

PHASE II GEOTECHNICAL DATA REPORT  
ROBERTSON BOULEVARD OVER INTERSTATE 395  
BRIDGE NO. 1560, MAINEDOT WIN 029484.00  
BREWER, MAINE

by  
Haley & Aldrich, Inc.  
Portland, Maine

for  
HNTB Corporation  
South Portland, Maine

File No. 0210037-002  
May 2026





HALEY & ALDRICH, INC.  
75 Washington Avenue  
Suite 1A  
Portland, ME 04101  
207.482.4600

May 15, 2026  
File No. 0210037-002

HNTB Corporation  
82 Running Hill Road, Suite 201  
South Portland, Maine 04106-3218

Attention: Josh Olund, P.E., PhD  
Associate Vice President/Structures Department Manager

Subject: Phase II Geotechnical Data Report  
Robertson Boulevard over Interstate 395  
Bridge No. 1560, MaineDOT WIN 029484.00  
Brewer, Maine

Ladies and Gentlemen:

This Phase II Geotechnical Data Report presents the results of the recent geotechnical field investigation and geotechnical laboratory testing programs conducted at the site. This work has been completed in accordance with our proposal dated June 4, 2025 and our executed contract signed on October 2, 2025.

## Project Understanding

The existing 202-foot (ft)-long, two-span bridge carries Robertson Boulevard over Interstate 395 (I-395; see Figures 1 and 2). Based on our review of the 1984 historical bridge drawings, the existing bridge substructures are supported on plumb and battered (inclined at 3 horizontal:12 vertical) steel H-piles end-bearing in bedrock. The historical bridge drawings indicate that the maximum calculated pile load is 118 tons (236 kips). A summary of the existing bridge piles is provided below.

Existing Bridge Substructure	Steel H-Pile Section	Number of Piles	Estimated Pile Length (ft)
Abutment No. 1	HP14x73	19	56
Pier	HP14x89	10	33
Abutment No. 2	HP14x73	23	49

Based on discussions with HNTB Corporation (HNTB), the project will include a full bridge replacement.

## Horizontal Coordinate System and Elevation Datum

Plan locations of test borings (borings) are reported as northing and easting coordinates relative to the Maine State Plane Coordinate System, North American Datum of 1983 (NAD 83), Maine 2000 Central Zone (refer to Table I and boring logs in Appendix A). Elevations (El.) referenced herein are in feet (ft) and reference the North American Vertical Datum of 1988 (NAVD 88).

## Geologic Setting

According to Maine Geological Survey's Bangor Surficial Geology Quadrangle, Maine (2011), the surficial geologic unit mapped within the site vicinity is the Presumpscot Formation which consists of silt, clay, and sand. According to Maine Geological Survey's Bangor Bedrock Geology Quadrangle, Maine (2011), bedrock at the site vicinity is mapped as the Bangor Formation of the Penobscot River Member which consists of Silurian Age medium- to very fine-grained feldspathic metawacke.

## Geotechnical Field Investigations

### HISTORICAL GEOTECHNICAL FIELD INVESTIGATIONS

Two phases of historical geotechnical field investigations were conducted at the site by the MaineDOT in 1980 and 1982, in support of the design and construction of the existing bridge. The results of these investigations are summarized in the Phase I Geotechnical Data Report prepared by Haley & Aldrich, Inc. (Haley & Aldrich), dated May 15, 2026.

### GEOTECHNICAL FIELD INVESTIGATION CONDUCTED BY HALEY & ALDRICH

Haley & Aldrich conducted a geotechnical field investigation at the site in October 2025. Three borings, designated BB-BIPR-101, BB-BIPR-102 and BB-BIPR-103, were completed along the existing bridge alignment. Borings BB-BIPR-101 and BB-BIPR-103 were drilled through the approach embankments behind the existing abutments. Boring BB-BIPR-102 was drilled through the existing bridge deck and casing was advanced from the bridge deck to the ground surface below.

The boring locations were laid out in the field prior to the start of drilling by taping distances from existing site features. "As-drilled" boring locations and ground surface elevations were determined in the field by MaineDOT using global positioning system (GPS) survey equipment upon the completion of drilling and were provided to Haley & Aldrich. The "as-drilled" boring locations and ground surface elevations are summarized on the boring logs and Table I and are shown on Figure 2.

The borings were drilled by New England Boring Contractors (NEBC) of Hermon, Maine using a track-mounted Mobile B53 drill rig. The borings were drilled to depths ranging from approximately 62 to 90 ft below ground surface (BGS).

The borings were advanced using cased-wash drilling methods by either driving or spinning casing. Casing consisted of 4-inch (in.; HW-size) inside diameter (ID) steel casing and/or 3-in. (NW-size) ID steel

casing. Casing blow count data is provided on the logs in Appendix A. Soil samples were generally collected continuously through the man-placed/existing fill (fill) and then typically at 5-ft intervals once naturally-deposited soils were encountered. The borings were extended to bedrock and collected approximately 10 to 11 ft of bedrock core.

Soil samples were collected by driving a 1-3/8-in. ID split-spoon sampler with a 140-lb hammer dropped from a height of 30 in., as indicated on the boring logs. Drilling and sampling were performed in accordance with MaineDOT specifications. The drill rig was equipped with an automatic hammer calibrated annually per MaineDOT requirements (Appendix A of MaineDOT Geotechnical Drilling Contract Specifications, revised June 2007). Haley & Aldrich reviewed the hammer calibration report provided by NEBC, confirmed that the hammer was calibrated within 12 months of when drilling was completed, and confirmed the hammer efficiency factor. A calculated hammer efficiency of 0.786 was used for the calibrated automatic hammer system for the drill rig.

The number of hammer blows required to advance the sampler through each 6-in. interval was recorded and is provided on the boring logs. The uncorrected SPT N-value is defined as the total number of blows required to advance the sampler through the middle 12 in. of the 24-in. sampling interval. The energy-corrected SPT N-value ( $N_{60}$ ) is equal to the uncorrected N-value multiplied by the hammer efficiency factor divided by 0.6 (i.e., 60 percent calculated hammer efficiency). Both the raw blow count data and the corrected N-values are shown on the boring logs.

In-situ vane shear tests were conducted within the marine (clay) deposit soils. In-situ vane shear tests were conducted with a 55 mm by 110 mm Geonor rectangular vane (per MaineDOT requirements) attached to a 2-ft long, 12-mm diameter rod extension, attached to a string of 5/8-in. outside diameter (OD) hollow chrome-moly rods. At the in-situ vane shear test location, the vane was pushed (by hand) until the bottom of the vane was approximately 1 to 2 ft below the bottom of the borehole. The vane was then rotated at a rate of about 90 degrees per minute using a calibrated torque wrench. Results of the vane shear testing, including raw torque values and calculated undrained shear strengths, are provided on the boring logs in Appendix A.

Six relatively undisturbed samples of marine clay were obtained from the borings. The samples were obtained by advancing a 3-in. OD thin-wall Shelby tube into the clay using a piston sampler.

The borings sampled approximately 10 to 11 ft of bedrock using a 2-in. (NQ-size) ID diamond-tipped core barrel.

All soil and bedrock samples were classified in accordance with MaineDOT classification system and were preserved in glass sample jars and wooden core boxes. The samples that were not submitted for laboratory testing are available for review upon request.

## Generalized Subsurface Conditions

The subsurface conditions encountered at the site consist of the following geologic units presented in order of increasing depth BGS: fill soils, marine deposits, glacial till and bedrock.

### SOIL AND BEDROCK DESCRIPTIONS

#### Soil

Refer to Table II for a summary of the soil units and encountered thicknesses at each boring location, based on the recent geotechnical field investigation. A description of each soil unit is provided separately, below. Detailed soil descriptions are provided on the boring logs in Appendix A. Please note that the soil descriptions provided on the boring logs and summarized below do not represent actual field conditions other than at the specific boring locations. The actual conditions may vary from those described and shown herein.

Geologic Unit	Range in Encountered Thickness (ft)	Generalized Description
Bituminous Concrete	0.5 to 1.0	An approximately 6-in. to 1-ft-thick layer of bituminous concrete was encountered at the ground surface in borings BB-BIPR-101 and BB-BIPR-103.
Fill	5.3 to 24.3	Medium dense to very dense gravelly fine to coarse SAND, trace silt; medium dense to very dense fine to coarse SAND, little fine to coarse gravel, trace to little silt. Fill thickness was the greatest at the two borings behind the abutments (BB-BIPR-101 and BB-BIPR-103), where the thickness ranged from 22.0 to 24.3 ft. <i>(encountered in all borings)</i>
Marine Deposit	29.2 to 41.0	Very soft to stiff CLAY, trace to some fine sand. <i>(encountered in all borings)</i>
Glacial Till	7.5 to 17.3	Medium dense to very dense Clayey fine to coarse SAND, trace to little gravel. The glacial till was moderately to well bonded. <i>(encountered in all borings)</i>
Bedrock		Bedrock was encountered in all borings. The top of bedrock surface was encountered at depths ranging from approximately 51.8 to 79.3 ft BGS.

Boring BB-BIPR-102 penetrated through the approximately 1.3-ft thick existing concrete bridge deck.

Please note that soil descriptions provided on the boring logs do not represent actual field conditions other than at the specific boring locations. The actual conditions encountered between boring locations may vary from those described herein.

## Bedrock

As stated previously, approximately 10 to 11 ft of bedrock was cored in the borings. The sampled and recovered bedrock generally consisted of hard, fresh to slightly weathered, grey to dark grey, aphanitic, METASILTSTONE. Primary joints were observed dipping at moderate to steep angles, are very close to moderately closely spaced, and tight to open.

Rock quality designation (RQD) is a common parameter that is used to help assess the competency of sampled bedrock. RQD is defined as the sum of pieces of recovered bedrock greater than 4 in. in length divided by the total length of the bedrock core run. RQD values for the bedrock encountered in the borings drilled at the site ranged from 18 to 94 percent, indicating variable bedrock quality; from very poor to excellent in accordance with the MaineDOT Geotechnical Section "Key to Soil and Rock Descriptions and Terms Field Identification Information" document, dated May 2024.

Detailed bedrock core data and descriptions are provided on Table III and on the boring logs in Appendix A. In addition, photographs of the recovered bedrock core samples are provided for reference in Appendix B.

## GROUNDWATER CONDITIONS

Groundwater levels were measured in the borings during or shortly after the completion of drilling. Observed groundwater depths measured in the borings are summarized in the table below:

Boring No.	Groundwater Depth (ft, BGS)	Groundwater Elevation (ft, NAVD 88)
BB-BIPR-101	24.2	56.1
BB-BIPR-102	30.6	25.0
BB-BIPR-103	39.4	39.9

Please note that these groundwater levels were measured during advancement of the borings and were influenced by drilling activities. It is important to note that the readings were taken over a relatively brief time and do not reflect static groundwater levels.

In general, groundwater levels are subject to variation due to seasonal changes, local soil and bedrock conditions, topography, precipitation, and the presence of below-grade structures. As such, groundwater conditions encountered during construction may differ from those measured during the recent geotechnical field investigation presented in Appendix A.

## Geotechnical Laboratory Testing Program

A geotechnical laboratory testing program was completed on disturbed and relatively undisturbed soil samples collected during the recent geotechnical field investigation to assist in soil classification and determination of engineering properties. All geotechnical laboratory soil testing was performed by GeoTesting Express, Inc. of Acton, Massachusetts. Geotechnical laboratory testing was performed in

accordance with applicable ASTM International (ASTM) testing procedures. A summary of the geotechnical laboratory test results is below.

Laboratory Test	ASTM Test Designation	Geologic Unit	No. of Tests Completed	Range in Test Results
Grain Size	D6913	Fill	4	AASHTO Classification: A-1-a, A-1-b USCS Classification: SP, SM, SW-SM
		Glacial Till	2	AASHTO Classification: A-2-4, A-1-b USCS Classification: SM
Atterberg Limits	D4318	Marine Deposit	6	USCS Classification: CL WC = 22 to 32% LL = 20 to 33% PL = 14 to 19% PI = 6 to 15%
Consolidated Undrained Direct Simple Shear	D6528	Marine Deposit	2	$S_u/\sigma'_{vc} = 0.18$ to $0.21$ $\gamma_T = 124$ to $125$ pcf
Incremental One-Dimensional Consolidation	D2435	Marine Deposit	2	$\gamma_T = 125$ to $126$ pcf  <i>Note: compressibility and stress history parameters (e.g., OCR, CR, and RR) have not been interpreted for this report. We assume the design-builder will determine these values based on the laboratory testing results provided in Appendix C.</i>

**Note:**

AASHTO = American Association of State and Highway Transportation Officials

USCS = Unified Soil Classification System

WC = water content

LL = liquid limit

PL = plastic limit

PI = plasticity index

$S_u$  = undrained shear strength

$\sigma'_{vc}$  = vertical consolidation stress

$\gamma_T$  = total unit weight

pcf = pounds per cubic foot

OCR = overconsolidation ratio

CR = compression ratio

RR = recompression ratio

All laboratory test results are shown on boring logs included in Appendix A and complete results are provided in Appendix C.

## Closure

We appreciate the opportunity to provide geotechnical engineering services on this project. Please do not hesitate to call if you have any questions or comments.

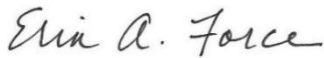
Sincerely yours,  
**HALEY & ALDRICH, INC.**



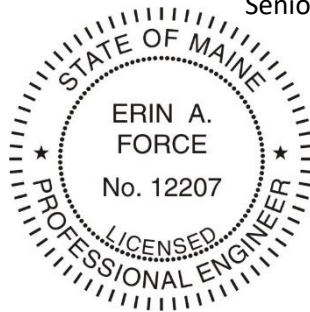
Camilo J. Fernandez-Escobar  
Staff Geotechnical Engineer



Nathan A. Sherwood, P.E.  
Senior Project Manager



Erin A. Force, P.E.  
Senior Associate



### Enclosures:

- Table I – Subsurface Exploration Location Data
- Table II – Subsurface Exploration Subsurface Data
- Table III – Subsurface Exploration Bedrock Core Data
- Figure 1 – Project Locus
- Figure 2 – Boring Location Plan
- Appendix A – Boring Logs
- Appendix B – Bedrock Core Photographs
- Appendix C – Laboratory Test Results

<https://haleyaldrich.sharepoint.com/sites/MaineDepartmentofTransportation2/Shared Documents/0210037.MaineDOT-Brewer I-395 Design Build/Deliverables/Phase 2 - Geotech Data Reports/Robertson Blvd over I395 No. 1560/2026-0515-HAI-I395 Robertson Blvd Bridge-Phase II GDR-F.docx>

## References

1. Syverson, Kent M., & Thompson, Andrew H., *Surficial Geology Bangor Quadrangle, Maine*, Maine Geological Survey, Department of Conservation, Augusta, Maine, Open File Report No. 11-6, 2011.
2. Pollock, Stephen G., *Bedrock Geology of the Bangor Quadrangle, Maine*, Maine Geological Survey, Department of Conservation, Augusta, Maine, Open File Report No. 11-57, 2011.

<https://haleyaldrich.sharepoint.com/sites/MaineDepartmentofTransportation2/Shared Documents/0210037.MaineDOT-Brewer I-395 Design Build/Deliverables/Phase 2 - Geotech Data Reports/Robertson Blvd over I395 No. 1560/2026-0515-HAI-I395 Robertson Blvd Bridge-Phase II GDR-F.docx>

## TABLES

**TABLE I**

Subsurface Exploration Location Data  
Robertson Boulevard over Interstate 395  
Bridge No. 1560, MaineDOT WIN 029484.00  
Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-002

Boring No. <sup>1</sup>	Ground Surface Elevation <sup>2</sup> (ft)	Station <sup>3</sup>	Offset Distance (ft) & Direction <sup>3</sup>	Horizontal Coordinates <sup>4</sup>	
				Northing (Y)	Easting (X)
BB-BIPR-101	80.3	TBD	TBD	467,643	1,733,844
BB-BIPR-102	55.6	TBD	TBD	467,761	1,733,861
BB-BIPR-103	79.3	TBD	TBD	467,870	1,733,867

Notes:

<sup>1</sup> Boring locations are shown on Figure 2, Boring Location Plan.

<sup>2</sup> Ground surface elevations at boring locations were determined in the field by MaineDOT using GPS survey equipment, are measured in feet (ft), and reference the North American Vertical Datum of 1988 (NAVD 88).

<sup>3</sup> Station and offset and direction information to be determined (TBD) after baseline stationing is available.

<sup>4</sup> As-drilled coordinates of borings were determined by MaineDOT using GPS survey equipment, are measured in feet and reference the NAD83, Maine 2000 West Zone coordinate system.

	Individual	Date
Prepared By:	CEF	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/27/2026

**TABLE II**  
Subsurface Exploration Subsurface Data  
Robertson Boulevard over Interstate 395  
Bridge No. 1560, MaineDOT WIN 029484.00  
Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-002

Boring No. <sup>1</sup>	Ground Surface Elevation <sup>2</sup> (ft)	Stratigraphic Data <sup>2</sup>												Bottom of Exploration Depth (ft)	Elevation of Bottom of Exploration <sup>2</sup> (ft)
		Bituminous Concrete Thickness (ft)	Fill			Marine Deposit			Glacial Till			Bedrock			
			Depth to Top (ft)	Elevation of Top (ft)	Thickness (ft)	Depth to Top (ft)	Elevation of Top (ft)	Thickness (ft)	Depth to Top (ft)	Elevation of Top (ft)	Thickness (ft)	Depth to Top (ft)	Elevation of Top (ft)		
BB-BIPR-101	80.3	0.5	0.5	79.8	24.3	24.8	55.5	34.2	59.0	21.3	7.5	66.5	13.8	76.7	3.6
BB-BIPR-102	55.6	0.0	0.0	55.6	5.3	5.3	50.3	29.2	34.5	21.1	17.3	51.8	3.8	62.0	-6.4
BB-BIPR-103	79.3	1.0	1.0	78.3	22.0	23.0	56.3	41.0	64.0	15.3	15.3	79.3	0.0	89.8	-10.5

Notes:  
<sup>1</sup> Boring locations are shown on Figure 2, Boring Location Plan.  
<sup>2</sup> Ground surface elevations at boring locations were determined in the field by MaineDOT using GPS survey equipment, are measured in feet (ft), and reference the North American Vertical Datum of 1988 (NAVD 88).

	Individual	Date
Prepared By:	CEF	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/27/2026

**TABLE III**  
Subsurface Exploration Bedrock Core Data  
Robertson Boulevard over Interstate 395  
Bridge No. 1560, MaineDOT WIN 029484.00  
Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-002

Boring No. <sup>1</sup>	Ground Surface Elevation <sup>2</sup> (ft)	Bedrock Core Diameter (in.)	Run					Total Core Recovery <sup>3</sup>		Rock Quality Designation <sup>4,5</sup>			Physical Rock Parameters		Lithologic, Bedrock Mass, and Discontinuity Description <sup>6</sup>
			No.	Depth Below Ground Surface (ft)			Total Length (in.)	Recovered Length (in.)	%	Length (in.)	%	Rock Quality	Weathering	Estimated Field Strength	
				Top	Bottom	Midpoint									
BB-BIPR-101	80.3	NQ-2"	R1	66.5	70.2	68.4	44.4	38.0	86%	36.0	81%	Good	Fresh	Hard	Grey to dark grey, aphanitic, METASILTSTONE, hard, fresh. Joint sets moderately dipping to steep (primarily along foliation), spaced moderately close to close, smooth and planar to rough and undulating, fresh to discolored, tight to open. Calcite veins throughout.
			R2	70.2	73.7	72.0	42.0	42.0	100%	36.1	86%	Good	Fresh	Hard	Similar to R1. Joint sets are moderately dipping to steep (primarily along foliation), spaced moderately close to close, smooth and planar, fresh, tight. Calcite veins throughout.
			R3	73.7	76.7	75.2	36.0	33.0	92%	24.1	67%	Fair	Fresh to Slightly Weathered	Hard	Similar to R2, except fresh to slightly weathered. Secondary joint sets are low angle, spaced very close to moderate, rough and undulating, fresh, open. Calcite veins throughout.
BB-BIPR-102	55.6		R1	52.0	57.0	54.5	60.0	60.0	100%	52.8	88%	Good	Fresh	Hard	Grey, aphanitic, METASILTSTONE, hard, fresh. Primary joint sets moderately dipping to steep, along foliation, spaced close to moderately close, smooth and planar to rough and undulating, fresh, tight to open. Secondary joint sets low angle, spaced very close to moderately close, rough and undulating, fresh, open. Calcite veins throughout.
			R2	57.0	60.6	58.8	43.2	43.0	100%	36.3	84%	Good	Fresh	Hard	Similar to R1.
			R3	60.6	62.0	61.3	16.8	16.0	94%	15.8	94%	Excellent	Fresh	Hard	Similar to R1, except no joints.

Boring No. <sup>1</sup>	Ground Surface Elevation <sup>2</sup> (ft)	Bedrock Core Diameter (in.)	Run				Total Core Recovery <sup>3</sup>		Rock Quality Designation <sup>4,5</sup>			Physical Rock Parameters		Lithologic, Bedrock Mass, and Discontinuity Description <sup>6</sup>	
			No.	Depth Below Ground Surface (ft)			Total Length (in.)	Recovered Length (in.)	%	Length (in.)	%	Rock Quality	Weathering		Estimated Field Strength
				Top	Bottom	Midpoint									
BB-BIPR-103	79.3	NQ-2"	R1	79.3	80.5	79.9	14.4	13.0	93%	2.6	18%	Very Poor	Slightly Weathered	Hard	Grey, aphanitic, METASILTSTONE. Hard, slightly weathered. Primary joint sets moderately dipping to steep, spaced very close, rough and undulating, smooth and planar, discolored to fresh, open. Secondary joint sets low angle, very close, rough and undulating, discolored to fresh, open. Calcite veins throughout.
			R2	80.5	84.8	82.7	51.6	50.0	96%	34.1	66%	Fair	Slightly Weathered	Hard	Similar to R1. Primary joint sets moderately dipping, very close to moderate, smooth and planar, fresh to discolored, tight. Secondary joint sets low angle, very close, smooth and planar, fresh to discolored, open. Calcite veins throughout, occasional pitting.
			R3	84.8	89.8	87.3	60.0	60.0	100%	39.0	65%	Fair	Slightly Weathered	Hard	Grey to dark grey, aphanitic, METASILTSTONE grading to SLATE with minor Pyrite at 88.0 ft, hard, slightly weathered. Primary joint sets high angle, extremely close to moderate, smooth and planar to rough and undulating, fresh to decomposed, open to tight. Secondary joint sets low angle to moderately dipping, very close to moderate, rough and undulating, fresh to decomposed, open. Calcite veins throughout.

Notes:

<sup>1</sup> Boring locations are shown on Figure 2, Boring Location Plan.

<sup>2</sup> Ground surface elevations at boring locations were determined in the field by MaineDOT using GPS survey equipment, are measured in feet (ft), and reference the North American Vertical Datum of 1988 (NAVD 88).

<sup>3</sup> Total core recovery (TCR) is the length of core recovered divided by the length of the run.

<sup>4</sup> Rock Quality Designation (RQD) is the total length of intact, full-diameter core pieces recovered with a length greater than or equal to twice the core diameter (i.e., length of at least 4 in.) measured along the core axis. The percent RQD is the total length of RQD measured versus the run length. Note that vertical discontinuities are not included in determination of RQD.

<sup>5</sup> Designation based on RQD in accordance with MaineDOT Geotechnical Section "Key to Soil and Rock Descriptions and Terms" Field Identification Information, dated May 2024.

<sup>6</sup> Refer to the boring logs in Appendix A and bedrock core photographs in Appendix B for additional information.

	Individual	Date
Prepared By:	CEF	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/27/2026

## FIGURES



0210037.001 LOCUS HALEYALDRICHUBOIS



SITE COORDINATES: 44°46'57"N, 68°45'54"W



MAP SOURCE: USGS

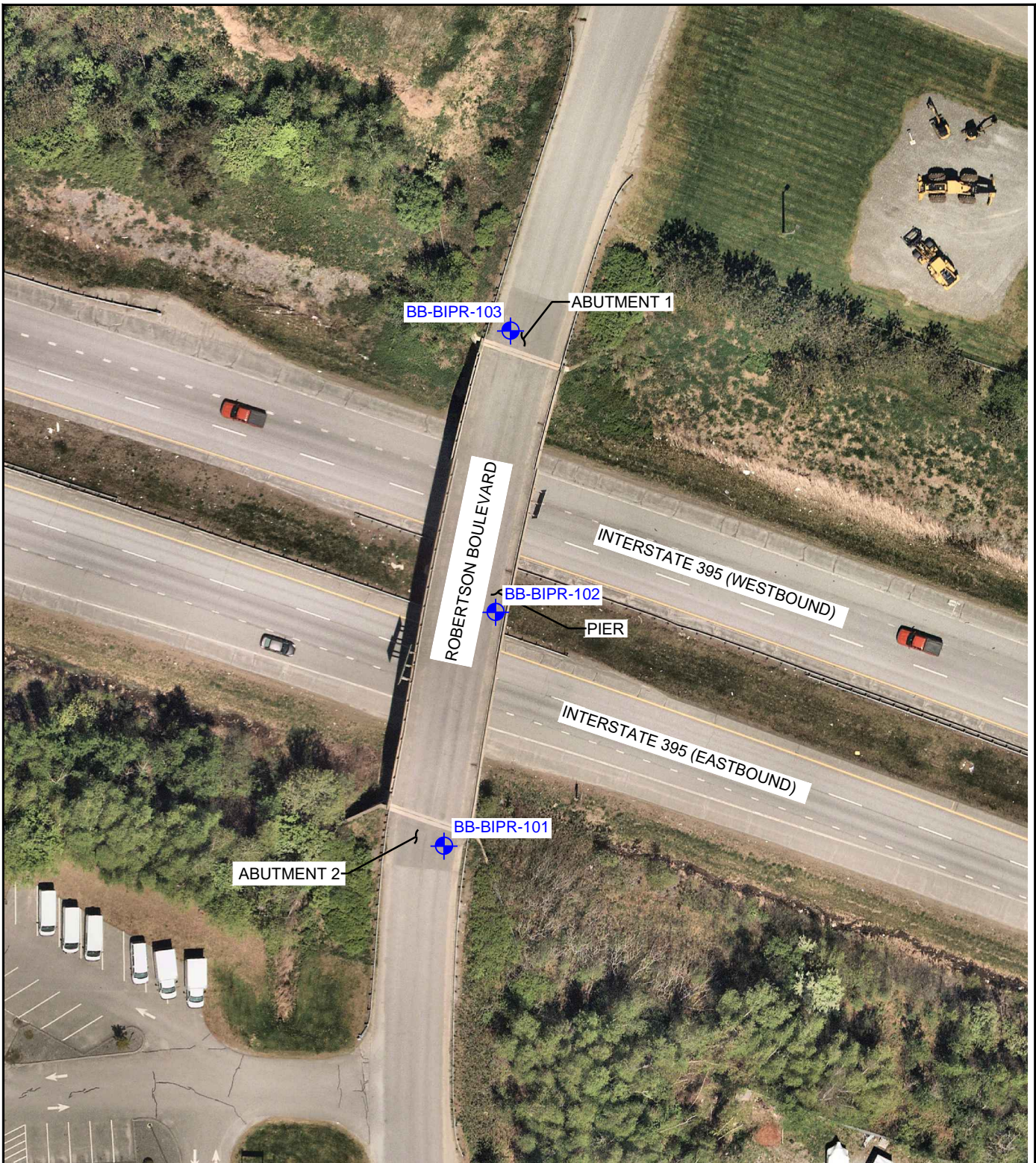
**HALEY  
ALDRICH**

ROBERTSON BOULEVARD OVER INTERSTATE 395  
BRIDGE NO. 1560, MAINEDOT WIN 029484.00  
BREWSTER, MAINE

## PROJECT LOCUS

APPROXIMATE SCALE: 1 INCH = 2,000 FEET  
MAY 2026

**FIGURE 1**



#### LEGEND

BB-BIPR-101



DESIGNATION AND AS-DRILLED  
 LOCATION OF TEST BORING DRILLED BY  
 NEW ENGLAND BORING CONTRACTORS  
 AND MONITORED IN THE FIELD BY  
 HALEY & ALDRICH, INC. IN OCTOBER  
 2025

#### NOTES

1. AERIAL IMAGE SHOWN IS DATED MAY 22, 2023 AND WAS DOWNLOADED FROM THE NEARMAP ONLINE DATABASE.
2. THE BORING LOCATIONS SHOWN ARE APPROXIMATE AND ARE NOT POSITIONED BASED ON THE SURVEY DATA.



0 30 60  
 SCALE IN FEET

**HALEY  
 ALDRICH**

ROBERTSON BOULEVARD OVER INTERSTATE 395  
 BRIDGE NO. 1560, MAINEDOT WIN 029484.00  
 BREWER, MAINE

### BORING LOCATION PLAN

SCALE: AS SHOWN  
 MAY 2026

FIGURE 2

## **APPENDIX A**

### **Boring Logs**

UNIFIED SOIL CLASSIFICATION SYSTEM					MODIFIED BURMISTER 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	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	<u>Descriptive Term</u>  trace little some adjective (e.g. Sandy, Clayey)	<u>Portion of Total (%)</u>  0 - 10 11 - 20 21 - 35 36 - 50														
		(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.																
	SANDS  (more than half of coarse fraction is smaller than No. 4 sieve size)	GC	Clayey gravels, gravel-sand-clay mixtures.																	
		CLEAN SANDS	SW	Well-graded sands, Gravelly sands, little or no fines																
		(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.	<u>Consistency of Cohesive soils</u>  Very Soft Soft Medium Stiff  Stiff  Very Stiff Hard	<u>SPT N<sub>60</sub>-Value (blows per foot)</u>  WOH, WOR, WOP, <2 2 - 4 5 - 8  9 - 15  16 - 30 >30	<u>Approximate Undrained Shear Strength (psf)</u>  0 - 250 250 - 500 500 - 1000  1000 - 2000  2000 - 4000 over 4000	<u>Field Guidelines</u>  Fist easily penetrates Thumb easily penetrates Thumb penetrates with moderate effort Indented by thumb with great effort Indented by thumbnail Indented by thumbnail with difficulty												
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.																		
<b>Desired Soil Observations (in this order, if applicable):</b> 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					<b>TERMS DESCRIBING DENSITY/CONSISTENCY</b>  <b>Coarse-grained soils</b> (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).  <b>Fine-grained soils</b> (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.  <b>Rock Quality Designation (RQD):</b> RQD (%) = <u>sum of the lengths of intact pieces of core* &gt; 4 inches</u> length of core advance *Minimum NQ rock core (1.88 in. OD of core)  <b>Rock Quality Based on RQD</b> <table><tr><th>Rock Quality</th><th>RQD (%)</th></tr><tr><td>Very Poor</td><td>≤25</td></tr><tr><td>Poor</td><td>26 - 50</td></tr><tr><td>Fair</td><td>51 - 75</td></tr><tr><td>Good</td><td>76 - 90</td></tr><tr><td>Excellent</td><td>91 - 100</td></tr></table> <b>Desired Rock Observations (in this order, if applicable):</b> 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))  <b>Sample Container Labeling Requirements:</b> WIN Bridge Name / Town Boring Number Sample Number Sample Depth Blow Counts Sample Recovery Date Personnel Initials				Rock Quality	RQD (%)	Very Poor	≤25	Poor	26 - 50	Fair	51 - 75	Good	76 - 90	Excellent	91 - 100
Rock Quality	RQD (%)																			
Very Poor	≤25																			
Poor	26 - 50																			
Fair	51 - 75																			
Good	76 - 90																			
Excellent	91 - 100																			
<b>Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information</b>																				

Maine Department of Transportation				Project: Robertson Boulevard over Interstate 395, Bridge No. 1560 Location: Brewer, Maine		Boring No.: BB-BIPR-101				
Soil/Rock Exploration Log US CUSTOMARY UNITS				WIN: 029484.00						
Driller: New England Boring Contractors		Elevation (ft.): 80.3		Auger ID/OD: SSA-5.0" OD						
Operator: G. McDougal		Datum: NAVD88		Sampler: 24" Standard Split Spoon						
Logged By: S. Butler		Rig Type: Mobile Drill B-53		Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 10/23/2025-10/27/25		Drilling Method: Cased Wash Boring		Core Barrel: NQ-2.0" ID						
Boring Location: N: 467,643; E: 1,733,844		Casing ID/OD: HW/NW-4.0/3.0" ID		Water Level*: 24.2 ft BGS						
Hammer Efficiency Factor: 0.786		Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>								
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 <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S <sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) q <sub>p</sub> = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N <sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N <sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected T <sub>v</sub> = 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 Information							Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N <sub>60</sub>	Casing Blows			
0							SSA	79.8		BITUMINOUS CONCRETE Brown, dry, very dense, Gravelly fine to coarse SAND, well-graded, trace silt, loosely bonded, with concrete fragments, (Fill) Note: SPT refused at approximately 2.4 ft on probable concrete. Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill). Brown, moist, medium dense, fine to coarse SAND, well-graded, little fine gravel, trace silt, (Fill). Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill). Similar to 4D, (Fill). Brown, moist, dense, fine to coarse SAND, well-graded, some fine to coarse gravel, trace silt, (Fill). Note: Minimal recovery in standard spoon, so used 3 in. spoon. Blow counts from standard spoon. Brown, moist, medium dense, Sandy fine to coarse GRAVEL, trace silt, (Fill). Brown, moist, medium dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill). Brown, moist, medium dense, Gravelly fine to coarse SAND, well-graded, trace silt, (Fill). Dark brown to brown, moist, loose, Gravelly fine to coarse SAND, poorly-graded, trace silt, (Fill). Dark brown to brown, moist, medium dense, fine to coarse SAND, well-graded, trace silt, (Fill). 12Da (24.0-24.8 ft): Grey-brown, wet, very loose, fine to coarse SAND, well-graded, (Fill).
	1D	17/8	1.0 - 2.4	9/16/50(5")			78	77.3		
	2D	24/9	3.0 - 5.0	18/15/14/17	29	38	18			
							41			
5	3D	24/8	5.0 - 7.0	13/15/12/24	17	22	HW			
							124			
	4D	24/13	7.0 - 9.0	15/17/17/18	34	45	85			
							97			
	5D	24/10	9.0 - 11.0	13/12/13/15	25	33	HW			
10										
	6D	24/8	11.0 - 13.0	11/12/14/12	26	34	33			
	7D	24/18	13.0 - 15.0	7/11/10/10	21	28	58	67.3		
							56			
15	8D	24/5	15.0 - 17.0	10/8/11/11	19	25	HW	65.3		
	9D	24/6	17.0 - 19.0	9/5/4/3	9	12		63.3		
20	10D	24/6	19.0 - 21.0	3/4/4/5	8	10				
	11D	24/8	21.0 - 23.0	2/5/7/9	12	16	35	59.3		
							62			
	12D	24/22	24.0 - 26.0	2/1/1/3	2	3	HW	55.5		
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity. 3. CUDSS = Consolidated Undrained Direct Simple Shear test.										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 4	
* 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.: BB-BIPR-101	

[illegible]

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Robertson Boulevard over Interstate 395, Bridge No. 1560 <b>Location:</b> Brewer, Maine				<b>Boring No.:</b> BB-BIPR-101 <b>WIN:</b> 029484.00																																																																																																																																																																																																																																																																																							
<b>Driller:</b> New England Boring Contractors				<b>Elevation (ft.):</b> 80.3				<b>Auger ID/OD:</b> SSA-5.0" OD																																																																																																																																																																																																																																																																																							
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<table><tr><th colspan="9">Sample Information</th><th rowspan="2">Graphic Log</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Depth (ft.)</th><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (/6 in.) Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N<sub>60</sub></th><th>Casing Blows</th><th>Elevation (ft.)</th></tr><tr><td>50</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="10"></td><td rowspan="10">55x110mm vane raw torque readings: V7: 210/15 in-lbs Note: Vane refused at 56.8 ft. Note: Spoon dropped down hole. Grey, wet, medium stiff, CLAY, little fine sand (frequent seams), slightly plastic, (Marine Deposit).</td><td rowspan="10">GTX=322343 C#IP-1 CUDSS# DSS-2 WC=25.6% LL=20% PL=14% PI=6% SG=2.70</td></tr><tr><td></td><td>2U</td><td>24/20</td><td>53.0 - 55.0</td><td>PUSH</td><td></td><td></td><td></td><td></td></tr><tr><td>55</td><td>17D V7</td><td>40.8/24</td><td>55.0 - 58.4 55.6 - 56.0</td><td>Su=815/60 psf</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>60</td><td>18D</td><td>24/12</td><td>59.0 - 61.0</td><td>7/9/15/17</td><td>24</td><td>31</td><td></td><td>21.3</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>65</td><td>19D</td><td>24/8</td><td>64.0 - 66.0</td><td>18/15/23/17</td><td>38</td><td>50</td><td></td><td>13.8</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>R1</td><td>44.4/38</td><td>66.5 - 70.2</td><td>RQD = 81%</td><td></td><td></td><td>NQ</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>70</td><td>R2</td><td>42/42</td><td>70.2 - 73.7</td><td>RQD = 86%</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>R3</td><td>36/33</td><td>73.7 - 76.7</td><td>RQD = 67%</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>75</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>												Sample Information									Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N <sub>60</sub>	Casing Blows	Elevation (ft.)	50										55x110mm vane raw torque readings: V7: 210/15 in-lbs Note: Vane refused at 56.8 ft. Note: Spoon dropped down hole. Grey, wet, medium stiff, CLAY, little fine sand (frequent seams), slightly plastic, (Marine Deposit).	GTX=322343 C#IP-1 CUDSS# DSS-2 WC=25.6% LL=20% PL=14% PI=6% SG=2.70		2U	24/20	53.0 - 55.0	PUSH					55	17D V7	40.8/24	55.0 - 58.4 55.6 - 56.0	Su=815/60 psf																							60	18D	24/12	59.0 - 61.0	7/9/15/17	24	31		21.3																																					65	19D	24/8	64.0 - 66.0	18/15/23/17	38	50		13.8																																						R1	44.4/38	66.5 - 70.2	RQD = 81%			NQ																																						70	R2	42/42	70.2 - 73.7	RQD = 86%																																										R3	36/33	73.7 - 76.7	RQD = 67%														75								
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[illegible]

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Robertson Boulevard over Interstate 395, Bridge No. 1560 <b>Location:</b> Brewer, Maine				<b>Boring No.:</b> BB-BIPR-102 <b>WIN:</b> 029484.00					
<b>Driller:</b> New England Boring Contractors				<b>Elevation (ft.):</b> 55.6				<b>Auger ID/OD:</b> SSA-5.0" OD					
<b>Operator:</b> G. McDougal				<b>Datum:</b> NAVD88				<b>Sampler:</b> 24" Standard Split Spoon					
<b>Logged By:</b> S. Butler				<b>Rig Type:</b> Mobile Drill B-53				<b>Hammer Wt./Fall:</b> 140#/30"					
<b>Date Start/Finish:</b> 10/27/2025-10/28/25				<b>Drilling Method:</b> Cased Wash Boring				<b>Core Barrel:</b> NQ-2.0" ID					
<b>Boring Location:</b> N: 467,761; E: 1,733,861				<b>Casing ID/OD:</b> HW/NW-4.0/3.0" ID				<b>Water Level*:</b> 30.6 ft BGS					
<b>Hammer Efficiency Factor:</b> 0.786				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>									
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				Su = Peak/Remolded Field Vane Undrained Shear Strength (psf) Su(lab) = Lab Vane Undrained Shear Strength (psf) qp = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N60 = SPT N-uncorrected Corrected for Hammer Efficiency N60 = (Hammer Efficiency Factor/60%)*N-uncorrected					
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0	1D	24/13	0.0 - 2.0	2/7/10/9	17	22	HW			Brown, moist, medium dense, Gravelly fine to coarse SAND, well-graded, little silt, with roots, (Fill).	G#847859 A-1-a, SW-SM		
								53.6					
	2D	24/8	2.0 - 4.0	10/14/21/17	35	46				Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, with roots and wood particles, (Fill).			
5	3D	24/16	5.0 - 7.0	10/2/1/1	3	4		50.3		Note: Top similar to 2D (approximately 5.0-5.3 ft)			
										Grey, moist, soft, CLAY, some fine sand, moderately plastic, (Marine Deposit).			
10	4D	24/12	10.0 - 12.0	Su=1,745/195 psf						55x110mm vane raw torque readings: V1: 450/50 in-lbs V2: 450/45 in-lbs Grey with black streaks, moist, stiff, CLAY, trace fine sand, slightly plastic, (Marine Deposit). Note: Attempted Shelby Tube from 12.0-14.0 ft. Recovered 4 in. in soil sample jar.	G#847853 WC=29% LL=32% PL=18% PI=14%		
	V1		10.6 - 11.0	Su=1,745/175 psf									
	V2		11.6 - 12.0										
	1U	24/4	12.0 - 14.0	PUSH									
	5D	24/24	14.0 - 16.0	WOR/WOH/WOH/ WOH						Similar to 4D, (Marine Deposit).			
20	6D	24/24	20.0 - 22.0	Su=1,240/135 psf						55x110mm vane raw torque readings: V3: 320/35 in-lbs V4: 300/30 in-lbs Similar to 4D, except with trace fine gravel, (Marine Deposit).			
	V3		20.6 - 21.0	Su=1,165/115 psf									
	V4		21.6 - 22.0										
	2U	24/24	22.0 - 24.0	PUSH									
25	7D	24/12	24.0 - 26.0	Su=1,360/270 psf						55x110mm vane raw torque readings: V5: 350/70 in-lbs			
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. Boring advanced from top of existing bridge deck. 3. Existing ground surface measured 24.0 ft below top of existing bridge deck surface.													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 3			
* 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.										<b>Boring No.:</b> BB-BIPR-102			

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Robertson Boulevard over Interstate 395, Bridge No. 1560</div> <div>Location: Brewer, Maine</div>				<div>Boring No.: BB-BIPR-102</div> <div>WIN: 029484.00</div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Date Start/Finish: 10/27/2025-10/28/25				Drilling Method: Cased Wash Boring				Core Barrel: NQ-2.0" ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Boring Location: N: 467,761; E: 1,733,861				Casing ID/OD: HW/NW-4.0/3.0" ID				Water Level*: 30.6 ft BGS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Hammer Efficiency Factor: 0.786				Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
<div>Definitions:</div> <div>D = Split Spoon Sample</div> <div>MD = Unsuccessful Split Spoon Sample Attempt</div> <div>U = Thin Wall Tube Sample</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt</div> <div>V = Field Vane Shear Test, PP = Pocket Penetrometer</div> <div>MV = Unsuccessful Field Vane Shear Test Attempt</div>				<div>R = Rock Core Sample</div> <div>SSA = Solid Stem Auger</div> <div>HSA = Hollow Stem Auger</div> <div>RC = Roller Cone</div> <div>WOH = Weight of 140 lb. Hammer</div> <div>WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of One Person</div>				<div>S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf)</div> <div>S<sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf)</div> <div>q<sub>p</sub> = Unconfined Compressive Strength (ksf)</div> <div>N-uncorrected = Raw Field SPT N-value</div> <div>Hammer Efficiency Factor = Rig Specific Annual Calibration Value</div> <div>N<sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency</div> <div>N<sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected</div>				<div>T<sub>v</sub> = Pocket Torvane Shear Strength (psf)</div> <div>WC = Water Content, percent</div> <div>LL = Liquid Limit</div> <div>PL = Plastic Limit</div> <div>PI = Plasticity Index</div> <div>G = Grain Size Analysis</div> <div>C = Consolidation Test</div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N<sub>60</sub></th><th>Casing</th><th>Blows</th></tr></thead><tbody><tr><td>25</td><td>V5</td><td></td><td>24.6 - 25.0</td><td>Su=1,515/310 psf</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="12">V6: 390/80 in-lbs Similar to 6D, (Marine Deposit).</td><td rowspan="12"></td></tr><tr><td></td><td>V6</td><td></td><td>25.6 - 26.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>30</td><td>8D</td><td>24/24</td><td>30.0 - 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37.0</td><td>22/23/9/12</td><td>32</td><td>42</td><td></td><td></td><td></td><td></td><td></td><td rowspan="12">Grey, wet, dense, Clayey fine to coarse SAND, little fine gravel, well bonded, (Glacial Till).</td><td rowspan="12"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>40</td><td>10D</td><td>24/4</td><td>40.0 - 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Maine Department of Transportation				Project: Robertson Boulevard over Interstate 395, Bridge No. 1560 Location: Brewer, Maine		Boring No.: BB-BIPR-103				
Soil/Rock Exploration Log US CUSTOMARY UNITS				WIN: 029484.00						
Driller: New England Boring Contractors		Elevation (ft.): 79.3		Auger ID/OD: SSA-5.0" OD						
Operator: G. McDougal		Datum: NAVD88		Sampler: 24" Standard Split Spoon						
Logged By: S. Butler		Rig Type: Mobile Drill B-53		Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 10/21/2025-10/23/25		Drilling Method: Cased Wash Boring		Core Barrel: NQ-2.0" ID						
Boring Location: N: 467,870; E: 1,733,867		Casing ID/OD: HW/NW-4.0/3.0" ID		Water Level*: 39.4 ft BGS						
Hammer Efficiency Factor: 0.786		Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>								
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 <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S <sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) q <sub>p</sub> = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N <sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N <sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected T <sub>v</sub> = 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										
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0							SSA	78.3	BITUMINOUS CONCRETE	
	1D	14/9	1.0 - 2.2	22/18/50(2")			70		Brown, dry, very dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	2D	24/17	3.0 - 5.0	37/27/30/23	57	75	52		Brown to light brown, dry, very dense, fine to coarse SAND, well-graded, some fine to coarse gravel, trace silt, (Fill).	
							40			
5	3D	24/7	5.0 - 7.0	14/20/43/31	63	83	HW		Brown, moist, very dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	4D	24/11	7.0 - 9.0	15/16/18/20	34	45	56		Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
							81			
10	5D	24/11	9.0 - 11.0	25/18/15/17	33	43	HW		Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	6D	24/10	11.0 - 13.0	12/10/12/12	22	29	30		Brown, moist, medium dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	7D	24/10	13.0 - 15.0	16/11/11/10	22	29	68		Brown, moist, medium dense, fine to coarse SAND, well-graded, some fine gravel, little silt, (Fill).	G#847861 A-1-b, SM
							84			
15	8D	24/8	15.0 - 17.0	17/16/18/14	34	45	HW		Brown, moist, dense, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	9D	24/5	17.0 - 19.0	15/12/10/13	22	29	46		Brown, moist, medium dense, fine to coarse SAND, well-graded, some fine to coarse gravel, trace silt, (Fill).	
							65			
20	10D	24/8	19.0 - 21.0	12/6/5/3	11	14	HW	60.3	Brown, moist, medium dense, fine to coarse Gravelly SAND, well-graded, trace silt, (Fill).	
	11D	24/3	21.0 - 23.0	8/3/2/3	5	7		58.3	Brown, moist, loose, fine to coarse SAND, well-graded, little fine to coarse gravel, trace silt, (Fill).	
	12D	24/3	23.0 - 25.0	5/4/7/10	11	14		56.3	Grey, moist, stiff, CLAY, trace fine gravel, little fine to coarse sand, moderately plastic, (Marine Deposit).	
25										
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity. 3. CUDSS = Consolidated Undrained Direct Simple Shear test.										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 5	
* 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.: BB-BIPR-103	

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>					<div>Project: Robertson Boulevard over Interstate 395, Bridge No. 1560</div> <div>Location: Brewer, Maine</div>			<div>Boring No.: BB-BIPR-103</div> <div>WIN: 029484.00</div>																																																																																																																																																																																																																																																														
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<div>Definitions:</div> <div>D = Split Spoon Sample</div> <div>MD = Unsuccessful Split Spoon Sample Attempt</div> <div>U = Thin Wall Tube Sample</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt</div> <div>V = Field Vane Shear Test, PP = Pocket Penetrometer</div> <div>MV = Unsuccessful Field Vane Shear Test Attempt</div>				<div>R = Rock Core Sample</div> <div>SSA = Solid Stem Auger</div> <div>HSA = Hollow Stem Auger</div> <div>RC = Roller Cone</div> <div>WOH = Weight of 140 lb. Hammer</div> <div>WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of One Person</div>					<div>S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf)</div> <div>S<sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf)</div> <div>q<sub>p</sub> = Unconfined Compressive Strength (ksf)</div> <div>N-uncorrected = Raw Field SPT N-value</div> <div>Hammer Efficiency Factor = Rig Specific Annual Calibration Value</div> <div>N<sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency</div> <div>N<sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected</div>		<div>T<sub>v</sub> = Pocket Torvane Shear Strength (psf)</div> <div>WC = Water Content, percent</div> <div>LL = Liquid Limit</div> <div>PL = Plastic Limit</div> <div>PI = Plasticity Index</div> <div>G = Grain Size Analysis</div> <div>C = Consolidation Test</div>																																																																																																																																																																																																																																																											
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Remarks: <div>1. BGS = Below Existing Ground Surface.</div> <div>2. SG = Specific Gravity.</div> <div>3. CUDSS = Consolidated Undrained Direct Simple Shear test.</div>																																																																																																																																																																																																																																																																						
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 5																																																																																																																																																																																																																																																												
* 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.: BB-BIPR-103																																																																																																																																																																																																																																																												

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Robertson Boulevard over Interstate 395, Bridge No. 1560 <b>Location:</b> Brewer, Maine				<b>Boring No.:</b> BB-BIPR-103 <b>WIN:</b> 029484.00																																																																																																																																																																																																																																																																																																																																																																																					
<b>Driller:</b> New England Boring Contractors				<b>Elevation (ft.):</b> 79.3				<b>Auger ID/OD:</b> SSA-5.0" OD																																																																																																																																																																																																																																																																																																																																																																																					
<b>Operator:</b> G. McDougal				<b>Datum:</b> NAVD88				<b>Sampler:</b> 24" Standard Split Spoon																																																																																																																																																																																																																																																																																																																																																																																					
<b>Logged By:</b> S. Butler				<b>Rig Type:</b> Mobile Drill B-53				<b>Hammer Wt./Fall:</b> 140#/30"																																																																																																																																																																																																																																																																																																																																																																																					
<b>Date Start/Finish:</b> 10/21/2025-10/23/25				<b>Drilling Method:</b> Cased Wash Boring				<b>Core Barrel:</b> NQ-2.0" ID																																																																																																																																																																																																																																																																																																																																																																																					
<b>Boring Location:</b> N: 467,870; E: 1,733,867				<b>Casing ID/OD:</b> HW/NW-4.0/3.0" ID				<b>Water Level*:</b> 39.4 ft BGS																																																																																																																																																																																																																																																																																																																																																																																					
<b>Hammer Efficiency Factor:</b> 0.786				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																									
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<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log US CUSTOMARY UNITS</div>						<div>Project:</div> Robertson Boulevard over Interstate 395, Bridge No. 1560 <div>Location:</div> Brewer, Maine		<div>Boring No.:</div> BB-BIPR-103 <div>WIN:</div> 029484.00					
Driller: <div>New England Boring Contractors</div>				Elevation (ft.): <div>79.3</div>		Auger ID/OD: <div>SSA-5.0" OD</div>							
Operator: <div>G. McDougal</div>				Datum: <div>NAVD88</div>		Sampler: <div>24" Standard Split Spoon</div>							
Logged By: <div>S. Butler</div>				Rig Type: <div>Mobile Drill B-53</div>		Hammer Wt./Fall: <div>140#/30"</div>							
Date Start/Finish: <div>10/21/2025-10/23/25</div>				Drilling Method: <div>Cased Wash Boring</div>		Core Barrel: <div>NQ-2.0" ID</div>							
Boring Location: <div>N: 467,870; E: 1,733,867</div>				Casing ID/OD: <div>HW/NW-4.0/3.0" ID</div>		Water Level*: <div>39.4 ft BGS</div>							
Hammer Efficiency Factor: <div>0.786</div>				Hammer Type: <div>Automatic<input checked="" type="checkbox"/>Hydraulic<input type="checkbox"/>Rope &amp; Cathead<input type="checkbox"/></div>									
Definitions: <div>D = Split Spoon SampleMD = Unsuccessful Split Spoon Sample AttemptU = Thin Wall Tube SampleMU = Unsuccessful Thin Wall Tube Sample AttemptV = Field Vane Shear Test, PP = Pocket PenetrometerMV = Unsuccessful Field Vane Shear Test Attempt</div>				R = Rock Core SampleSSA = Solid Stem AugerHSA = Hollow Stem AugerRC = Roller ConeWOH = Weight of 140 lb. HammerWOR/C = Weight of Rods or CasingWO1P = Weight of One PersonS <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf)S <sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf)q <sub>p</sub> = Unconfined Compressive Strength (ksf)N-uncorrected = Raw Field SPT N-valueHammer Efficiency Factor = Rig Specific Annual Calibration ValueN <sub>60</sub> = SPT N-uncorrected Corrected for Hammer EfficiencyN <sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrectedT <sub>v</sub> = Pocket Torvane Shear Strength (psf)WC = Water Content, percentLL = Liquid LimitPL = Plastic LimitPI = Plasticity IndexG = Grain Size AnalysisC = Consolidation Test									
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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 <sub>60</sub>	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.		
75							HW			some silt, some fine gravel, loosely bonded, (Glacial Till).			
								1.3					
								0.0		Grey-brown, wet, very dense, fine to coarse Gravelly SAND, well-graded, trace clay, loosely bonded, (Glacial Till).			
80	24D R1	4/3 14/13	79.0 - 79.3 79.3 - 80.5	50(3") RQD = 18%			NQ			Top of Bedrock at Elev. 0.0 ft. R1: Grey, aphanitic, METASILTSTONE, hard, slightly weathered. Primary joint sets moderately dipping to steep, spaced very close, rough and undulating, smooth and planar, discolored to fresh, open. Secondary joint sets low angle, very close, rough and undulating, discolored to fresh, open. Calcite veins throughout. BANGOR FORMATION Rock Mass Quality = Very Poor Recovery = 93% R1 Core Times (min:sec) 79.3-80.0 ft (2:26) 80.0-80.5 ft (1:54) R2: Similar to R1. Primary joint sets moderately dipping, very close to moderate, smooth and planar, fresh to discolored, tight. Secondary joint sets low angle, very close, smooth and planar, fresh to discolored, open. Calcite veins throughout, occasional pitting. BANGOR FORMATION Rock Mass Quality = Fair Recovery = 96% R2 Core Times (min:sec) 80.5-81.0 ft (1:22) 81.0-82.0 ft (2:35) 82.0-83.0 ft (2:50) 83.0-84.0 ft (2:49) 84.0-84.8 ft (1:25) R3: Grey to dark grey, aphanitic, METASILTSTONE grading to SLATE with minor pyrite at 88.0 ft, hard, slightly weathered. Primary joint sets high angle, extremely close to moderate, smooth and planar to rough and undulating, fresh to decomposed, open to tight. Secondary joint sets low angle to moderately dipping, very close to moderate, rough and undulating, fresh to decomposed, open. Calcite veins throughout. BANGOR FORMATION Rock Mass Quality = Fair Recovery = 100% R3 Core Times (min:sec) 84.8-85.8 ft (3:53) 85.8-86.8 ft (3:03) 86.8-87.8 ft (4:40) 87.8-88.8 ft (3:39)			
	R2	52/50	80.5 - 84.8	RQD = 66%									
	R3	60/60	84.8 - 89.8	RQD = 65%									
85													
90								-10.5					
95													
100													
Remarks: <div>1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity. 3. CUDSS = Consolidated Undrained Direct Simple Shear test.</div>													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 4 of 5			
* 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.: BB-BIPR-103			

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Robertson Boulevard over Interstate 395, Bridge No. 1560</div> <div>Location: Brewer, Maine</div>				<div>Boring No.: BB-BIPR-103</div> <div>WIN: 029484.00</div>							
Driller: New England Boring Contractors				Elevation (ft.): 79.3				Auger ID/OD: SSA-5.0" OD							
Operator: G. McDougal				Datum: NAVD88				Sampler: 24" Standard Split Spoon							
Logged By: S. Butler				Rig Type: Mobile Drill B-53				Hammer Wt./Fall: 140#/30"							
Date Start/Finish: 10/21/2025-10/23/25				Drilling Method: Cased Wash Boring				Core Barrel: NQ-2.0" ID							
Boring Location: N: 467,870; E: 1,733,867				Casing ID/OD: HW/NW-4.0/3.0" ID				Water Level*: 39.4 ft BGS							
Hammer Efficiency Factor: 0.786				Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>											
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 <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S <sub>u</sub> (lab) = Lab Vane Undrained Shear Strength (psf) q <sub>p</sub> = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N <sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N <sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected							
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Sample Information												Visual Description and Remarks		Laboratory Testing Results/ AASHTO and Unified Class.	
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N <sub>60</sub>	Casing Blows	Elevation (ft.)	Graphic Log						
100											88.8-89.8 ft (4:07)	Bottom of Exploration at 89.8 feet below ground surface.			
125															
Remarks:															
1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity. 3. CUDSS = Consolidated Undrained Direct Simple Shear test.															
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.												Page 5 of 5			
* 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.: BB-BIPR-103			

## **APPENDIX B**

### **Bedrock Core Photographs**

**BEDROCK CORE PHOTOGRAPHS**  
**ROBERTSON BOULEVARD OVER INTERSTATE 395**  
**BRIDGE NO. 1560, MAINEDOT WIN 029484.00**  
**Brewer, Maine**

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**Top Row:** BB-BIPR-103, Run No. R1: 79.0 ft (left) to 80.5 ft (middle-right), Run No. R2: 80.5 ft (middle-right) to 84.4 ft (right)

**Top Middle Row:** BB-BIPR-103, Run No. R2: 84.4 ft (left) to 84.8 ft (middle-right), Run No. R3: 84.8 ft (middle-right) to 89.0 ft (right)

**Bottom Middle Row:** BB-BIPR-103, Run No. R1: 89.0 ft (left) to 89.8 ft (middle-right), BB-BPIR-101, Run No. R1: 66.5 ft (middle-right) to 70.2 ft (right)

**Bottom Row:** BB-BPIR-101, Run No. R2: 70.2 ft (left) to 73.7 ft (middle-left)

**BEDROCK CORE PHOTOGRAPHS**  
**ROBERTSON BOULEVARD OVER INTERSTATE 395**  
**BRIDGE NO. 1560, MAINEDOT WIN 029484.00**  
**Brewer, Maine**

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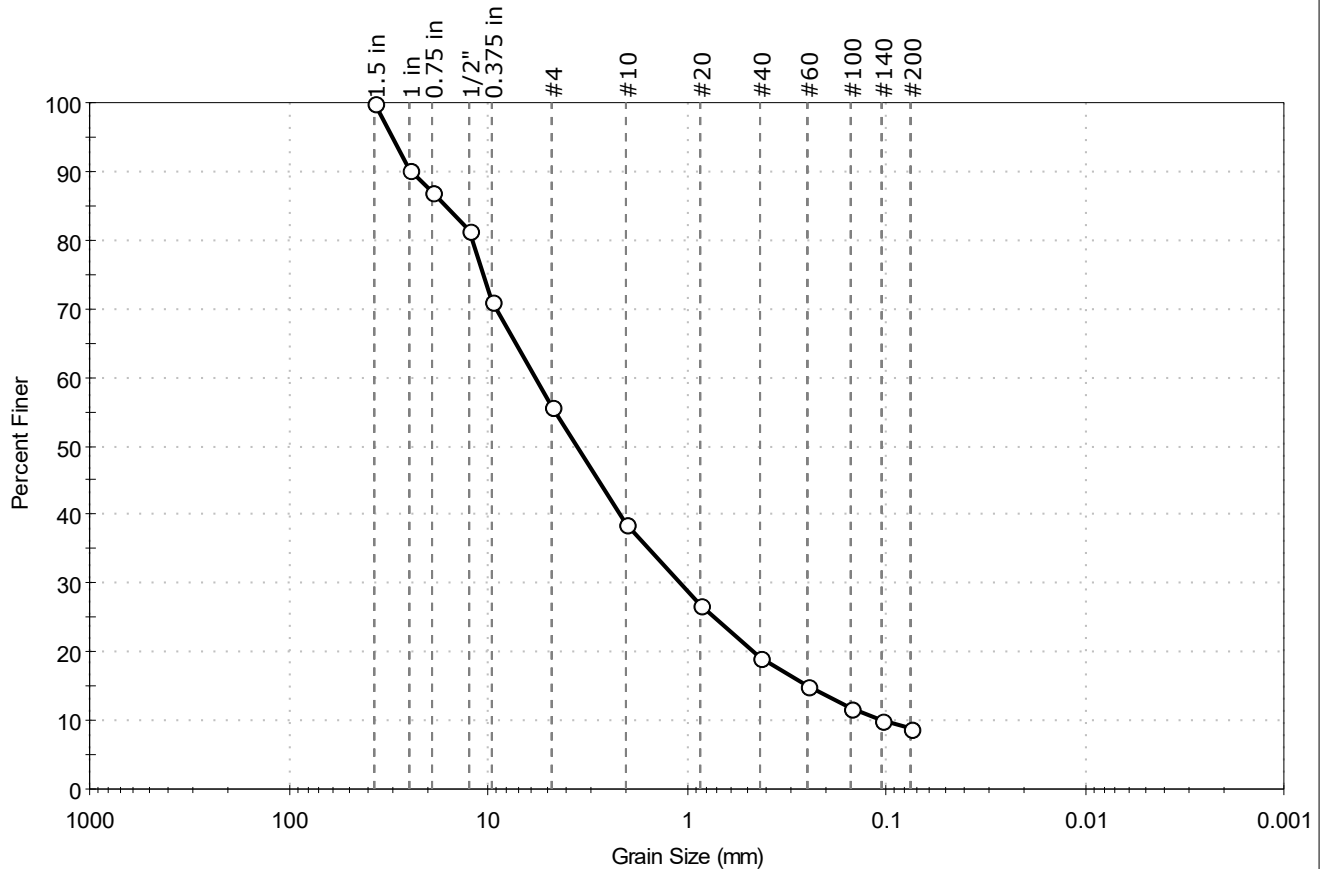
**Top Row:** BB-BIPR-101, Run No. R3: 73.7 ft (left) to 76.7 ft (middle)  
**Top Middle Row:** BB- BIPR-102, Run No. R1: 52.0 ft (left) to 57.0 ft (right)  
**Bottom Middle Row:** BB-BIPR-102, Run No. R2: 57.0 ft (left) to 60.6 ft (middle-right)  
**Bottom Row:** BB-BIPR-102, Run No. R3: 60.6 ft (left) to 62.0 ft (middle-left)

## **APPENDIX C**

### **Laboratory Test Results**

Client: Haley & Aldrich, Inc.	Project No: GTX-322343
Project: I-395 - Industrial Park Bridge	
Location: Brewer, ME	
Boring ID: BB-BIPR-101	Sample Type: Jar
Sample ID: 9D	Test Date: 12/19/25
Depth: 17-19'	Test Id: 847857
Test Comment: ---	Tested By: ajl
Visual Description: Moist, grayish brown sand with silt and gravel	Checked By: ank
Sample Comment: ---	

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	44.4	46.8	8.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	90		
0.75 in	19.00	87		
1/2"	12.50	82		
0.375 in	9.50	71		
#4	4.75	56		
#10	2.00	39		
#20	0.85	27		
#40	0.42	19		
#60	0.25	15		
#100	0.15	12		
#140	0.11	10		
#200	0.075	8.8		

### Coefficients

$D_{85} = 16.3512 \text{ mm}$        $D_{30} = 1.0700 \text{ mm}$   
 $D_{60} = 5.7819 \text{ mm}$        $D_{15} = 0.2481 \text{ mm}$   
 $D_{50} = 3.5691 \text{ mm}$        $D_{10} = 0.1026 \text{ mm}$   
 $C_u = 56.354$        $C_c = 1.930$

### Classification

ASTM N/A

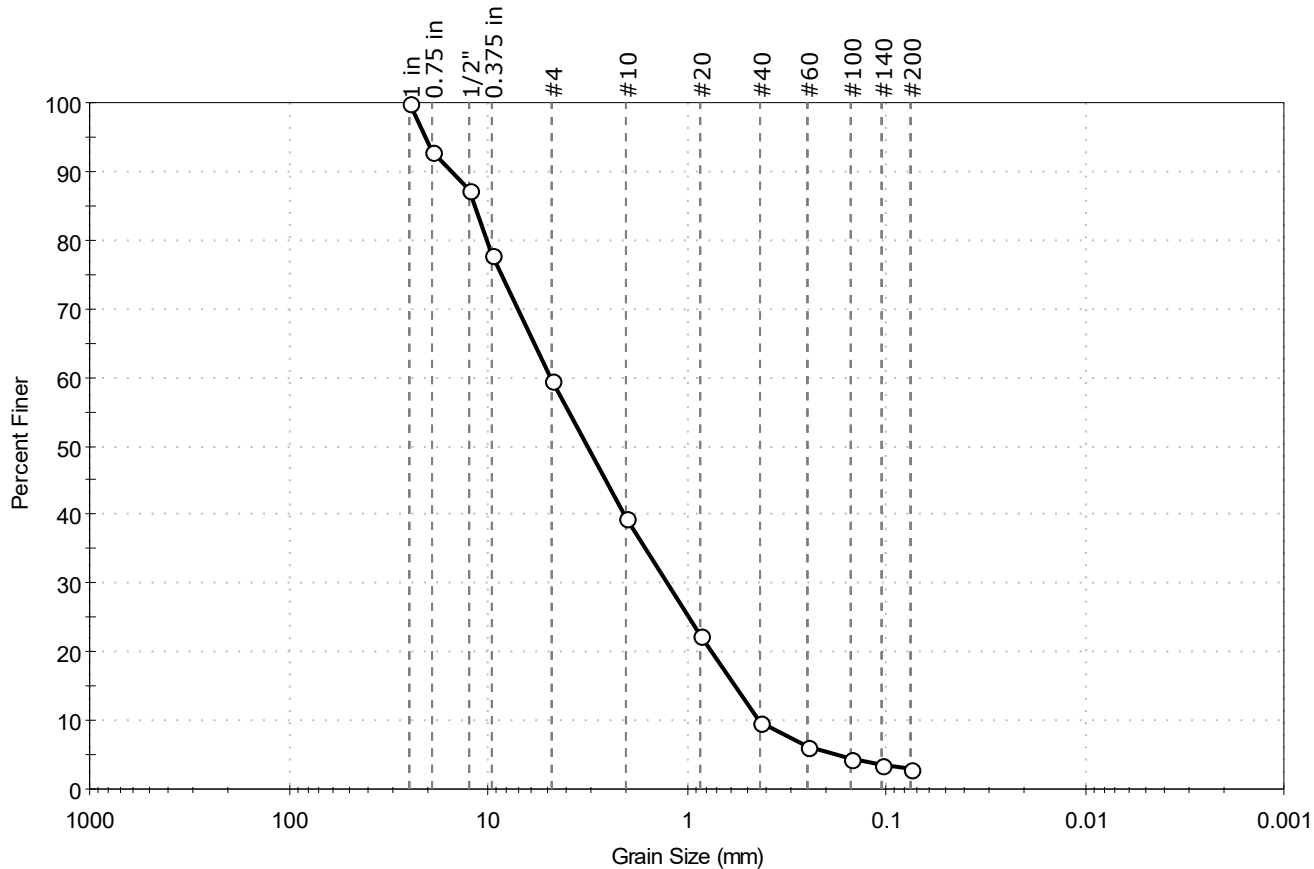
AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client: Haley & Aldrich, Inc.	Project No: GTX-322343	
Project: I-395 - Industrial Park Bridge		
Location: Brewer, ME		
Boring ID: BB-BIPR-101	Sample Type: Jar	Tested By: ajl
Sample ID: 10D	Test Date: 12/19/25	Checked By: ank
Depth: 19-21'	Test Id: 847858	
Test Comment: ---		
Visual Description: Moist, grayish brown sand with gravel		
Sample Comment: ---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	40.5	56.5	3.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
3/4 in	19.00	93		
1/2 in	12.50	87		
3/8 in	9.50	78		
#4	4.75	59		
#10	2.00	39		
#20	0.85	22		
#40	0.425	10		
#60	0.25	6		
#100	0.15	4		
#140	0.11	4		
#200	0.075	3		

### Coefficients

$D_{85} = 11.6862 \text{ mm}$        $D_{30} = 1.2422 \text{ mm}$   
 $D_{60} = 4.8471 \text{ mm}$        $D_{15} = 0.5673 \text{ mm}$   
 $D_{50} = 3.1560 \text{ mm}$        $D_{10} = 0.4329 \text{ mm}$   
 $C_u = 11.197$        $C_c = 0.735$

### Classification

**ASTM** Poorly graded SAND with Gravel (SP)

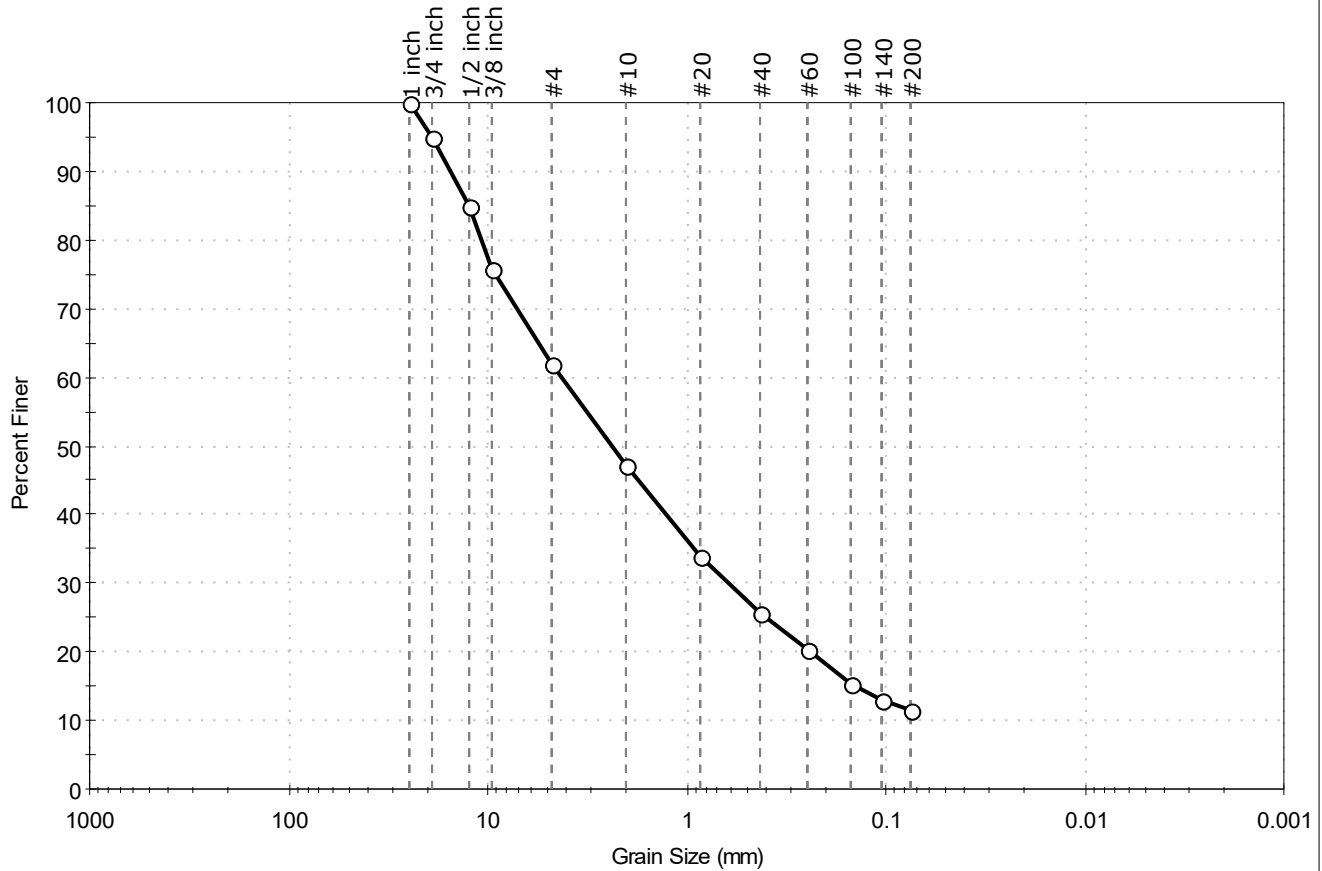
**AASHTO** Stone Fragments, Gravel and Sand (A-1-a (1))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client:	Haley & Aldrich, Inc.		
Project:	I-395 - Industrial Park Bridge		
Location:	Brewer, ME	Project No:	GTX-322343
Boring ID:	BB-BIPR-102	Sample Type:	Jar
Sample ID:	1D	Test Date:	12/19/25
Depth :	0-2'	Test Id:	847859
Test Comment:	---		
Visual Description:	Moist, grayish brown sand with silt and gravel		
Sample Comment:	---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	38.1	50.3	11.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 inch	25.00	100		
3/4 inch	19.00	95		
1/2 inch	12.50	85		
3/8 inch	9.50	76		
#4	4.75	62		
#10	2.00	47		
#20	0.85	34		
#40	0.42	26		
#60	0.25	20		
#100	0.15	15		
#140	0.11	13		
#200	0.075	12		

### Coefficients

$D_{85} = 12.5433 \text{ mm}$        $D_{30} = 0.6117 \text{ mm}$   
 $D_{60} = 4.2365 \text{ mm}$        $D_{15} = 0.1432 \text{ mm}$   
 $D_{50} = 2.3541 \text{ mm}$        $D_{10} = \text{N/A}$   
 $C_u = \text{N/A}$        $C_c = \text{N/A}$

### Classification

ASTM      N/A

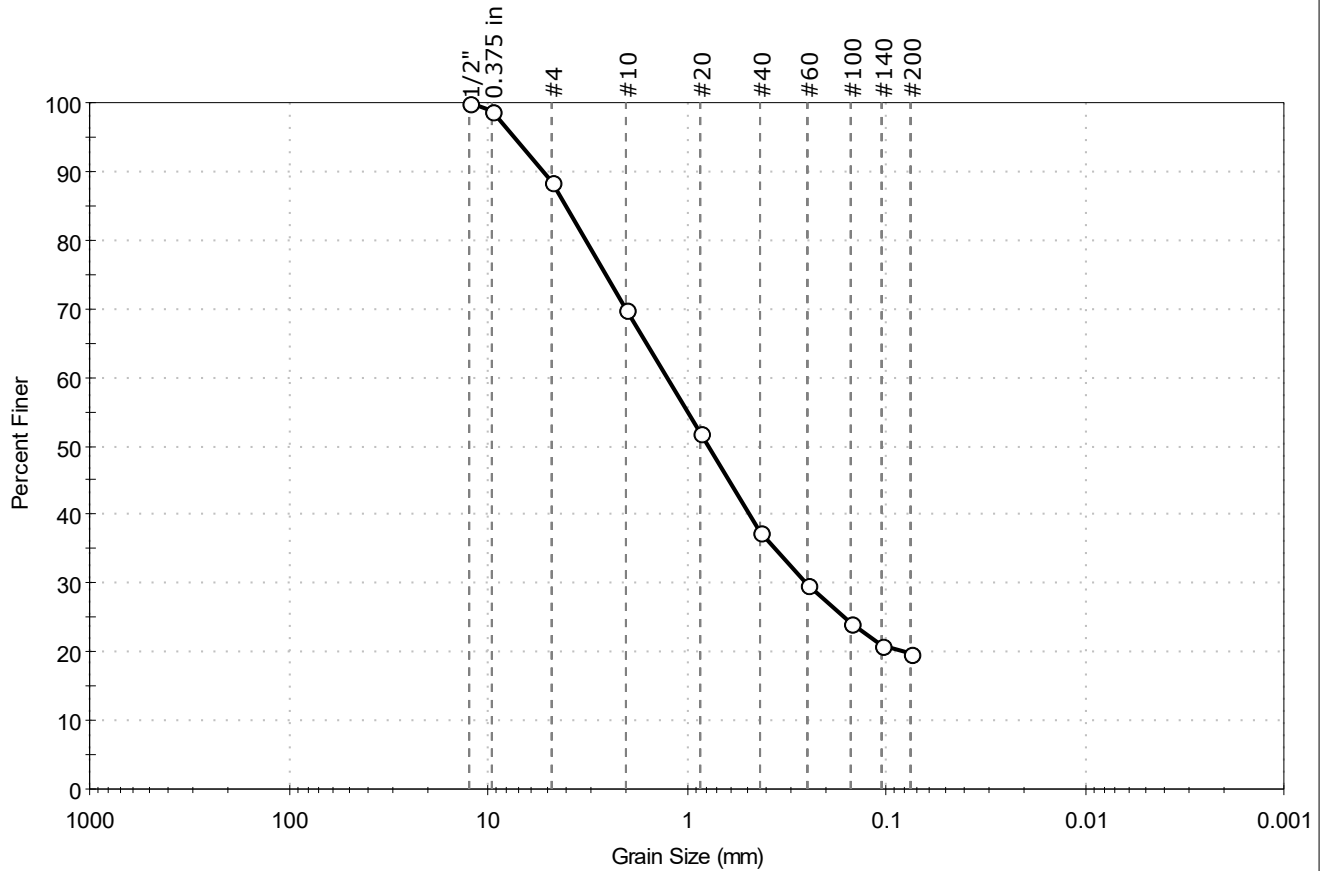
AASHTO      Stone Fragments, Gravel and Sand (A-1-a (0))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client: Haley & Aldrich, Inc.	Project No: GTX-322343
Project: I-395 - Industrial Park Bridge	
Location: Brewer, ME	
Boring ID: BB-BIPR-102	Sample Type: Jar
Sample ID: 10D	Test Date: 12/19/25
Depth: 40-42'	Test Id: 847860
Test Comment: ---	Tested By: ajl
Visual Description: Moist, gray silty sand	Checked By: ank
Sample Comment: ---	

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	11.5	68.7	19.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1/2"	12.50	100		
0.375 in	9.50	99		
#4	4.75	88		
#10	2.00	70		
#20	0.85	52		
#40	0.42	37		
#60	0.25	30		
#100	0.15	24		
#140	0.11	21		
#200	0.075	20		

### Coefficients

D <sub>85</sub> = 4.0333 mm	D <sub>30</sub> = 0.2558 mm
D <sub>60</sub> = 1.2472 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.7779 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

### Classification

ASTM N/A

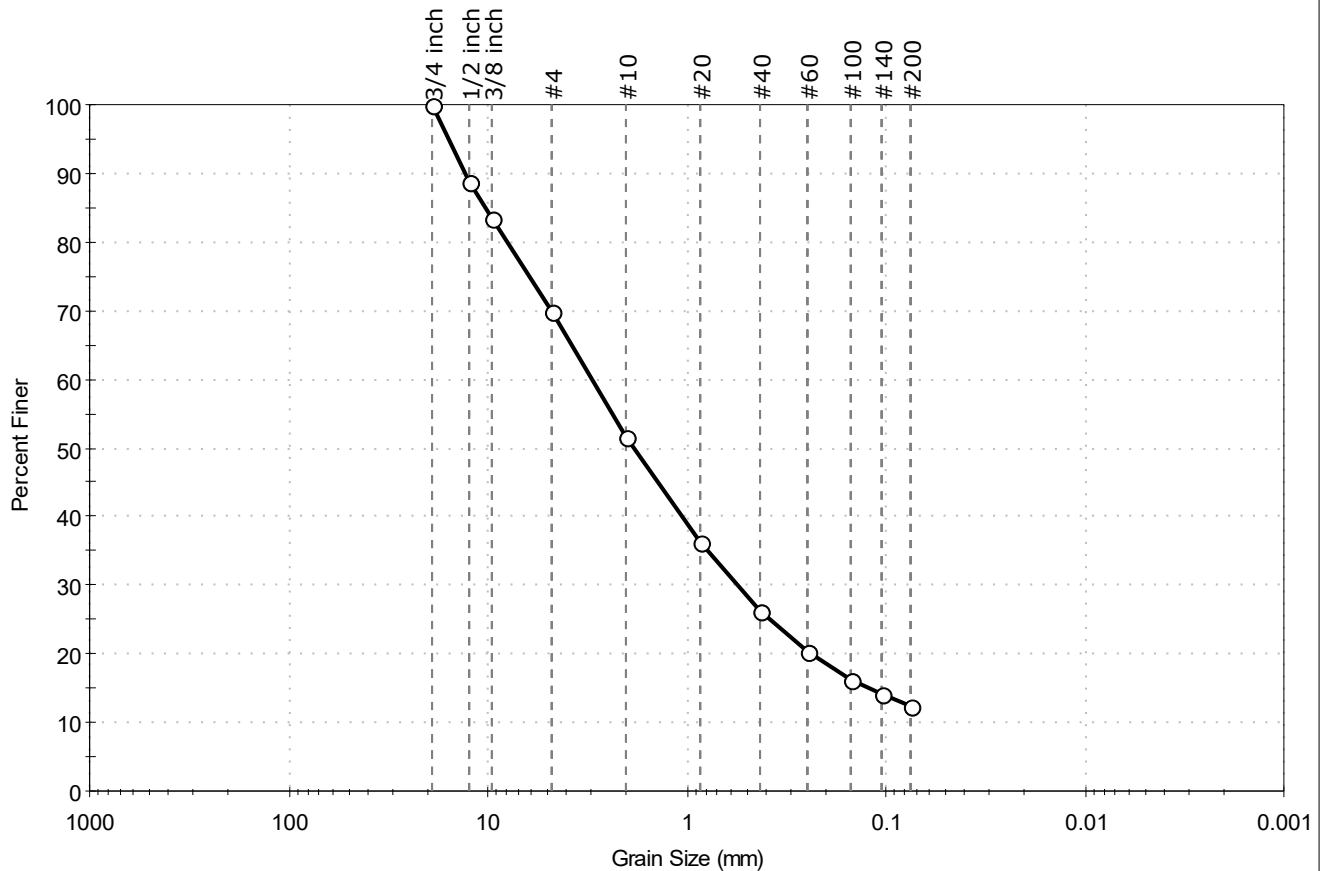
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
Sand/Gravel Hardness : HARD

Client:	Haley & Aldrich, Inc.		
Project:	I-395 - Industrial Park Bridge		
Location:	Brewer, ME	Project No:	GTX-322343
Boring ID:	BB-BIPR-103	Sample Type:	Jar
Sample ID:	7D	Test Date:	12/19/25
Depth :	13-15'	Test Id:	847861
Test Comment:	---		
Visual Description:	Moist, brown silty sand with gravel		
Sample Comment:	---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	30.1	57.4	12.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	89		
3/8 inch	9.50	84		
#4	4.75	70		
#10	2.00	52		
#20	0.85	36		
#40	0.42	26		
#60	0.25	20		
#100	0.15	16		
#140	0.11	14		
#200	0.075	13		

### Coefficients

D<sub>85</sub> = 10.2364 mm      D<sub>30</sub> = 0.5526 mm  
 D<sub>60</sub> = 2.9659 mm      D<sub>15</sub> = 0.1212 mm  
 D<sub>50</sub> = 1.8182 mm      D<sub>10</sub> = N/A  
 C<sub>u</sub> = N/A                  C<sub>c</sub> = N/A

### Classification

ASTM      N/A

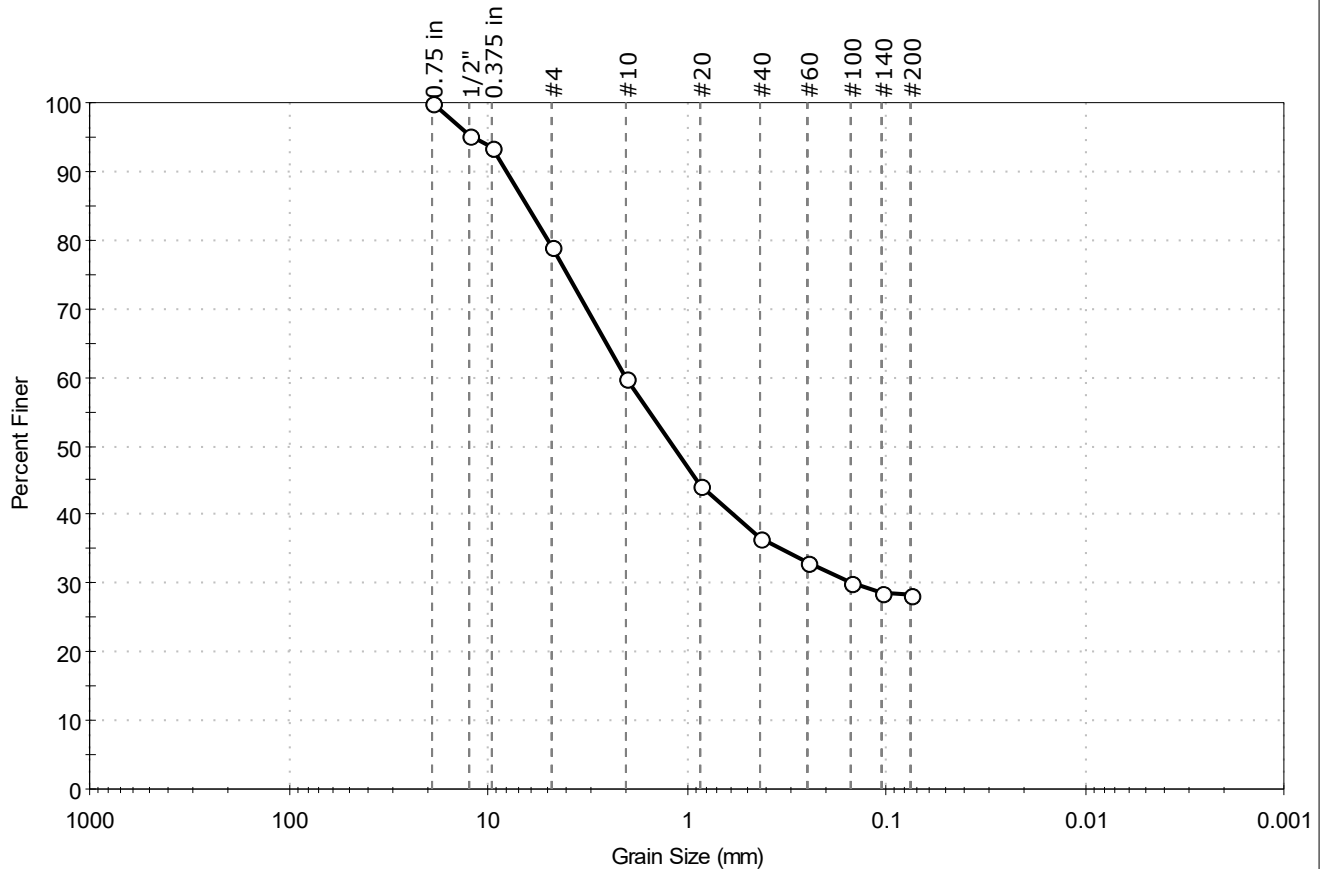
AASHTO      Stone Fragments, Gravel and Sand (A-1-b (0))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client: Haley & Aldrich, Inc.	Project No: GTX-322343
Project: I-395 - Industrial Park Bridge	
Location: Brewer, ME	
Boring ID: BB-BIPR-103	Sample Type: Jar
Sample ID: 23D	Test Date: 12/19/25
Depth: 74-76'	Test Id: 847866
Test Comment: ---	Tested By: ajl
Visual Description: Moist, gray silty sand with gravel	Checked By: ank
Sample Comment: ---	

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	21.0	50.7	28.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
1/2"	12.50	95		
0.375 in	9.50	93		
#4	4.75	79		
#10	2.00	60		
#20	0.85	44		
#40	0.42	37		
#60	0.25	33		
#100	0.15	30		
#140	0.11	29		
#200	0.075	28		

### Coefficients

$D_{85} = 6.3323 \text{ mm}$        $D_{30} = 0.1453 \text{ mm}$   
 $D_{60} = 2.0039 \text{ mm}$        $D_{15} = \text{N/A}$   
 $D_{50} = 1.1677 \text{ mm}$        $D_{10} = \text{N/A}$   
 $C_u = \text{N/A}$        $C_c = \text{N/A}$

### Classification

ASTM N/A

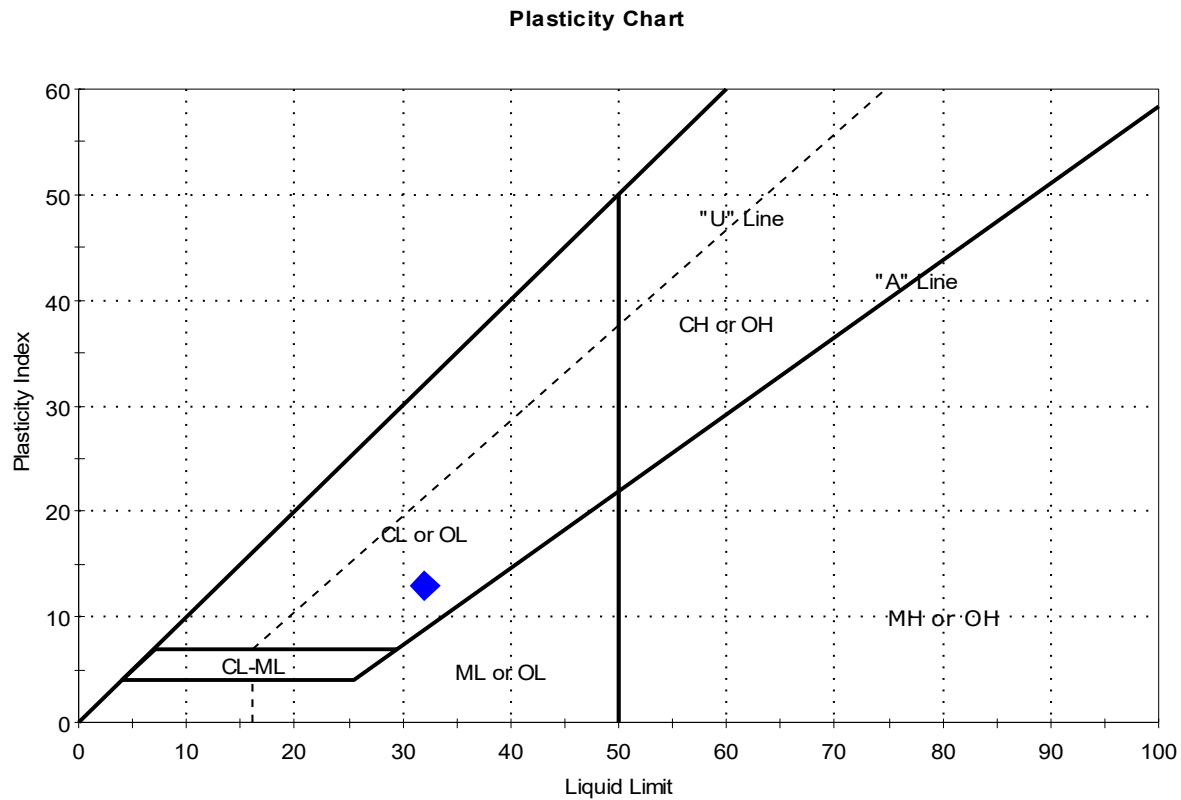
AASHTO Silty Gravel and Sand (A-2-4 (0))

### Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR  
 Sand/Gravel Hardness : HARD

Client:	Haley & Aldrich, Inc.				
Project:	I-395 - Industrial Park Bridge				
Location:	Brewer, ME			Project No:	GTX-322343
Boring ID:	BB-BIPR-101	Sample Type:	Jar	Tested By:	ajl
Sample ID:	14D	Test Date:	12/18/25	Checked By:	ank
Depth :	34-36'	Test Id:	847851		
Test Comment:	---				
Visual Description:	Moist, gray clay				
Sample Comment:	---				

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	14D	B-BIPR-101	34-36'	29	32	19	13	0.8	

Sample Prepared using the WET method

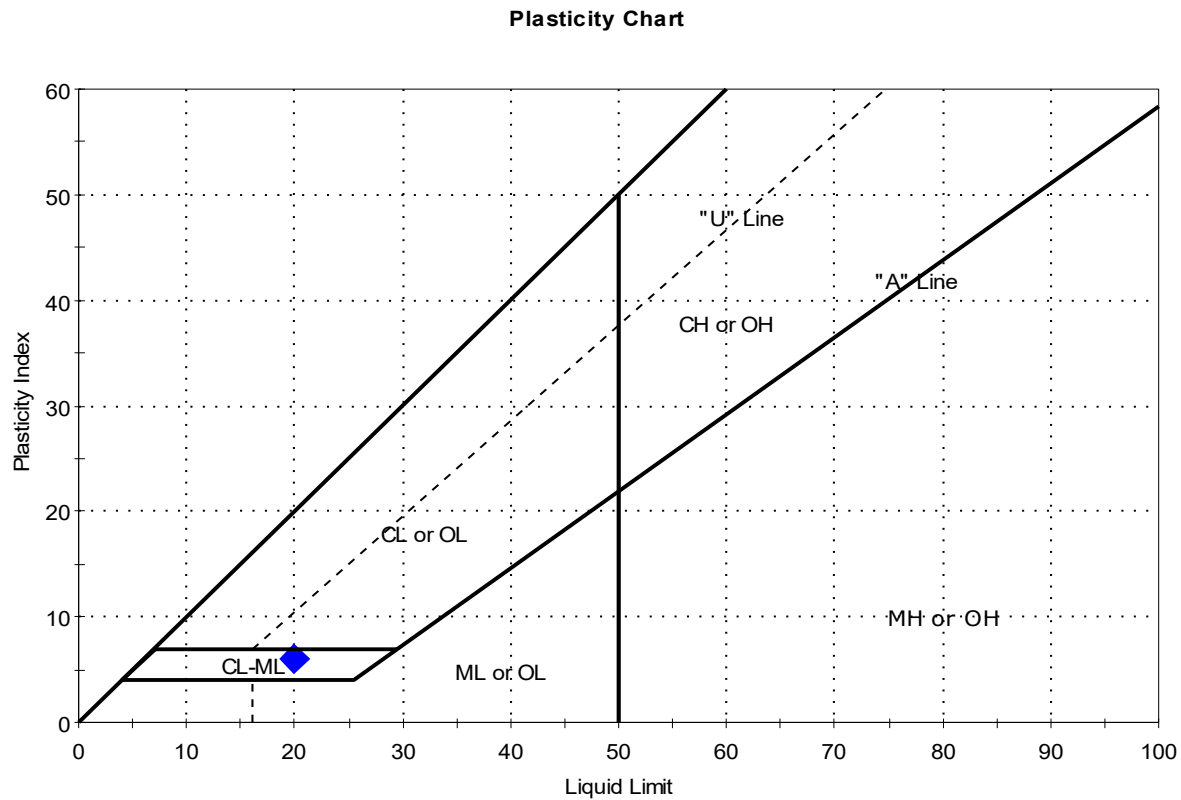
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.		
Project:	I-395 - Industrial Park Bridge		
Location:	Brewer, ME	Project No:	GTX-322343
Boring ID:	BB-BIPR-101	Sample Type:	Tube
Sample ID:	2U	Test Date:	12/19/25
Depth :	53-55'	Test Id:	847852
Test Comment:	---		
Visual Description:	Wet, dark gray silty clay		
Sample Comment:	---		

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	2U	B-BIPR-101	53-55'	25	20	14	6	1.8	

Sample Prepared using the WET method

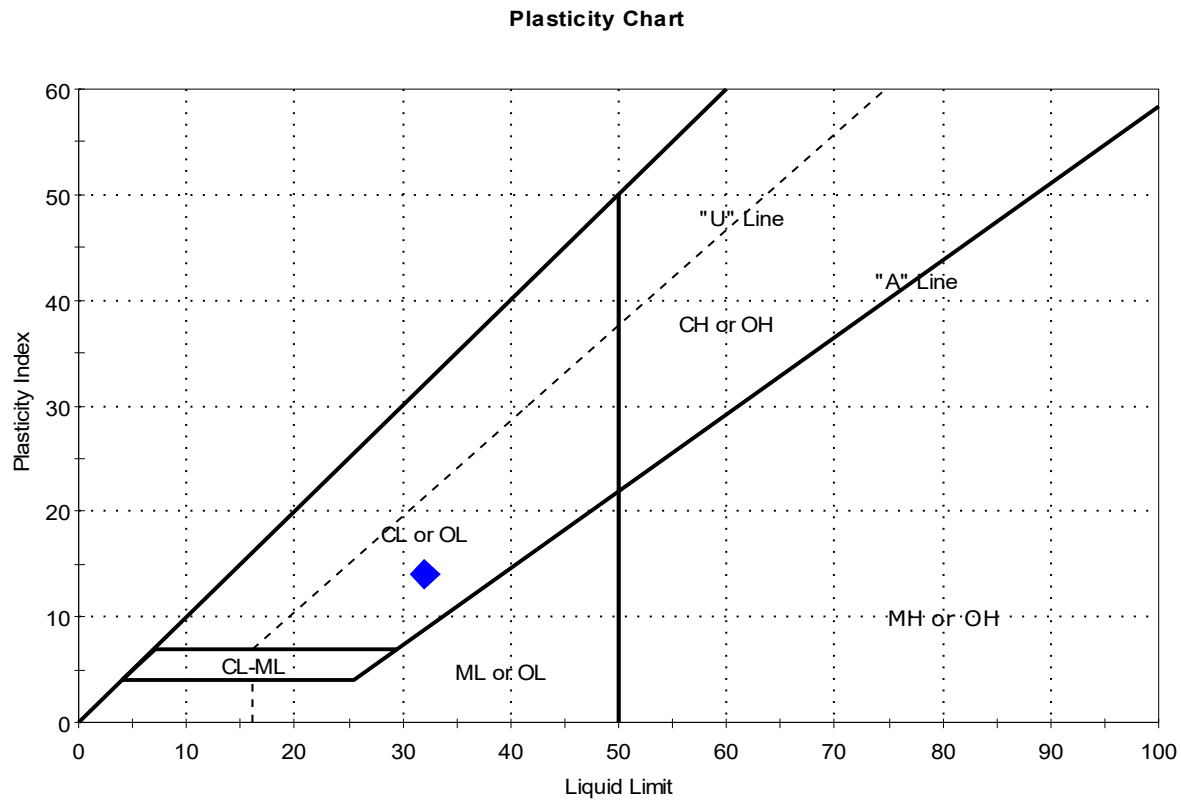
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.		Project No:	GTX-322343
Project:	I-395 - Industrial Park Bridge			
Location:	Brewer, ME		Tested By:	ajl
Boring ID:	BB-BIPR-102	Sample Type:	Jar	
Sample ID:	4D	Test Date:	12/18/25	Checked By: ank
Depth :	10-12'	Test Id:	847853	
Test Comment:	---			
Visual Description:	Moist, gray clay			
Sample Comment:	---			

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	4D	B-BIPR-10	10-12'	29	32	18	14	0.8	

Sample Prepared using the WET method

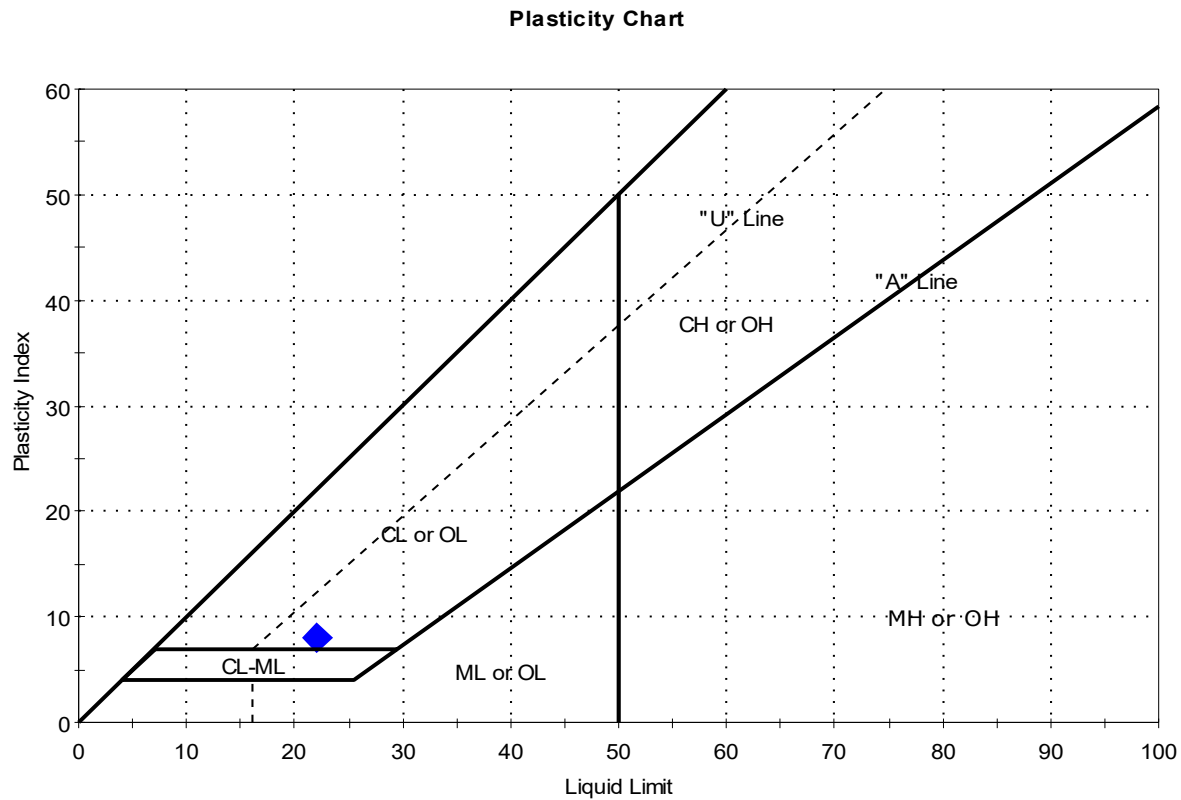
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.		
Project:	I-395 - Industrial Park Bridge		
Location:	Brewer, ME	Project No:	GTX-322343
Boring ID:	BB-BIPR-103	Sample Type:	Tube
Sample ID:	1U	Test Date:	12/19/25
Depth :	29-31'	Test Id:	847854
Test Comment:	---		
Visual Description:	Moist, dark gray clay		
Sample Comment:	---		

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	1U	BB-BIPR-103	29-31'	22	22	14	8	1	

Sample Prepared using the WET method

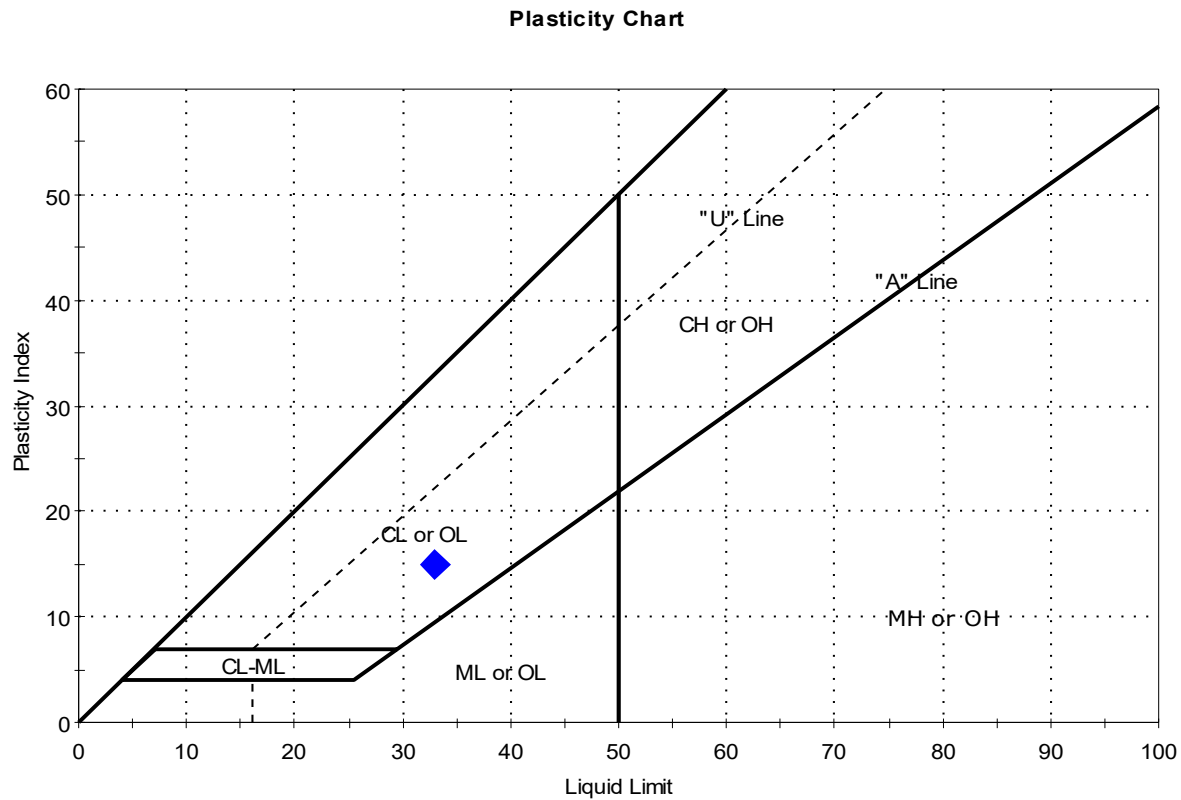
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.		
Project:	I-395 - Industrial Park Bridge		
Location:	Brewer, ME	Project No:	GTX-322343
Boring ID:	BB-BIPR-103	Sample Type:	Jar
Sample ID:	16D	Test Date:	12/17/25
Depth :	39-41'	Test Id:	847855
Test Comment:	---		
Visual Description:	Moist, dark grayish brown clay		
Sample Comment:	---		

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	16D	B-BIPR-103	39-41'	32	33	18	15	0.9	

Sample Prepared using the WET method

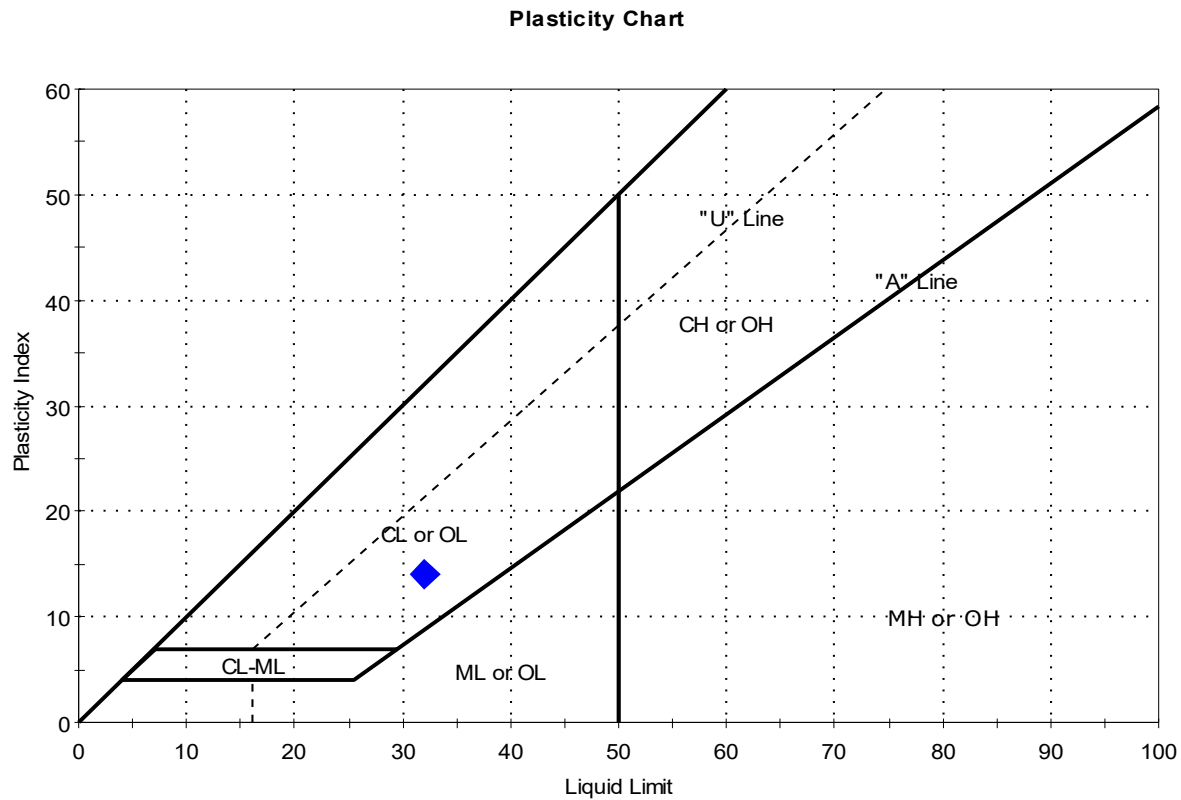
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.			
Project:	I-395 - Industrial Park Bridge			
Location:	Brewer, ME		Project No:	GTX-322343
Boring ID:	BB-BIPR-103	Sample Type:	Jar	Tested By: ajl
Sample ID:	18D	Test Date:	12/17/25	Checked By: ank
Depth :	47-49'	Test Id:	847856	
Test Comment:	---			
Visual Description:	Moist, gray clay			
Sample Comment:	---			

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	18D	B-BIPR-103	47-49'	28	32	18	14	0.7	

Sample Prepared using the WET method

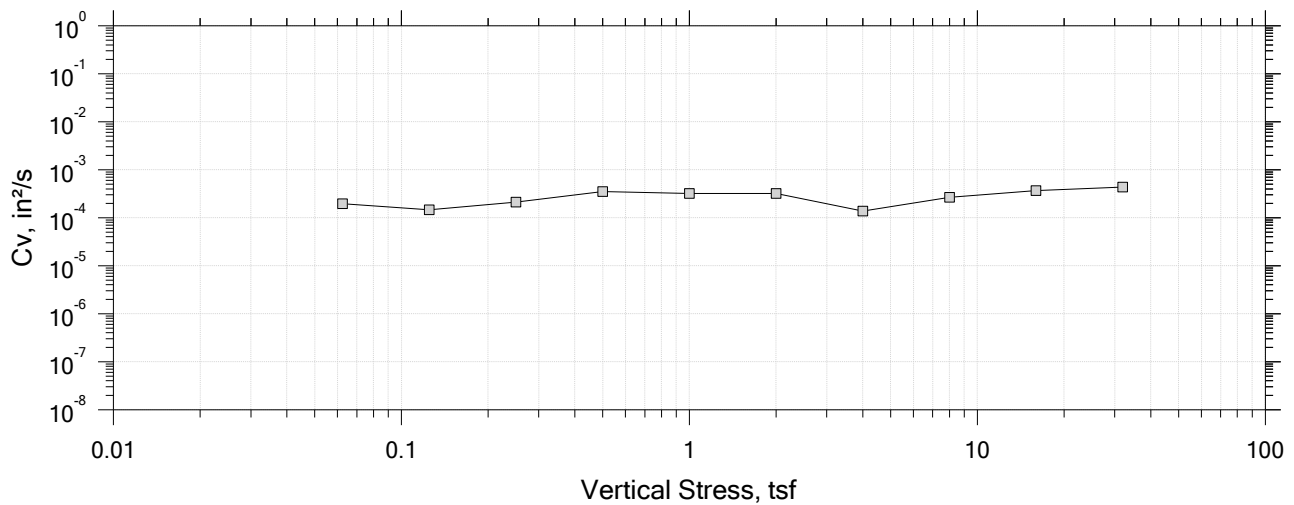
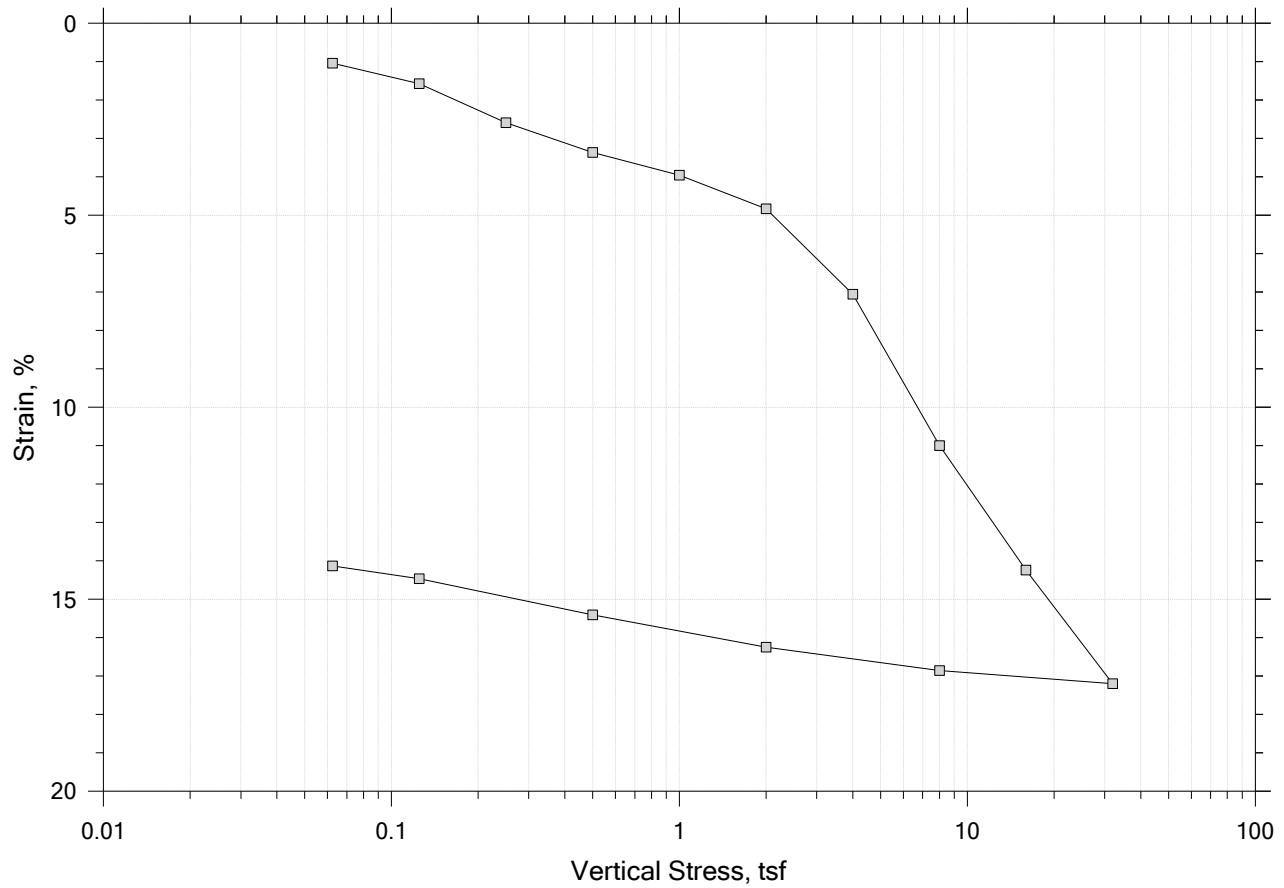
Dry Strength: VERY HIGH


Dilatancy: SLOW

Toughness: LOW

# One-Dimensional Consolidation by ASTM D2435 - Method B

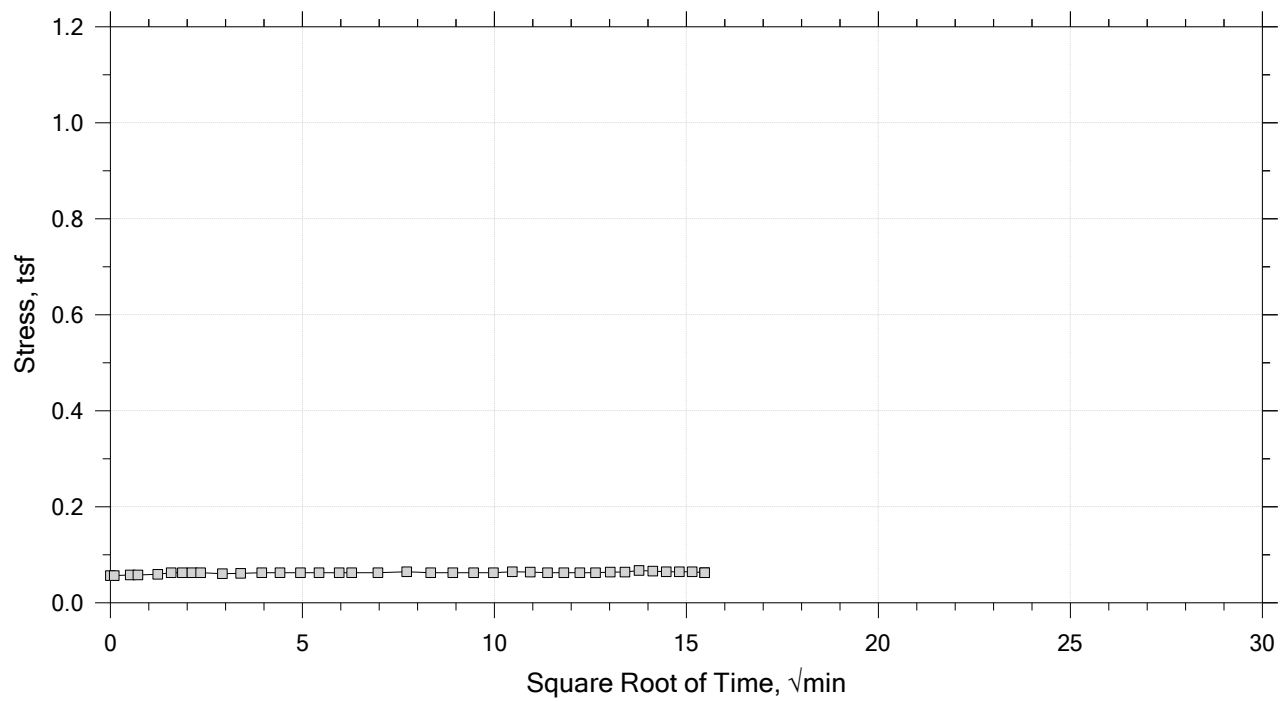
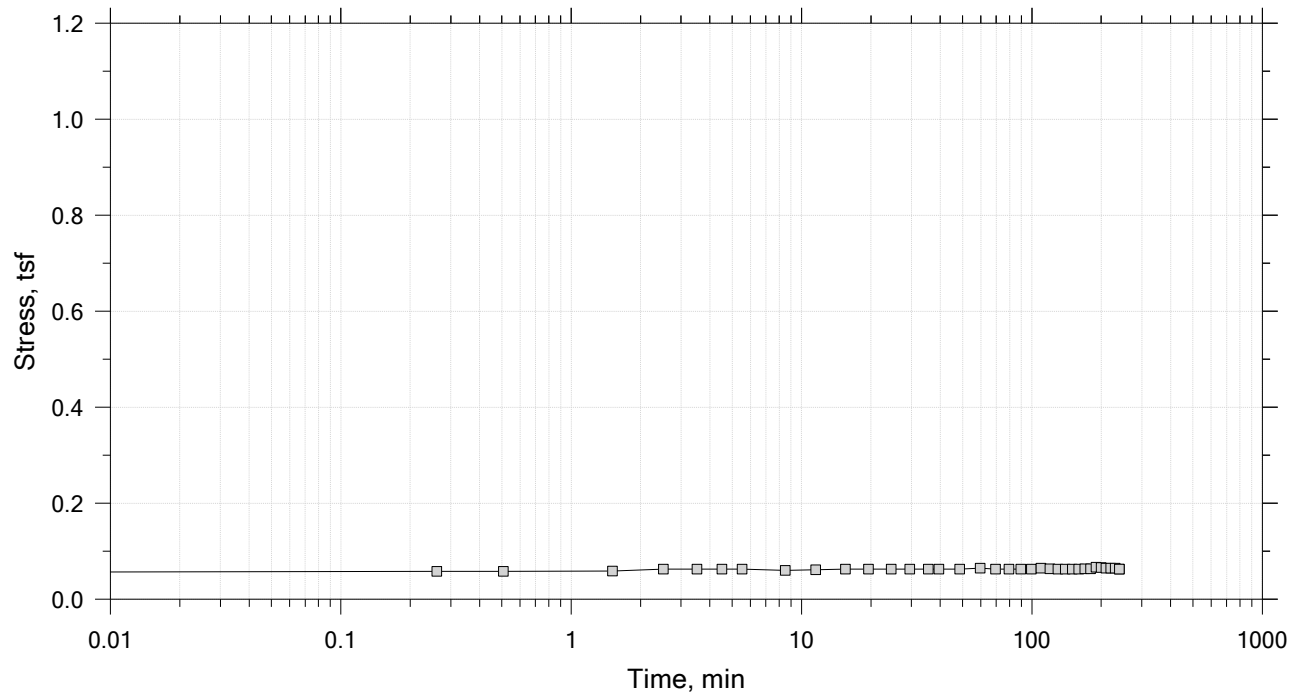
## Summary Report




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		
	Displacement at End of Increment		

# One-Dimensional Consolidation by ASTM D2435 - Method B

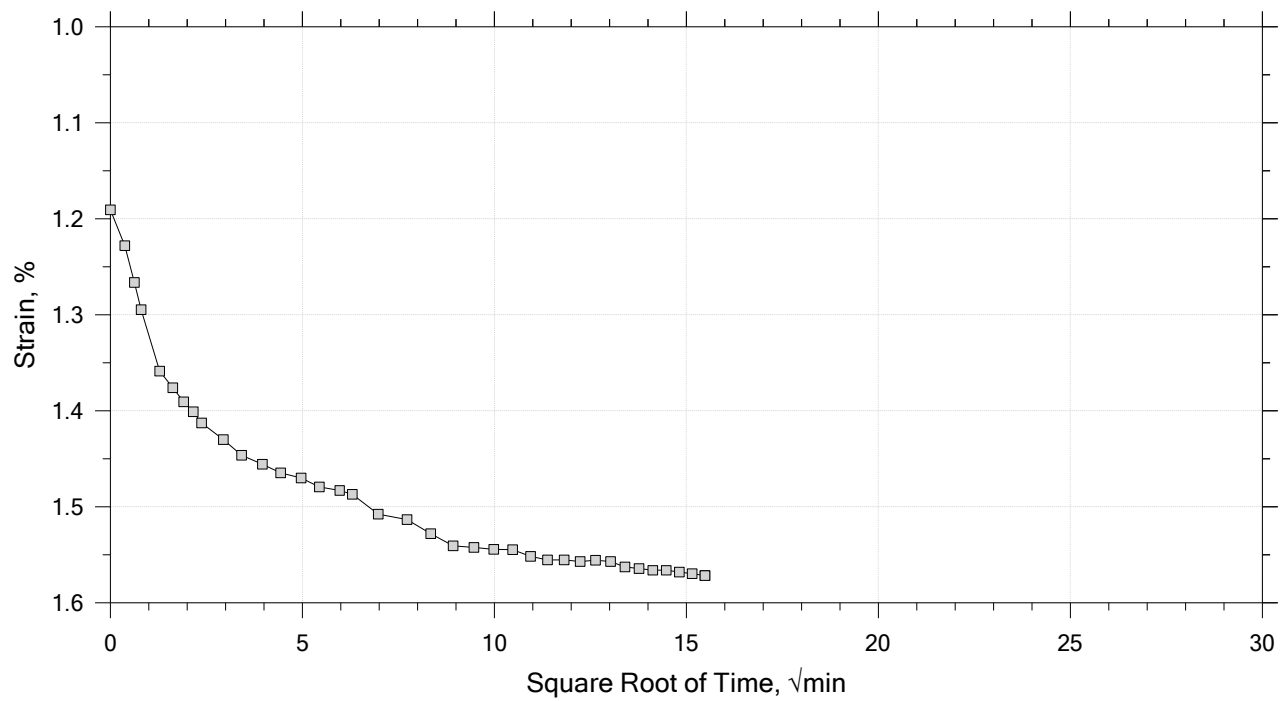
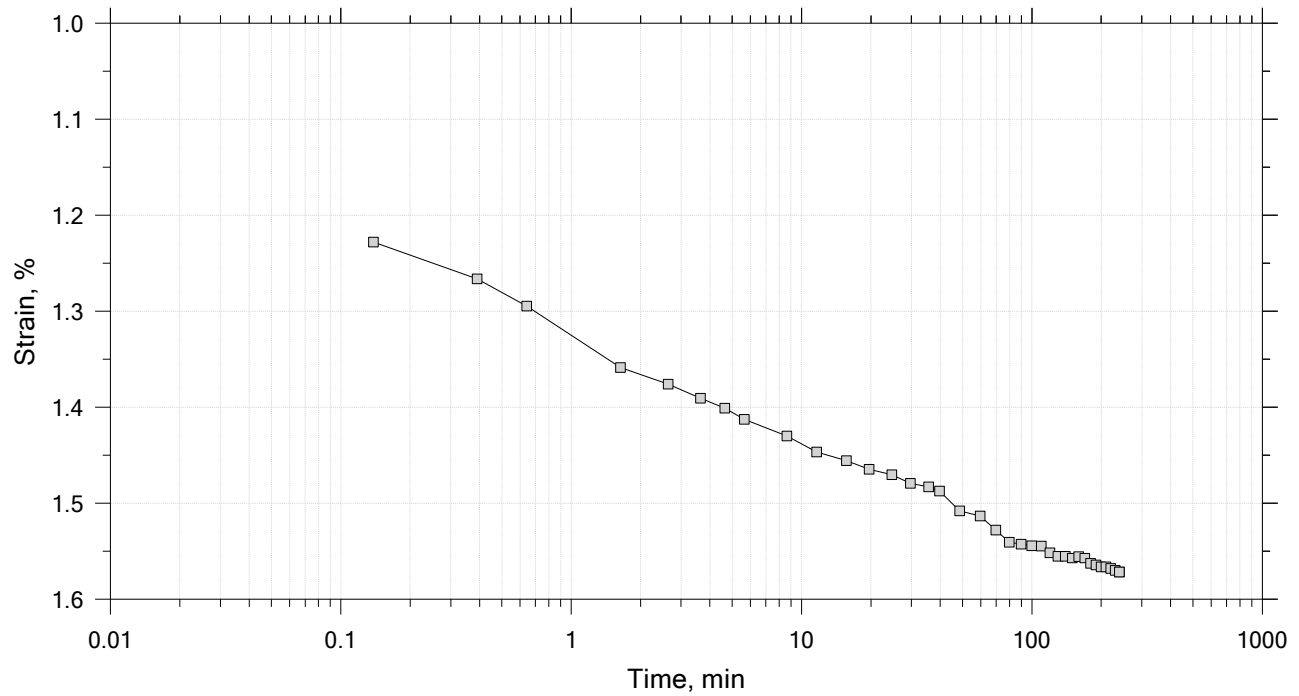
Time Curve 1 of 15  
Constant Volume Step  
Stress: 0.0624 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

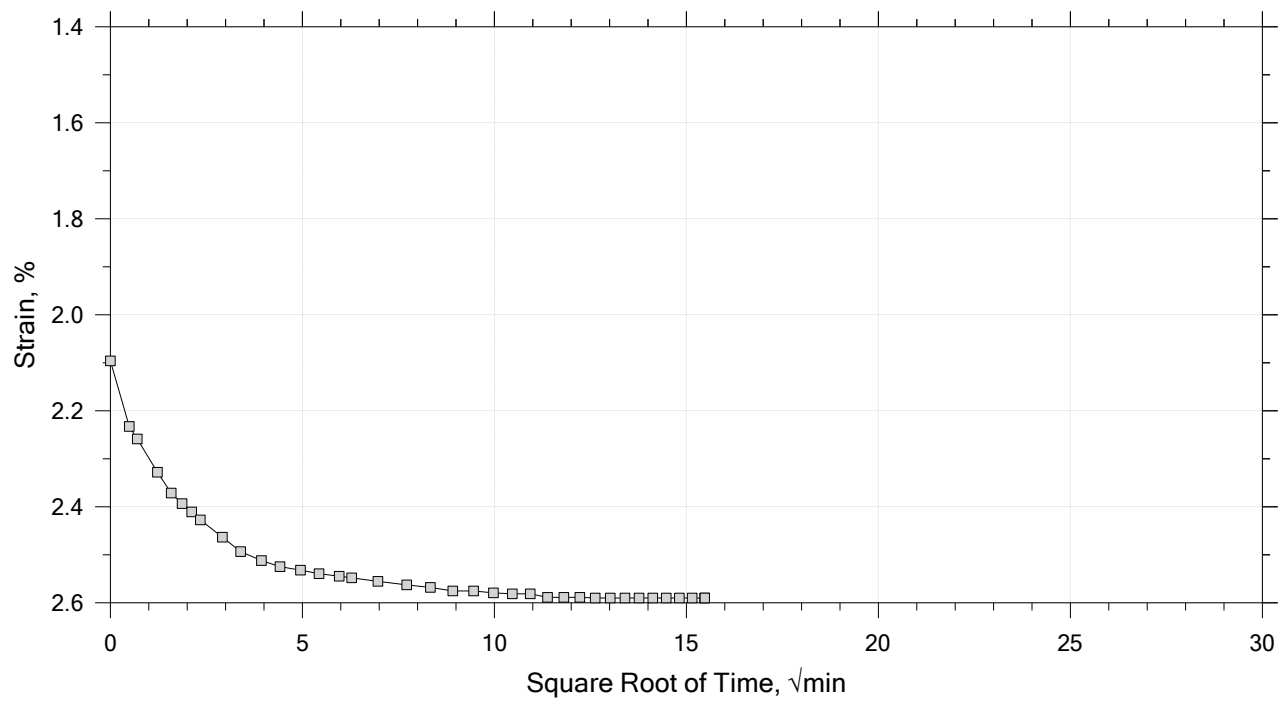
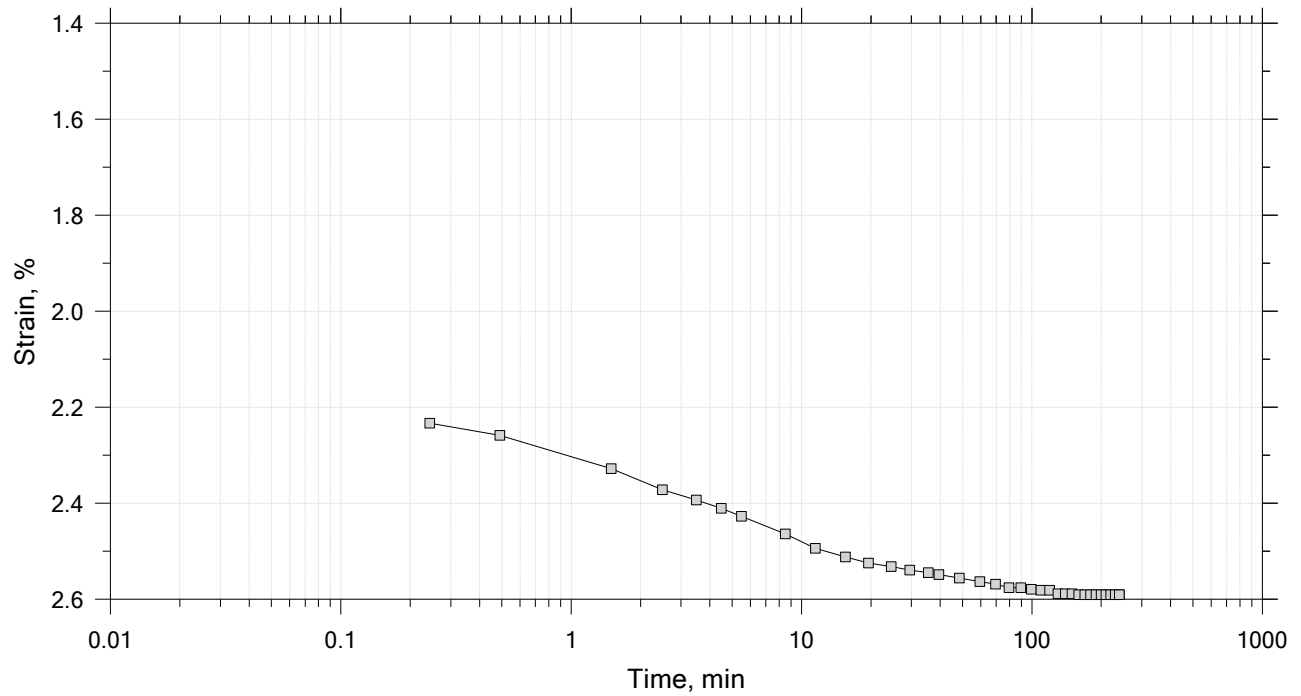
Time Curve 2 of 15  
Constant Load Step  
Stress: 0.125 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

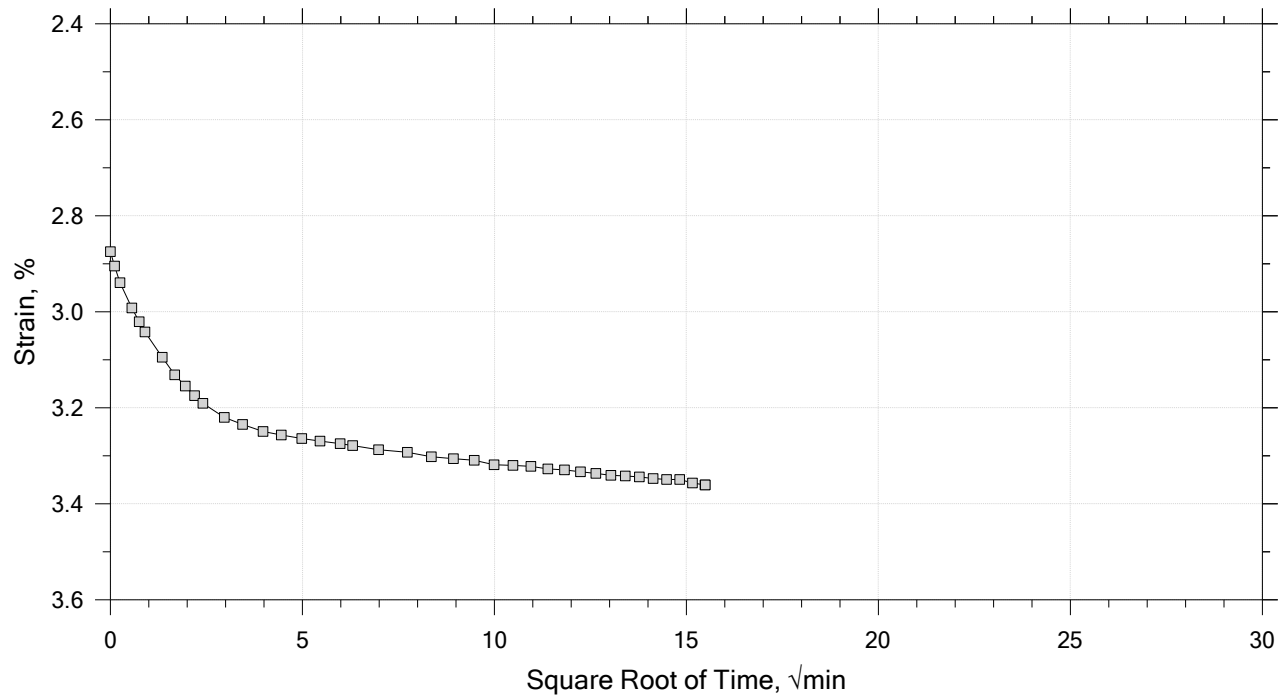
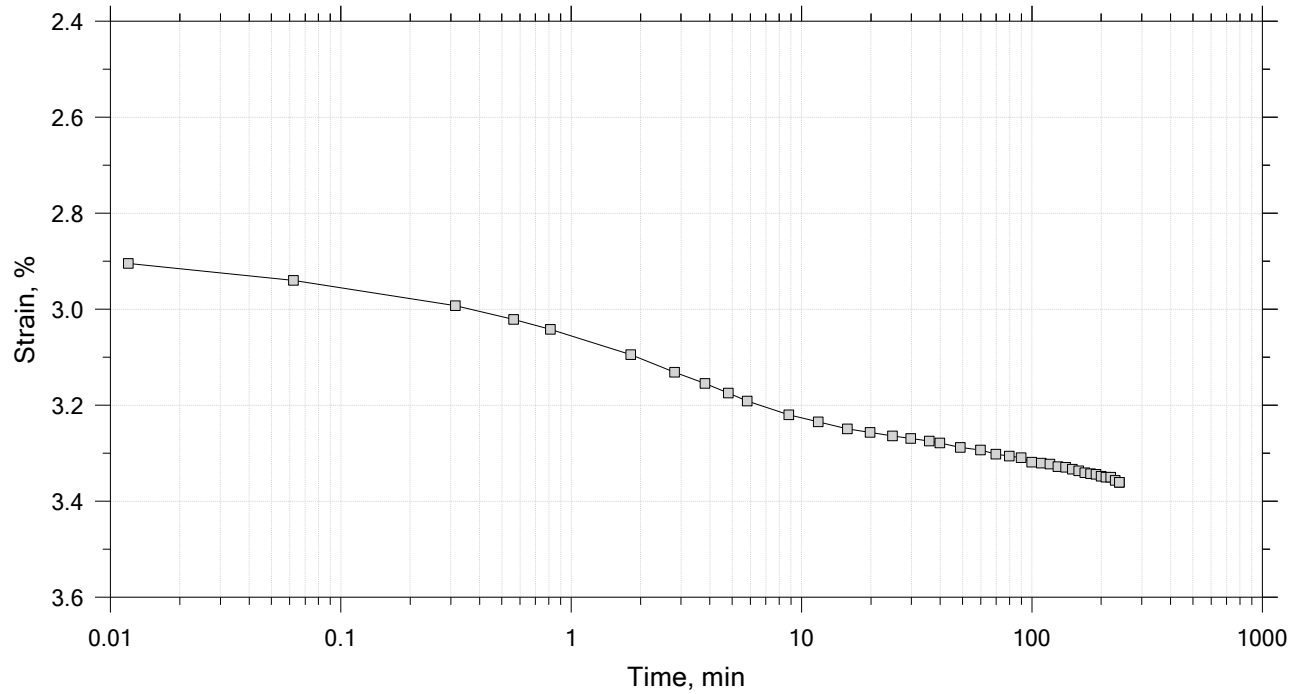
Time Curve 3 of 15  
Constant Load Step  
Stress: 0.25 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

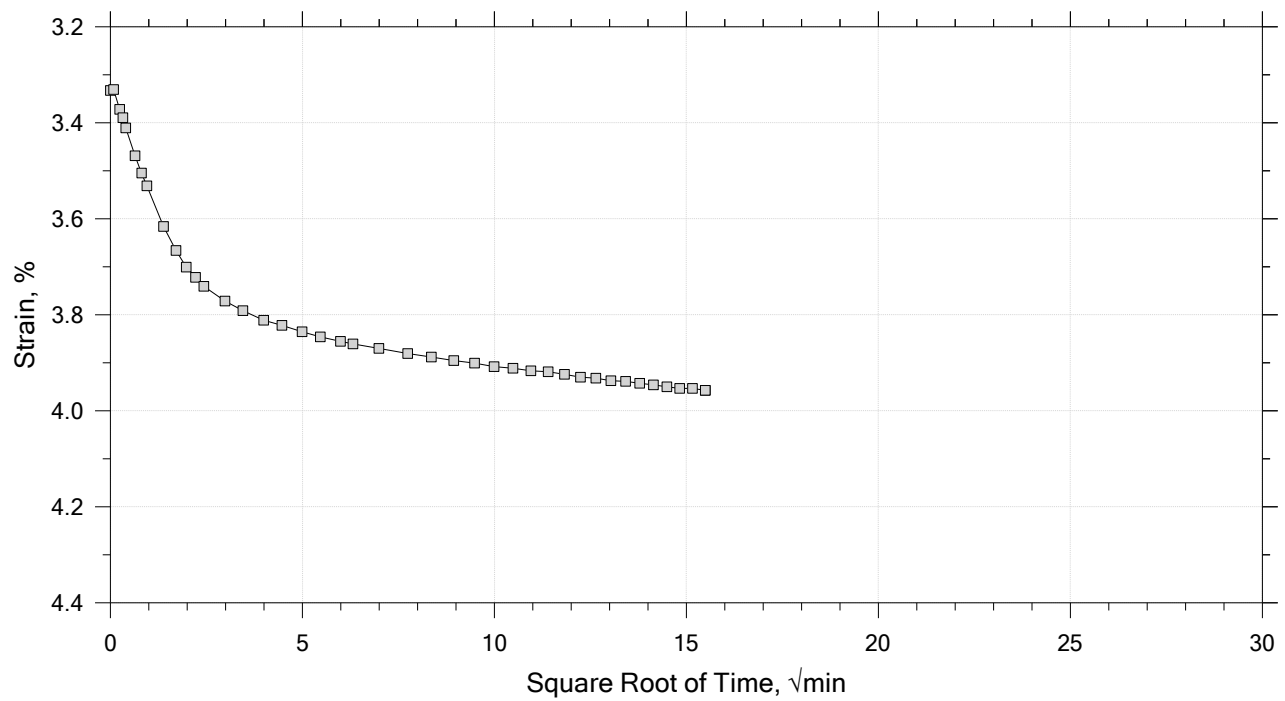
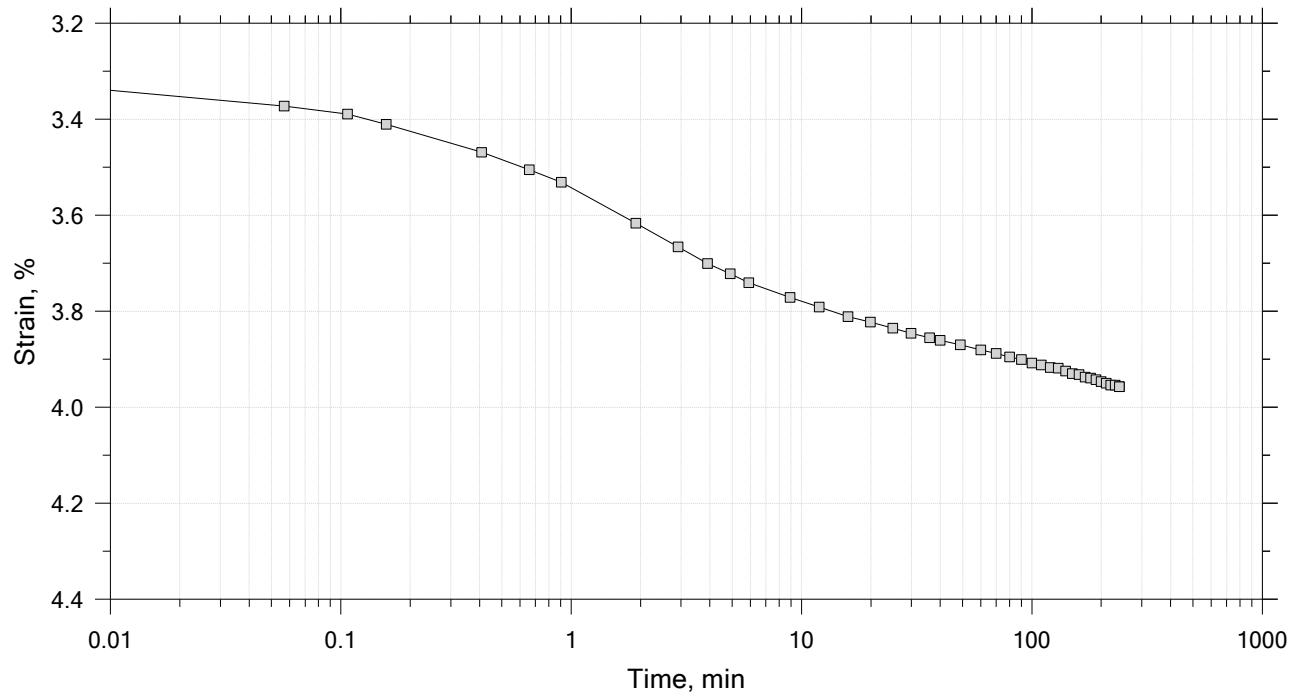
Time Curve 4 of 15  
Constant Load Step  
Stress: 0.5 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

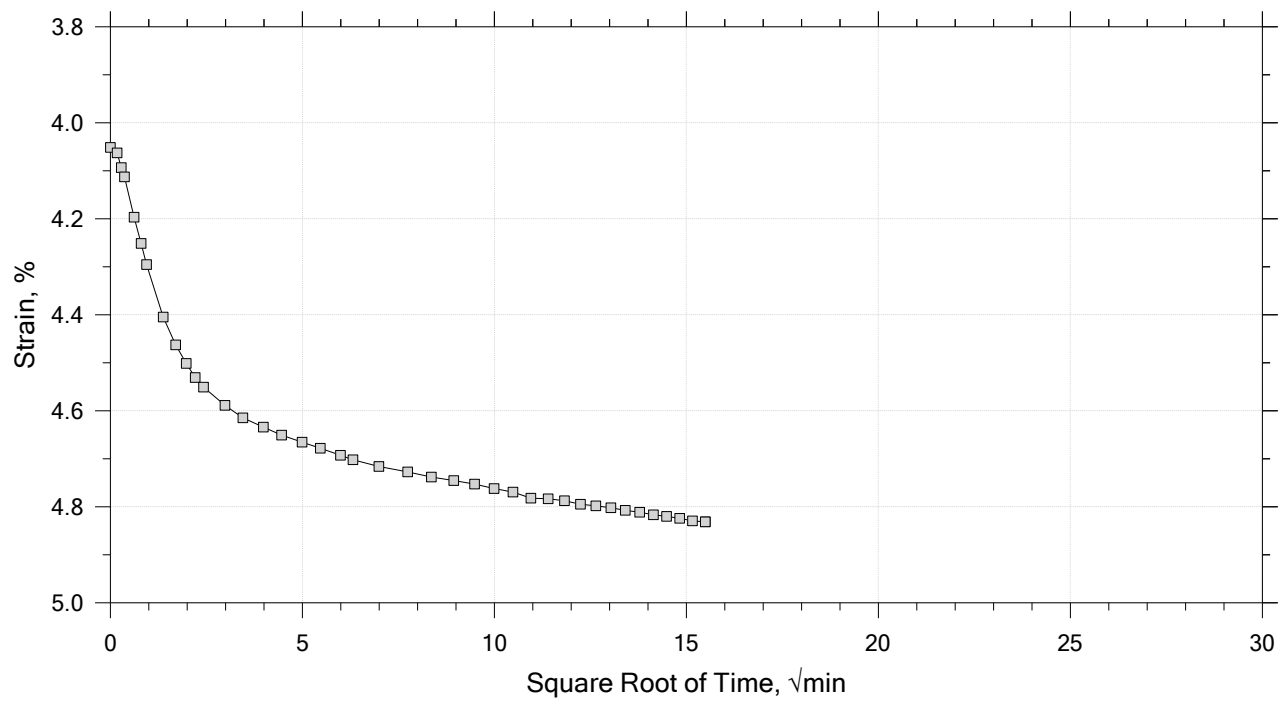
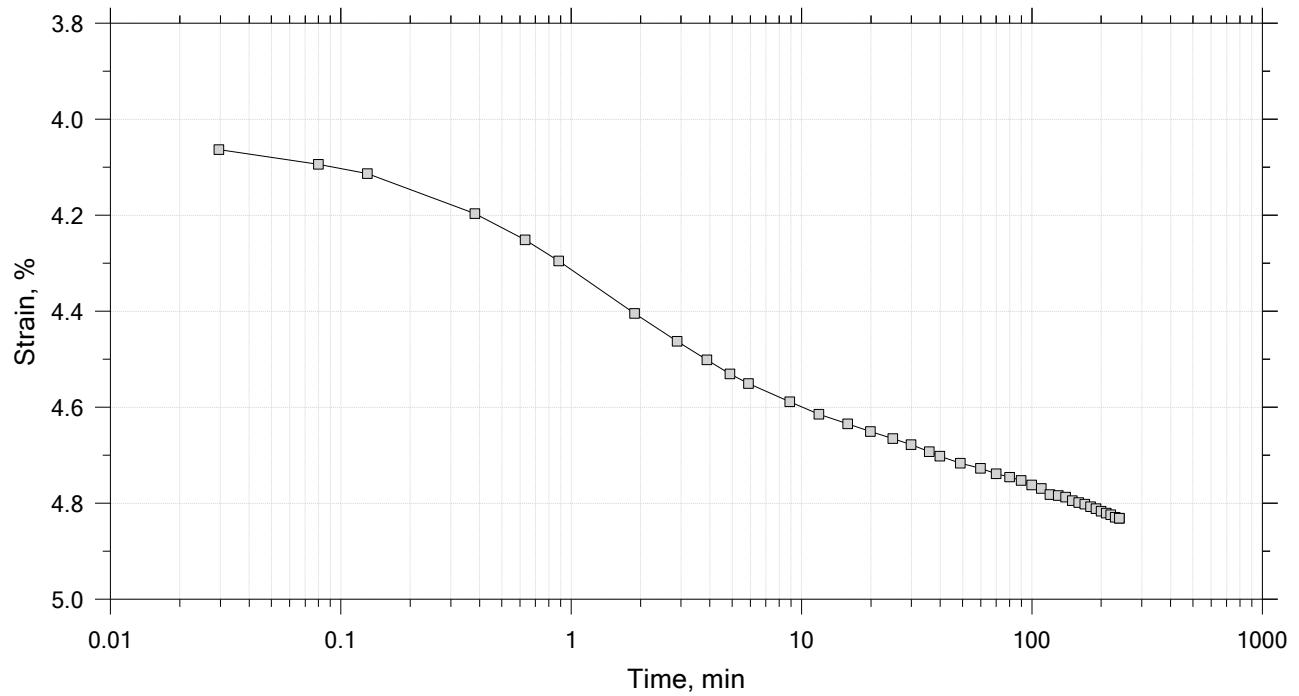
Time Curve 5 of 15  
Constant Load Step  
Stress: 1 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 15  
Constant Load Step  
Stress: 2 tsf



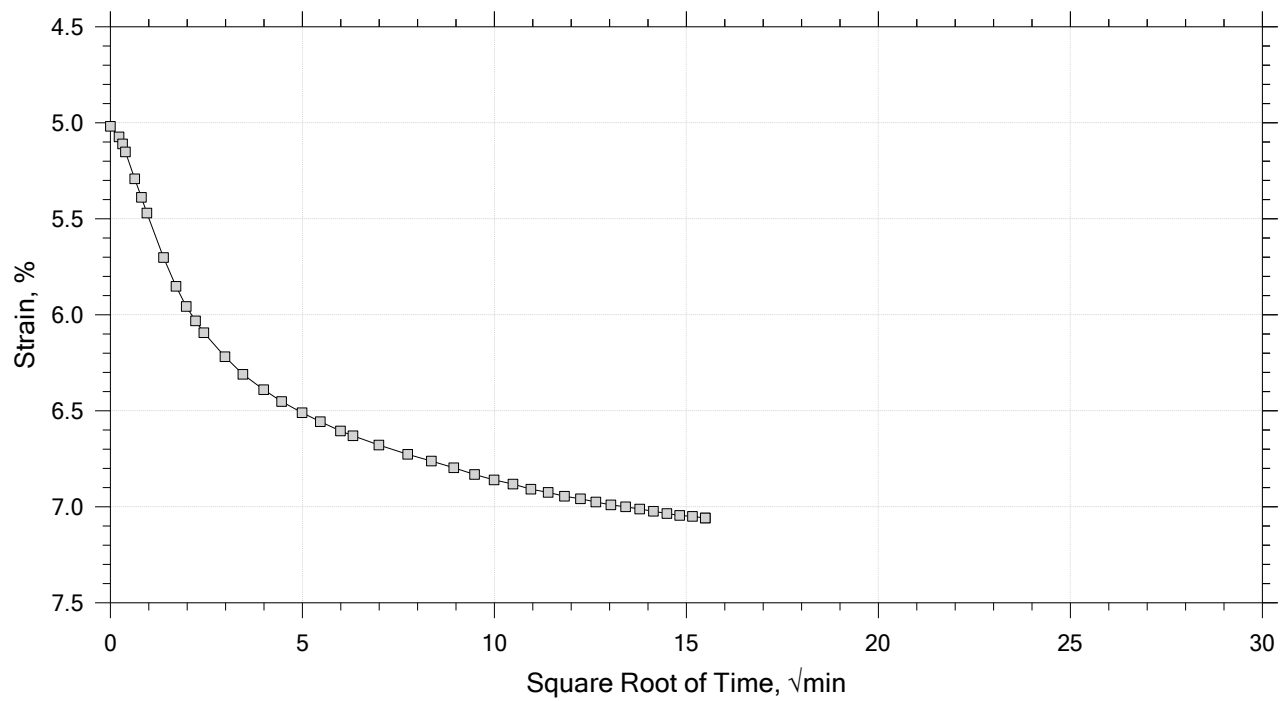
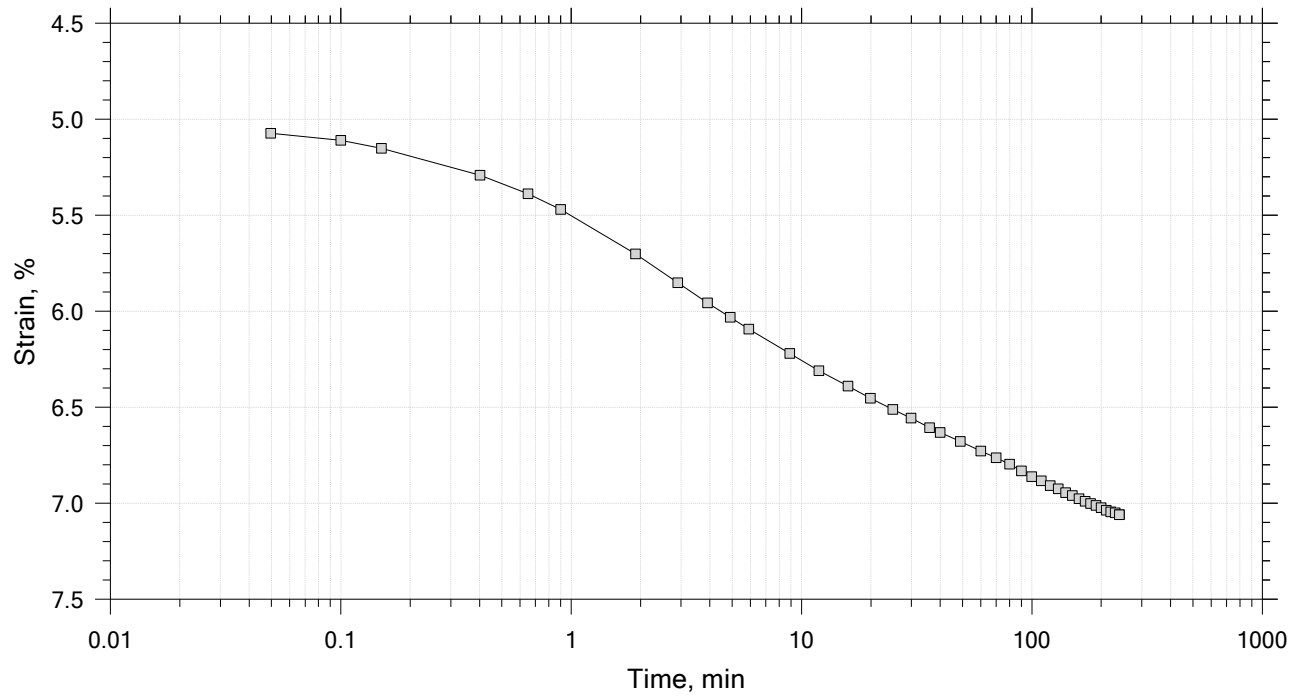
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 15

Constant Load Step

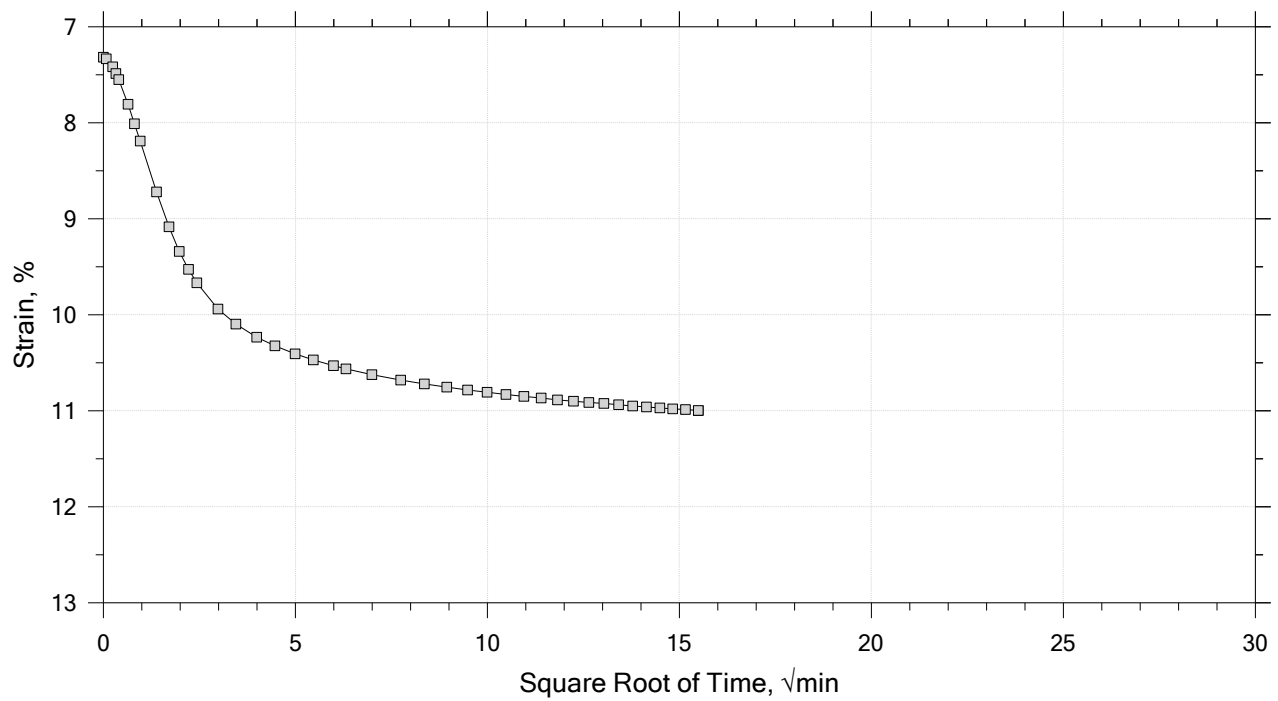
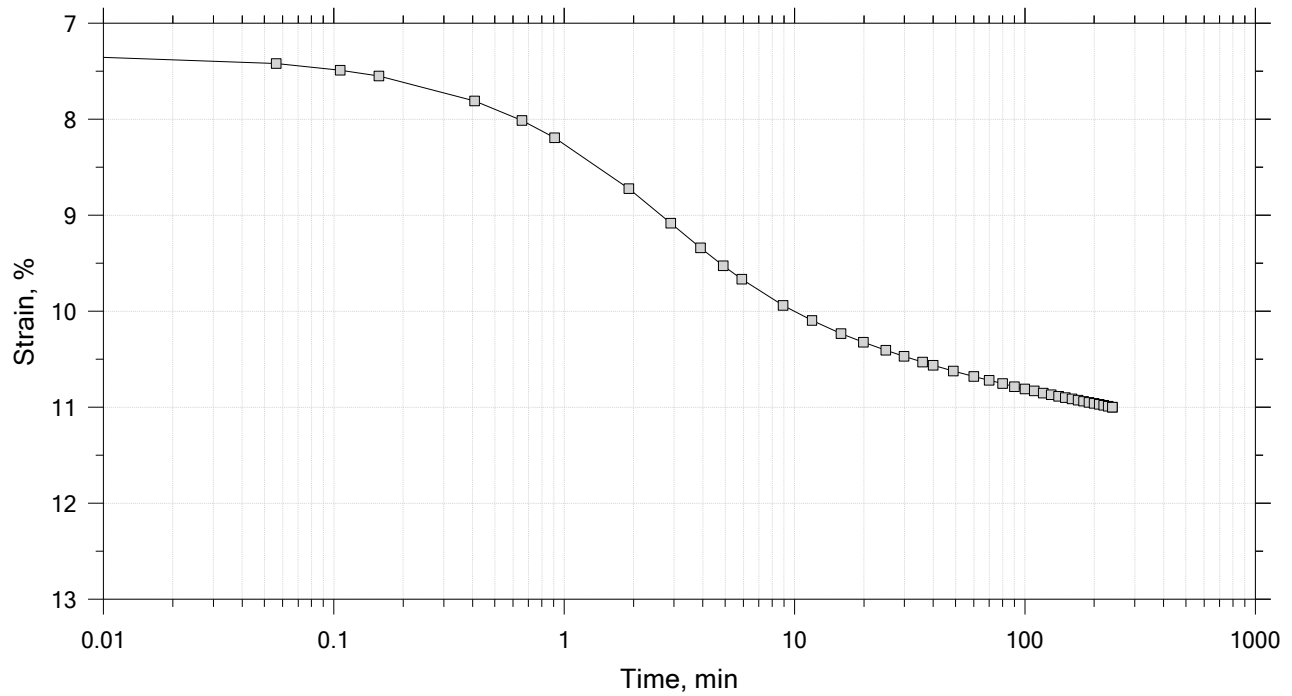
Stress: 4 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

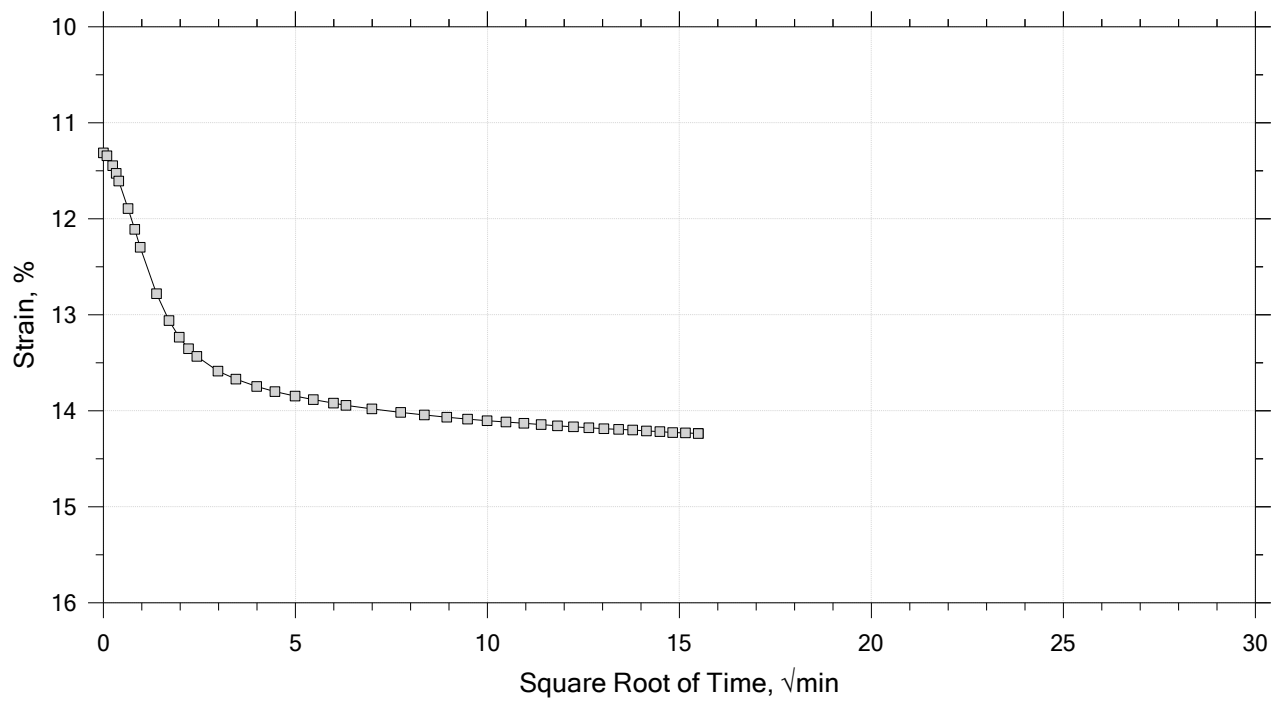
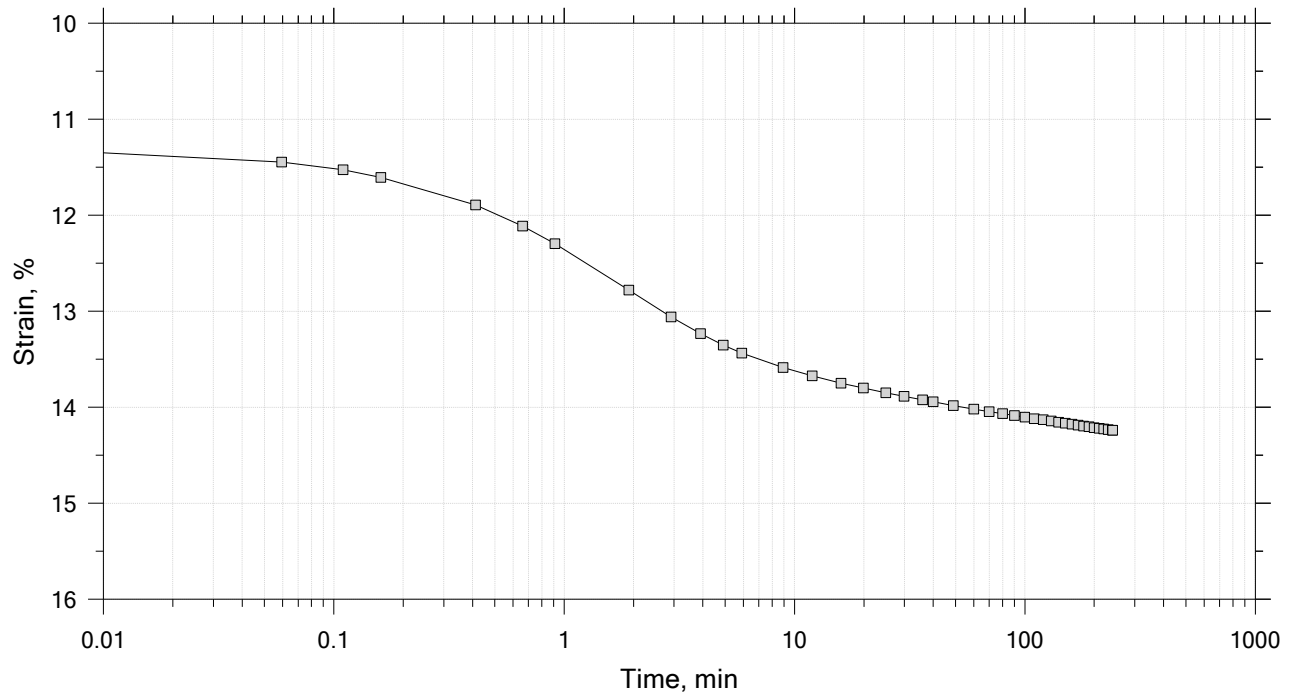
Time Curve 8 of 15  
Constant Load Step  
Stress: 8 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 15  
Constant Load Step  
Stress: 16 tsf



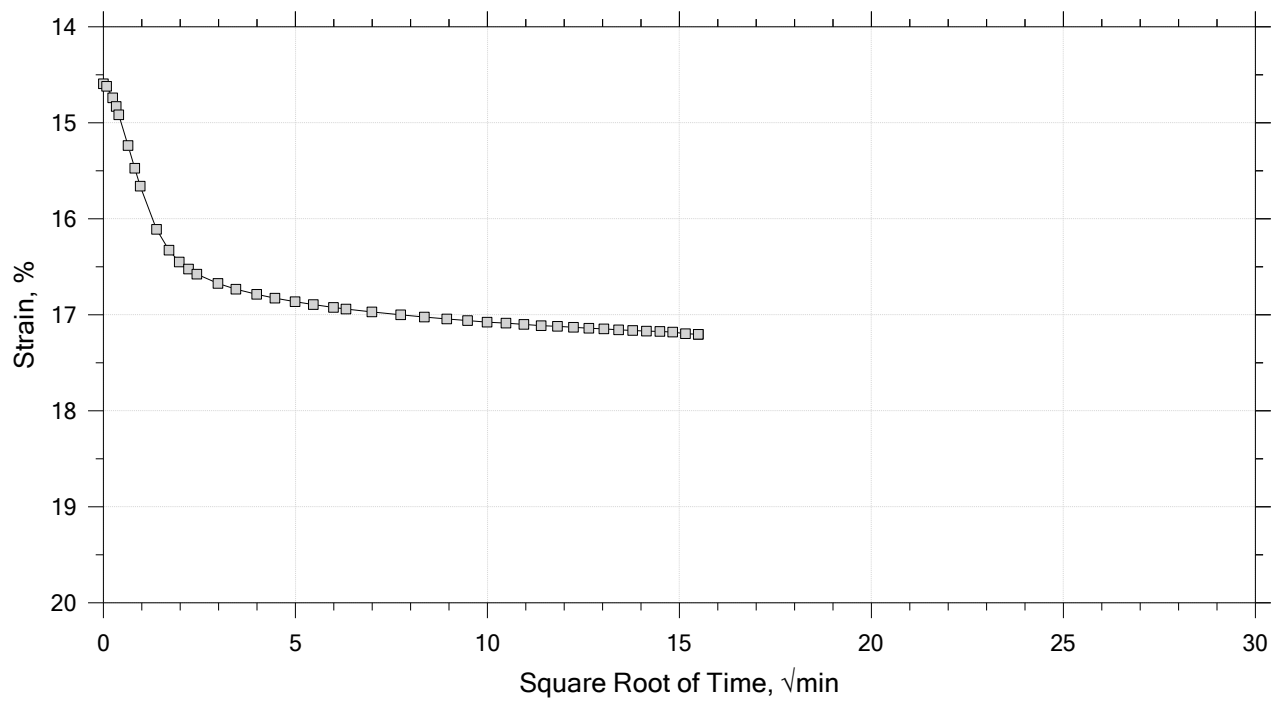
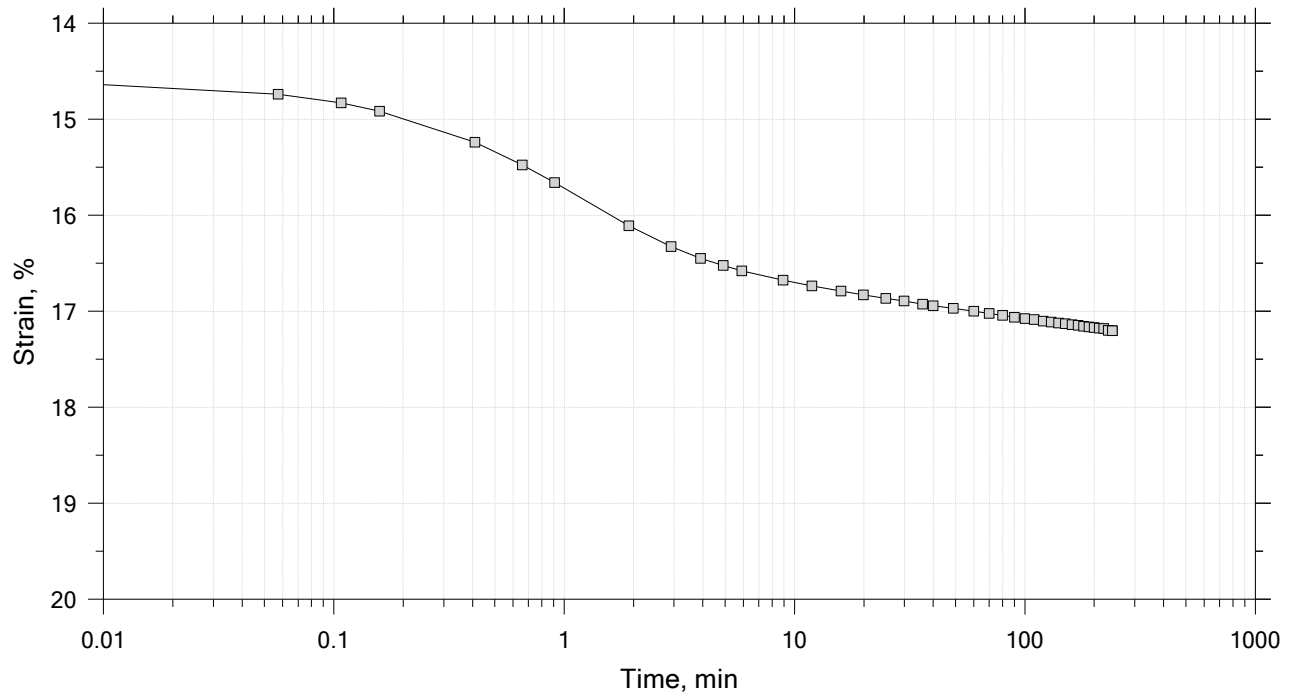
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 15

Constant Load Step

Stress: 32 tsf



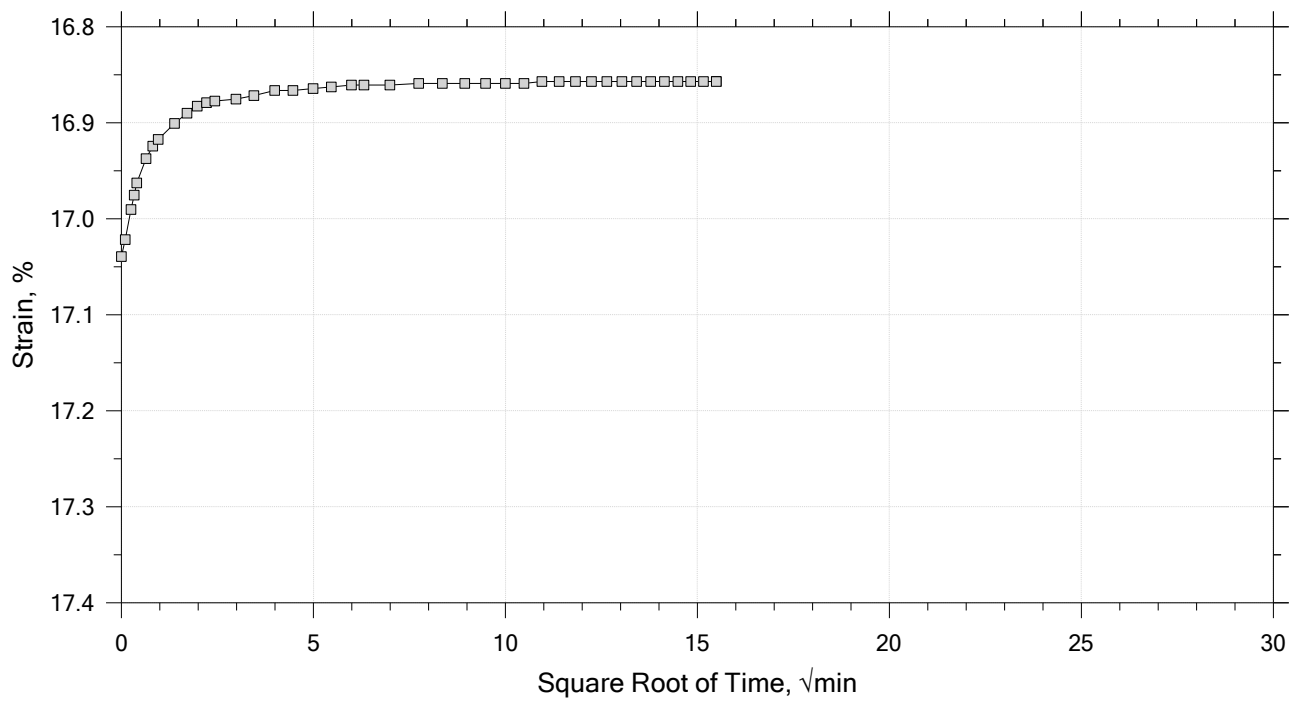
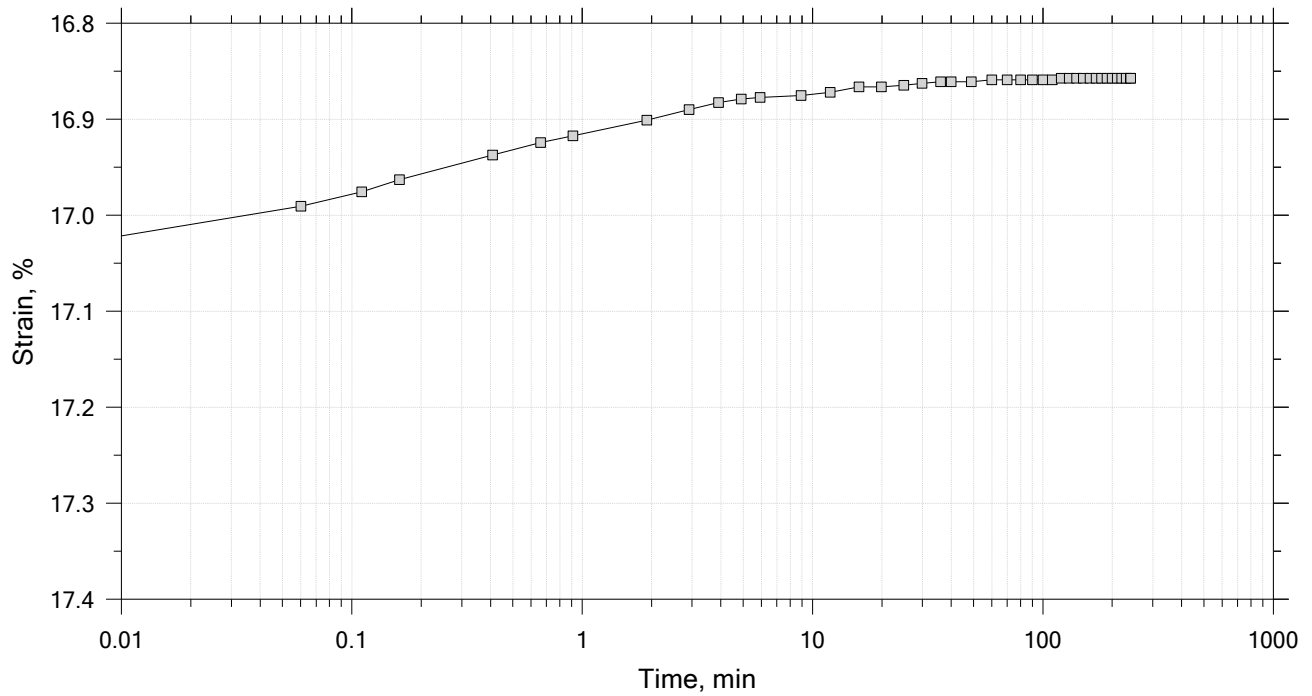
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 15

Constant Load Step

Stress: 8 tsf



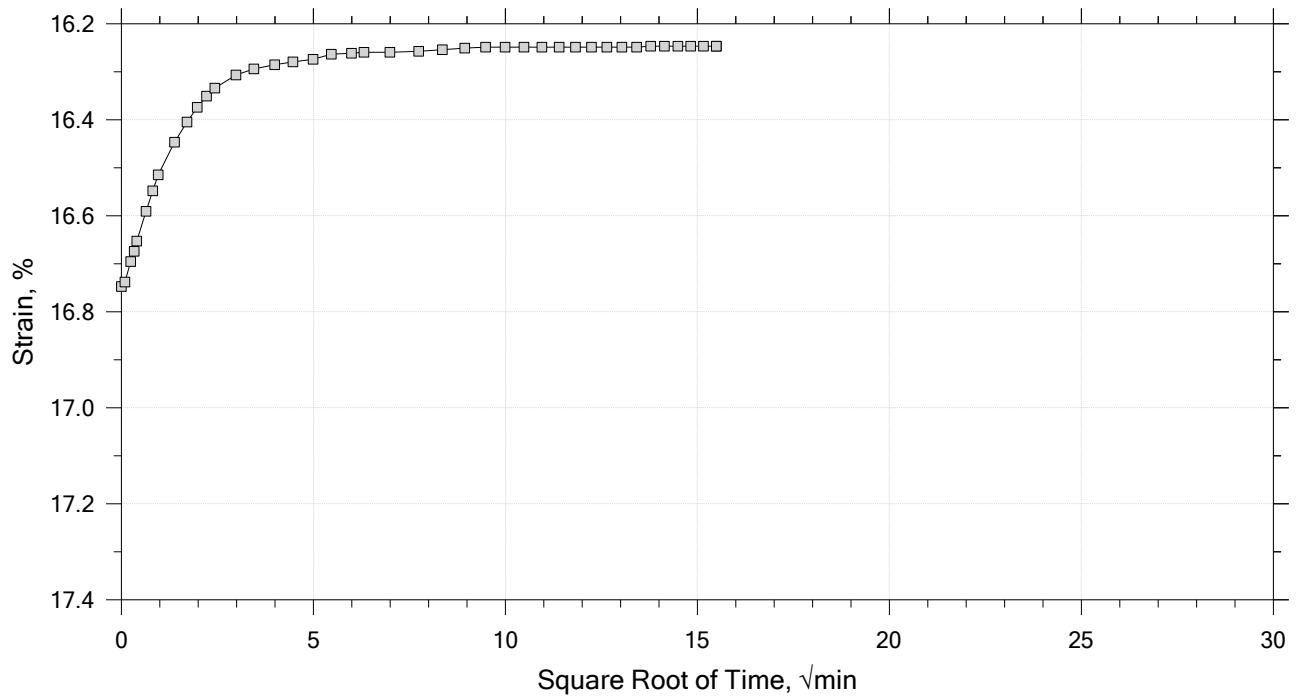
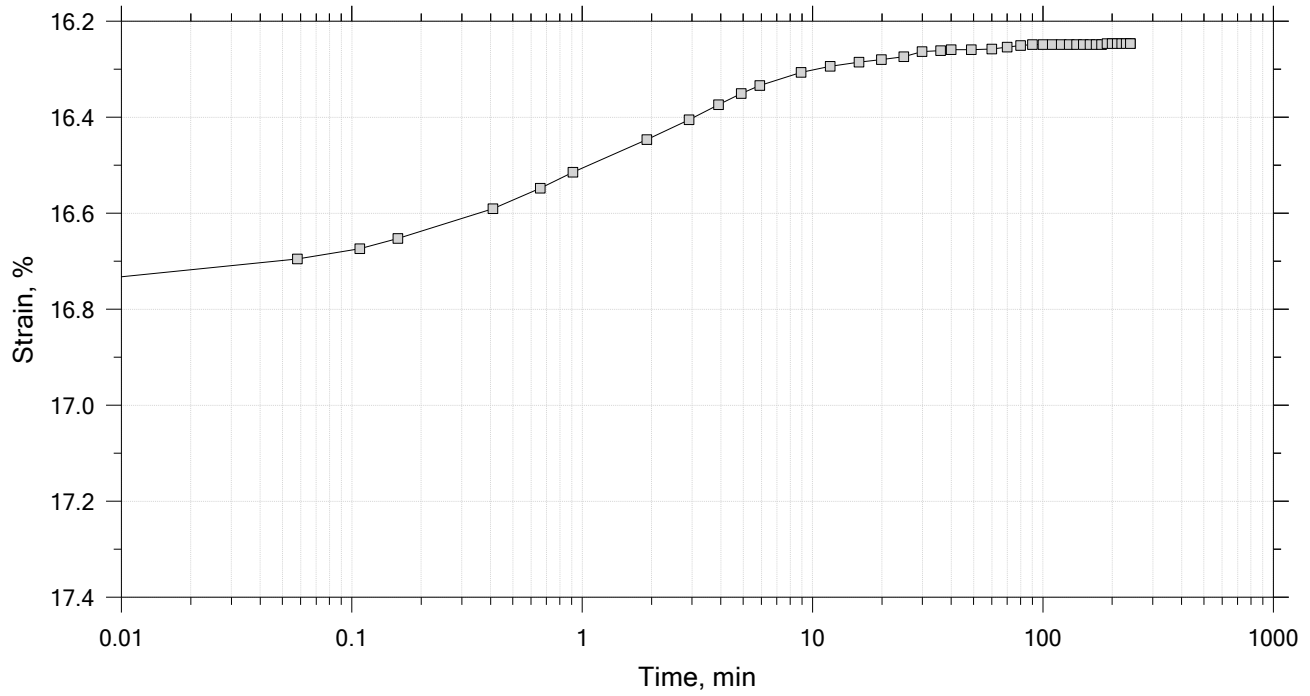
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 15

Constant Load Step

Stress: 2 tsf



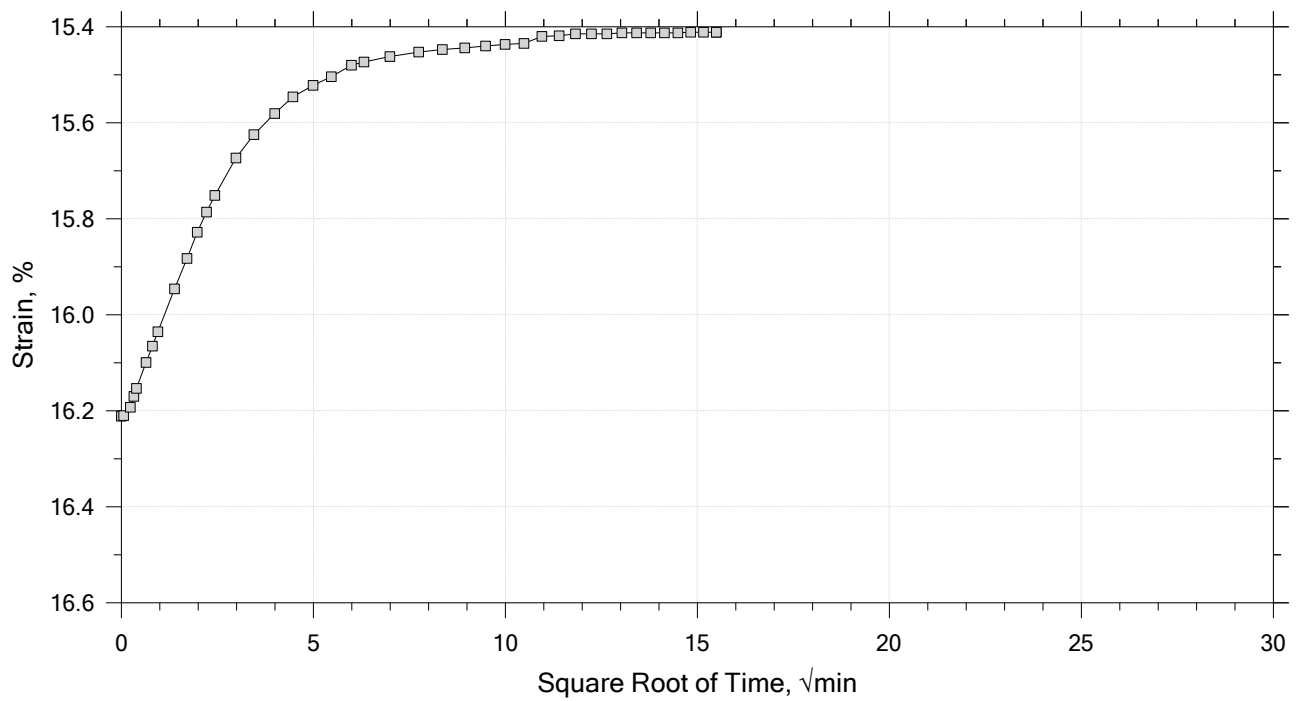
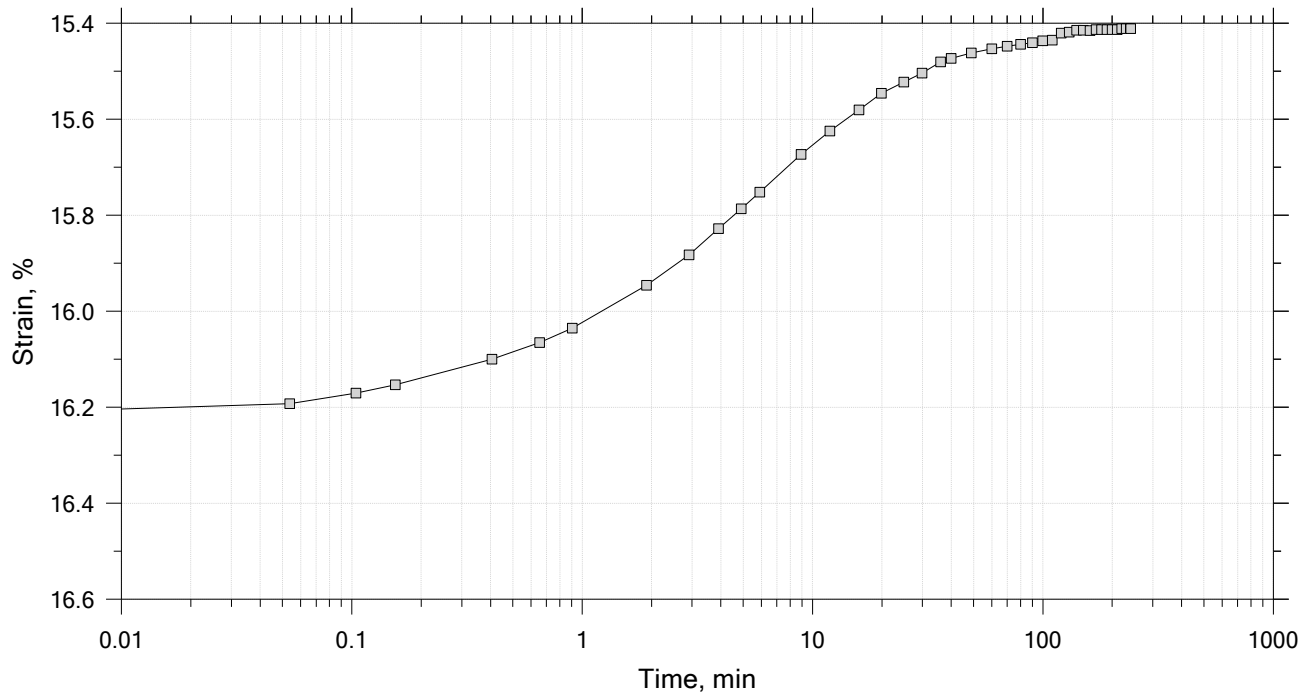
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 15

Constant Load Step

Stress: 0.5 tsf



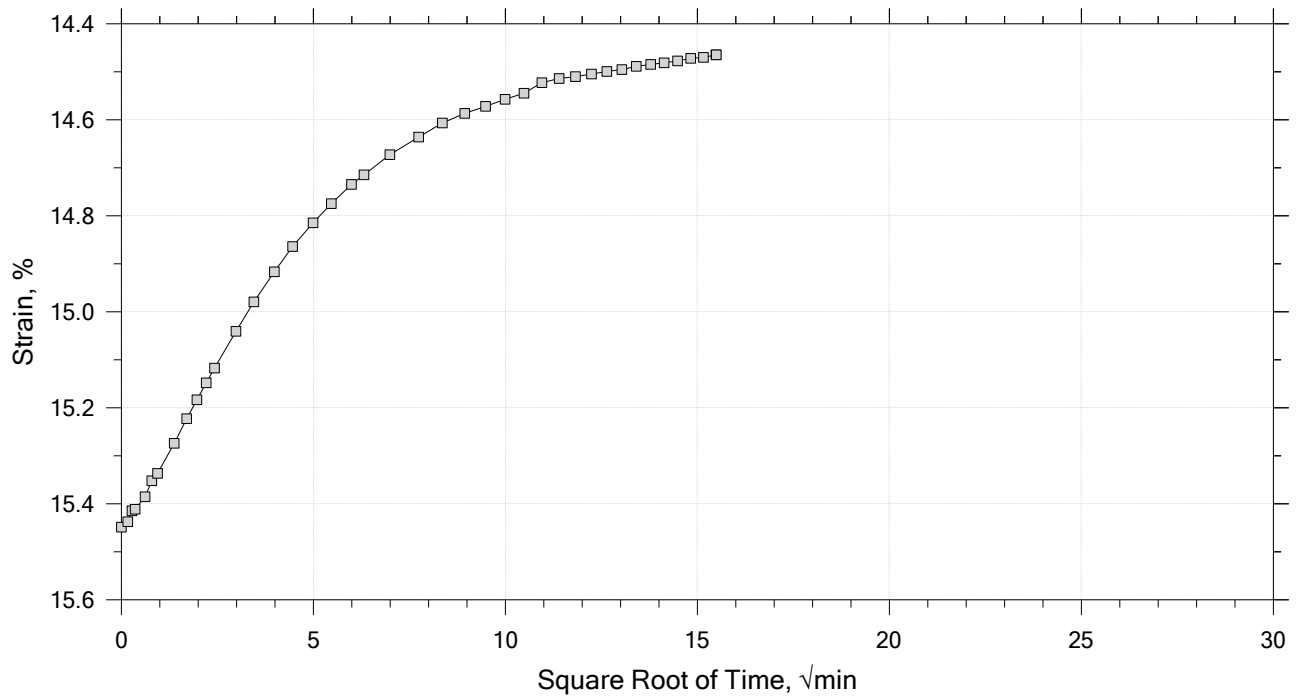
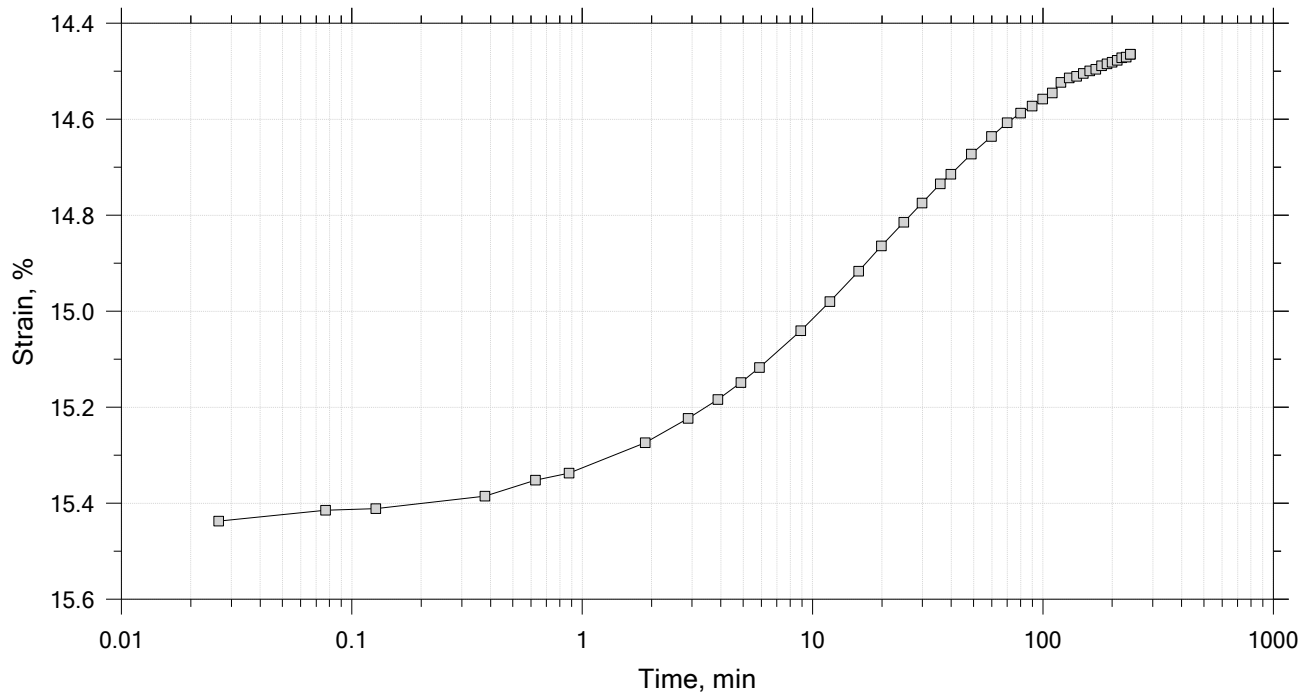
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 15

Constant Load Step

Stress: 0.125 tsf



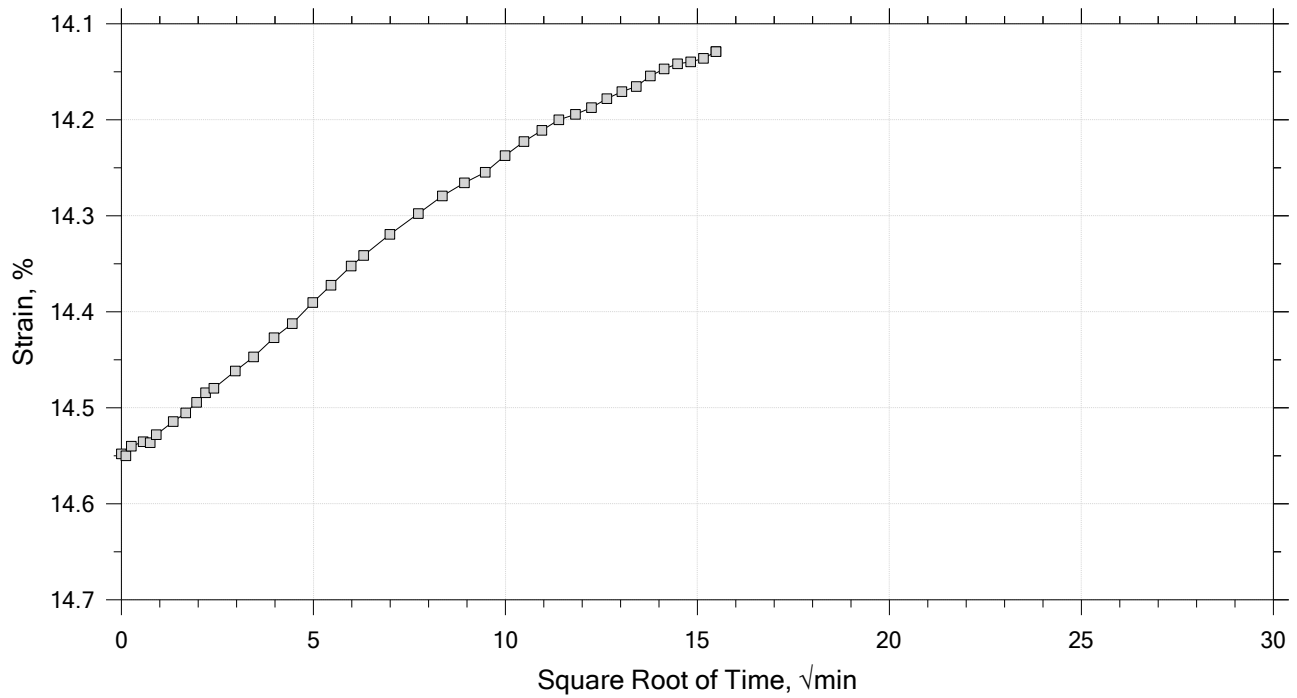
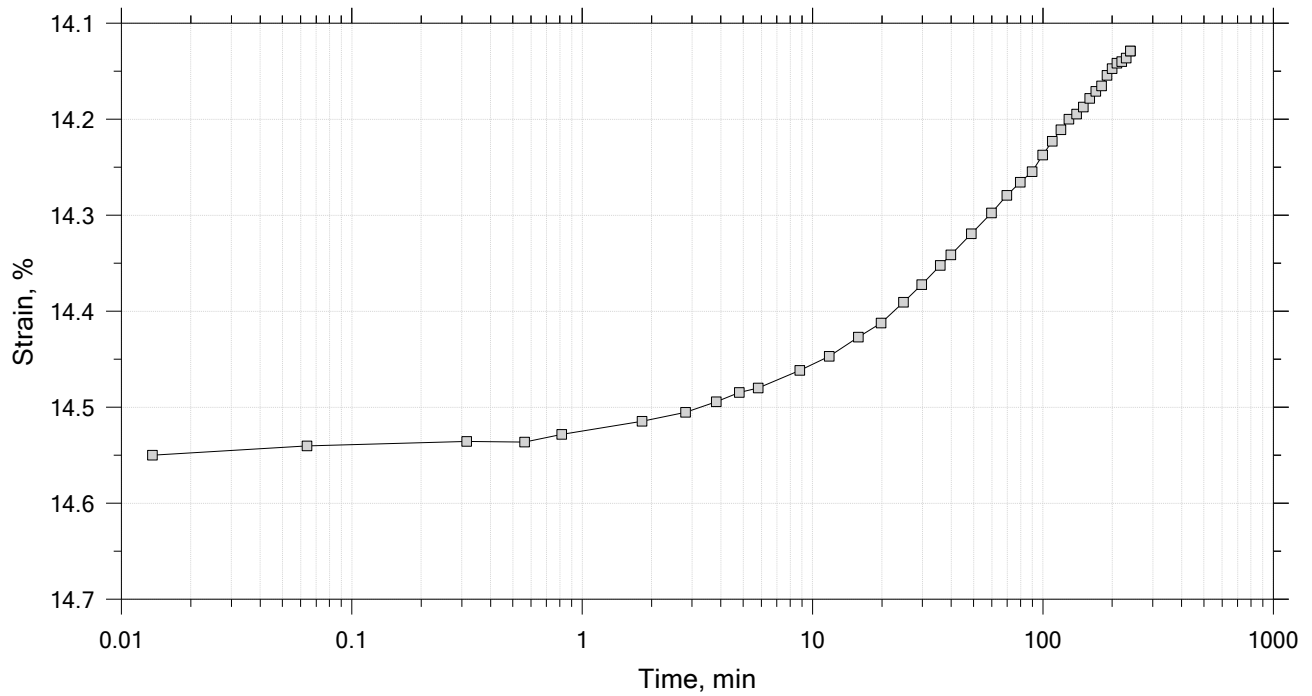
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 15

Constant Load Step

Stress: 0.0625 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.70	Liquid Limit: 20
Initial Height: 1.00 in	Initial Void Ratio: 0.693	Plastic Limit: 14
Final Height: 0.86 in	Final Void Ratio: 0.456	Plasticity Index: 6

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E14288	RING		E13712
Mass Container, gm	8.31	110.22	110.22	8.23
Mass Container + Wet Soil, gm	131.77	271.48	260.3	154
Mass Container + Dry Soil, gm	107.33	238.63	238.63	132.95
Mass Dry Soil, gm	99.02	128.41	128.41	124.72
Water Content, %	24.68	25.58	16.88	16.88
Void Ratio	---	0.69	0.46	---
Degree of Saturation, %	---	99.75	100.00	---
Dry Unit Weight, pcf	---	99.655	115.88	---


Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		

## One-Dimensional Consolidation by ASTM D2435 - Method B

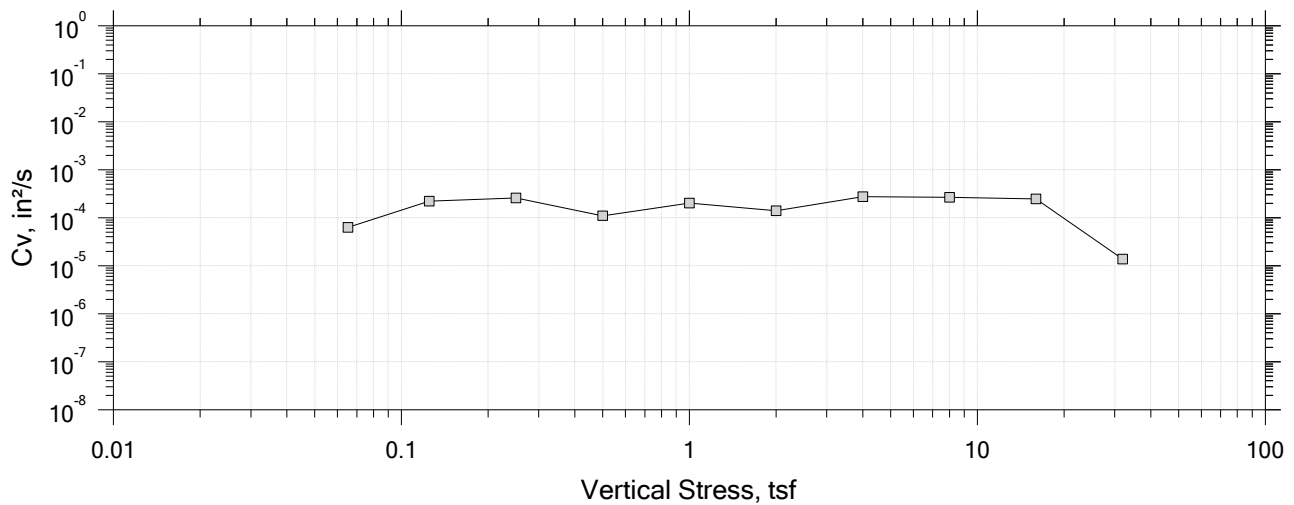
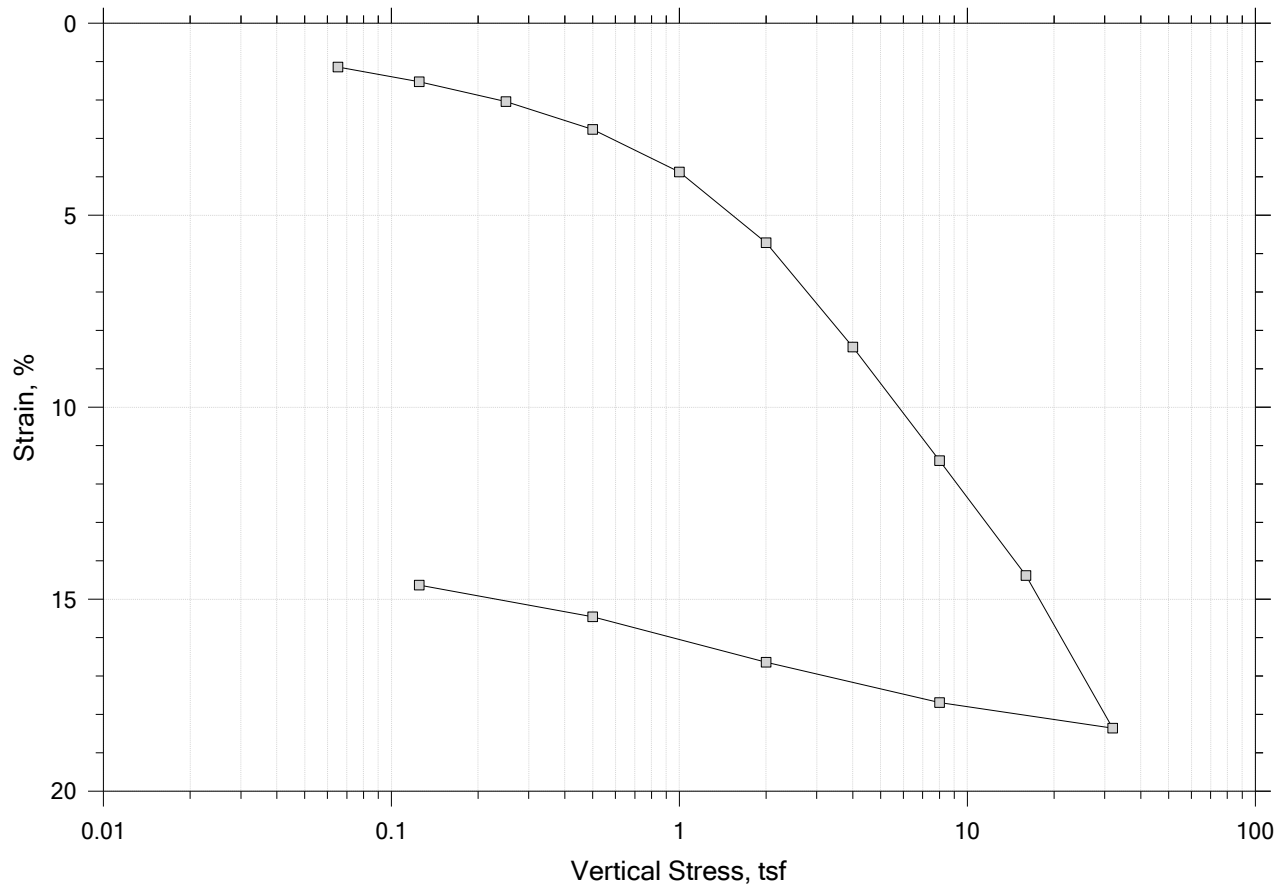
### Square Root of Time Coefficients


[illegible]

 A Serco Business	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-101	Tested By: sjt	Checked By: ab
	Sample No.: 2U	Test Date: 12/15/25	Depth: 53-55'
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: System LTIII-A, Swell Pressure = 0.0624 tsf		
	Displacement at End of Increment		

# One-Dimensional Consolidation by ASTM D2435 - Method B

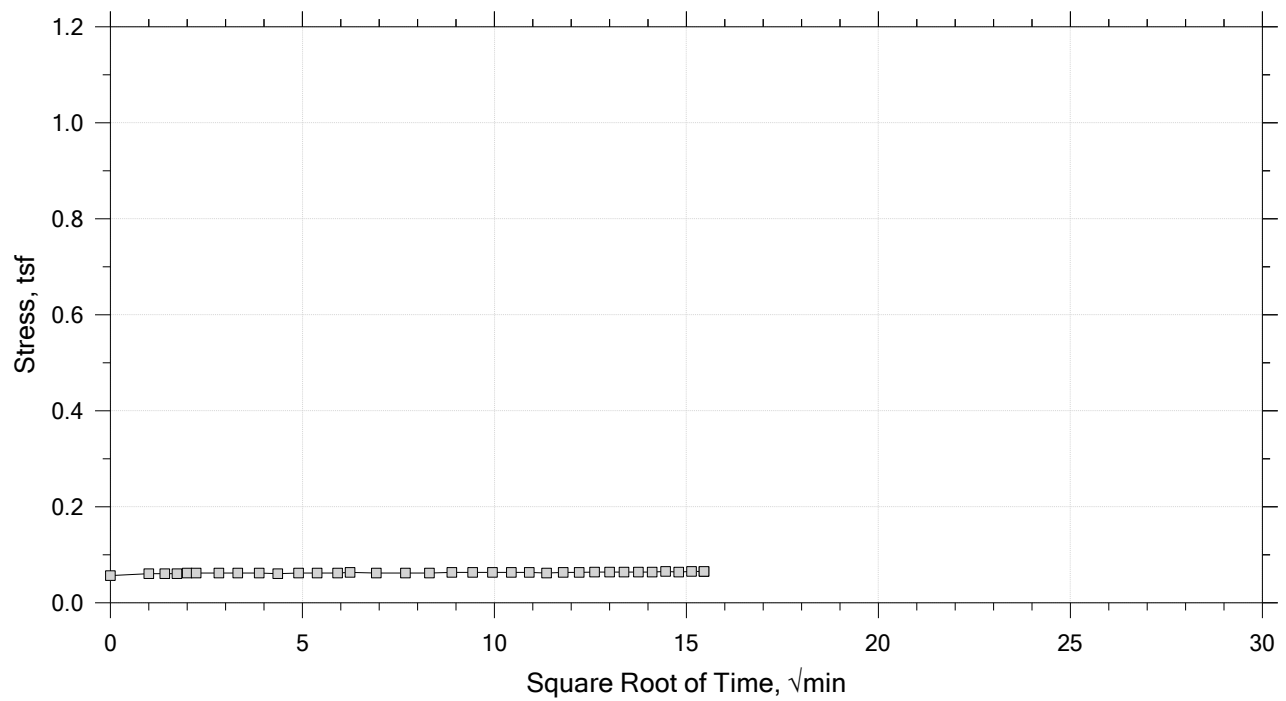
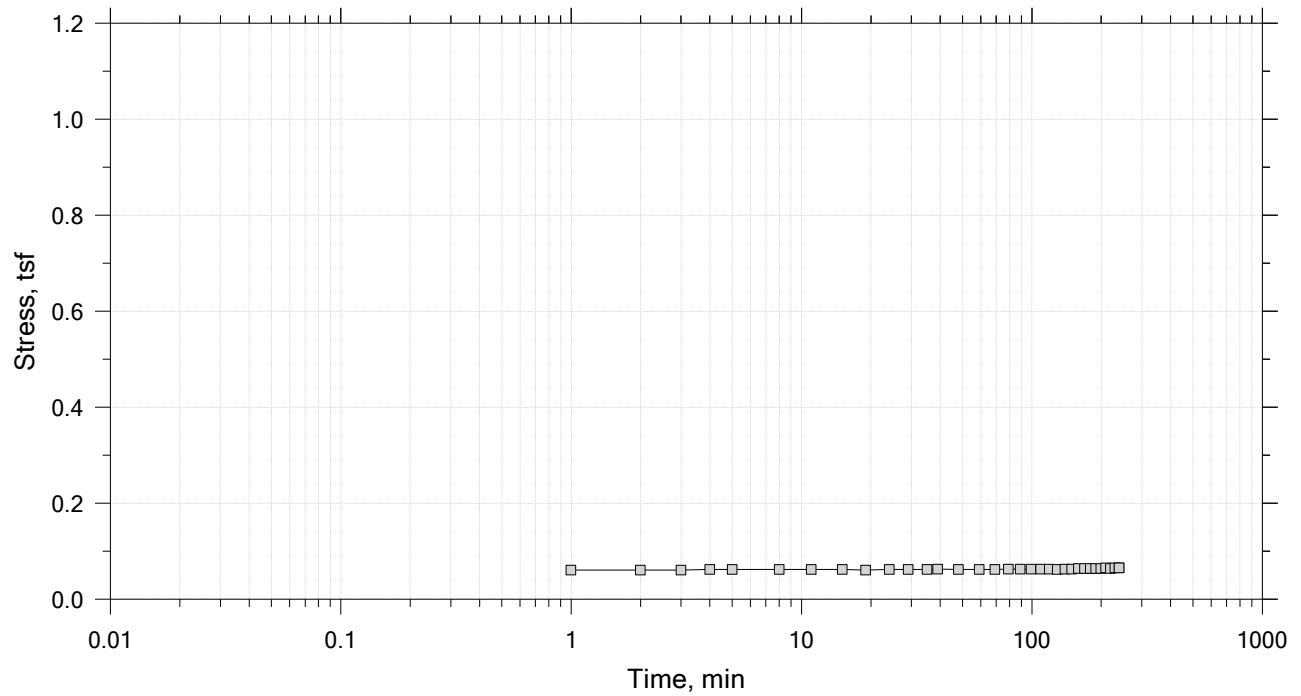
## Summary Report




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		
	Displacement at End of Increment		

# One-Dimensional Consolidation by ASTM D2435 - Method B

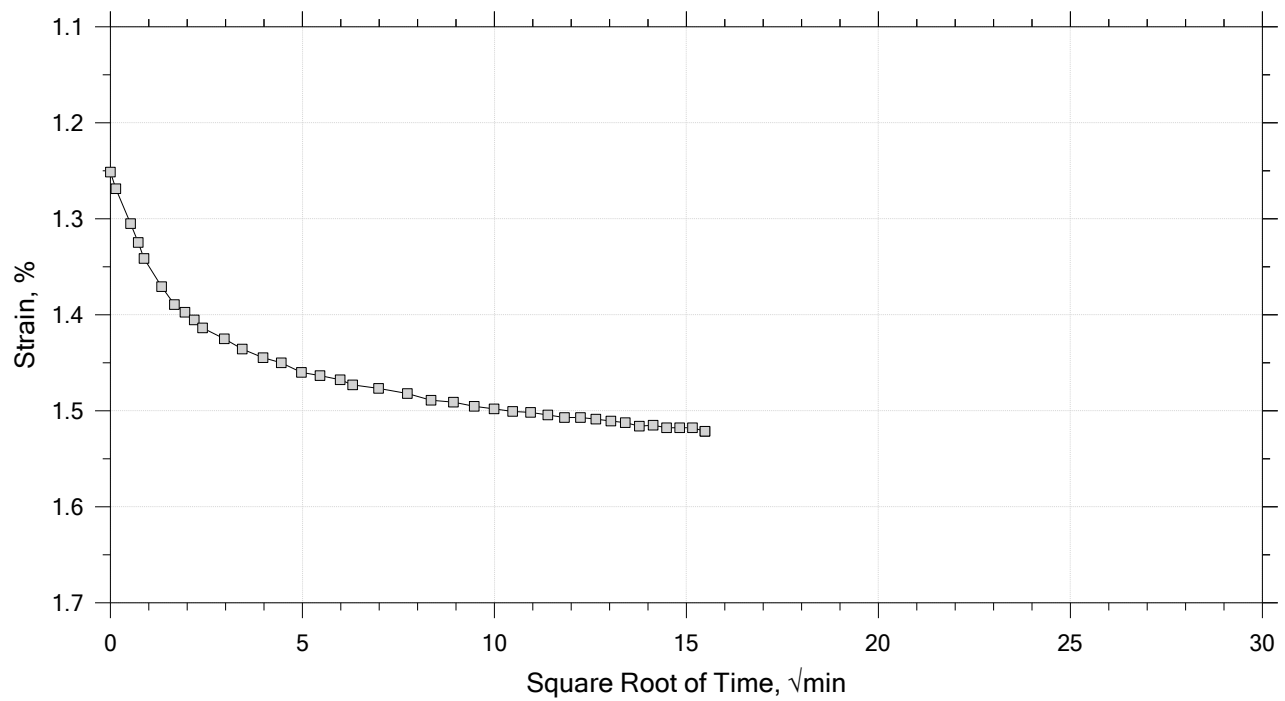
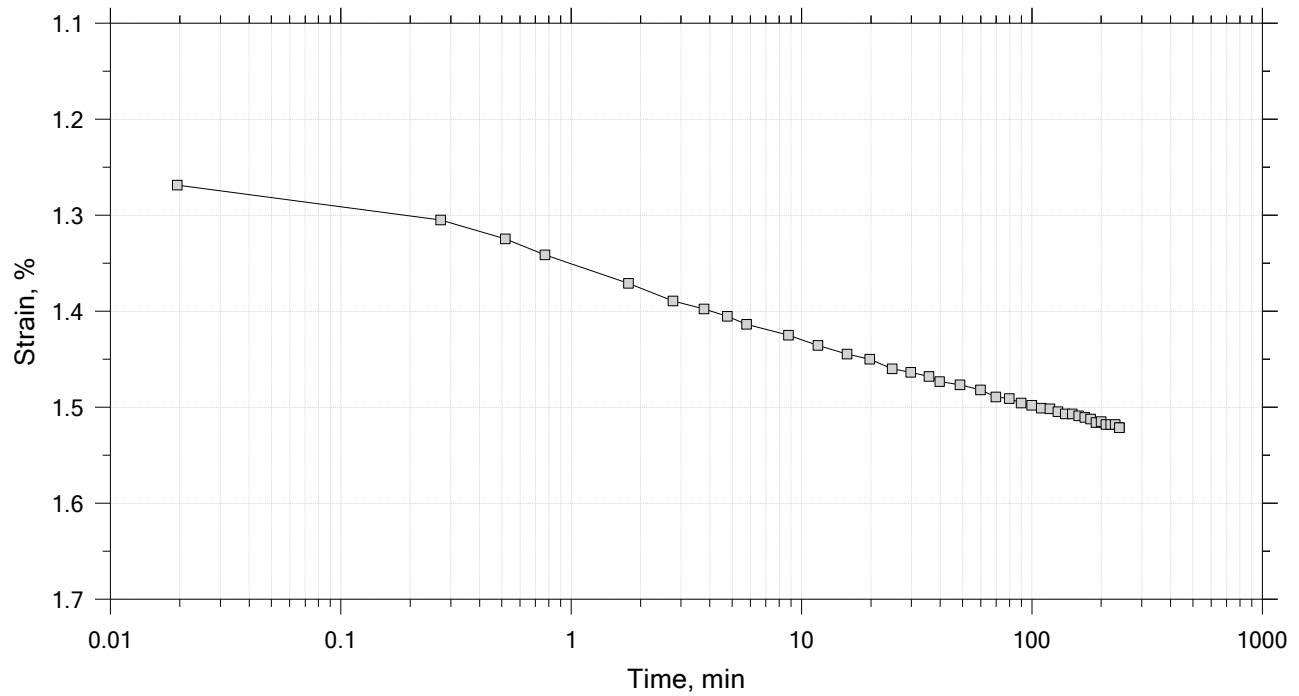
Time Curve 1 of 14  
Constant Volume Step  
Stress: 0.0652 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 14  
Constant Load Step  
Stress: 0.125 tsf



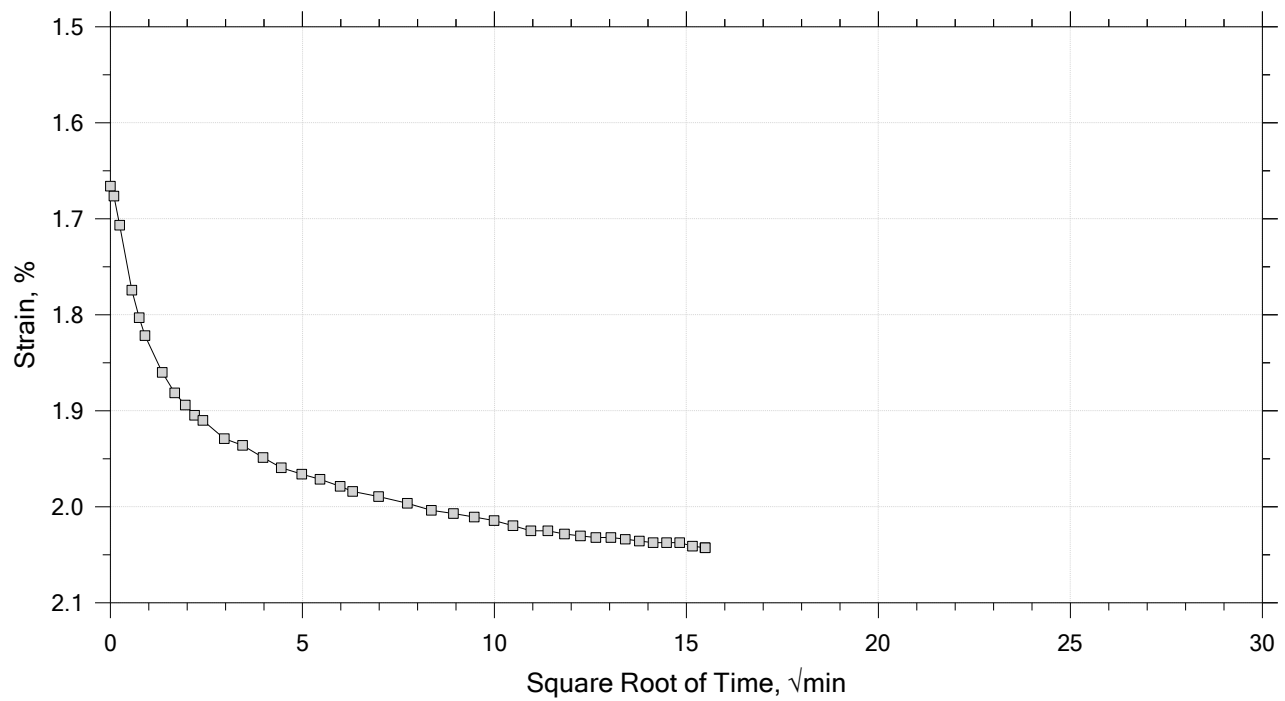
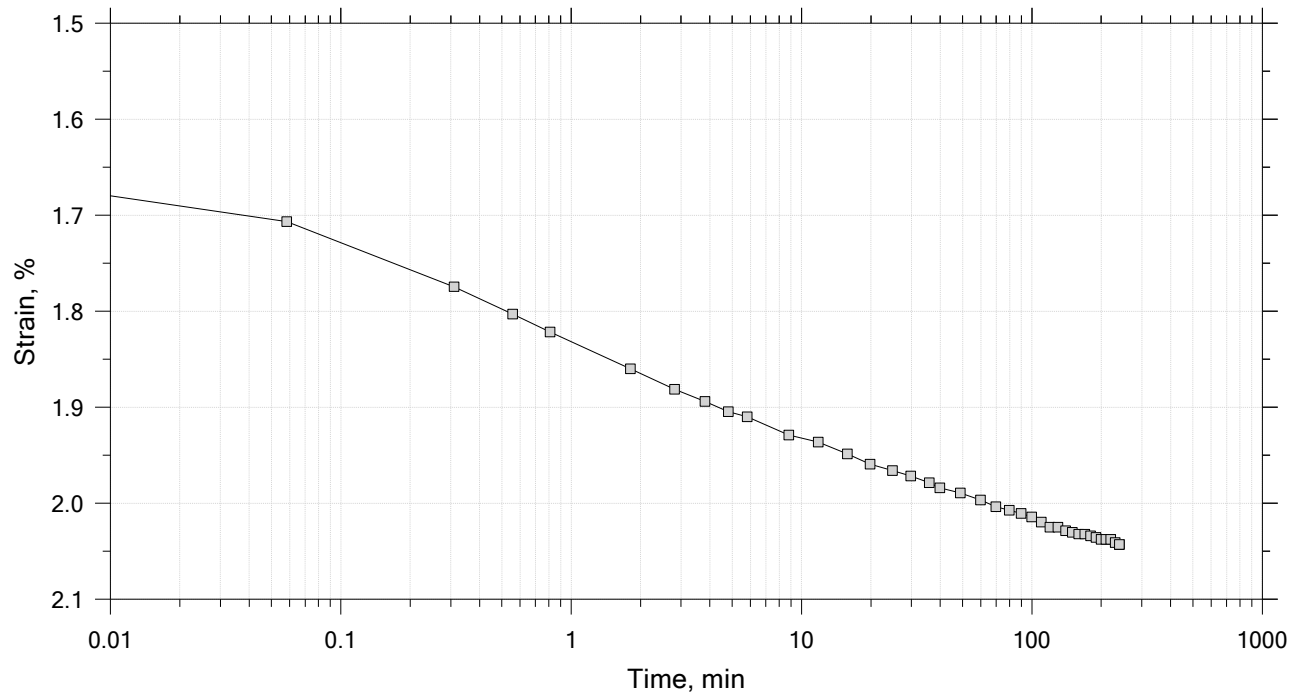
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 14

Constant Load Step

Stress: 0.25 tsf



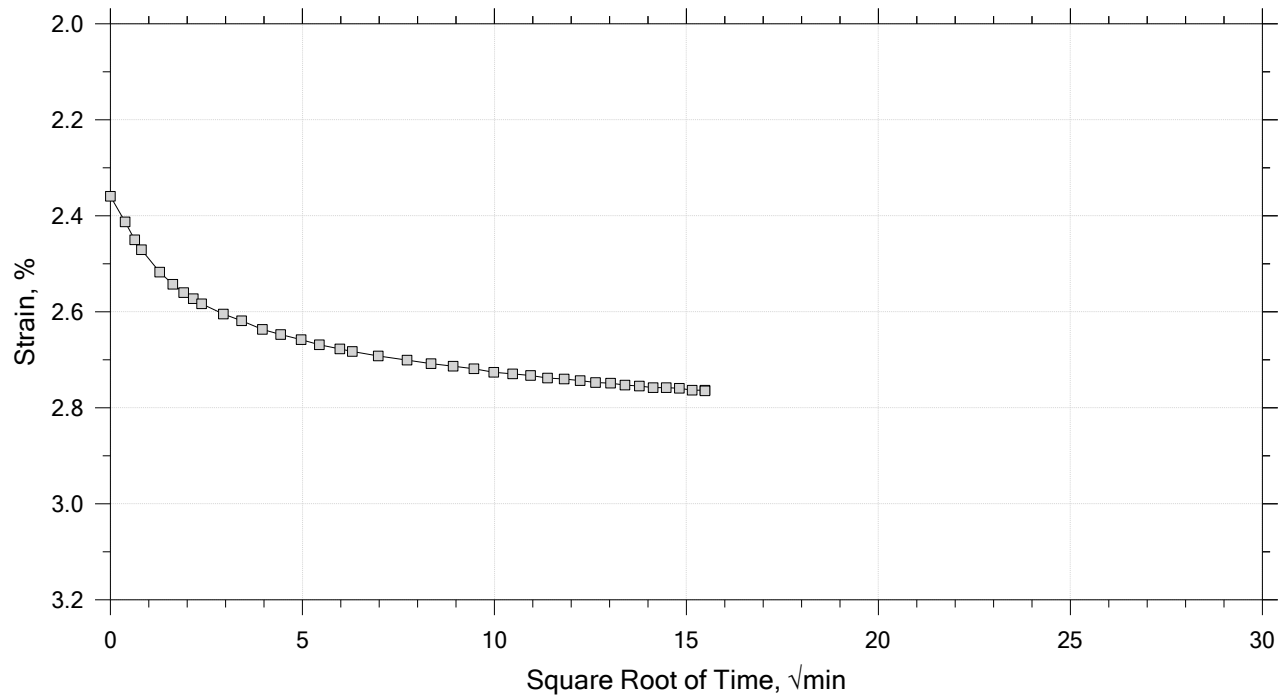
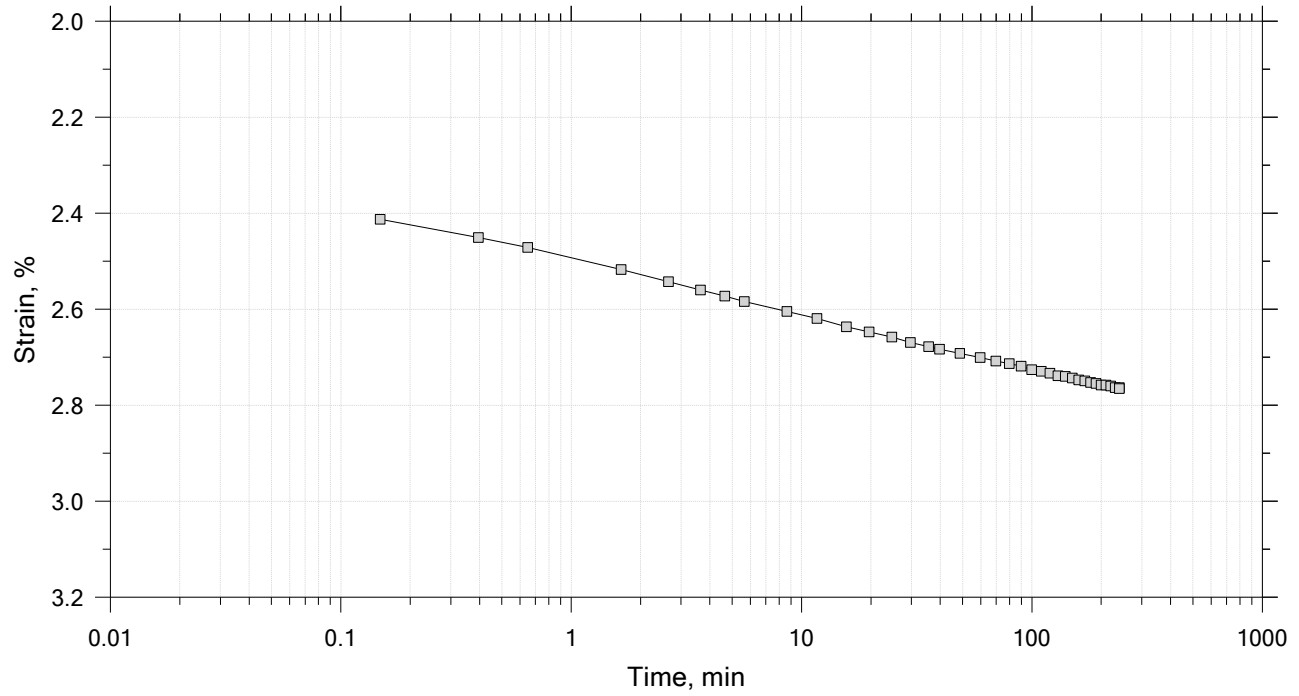
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 14

Constant Load Step

Stress: 0.5 tsf



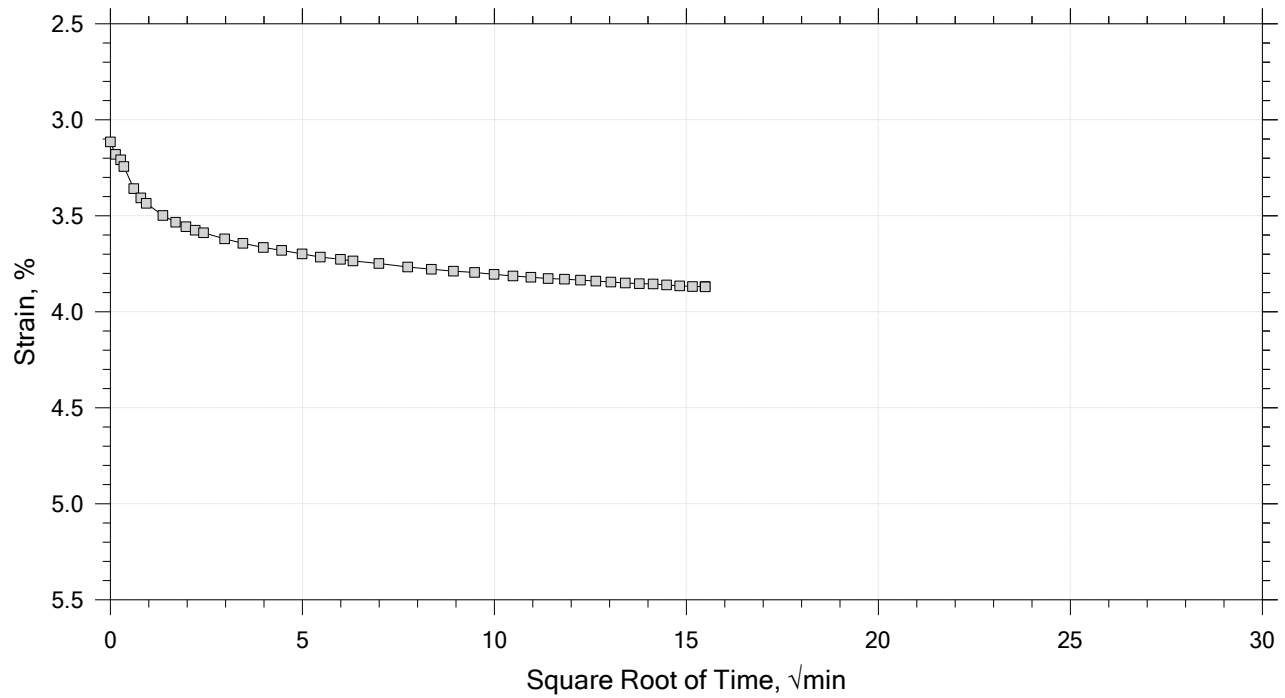
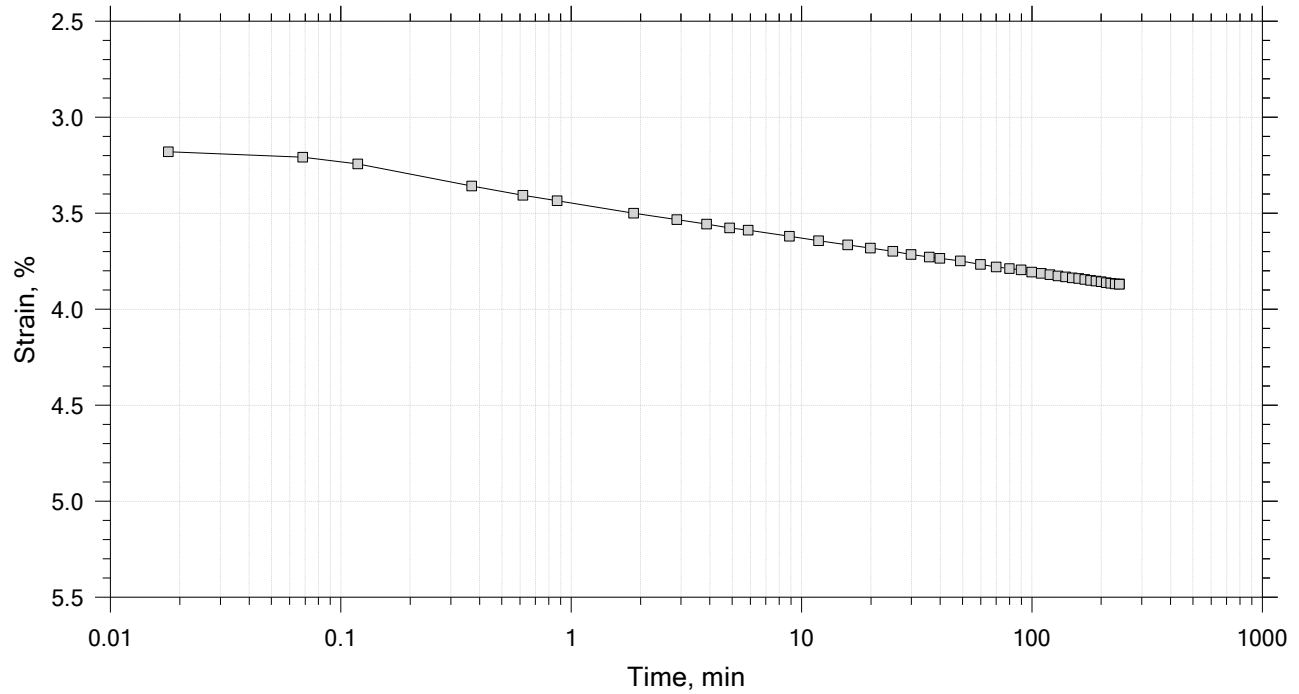
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 14

Constant Load Step

Stress: 1 tsf



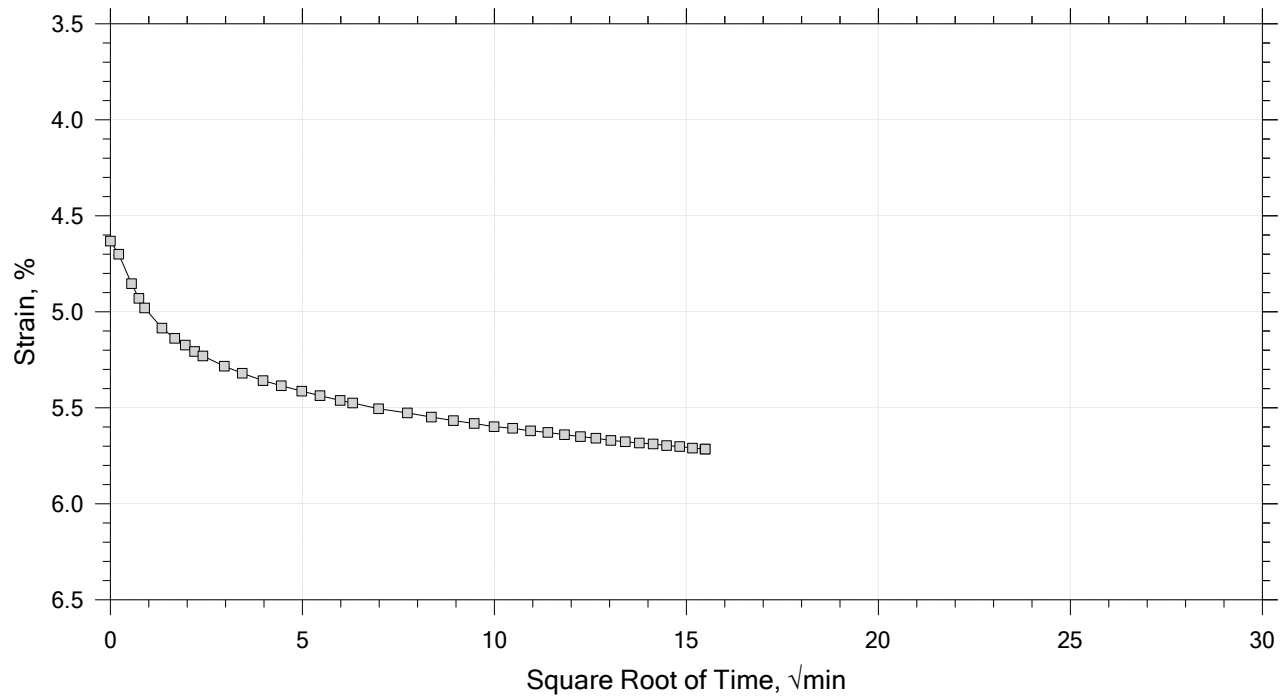
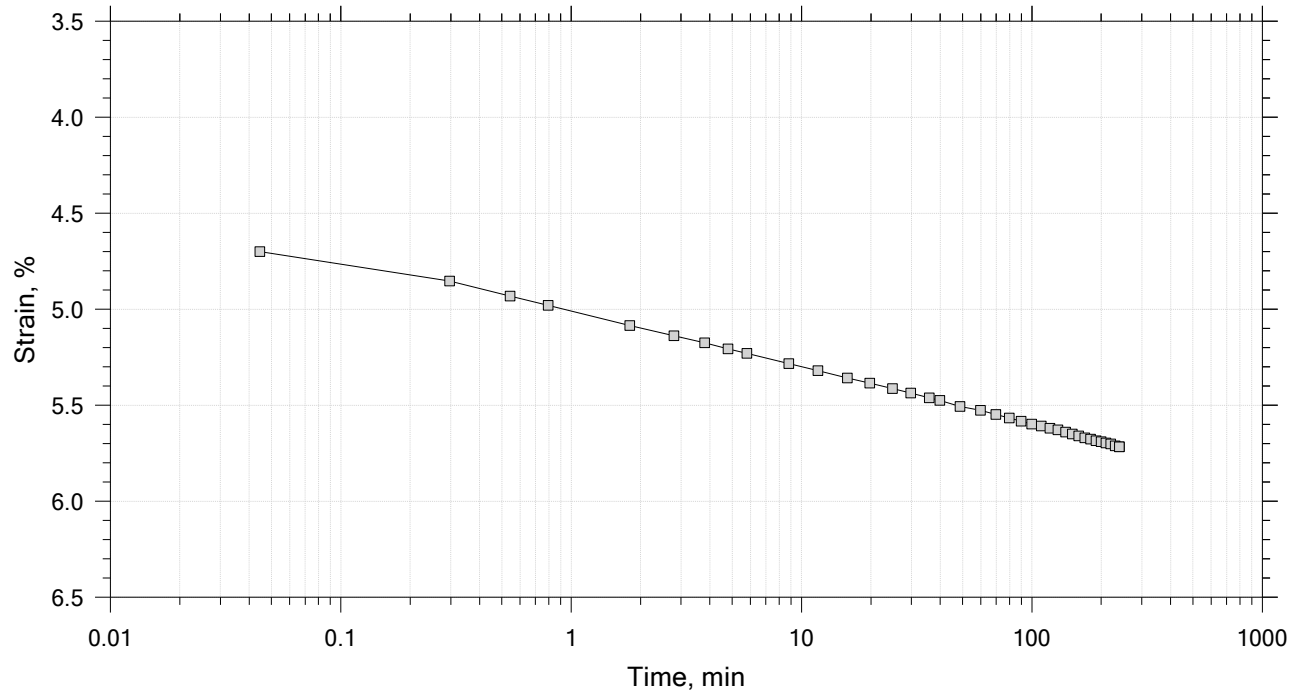
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 14

Constant Load Step

Stress: 2 tsf



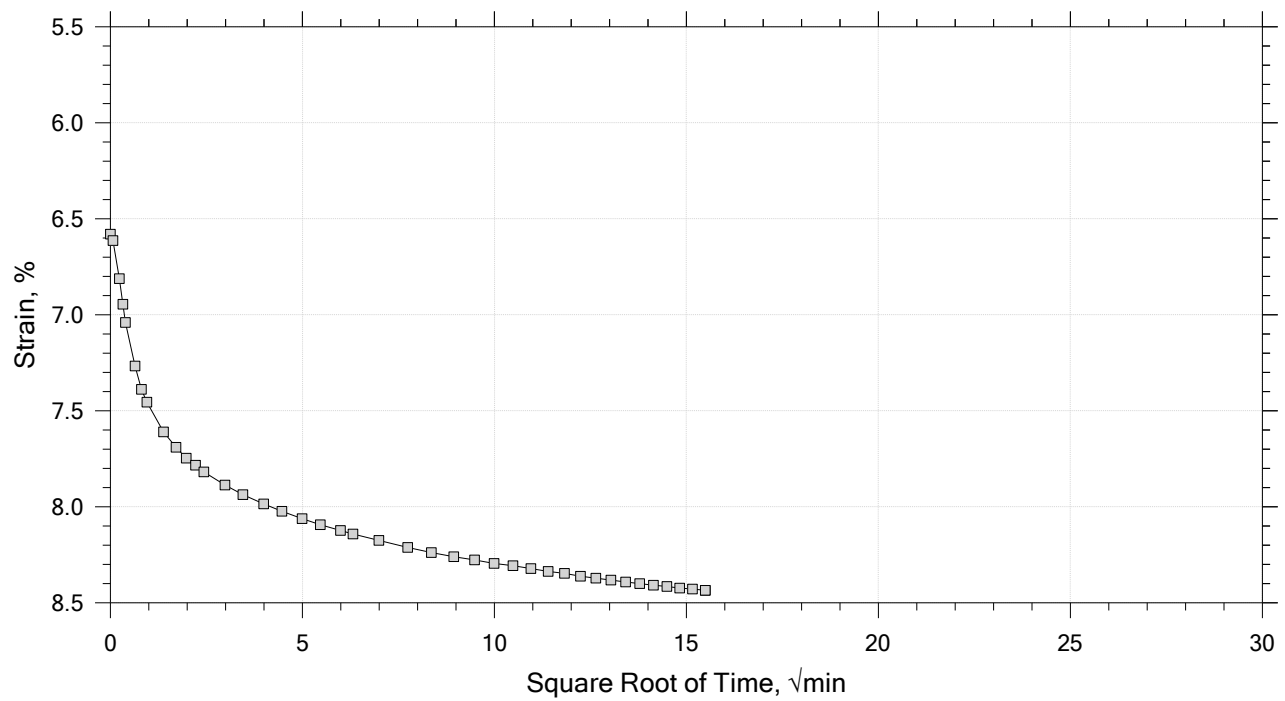
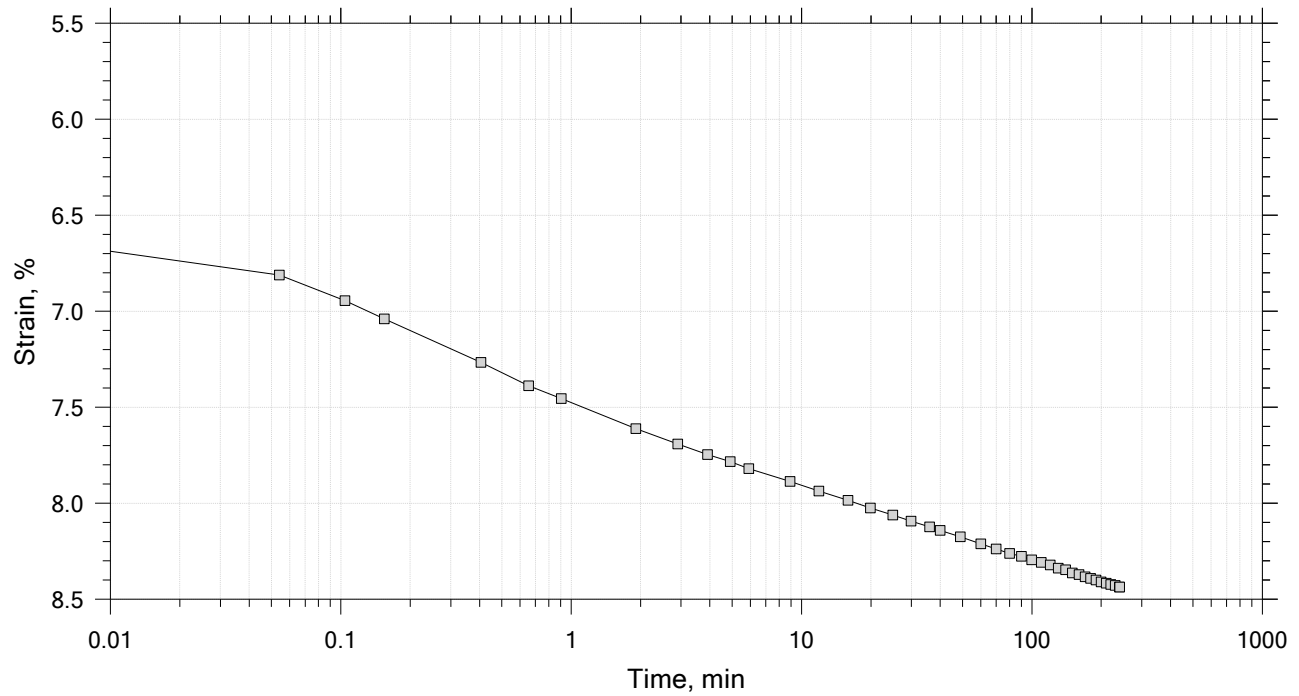
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 14

Constant Load Step

Stress: 4 tsf



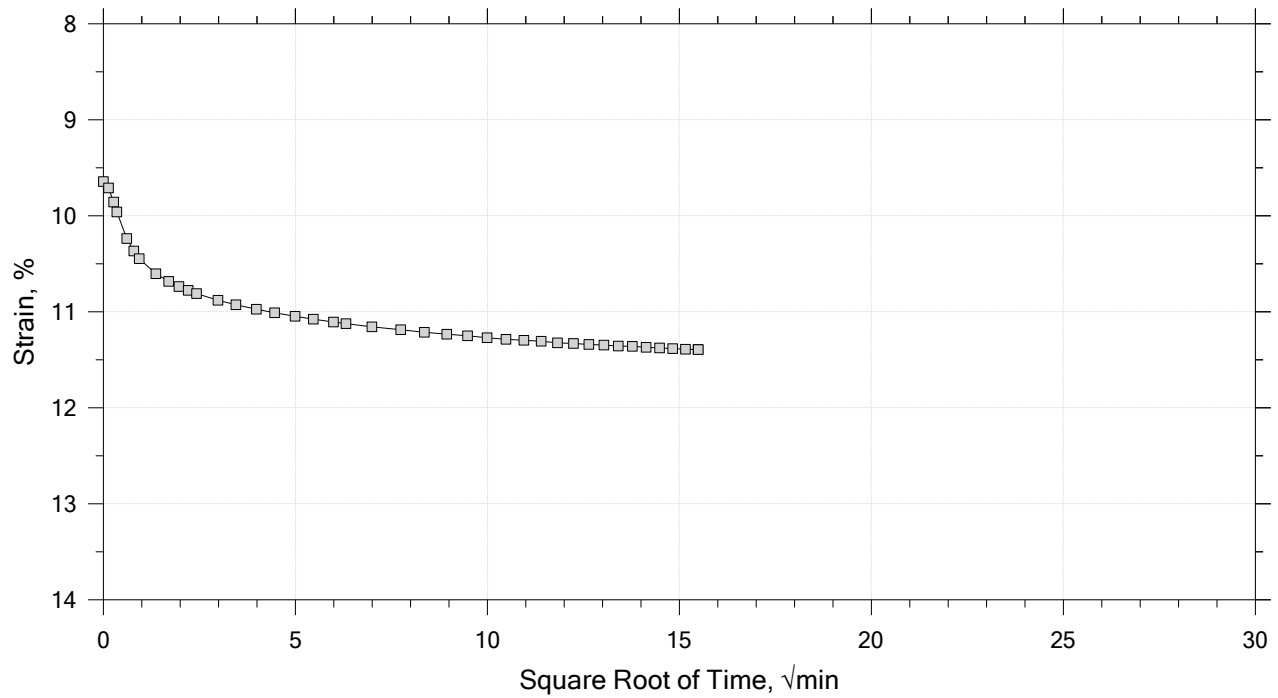
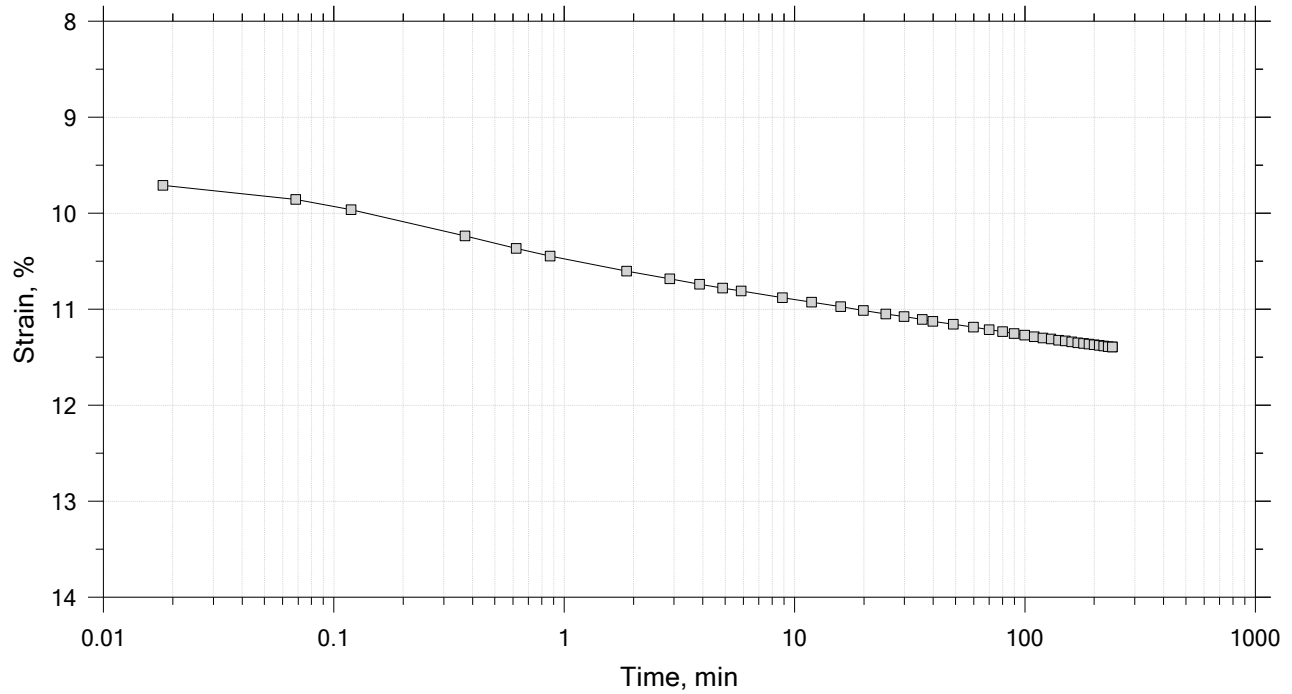
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 14

Constant Load Step

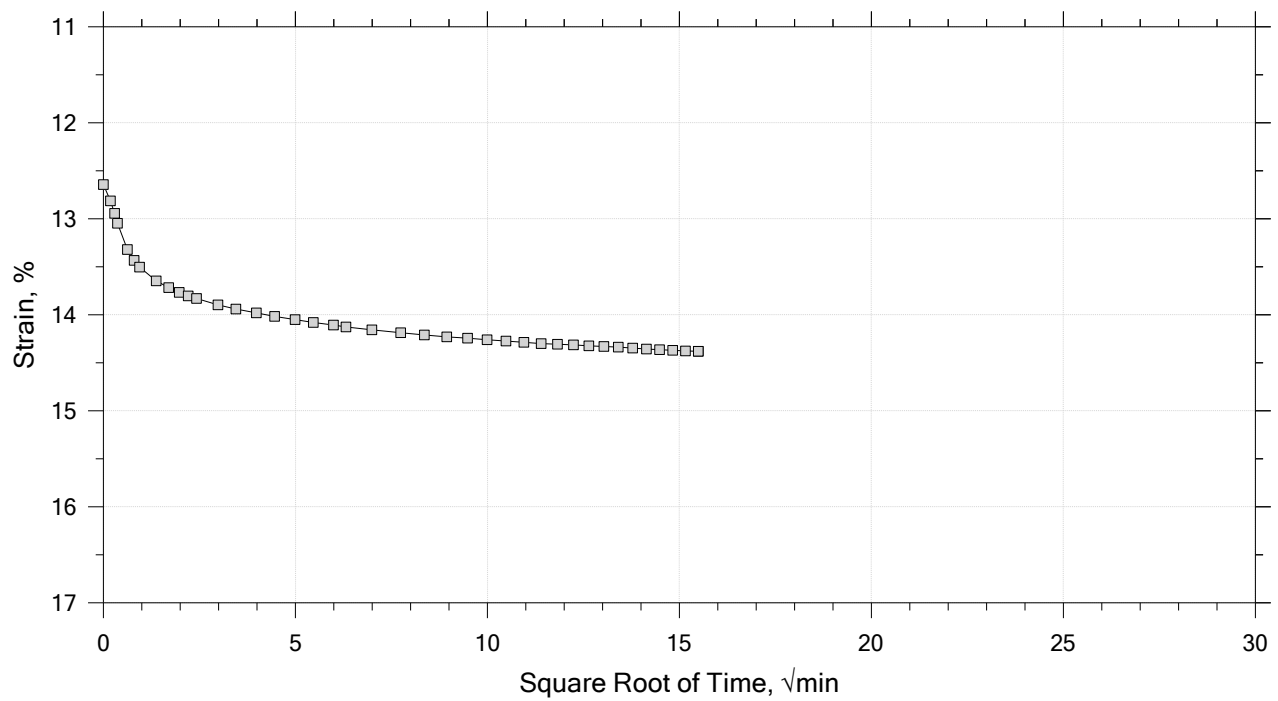
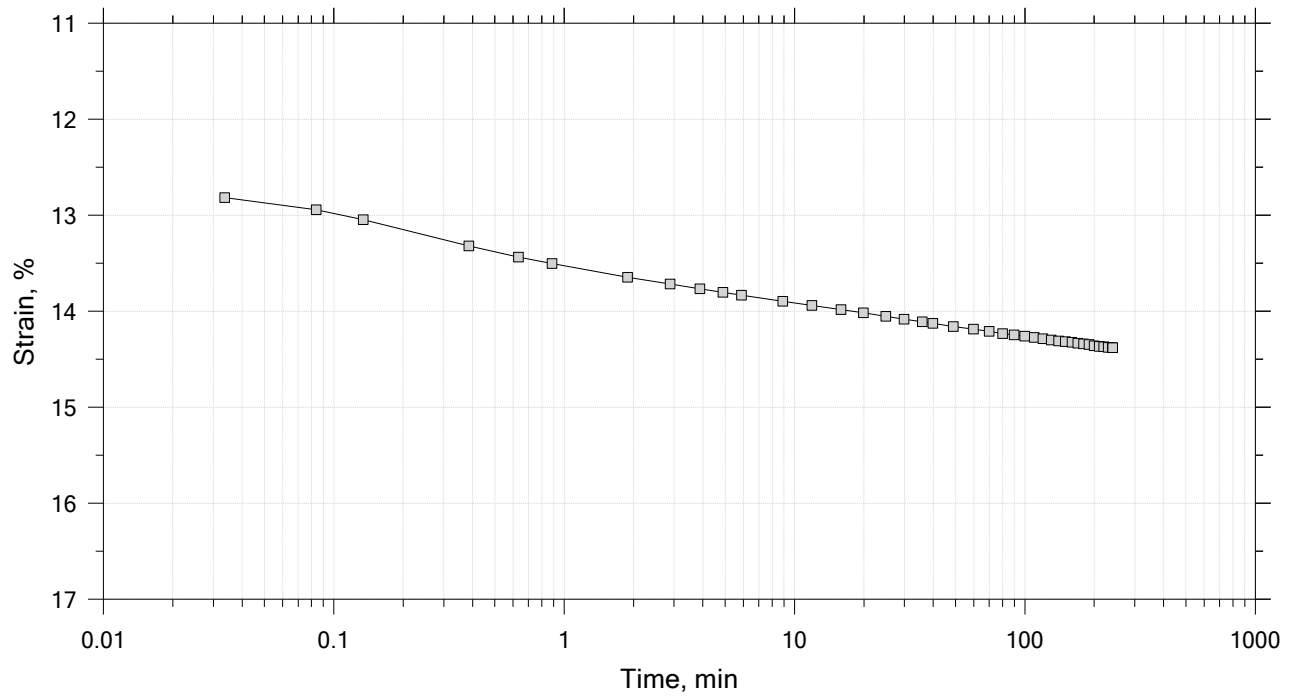
Stress: 8 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 14  
Constant Load Step  
Stress: 16 tsf



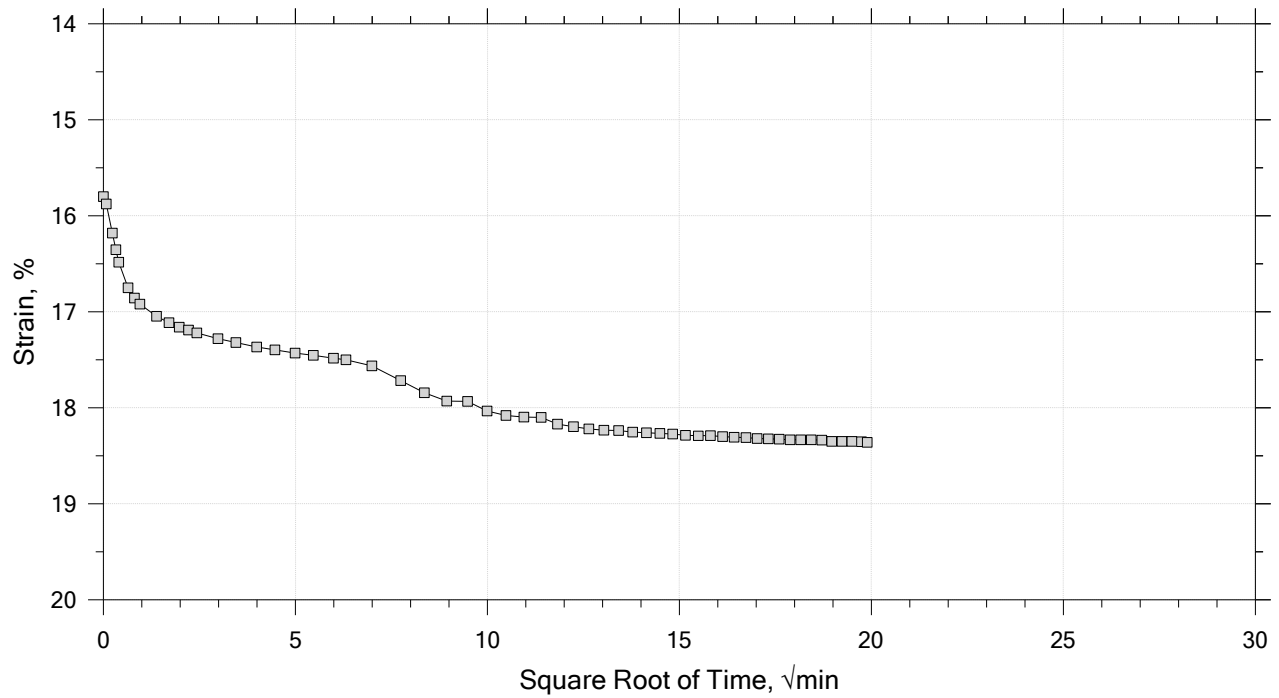
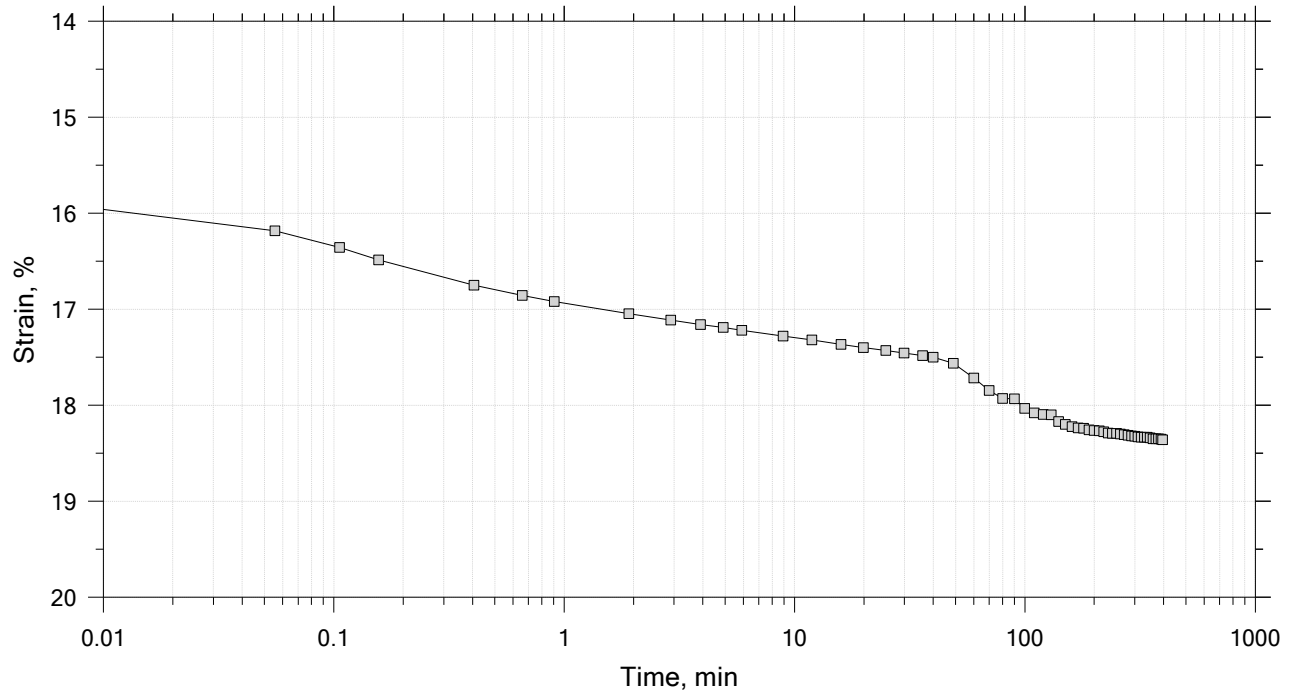
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 14

Constant Load Step

Stress: 32 tsf



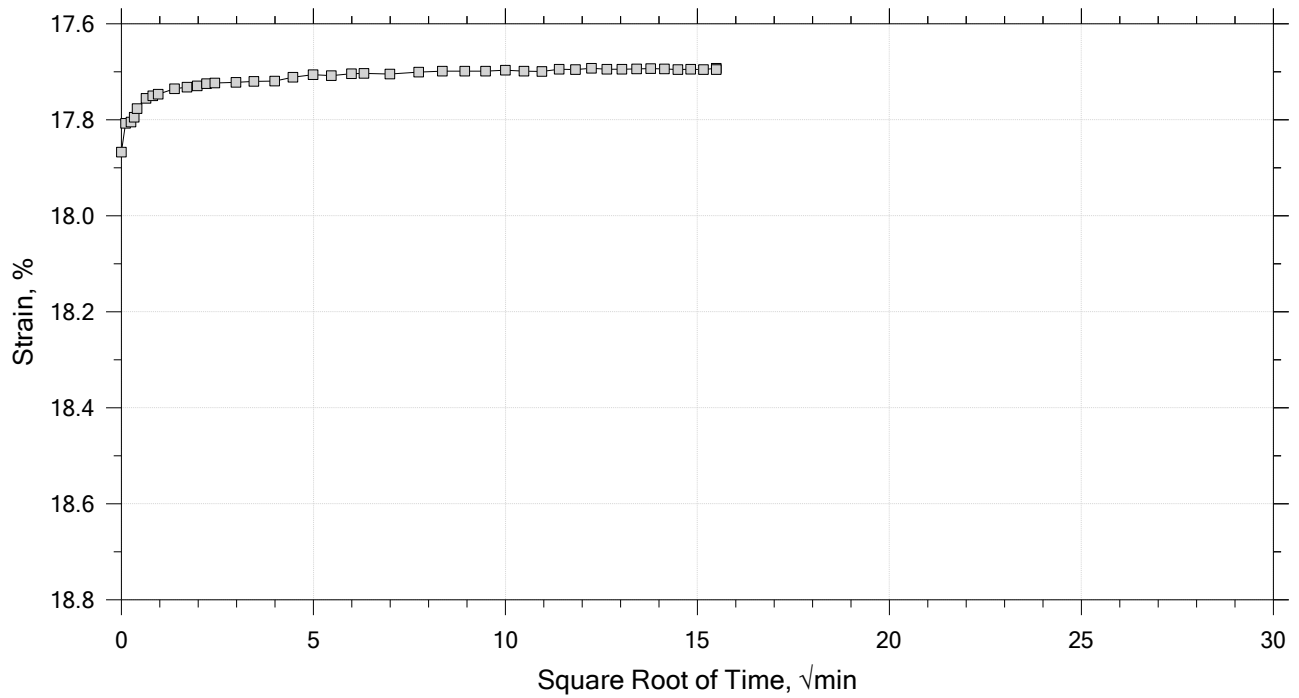
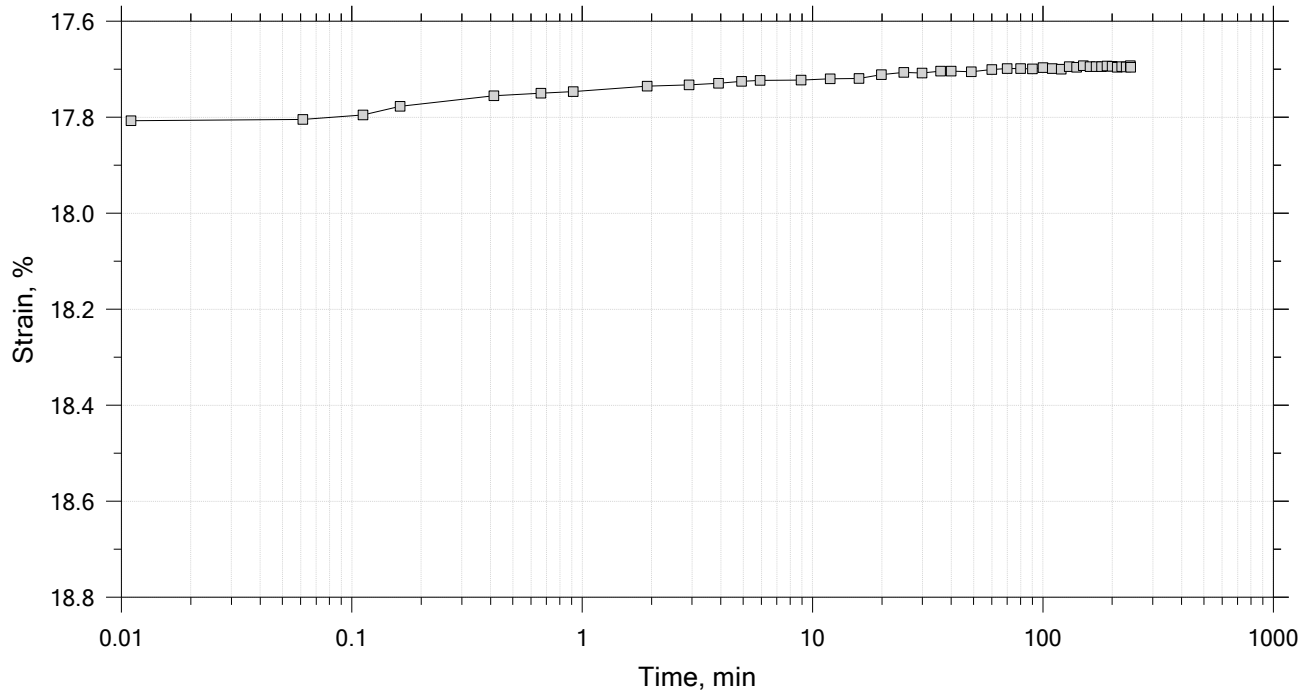
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 14

Constant Load Step

Stress: 8 tsf



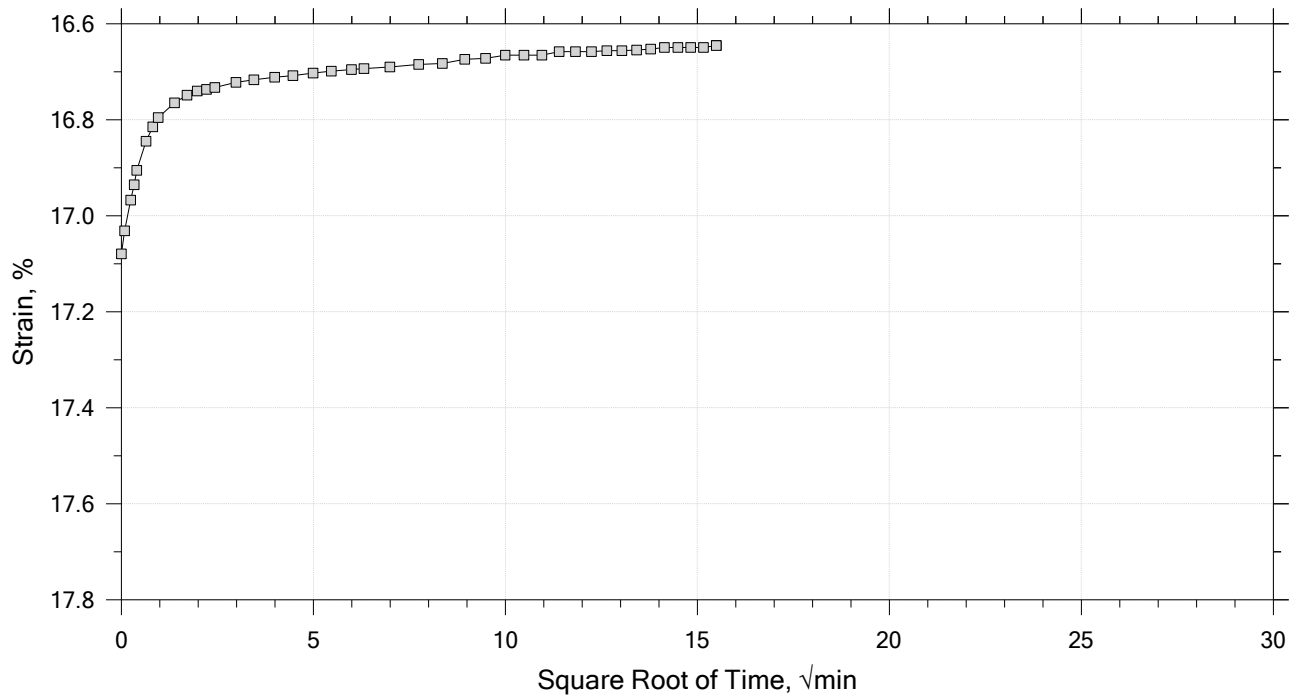
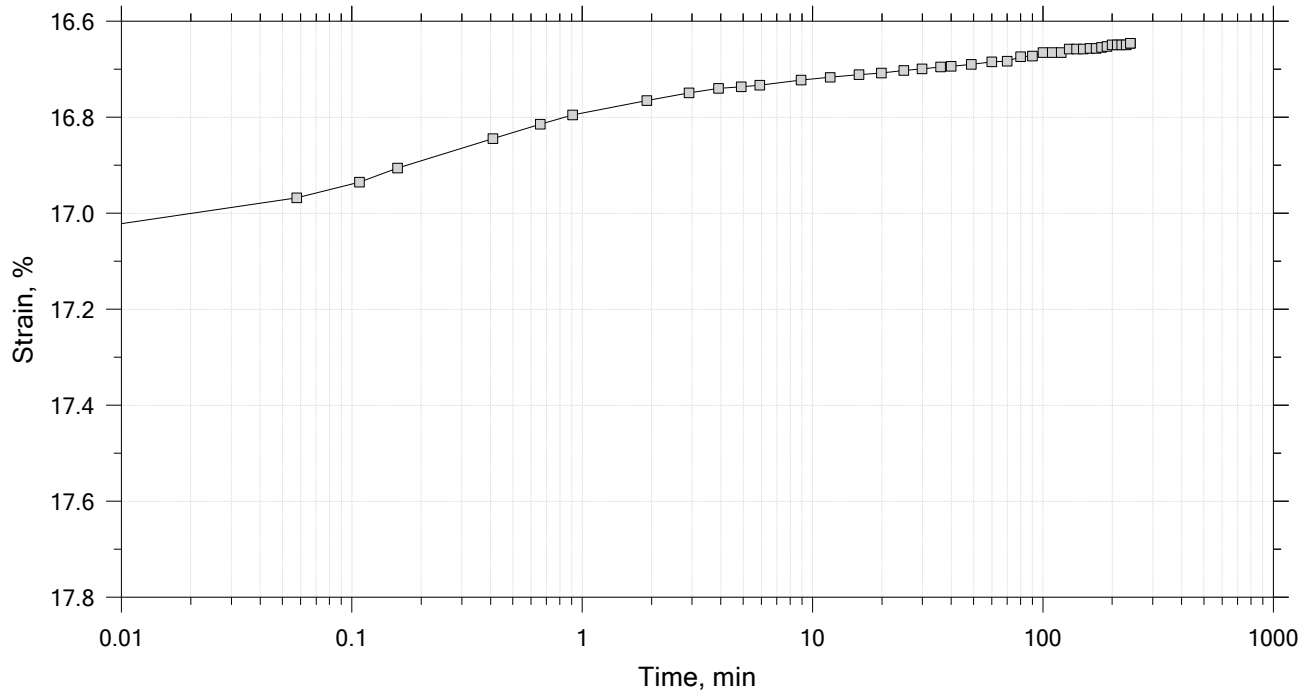
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 14

Constant Load Step

Stress: 2 tsf



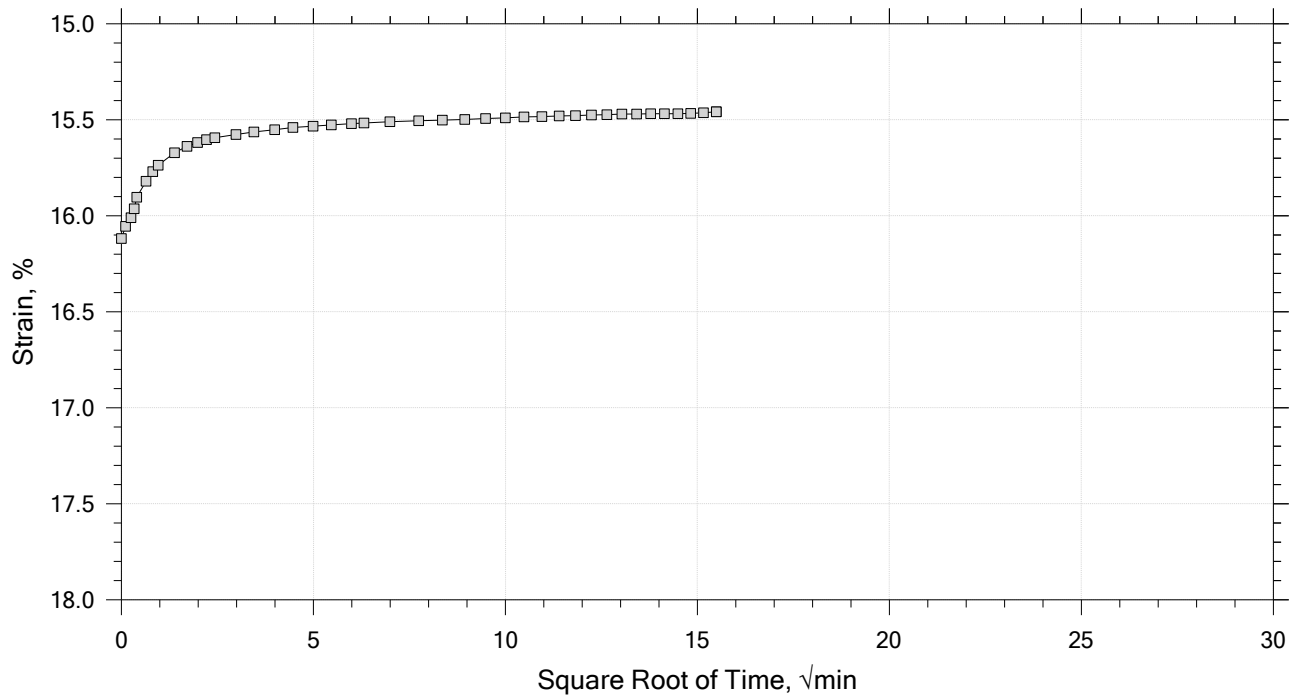
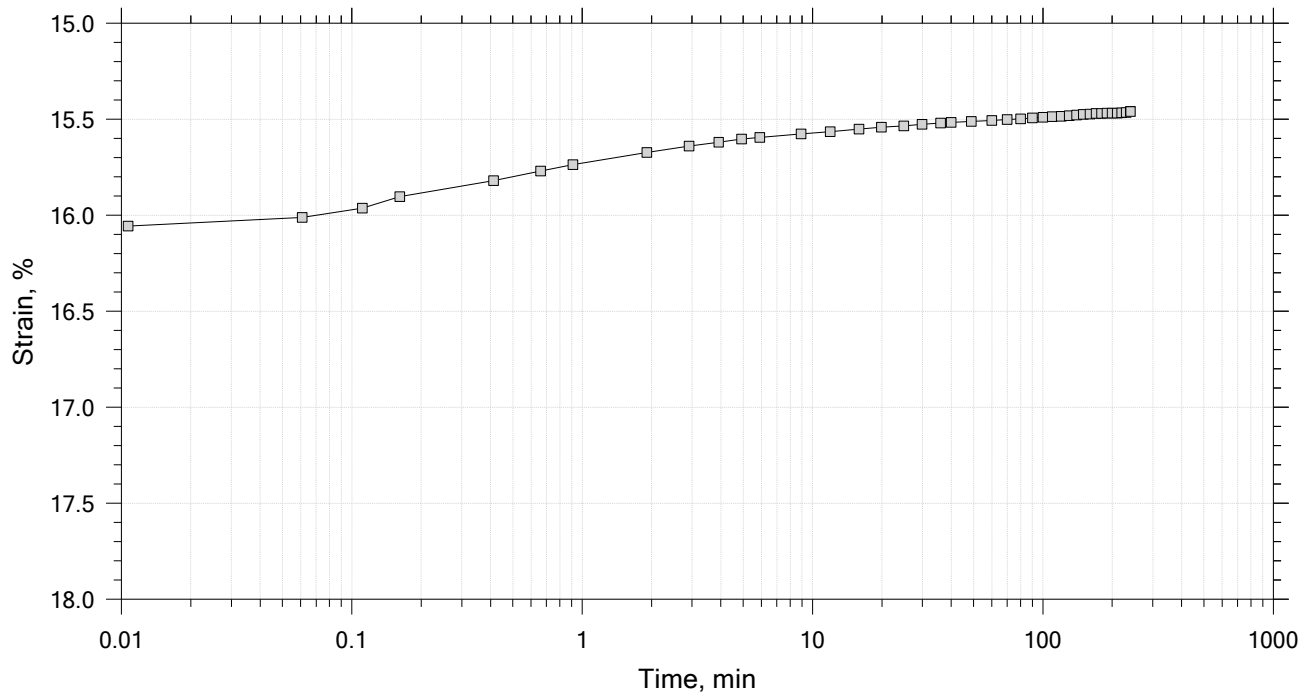
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 14

Constant Load Step

Stress: 0.5 tsf



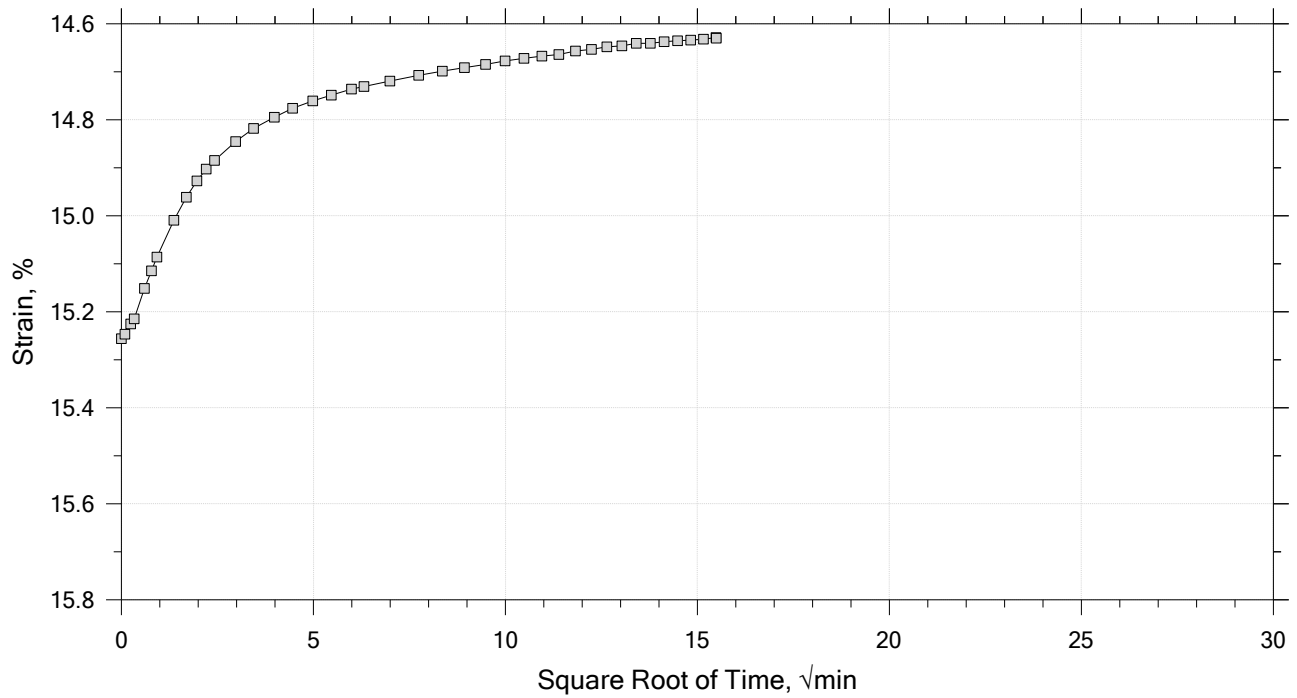
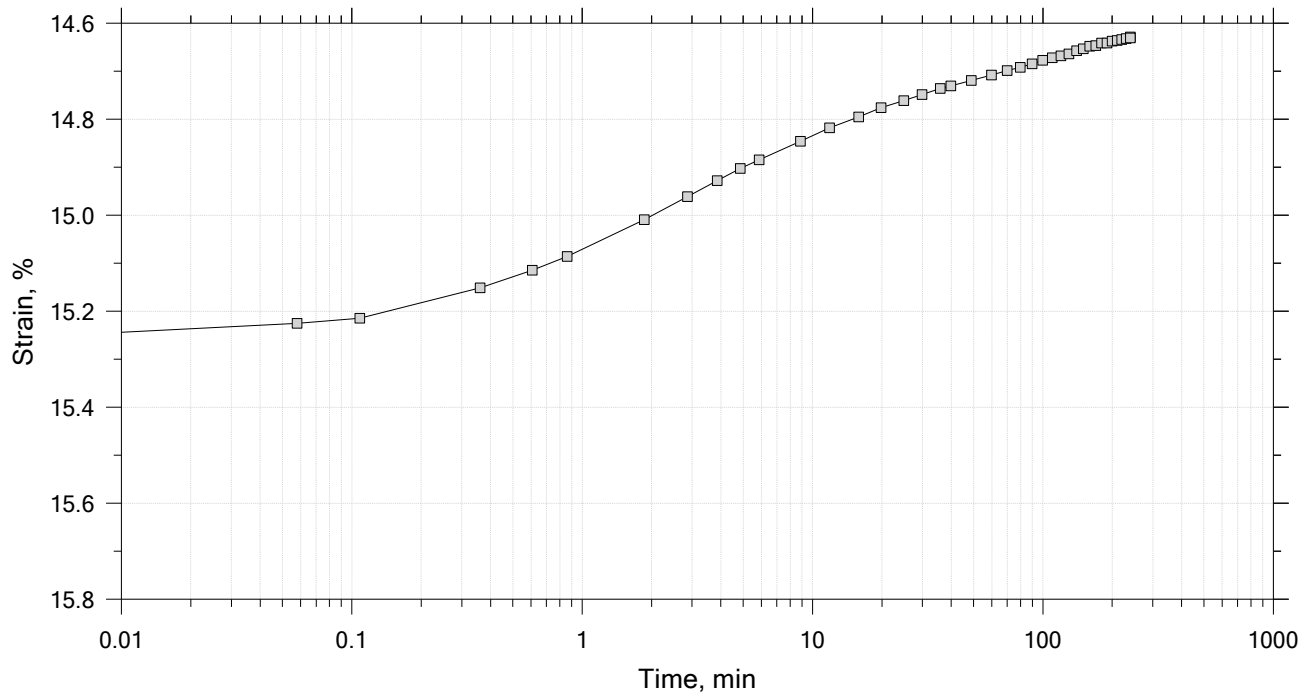
	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		


# One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 14

Constant Load Step

Stress: 0.125 tsf




	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		

# One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.74	Liquid Limit: 22
Initial Height: 1.00 in	Initial Void Ratio: 0.653	Plastic Limit: 14
Final Height: 0.90 in	Final Void Ratio: 0.487	Plasticity Index: 8

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	E14625	RING		E12394
Mass Container, gm	8.59	109.79	109.79	8.18
Mass Container + Wet Soil, gm	154.67	272.52	267	158.7
Mass Container + Dry Soil, gm	128.33	243.28	243.28	135.99
Mass Dry Soil, gm	119.74	133.49	133.49	127.81
Water Content, %	22.00	21.90	17.77	17.77
Void Ratio	---	0.65	0.49	---
Degree of Saturation, %	---	92.05	100.00	---
Dry Unit Weight, pcf	---	103.6	115.11	---


Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		

## One-Dimensional Consolidation by ASTM D2435 - Method B

### Square Root of Time Coefficients

[illegible]

 <b>GeoTesting</b> <b>EXPRESS</b> <small>A Sercel Business</small>	Project: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project No.: GTX-322343
	Boring No.: BB-BIPR-103	Tested By: sjt	Checked By: ab
	Sample No.: 1U	Test Date: 12/15/25	Depth: 29-31'
	Test No.: IP-2	Sample Type: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: LTIII-C, Swell Pressure = 0.0652 tsf		
	Displacement at End of Increment		



Client:	Haley & Aldrich, Inc.
Project Name:	I-395 - Industrial Park Bridge
Project Location:	Brewer, ME
GTX #:	322343
Test Date:	1/22/2026
Tested By:	jlw
Checked By:	dgz
Boring ID:	BB-BIPR-103
Sample ID:	1U
Depth, ft:	29-31
Location in sample, ft:	30.6-30.8
Visual Description:	Moist, dark gray clay

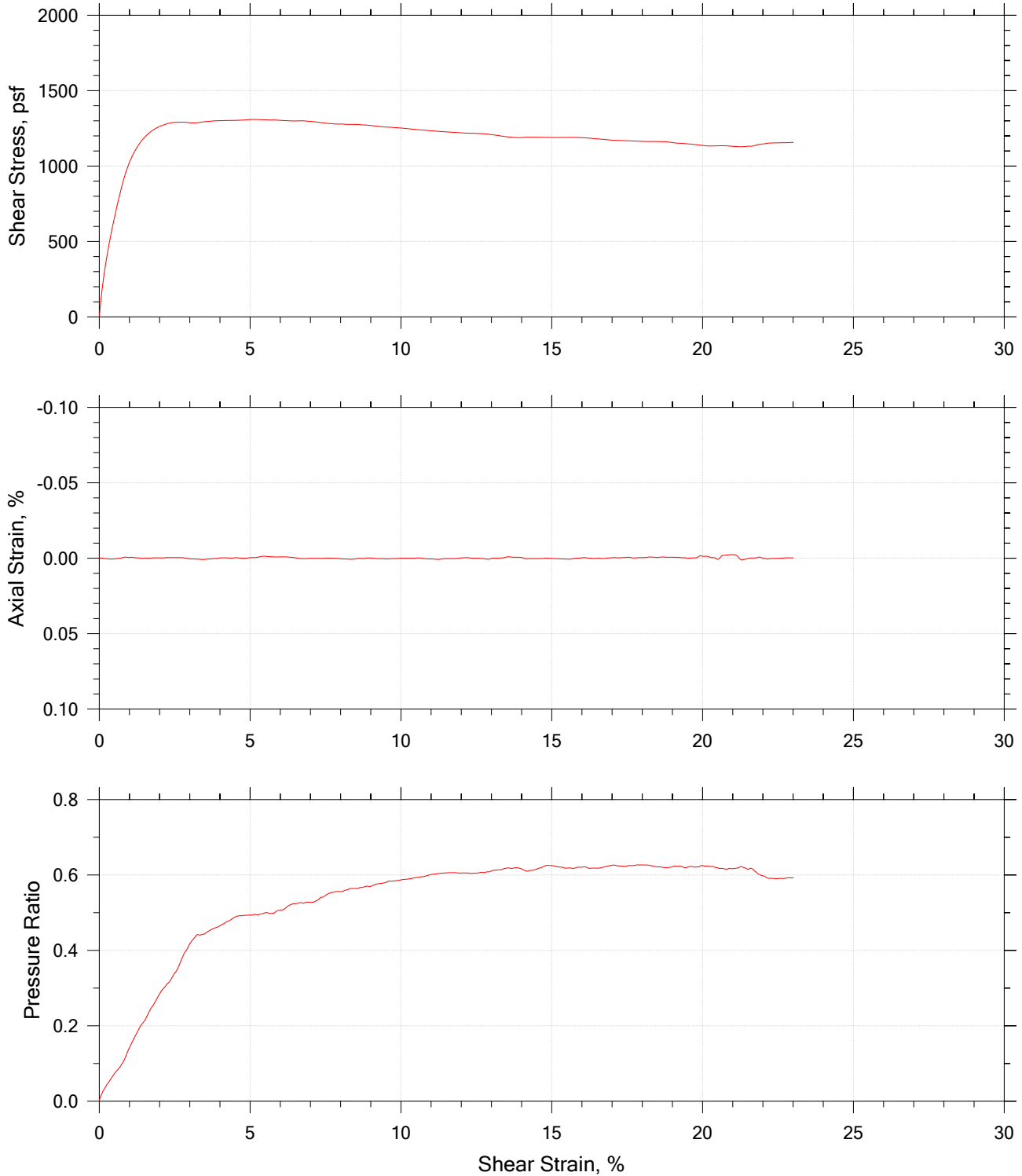
## Consolidated Undrained Direct Simple shear Testing of Fine-Grained Soils by ASTM D6528


Test Condition:	Inundated prior to consolidation.		
Sample Preparation:	Extruded from tube, cut and trimmed. Tested at the as-received moisture and density.		
Sample Type:	intact	Estimated Specific Gravity:	2.77
% Passing #200 sieve:	---	Liquid Limit:	22
Soil Classification:	---	Plastic Limit:	14
Group Symbol:	---	Plasticity Index:	8

Parameter	Point 1	Point 2	Point 3	Point 4
Test No.	DSS-1	---	---	---
Initial Diameter, in	2.50	---	---	---
Initial Height, in	1.00	---	---	---
Initial Area, in <sup>2</sup>	4.91	---	---	---
Initial Mass, g	159.5	---	---	---
Initial Moisture Content, %	22.8	---	---	---
Initial Dry Density, pcf	100.8	---	---	---
Initial Void Ratio	0.76	---	---	---
Initial Degree of Saturation, %	88.2	---	---	---
Nominal Rate of Shear Strain, %/hour	5.0	---	---	---
Max. Vertical Consolidation Stress, psf	6,000	---	---	---
Vertical Consolidation Stress at shear, psf	6,000	---	---	---
Pre-shear Moisture Content, %	22.3	---	---	---
Pre-shear Void Ratio	0.62	---	---	---
Pre-shear Vertical Strain, %	5.7	---	---	---
Final Consolidation Loading Duration, min	1,187	---	---	---
Final Moisture Content, %	22.2	---	---	---
Measured Peak Shear Stress, psf	1,309	---	---	---
Shear Strain at Peak Shear Stress, %	5.1	---	---	---
Membrane Correction, psf	41	---	---	---
Corrected Peak Shear Stress, psf	1,268	---	---	---
$S_u/\sigma'_{vc}$	0.21	---	---	---

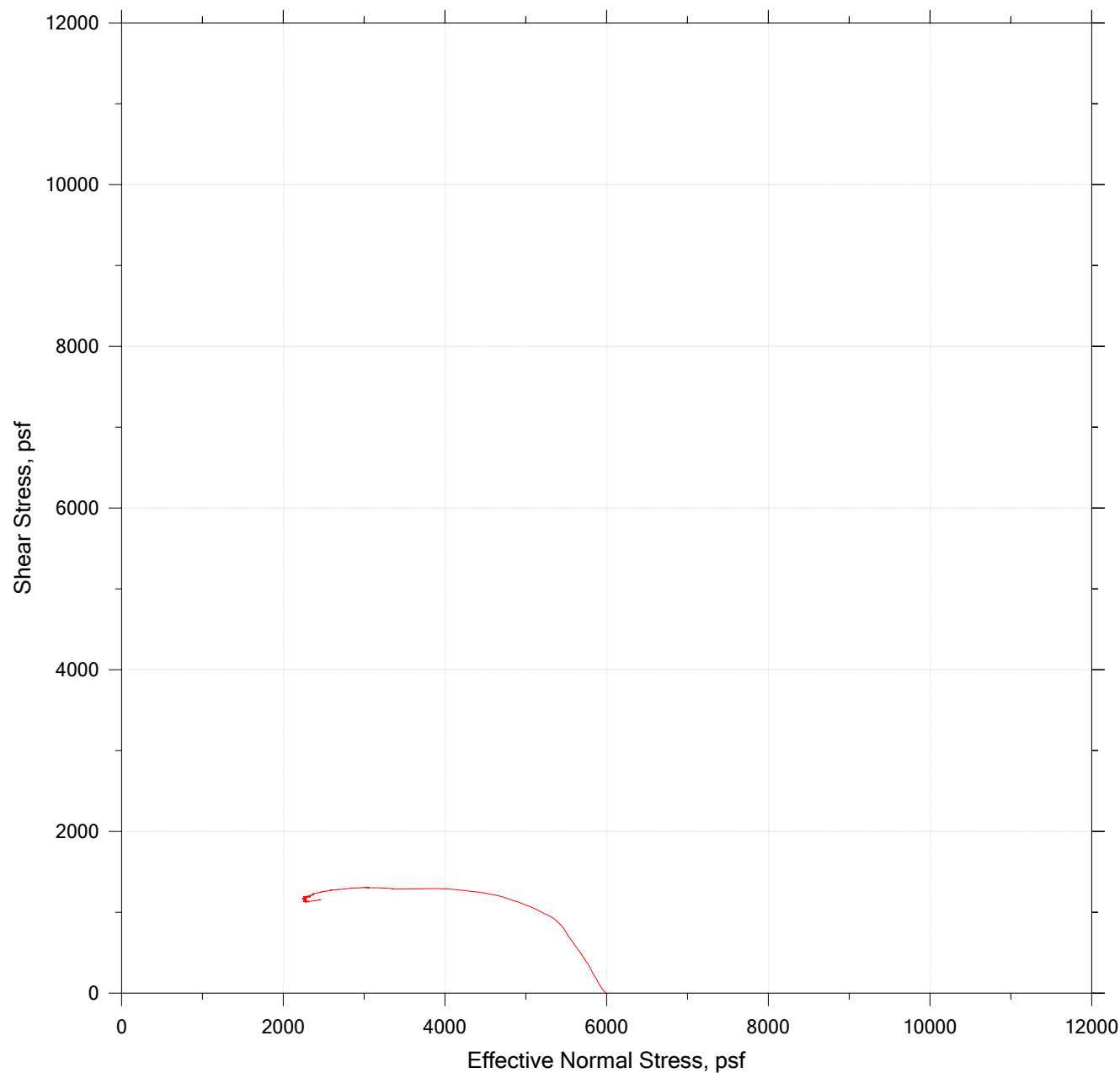
Comments:	Please see attached plots for additional information
Notes:	These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.


# Direct Simple Shear Test



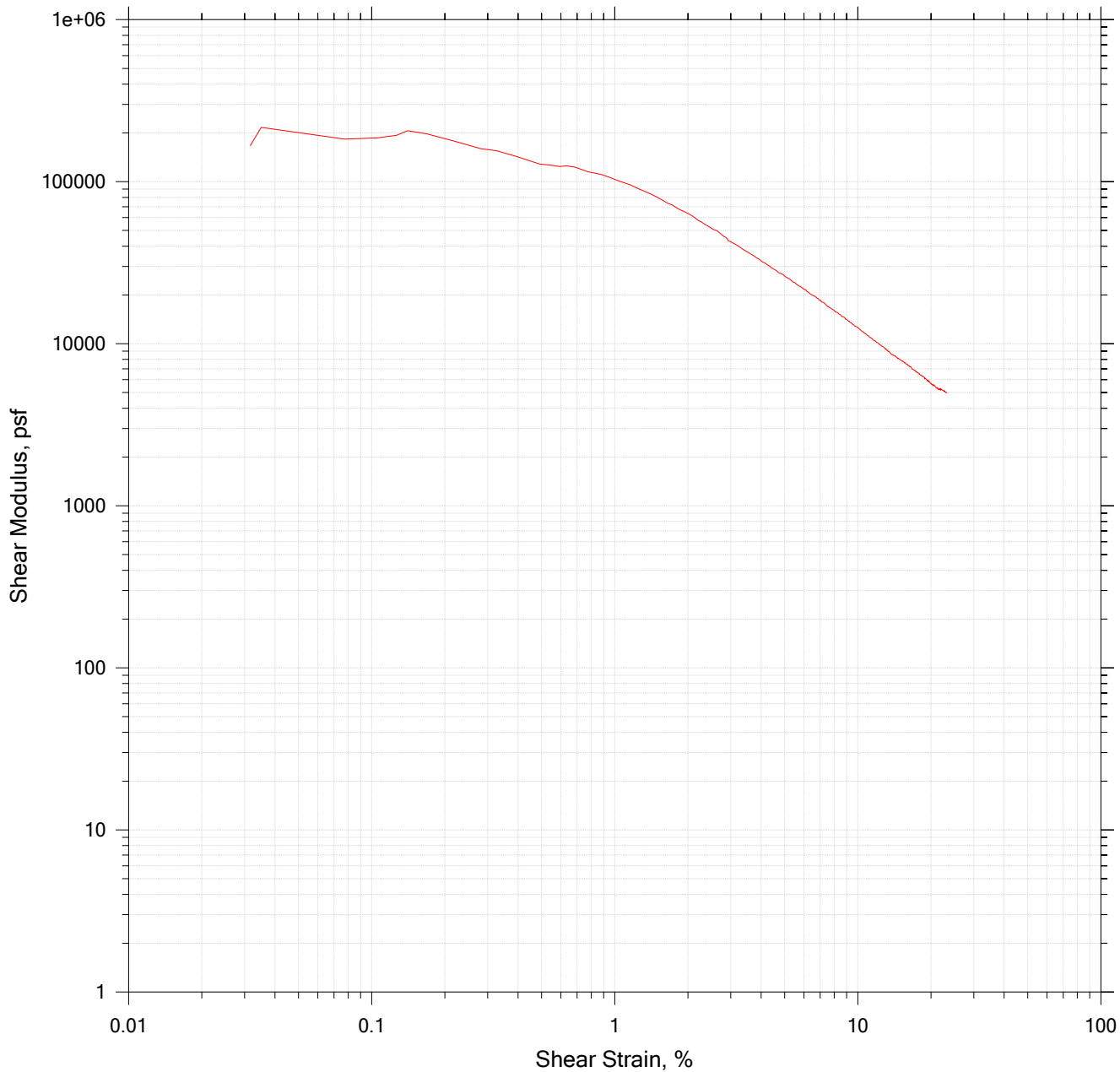
	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-103	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 1/22/26	Depth: 29-31'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-003		


Direct Simple Shear Test



	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-103	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 1/22/26	Depth: 29-31'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-003		

Direct Simple Shear Test



	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-103	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 1/22/26	Depth: 29-31'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-003		



Client:	Haley & Aldrich, Inc.
Project Name:	I-395 - Industrial Park Bridge
Project Location:	Brewer, ME
GTX #:	322343
Test Date:	1/22/2026
Tested By:	jlw
Checked By:	dgz
Boring ID:	BB-BIPR-101
Sample ID:	2U
Depth, ft:	53-55
Location in sample, ft:	54.6-54.8
Visual Description:	Wet, dark gray silty clay

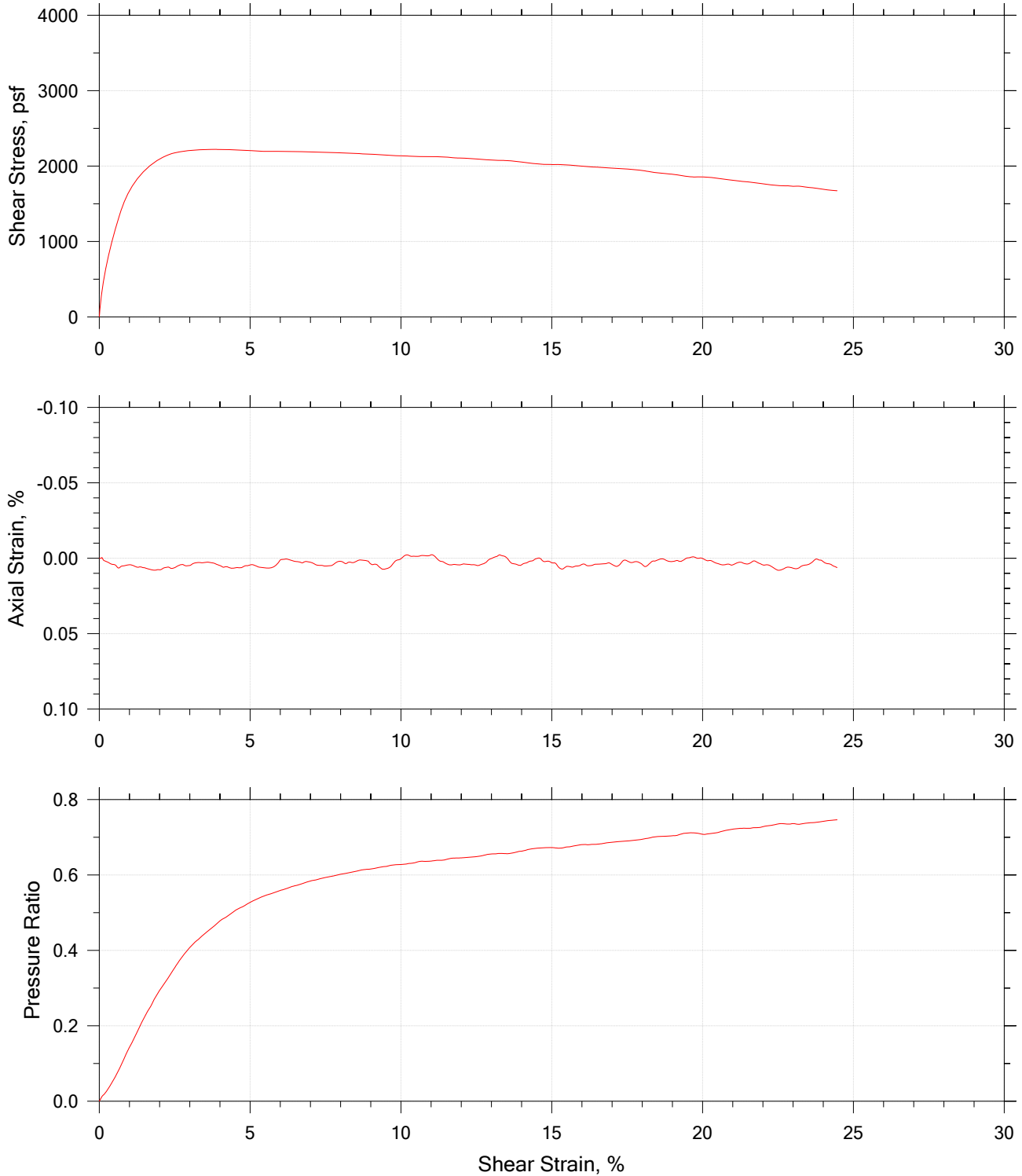
## Consolidated Undrained Direct Simple shear Testing of Fine-Grained Soils by ASTM D6528


Test Condition:	Inundated prior to consolidation.		
Sample Preparation:	Extruded from tube, cut and trimmed. Tested at the as-received moisture and density.		
Sample Type:	intact	Estimated Specific Gravity:	2.78
% Passing #200 sieve:	---	Liquid Limit:	20
Soil Classification:	---	Plastic Limit:	14
Group Symbol:	---	Plasticity Index:	6

Parameter	Point 1	Point 2	Point 3	Point 4
Test No.	DSS-2	---	---	---
Initial Diameter, in	2.50	---	---	---
Initial Height, in	1.00	---	---	---
Initial Area, in <sup>2</sup>	4.91	---	---	---
Initial Mass, g	160.5	---	---	---
Initial Moisture Content, %	26.4	---	---	---
Initial Dry Density, pcf	98.5	---	---	---
Initial Void Ratio	0.76	---	---	---
Initial Degree of Saturation, %	96.4	---	---	---
Nominal Rate of Shear Strain, %/hour	5.0	---	---	---
Max. Vertical Consolidation Stress, psf	12,000	---	---	---
Vertical Consolidation Stress at shear, psf	12,000	---	---	---
Pre-shear Moisture Content, %	20.3	---	---	---
Pre-shear Void Ratio	0.56	---	---	---
Pre-shear Vertical Strain, %	11.5	---	---	---
Final Consolidation Loading Duration, min	361	---	---	---
Final Moisture Content, %	20.6	---	---	---
Measured Peak Shear Stress, psf	2,222	---	---	---
Shear Strain at Peak Shear Stress, %	3.7	---	---	---
Membrane Correction, psf	50	---	---	---
Corrected Peak Shear Stress, psf	2,172	---	---	---
$S_u/\sigma'_{vc}$	0.18	---	---	---

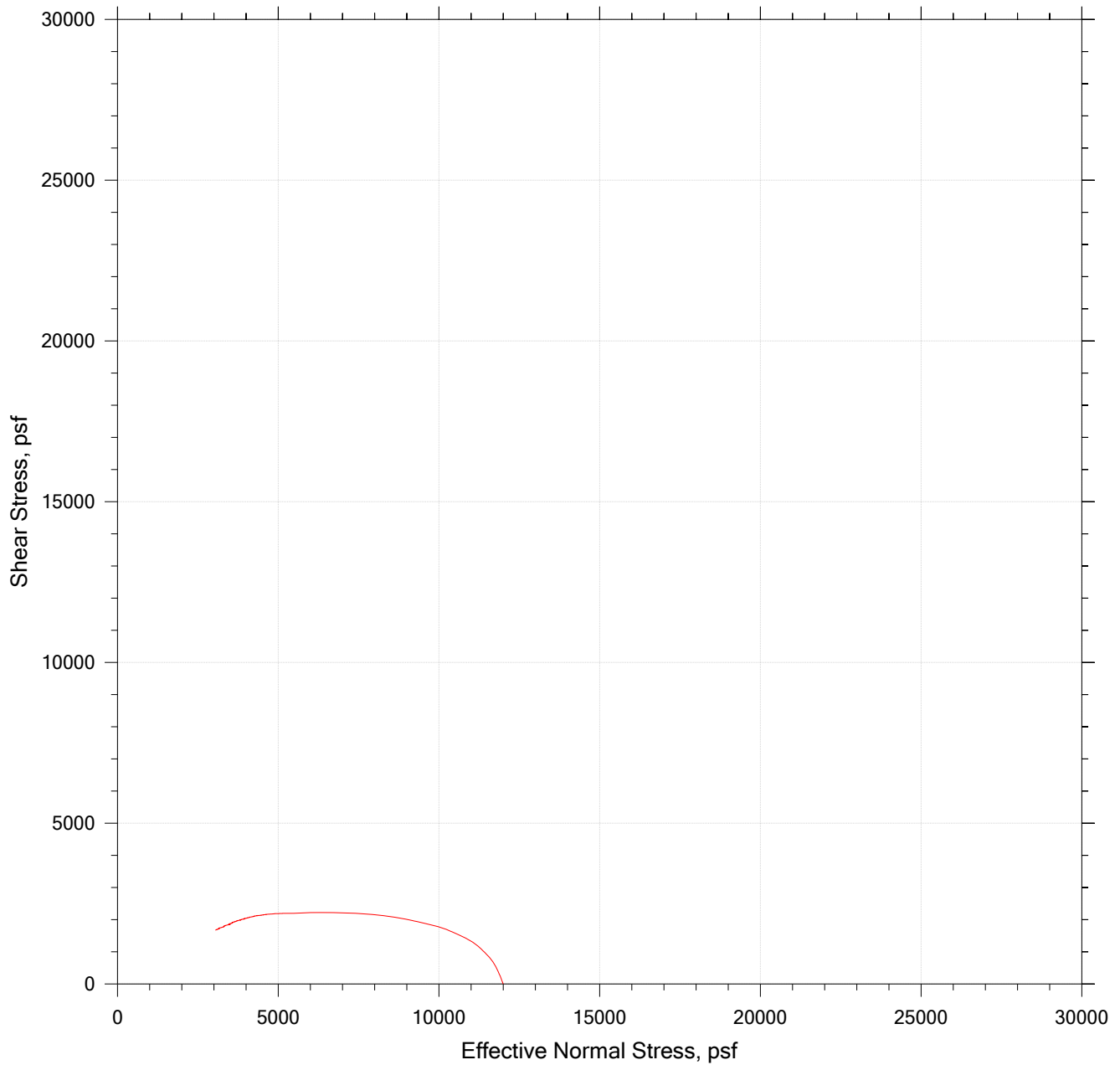
Comments:	Please see attached plots for additional information
Notes:	These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.


# Direct Simple Shear Test



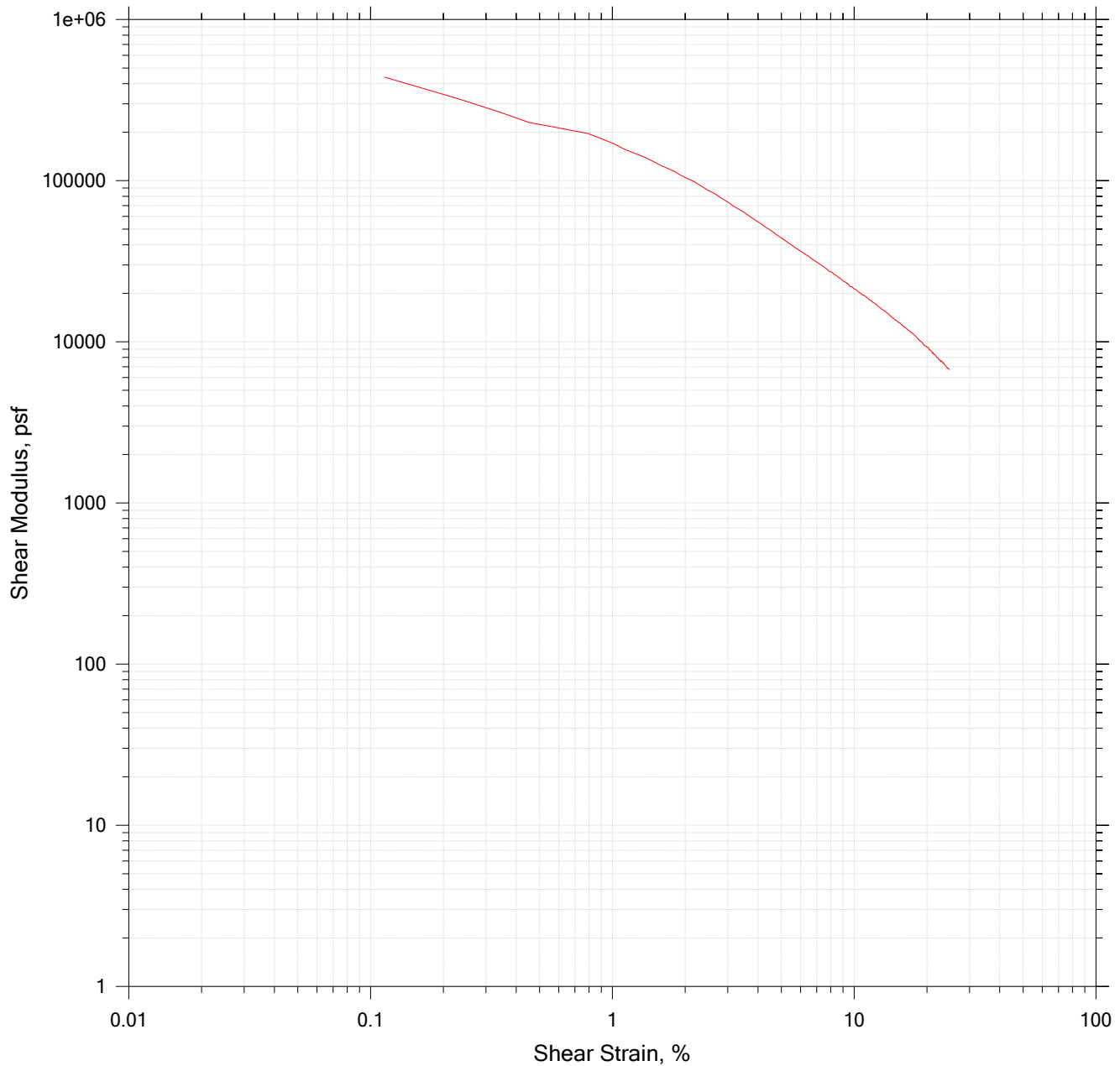
	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-101	Tester: jlw	Checker: dgz
	Sample Number: 2U	Test Date: 1/22/26	Depth: 53-55'
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Wet, dark gray silty clay		
	Remarks: DS-03		


# Direct Simple Shear Test



	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-101	Tester: jlw	Checker: dgz
	Sample Number: 2U	Test Date: 1/22/26	Depth: 53-55'
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Wet, dark gray silty clay		
	Remarks: DS-03		

# Direct Simple Shear Test



	Project Name: I-395 - Industrial Park Bridge	Location: Brewer, ME	Project Number: GTX-322343
	Boring Number: BB-BIPR-101	Tester: jlw	Checker: dgz
	Sample Number: 2U	Test Date: 1/22/26	Depth: 53-55'
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Wet, dark gray silty clay		
	Remarks: DS-03		