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GEOTECHNICAL DESIGN REPORT SOUTHPORT BRIDGE NO. 2789 OVER TOWNSEND GUT

MAINE DOT WIN 021751.01

SOUTHPORT-BOOTHBAY HARBOR, MAINE

Prepared for:

Maine Department of Transportation
Augusta, Maine

September 2022
09.0025999.01

Prepared by:

GZA GeoEnvironmental, Inc.

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VIA EMAIL

September 15, 2022
File No. 09.0025999.01

Ms. Laura Krusinski
Maine Department of Transportation
16 State House Station
Augusta, Maine 04333-0016

Re: Geotechnical Design Report
Southport Bridge, Bridge No. 2789 Improvements and Fender Replacement
Rt. 27 over Townsend Gut
Maine Department of Transportation WIN 021751.01
Southport-Boothbay Harbor, Maine

Dear Laura:

We are pleased to provide this Geotechnical Design Report for Maine Department of Transportation (MaineDOT) Bridge No. 2789 over Townsend Gut in Southport -Boothbay Harbor, Maine. Our work was completed in accordance with GZA GeoEnvironmental, Inc.'s Project Contract dated October 2, 2020, our August 20, 2020 proposal, and the *Limitations* included in **Appendix A** of this report.

It has been a pleasure serving the MaineDOT team on this project. If you have any questions regarding the report, or if we can provide further assistance, please do not hesitate to contact the undersigned.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

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1.0 INTRODUCTION

This report presents the results of GZA GeoEnvironmental, Inc.'s (GZA's) geotechnical evaluation for the proposed improvements and fender replacement of Maine Department of Transportation (MaineDOT) Southport Bridge No. 2789 carrying Route 27 over Townsend Gut in Southport and Boothbay Harbor, Maine. Our services are subject to the *Limitations* contained in **Appendix A** of this report. Our services were provided in accordance with GZA's Proposal No. 09.P000070.21, dated August 20, 2021. This report is subject to the *Limitations* included in **Appendix A**.

1.1 BACKGROUND

Southport Bridge No. 2789 carries Route 27 over Townsend Gut in Southport and Boothbay Harbor, Maine at the location shown on **Figure 1**. The existing bridge was constructed in approximately 1939 and spans northeast-to-southwest. It is an approximately 370-foot-long, four-span bridge. The approach spans extend from Abutment 1 to Pier 1 and from Pier 3 to Abutment 2 and consist of a metal grate deck over steel girders. A truss swing span extends between Piers 1 and 3, rotating around the center pier, Pier 2. The plans indicate that both abutments and Piers 1 and 3 are supported on spread footings constructed on tremie seals bearing on bedrock or directly on bedrock. Pier 2 consists of a 33-foot high, octagonal shaped reinforced concrete shell with approximately 3-foot-thick walls, and the inside is filled with gravel borrow. Pier 2 is supported on a 24-foot-thick concrete pile cap/tremie seal supported by 53, 12Hx65 steel piles.

Each pier is surrounded by a protective fender system. The fender systems are constructed of timber grillage and have plan dimensions of approximately 13 feet by 39 feet at Piers 1 and 3 and 34 feet by 220 feet at Pier 2. The fender systems at Piers 1 and 3 appear to be supported by driven timber piles, and the fender system at Pier 2 appears to be supported on the Pier 2 pile cap as well as on driven timber piles. The size of the Pier 2 fender is consistent with the open bridge swing span, and it is designed to protect the swing span from boat impact.

We understand the project consists of replacement of the existing center pier fender system. The new fender will be of similar construction and size to the existing structure and will be supported on steel HP12x74 piles. The construction limitations of replacing the fender system are anticipated to include short work windows and restricted available space in which to work. We understand bridge rehabilitation includes mechanical improvements to the swing bridge components and other structural details that do not have an impact on existing foundations and do not require new bridge foundations. Therefore, geotechnical evaluations and recommendations are limited to new piles to support the new timber fender system.

The project also includes construction of crash barrier gates and mast arms for overhead warning signals. GZA conducted geotechnical evaluations and developed structural designs for the foundations for the barrier gates and mast arms, which are presented under separate cover.

This project is being completed using the Contractor-In-Design (CID) process. The process allows input from numerous potential contractors with regard to design elements and constructability of the project.

1.2 OBJECTIVES AND SCOPE OF SERVICES

The objectives of our work were to evaluate subsurface conditions and provide final geotechnical design recommendations and construction considerations for fender replacement. To meet these objectives, GZA completed the following Scope of Services:

- Conducted site visits to observe surficial conditions, traffic and boring access;
- Coordinated and observed preliminary and final subsurface exploration programs consisting of a total of nine test borings, to evaluate subsurface conditions;
- Conducted a laboratory testing program to evaluate classification and engineering properties of the site soil and bedrock;
- Completed geotechnical evaluations for soil and bedrock properties; AASHTO load and resistance factors associated with geotechnical design elements; nominal resistance of pile foundations; and pile drivability;
- Developed geotechnical engineering recommendations including foundation design recommendations for driven piles; and
- Prepared this report summarizing our findings and design recommendations.

2.0 SUBSURFACE EXPLORATIONS

2.1 PREVIOUS (1939) BORINGS

In 1939, MaineDOT conducted 32 “soundings” to explore subsurface conditions for the current bridge. All of the soundings were advanced through the existing mudline to apparent bedrock. The 1939 survey plan presents the locations of the soundings and tables that describe elevations of strata encountered, including ledge elevations. Based on the information provided, we anticipate that soil samples were collected, but details of the sounding advancement are not provided. The locations of the soundings were estimated by overlaying the 1939 survey plan (presented in **Appendix B**) over the current existing bridge plan as shown on **Figure 2**. Due to the overlay process, the locations should be considered approximate.

2.2 RECENT BORINGS

GZA completed a preliminary subsurface exploration program consisting of five (5) test borings (BB-SBTG-101 through -105) between June 10 and 13, 2019. The borings were drilled through the bridge deck on the south side of Pier 1, both sides of Pier 2, and both sides of Pier 3. The borings were drilled using truck-mounted drill rig. MaineDOT personnel cut holes in the metal grate bridge deck at each boring prior to drilling and patched the holes upon completion. Ground surface and mudline elevations were estimated based on the assumption that the bridge deck is at El. 17, as indicated on the plans. Elevations referenced in this report are in feet and refer to the National American Vertical Datum of 1988 (NAVD88).

Between November 9, 2020 and July 28, 2021, GZA completed a final design-phase subsurface exploration program consisting of six (6) bridge borings (BB-SBTG-201 through BB-SBTG-206), two (2) road borings (RB-SBTG-201 and -202), and eight (8) road probes (RP-SBTG-201 through RP-SBTG-207). Four bridge borings were drilled through the roadway at the approach and on the land side of each abutment

(BB-SBTG-201 -202, -205, and -206), and two were drilled within the Townsend Gut near the east and west limits of the fender, approximately 70 feet from the bridge centerline (BB-SBTG-203 and -204). The bridge and road explorations were drilled using a truck-mounted drill rig, and the river borings were conducted using a barge-mounted drill rig.

The roadway borings were conducted at the anticipated warning beacon locations to assess refusal depths. RB-SBTG-201 was located approximately 1,150 feet north of Abutment 1, and RB-SBTG-202 was located approximately 675 feet south of Abutment 2. Roadway probes were completed at approximately 200-foot intervals between the roadway borings and the abutments.

The approximate as-drilled exploration locations were estimated using taped ties to existing bridge and roadway structure components and are shown on **Figures 2** and **3**. The land-based Standard Penetration Testing (SPT) sampling was conducted using automatic hammers with rated hammer efficiency factors of 0.84 and 0.90 at the time of drilling, and the water-based SPT sampling was completed using a safety hammer operated by a rope and cathead.

The borings were drilled to the following depth ranges:

- Bridge Borings: approximately 18.0 to 58.6 feet below ground surface;
- Roadway Borings: approximately 3.0 to 13.0 feet below ground surface; and
- Roadway Probes: approximately 2.0 to 15.0 feet below ground surface.

All bridge borings were cored approximately 5.5 feet to 13.6 feet into bedrock. Roadway borings and probes were terminated on hollow stem auger refusal interpreted by GZA to be probable bedrock. New England Boring Contractors of Hermon, Maine provided drilling services and coordinated utility clearance to complement the findings from Substructure. GZA personnel monitored the drilling work and prepared logs of each boring, included in **Appendix C**.

The borings were drilled using 3- and 4-inch driven casing and drive-and-wash or hollow stem auger drilling techniques. SPT and split-spoon sampling were performed at 5-foot typical intervals using a 24-inch-long, 1-3/8-inch inside-diameter sampler, driven with a 140-lb calibrated automatic hammer with a 30-inch drop. *In situ* field vanes were taken within the cohesive layer encountered in borings BB-SBTG-102, -103, -203, and -204. Three thin-walled tube samples were taken in borings BB-SBTG-203 and -204 to provide samples for use in laboratory shear strength testing. Bedrock cores were obtained using NQ (2-inch nominal) coring equipment. Soil samples were collected from the hollow stem auger flights while drilling the roadway probes.

3.0 LABORATORY TESTING

GZA retained Thielsch Engineering's Geotechnical Laboratory in Cranston, Rhode Island to complete a soil and rock testing program to assess the gradation and engineering characteristics of the soil and the strength of the bedrock, and Soil Metrics LLC of Cape Elizabeth, Maine to conduct shear strength testing on tube samples of cohesive soil. The testing program consisted of:

3.1 SOIL

- 15 gradation analysis / AASHTO Classification / Unified Soil Classification System / Frost Classification assessments;
- 9 sets of Atterberg Limits;
- 29 moisture content tests;
- 4 organic content tests; and
- 3 consolidated undrained triaxial tests.

Results of the testing are included in **Appendix E**.

4.0 SUBSURFACE CONDITIONS

4.1 SURFICIAL AND BEDROCK GEOLOGY

Based on available mapping[1], the surficial geologic unit along the shoreline in the area consists of glacial till (heterogeneous mixture of sand, silt, clay and stones) with bedrock outcrops. There are also discontinuous glacial-marine deposits of the Presumpscot Formation in the site vicinity, described as silt, clay and sand.

Based on available bedrock geology data[2], the site is mapped near a contact of the Devonian Syenite formation and the Cape Elizabeth formation. The syenite is characterized as an unmetamorphosed, igneous syenite intrusion of Devonian age. The Cape Elizabeth formation is described as thinly-bedded slate and heavier beds of schist and quartzite of Ordovician to Precambrian age.

4.2 SUBSURFACE PROFILE

Five soil units were encountered in the test borings beneath surficial pavement and overlying bedrock: Fill, Harbor Bottom Sand, Marine Clay, Sand, and Glacial Till. The approximate thicknesses and generalized descriptions of the subsurface units are presented in the following table in descending order from existing ground surface. Detailed descriptions of the materials encountered at specific locations are provided in the boring logs in **Appendix C**. The subsurface conditions are also shown in relation to the fender alignment on the fender interpretive subsurface profile in **Figure 4**. It is noted that the Fill and Glacial Till strata were not encountered in GZA's fender borings and therefore do not appear on **Figure 4**.

---

[1] Smith, G.W., 1976, "Surficial Geology of the Boothbay Harbor Quadrangle," (Open File No. 76-33), Maine Geological Survey, Department of Conservation, scale 1:24,000.

[2] Osberg, P.H., Hussey, A.M., and Boone, G.M., 1985, "Bedrock geologic map of Maine." Maine Geological Survey, Department of Conservation, scale 1:500,000.

GENERALIZED SUBSURFACE CONDITIONS		
Soil Unit	**Approximate Encountered Thickness (ft)**	**Generalized Description**
Fill	1.4 to 14.1	Variable: From Brown, medium dense to dense, fine to coarse SAND, little to some Gravel, trace to some Silt with asphalt to brown, medium stiff to stiff Silty CLAY, little Sand, trace Gravel (USCS: SW-SM, CL). • Clay fill was encountered at BB-SBTG-201, -202, -205, -206, and RB-SBTG-202 underlying granular fill. *Encountered directly under asphalt in all abutment/approach borings and probes (BB-SBTG-201, -202, -205, -206, RB-SBTG-201, -202, and RP-SBTG-201 through -207).*
Harbor Bottom Sand	3.7 to 16.6	Grey to black, wet, very loose, fine to coarse SAND, little Silt to Silty, variable amounts of gravel, with organics, shells, and wood (USCS: SP-SM, SM). *Encountered at the mudline in borings BB-SBTG-102, -103, -104, -203, and -204. Also encountered in BB-SBTG-206 beneath the fill.*
Marine Clay	8.8 to 33.0	Grey, wet, very soft to soft, Silty CLAY, trace to little fine sand, with shells (USCS: CL). *Encountered in over-water borings BB-SBTG-102, -103, -104, -203, and -204* Grey, wet, stiff to very stiff, Silty CLAY, trace fine Sand with trace organic fibers. *Encountered in land-based boring BB-SBTG-206 and in roadway probes RP-SBTG-206 and -207.*
Sand	3.3 to 9.1	Variable: From Grey, wet, medium dense to very dense, Sandy GRAVEL, little Silt to fine to coarse SAND, little Silt to Silty, trace gravel (USCS: SM, GM). *Encountered in borings BB-SBTG-102, -103, -104, -203, -204, and -206*
Glacial Till	1.5 to 12.9	Variable: From Grey/Brown, moist, medium dense to very dense, fine to coarse SAND, trace to some Gravel, trace to some Silt to Sandy GRAVEL, trace Silt (USCS: SM, GP-GM). *Encountered in borings and probes (BB-SBTG-201, -202, RB-SBTG-201, -202, and RP-SBTG-207)*
Top of Bedrock Elevation	Fender: El.-73 to -99	

Refusal elevations were determined in the probes based on auger advancement characteristics and are provided in the table below.

SUMMARY OF ROADWAY PROBES AND BORINGS					
Exploration ID	**Ground Surface El.**	**Northing**	**Easting**	**Refusal Depth (ft)**	**Refusal Elevation (ft NAVD 88)**
RB-SBTG-201	49.0	126556	1501263	3.0	46.0
RB-SBTG-202	12.0	124672	1500290	13.0	-1.0
RP-SBTG-201	47.0	126442	1501094	10.5	36.5
RP-SBTG-202	58.0	126225	1501058	5.5	52.5
RP-SBTG-203	51.0	126066	1501048	2.5	48.5
RP-SBTG-203A	49.5	126057	1501030	2.0	47.5
RP-SBTG-204	34.0	125861	1500981	5.0	29.0
RP-SBTG-205	18.5	125653	1501017	4.5	14.0
RP-SBTG-206	15.0	124946	1500597	15.0	0.0
RP-SBTG-207	12.5	124820	1500485	7.5	5.0

4.2.1 Bedrock

Bedrock was cored in each bridge boring and was described as Schist and Pegmatite. Photographic logs of the recovered rock core specimens are included in **Appendix D**. Probable bedrock was encountered within the roadway borings and probes based on the advancement of augers.

The bedrock cores were generally described as hard, fresh to slightly weathered, aphanitic to medium grained, black/grey/white banded, SCHIST and hard, slightly weathered, coarse-grained grey/white/pink PEGMATITE. Joints are close to moderately spaced, low angle to moderately dipping, undulating to planar, rough to smooth, fresh to discolored, tight to open. The Rock Quality Designation ranged from 22 to 100 percent with a weighted average of 70 percent.

4.2.2 Groundwater

The test borings were drilled using drive-and-wash techniques, which introduce water into the borehole during drilling. As a result, stabilized groundwater levels were not determined at the proposed abutment locations. Considering the proximity to the tidal cove, groundwater levels are anticipated to fluctuate within the general range of high tide level to low tide level.

The groundwater observations were made at the times and under the conditions stated in the boring logs. Fluctuations in groundwater will occur due to variations in season, tide, precipitation, proximity to the water body, and other factors. Consequently, water levels during and after construction are likely to vary from those encountered at the time the observations were made.

5.0 ENGINEERING EVALUATIONS

5.1 GENERAL

GZA conducted geotechnical engineering evaluations based on the *2020 AASHTO LRFD Bridge Design Specifications, 9th Edition with Interims* (AASHTO), and the *MaineDOT Bridge Design Guide, 2003 Edition*, with updates through 2018 (MaineDOT BDG). Supporting calculations developed by GZA for the project are attached in **Appendix F** of this report.

5.2 PILE DESIGN CONSIDERATIONS

5.2.1 Pile Type and Loading

We understand that steel HP12x74 Grade 50 piles have been selected by VHB to support the fender replacement. With cutoff at El. 7 and tip elevations anticipated near or on the top of bedrock at approximately El. -73 to El. -99, pile lengths are anticipated to range from approximately 80 to 106 feet. Piles of this length usually are installed with at least one splice, but if a suitable method can be developed, they could be installed as a single piece for this project. Mudline elevations range from about El. -35 to El. -40, which will result in pile embedment lengths of approximately 33 to 64 feet.

For this project, we anticipate that most of the piles will have final installation by vibratory hammer. The use of dynamic pile testing with signal matching is understood to have less certainty for a vibratory

hammer than those procedures yield for an impact-driven pile. For an impact driven pile, the appropriate resistance factor would be 0.65 for the strength case. At this site, the installation will have wave equation analysis of all piles, and we intend there to be field confirmation of hammer performance on selected piles using an impact hammer, such as a drop hammer, so the appropriate resistance factor is 0.5, based on AASHTO Table 10.5.5.2.3-1. Consequently, the piles should be installed to a nominal resistance of 200 kips. In order to develop this nominal resistance, we anticipate that the piles will need to be advanced until the tips are on or near the bedrock surface.

5.2.2 Pile Constructibility Considerations

As a result of the CID process input, the fender replacement work is understood to have limited/difficult access for construction equipment and restricted work windows that present concerns for productivity of the pile installation. A potential approach was developed during the CID process that includes installation of all the piles using a vibratory hammer, then proof testing select piles using an impact hammer (such as a drop hammer) to assess as-driven axial resistance.

5.2.3 Preliminary Wave Equation Analyses

GZA completed preliminary wave equation analyses to assess the installation characteristics of an ASTM A572 Grade 50 Steel HP12x74 pile using vibratory and impact type hammers. The intent of these analyses is to assess the ability of a typical vibratory hammer to install the piles to practical refusal on bedrock without exceeding the allowable stresses in the pile, or reaching practical refusal in the overburden; and to assess the ability of a typical drop hammer to show the required nominal resistance via dynamic testing.

The analyzed pile length was 100 feet which included 47 feet embedment, anticipating that all the fender system piles would be driven onto or near bedrock. Based on GZA's local experience, the soil resistance profile considered 15 feet of very dense sand directly above bedrock, corresponding to a side resistance of approximately 20 percent.

Vibratory hammer analyses were completed using an ICE 216 Vibratory Pile Driver/Extractor. The ICE 216 Vibratory Pile Driver/Extractor has an upper mass weight of 1.9 kips and a lower mass weight of 2.4 kips, a maximum rated frequency of 26.7 Hz, and a maximum power rating of 130 kW. Results of the preliminary wave equation analyses (WEAP) with the vibratory hammer indicate that the hammer is capable of installing the pile through dense sand to the top of bedrock, and that at practical refusal, stresses in the pile were on the order of 24 kips per square inch (ksi), well below the allowable driving stress of 45 ksi (0.9 Fy) for the Grade 50 steel piles. The analysis indicated a nominal resistance over 700 kips at practical refusal. We note that the vibratory hammer is rigidly clamped to the pile and creates a reciprocal motion so that the final resting position could be in the "up" position and the pile may require a displacement equal to the reciprocal movement of the hammer (typically ½-inch to 2-inches) before the full axial resistance is mobilized in the installed pile.

Impact pile driving was modelled using a 2.3-kip drop hammer with a maximum stroke of 10.0 feet which could yield a rated energy up to 23.0 kip-feet. Results of the WEAP analyses with the impact hammer indicate that at a 5-foot stroke and a penetration resistance of 8 blows per inch, the hammer yields a nominal resistance of 200 kips with a driving stress of 22 ksi, well below the allowable driving stress of 45 ksi (0.9 Fy) for the Grade 50 steel piles.

Since WEAP results indicate that the vibratory hammer is capable of penetrating the overburden and developing resistance on bedrock, and that the drop hammer is sufficient to develop the required nominal resistance on bedrock, and driving stresses for both were within acceptable levels, the analyzed systems are judged suitable to install the piles as described. Results of the preliminary WEAP analyses are provided in **Appendix F**.

5.3 PILE RECOMMENDATIONS

- The proposed fender may be supported on HP12x74 ASTM A572, Grade 50 steel (50 ksi yield stress) H-piles installed to the required nominal resistance, anticipated to be developed primarily through end-bearing on or near the bedrock surface.
- The piles should be installed to a nominal resistance of 200 kips, calculated by dividing the maximum factored pile load of 100 kips by a resistance factor of 0.5.
- All piles should be installed with a vibratory hammer to a refusal criterion developed during the pre-construction WEAP analyses. We anticipate that this would be zero penetration over a certain duration using full hammer energy.
- Four piles, two on each side of Pier 2, should be selected as proof test piles. The proof test piles should be installed to the refusal criterion for the vibratory hammer that is planned for the production piles, then driven with the drop hammer until the WEAP-based penetration criterion for an impact hammer is achieved for two consecutive inches. If abrupt refusal is encountered, driving may be ceased if less than ½ inch of penetration is observed for 10 consecutive hammer blows.
- If dynamic testing with the impact hammer and field observations indicate that more than 2 inches of displacement is occurring before the test pile develops the required nominal resistance, then alternate means of final driving should be developed. A static drop of the vibratory hammer with the clamps open after completion of vibratory installation may be sufficient to seat the pile, provided that it can be shown by dynamic testing with the impact hammer that the installation method achieves the required pile resistance without excessive displacement. Any such methods developed on proof test piles should be used on all production piles. Additional impact hammer proof testing will also be required for modified installation methods.
- Preliminary wave equation analyses indicate that an ICE 216 Vibratory Pile Driver/Extractor with an upper mass weight of 1.9 kips and a lower mass weight of 2.4 kips operated at a maximum rated frequency of 26.7 Hz, and a maximum power rating of 130 kW, can install the piles through dense sand to the top of bedrock, without exceeding the allowable driving stress of 45 ksi (0.9Fy).
- Preliminary wave equation analyses indicate that a nominal resistance of 200 kips can be developed on the proof test piles using a 2.3-kip drop hammer without exceeding the allowable driving stress of 45 ksi (0.9Fy), with a final penetration resistance of 8 blows per inch.
- The pile tip elevations used in the drawings should correspond to the top-of-rock elevations encountered in the borings and shown on the fender interpretive cross-section profile (approximately El. -73 to El. -99). A provision is recommended to be provided in the drawings for extra pile length of at least 5 feet to account for variability in the top-of-rock surface and the potential for piles to penetrate a short distance into bedrock.

- We recommend that four piles be designated as test piles. The test piles should be dynamically tested during driving of an impact hammer to assess driving stresses and to verify the pile resistance. The tests should be conducted using wave equation analysis and field logging of the pile installation with final penetration resistance based on dynamic pile testing with signal matching analysis.
- Piles shall be spliced in accordance with MaineDOT Standard Specification Section 501.047.

FIGURES

USGS QUADRANGLE LOCATION

N W E S

SOURCE : THIS MAP CONTAINS THE ESRI ARCGIS ONLINE USA TOPOGRAPHIC MAP SERVICE, PUBLISHED DECEMBER 12, 2009 BY ESRI ARCIMS SERVICES AND UPDATED AS NEEDED. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS. THIS MAP ALSO CONTAINS THE ESRI ARCGIS ONLINE USA COUNTIES WHICH PROVIDES DETAILED BOUNDARIES THAT ARE CONSISTENT WITH THE TRACT, BLOCK GROUP, AND STATE DATA SETS AND ARE EFFECTIVE AT REGIONAL AND STATE LEVELS.

0 1,000 2,000 4,000 6,000

SCALE IN FEET

Data Supplied by :

esri

USGS science for a changing world

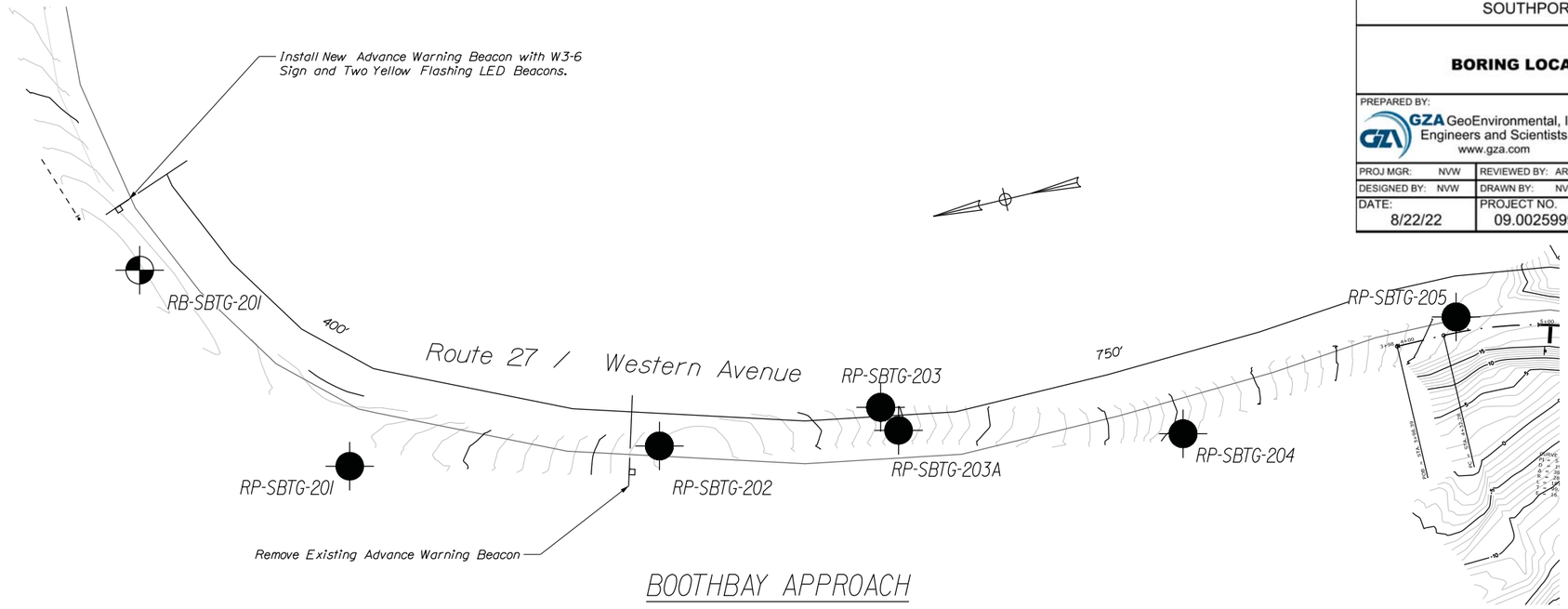
GZA	PROJ. MGR.: NVW DESIGNED BY: BLW REVIEWED BY: ARB OPERATOR: BLW DATE: 02-06-2020	**LOCUS PLAN**	JOB NO. 09.0025999.01
		ROUTE 27 BRIDGE OVER TOWNSEND GUT SOUTHPORT, MAINE	FIGURE NO. 1

© 2020 - GZA GeoEnvironmental, Inc. P:\09 Jobs\0025900s\09.0025999.00 - VHB Southport Bridge #2789\Figures\GIS\Figure1-LocusPlan.mxd, 2/6/2020, 9:53:57 AM, benjamin.woodman

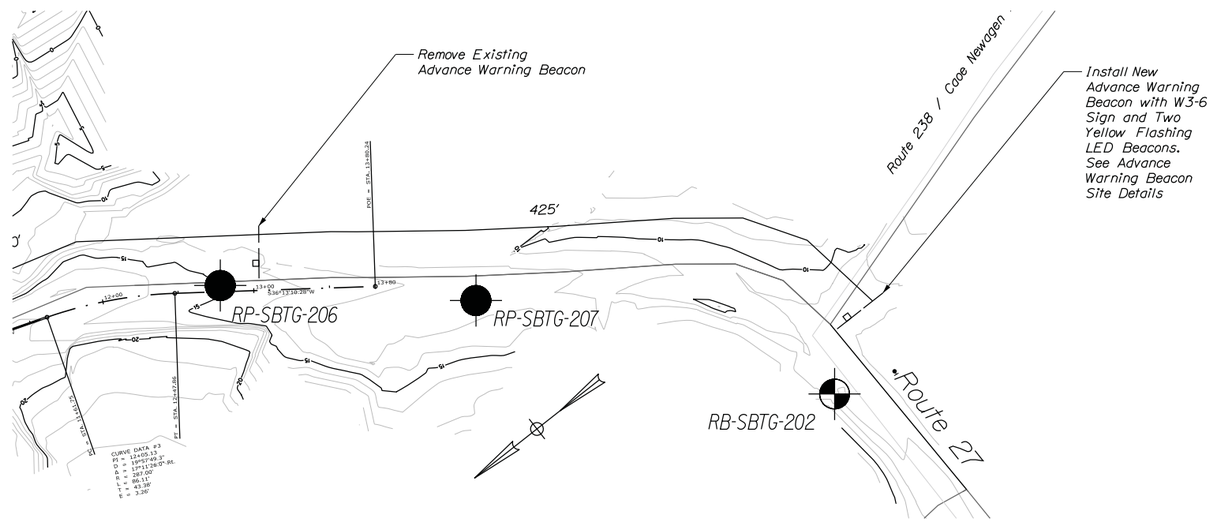
SOUTHPORT BRIDGE
MAINEDOT WIN 21751.00
SOUTHPORT-BOOTHBAY HARBOR, ME

BORING LOCATION PLAN - ROADWAY

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MAINEDOT	
PROJ MGR: NVW	REVIEWED BY: ARB	CHECKED BY: CLS	FIG 2
DESIGNED BY: NVW	DRAWN BY: NVW	SCALE: AS SHOWN	
DATE: 8/22/22	PROJECT NO. 09.0025999.01	REVISION NO.	SHEET NO. 2 OF 4



BOOTHBAY APPROACH



SOUTHPORT APPROACH

NOTES

1) Base map developed from electronic files (Ex-Bridge.dgn, TBK_Southport.dgn, BRIDGE.dgn, Alignments.dgn, BDPlan.dgn, Contours.dgn, Topo.dgn, and 039_traffic_02) provided by VHB on June 22, 2022.

2) BB-SBTG-100 series bridge borings were performed by New England Boring Contractors and observed by GZA personnel between June 10, 2019 and June 13, 2019. The as drilled locations of the test borings were estimated by taping to existing bridge structural elements and should be considered approximate.

3) BB-, RB-, and RP-SBTG-200 series bridge borings, roadway borings, and roadway probes were performed by New England Boring Contractors and observed by GZA personnel between November 9, 2020 and July 28, 2021. The as drilled locations of RB- and RP-SBTG-200 series roadway borings and probes and bridge borings BB-SBTG-201, -202, -205, -206 were estimated by taping to existing bridge structural elements and should be considered approximate. Bridge borings BB-SBTG-203 and -204 were surveyed by a MaineDOT survey crew and provided to GZA in the field.

PLAN

100 0 100 200
Scale of Feet

BORING LOCATION PLAN LEGEND

BB-SBTG-206	Approximate location and designation of 200-Series cased wash borings by GZA
RB-SBTG-202	Approximate location and designation of 200-Series hollow-stem auger roadway borings by GZA
RP-SBTG-207	Approximate location and designation of 200-Series solid stem auger roadway probes by GZA

PREPARED BY:

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2175(100)

WIN 21751.00

BRIDGE PLANS

BRIDGE NO. 2789

STATE OF MAINE Andrew R. Blaisdell 10957 PROFESSIONAL ENGINEER 08/19/2022

PROJ. MANAGER	J. STETSON		
DESIGN-DETAILED	N.WILLIAMS	N.WILLIAMS	AUG 2022
CHECKED-REVIEWED	A.BLASDELL	C.SNOW	AUG 2022
DESIGN2-DETAILED2	-----	-----	-----
DESIGN3-DETAILED3	-----	-----	-----
REVISIONS 1	-----	-----	-----
REVISIONS 2	-----	-----	-----
REVISIONS 3	-----	-----	-----
REVISIONS 4	-----	-----	-----
FIELD CHANGES	-----	-----	-----

SIGNATURE

P.E. NUMBER

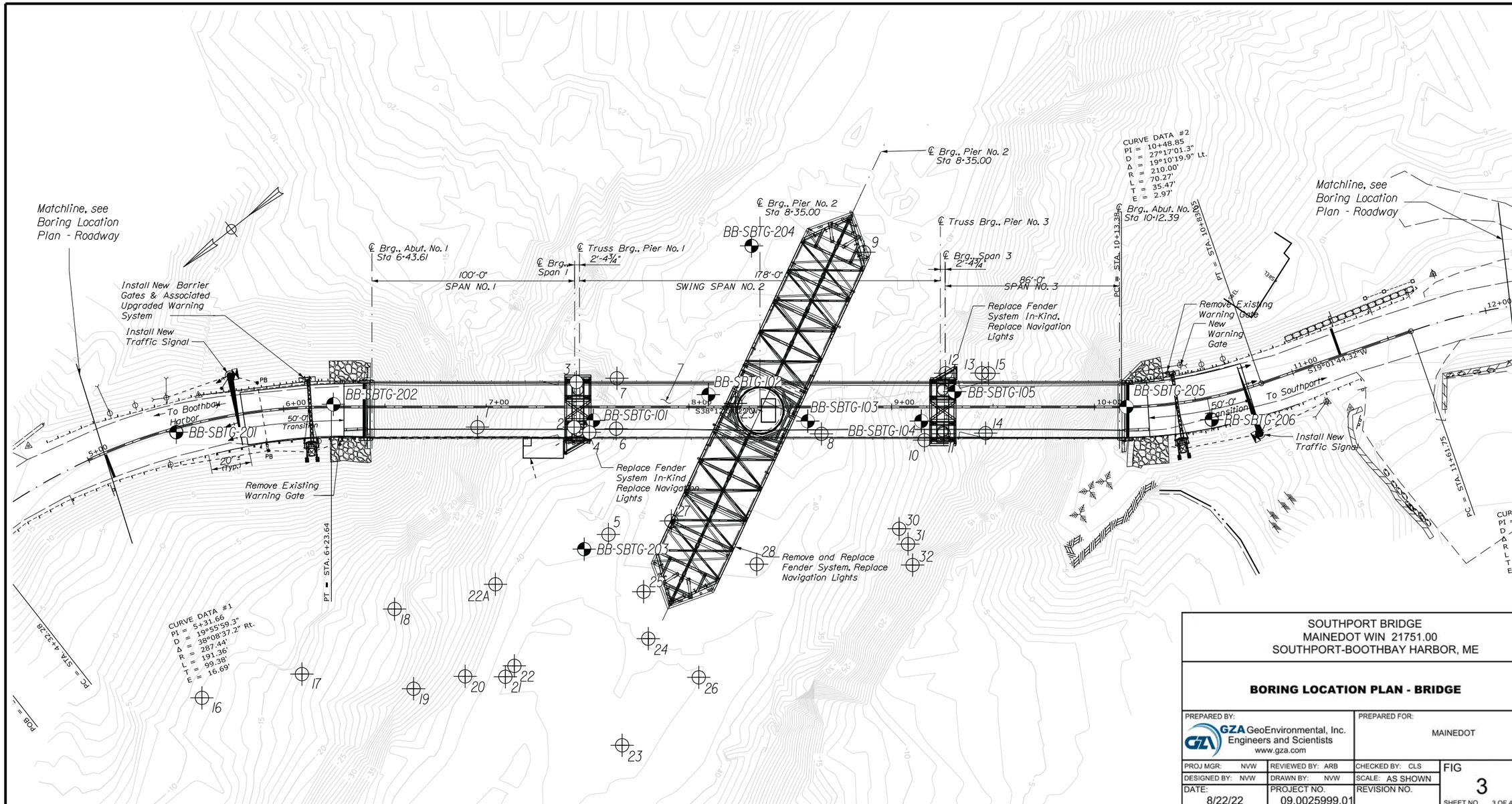
DATE

SOUTHPORT BRIDGE ROUTE 27
OVER TOWNSEND GUT
SOUTHPORT & BOOTHBAY HARBOR ME LINCOLN COUNTY

BORING LOCATION PLAN
ROADWAY

FIGURE 4 OF 48

Division: HIGHWAY
Username: common
Date:8/19/2022
Filename: ...\BLP - Roadway - 2Views.dgn



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2175(100)

WIN 21751.00

BRIDGE NO. 2789

BRIDGE PLANS

STATE OF MAINE
Andrew R. Blaisdell
No. 10957
PROFESSIONAL ENGINEER
08/19/2022

	BY	DATE
PROJ. MANAGER	J. STETSON	
DESIGN-DETAILED	N.WILLIAMS	AUG 2022
CHECKED-REVIEWED	A.BLAISDELL	AUG 2022
DESIGN2-DETAILED2	C.SHOW	
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

SOUTHPORT BRIDGE
MAINEDOT WIN 21751.00
SOUTHPORT-BOOTHBAY HARBOR, ME

BORING LOCATION PLAN - BRIDGE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: MAINEDOT

PROJ MGR: NVW	REVIEWED BY: ARB	CHECKED BY: CLS	FIG 3
DESIGNED BY: NVW	DRAWN BY: NVW	SCALE: AS SHOWN	SHEET NO. 3 OF 4
DATE: 8/22/22	PROJECT NO. 09.0025999.01	REVISION NO.	

SOUTHPORT BRIDGE ROUTE 27
OVER TOWNSEND GUT
SOUTHPORT & BOOTHBAY HARBOR ME LINCOLN COUNTY

BORING LOCATION PLAN
BRIDGE

FIGURE 5 OF 48

PREPARED BY: GZA

NOTES

1) Base map developed from electronic files (Ex-Bridge.dgn, TBK_Southport.dgn, BRIDGE.dgn, Alignments.dgn, Contours.dgn, and Topo.dgn) provided by VHB on June 22, 2022.

2) The locations of the 1939 borings were estimated by overlaying the 1939 boring location plan over the current bridge plan and should be considered approximate.

3) BB-SBTG-100 series bridge borings were performed by New England Boring Contractors and observed by GZA personnel between June 10, 2019 and June 13, 2019. The as drilled locations of the test borings were estimated by taping to existing bridge structural elements and should be considered approximate.

4) BB-SBTG-200 series bridge borings were performed by New England Boring Contractors and observed by GZA personnel between November 9, 2020 and July 28, 2021. The as drilled locations of BB-SBTG-201, -202, -205, and -206 were estimated by taping to existing bridge structural elements and should be consisdred approximate. BB-SBTG-203 and 204 were surveyed by a MaineDOT survey crew and provided to GZA in the field.

BORING LOCATION PLAN LEGEND

BB-SBTG-105	Approximate location and designation of 100-Series cased wash borings by GZA
BB-SBTG-206	Approximate location and designation of 200-Series cased wash borings by GZA
32	Approximate location and designation of 1939 borings by MaineDOT

PLAN

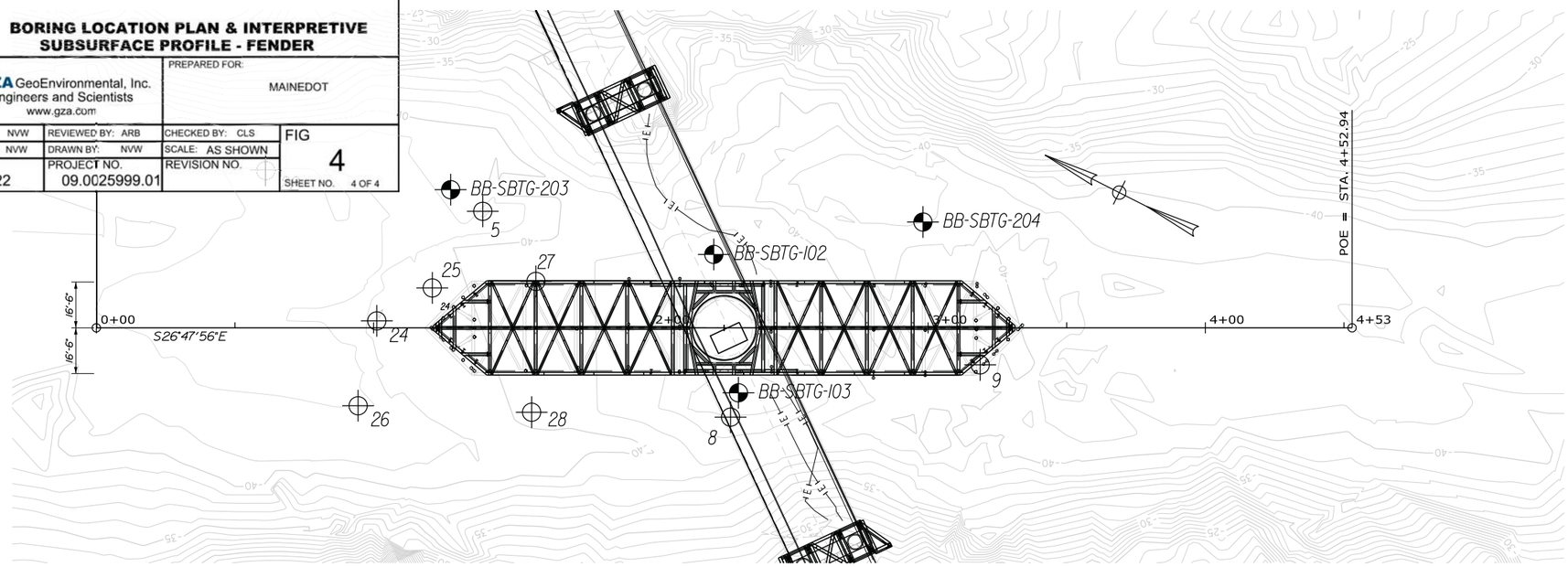
25 0 25 50
Scale

Division: HIGHWAY
Username: common
Date:8/19/2022
Filename: ...\1 - BLP\BLP - Bridge.dgn

SOUTHPORT BRIDGE
MAINEDOT WIN 21751.00
SOUTHPORT-BOOTHBAY HARBOR, ME

BORING LOCATION PLAN & INTERPRETIVE SUBSURFACE PROFILE - FENDER

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MAINEDOT	
PROJ MGR: NVW	REVIEWED BY: ARB	CHECKED BY: CLS	FIG 4
DESIGNED BY: NVW	DRAWN BY: NVW	SCALE: AS SHOWN	
DATE: 8/22/22	PROJECT NO. 09.0025999.01	REVISION NO.	SHEET NO. 4 OF 4



NOTES

1) Base map developed from electronic files provided by VHB dated June 22, 2022 (Files included BRIDGE.dgn, Ex-Bridge.dgn, TBK_Southport.dgn, and z_Fender-sys_P&P.dgn)

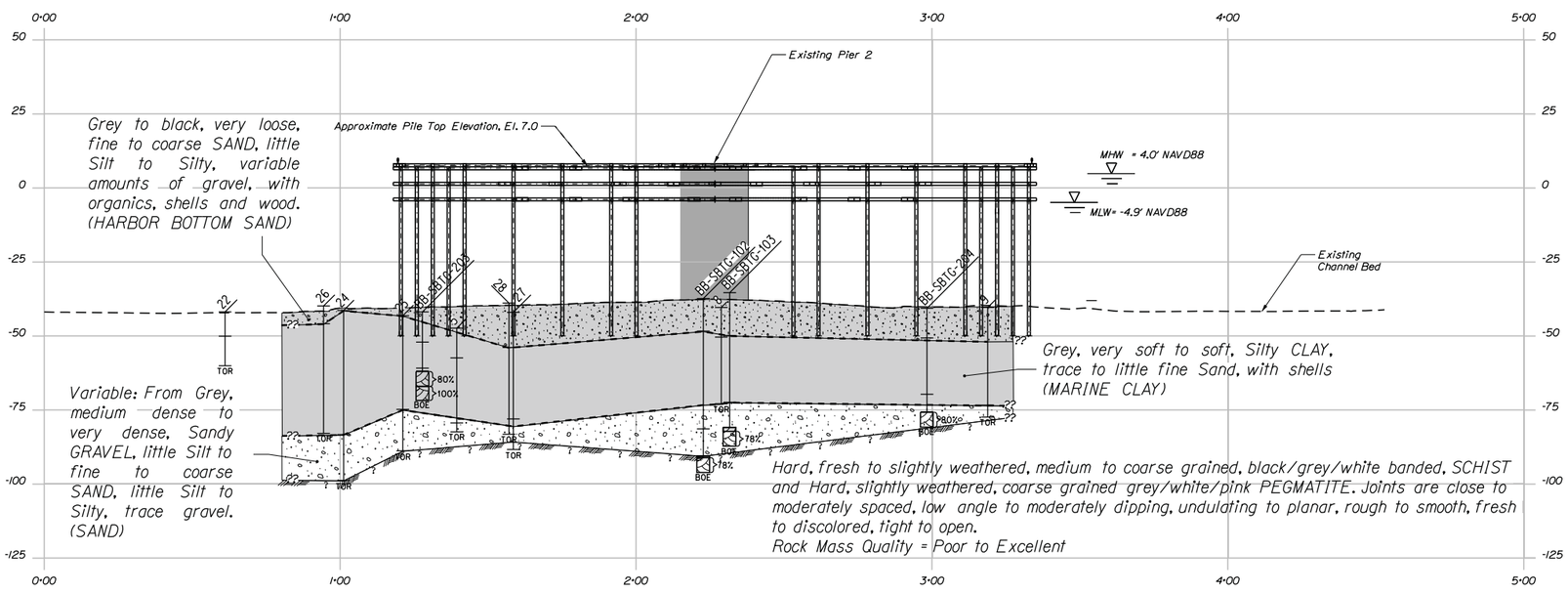
2) See Notes 2 through 4 on Boring Location Plan - Bridge for details of the subsurface exploration dates and locations.

3) This generalized interpretive soil profile is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples. Actual soil and rock transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

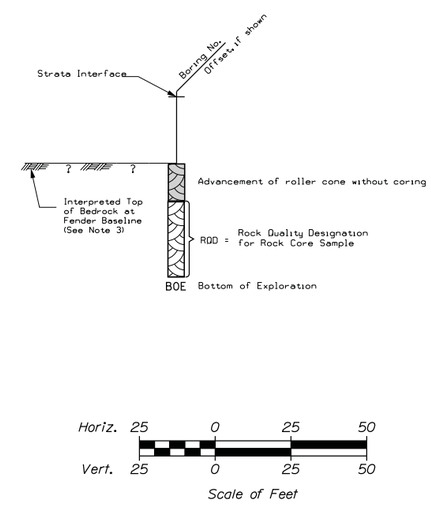
BORING LOCATION PLAN LEGEND

BB-SBTG-206 — Approximate Location and designation of 100- and 200-Series cased wash borings by GZA

32 — Approximate Location and designation of 1939 borings by MaineDOT



INTERPRETIVE SUBSURFACE PROFILE LEGEND



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2175(100)

WIN 21751.00

BRIDGE NO. 2789

BRIDGE PLANS

STATE OF MAINE Andrew R. Blaisdell 10951 PROFESSIONAL ENGINEER 08/19/2022

PROJ. MANAGER	J. STETSON	BY	DATE
DESIGN-DETAILED	N.WILLIAMS	N.WILLIAMS	AUG 2022
CHECKED-REVIEWED	A.BLASDELL	C.SNOW	AUG 2022
DESIGN2-DETAILED2	----	----	----
DESIGN3-DETAILED3	----	----	----
REVISIONS 1	----	----	----
REVISIONS 2	----	----	----
REVISIONS 3	----	----	----
REVISIONS 4	----	----	----
FIELD CHANGES	----	----	----

SIGNATURE

P.E. NUMBER

DATE

SOUTHPORT BRIDGE ROUTE 27
OVER TOWNSEND GUT
SOUTHPORT & BOOTHBAY HARBOR ME LINCOLN COUNTY

BORING LOCATION PLAN & INTERPRETIVE
SUBSURFACE PROFILE - FENDER

FIGURE
6
OF 48

Division: HIGHWAY
Username: common
Date:8/19/2022
Filename: ...\Figures\2 - ISP\FENDER_ISP.dgn

APPENDIX A – LIMITATIONS

GEOTECHNICAL LIMITATIONS

Use of Report

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

Standard of Care

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report, as appropriate, to reflect the unanticipated changed conditions.

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

Subsurface Conditions

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Cost Estimates

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

Additional Services

12. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B – PREVIOUS (1939) BORINGS

~ NOTES ~

SUPERSTRUCTURE – WOOD STRINGERS 3" TRANSVERSE PLANK. FAIR CONDITION. SWING SPAN AS SHOWN IN SKETCH – POOR CONDITION.

SUBSTRUCTURE – OAK PILE BENTS AS SHOWN IN SKETCH – FAIR CONDITION, ALTHOUGH BENTS NEAR AND INCLUDING FENDER PIER ARE NOT STABLE LATERALLY. PILES IN FENDER PIER REPORTED DRIVEN 90' (SPLICED.)

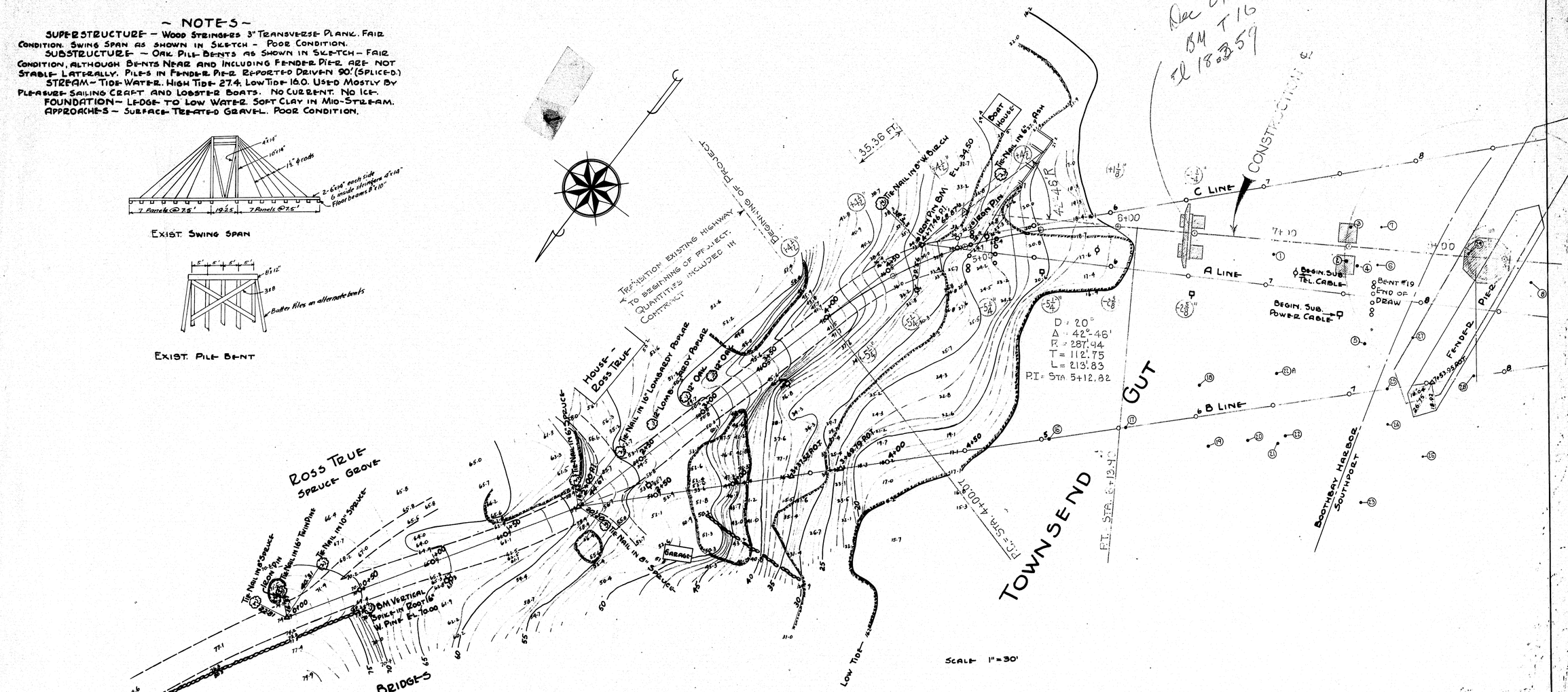
STREAM – TIDE WATER. HIGH TIDE 27.4; LOW TIDE 16.0. USED MOSTLY BY PLEASURE SAILING CRAFT AND LOBSTER BOATS. NO CURRENT. NO ICE.

FOUNDATION – LEDGE TO LOW WATER. SOFT CLAY IN MID-STREAM.

APPROACHES – SURFACE TREATED GRAVEL. POOR CONDITION.

EXIST. SWING SPAN

EXIST. PILE BENT



"A" LINE SOUNDINGS			
POINT	STA.	ELEVATIONS	DESCRIPTION
1	7+03 20' L	-5.3 -5.3 TO-11.3 -11.3	STR. BED GRAVEL + SAND LEDGE
2	7+50 21' L	-18.0 -18.0 TO-24.0 -24.0 TO-30.0 -30.0	STR. BED SILT SAND LEDGE
3	7+50 43'-L	-19.5 -19.5 TO-22.0 -22.0 TO-30.0 -30.0	STR. BED SAND + SILT HARD SAND LEDGE
4	7+56 19' L	-18.0 -18.0 TO-30.0 -30.0	STR. BED SAND LEDGE

"A" LINE SOUNDINGS (CONT.)			
POINT	STA.	ELEVATIONS	DESCRIPTIONS
5	7+68 30' R	-25.5 -25.5 TO-35.5 -35.5 TO-57.5 -57.5 TO-60.5 -60.5	STR. BED SAND CLAY + SILT. GRAVEL LEDGE
6	7+71 21' L	-19.0 -19.0 TO-40.0 -40.0	STR. BED SILT + SAND LEDGE
7	7+71 45' L	-19.0 -19.0 TO-35.0 -35.0 TO-43.0 -43.0	STR. BED SILT SILT + SAND LEDGE
8	8+70 20' L	-19.5 -19.5 TO-29.5 -29.5 TO-52.0 -52.0	STR. BED SILT. SILT + SAND LEDGE

"A" LINE SOUNDINGS (CONT.)			
POINT	STA.	ELEVATIONS	DESCRIPTIONS
9	8+85 110' L	-18.5 -18.5 TO-41.5 -41.5 TO-51.5 -51.5 TO-55.5 -55.5	STR. BED VERY SOFT SILT SOFT SILT GRAVEL LEDGE
10	9+18 18' L	-9.0 -9.0 TO-19.0 -19.0 TO-25.0 -25.0 TO-31.0 -31.0	STR. BED SILT SILT + SAND SAND + GRAVEL LEDGE
11	9+27 21' L	-11.3 -11.3 TO 21.3 -21.3 TO-33.0 -33.0	STR. BED SILT SILT + SAND. LEDGE
12	9+27 51' L	-13.0 -13.0 TO-22.5 -22.5	STR. BED SILT + SAND LEDGE

"A" LINE SOUNDINGS (CONT.)			
POINT	STA.	ELEVATIONS	DESRIPTION
13	9+45 51' L	-6.5 -6.5 TO-13.0 -13.0	STR. BED SAND LEDGE
14	9+48 22' L	-2.5 -2.5 TO-6.0 -6.0 TO-10.0 -10.0	STR. BED SILT SAND LEDGE
15	9+48 51' L	-5.0	CASING HITS SLOPING LEDGE.

P.W.A. PROJECT NO. MAINE 1120-F

TOWN 08-15
BRIDGE 2789

STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION

SOUTHPORT BRIDGE
OVER
TOWNSEND GUT
BETWEEN THE TOWNS OF
SOUTHPORT – BOOTHBAY HARBOR
LINCOLN COUNTY

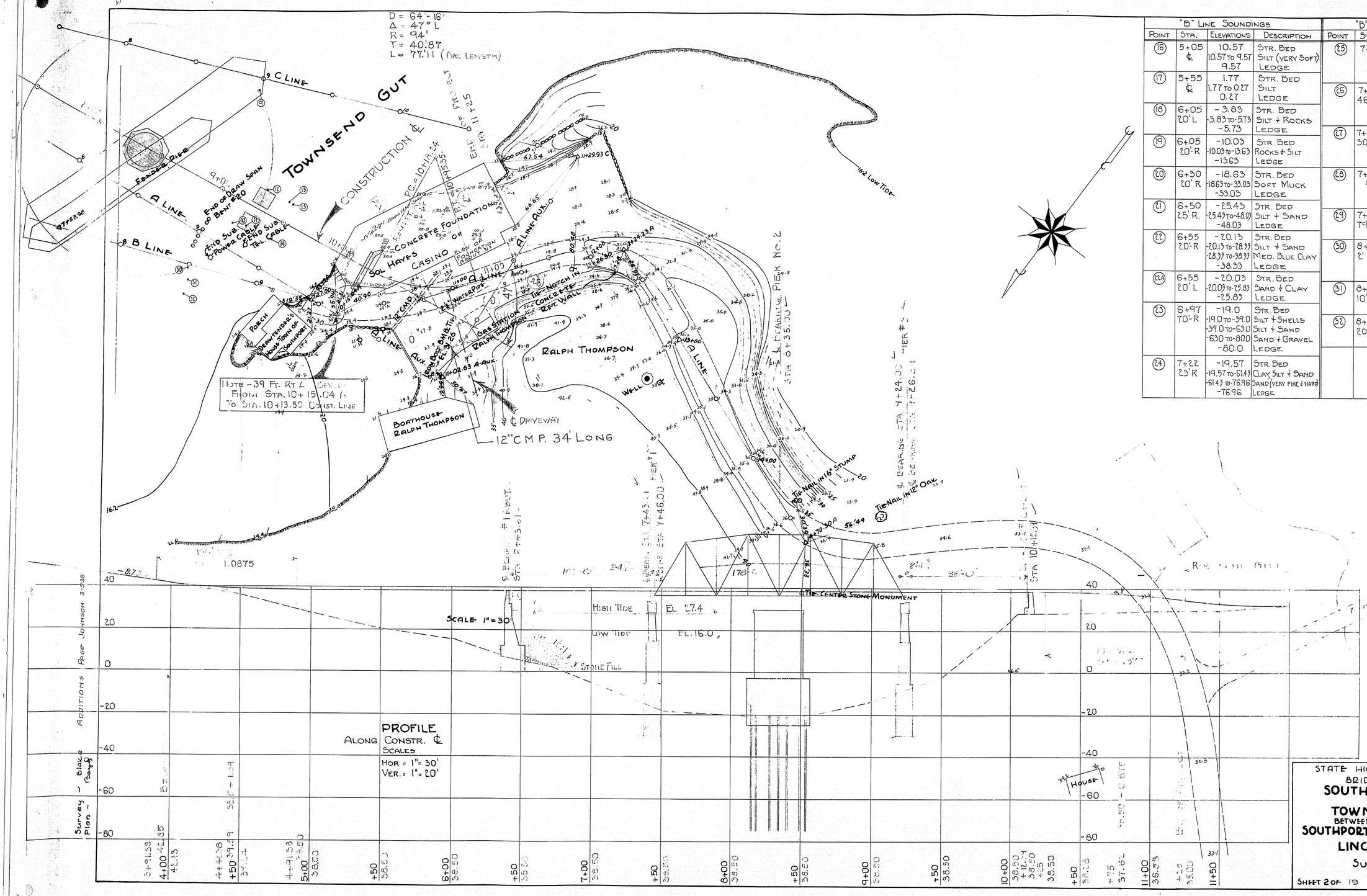
SURVEY PLAN

SHEET 1 OF 19, AUGUSTA, MAINE. JAN. 1937.

38-1

Survey – Plan – Bridge – Scale

0 1 2 3 4 5 INCHES



"B" Line Soundings			
Point	Sta.	Elevations	Description
16	5+05 ℄	10.57 10.57 to 9.57 9.57	Str. Bed Silt (very soft) Ledge
17	5+55 ℄	1.77 1.77 to 0.27 0.27	Str. Bed Silt Ledge
18	6+05 20' L	-3.83 -3.83 to -5.73 -5.73	Str. Bed Silt + Rocks Ledge
19	6+05 20' R	-10.03 -10.03 to -13.63 -13.63	Str. Bed Rocks + Silt Ledge
20	6+30 20' R	-18.63 -18.63 to -33.03 -33.03	Str. Bed Soft Muck Ledge
21	6+50 25' R.	-25.43 -25.43 to -48.03 -48.03	Str. Bed Silt + Sand Ledge
22	6+55 20' R	-20.13 -20.13 to -28.33 -28.33 to -38.33 -38.33	Str. Bed Silt + Sand Med. Blue Clay Ledge
22A	6+55 20' L	-20.03 -20.03 to -25.83 -25.83	Str. Bed Sand + Clay Ledge
23	6+97 70' R	-19.0 -19.0 to -39.0 -39.0 to -63.0 -63.0 to -80.0 -80.0	Str. Bed Silt + Shells Silt + Sand Sand + Gravel Ledge
24	7+22 23' R	-19.57 -19.57 to -61.43 -61.43 to -76.96 -76.96	Str. Bed Clay, Silt + Sand Sand (very fine & hard) Ledge

"B" Line Soundings (cont.)			
Point	Sta.	Elevations	Description
25	7+25 ℄	-21.33 -21.33 to -52.93 -52.93 to -66.9 -66.9	Str. Bed Clay + Silt Gravel Ledge
26	7+42 46' R	-18.0 -18.0 to -24.0 -24.0 to -61.0 -61.0	Str. Bed Silt Silt + Sand Ledge
27	7+46 30' L	-22.0 -22.0 to -58.0 -58.0 to -68.25 -68.25	Str. Bed Clay, Shelly Silt, Fine Sand Sand + Gravel Ledge
28	7+82 ℄	-17.0 -17.0 to -32.0 -32.0 to -61.3 -61.3	Str. Bed Muck + Silt Sand + Silt Ledge
29	7+90 79' L	-21.58 -21.58 to -64.41 -64.41 to -79.41	Str. Bed Clay-Sand + Silt Silt-Fine Sand + Few Rocks
30	8+50 2' R	-13.0 -13.0 to -17.0 -17.0 to -31.03 -31.03	Str. Bed Silt-Sand + Shells Gravel Ledge
31	8+52 10' R	-8.0 -8.0 to -10.0 -10.0	Str. Bed Sand Ledge
32	8+52 20' R	-5.0 -5.0 to -10.0 -10.0	Str. Bed Sand + Silt Ledge

P.W.A. Project No.
Maine 1120-F

Town 08-15
Bridge 2789

STATE HIGHWAY DEPARTMENT
BRIDGE DIVISION
SOUTHPORT BRIDGE
OVER
TOWNSEND GUT
BETWEEN THE TOWNS OF
SOUTHPORT-BOOTHBAY HARBOR
LINCOLN COUNTY
SURVEY PLAN

Sheet 2 of 19 Augusta, Maine Jan. 1937

38-2

0 1 2 3 4 5 INCHES

APPENDIX C – GZA RECENT TEST BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS (more than half of material is larger than No. 200 sieve size)	GRAVELS (more than half of coarse fraction is larger than No. 4 sieve size)	CLEAN GRAVELS (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel sand mixtures, little or no fines.
		GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS (little or no fines)	SW	Well-graded sands, Gravelly sands, little or no fines
			SP	Poorly-graded sands, Gravelly sand, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures.
FINE-GRAINED SOILS (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS (liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, Silty or Clayey fine sands, or Clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, Gravelly clays, Sandy clays, Silty clays, lean clays.
			OL	Organic silts and organic Silty clays of low plasticity.
	SILTS AND CLAYS (liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine Sandy or Silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.

MODIFIED BURMISTER SYSTEM

Descriptive Term	Portion of Total (%)
trace	0 - 10
little	11 - 20
some	21 - 35
adjective (e.g. Sandy, Clayey)	36 - 50

TERMS DESCRIBING DENSITY/CONSISTENCY

Coarse-grained soils (more than half of material is larger than No. 200 sieve): Includes (1) clean gravels; (2) Silty or Clayey gravels; and (3) Silty, Clayey or Gravelly sands. Density is rated according to standard penetration resistance (N-value).

Density of Cohesionless Soils	Standard Penetration Resistance N-Value (blows per foot)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

Fine-grained soils (more than half of material is smaller than No. 200 sieve): Includes (1) inorganic and organic silts and clays; (2) Gravelly, Sandy or Silty clays; and (3) Clayey silts. Consistency is rated according to undrained shear strength as indicated.

Consistency of Cohesive soils	SPT N-Value (blows per foot)	Approximate Undrained Shear Strength (psf)	Field Guidelines
Very Soft	WOH, WOR, WOP, <2	0 - 250	Fist easily penetrates
Soft	2 - 4	250 - 500	Thumb easily penetrates
Medium Stiff	5 - 8	500 - 1000	Thumb penetrates with moderate effort
Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort
Very Stiff	16 - 30	2000 - 4000	Indented by thumbnail
Hard	>30	over 4000	Indented by thumbnail with difficulty

Rock Quality Designation (RQD):

$$\text{RQD (\%)} = \frac{\text{sum of the lengths of intact pieces of core* > 4 inches}}{\text{length of core advance}}$$

*Minimum NQ rock core (1.88 in. OD of core)

Rock Quality Based on RQD

Rock Quality	RQD (%)
Very Poor	≤25
Poor	26 - 50
Fair	51 - 75
Good	76 - 90
Excellent	91 - 100

Desired Rock Observations (in this order, if applicable):

Color (Munsell color chart)
Texture (aphanitic, fine-grained, etc.)
Rock Type (granite, schist, sandstone, etc.)
Hardness (very hard, hard, mod. hard, etc.)
Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.)
Geologic discontinuities/jointing:
- -dip (horiz - 0-5 deg., low angle - 5-35 deg., mod. dipping - 35-55 deg., steep - 55-85 deg., vertical - 85-90 deg.)
- -spacing (very close - <2 inch, close - 2-12 inch, mod. close - 1-3 feet, wide - 3-10 feet, very wide >10 feet)
- -tightness (tight, open, or healed)
- -infilling (grain size, color, etc.)

Formation (Waterville, Ellsworth, Cape Elizabeth, etc.)
RQD and correlation to rock quality (very poor, poor, etc.)
ref: ASTM D6032 and FHWA NHI-16-072 GEC 5 - Geotechnical Site Characterization, Table 4-12
Recovery (inch/inch and percentage)
Rock Core Rate (X.X ft - Y.Y ft (min:sec))

Desired Soil Observations (in this order, if applicable):

Color (Munsell color chart)
Moisture (dry, damp, moist, wet)
Density/Consistency (from above right hand side)
Texture (fine, medium, coarse, etc.)
Name (Sand, Silty Sand, Clay, etc., including portions - trace, little, etc.)
Gradation (well-graded, poorly-graded, uniform, etc.)
Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic)
Structure (layering, fractures, cracks, etc.)
Bonding (well, moderately, loosely, etc.,)
Cementation (weak, moderate, or strong)
Geologic Origin (till, marine clay, alluvium, etc.)
Groundwater level

Sample Container Labeling Requirements:

WIN	Blow Counts
Bridge Name / Town	Sample Recovery
Boring Number	Date
Sample Number	Personnel Initials
Sample Depth	

Maine Department of Transportation
Geotechnical Section
Key to Soil and Rock Descriptions and Terms
Field Identification Information

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-101
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-34.9	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/13/19-6/13/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 7+53, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/22	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH			Grey/black, wet, very loose, Gravelly fine to coarse SAND, little Silt, with organics and shells, (Harbor Bottom Sand).	G#1 A-1-a, SP-SM WC=67.8
	2D	24/0	4.5 - 6.5	WOR-WOR-WOR-WOR	-					No recovery.	
5											
	3D	24/3	9.5 - 11.5	WOR-WOH-WOH-WOH	-					Grey, wet, very loose, fine to medium SAND, some silt, with shells, (Harbor Bottom Sand). Sample 3D was taken with a 3" spoon.	
10											
	4D	24/1	14.5 - 16.5	WOR-WOR-WOR-WOR	-					Grey, wet, very loose, fine to coarse SAND, some silt, little gravel, with shells, (Harbor Bottom Sand).	G#2 A-2-4, SM WC=16.4
15											
	5D	1/0	16.5 - 16.6	50/1"	-		NQ	-51.5		No recovery.	
	R1	60/60	16.6 - 21.6	RQD = 72%						16.6 — Advanced casing and roller cone to 16.6'. Set up to core. R1: Hard, fresh, medium to coarse grained, black/grey/white banded, SCHIST. Joints are close to moderately spaced, low angle to moderately dipping, undulating, rough, fresh to discolored, open. Rock Mass Quality = Fair Recovery = 100% Rock Core Times (min:sec): 16.6-17.6' (1:50), 17.6-18.6' (1:43), 18.6-19.6' (1:51), 19.6-20.6' (1:50), 20.6-21.6' (1:42)	
20	R2	13/13	21.6 - 22.7	RQD = 100%						R2: Hard, slightly weathered, medium to coarse grained, blue/grey, SCHIST. Joints are close to moderately spaced, low angle, undulating, rough, discolored, moderately wide. Rock Mass Quality = Excellent Recovery = 100% Rock Core Times (min:sec): 21.6-22.6' (1:34), 22.6-22.7' (1:28)	
	R3	60/60	22.7 - 27.7	RQD = 80%						R3: Hard, slightly weathered, medium to coarse grained, blue/grey/	
25											

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125393, E1500866). Ground surface/mudline elevation measured 51.9' below the top of bridge deck.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-101
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-34.9	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/13/19-6/13/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 7+53, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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U = Thin Wall Tube Sample
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SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25										white, SCHIST. Joints are close to moderately spaced, moderately dipping, undulating to planar, rough to smooth, fresh to discolored, tight to open. Rock Mass Quality = Good Recovery = 100% Rock Core Times (min:sec): 22.7-23.7' (0:48), 23.7-24.7' (1:25), 24.7-25.7' (1:38), 25.7-26.7' (1:34), 26.7-27.7' (1:18)	
								-62.6		27.7	
										Bottom of Exploration at 27.7 feet below ground surface.	
30											
35											
40											
45											
50											

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125393, E1500866). Ground surface/mudline elevation measured 51.9' below the top of bridge deck.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-102
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-37.6	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/12/19-6/12/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+10, 6' LT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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SSA = Solid Stem Auger
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RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
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T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/0	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH		No recovery. Sample 1D was driven with a 3" spoon.	
5	2D	24/1	6.0 - 8.0	2-WOH-WOH-WOH	-				Black, wet, very loose, fine to medium SAND, little silt, with shells and organics, (Harbor Bottom Sand). Sample 2D was taken with a 3" spoon.	
10								-48.6	11.0	
	3D	24/7	11.0 - 13.0	WOR-WOR-WOR-WOR	-				Grey, wet, very soft, Silty CLAY, little fine sand, with shells, (Marine Clay). Sample 3D was taken with a 3" spoon.	WC=53.6
15	4D	24/15	17.0 - 19.0	Push thru vane	-				Grey, wet, very soft, Silty CLAY, trace fine sand, with shells, (Marine Clay).	A-7, CL
	V1		17.6 - 18.0	S_u=233/82 psf					65x130mm vane raw torque readings:	LL=41
	V2		18.6 - 19.0	S_u=247/41 psf					V1: 8.5/3 ft-lbs	PL=21
									V2: 9.0/1.5 ft-lbs	PI=20
										WC=60.4
20	5D	24/12	22.0 - 24.0	Push thru vane	-				Grey, wet, soft, Silty CLAY, trace fine sand, with shells, (Marine Clay).	
	V3		22.6 - 23.0	S_u=302/82 psf					65x130mm vane raw torque readings:	
	V4		23.6 - 24.0	S_u=343/82 psf					V3: 11/3 ft-lbs	
25									V4: 12.5/3 ft-lbs	

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125341, E1500841). Ground surface/mudline elevation measured 54.6' below the top of bridge deck.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-102
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-37.6	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/12/19-6/12/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+10, 6' LT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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N-uncorrected = Raw Field SPT N-value
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WC = Water Content, percent
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C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25											
	6D V5	24/24	27.0 - 29.0 27.6 - 28.0	Push thru vane S_u=165/41 psf	-					Grey, wet, very soft, Silty CLAY, trace fine sand, with shells, (Marine Clay). 65x130mm vane raw torque readings: V5: 6/1.5 ft-lbs V6: 7.5/3.5 ft-lbs	WC=42.8
	V6		28.6 - 29.0	S_u=206/96 psf							
30											
	7D V7	24/19	32.0 - 34.0 32.6 - 33.0	Push thru vane S_u=220/27 psf	-					Grey, wet, very soft, Silty CLAY, trace fine sand, with shells, (Marine Clay). 65x130mm vane raw torque readings: V7: 8/1 ft-lbs V8: 8/5 ft-lbs	A-6, CL LL=36 PL=21 PI=15 WC=41.9
	V8		33.6 - 34.0	S_u=220/137 psf							
35											
	8D V9	24/22	37.0 - 39.0 37.6 - 38.0	Push thru vane S_u=110/55 psf	-					Grey, wet, very soft, Silty CLAY, trace fine sand, with shells, (Marine Clay). 65x130mm vane raw torque readings: V9: 4/2 ft-lbs V10: 7/3 ft-lbs	WC=37.9
	V10		38.6 - 39.0	S_u=192/82 psf							
40											
	9D V11	24/20	42.0 - 44.0 42.6 - 43.0	Push thru vane S_u=384/82 psf	-					Grey, wet, soft, Silty CLAY, trace fine sand, (Marine Clay). 65x130mm vane raw torque readings: V11: 14/3 ft-lbs	A-4, CL-ML LL=22 PL=16 PI=6
	MV1		43.6 - 43.6				31				
							65	-81.6		44.0	WC=26.2
45	10D	24/13	45.0 - 47.0	10-9-11-12	20	30	22			Grey, wet, medium dense, fine to medium SAND, some silt, trace gravel, (Sand).	G#9 A-4, SC-SM WC=6.5
							63				
							99				
							125				
50							179				

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
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3. The as-drilled location was measured from existing structural elements (N125341, E1500841). Ground surface/mudline elevation measured 54.6' below the top of bridge deck.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-102
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-37.6	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/12/19-6/12/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+10, 6' LT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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N-uncorrected = Raw Field SPT N-value
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C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
50	11D	24/12	50.0 - 52.0	13-19-16-11	25	37	RC			Grey, wet, medium dense, Silty fine to coarse SAND, (Sand).	G#10 A-4, SC WC=11.6
	R1	60/60	53.6 - 58.6	RQD = 78%			NQ	-90.7		53.1 Observed large increase in resistance during roller cone advancement at 53.1'. Advanced roller cone and 3" casing to 53.6'; set up to core. R1: Hard, fresh, fine to medium grained, grey/white/black, SCHIST. Joints are close to widely spaced, low angle to moderately dipping, undulating, rough, discolored, open. Rock Mass Quality = Excellent Recovery = 100% Rock Core Times (min:sec): 53.6-54.6' (1:49), 54.6-55.6' (1:34), 55.6-56.6' (1:35), 56.6-57.6' (1:36), 57.6-58.6' (2:07)	
55											
								-96.2		58.6 **Bottom of Exploration at 58.6 feet below ground surface.**	
60											
65											
70											
75											

Remarks:

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-103
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-35.5	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/10/19-6/10/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+59, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

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HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
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Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/3	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH			Black, wet, very loose, Silty fine SAND, with organics and shells, (Harbor Bottom Sand).	OC=6.4 WC=61.1
5	2D	24/2	6.0 - 8.0	Push thru vane	-					Black, wet, very loose, fine to medium SAND, some silt, with organics and shells, (Harbor Bottom Sand). Sample 2D was taken with a 3" spoon.	
	V1		6.6 - 7.0							65x130mm vane conducted for V1 but not recorded because it is sand.	
	MV1		7.6 - 7.6								
10										Observed wood pieces in wash return from 8.0'-11.0'. Observed color change from black to grey at approximately 9.5' during roller cone advancement.	
	3D	24/4	11.0 - 13.0	WOH-WOH-WOH-WOH	-					Light grey, wet, very loose, Silty fine to coarse SAND, with shells, (Harbor Bottom Sand). Sample 3D was taken with a 3" spoon.	G#12 A-4, SM WC=53.4
								-50.0		14.5	
15	4D	24/24	16.0 - 18.0	WOR-WOR-WOR-WOR	-					Grey, wet, very soft, Silty CLAY, little fine sand, with shells, (Marine Clay).	WC=37.7
20										Casing advanced under its own weight during advancement from 18.0'-21.0'.	
25											

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125310, E1500800). Ground surface/mudline elevation measured 52.5' below the top of bridge deck.
4. OC = Organic Content results from laboratory testing.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-103
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-35.5	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/10/19-6/10/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+59, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25											
	5D	24/17	26.0 - 28.0	Push thru vane	-					Grey, wet, very soft to soft, Silty CLAY, trace fine sand, (Marine Clay).	A-6, CL
	V2		26.6 - 27.0	S_u=330/110 psf						65x130mm vane raw torque readings:	LL=38
	V3		27.6 - 28.0	S_u=206/82 psf						V2: 12/4 ft-lbs	PL=21
										V3: 7.5/3 ft-lbs	PI=17
											WC=42.9
30											
	6D	24/16	31.0 - 33.0	WOR-WOR-WOR-WOR	-					Grey, wet, very soft, Silty CLAY, trace fine sand, (Marine Clay).	
35											
	7D	24/15	36.0 - 38.0	Push thru vane	-					Grey, wet, very soft, Silty CLAY, trace fine sand, (Marine Clay).	WC=40.9
	V4		36.6 - 37.0	S_u=96/41 psf						65x130mm vane raw torque readings:	
	V5		37.6 - 38.0	S_u=192/82 psf						V4: 3.5/1.5 ft-lbs	
										V5: 7/3 ft-lbs	
							28				
40								-75.5		40.0	
	8D	24/0	40.0 - 42.0	14-6-4-3	10	15	18			Increase in resistance during casing advancement indicates probable strata change.	
							18			No recovery.	
							10				
							14				
							50				
45	9D	24/12	45.0 - 47.0	32-26-20-99	46	69				Grey and white, wet, very dense, fine to coarse SAND, little silt, (Sand).	G#11
											A-1-b, SM
											WC=13.5
							58	-83.9		48.4	
										Casing refusal at 48.4'. Advance roller cone to 49.7', set up to core.	
50	R1	60/60	49.7 - 54.7	RQD = 75%			NQ				

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125310, E1500800). Ground surface/mudline elevation measured 52.5' below the top of bridge deck.
4. OC = Organic Content results from laboratory testing.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-103
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-35.5	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/10/19-6/10/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 8+59, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
50										Hard, slightly weathered, medium to coarse grained, black/grey, SCHIST. Joints are moderately spaced, moderately dipping, undulating, rough, discolored, tight to moderately wide. Rock Mass Quality = Fair Recovery = 100% Rock Core Times (min:sec): 49.7-50.7' (1:28), 50.7-51.7' (1:22), 51.7-52.7' (1:29), 52.7-53.7' (1:35), 53.7-54.7' (1:29)	
								-90.2		54.7 **Bottom of Exploration at 54.7 feet below ground surface.**	
55											
60											
65											
70											
75											

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125310, E1500800). Ground surface/mudline elevation measured 52.5' below the top of bridge deck.
4. OC = Organic Content results from laboratory testing.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-104
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-31.5	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/11/19-6/11/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 9+15, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/6	0.0 - 2.0	2-2-2-2	4	6	PUSH		Black, wet, very loose, fine to coarse SAND, some gravel, little silt, with shells and organics, (Harbor Bottom Sand). Sample 1D was taken with a 3" spoon.	G#17 A-1-b, SM WC=42.2
								-35.3	3.8	
5	2D	24/15	5.5 - 7.5	8-2-WOH-WOH	2	3			Grey, wet, soft, Silty CLAY, some sand, with shells, (Marine Clay).	
10	3D	24/24	10.5 - 12.5	WOR-WOR-WOR-WOR	-				Grey, wet, very soft, Silty CLAY, trace sand (Marine Clay).	A-6, CL LL=37 PL=21 PI=16 WC=41.5
15	4D	24/8	15.5 - 17.5	6-1-1-13	2	3		-47.0	15.5	
	MV1		16.1 - 16.1						Grey, wet, very loose, Sandy GRAVEL, little silt, (Sand).	G#19 A-1-b, GM WC=8.1
	R1	70/60	18.8 - 24.6	RQD = 58%			NQ	-50.3	18.8	
20									Practical refusal at 18.8' during roller cone advancement. Advance 3" casing to 18.8' and set up to core. Core advancement began at 18.8'. Recovery began at 19.6', indicating probable highly weathered rock from 18.8'-19.6'. R1: Hard, slightly weathered, fine to medium grained, grey/white, SCHIST. Primary joints are close to moderately spaced, low angle, undulating, rough, discolored, open to moderately wide. Secondary joints are close to moderately spaced, moderately dipping, planar to undulating, rough, fresh to discolored, open. Rock Mass Quality = Fair Recovery = 100% Rock Core Times (min:sec): 19.6-20.6' (1:14), 20.6-21.6' (1:37), 21.6-	
25	R2	38/38	24.6 - 27.8	RQD = 42%				-56.1		

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125266, E1500766). Ground surface/mudline elevation measured 48.5' below the top of bridge deck.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-104
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-31.5	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/11/19-6/11/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 9+15, 7' RT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25										22.6' (2:07), 22.6-23.6' (1:30), 23.6-24.6' (1:14)	
										24.6	
								-58.2		R2: Hard, slightly weathered, coarse grained, grey/white/tan, PEGMATITE. Hard, slightly weathered, medium grained, grey/blue, SCHIST from 26.7'-27.8'. Joints are close to moderately spaced, low angle, undulating, rough, partially open to open, discolored. Highly fractured zone from 24.6'-24.9' and 26.7'-27.8'.	
	R3	55/55	27.8 - 32.4	RQD = 73%				-59.3		Rock Mass Quality = Poor Recovery = 84% Rock Core Times (min:sec): 24.6-25.6' (1:14), 25.6-26.6' (0:55), 26.6-27.3' (0:33)	
30										26.7	
										27.8	
								-62.6		R3: Hard, slightly weathered, coarse grained, grey/white/pink, PEGMATITE. Hard, slightly weathered, medium grained, grey/blue, SCHIST from 31.1'-32.4'. Joints are very close to moderately spaced, low to high angle, undulating, rough, discolored, open to moderately wide.	
								-63.9		Rock Mass Quality = Fair Recovery = 100% Rock Core Times (min:sec): 27.8-28.8' (0:26), 28.8-29.8' (1:39), 29.8-30.8' (1:37), 30.8-33.0' (0:26)	
35										31.1	
										32.4	
										Bottom of Exploration at 32.4 feet below ground surface.	
40											
45											
50											

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125266, E1500766). Ground surface/mudline elevation measured 48.5' below the top of bridge deck.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-105
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-28.0	**Auger ID/OD:**	4.25" SSA
Operator:	B. Enos / D. Shane	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	M. Walsh	**Rig Type:**	Track Mounted	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/13/19-6/13/19	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NQ
Boring Location:	Sta. 9+31, 8' LT	**Casing ID/OD:**	4/4.5", 3/3.5"	**Water Level*:**	River
Hammer Efficiency Factor:	0.895	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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MD = Unsuccessful Split Spoon Sample Attempt
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V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/3	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH		Grey, wet, very loose, Silty fine to medium SAND, with organics and shells, (Harbor Bottom Sand).	
5	2D	14/6	6.0 - 7.2	WOH-WOH-75/2"	-				Grey, wet, fine to coarse SAND, some silt, with shells and organics, (Harbor Bottom Sand).	G#20 A-2-4, 5.4 WC=23.3
							NQ	-35.2	7.2 — Split spoon refusal at 7.2'. Advance roller cone and 3" casing to 8.0', set up to core.	
	R1	60/60	8.0 - 13.0	RQD = 87%					R1: Hard, slightly weathered, coarse grained, white/grey/tan, PEGMATITE. Joints are close to moderately spaced, moderately dipping, undulating, rough, discolored, open to moderately wide. Rock Mass Quality = Good Recovery = 100% Rock Core Times (min:sec): 8.0-9.0' (1:50), 9.0-10.0' (1:10), 10.0-11.0' (0:56), 11.0-12.0' (0:52), 12.0-13.0' (1:10)	
10										
	R2	60/60	13.0 - 18.0	RQD = 65%					R2: 13.0'-15.8': Hard, slightly weathered, coarse grained, white/grey/tan, PEGMATITE. Joints are close to moderately spaced, moderately dipping to high angle, undulating, rough, discolored, open to moderately wide.	
15								-43.8	15.8 — R2: 15.8'-18.0': Hard, slightly weathered, medium grained, white/grey/tan, SCHIST. Rock Mass Quality = Fair Recovery = 100%	
								-46.0	Rock Core Times (min:sec): 13.0-14.0' (1:17), 14.0-15.0' (1:00), 15.0-16.0' (0:59), 16.0-17.0' (0:52), 17.0-18.0' (1:00)	
20									18.0 — **Bottom of Exploration at 18.0 feet below ground surface.**	
25										

Remarks:

1. Automatic hammer NEBC #D23 Energy Transfer Ratio = 0.895.
2. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limits test if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
3. The as-drilled location was measured from existing structural elements (N125244, E1500767). Ground surface/mudline elevation measured 45.0' below the top of bridge deck.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-201
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	17.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/12/20-11/12/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 5+47, 2' RT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	20.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/12	0.5 - 2.5	20-20-14-9	34	48	RC	16.5	0'-0.5': Asphalt 0.5 Brown, dry, dense, fine to coarse SAND, some gravel, little silt, (Fill).	
	2D	24/9	4.0 - 6.0	8-7-6-6	13	18			Brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (Fill).	G#22 A-2-4, SM WC=13.9
5										
	3D	24/13	9.0 - 11.0	2-3-4-3	7	10			Brown, wet, stiff, Silty CLAY, little fine to medium sand, (Fill).	G#23 A-4, ML WC=28.1
10										
								4.0	13.0	
	4D	24/6	14.0 - 16.0	8-5-3-4	8	11			Brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (Glacial Till).	
15										
	5D	17/8	19.0 - 20.4	5-17-100/4"	R		NX	-2.3	Top 4": Gray/black, wet, fine to coarse SAND, little silt, (Glacial Till). 19.3	
20	R1	60/44	20.5 - 25.5	RQD = 22%					Bottom 4": Black, wet, GRAVEL, some fine to coarse sand, little silt, with shells,(Weathered Bedrock). Splitspoon refusal at 20.4'. Advanced 4" casing and roller cone to 20.5' and set up to core. R1: Hard, fresh, aphanitic, grey, SCHIST. Joints are extremely close to moderately spaced, horizontal to vertical, undulating, rough, fresh to decomposed, moderately wide. Rock Quality = Very Poor Recovery = 74% Rock Core Times (min:sec): 20.5-21.5' (2:08), 21.5-22.5' (2:36), 22.5-23.5' (2:37), 23.5-24.5' (2:40), 24.5-25.5' (2:04)	
25										

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125559, E1500989). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-201
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	17.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/12/20-11/12/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 5+47, 2' RT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	20.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25								-8.5		25.5 **Bottom of Exploration at 25.5 feet below ground surface.**	
30											
35											
40											
45											
50											

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125559, E1500989). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-202
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	16.5'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/11/20-11/11/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 6+24, 1' LT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	14.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							RC	15.7	0'-0.8': Asphalt (0.8)	
	1D	24/9	1.8 - 3.8	8-8-9-3	17	24			Black/brown, moist, medium dense, fine to coarse SAND, some gravel, little silt, (Fill).	
	2D	24/10	4.0 - 6.0	1-2-1-2	3	4		12.5	(4.0) Brown, wet, medium stiff, Silty CLAY, little sand, trace gravel, (Fill).	
5										
	3D	24/24	9.0 - 11.0	3-3-2-2	5	7			Brown, wet, medium stiff, Silty CLAY, little fine to coarse sand, (Fill).	A-6, CL LL=33 PL=17 PI=16 WC=28.1
10										
	4D	24/9	14.0 - 16.0	8-15-14-10	29	41		2.4	Top 1": Brown, wet, Silty CLAY, little fine to coarse sand, (Fill). (14.1) Bottom 8": Brown, wet, dense, fine to coarse SAND, some silt, little gravel, (Glacial Till).	
15										
	5D	24/11	19.0 - 21.0	13-68-10-10	78	109			Brown, wet, very dense, Sandy GRAVEL, trace silt, (Glacial Till).	G#24 A-1-a, GP-GM WC=9.6
20										
25	6D	24/8	24.0 - 26.0	5-7-12-5	19	27			Grey/brown, wet, medium dense, medium to coarse SAND, trace gravel, trace silt, (Glacial Till).	

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125490, E1500952). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-202
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	16.5'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/11/20-11/11/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 6+24, 1' LT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	14.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25											
	R1	60/50	27.0 - 32.0	RQD = 62%			NX	-10.5		27.0 Casing refusal at 27.0'. Advance roller cone to 27.0' and set up to core. R1: Very hard, coarse grained, grey/rust, PEGMATITE. Joints are extremely close to moderately spaced, horizontal to moderately dipping, undulating, rough, fresh to decomposed, partially open to moderately wide. Rock Quality = Fair Recovery = 83% Rock Core Times (min:sec): 27.0-28.0' (3:34), 28.0-29.0' (3:11), 29.0-30.0' (4:29), 30.0-31.0' (3:34), 31.0-32.0' (4:32) R2: Very Hard, coarse grained, grey/rust, PEGMATITE. Joints are very close to moderately spaced, horizontal to moderately dipping, undulating, rough, fresh to discolored, open. Rock Quality = Poor Recovery = 62% Rock Core Times (min:sec): 32.0-33.0' (2:05), 33.0-34.0' (3:29), 34.0-35.0' (2:55), 35.0-36.0' (4:56), 36.0-37.0' (5:50)	
30											
	R2	60/37	32.0 - 37.0	RQD = 43%							
35								-20.5		37.0 **Bottom of Exploration at 37.0 feet below ground surface.**	
40											
45											
50											

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125490, E1500952). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-203
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-42.0	**Auger ID/OD:**	
Operator:	S. Cooley	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	B. Woodman	**Rig Type:**	Barge-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	7/27/21-7/27/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 7+4, 70' RT	**Casing ID/OD:**	4"	**Water Level*:**	Tidal
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

Definitions:
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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/12	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH		Grey, wet, very loose, fine to medium SAND, little silt, with shells and organics, (Harbor Bottom Sand).	
5	2D	24/6	5.0 - 7.0	2-2-WOR-WOR	-				Grey, wet, very loose, fine to medium SAND, little silt, with shells and organics, (Harbor Bottom Sand).	
10	3D	24/24	10.0 - 12.0	WOR-WOR-WOR-WOR	-			-52.2	Top 2": Grey, wet, very loose, Silty SAND, with shells and organics, (Harbor Bottom Sand).	
									10.2	
									Bottom 22": Grey, wet, very soft, Silty CLAY, (Marine Clay).	
15	U1	24/24	15.0 - 17.0						Grey, Silty CLAY, little sand, (Marine Clay).	
	V1		17.0 - 17.4	S_u = 137/55					65x130 mm vane raw torque readings: V1: 5/2 ft-lbs	
	V2		17.6 - 18.0	S_u = 275/110					V2: 10/4 ft-lbs	
								-61.0	19.0	
							RC		Increase in resistance during roller cone advancement at 19.0' and sand observed in wash return indicates strata change (Sand).	
20							NX	-62.0	20.0	
	R1	60/57	21.5 - 26.5	RQD = 80%					Increase in resistance during roller cone advancement at 20.0' and rock chips observed in wash return indicate probable top of rock at 20.0'. Advanced 3" casing to 21.5' and set up to core. R1: Hard, fresh, fine to medium grained, grey/white/black, SCHIST. Joints are close to widely spaced, low angle to moderately dipping, undulating, rough, fresh to discolored, open. Rock Quality = Good Recovery = 90% Rock Core Times (min:sec): 21.5-22.5' (3:04), 22.5-23.5' (2:30), 23.5-	
25										

Remarks:

1. Mudline elevation measured relative to the tidal board surveyed by MaineDOT.
2. Boring locations were surveyed by MaineDOT (N125436, E1500819).
3. Field vanes consisted of Geonor rectangular vanes with a rod diameter of 65mm. Raw torque readings were converted to undrained shear strength.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-203
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-42.0	**Auger ID/OD:**	
Operator:	S. Cooley	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	B. Woodman	**Rig Type:**	Barge-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	7/27/21-7/27/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 7+4, 70' RT	**Casing ID/OD:**	4"	**Water Level*:**	Tidal
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

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SSA = Solid Stem Auger
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WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
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S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25										24.5' (2:30), 24.5-25.5' (2:11), 25.5-26.5' (2:21)	
	R2	57/57	26.5 - 31.3	RQD = 100%						R2: hard, fresh, fine to medium grained, grey/white/black, SCHIST. Joints are widely spaced, low angle to moderately dipping, undulating, rough, discolored, open. Rock Quality = Excellent Recovery = 100% Rock Core Times (min:sec): 26.5-27.5' (2:15), 27.5-28.5' (2:42), 28.5-29.5' (2:36), 29.5-30.5' (2:56), 30.5-31.3' (2:50)	
30								-73.3		31.3	
										Bottom of Exploration at 31.3 feet below ground surface.	
35											
40											
45											
50											

Remarks:

1. Mudline elevation measured relative to the tidal board surveyed by MaineDOT.
2. Boring locations were surveyed by MaineDOT (N125436, E1500819).
3. Field vanes consisted of Geonor rectangular vanes with a rod diameter of 65mm. Raw torque readings were converted to undrained shear strength.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-204
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-41.0	**Auger ID/OD:**	
Operator:	S. Cooley	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	B. Woodman	**Rig Type:**	Barge-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	7/28/21-7/28/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 8+31, 79' LT	**Casing ID/OD:**	4"/3.0"	**Water Level*:**	Tidal
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
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N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
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WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/13	0.0 - 2.0	WOR-WOR-WOR-WOR	-		PUSH			Grey, wet, very loose, fine to coarse SAND, little silt, with shells and organics, (Harbor Bottom Sand).	
5	2D	24/4	5.0 - 7.0	WOH-WOH-WOH-WOH	-					Grey, wet, very loose, fine to medium SAND, some silt, with shells and organics, (Harbor Bottom Sand).	
10	3D	24/24	10.0 - 12.0	WOR-WOR-WOR-WOR	-			-51.0		10.0 Grey, wet, very soft, Silty CLAY, little sand, trace shells, (Marine Clay).	
	V1		12.6 - 13.0	S_u = 217/63						65x130mm vane raw torque readings: V1: 95/28 in-lbs	
	V2		13.6 - 14.0	S_u = 195/47						V2: 85/20 in-lbs	
15	U1	24/24	15.0 - 17.0							Grey, wet, Silty CLAY, (Marine Clay).	
	V3		17.6 - 18.0	S_u = 184/36						65x130mm vane raw torque readings: V3: 80/15 in-lbs	
	V4		18.6 - 19.0	S_u = 228/47						V4: 100/20 in-lbs	
20	4D	24/24	20.0 - 22.0	Push thru vane	-					Grey, wet, very soft, Silty CLAY, (Marine Clay).	
	V5		20.6 - 21.0	S_u = 137/47						65x130mm vane raw torque readings: V5: 60/20 in-lbs	
	V6		21.6 - 22.0	S_u = 217/69						V6: 95/30 in-lbs	
25											

Remarks:

1. Mudline elevation measured relative to the tidal board surveyed by MaineDOT.
2. Boring locations were surveyed by MaineDOT (N125279, E1500885).
3. Field vanes consisted of Geonor rectangular vanes with a rod diameter of 65mm. Raw torque readings were converted to undrained shear strength.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-204
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	-41.0	**Auger ID/OD:**	
Operator:	S. Cooley	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	B. Woodman	**Rig Type:**	Barge-Mounted Mobile Drill	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	7/28/21-7/28/21	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 8+31, 79' LT	**Casing ID/OD:**	4"/3.0"	**Water Level*:**	Tidal
Hammer Efficiency Factor:	0.6	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☒		

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MD = Unsuccessful Split Spoon Sample Attempt
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MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25	U2	24/24	25.0 - 27.0							Grey, wet, Silty CLAY, (Marine Clay).	
	V7		27.6 - 28.0	S_u = 228/69	-					65x130mm vane raw torque readings: V7: 100/30 in-lbs	
	V8		28.6 - 29.0	S_u = 286/58	-					V8: 125/25 in-lbs	
								-70.0		29.0	
30	5D	24/9	30.0 - 32.0	2-1-8-23	9	9				Increase in resistance during roller cone advancement indicates probable strata change at 29.0'. Grey, wet, fine to coarse SAND, little gravel, little silt, (Sand).	
35							NX	-76.0		35.0	
	R1	60/49	36.0 - 41.0	RQD = 80%						Increased resistance during roller cone advancement at 35.0' indicates probable top of rock. Advanced 3" casing to 36.0' and set up to core. R1: Hard, fresh, fine to medium grained, grey/white/black, SCHIST. Joints are widely spaced, moderately dipping, undulating, rough, discolored, open. Rock Quality = Good Recovery = 82% Rock Core Times (min:sec): 36.0-37.0' (2:52), 37.0-38.0' (1:48), 38.0-39.0' (2:24), 39.0-40.0' (2:15), 40.0-41.0' (2:10)	
40								-82.0		41.0	
										Bottom of Exploration at 41.0 feet below ground surface.	
45											
50											

Remarks:

1. Mudline elevation measured relative to the tidal board surveyed by MaineDOT.
2. Boring locations were surveyed by MaineDOT (N125279, E1500885).
3. Field vanes consisted of Geonor rectangular vanes with a rod diameter of 65mm. Raw torque readings were converted to undrained shear strength.
4. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-205
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	17.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/11/20-11/11/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 10+13, 0' --	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	8.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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MD = Unsuccessful Split Spoon Sample Attempt
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MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/8	0.5 - 2.5	14-10-8-3	18	25		16.5	0'-0.5': Asphalt 0.5 Tan/brown, moist, medium dense, fine to coarse SAND, some gravel, trace silt, (Fill).	G#25 A-1-a, SP-SM WC=7.8
	2D	24/16	4.0 - 6.0	1-2-2-2	4	6			Brown, wet, medium stiff, Silty CLAY, trace fine sand, (Fill).	A-6, CL LL=34 PL=19 PI=15 WC=31.1
5								9.0	8.0	
	R1	60/59	8.5 - 13.5	RQD = 75%			NX		Casing refusal at 8.0'. Advanced roller cone to 8.5' and set up to core. R1: Very hard, fresh, medium to coarse grained, black/grey/orange, PEGMATITE. Joints are very close to moderately spaced, horizontal to moderately dipping, undulating, rough, fresh to discolored, tight to moderately wide. Rock Quality = Fair Recovery = 98% Rock Core Times (min:sec): 8.5-9.5' (2:33), 9.5-10.5' (2:36), 10.5-11.5' (2:33), 11.5-12.5' (2:30), 12.5-13.5 (2:50)	
10										
	R2	60/57	13.5 - 18.5	RQD = 85%					R2: Hard, coarse grained, black/grey, PEGMATITE. Hard, fine grained, grey/blue, SCHIST from 17.0- 18.1'. Joints are very close to moderately spaced, horizontal to moderately dipping, undulating, rough, fresh to discolored, tight to moderately wide. Rock Quality = Good Recovery = 95% Rock Core Times (min:sec): 13.5-14.5' (2:20), 14.4-15.5' (2:03), 15.5-16.5' (1:54), 16.5-17.5' (1:58), 17.5-18.5' (2:26)	
15								0.0	17.0	
								-1.5	18.5	
20									**Bottom of Exploration at 18.5 feet below ground surface.**	
25										

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125182, E1500709). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-206
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	17.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/10/20-11/10/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 10+56, 11' RT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	14.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/19	0.6 - 2.6	27-19-15-12	34	48	RC	16.4	0'-0.6': Asphalt 0.6 Top 7": Brown to grey, dry, fine to coarse SAND, some gravel, little silt, (Fill). Middle 1": Asphalt Bottom 8": Brown, dry, fine to coarse SAND, little gravel, trace silt, (Fill).	
	2D	24/15	4.0 - 6.0	2-2-1-2	3	4		13.0	4.0 Brown, wet, medium stiff, Silty CLAY, little sand, (Fill).	
5										
	3D	24/14	9.0 - 11.0	1-WOH-8-13	8	11			Top 6": Brown, wet, Silty CLAY, little sand, (Fill).	
10								6.5	10.5 Bottom 6": Black, wet, fine to coarse SAND, some gravel, some silt, trace organic silt, (Harbor Bottom Sand).	
	4D	24/18	14.0 - 16.0	1-4-5-7	9	13		2.8	Top 2": Grey, wet, Silty fine to coarse SAND, some gravel, (Harbor Bottom Sand).	
15									14.2 Bottom 14": Grey, wet, stiff, Silty CLAY, trace organic fibers, (Marine Clay).	
	5D	24/20	19.0 - 21.0	4-8-7-8	15	21			Grey, wet, very stiff, Silty CLAY, trace fine sand, (Marine Clay).	A-7, CL LL=43 PL=20 PI=23 WC=24.3
20										
							NX	-6.5	23.5 Casing refusal at 24.0'. Roller cone advanced to 24.0' and set up to core.	
25	R1	60/51	24.0 - 29.0	RQD = 72%					R1: Very hard, fresh, fine to medium grained, black/grey/white	

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125153, E1500678). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: BB-SBTG-206
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	17.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/10/20-11/10/20	**Drilling Method:**	Drive & Wash	**Core Barrel:**	NX
Boring Location:	Sta. 10+56, 11' RT	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	14.0'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140 lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
25										banded, SCHIST. Joints are very close to moderately spaced, horizontal to moderately dipping, undulating, rough discolored, partially open to moderately wide. Rock Quality = Fair Recovery = 85% Rock Core Times (min:sec): 24.0-25.0' (1:56), 25.0-26.0' (2:09), 26.0-27.0' (2:25), 27.0-28.0' (3:30), 28.0-29.0' (4:30)	
								-12.0		29.0 **Bottom of Exploration at 29.0 feet below ground surface.**	
30											
35											
40											
45											
50											

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N125153, E1500678). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RB-SBTG-201
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	49.0'	**Auger ID/OD:**	
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N126556, E1501263	**Casing ID/OD:**	4"/4.5"	**Water Level*:**	Not Encountered
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/13	0.6 - 2.6	14-14-11-9	25	35	HSA	48.4		0'-0.6': Asphalt (0.6)	
								47.6		Top 9": Black/brown, dry, medium dense, fine to coarse SAND, some silt, trace gravel, (Fill). (1.4)	G#28 A-1-b, SP-SM WC=4.0
								46.0		Bottom 4": Grey/white/tan, dry, fine to coarse SAND, some gravel, trace silt, (Glacial Till). Auger refusal at 3.0' indicates probable bedrock. (3.0)	
5										**Bottom of Exploration at 3.0 feet below ground surface.**	
10											
15											
20											
25											

Remarks:

1. NEBC Automatic hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N126556, E1501263). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RB-SBTG-202
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	12.0'	**Auger ID/OD:**	4/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	Standard Splitspoon
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	11/10/20-11/10/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N124672, E1500290	**Casing ID/OD:**		**Water Level*:**	11.5'
Hammer Efficiency Factor:	0.84	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

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MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	1D	24/10	0.8 - 2.8	26-14-8-6	22	31	HSA	11.2	0'-0.8': Asphalt (0.8)	
									Top 6": Brown, dry, medium dense, fine to coarse SAND, little gravel, little silt. Bottom 4": Brown, moist, stiff, Silty CLAY, trace sand, (Fill).	
	2D	24/22	4.0 - 6.0	3-7-9-14	16	22			Brown, moist, very stiff, Silty CLAY, (Fill).	A-7, CL LL=42 PL=21 PI=21 WC=23.4
5								4.5	(7.5)	
	3D	24/17	9.0 - 11.0	10-24-29-12	53	74			Brown, moist, very dense, fine to medium SAND, some silt, trace gravel, (Glacial Till).	G#30 A-2-4, SM WC=11.4
10									Auger refusal at 13.0' indicates probable bedrock.	
								-1.0	(13.0) **Bottom of Exploration at 13.0 feet below ground surface.**	
15										
20										
25										

Remarks:

1. NEBC Automatic Hammer serial #27015 Energy Transfer Ratio = 84%
2. The as-drilled location was measured from existing structural elements (N124672, E1500290). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
3. Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterburg Limit tests if available, rather than the MaineDOT Standard based percentages passing specific grain sizes.
4. Water level measured after approximately 10 minutes of stabilization time with casing in place.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-201

WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	47.0'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N126442, E1501094	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:	N/A	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	46.2		0'-0.8': Asphalt — 0.8	
										Brown/tan, dry, fine to coarse SAND, trace gravel, grace silt, (Fill).	
										4.0'-5.5': Gravel Fill	
5										5.5'-10.5': Brown, moist, SILT & CLAY.	
10								36.5		Auger refusal at 10.5' indicates probable bedrock. — 10.5	
										Bottom of Exploration at 10.5 feet below ground surface.	
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N126442, E1501094). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-202

WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	58.0'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N126225, E1501058	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:	N/A	**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	57.3		0'-0.7': Asphalt (0.7)	
										0.7'-5.5': Brown/tan, dry, fine to coarse SAND, trace gravel, trace silt, (Fill).	
5								52.5		Auger refusal at 5.5' indicates probable bedrock. (5.5)	
										Bottom of Exploration at 5.5 feet below ground surface.	
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N126225, E1501058). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: RP-SBTG-202

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-203

WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	51.0'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N126066, E1501048	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	50.3		0'-0.7': Asphalt (0.7)	
										0.7'-2.5': Brown, dry, fine to coarse SAND, some gravel, trace silt, (Fill). Auger refusal at 2.5' indicates probable bedrock.	
								48.5		(2.5) **Bottom of Exploration at 2.5 feet below ground surface.**	
5											
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N126066, E1501048). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.
3. Offset 5.0' and set up to Probe RP-SBTG-203A.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Boring No.: RP-SBTG-203

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-203A

WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	49.5'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N126057, E1501030	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	48.8		0'-0.7': Asphalt (0.7)	
								47.5		0.7'-2.0': Brown, dry, fine to coarse SAND, some gravel, some silt, (Fill). Auger refusal at 2.0' indicates probable bedrock. (2.0)	
										Bottom of Exploration at 2.0 feet below ground surface.	
5											
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N126057, E1501030). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-204

WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	34.0'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N125861, E1500981	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	33.3		0'-0.7': Asphalt (0.7)	
										0.7'-4.0': Brown, dry, gravelly fine to coarse SAND, trace silt, (Fill). Auger refusal at 5.0' indicates probable bedrock.	
5								29.0		4.0'-5.0': Brown, dry, fine to medium SAND, trace gravel, little silt, (Fill). Auger refusal at 5.0' indicates probable bedrock. (5.0)	
										Bottom of Exploration at 5.0 feet below ground surface.	
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N125861, E1500981). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-205
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	18.5'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/9/20-11/9/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	Sta. 4+47, 5' LT	**Casing ID/OD:**		**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	17.8		0'-0.7': Asphalt (0.7)	
										0.7'-4.5': Brown, dry, gravelly fine to coarse SAND, trace silt, (Fill).	
								14.0		Auger refusal at 4.5' indicates probable bedrock. (4.5)	
5										**Bottom of Exploration at 4.5 feet below ground surface.**	
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N125653, E1501018). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-206
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	15.0'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/10/20-11/10/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	Sta. 12+78, 4' LT	**Casing ID/OD:**	N/A	**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	14.2		0'-0.8': Asphalt (0.8)	
										0.8'-4.0': Brown, dry, fine to coarse SAND and GRAVEL, (Fill).	
								11.0		(4.0)	
5										4.0'-15.0': Brown, moist, SILT & CLAY, some fine sand, (Marine Clay).	
10											
										Auger refusal at 15.0' indicates probable bedrock.	
15								0.0		(15.0) **Bottom of Exploration at 15.0 feet below ground surface.**	
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N124946, E1500597). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Southport Bridge No. 2789
Route 27 over Townsend Gut
Location: Southport - Boothbay Harbor, Maine

Boring No.: RP-SBTG-207
WIN: 21751.00

Driller:	New England Boring Contractors	**Elevation (ft.)**	12.5'	**Auger ID/OD:**	4"/4.5"
Operator:	P. Schofield	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	E. Tome	**Rig Type:**	Truck-Mounted Mobile Drill B-48	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	11/10/20-11/10/20	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	N124820, E1500485	**Casing ID/OD:**	N/A	**Water Level*:**	Not Encountered
Hammer Efficiency Factor:		**Hammer Type:**	Automatic ☐ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample Attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample Attempt
V = Field Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Field Vane Shear Test Attempt
R = Rock Core Sample
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RC = Roller Cone
WOH = Weight of 140lb. Hammer
WOR/C = Weight of Rods or Casing
WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
$S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw Field SPT N-value
Hammer Efficiency Factor = Rig Specific Annual Calibration Value
N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
T_v = Pocket Torvane Shear Strength (psf)
WC = Water Content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							HSA	11.7		0'-0.8': Asphalt (0.8)	
										0.8'-5.0': Brown, dry, fine to coarse SAND and GRAVEL, (Fill). (5.0)	
5								7.5		5.0'-6.0': Brown, moist, SILT & CLAY, little fine to coarse sand, (Marine Clay). (6.0)	
								6.5		6.0'-7.5': Brown, dry, fine to coarse SAND, trace gravel, trace silt, (Sand).	
								5.0		Auger refusal at 7.5' indicates probable bedrock. (7.5)	
										Bottom of Exploration at 7.5 feet below ground surface.	
10											
15											
20											
25											

Remarks:

1. The as-drilled location was measured from existing structural elements (N124820, E1500485). Elevation was interpolated from existing contours and estimated to the nearest 0.5'.
2. Soil descriptions are based on soil recovered from auger flights.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

APPENDIX D – ROCK CORE PHOTOGRAPHS

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)			Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-101	R1	16.6	-	21.6	60	100	43	72	SCHIST	1
BB-SBTG-101	R2	21.6	-	22.7	13.2	100	13.2	100	SCHIST	2
BB-SBTG-101	R3	22.7	-	27.7	60	100	48	80	SCHIST	2,3

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 4=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-102	R1	53.6 - 58.6	60	100	59	98	SCHIST	1

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 4=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-103	R1	49.7 - 54.7	60	100	45	75	SCHIST	1

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 3=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-104	R1	19.6 - 24.6	60	100	41	68	SCHIST	1
BB-SBTG-104	R2	24.6 - 27.8	38.4	100	16	42	SCHIST, PEGMATITE	2
BB-SBTG-104	R3	27.8 - 32.4	55.2	100	40	73	SCHIST, PEGMATITE	2,3

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 3=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-105	R1	8.0 - 13.0	60	100	52	80	PEGMATITE	1
BB-SBTG-105	R2	13.0 - 18.0	60	100	39	65	PEGMATITE/SCHIST	2

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 4=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-202	R1	27.0 - 32.0	50	83	37	62	PEGMATITE	1
BB-SBTG-202	R2	32.0 - 37.0	37	62	26	43	PEGMATITE	2
BB-SBTG-201	R1	20.5 - 25.5	44	74	13	22	SCHIST	3

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 3=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-203	R1	21.5 - 26.5	57	90	48	80	SCHIST	1
BB-SBTG-203	R2	26.5 - 31.3	57	100	57	100	SCHIST	2
BB-SBTG-204	R1	36.0 - 41.0	49	82	48	80	SCHIST	3

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 3=Bottom.
2. Top photo is dry, bottom photo is wet.

Southport Bridge No. 2789 Repairs
Route 27 over Townsend Gut
Southport, ME
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB-SBTG-206	R1	24.0 - 29.0	51	85	43	72	SCHIST	1
BB-SBTG-205	R1	8.5 - 13.5	59	98	44	75	PEGMATITE	2
BB-SBTG-205	R2	13.5 - 18.5	57	95	51	85	PEGMATITE /SCHIST	3

Notes: 1. Box row corresponds to the core box section in which the rock core sample is contained; Row 1=Top, Row 3=Bottom.
2. Top photo is dry, bottom photo is wet.

APPENDIX E – LABORATORY TEST RESULTS

THIELSCH ENGINEERING	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 thielsch.com *Let's Build a Solid Foundation*	Client Information: GZA GeoEnvironmental Portland, ME PM: NVW Assigned By: NVW Collected By: MW	Project Information: **Southport Bridge #2789** **Southport, ME** GZA Project Number: 09.0025999.00 Summary Page: 1 of 2 Report Date: 07.05.19

LABORATORY TESTING DATA SHEET

Boring	Sample No.	Depth (ft)	Laboratory No.	Identification Tests								Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Received Water Content %	LL %	PL %	Gravel %	Sand %	Fines %	Org. %	G_s	Dry unit wt. pcf	Test Water Content %	γ_d MAX (pcf) / W_{opt} (%)	γ_d MAX (pcf) / W_{opt} (%) (Corr.)	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Perme-ability cm/sec	
				D2216	D4318		D6913			D2874	D854			D1557						
BB-SBTG-101	1D	0-2	S-1	67.8			36.4	53.2	10.4	2.8										Dark Brown Gravelly fine to coarse SAND, little Silt
BB-SBTG-101	4D	14.5-16.5	S-2	16.4			15.2	56.1	28.7											Gray f-c SAND, some Silt, little fine Gravel
BB-SBTG-102	3D	11-13	S-3	53.6																Water Content only
BB-SBTG-102	4D	17-19	S-4	60.4	41	21														Gray Silty CLAY
BB-SBTG-102	6D	27-29	S-5	42.8																Water Content only
BB-SBTG-102	7D	32-34	S-6	41.9	36	21														Gray Silty CLAY
BB-SBTG-102	8D	37-39	S-7	37.9																Water Content only
BB-SBTG-102	9D	42-44	S-8	26.2	22	16														Gray Clayey SILT
BB-SBTG-102	10D	45-47	S-9	6.5			6.6	43.5	49.9											Gray Sandy Clayey SILT, trace fine Gravel
BB-SBTG-102	11D	50-52	S-10	11.6			0.0	53.3	46.7											Gray Silty fine to coarse SAND
BB-SBTG-103	1D	0-2	S-11	61.1						6.4										Organic Content Only
BB-SBTG-103	3D	11-13	S-12	53.4			0.0	53.4	46.6	2.2										Dark Gray Silty fine to coarse SAND

Date Received *06.24.19* Reviewed By: Sth Date Reviewed: *07.09.19*

THIELSCH ENGINEERING	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 thielsch.com *Let's Build a Solid Foundation*	Client Information: GZA GeoEnvironmental Portland, ME PM: NVW Assigned By: NVW Collected By: MW	Project Information: **Southport Bridge #2789** **Southport, ME** GZA Project Number: 09.0025999.00 Summary Page: 2 of 2 Report Date: 07.05.19

LABORATORY TESTING DATA SHEET

Boring	Sample No.	Depth (ft)	Laboratory No.	Identification Tests								Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Received Water Content %	LL %	PL %	Gravel %	Sand %	Fines %	Org. %	G_s	Dry unit wt. pcf	Test Water Content %	γ_d MAX (pcf) / W_{opt} (%)	γ_d MAX (pcf) / W_{opt} (%) (Corr.)	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Perme-ability cm/sec	
				D2216	D4318		D6913			D2874	D854			D1557						
BB-SBTG-103	4D	16-18	S-13	37.7																Water Content only
BB-SBTG-103	5D	26-28	S-14	42.9	38	21														Gray Silty CLAY
BB-SBTG-103	7D	36-38	S-15	40.9																Water Content only
BB-SBTG-103	9D	45-47	S-16	13.5			0.0	83.0	17.0											Gray f-c SAND, little Silt
BB-SBTG-104	1D	0-2	S-17	42.2			27.2	60.0	12.8	3.0										Brown f-c SAND, some f-c Gravel, little Silt
BB-SBTG-104	3D	10.5-12.5	S-18	41.5	37	21														Gray Silty CLAY
BB-SBTG-104	4D	15.5-17.5	S-19	8.1			47.1	37.0	15.9											Gray Sandy fine to coarse GRAVEL, little Silt
BB-SBTG-105	2D	6-7.2	S-20	23.3			0.0	72.1	27.9											Brown f-c SAND, some Silt

Date Received *06.24.19* Reviewed By: Date Reviewed: *07.09.19*

THIELSCH ENGINEERING

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Southport Bridge #2789

MDOT Project Number:

GZA Project Number: 09.0025999.00

Town(s): Southport, ME

Boring & Sample Identification Number	Station (Feet)	Sample No.	Depth (Feet)	Lab Number	Organic %	W.C.	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
BB-SBTG-101		1D	0-2	S-1	2.8	67.8			SP-SM	A-1-a	II
BB-SBTG-101		4D	14.5-16.5	S-2		16.4			SM	A-2-4(0)	II
BB-SBTG-102		3D	11-13	S-3		53.6					
BB-SBTG-102		4D	17-19	S-4		60.4	41	20	CL	A-7	III
BB-SBTG-102		6D	27-29	S-5		42.8					
BB-SBTG-102		7D	32-34	S-6		41.9	36	15	CL	A-6	III
BB-SBTG-102		8D	37-39	S-7		37.9					
BB-SBTG-102		9D	42-44	S-8		26.2	22	6	CL-ML	A-4	IV
BB-SBTG-102		10D	45-47	S-9		6.5			SC-SM	A-4(0)	III
BB-SBTG-102		11D	50-52	S-10		11.6			SC	A-4(0)	III
BB-SBTG-103		1D	0-2	S-11	6.4	61.1					
BB-SBTG-103		3D	11-13	S-12	2.2	53.4			SM	A-4(0)	III
BB-SBTG-103		4D	16-18	S-13		37.7					
BB-SBTG-103		5D	26-28	S-14		42.9	38	17	CL	A-6	III
BB-SBTG-103		7D	36-38	S-15		40.9					
BB-SBTG-103		9D	45-47	S-16		13.5			SM	A-1-b	II
BB-SBTG-104		1D	0-2	S-17	3.0	42.2			SM	A-1-b	II
BB-SBTG-104		3D	10.5-12.5	S-18		41.5	37	16	CL	A-6	III
BB-SBTG-104		4D	15.5-17.5	S-19		8.05			GM	A-1-b	I
BB-SBTG-105		2D	6-7.2	S-20		23.3			SM	A-2-4(0)	II

Classification of these soil samples is in accordance with AASHTO Classification System M-145-40. This classification is followed by the "Frost Susceptibility Rating" from zero (non-frost susceptible) to Class IV (highly frost susceptible). The "Frost Susceptibility Rating" is based upon the MDOT and Corps of Engineers Classification Systems.

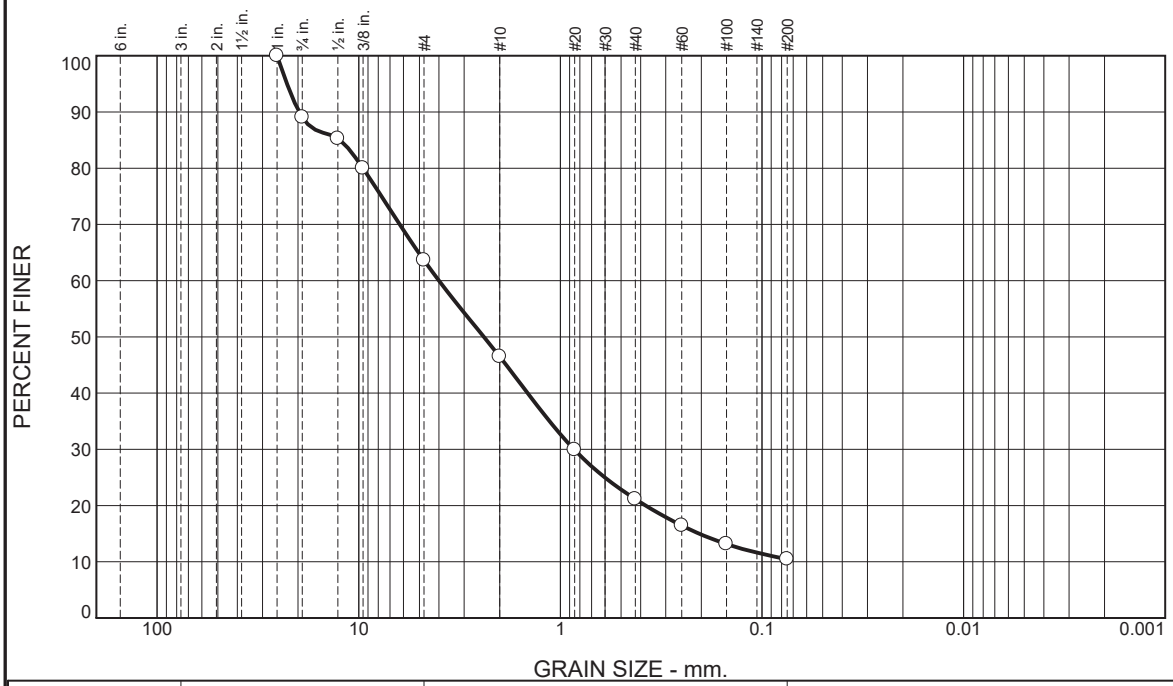
GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

WC = water content as determined by AASHTO T 265-93 and/or ASTM D 2216-98

LL = Liquid limit as determined by AASHTO T 89-96 and/or ASTM D 4318-98

PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.9	25.5	17.1	25.3	10.8	10.4	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	89.1		
0.5"	85.3		
0.375"	80.0		
#4	63.6		
#10	46.5		
#20	29.9		
#40	21.2		
#60	16.4		
#100	13.1		
#200	10.4		

* (no specification provided)

Material Description

Dark Brown Gravelly fine to coarse SAND, little Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-1-a

Coefficients

D_{90}= 19.7327 D_{85}= 12.3906 D_{60}= 4.0021
D_{50}= 2.3950 D_{30}= 0.8555 D_{15}= 0.2046
D_{10}= C_u= C_c=

Remarks

Unable to run hydrometer test due to insufficent material smaller than 0.425mm.

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

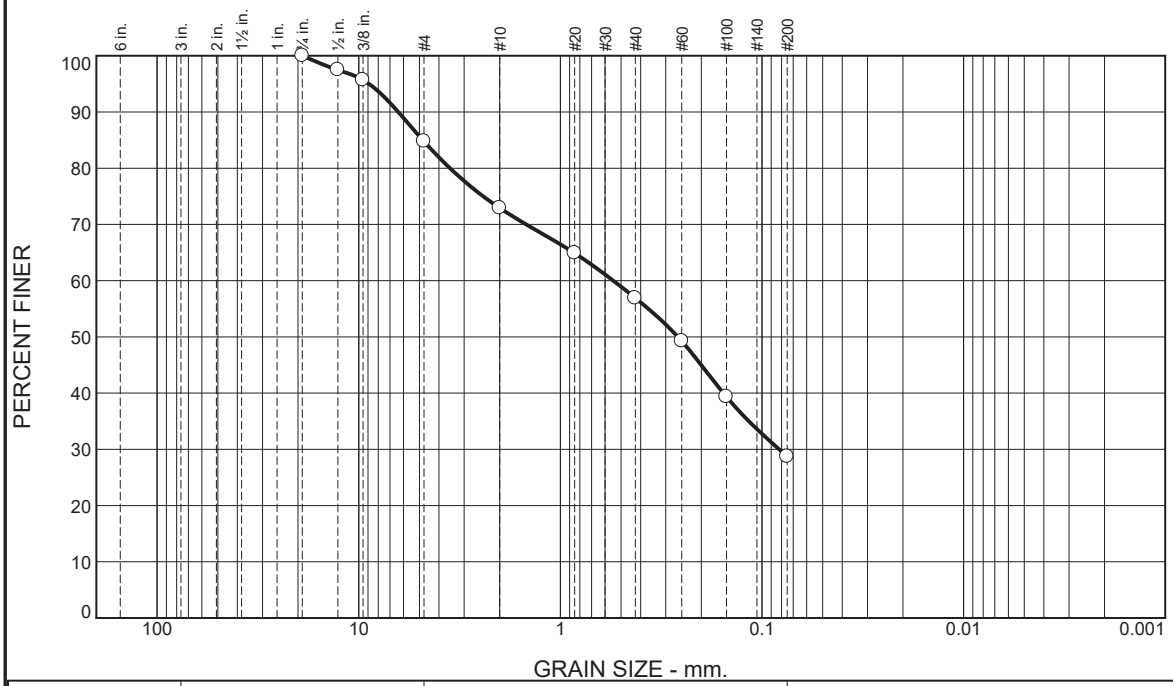
Source of Sample: BB-SBTG-101 **Depth:** 0-2' **Date Sampled:**
Sample Number: 1D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-1

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.2	11.9	16.0	28.2	28.7	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
0.5"	97.5		
0.375"	95.7		
#4	84.8		
#10	72.9		
#20	64.9		
#40	56.9		
#60	49.2		
#100	39.3		
#200	28.7		

* (no specification provided)

Material Description

Gray f-c SAND, some Silt, little fine Gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 6.3599 D_{85}= 4.8131 D_{60}= 0.5464
D_{50}= 0.2612 D_{30}= 0.0823 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

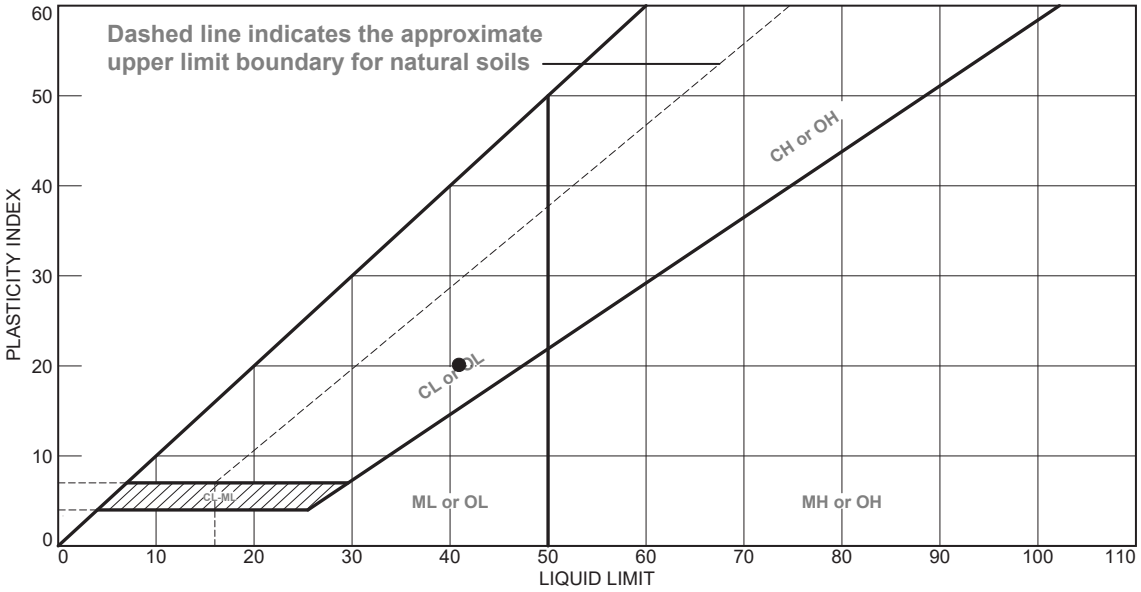
Source of Sample: BB-SBTG-101 **Depth:** 14.5-16.5' **Date Sampled:**
Sample Number: 4D

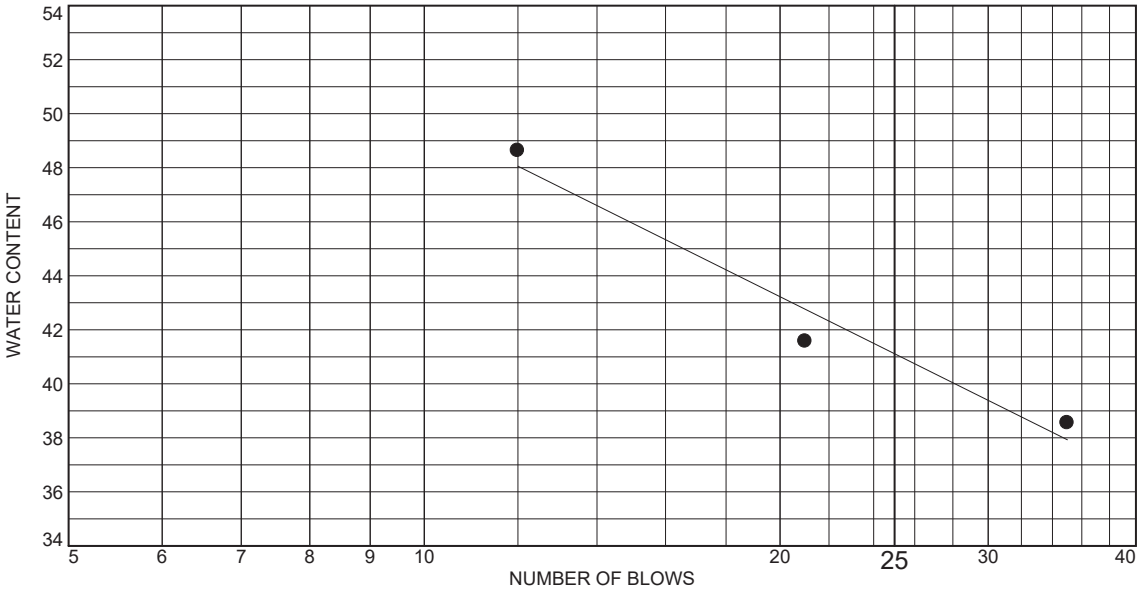
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-2

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Silty CLAY	41	21	20			

Project No. 09.0025999.00 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-102 **Depth:** 17-19'

Sample Number: 4D

Remarks:

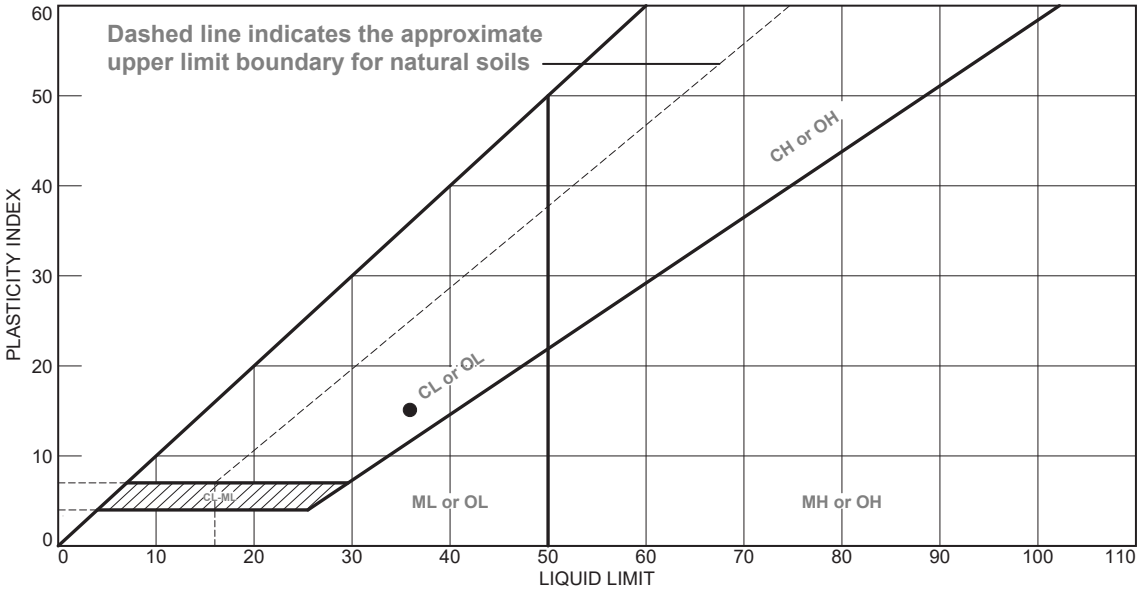
Thielsch Engineering Inc.

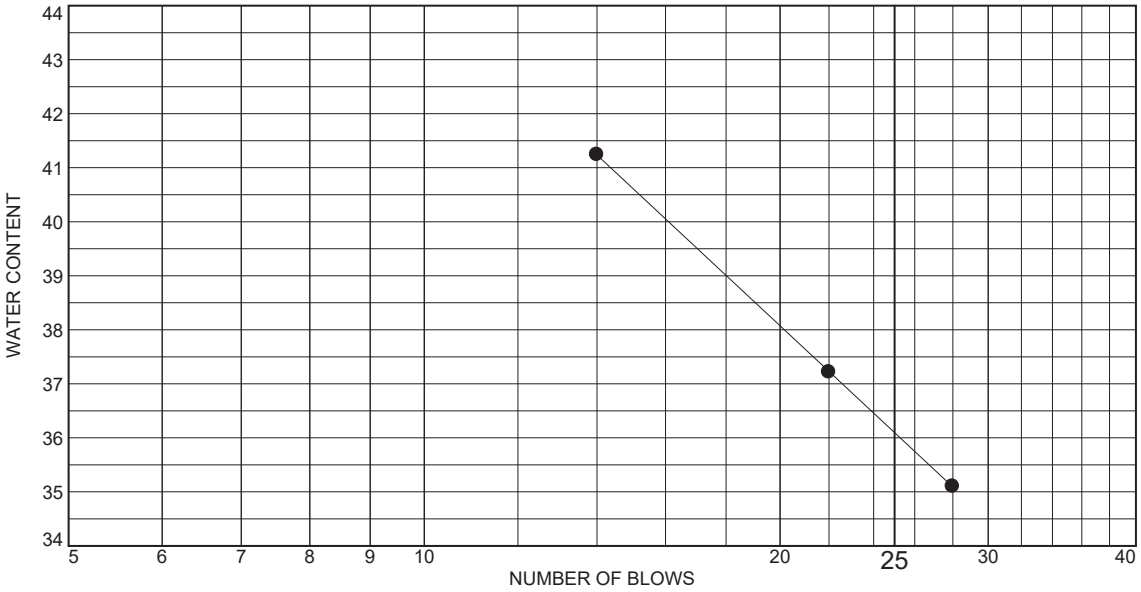
Cranston, RI

Figure L-4

Tested By: PB **Checked By:** RR

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Silty CLAY	36	21	15			

Project No. 09.0025999.00 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-102 **Depth:** 32-34'

Sample Number: 7D

Remarks:

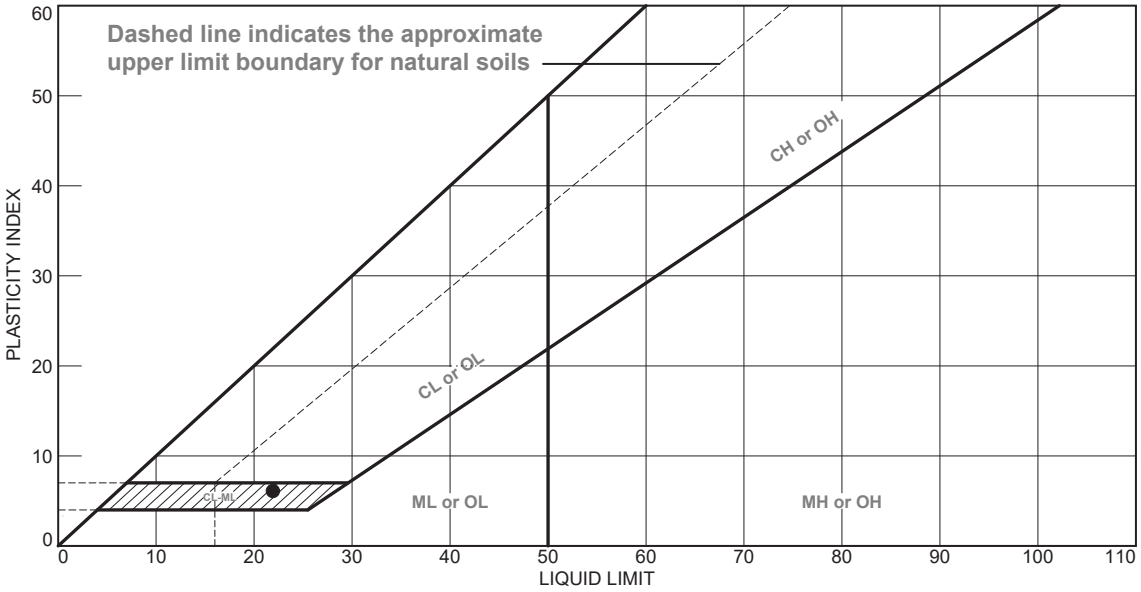
Thielsch Engineering Inc.

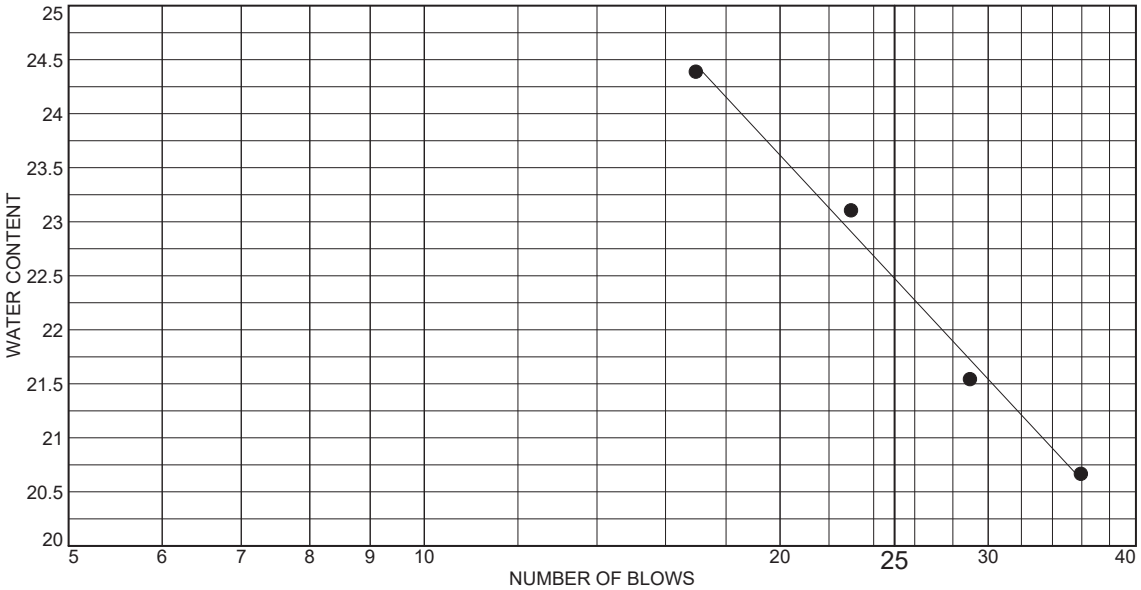
Cranston, RI

Figure L-6

Tested By: PB **Checked By:** RR

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Clayey SILT	22	16	6			

Project No. 09.0025999.00 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-102 **Depth:** 42-44'

Sample Number: 9D

Remarks:

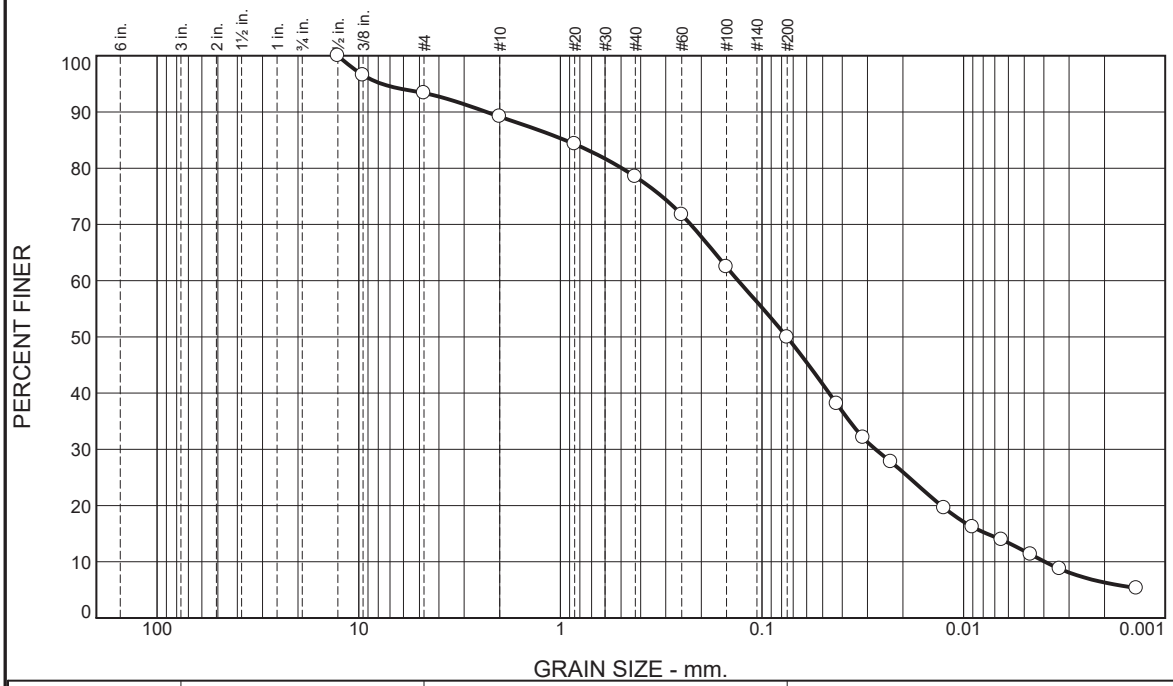
Thielsch Engineering Inc.

Cranston, RI

Figure L-8

Tested By: PB **Checked By:** RR

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.6	4.2	10.7	28.6	43.6	6.3

Test Results (D7928 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.5"	100.0		
0.375"	96.6		
#4	93.4		
#10	89.2		
#20	84.3		
#40	78.5		
#60	71.7		
#100	62.4		
#200	49.9		
0.0425 mm.	38.1		
0.0315 mm.	32.1		
0.0229 mm.	27.8		
0.0125 mm.	19.6		
0.0090 mm.	16.2		
0.0065 mm.	13.9		
0.0046 mm.	11.3		
0.0033 mm.	8.7		
0.0014 mm.	5.3		

* (no specification provided)

Material Description

Gray Sandy Clayey SILT, trace fine Gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SC-SM **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 2.3226 D_{85}= 0.9471 D_{60}= 0.1312
D_{50}= 0.0753 D_{30}= 0.0274 D_{15}= 0.0077
D_{10}= 0.0039 C_u= 33.22 C_c= 1.45

Remarks

Sample visually classified as plastic. Sample rolled to 1/4".

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Steven Accetta

Title: Laboratory Coordinator

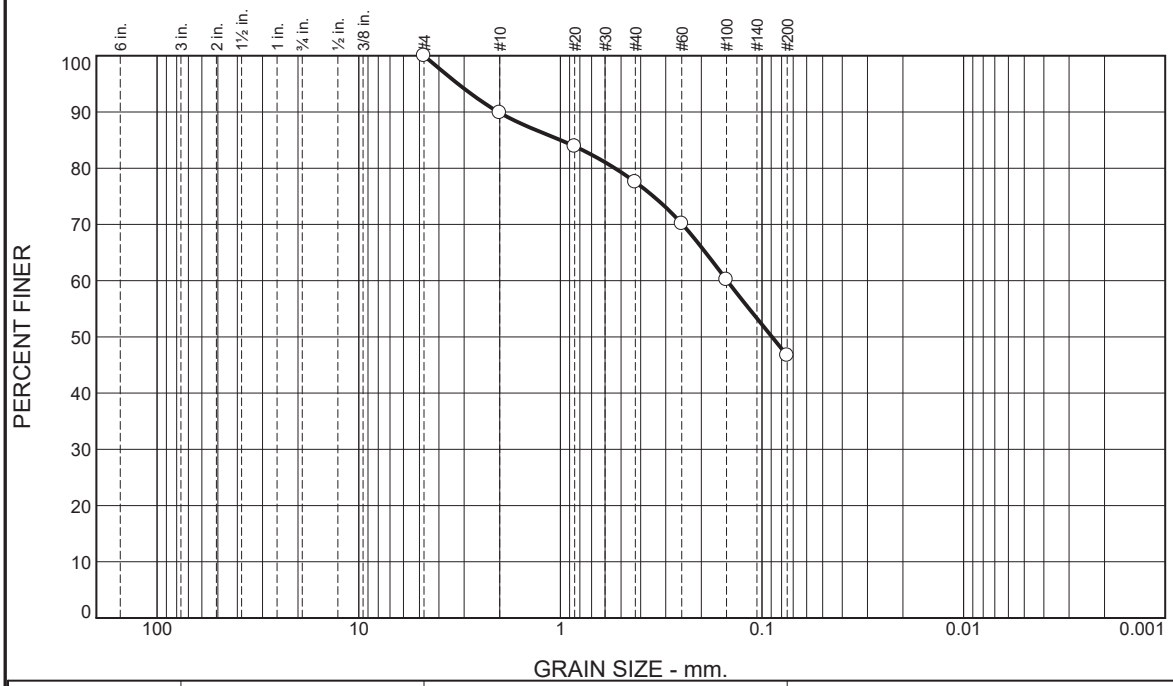
Source of Sample: BB-SBTG-102 **Depth:** 45-47' **Date Sampled:**
Sample Number: 10D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-9

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	10.1	12.4	30.8	46.7	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	89.9		
#20	83.9		
#40	77.5		
#60	70.1		
#100	60.1		
#200	46.7		

* (no specification provided)

Material Description

Gray Silty fine to coarse SAND

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SC **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 2.0273 D_{85}= 0.9984 D_{60}= 0.1489
D_{50}= 0.0892 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample visually classified as plastic. Sample rolled to 1/8".

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

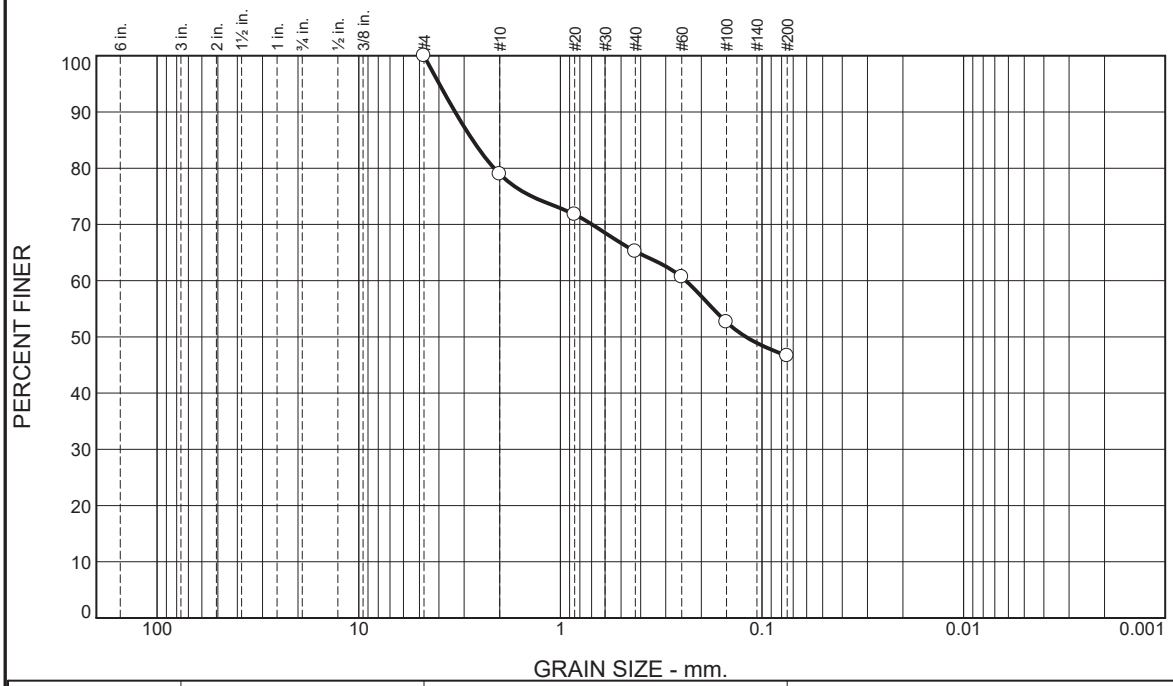
Source of Sample: BB-SBTG-102 **Depth:** 50-52' **Date Sampled:**
Sample Number: 11D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-10

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	21.0	13.8	18.6	46.6	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	79.0		
#20	71.8		
#40	65.2		
#60	60.6		
#100	52.6		
#200	46.6		

* (no specification provided)

Material Description

Dark Gray Silty fine to coarse SAND

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 3.3243 D_{85}= 2.7213 D_{60}= 0.2386
D_{50}= 0.1200 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample visually classified as non-plastic.

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

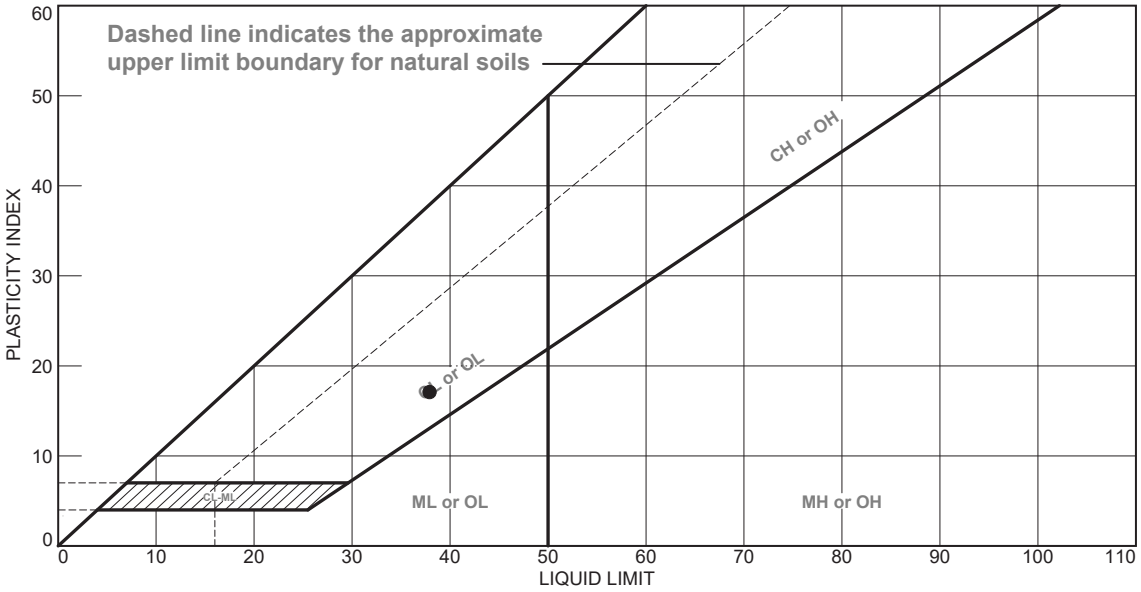
Source of Sample: BB-SBTG-103 **Depth:** 11-13' **Date Sampled:**
Sample Number: 3D

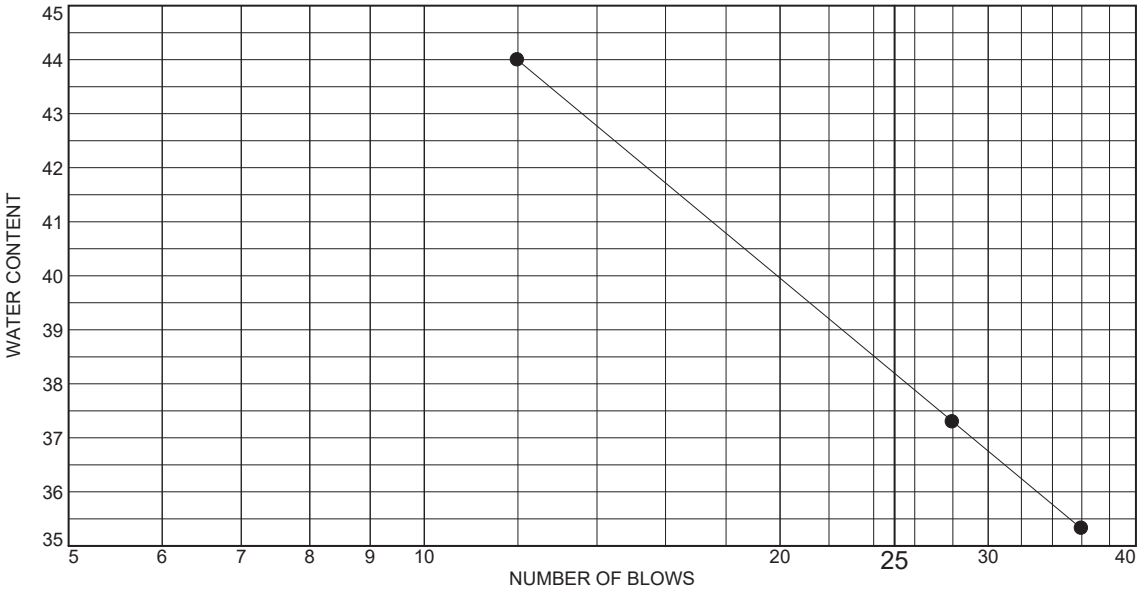
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-12

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Silty CLAY	38	21	17			

Project No. 09.0025999.00 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-103 **Depth:** 26-28'

Sample Number: 5D

Remarks:

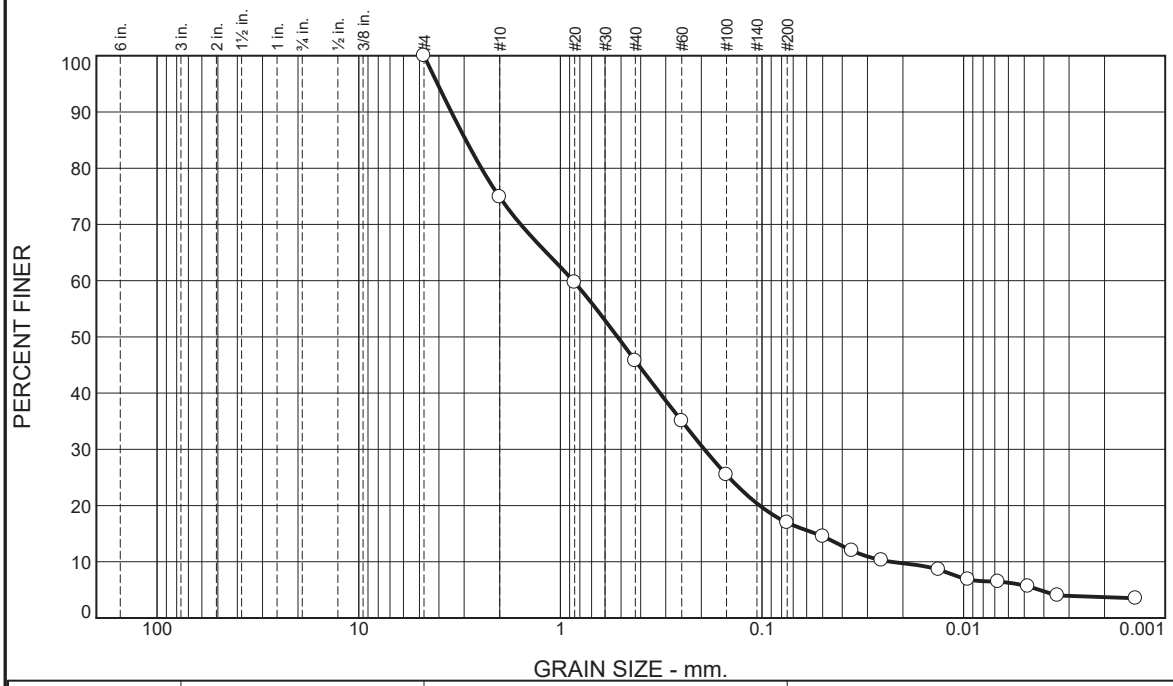
Thielsch Engineering Inc.

Cranston, RI

Figure L-14

Tested By: PB **Checked By:** RR

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	25.1	29.1	28.8	13.3	3.7

Test Results (D7928 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	74.9		
#20	59.7		
#40	45.8		
#60	35.0		
#100	25.5		
#200	17.0		
0.0498 mm.	14.5		
0.0358 mm.	12.0		
0.0255 mm.	10.3		
0.0133 mm.	8.6		
0.0095 mm.	6.9		
0.0067 mm.	6.5		
0.0048 mm.	5.6		
0.0034 mm.	4.0		
0.0014 mm.	3.5		

* (no specification provided)

Material Description

Gray f-c SAND, little Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 3.4715 D_{85}= 2.9425 D_{60}= 0.8657
D_{50}= 0.5207 D_{30}= 0.1931 D_{15}= 0.0539
D_{10}= 0.0229 C_u= 37.81 C_c= 1.88

Remarks

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

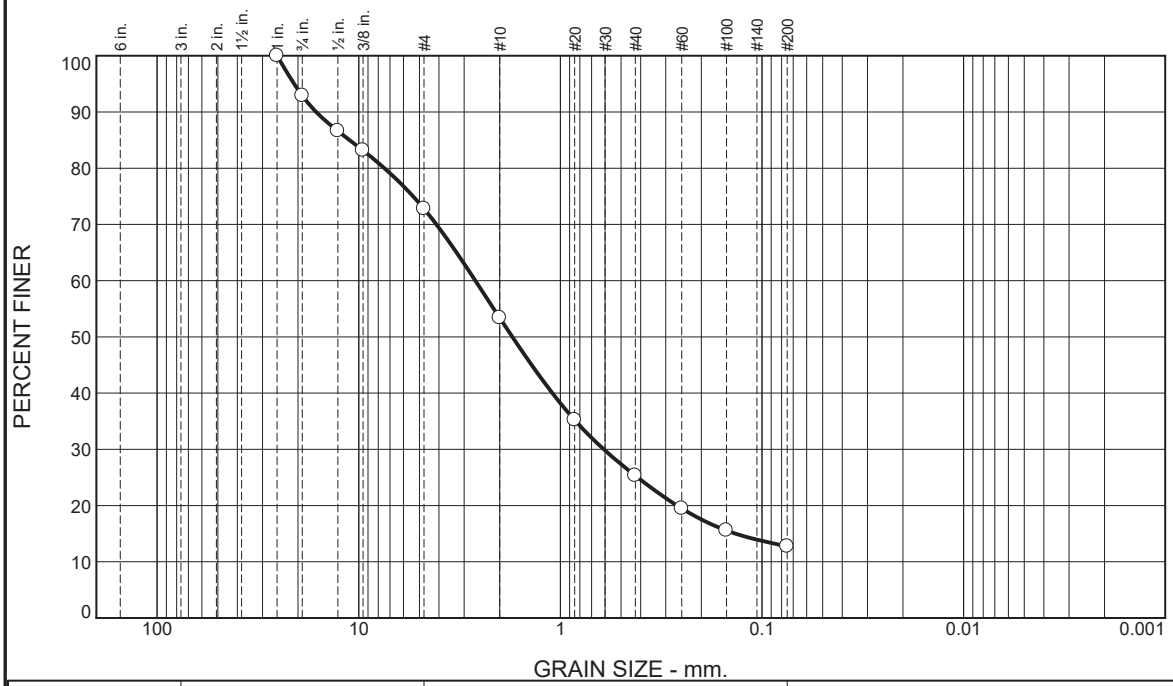
Source of Sample: BB-SBTG-103 **Depth:** 45-47' **Date Sampled:**
Sample Number: 9D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-16

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.1	20.1	19.4	28.1	12.5	12.8	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	92.9		
0.5"	86.6		
0.375"	83.2		
#4	72.8		
#10	53.4		
#20	35.2		
#40	25.3		
#60	19.5		
#100	15.6		
#200	12.8		

* (no specification provided)

Material Description

Brown f-c SAND, some f-c Gravel, little Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 16.2558 D_{85}= 11.0955 D_{60}= 2.6382
D_{50}= 1.7307 D_{30}= 0.6086 D_{15}= 0.1350
D_{10}= C_u= C_c=

Remarks

Unable to run hydrometer test due to insufficent material smaller than 0.425mm.

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

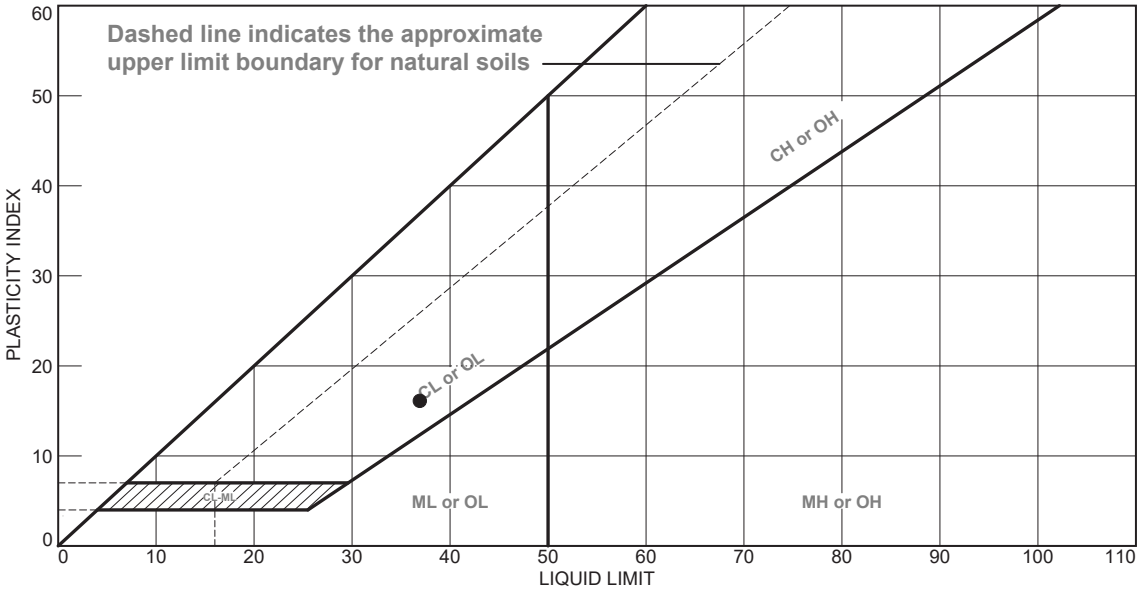
Source of Sample: BB-SBTG-104 **Depth:** 0-2' **Date Sampled:**
Sample Number: 1D

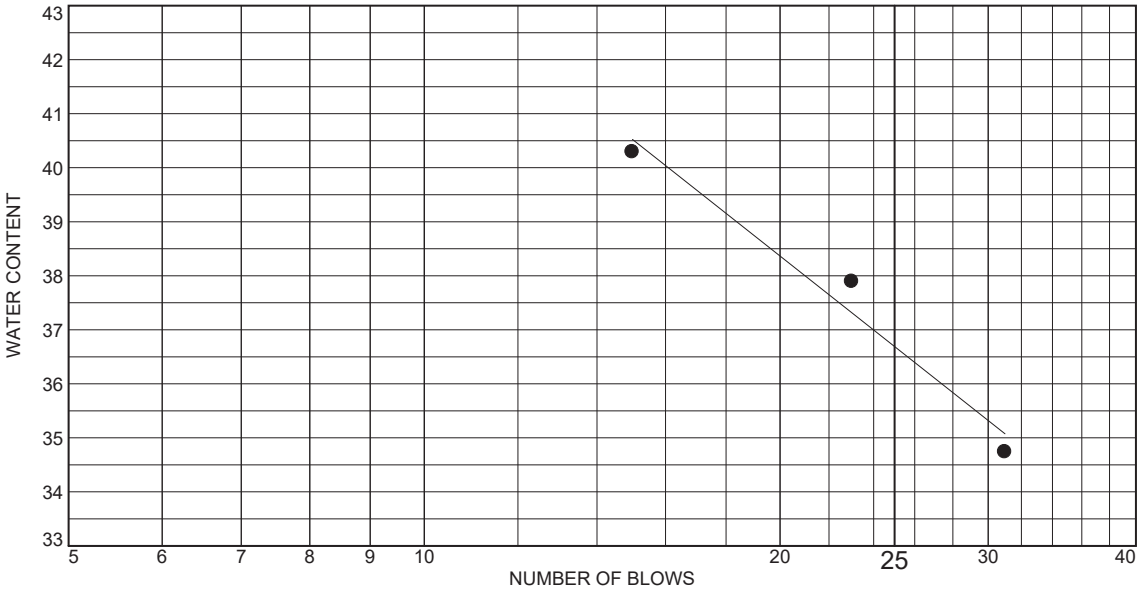
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-17

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Silty CLAY	37	21	16			

Project No. 09.0025999.00 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-104 **Depth:** 10.5-12.5'

Sample Number: 3D

Remarks:

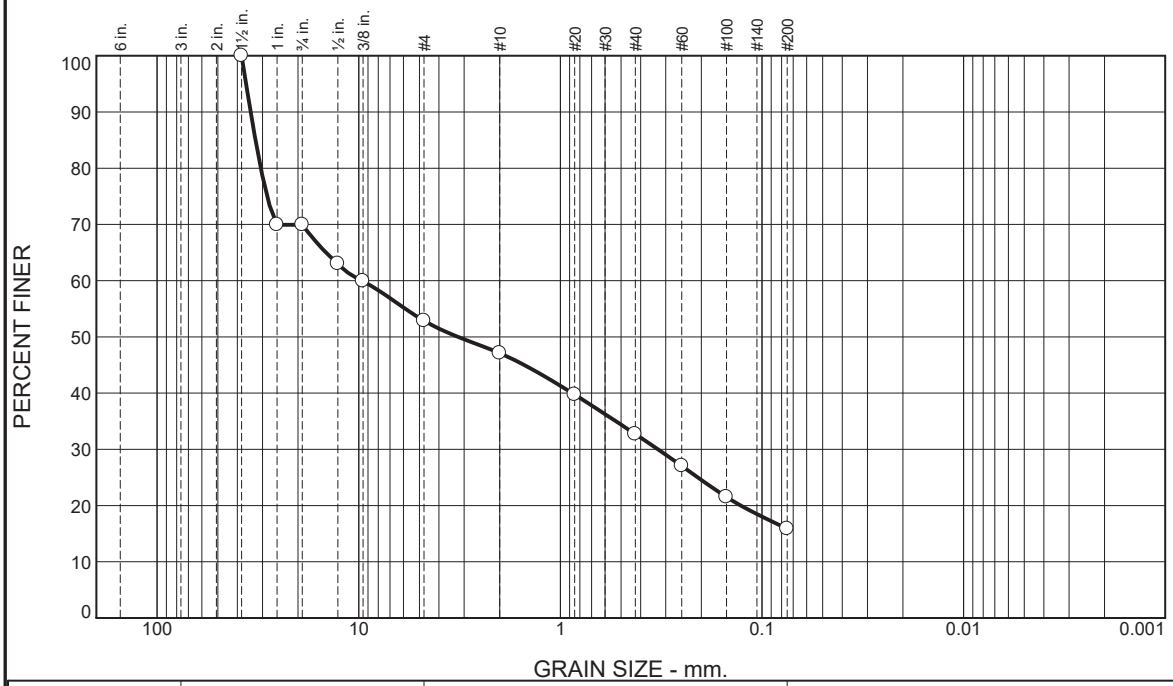
Thielsch Engineering Inc.

Cranston, RI

Figure L-18

Tested By: PB **Checked By:** RR

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	30.1	17.0	5.8	14.4	16.8	15.9	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1-1/2"	100.0		
1"	69.9		
3/4"	69.9		
1/2"	63.0		
3/8"	59.9		
#4	52.9		
#10	47.1		
#20	39.7		
#40	32.7		
#60	27.1		
#100	21.5		
#200	15.9		

* (no specification provided)

Material Description

Gray Sandy fine to coarse GRAVEL, little Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= GM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 34.3541 D_{85}= 32.5082 D_{60}= 9.6281
D_{50}= 3.2144 D_{30}= 0.3283 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

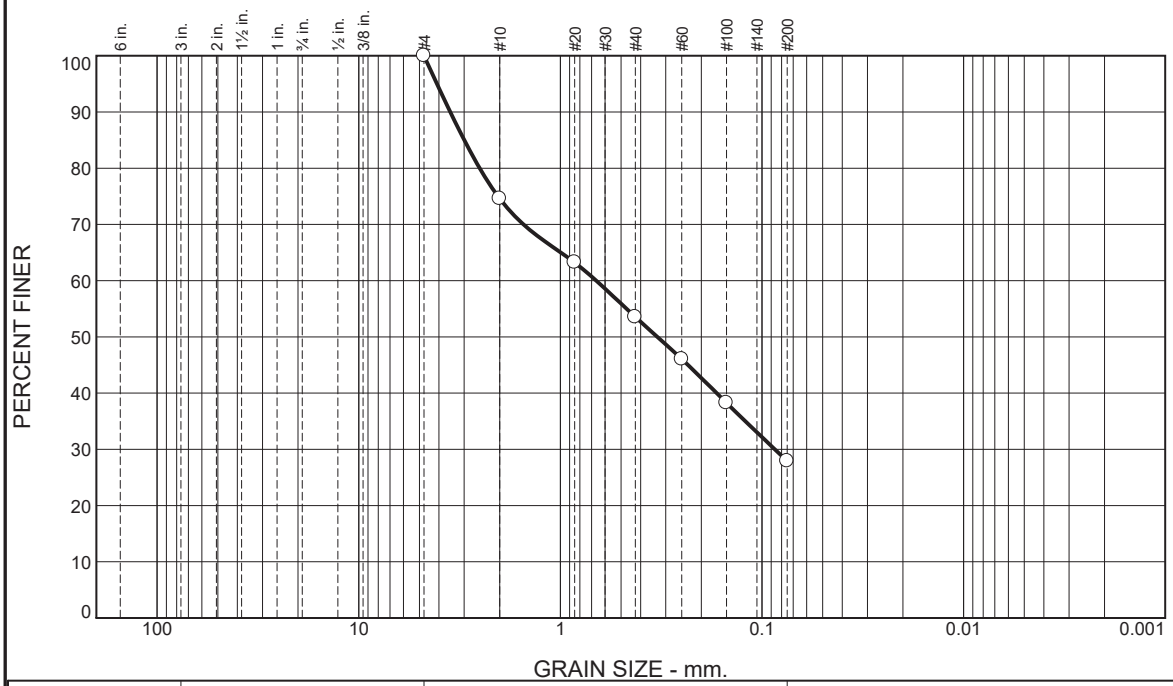
Source of Sample: BB-SBTG-104 **Depth:** 15.5-17.5' **Date Sampled:**
Sample Number: 4D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-19

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	25.4	21.1	25.6	27.9	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	74.6		
#20	63.2		
#40	53.5		
#60	46.1		
#100	38.3		
#200	27.9		

* (no specification provided)

Material Description

Brown f-c SAND, some Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 3.5165 D_{85}= 2.9955 D_{60}= 0.6635
D_{50}= 0.3303 D_{30}= 0.0864 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 06.24.19 **Date Tested:** 07.03.19

Tested By: MN / JM

Checked By: Rebecca Roth

Title: Laboratory Coordinator

Source of Sample: BB-SBTG-105 **Depth:** 6-7.2' **Date Sampled:**
Sample Number: 2D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.00 **Figure** S-20

THIELSCH ENGINEERING	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 thielsch.com *Let's Build a Solid Foundation*	Client Information: GZA GeoEnvironmental South Portland, ME PM: NVM Assigned By: NVM Collected By: ET	Project Information: **Sourthport Bridge #2789, WIN 21751.00** **Southport, ME** GZA Project Number: 09.0025999.01 Summary Page: 1 of 1 Report Date: 08.16.22

LABORATORY TESTING DATA SHEET, Report No.: 7421-K-160 R1

Boring No.	Sample No.	Depth (ft)	Laboratory No.	Identification Tests								Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Received Moisture Content %	LL %	PL %	Gravel %	Sand %	Fines %	Org. %	G_s	Dry unit wt. pcf	Test Moisture Content %	γ_d MAX (pcf) / W_{opt} (%)	γ_d MAX (pcf) / W_{opt} (%) (Corr.)	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318		D6913			D2974	D854			D1557						
BB-SBTG-201	2D	4-6	S-21	13.9			6.1	64.2	29.7											Brown f-c SAND, some Silt, trace f-c Gravel
BB-SBTG-201	3D	9-11	S-22				0.0	10.3	89.7											Brown Clayey SILT, little f-m Sand
BB-SBTG-202	3D	9-11	S-23	28.1	33	17														Brown Silty CLAY
BB-SBTG-202	5D	19-21	S-24	9.6			50.8	41.8	7.4											Brown Sandy fine to coarse GRAVEL, trace Silt
BB-SBTG-205	1D	0.5-2.5	S-25	7.8			34.1	56.1	9.8											Brown f-c SAND, some fine Gravel, trace Silt
BB-SBTG-205	2D	4-6	S-26	31.1	34	19														Brown Silty CLAY
BB-SBTG-206	5D	19-21	S-27	24.3	43	20														Gray Silty CLAY
RB-SBTG-201	1D	0.6-2.6 Top 9"	S-28	4.0			24.9	63.8	11.3											Brown f-c SAND, some fine Gravel, little Silt
RB-SBTG-202	2D	4-6	S-29	23.4	42	21														Brown Silty CLAY
RB-SBTG-202	3D	9-11	S-30	11.4			9.7	66.4	23.9											Brown f-m SAND, some Silt, trace fine Gravel

Date Received: *10.18.21* Reviewed By: Date Reviewed: *08.16.22*

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THIELSCH ENGINEERING

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Southport Bridge #2789, WIN 21751.00

MDOT Project Number:

GZA Project Number: 09.0025999.01

Town(s): Southport, ME

Boring & Sample Identification Number	Station (Feet)	Sample No.	Depth (Feet)	Lab Number	Organic %	W.C.	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
BB-SBTG-201		2D	47-6	S-21		13.9			SM	A-2-4(0)	III
BB-SBTG-201		3D	9-11	S-22					ML	A-4(0)	IV
BB-SBTG-202		3D	9-11	S-23		28.1	33	16	CL	A-6	III
BB-SBTG-202		5D	19-21	S-24		9.6			GP-GM	A-1-a	I
BB-SBTG-205		1D	0.5-2.5	S-25		7.8			SP-SM	A-1-b	II
BB-SBTG-205		2D	4-6	S-26		31.1	34	15	CL	A-6	III
BB-SBTG-206		5D	1-21	S-27		24.3	43	23	CL	A-7	III
RB-SBTG-201		1D	0.6-2.6	S-28		4.0			SP-SM	A-1-b	II
RB-SBTG-202		2D	4-6	S-29		23.4	42	21	CL	A-7	III
RB-SBTG-202		3D	9-11	S-30		11.4			SM	A-2-4(0)	II

Classification of these soil samples is in accordance with AASHTO Classification System M-145-40. This classification is followed by the "Frost Susceptibility Rating" from zero (non-frost susceptible) to Class IV (highly frost susceptible). The "Frost Susceptibility Rating" is based upon the MDOT and Corps of Engineers Classification Systems.

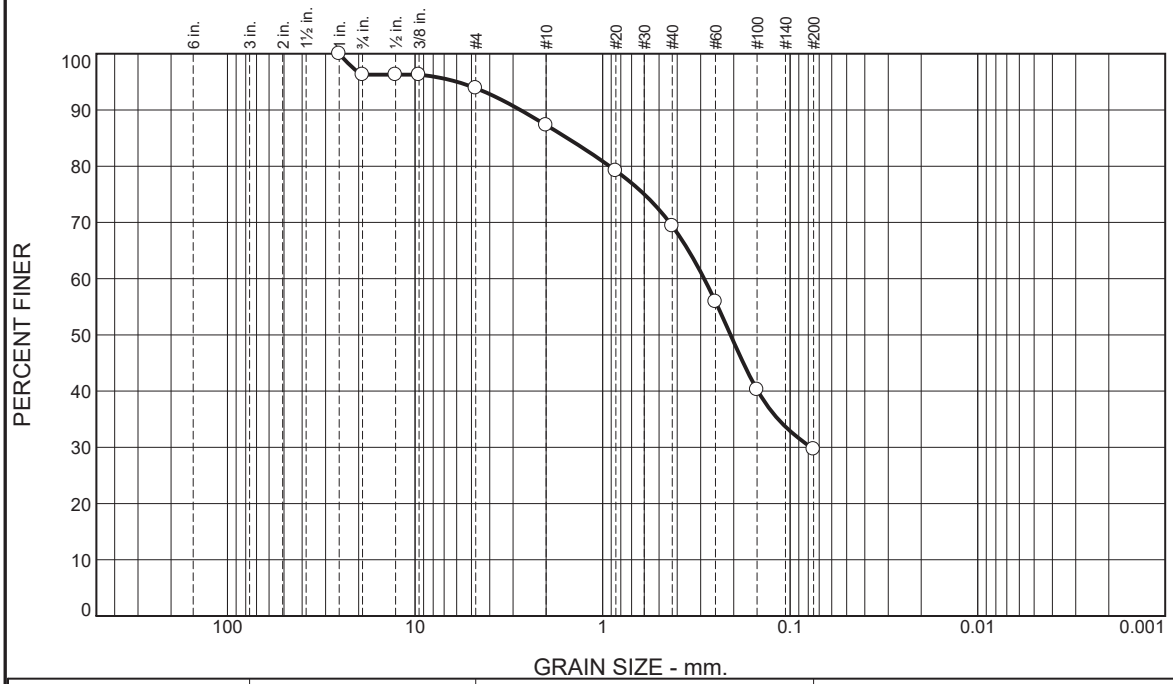
GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

WC = water content as determined by AASHTO T 265-93 and/or ASTM D 2216-98

LL = Liquid limit as determined by AASHTO T 89-96 and/or ASTM D 4318-98

PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.7	2.4	6.6	17.9	39.7	29.7	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	96.3		
0.5"	96.3		
0.375"	96.3		
#4	93.9		
#10	87.3		
#20	79.2		
#40	69.4		
#60	55.9		
#100	40.2		
#200	29.7		

* (no specification provided)

Material Description

Brown f-c SAND, some Silt, trace f-c Gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 2.7433 D_{85}= 1.5413 D_{60}= 0.2872
D_{50}= 0.2078 D_{30}= 0.0774 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / JF / RL

Checked By: Steven Accetta

Title: Laboratory Coordinator

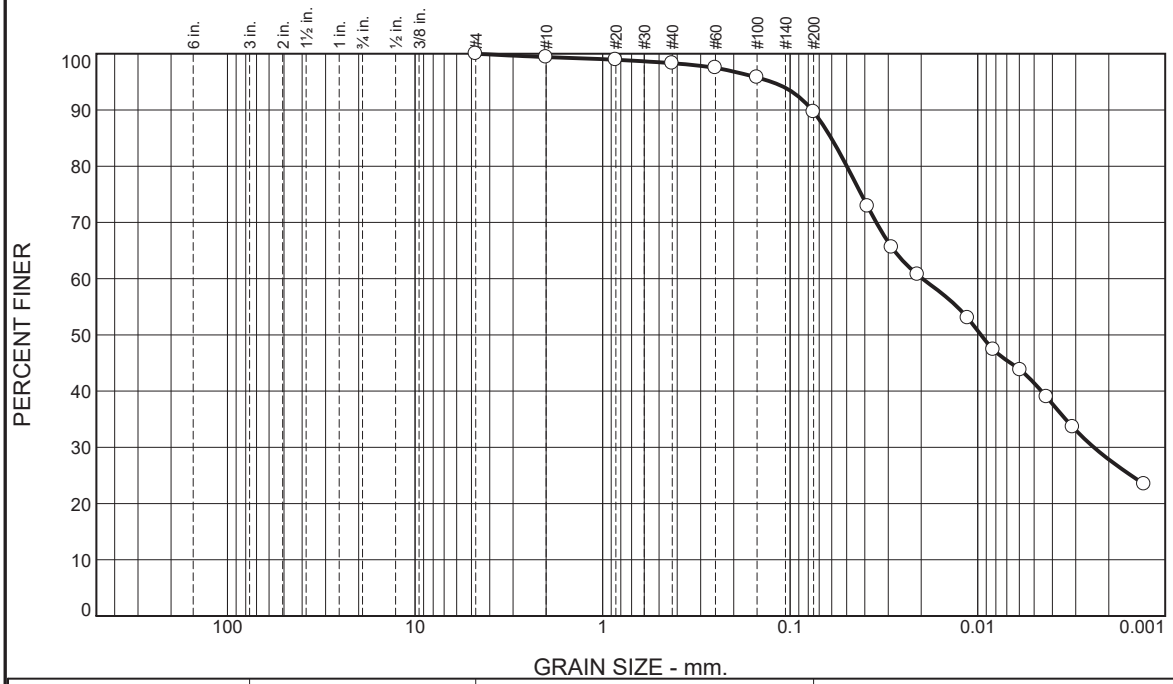
Source of Sample: BB-SBTG-201 **Depth:** 4-6' **Date Sampled:**
Sample Number: 2D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-21

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.6	1.1	8.6	48.3	41.4

Test Results (D7928 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	99.4		
#20	98.9		
#40	98.3		
#60	97.5		
#100	95.8		
#200	89.7		
0.0386 mm.	72.9		
0.0287 mm.	65.6		
0.0209 mm.	60.7		
0.0113 mm.	53.0		
0.0082 mm.	47.4		
0.0059 mm.	43.8		
0.0043 mm.	39.0		
0.0031 mm.	33.6		
0.0013 mm.	23.4		

* (no specification provided)

Material Description

Brown Clayey SILT, little f-m Sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 0.0764 D_{85}= 0.0603 D_{60}= 0.0197
D_{50}= 0.0096 D_{30}= 0.0024 D_{15}=
D_{10}= C_u= C_c=

Remarks

Sample visually classified as plastic. Sample rolled to 1/8".

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / SL

Checked By: Steven Accetta

Title: Laboratory Coordinator

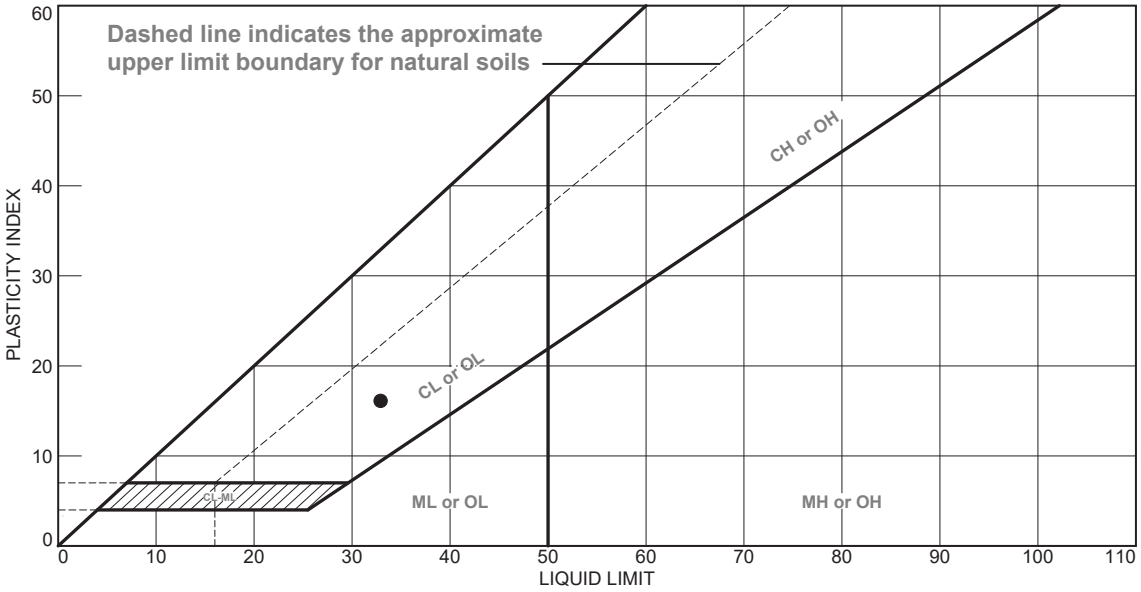
Source of Sample: BB-SBTG-201 **Depth:** 9-11' **Date Sampled:**
Sample Number: 3D

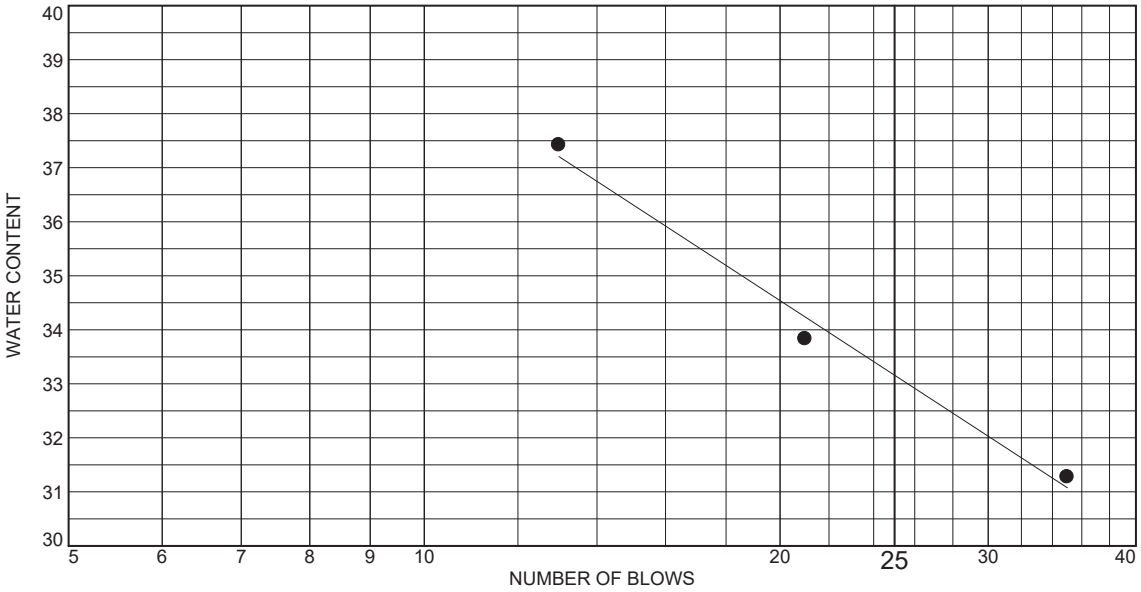
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-22

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Silty CLAY	33	17	16			

Project No. 09.0025999.01 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-202 **Depth:** 9-11'

Sample Number: 3D

Remarks:

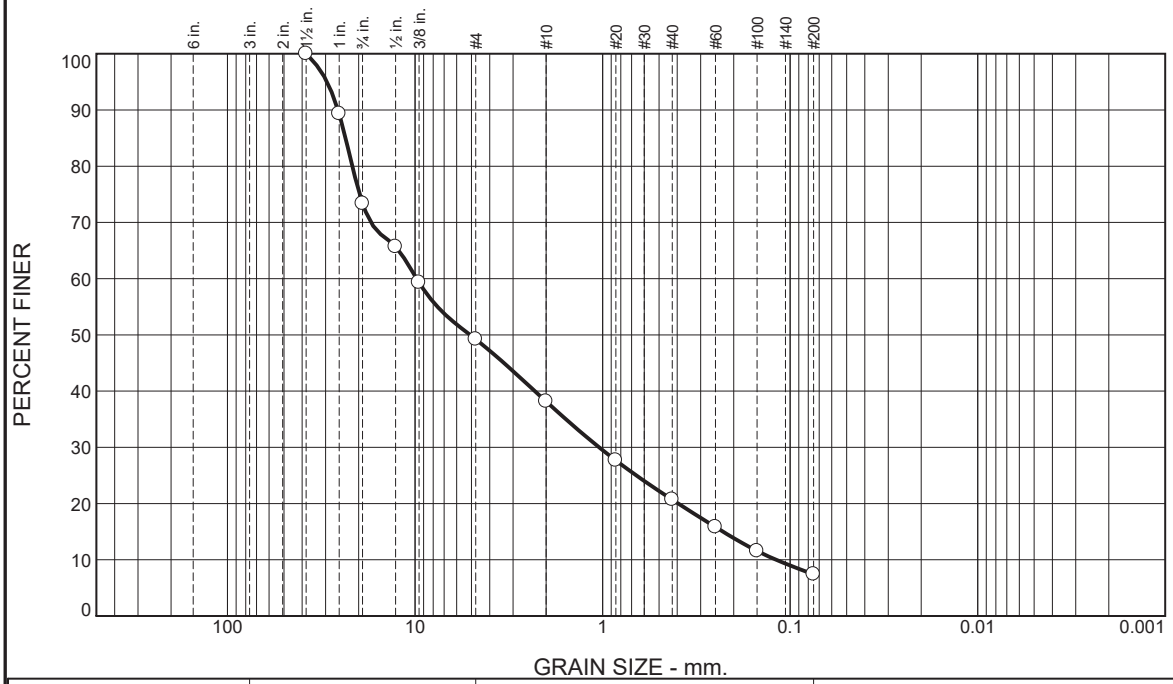
Thielsch Engineering Inc.

Cranston, RI

Figure L-23

Tested By: SL **Checked By:** SA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	26.6	24.2	11.0	17.5	13.3	7.4	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5"	100.0		
1"	89.3		
0.75"	73.4		
0.5"	65.7		
0.375"	59.3		
#4	49.2		
#10	38.2		
#20	27.7		
#40	20.7		
#60	15.8		
#100	11.6		
#200	7.4		

* (no specification provided)

Material Description

Brown Sandy fine to coarse GRAVEL, trace Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= GP-GM **AASHTO (M 145)=** A-1-a

Coefficients

D_{90}= 25.7522 D_{85}= 23.4730 D_{60}= 9.8175
D_{50}= 5.0900 D_{30}= 1.0434 D_{15}= 0.2279
D_{10}= 0.1187 C_u= 82.71 C_c= 0.93

Remarks

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / JF / SL

Checked By: Steven Accetta

Title: Laboratory Coordinator

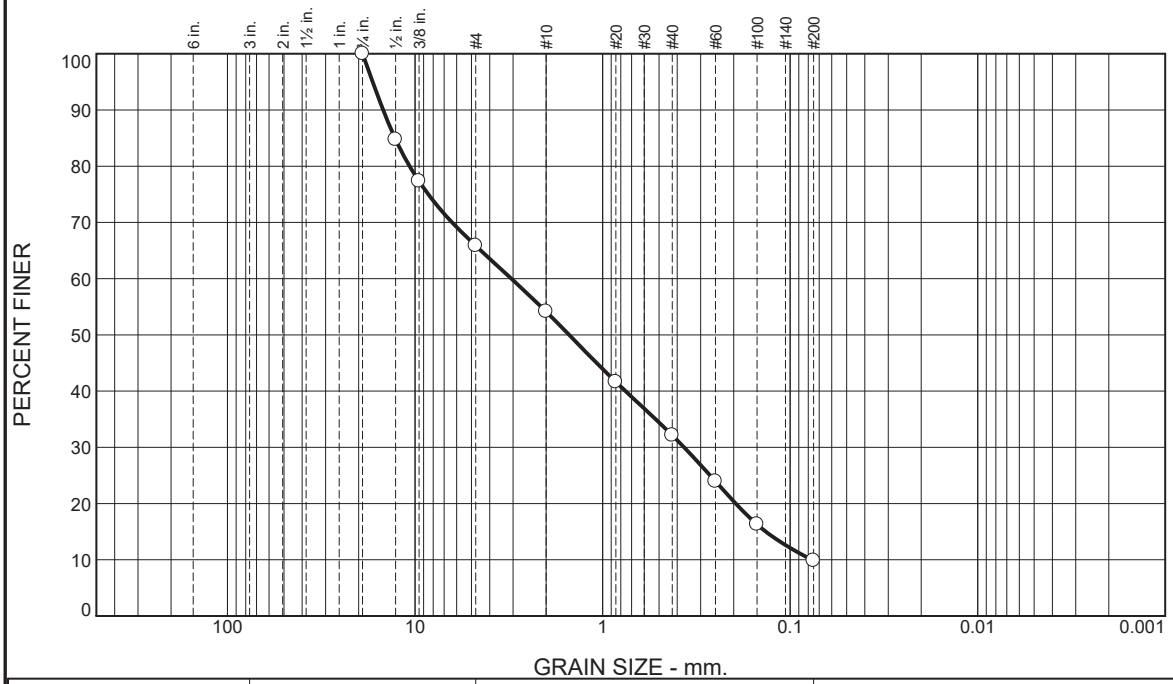
Source of Sample: BB-SBTG-202 **Depth:** 19-21' **Date Sampled:**
Sample Number: 5D

Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-24

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	34.1	11.8	22.0	22.3	9.8	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
0.5"	84.8		
0.375"	77.3		
#4	65.9		
#10	54.1		
#20	41.6		
#40	32.1		
#60	24.0		
#100	16.3		
#200	9.8		

* (no specification provided)

Material Description

Brown f-c SAND, some fine Gravel, trace Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 14.7938 D_{85}= 12.8013 D_{60}= 3.0680
D_{50}= 1.5073 D_{30}= 0.3676 D_{15}= 0.1347
D_{10}= 0.0767 C_u= 40.00 C_c= 0.57

Remarks

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / JF / SL

Checked By: Steven Accetta

Title: Laboratory Coordinator

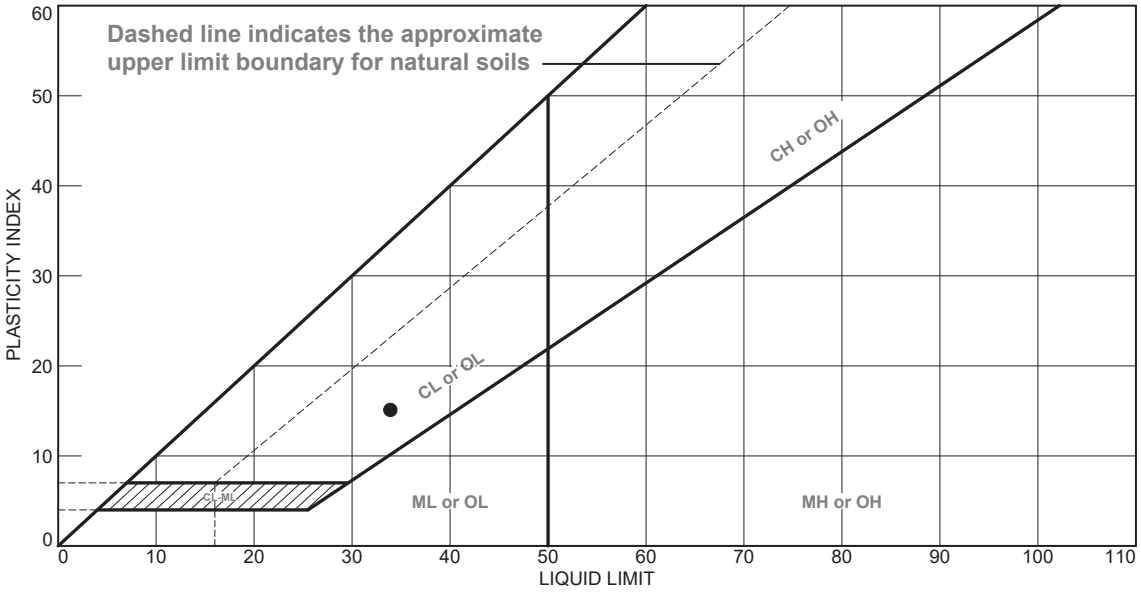
Source of Sample: BB-SBTG-205 **Depth:** 0.5-2.5' **Date Sampled:**
Sample Number: 1D

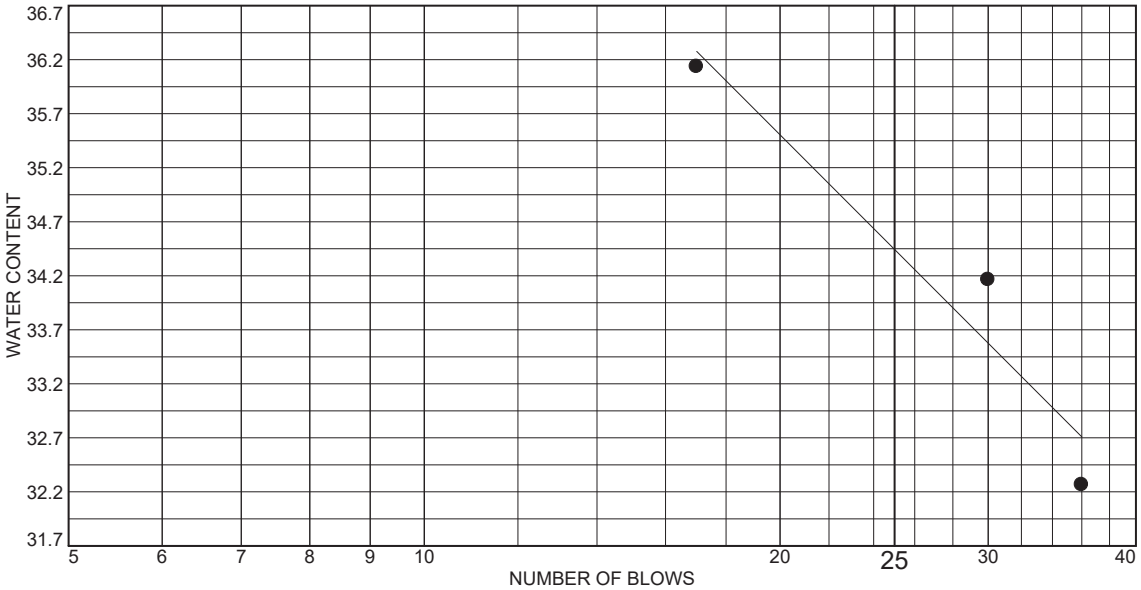
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-25

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Silty CLAY	34	19	15			

Project No. 09.0025999.01 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-205 **Depth:** 4-6'

Sample Number: 2D

Remarks:

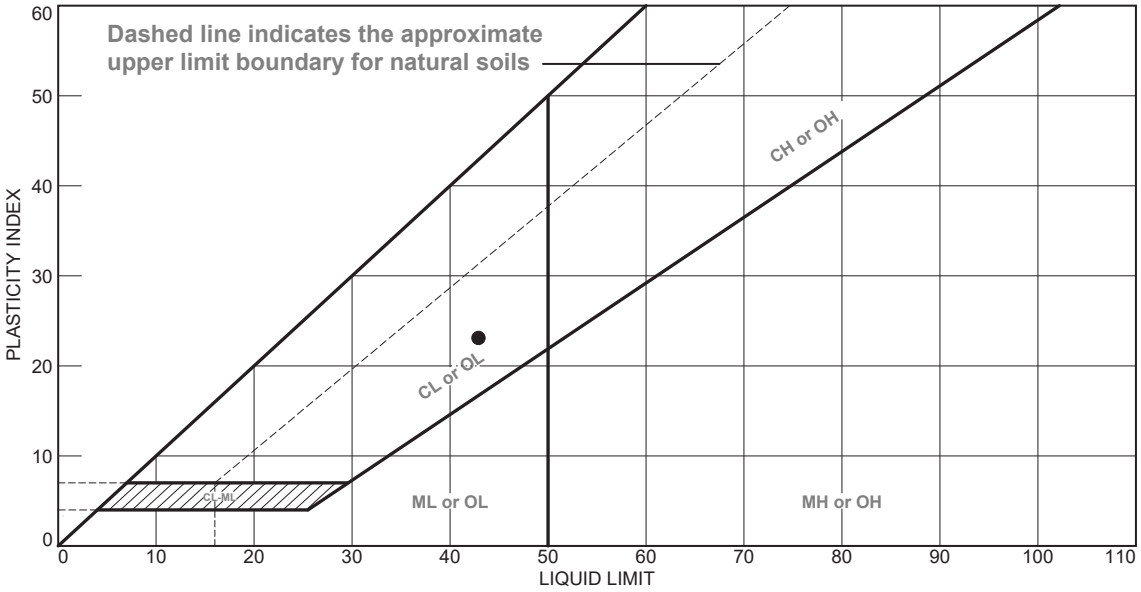
Thielsch Engineering Inc.

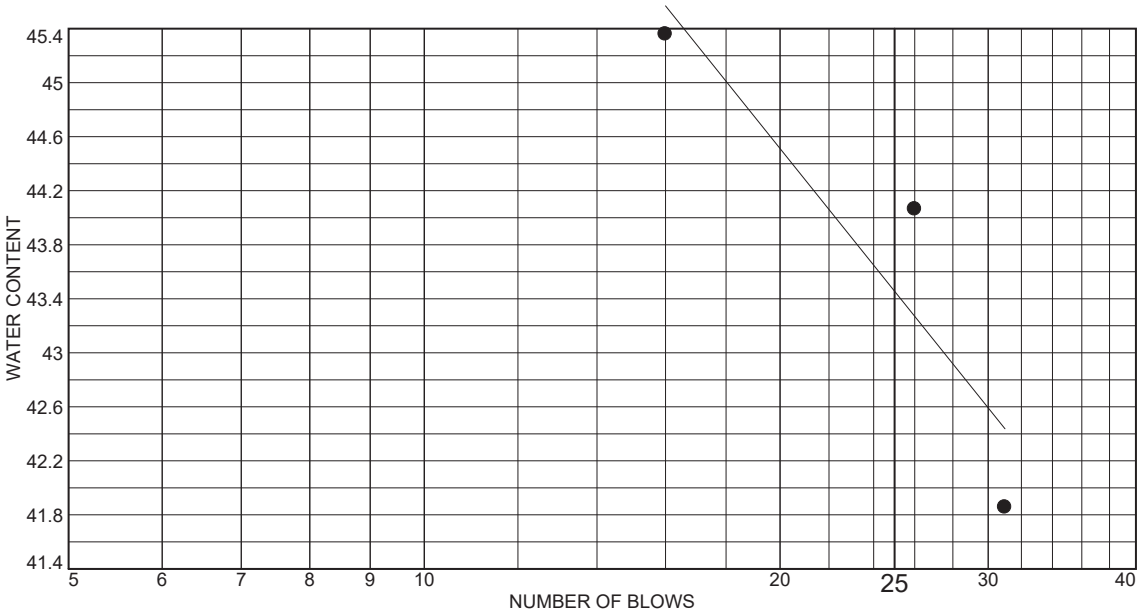
Cranston, RI

Figure L-26

Tested By: SL **Checked By:** SA

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Silty CLAY	43	20	23			

Project No. 09.0025999.01 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: BB-SBTG-206 **Depth:** 19-21'

Sample Number: 5D

Remarks:

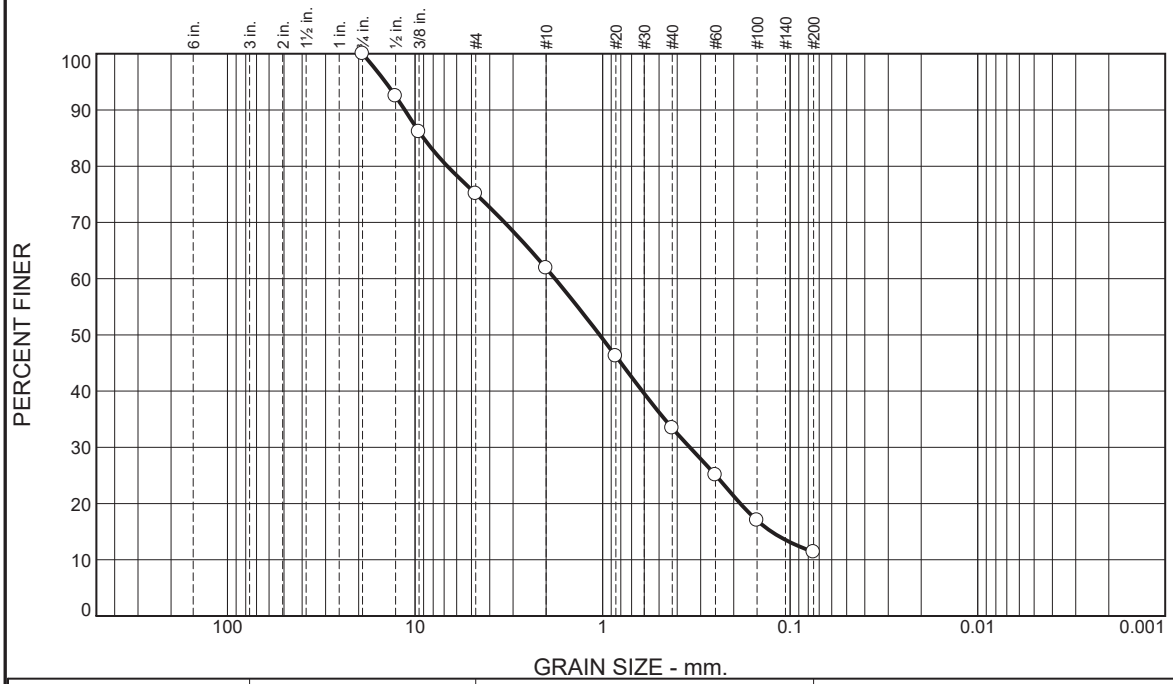
Thielsch Engineering Inc.

Cranston, RI

Figure L-27

Tested By: SL **Checked By:** SA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	24.9	13.2	28.5	22.1	11.3	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
0.5"	92.5		
0.375"	86.1		
#4	75.1		
#10	61.9		
#20	46.2		
#40	33.4		
#60	25.1		
#100	17.0		
#200	11.3		

* (no specification provided)

Material Description

Brown f-c SAND, some fine Gravel, little Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 11.3500 D_{85}= 9.0066 D_{60}= 1.7945
D_{50}= 1.0371 D_{30}= 0.3428 D_{15}= 0.1257
D_{10}= C_u= C_c=

Remarks

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / JF / SL

Checked By: Steven Accetta

Title: Laboratory Coordinator

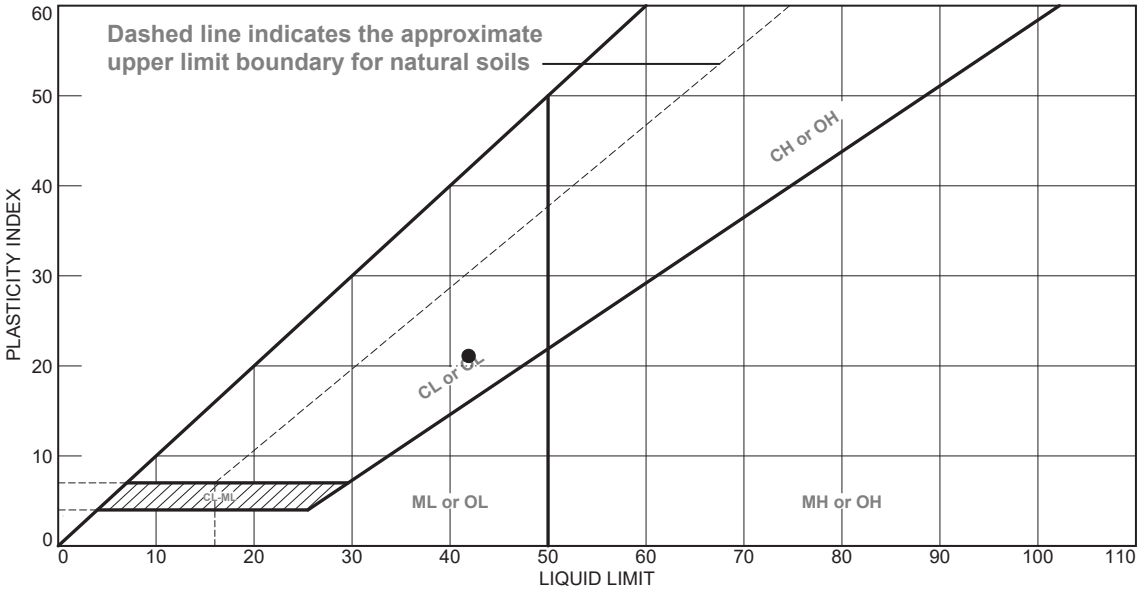
Source of Sample: RB-SBTG-201 **Depth:** 0.6-2.6' **Date Sampled:**
Sample Number: 1D

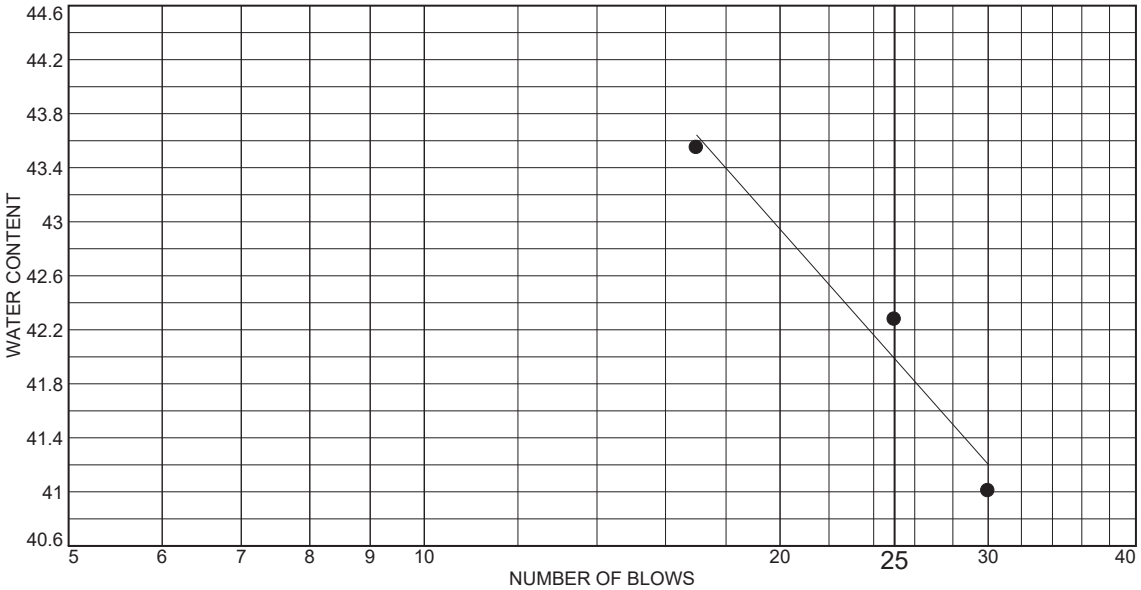
Thielsch Engineering Inc.

Cranston, RI

Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-28

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Silty CLAY	42	21	21			

Project No. 09.0025999.01 **Client:** GZA GeoEnvironmental

Project: Southport Bridge 2789

Southport, ME

Source of Sample: RB-SBTG-202 **Depth:** 4-6

Sample Number: 2D

Remarks:

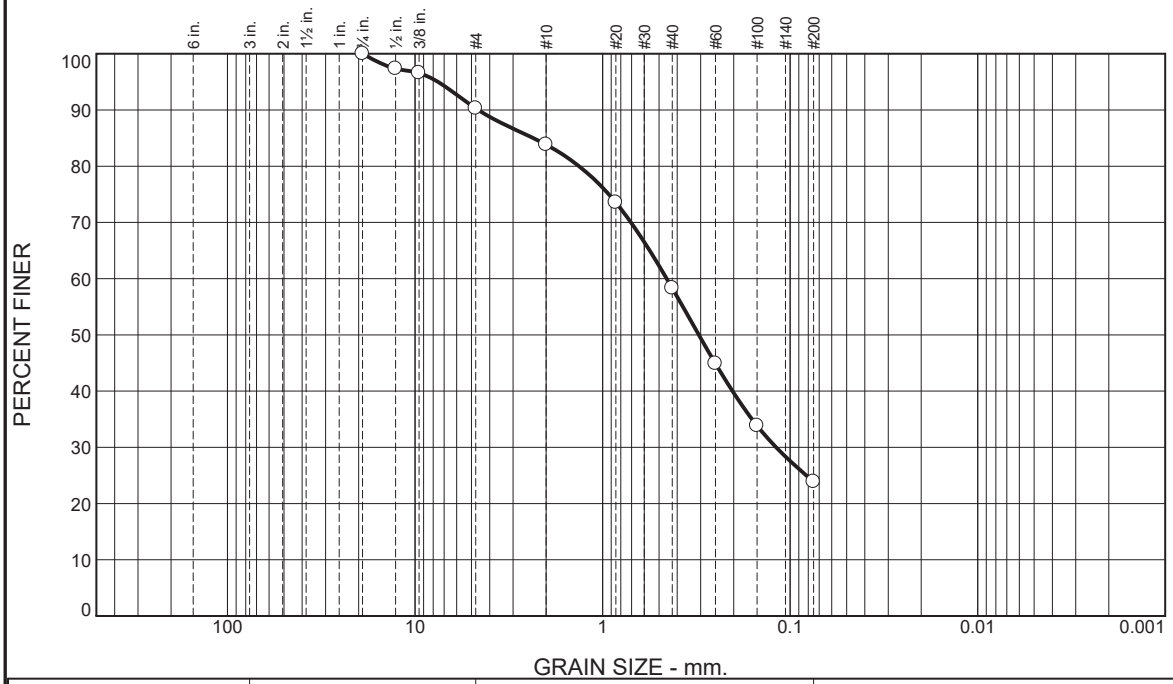
Thielsch Engineering Inc.

Cranston, RI

Figure L-29

Tested By: SL **Checked By:** SA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.7	6.5	25.5	34.4	23.9	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
0.5"	97.3		
0.375"	96.6		
#4	90.3		
#10	83.8		
#20	73.5		
#40	58.3		
#60	44.9		
#100	33.8		
#200	23.9		

* (no specification provided)

Material Description

Brown f-m SAND, some Silt, trace fine Gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 4.6021 D_{85}= 2.3415 D_{60}= 0.4551
D_{50}= 0.3067 D_{30}= 0.1187 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 10.18.21 **Date Tested:** 10.21.21

Tested By: RR / JF / SL

Checked By: Steven Accetta

Title: Laboratory Coordinator

Source of Sample: RB-SBTG-202 **Depth:** 9-11 **Date Sampled:**
Sample Number: 3D

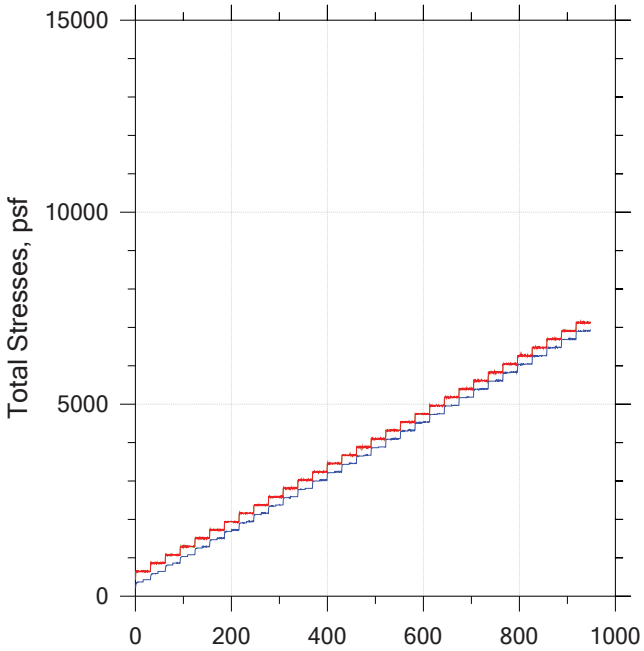
Thielsch Engineering Inc.

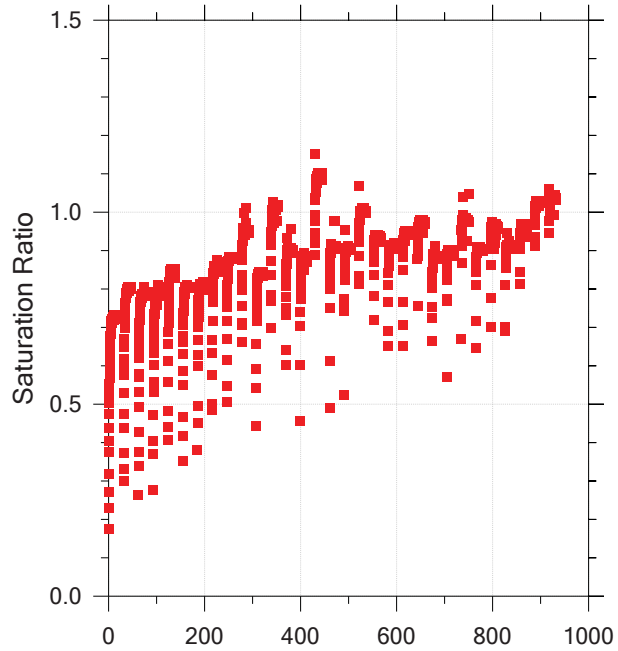
Cranston, RI

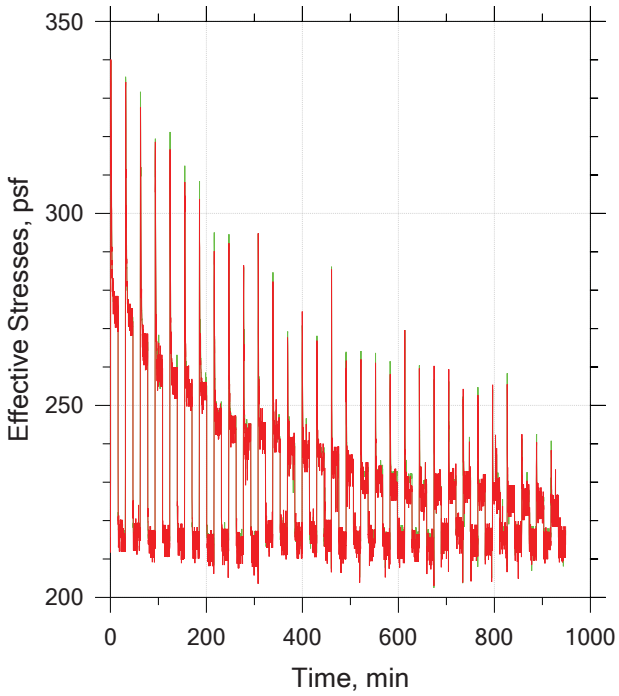
Client: GZA GeoEnvironmental
Project: Southport Bridge 2789
Southport, ME
Project No: 09.0025999.01 **Figure** S-30

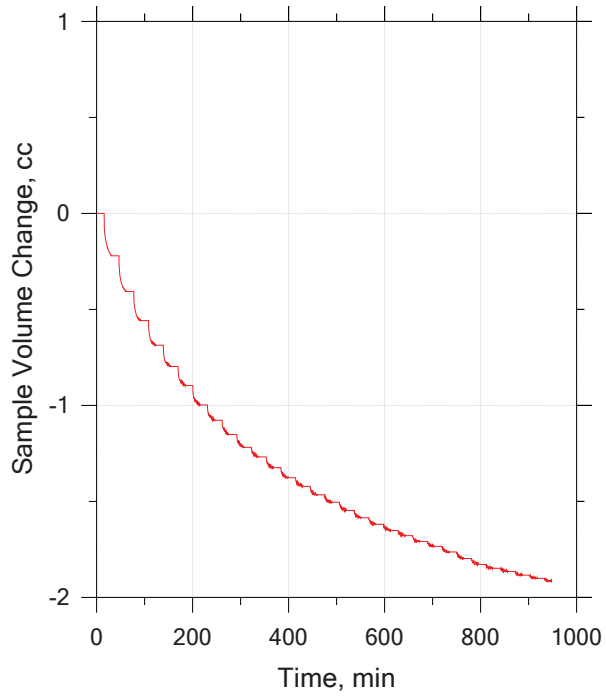
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Saturation Phase







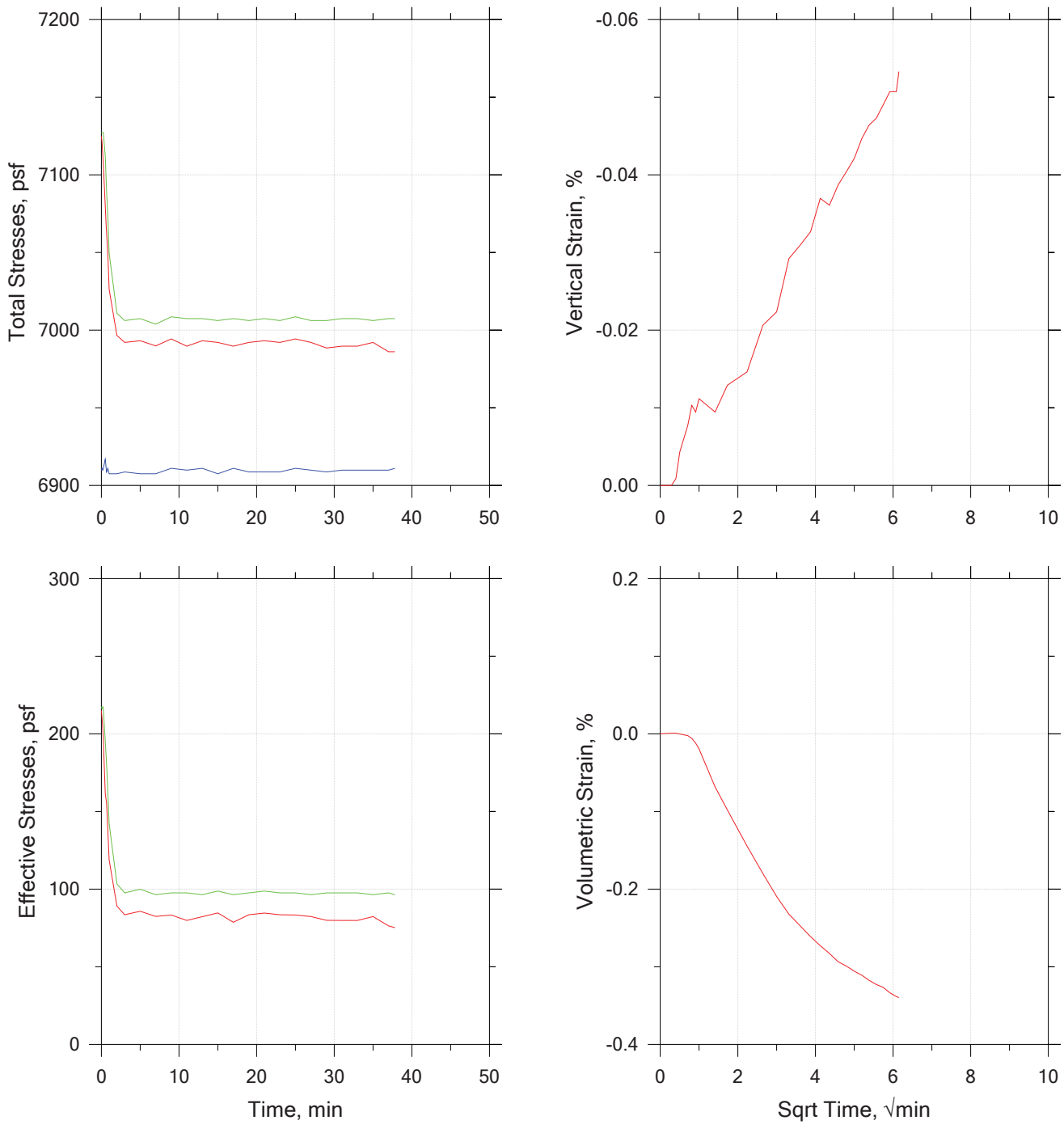


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 1 of 6

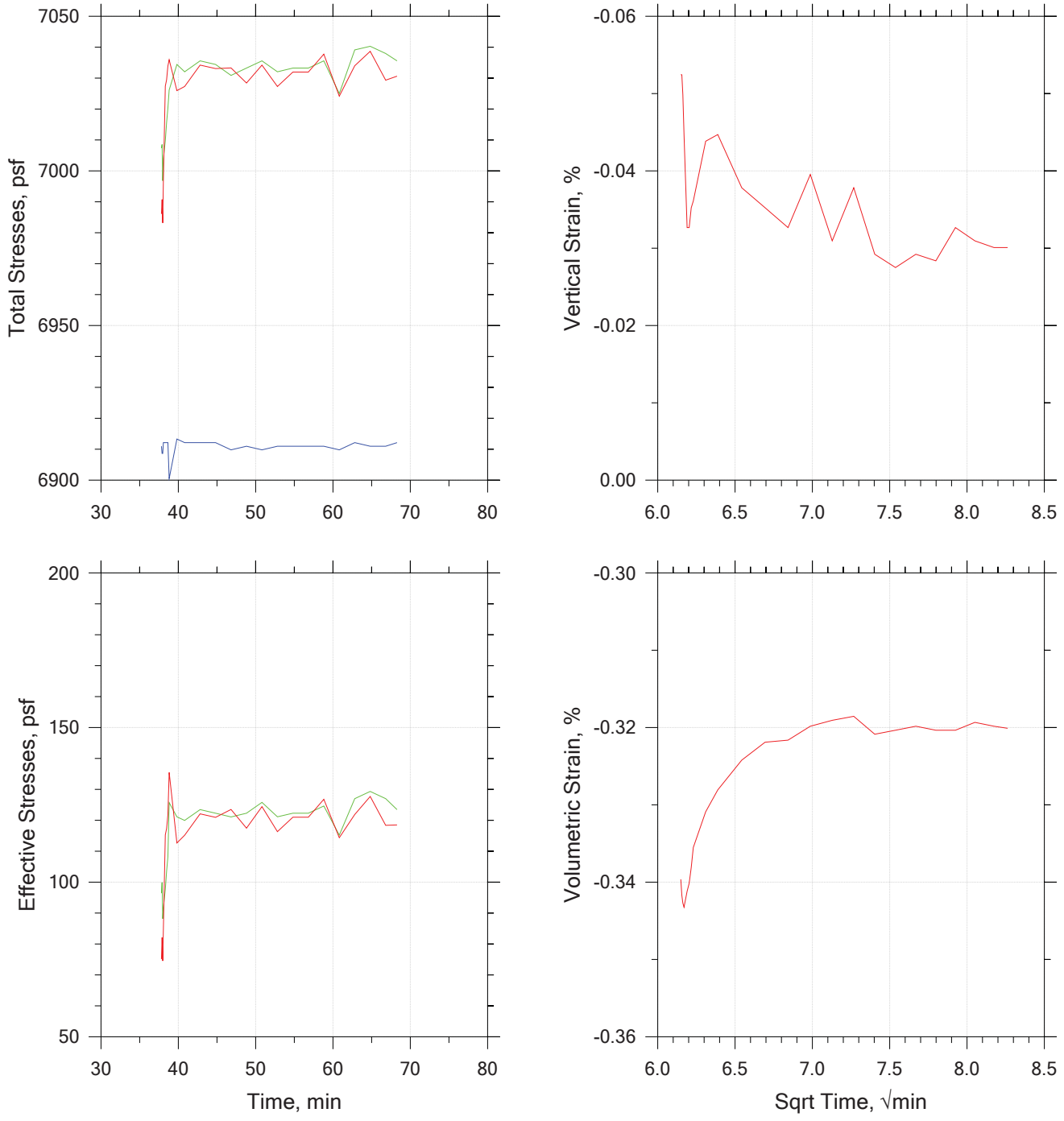


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 2 of 6

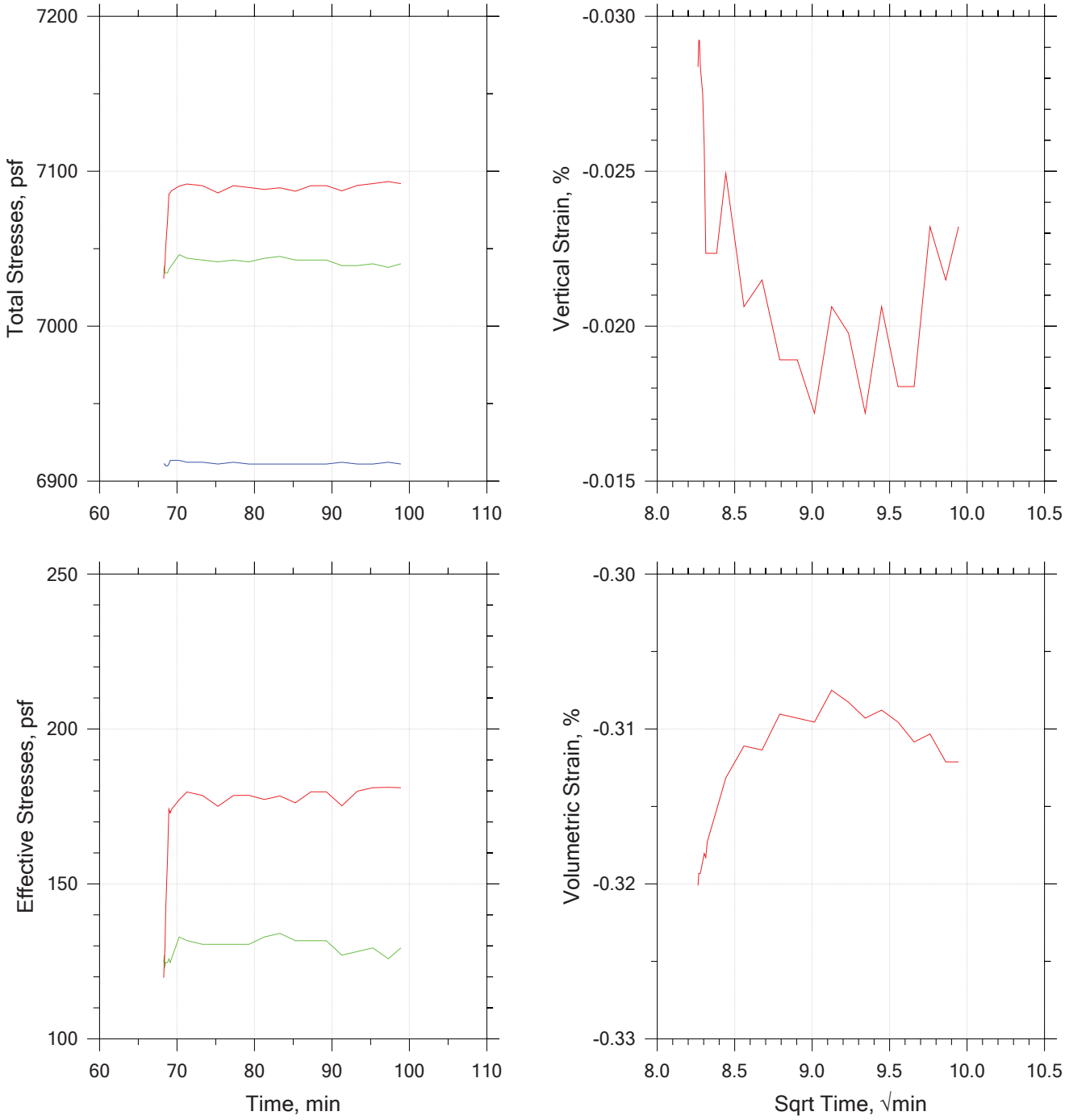


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 3 of 6

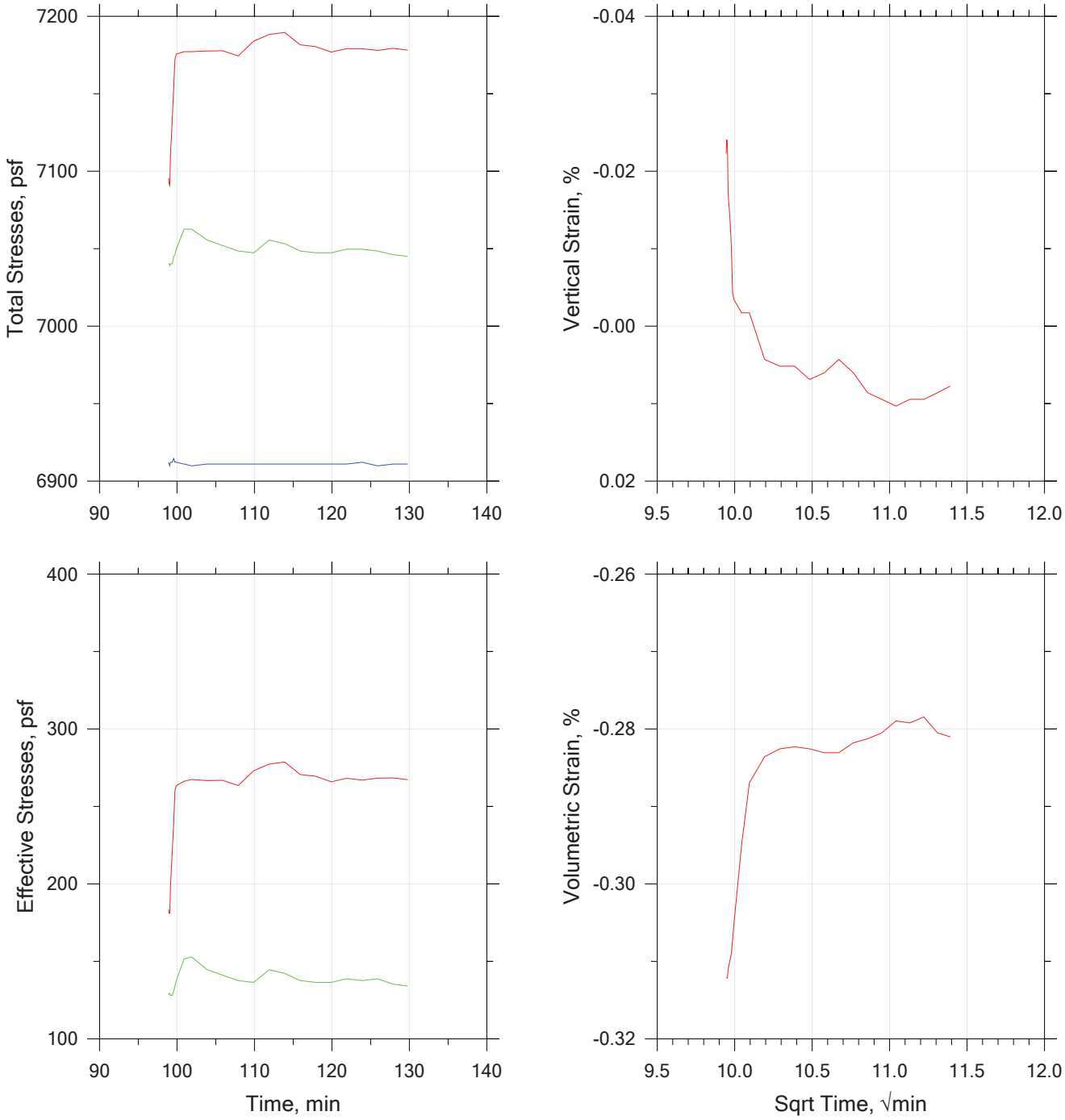


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
	Test No.: CkoU 312	Sample Type:	Elevation: -57.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 4 of 6

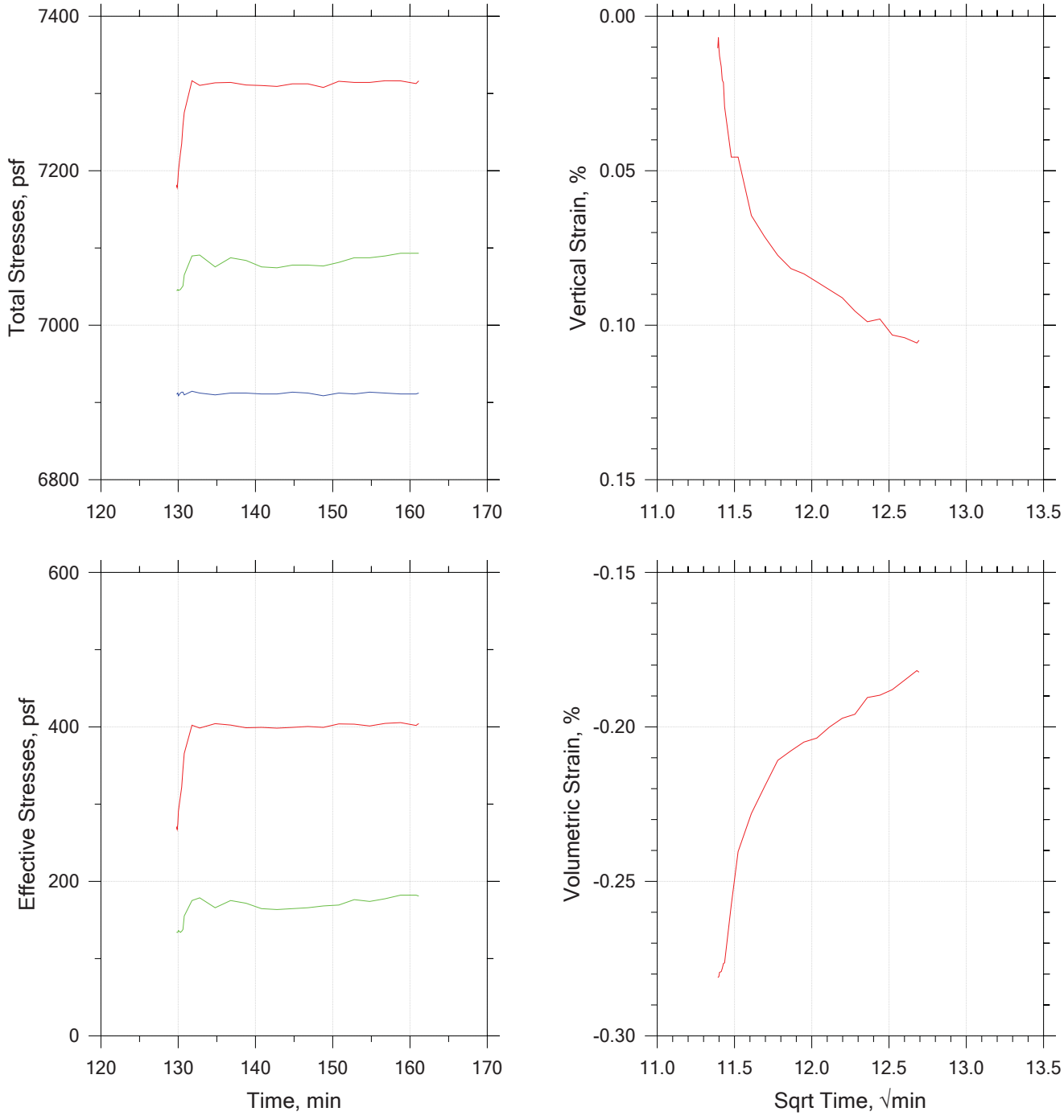


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 5 of 6

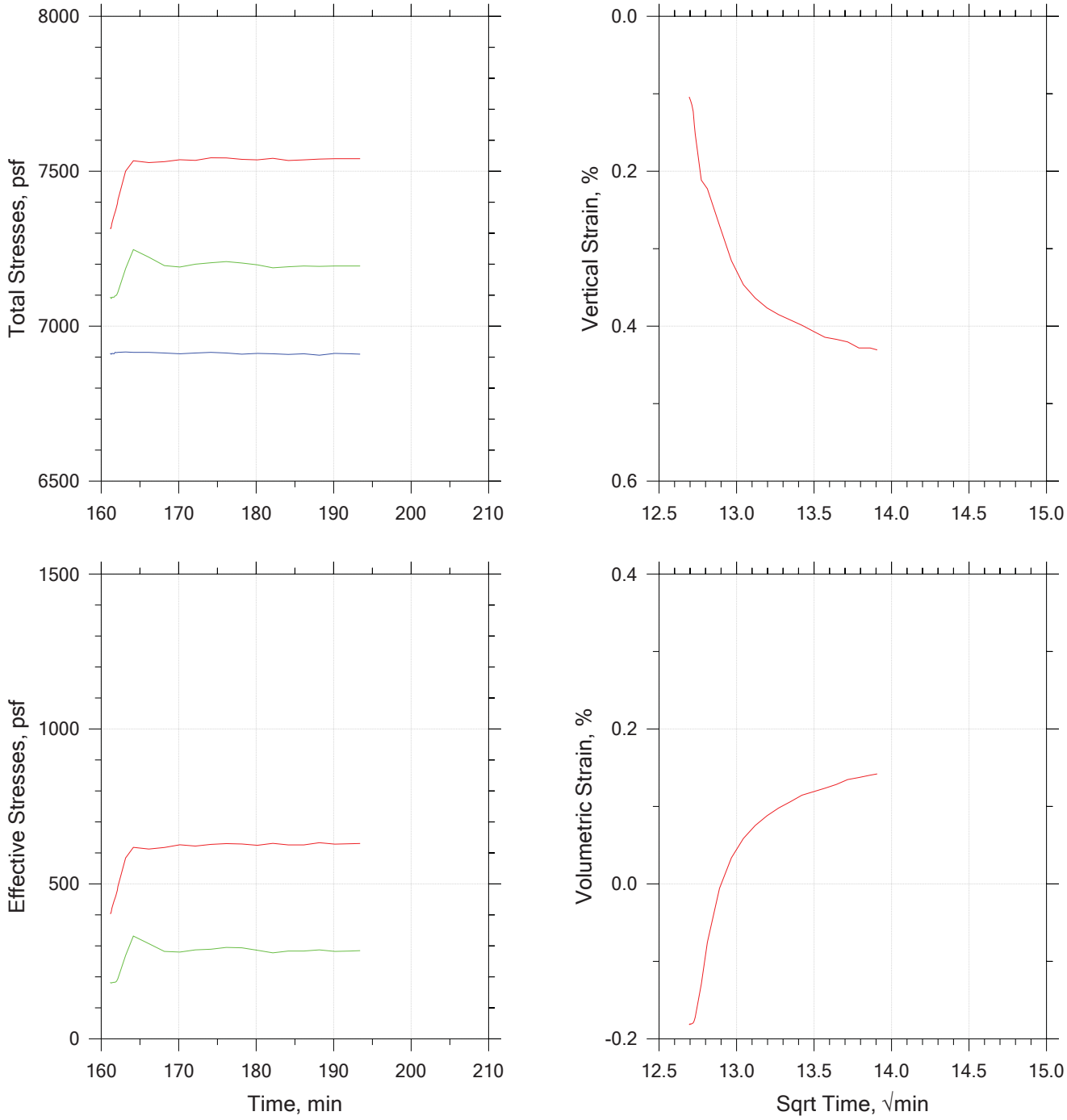


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

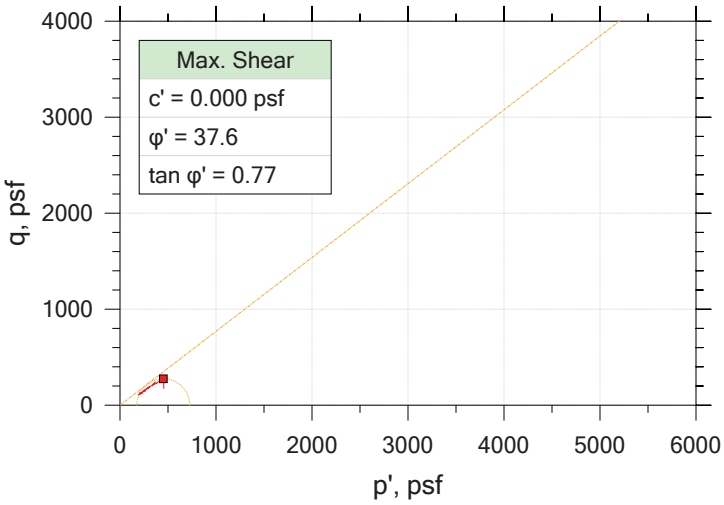
Consolidation Phase

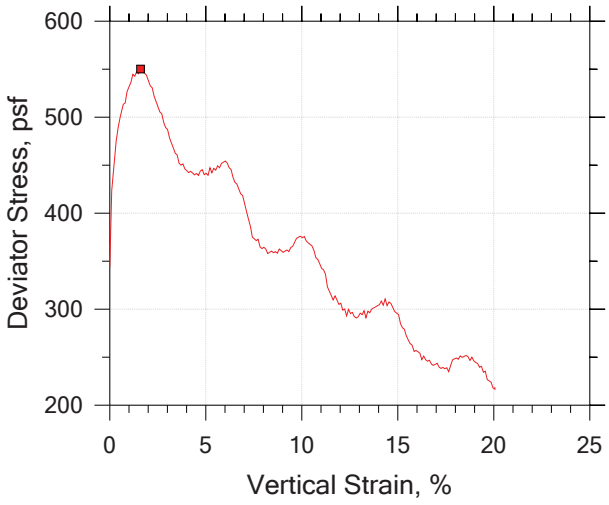
Step 6 of 6



	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
	Test No.: CkoU 312	Sample Type:	Elevation: -57.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



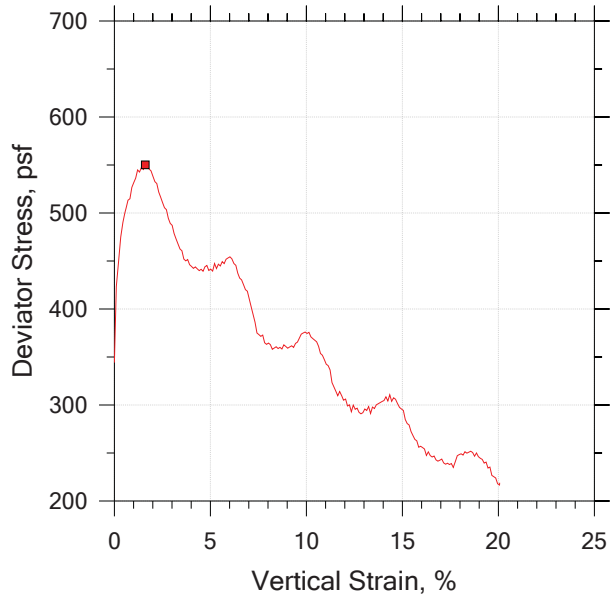


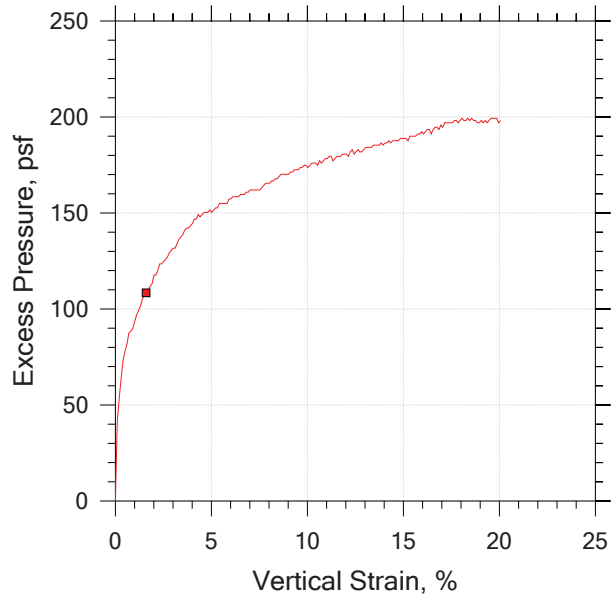
Symbol		■
Sample ID		U-1
Depth, ft		16.35
Test Number		CkoU 312
Initial	Height, in	4.020
	Diameter, in	2.004
	Moisture Content (from Cuttings), %	54.6
	Dry Density, pcf	68.7
	Saturation (Wet Method), %	100.3
	Void Ratio	1.50
Final	Moisture Content, %	54.7
	Dry Density, pcf	68.6
	Cross-Sectional Area (Method A), in²	3.171
	Saturation, %	100.0
	Void Ratio	1.50
	Back Pressure, %	6910.
Vertical Effective Consolidation Stress, psf		623.5
Horizontal Effective Consolidation Stress, psf		284.5
Vertical Strain after Consolidation, %		0.4290
Volumetric Strain after Consolidation, %		0.1419
Time to 50% Consolidation, min		0.0000
Shear Strength, psf		275.1
Strain at Failure, %		1.60
Strain Rate, %/min		0.01500
Deviator Stress at Failure, psf		550.2
Effective Minor Principal Stress at Failure, psf		176.1
Effective Major Principal Stress at Failure, psf		726.2
B-Value		0.95

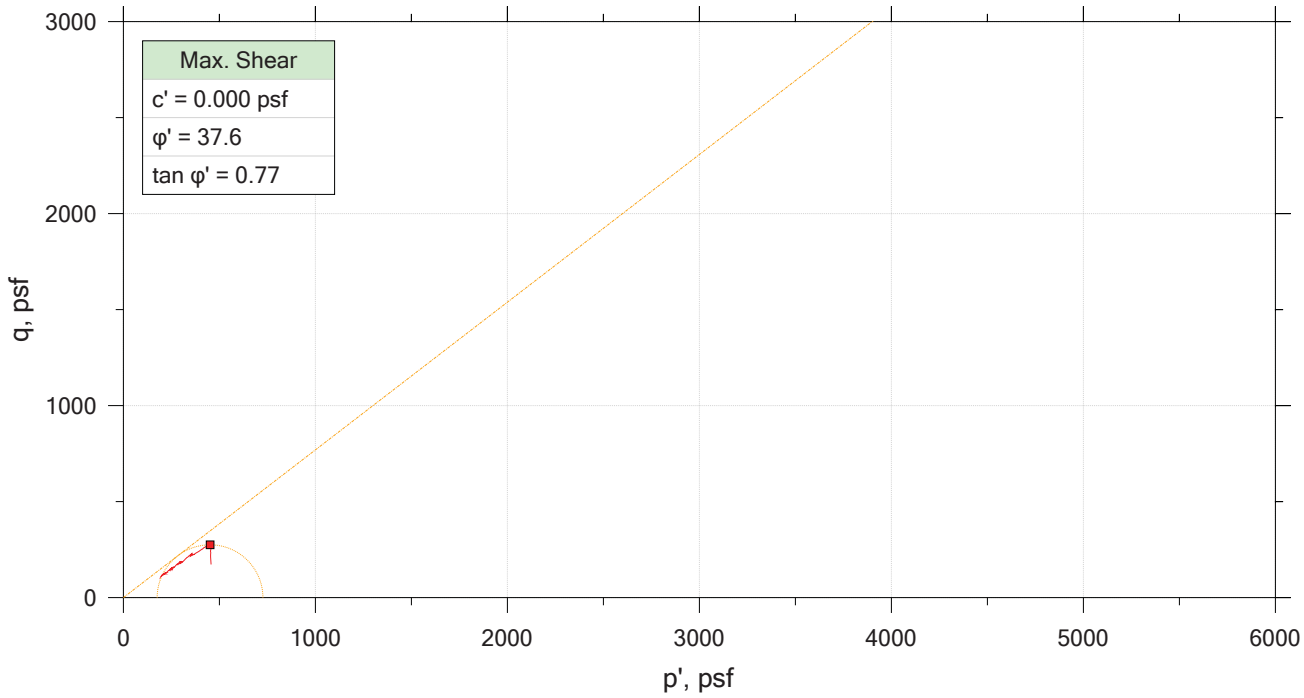
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



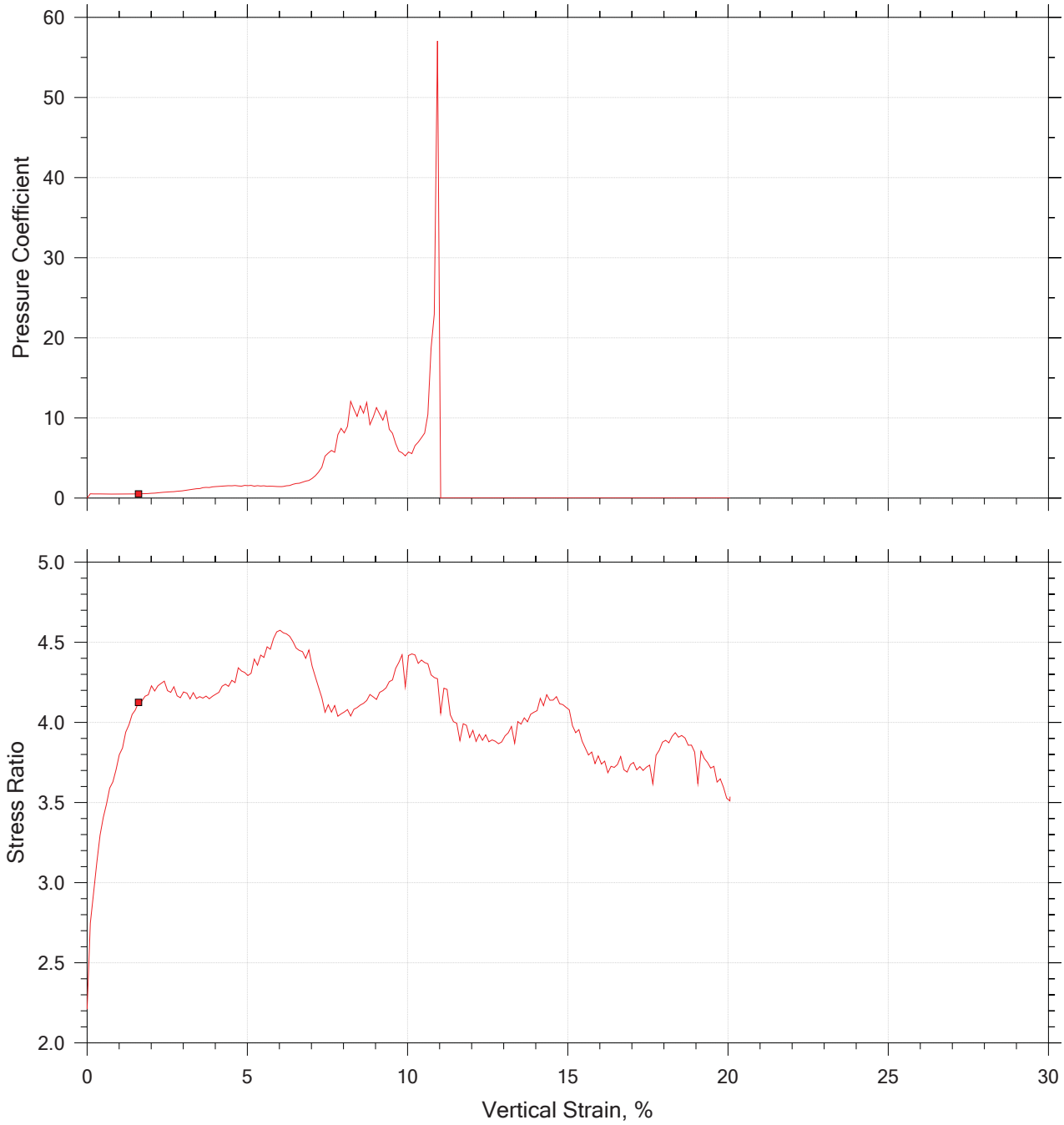




	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	U-1	CkoU 312	16.35	SJR	8/23/21	sjr	9/12/21	CKoU 312.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
	Test No.: CkoU 312	Sample Type:	Elevation: -57.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	U-1	CkoU 312	16.35	SJR	8/23/21	sjr	9/12/21	CKoU 312.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
	Test No.: CkoU 312	Sample Type:	Elevation: -57.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Specimen Height, in: 4.02	Liquid Limit: 38	Filter Strip Correction, psf: 0.00
Specimen Area, in²: 3.15	Plastic Limit: 21	Membrane Correction, lb/in: 4.20
Specimen Volume, cc: 207.78	Implied Specific Gravity: 2.75	Correction Type: Parabolic

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	302	---		412
Mass Container, gm	60.04	---	---	89.8
Mass Container + Wet Soil, gm	256.72	---	---	424.89
Mass Container + Dry Soil, gm	187.23	---	---	314.2
Mass Wet Soil, gm	196.68	353.8	335.9	335.09
Mass Dry Soil, gm	127.19	228.8	224.94	224.4
Mass Water, gm	69.49	125	110.96	110.69
Water Content, %	54.63	54.63	49.33	49.33
Void Ratio	---	1.50	1.55	---
Degree of Saturation, %	---	100.34	87.72	---
Dry Unit Weight, pcf	---	68.741	67.418	---

	End of Initialization	End of Consolidation/A	End of Saturation	End of Consolidation/B	End of Shear	Maximum Shear
Time, min	121.16	121.16	1069.4	1262.8	2598.4	1369.9
Height, in	4.0214	4.0214	4.0252	4.0079	3.2038	3.9436
Area, in²	3.1542	3.1542	3.1542	3.1714	4.7646	3.2586
Volume, cc	208	208	208.59	208.29	208.29	208.29
Moisture, %	55.27	55.27	56.11	54.67	54.67	54.67
Void Ratio	1.50	1.50	1.51	1.50	1.50	1.50
Saturation, %	101.32	101.32	102.38	100.00	100.00	100.00
Dry Unit Weight, pcf	68.669	68.669	68.476	68.573	68.573	68.573
Wet Unit Weight, pcf	173.04	173.04	174.13	171.68	171.68	171.68
Tot. Vertical Stress, psf	427.67	427.24	7125.9	7533.3	7332.5	7744.4
Tot. Horizontal Stress, psf	431.35	431.35	7127.3	7194.3	7194.3	7194.3
Pore Pressure, psf	215.64	215.64	6909.8	6909.8	7108	7018.2
Eff. Vertical Stress, psf	212.03	211.6	216.11	623.46	224.49	726.22
Eff. Horizontal Stress, psf	215.71	215.71	217.47	284.46	86.305	176.06

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 1 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
0.00000	0.00000	0.00000	3.1542	7124.8	7127.3	6909.8	214.98	217.47	1.0116
0.083467	0.00000	0.00077133	3.1542	7121.2	7127.3	6911.0	210.26	216.30	1.0287
0.16188	-0.00085964	0.00077133	3.1542	7114.1	7127.3	6909.8	204.32	217.47	1.0644
0.25362	-0.0042982	-0.00025711	3.1542	7107.0	7127.3	6911.0	196.04	216.30	1.1033
0.50242	-0.0077367	-0.0023140	3.1542	7078.3	7112.0	6916.8	161.49	195.19	1.2087
0.66388	-0.010316	-0.0059135	3.1542	7064.2	7089.7	6908.6	155.56	181.02	1.1637
0.83398	-0.0094560	-0.012084	3.1542	7048.6	7073.2	6911.0	137.61	162.24	1.1790
1.0007	-0.011175	-0.019283	3.1542	7026.3	7049.7	6907.5	118.79	142.23	1.1973
2.0015	-0.0094560	-0.068391	3.1542	6996.6	7010.9	6907.5	89.082	103.44	1.1612
3.0002	-0.012895	-0.097958	3.1542	6992.1	7006.2	6908.6	83.453	97.572	1.1692
5.0038	-0.014614	-0.14449	3.1542	6993.2	7007.4	6907.5	85.735	99.913	1.1654
7.0024	-0.020631	-0.17998	3.1542	6989.9	7003.9	6907.5	82.387	96.387	1.1699
9.0039	-0.022351	-0.20954	3.1542	6994.3	7008.6	6911.0	83.353	97.592	1.1708
11.002	-0.029228	-0.23243	3.1542	6989.7	7007.4	6909.8	79.848	97.582	1.2221
13.002	-0.030947	-0.24734	3.1542	6993.2	7007.4	6911.0	82.238	96.416	1.1724
15.001	-0.032666	-0.26122	3.1542	6992.1	7006.2	6907.5	84.619	98.738	1.1669
17.003	-0.036964	-0.27279	3.1542	6989.7	7007.4	6911.0	78.683	96.416	1.2254
19.002	-0.036105	-0.28282	3.1542	6992.1	7006.2	6908.6	83.453	97.572	1.1692
21.001	-0.038684	-0.29362	3.1542	6993.2	7007.4	6908.6	84.569	98.747	1.1677
23.002	-0.040403	-0.29927	3.1542	6992.1	7006.2	6908.6	83.453	97.572	1.1692
25.003	-0.042122	-0.30570	3.1542	6994.3	7008.6	6911.0	83.353	97.592	1.1708
27.002	-0.044701	-0.31110	3.1542	6992.1	7006.2	6909.8	82.288	96.406	1.1716
29.001	-0.046420	-0.31753	3.1542	6988.5	7006.2	6908.6	79.898	97.572	1.2212
31.002	-0.047280	-0.32293	3.1542	6989.7	7007.4	6909.8	79.848	97.582	1.2221
33.002	-0.048999	-0.32653	3.1542	6989.7	7007.4	6909.8	79.848	97.582	1.2221
35.001	-0.050719	-0.33347	3.1542	6992.1	7006.2	6909.8	82.288	96.406	1.1716
37.001	-0.050719	-0.33835	3.1542	6986.1	7007.4	6909.8	76.293	97.582	1.2790
37.813	-0.053297	-0.33964	3.1542	6986.1	7007.4	6911.0	75.128	96.416	1.2834

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 2 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
37.815	-0.052438	-0.33964	3.1542	6986.1	7007.4	6911.0	75.128	96.416	1.2834
37.896	-0.052438	-0.34170	3.1542	6990.8	7008.6	6908.6	82.130	99.923	1.2166
37.975	-0.049859	-0.34273	3.1542	6983.2	6996.8	6908.6	74.527	88.169	1.1830
38.067	-0.044701	-0.34324	3.1542	6997.0	7003.9	6912.1	84.835	91.725	1.0812
38.317	-0.032666	-0.34118	3.1542	7027.4	7009.7	6912.1	115.30	97.601	0.84651
38.479	-0.032666	-0.34015	3.1542	7029.5	7015.6	6912.1	117.32	103.48	0.88200
38.646	-0.035245	-0.33810	3.1542	7033.9	7020.3	6912.1	121.79	108.18	0.88828
38.817	-0.036105	-0.33553	3.1542	7035.9	7026.2	6900.5	135.46	125.71	0.92801
39.815	-0.043841	-0.33090	3.1542	7026.0	7034.4	6913.3	112.68	121.12	1.0749
40.817	-0.044701	-0.32807	3.1542	7027.3	7032.1	6912.1	115.17	119.93	1.0414
42.816	-0.037824	-0.32421	3.1542	7034.2	7035.6	6912.1	122.07	123.46	1.0114
44.819	-0.035245	-0.32190	3.1542	7033.1	7034.4	6912.1	120.95	122.28	1.0110
46.818	-0.032666	-0.32164	3.1542	7033.3	7030.9	6909.8	123.49	121.09	0.98053
48.815	-0.039543	-0.31984	3.1542	7028.4	7033.2	6911.0	117.45	122.27	1.0411
50.816	-0.030947	-0.31907	3.1542	7034.2	7035.6	6909.8	124.40	125.79	1.0112
52.816	-0.037824	-0.31856	3.1542	7027.3	7032.1	6911.0	116.33	121.10	1.0410
54.817	-0.029228	-0.32087	3.1542	7032.0	7033.2	6911.0	121.00	122.27	1.0105
56.816	-0.027508	-0.32036	3.1542	7032.0	7033.2	6911.0	121.00	122.27	1.0105
58.815	-0.029228	-0.31984	3.1542	7037.8	7035.6	6911.0	126.79	124.62	0.98292
60.815	-0.028368	-0.32036	3.1542	7024.2	7025.0	6909.8	114.36	115.21	1.0075
62.816	-0.032666	-0.32036	3.1542	7034.0	7039.1	6912.1	121.86	126.98	1.0420
64.816	-0.030947	-0.31933	3.1542	7038.7	7040.3	6911.0	127.70	129.33	1.0127
66.818	-0.030087	-0.31984	3.1542	7029.3	7038.0	6911.0	118.36	126.98	1.0728
68.279	-0.030087	-0.32010	3.1542	7030.7	7035.6	6912.1	118.51	123.46	1.0417

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 3 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
68.280	-0.028368	-0.32010	3.1542	7030.7	7035.6	6911.0	119.68	124.62	1.0413
68.363	-0.029228	-0.31933	3.1542	7036.4	7038.0	6911.0	125.47	126.98	1.0120
68.442	-0.029228	-0.31933	3.1542	7040.2	7034.4	6911.0	129.23	123.45	0.95527
68.534	-0.028368	-0.31933	3.1542	7050.9	7034.4	6909.8	141.06	124.61	0.88342
68.781	-0.027508	-0.31856	3.1542	7068.6	7034.4	6909.8	158.84	124.61	0.78455
68.943	-0.025789	-0.31804	3.1542	7085.1	7036.8	6911.0	174.12	125.80	0.72248
69.110	-0.022351	-0.31830	3.1542	7086.2	7038.0	6913.3	172.91	124.64	0.72088
69.281	-0.022351	-0.31727	3.1542	7087.3	7039.1	6913.3	174.02	125.82	0.72301
70.284	-0.022351	-0.31521	3.1542	7090.5	7046.2	6913.3	177.16	132.87	0.75000
71.283	-0.024929	-0.31316	3.1542	7091.8	7043.8	6912.1	179.65	131.69	0.73302
73.282	-0.020631	-0.31110	3.1542	7090.7	7042.7	6912.1	178.53	130.51	0.73101
75.280	-0.021491	-0.31136	3.1542	7086.0	7041.5	6911.0	175.03	130.50	0.74560
77.283	-0.018912	-0.30904	3.1542	7090.7	7042.7	6912.1	178.53	130.51	0.73101
79.282	-0.018912	-0.30930	3.1542	7089.6	7041.5	6911.0	178.58	130.50	0.73076
81.280	-0.017193	-0.30956	3.1542	7088.2	7043.8	6911.0	177.26	132.85	0.74947
83.281	-0.020631	-0.30750	3.1542	7089.4	7045.0	6911.0	178.38	134.03	0.75137
85.281	-0.019772	-0.30827	3.1542	7087.1	7042.7	6911.0	176.14	131.68	0.74755
87.283	-0.017193	-0.30930	3.1542	7090.7	7042.7	6911.0	179.70	131.68	0.73276
89.282	-0.020631	-0.30879	3.1542	7090.7	7042.7	6911.0	179.70	131.68	0.73276
91.283	-0.018052	-0.30956	3.1542	7087.3	7039.1	6912.1	175.19	126.98	0.72485
93.284	-0.018052	-0.31084	3.1542	7090.9	7039.1	6911.0	179.91	128.15	0.71231
95.283	-0.023210	-0.31033	3.1542	7092.0	7040.3	6911.0	181.02	129.33	0.71442
97.281	-0.021491	-0.31213	3.1542	7093.3	7038.0	6912.1	181.18	125.81	0.69439
98.900	-0.023210	-0.31213	3.1542	7092.0	7040.3	6911.0	181.02	129.33	0.71442

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 4 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
98.902	-0.022351	-0.31213	3.1542	7095.6	7040.3	6912.1	183.41	128.16	0.69875
98.986	-0.024070	-0.31213	3.1542	7092.0	7040.3	6911.0	181.02	129.33	0.71442
99.065	-0.023210	-0.31213	3.1542	7090.9	7039.1	6909.8	181.07	129.32	0.71416
99.153	-0.017193	-0.31110	3.1542	7109.8	7040.3	6912.1	197.63	128.16	0.64848
99.403	-0.013754	-0.30982	3.1542	7134.7	7040.3	6912.1	222.52	128.16	0.57595
99.564	-0.010316	-0.30904	3.1542	7153.3	7045.0	6914.5	238.87	130.53	0.54645
99.734	-0.0042982	-0.30724	3.1542	7172.2	7046.2	6912.1	260.09	134.04	0.51534
99.904	-0.0034385	-0.30519	3.1542	7175.6	7049.7	6912.1	263.44	137.56	0.52218
100.91	-0.0017193	-0.29490	3.1542	7177.2	7062.6	6911.0	266.21	151.66	0.56969
101.91	-0.0017193	-0.28693	3.1542	7177.2	7062.6	6909.8	267.38	152.82	0.57156
103.90	0.0042982	-0.28359	3.1542	7177.6	7055.6	6911.0	266.63	144.61	0.54235
105.90	0.0051578	-0.28256	3.1542	7177.8	7052.1	6911.0	266.84	141.08	0.52871
107.91	0.0051578	-0.28231	3.1542	7174.5	7048.5	6911.0	263.49	137.55	0.52205
109.90	0.0068771	-0.28256	3.1542	7184.0	7047.4	6911.0	273.04	136.38	0.49948
111.90	0.0060175	-0.28308	3.1542	7188.3	7055.6	6911.0	277.29	144.61	0.52149
113.90	0.0042982	-0.28308	3.1542	7189.6	7053.2	6911.0	278.62	142.25	0.51057
115.90	0.0060175	-0.28179	3.1542	7181.6	7048.5	6911.0	270.60	137.55	0.50833
117.90	0.0085964	-0.28128	3.1542	7180.5	7047.4	6911.0	269.48	136.38	0.50607
119.90	0.0094560	-0.28051	3.1542	7176.9	7047.4	6911.0	265.93	136.38	0.51284
121.90	0.010316	-0.27896	3.1542	7179.1	7049.7	6911.0	268.16	138.73	0.51734
123.90	0.0094560	-0.27922	3.1542	7179.1	7049.7	6912.1	266.99	137.56	0.51523
125.90	0.0094560	-0.27845	3.1542	7178.0	7048.5	6909.8	268.21	138.72	0.51720
127.91	0.0085964	-0.28051	3.1542	7179.3	7046.2	6911.0	268.37	135.20	0.50380
129.78	0.0077367	-0.28102	3.1542	7178.2	7045.0	6911.0	267.25	134.03	0.50150

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 5 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
129.78	0.010316	-0.28102	3.1542	7181.8	7045.0	6911.0	270.81	134.03	0.49492
129.86	0.0068771	-0.28102	3.1542	7178.2	7045.0	6911.0	267.25	134.03	0.50150
129.94	0.010316	-0.28076	3.1542	7186.5	7046.2	6912.1	274.31	134.04	0.48863
130.03	0.012895	-0.27948	3.1542	7199.6	7045.0	6908.6	290.91	136.36	0.46873
130.28	0.016333	-0.27922	3.1542	7222.0	7046.2	6912.1	309.86	134.04	0.43257
130.44	0.020631	-0.27819	3.1542	7234.9	7048.5	6913.3	321.59	135.22	0.42048
130.61	0.021491	-0.27665	3.1542	7258.5	7050.9	6913.3	345.15	137.57	0.39858
130.78	0.029228	-0.27639	3.1542	7275.4	7065.0	6909.8	365.59	155.17	0.42444
131.78	0.045561	-0.25762	3.1542	7316.6	7089.7	6914.5	402.14	175.19	0.43566
132.78	0.045561	-0.24040	3.1542	7310.6	7090.8	6912.1	398.47	178.70	0.44846
134.78	0.064473	-0.22806	3.1542	7313.9	7075.6	6909.8	404.08	165.75	0.41020
136.78	0.071350	-0.21931	3.1542	7314.4	7087.3	6912.1	402.24	175.17	0.43550
138.78	0.077367	-0.21083	3.1542	7311.0	7083.8	6912.1	398.89	171.65	0.43031
140.78	0.081665	-0.20774	3.1542	7310.3	7075.6	6911.0	399.36	164.59	0.41213
142.78	0.083385	-0.20492	3.1542	7309.2	7074.4	6911.0	398.24	163.41	0.41033
144.78	0.085964	-0.20363	3.1542	7312.6	7077.9	6913.3	399.26	164.61	0.41228
146.78	0.088543	-0.20003	3.1542	7312.6	7077.9	6912.1	400.42	165.77	0.41399
148.78	0.091121	-0.19720	3.1542	7307.9	7076.7	6908.6	399.25	168.09	0.42102
150.78	0.095420	-0.19592	3.1542	7315.9	7081.4	6912.1	403.77	169.30	0.41929
152.78	0.098858	-0.19052	3.1542	7314.4	7087.3	6911.0	403.40	176.34	0.43713
154.78	0.097999	-0.18975	3.1542	7314.4	7087.3	6913.3	401.07	174.01	0.43386
156.78	0.10316	-0.18795	3.1542	7316.6	7089.7	6912.1	404.47	177.52	0.43891
158.78	0.10402	-0.18486	3.1542	7316.4	7093.2	6911.0	405.43	182.22	0.44944
160.78	0.10574	-0.18178	3.1542	7312.8	7093.2	6911.0	401.87	182.22	0.45342
161.14	0.10488	-0.18229	3.1542	7316.4	7093.2	6912.1	404.26	181.05	0.44786

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 6 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
161.14	0.10402	-0.18203	3.1542	7316.4	7093.2	6912.1	404.26	181.05	0.44786
161.22	0.10574	-0.18126	3.1542	7315.3	7092.0	6911.0	404.31	181.04	0.44778
161.30	0.10659	-0.18075	3.1542	7320.2	7089.7	6909.8	410.35	179.86	0.43829
161.39	0.11003	-0.18126	3.1542	7334.2	7093.2	6912.1	422.04	181.05	0.42899
161.64	0.11605	-0.18023	3.1542	7355.5	7093.2	6911.0	444.53	182.22	0.40991
161.80	0.12293	-0.17946	3.1542	7370.6	7097.9	6915.6	455.00	182.26	0.40056
161.97	0.13754	-0.17663	3.1542	7383.5	7100.2	6914.5	469.06	185.77	0.39605
162.14	0.15216	-0.17201	3.1542	7406.7	7109.6	6915.6	491.04	194.01	0.39510
163.15	0.21147	-0.12933	3.1542	7500.5	7186.0	6916.8	583.73	269.24	0.46124
164.14	0.22265	-0.075333	3.1542	7533.7	7247.2	6915.6	618.02	331.52	0.53643
166.14	0.26993	-0.0056564	3.1542	7528.0	7222.5	6915.6	612.37	306.84	0.50107
168.14	0.31549	0.033681	3.1542	7530.8	7195.4	6913.3	617.48	282.14	0.45692
170.14	0.34643	0.058621	3.1542	7537.0	7190.7	6911.0	626.01	279.77	0.44691
172.14	0.36363	0.075333	3.1542	7535.2	7200.1	6913.3	621.94	286.84	0.46120
174.14	0.37652	0.087931	3.1542	7543.3	7204.8	6915.6	627.63	289.21	0.46080
176.14	0.38512	0.097958	3.1542	7543.1	7208.4	6913.3	629.75	295.07	0.46855
178.14	0.39199	0.10593	3.1542	7538.6	7203.7	6909.8	628.79	293.86	0.46735
180.14	0.39887	0.11441	3.1542	7536.6	7197.8	6912.1	624.43	285.66	0.45747
182.14	0.40661	0.11904	3.1542	7541.9	7188.4	6911.0	630.89	277.42	0.43973
184.14	0.41434	0.12341	3.1542	7534.5	7191.9	6908.6	625.90	283.28	0.45259
186.14	0.41692	0.12830	3.1542	7536.8	7194.3	6911.0	625.80	283.30	0.45269
188.14	0.42036	0.13472	3.1542	7539.2	7193.1	6906.3	632.91	286.78	0.45312
190.14	0.42810	0.13730	3.1542	7540.3	7194.3	6912.1	628.19	282.13	0.44911
192.15	0.42810	0.14038	3.1542	7540.3	7194.3	6911.0	629.36	283.30	0.45013
193.42	0.43068	0.14192	3.1542	7540.3	7194.3	6909.8	630.52	284.46	0.45115

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
0.00000	7538.5	7194.3	0.00000	628.64	284.46	456.55	172.09	0.00000	2.2099
0.10101	7617.8	7194.3	41.962	666.07	242.50	454.28	211.79	0.52856	2.7467
0.20116	7640.6	7194.3	53.619	677.17	230.84	454.01	223.16	0.52491	2.9335
0.30131	7663.3	7194.3	64.109	689.36	220.35	454.86	234.50	0.51359	3.1284
0.40232	7678.8	7194.3	73.434	695.59	211.03	453.31	242.28	0.52310	3.2962
0.50160	7690.9	7194.3	78.097	702.96	206.36	454.66	248.30	0.51239	3.4064
0.60261	7699.3	7194.3	81.594	707.92	202.87	455.39	252.53	0.50720	3.4896
0.70276	7708.9	7195.4	87.422	711.65	198.21	454.93	256.72	0.50958	3.5903
0.80291	7709.2	7194.3	88.587	710.80	195.87	453.33	257.46	0.51884	3.6288
0.90305	7721.1	7194.3	89.753	721.50	194.71	458.10	263.40	0.49149	3.7056
1.0041	7724.8	7193.1	93.250	721.74	190.04	455.89	265.85	0.50353	3.7979
1.1033	7731.9	7195.4	96.747	725.36	188.89	457.12	268.23	0.49703	3.8401
1.2044	7739.1	7194.3	99.078	730.19	185.38	457.79	272.40	0.49385	3.9388
1.3045	7735.9	7193.1	101.41	724.63	181.88	453.25	271.38	0.51660	3.9842
1.4047	7741.8	7194.3	104.91	727.06	179.56	453.31	273.75	0.51597	4.0492
1.5048	7739.7	7194.3	107.24	722.61	177.22	449.92	272.69	0.53297	4.0774
1.6049	7744.4	7194.3	108.40	726.22	176.06	451.14	275.08	0.52627	4.1249
1.7060	7742.3	7194.3	109.57	722.92	174.89	448.91	274.02	0.53749	4.1335
1.8061	7740.2	7194.3	111.90	718.48	172.56	445.52	272.96	0.55467	4.1636
1.9063	7738.1	7194.3	113.07	715.21	171.40	443.30	271.91	0.56637	4.1729
2.0064	7732.6	7194.3	117.73	705.03	166.73	435.88	269.15	0.60649	4.2285
2.1065	7727.1	7194.3	117.73	699.52	166.73	433.13	266.39	0.62419	4.1955
2.2067	7725.0	7194.3	120.06	695.11	164.40	429.76	265.35	0.64366	4.2281
2.3077	7716.1	7194.3	123.56	682.72	160.91	421.81	260.90	0.69559	4.2430
2.4079	7708.4	7191.9	123.56	675.02	158.55	416.79	258.23	0.73080	4.2573
2.5080	7705.2	7194.3	124.72	670.65	159.74	415.20	255.46	0.74804	4.1984
2.6081	7699.8	7194.3	125.89	664.06	158.57	411.32	252.74	0.78043	4.1877
2.7083	7696.6	7193.1	127.05	659.74	156.23	407.99	251.75	0.80480	4.2228
2.8093	7690.1	7195.4	129.38	650.86	156.25	403.56	247.30	0.85229	4.1655
2.9095	7684.7	7195.4	130.55	644.32	155.09	399.70	244.62	0.89192	4.1546
3.0096	7681.6	7194.3	131.72	640.03	152.75	396.39	243.64	0.92042	4.1902
3.1097	7670.6	7191.9	131.72	629.09	150.40	389.74	239.35	0.99668	4.1829
3.2099	7667.5	7194.3	134.05	623.67	150.41	387.04	236.63	1.0386	4.1463
3.3100	7661.1	7193.1	136.38	614.90	146.91	380.90	234.00	1.1110	4.1856
3.4111	7656.9	7194.3	137.54	609.54	146.92	378.23	231.31	1.1613	4.1488
3.5112	7654.9	7194.3	138.71	606.42	145.75	376.09	230.33	1.1908	4.1606
3.6114	7646.3	7194.3	141.04	595.49	143.42	369.46	226.04	1.3073	4.1521
3.7115	7644.4	7194.3	142.21	592.39	142.26	367.32	225.07	1.3421	4.1643
3.8116	7646.9	7195.4	142.21	594.89	143.43	369.16	225.73	1.3146	4.1476
3.9118	7640.6	7194.3	143.37	587.37	141.09	364.23	223.14	1.4042	4.1631
4.0128	7638.6	7194.3	144.54	584.27	139.92	362.10	222.17	1.4430	4.1756
4.1130	7637.8	7195.4	146.87	581.14	138.77	359.95	221.19	1.4838	4.1878
4.2131	7638.1	7194.3	146.87	581.39	137.59	359.49	221.90	1.4743	4.2255
4.3141	7637.3	7195.4	149.20	578.25	136.44	357.34	220.91	1.5162	4.2382
4.4134	7634.2	7194.3	148.03	576.40	136.43	356.41	219.99	1.5454	4.2250
4.5144	7635.6	7194.3	149.20	576.58	135.26	355.92	220.66	1.5360	4.2627
4.6146	7634.8	7195.4	150.37	574.62	135.27	354.95	219.68	1.5676	4.2479
4.7147	7637.2	7193.1	150.37	576.99	132.92	354.96	222.04	1.5171	4.3409
4.8148	7639.6	7194.3	150.37	579.45	134.10	356.77	222.68	1.4862	4.3212
4.9150	7634.5	7194.3	151.53	573.13	132.93	353.03	220.10	1.5782	4.3115

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
5.0151	7635.8	7194.3	150.37	575.63	134.10	354.86	220.77	1.5446	4.2926
5.1162	7633.9	7194.3	151.53	572.54	132.93	352.73	219.80	1.5879	4.3070
5.2163	7641.7	7194.3	152.70	579.15	131.76	355.46	223.69	1.4795	4.3954
5.3164	7636.5	7194.3	152.70	574.01	131.76	352.89	221.12	1.5570	4.3564
5.4166	7642.2	7195.4	155.03	577.33	130.61	353.97	223.36	1.5004	4.4203
5.5167	7640.3	7195.4	155.03	575.42	130.61	353.01	222.40	1.5289	4.4056
5.6169	7643.6	7194.3	155.03	578.79	129.43	354.11	224.68	1.4739	4.4717
5.7179	7641.7	7194.3	155.03	576.86	129.43	353.15	223.71	1.5016	4.4568
5.8180	7645.0	7193.1	155.03	580.21	128.26	354.23	225.98	1.4494	4.5238
5.9182	7647.4	7194.3	157.36	580.26	127.10	353.68	226.58	1.4439	4.5653
6.0183	7648.7	7194.3	157.36	581.52	127.10	354.31	227.21	1.4275	4.5752
6.1185	7647.9	7195.4	158.52	579.55	127.11	353.33	226.22	1.4535	4.5594
6.2195	7641.7	7194.3	158.52	573.32	125.94	349.63	223.69	1.5360	4.5525
6.3196	7639.7	7194.3	158.52	571.41	125.94	348.67	222.74	1.5650	4.5373
6.4198	7630.4	7193.1	158.52	562.07	124.76	343.41	218.65	1.7149	4.5051
6.5199	7626.5	7194.3	159.69	556.98	124.77	340.87	216.10	1.8141	4.4640
6.6201	7624.6	7194.3	159.69	555.10	124.77	339.93	215.16	1.8537	4.4489
6.7202	7618.5	7193.1	159.69	548.96	123.60	336.28	212.68	1.9816	4.4416
6.8212	7614.6	7194.3	160.86	543.90	123.61	333.75	210.15	2.1135	4.4003
6.9214	7610.5	7191.9	160.86	539.79	121.25	330.52	209.27	2.1949	4.4517
7.0215	7604.6	7194.3	162.02	532.77	122.44	327.61	205.17	2.4492	4.3513
7.1217	7596.5	7194.3	162.02	524.70	122.44	323.57	201.13	2.7895	4.2854
7.2218	7588.5	7194.3	162.02	516.66	122.44	319.55	197.11	3.2378	4.2197
7.3228	7580.5	7194.3	162.02	508.63	122.44	315.54	193.10	3.8567	4.1541
7.4230	7569.4	7194.3	162.02	497.55	122.44	309.99	187.55	5.2393	4.0636
7.5231	7565.4	7191.9	162.02	493.53	120.09	306.81	186.72	5.6178	4.1097
7.6233	7565.8	7194.3	163.19	492.85	121.27	307.06	185.79	5.9578	4.0639
7.7234	7567.2	7194.3	164.35	493.00	120.11	306.55	186.45	5.7246	4.1046
7.8236	7560.4	7195.4	165.52	485.05	120.12	302.58	182.46	7.9215	4.0381
7.9246	7557.5	7194.3	165.52	482.16	118.94	300.55	181.61	8.6951	4.0537
8.0247	7558.8	7194.3	165.52	483.48	118.94	301.21	182.27	8.1313	4.0648
8.1249	7557.1	7194.3	166.68	480.57	117.78	299.17	181.40	8.9562	4.0803
8.2250	7552.3	7194.3	166.68	475.78	117.78	296.78	179.00	12.062	4.0396
8.3252	7553.6	7194.3	167.85	475.93	116.61	296.27	179.66	11.091	4.0813
8.4253	7554.9	7194.3	167.85	477.23	116.61	296.92	180.31	10.210	4.0925
8.5263	7553.1	7194.3	169.02	474.32	115.45	294.88	179.44	11.505	4.1086
8.6265	7555.6	7195.4	170.18	475.57	115.46	295.51	180.06	10.605	4.1191
8.7266	7552.7	7194.3	170.18	472.72	114.28	293.50	179.22	11.939	4.1365
8.8268	7557.0	7194.3	170.18	477.02	114.28	295.65	181.37	9.1705	4.1741
8.9269	7555.3	7194.3	170.18	475.28	114.28	294.78	180.50	10.117	4.1589
9.0279	7553.5	7194.3	170.18	473.54	114.28	293.91	179.63	11.290	4.1436
9.1281	7554.8	7194.3	171.35	473.64	113.11	293.38	180.26	10.484	4.1873
9.2282	7556.1	7194.3	171.35	474.90	113.11	294.01	180.89	9.7324	4.1984
9.3284	7554.3	7194.3	172.51	472.00	111.95	291.98	180.03	10.868	4.2162
9.4285	7558.6	7194.3	172.51	476.24	111.95	294.09	182.14	8.5800	4.2540
9.5287	7559.8	7194.3	172.51	477.48	111.95	294.71	182.76	8.0822	4.2651
9.6297	7564.0	7194.3	173.68	480.49	110.78	295.64	184.85	6.8032	4.3372
9.7298	7568.2	7194.3	173.68	484.67	110.78	297.73	186.94	5.8461	4.3750
9.8300	7569.4	7194.3	174.84	484.71	109.62	297.16	187.55	5.6562	4.4218
9.9301	7577.3	7201.3	174.84	492.66	116.67	304.67	188.00	5.2747	4.2227

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
10.030	7567.7	7193.1	173.68	484.19	109.61	296.90	187.29	5.7518	4.4175
10.131	7570.0	7194.3	174.84	485.32	109.62	297.47	187.85	5.5468	4.4274
10.231	7565.3	7194.3	176.01	479.47	108.45	293.96	185.51	6.5592	4.4210
10.332	7564.7	7195.4	176.01	478.85	109.63	294.24	184.61	6.9821	4.3680
10.432	7561.8	7194.3	176.01	475.98	108.45	292.22	183.76	7.5383	4.3889
10.532	7558.9	7193.1	174.84	474.28	108.44	291.36	182.92	8.1261	4.3736
10.632	7555.4	7194.3	177.17	468.44	107.29	287.86	180.58	10.440	4.3662
10.733	7546.8	7193.1	176.01	460.93	107.28	284.11	176.83	18.700	4.2967
10.833	7546.2	7194.3	177.17	459.19	107.29	283.24	175.95	22.951	4.2800
10.933	7541.6	7194.3	178.34	453.43	106.12	279.77	173.65	57.058	4.2727
11.033	7542.6	7200.1	178.34	454.48	112.00	283.24	171.24	0.00000	4.0580
11.134	7536.4	7195.4	179.51	447.13	106.13	276.63	170.50	0.00000	4.2130
11.234	7530.8	7194.3	179.51	441.45	104.96	273.20	168.25	0.00000	4.2061
11.335	7516.5	7193.1	177.17	429.50	106.11	267.80	161.69	0.00000	4.0476
11.435	7513.1	7194.3	178.34	424.96	106.12	265.54	159.42	0.00000	4.0045
11.535	7508.6	7194.3	179.51	419.30	104.96	262.13	157.17	0.00000	3.9951
11.635	7506.4	7196.6	179.51	417.09	107.31	262.20	154.89	0.00000	3.8869
11.735	7508.2	7194.3	179.51	418.91	104.96	261.93	156.98	0.00000	3.9913
11.837	7503.7	7194.3	180.67	413.26	103.79	258.52	154.73	0.00000	3.9817
11.937	7500.4	7195.4	180.67	409.96	104.97	257.46	152.50	0.00000	3.9057
12.037	7500.5	7194.3	180.67	410.06	103.79	256.92	153.13	0.00000	3.9508
12.137	7492.2	7193.1	179.51	402.85	103.78	253.32	149.54	0.00000	3.8818
12.237	7494.5	7194.3	181.84	402.88	102.62	252.75	150.13	0.00000	3.9258
12.337	7487.3	7194.3	183.00	394.51	101.46	247.98	146.52	0.00000	3.8884
12.438	7493.0	7193.1	180.67	402.53	102.61	252.57	149.96	0.00000	3.9228
12.538	7489.8	7194.3	181.84	398.12	102.62	250.37	147.75	0.00000	3.8794
12.638	7492.1	7195.4	183.00	399.29	102.63	250.96	148.33	0.00000	3.8905
12.739	7485.5	7193.1	181.84	393.84	101.45	247.64	146.20	0.00000	3.8822
12.839	7483.9	7193.1	181.84	392.27	101.45	246.86	145.41	0.00000	3.8667
12.939	7486.3	7194.3	183.00	393.45	101.46	247.45	145.99	0.00000	3.8779
13.040	7491.3	7195.4	184.17	397.37	101.47	249.42	147.95	0.00000	3.9162
13.140	7488.6	7194.3	184.17	394.66	100.29	247.48	147.19	0.00000	3.9351
13.240	7492.6	7194.3	184.17	398.61	100.29	249.45	149.16	0.00000	3.9744
13.340	7486.6	7195.4	184.17	392.66	101.47	247.06	145.60	0.00000	3.8698
13.440	7492.2	7194.3	185.33	397.03	99.127	248.08	148.95	0.00000	4.0053
13.541	7490.6	7194.3	185.33	395.45	99.127	247.29	148.16	0.00000	3.9893
13.642	7494.5	7194.3	185.33	399.34	99.127	249.23	150.11	0.00000	4.0286
13.742	7496.8	7195.4	185.33	401.62	100.30	250.96	150.66	0.00000	4.0041
13.842	7497.9	7195.4	186.50	401.59	99.137	250.36	151.23	0.00000	4.0509
13.942	7497.9	7194.3	185.33	402.76	99.127	250.94	151.82	0.00000	4.0631
14.042	7500.2	7195.4	186.50	403.85	99.137	251.49	152.36	0.00000	4.0736
14.143	7502.8	7194.3	186.50	406.52	97.962	252.24	154.28	0.00000	4.1498
14.243	7499.7	7195.4	187.67	402.20	97.971	250.09	152.11	0.00000	4.1053
14.344	7505.0	7194.3	186.50	408.72	97.962	253.34	155.38	0.00000	4.1723
14.444	7498.1	7194.3	187.67	400.59	96.796	248.69	151.90	0.00000	4.1385
14.544	7503.0	7195.4	187.67	405.50	97.971	251.73	153.76	0.00000	4.1389
14.645	7500.2	7194.3	187.67	402.76	96.796	249.78	152.98	0.00000	4.1610
14.745	7496.0	7194.3	187.67	398.51	96.796	247.65	150.86	0.00000	4.1170
14.845	7491.8	7194.3	188.83	393.11	95.630	244.37	148.74	0.00000	4.1107
14.945	7490.2	7194.3	188.83	391.55	95.630	243.59	147.96	0.00000	4.0944

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
15.045	7488.6	7194.3	188.83	389.98	95.630	242.81	147.18	0.00000	4.0780
15.146	7479.1	7194.3	188.83	380.50	95.630	238.06	142.43	0.00000	3.9788
15.247	7473.8	7193.1	187.67	376.35	95.621	235.98	140.36	0.00000	3.9358
15.347	7473.4	7194.3	190.00	373.62	94.465	234.04	139.58	0.00000	3.9551
15.447	7466.7	7194.3	190.00	366.85	94.465	230.66	136.19	0.00000	3.8834
15.547	7462.5	7194.3	190.00	362.72	94.465	228.59	134.13	0.00000	3.8398
15.647	7458.4	7194.3	190.00	358.61	94.465	226.54	132.07	0.00000	3.7963
15.747	7456.9	7194.3	191.16	355.96	93.299	224.63	131.33	0.00000	3.8153
15.848	7450.2	7194.3	191.16	349.27	93.299	221.28	127.98	0.00000	3.7435
15.948	7451.4	7194.3	192.33	349.23	92.134	220.68	128.55	0.00000	3.7905
16.049	7449.9	7194.3	191.16	348.93	93.299	221.11	127.81	0.00000	3.7399
16.149	7448.4	7194.3	192.33	346.30	92.134	219.22	127.08	0.00000	3.7587
16.249	7443.0	7195.4	193.49	339.65	92.143	215.90	123.75	0.00000	3.6861
16.350	7446.6	7195.4	193.49	343.34	92.143	217.74	125.60	0.00000	3.7261
16.450	7439.2	7191.9	191.16	338.25	90.948	214.60	123.65	0.00000	3.7192
16.550	7438.9	7193.1	193.49	335.61	89.793	212.70	122.91	0.00000	3.7377
16.650	7440.0	7193.1	194.66	335.56	88.627	212.10	123.47	0.00000	3.7863
16.751	7437.2	7194.3	194.66	332.71	89.802	211.26	121.45	0.00000	3.7049
16.851	7434.6	7193.1	193.49	331.31	89.793	210.55	120.76	0.00000	3.6898
16.953	7436.8	7194.3	195.82	331.20	88.637	209.92	121.28	0.00000	3.7366
17.052	7436.8	7193.1	194.66	332.35	88.627	210.49	121.86	0.00000	3.7500
17.152	7435.1	7195.4	196.99	328.33	88.646	208.49	119.84	0.00000	3.7038
17.252	7432.6	7194.3	196.99	325.78	87.471	206.62	119.15	0.00000	3.7244
17.352	7434.8	7195.4	196.99	328.01	88.646	208.33	119.68	0.00000	3.7002
17.453	7432.2	7194.3	196.99	325.45	87.471	206.46	118.99	0.00000	3.7206
17.553	7433.3	7194.3	196.99	326.53	87.471	207.00	119.53	0.00000	3.7331
17.654	7432.8	7197.8	198.16	324.86	89.831	207.34	117.51	0.00000	3.6163
17.754	7435.5	7194.3	198.16	327.52	86.305	206.91	120.61	0.00000	3.7949
17.854	7441.5	7194.3	196.99	334.72	87.471	211.10	123.62	0.00000	3.8266
17.954	7442.6	7194.3	198.16	334.60	86.305	210.45	124.15	0.00000	3.8769
18.055	7444.7	7195.4	199.32	335.59	86.315	210.95	124.64	0.00000	3.8880
18.155	7442.2	7194.3	198.16	334.19	86.305	210.25	123.94	0.00000	3.8722
18.255	7445.6	7194.3	198.16	337.68	86.305	211.99	125.69	0.00000	3.9126
18.355	7444.2	7194.3	199.32	335.07	85.140	210.10	124.97	0.00000	3.9355
18.456	7445.2	7194.3	198.16	337.25	86.305	211.78	125.47	0.00000	3.9076
18.556	7447.4	7195.4	199.32	338.22	86.315	212.27	125.95	0.00000	3.9184
18.657	7444.8	7194.3	198.16	336.80	86.305	211.55	125.25	0.00000	3.9024
18.757	7440.9	7194.3	198.16	332.93	86.305	209.62	123.31	0.00000	3.8576
18.857	7444.3	7194.3	196.99	337.52	87.471	212.50	125.03	0.00000	3.8587
18.957	7440.5	7194.3	196.99	333.67	87.471	210.57	123.10	0.00000	3.8146
19.057	7445.9	7201.3	198.16	337.89	93.357	215.62	122.27	0.00000	3.6193
19.158	7436.5	7193.1	196.99	329.68	86.296	207.99	121.69	0.00000	3.8204
19.259	7433.8	7194.3	198.16	325.83	86.305	206.07	119.76	0.00000	3.7754
19.359	7434.8	7194.3	196.99	327.99	87.471	207.73	120.26	0.00000	3.7497
19.459	7428.6	7194.3	198.16	320.64	86.305	203.47	117.17	0.00000	3.7152
19.559	7430.7	7195.4	199.32	321.60	86.315	203.96	117.64	0.00000	3.7259
19.659	7422.2	7195.4	199.32	313.07	86.315	199.70	113.38	0.00000	3.6271
19.760	7419.7	7194.3	199.32	310.56	85.140	197.85	112.71	0.00000	3.6476
19.860	7419.5	7195.4	199.32	310.32	86.315	198.32	112.00	0.00000	3.5952
19.960	7411.1	7193.1	196.99	304.30	86.296	195.30	109.00	0.00000	3.5263

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
20.061	7410.9	7194.3	198.16	302.92	86.305	194.61	108.31	0.00000	3.5099
20.062	7413.2	7194.3	198.16	305.25	86.305	195.78	109.47	0.00000	3.5369

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
0.00000	0.00000	0.00000	3.1714	7.5802	344.18	7538.5	7194.3	6909.8
6.6813	0.10101	0.00000	3.1768	9.3712	423.57	7617.8	7194.3	6951.8
12.563	0.20116	0.00000	3.1821	9.9162	446.33	7640.6	7194.3	6963.4
19.811	0.30131	0.00000	3.1874	10.461	469.01	7663.3	7194.3	6973.9
26.508	0.40232	0.00000	3.1928	10.851	484.57	7678.8	7194.3	6983.2
33.927	0.50160	0.00000	3.1982	11.162	496.60	7690.9	7194.3	6987.9
40.736	0.60261	0.00000	3.2036	11.396	505.05	7699.3	7194.3	6991.4
47.976	0.70276	0.00000	3.2090	11.628	513.43	7708.9	7195.4	6997.2
52.990	0.80291	0.00000	3.2144	11.707	514.92	7709.2	7194.3	6998.4
60.190	0.90305	0.00000	3.2199	12.019	526.79	7721.1	7194.3	6999.6
67.192	1.0041	0.00000	3.2254	12.176	531.71	7724.8	7193.1	7003.1
73.063	1.1033	0.00000	3.2308	12.329	536.47	7731.9	7195.4	7006.6
79.510	1.2044	0.00000	3.2364	12.564	544.81	7739.1	7194.3	7008.9
86.419	1.3045	0.00000	3.2419	12.565	542.76	7735.9	7193.1	7011.2
93.480	1.4047	0.00000	3.2474	12.720	547.50	7741.8	7194.3	7014.7
99.902	1.5048	0.00000	3.2530	12.720	545.39	7739.7	7194.3	7017.0
107.06	1.6049	0.00000	3.2586	12.875	550.16	7744.4	7194.3	7018.2
113.46	1.7060	0.00000	3.2642	12.875	548.03	7742.3	7194.3	7019.4
120.10	1.8061	0.00000	3.2699	12.875	545.92	7740.2	7194.3	7021.7
126.32	1.9063	0.00000	3.2755	12.875	543.81	7738.1	7194.3	7022.9
133.99	2.0064	0.00000	3.2811	12.797	538.29	7732.6	7194.3	7027.5
139.99	2.1065	0.00000	3.2868	12.720	532.79	7727.1	7194.3	7027.5
145.75	2.2067	0.00000	3.2925	12.720	530.71	7725.0	7194.3	7029.9
154.09	2.3077	0.00000	3.2983	12.564	521.81	7716.1	7194.3	7033.4
161.04	2.4079	0.00000	3.3040	12.489	516.47	7708.4	7191.9	7033.4
166.85	2.5080	0.00000	3.3098	12.408	510.91	7705.2	7194.3	7034.5
173.69	2.6081	0.00000	3.3155	12.330	505.49	7699.8	7194.3	7035.7
180.93	2.7083	0.00000	3.3213	12.331	503.51	7696.6	7193.1	7036.9
186.45	2.8093	0.00000	3.3272	12.173	494.61	7690.1	7195.4	7039.2
193.37	2.9095	0.00000	3.3330	12.095	489.23	7684.7	7195.4	7040.4
199.48	3.0096	0.00000	3.3389	12.097	487.29	7681.6	7194.3	7041.5
207.46	3.1097	0.00000	3.3448	11.943	478.69	7670.6	7191.9	7041.5
213.03	3.2099	0.00000	3.3507	11.863	473.25	7667.5	7194.3	7043.9
220.66	3.3100	0.00000	3.3566	11.786	467.99	7661.1	7193.1	7046.2
226.82	3.4111	0.00000	3.3626	11.707	462.62	7656.9	7194.3	7047.4
234.24	3.5112	0.00000	3.3685	11.707	460.67	7654.9	7194.3	7048.5
240.68	3.6114	0.00000	3.3745	11.551	452.07	7646.3	7194.3	7050.8
247.36	3.7115	0.00000	3.3805	11.551	450.14	7644.4	7194.3	7052.0
253.97	3.8116	0.00000	3.3866	11.628	451.46	7646.9	7195.4	7052.0
259.98	3.9118	0.00000	3.3926	11.551	446.28	7640.6	7194.3	7053.2
266.72	4.0128	0.00000	3.3987	11.551	444.34	7638.6	7194.3	7054.3
273.58	4.1130	0.00000	3.4048	11.550	442.37	7637.8	7195.4	7056.7
280.78	4.2131	0.00000	3.4109	11.629	443.80	7638.1	7194.3	7056.7
286.86	4.3141	0.00000	3.4171	11.628	441.81	7637.3	7195.4	7059.0
293.13	4.4134	0.00000	3.4232	11.629	439.97	7634.2	7194.3	7057.8
299.89	4.5144	0.00000	3.4295	11.707	441.32	7635.6	7194.3	7059.0
305.69	4.6146	0.00000	3.4357	11.706	439.35	7634.8	7195.4	7060.2
313.35	4.7147	0.00000	3.4419	11.864	444.07	7637.2	7193.1	7060.2
319.35	4.8148	0.00000	3.4481	11.941	445.36	7639.6	7194.3	7060.2
326.18	4.9150	0.00000	3.4544	11.863	440.20	7634.5	7194.3	7061.3

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
332.77	5.0151	0.00000	3.4607	11.941	441.53	7635.8	7194.3	7060.2
339.03	5.1162	0.00000	3.4671	11.941	439.61	7633.9	7194.3	7061.3
346.38	5.2163	0.00000	3.4734	12.174	447.39	7641.7	7194.3	7062.5
352.17	5.3164	0.00000	3.4798	12.097	442.25	7636.5	7194.3	7062.5
358.65	5.4166	0.00000	3.4861	12.251	446.72	7642.2	7195.4	7064.8
365.74	5.5167	0.00000	3.4925	12.251	444.81	7640.3	7195.4	7064.8
372.99	5.6169	0.00000	3.4990	12.408	449.36	7643.6	7194.3	7064.8
380.19	5.7179	0.00000	3.5055	12.408	447.43	7641.7	7194.3	7064.8
386.35	5.8180	0.00000	3.5120	12.565	451.95	7645.0	7193.1	7064.8
392.50	5.9182	0.00000	3.5185	12.642	453.16	7647.4	7194.3	7067.2
399.43	6.0183	0.00000	3.5250	12.720	454.42	7648.7	7194.3	7067.2
406.35	6.1185	0.00000	3.5316	12.718	452.44	7647.9	7195.4	7068.3
412.52	6.2195	0.00000	3.5382	12.642	447.39	7641.7	7194.3	7068.3
419.27	6.3196	0.00000	3.5448	12.642	445.47	7639.7	7194.3	7068.3
426.61	6.4198	0.00000	3.5514	12.487	437.30	7630.4	7193.1	7068.3
433.53	6.5199	0.00000	3.5581	12.408	432.21	7626.5	7194.3	7069.5
440.15	6.6201	0.00000	3.5647	12.408	430.33	7624.6	7194.3	7069.5
446.29	6.7202	0.00000	3.5714	12.331	425.36	7618.5	7193.1	7069.5
453.09	6.8212	0.00000	3.5782	12.252	420.29	7614.6	7194.3	7070.7
459.53	6.9214	0.00000	3.5850	12.255	418.54	7610.5	7191.9	7070.7
467.02	7.0215	0.00000	3.5917	12.097	410.33	7604.6	7194.3	7071.8
473.29	7.1217	0.00000	3.5986	11.941	402.26	7596.5	7194.3	7071.8
480.39	7.2218	0.00000	3.6054	11.785	394.22	7588.5	7194.3	7071.8
486.30	7.3228	0.00000	3.6123	11.629	386.19	7580.5	7194.3	7071.8
493.54	7.4230	0.00000	3.6192	11.396	375.11	7569.4	7194.3	7071.8
499.87	7.5231	0.00000	3.6261	11.398	373.44	7565.4	7191.9	7071.8
505.84	7.6233	0.00000	3.6330	11.396	371.57	7565.8	7194.3	7073.0
512.45	7.7234	0.00000	3.6400	11.474	372.89	7567.2	7194.3	7074.2
519.42	7.8236	0.00000	3.6470	11.317	364.93	7560.4	7195.4	7075.3
526.73	7.9246	0.00000	3.6540	11.318	363.22	7557.5	7194.3	7075.3
533.13	8.0247	0.00000	3.6611	11.396	364.54	7558.8	7194.3	7075.3
539.81	8.1249	0.00000	3.6681	11.396	362.79	7557.1	7194.3	7076.5
545.99	8.2250	0.00000	3.6752	11.318	358.00	7552.3	7194.3	7076.5
553.32	8.3252	0.00000	3.6824	11.396	359.31	7553.6	7194.3	7077.7
559.20	8.4253	0.00000	3.6895	11.474	360.62	7554.9	7194.3	7077.7
566.87	8.5263	0.00000	3.6968	11.474	358.87	7553.1	7194.3	7078.8
573.74	8.6265	0.00000	3.7040	11.550	360.12	7555.6	7195.4	7080.0
580.24	8.7266	0.00000	3.7112	11.551	358.44	7552.7	7194.3	7080.0
586.95	8.8268	0.00000	3.7185	11.707	362.74	7557.0	7194.3	7080.0
593.89	8.9269	0.00000	3.7257	11.707	361.00	7555.3	7194.3	7080.0
599.87	9.0279	0.00000	3.7331	11.707	359.26	7553.5	7194.3	7080.0
606.33	9.1281	0.00000	3.7405	11.785	360.53	7554.8	7194.3	7081.2
614.04	9.2282	0.00000	3.7479	11.863	361.79	7556.1	7194.3	7081.2
620.49	9.3284	0.00000	3.7553	11.863	360.06	7554.3	7194.3	7082.3
627.37	9.4285	0.00000	3.7627	12.019	364.29	7558.6	7194.3	7082.3
633.77	9.5287	0.00000	3.7702	12.097	365.53	7559.8	7194.3	7082.3
641.40	9.6297	0.00000	3.7777	12.252	369.71	7564.0	7194.3	7083.5
646.49	9.7298	0.00000	3.7853	12.408	373.89	7568.2	7194.3	7083.5
654.19	9.8300	0.00000	3.7928	12.486	375.09	7569.4	7194.3	7084.7
659.86	9.9301	0.00000	3.8004	12.556	375.99	7577.3	7201.3	7084.7

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
667.31	10.030	0.00000	3.8080	12.565	374.58	7567.7	7193.1	7083.5
674.06	10.131	0.00000	3.8157	12.642	375.70	7570.0	7194.3	7084.7
681.66	10.231	0.00000	3.8234	12.564	371.02	7565.3	7194.3	7085.8
687.12	10.332	0.00000	3.8311	12.562	369.22	7564.7	7195.4	7085.8
694.51	10.432	0.00000	3.8389	12.564	367.53	7561.8	7194.3	7085.8
701.45	10.532	0.00000	3.8466	12.565	365.84	7558.9	7193.1	7084.7
707.60	10.632	0.00000	3.8544	12.486	361.15	7555.4	7194.3	7087.0
714.94	10.733	0.00000	3.8623	12.331	353.66	7546.8	7193.1	7085.8
721.41	10.833	0.00000	3.8702	12.330	351.90	7546.2	7194.3	7087.0
727.67	10.933	0.00000	3.8781	12.252	347.31	7541.6	7194.3	7088.1
734.85	11.033	0.00000	3.8860	12.168	342.49	7542.6	7200.1	7088.1
742.06	11.134	0.00000	3.8940	12.173	341.00	7536.4	7195.4	7089.3
747.79	11.234	0.00000	3.9020	12.097	336.49	7530.8	7194.3	7089.3
754.46	11.335	0.00000	3.9101	11.786	323.39	7516.5	7193.1	7087.0
761.63	11.435	0.00000	3.9182	11.707	318.84	7513.1	7194.3	7088.1
768.36	11.535	0.00000	3.9262	11.629	314.35	7508.6	7194.3	7089.3
774.93	11.635	0.00000	3.9344	11.549	309.78	7506.4	7196.6	7089.3
782.48	11.735	0.00000	3.9425	11.707	313.95	7508.2	7194.3	7089.3
788.89	11.837	0.00000	3.9509	11.629	309.47	7503.7	7194.3	7090.5
795.47	11.937	0.00000	3.9590	11.550	304.99	7500.4	7195.4	7090.5
802.15	12.037	0.00000	3.9673	11.629	306.27	7500.5	7194.3	7090.5
808.24	12.137	0.00000	3.9756	11.475	299.07	7492.2	7193.1	7089.3
814.89	12.237	0.00000	3.9839	11.551	300.25	7494.5	7194.3	7091.6
821.93	12.337	0.00000	3.9923	11.396	293.05	7487.3	7194.3	7092.8
828.13	12.438	0.00000	4.0008	11.631	299.92	7493.0	7193.1	7090.5
835.03	12.538	0.00000	4.0092	11.551	295.49	7489.8	7194.3	7091.6
842.50	12.638	0.00000	4.0177	11.628	296.66	7492.1	7195.4	7092.8
848.63	12.739	0.00000	4.0262	11.553	292.39	7485.5	7193.1	7091.6
855.21	12.839	0.00000	4.0348	11.553	290.82	7483.9	7193.1	7091.6
861.65	12.939	0.00000	4.0434	11.629	291.99	7486.3	7194.3	7092.8
868.45	13.040	0.00000	4.0521	11.784	295.90	7491.3	7195.4	7094.0
875.51	13.140	0.00000	4.0607	11.785	294.37	7488.6	7194.3	7094.0
882.79	13.240	0.00000	4.0694	11.941	298.31	7492.6	7194.3	7094.0
888.61	13.340	0.00000	4.0782	11.784	291.19	7486.6	7195.4	7094.0
894.95	13.440	0.00000	4.0869	12.019	297.91	7492.2	7194.3	7095.1
902.27	13.541	0.00000	4.0958	12.019	296.32	7490.6	7194.3	7095.1
908.36	13.642	0.00000	4.1047	12.174	300.21	7494.5	7194.3	7095.1
915.34	13.742	0.00000	4.1135	12.251	301.32	7496.8	7195.4	7095.1
921.58	13.842	0.00000	4.1225	12.329	302.46	7497.9	7195.4	7096.3
928.71	13.942	0.00000	4.1314	12.408	303.63	7497.9	7194.3	7095.1
935.23	14.042	0.00000	4.1404	12.485	304.71	7500.2	7195.4	7096.3
942.08	14.143	0.00000	4.1496	12.642	308.56	7502.8	7194.3	7096.3
948.34	14.243	0.00000	4.1586	12.562	304.23	7499.7	7195.4	7097.5
955.11	14.344	0.00000	4.1678	12.797	310.76	7505.0	7194.3	7096.3
961.90	14.444	0.00000	4.1769	12.642	303.79	7498.1	7194.3	7097.5
968.04	14.544	0.00000	4.1861	12.796	307.53	7503.0	7195.4	7097.5
975.46	14.645	0.00000	4.1954	12.797	305.97	7500.2	7194.3	7097.5
982.39	14.745	0.00000	4.2047	12.720	301.72	7496.0	7194.3	7097.5
988.70	14.845	0.00000	4.2141	12.642	297.48	7491.8	7194.3	7098.6
994.61	14.945	0.00000	4.2234	12.642	295.92	7490.2	7194.3	7098.6

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
1002.0	15.045	0.00000	4.2328	12.642	294.35	7488.6	7194.3	7098.6
1008.4	15.146	0.00000	4.2423	12.408	284.87	7479.1	7194.3	7098.6
1014.0	15.247	0.00000	4.2519	12.331	280.73	7473.8	7193.1	7097.5
1021.9	15.347	0.00000	4.2614	12.330	279.16	7473.4	7194.3	7099.8
1028.1	15.447	0.00000	4.2710	12.174	272.38	7466.7	7194.3	7099.8
1035.5	15.547	0.00000	4.2806	12.097	268.26	7462.5	7194.3	7099.8
1042.0	15.647	0.00000	4.2903	12.019	264.15	7458.4	7194.3	7099.8
1048.5	15.747	0.00000	4.3000	12.019	262.66	7456.9	7194.3	7101.0
1055.3	15.848	0.00000	4.3098	11.863	255.97	7450.2	7194.3	7101.0
1062.0	15.948	0.00000	4.3196	11.941	257.10	7451.4	7194.3	7102.1
1069.3	16.049	0.00000	4.3295	11.941	255.63	7449.9	7194.3	7101.0
1076.2	16.149	0.00000	4.3393	11.941	254.17	7448.4	7194.3	7102.1
1082.4	16.249	0.00000	4.3493	11.784	247.51	7443.0	7195.4	7103.3
1089.2	16.350	0.00000	4.3593	11.940	251.19	7446.6	7195.4	7103.3
1095.2	16.450	0.00000	4.3694	11.866	247.31	7439.2	7191.9	7101.0
1102.5	16.550	0.00000	4.3794	11.864	245.82	7438.9	7193.1	7103.3
1108.6	16.650	0.00000	4.3895	11.942	246.94	7440.0	7193.1	7104.5
1115.9	16.751	0.00000	4.3997	11.863	242.91	7437.2	7194.3	7104.5
1122.1	16.851	0.00000	4.4099	11.864	241.52	7434.6	7193.1	7103.3
1129.7	16.953	0.00000	4.4204	11.941	242.56	7436.8	7194.3	7105.6
1135.7	17.052	0.00000	4.4306	12.020	243.72	7436.8	7193.1	7104.5
1142.5	17.152	0.00000	4.4409	11.940	239.68	7435.1	7195.4	7106.8
1148.8	17.252	0.00000	4.4513	11.941	238.31	7432.6	7194.3	7106.8
1154.7	17.352	0.00000	4.4618	12.017	239.36	7434.8	7195.4	7106.8
1162.2	17.453	0.00000	4.4724	12.019	237.97	7432.2	7194.3	7106.8
1168.9	17.553	0.00000	4.4829	12.097	239.06	7433.3	7194.3	7106.8
1175.3	17.654	0.00000	4.4935	12.015	235.03	7432.8	7197.8	7108.0
1182.2	17.754	0.00000	4.5042	12.252	241.22	7435.5	7194.3	7108.0
1189.3	17.854	0.00000	4.5149	12.486	247.25	7441.5	7194.3	7106.8
1195.5	17.954	0.00000	4.5256	12.564	248.29	7442.6	7194.3	7108.0
1202.0	18.055	0.00000	4.5365	12.640	249.28	7444.7	7195.4	7109.1
1208.7	18.155	0.00000	4.5474	12.642	247.88	7442.2	7194.3	7108.0
1216.0	18.255	0.00000	4.5583	12.797	251.37	7445.6	7194.3	7108.0
1222.6	18.355	0.00000	4.5693	12.797	249.93	7444.2	7194.3	7109.1
1229.5	18.456	0.00000	4.5803	12.875	250.94	7445.2	7194.3	7108.0
1235.6	18.556	0.00000	4.5914	12.952	251.91	7447.4	7195.4	7109.1
1242.8	18.657	0.00000	4.6026	12.953	250.49	7444.8	7194.3	7108.0
1249.1	18.757	0.00000	4.6138	12.875	246.63	7440.9	7194.3	7108.0
1254.7	18.857	0.00000	4.6250	13.031	250.05	7444.3	7194.3	7106.8
1261.7	18.957	0.00000	4.6363	12.953	246.20	7440.5	7194.3	7106.8
1267.5	19.057	0.00000	4.6476	12.945	244.53	7445.9	7201.3	7108.0
1275.5	19.158	0.00000	4.6591	12.954	243.39	7436.5	7193.1	7106.8
1281.8	19.259	0.00000	4.6706	12.875	239.53	7433.8	7194.3	7108.0
1289.2	19.359	0.00000	4.6821	12.953	240.52	7434.8	7194.3	7106.8
1295.2	19.459	0.00000	4.6936	12.797	234.33	7428.6	7194.3	7108.0
1301.8	19.559	0.00000	4.7053	12.874	235.28	7430.7	7195.4	7109.1
1308.7	19.659	0.00000	4.7169	12.640	226.76	7422.2	7195.4	7109.1
1314.8	19.760	0.00000	4.7288	12.642	225.42	7419.7	7194.3	7109.1
1322.5	19.860	0.00000	4.7406	12.640	224.01	7419.5	7195.4	7109.1
1329.2	19.960	0.00000	4.7524	12.487	218.01	7411.1	7193.1	7106.8

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

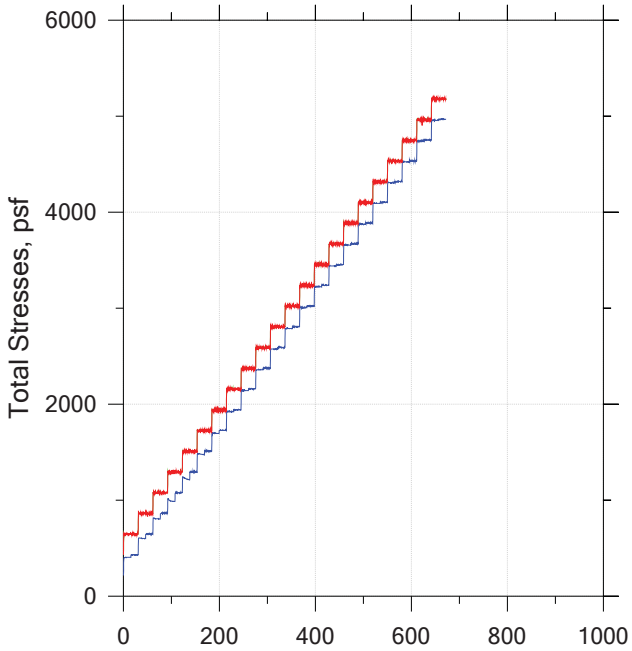
Shear Phase

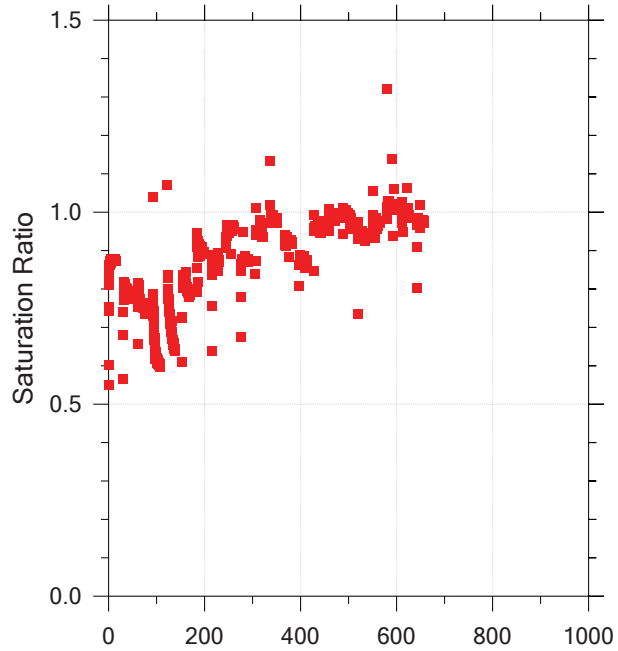
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
1335.5	20.061	0.00000	4.7643	12.486	216.62	7410.9	7194.3	7108.0
1335.6	20.062	0.00000	4.7646	12.564	218.95	7413.2	7194.3	7108.0

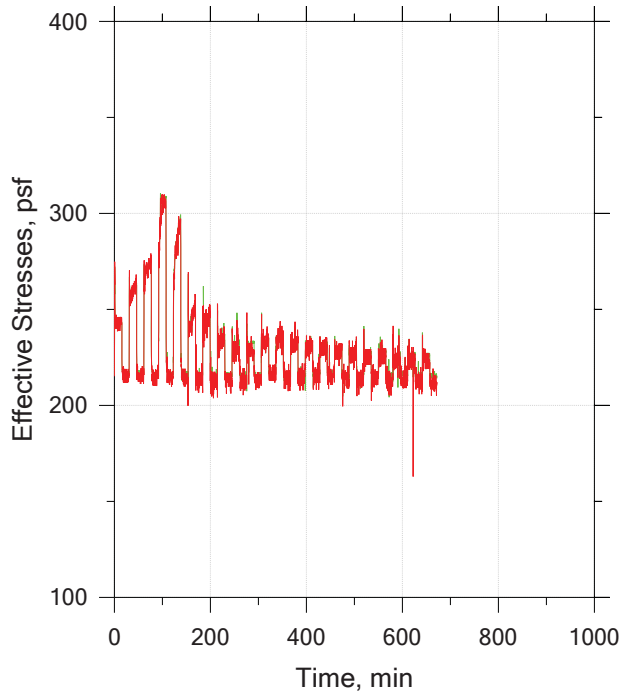
Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB STBG 204	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 8/23/21	Depth: 16.35
Test No.: CkoU 312	Sample Type:	Elevation: -57.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation		

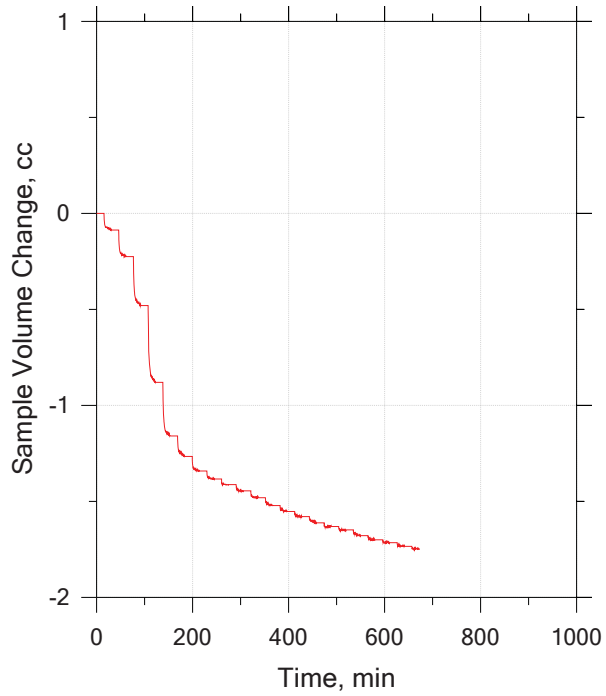
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Saturation Phase







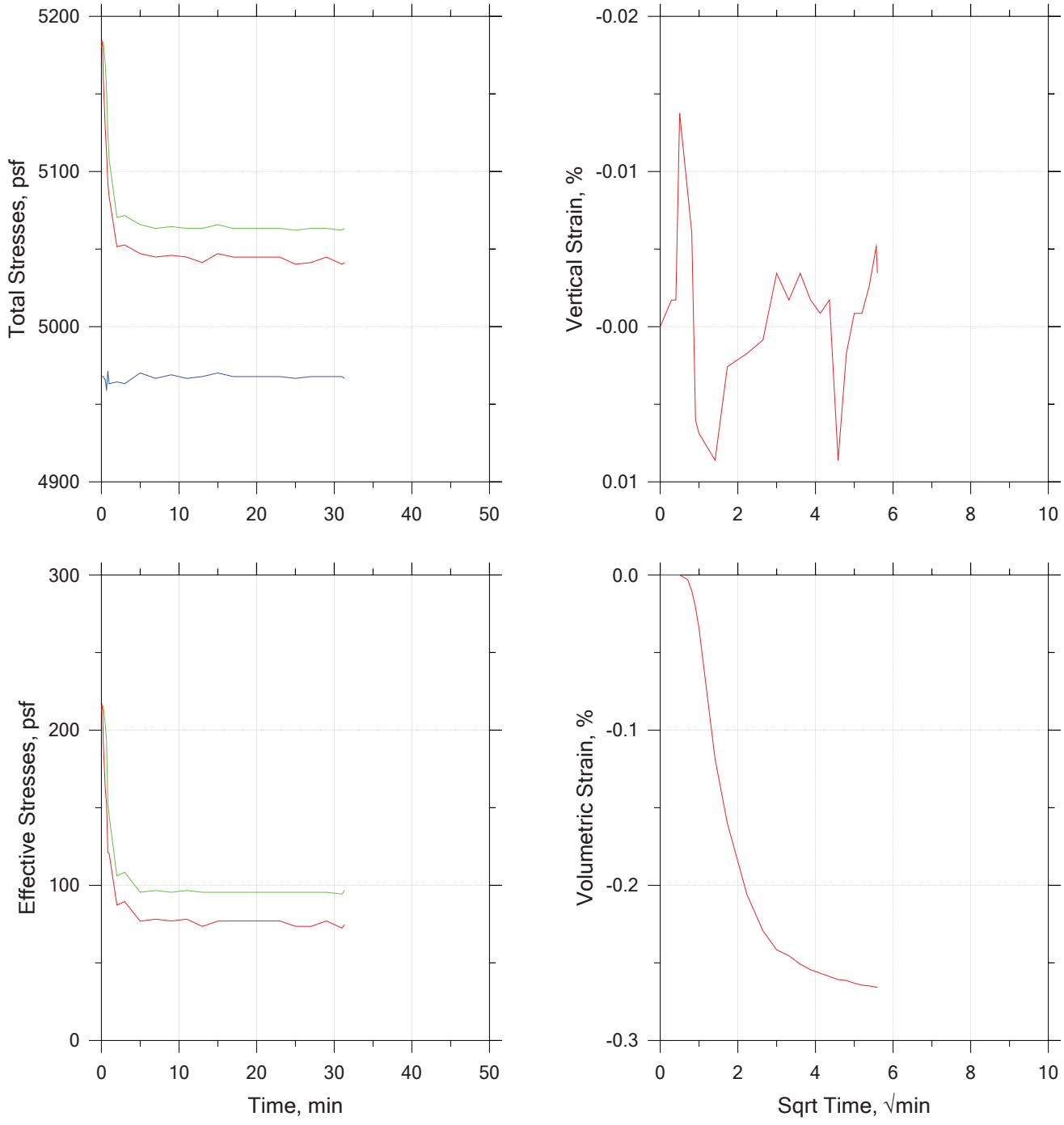


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 1 of 7

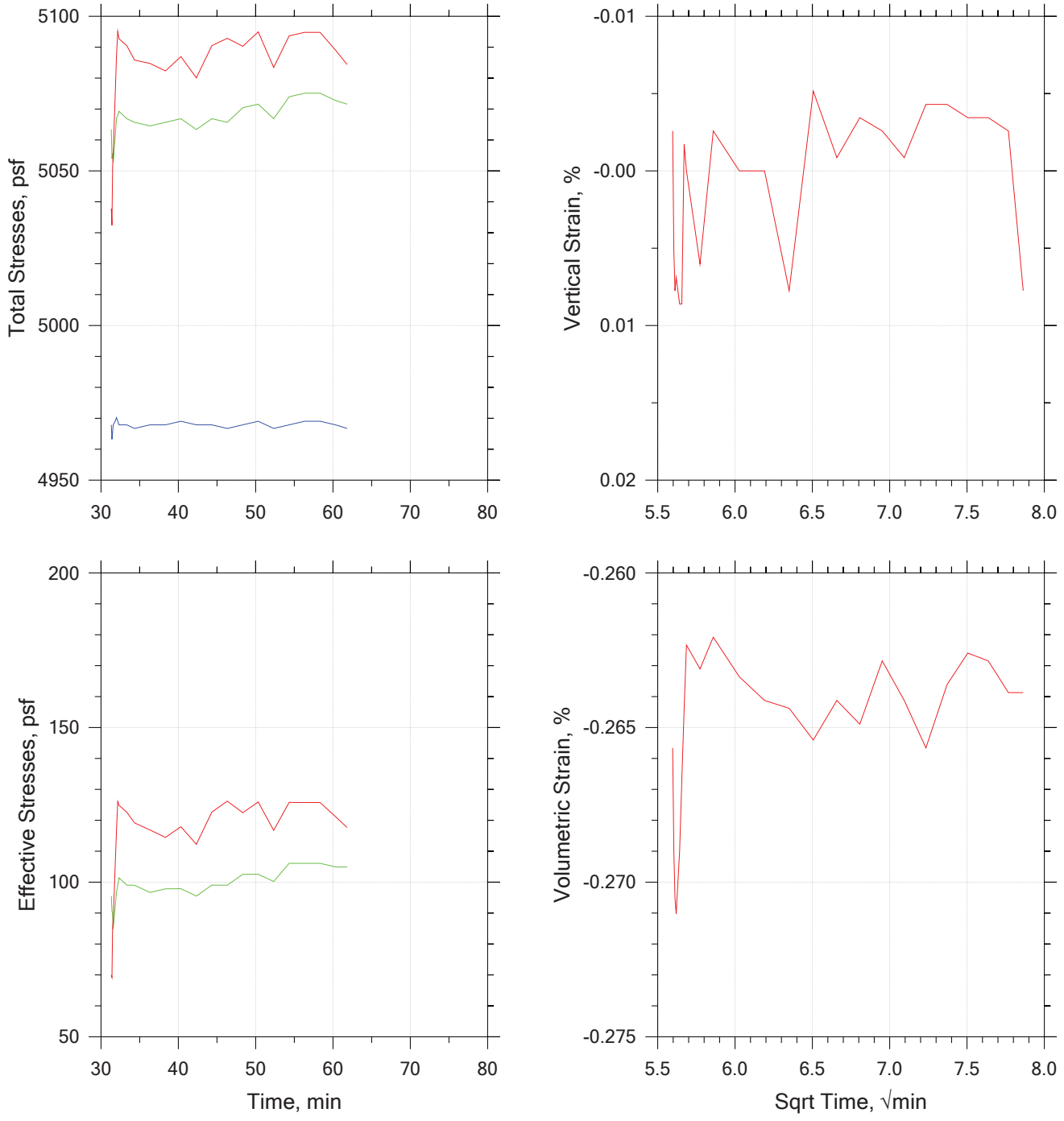


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 2 of 7

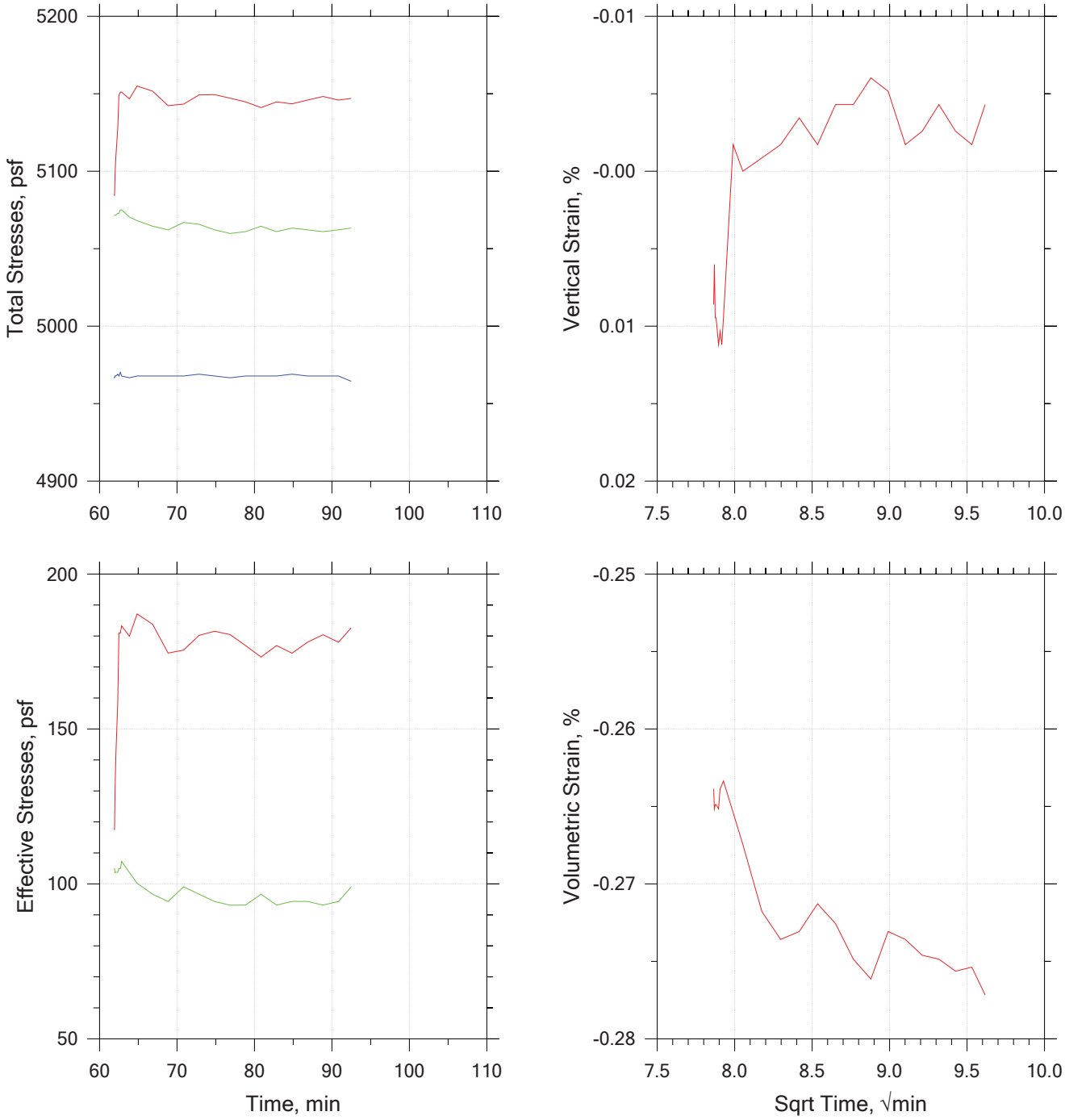


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 3 of 7

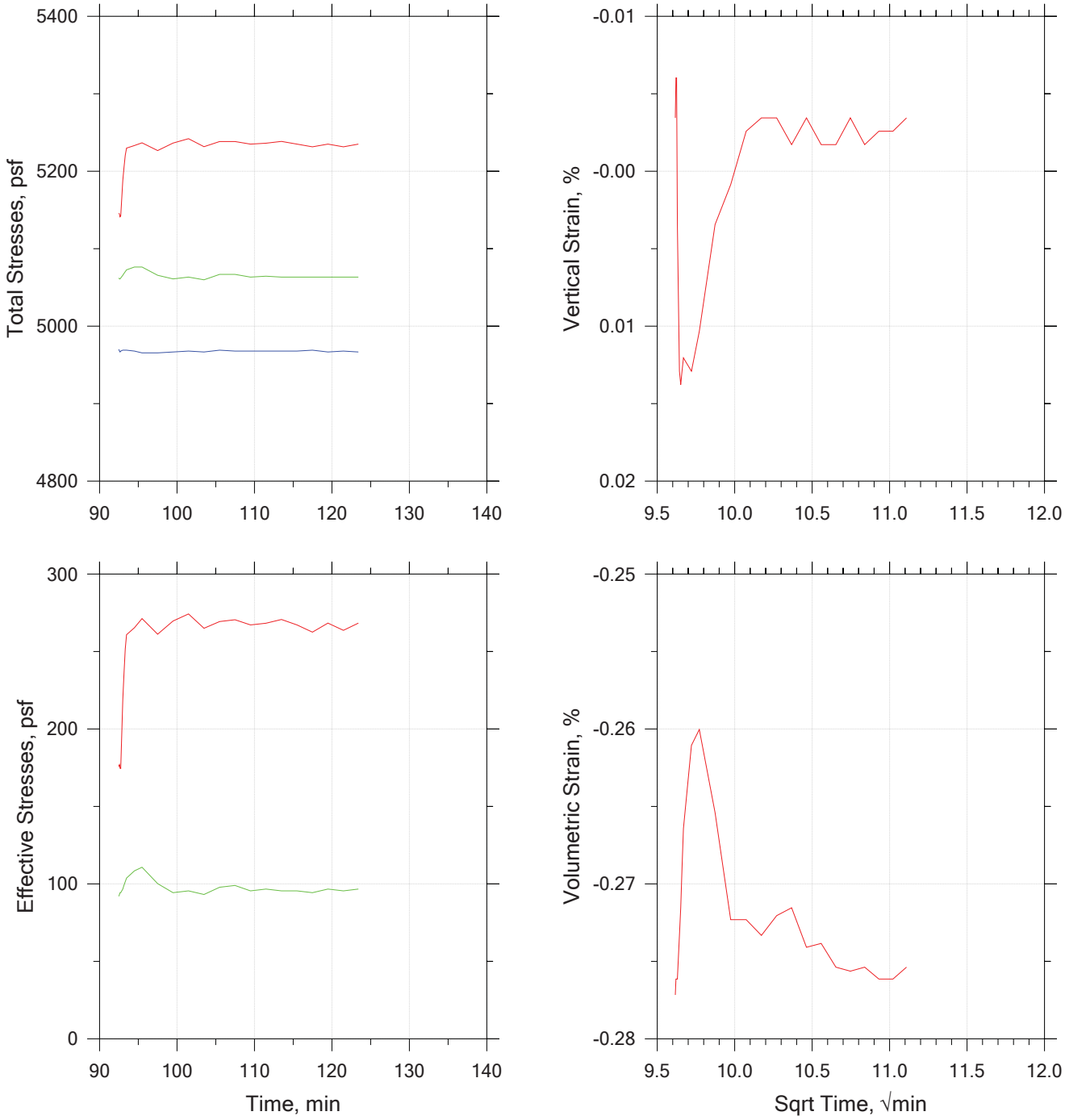


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
	Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
	Test No.: CkoU 314	Sample Type:	Elevation: -67.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 4 of 7

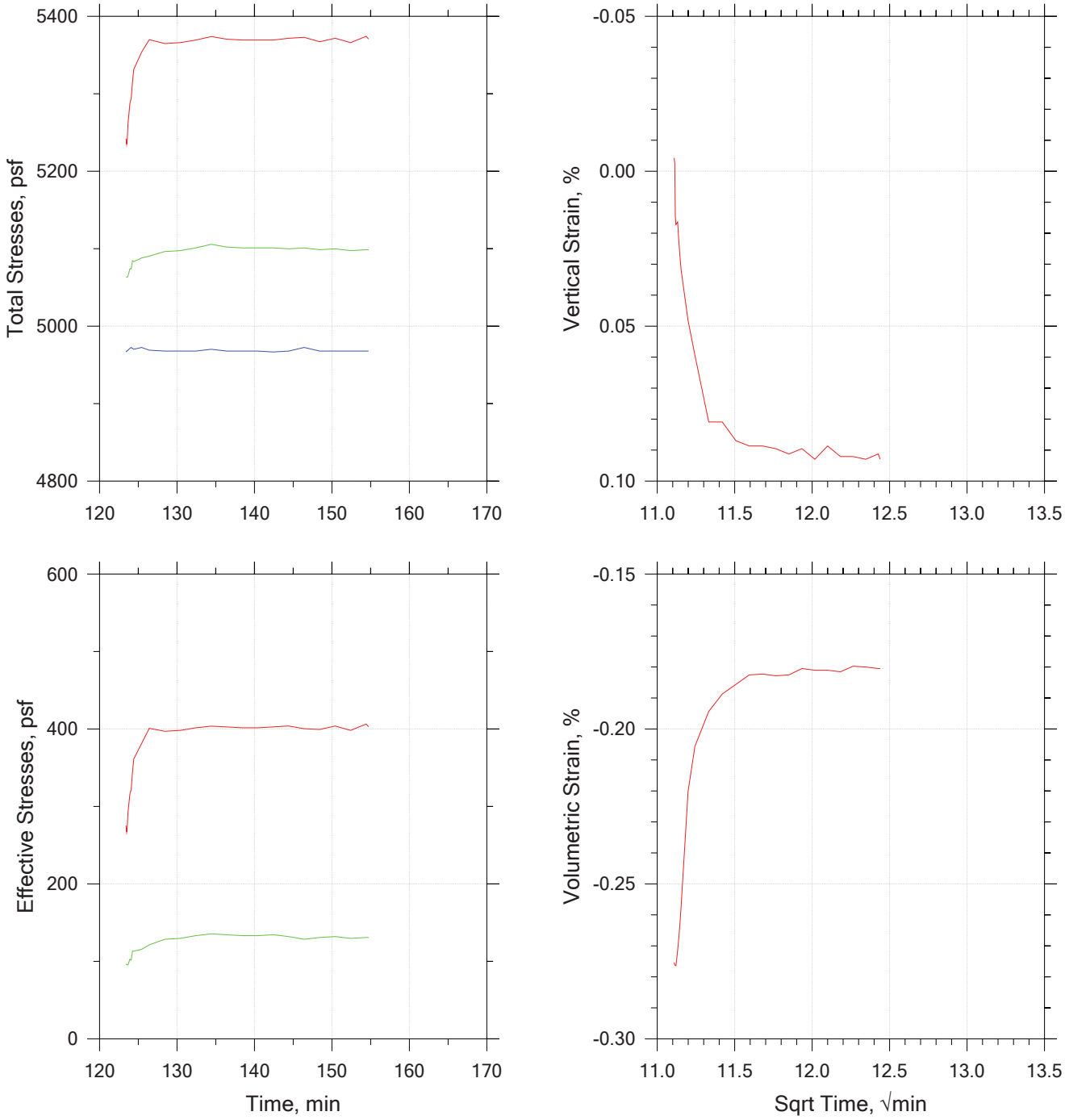


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
	Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
	Test No.: CkoU 314	Sample Type:	Elevation: -67.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 5 of 7

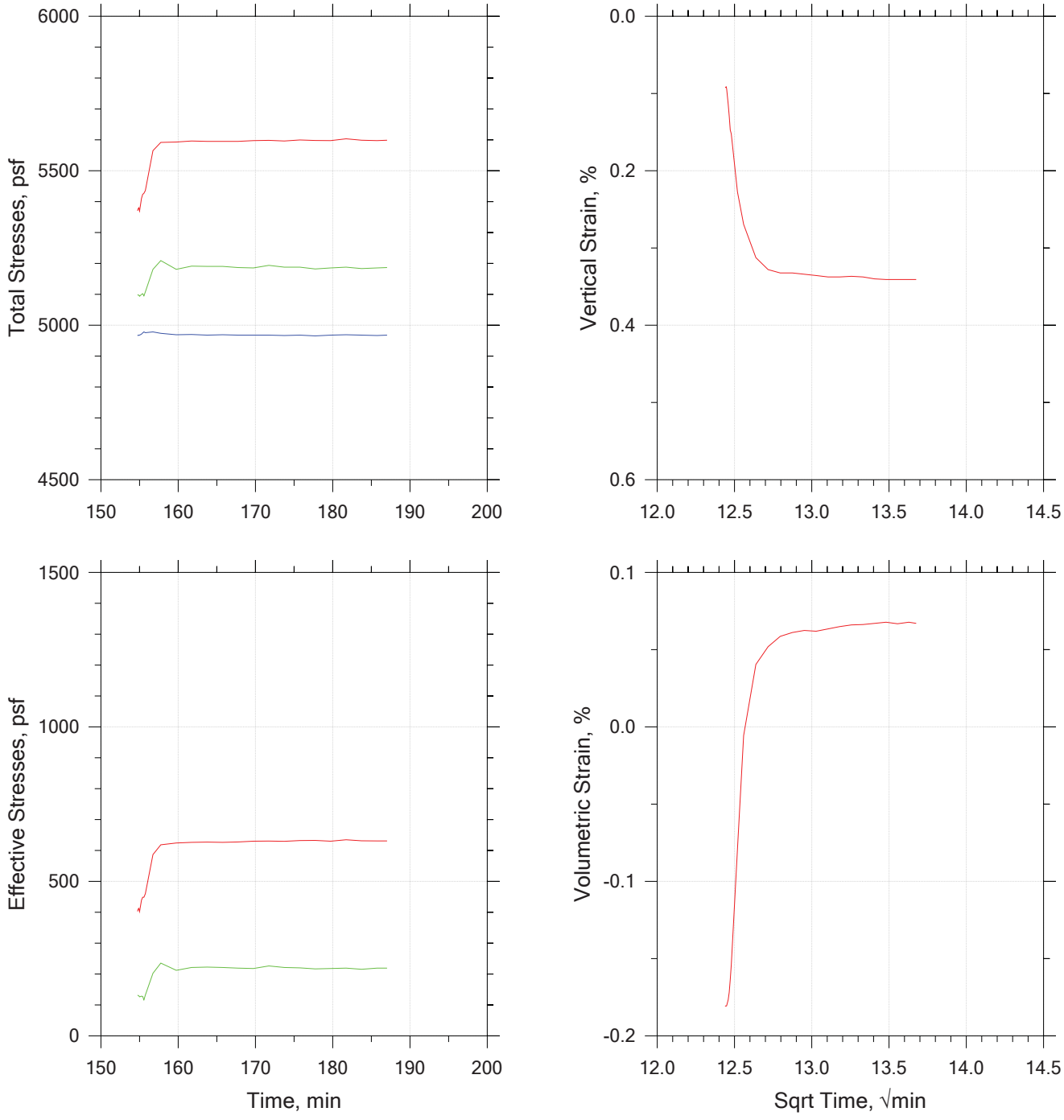


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 6 of 7

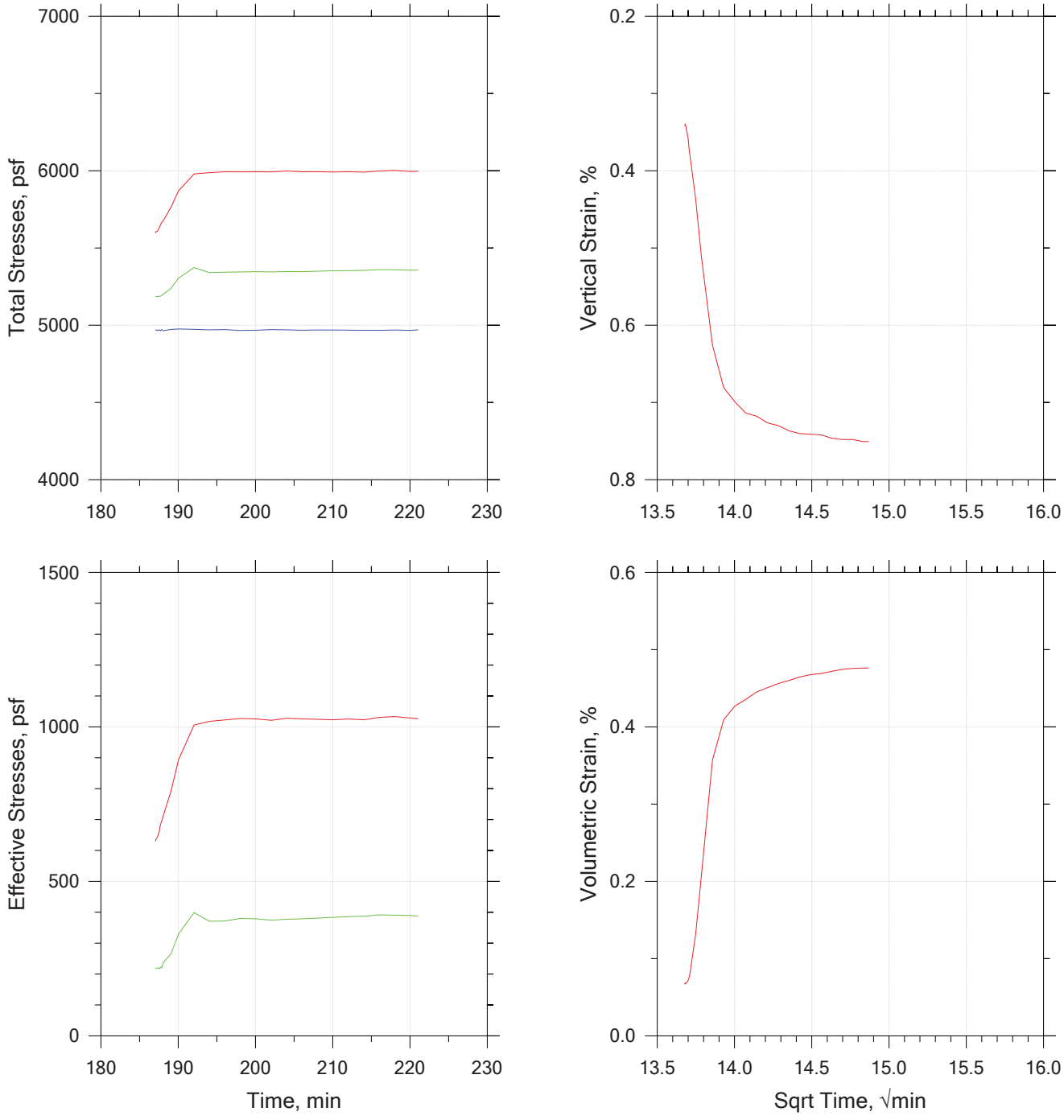


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
	Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
	Test No.: CkoU 314	Sample Type:	Elevation: -67.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

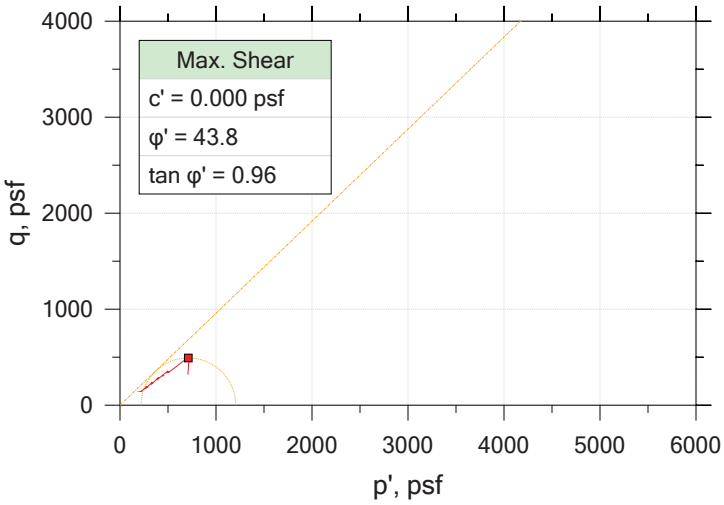
Consolidation Phase

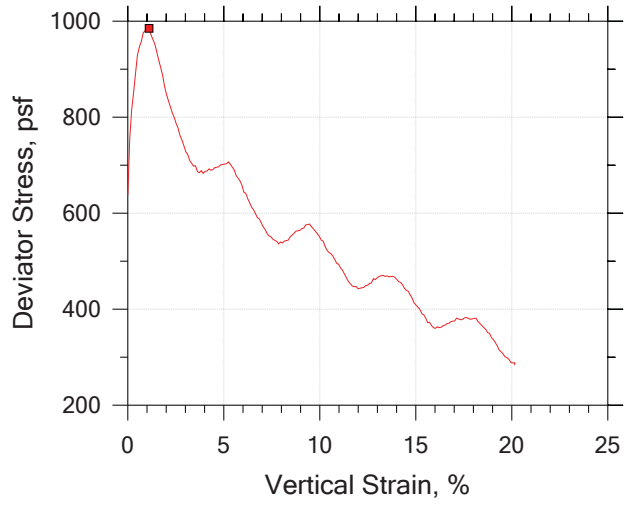
Step 7 of 7



Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



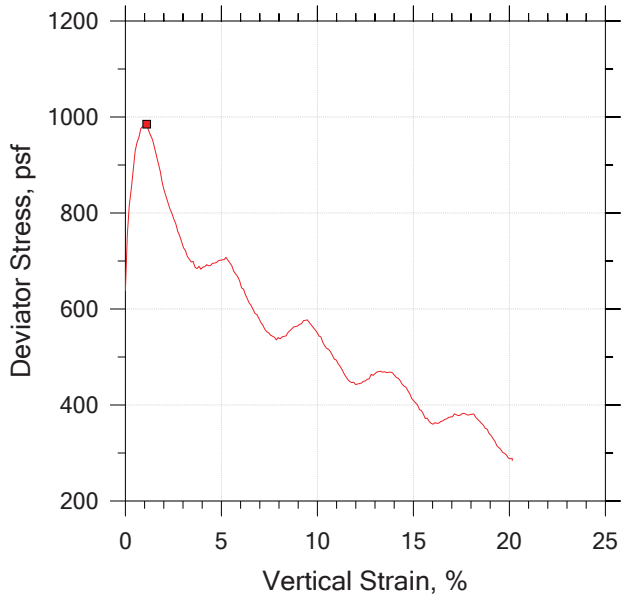


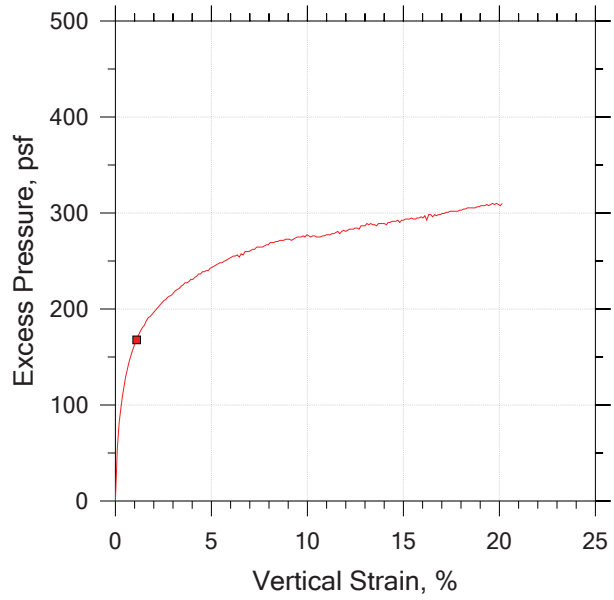
Symbol		■			
Sample ID		2U			
Depth, ft		26.35			
Test Number		CkoU 314			
Initial	Height, in	4.020			
	Diameter, in	2.014			
	Moisture Content (from Cuttings), %	42.7			
	Dry Density, pcf	80.0			
	Saturation (Wet Method), %	102.4			
	Void Ratio	1.15			
Final	Moisture Content, %	41.3			
	Dry Density, pcf	80.4			
	Cross-Sectional Area (Method A), in²	3.193			
	Saturation, %	100.0			
	Void Ratio	1.14			
	Back Pressure, %	4970.			
Vertical Effective Consolidation Stress, psf		1017.			
Horizontal Effective Consolidation Stress, psf		388.2			
Vertical Strain after Consolidation, %		0.7497			
Volumetric Strain after Consolidation, %		0.4763			
Time to 50% Consolidation, min		0.0000			
Shear Strength, psf		492.5			
Strain at Failure, %		1.11			
Strain Rate, %/min		0.01500			
Deviator Stress at Failure, psf		985.1			
Effective Minor Principal Stress at Failure, psf		219.1			
Effective Major Principal Stress at Failure, psf		1204.			
B-Value		0.95			

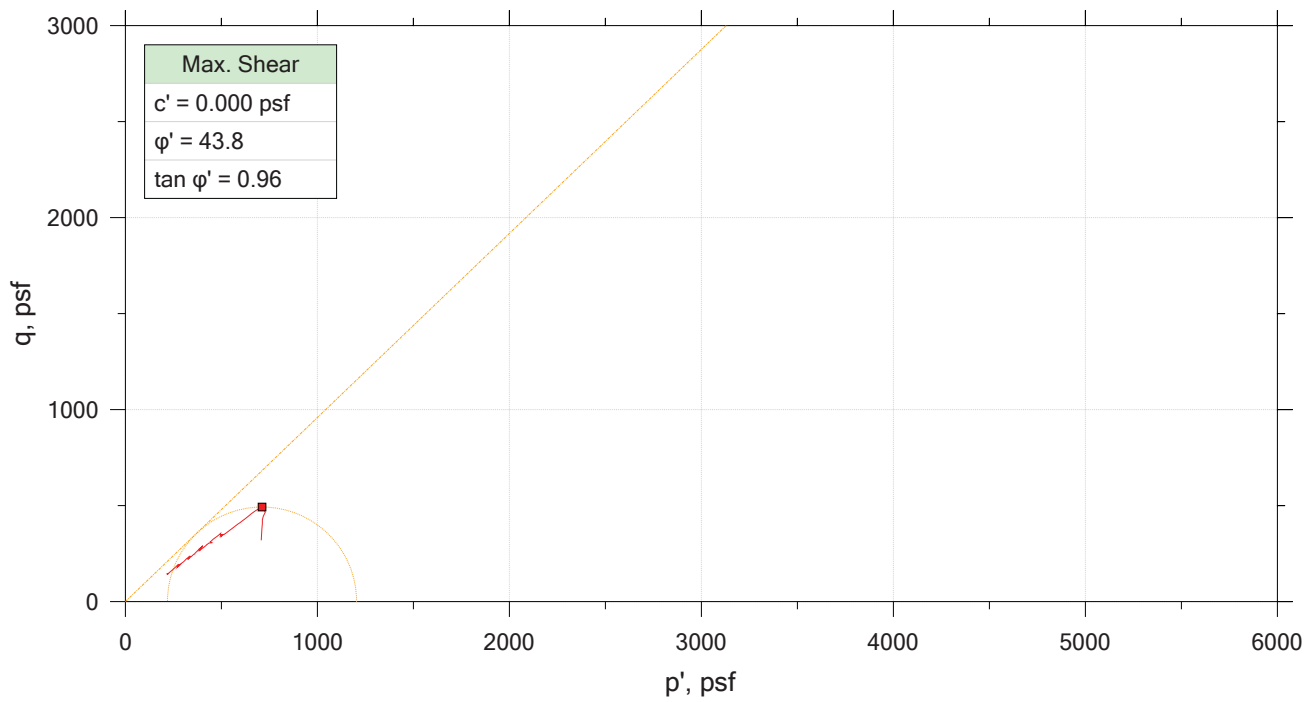
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



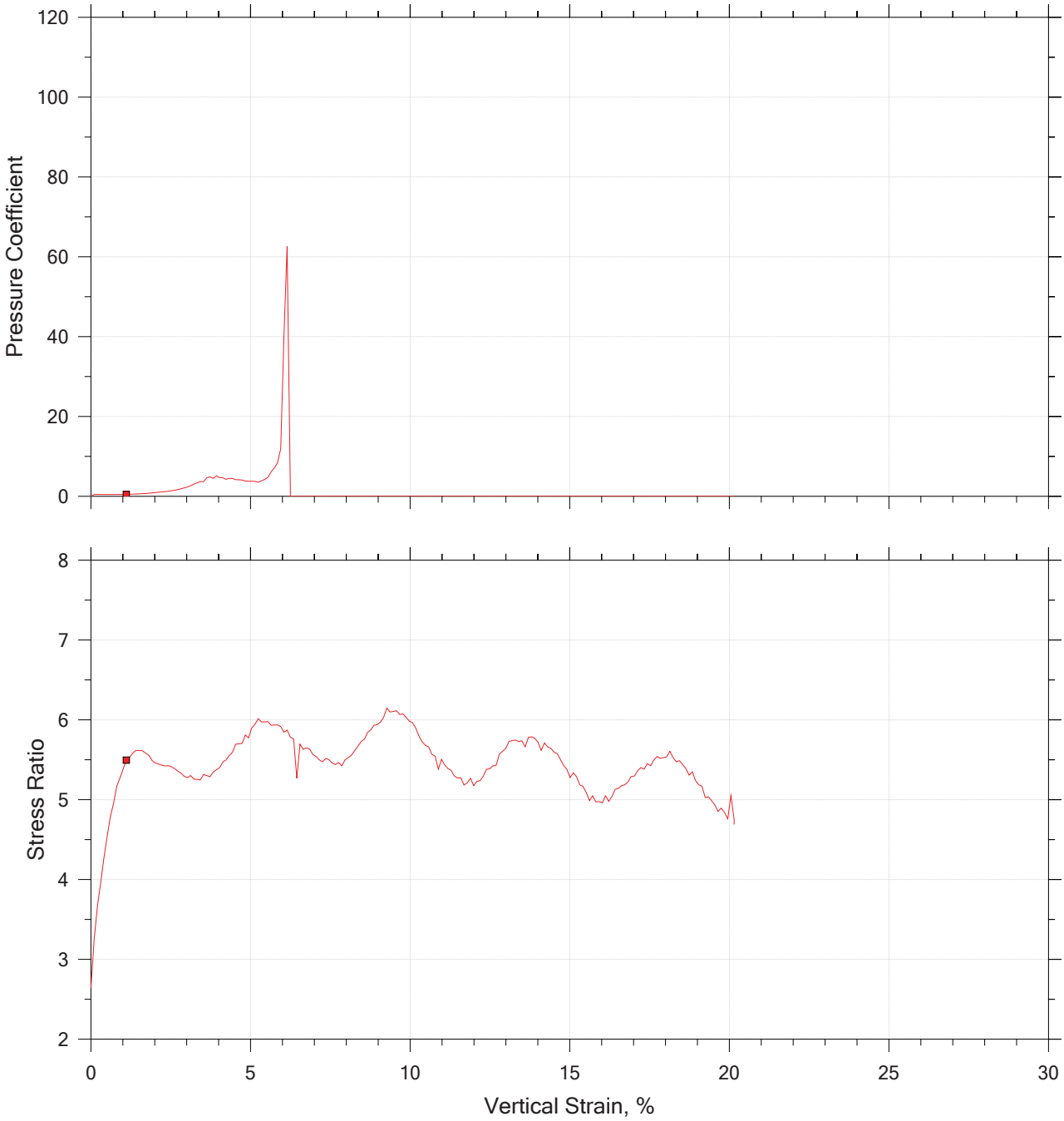




	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	2U	CkoU 314	26.35	SJR	8/26/21	sjr		CKoU 314.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
	Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
	Test No.: CkoU 314	Sample Type:	Elevation: -67.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	2U	CkoU 314	26.35	SJR	8/26/21	sjr		CKoU 314.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
	Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
	Test No.: CkoU 314	Sample Type:	Elevation: -67.35
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Specimen Height, in: 4.02	Liquid Limit: 32	Filter Strip Correction, psf: 0.00
Specimen Area, in²: 3.18	Plastic Limit: 20	Membrane Correction, lb/in: 4.20
Specimen Volume, cc: 209.76	Implied Specific Gravity: 2.75	Correction Type: Parabolic

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	316	---		408
Mass Container, gm	60.51	---	---	88.53
Mass Container + Wet Soil, gm	324.45	---	---	462.68
Mass Container + Dry Soil, gm	245.52	---	---	350.77
Mass Wet Soil, gm	263.94	383.59	374.15	374.15
Mass Dry Soil, gm	185.01	268.88	262.24	262.24
Mass Water, gm	78.93	114.71	111.91	111.91
Water Content, %	42.66	42.66	42.67	42.67
Void Ratio	---	1.15	1.19	---
Degree of Saturation, %	---	102.43	98.70	---
Dry Unit Weight, pcf	---	80.023	78.425	---

	End of Initialization	End of Consolidation/A	End of Saturation	End of Consolidation/B	End of Shear	Maximum Shear
Time, min	121.48	121.48	793.36	1014.4	2347.6	1087.7
Height, in	4.0213	4.0213	4.0199	3.9898	3.1857	3.9456
Area, in²	3.1841	3.1841	3.1841	3.1928	4.8076	3.2529
Volume, cc	209.96	209.96	209.75	208.75	208.75	208.75
Moisture, %	42.33	42.33	42.98	41.27	41.27	41.27
Void Ratio	1.15	1.15	1.15	1.14	1.14	1.14
Saturation, %	101.45	101.45	103.20	100.00	100.00	100.00
Dry Unit Weight, pcf	79.947	79.947	80.027	80.41	80.41	80.41
Wet Unit Weight, pcf	173.01	173.01	174.61	171.68	171.68	171.68
Tot. Vertical Stress, psf	431.19	430.81	5179.5	5987	5559.9	6342.3
Tot. Horizontal Stress, psf	431.35	431.35	5183.3	5358.4	5357.2	5357.2
Pore Pressure, psf	215.64	215.64	4967.9	4970.2	5280.3	5138.1
Eff. Vertical Stress, psf	215.55	215.16	211.59	1016.7	279.6	1204.2
Eff. Horizontal Stress, psf	215.71	215.71	215.38	388.17	76.941	219.15

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 1 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
0.00000	0.00000	0.00000	3.1841	5179.9	5183.3	4967.9	212.00	215.38	1.0159
0.083833	-0.0017215	0.00000	3.1841	5183.4	5183.3	4967.9	215.52	215.38	0.99934
0.16328	-0.0017215	0.00000	3.1841	5179.9	5183.3	4967.9	212.00	215.38	1.0159
0.25105	-0.013772	0.00000	3.1841	5158.8	5183.3	4967.9	190.87	215.38	1.1284
0.50293	-0.0086076	-0.0030683	3.1841	5127.7	5169.2	4965.6	162.20	203.60	1.2553
0.66417	-0.0060253	-0.010228	3.1841	5112.1	5152.7	4959.7	152.40	192.98	1.2663
0.83037	0.0060253	-0.020966	3.1841	5092.4	5124.5	4971.4	120.99	153.11	1.2655
1.0007	0.0068861	-0.034518	3.1841	5083.8	5108.0	4963.2	120.57	144.82	1.2011
2.0009	0.0086076	-0.11864	3.1841	5051.6	5070.4	4964.4	87.202	106.04	1.2160
3.0002	0.0025823	-0.16006	3.1841	5052.7	5071.6	4963.2	89.484	108.38	1.2112
5.0022	0.0017215	-0.20608	3.1841	5047.1	5065.7	4970.2	76.908	95.512	1.2419
7.0011	0.00086076	-0.22935	3.1841	5044.9	5063.4	4966.7	78.173	96.658	1.2365
9.0024	-0.0034430	-0.24162	3.1841	5046.0	5064.6	4969.0	76.958	95.502	1.2410
11.003	-0.0017215	-0.24546	3.1841	5044.9	5063.4	4966.7	78.173	96.658	1.2365
13.002	-0.0034430	-0.25083	3.1841	5041.4	5063.4	4967.9	73.486	95.492	1.2995
15.001	-0.0017215	-0.25441	3.1841	5047.1	5065.7	4970.2	76.908	95.512	1.2419
17.001	-0.00086076	-0.25671	3.1841	5044.9	5063.4	4967.9	77.007	95.492	1.2400
19.002	-0.0017215	-0.25876	3.1841	5044.9	5063.4	4967.9	77.007	95.492	1.2400
21.000	0.0086076	-0.26080	3.1841	5044.9	5063.4	4967.9	77.007	95.492	1.2400
23.001	0.0017215	-0.26131	3.1841	5044.9	5063.4	4967.9	77.007	95.492	1.2400
25.003	-0.00086076	-0.26310	3.1841	5040.3	5062.2	4966.7	73.535	95.483	1.2985
27.004	-0.00086076	-0.26438	3.1841	5041.4	5063.4	4967.9	73.486	95.492	1.2995
29.001	-0.0025823	-0.26489	3.1841	5044.9	5063.4	4967.9	77.007	95.492	1.2400
31.004	-0.0051646	-0.26566	3.1841	5040.3	5062.2	4967.9	72.369	94.317	1.3033
31.327	-0.0034430	-0.26566	3.1841	5041.4	5063.4	4966.7	74.651	96.658	1.2948

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 2 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
31.328	-0.0025823	-0.26566	3.1841	5037.8	5063.4	4967.9	69.964	95.492	1.3649
31.410	0.0051646	-0.26898	3.1841	5032.4	5054.0	4963.2	69.218	90.752	1.3111
31.492	0.0077468	-0.27052	3.1841	5051.2	5055.1	4965.6	85.611	89.596	1.0466
31.579	0.0068861	-0.27103	3.1841	5056.0	5052.8	4967.9	88.090	84.914	0.96395
31.832	0.0086076	-0.26898	3.1841	5074.4	5061.0	4969.0	105.30	91.976	0.87344
31.989	0.0086076	-0.26668	3.1841	5087.0	5066.9	4970.2	116.76	96.687	0.82807
32.159	-0.0017215	-0.26438	3.1841	5095.1	5068.1	4969.0	126.09	99.028	0.78540
32.332	0.00000	-0.26234	3.1841	5092.7	5069.3	4967.9	124.85	101.37	0.81195
33.330	0.0060253	-0.26310	3.1841	5090.5	5066.9	4967.9	122.61	99.018	0.80756
34.331	-0.0025823	-0.26208	3.1841	5085.9	5065.7	4966.7	119.14	99.009	0.83101
36.332	0.00000	-0.26336	3.1841	5084.7	5064.6	4967.9	116.86	96.668	0.82721
38.332	0.00000	-0.26413	3.1841	5082.3	5065.7	4967.9	114.46	97.843	0.85486
40.328	0.0077468	-0.26438	3.1841	5087.0	5066.9	4969.0	117.93	97.853	0.82977
42.330	-0.0051646	-0.26540	3.1841	5080.1	5063.4	4967.9	112.22	95.492	0.85092
44.330	-0.00086076	-0.26413	3.1841	5090.5	5066.9	4967.9	122.61	99.018	0.80756
46.330	-0.0034430	-0.26489	3.1841	5092.9	5065.7	4966.7	126.19	99.009	0.78463
48.332	-0.0025823	-0.26285	3.1841	5090.3	5070.4	4967.9	122.44	102.54	0.83750
50.329	-0.00086076	-0.26413	3.1841	5095.0	5071.6	4969.0	125.91	102.55	0.81448
52.332	-0.0043038	-0.26566	3.1841	5083.5	5066.9	4966.7	116.74	100.18	0.85820
54.331	-0.0043038	-0.26361	3.1841	5093.7	5074.0	4967.9	125.79	106.07	0.84323
56.331	-0.0034430	-0.26259	3.1841	5094.8	5075.1	4969.0	125.74	106.08	0.84364
58.329	-0.0034430	-0.26285	3.1841	5094.8	5075.1	4969.0	125.74	106.08	0.84364
60.332	-0.0025823	-0.26387	3.1841	5089.0	5072.8	4967.9	121.15	104.90	0.86581
61.840	0.0077468	-0.26387	3.1841	5084.4	5071.6	4966.7	117.68	104.89	0.89127

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 3 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
61.841	0.0086076	-0.26387	3.1841	5084.4	5071.6	4966.7	117.68	104.89	0.89127
61.923	0.0060253	-0.26515	3.1841	5084.4	5071.6	4966.7	117.68	104.89	0.89127
62.002	0.0094684	-0.26489	3.1841	5098.5	5071.6	4967.9	130.60	103.72	0.79417
62.094	0.0094684	-0.26489	3.1841	5109.0	5071.6	4967.9	141.17	103.72	0.73474
62.342	0.011190	-0.26515	3.1841	5127.8	5072.8	4969.0	158.72	103.73	0.65352
62.503	0.010329	-0.26387	3.1841	5148.9	5072.8	4967.9	181.02	104.90	0.57947
62.672	0.011190	-0.26361	3.1841	5151.1	5075.1	4970.2	180.92	104.91	0.57989
62.842	0.0094684	-0.26336	3.1841	5151.1	5075.1	4967.9	183.25	107.25	0.58524
63.845	-0.0017215	-0.26540	3.1841	5146.7	5070.4	4966.7	179.95	103.71	0.57632
64.843	0.00000	-0.26745	3.1841	5155.0	5068.1	4967.9	187.12	100.19	0.53546
66.842	-0.00086076	-0.27180	3.1841	5151.7	5064.6	4967.9	183.77	96.668	0.52603
68.844	-0.0017215	-0.27359	3.1841	5142.4	5062.2	4967.9	174.49	94.317	0.54052
70.844	-0.0034430	-0.27307	3.1841	5143.3	5066.9	4967.9	175.44	99.018	0.56441
72.843	-0.0017215	-0.27128	3.1841	5149.2	5065.7	4969.0	180.20	96.677	0.53650
74.845	-0.0043038	-0.27256	3.1841	5149.4	5062.2	4967.9	181.54	94.317	0.51955
76.843	-0.0043038	-0.27486	3.1841	5147.2	5059.8	4966.7	180.47	93.132	0.51605
78.844	-0.0060253	-0.27614	3.1841	5144.8	5061.0	4967.9	176.90	93.142	0.52652
80.845	-0.0051646	-0.27307	3.1841	5141.1	5064.6	4967.9	173.21	96.668	0.55811
82.842	-0.0017215	-0.27359	3.1841	5144.8	5061.0	4967.9	176.90	93.142	0.52652
84.843	-0.0025823	-0.27461	3.1841	5143.5	5063.4	4969.0	174.44	94.327	0.54073
86.843	-0.0043038	-0.27486	3.1841	5145.9	5062.2	4967.9	178.02	94.317	0.52982
88.845	-0.0025823	-0.27563	3.1841	5148.3	5061.0	4967.9	180.42	93.142	0.51625
90.845	-0.0017215	-0.27538	3.1841	5145.9	5062.2	4967.9	178.02	94.317	0.52982
92.484	-0.0043038	-0.27717	3.1841	5147.0	5063.4	4964.4	182.63	98.989	0.54202

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 4 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
92.486	-0.0034430	-0.27717	3.1841	5145.9	5062.2	4970.2	175.68	91.986	0.52359
92.568	-0.0060253	-0.27614	3.1841	5144.8	5061.0	4967.9	176.90	93.142	0.52652
92.647	-0.0060253	-0.27614	3.1841	5141.3	5061.0	4966.7	174.54	94.307	0.54031
92.738	0.0034430	-0.27614	3.1841	5142.4	5062.2	4967.9	174.49	94.317	0.54052
92.989	0.012911	-0.27333	3.1841	5188.0	5065.7	4969.0	218.94	96.677	0.44158
93.150	0.013772	-0.27154	3.1841	5204.3	5068.1	4969.0	235.25	99.028	0.42094
93.318	0.012911	-0.26898	3.1841	5220.6	5070.4	4969.0	251.57	101.38	0.40298
93.487	0.012051	-0.26643	3.1841	5229.9	5072.8	4969.0	260.85	103.73	0.39766
94.490	0.012911	-0.26106	3.1841	5233.2	5076.3	4967.9	265.36	108.42	0.40858
95.487	0.010329	-0.26003	3.1841	5236.8	5076.3	4965.6	271.22	110.75	0.40835
97.490	0.0034430	-0.26540	3.1841	5226.7	5065.7	4965.6	261.17	100.17	0.38356
99.488	0.00086076	-0.27231	3.1841	5236.3	5061.0	4966.7	269.63	94.307	0.34977
101.49	-0.0025823	-0.27231	3.1841	5242.1	5063.4	4967.9	274.21	95.492	0.34824
103.49	-0.0034430	-0.27333	3.1841	5231.7	5059.8	4966.7	264.99	93.132	0.35146
105.49	-0.0034430	-0.27205	3.1841	5238.4	5066.9	4969.0	269.35	97.853	0.36329
107.49	-0.0017215	-0.27154	3.1841	5238.4	5066.9	4967.9	270.52	99.018	0.36603
109.49	-0.0034430	-0.27410	3.1841	5235.1	5063.4	4967.9	267.17	95.492	0.35742
111.49	-0.0017215	-0.27384	3.1841	5236.2	5064.6	4967.9	268.29	96.668	0.36031
113.49	-0.0017215	-0.27538	3.1841	5238.6	5063.4	4967.9	270.69	95.492	0.35277
115.49	-0.0034430	-0.27563	3.1841	5235.1	5063.4	4967.9	267.17	95.492	0.35742
117.49	-0.0017215	-0.27538	3.1841	5231.5	5063.4	4969.0	262.48	94.327	0.35936
119.49	-0.0025823	-0.27614	3.1841	5235.1	5063.4	4966.7	268.34	96.658	0.36021
121.49	-0.0025823	-0.27614	3.1841	5231.5	5063.4	4967.9	263.65	95.492	0.36219
123.42	-0.0034430	-0.27538	3.1841	5235.1	5063.4	4966.7	268.34	96.658	0.36021

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 5 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
123.42	-0.0043038	-0.27538	3.1841	5242.1	5063.4	4966.7	275.38	96.658	0.35100
123.50	-0.0025823	-0.27614	3.1841	5235.1	5063.4	4967.9	267.17	95.492	0.35742
123.58	0.014633	-0.27640	3.1841	5242.1	5063.4	4967.9	274.21	95.492	0.34824
123.67	0.017215	-0.27640	3.1841	5260.8	5064.6	4969.0	291.77	95.502	0.32732
123.92	0.016354	-0.27154	3.1841	5287.4	5074.0	4971.4	315.98	102.57	0.32462
124.08	0.022380	-0.26745	3.1841	5294.4	5074.0	4972.5	321.86	101.41	0.31507
124.25	0.027544	-0.26285	3.1841	5315.0	5084.5	4971.4	343.63	113.15	0.32928
124.42	0.031848	-0.25722	3.1841	5331.5	5083.4	4970.2	361.29	113.14	0.31316
125.42	0.048203	-0.22015	3.1841	5353.6	5088.1	4972.5	381.03	115.51	0.30316
126.42	0.059393	-0.20557	3.1841	5369.9	5090.4	4969.0	400.85	121.36	0.30276
128.42	0.080912	-0.19432	3.1841	5364.9	5096.3	4967.9	397.03	128.40	0.32341
130.42	0.080912	-0.18870	3.1841	5366.0	5097.5	4967.9	398.15	129.58	0.32545
132.42	0.086937	-0.18563	3.1841	5369.4	5101.0	4967.9	401.50	133.10	0.33152
134.42	0.088658	-0.18256	3.1841	5373.8	5105.7	4970.2	403.63	135.47	0.33564
136.42	0.088658	-0.18231	3.1841	5370.5	5102.2	4967.9	402.61	134.28	0.33352
138.42	0.089519	-0.18282	3.1841	5369.4	5101.0	4967.9	401.50	133.10	0.33152
140.42	0.091241	-0.18256	3.1841	5369.4	5101.0	4967.9	401.50	133.10	0.33152
142.42	0.089519	-0.18052	3.1841	5369.4	5101.0	4966.7	402.66	134.27	0.33345
144.42	0.092962	-0.18103	3.1841	5371.8	5099.8	4967.9	403.90	131.93	0.32663
146.42	0.088658	-0.18103	3.1841	5372.9	5101.0	4972.5	400.35	128.44	0.32082
148.42	0.092101	-0.18154	3.1841	5367.1	5098.6	4967.9	399.26	130.75	0.32749
150.42	0.092101	-0.17975	3.1841	5371.8	5099.8	4967.9	403.90	131.93	0.32663
152.42	0.092962	-0.18000	3.1841	5366.0	5097.5	4967.9	398.15	129.58	0.32545
154.42	0.091241	-0.18052	3.1841	5374.2	5098.6	4967.9	406.31	130.75	0.32181
154.74	0.092962	-0.18052	3.1841	5370.7	5098.6	4967.9	402.78	130.75	0.32462

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 6 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
154.74	0.092101	-0.18052	3.1841	5370.7	5098.6	4967.9	402.78	130.75	0.32462
154.82	0.092101	-0.18077	3.1841	5376.6	5097.5	4966.7	409.88	130.74	0.31898
154.90	0.091241	-0.18077	3.1841	5380.1	5097.5	4967.9	412.23	129.58	0.31433
154.99	0.093823	-0.18052	3.1841	5369.7	5093.9	4967.9	401.84	126.05	0.31368
155.24	0.11362	-0.17668	3.1841	5410.5	5099.8	4971.4	439.14	128.43	0.29246
155.40	0.12911	-0.17182	3.1841	5423.3	5102.2	4974.9	448.44	127.28	0.28384
155.57	0.14719	-0.16364	3.1841	5427.2	5095.1	4978.4	448.81	116.74	0.26010
155.74	0.15235	-0.15418	3.1841	5435.9	5108.0	4976.0	459.90	132.00	0.28701
156.74	0.22724	-0.079263	3.1841	5565.0	5180.9	4978.4	586.64	202.54	0.34524
157.74	0.26942	-0.0056251	3.1841	5591.8	5209.1	4973.7	618.10	235.41	0.38086
159.74	0.31246	0.040399	3.1841	5593.2	5180.9	4969.0	624.14	211.86	0.33944
161.74	0.32795	0.051905	3.1841	5596.2	5191.5	4970.2	625.98	221.27	0.35348
163.74	0.33225	0.058552	3.1841	5595.1	5190.3	4967.9	627.19	222.43	0.35464
165.74	0.33225	0.061109	3.1841	5595.1	5190.3	4969.0	626.03	221.26	0.35344
167.74	0.33398	0.062388	3.1841	5595.3	5186.8	4967.9	627.37	218.90	0.34892
169.74	0.33570	0.061876	3.1841	5597.7	5185.6	4967.9	629.77	217.73	0.34572
171.74	0.33742	0.063411	3.1841	5598.4	5193.8	4967.9	630.54	225.96	0.35835
173.74	0.33742	0.064945	3.1841	5596.4	5188.0	4966.7	629.65	221.24	0.35138
175.74	0.33656	0.065967	3.1841	5599.9	5188.0	4967.9	632.01	220.08	0.34822
177.74	0.33742	0.066223	3.1841	5597.8	5182.1	4965.6	632.28	216.53	0.34247
179.74	0.34000	0.066990	3.1841	5597.7	5185.6	4967.9	629.77	217.73	0.34572
181.74	0.34086	0.067757	3.1841	5603.4	5188.0	4969.0	634.36	218.91	0.34509
183.74	0.34086	0.066734	3.1841	5598.9	5183.3	4967.9	631.06	215.38	0.34129
185.74	0.34086	0.067757	3.1841	5597.7	5185.6	4966.7	630.94	218.89	0.34693
187.04	0.34086	0.066990	3.1841	5598.8	5186.8	4967.9	630.89	218.90	0.34698

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 7 of 7

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
187.04	0.34172	0.066990	3.1841	5597.7	5185.6	4967.9	629.77	217.73	0.34572
187.12	0.34086	0.067502	3.1841	5606.9	5188.0	4970.2	636.72	217.75	0.34198
187.20	0.34000	0.068269	3.1841	5605.8	5186.8	4967.9	637.93	218.90	0.34315
187.29	0.34258	0.067757	3.1841	5608.2	5185.6	4965.6	642.67	220.06	0.34241
187.54	0.35205	0.069803	3.1841	5631.6	5188.0	4970.2	661.37	217.75	0.32924
187.70	0.35808	0.071593	3.1841	5649.2	5188.0	4965.6	683.64	222.41	0.32533
187.87	0.37271	0.075684	3.1841	5666.6	5191.5	4971.4	695.25	220.11	0.31659
188.04	0.38132	0.081309	3.1841	5675.6	5200.9	4964.4	711.17	236.50	0.33256
189.04	0.43727	0.13245	3.1841	5763.0	5237.3	4972.5	790.44	264.78	0.33498
190.04	0.50957	0.20583	3.1841	5870.0	5305.5	4976.0	893.94	329.45	0.36854
192.04	0.62577	0.35720	3.1841	5979.4	5372.5	4973.7	1005.7	398.78	0.39653
194.04	0.68086	0.40910	3.1841	5988.0	5340.8	4970.2	1017.8	370.54	0.36407
196.04	0.69894	0.42674	3.1841	5993.7	5343.1	4971.4	1022.4	371.73	0.36359
198.04	0.71357	0.43544	3.1841	5992.5	5345.5	4965.6	1026.9	379.91	0.36995
200.04	0.71787	0.44515	3.1841	5993.6	5346.6	4967.9	1025.7	378.75	0.36926
202.04	0.72648	0.45078	3.1841	5992.5	5345.5	4971.4	1021.1	374.08	0.36636
204.04	0.72993	0.45615	3.1841	5998.2	5347.8	4970.2	1028.0	377.59	0.36731
206.04	0.73681	0.46024	3.1841	5993.6	5346.6	4967.9	1025.7	378.75	0.36926
208.04	0.74025	0.46458	3.1841	5993.4	5350.2	4969.0	1024.4	381.11	0.37205
210.04	0.74112	0.46765	3.1841	5992.1	5352.5	4969.0	1023.1	383.46	0.37482
212.04	0.74198	0.46893	3.1841	5993.2	5353.7	4967.9	1025.3	385.80	0.37627
214.04	0.74628	0.47200	3.1841	5990.8	5354.9	4967.9	1022.9	386.98	0.37830
216.04	0.74800	0.47456	3.1841	5998.8	5359.6	4967.9	1030.9	391.68	0.37993
218.04	0.74800	0.47558	3.1841	6002.3	5359.6	4969.0	1033.3	390.51	0.37793
220.04	0.75058	0.47609	3.1841	5995.5	5356.0	4966.7	1028.7	389.32	0.37844
221.07	0.75058	0.47609	3.1841	5996.6	5357.2	4970.2	1026.4	387.00	0.37706

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
0.00000	5996.0	5358.4	0.00000	1025.7	388.17	706.96	318.79	0.00000	2.6425
0.10147	6112.9	5358.4	54.784	1087.9	333.39	710.63	377.24	0.46859	3.2631
0.20207	6173.4	5358.4	82.759	1120.4	305.41	712.92	407.51	0.46639	3.6686
0.30267	6208.2	5357.2	99.078	1138.9	287.92	713.39	425.47	0.46986	3.9555
0.40328	6247.4	5357.2	114.23	1162.9	272.77	717.85	445.08	0.45688	4.2635
0.50388	6287.6	5358.4	124.72	1192.7	263.45	728.05	464.60	0.42767	4.5270
0.60535	6304.5	5357.2	136.38	1197.9	250.62	724.28	473.66	0.44407	4.7800
0.70595	6315.6	5357.2	144.54	1200.9	242.46	721.67	479.21	0.45416	4.9529
0.80655	6333.6	5357.2	152.70	1210.7	234.30	722.49	488.19	0.45415	5.1672
0.90716	6337.7	5357.2	157.36	1210.1	229.64	719.87	490.23	0.46236	5.2696
1.0078	6338.3	5357.2	163.19	1204.9	223.81	714.34	490.53	0.47852	5.3834
1.1084	6342.3	5357.2	167.85	1204.2	219.15	711.69	492.54	0.48638	5.4951
1.2098	6329.1	5357.2	172.51	1186.4	214.48	700.42	485.94	0.51955	5.5312
1.3104	6319.4	5357.2	177.17	1172.0	209.82	690.90	481.08	0.54947	5.5856
1.4110	6309.7	5357.2	180.67	1158.8	206.33	682.56	476.24	0.57747	5.6164
1.5125	6292.0	5356.0	183.00	1138.8	202.82	670.82	468.00	0.62110	5.6150
1.6122	6276.7	5357.2	187.67	1118.8	199.33	659.09	459.76	0.66979	5.6130
1.7137	6261.4	5358.4	191.16	1100.0	197.01	648.52	451.51	0.72013	5.5837
1.8143	6243.9	5357.2	192.33	1081.4	194.67	638.04	443.37	0.77662	5.5551
1.9149	6220.8	5357.2	194.66	1056.0	192.34	624.15	431.82	0.86630	5.4902
2.0155	6204.6	5357.2	196.99	1037.4	190.01	613.70	423.70	0.94445	5.4598
2.1161	6191.8	5357.2	199.32	1022.3	187.68	604.97	417.30	1.0176	5.4470
2.2167	6179.0	5357.2	201.65	1007.2	185.34	596.26	410.92	1.1008	5.4341
2.3182	6166.3	5357.2	203.98	992.10	183.01	587.56	404.55	1.1961	5.4210
2.4188	6157.0	5357.2	206.32	980.46	180.68	580.57	399.89	1.2792	5.4265
2.5194	6144.3	5357.2	208.65	965.48	178.35	571.92	393.57	1.4029	5.4134
2.6200	6135.1	5357.2	209.81	955.07	177.18	566.13	388.94	1.5037	5.3902
2.7206	6119.2	5357.2	212.14	936.81	174.85	555.83	380.98	1.7150	5.3577
2.8212	6110.0	5357.2	213.31	926.46	173.69	550.08	376.39	1.8618	5.3341
2.9227	6097.5	5357.2	214.47	912.78	172.52	542.65	370.13	2.1001	5.2908
3.0233	6085.0	5357.2	216.81	897.99	170.19	534.09	363.90	2.4159	5.2764
3.1239	6079.3	5357.2	219.14	889.90	167.86	528.88	361.02	2.6081	5.3015
3.2245	6066.9	5357.2	220.30	876.35	166.69	521.52	354.83	3.0726	5.2572
3.3251	6061.2	5357.2	221.47	869.47	165.53	517.50	351.97	3.3547	5.2527
3.4266	6056.6	5358.4	223.80	862.54	164.37	513.45	349.08	3.6936	5.2474
3.5272	6056.4	5357.2	224.97	861.18	162.03	511.61	349.57	3.6726	5.3149
3.6278	6044.1	5357.2	227.30	846.57	159.70	503.13	343.43	4.6347	5.3010
3.7284	6041.7	5357.2	227.30	844.21	159.70	501.96	342.26	4.8675	5.2862
3.8290	6045.9	5357.2	228.46	847.27	158.53	502.90	344.37	4.4886	5.3444
3.9296	6040.3	5357.2	230.79	839.29	156.20	497.75	341.54	5.0963	5.3731
4.0310	6044.5	5357.2	230.79	843.47	156.20	499.84	343.63	4.6677	5.3998
4.1316	6045.4	5357.2	233.12	842.05	153.87	497.96	344.09	4.6297	5.4724
4.2322	6050.7	5358.4	234.29	846.18	153.88	500.03	346.15	4.2816	5.4989
4.3328	6048.3	5358.4	236.62	841.48	151.55	496.51	344.96	4.5198	5.5524
4.4334	6048.1	5357.2	236.62	841.24	150.38	495.81	345.43	4.4620	5.5943
4.5349	6052.2	5357.2	238.95	843.02	148.04	495.53	347.49	4.1834	5.6944
4.6355	6053.0	5357.2	238.95	843.88	148.04	495.96	347.92	4.1212	5.7002
4.7361	6055.0	5358.4	240.12	844.70	148.05	496.38	348.32	4.0649	5.7053
4.8367	6056.9	5356.0	240.12	846.53	145.70	496.12	350.42	3.8330	5.8100
4.9373	6061.1	5359.6	242.45	848.40	146.90	497.65	350.75	3.7738	5.7755

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
5.0379	6059.7	5357.2	243.62	845.83	143.38	494.60	351.22	3.7735	5.8991
5.1394	6060.5	5357.2	244.78	845.46	142.22	493.84	351.62	3.7452	5.9449
5.2400	6064.5	5357.2	245.95	848.31	141.05	494.68	353.63	3.5459	6.0143
5.3406	6060.0	5358.4	247.11	842.67	141.06	491.87	350.81	3.8587	5.9739
5.4412	6054.4	5358.4	248.28	835.92	139.89	487.91	348.01	4.2472	5.9754
5.5418	6047.7	5357.2	248.28	829.24	138.72	483.98	345.26	4.7116	5.9778
5.6424	6035.8	5357.2	249.44	816.16	137.55	476.85	339.30	6.1082	5.9334
5.7439	6030.3	5357.2	250.61	809.45	136.39	472.92	336.53	7.0953	5.9349
5.8445	6024.8	5357.2	251.77	802.77	135.22	469.00	333.78	8.4376	5.9367
5.9451	6016.1	5357.2	252.94	792.95	134.06	463.50	329.45	11.917	5.9151
6.0457	6001.2	5357.2	254.11	776.84	132.89	454.87	321.98	40.020	5.8457
6.1463	5998.9	5357.2	255.27	773.39	131.73	452.56	320.83	62.628	5.8712
6.2478	5987.1	5357.2	255.27	761.65	131.73	446.69	314.96	0.00000	5.7821
6.3484	5978.6	5357.2	256.44	751.95	130.56	441.25	310.69	0.00000	5.7594
6.4490	5980.2	5367.8	254.11	755.87	143.47	449.67	306.20	0.00000	5.2685
6.5496	5964.7	5357.2	257.60	736.92	129.39	433.16	303.76	0.00000	5.6951
6.6502	5955.1	5356.0	256.44	728.50	129.38	428.94	299.56	0.00000	5.6305
6.7508	5947.8	5357.2	259.93	717.69	127.06	422.38	295.31	0.00000	5.6483
6.8522	5945.6	5357.2	259.93	715.49	127.06	421.27	294.21	0.00000	5.6309
6.9528	5937.2	5357.2	259.93	707.09	127.06	417.08	290.02	0.00000	5.5649
7.0543	5928.9	5357.2	261.10	697.55	125.90	411.72	285.82	0.00000	5.5406
7.1541	5924.8	5358.4	262.27	692.28	125.91	409.09	283.19	0.00000	5.4983
7.2547	5915.3	5357.2	262.27	682.84	124.73	403.79	279.06	0.00000	5.4745
7.3561	5910.1	5357.2	264.60	675.29	122.40	398.84	276.44	0.00000	5.5170
7.4567	5908.0	5357.2	264.60	673.17	122.40	397.79	275.39	0.00000	5.4998
7.5573	5902.8	5357.2	264.60	667.99	122.40	395.20	272.80	0.00000	5.4575
7.6579	5900.7	5357.2	264.60	665.90	122.40	394.15	271.75	0.00000	5.4403
7.7585	5898.6	5357.2	265.76	662.63	121.23	391.93	270.70	0.00000	5.4657
7.8591	5894.6	5358.4	266.93	657.45	121.24	389.35	268.10	0.00000	5.4225
7.9606	5897.5	5357.2	266.93	660.32	120.07	390.19	270.12	0.00000	5.4995
8.0612	5896.5	5358.4	269.26	657.02	118.91	387.97	269.05	0.00000	5.5252
8.1618	5900.5	5358.4	269.26	661.00	118.91	389.96	271.05	0.00000	5.5587
8.2624	5900.3	5357.2	269.26	660.82	117.74	389.28	271.54	0.00000	5.6126
8.3630	5901.2	5357.2	270.42	660.58	116.57	388.57	272.00	0.00000	5.6667
8.4636	5908.2	5357.2	270.42	667.53	116.57	392.05	275.48	0.00000	5.7263
8.5651	5913.2	5358.4	271.59	671.38	116.58	393.98	277.40	0.00000	5.7589
8.6657	5916.0	5357.2	271.59	674.15	115.41	394.78	279.37	0.00000	5.8415
8.7663	5919.8	5357.2	271.59	678.02	115.41	396.71	281.31	0.00000	5.8751
8.8669	5920.7	5357.2	272.76	677.72	114.24	395.98	281.74	0.00000	5.9323
8.9675	5921.5	5357.2	272.76	678.57	114.24	396.40	282.16	0.00000	5.9398
9.0690	5925.3	5357.2	272.76	682.37	114.24	398.31	284.07	0.00000	5.9731
9.1696	5923.9	5354.9	271.59	682.12	113.06	397.59	284.53	0.00000	6.0335
9.2702	5930.7	5354.9	272.76	687.71	111.89	399.80	287.91	0.00000	6.1463
9.3708	5933.7	5357.2	273.92	689.60	113.08	401.34	288.26	0.00000	6.0986
9.4714	5935.7	5358.4	275.09	690.36	113.09	401.72	288.64	0.00000	6.1048
9.5720	5929.4	5357.2	275.09	684.12	111.91	398.01	286.10	0.00000	6.1131
9.6735	5924.3	5357.2	275.09	679.00	111.91	395.45	283.54	0.00000	6.0674
9.7741	5919.2	5357.2	276.25	672.75	110.74	391.75	281.00	0.00000	6.0748
9.8747	5913.0	5356.0	275.09	667.72	110.73	389.23	278.49	0.00000	6.0299
9.9753	5910.2	5358.4	277.42	662.59	110.75	386.67	275.92	0.00000	5.9825

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
10.077	5900.0	5356.0	276.25	653.53	109.57	381.55	271.98	0.00000	5.9645
10.178	5897.9	5356.0	275.09	652.58	110.73	381.65	270.92	0.00000	5.8932
10.278	5888.2	5357.2	276.25	641.73	110.74	376.24	265.49	0.00000	5.7947
10.379	5880.3	5357.2	276.25	633.85	110.74	372.30	261.55	0.00000	5.7235
10.479	5874.2	5356.0	275.09	628.93	110.73	369.83	259.10	0.00000	5.6796
10.580	5872.2	5356.0	275.09	626.88	110.73	368.81	258.07	0.00000	5.6611
10.680	5868.4	5357.2	275.09	623.08	111.91	367.50	255.59	0.00000	5.5677
10.782	5860.6	5357.2	276.25	614.10	110.74	362.42	251.68	0.00000	5.5452
10.883	5855.0	5359.6	276.25	608.57	113.09	360.83	247.74	0.00000	5.3811
10.983	5850.8	5357.2	277.42	603.17	109.58	356.37	246.80	0.00000	5.5044
11.084	5843.1	5357.2	277.42	595.45	109.58	352.51	242.93	0.00000	5.4340
11.184	5838.2	5357.2	277.42	590.61	109.58	350.09	240.51	0.00000	5.3898
11.285	5830.6	5357.2	278.58	581.77	108.41	345.09	236.68	0.00000	5.3662
11.386	5822.9	5357.2	278.58	574.10	108.41	341.26	232.85	0.00000	5.2955
11.487	5815.3	5357.2	279.75	565.32	107.25	336.28	229.04	0.00000	5.2712
11.588	5810.5	5357.2	280.91	559.40	106.08	332.74	226.66	0.00000	5.2732
11.688	5804.7	5356.0	278.58	555.86	107.24	331.55	224.31	0.00000	5.1834
11.789	5803.9	5357.2	280.91	552.75	106.08	329.42	223.33	0.00000	5.2106
11.890	5804.8	5357.2	282.08	552.48	104.92	328.70	223.78	0.00000	5.2660
11.991	5800.1	5357.2	280.91	548.94	106.08	327.51	221.43	0.00000	5.1747
12.091	5801.0	5357.2	282.08	548.68	104.92	326.80	221.88	0.00000	5.2297
12.192	5803.0	5358.4	283.25	549.55	104.93	327.24	222.31	0.00000	5.2375
12.293	5802.8	5357.2	283.25	549.32	103.75	326.54	222.78	0.00000	5.2946
12.393	5805.3	5356.0	283.25	551.87	102.58	327.22	224.65	0.00000	5.3801
12.495	5807.3	5357.2	284.41	552.69	102.58	327.64	225.05	0.00000	5.3876
12.595	5811.0	5357.2	284.41	556.33	102.58	329.46	226.87	0.00000	5.4231
12.696	5810.7	5356.0	283.25	557.22	102.58	329.90	227.32	0.00000	5.4323
12.796	5822.1	5358.4	286.74	565.12	101.43	333.27	231.85	0.00000	5.5716
12.897	5819.0	5357.2	286.74	562.05	100.25	331.15	230.90	0.00000	5.6063
12.998	5822.6	5357.2	286.74	565.63	100.25	332.94	232.69	0.00000	5.6419
13.099	5827.2	5358.4	289.07	567.96	99.098	333.53	234.43	0.00000	5.7313
13.200	5826.9	5357.2	287.91	568.79	99.088	333.94	234.85	0.00000	5.7402
13.300	5828.8	5358.4	289.07	569.53	99.098	334.32	235.22	0.00000	5.7472
13.401	5825.7	5357.2	287.91	567.62	99.088	333.35	234.27	0.00000	5.7284
13.502	5826.5	5357.2	287.91	568.39	99.088	333.74	234.65	0.00000	5.7363
13.603	5824.6	5357.2	286.74	567.59	100.25	333.92	233.67	0.00000	5.6616
13.704	5825.3	5357.2	289.07	566.03	97.922	331.98	234.05	0.00000	5.7804
13.804	5826.1	5357.2	289.07	566.79	97.922	332.35	234.43	0.00000	5.7881
13.905	5824.1	5357.2	289.07	564.84	97.922	331.38	233.46	0.00000	5.7682
14.005	5819.5	5357.2	289.07	560.20	97.922	329.06	231.14	0.00000	5.7209
14.106	5814.9	5357.2	287.91	556.74	99.088	327.92	228.83	0.00000	5.6187
14.208	5812.9	5357.2	290.24	552.47	96.757	324.61	227.86	0.00000	5.7099
14.308	5808.3	5357.2	290.24	547.88	96.757	322.32	225.56	0.00000	5.6624
14.409	5801.1	5357.2	291.41	539.46	95.591	317.53	221.94	0.00000	5.6435
14.509	5796.5	5357.2	291.41	534.91	95.591	315.25	219.66	0.00000	5.5958
14.610	5794.6	5357.2	291.41	533.02	95.591	314.31	218.72	0.00000	5.5761
14.711	5788.6	5358.4	292.57	525.79	95.601	310.69	215.09	0.00000	5.4998
14.812	5779.2	5356.0	290.24	518.70	95.581	307.14	211.56	0.00000	5.4268
14.913	5770.5	5357.2	292.57	507.74	94.426	301.08	206.66	0.00000	5.3771
15.013	5767.2	5358.4	292.57	504.41	95.601	300.00	204.40	0.00000	5.2762

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
15.114	5761.6	5357.2	293.74	497.67	93.260	295.46	202.20	0.00000	5.3363
15.214	5757.2	5357.2	293.74	493.24	93.260	293.25	199.99	0.00000	5.2888
15.316	5747.5	5357.2	293.74	483.58	93.260	288.42	195.16	0.00000	5.1853
15.416	5746.9	5358.4	294.90	481.77	93.270	287.52	194.25	0.00000	5.1653
15.517	5738.8	5357.2	293.74	474.82	93.260	284.04	190.78	0.00000	5.0914
15.618	5729.2	5357.2	293.74	465.27	93.260	279.27	186.01	0.00000	4.9890
15.718	5730.1	5357.2	294.90	464.97	92.094	278.53	186.44	0.00000	5.0488
15.819	5723.2	5357.2	294.90	458.06	92.094	275.08	182.98	0.00000	4.9738
15.920	5718.9	5357.2	296.07	452.58	90.929	271.75	180.82	0.00000	4.9773
16.021	5716.0	5356.0	294.90	450.90	90.919	270.91	179.99	0.00000	4.9594
16.122	5720.6	5357.2	297.23	453.13	89.763	271.45	181.68	0.00000	5.0481
16.222	5715.5	5353.7	292.57	452.68	90.899	271.79	180.89	0.00000	4.9800
16.323	5720.8	5358.4	298.40	452.23	89.773	271.00	181.23	0.00000	5.0375
16.424	5723.1	5357.2	298.40	454.47	88.597	271.54	182.94	0.00000	5.1297
16.525	5721.6	5354.9	296.07	455.37	88.578	271.97	183.39	0.00000	5.1408
16.625	5727.3	5357.2	298.40	458.66	88.597	273.63	185.03	0.00000	5.1769
16.726	5726.9	5356.0	297.23	459.49	88.588	274.04	185.45	0.00000	5.1869
16.827	5731.4	5357.2	298.40	462.78	88.597	275.69	187.09	0.00000	5.2234
16.927	5731.0	5356.0	298.40	462.43	87.422	274.93	187.51	0.00000	5.2897
17.029	5732.9	5357.2	299.56	463.16	87.432	275.30	187.86	0.00000	5.2974
17.129	5738.7	5357.2	299.56	468.95	87.432	278.19	190.76	0.00000	5.3636
17.230	5737.0	5357.2	300.73	466.03	86.266	276.15	189.88	0.00000	5.4022
17.331	5735.2	5357.2	300.73	464.27	86.266	275.27	189.00	0.00000	5.3819
17.431	5736.0	5357.2	301.90	463.85	85.101	274.48	189.38	0.00000	5.4506
17.533	5740.3	5358.4	301.90	468.19	86.276	277.23	190.96	0.00000	5.4267
17.633	5739.9	5357.2	301.90	467.78	85.101	276.44	191.34	0.00000	5.4968
17.734	5737.0	5356.0	301.90	464.89	83.925	274.41	190.48	0.00000	5.5393
17.834	5735.2	5356.0	301.90	463.13	83.925	273.53	189.60	0.00000	5.5184
17.935	5737.1	5357.2	303.06	463.81	83.935	273.87	189.94	0.00000	5.5259
18.036	5737.8	5357.2	303.06	464.52	83.935	274.23	190.29	0.00000	5.5342
18.137	5738.5	5357.2	304.23	464.03	82.769	273.40	190.63	0.00000	5.6063
18.238	5731.8	5357.2	304.23	457.39	82.769	270.08	187.31	0.00000	5.5260
18.338	5728.8	5358.4	305.39	453.18	82.779	267.98	185.20	0.00000	5.4745
18.439	5723.5	5357.2	305.39	447.88	81.604	264.74	183.14	0.00000	5.4885
18.539	5719.3	5357.2	305.39	443.73	81.604	262.67	181.06	0.00000	5.4376
18.640	5715.2	5357.2	305.39	439.60	81.604	260.60	179.00	0.00000	5.3870
18.742	5708.7	5357.2	305.39	433.05	81.604	257.33	175.72	0.00000	5.3068
18.842	5707.0	5357.2	306.56	430.20	80.438	255.32	174.88	0.00000	5.3483
18.943	5698.1	5357.2	306.56	421.31	80.438	250.88	170.44	0.00000	5.2377
19.043	5695.2	5358.4	307.72	417.23	80.448	248.84	168.39	0.00000	5.1863
19.144	5687.6	5357.2	307.72	409.66	79.272	244.47	165.19	0.00000	5.1677
19.245	5682.3	5358.4	307.72	404.37	80.448	242.41	161.96	0.00000	5.0266
19.346	5672.4	5357.2	308.89	393.32	78.107	235.71	157.61	0.00000	5.0356
19.447	5667.3	5356.0	307.72	389.38	78.097	233.74	155.64	0.00000	4.9858
19.547	5664.5	5357.2	308.89	385.39	78.107	231.75	153.64	0.00000	4.9342
19.648	5659.3	5358.4	310.06	379.06	78.117	228.59	150.47	0.00000	4.8525
19.748	5655.5	5356.0	308.89	376.40	76.931	226.66	149.73	0.00000	4.8926
19.850	5652.7	5357.2	310.06	372.45	76.941	224.69	147.75	0.00000	4.8407
19.951	5645.3	5356.0	308.89	366.24	76.931	221.59	144.66	0.00000	4.7606
20.051	5637.0	5349.0	307.72	359.06	71.045	215.05	144.01	0.00000	5.0540

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
20.152	5645.8	5357.2	310.06	365.49	76.941	221.22	144.27	0.00000	4.7503
20.153	5641.1	5357.2	310.06	360.81	76.941	218.88	141.94	0.00000	4.6895

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
0.00000	0.00000	0.00000	3.1928	14.136	637.57	5996.0	5358.4	4970.2
6.2783	0.10147	0.00000	3.1982	16.784	754.49	6112.9	5358.4	5025.0
13.348	0.20207	0.00000	3.2036	18.186	815.02	6173.4	5358.4	5053.0
19.688	0.30267	0.00000	3.2090	19.043	850.94	6208.2	5357.2	5069.3
26.070	0.40328	0.00000	3.2144	19.978	890.17	6247.4	5357.2	5084.4
32.508	0.50388	0.00000	3.2198	20.911	929.20	6287.6	5358.4	5094.9
40.096	0.60535	0.00000	3.2253	21.380	947.33	6304.5	5357.2	5106.6
46.516	0.70595	0.00000	3.2308	21.691	958.41	6315.6	5357.2	5114.8
53.868	0.80655	0.00000	3.2363	22.158	976.39	6333.6	5357.2	5122.9
58.849	0.90716	0.00000	3.2418	22.314	980.46	6337.7	5357.2	5127.6
66.094	1.0078	0.00000	3.2474	22.392	981.05	6338.3	5357.2	5133.4
73.280	1.1084	0.00000	3.2529	22.548	985.09	6342.3	5357.2	5138.1
80.556	1.2098	0.00000	3.2585	22.314	971.88	6329.1	5357.2	5142.7
87.007	1.3104	0.00000	3.2641	22.158	962.16	6319.4	5357.2	5147.4
93.986	1.4110	0.00000	3.2697	22.003	952.47	6309.7	5357.2	5150.9
100.28	1.5125	0.00000	3.2754	21.692	936.00	6292.0	5356.0	5153.2
107.08	1.6122	0.00000	3.2810	21.380	919.51	6276.7	5357.2	5157.9
113.72	1.7137	0.00000	3.2867	21.067	903.03	6261.4	5358.4	5161.4
120.49	1.8143	0.00000	3.2924	20.757	886.73	6243.9	5357.2	5162.5
127.68	1.9149	0.00000	3.2981	20.289	863.63	6220.8	5357.2	5164.9
134.16	2.0155	0.00000	3.3038	19.978	847.39	6204.6	5357.2	5167.2
141.12	2.1161	0.00000	3.3095	19.744	834.59	6191.8	5357.2	5169.5
147.36	2.2167	0.00000	3.3153	19.511	821.83	6179.0	5357.2	5171.9
154.10	2.3182	0.00000	3.3211	19.277	809.09	6166.3	5357.2	5174.2
160.56	2.4188	0.00000	3.3269	19.121	799.78	6157.0	5357.2	5176.5
167.60	2.5194	0.00000	3.3327	18.888	787.13	6144.3	5357.2	5178.9
173.00	2.6200	0.00000	3.3386	18.732	777.88	6135.1	5357.2	5180.0
180.51	2.7206	0.00000	3.3445	18.421	761.96	6119.2	5357.2	5182.4
187.68	2.8212	0.00000	3.3503	18.265	752.78	6110.0	5357.2	5183.5
193.78	2.9227	0.00000	3.3563	18.031	740.26	6097.5	5357.2	5184.7
199.95	3.0233	0.00000	3.3622	17.798	727.80	6085.0	5357.2	5187.0
206.84	3.1239	0.00000	3.3682	17.720	722.04	6079.3	5357.2	5189.4
214.03	3.2245	0.00000	3.3741	17.486	709.65	6066.9	5357.2	5190.5
219.41	3.3251	0.00000	3.3801	17.408	703.94	6061.2	5357.2	5191.7
226.90	3.4266	0.00000	3.3862	17.329	698.16	6056.6	5358.4	5194.0
233.12	3.5272	0.00000	3.3922	17.408	699.15	6056.4	5357.2	5195.2
240.52	3.6278	0.00000	3.3983	17.175	686.87	6044.1	5357.2	5197.5
247.01	3.7284	0.00000	3.4044	17.175	684.51	6041.7	5357.2	5197.5
253.79	3.8290	0.00000	3.4104	17.330	688.73	6045.9	5357.2	5198.7
260.04	3.9296	0.00000	3.4166	17.253	683.09	6040.3	5357.2	5201.0
266.31	4.0310	0.00000	3.4228	17.408	687.27	6044.5	5357.2	5201.0
272.60	4.1316	0.00000	3.4289	17.486	688.18	6045.4	5357.2	5203.3
279.56	4.2322	0.00000	3.4351	17.641	692.29	6050.7	5358.4	5204.5
286.84	4.3328	0.00000	3.4413	17.641	689.92	6048.3	5358.4	5206.8
292.88	4.4334	0.00000	3.4476	17.720	690.87	6048.1	5357.2	5206.8
299.71	4.5349	0.00000	3.4539	17.875	694.97	6052.2	5357.2	5209.2
306.31	4.6355	0.00000	3.4601	17.953	695.84	6053.0	5357.2	5209.2
312.13	4.7361	0.00000	3.4664	18.030	696.64	6055.0	5358.4	5210.3
319.81	4.8367	0.00000	3.4728	18.188	700.83	6056.9	5356.0	5210.3
326.27	4.9373	0.00000	3.4791	18.262	701.51	6061.1	5359.6	5212.7

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
332.65	5.0379	0.00000	3.4855	18.343	702.44	6059.7	5357.2	5213.8
339.61	5.1394	0.00000	3.4919	18.421	703.25	6060.5	5357.2	5215.0
346.01	5.2400	0.00000	3.4983	18.576	707.26	6064.5	5357.2	5216.2
353.01	5.3406	0.00000	3.5048	18.497	701.61	6060.0	5358.4	5217.3
359.95	5.4412	0.00000	3.5112	18.419	696.03	6054.4	5358.4	5218.5
365.94	5.5418	0.00000	3.5177	18.343	690.52	6047.7	5357.2	5218.5
373.02	5.6424	0.00000	3.5242	18.109	678.60	6035.8	5357.2	5219.7
379.78	5.7439	0.00000	3.5308	18.031	673.06	6030.3	5357.2	5220.8
386.88	5.8445	0.00000	3.5374	17.953	667.55	6024.8	5357.2	5222.0
393.16	5.9451	0.00000	3.5440	17.798	658.90	6016.1	5357.2	5223.2
399.63	6.0457	0.00000	3.5506	17.486	643.95	6001.2	5357.2	5224.3
406.23	6.1463	0.00000	3.5572	17.486	641.67	5998.9	5357.2	5225.5
413.25	6.2478	0.00000	3.5639	17.253	629.93	5987.1	5357.2	5225.5
419.11	6.3484	0.00000	3.5706	17.097	621.39	5978.6	5357.2	5226.7
426.29	6.4490	0.00000	3.5773	16.929	612.41	5980.2	5367.8	5224.3
433.04	6.5496	0.00000	3.5840	16.863	607.52	5964.7	5357.2	5227.8
439.61	6.6502	0.00000	3.5908	16.709	599.11	5955.1	5356.0	5226.7
446.17	6.7508	0.00000	3.5976	16.552	590.63	5947.8	5357.2	5230.1
452.24	6.8522	0.00000	3.6045	16.552	588.42	5945.6	5357.2	5230.1
459.09	6.9528	0.00000	3.6113	16.396	580.03	5937.2	5357.2	5230.1
466.07	7.0543	0.00000	3.6182	16.240	571.65	5928.9	5357.2	5231.3
473.26	7.1541	0.00000	3.6250	16.161	566.37	5924.8	5358.4	5232.5
479.31	7.2547	0.00000	3.6320	16.007	558.11	5915.3	5357.2	5232.5
486.52	7.3561	0.00000	3.6390	15.929	552.89	5910.1	5357.2	5234.8
492.51	7.4567	0.00000	3.6459	15.929	550.77	5908.0	5357.2	5234.8
499.13	7.5573	0.00000	3.6529	15.851	545.59	5902.8	5357.2	5234.8
505.68	7.6579	0.00000	3.6599	15.851	543.49	5900.7	5357.2	5234.8
512.05	7.7585	0.00000	3.6670	15.851	541.40	5898.6	5357.2	5236.0
518.71	7.8591	0.00000	3.6741	15.772	536.20	5894.6	5358.4	5237.1
525.21	7.9606	0.00000	3.6812	15.929	540.25	5897.5	5357.2	5237.1
532.60	8.0612	0.00000	3.6884	15.927	538.11	5896.5	5358.4	5239.5
538.70	8.1618	0.00000	3.6955	16.083	542.09	5900.5	5358.4	5239.5
545.81	8.2624	0.00000	3.7027	16.162	543.08	5900.3	5357.2	5239.5
551.70	8.3630	0.00000	3.7099	16.240	544.01	5901.2	5357.2	5240.6
559.20	8.4636	0.00000	3.7172	16.474	550.96	5908.2	5357.2	5240.6
565.58	8.5651	0.00000	3.7245	16.628	554.80	5913.2	5358.4	5241.8
572.78	8.6657	0.00000	3.7318	16.785	558.74	5916.0	5357.2	5241.8
579.75	8.7663	0.00000	3.7391	16.941	562.61	5919.8	5357.2	5241.8
586.85	8.8669	0.00000	3.7465	17.019	563.47	5920.7	5357.2	5243.0
593.24	8.9675	0.00000	3.7539	17.097	564.33	5921.5	5357.2	5243.0
600.46	9.0690	0.00000	3.7613	17.253	568.13	5925.3	5357.2	5243.0
606.02	9.1696	0.00000	3.7688	17.333	569.06	5923.9	5354.9	5241.8
612.58	9.2702	0.00000	3.7762	17.567	575.82	5930.7	5354.9	5243.0
620.31	9.3708	0.00000	3.7838	17.642	576.53	5933.7	5357.2	5244.1
626.74	9.4714	0.00000	3.7913	17.718	577.27	5935.7	5358.4	5245.3
633.57	9.5720	0.00000	3.7988	17.642	572.21	5929.4	5357.2	5245.3
639.69	9.6735	0.00000	3.8065	17.564	567.09	5924.3	5357.2	5245.3
647.36	9.7741	0.00000	3.8141	17.486	562.01	5919.2	5357.2	5246.5
653.05	9.8747	0.00000	3.8218	17.410	556.99	5913.0	5356.0	5245.3
659.73	9.9753	0.00000	3.8295	17.329	551.84	5910.2	5358.4	5247.6

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
666.28	10.077	0.00000	3.8373	17.176	543.96	5900.0	5356.0	5246.5
673.65	10.178	0.00000	3.8451	17.176	541.84	5897.9	5356.0	5245.3
680.47	10.278	0.00000	3.8528	16.941	530.98	5888.2	5357.2	5246.5
687.36	10.379	0.00000	3.8606	16.785	523.10	5880.3	5357.2	5246.5
693.34	10.479	0.00000	3.8684	16.709	518.20	5874.2	5356.0	5245.3
699.82	10.580	0.00000	3.8763	16.709	516.15	5872.2	5356.0	5245.3
706.76	10.680	0.00000	3.8842	16.630	511.17	5868.4	5357.2	5245.3
712.63	10.782	0.00000	3.8922	16.474	503.36	5860.6	5357.2	5246.5
720.42	10.883	0.00000	3.9003	16.315	495.48	5855.0	5359.6	5246.5
726.20	10.983	0.00000	3.9082	16.318	493.59	5850.8	5357.2	5247.6
732.98	11.084	0.00000	3.9162	16.162	485.87	5843.1	5357.2	5247.6
740.02	11.184	0.00000	3.9243	16.084	481.03	5838.2	5357.2	5247.6
747.02	11.285	0.00000	3.9324	15.929	473.35	5830.6	5357.2	5248.8
752.79	11.386	0.00000	3.9406	15.773	465.69	5822.9	5357.2	5248.8
759.13	11.487	0.00000	3.9488	15.617	458.07	5815.3	5357.2	5250.0
766.08	11.588	0.00000	3.9570	15.539	453.31	5810.5	5357.2	5251.1
773.38	11.688	0.00000	3.9652	15.463	448.62	5804.7	5356.0	5248.8
779.57	11.789	0.00000	3.9735	15.462	446.67	5803.9	5357.2	5251.1
786.94	11.890	0.00000	3.9819	15.539	447.57	5804.8	5357.2	5252.3
793.86	11.991	0.00000	3.9902	15.462	442.86	5800.1	5357.2	5251.1
800.03	12.091	0.00000	3.9986	15.539	443.77	5801.0	5357.2	5252.3
806.86	12.192	0.00000	4.0070	15.616	444.63	5803.0	5358.4	5253.5
813.09	12.293	0.00000	4.0155	15.695	445.57	5802.8	5357.2	5253.5
819.66	12.393	0.00000	4.0240	15.852	449.29	5805.3	5356.0	5253.5
826.69	12.495	0.00000	4.0326	15.929	450.10	5807.3	5357.2	5254.6
833.31	12.595	0.00000	4.0411	16.084	453.75	5811.0	5357.2	5254.6
839.93	12.696	0.00000	4.0497	16.164	454.65	5810.7	5356.0	5253.5
847.11	12.796	0.00000	4.0584	16.473	463.69	5822.1	5358.4	5257.0
853.74	12.897	0.00000	4.0670	16.474	461.80	5819.0	5357.2	5257.0
860.10	12.998	0.00000	4.0757	16.630	465.37	5822.6	5357.2	5257.0
867.20	13.099	0.00000	4.0845	16.784	468.86	5827.2	5358.4	5259.3
873.71	13.200	0.00000	4.0933	16.863	469.70	5826.9	5357.2	5258.1
880.27	13.300	0.00000	4.1021	16.940	470.44	5828.8	5358.4	5259.3
887.85	13.401	0.00000	4.1110	16.941	468.53	5825.7	5357.2	5258.1
894.19	13.502	0.00000	4.1199	17.019	469.31	5826.5	5357.2	5258.1
900.27	13.603	0.00000	4.1289	17.019	467.34	5824.6	5357.2	5257.0
907.39	13.704	0.00000	4.1379	17.097	468.11	5825.3	5357.2	5259.3
913.12	13.804	0.00000	4.1469	17.175	468.86	5826.1	5357.2	5259.3
920.03	13.905	0.00000	4.1559	17.175	466.91	5824.1	5357.2	5259.3
926.71	14.005	0.00000	4.1650	17.097	462.28	5819.5	5357.2	5259.3
934.20	14.106	0.00000	4.1742	17.019	457.66	5814.9	5357.2	5258.1
940.45	14.208	0.00000	4.1834	17.019	455.72	5812.9	5357.2	5260.5
946.72	14.308	0.00000	4.1926	16.941	451.12	5808.3	5357.2	5260.5
953.06	14.409	0.00000	4.2019	16.785	443.87	5801.1	5357.2	5261.6
959.93	14.509	0.00000	4.2112	16.707	439.32	5796.5	5357.2	5261.6
966.91	14.610	0.00000	4.2205	16.707	437.43	5794.6	5357.2	5261.6
973.33	14.711	0.00000	4.2299	16.550	430.19	5788.6	5358.4	5262.8
979.38	14.812	0.00000	4.2394	16.397	423.12	5779.2	5356.0	5260.5
986.67	14.913	0.00000	4.2488	16.162	413.31	5770.5	5357.2	5262.8
992.96	15.013	0.00000	4.2583	16.083	408.81	5767.2	5358.4	5262.8

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
999.58	15.114	0.00000	4.2679	16.007	404.41	5761.6	5357.2	5264.0
1006.4	15.214	0.00000	4.2775	15.929	399.98	5757.2	5357.2	5264.0
1012.5	15.316	0.00000	4.2872	15.695	390.32	5747.5	5357.2	5264.0
1018.7	15.416	0.00000	4.2968	15.694	388.50	5746.9	5358.4	5265.1
1026.9	15.517	0.00000	4.3066	15.539	381.56	5738.8	5357.2	5264.0
1032.5	15.618	0.00000	4.3163	15.306	372.01	5729.2	5357.2	5264.0
1040.2	15.718	0.00000	4.3261	15.384	372.87	5730.1	5357.2	5265.1
1046.3	15.819	0.00000	4.3360	15.228	365.96	5723.2	5357.2	5265.1
1052.8	15.920	0.00000	4.3460	15.150	361.65	5718.9	5357.2	5266.3
1059.6	16.021	0.00000	4.3559	15.151	359.98	5716.0	5356.0	5265.1
1066.1	16.122	0.00000	4.3659	15.306	363.37	5720.6	5357.2	5267.4
1073.2	16.222	0.00000	4.3759	15.310	361.78	5715.5	5353.7	5262.8
1080.1	16.323	0.00000	4.3860	15.382	362.46	5720.8	5358.4	5268.6
1086.1	16.424	0.00000	4.3962	15.539	365.88	5723.1	5357.2	5268.6
1092.6	16.525	0.00000	4.4064	15.620	366.79	5721.6	5354.9	5266.3
1099.3	16.625	0.00000	4.4166	15.773	370.06	5727.3	5357.2	5268.6
1106.2	16.726	0.00000	4.4269	15.852	370.91	5726.9	5356.0	5267.4
1113.2	16.827	0.00000	4.4372	16.007	374.19	5731.4	5357.2	5268.6
1118.6	16.927	0.00000	4.4476	16.086	375.01	5731.0	5356.0	5268.6
1126.1	17.029	0.00000	4.4581	16.162	375.73	5732.9	5357.2	5269.8
1133.7	17.129	0.00000	4.4685	16.396	381.51	5738.7	5357.2	5269.8
1140.0	17.230	0.00000	4.4790	16.396	379.76	5737.0	5357.2	5270.9
1146.8	17.331	0.00000	4.4896	16.396	378.01	5735.2	5357.2	5270.9
1153.4	17.431	0.00000	4.5002	16.474	378.75	5736.0	5357.2	5272.1
1159.6	17.533	0.00000	4.5110	16.628	381.92	5740.3	5358.4	5272.1
1167.1	17.633	0.00000	4.5217	16.707	382.68	5739.9	5357.2	5272.1
1173.2	17.734	0.00000	4.5324	16.709	380.96	5737.0	5356.0	5272.1
1180.5	17.834	0.00000	4.5432	16.709	379.21	5735.2	5356.0	5272.1
1187.6	17.935	0.00000	4.5541	16.785	379.88	5737.1	5357.2	5273.3
1194.3	18.036	0.00000	4.5650	16.863	380.58	5737.8	5357.2	5273.3
1200.6	18.137	0.00000	4.5761	16.941	381.26	5738.5	5357.2	5274.4
1206.6	18.238	0.00000	4.5871	16.785	374.62	5731.8	5357.2	5274.4
1213.8	18.338	0.00000	4.5982	16.706	370.40	5728.8	5358.4	5275.6
1220.3	18.439	0.00000	4.6093	16.630	366.27	5723.5	5357.2	5275.6
1227.5	18.539	0.00000	4.6205	16.552	362.13	5719.3	5357.2	5275.6
1233.9	18.640	0.00000	4.6317	16.474	358.00	5715.2	5357.2	5275.6
1240.8	18.742	0.00000	4.6431	16.318	351.45	5708.7	5357.2	5275.6
1247.7	18.842	0.00000	4.6545	16.318	349.76	5707.0	5357.2	5276.8
1254.2	18.943	0.00000	4.6659	16.084	340.87	5698.1	5357.2	5276.8
1259.6	19.043	0.00000	4.6773	16.005	336.78	5695.2	5358.4	5277.9
1266.5	19.144	0.00000	4.6889	15.851	330.39	5687.6	5357.2	5277.9
1272.6	19.245	0.00000	4.7005	15.694	323.93	5682.3	5358.4	5277.9
1280.2	19.346	0.00000	4.7122	15.462	315.21	5672.4	5357.2	5279.1
1286.9	19.447	0.00000	4.7239	15.385	311.28	5667.3	5356.0	5277.9
1293.5	19.547	0.00000	4.7356	15.306	307.29	5664.5	5357.2	5279.1
1299.9	19.648	0.00000	4.7474	15.149	300.95	5659.3	5358.4	5280.3
1306.4	19.748	0.00000	4.7593	15.151	299.47	5655.5	5356.0	5279.1
1313.4	19.850	0.00000	4.7713	15.072	295.51	5652.7	5357.2	5280.3
1318.8	19.951	0.00000	4.7833	14.918	289.31	5645.3	5356.0	5279.1
1326.5	20.051	0.00000	4.7953	14.926	288.02	5637.0	5349.0	5277.9

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

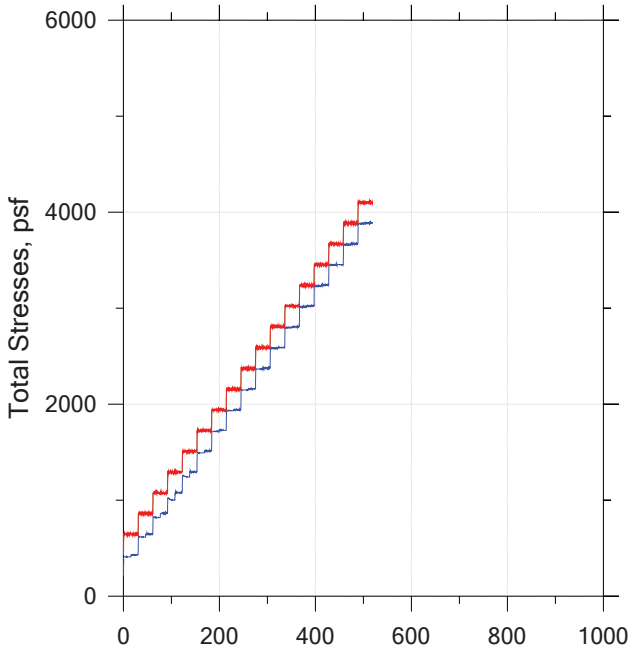
Shear Phase

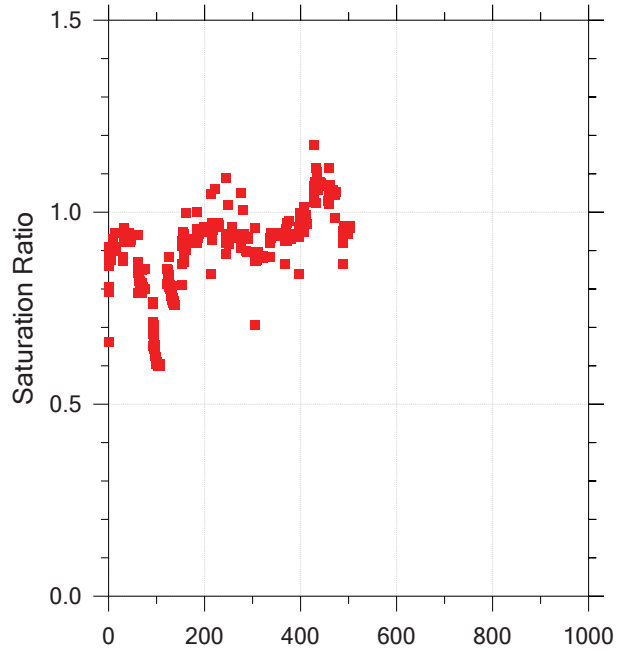
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
1333.1	20.152	0.00000	4.8074	14.994	288.55	5645.8	5357.2	5280.3
1333.2	20.153	0.00000	4.8076	14.839	283.87	5641.1	5357.2	5280.3

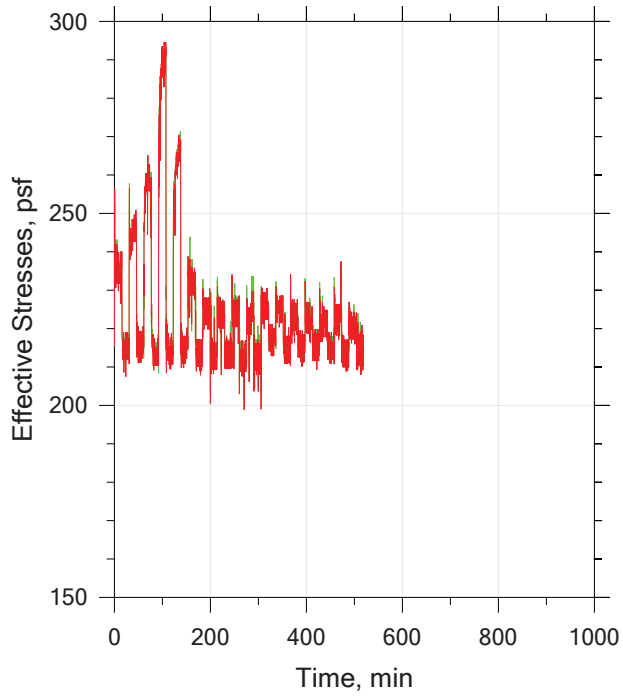
Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-204	Tested By: SJR	Checked By: sjr
Sample No.: 2U	Test Date: 8/26/21	Depth: 26.35
Test No.: CkoU 314	Sample Type:	Elevation: -67.35
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 1032 psf. Ko Consolidation		

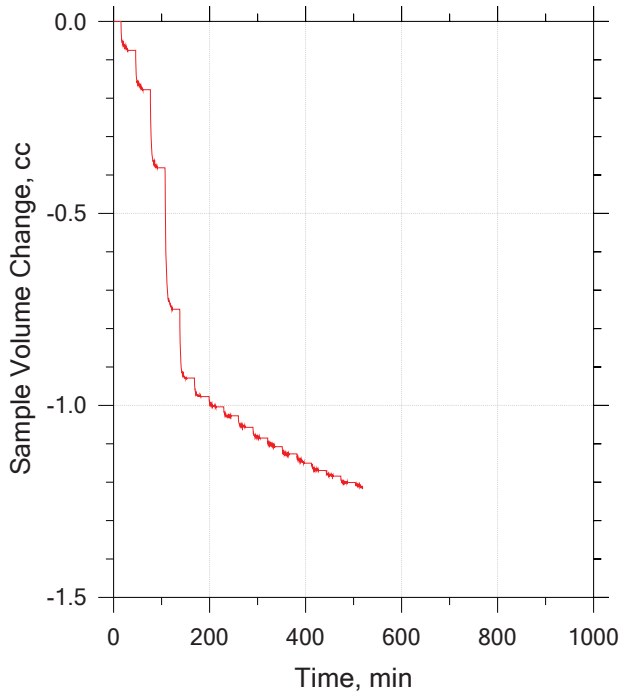
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Saturation Phase







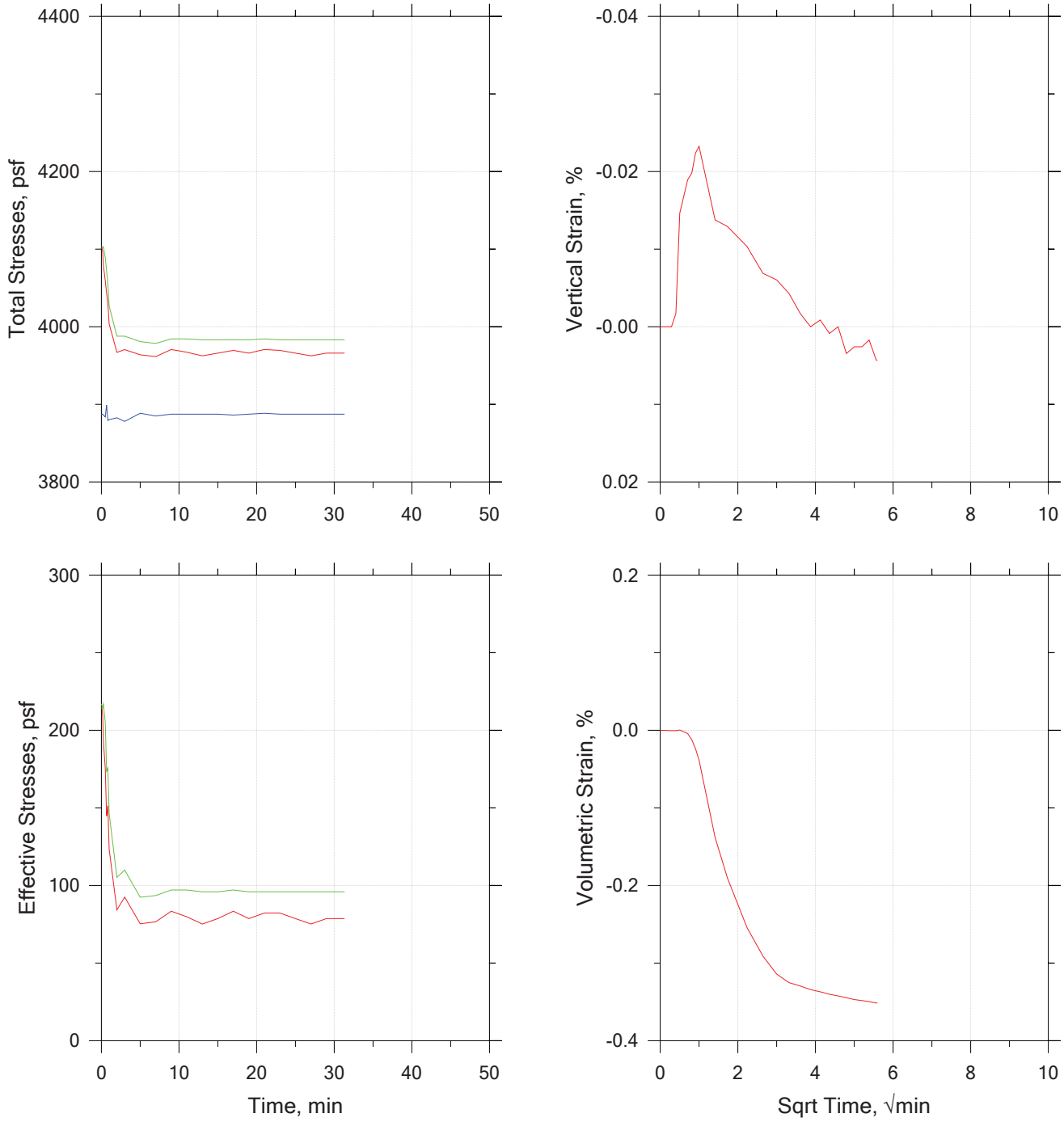


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 1 of 6

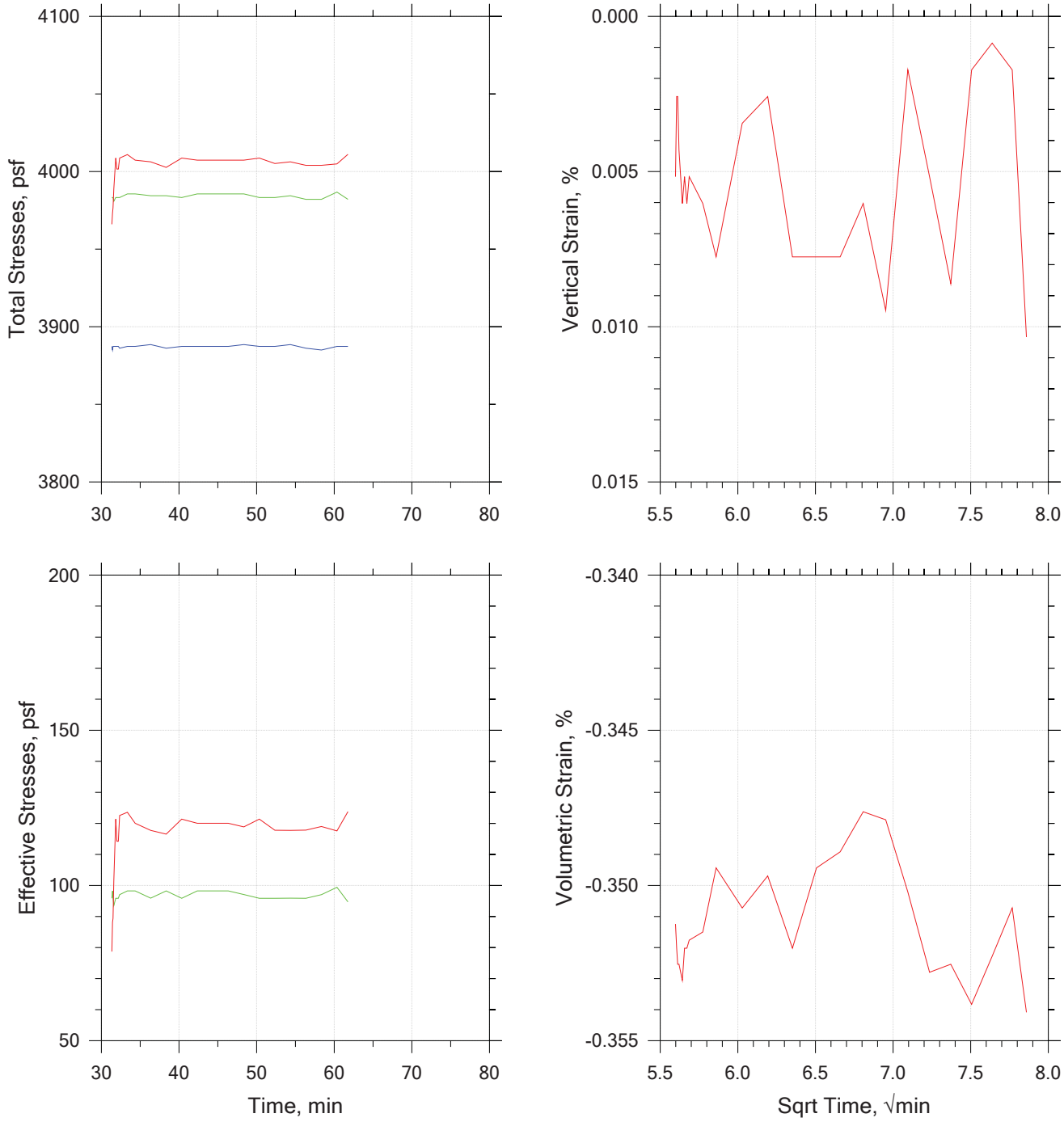


Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 2 of 6

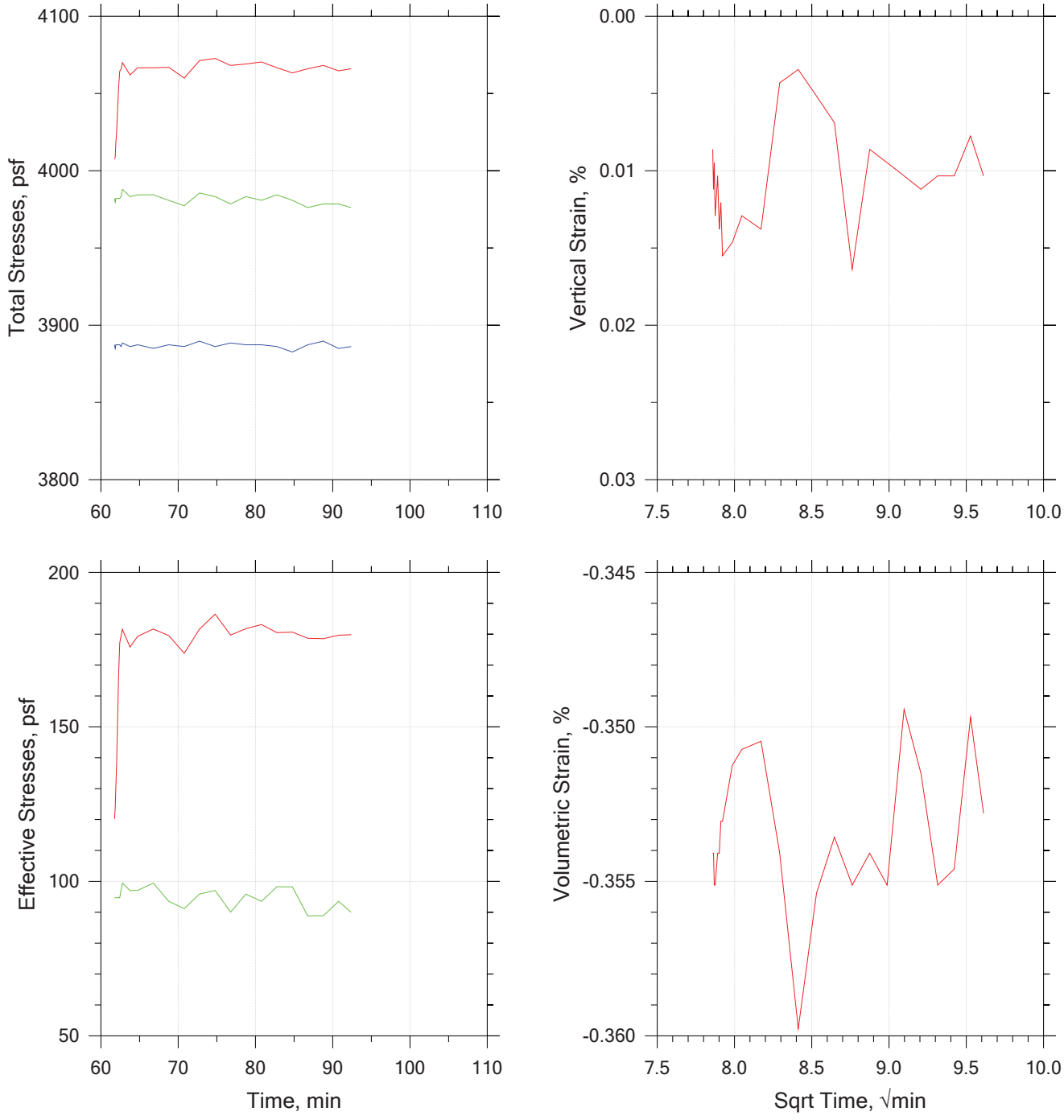


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 3 of 6

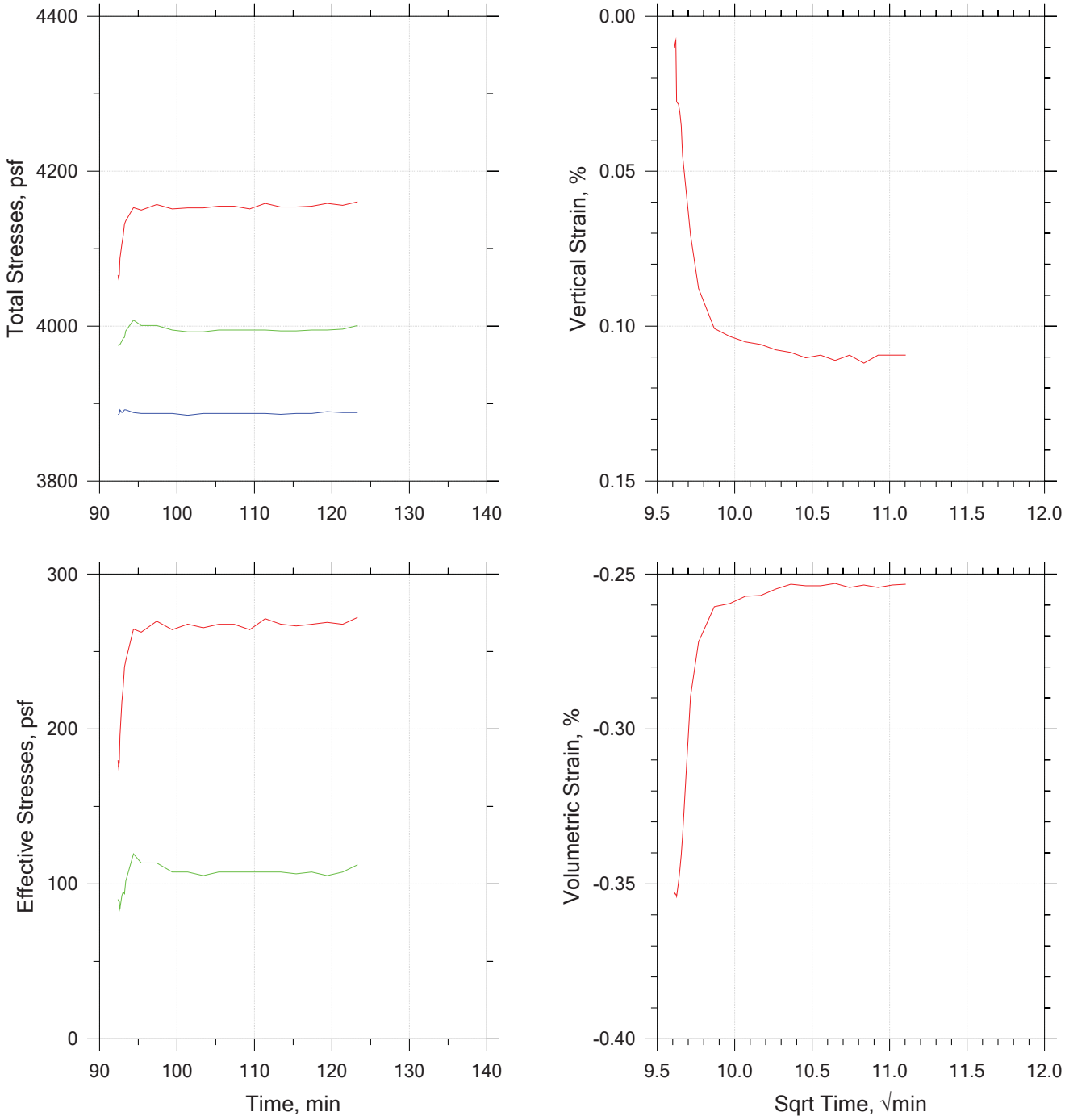


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 4 of 6

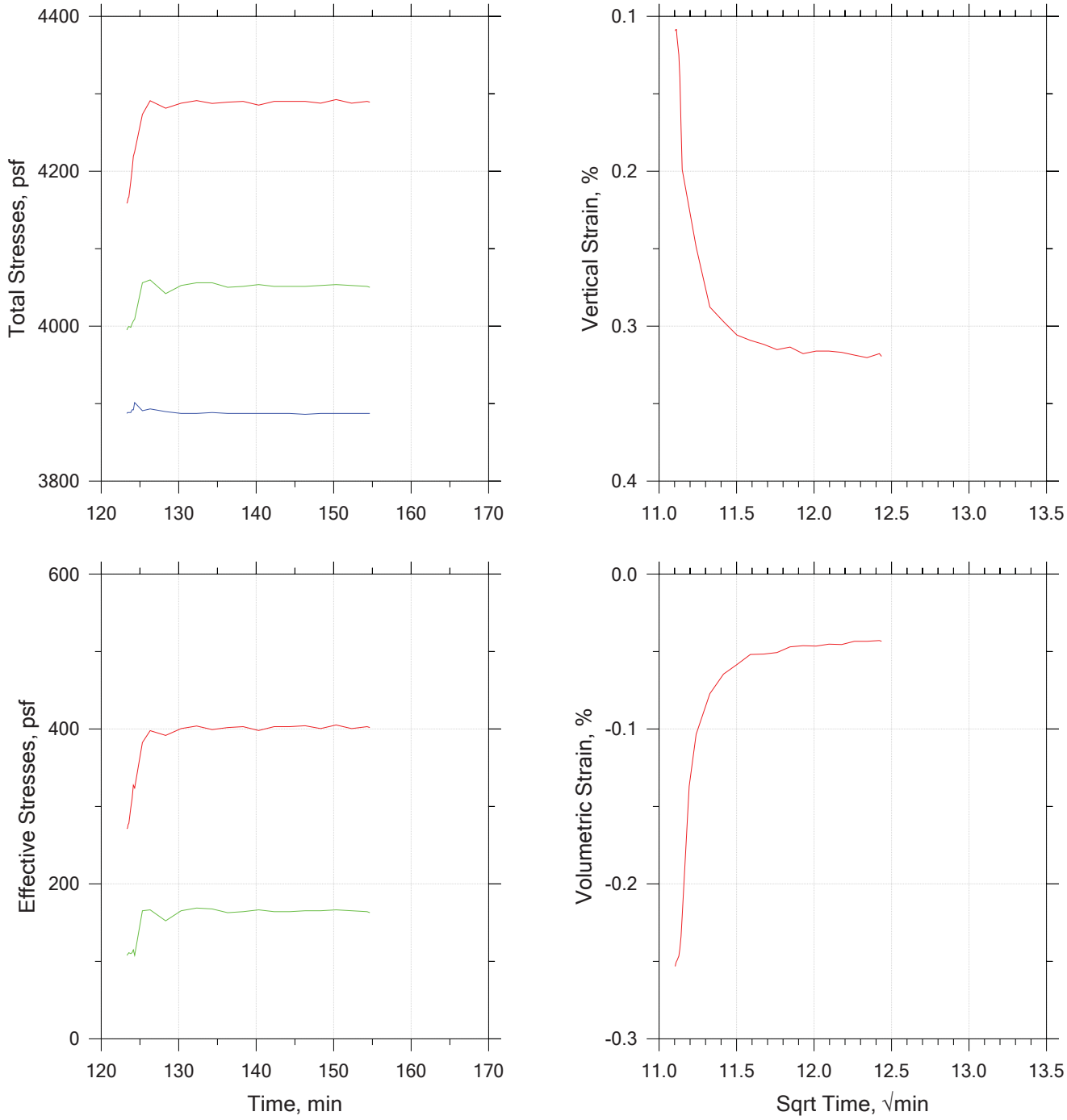


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation Phase

Step 5 of 6

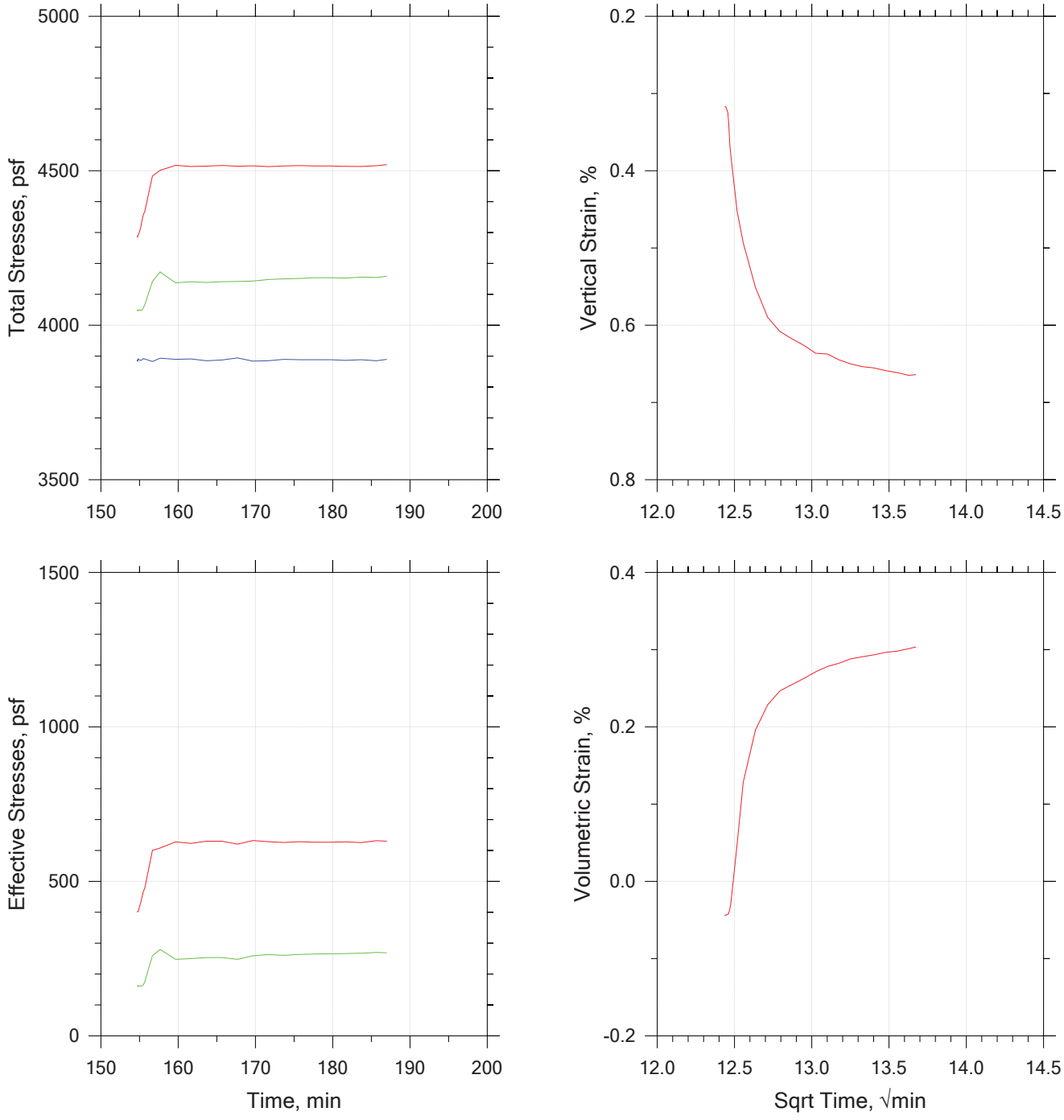


	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

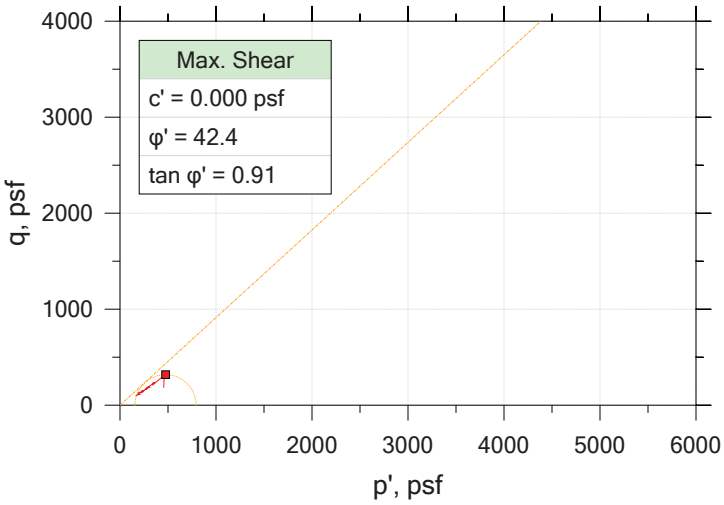
Consolidation Phase

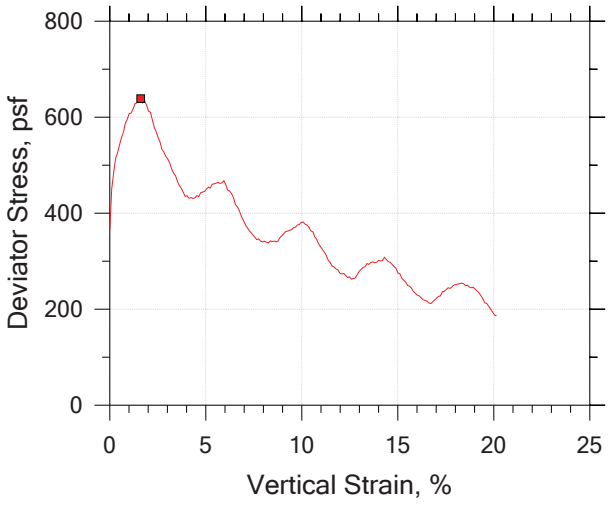
Step 6 of 6



Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



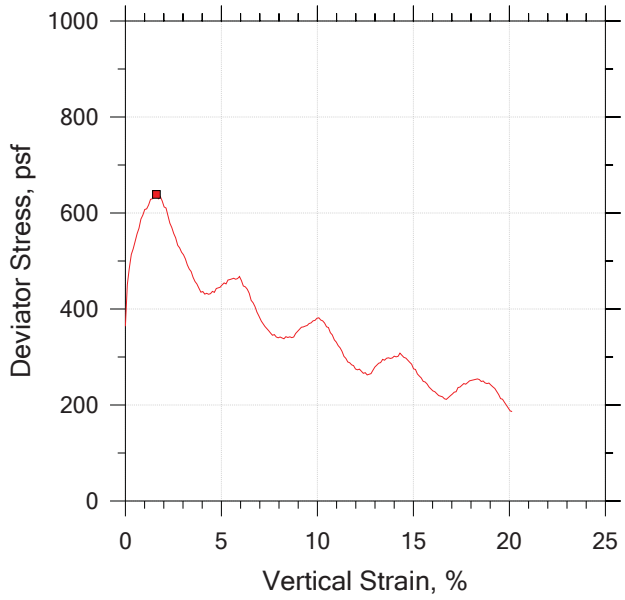


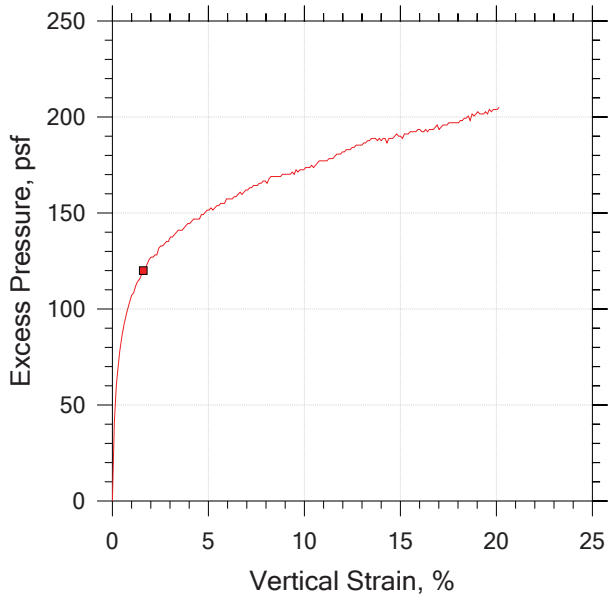
Symbol		■
Sample ID		U-1
Depth, ft		15.9
Test Number		CkoU 315
Initial	Height, in	4.020
	Diameter, in	2.004
	Moisture Content (from Cuttings), %	45.1
	Dry Density, pcf	76.5
	Saturation (Wet Method), %	99.8
	Void Ratio	1.24
Final	Moisture Content, %	44.9
	Dry Density, pcf	76.8
	Cross-Sectional Area (Method A), in²	3.163
	Saturation, %	100.0
	Void Ratio	1.23
	Back Pressure, %	3885.
Vertical Effective Consolidation Stress, psf		628.2
Horizontal Effective Consolidation Stress, psf		272.2
Vertical Strain after Consolidation, %		0.6639
Volumetric Strain after Consolidation, %		0.3034
Time to 50% Consolidation, min		0.0000
Shear Strength, psf		319.4
Strain at Failure, %		1.61
Strain Rate, %/min		0.01500
Deviator Stress at Failure, psf		638.8
Effective Minor Principal Stress at Failure, psf		154.5
Effective Major Principal Stress at Failure, psf		793.3
B-Value		0.96

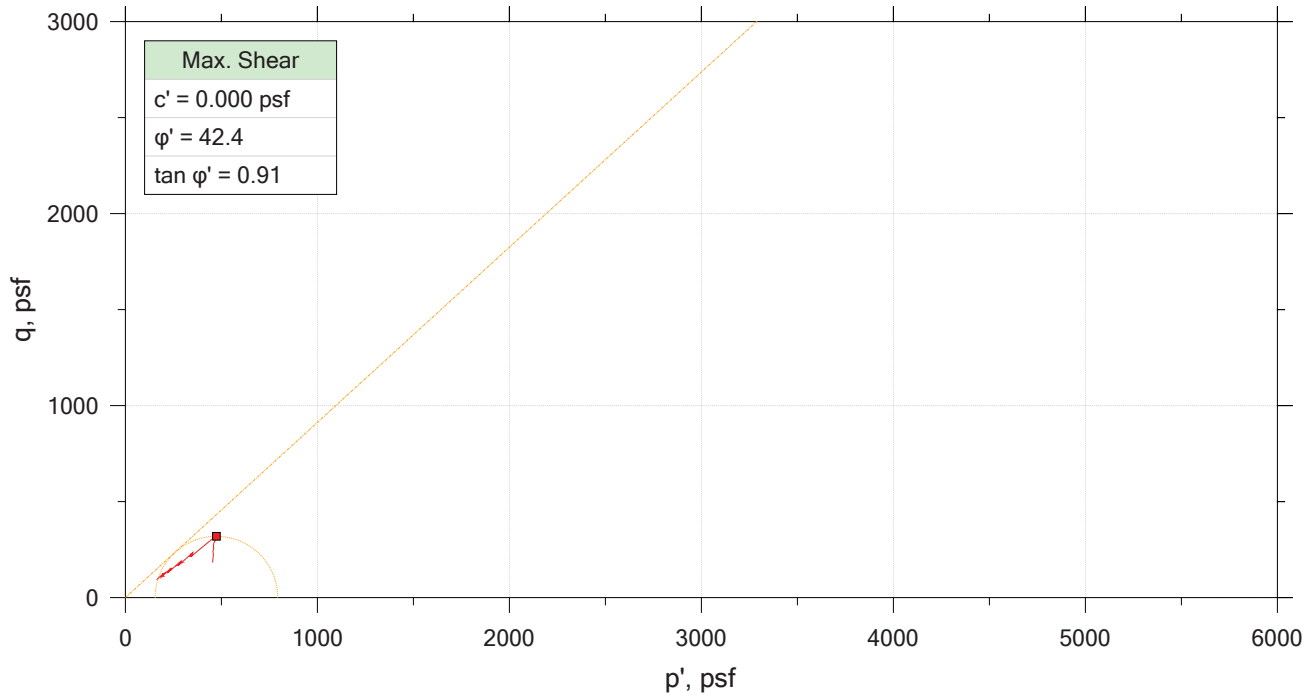
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



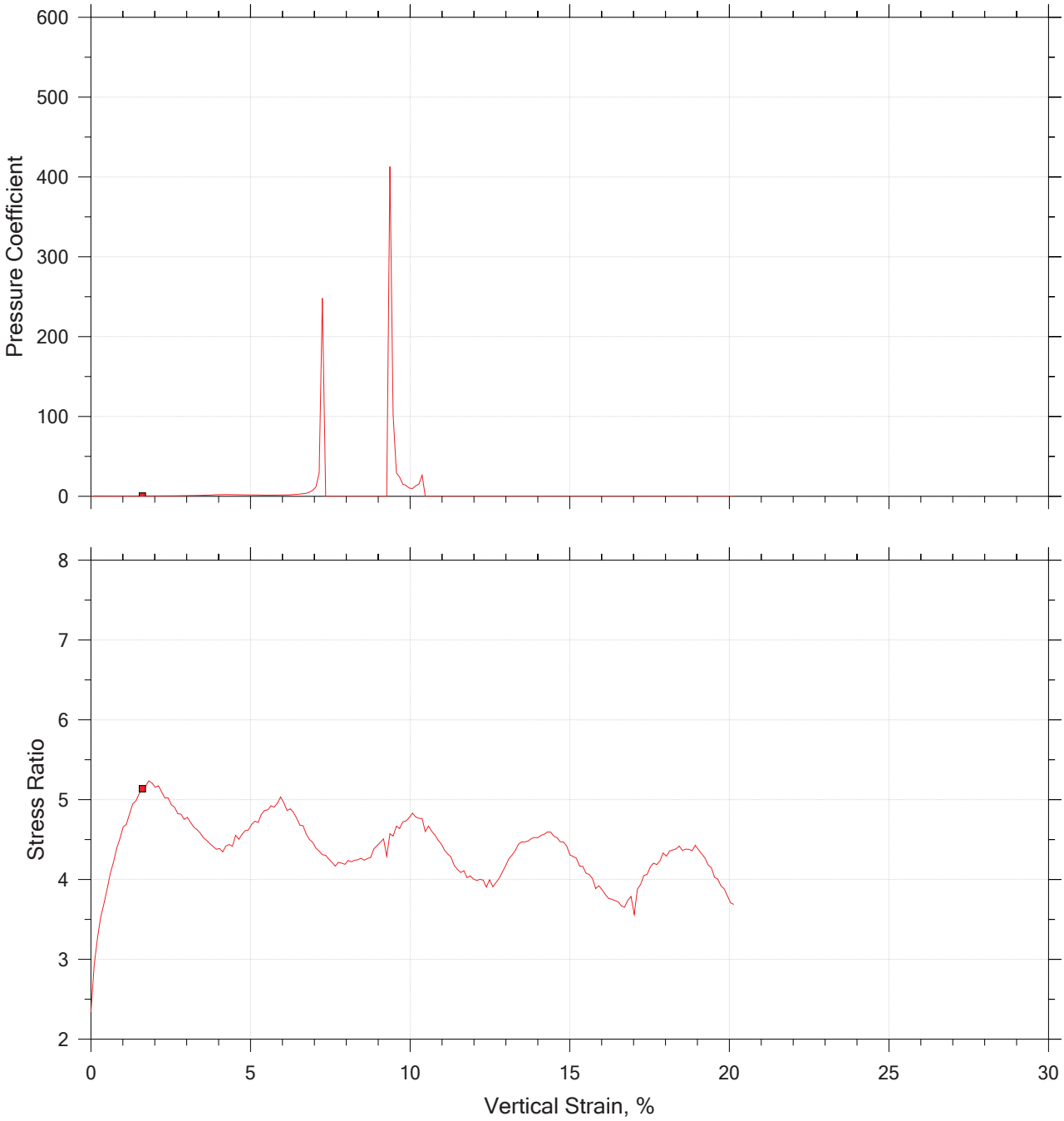




	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	U-1	CkoU 315	15.9	SJR	9/5/21	sjr		CKoU 315.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	U-1	CkoU 315	15.9	SJR	9/5/21	sjr		CKoU 315.dat

	Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
	Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
	Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
	Test No.: CkoU 315	Sample Type:	Elevation: -57.9
	Description: Gray Silty Clay		
	Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Specimen Height, in: 4.02	Liquid Limit: 35	Filter Strip Correction, psf: 0.00
Specimen Area, in²: 3.15	Plastic Limit: 21	Membrane Correction, lb/in: 4.20
Specimen Volume, cc: 207.78	Implied Specific Gravity: 2.75	Correction Type: Parabolic

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	323	---		406
Mass Container, gm	60.68	---	---	87.64
Mass Container + Wet Soil, gm	379.76	---	---	444.33
Mass Container + Dry Soil, gm	280.54	---	---	333.4
Mass Wet Soil, gm	319.08	369.55	356.69	356.69
Mass Dry Soil, gm	219.86	254.64	245.76	245.76
Mass Water, gm	99.22	114.91	110.93	110.93
Water Content, %	45.13	45.13	45.14	45.14
Void Ratio	---	1.24	1.31	---
Degree of Saturation, %	---	99.76	94.41	---
Dry Unit Weight, pcf	---	76.504	74.164	---

	End of Initialization	End of Consolidation/A	End of Saturation	End of Consolidation/B	End of Shear	Maximum Shear
Time, min	121.63	121.63	640.56	827.56	2161.8	934.46
Height, in	4.0157	4.0157	4.0182	3.9915	3.1875	3.9271
Area, in²	3.1542	3.1542	3.1542	3.1627	4.7611	3.2501
Volume, cc	207.12	207.12	207.5	206.87	206.87	206.87
Moisture, %	44.61	44.61	45.09	44.88	44.88	44.88
Void Ratio	1.24	1.24	1.24	1.23	1.23	1.23
Saturation, %	99.18	99.18	99.91	100.00	100.00	100.00
Dry Unit Weight, pcf	76.75	76.75	76.609	76.842	76.842	76.842
Wet Unit Weight, pcf	170.9	170.9	171.59	171.68	171.68	171.68
Tot. Vertical Stress, psf	429.51	430.8	4101.9	4513.2	4264.4	4798.4
Tot. Horizontal Stress, psf	431.35	431.35	4103.1	4157.2	4159.5	4159.5
Pore Pressure, psf	215.64	215.64	3886.2	3885	4090.2	4005.1
Eff. Vertical Stress, psf	213.87	215.16	215.73	628.2	174.26	793.3
Eff. Horizontal Stress, psf	215.71	215.71	216.94	272.17	69.368	154.46

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 1 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
0.00000	0.00000	0.00000	3.1542	4101.2	4103.1	3886.2	214.99	216.94	1.0091
0.083533	0.00000	-0.00051692	3.1542	4101.2	4103.1	3887.4	213.82	215.77	1.0091
0.16198	-0.0017223	-0.00051692	3.1542	4096.5	4101.9	3887.4	209.15	214.59	1.0260
0.25343	-0.014639	0.00025846	3.1542	4079.8	4103.1	3886.2	193.66	216.94	1.1202
0.50167	-0.018945	-0.0041353	3.1542	4059.3	4089.0	3883.9	175.49	205.16	1.1691
0.66315	-0.019806	-0.012406	3.1542	4043.7	4072.6	3899.0	144.72	173.55	1.1993
0.83088	-0.022390	-0.023778	3.1542	4030.5	4054.9	3879.2	151.35	175.74	1.1611
1.0023	-0.023251	-0.038510	3.1542	4003.8	4026.7	3880.4	123.41	146.37	1.1860
2.0033	-0.013778	-0.13802	3.1542	3966.9	3987.9	3882.7	84.260	105.25	1.2491
3.0044	-0.012917	-0.19074	3.1542	3970.5	3987.9	3878.0	92.478	109.91	1.1885
5.0003	-0.010334	-0.25432	3.1542	3963.8	3980.9	3888.5	75.293	92.368	1.2268
7.0015	-0.0068891	-0.29102	3.1542	3961.6	3978.5	3885.0	76.558	93.515	1.2215
9.0004	-0.0060280	-0.31428	3.1542	3970.7	3984.4	3887.4	83.361	97.060	1.1643
11.000	-0.0043057	-0.32514	3.1542	3967.2	3984.4	3887.4	79.806	97.060	1.2162
13.001	-0.0017223	-0.32953	3.1542	3962.5	3983.2	3887.4	75.135	95.885	1.2762
15.001	0.00000	-0.33419	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
17.002	-0.00086114	-0.33703	3.1542	3969.6	3983.2	3886.2	83.411	97.050	1.1635
19.004	0.00086114	-0.34013	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
21.000	0.00000	-0.34246	3.1542	3970.7	3984.4	3888.5	82.195	95.894	1.1667
23.002	0.0034446	-0.34478	3.1542	3969.6	3983.2	3887.4	82.245	95.885	1.1658
25.001	0.0025834	-0.34711	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
27.003	0.0025834	-0.34840	3.1542	3962.5	3983.2	3887.4	75.135	95.885	1.2762
29.003	0.0017223	-0.34969	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
31.003	0.0043057	-0.35150	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
31.339	0.0043057	-0.35124	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 2 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
31.341	0.0051668	-0.35124	3.1542	3966.0	3983.2	3887.4	78.690	95.885	1.2185
31.423	0.0025834	-0.35202	3.1542	3973.2	3983.2	3885.0	88.131	98.216	1.1144
31.502	0.0025834	-0.35254	3.1542	3976.7	3983.2	3887.4	89.355	95.885	1.0731
31.594	0.0043057	-0.35254	3.1542	3988.7	3980.9	3887.4	101.34	93.534	0.92294
31.842	0.0060280	-0.35305	3.1542	4008.7	3983.2	3887.4	121.35	95.885	0.79015
32.003	0.0051668	-0.35202	3.1542	4001.6	3983.2	3887.4	114.24	95.885	0.83932
32.172	0.0060280	-0.35202	3.1542	4001.6	3983.2	3887.4	114.24	95.885	0.83932
32.342	0.0051668	-0.35176	3.1542	4008.7	3983.2	3886.2	122.52	97.050	0.79214
33.344	0.0060280	-0.35150	3.1542	4010.9	3985.6	3887.4	123.58	98.235	0.79490
34.345	0.0077503	-0.34944	3.1542	4007.4	3985.6	3887.4	120.03	98.235	0.81845
36.343	0.0034446	-0.35073	3.1542	4006.3	3984.4	3888.5	117.75	95.894	0.81442
38.344	0.0025834	-0.34969	3.1542	4002.7	3984.4	3886.2	116.52	98.226	0.84298
40.344	0.0077503	-0.35202	3.1542	4008.7	3983.2	3887.4	121.35	95.885	0.79015
42.343	0.0077503	-0.34944	3.1542	4007.4	3985.6	3887.4	120.03	98.235	0.81845
44.344	0.0077503	-0.34892	3.1542	4007.4	3985.6	3887.4	120.03	98.235	0.81845
46.342	0.0060280	-0.34763	3.1542	4007.4	3985.6	3887.4	120.03	98.235	0.81845
48.345	0.0094725	-0.34788	3.1542	4007.4	3985.6	3888.5	118.86	97.070	0.81667
50.344	0.0017223	-0.35021	3.1542	4008.7	3983.2	3887.4	121.35	95.885	0.79015
52.344	0.0051668	-0.35280	3.1542	4005.1	3983.2	3887.4	117.80	95.885	0.81399
54.341	0.0086114	-0.35254	3.1542	4006.3	3984.4	3888.5	117.75	95.894	0.81442
56.342	0.0017223	-0.35383	3.1542	4004.0	3982.1	3886.2	117.85	95.875	0.81357
58.345	0.00086114	-0.35228	3.1542	4004.0	3982.1	3885.0	119.01	97.041	0.81539
60.344	0.0017223	-0.35073	3.1542	4004.9	3986.8	3887.4	117.59	99.411	0.84542
61.769	0.010334	-0.35409	3.1542	4011.1	3982.1	3887.4	123.79	94.709	0.76508

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 3 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
61.770	0.0086114	-0.35409	3.1542	4007.6	3982.1	3887.4	120.23	94.709	0.78770
61.853	0.011195	-0.35409	3.1542	4008.9	3979.7	3885.0	123.89	94.690	0.76431
61.932	0.0094725	-0.35512	3.1542	4018.3	3982.1	3887.4	130.90	94.709	0.72353
62.023	0.012917	-0.35512	3.1542	4025.4	3982.1	3887.4	138.01	94.709	0.68625
62.272	0.010334	-0.35409	3.1542	4053.8	3982.1	3887.4	166.45	94.709	0.56900
62.434	0.013778	-0.35409	3.1542	4064.5	3982.1	3887.4	177.11	94.709	0.53473
62.601	0.012056	-0.35305	3.1542	4065.6	3983.2	3886.2	179.40	97.050	0.54098
62.772	0.015501	-0.35305	3.1542	4070.0	3987.9	3888.5	181.53	99.420	0.54769
63.771	0.014639	-0.35124	3.1542	4062.0	3983.2	3886.2	175.84	97.050	0.55192
64.771	0.012917	-0.35073	3.1542	4066.7	3984.4	3887.4	179.35	97.060	0.54119
66.775	0.013778	-0.35047	3.1542	4066.7	3984.4	3885.0	181.68	99.391	0.54708
68.773	0.0043057	-0.35409	3.1542	4066.9	3980.9	3887.4	179.55	93.534	0.52092
70.774	0.0034446	-0.35977	3.1542	4060.0	3977.4	3886.2	173.82	91.174	0.52454
72.772	0.0051668	-0.35538	3.1542	4071.4	3985.6	3889.7	181.69	95.904	0.52786
74.774	0.0068891	-0.35357	3.1542	4072.7	3983.2	3886.2	186.51	97.050	0.52036
76.773	0.016362	-0.35512	3.1542	4068.2	3978.5	3888.5	179.71	90.018	0.50090
78.772	0.0086114	-0.35409	3.1542	4069.1	3983.2	3887.4	181.79	95.885	0.52746
80.774	0.0094725	-0.35512	3.1542	4070.5	3980.9	3887.4	183.11	93.534	0.51081
82.774	0.010334	-0.34944	3.1542	4066.7	3984.4	3886.2	180.51	98.226	0.54415
84.774	0.011195	-0.35150	3.1542	4063.3	3980.9	3882.7	180.66	98.196	0.54354
86.772	0.010334	-0.35512	3.1542	4066.0	3976.2	3887.4	178.65	88.833	0.49725
88.774	0.010334	-0.35460	3.1542	4068.2	3978.5	3889.7	178.55	88.852	0.49764
90.772	0.0077503	-0.34969	3.1542	4064.7	3978.5	3885.0	179.65	93.515	0.52053
92.382	0.010334	-0.35280	3.1542	4066.0	3976.2	3886.2	179.81	89.998	0.50051

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 4 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
92.384	0.010334	-0.35280	3.1542	4066.0	3976.2	3886.2	179.81	89.998	0.50051
92.466	0.0086114	-0.35331	3.1542	4061.3	3975.0	3886.2	175.14	88.823	0.50715
92.545	0.0077503	-0.35331	3.1542	4066.0	3976.2	3887.4	178.65	88.833	0.49725
92.637	0.027556	-0.35409	3.1542	4087.3	3976.2	3892.0	195.31	84.170	0.43095
92.888	0.028418	-0.34944	3.1542	4106.0	3980.9	3888.5	217.49	92.368	0.42469
93.047	0.031001	-0.34556	3.1542	4116.5	3984.4	3889.7	226.79	94.729	0.41770
93.214	0.035307	-0.34065	3.1542	4131.8	3985.6	3892.0	239.79	93.573	0.39023
93.385	0.044779	-0.33470	3.1542	4136.1	3993.8	3892.0	244.04	101.80	0.41714
94.385	0.070613	-0.28947	3.1542	4153.0	4007.9	3888.5	264.49	119.40	0.45145
95.387	0.087836	-0.27190	3.1542	4149.9	4000.9	3887.4	262.51	113.51	0.43242
97.385	0.10075	-0.26053	3.1542	4157.0	4000.9	3887.4	269.62	113.51	0.42101
99.387	0.10334	-0.25949	3.1542	4151.4	3995.0	3887.4	264.04	107.64	0.40765
101.39	0.10506	-0.25717	3.1542	4152.7	3992.6	3885.0	267.70	107.62	0.40202
103.39	0.10592	-0.25691	3.1542	4152.7	3992.6	3887.4	265.37	105.29	0.39676
105.39	0.10764	-0.25484	3.1542	4154.9	3995.0	3887.4	267.60	107.64	0.40224
107.39	0.10850	-0.25329	3.1542	4154.9	3995.0	3887.4	267.60	107.64	0.40224
109.39	0.11023	-0.25381	3.1542	4151.4	3995.0	3887.4	264.04	107.64	0.40765
111.39	0.10936	-0.25381	3.1542	4158.5	3995.0	3887.4	271.15	107.64	0.39696
113.39	0.11109	-0.25303	3.1542	4153.8	3993.8	3886.2	267.65	107.63	0.40213
115.39	0.10936	-0.25432	3.1542	4153.8	3993.8	3887.4	266.48	106.46	0.39951
117.39	0.11195	-0.25355	3.1542	4154.9	3995.0	3887.4	267.60	107.64	0.40224
119.39	0.10936	-0.25432	3.1542	4158.5	3995.0	3889.7	268.82	105.31	0.39173
121.39	0.10936	-0.25355	3.1542	4156.1	3996.2	3888.5	267.55	107.65	0.40235
123.31	0.10936	-0.25329	3.1542	4160.5	4000.9	3888.5	272.01	112.35	0.41303

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 5 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
123.31	0.10936	-0.25329	3.1542	4158.5	3995.0	3887.4	271.15	107.64	0.39696
123.40	0.10850	-0.25122	3.1542	4160.7	3997.3	3888.5	272.22	108.82	0.39976
123.47	0.10850	-0.25019	3.1542	4165.4	3998.5	3888.5	276.89	110.00	0.39726
123.57	0.11367	-0.24941	3.1542	4166.5	3999.7	3888.5	278.01	111.17	0.39990
123.82	0.12487	-0.24657	3.1542	4186.7	3998.5	3888.5	298.22	110.00	0.36885
123.97	0.13950	-0.24192	3.1542	4201.9	4003.2	3892.0	309.85	111.20	0.35889
124.14	0.17137	-0.23390	3.1542	4219.4	4006.7	3892.0	327.42	114.73	0.35041
124.31	0.19892	-0.22072	3.1542	4225.2	4009.1	3901.3	323.88	107.75	0.33270
125.32	0.22390	-0.13698	3.1542	4273.4	4056.1	3890.8	382.55	165.26	0.43199
126.31	0.24887	-0.10338	3.1542	4291.0	4059.6	3893.2	397.79	166.45	0.41845
128.31	0.28762	-0.077279	3.1542	4281.3	4042.0	3889.7	391.66	152.32	0.38891
130.32	0.29709	-0.064615	3.1542	4287.8	4052.6	3887.4	400.48	165.23	0.41258
132.31	0.30570	-0.058412	3.1542	4291.2	4056.1	3887.4	403.83	168.76	0.41789
134.31	0.30915	-0.051950	3.1542	4287.6	4056.1	3888.5	399.11	167.59	0.41991
136.32	0.31173	-0.051692	3.1542	4289.2	4050.2	3887.4	401.80	162.88	0.40537
138.31	0.31518	-0.050658	3.1542	4290.3	4051.4	3887.4	402.92	164.05	0.40717
140.31	0.31345	-0.047039	3.1542	4285.4	4053.8	3887.4	398.04	166.41	0.41806
142.32	0.31776	-0.046264	3.1542	4290.3	4051.4	3887.4	402.92	164.05	0.40717
144.32	0.31604	-0.046522	3.1542	4290.3	4051.4	3887.4	402.92	164.05	0.40717
146.31	0.31604	-0.045230	3.1542	4290.3	4051.4	3886.2	404.08	165.22	0.40888
148.32	0.31690	-0.045489	3.1542	4287.8	4052.6	3887.4	400.48	165.23	0.41258
150.32	0.31862	-0.043421	3.1542	4292.5	4053.8	3887.4	405.15	166.41	0.41073
152.31	0.32034	-0.043421	3.1542	4287.8	4052.6	3887.4	400.48	165.23	0.41258
154.31	0.31776	-0.042904	3.1542	4290.3	4051.4	3887.4	402.92	164.05	0.40717
154.66	0.31948	-0.043421	3.1542	4289.2	4050.2	3887.4	401.80	162.88	0.40537

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Consolidation/B Phase

Step 6 of 6

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Vertical Stress psf	Horizontal Stress psf	Sample Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Stress Ratio
154.66	0.31690	-0.043421	3.1542	4288.0	4049.1	3887.4	400.69	161.70	0.40357
154.75	0.31690	-0.044196	3.1542	4285.8	4046.7	3883.9	401.95	162.85	0.40515
154.83	0.31690	-0.043938	3.1542	4292.7	4050.2	3890.8	401.86	159.38	0.39661
154.92	0.31862	-0.043421	3.1542	4298.7	4049.1	3888.5	410.19	160.54	0.39138
155.17	0.32465	-0.042904	3.1542	4318.9	4047.9	3886.2	432.73	161.69	0.37366
155.33	0.33843	-0.041353	3.1542	4338.9	4050.2	3888.5	450.41	161.71	0.35904
155.50	0.36771	-0.035926	3.1542	4359.8	4057.3	3892.0	467.82	165.27	0.35327
155.67	0.38062	-0.027913	3.1542	4367.6	4065.5	3890.8	476.80	174.66	0.36632
156.67	0.45210	0.047556	3.1542	4482.8	4141.9	3882.7	600.14	259.22	0.43193
157.67	0.49343	0.12845	3.1542	4501.2	4172.5	3893.2	607.99	279.29	0.45936
159.67	0.55113	0.19617	3.1542	4517.5	4137.2	3889.7	627.79	247.52	0.39428
161.67	0.58988	0.22874	3.1542	4513.7	4140.7	3890.8	622.86	249.88	0.40119
163.67	0.60796	0.24657	3.1542	4515.0	4138.4	3885.0	630.01	253.36	0.40215
165.67	0.61744	0.25458	3.1542	4517.3	4140.7	3887.4	629.91	253.38	0.40225
167.67	0.62605	0.26259	3.1542	4514.8	4141.9	3894.3	620.48	247.56	0.39898
169.67	0.63638	0.27138	3.1542	4515.9	4143.1	3883.9	632.09	259.23	0.41011
171.67	0.63724	0.27810	3.1542	4513.3	4147.8	3885.0	628.27	262.76	0.41823
173.66	0.64499	0.28249	3.1542	4515.5	4150.1	3889.7	625.84	260.45	0.41616
175.67	0.65016	0.28818	3.1542	4516.6	4151.3	3888.5	628.12	262.79	0.41838
177.67	0.65360	0.29077	3.1542	4515.3	4153.7	3888.5	626.80	265.14	0.42301
179.67	0.65533	0.29335	3.1542	4515.3	4153.7	3888.5	626.80	265.14	0.42301
181.67	0.65877	0.29645	3.1542	4514.2	4152.5	3886.2	628.02	266.30	0.42403
183.67	0.66135	0.29800	3.1542	4514.0	4156.0	3888.5	625.48	267.49	0.42766
185.67	0.66480	0.30110	3.1542	4516.4	4154.8	3885.0	631.41	269.82	0.42732
186.99	0.66394	0.30343	3.1542	4519.8	4158.4	3889.7	630.10	268.68	0.42641

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
0.00000	4521.2	4157.2	0.00000	636.21	272.17	454.19	182.02	0.00000	2.3376
0.10143	4609.0	4158.4	40.797	683.18	232.55	457.86	225.32	0.45758	2.9378
0.20199	4642.4	4158.4	59.447	697.90	213.90	455.90	242.00	0.48576	3.2628
0.30255	4672.1	4158.4	69.937	717.14	203.40	460.27	256.87	0.45937	3.5257
0.40397	4685.2	4159.5	79.262	720.93	195.25	458.09	262.84	0.47586	3.6922
0.50367	4700.7	4159.5	86.256	729.44	188.26	458.85	270.59	0.47368	3.8746
0.60509	4715.0	4158.4	92.084	737.91	181.26	459.58	278.33	0.47199	4.0711
0.70565	4726.9	4158.4	96.747	745.12	176.60	460.86	284.26	0.46738	4.2194
0.80621	4745.7	4158.4	100.24	760.45	173.10	466.78	293.68	0.44364	4.3932
0.90677	4754.0	4158.4	103.74	765.24	169.60	467.42	297.82	0.44287	4.5120
1.0073	4765.7	4158.4	107.24	773.48	166.10	469.79	303.69	0.43588	4.6566
1.1088	4767.0	4158.4	108.40	773.55	164.94	469.24	304.31	0.43844	4.6899
1.2093	4775.2	4158.4	111.90	778.25	161.44	469.85	308.40	0.43806	4.8206
1.3099	4786.8	4158.4	114.23	787.55	159.11	473.33	314.22	0.42761	4.9497
1.4104	4788.0	4158.4	115.40	787.58	157.95	472.76	314.82	0.43006	4.9864
1.5110	4792.7	4158.4	117.73	789.90	155.61	472.76	317.14	0.43129	5.0760
1.6124	4798.4	4159.5	120.06	793.30	154.46	473.88	319.42	0.42835	5.1360
1.7130	4787.0	4157.2	121.22	780.73	150.94	465.84	314.90	0.45617	5.1724
1.8135	4792.7	4158.4	123.56	784.13	149.79	466.96	317.17	0.45276	5.2350
1.9141	4784.7	4159.5	125.89	773.79	148.63	461.21	312.58	0.47312	5.2061
2.0155	4772.1	4159.5	127.05	760.07	147.46	453.77	306.30	0.50170	5.1542
2.1161	4768.8	4158.4	127.05	756.72	146.29	451.50	305.21	0.51090	5.1728
2.2158	4752.9	4158.4	128.22	739.68	145.12	442.40	297.28	0.55113	5.0969
2.3172	4736.0	4157.2	128.22	722.71	143.95	433.33	289.38	0.59714	5.0207
2.4178	4728.1	4158.4	131.72	711.36	141.63	426.49	284.87	0.63466	5.0228
2.5183	4716.9	4159.5	132.88	698.96	141.64	420.30	278.66	0.67534	4.9349
2.6189	4706.8	4158.4	132.88	688.93	140.46	414.70	274.23	0.71415	4.9048
2.7194	4691.2	4158.4	134.05	672.11	139.30	405.70	266.41	0.78731	4.8250
2.8200	4685.7	4158.4	135.21	665.47	138.13	401.80	263.67	0.82082	4.8177
2.9214	4676.9	4158.4	135.21	656.63	138.13	397.38	259.25	0.86782	4.7537
3.0220	4671.4	4158.4	137.54	648.87	135.80	392.33	256.53	0.91509	4.7781
3.1226	4662.7	4158.4	137.54	640.09	135.80	387.94	252.15	0.97236	4.7135
3.2240	4650.5	4158.4	138.71	626.80	134.63	380.72	246.08	1.0734	4.6556
3.3237	4641.8	4158.4	139.87	616.94	133.47	375.20	241.74	1.1614	4.6224
3.4251	4637.6	4159.5	141.04	611.53	133.48	372.50	239.03	1.2165	4.5815
3.5257	4624.5	4158.4	141.04	598.41	132.30	365.36	233.05	1.3704	4.5231
3.6262	4614.7	4157.2	141.04	588.66	131.13	359.89	228.77	1.5087	4.4893
3.7268	4610.6	4158.4	142.21	583.33	131.14	357.24	226.10	1.5998	4.4483
3.8273	4602.0	4158.4	143.37	573.59	129.97	351.78	221.81	1.7870	4.4132
3.9279	4593.4	4158.4	144.54	563.87	128.80	346.34	217.53	2.0187	4.3777
4.0293	4594.8	4158.4	144.54	565.25	128.80	347.03	218.22	1.9802	4.3884
4.1299	4590.7	4159.5	145.70	559.99	128.81	344.40	215.59	2.1355	4.3472
4.2304	4591.0	4158.4	146.87	559.09	126.47	342.78	216.31	2.1246	4.4206
4.3310	4588.0	4157.2	146.87	556.07	125.30	340.68	215.39	2.2011	4.4380
4.4316	4590.5	4158.4	146.87	558.57	126.47	342.52	216.05	2.1409	4.4165
4.5330	4591.7	4154.8	146.87	559.85	122.95	341.40	218.45	2.0482	4.5536
4.6344	4593.2	4158.4	149.20	558.95	124.14	341.55	217.40	2.0918	4.5025
4.7350	4601.1	4158.4	149.20	566.84	124.14	345.49	221.35	1.8820	4.5661
4.8347	4602.4	4158.4	150.37	567.03	122.98	345.00	222.03	1.8647	4.6109
4.9352	4604.9	4159.5	151.53	568.32	122.99	345.65	222.67	1.8352	4.6210

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
5.0358	4608.3	4158.4	151.53	571.77	121.81	346.79	224.98	1.7501	4.6939
5.1372	4614.0	4159.5	152.70	576.26	121.82	349.04	227.22	1.6632	4.7304
5.2378	4610.9	4158.4	151.53	574.37	121.81	348.09	226.28	1.6988	4.7152
5.3383	4618.7	4158.4	152.70	580.95	120.65	350.80	230.15	1.5740	4.8154
5.4389	4619.9	4158.4	153.86	581.06	119.48	350.27	230.79	1.5654	4.8633
5.5395	4621.2	4158.4	153.86	582.33	119.48	350.90	231.43	1.5453	4.8739
5.6400	4622.5	4158.4	155.03	582.42	118.31	350.37	232.05	1.5375	4.9227
5.7414	4620.5	4158.4	155.03	580.45	118.31	349.38	231.07	1.5684	4.9060
5.8420	4620.6	4157.2	155.03	580.58	117.14	348.86	231.72	1.5597	4.9563
5.9426	4626.2	4158.4	157.36	583.81	115.98	349.89	233.91	1.5050	5.0336
6.0431	4617.8	4158.4	157.36	575.47	115.98	345.73	229.74	1.6365	4.9617
6.1437	4606.4	4158.4	157.36	563.98	115.98	339.98	224.00	1.8605	4.8626
6.2451	4603.3	4157.2	157.36	560.92	114.81	337.86	223.05	1.9175	4.8857
6.3457	4599.3	4158.4	158.52	555.78	114.82	335.30	220.48	2.0456	4.8406
6.4471	4591.1	4158.4	158.52	547.53	114.82	331.17	216.36	2.2915	4.7687
6.5468	4576.6	4158.4	159.69	531.85	113.65	322.75	209.10	2.9270	4.6797
6.6473	4571.5	4158.4	160.86	525.67	112.49	319.08	206.59	3.2496	4.6732
6.7479	4563.4	4158.4	159.69	518.69	113.65	316.17	202.52	3.8671	4.5638
6.8493	4552.1	4158.4	160.86	506.25	112.49	309.37	196.88	5.3739	4.5005
6.9499	4544.0	4158.4	162.02	496.99	111.32	304.16	192.84	7.4370	4.4645
7.0505	4536.0	4158.4	162.02	488.94	111.32	300.13	188.81	11.854	4.3921
7.1510	4527.9	4158.4	163.19	479.74	110.15	294.95	184.79	29.251	4.3551
7.2516	4523.1	4158.4	163.19	474.85	110.15	292.50	182.35	248.19	4.3108
7.3530	4518.2	4158.4	164.35	468.80	108.99	288.90	179.91	0.00000	4.3014
7.4536	4513.3	4158.4	164.35	463.95	108.99	286.47	177.48	0.00000	4.2568
7.5541	4508.5	4158.4	164.35	459.11	108.99	284.05	175.06	0.00000	4.2124
7.6547	4504.8	4159.5	165.52	454.25	109.00	281.62	172.62	0.00000	4.1674
7.7552	4505.0	4158.4	165.52	454.49	107.82	281.16	173.33	0.00000	4.2151
7.8558	4500.2	4158.4	166.68	448.52	106.66	277.59	170.93	0.00000	4.2053
7.9572	4498.5	4158.4	166.68	446.80	106.66	276.73	170.07	0.00000	4.1891
8.0578	4497.6	4156.0	165.52	447.08	105.47	276.28	170.80	0.00000	4.2388
8.1583	4498.2	4158.4	167.85	445.29	105.49	275.39	169.90	0.00000	4.2210
8.2589	4496.5	4158.4	169.02	442.42	104.33	273.37	169.04	0.00000	4.2407
8.3595	4502.0	4159.5	169.02	447.94	105.50	276.72	171.22	0.00000	4.2458
8.4600	4499.1	4158.4	169.02	445.11	104.33	274.72	170.39	0.00000	4.2665
8.5615	4501.6	4159.5	169.02	447.56	105.50	276.53	171.03	0.00000	4.2421
8.6620	4498.8	4158.4	169.02	444.72	104.33	274.53	170.20	0.00000	4.2628
8.7626	4500.1	4158.4	169.02	446.05	104.33	275.19	170.86	0.00000	4.2755
8.8631	4507.4	4158.4	170.18	452.25	103.16	277.70	174.54	0.00000	4.3839
8.9646	4511.7	4158.4	170.18	456.54	103.16	279.85	176.69	0.00000	4.4256
9.0651	4516.0	4158.4	170.18	460.84	103.16	282.00	178.84	0.00000	4.4672
9.1657	4520.3	4158.4	170.18	465.11	103.16	284.14	180.98	0.00000	4.5086
9.2662	4528.3	4165.4	170.18	473.12	110.21	291.67	181.45	0.00000	4.2928
9.3668	4522.8	4158.4	171.35	466.45	102.00	284.22	182.23	412.97	4.5733
9.4674	4524.1	4158.4	170.18	468.86	103.16	286.01	182.85	102.23	4.5449
9.5688	4528.3	4158.4	172.51	470.73	100.83	285.78	184.95	29.281	4.6685
9.6693	4529.5	4158.4	171.35	473.11	102.00	287.55	185.56	24.066	4.6386
9.7699	4533.7	4158.4	172.51	476.13	100.83	288.48	187.65	15.229	4.7221
9.8705	4534.9	4158.4	172.51	477.32	100.83	289.08	188.25	13.763	4.7340
9.9710	4539.0	4158.4	172.51	481.47	100.83	291.15	190.32	10.325	4.7751

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
10.072	4540.2	4158.4	173.68	481.48	99.664	290.57	190.91	9.7067	4.8310
10.173	4535.4	4158.4	173.68	476.75	99.664	288.21	188.54	13.233	4.7835
10.274	4533.7	4158.4	173.68	474.98	99.664	287.32	187.66	15.306	4.7658
10.374	4529.0	4158.4	174.84	469.12	98.499	283.81	185.31	26.408	4.7627
10.475	4522.5	4159.5	173.68	463.81	100.84	282.32	181.48	0.00000	4.5995
10.575	4519.6	4158.4	174.84	459.78	98.499	279.14	180.64	0.00000	4.6679
10.676	4509.2	4158.4	176.01	448.14	97.333	272.74	175.40	0.00000	4.6042
10.777	4505.7	4159.5	177.17	443.47	97.343	270.40	173.06	0.00000	4.5557
10.879	4494.1	4158.4	177.17	431.92	96.167	264.04	167.88	0.00000	4.4913
10.978	4489.6	4158.4	177.17	427.36	96.167	261.76	165.60	0.00000	4.4439
11.079	4482.1	4158.4	177.17	419.91	96.167	258.04	161.87	0.00000	4.3664
11.179	4477.6	4158.4	177.17	415.37	96.167	255.77	159.60	0.00000	4.3193
11.281	4470.2	4158.4	178.34	406.79	95.002	250.90	155.90	0.00000	4.2820
11.381	4459.9	4158.4	178.34	396.55	95.002	245.78	150.77	0.00000	4.1741
11.482	4455.4	4158.4	178.34	392.08	95.002	243.54	148.54	0.00000	4.1271
11.583	4448.1	4158.4	179.51	383.60	93.836	238.72	144.88	0.00000	4.0879
11.683	4446.5	4158.4	180.67	380.85	92.670	236.76	144.09	0.00000	4.1098
11.784	4443.2	4159.5	180.67	377.56	93.846	235.70	141.86	0.00000	4.0232
11.885	4440.5	4158.4	180.67	374.85	92.670	233.76	141.09	0.00000	4.0450
11.986	4433.3	4158.4	181.84	366.45	91.505	228.98	137.47	0.00000	4.0047
12.086	4431.8	4158.4	181.84	364.91	91.505	228.21	136.70	0.00000	3.9879
12.187	4434.2	4159.5	183.00	366.16	91.515	228.84	137.32	0.00000	4.0011
12.287	4428.7	4158.4	183.00	360.67	90.339	225.50	135.16	0.00000	3.9924
12.388	4425.5	4159.5	183.00	357.45	91.515	224.48	132.97	0.00000	3.9059
12.489	4425.6	4158.4	184.17	356.43	89.174	222.80	133.63	0.00000	3.9970
12.590	4422.4	4159.5	184.17	353.23	90.349	221.79	131.44	0.00000	3.9096
12.690	4423.7	4159.5	185.33	353.35	89.183	221.27	132.08	0.00000	3.9620
12.791	4423.8	4158.4	185.33	353.49	88.008	220.75	132.74	0.00000	4.0166
12.892	4430.7	4158.4	185.33	360.33	88.008	224.17	136.16	0.00000	4.0943
12.992	4437.5	4158.4	185.33	367.13	88.008	227.57	139.56	0.00000	4.1715
13.094	4441.5	4158.4	186.50	369.95	86.842	228.40	141.55	0.00000	4.2600
13.194	4445.4	4158.4	186.50	373.93	86.842	230.39	143.54	0.00000	4.3058
13.295	4446.6	4158.4	187.67	373.96	85.677	229.82	144.14	0.00000	4.3648
13.395	4453.3	4158.4	187.67	380.66	85.677	233.17	147.49	0.00000	4.4430
13.496	4451.8	4158.4	188.83	377.92	84.511	231.22	146.70	0.00000	4.4718
13.597	4456.8	4159.5	188.83	382.95	85.686	234.32	148.63	0.00000	4.4692
13.698	4458.0	4159.5	188.83	384.10	85.686	234.89	149.21	0.00000	4.4827
13.799	4454.1	4157.2	187.67	381.41	84.501	232.96	148.46	0.00000	4.5137
13.899	4456.4	4158.4	188.83	382.54	84.511	233.52	149.01	0.00000	4.5265
13.999	4460.2	4158.4	187.67	387.56	85.677	236.62	150.94	0.00000	4.5235
14.100	4458.7	4158.4	188.83	384.81	84.511	234.66	150.15	0.00000	4.5533
14.201	4459.8	4158.4	188.83	385.92	84.511	235.21	150.70	0.00000	4.5665
14.302	4465.2	4157.2	186.50	393.63	85.667	239.65	153.98	0.00000	4.5949
14.403	4462.0	4158.4	188.83	388.14	84.511	236.33	151.81	0.00000	4.5928
14.503	4457.7	4158.4	188.83	383.86	84.511	234.19	149.68	0.00000	4.5422
14.604	4456.1	4158.4	188.83	382.28	84.511	233.40	148.89	0.00000	4.5235
14.705	4453.0	4159.5	190.00	377.98	84.521	231.25	146.73	0.00000	4.4721
14.806	4448.8	4159.5	191.16	372.58	83.355	227.97	144.61	0.00000	4.4698
14.906	4443.4	4158.4	190.00	368.40	83.346	225.87	142.53	0.00000	4.4201
15.007	4433.9	4158.4	190.00	358.88	83.346	221.11	137.77	0.00000	4.3059

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
15.107	4431.2	4157.2	188.83	357.39	83.336	220.36	137.03	0.00000	4.2886
15.208	4421.8	4157.2	191.16	345.60	81.005	213.30	132.30	0.00000	4.2664
15.309	4418.8	4158.4	191.16	342.58	82.180	212.38	130.20	0.00000	4.1687
15.410	4413.5	4157.2	191.16	337.33	81.005	209.17	128.16	0.00000	4.1643
15.510	4407.9	4158.4	192.33	330.56	81.014	205.79	124.77	0.00000	4.0802
15.611	4406.4	4158.4	192.33	329.10	81.014	205.06	124.04	0.00000	4.0622
15.712	4402.4	4158.4	192.33	325.02	81.014	203.02	122.00	0.00000	4.0119
15.812	4396.8	4159.5	192.33	319.49	82.190	200.84	118.65	0.00000	3.8872
15.914	4391.7	4158.4	193.49	313.14	79.849	196.49	116.65	0.00000	3.9217
16.014	4387.6	4158.4	193.49	309.12	79.849	194.48	114.64	0.00000	3.8713
16.115	4386.2	4158.4	192.33	308.87	81.014	194.94	113.93	0.00000	3.8126
16.215	4382.2	4158.4	192.33	304.88	81.014	192.95	111.93	0.00000	3.7633
16.316	4378.2	4158.4	193.49	299.74	79.849	189.79	109.94	0.00000	3.7538
16.417	4375.7	4157.2	192.33	298.37	79.839	189.11	109.27	0.00000	3.7372
16.518	4375.5	4158.4	193.49	296.96	79.849	188.40	108.55	0.00000	3.7190
16.618	4371.5	4158.4	193.49	293.01	79.849	186.43	106.58	0.00000	3.6696
16.719	4370.2	4158.4	193.49	291.65	79.849	185.75	105.90	0.00000	3.6525
16.819	4373.9	4158.4	194.66	294.22	78.683	186.45	107.77	0.00000	3.7393
16.920	4378.7	4159.5	195.82	297.90	78.693	188.30	109.61	0.00000	3.7857
17.021	4388.1	4165.4	193.49	309.59	86.901	198.24	111.34	0.00000	3.5625
17.122	4385.0	4158.4	194.66	305.30	78.683	191.99	113.31	0.00000	3.8802
17.223	4386.1	4158.4	195.82	305.27	77.517	191.39	113.88	0.00000	3.9381
17.323	4394.8	4158.4	195.82	313.96	77.517	195.74	118.22	0.00000	4.0502
17.424	4395.9	4158.4	195.82	315.06	77.517	196.29	118.77	0.00000	4.0643
17.525	4399.5	4158.4	196.99	317.48	76.352	196.92	120.56	0.00000	4.1581
17.626	4403.1	4158.4	196.99	321.06	76.352	198.71	122.35	0.00000	4.2050
17.726	4401.6	4158.4	196.99	319.63	76.352	197.99	121.64	0.00000	4.1862
17.827	4405.2	4158.4	196.99	323.18	76.352	199.77	123.41	0.00000	4.2328
17.927	4407.6	4157.2	196.99	325.58	75.176	200.38	125.20	0.00000	4.3309
18.028	4409.8	4158.4	196.99	327.75	76.352	202.05	125.70	0.00000	4.2926
18.129	4410.8	4158.4	198.16	327.59	75.186	201.39	126.20	0.00000	4.3571
18.230	4411.8	4158.4	198.16	328.61	75.186	201.90	126.71	0.00000	4.3706
18.330	4413.9	4159.5	199.32	329.59	75.196	202.39	127.20	0.00000	4.3831
18.431	4411.3	4158.4	199.32	327.00	74.021	200.51	126.49	0.00000	4.4177
18.532	4408.6	4159.5	200.49	323.07	74.030	198.55	124.52	0.00000	4.3640
18.632	4407.3	4157.2	198.16	324.14	74.011	199.07	125.06	0.00000	4.3796
18.734	4405.7	4159.5	201.65	319.02	72.865	195.94	123.08	0.00000	4.3782
18.834	4403.1	4158.4	200.49	317.62	72.855	195.24	122.38	0.00000	4.3596
18.935	4404.1	4158.4	201.65	317.45	71.689	194.57	122.88	0.00000	4.4281
19.035	4401.4	4159.5	202.82	313.57	71.699	192.63	120.94	0.00000	4.3734
19.136	4396.4	4158.4	201.65	309.77	71.689	190.73	119.04	0.00000	4.3210
19.237	4392.6	4158.4	201.65	305.94	71.689	188.81	117.12	0.00000	4.2675
19.338	4386.4	4158.4	201.65	299.73	71.689	185.71	114.02	0.00000	4.1810
19.438	4380.2	4158.4	202.82	292.39	70.524	181.46	110.93	0.00000	4.1460
19.539	4370.6	4157.2	201.65	283.88	70.514	177.20	106.68	0.00000	4.0259
19.640	4371.5	4159.5	203.98	282.47	70.533	176.50	105.97	0.00000	4.0048
19.740	4364.2	4158.4	202.82	276.40	70.524	173.46	102.94	0.00000	3.9193
19.841	4358.2	4158.4	203.98	269.15	69.358	169.26	99.898	0.00000	3.8807
19.942	4352.1	4158.4	203.98	263.11	69.358	166.23	96.876	0.00000	3.7935
20.043	4346.1	4158.4	203.98	257.09	69.358	163.23	93.868	0.00000	3.7068

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Vertical Strain %	Total Vertical Stress psf	Total Horizontal Stress psf	Excess Pore Pressure psf	Effective Vertical Stress psf	Effective Horizontal Stress psf	Effective p psf	q psf	A Parameter	Stress Ratio
20.143	4346.0	4159.5	205.15	255.79	69.368	162.58	93.210	0.00000	3.6874

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
0.00000	0.00000	0.00000	3.1627	7.9957	364.05	4521.2	4157.2	3885.0
6.4251	0.10143	0.00000	3.1681	9.9411	450.64	4609.0	4158.4	3925.8
13.682	0.20199	0.00000	3.1734	10.720	484.01	4642.4	4158.4	3944.5
20.096	0.30255	0.00000	3.1788	11.421	513.73	4672.1	4158.4	3955.0
26.404	0.40397	0.00000	3.1842	11.731	525.67	4685.2	4159.5	3964.3
33.665	0.50367	0.00000	3.1895	12.120	541.18	4700.7	4159.5	3971.3
40.276	0.60509	0.00000	3.1949	12.511	556.65	4715.0	4158.4	3977.1
46.608	0.70565	0.00000	3.2004	12.822	568.53	4726.9	4158.4	3981.8
54.166	0.80621	0.00000	3.2058	13.289	587.35	4745.7	4158.4	3985.3
60.465	0.90677	0.00000	3.2113	13.523	595.64	4754.0	4158.4	3988.8
66.957	1.0073	0.00000	3.2167	13.835	607.38	4765.7	4158.4	3992.3
72.917	1.1088	0.00000	3.2223	13.912	608.61	4767.0	4158.4	3993.4
80.633	1.2093	0.00000	3.2278	14.146	616.81	4775.2	4158.4	3996.9
85.573	1.3099	0.00000	3.2333	14.458	628.44	4786.8	4158.4	3999.3
93.182	1.4104	0.00000	3.2389	14.535	629.64	4788.0	4158.4	4000.4
99.739	1.5110	0.00000	3.2444	14.691	634.29	4792.7	4158.4	4002.7
106.90	1.6124	0.00000	3.2501	14.846	638.84	4798.4	4159.5	4005.1
113.88	1.7130	0.00000	3.2557	14.692	629.79	4787.0	4157.2	4006.2
120.34	1.8135	0.00000	3.2613	14.847	634.35	4792.7	4158.4	4008.6
127.06	1.9141	0.00000	3.2670	14.690	625.15	4784.7	4159.5	4010.9
134.53	2.0155	0.00000	3.2727	14.456	612.60	4772.1	4159.5	4012.1
140.21	2.1161	0.00000	3.2784	14.458	610.43	4768.8	4158.4	4012.1
146.80	2.2158	0.00000	3.2840	14.146	594.56	4752.9	4158.4	4013.2
154.16	2.3172	0.00000	3.2898	13.836	578.77	4736.0	4157.2	4013.2
161.58	2.4178	0.00000	3.2955	13.679	569.73	4728.1	4158.4	4016.7
167.93	2.5183	0.00000	3.3013	13.444	557.33	4716.9	4159.5	4017.9
174.22	2.6189	0.00000	3.3071	13.289	548.47	4706.8	4158.4	4017.9
181.02	2.7194	0.00000	3.3129	12.978	532.81	4691.2	4158.4	4019.1
186.71	2.8200	0.00000	3.3187	12.900	527.34	4685.7	4158.4	4020.2
193.64	2.9214	0.00000	3.3246	12.744	518.50	4676.9	4158.4	4020.2
200.92	3.0220	0.00000	3.3305	12.667	513.07	4671.4	4158.4	4022.6
207.90	3.1226	0.00000	3.3364	12.511	504.29	4662.7	4158.4	4022.6
214.51	3.2240	0.00000	3.3423	12.277	492.17	4650.5	4158.4	4023.7
220.82	3.3237	0.00000	3.3482	12.121	483.47	4641.8	4158.4	4024.9
227.29	3.4251	0.00000	3.3542	12.042	478.05	4637.6	4159.5	4026.1
233.43	3.5257	0.00000	3.3602	11.810	466.11	4624.5	4158.4	4026.1
240.82	3.6262	0.00000	3.3662	11.656	457.53	4614.7	4157.2	4026.1
246.72	3.7268	0.00000	3.3722	11.576	452.20	4610.6	4158.4	4027.2
253.67	3.8273	0.00000	3.3782	11.421	443.62	4602.0	4158.4	4028.4
260.05	3.9279	0.00000	3.3843	11.265	435.06	4593.4	4158.4	4029.6
267.64	4.0293	0.00000	3.3904	11.343	436.44	4594.8	4158.4	4029.6
273.66	4.1299	0.00000	3.3965	11.264	431.17	4590.7	4159.5	4030.7
281.10	4.2304	0.00000	3.4026	11.343	432.62	4591.0	4158.4	4031.9
287.38	4.3310	0.00000	3.4088	11.344	430.77	4588.0	4157.2	4031.9
294.06	4.4316	0.00000	3.4150	11.421	432.10	4590.5	4158.4	4031.9
300.26	4.5330	0.00000	3.4212	11.580	436.90	4591.7	4154.8	4031.9
307.05	4.6344	0.00000	3.4275	11.576	434.81	4593.2	4158.4	4034.2
314.25	4.7350	0.00000	3.4337	11.810	442.70	4601.1	4158.4	4034.2
320.10	4.8347	0.00000	3.4399	11.888	444.05	4602.4	4158.4	4035.4
327.21	4.9352	0.00000	3.4462	11.964	445.33	4604.9	4159.5	4036.6

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
333.46	5.0358	0.00000	3.4525	12.121	449.96	4608.3	4158.4	4036.6
340.04	5.1372	0.00000	3.4589	12.276	454.44	4614.0	4159.5	4037.7
346.36	5.2378	0.00000	3.4652	12.277	452.55	4610.9	4158.4	4036.6
353.39	5.3383	0.00000	3.4716	12.511	460.31	4618.7	4158.4	4037.7
361.16	5.4389	0.00000	3.4780	12.589	461.58	4619.9	4158.4	4038.9
367.98	5.5395	0.00000	3.4844	12.667	462.85	4621.2	4158.4	4038.9
373.70	5.6400	0.00000	3.4909	12.744	464.11	4622.5	4158.4	4040.0
380.59	5.7414	0.00000	3.4974	12.744	462.14	4620.5	4158.4	4040.0
386.58	5.8420	0.00000	3.5039	12.824	463.44	4620.6	4157.2	4040.0
394.29	5.9426	0.00000	3.5104	12.978	467.82	4626.2	4158.4	4042.4
400.98	6.0431	0.00000	3.5170	12.822	459.49	4617.8	4158.4	4042.4
408.03	6.1437	0.00000	3.5235	12.589	447.99	4606.4	4158.4	4042.4
415.17	6.2451	0.00000	3.5302	12.590	446.11	4603.3	4157.2	4042.4
421.18	6.3457	0.00000	3.5368	12.511	440.97	4599.3	4158.4	4043.5
427.77	6.4471	0.00000	3.5435	12.355	432.71	4591.1	4158.4	4043.5
434.15	6.5468	0.00000	3.5501	12.044	418.20	4576.6	4158.4	4044.7
440.99	6.6473	0.00000	3.5568	11.966	413.18	4571.5	4158.4	4045.9
447.31	6.7479	0.00000	3.5635	11.810	405.04	4563.4	4158.4	4044.7
454.13	6.8493	0.00000	3.5703	11.576	393.76	4552.1	4158.4	4045.9
461.63	6.9499	0.00000	3.5771	11.421	385.67	4544.0	4158.4	4047.0
468.92	7.0505	0.00000	3.5839	11.265	377.62	4536.0	4158.4	4047.0
474.82	7.1510	0.00000	3.5907	11.109	369.58	4527.9	4158.4	4048.2
481.57	7.2516	0.00000	3.5975	11.031	364.70	4523.1	4158.4	4048.2
488.13	7.3530	0.00000	3.6045	10.953	359.81	4518.2	4158.4	4049.4
494.64	7.4536	0.00000	3.6114	10.876	354.96	4513.3	4158.4	4049.4
501.90	7.5541	0.00000	3.6183	10.798	350.12	4508.5	4158.4	4049.4
508.83	7.6547	0.00000	3.6252	10.718	345.25	4504.8	4159.5	4050.5
515.38	7.7552	0.00000	3.6322	10.798	346.67	4505.0	4158.4	4050.5
522.28	7.8558	0.00000	3.6392	10.720	341.87	4500.2	4158.4	4051.7
528.94	7.9572	0.00000	3.6463	10.720	340.14	4498.5	4158.4	4051.7
534.72	8.0578	0.00000	3.6534	10.800	341.61	4497.6	4156.0	4050.5
541.21	8.1583	0.00000	3.6604	10.798	339.79	4498.2	4158.4	4052.9
547.67	8.2589	0.00000	3.6676	10.798	338.09	4496.5	4158.4	4054.0
555.20	8.3595	0.00000	3.6747	10.952	342.44	4502.0	4159.5	4054.0
561.71	8.4600	0.00000	3.6819	10.953	340.78	4499.1	4158.4	4054.0
568.83	8.5615	0.00000	3.6891	11.030	342.05	4501.6	4159.5	4054.0
574.90	8.6620	0.00000	3.6964	11.031	340.40	4498.8	4158.4	4054.0
581.36	8.7626	0.00000	3.7036	11.109	341.72	4500.1	4158.4	4054.0
588.03	8.8631	0.00000	3.7109	11.343	349.08	4507.4	4158.4	4055.2
594.81	8.9646	0.00000	3.7183	11.498	353.38	4511.7	4158.4	4055.2
602.73	9.0651	0.00000	3.7256	11.654	357.68	4516.0	4158.4	4055.2
608.45	9.1657	0.00000	3.7330	11.810	361.95	4520.3	4158.4	4055.2
615.51	9.2662	0.00000	3.7404	11.880	362.91	4528.3	4165.4	4055.2
622.09	9.3668	0.00000	3.7478	11.966	364.46	4522.8	4158.4	4056.4
628.22	9.4674	0.00000	3.7553	12.044	365.70	4524.1	4158.4	4055.2
634.52	9.5688	0.00000	3.7628	12.199	369.90	4528.3	4158.4	4057.5
641.85	9.6693	0.00000	3.7703	12.277	371.12	4529.5	4158.4	4056.4
648.57	9.7699	0.00000	3.7779	12.433	375.30	4533.7	4158.4	4057.5
655.25	9.8705	0.00000	3.7855	12.511	376.49	4534.9	4158.4	4057.5
662.06	9.9710	0.00000	3.7931	12.667	380.64	4539.0	4158.4	4057.5

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
669.16	10.072	0.00000	3.8007	12.744	381.82	4540.2	4158.4	4058.7
676.10	10.173	0.00000	3.8085	12.667	377.08	4535.4	4158.4	4058.7
681.75	10.274	0.00000	3.8162	12.667	375.32	4533.7	4158.4	4058.7
688.24	10.374	0.00000	3.8239	12.589	370.62	4529.0	4158.4	4059.9
694.81	10.475	0.00000	3.8317	12.432	362.97	4522.5	4159.5	4058.7
702.18	10.575	0.00000	3.8394	12.433	361.28	4519.6	4158.4	4059.9
709.00	10.676	0.00000	3.8473	12.199	350.81	4509.2	4158.4	4061.0
715.97	10.777	0.00000	3.8552	12.120	346.12	4505.7	4159.5	4062.2
722.80	10.879	0.00000	3.8632	11.888	335.75	4494.1	4158.4	4062.2
729.78	10.978	0.00000	3.8710	11.810	331.19	4489.6	4158.4	4062.2
735.40	11.079	0.00000	3.8790	11.654	323.74	4482.1	4158.4	4062.2
742.13	11.179	0.00000	3.8870	11.576	319.21	4477.6	4158.4	4062.2
749.42	11.281	0.00000	3.8951	11.421	311.79	4470.2	4158.4	4063.4
756.78	11.381	0.00000	3.9031	11.187	301.55	4459.9	4158.4	4063.4
763.33	11.482	0.00000	3.9112	11.109	297.08	4455.4	4158.4	4063.4
769.03	11.583	0.00000	3.9193	10.953	289.76	4448.1	4158.4	4064.5
776.23	11.683	0.00000	3.9275	10.953	288.18	4446.5	4158.4	4065.7
782.59	11.784	0.00000	3.9357	10.874	283.71	4443.2	4159.5	4065.7
789.17	11.885	0.00000	3.9440	10.876	282.18	4440.5	4158.4	4065.7
796.33	11.986	0.00000	3.9522	10.720	274.95	4433.3	4158.4	4066.9
803.04	12.086	0.00000	3.9605	10.720	273.40	4431.8	4158.4	4066.9
809.80	12.187	0.00000	3.9689	10.796	274.64	4434.2	4159.5	4068.0
816.17	12.287	0.00000	3.9772	10.720	270.33	4428.7	4158.4	4068.0
822.70	12.388	0.00000	3.9856	10.641	265.94	4425.5	4159.5	4068.0
830.43	12.489	0.00000	3.9941	10.720	267.26	4425.6	4158.4	4069.2
835.30	12.590	0.00000	4.0026	10.641	262.88	4422.4	4159.5	4069.2
842.39	12.690	0.00000	4.0111	10.718	264.17	4423.7	4159.5	4070.4
848.86	12.791	0.00000	4.0197	10.798	265.49	4423.8	4158.4	4070.4
855.40	12.892	0.00000	4.0282	11.031	272.32	4430.7	4158.4	4070.4
861.71	12.992	0.00000	4.0369	11.265	279.12	4437.5	4158.4	4070.4
869.10	13.094	0.00000	4.0456	11.421	283.11	4441.5	4158.4	4071.5
875.43	13.194	0.00000	4.0543	11.576	287.09	4445.4	4158.4	4071.5
881.74	13.295	0.00000	4.0630	11.654	288.29	4446.6	4158.4	4072.7
888.78	13.395	0.00000	4.0718	11.888	294.98	4453.3	4158.4	4072.7
894.75	13.496	0.00000	4.0806	11.888	293.41	4451.8	4158.4	4073.9
902.25	13.597	0.00000	4.0895	12.042	297.26	4456.8	4159.5	4073.9
909.33	13.698	0.00000	4.0984	12.120	298.42	4458.0	4159.5	4073.9
917.16	13.799	0.00000	4.1074	12.123	296.91	4454.1	4157.2	4072.7
922.95	13.899	0.00000	4.1163	12.199	298.03	4456.4	4158.4	4073.9
928.88	13.999	0.00000	4.1253	12.355	301.88	4460.2	4158.4	4072.7
935.80	14.100	0.00000	4.1343	12.355	300.30	4458.7	4158.4	4073.9
942.10	14.201	0.00000	4.1434	12.433	301.41	4459.8	4158.4	4073.9
949.48	14.302	0.00000	4.1526	12.668	307.97	4465.2	4157.2	4071.5
956.42	14.403	0.00000	4.1617	12.589	303.63	4462.0	4158.4	4073.9
962.63	14.503	0.00000	4.1709	12.511	299.35	4457.7	4158.4	4073.9
969.10	14.604	0.00000	4.1802	12.511	297.77	4456.1	4158.4	4073.9
976.13	14.705	0.00000	4.1895	12.432	293.46	4453.0	4159.5	4075.0
982.71	14.806	0.00000	4.1988	12.354	289.23	4448.8	4159.5	4076.2
988.95	14.906	0.00000	4.2082	12.277	285.05	4443.4	4158.4	4075.0
995.75	15.007	0.00000	4.2176	12.044	275.53	4433.9	4158.4	4075.0

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
1001.7	15.107	0.00000	4.2271	12.045	274.05	4431.2	4157.2	4073.9
1009.7	15.208	0.00000	4.2365	11.811	264.59	4421.8	4157.2	4076.2
1016.6	15.309	0.00000	4.2462	11.732	260.40	4418.8	4158.4	4076.2
1022.9	15.410	0.00000	4.2557	11.656	256.32	4413.5	4157.2	4076.2
1029.2	15.510	0.00000	4.2654	11.498	249.54	4407.9	4158.4	4077.3
1035.1	15.611	0.00000	4.2750	11.498	248.08	4406.4	4158.4	4077.3
1042.2	15.712	0.00000	4.2847	11.421	244.01	4402.4	4158.4	4077.3
1049.4	15.812	0.00000	4.2945	11.264	237.30	4396.8	4159.5	4077.3
1055.3	15.914	0.00000	4.3044	11.187	233.29	4391.7	4158.4	4078.5
1063.0	16.014	0.00000	4.3142	11.109	229.27	4387.6	4158.4	4078.5
1069.0	16.115	0.00000	4.3241	11.109	227.86	4386.2	4158.4	4077.3
1076.4	16.215	0.00000	4.3340	11.031	223.87	4382.2	4158.4	4077.3
1082.1	16.316	0.00000	4.3440	10.953	219.89	4378.2	4158.4	4078.5
1088.8	16.417	0.00000	4.3541	10.955	218.53	4375.7	4157.2	4077.3
1094.5	16.518	0.00000	4.3642	10.953	217.11	4375.5	4158.4	4078.5
1101.8	16.618	0.00000	4.3743	10.876	213.17	4371.5	4158.4	4078.5
1108.9	16.719	0.00000	4.3845	10.876	211.80	4370.2	4158.4	4078.5
1115.0	16.819	0.00000	4.3947	11.031	215.53	4373.9	4158.4	4079.7
1122.0	16.920	0.00000	4.4049	11.186	219.21	4378.7	4159.5	4080.8
1128.4	17.021	0.00000	4.4153	11.335	222.69	4388.1	4165.4	4078.5
1134.1	17.122	0.00000	4.4257	11.498	226.62	4385.0	4158.4	4079.7
1140.7	17.223	0.00000	4.4361	11.576	227.75	4386.1	4158.4	4080.8
1148.1	17.323	0.00000	4.4465	11.888	236.44	4394.8	4158.4	4080.8
1154.4	17.424	0.00000	4.4570	11.966	237.54	4395.9	4158.4	4080.8
1161.3	17.525	0.00000	4.4677	12.121	241.13	4399.5	4158.4	4082.0
1167.8	17.626	0.00000	4.4783	12.277	244.71	4403.1	4158.4	4082.0
1174.7	17.726	0.00000	4.4889	12.277	243.27	4401.6	4158.4	4082.0
1182.0	17.827	0.00000	4.4996	12.433	246.83	4405.2	4158.4	4082.0
1188.5	17.927	0.00000	4.5104	12.590	250.40	4407.6	4157.2	4082.0
1194.7	18.028	0.00000	4.5212	12.667	251.39	4409.8	4158.4	4082.0
1201.3	18.129	0.00000	4.5321	12.744	252.41	4410.8	4158.4	4083.2
1207.8	18.230	0.00000	4.5431	12.822	253.43	4411.8	4158.4	4083.2
1214.2	18.330	0.00000	4.5540	12.899	254.39	4413.9	4159.5	4084.3
1222.0	18.431	0.00000	4.5650	12.900	252.98	4411.3	4158.4	4084.3
1228.0	18.532	0.00000	4.5761	12.821	249.04	4408.6	4159.5	4085.5
1233.4	18.632	0.00000	4.5872	12.901	250.13	4407.3	4157.2	4083.2
1241.3	18.734	0.00000	4.5985	12.821	246.15	4405.7	4159.5	4086.7
1248.3	18.834	0.00000	4.6097	12.822	244.76	4403.1	4158.4	4085.5
1254.1	18.935	0.00000	4.6210	12.900	245.76	4404.1	4158.4	4086.7
1261.6	19.035	0.00000	4.6324	12.821	241.87	4401.4	4159.5	4087.8
1267.8	19.136	0.00000	4.6438	12.744	238.08	4396.4	4158.4	4086.7
1274.5	19.237	0.00000	4.6553	12.667	234.25	4392.6	4158.4	4086.7
1280.9	19.338	0.00000	4.6668	12.511	228.04	4386.4	4158.4	4086.7
1288.2	19.438	0.00000	4.6784	12.355	221.86	4380.2	4158.4	4087.8
1294.3	19.539	0.00000	4.6900	12.123	213.36	4370.6	4157.2	4086.7
1300.8	19.640	0.00000	4.7017	12.120	211.94	4371.5	4159.5	4089.0
1308.7	19.740	0.00000	4.7135	11.966	205.88	4364.2	4158.4	4087.8
1314.4	19.841	0.00000	4.7254	11.810	199.80	4358.2	4158.4	4089.0
1321.8	19.942	0.00000	4.7372	11.654	193.75	4352.1	4158.4	4089.0
1327.6	20.043	0.00000	4.7492	11.498	187.74	4346.1	4158.4	4089.0

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Shear Phase

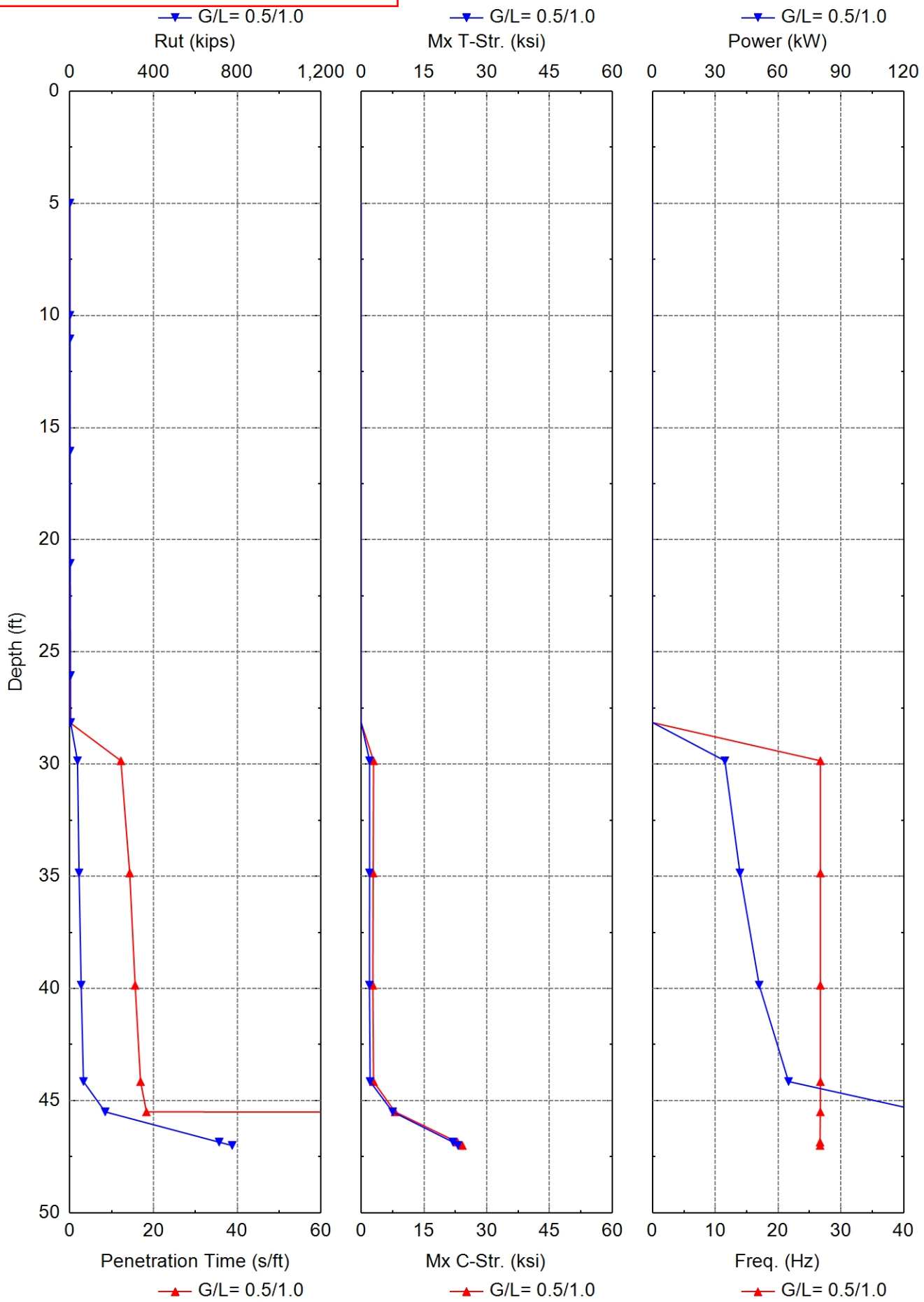
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psf	Total Vertical Stress psf	Total Horizontal Stress psf	Pore Pressure psf
1334.2	20.143	0.00000	4.7611	11.497	186.42	4346.0	4159.5	4090.2

Project: Southport Bridge	Location: Southport ME	Project No.: 166-24
Boring No.: BB-STBG-203	Tested By: SJR	Checked By: sjr
Sample No.: U-1	Test Date: 9/5/21	Depth: 15.9
Test No.: CkoU 315	Sample Type:	Elevation: -57.9
Description: Gray Silty Clay		
Remarks: Consolidate to effective vertical stress of 632 paf. Ko Consolidation. retest		

APPENDIX F – CALCULATIONS

WEAP RESULTS

Vibratory Hammer - ICE 216
Fender Pile, 100' pile, 47' embedment

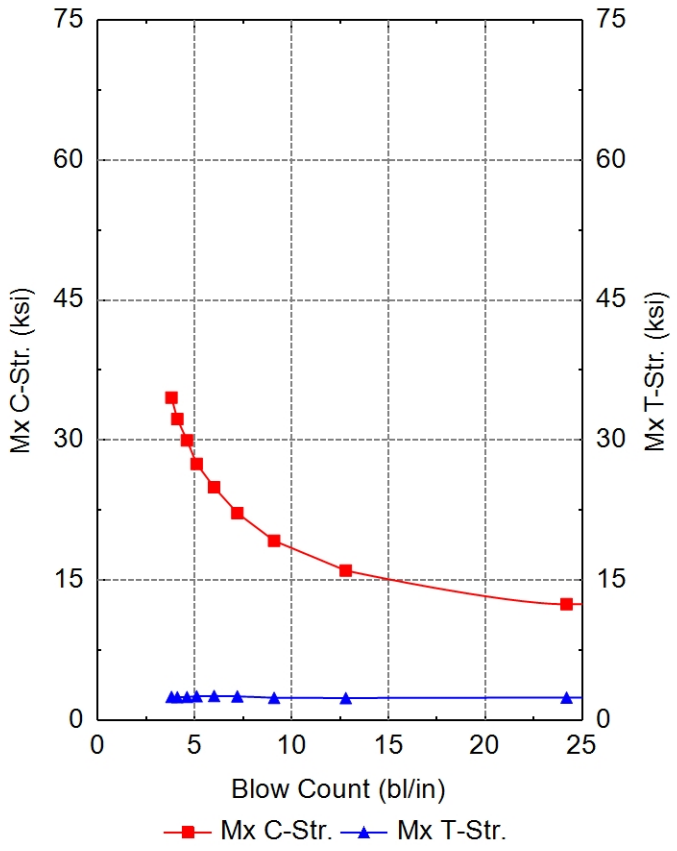


Gain/Loss 1 at Shaft/Toe = 0.500/1.000

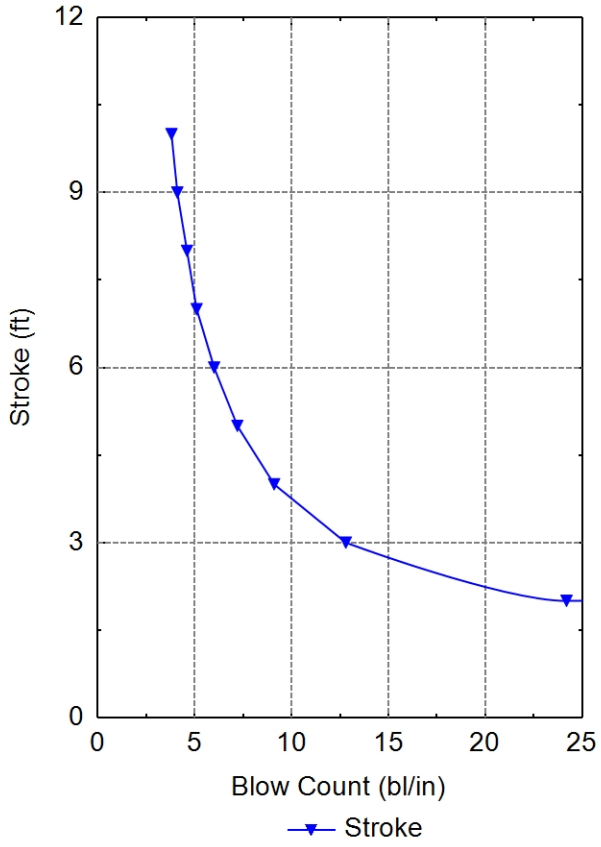
Depth	Rut	Rshaft	Rtoe	Pen. T	Mx C-Str	Mx T-Str	Ham Freq.	Power	Hammer
ft	kips	kips	kips	s/ft	ksi	ksi	Hz	KW	-
5.0	0.2	0.2	0.0	0.0	0.000	0.000	0.00	0.0	216
10.0	0.6	0.6	0.0	0.0	0.000	0.000	0.00	0.0	216
11.1	0.7	0.7	0.0	0.0	0.000	0.000	0.00	0.0	216
16.1	1.3	1.3	0.0	0.0	0.000	0.000	0.00	0.0	216
21.1	2.1	2.1	0.0	0.0	0.000	0.000	0.00	0.0	216
26.1	3.2	3.2	0.0	0.0	0.000	0.000	0.00	0.0	216
28.1	3.7	3.7	0.0	0.0	0.000	0.000	0.00	0.0	216
29.9	36.5	4.9	31.6	12.3	2.952	2.004	26.73	34.6	216
34.9	43.9	12.3	31.6	14.3	2.861	1.994	26.73	41.8	216
39.9	54.1	22.5	31.6	15.5	2.794	1.970	26.73	51.0	216
44.1	65.1	33.5	31.6	16.9	2.941	2.131	26.73	65.0	216
45.5	169.0	137.4	31.6	18.3	8.090	7.527	26.73	130.4	216
46.9	713.8	584.1	129.7	9999.0	23.003	21.945	26.69	130.0	216
47.0	775.8	644.6	131.2	9999.0	24.197	23.141	26.69	130.1	216

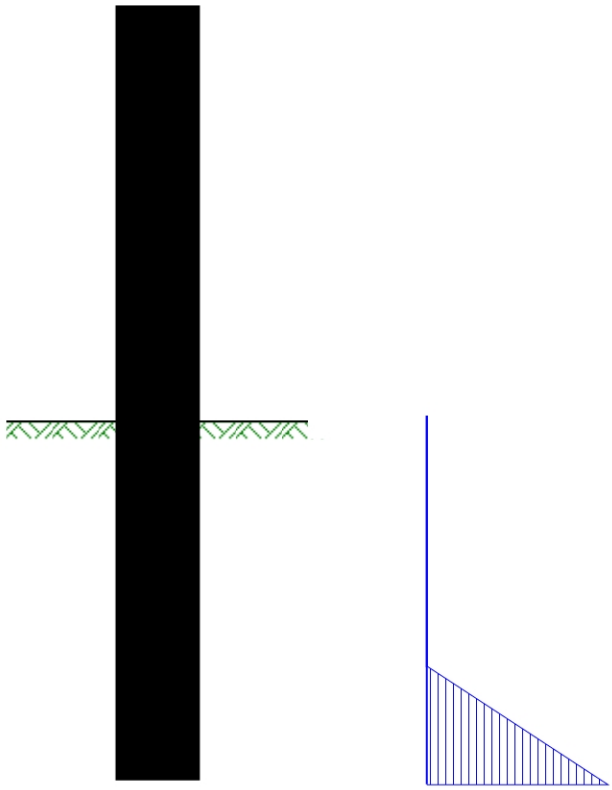
Refusal occurred; no driving time output possible.

Drop Hammer - 2.3 kips
Fender Pile, 100' pile, 47' embedment



Fleming 2300 lb.*	User Hammer (ID=5)	
Capacity	200.0	kips
Ram Weight	2.30	kips
Efficiency	0.600	
Stroke	10.000	ft
Helmet Weight	0.500	kips
Hammer Cushion	952508.780	kips/in
COR of H.C.	0.850	
Skin Quake	0.100	in
Toe Quake	0.040	in
Skin Damping	0.050	s/ft
Toe Damping	0.150	s/ft
Pile Length	100.00	ft
Pile Penetration	47.00	ft
Pile Top Area	21.80	in²
RSA	No	





Pile Model

Shaft=20%
(Prop.)

Drop Hammer - 2.3 kips
Fender Pile, 100' pile, 47' embedment

Bearing Graph Summary — FLEMING 2300 LB.*

Rut	Mx C-Str.	Top Str.	Mx T-Str.	Blow Ct	Stroke	ENTHRU	Hammer	Trans. Ratio
kips	ksi	ksi	ksi	bl/in	ft	kip-ft	Fleming	%
200.0	9.56	7.93	2.43	9999.0	1.00	1.14	2300 lb.	4.9
200.0	12.41	12.31	2.41	24.2	2.00	2.28	2300 lb.	9.9
200.0	16.02	15.97	2.36	12.8	3.00	3.43	2300 lb.	14.9
200.0	19.21	19.21	2.38	9.1	4.00	4.59	2300 lb.	20.0
200.0	22.18	22.18	2.54	7.2	5.00	5.75	2300 lb.	25.0
200.0	24.94	24.94	2.58	6.0	6.00	6.92	2300 lb.	30.1
200.0	27.44	27.44	2.55	5.1	7.00	8.09	2300 lb.	35.2
200.0	29.97	29.97	2.47	4.6	8.00	9.27	2300 lb.	40.3
200.0	32.24	32.24	2.45	4.1	9.00	10.44	2300 lb.	45.4
200.0	34.55	34.55	2.48	3.8	10.00	11.62	2300 lb.	50.5