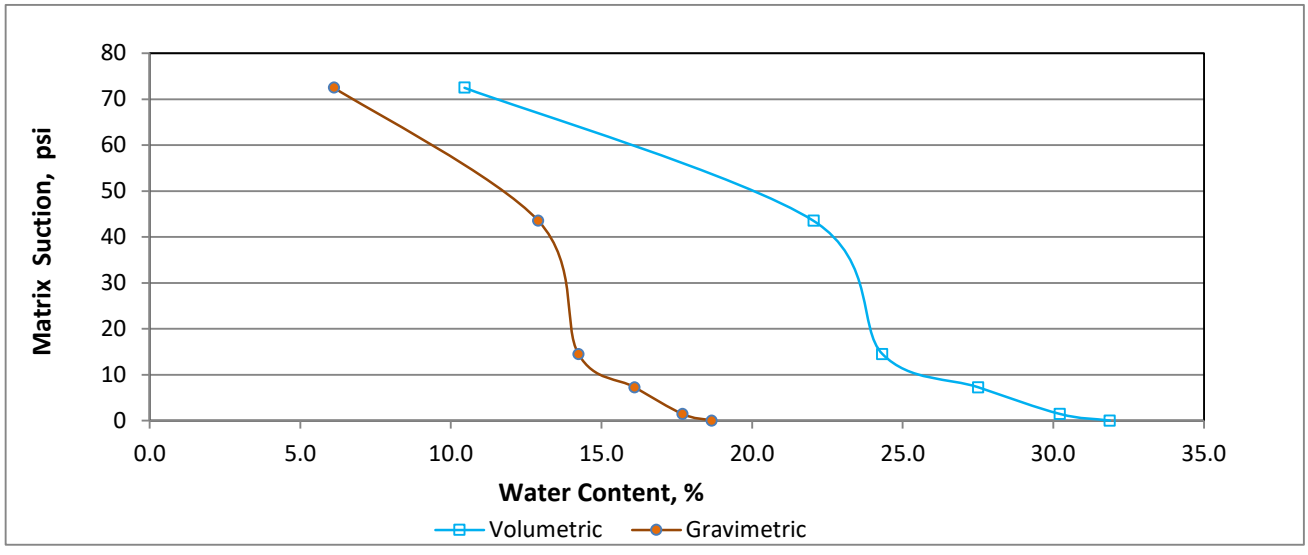
Point	1	2	3	4	5	6
psi	0	1.45	7.25	14.5	43.5	72.5
kPa	0	10	50	100	300	500

Volumetric Water Content:

Point	1	2	3	4	5	6
%	31.9	30.2	27.5	24.3	22.0	10.5

Gravimetric Water Content:

Point	1	2	3	4	5	6
%	18.7	17.7	16.1	14.2	12.9	6.1



Attachment E-2. Laboratory Testing Results

Dispersive Clay - Crumb

Crumb Test for Dispersibility of Clayey Soils

D6572

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 433 Sample Purpose: N/A

Source: B-3.72, 5.0'-10.0'

[x] Disturbed [ ] Undisturbed Color: brown Natural Moisture Content (as received): 15.1 %

Specimen Type: [ ] Natural Irregularly Shaped Crumb [x] Remolded Crumb Cube

Moisture Content: [ ] Natural Moisture [ ] Air-Dried [x] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 18.2 °C Time at Beginning of Test: 9:06 [x] am [ ] pm

Tested By: DB Date Tested: 3-5-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
433A	--	1	18.2	1	18.4	1	19.3
433B	--	1	18.1	1	18.2	1	19.2

Lab ID: 435 Sample Purpose: N/A

Source: B-3.74, 8.0'-10.0'

[x] Disturbed [ ] Undisturbed Color: brown Natural Moisture Content (as received): 15.5 %

Specimen Type: [ ] Natural Irregularly Shaped Crumb [x] Remolded Crumb Cube

Moisture Content: [ ] Natural Moisture [ ] Air-Dried [x] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 18.0 °C Time at Beginning of Test: 9:08 [x] am [ ] pm

Tested By: DB Date Tested: 3-5-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
435A	--	1	18.0	1	18.1	1	18.9
435B	--	1	17.9	1	18.0	1	18.9

Crumb Test for Dispersibility of Clayey Soils

D6572

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 437 Sample Purpose: N/A

Source: B-3.76, 4.0'-10.0'

[x] Disturbed [ ] Undisturbed Color: brown Natural Moisture Content (as received): 16.2 %

Specimen Type: [ ] Natural Irregularly Shaped Crumb [x] Remolded Crumb Cube

Moisture Content: [ ] Natural Moisture [ ] Air-Dried [x] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 17.7 °C Time at Beginning of Test: 9:12 [x] am [ ] pm

Tested By: DB Date Tested: 3-5-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
437A	--	1	17.7	1	17.8	1	19.0
437B	--	1	17.7	1	17.8	1	18.5

Lab ID: 442 Sample Purpose: N/A

Source: B-3.83, 5.0'-8.5'

[x] Disturbed [ ] Undisturbed Color: brown Natural Moisture Content (as received): 16.2 %

Specimen Type: [ ] Natural Irregularly Shaped Crumb [x] Remolded Crumb Cube

Moisture Content: [ ] Natural Moisture [ ] Air-Dried [x] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 17.5 °C Time at Beginning of Test: 9:16 [x] am [ ] pm

Tested By: DB Date Tested: 3-5-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
442A	--	1	17.5	1	17.6	1	18.3
442B	--	1	17.5	1	17.5	1	18.2

Crumb Test for Dispersibility of Clayey Soils

D6572

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 768 Sample Purpose: N/A

Source: B-3.80, 5.0'-10.0'

[x] Disturbed [ ] Undisturbed Color: Dark brown Natural Moisture Content (as received): 14.2 %

Specimen Type: [ ] Natural Irregularly Shaped Crumb [x] Remolded Crumb Cube

Moisture Content: [x] Natural Moisture [ ] Air-Dried [ ] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 21.0 °C Time at Beginning of Test: 9:50 [x] am [ ] pm

Tested By: DB Date Tested: 5-26-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
768A	--	1	20.9	1	20.8	1	20.2
768B	--	1	20.9	1	20.8	1	20.1

Lab ID: 791 Sample Purpose: N/A

Source: B-3.51a, 0.0'-2.0'

[ ] Disturbed [x] Undisturbed Color: Dark brown Natural Moisture Content (as received): 25.6 %

Specimen Type: [x] Natural Irregularly Shaped Crumb [ ] Remolded Crumb Cube

Moisture Content: [x] Natural Moisture [ ] Air-Dried [ ] Distilled Water Added to Remold Specimen

Curing Time: N/A Min Water Used: [x] Distilled [ ] Distilled and Demineralized

Initial Water Temperature: 21.1 °C Time at Beginning of Test: 9:54 [x] am [ ] Pm

Tested By: DB Date Tested: 5-26-21

Specimen Number	Dish Number	2 Minutes		1 Hour		6 Hours	
		Grade	°C	Grade	°C	Grade	°C
791A	--	1	20.9	1	20.7	1	20.2
791B	--	1	20.9	1	20.7	1	20.2

Attachment E-2. Laboratory Testing Results

Dispersive Clay - Double Hydrometer

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.51a, 0.0'-2.0'

Project Number 173409690
Lab ID 791
Date Received 02-08-2021
Test Date 05-13-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
3/8"	100.0
No. 4	99.7
No. 10	99.5

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 05-19-2021

ASTM D 422

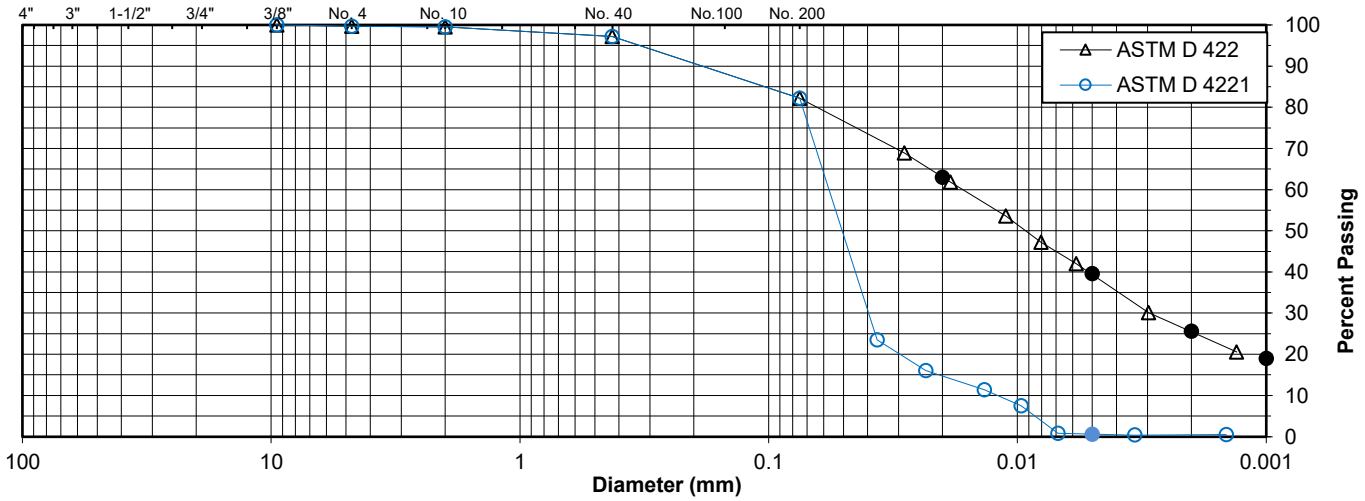
Sieve Size	% Passing
No. 40	97.2
No. 200	82.2
0.02 mm	63.0
0.005 mm	**39.6**
0.002 mm	25.6
0.001 mm	19.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	97.2	
No. 200	82.2	
0.02 mm		
0.005 mm	**0.6**	**1.5**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.3	0.2	2.3	14.9	42.6	39.6



Comments

Reviewed By RJ

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.72, 5.0'-10.0'

Project Number 173409690
Lab ID 433
Date Received 02-08-2021
Test Date 03-01-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
3/8"	100.0
No. 4	99.0
No. 10	96.9

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 03-03-2021

ASTM D 422

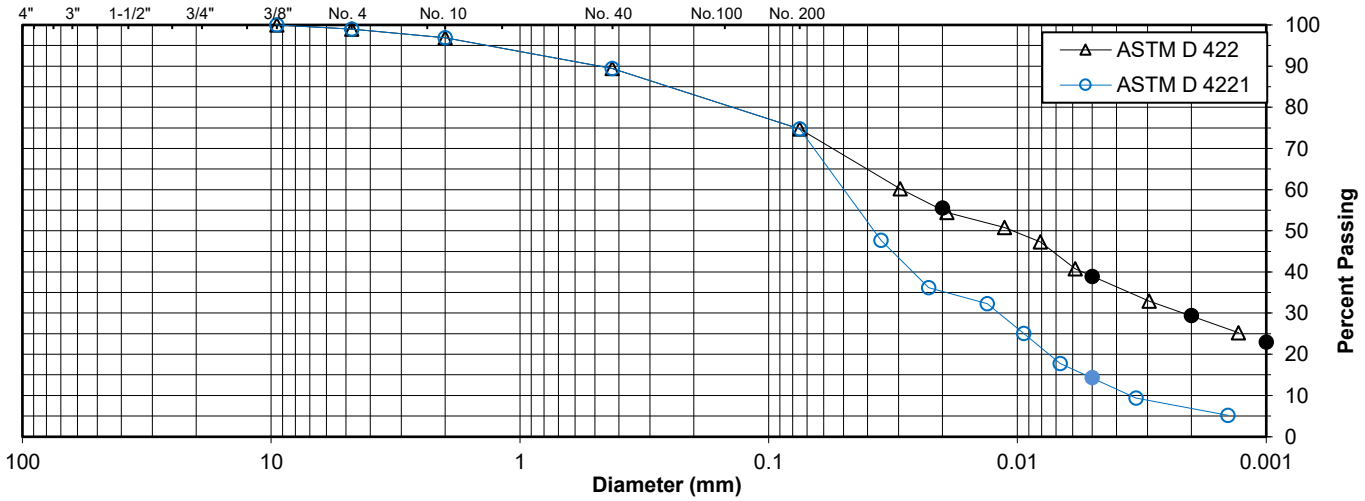
Sieve Size	% Passing
No. 40	89.4
No. 200	74.7
0.02 mm	55.5
0.005 mm	**38.9**
0.002 mm	29.4
0.001 mm	23.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	89.4	
No. 200	74.7	
0.02 mm		
0.005 mm	**14.3**	**36.8**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	1.0	2.0	7.5	14.7	35.8	38.9



Comments

Reviewed By RJ

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.74, 8.0'-10.0'

Project Number 173409690
Lab ID 435
Date Received 02-08-2021
Test Date 03-01-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	99.6
No. 10	98.2

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 03-03-2021

ASTM D 422

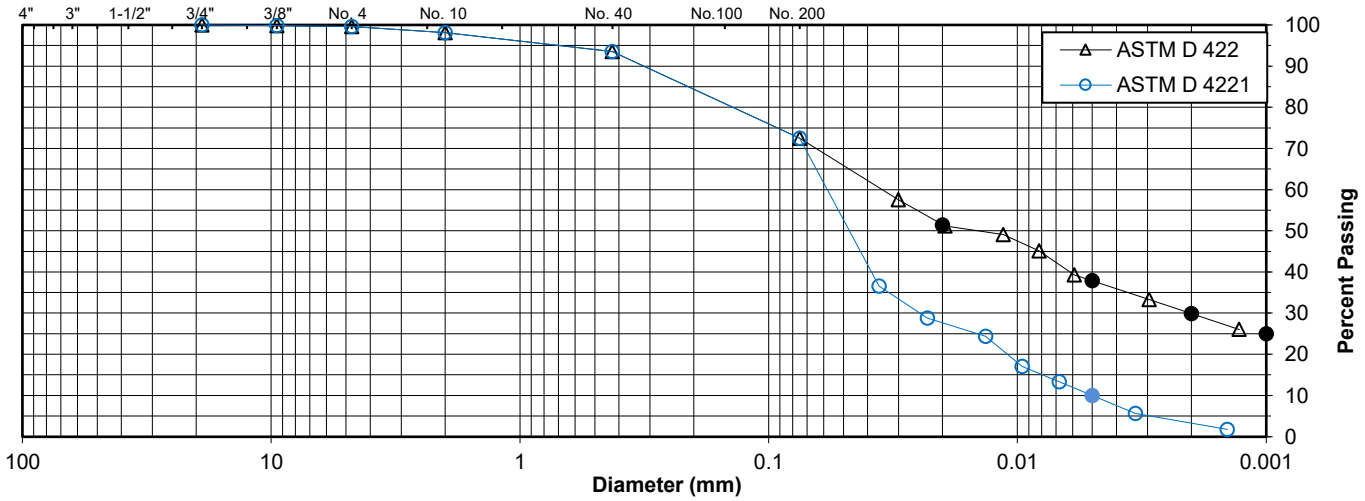
Sieve Size	% Passing
No. 40	93.5
No. 200	72.5
0.02 mm	51.4
0.005 mm	**37.9**
0.002 mm	29.9
0.001 mm	25.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	93.5	
No. 200	72.5	
0.02 mm		
0.005 mm	**10.0**	**26.4**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
0.0	0.4	1.4	4.6	21.0	34.6	37.9



Comments

Reviewed By RJ

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.76, 4.0'-10.0'

Project Number 173409690
Lab ID 437
Date Received 02-08-2021
Test Date 03-01-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
3/8"	100.0
No. 4	99.3
No. 10	95.9

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 03-03-2021

ASTM D 422

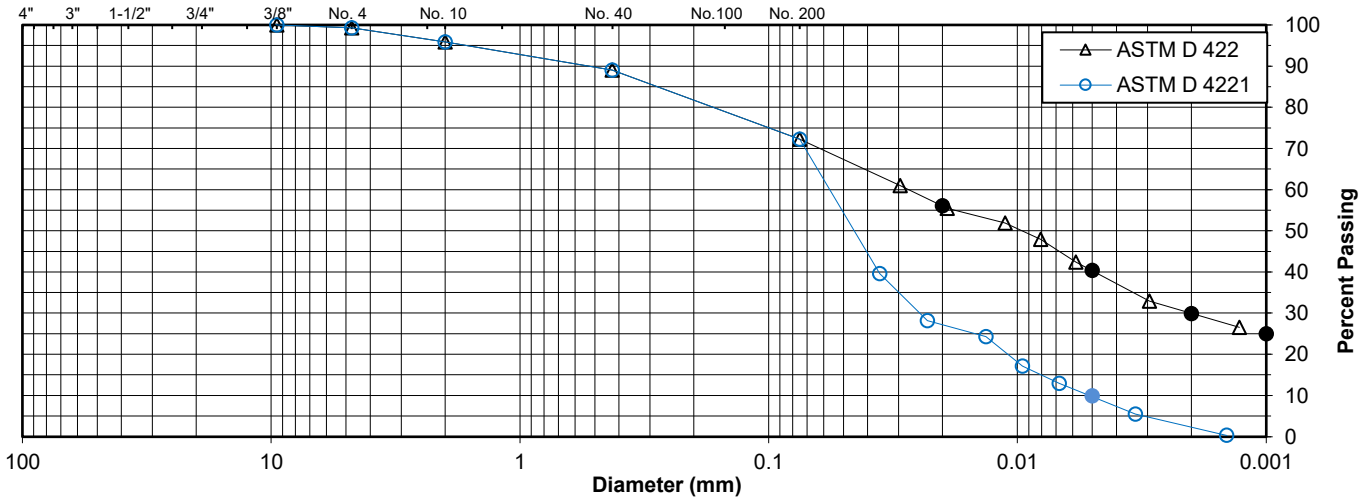
Sieve Size	% Passing
No. 40	89.0
No. 200	72.2
0.02 mm	56.1
0.005 mm	**40.4**
0.002 mm	29.9
0.001 mm	25.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	89.0	
No. 200	72.2	
0.02 mm		
0.005 mm	**9.9**	**24.5**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.7	3.4	6.9	16.8	31.8	40.4



Comments

Reviewed By RJ

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.80, 5.0'-10.0'

Project Number 173409690
Lab ID 768
Date Received 04-14-2021
Test Date 04-28-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
3/4"	100.0
3/8"	99.2
No. 4	97.3
No. 10	94.3

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 05-10-2021

ASTM D 422

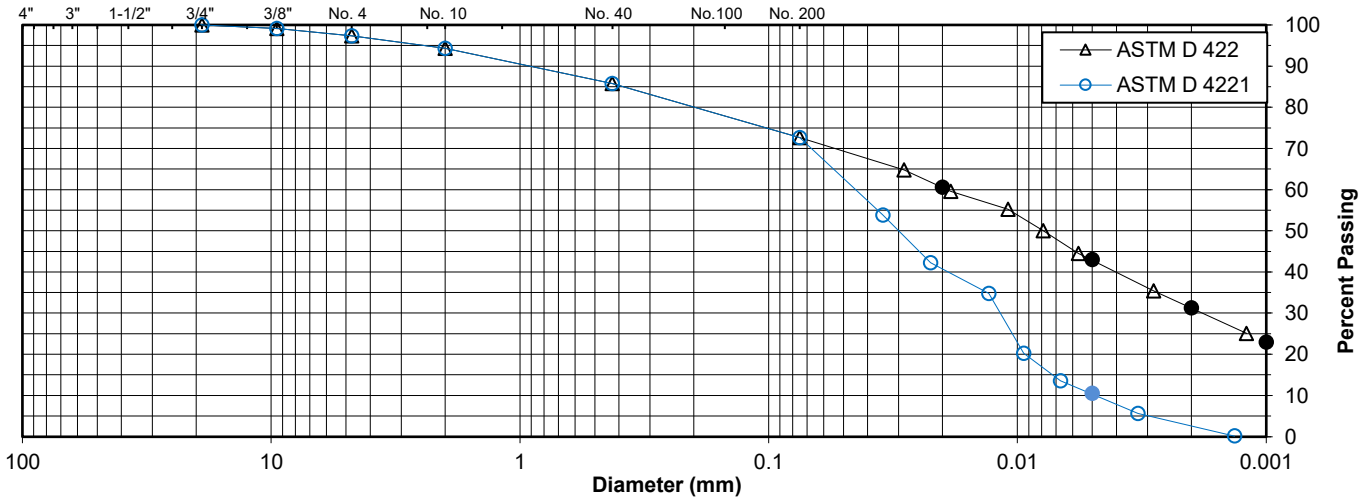
Sieve Size	% Passing
No. 40	85.7
No. 200	72.6
0.02 mm	60.6
0.005 mm	**43.0**
0.002 mm	31.3
0.001 mm	23.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	85.7	
No. 200	72.6	
0.02 mm		
0.005 mm	**10.5**	**24.4**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
0.0	2.7	3.0	8.6	13.1	29.6	43.0



Comments

Reviewed By RJ

Template: tmp_hyhy_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: RJ
Report Date: 09/22/2021

Stantec

Dispersive Characteristics of Clay Soil by Double Hydrometer

ASTM D 4221

Project Name Eagle Creek
Source B-3.83, 5.0'-8.5'

Project Number 173409690
Lab ID 442
Date Received 02-08-2021
Test Date 03-01-2021

Sieve analysis for the Portion Coarser than the No. 10 Sieve

ASTM D 422

Sieve Size	% Passing
1 1/2"	100.0
3/4"	98.5
3/8"	97.5
No. 4	96.0
No. 10	92.9

Particle Shape Angular
Particle Hardness Hard and Durable

Specific Gravity 2.7

Analysis for the portion Finer than the No. 10 Sieve

Test Date 03-03-2021

ASTM D 422

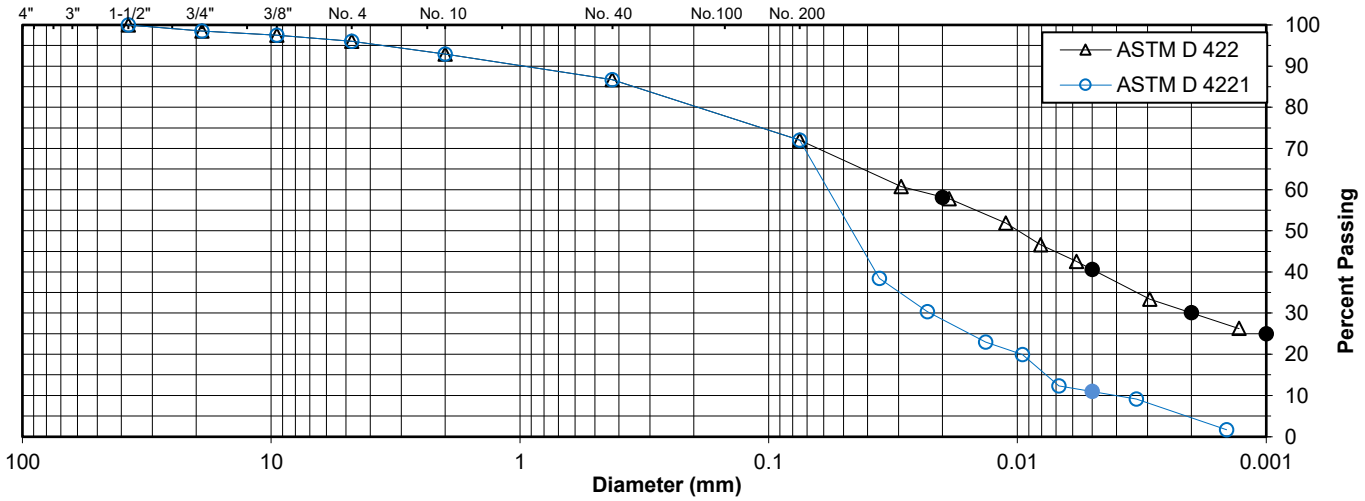
Sieve Size	% Passing
No. 40	86.7
No. 200	72.0
0.02 mm	58.1
0.005 mm	**40.6**
0.002 mm	30.1
0.001 mm	25.0

ASTM D 4221

Sieve Size	% Passing	% Dispersion
No. 40	86.7	
No. 200	72.0	
0.02 mm		
0.005 mm	**11.0**	**27.1**
0.002 mm		
0.001 mm		

Particle Size Distribution

C. Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
1.5	2.5	3.1	6.2	14.6	31.4	40.6



Comments

Reviewed By RJ

Attachment E-2. Laboratory Testing Results

Dispersive Clay - Pinhole

Stantec
3052 Beaumont Centre Circle
Lexington, Kentucky 40513
Phone: (859) 422-3000
Fax: (859) 422-3100

Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 791 Source: B-3.51a, 0.0'-2.0'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: N/A

Water Content Prior to Specimen Prep (%): 25.6

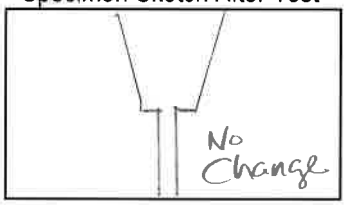
Water Content of Specimen (%): 29.1

Dry Unit Weight (pcf): N/A

Distilled Water Added: [X] Yes [ ] No

Curing Time: N/A

Specimen Sketch After Test



Date: 5-26-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
3:55 pm	2"	8	10	0.8							X	
	2"	16	20	0.8							X	
	2"	24	30	0.8							X	
	2"	39	50	0.8							X	
	2"	57	75	0.8							X	
	2"	76	100	0.8							X	
	2"	114	150	0.8							X	
	2"	153	200	0.8							X	
	2"	227	300	0.8							X	
	2"	402	400	1.0							X	
	2"	437	500	0.9							X	
4:05 pm	2"	552	600	0.9							X	
												Moved to 7" head
4:07 pm	7"	10	10	1.0							X	
	7"	19	20	1.0							X	
	7"	29	30	1.0							X	
	7"	58	60	1.0							X	
	7"	91	100	0.9							X	
	7"	191	200	1.0							X	
4:12 pm	7"	286	300	1.0							X	Moved to 15" head

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 791 Source: B-3.51a, 0.0'-2.0'

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
4:15 pm	15"	14	10	1.4							X	
	15"	28	20	1.4							X	
	15"	40	30	1.3							X	
	15"	78	60	1.3							X	
	15"	129	100	1.3							X	
	15"	257	200	1.3							X	
4:20 pm	15"	385	300	1.3							X	
												Moved to 40" head
4:24 pm	40"	21	10	2.1							X	
	40"	42	20	2.1							X	
	40"	63	30	2.1							X	
	40"	126	60	2.1							X	
	40"	211	100	2.1							X	
	40"	422	200	2.1							X	
4:29 pm	40"	633	300	2.1							X	
												End Test. Classification: ND1

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 433 Source: B-3.72, 5.0'-10.0'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: N/A

Water Content Prior to Specimen Prep (%): 17.8

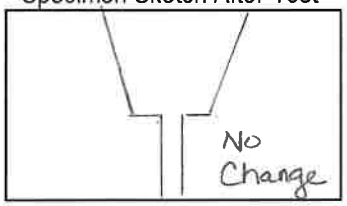
Water Content of Specimen (%): 19.9

Dry Unit Weight (pcf): N/A

Distilled Water Added: [X] Yes [ ] No

Curing Time: N/A

Specimen Sketch After Test



Date: 3-23-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
10:45 am	2"	10	22	2.2							X	
	2"	20	41	2.1							X	
	2"	30	61	2.0							X	
	2"	50	104	2.1							X	
	2"	75	159	2.1							X	
	2"	100	216	2.2							X	
	2"	150	329	2.2							X	
	2"	200	444	2.2							X	
	2"	250	556	2.2							X	
10:55 am	2"	270	600	2.2							X	
												Moved to 7" head
10:57 am	7"	10	13	1.3							X	
	7"	20	26	1.3							X	
	7"	30	42	1.4							X	
	7"	50	70	1.4							X	
	7"	100	139	1.4							X	
	7"	150	205	1.4							X	
	7"	200	271	1.4							X	
11:02 am	7"	223	300	1.3							X	
												Moved to 15" head

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 433 Source: B-3.72, 5.0'-10.0'

Clock Time	Head	Flow		Flow Rate ml/s	Turbidity from Side						Completely Clear from Top	Remarks
		ml.	sec.		Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear		
11:04 am	15"	10	9	0.9							X	
	15"	20	18	0.9							X	
	15"	30	27	0.9							X	
	15"	50	47	0.9							X	
	15"	100	93	0.9							X	
	15"	150	140	0.9							X	
	15"	200	186	0.9							X	
	15"	250	233	0.9							X	
	15"	300	279	0.9							X	
11:09 am	15"	324	300	0.9							X	
												Moved to 40" head
11:11 am	40"	10	5								X	
	40"	20	10								X	
	40"	30	15								X	
	40"	50	25								X	
	40"	100	51								X	
	40"	150	77								X	
	40"	200	103								X	
	40"	250	129								X	
	40"	300	155								X	
	40"	350	183								X	
	40"	400	207								X	
	40"	450	232								X	
	40"	500	259								X	
	40"	550	284								X	
11:16 am	40"	581	300								X	End Test. Classification: ND1

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 435 Source: B-3.74, 8.0'-10.0'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: N/A

Water Content Prior to Specimen Prep (%): 14.8

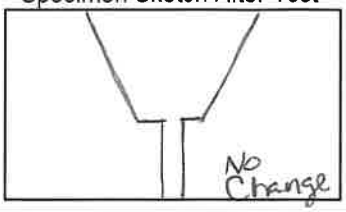
Water Content of Specimen (%): 14.2

Dry Unit Weight (pcf): N/A

Distilled Water Added: [X] Yes [ ] No

Curing Time: N/A

Specimen Sketch After Test



Date: 3-19-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
9:30 am	2"	10	22	2.2							X	
	2"	20	44	2.2							X	
	2"	30	66	2.2							X	
	2"	50	109	2.2							X	
	2"	75	162	2.2							X	
	2"	100	200	2.0							X	
	2"	200	427	2.1							X	
	2"	250	536	2.1							X	
9:40 am	2"	280	600	2.1							X	
												Moved to 7" head
9:42 am	7"	10	14	1.4							X	
	7"	20	28	1.4							X	
	7"	65	92	1.4							X	
	7"	100	142	1.4							X	
	7"	150	213	1.4							X	
	7"	200	285	1.4							X	
9:47 am	7"	211	300	1.4							X	
												Moved to 15" head
9:49	15"	10	21	1.0							X	
	15"	20	10	1.1							X	

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 435 Source: B-3.74, 8.0'-10.0'

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
	15"	50	52	1.0							X	
	15"	100	101	1.0							X	
	15"	150	149	1.0							X	
	15"	200	197	1.0							X	
	15"	250	246	1.0							X	
	15"	300	293	1.0							X	
9:54 am	15'	307	300	1.0							X	
												Moved to 40" head
9:56 am	40"	10	5	0.5							X	
	40"	20	10	0.5							X	
	40"	50	27	0.5							X	
	40"	100	54	0.5							X	
	40"	150	83	0.6							X	
	40"	200	110	0.6							X	
	40"	250	138	0.6							X	
	40"	300	165	0.6							X	
	40"	350	193	0.6							X	
	40"	400	220	0.6							X	
	40"	450	248	0.6							X	
	40"	500	276	0.6							X	
10:01 am	40"	542	300	0.6							X	End test. Classification: ND1

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 437 Source: B-3.76, 4.0'-10.0'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: N/A

Water Content Prior to Specimen Prep (%): 15.5

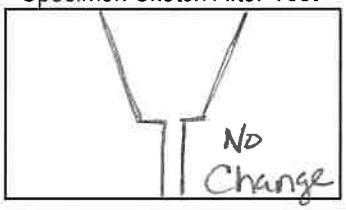
Water Content of Specimen (%): 18.9

Dry Unit Weight (pcf): N/A

Distilled Water Added: [X] Yes [ ] No

Curing Time: N/A

Specimen Sketch After Test



Date: 3-23-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
1:54 pm	2"	10	17	1.7							X	
	2"	20	36	1.8							X	
	2"	30	55	1.8							X	
	2"	50	94	1.9							X	
	2"	75	132	1.8							X	
	2"	100	189	1.9							X	
	2"	150	284	1.9							X	
	2"	200	381	1.9							X	
	2"	250	479	1.9							X	
	2"	300	576	1.9							X	
2:04 pm	2"	313	600	1.9							X	
												Moved to 7" head
2:06 pm	7"	10	12	1.2							X	
	7"	20	24	1.2							X	
	7"	30	36	1.2							X	
	7"	50	61	1.2							X	
	7"	100	124	1.2							X	
	7"	150	187	1.2							X	
	7"	200	249	1.2							X	
2:11 pm	7"	241	300	1.2							X	Moved to 15' head

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 437 Source: B-3.76, 4.0'-10.0'

Clock Time	Head	Flow		Flow Rate ml/s	Turbidity from Side						Completely Clear from Top	Remarks
		ml.	sec.		Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear		
2:13 pm	15"	10	9	0.9							X	
	15"	20	18	0.9							X	
	15"	30	27	0.9							X	
	15"	50	46	0.9							X	
	15"	100	93	0.9							X	
	15"	150	140	0.9							X	
	15"	200	187	0.9							X	
	15"	250	234	0.9							X	
	15"	300	280	0.9							X	
2:18 pm	15"	322	300	0.9							X	
												Moved to 40" head
2:20 pm	40"	10	5	0.5							X	
	40"	20	10	0.5							X	
	40"	30	15	0.5							X	
	40"	50	26	0.5							X	
	40"	100	53	0.5							X	
	40"	150	80	0.5							X	
	40"	200	106	0.5							X	
	40"	250	133	0.5							X	
	40"	300	159	0.5							X	
	40"	350	186	0.5							X	
	40"	400	213	0.5							X	
	40"	450	239	0.5							X	
	40"	500	266	0.5							X	
	40"	550	293	0.5							X	
2:25 pm	40"	563	300	0.5							X	End Test. Classification: ND1

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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 768 Source: B-3.80, 5.0'-10.0'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: 118.3 pcf at 13.9%

Water Content Prior to Specimen Prep (%): 13.9

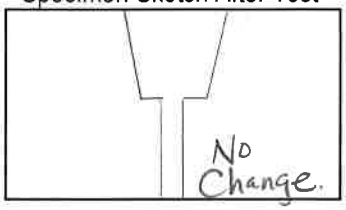
Water Content of Specimen (%): 15.1

Dry Unit Weight (pcf): 118.3

Distilled Water Added: [x] Yes [ ] No

Curing Time: 24 hrs

Specimen Sketch After Test



Date: 5-26-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
1:42 pm	2"	6	10	0.6							X	
	2"	12	20	0.6							X	
	2"	17	30	0.6							X	
	2"	28	50	0.6							X	
	2"	42	75	0.6							X	
	2"	55	100	0.6							X	
	2"	82	150	0.5							X	
	2"	111	200	0.6							X	
	2"	139	250	0.6							X	
	2"	148	300	0.5							X	
	2"	223	400	0.6							X	
	2"	279	500	0.6							X	
1:52 pm	2"	334	600	0.6							X	Moved to 7" head
1:55 pm	7"	9	10	0.9							X	
	7"	17	20	0.9							X	
	7"	25	30	0.8							X	
	7"	51	60	0.9							X	
	7"	84	100	0.8							X	
	7"	150	200	0.8							X	

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Fax: (859) 422-3100

Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 768 Source: B-3.80, 5.0'-10.0'

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
2:00 pm	7"	250	300	0.8							X	
												Moved to 15" head
2:03 pm	15"	11	10	1.1							X	
	15"	23	20	1.2							X	
	15"	34	30	1.1							X	
	15"	69	60	1.2							X	
	15"	115	100	1.2							X	
	15"	232	200	1.2							X	
2:08 pm	15"	349	300	1.2							X	
												Moved to 40" head
2:11 pm	40"	21	10	2.1							X	
	40"	40	20	2.0							X	
	40"	60	30	2.0							X	
	40"	119	60	2.0							X	
	40"	199	100	2.0							X	
	40"	398	200	2.0							X	
2:16 pm	40"	599	300	2.0							X	
												End Test. Classification: ND1

Stantec
3052 Beaumont Centre Circle
Lexington, Kentucky 40513
Phone: (859) 422-3000
Fax: (859) 422-3100

Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 442 Source: B-3.83, 5.0'-8.5'

Sample Description: Lean Clay (CL), dark brown

Compaction Requirements: N/A

Water Content Prior to Specimen Prep (%): 15.5

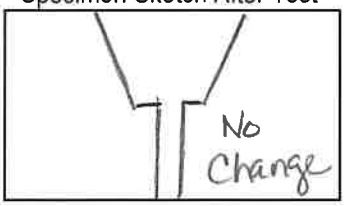
Water Content of Specimen (%): 19.4

Dry Unit Weight (pcf): N/A

Distilled Water Added: [X] Yes [ ] No

Curing Time: N/A

Specimen Sketch After Test



Date: 3-23-21

Tech: DB

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
3:45 pm	2"	10	17	1.7						X		
	2"	20	36	1.8					X			
	2"	30	52	1.7					X			
	2"	50	83	1.6					X			
	2"	75	122	1.6					X			
	2"	100	161	1.6					X			
	2"	150	241	1.6						X		
	2"	200	319	1.6						X		
	2"	250	395	1.6							X	
	2"	300	471	1.6							X	
	2"	350	548	1.6							X	
3:55 pm	2"	384	600	1.6							X	
												Moved to 7" head
3:57 pm	7"	10	13	1.3							X	
	7"	20	25	1.3							X	
	7"	30	38	1.3							X	
	7"	50	63	1.3							X	
	7"	100	126	1.3							X	
	7"	150	191	1.3							X	
	7"	200	253	1.3							X	

Stantec
3052 Beaumont Centre Circle
Lexington, Kentucky 40513
Phone: (859) 422-3000
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Dispersion Test
Pinhole Test Data

D4647

Method A

Project Name: Eagle Creek Project No.: 173409690

Lab ID: 442 Source: B-3.83, 5.0'-8.5'

Clock Time	Head	Flow ml.	Flow sec.	Flow Rate ml/s	Turbidity from Side: Very Dark	Dark	Moderately Dark	Slightly Dark	Barely Visible	Completely Clear	Completely Clear from Top	Remarks
4:02 pm	7"	240	300	1.3							X	
												Moved to 15" head
4:04 pm	15"	10	8	0.8						X		
	15"	20	16	0.8						X		
	15"	30	24	0.8						X		
	15"	50	42	0.8						X		
	15"	100	84	0.8						X		
	15"	150	126	0.8						X		
	15"	200	169	0.8						X		
	15"	250	211	0.8						X		
	15"	300	253	0.8						X		
	15"	350	296	0.8							X	
4:09 pm	15"	354	300	0.8							X	
												Moved to 40" head
4:11 pm	40"	10	5	0.5							X	
	40"	20	10	0.5							X	
	40"	30	15	0.5							X	
	40"	50	26	0.5							X	
	40"	100	53	0.5							X	
	40"	150	79	0.5							X	
	40"	200	105	0.5							X	
	40"	300	154	0.5							X	
	40"	400	206	0.5							X	
	40"	500	254	0.5							X	
4:16 pm	40"	584	300	0.5							X	End Test. Classification: ND1

Attachment E-2. Laboratory Testing Results

Soil Resistivity

Stantec

Soil Resistivity Using The Wenner Four-Electrode Method

Soil Sample Measurement
ASTM G 57

Project Eagle Creek

Project Number 173409690
Date Received 02/08/2021

Soil Box Width (cm) 3.000
Soil Box Height (cm) 2.400
Electrode Distance (cm) 7.200

Source	Lab ID	Date	Moisture Content: Tare Mass (g)	Moisture Content: Wet Mass Plus Tare (g)	Moisture Content: Dry Mass Plus Tare (g)	Moisture Content: Moisture Content (%)	Soil Temp. (deg. C)	Measured Soil Resistance (Ω)	Temp. Correction Factor (Ω)	Temp. Corrected Resistance (Ω)	Resistivity @ 15.5°C (Ω*cm)
B-3.76, 4.0'-10.0'	437	03-17-2021	21.06	93.99	78.42	27.1	19.5	1300	1.1	1430	1430
B-3.83, 5.0'-8.5'	442	03-17-2021	20.99	105.81	84.6	33.3	21.4	2100	1.1475	2409.75	2409.75

Comments

Reviewed By RHB

Template: tmp_res_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Louisville, Kentucky

Reported By: RHB
Report Date: 03/23/2021

Stantec

Soil Resistivity Using The Wenner Four-Electrode Method

Soil Sample Measurement
ASTM G 57

Project Eagle Creek

Project Number 173409690
Date Received 04/14/2021

Soil Box Width (cm) 3.000
Soil Box Height (cm) 2.400

Electrode Distance (cm) 7.200

Source	Lab ID	Date	Moisture Content: Tare Mass (g)	Moisture Content: Wet Mass Plus Tare (g)	Moisture Content: Dry Mass Plus Tare (g)	Moisture Content: Moisture Content (%)	Soil Temp. (deg. C)	Measured Soil Resistance (Ω)	Temp. Correction Factor (Ω)	Temp. Corrected Resistance (Ω)	Resistivity @ 15.5°C (Ω*cm)
B-3.80, 5.0'-10.0'	768	05-11-2021	21.23	133.44	107.49	30.1	22.6	1050	1.1775	1236.38	1236.38
B-3.44a, 2.0'-4.0'	772	05-11-2021	20.88	124.64	89.03	52.3	22.8	1600	1.1825	1892	1892
B-3.50a, 2.0'-4.0'	788	05-11-2021	20.98	130.48	93.55	50.9	22.7	1200	1.18	1416	1416
B-3.50a, 6.0'-8.0'	790	05-11-2021	20.76	150.92	132.6	16.4	23.1	1900	1.19	2261	2261
B-3.51a, 8.0'-10.0'	795	05-11-2021	21.05	145.54	120.84	24.8	23.1	1250	1.19	1487.5	1487.5
B-3.53a, 0.0'-2.0'	798	05-11-2021	21.13	128.68	94.56	46.5	23.6	2250	1.2025	2705.63	2705.63

Comments

Reviewed By RJ

Attachment E-2. Laboratory Testing Results

Standard Proctor

Stantec

Compaction Characteristics of Soil Using Standard Effort

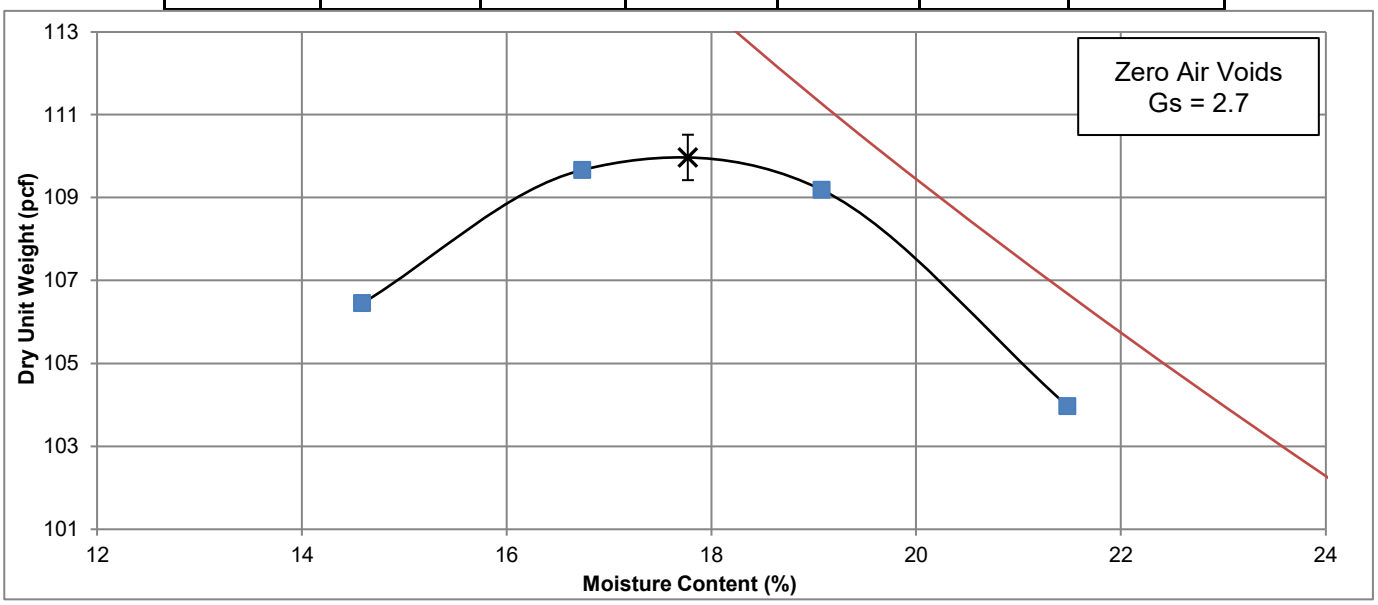
ASTM D 698 - Method B

Project	Eagle Creek	Project No.	173409690
Source	B-3.72, 5.0'-10.0'	Sample ID	433
Description	Lean Clay (CL), dark brown	Date Received	02/08/2021
Visual Notes		Date Tested	03/04/2021

Test Fraction (%)	100.0		Oversized Fraction (%)	N/A	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4204	Preparation Method	Moist	Rammer Type	Manual	

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6041	1837	528.79	471.05	75.29	14.6	106.5
6132	1928	511.16	448.12	71.54	16.7	109.7
6162	1958	576.67	495.62	70.73	19.1	109.2
6106	1902	476.79	404.70	69.06	21.5	104.0



Maximum Dry Unit Weight (pcf)	**110.0**
Optimum Moisture Content (%)	**17.8**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

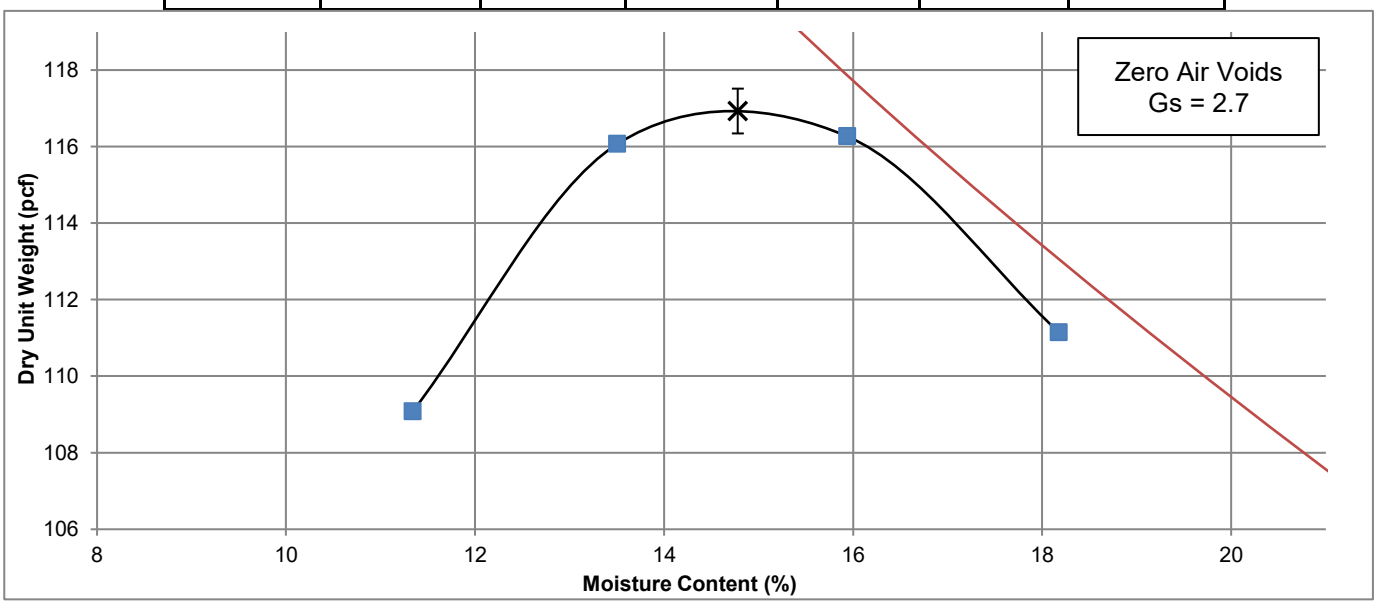
ASTM D 698 - Method B

Project	Eagle Creek	Project No.	173409690
Source	B-3.74, 8.0'-10.0'	Sample ID	435
Description	Lean Clay (CL), dark brown	Date Received	02/08/2021
Visual Notes		Date Tested	03/04/2021

Test Fraction (%)	99.8		Oversized Fraction (%)	0.2	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4204	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6033	1829	546.18	497.78	70.99	11.3	109.1
6188	1984	589.99	528.24	70.96	13.5	116.1
6234	2030	587.74	516.78	71.52	15.9	116.3
6182	1978	492.06	427.71	73.66	18.2	111.1



Maximum Dry Unit Weight (pcf)	**116.9**
Optimum Moisture Content (%)	**14.8**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

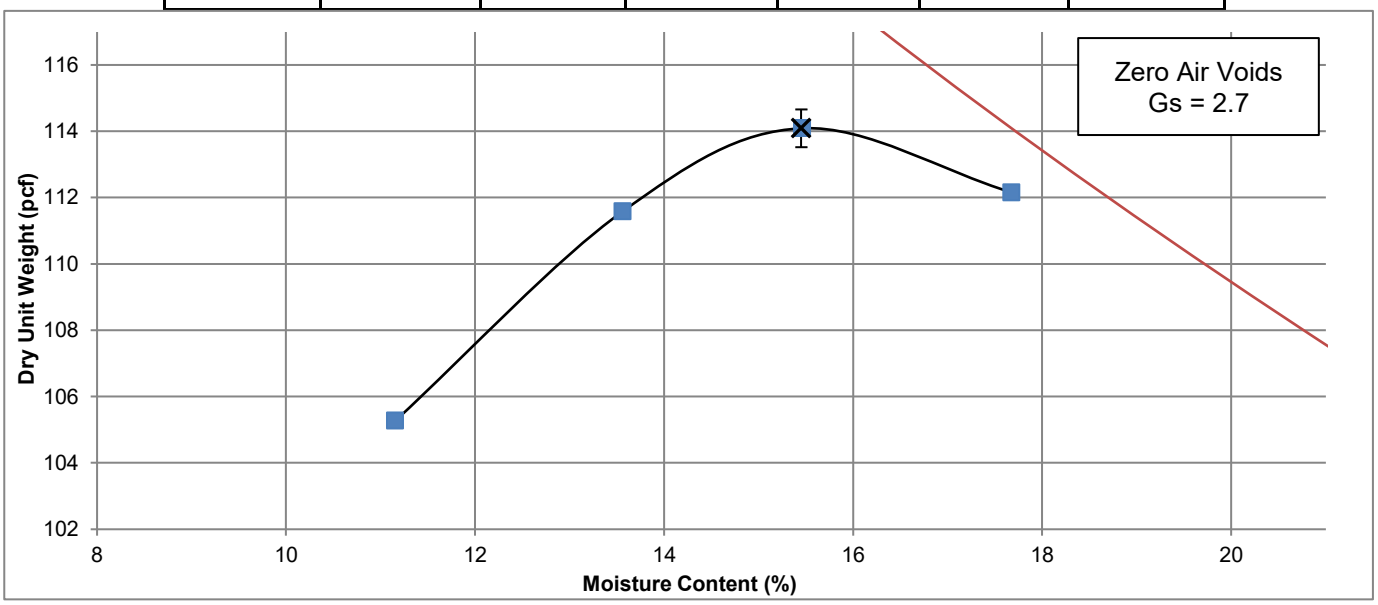
ASTM D 698 - Method B

Project	Eagle Creek	Project No.	173409690
Source	B-3.76, 4.0'-10.0'	Sample ID	437
Description	Lean Clay (CL), dark brown	Date Received	02/08/2021
Visual Notes		Date Tested	03/05/2021

Test Fraction (%)	100.0		Oversized Fraction (%)	N/A	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4204	Preparation Method	Moist	Rammer Type	Manual	

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5966	1762	543.67	496.63	74.88	11.2	105.3
6112	1908	579.73	519.20	72.77	13.6	111.6
6188	1984	544.34	480.91	70.61	15.5	114.1
6192	1988	583.26	507.03	75.69	17.7	112.2



Maximum Dry Unit Weight (pcf)	**114.1**
Optimum Moisture Content (%)	**15.5**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

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Compaction Characteristics of Soil Using Standard Effort

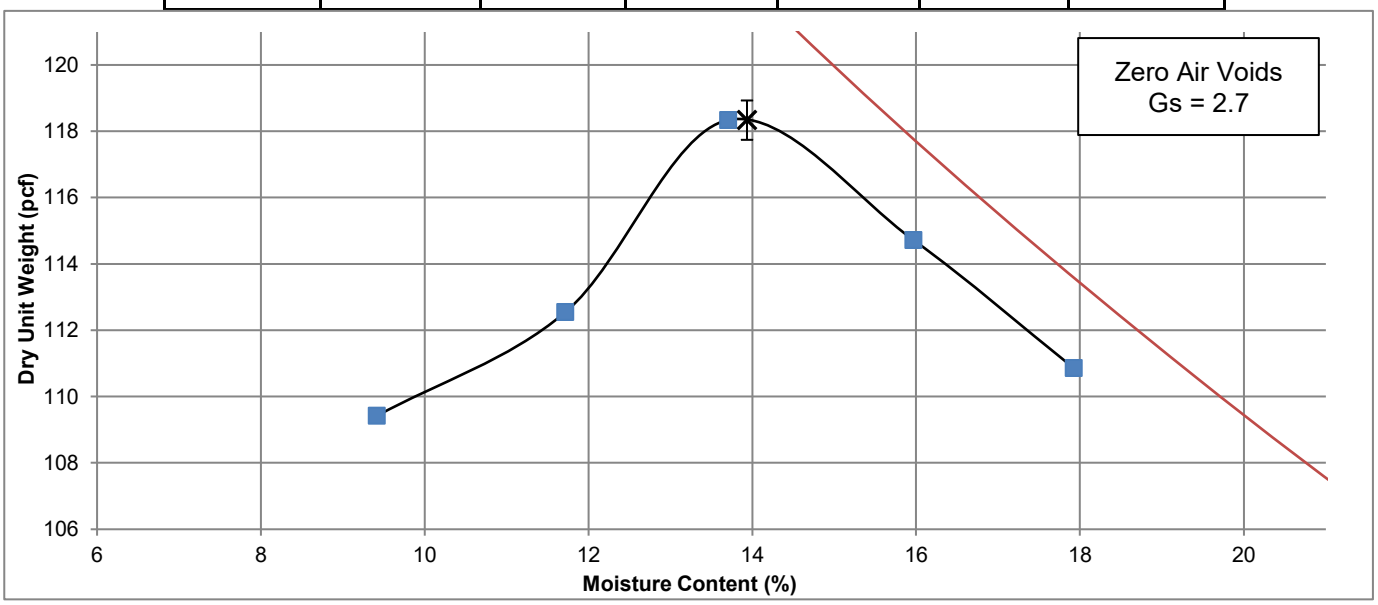
ASTM D 698 - Method B

Project	Eagle Creek	Project No.	173409690
Source	B-3.80, 5.0'-10.0'	Sample ID	768
Description	Lean Clay (CL), light brown	Date Received	04/14/2021
Visual Notes		Date Tested	04/28/2021

Test Fraction (%)	99.2		Oversized Fraction (%)	0.8	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4203.4	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6006	1803	561.03	519.08	73.44	9.4	109.4
6097	1893	539.15	489.88	69.32	11.7	112.5
6230	2026	501.71	449.84	71.35	13.7	118.3
6207	2003	542.60	477.60	70.46	16.0	114.7
6172	1969	532.60	462.30	70.10	17.9	110.9



Maximum Dry Unit Weight (pcf)	**118.3**
Optimum Moisture Content (%)	**13.9**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

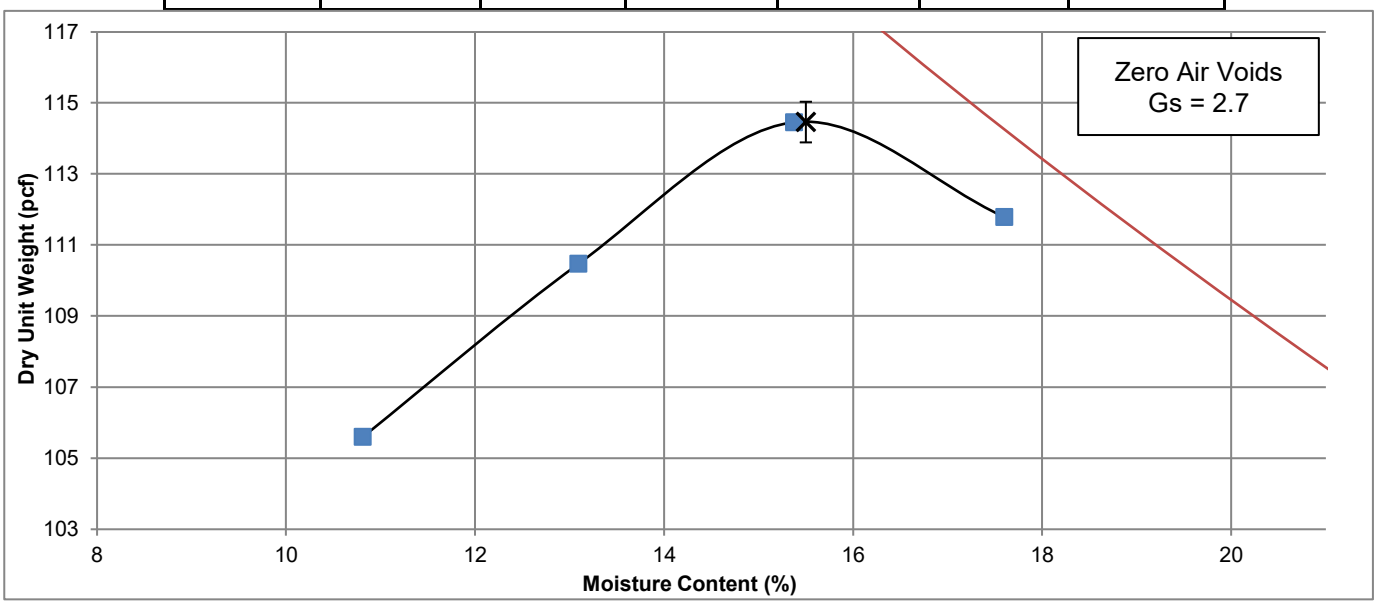
ASTM D 698 - Method B

Project	Eagle Creek	Project No.	173409690
Source	B-3.83, 5.0'-8.5'	Sample ID	442
Description	Lean Clay (CL), dark brown	Date Received	02/08/2021
Visual Notes		Date Tested	03/05/2021

Test Fraction (%)	97.5		Oversized Fraction (%)	2.5	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4204	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5966	1762	523.42	479.52	73.39	10.8	105.6
6085	1881	549.34	494.34	74.23	13.1	110.5
6193	1989	616.65	543.74	69.58	15.4	114.5
6184	1980	508.13	442.41	68.99	17.6	111.8



Maximum Dry Unit Weight (pcf)	**114.5**
Optimum Moisture Content (%)	**15.5**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

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Compaction Characteristics of Soil Using Standard Effort

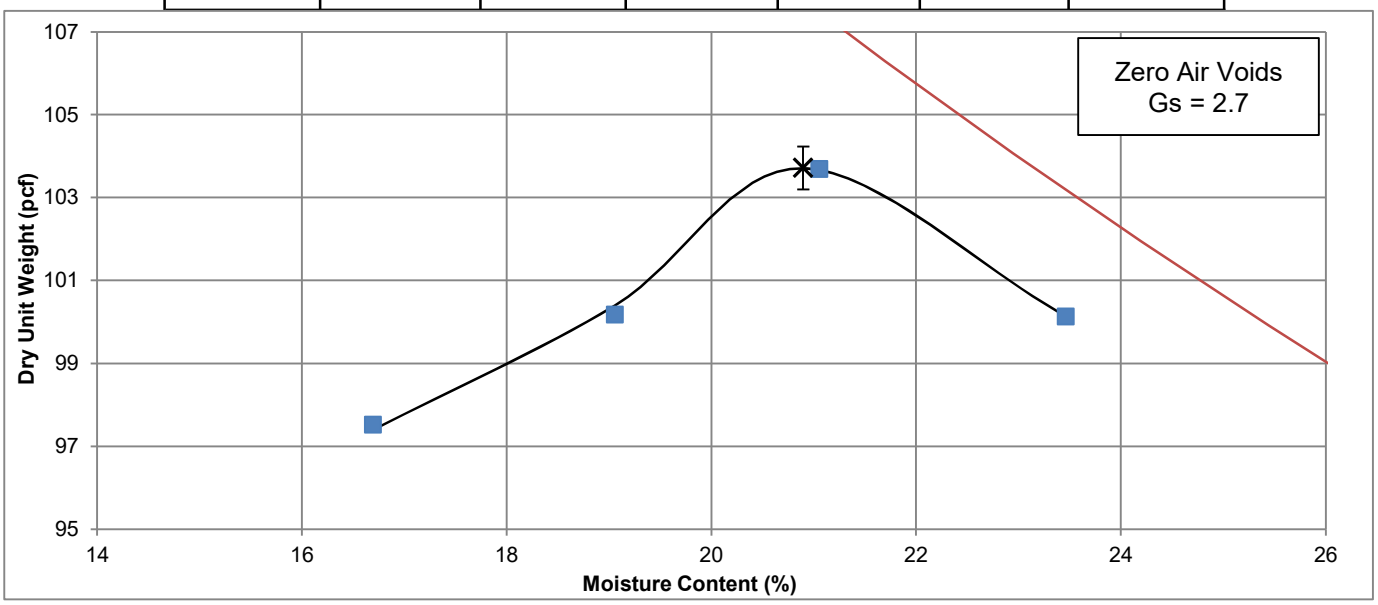
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.1-A, 2.5'-5.0'	Sample ID	1025
Description	Lean Clay with sand (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/23/2022

Test Fraction (%)	98.9		Oversized Fraction (%)	1.1	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4241.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5955	1714	570.85	499.88	74.79	16.7	97.5
6037	1796	599.27	515.29	74.62	19.1	100.2
6131	1890	676.94	570.91	67.28	21.1	103.7
6103	1862	686.40	568.60	66.49	23.5	100.1



Maximum Dry Unit Weight (pcf)	**103.7**
Optimum Moisture Content (%)	**20.9**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

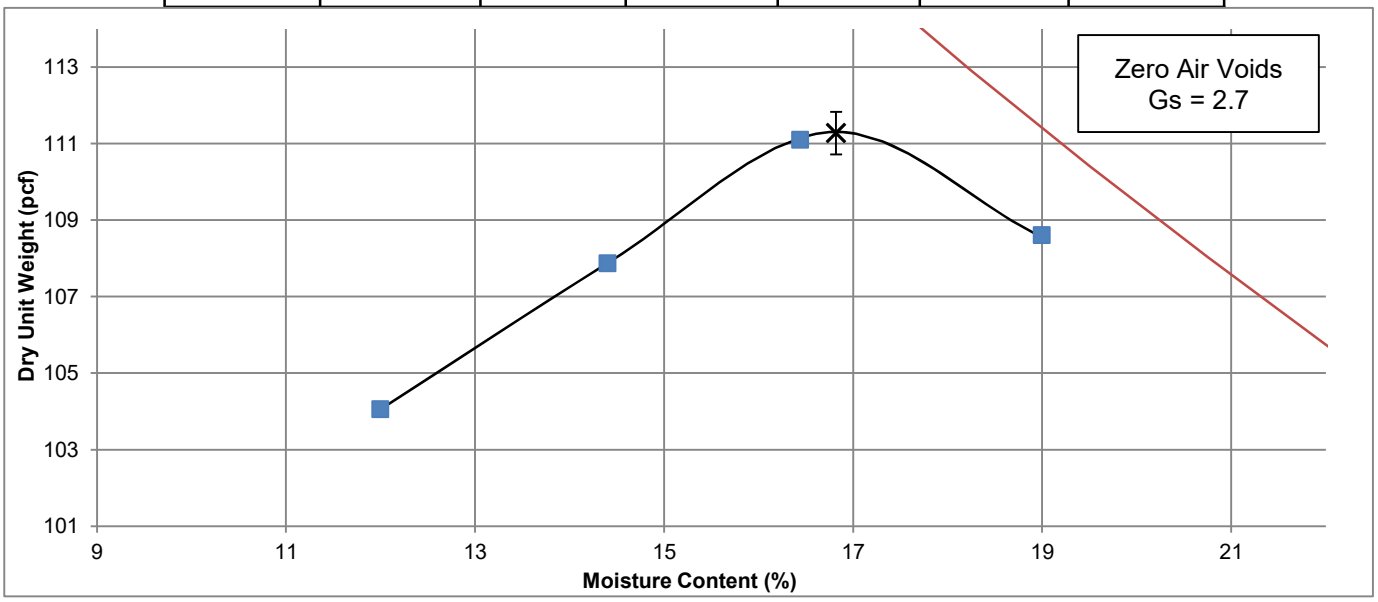
ASTM D 698 - Method B

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-A, 2.5'-5.0'	Sample ID	1026
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/23/2022

Test Fraction (%)	96.3		Oversized Fraction (%)	3.7	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4241.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5996	1755	696.63	629.49	69.79	12.0	104.1
6100	1858	563.36	500.95	67.58	14.4	107.9
6189	1948	609.19	533.08	70.12	16.4	111.1
6187	1946	753.74	645.19	73.78	19.0	108.6



Maximum Dry Unit Weight (pcf)	**111.3**
Optimum Moisture Content (%)	**16.8**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

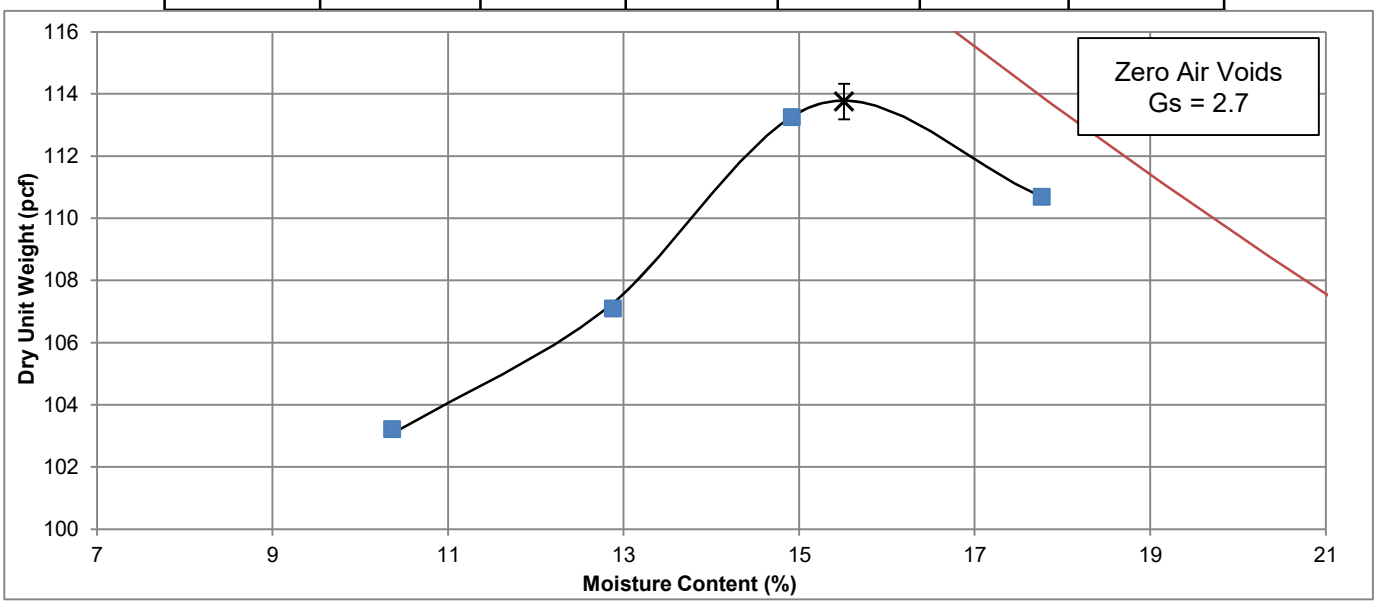
ASTM D 698 - Method B

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.3-A, 2.5'-5.5'	Sample ID	1029
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/23/2022

Test Fraction (%)	89.7		Oversized Fraction (%)	10.3	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	2.39	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	4.1	

Mold Weight (g)	4241.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5957	1715	626.41	574.50	73.50	10.4	103.2
6062	1821	614.96	552.99	71.85	12.9	107.1
6201	1960	699.84	617.77	67.58	14.9	113.3
6204	1963	599.00	519.81	74.06	17.8	110.7



Maximum Dry Unit Weight (pcf)	**113.8**
Optimum Moisture Content (%)	**15.5**
Corrected Maximum Dry Unit Weight (pcf)	**116.6**
Corrected Optimum Moisture Content (%)	**14.3**

Reviewed By RHB

Comments

Stantec

Density, Relative Density and Absorption of Coarse Aggregate

ASTM C 127

Project Eagle Creek Flood Basin — Project No. 173409690
Source TP-4.3-A, 2.5'-5.5' — Lab ID 1029
Material
Retained Particle Size + No. 4 — Nominal Maximum Particle Size 3/4"

Preparation Method: Tested at as received moisture content. — Preparation Date 07-21-2022

Test Date 07-21-2022

Water Temperature (°C)	21.2
Tare Mass (g)	945.3
Saturated Surface Dry Sample + Tare Mass (g)	2162.6
Basket Mass in Water (g)	819.2
Sample + Mass Basket in Water (g)	1547.0
Oven Dry Sample Mass (g)	1169.6
SSD Sample Mass (g)	1217.3
Sample Mass in Water (g)	727.8
Relative Density (OD)	2.39
Relative Density (SSD)	2.49
Apparent Relative Density	2.65
Absorption (%)	4.1
Density (OD), kg/m³, @ 23 °C	2380
Density (OD), lb/ft³, @ 23 °C	149
Density (SSD), kg/m³, @ 23 °C	2480
Density (SSD), lb/ft³, @ 23 °C	155.0
Apparent Density, kg/m³, @ 23 °C	2640
Apparent Density, lb/ft³, @ 23 °C	165.0

Comments

Reviewed By RHB

Stantec

Compaction Characteristics of Soil Using Standard Effort

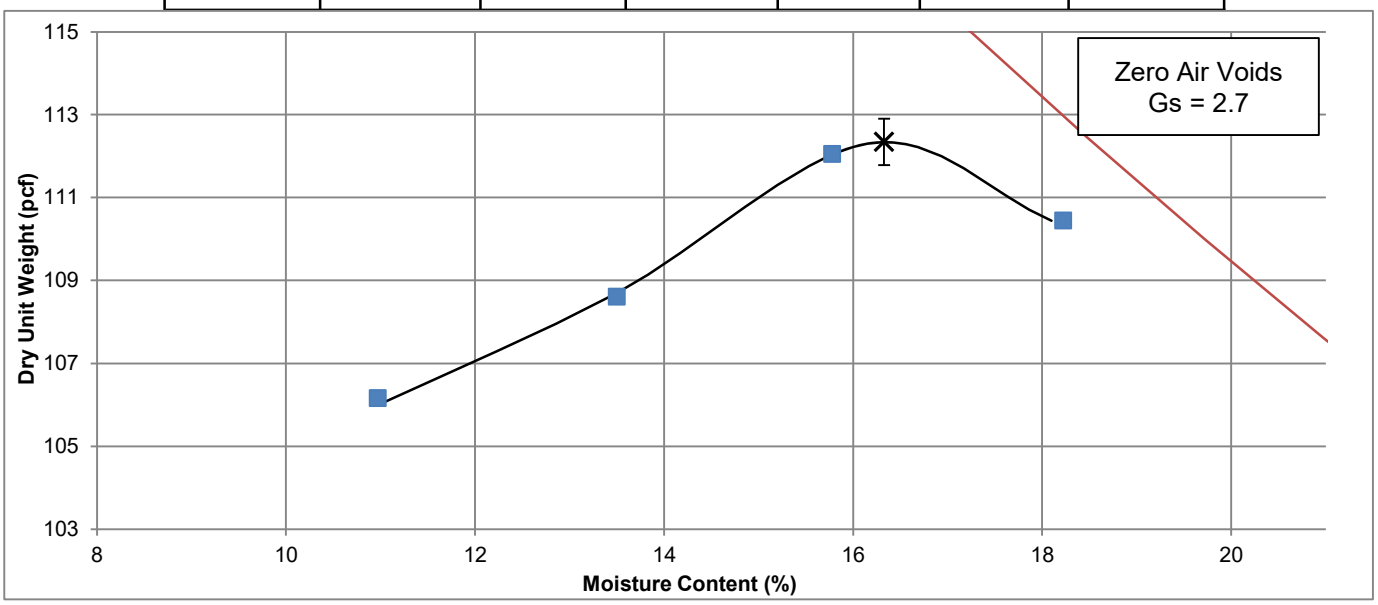
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.3-B, 2.5'-5.5'	Sample ID	1030
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/23/2022

Test Fraction (%)	95.7		Oversized Fraction (%)	4.3	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4241.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6015	1774	621.04	567.02	74.55	11.0	106.2
6098	1856	609.53	545.92	74.66	13.5	108.6
6195	1954	527.82	465.29	69.00	15.8	112.1
6207	1966	760.17	654.37	73.79	18.2	110.4



Maximum Dry Unit Weight (pcf)	**112.3**
Optimum Moisture Content (%)	**16.3**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

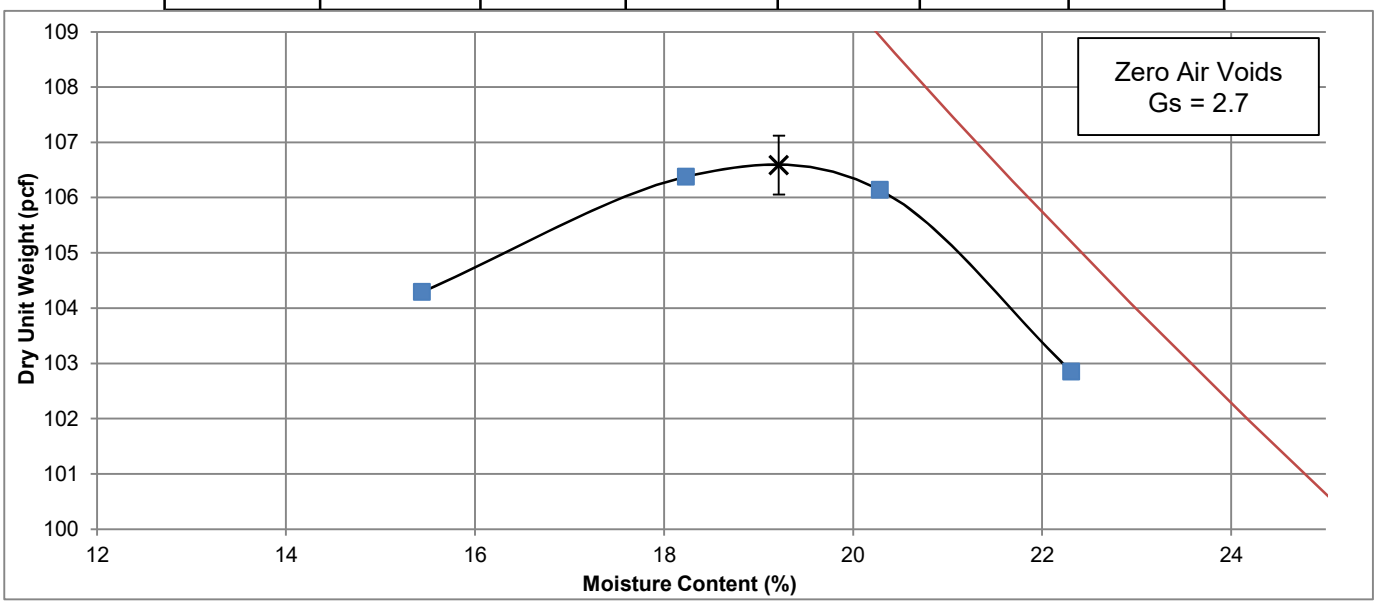
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.4-A, 2.0'-4.5'	Sample ID	1031
Description	Sandy Len Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/24/2022

Test Fraction (%)	99.1		Oversized Fraction (%)	0.9	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4241.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6054	1813	608.54	536.40	69.08	15.4	104.3
6135	1894	584.40	504.72	67.62	18.2	106.4
6164	1923	665.61	564.89	68.29	20.3	106.1
6136	1894	694.83	581.43	73.11	22.3	102.9



Maximum Dry Unit Weight (pcf)	**106.6**
Optimum Moisture Content (%)	**19.2**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

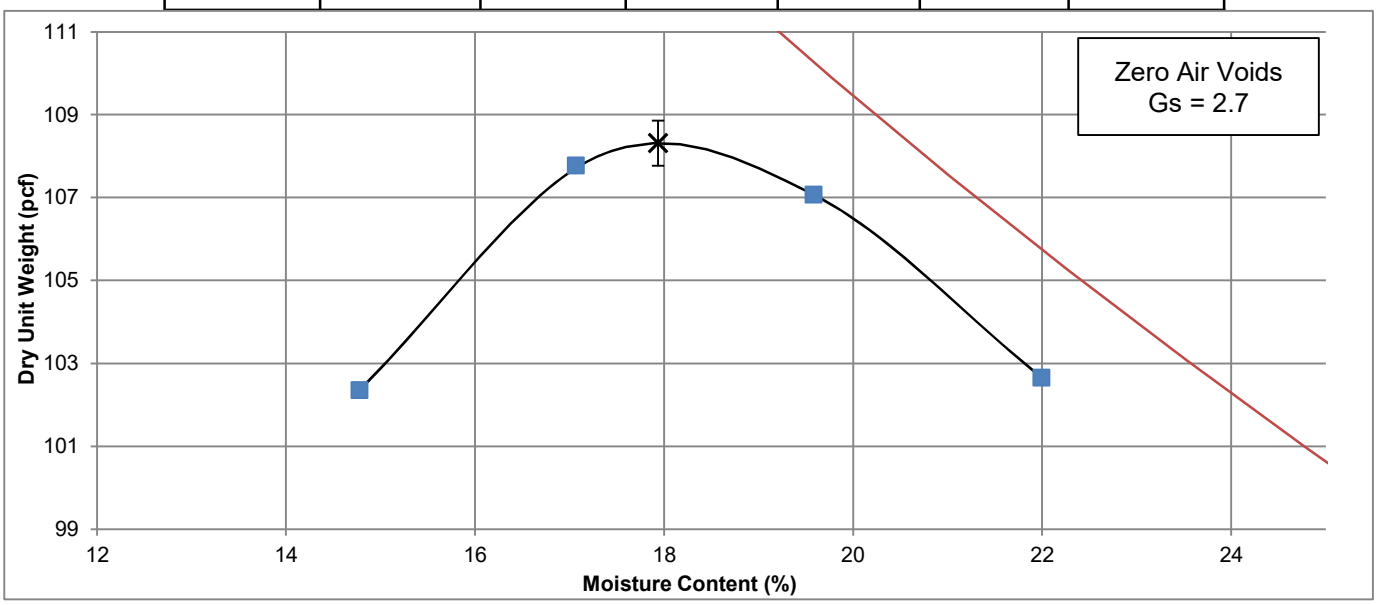
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.5-A, 2.0'-4.0'	Sample ID	1034
Description	Lean Clay with Sand (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/23/2022

Test Fraction (%)	97.9		Oversized Fraction (%)	2.1	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4240.3	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6010	1769	470.79	419.09	69.19	14.8	102.4
6140	1900	500.73	437.66	68.13	17.1	107.8
6169	1928	644.05	549.49	66.58	19.6	107.1
6126	1886	588.61	495.89	74.32	22.0	102.7



Maximum Dry Unit Weight (pcf)	**108.3**
Optimum Moisture Content (%)	**17.9**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

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Compaction Characteristics of Soil Using Standard Effort

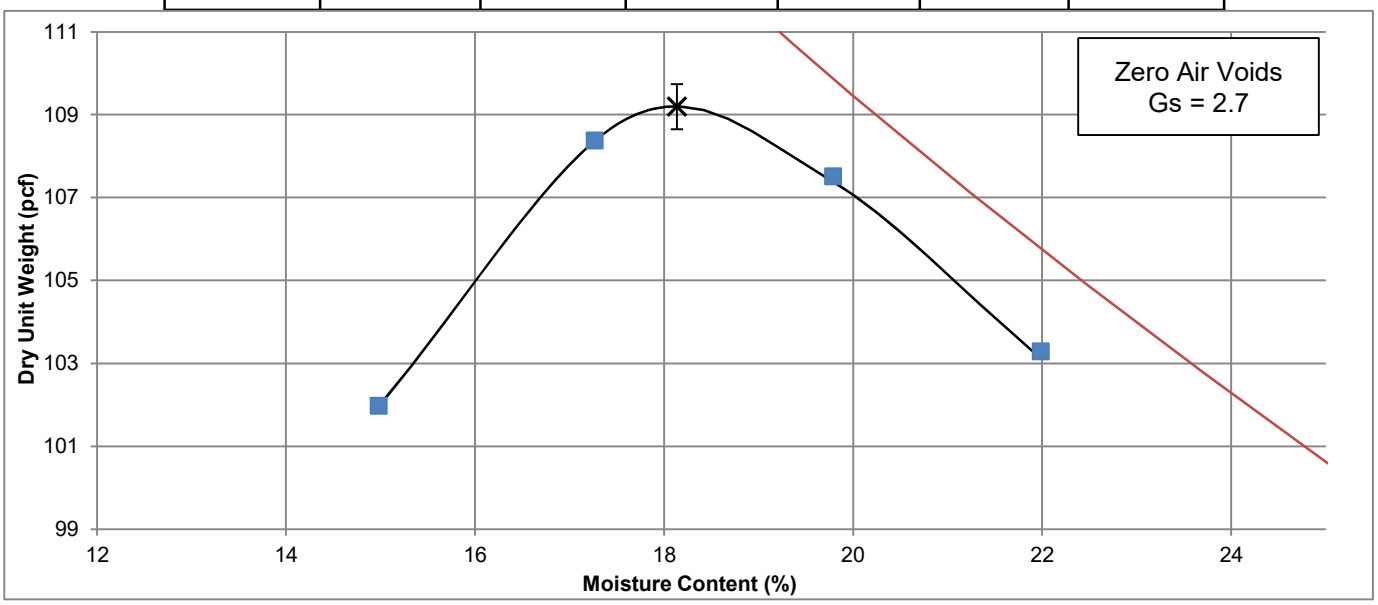
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.5-B, 2.0'-4.0'	Sample ID	1035
Description	Lean Clay with Sand (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/30/2022

Test Fraction (%)	96.4		Oversized Fraction (%)	3.6	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4185.5	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5951	1766	565.46	501.26	72.71	15.0	102.0
6099	1914	588.91	511.90	65.84	17.3	108.4
6125	1939	557.16	477.02	72.01	19.8	107.5
6083	1898	550.33	464.17	72.28	22.0	103.3



Maximum Dry Unit Weight (pcf)	**109.2**
Optimum Moisture Content (%)	**18.1**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

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Compaction Characteristics of Soil Using Standard Effort

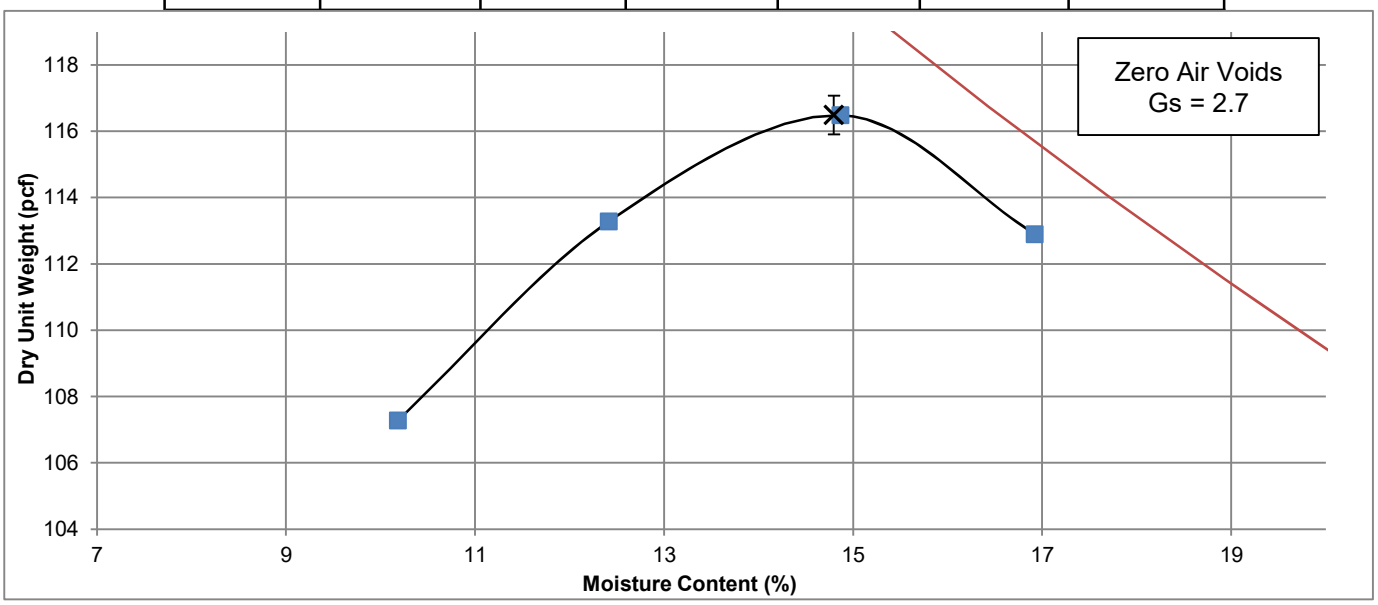
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-A, 1.5'-3.5'	Sample ID	1036
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/30/2022

Test Fraction (%)	96.2		Oversized Fraction (%)	3.8	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4185.5	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5966	1780	532.00	489.23	69.23	10.2	107.3
6103	1918	636.84	574.43	71.72	12.4	113.3
6200	2015	698.19	617.04	71.12	14.9	116.5
6173	1988	588.73	513.60	69.61	16.9	112.9



Maximum Dry Unit Weight (pcf)	**116.5**
Optimum Moisture Content (%)	**14.8**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

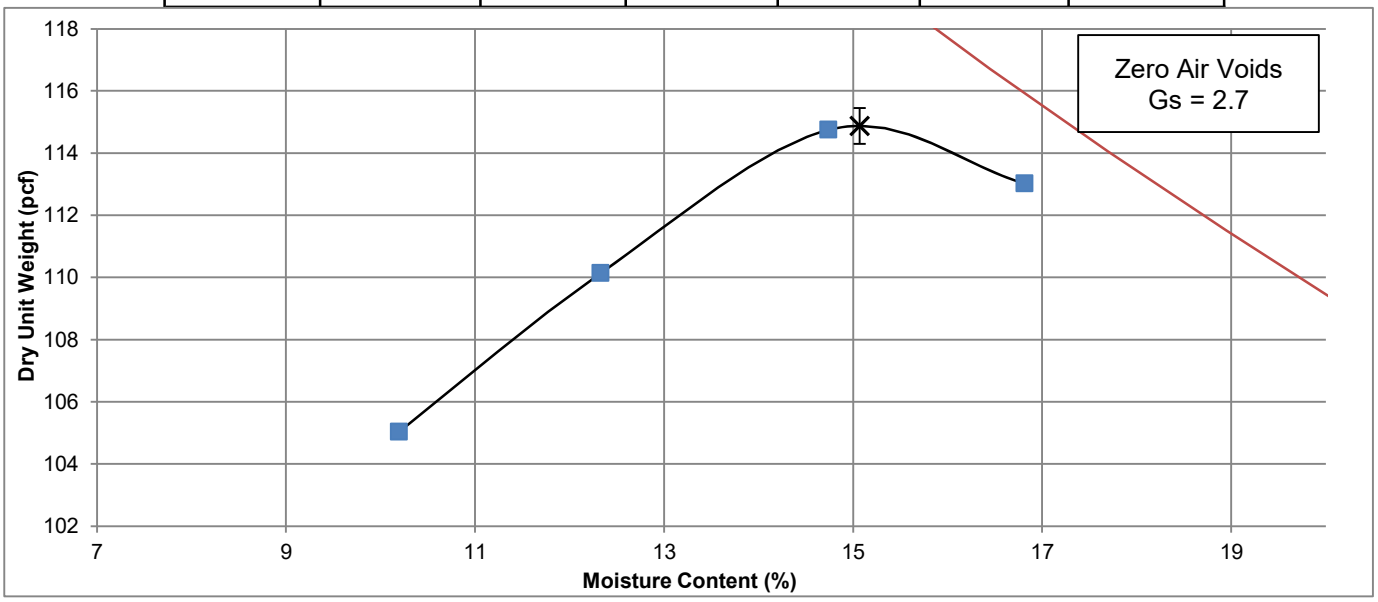
ASTM D 698 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-B, 1.5'-3.5'	Sample ID	1037
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/30/2022

Test Fraction (%)	96.8		Oversized Fraction (%)	3.2	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4185.5	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
5929	1743	595.14	546.72	71.78	10.2	105.0
6049	1863	623.92	563.24	70.98	12.3	110.1
6168	1983	684.22	605.39	70.52	14.7	114.8
6174	1988	649.38	565.92	69.51	16.8	113.0



Maximum Dry Unit Weight (pcf)	**114.9**
Optimum Moisture Content (%)	**15.1**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Attachment E-2. Laboratory Testing Results

Modified Proctor

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Compaction Characteristics of Soil Using Modified Effort

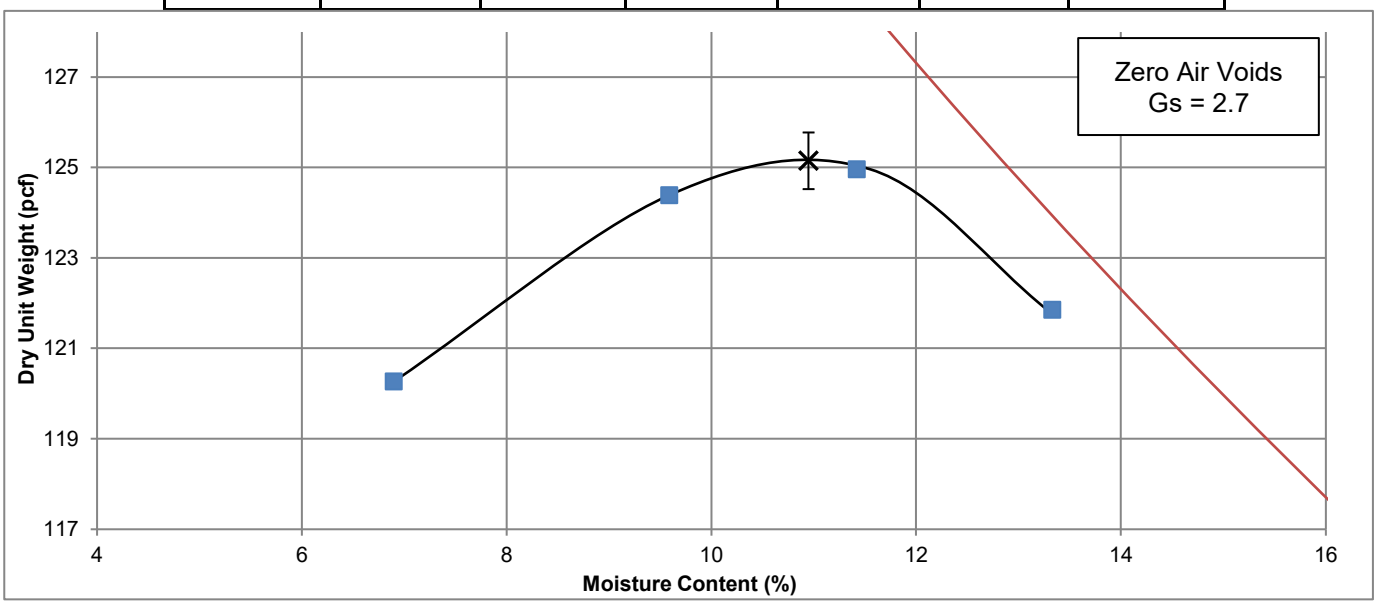
ASTM D 1557 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.2-B, 2.5'-5.0'	Sample ID	1028
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/29/2022

Test Fraction (%)	98.1		Oversized Fraction (%)	1.9	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4240.4	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6177	1936	692.53	652.38	70.39	6.9	120.3
6293	2053	723.82	667.06	75.09	9.6	124.4
6337	2097	728.81	661.22	69.37	11.4	125.0
6320	2080	733.95	656.00	71.17	13.3	121.9



Maximum Dry Unit Weight (pcf)	**125.2**
Optimum Moisture Content (%)	**10.9**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RJ

Comments

Stantec

Compaction Characteristics of Soil Using Modified Effort

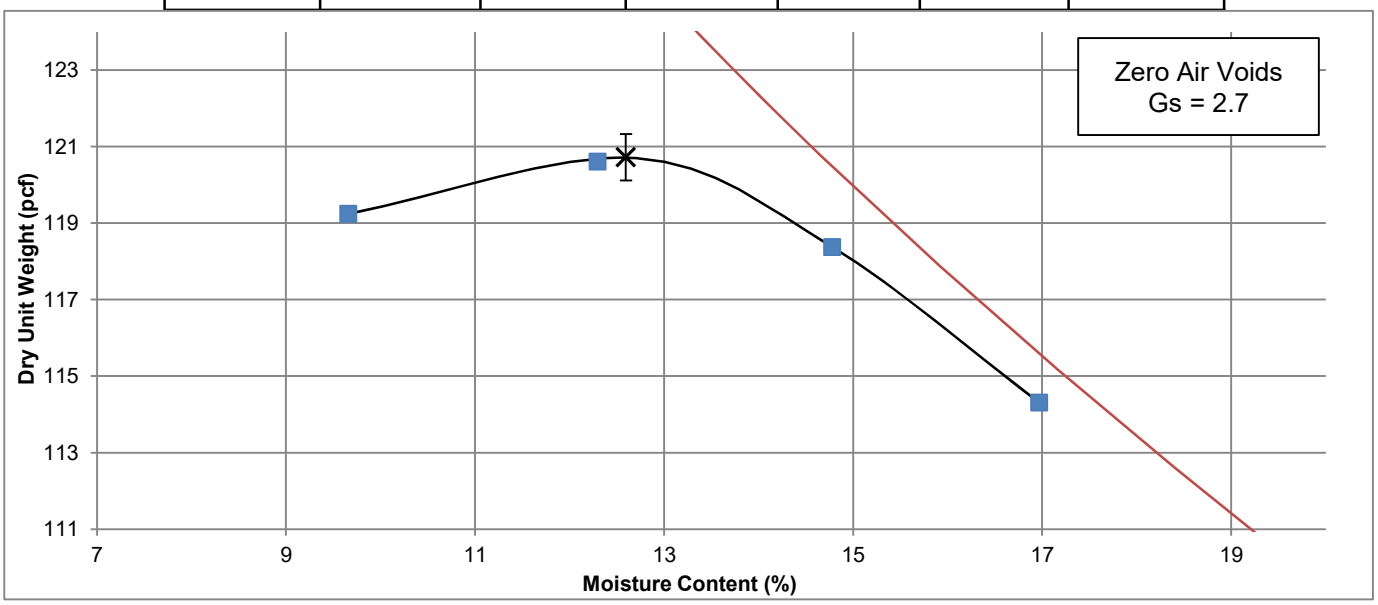
ASTM D 1557 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.4-B, 2.0'-4.5'	Sample ID	1033
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	06/29/2022

Test Fraction (%)	99.8		Oversized Fraction (%)	0.2	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4240.3	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6210	1969	677.47	624.08	71.34	9.7	119.2
6280	2040	668.74	603.77	75.40	12.3	120.6
6286	2046	604.64	536.22	73.26	14.8	118.4
6254	2014	553.80	483.57	69.67	17.0	114.3



Maximum Dry Unit Weight (pcf)	**120.7**
Optimum Moisture Content (%)	**12.6**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Modified Effort

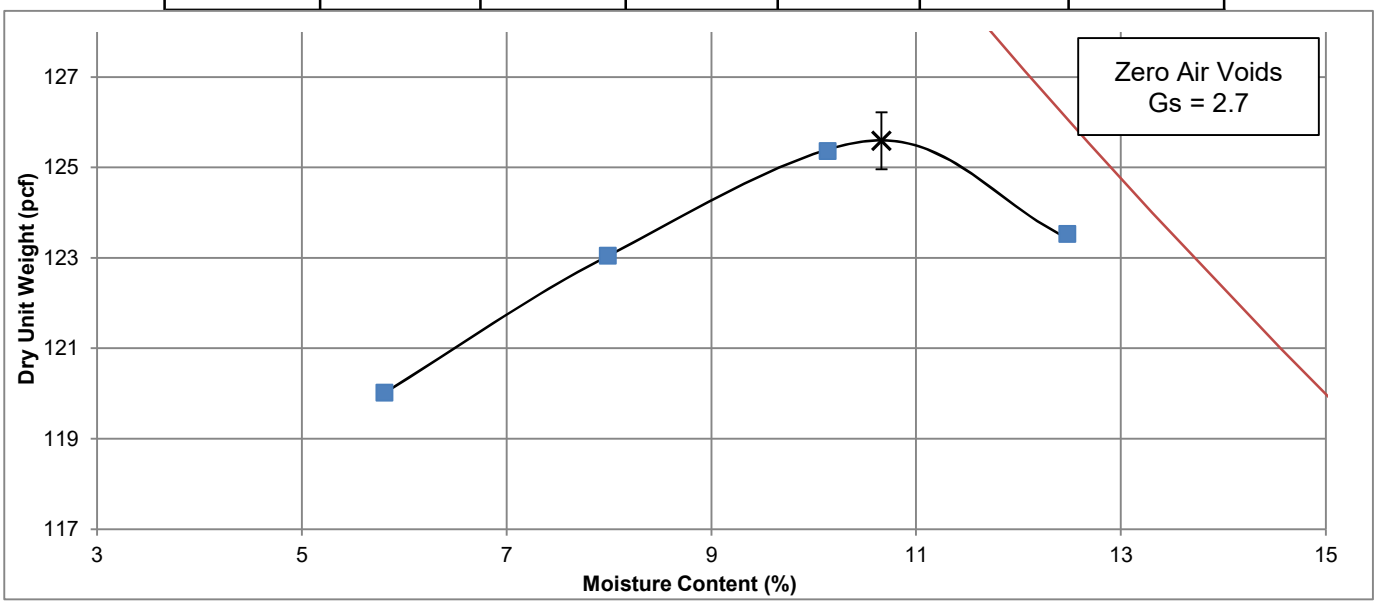
ASTM D 1557 - Method A

Project	Eagle Creek Flood Basin	Project No.	173409690
Source	TP-4.6-C, 1.5'-3.5'	Sample ID	1038
Description	Sandy Lean Clay (CL), brown	Date Received	06/20/2022
Visual Notes		Date Tested	07/05/2022

Test Fraction (%)	96.0		Oversized Fraction (%)	4.0	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	No. 4		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4240.5	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6153	1912	717.38	681.79	68.78	5.8	120.0
6242	2001	683.82	638.42	70.03	8.0	123.0
6320	2079	756.19	693.33	73.18	10.1	125.4
6333	2092	558.53	504.57	72.07	12.5	123.5



Maximum Dry Unit Weight (pcf)	**125.6**
Optimum Moisture Content (%)	**10.7**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments