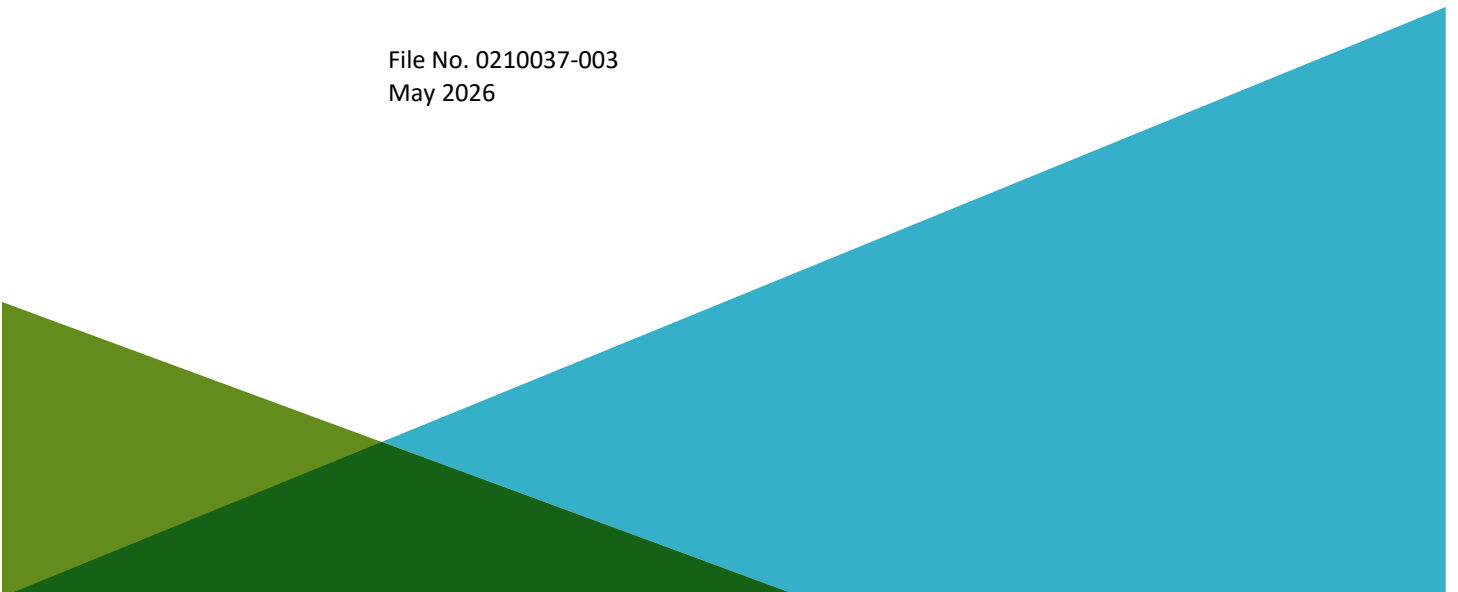


PHASE II GEOTECHNICAL DATA REPORT  
INTERSTATE 395 OVER CSX RAILROAD  
BRIDGE NO. 1559, MAINEDOT WIN 029484.00  
BREWER, MAINE

by  
Haley & Aldrich, Inc.  
Portland, Maine

for  
HNTB Corporation  
South Portland, Maine

File No. 0210037-003  
May 2026





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

May 15, 2026  
File No. 0210037-003

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  
Interstate 395 over CSX Railroad  
Bridge No. 1559, 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 bridge is a 25-foot (ft) span by 26-ft rise, 286-ft-long, three-sided concrete frame that carries Interstate 395 (I-395) and two ramps over the CSX Railroad (see Figures 1 and 2). Based on our review of the historical bridge drawings, the existing bridge is a rigid frame structure that is supported on continuous footings that are in turn supported on vertical and battered steel, end-bearing, HP 14x89 H-piles with a maximum pile load of 118 tons (236 kips).

Based on discussions with HNTB Corporation (HNTB), it is our understanding that minor rehabilitation of the existing bridge is planned, including repair and stabilization of the metal bin walls. Project scope also includes substructure patching and application of protective coating.

## **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 INVESTIGATION

A historical geotechnical field investigation was conducted at the site by the MaineDOT in 1983, 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 and November 2025. Five borings, designated BB-MCRR-101, BB-MCRR-102, BB-MCRR-103, BB-MCRR-103A and BB-MCRR-104, were completed near the existing bridge wingwalls. Borings BB-MCRR-101 and BB-MCRR-102 were drilled from the South Main Street entrance ramp to westbound I-395. Borings BB-MCRR-103 and BB-MCRR-104 were drilled from the eastbound I-395 Exit 4 ramp to South Main Street. Boring BB-MCRR-103A was terminated at 49 ft below ground surface (BGS) due to broken drill casing. Therefore, an additional boring (BB-MCRR-103A) was advanced adjacent to boring BB-MCRR-103.

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 49 to 68 ft 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 4 to 5 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.

Three 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 4 to 5 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 below ground surface: fill, 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	0.3 to 0.5	Approximate 4 to 6-in.-thick layer of bituminous concrete was encountered at the ground surface in all borings.
Fill	28.7 to 30.0	Medium dense to dense fine to coarse SAND, trace to some gravel, and trace to little silt; loose to very dense fine to coarse Gravelly SAND, trace to little silt. <i>(encountered in all borings)</i>
Marine Deposit	13.0 to 24.0	Very soft to very stiff Silty CLAY to CLAY, trace to little sand, trace gravel, with occasional Sandy SILT and SILT zones and trace wood particles and organics. <i>(encountered in all borings)</i>
Glacial Till	1.0 to 8.5	Very dense fine to coarse GRAVEL, some fine to coarse sand, trace silt; dense fine to coarse Gravelly SAND, trace silt. Occasional Sandy GRAVEL and Sandy SILT. The glacial till was loosely bonded. <i>(encountered in all borings)</i>
Bedrock		Bedrock was encountered in all borings, except boring BB-MCRR-103. The top of bedrock surface was encountered at depths ranging from 50.0 to 62.5 ft BGS. A 0.7-ft-thick layer of weathered bedrock was encountered in boring BB-MCRR-103A.

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 4 to 5 ft of bedrock was cored in the borings. The sampled and recovered bedrock generally consisted of hard, fresh to moderately weathered, grey to dark grey,

aphanitic, METASILTSTONE. Primary joints were observed dipping at moderate to steep angles, are 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 0 to 90 percent, indicating variable bedrock quality; from very poor to good 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 borings BB-MCRR-101, BB-MCRR-102, BB-MCRR-103 and BB-MCRR-104, during or shortly after the completion of drilling. Observed groundwater levels measured in the borings are summarized in the table below:

Boring No.	Groundwater Depth (ft, BGS)	Groundwater Elevation (ft, NAVD 88)
BB-MCRR-101	38.6	22.1
BB-MCRR-102	37.6	23.0
BB-MCRR-103	30.4	28.0
BB-MCRR-104	37.8	21.4

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	3	AASHTO Classification: A-1-b, A-2-4, USCS Classification: SM, SP-SM
		Glacial Till	1	AASHTO Classification: A-1-b USCS Classification: GM
Atterberg Limits	D4318	Marine Deposit	3	WC = 26 to 29% LL = 23 to 34% PL = 15 to 18% PI = 7 to 16%
Consolidated Undrained Direct Simple Shear	D6528	Marine Deposit	3	$S_u/\sigma'_{vc} = 0.18$ to $0.26$ $\gamma_T = 121$ to $126$ pcf

**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

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.

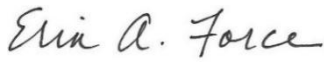
Sincerely yours,  
**HALEY & ALDRICH, INC.**



Camilo J. Fernández-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/CSX Railroad Bridge No. 1559/2026-0515-HAI-I395 CSX Railroad 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/CSX Railroad Bridge No. 1559/2026-0515-HAI-I395 CSX Railroad Bridge-Phase II GDR-F.docx>

## TABLES

**TABLE I**

Subsurface Exploration Location Data  
 Interstate 395 over CSX Railroad  
 Bridge No. 1559, MaineDOT WIN 029484.00  
 Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-003

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-MCRR-101	60.7	TBD	TBD	467,942	1,732,611
BB-MCRR-102	60.6	TBD	TBD	467,955	1,732,716
BB-MCRR-103	58.4	TBD	TBD	468,199	1,732,743
BB-MCRR-103A	58.2	TBD	TBD	468,204	1,732,739
BB-MCRR-104	59.2	TBD	TBD	468,136	1,732,803

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 (ft), and reference the NAD83, Maine 2000 West Zone coordinate system.

	Individual	Date
Prepared By:	CFE	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/28/2026

**TABLE II**  
Subsurface Exploration Subsurface Data  
Interstate 395 over CSX Railroad  
Bridge No. 1559, MaineDOT WIN 029484.00  
Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-003

Boring No. <sup>1</sup>	Ground Surface Elevation <sup>3</sup> (ft)	Stratigraphic Data <sup>2,4</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-MCRR-101	60.7	0.5	0.5	60.2	29.5	30.0	30.7	24.0	54.0	6.7	8.5	62.5	-1.8	67.5	-6.8
BB-MCRR-102	60.6	0.5	0.5	60.1	30.0	30.5	30.1	18.5	49.0	11.6	5.0	54.0	6.6	57.6	3.0
BB-MCRR-103 <sup>2</sup>	58.4	0.3	0.3	58.2	28.7	29.0	29.4	13.0	42.0	16.4	>7.0	--	--	49.0	9.4
BB-MCRR-103A	58.2	--	--	--	--	--	--	--	--	--	>4.4	55.1	3.1	60.0	-1.8
BB-MCRR-104	59.2	0.5	0.5	58.7	29.5	30.0	29.2	20.0	49.0	10.2	1.0	50.0	9.2	55.0	4.2

Notes:

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

<sup>2</sup> Boring BB-MCRR-103 was terminated at 49.0 ft below ground surface due to broken drill casing. Boring BB-MCRR-103A was drilled to collect bedrock information.

<sup>3</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>4</sup> "--" indicates boring not drilled deep enough or sampling not completed to determine presence of stratum; ">7.0" indicates boring not drilled deep enough to determine full thickness of stratum, actual thickness could be greater than value shown.

	Individual	Date
Prepared By:	CFE	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/28/2026



TABLE III  
Subsurface Exploration Bedrock Core Data  
Interstate 395 over CSX Railroad  
Bridge No. 1559, MaineDOT WIN 029484.00  
Brewer, Maine

Haley & Aldrich, Inc. File No.: 0210037-003

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-MCRR-101	60.7	NQ-2"	R1	62.5	67.5	65.0	60.0	54.0	90%	51.0	85%	Good	Fresh	Hard	Grey to dark grey, aphanitic to fine-grained, METASILTSTONE. Hard, fresh to slightly weathered. Primary joint sets are steep along foliation, spaced wide, planar, rough, slightly discolored, tight. Calcite veins throughout.
BB-MCRR-102	60.6		R1	54.0	57.6	55.8	43.2	28.0	65%	9.9	23%	Very Poor	Fresh to Moderately Weathered	Hard	Grey, aphanitic to fine-grained, METASILTSTONE. Hard, fresh to moderately weathered, Primary joint sets are moderately dipping to steep along foliation, spaced very close to moderately close, smooth and planar, rough and undulating, fresh to slightly discolored, open to tight. Secondary joint sets are low angle, spaced very close to close, smooth and planar, rough and undulating, fresh to slightly decomposed, open. Calcite veins throughout.
BB-MCRR-103A	58.2		R1	55.1	58.0	56.6	34.8	34.0	98%	25.1	72%	Fair	Fresh	Hard	Grey to dark grey and white, aphanitic, METASILTSTONE with quartz vein (9 in.) at 55.5 ft. Hard, fresh. Primary joint sets are moderately dipping, spaced close, smooth and planar to rough and undulating, fresh to slightly discolored, tight to open. Secondary joint sets are low angle, spaced very close to moderately close, rough and undulating, fresh to discolored, open. Calcite veins throughout.
			R2	58.0	60.0	59.0	24.0	23.0	96%	16.1	67%	Fair	Fresh	Hard	Similar to R1. Primary joint sets are moderately dipping, spaced very close to moderately close, smooth and planar, fresh to discolored, tight to open. Quartz and calcite veins throughout.

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-MCRR-104	59.2	NQ-2"	R1	50.0	51.4	50.7	16.8	15.0	88%	0.0	0%	Very Poor	Fresh to Slightly Weathered	Hard	Grey to dark grey, aphanitic, METASILTSTONE. Hard, fresh to slightly weathered. Primary joint sets are steep along foliation, spaced extremely close to close, smooth and planar, fresh, open. Secondary joint sets one low angle, spaced very close to close, rough and undulating, fresh to slightly discolored, open. Calcite veins throughout.
			R2	51.4	53.3	52.4	22.8	23.0	100%	13.9	61%	Fair	Fresh to Slightly Weathered	Hard	Similar to R1. Primary joint sets are steep along foliation, spaced very close to moderately close, smooth and planar, fresh, open. Secondary joint sets are low angle, spaced close to moderately close, rough and undulating, fresh, open. Calcite veins throughout.
			R3	53.3	55.0	54.2	20.4	20.0	100%	18.4	90%	Good	Fresh to Slightly Weathered	Hard	Similar to R1, joints are steep, spaced close to moderately close, smooth and planar, fresh to slightly discolored, tight.

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:	CFE	1/16/2026
Checked By:	SLB	1/22/2026
Reviewed By:	NAS	1/28/2026

## FIGURES



0210037.000 LOCUS HALEYALDRICHUBOIS



SITE COORDINATES: 44°46'59"N, 68°46'09"W



MAP SOURCE: USGS

**HALEY  
ALDRICH**

INTERSTATE 395 OVER CSX RAILROAD  
BRIDGE NO. 1559, MAINEDOT WIN 029484.00  
BREWER, MAINE

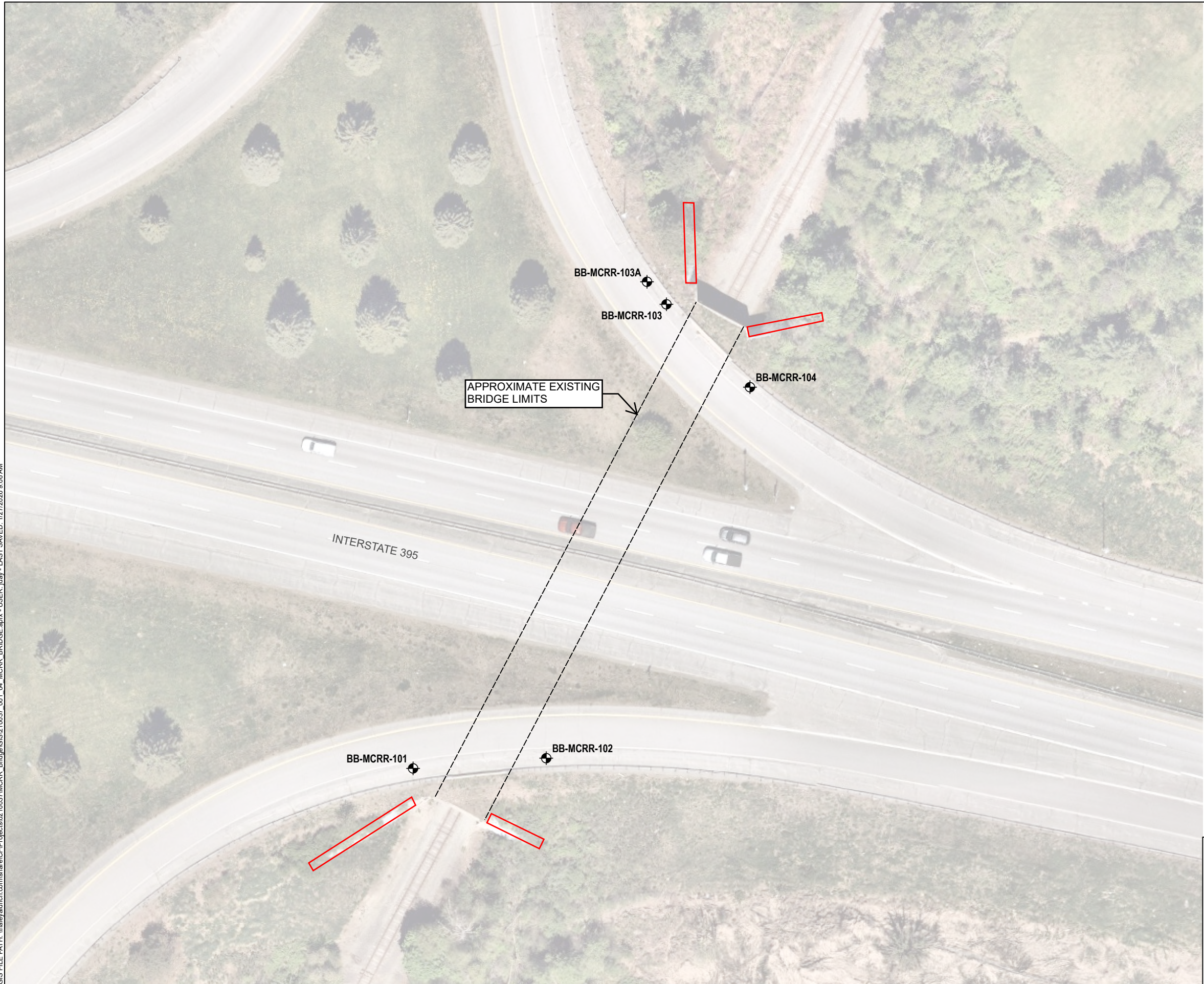
## PROJECT LOCUS

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



**FIGURE 1**



GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\02\0037\MCRB Bridge\GIS\210037\_001\_04\_MCRB BRIDGE.aprx - USER jday - LAST SAVED: 1/27/2026 9:06 AM



**LEGEND**

- BB-MCRR-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 AND NOVEMBER 2025.
-  APPROXIMATE LOCATIONS OF EXISTING METAL BIN WALLS

**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 50 100  
SCALE IN FEET

**HALEY  
ALDRICH**

INTERSTATE 395 OVER CSX RAILROAD  
BRIDGE NO. 1559, 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>		<u>Portion of Total (%)</u>		
		(little or no fines)	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines.	trace	0 - 10			
					little	11 - 20			
	SANDS  (more than half of coarse fraction is smaller than No. 4 sieve size)	GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.	some	21 - 35			
			GC	Clayey gravels, gravel-sand-clay mixtures.	adjective (e.g. Sandy, Clayey)	36 - 50			
					TERMS DESCRIBING DENSITY/CONSISTENCY				
					<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).				
					<u>Density of Cohesionless Soils</u>		<u>Standard Penetration Resistance</u> N <sub>60</sub> -Value (blows per foot)		
					Very loose		0 - 4		
					Loose		5 - 10		
					Medium Dense		11 - 30		
					Dense		31 - 50		
					Very Dense		> 50		
					<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.				
					<u>Consistency of Cohesive soils</u>		<u>SPT N<sub>60</sub>-Value (blows per foot)</u>	<u>Approximate Undrained Shear Strength (psf)</u>	<u>Field Guidelines</u>
					Very Soft		WOH, WOR, WOP, <2	0 - 250	Fist easily penetrates
					Soft		2 - 4	250 - 500	Thumb easily penetrates
					Medium Stiff		5 - 8	500 - 1000	Thumb penetrates with moderate effort
					Stiff		9 - 15	1000 - 2000	Indented by thumb with great effort
					Very Stiff		16 - 30	2000 - 4000	Indented by thumbnail
					Hard		>30	over 4000	Indented by thumbnail with difficulty
					<b>Rock Quality Designation (RQD):</b>				
					RQD (%) = $\frac{\text{sum of the lengths of intact pieces of core}^* > 4 \text{ inches}}{\text{length of core advance}}$				
					*Minimum NQ rock core (1.88 in. OD of core)				
					<b>Rock Quality Based on RQD</b>				
					<u>Rock Quality</u>		<u>RQD (%)</u>		
					Very Poor		≤25		
					Poor		26 - 50		
					Fair		51 - 75		
					Good		76 - 90		
					Excellent		91 - 100		
					<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		Blow Counts		
					Bridge Name / Town		Sample Recovery		
					Boring Number		Date		
					Sample Number		Personnel Initials		
					Sample Depth				
<b>Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information</b>									

Maine Department of Transportation				Project: Interstate 395 over CSX Railroad, Bridge No. 1559		Boring No.: BB-MCRR-101				
Soil/Rock Exploration Log US CUSTOMARY UNITS				Location: Brewer, Maine		WIN: 029484.00				
Driller:		New England Boring Contractors		Elevation (ft.):		60.7				
Operator:		G. McDougal		Datum:		NAVD88				
Logged By:		S. Butler		Rig Type:		Mobile Drill B-53				
Date Start/Finish:		10/30/2025-11/3/2025		Drilling Method:		Cased Wash Boring				
Boring Location:		N: 467,942; E: 1,732,611		Casing ID/OD:		HW/NW-4.0/3.0" ID				
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	60.2	BITUMINOUS CONCRETE	
	1D	24/13	1.0 - 3.0	20/26/28/23	54	71			Grey-brown, dry, very dense, fine to coarse SAND, well-graded, some coarse to fine gravel, trace silt, (Fill).	
	2D	24/16	3.0 - 5.0	8/10/11/14	21	28			Brown, dry, medium dense, fine SAND, poorly-graded, little medium to coarse sand, trace fine to coarse gravel, trace silt, loosely bonded, (Fill).	
5	3D	24/18	5.0 - 7.0	22/27/22/25	49	64			Brown, dry, very dense, fine SAND, poorly-graded, little medium to coarse sand, trace fine to coarse gravel, trace silt, loosely bonded, (Fill).	
	4D	8/5	7.0 - 7.7	19/50(2")			23	53.7	Brown, moist, very dense, fine to coarse Gravelly SAND, trace silt, loosely bonded, (Fill).	
	5D	4/0	9.0 - 9.3	50(3")			20		Note: SPT refusal at 9.3 ft, coarse gravel likely blocked soil from entering spoon.	
10							108			
							80			
							106			
							106			
15	6D	24/8	14.0 - 16.0	20/21/14/41	35	46	HW	46.7	Brown, moist, dense, fine to coarse Sandy GRAVEL, trace silt, loosely bonded, (Fill).	
							29			
	7D	24/14	16.0 - 18.0	11/11/10/19	21	28	70	44.7	Brown, moist, medium dense, fine SAND, poorly-graded, medium to coarse sand, some fine to coarse gravel, trace silt, loosely bonded, (Fill).	
							84			
							74			
20	8D	24/4	19.0 - 21.0	11/21/24/22	45	59	HW		Similar to to 7D, except very dense, (Fill).	
	9D	24/6	21.0 - 23.0	7/5/4/9	9	12	86	39.7	Brown, moist, medium dense, Gravelly fine to coarse SAND, poorly-graded, trace silt, (Fill).	G#847814 A-1-b, SP-SM
							58			
							72			
25	10D	24/6	24.0 - 26.0	13/7/6/6	13	17	HW	36.7	Brown, moist, medium dense, fine to coarse Sandy GRAVEL,	
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity.										
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.									Boring No.: BB-MCRR-101	



<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Interstate 395 over CSX Railroad, Bridge No. 1559 <b>Location:</b> Brewer, Maine		<b>Boring No.:</b> BB-MCRR-101 <b>WIN:</b> 029484.00					
<b>Driller:</b> New England Boring Contractors			<b>Elevation (ft.):</b> 60.7		<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> 10/30/2025-11/3/2025			<b>Drilling Method:</b> Cased Wash Boring		<b>Core Barrel:</b> NQ-2.0" ID						
<b>Boring Location:</b> N: 467,942; E: 1,732,611			<b>Casing ID/OD:</b> HW/NW-4.0/3.0" ID		<b>Water Level*:</b> 38.6 ft BGS						
<b>Hammer Efficiency Factor:</b> 0.786 <small>           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         </small>				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/> <small>           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         </small>				<small>           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         </small>			
Depth (ft.)	Sample Information							Elevation (ft.)	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				
25							HW	30.7	30.0	trace silt, loosely bonded, (Fill).	
	11D	24/12	26.0 - 28.0	9/15/13/24	28	37	29			Brown, moist, dense, fine to coarse Gravelly SAND, some medium to coarse sand, trace silt, loosely bonded, (Fill).	
							95				
							68				
	12D	24/7	29.0 - 31.0	10/25/17/6	42	55	34			Similar to 10D, (Fill).	
30							83				
	13D	24/4	31.0 - 33.0	WOR/WOR/12/13	12	16	53			Brown-grey, moist, very stiff, Silty CLAY, some fine to coarse gravel, trace fine sand, slightly plastic, (Marine Deposit).	
							70				
							77				
	14D	24/22	34.0 - 36.0	18/18/6/5	24	31	26			Brown-grey, moist, hard, Silty CLAY, trace coarse sand, trace wood particles, (Marine Deposit).	
35							50	26.7	34.0		
							66				
							71				
							59				
	15D	24/24	39.0 - 41.0	WOH/WOH/WOH/1			HW				Grey, wet, very soft, CLAY, moderately plastic, (Marine Deposit).
40											
	16D	24/12	44.0 - 46.0	Su=1,050/175 psf							5x110mm vane raw torque reading: V1: 270/45 in-lbs V2: 230/35 in-lbs Dark grey, wet, medium stiff to stiff, CLAY, moderately plastic, (Marine Deposit).
45	V1		44.6 - 45.0	Su=890/135 psf							
	V2		45.6 - 46.0								
	1U	24/19	46.0 - 48.0	PUSH							
	17D	24/24	48.0 - 50.0	Su=890/155 psf				55x110mm vane raw torque reading: V3: 230/40 in-lbs V4: 280/50 in-lbs Grey, wet, medium stiff to stiff, CLAY, trace fine sand (frequent			
50	V3		48.6 - 49.0								
	V4		49.6 - 50.0	Su=1,085/195 psf							
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity.											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 3 <b>Boring No.:</b> BB-MCRR-101	
* 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.											

[illegible]

Maine Department of Transportation				Project: Interstate 395 over CSX Railroad, Bridge No. 1559		Boring No.: BB-MCRR-102					
Soil/Rock Exploration Log US CUSTOMARY UNITS				Location: Brewer, Maine		WIN: 029484.00					
Driller: New England Boring Contractors		Elevation (ft.): 60.6		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: 11/4/2025-11/5/2025		Drilling Method: Cased Wash Boring		Core Barrel: NQ-2.0" ID							
Boring Location: N: 467,955; E: 1,732,716		Casing ID/OD: HW/NW-4.0/3.0 in. ID		Water Level*: 37.6 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				Elevation (ft.)
0							SSA	60.1		BITUMINOUS CONCRETE Brown, dry, dense, fine to coarse SAND, well-graded, some fine to coarse gravel, trace silt, trace cement, (Fill). Brown, dry, dense, fine SAND, poorly-graded, little medium to coarse sand, trace fine to coarse gravel, trace silt, (Fill). Brown, dry, medium dense, fine SAND, poorly-graded, little medium to coarse sand, trace fine to coarse gravel, trace silt, (Fill). Similar to 3D, except very dense, (Fill). Similar to 3D, except moist, (Fill). Brown, moist, very dense, Gravelly fine to coarse SAND, poorly-graded, little silt, (Fill). Brown, moist, very dense, fine SAND, poorly-graded, some medium to coarse sand, trace fine to coarse gravel, trace silt, (Fill). Similar to 7D, (Fill). Similar to 7D, (Fill). Similar to 7D, (Fill). Similar to 7D, (Fill).	G#847816 A-1-b, SP-SM
	1D	24/12	1.0 - 3.0	19/17/21/21	38	50					
	2D	24/15	3.0 - 5.0	11/15/18/21	33	43					
5	3D	24/14	5.0 - 7.0	8/6/13/21	19	25	10				
							90				
	4D	24/19	7.0 - 9.0	22/23/17/20	40	52	112				
							155				
	5D	24/15	9.0 - 11.0	31/27/28/27	55	72	HW				
10											
	6D	16/16	11.0 - 12.3	23/39/50(4")				49.6			
							19				
							66				
	7D	24/12	14.0 - 16.0	15/22/23/32	45	59	HW	46.6			
15											
	8D	11/6	16.0 - 16.9	28/50(5")							
							33				
							84				
	9D	24/10	19.0 - 21.0	22/23/21/36	44	58	HW				
20											
	10D	24/12	21.0 - 23.0	48/42/53/41	95	124					
							48				
							108				
25	11D	24/14	24.0 - 26.0	29/29/27/40	56	73	HW				
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity.											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 3 <b>Boring No.: BB-MCRR-102</b>		

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Interstate 395 over CSX Railroad, Bridge No. 1559 <b>Location:</b> Brewer, Maine		<b>Boring No.:</b> BB-MCRR-102 <b>WIN:</b> 029484.00	
<b>Driller:</b> New England Boring Contractors			<b>Elevation (ft.):</b> 60.6		<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> 11/4/2025-11/5/2025			<b>Drilling Method:</b> Cased Wash Boring		<b>Core Barrel:</b> NQ-2.0" ID		
<b>Boring Location:</b> N: 467,955; E: 1,732,716			<b>Casing ID/OD:</b> HW/NW-4.0/3.0 in. ID		<b>Water Level*:</b> 37.6 ft BGS		
<b>Hammer Efficiency Factor:</b> 0.786 <small>           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         </small>				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/> <small>           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         </small>			

Sample Information								Elevation (ft.)	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				
25							10		26.0	Grey-brown, moist, hard, CLAY, some fine to coarse gravel, some fine to coarse sand, (Fill).  Similar to 12D, except trace organic soil, (Fill).	
	12D	24/18	26.0 - 28.0	26/51/24/13	75	98	69				
							75				
							111				
30									30.5	Grey-brown, moist, hard, Clayey SILT, some fine sand, non-plastic (Marine Deposit).  Olive-brown, mottled, moist, very stiff, Clayey SILT, little fine sand, trace organics, slightly plastic, wood particles, (Marine Deposit).	
	13D	24/10	29.0 - 31.0	24/27/21/13	48	63	HW				
									39.0	Grey, wet, stiff, CLAY, moderately plastic, (Marine Deposit).  55x110mm vane raw torque reading: V1: 315/55 in-lbs V2: 325/45 in-lbs Grey, wet, stiff, CLAY, trace fine sand (frequent seams), moderately plastic, (Marine Deposit).	GTX#322340 CUDSS# DSS-1 WC=29% LL=29% PL=15% PI=14% SG=2.82
	14D	24/10	31.0 - 33.0	11/20/19/17	39	51					
							V				
							23				
35											
	15D	24/14	34.0 - 36.0	17/6/7/11	13	17	HW				
40											
	16D	24/24	39.0 - 41.0	2/4/4/5	8	10					
	1U	24/24	41.0 - 43.0	PUSH							
45											
	17D	24/12	44.0 - 46.0	Su=1,220/215 psf							
	V1		44.6 - 45.0								
	V2		45.6 - 46.0	Su=1,260/175 psf							
50									49.0	Grey-brown, wet, medium dense, fine to coarse GRAVEL, some	
	18D	24/8	49.0 - 51.0	29/8/13/23	21	28					

**Remarks:**  
 1. BGS = Below Existing Ground Surface.  
 2. SG = Specific Gravity.

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

Page 2 of 3  
**Boring No.:** BB-MCRR-102

[illegible]

Maine Department of Transportation				Project: Interstate 395 over CSX Railroad, Bridge No. 1559		Boring No.: BB-MCRR-103					
Soil/Rock Exploration Log US CUSTOMARY UNITS				Location: Brewer, Maine		WIN: 029484.00					
Driller: New England Boring Contractors		Elevation (ft.): 58.4		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: 11/10/2025-11/12/2025		Drilling Method: Cased Wash Boring		Core Barrel: NQ-2.0" ID							
Boring Location: N: 468,199; E: 1,732,743		Casing ID/OD: HW/NW-4.0/3.0" ID		Water Level*: 30.4 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											
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				Elevation (ft.)
0							SSA	58.1		BITUMINOUS CONCRETE Brown, dry, very dense, fine to coarse SAND, well-graded, some fine to coarse gravel, trace silt, trace asphalt, (Fill). Brown, dry, dense, fine to coarse SAND, poorly-graded, trace fine to coarse gravel, trace silt, (Fill). Brown, dry, very dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, (Fill). Brown, dry, very dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, (Fill). Brown, dry, dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, (Fill). Brown, dry, very dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, (Fill). Brown, moist, dense, fine to coarse SAND, well-graded, little silt, little fine gravel, (Fill). Similar to 7D, except very dense, (Fill). Brown, moist, dense, fine to coarse SAND, poorly-graded, trace fine to coarse gravel, trace silt, (Fill). Brown, moist, dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, (Fill). Brown, moist, very dense, fine to coarse GRAVEL, poorly-	G#847817 A-2-4, SM
	1D	24/18	1.0 - 3.0	21/21/29/25	50	66	11				
	2D	24/21	3.0 - 5.0	19/14/11/11	25	33	HW				
5	3D	24/19	5.0 - 7.0	21/21/20/19	41	54	21				
							45				
	4D	24/18	7.0 - 9.0	19/23/21/21	44	58	18				
							53				
10	5D	24/14	9.0 - 11.0	12/12/16/21	28	37	HW				
	6D	24/16	11.0 - 13.0	22/18/25/16	43	56					
15	7D	24/11	14.0 - 16.0	11/14/17/20	31	41					
	8D	24/11	16.0 - 18.0	32/50(5")			25				
							62				
							112				
20	9D	24/8	19.0 - 21.0	14/11/16/19	27	35	HW				
	10D	24/15	21.0 - 23.0	17/17/18/20	35	46	20				
							80				
							92				
25	11D	24/4	24.0 - 26.0	34/48/30/27	78	102	HW	34.4			
Remarks: 1. BGS = Below Existing Ground Surface.											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 3 <b>Boring No.: BB-MCRR-103</b>		

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Interstate 395 over CSX Railroad, Bridge No. 1559 <b>Location:</b> Brewer, Maine		<b>Boring No.:</b> BB-MCRR-103 <b>WIN:</b> 029484.00																																																																																																																																																																																																																																																																																																																																																																																								
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<b>Hammer Efficiency Factor:</b> 0.786 <small>           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         </small>				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/> <small>           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         </small>				<small>           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         </small>																																																																																																																																																																																																																																																																																																																																																																																						
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<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Interstate 395 over CSX Railroad, Bridge No. 1559</div> <div>Location: Brewer, Maine</div>		<div>Boring No.: BB-MCRR-103A</div> <div>WIN: 029484.00</div>																																																																																																																																																																																																																																																		
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Date Start/Finish: 11/10/2025-11/12/2025			Drilling Method: Cased Wash Boring		Core Barrel: NQ-2.0" ID																																																																																																																																																																																																																																																			
Boring Location: N: 468,204; E: 1,732,739			Casing ID/OD: HW/NW-4.0/3.0" ID		Water Level*: Not Measured																																																																																																																																																																																																																																																			
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BANGOR FORMATION Rock Mass Quality = Fair Recovery = 96% R2 Core Times (min:sec) 58.0-59.0 ft (6:43) 59.0-60.0 ft (3:33)  Bottom of Exploration at 60.0 feet below ground surface.</td><td rowspan="10"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>103</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>105</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>132</td></tr><tr><td>55</td><td>18D</td><td>8/2</td><td>54.4 - 55.1</td><td>26/50(1")</td><td></td><td></td><td></td><td>3.8</td></tr><tr><td></td><td>R1</td><td>35/34</td><td>55.1 - 58.0</td><td>RQD = 72%</td><td></td><td></td><td>NQ</td><td>3.1</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>R2</td><td>24/23</td><td>58.0 - 60.0</td><td>RQD = 67%</td><td></td><td></td><td></td><td></td></tr><tr><td>60</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-1.8</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>65</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></tr><tr><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></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>70</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></tr><tr><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></tr><tr><td>75</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>										Depth (ft.)	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Maine Department of Transportation										Project: Interstate 395 over CSX Railroad, Bridge No. 1559		Boring No.: BB-MCRR-104	
Soil/Rock Exploration Log US CUSTOMARY UNITS										Location: Brewer, Maine		WIN: 029484.00	
Driller: New England Boring Contractors					Elevation (ft.): 59.2			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: 11/5/2025-11/7/2025					Drilling Method: Cased Wash Boring			Core Barrel: NQ-2.0" ID					
Boring Location: N: 468,136; E: 1,732,803					Casing ID/OD: HW/NW-4.0/3.0" ID			Water Level*: 37.8 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	Elevation (ft.)					
0							SSA	58.7		BITUMINOUS CONCRETE	G#847820 WC=26% LL=34% PL=18% PI=16%		
	1D	24/14	1.0 - 3.0	7/16/14/14	30	39				Brown, dry, dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, trace cement, (Fill).			
	2D	24/16	3.0 - 5.0	13/14/15/12	29	38				Brown, dry, dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, trace cement, (Fill).			
5	3D	24/21	5.0 - 7.0	16/15/14/18	29	38				Brown, dry, dense, fine to coarse SAND, poorly-graded, trace fine to coarse gravel, trace silt, (Fill).			
	4D	24/11	7.0 - 9.0	3/27/16/9	43	56	V			Similar to 3D, except very dense, (Fill).			
							20						
	5D	24/16	9.0 - 11.0	12/17/15/10	32	42		51		Brown, dry, dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, (Fill).			
10								65					
	6D	24/19	11.0 - 13.0	19/13/11/12	24	31		90		Similar to 5D, (Fill).			
								106					
								143					
	7D	24/10	14.0 - 16.0	20/20/18/19	38	50		15		Brown, moist, dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, (Fill).			
15								16					
	8D	24/12	16.0 - 18.0	24/26/31/25	57	75		25		Brown, moist, very dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, (Fill).			
								64					
								43					
	9D	24/12	19.0 - 21.0	14/20/19/32	39	51	HW			Similar to 8D, (Fill).			
20													
	10D	6/2	21.0 - 21.5	27/50(0")					Brown, moist, very dense, fine to coarse SAND, poorly-graded, little fine to coarse gravel, trace silt, (Fill).				
								60					
								103					
25	11D	24/12	24.0 - 26.0	10/15/28/27	43	56	HW	35.2	Brown, moist, very dense, fine to coarse Gravelly SAND, trace				
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity.													
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.										Boring No.: BB-MCRR-104			

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> Interstate 395 over CSX Railroad, Bridge No. 1559 <b>Location:</b> Brewer, Maine		<b>Boring No.:</b> BB-MCRR-104 <b>WIN:</b> 029484.00					
<b>Driller:</b> New England Boring Contractors			<b>Elevation (ft.):</b> 59.2		<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> 11/5/2025-11/7/2025			<b>Drilling Method:</b> Cased Wash Boring		<b>Core Barrel:</b> NQ-2.0" ID						
<b>Boring Location:</b> N: 468,136; E: 1,732,803			<b>Casing ID/OD:</b> HW/NW-4.0/3.0" ID		<b>Water Level*:</b> 37.8 ft BGS						
<b>Hammer Efficiency Factor:</b> 0.786 <small>           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         </small>				<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/> <small>           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         </small>							
<small>           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         </small>				<small>           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         </small>							
Depth (ft.)	Sample Information							Elevation (ft.)	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				
25										silt, (Fill).  Brown, moist, very dense, fine to coarse SAND, poorly-graded, some fine to coarse gravel, trace silt, trace organics, (Fill).  Similar to 12D, except trace wood fragments, medium dense, (Fill).  Olive-brown, moist, very stiff, SILT, trace fine sand, organic odor, non-plastic, trace organics, (Marine Deposit).  Olive-brown, moist, very stiff, Silty CLAY, slightly plastic, trace wood particles and organics, (Marine Deposit).  Grey, wet, very soft, CLAY, moderately plastic, frequent trace fine sand seams, (Marine Deposit).  Grey-brown, wet, very dense, fine to coarse GRAVEL, some fine	GTX#322340 CUDSS# DSS-2 WC=25.6% LL=34% PL=18% PI=16% SG=2.75
	12D	24/12	26.0 - 28.0	7/32/35/41	67	88	33				
							45				
	13D	24/24	29.0 - 31.0	20/14/8/11	22	29	HW				
30							62				
	14D	24/20	34.0 - 36.0	18/8/11/14	19	25	HW				
35											
	1U	24/23	39.0 - 41.0	PUSH							
40											
	15D	24/22	44.0 - 46.0	WOR/WOH/WOH/ WOH			122				
45							190				
							200				
50	16D	11/6	49.0 - 49.9	35/50(5")							
<b>Remarks:</b> 1. BGS = Below Existing Ground Surface. 2. SG = Specific Gravity.											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 3 <b>Boring No.:</b> BB-MCRR-104	

<b>Maine Department of Transportation</b>						Project: Interstate 395 over CSX Railroad, Bridge No. 1559			<b>Boring No.:</b> BB-MCRR-104																																																																																																																																																																															
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<table border="1"><thead><tr><th rowspan="2">Depth (ft.)</th><th colspan="8">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>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></thead><tbody><tr><td rowspan="3">50</td><td>R1</td><td>17/15</td><td>50.0 - 51.4</td><td>RQD = 0%</td><td></td><td></td><td>NQ</td><td>9.2</td><td rowspan="10"></td><td>to coarse sand, trace silt, loosely bonded, (Glacial Till). Note: SPT refusal at 49.9 ft on bedrock. <div style="text-align: right;">50.0-</div></td><td rowspan="10"></td></tr><tr><td>R2</td><td>23/23</td><td>51.4 - 53.3</td><td>RQD = 61%</td><td></td><td></td><td></td><td></td><td>Top of Bedrock at Elev. 9.2 ft. R1: Grey to dark grey, aphanitic, METASILTSTONE, hard, fresh to slightly weathered. Primary joint sets are steep along foliation, spaced extremely close to close, smooth and planar, fresh, open. Secondary joint sets one low angle, spaced very close to close, rough and undulating, fresh to slightly discolored, open. Calcite veins throughout.</td></tr><tr><td>R3</td><td>20/20</td><td>53.3 - 55.0</td><td>RQD = 90%</td><td></td><td></td><td></td><td></td><td>BANGOR FORMATION Rock Mass Quality = Very Poor Recovery = 88% R1 Core Times (min:sec) 50.0-51.0 ft (3:51) 51.0-51.4 ft (2:03) R2: Similar to R1. Primary joint sets are steep along foliation, spaced very close to moderately close, smooth and planar, fresh, open. Secondary joint sets are low angle, spaced close to moderately close, rough and undulating, fresh, open. 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## **APPENDIX B**

### **Bedrock Core Photographs**

**BEDROCK CORE PHOTOGRAPHS  
INTERSTATE 395 OVER CSX RAILROAD  
BRIDGE NO. 1559, MAINEDOT WIN 029484.00  
Brewer, Maine**

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**Top Row:** BB-MCRR-101, Run No. R1: 62.5 ft (left) to 67.5 ft (right)  
**Top Middle Row:** BB-MCRR-102, Run No. R1: 54.0 ft (left) to 57.6 ft (middle), BB-MCRR-104,  
Run No. R1: 50.0 ft (middle) to 51.4 ft (middle-right), Run No. R2: 51.4 ft (middle-right) to 52.7 ft (right)  
**Bottom Middle Row:** BB-MCRR-104, Run No. R2: 52.7 ft (middle) to 53.3 ft (middle-left),  
Run No. R3: 53.3 ft (middle-left) to 55.0 ft (middle)  
**Bottom Row:** Empty.



**BEDROCK CORE PHOTOGRAPHS  
INTERSTATE 395 OVER CSX RAILROAD  
BRIDGE NO. 1559, MAINEDOT WIN 029484.00  
Brewer, Maine**

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**Top Row:** BB-MCRR-103A, Run No. R1: 55.0 ft (left) to 58.0 ft (middle-right), Run No. R2: 58.0 ft (middle-right) to 60.0 ft (right)

**Top Middle Row:** Empty.

**Bottom Middle Row:** Empty.

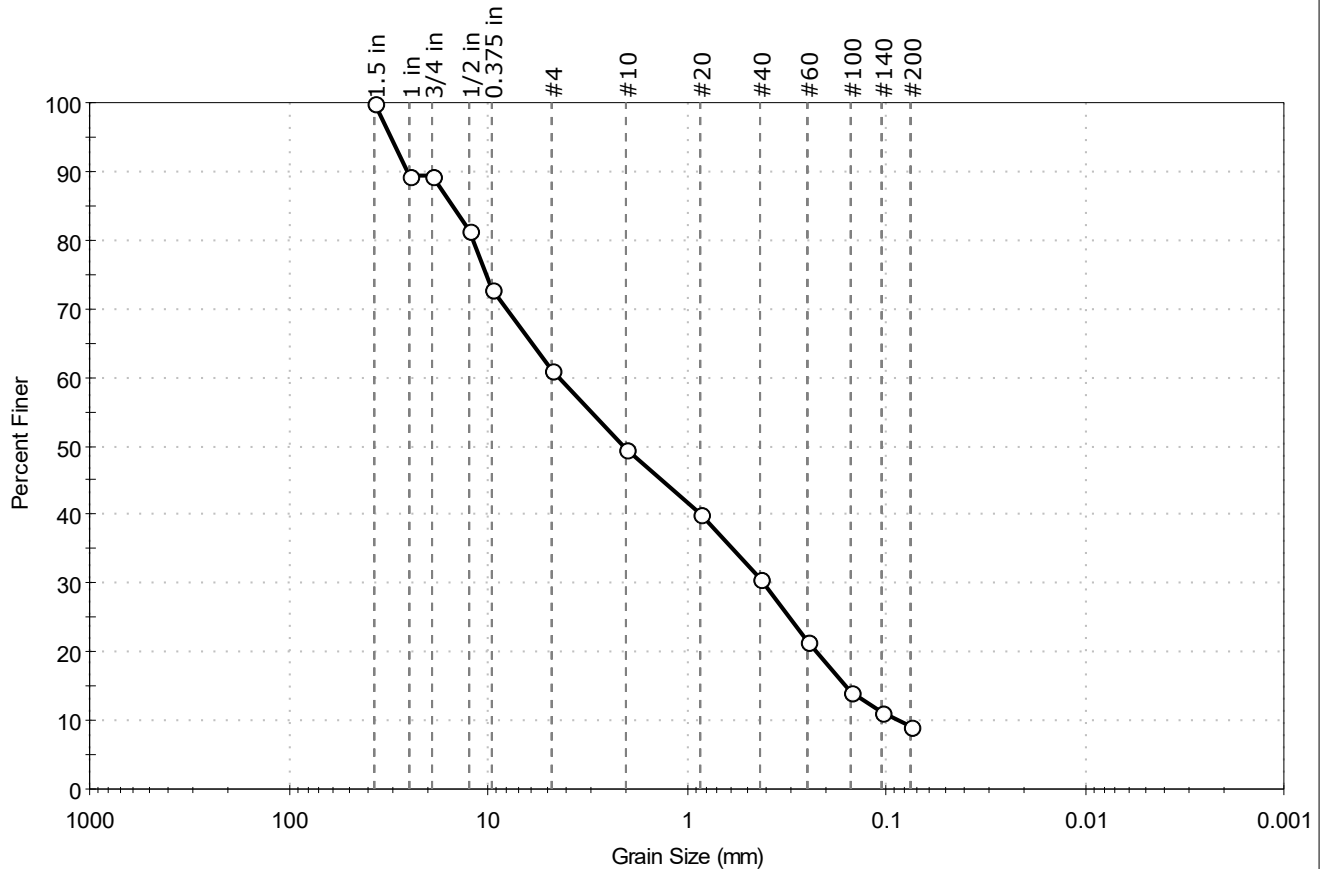
**Bottom Row:** Empty.

## **APPENDIX C**

### **Laboratory Test Results**

Client: Haley & Aldrich, Inc.	Project No: GTX-322340	
Project: I-395 MCRR Bridge No. 1559		
Location: Brewer, ME	Boring ID: BB-MCRR-101	Sample Type: Jar
	Sample ID: 9D	Test Date: 12/19/25
	Depth: 21-23'	Test Id: 847814
Test Comment: ---		
Visual Description: Moist, brown sand with silt and gravel		
Sample Comment: ---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	39.0	51.8	9.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	89		
3/4 in	19.00	89		
1/2 in	12.50	81		
0.375 in	9.50	73		
#4	4.75	61		
#10	2.00	50		
#20	0.85	40		
#40	0.42	31		
#60	0.25	22		
#100	0.15	14		
#140	0.11	11		
#200	0.075	9.2		

### Coefficients

$D_{85} = 15.0761$  mm       $D_{30} = 0.4097$  mm  
 $D_{60} = 4.4123$  mm       $D_{15} = 0.1576$  mm  
 $D_{50} = 2.0581$  mm       $D_{10} = 0.0872$  mm  
 $C_u = 50.600$        $C_c = 0.436$

### Classification

ASTM N/A

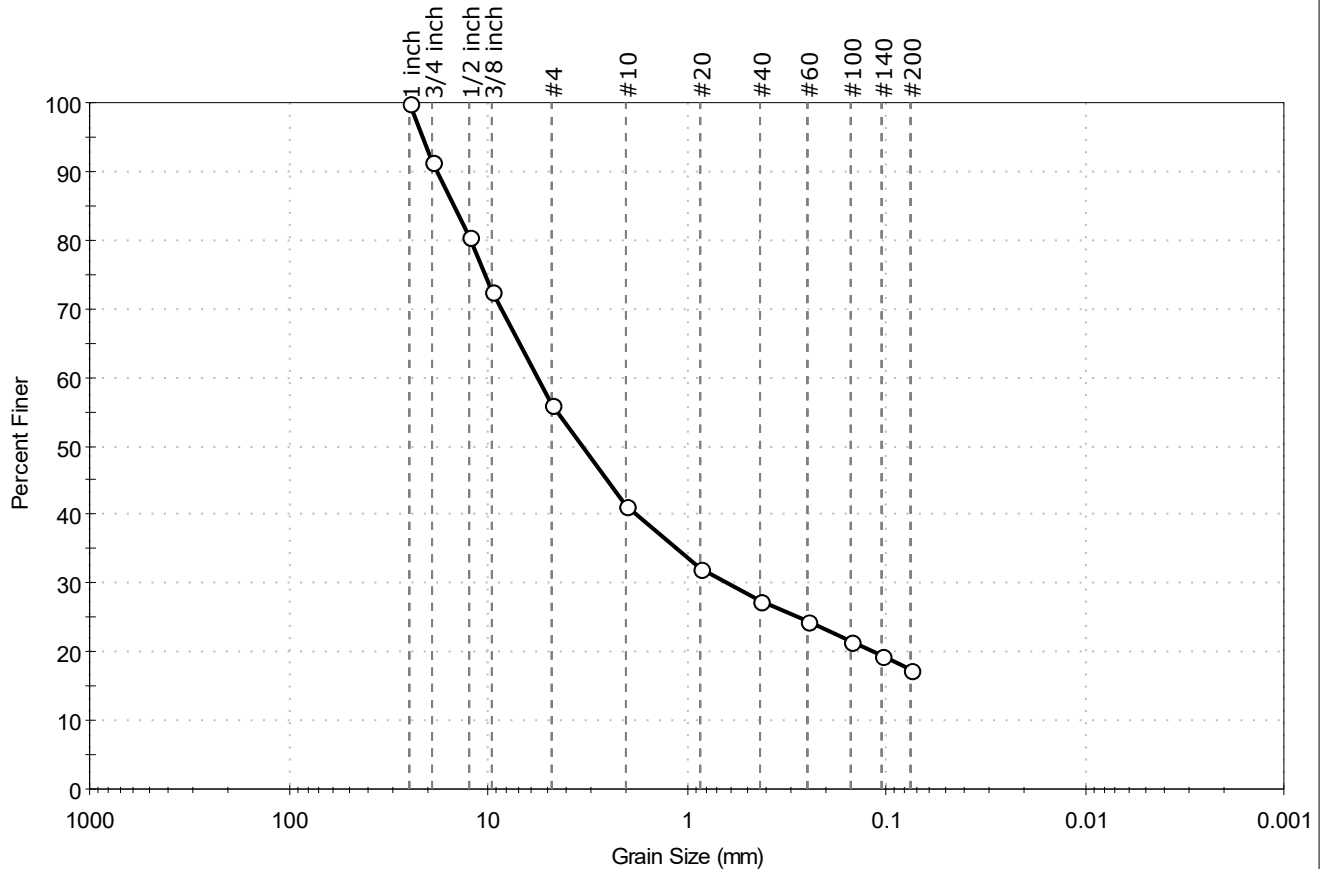
AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

### Sample/Test Description

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

Client: Haley & Aldrich, Inc.	Project No: GTX-322340	
Project: I-395 MCRR Bridge No. 1559		
Location: Brewer, ME	Sample Type: Jar	Tested By: ajl
Boring ID: BB-MCRR-101	Test Date: 12/19/25	Checked By: ank
Sample ID: 18D	Test Id: 847815	
Depth : 54-56'		
Test Comment: ---		
Visual Description: Moist, gray silty gravel with sand		
Sample Comment: ---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	43.9	38.7	17.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 inch	25.00	100		
3/4 inch	19.00	91		
1/2 inch	12.50	80		
3/8 inch	9.50	73		
#4	4.75	56		
#10	2.00	41		
#20	0.85	32		
#40	0.42	27		
#60	0.25	24		
#100	0.15	22		
#140	0.11	19		
#200	0.075	17		

### Coefficients

$D_{85} = 14.8739 \text{ mm}$        $D_{30} = 0.6193 \text{ mm}$   
 $D_{60} = 5.6068 \text{ mm}$        $D_{15} = \text{N/A}$   
 $D_{50} = 3.3374 \text{ mm}$        $D_{10} = \text{N/A}$   
 $C_u = \text{N/A}$        $C_c = \text{N/A}$

### Classification

ASTM N/A

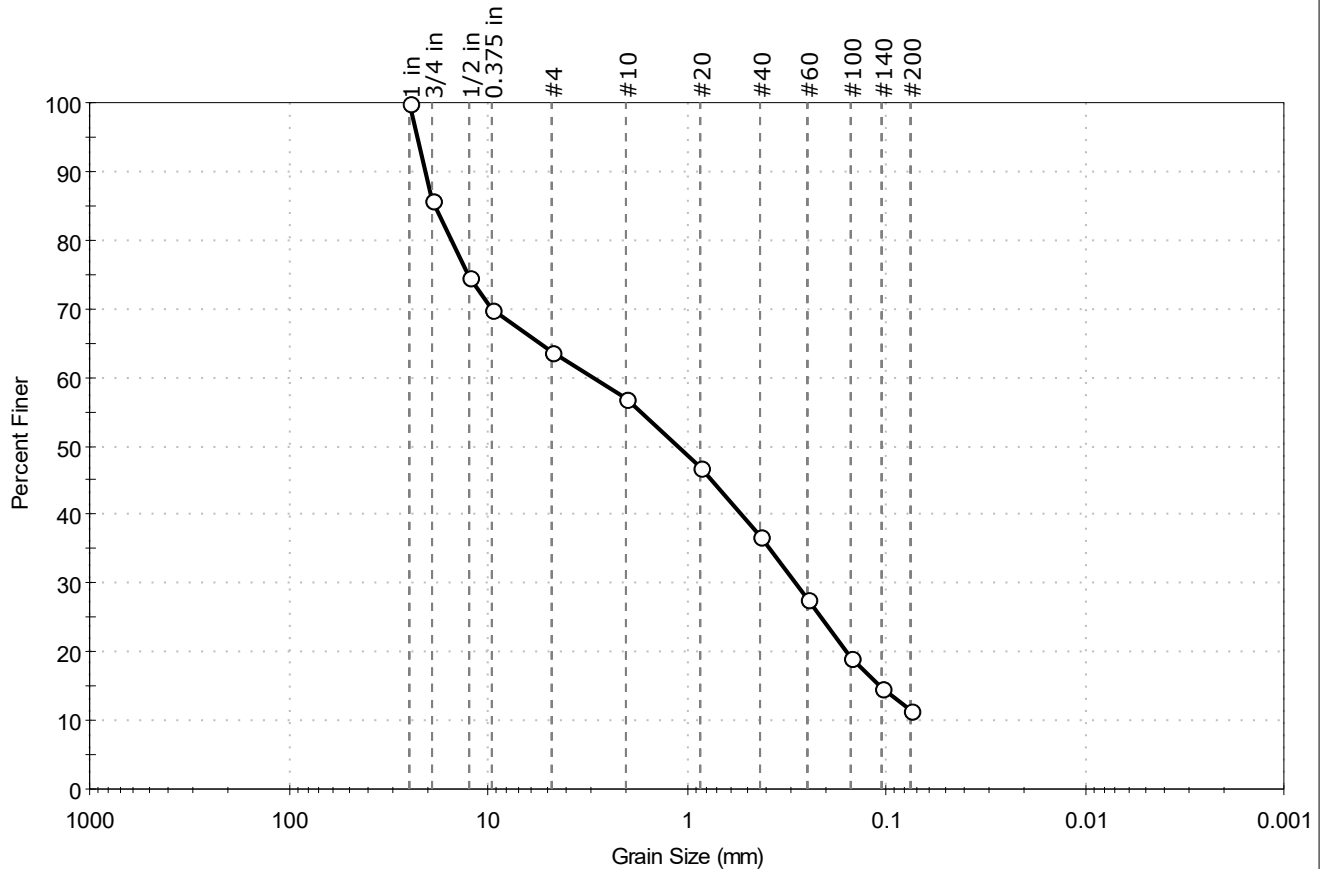
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

### Sample/Test Description

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

Client:	Haley & Aldrich, Inc.		
Project:	I-395 MCRR Bridge No. 1559		
Location:	Brewer, ME	Project No:	GTX-322340
Boring ID:	BB-MCRR-102	Sample Type:	Jar
Sample ID:	6D	Test Date:	12/19/25
Depth :	11-12.3'	Test Id:	847816
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
—	36.2	52.4	11.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
3/4 in	19.00	86		
1/2 in	12.50	74		
0.375 in	9.50	70		
#4	4.75	64		
#10	2.00	57		
#20	0.85	47		
#40	0.42	37		
#60	0.25	28		
#100	0.15	19		
#140	0.11	15		
#200	0.075	11		

### Coefficients

$D_{85} = 18.3315 \text{ mm}$        $D_{30} = 0.2862 \text{ mm}$   
 $D_{60} = 2.9171 \text{ mm}$        $D_{15} = 0.1081 \text{ mm}$   
 $D_{50} = 1.0943 \text{ mm}$        $D_{10} = \text{N/A}$   
 $C_u = \text{N/A}$        $C_c = \text{N/A}$

### Classification

ASTM N/A

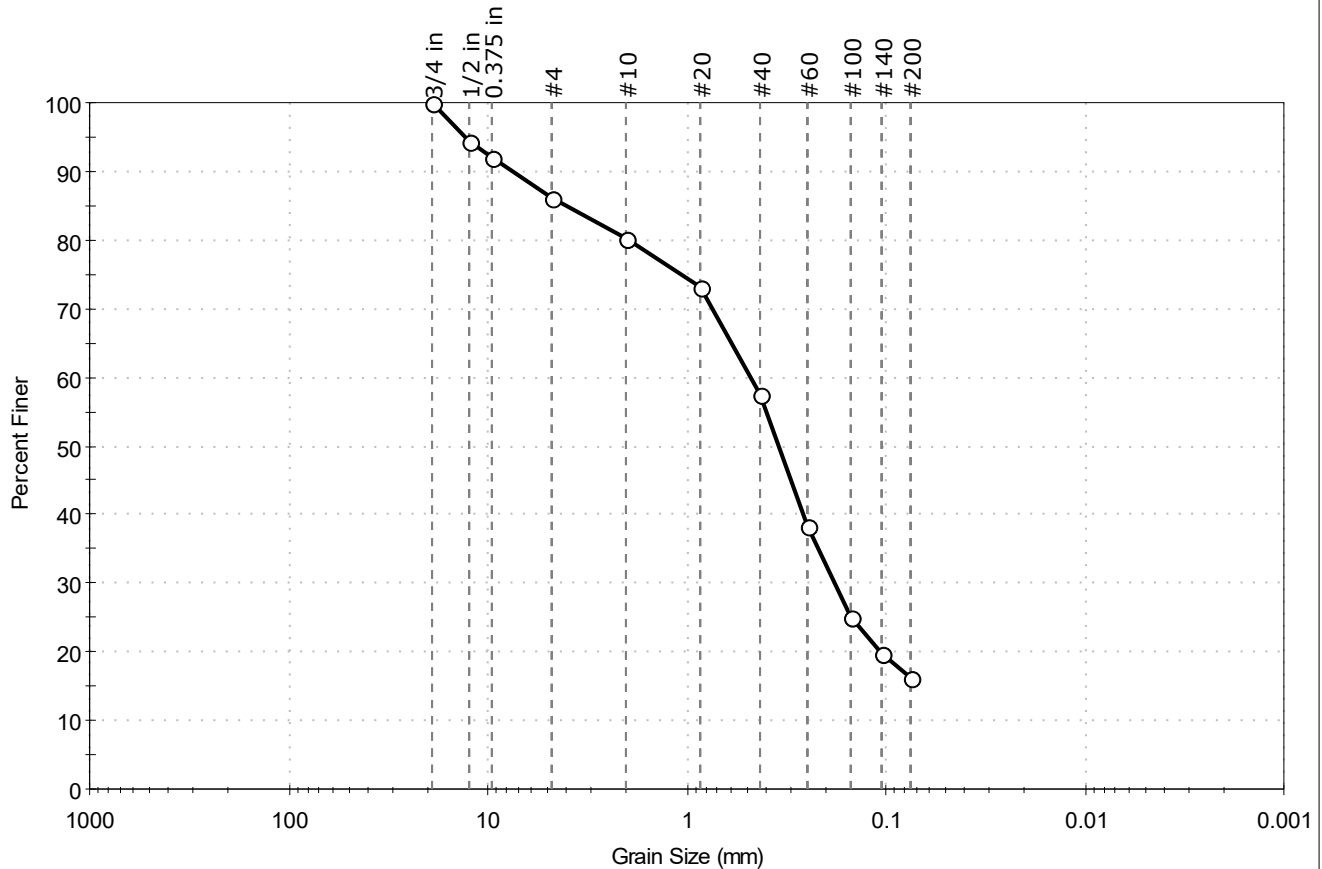
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

### Sample/Test Description

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

Client: Haley & Aldrich, Inc.	Project No: GTX-322340	
Project: I-395 MCRR Bridge No. 1559		
Location: Brewer, ME	Boring ID: BB-MCRR-103	Sample Type: Jar
	Sample ID: 7D	Test Date: 12/19/25
	Depth: 14-16'	Test Id: 847817
Test Comment: ---		
Visual Description: Moist, brown silty sand		
Sample Comment: ---		

## Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	13.8	69.9	16.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 in	19.00	100		
1/2 in	12.50	95		
0.375 in	9.50	92		
#4	4.75	86		
#10	2.00	80		
#20	0.85	73		
#40	0.42	57		
#60	0.25	38		
#100	0.15	25		
#140	0.11	20		
#200	0.075	16		

### Coefficients

$D_{85} = 4.0053 \text{ mm}$        $D_{30} = 0.1809 \text{ mm}$   
 $D_{60} = 0.4761 \text{ mm}$        $D_{15} = \text{N/A}$   
 $D_{50} = 0.3454 \text{ mm}$        $D_{10} = \text{N/A}$   
 $C_u = \text{N/A}$        $C_c = \text{N/A}$

### Classification

ASTM N/A

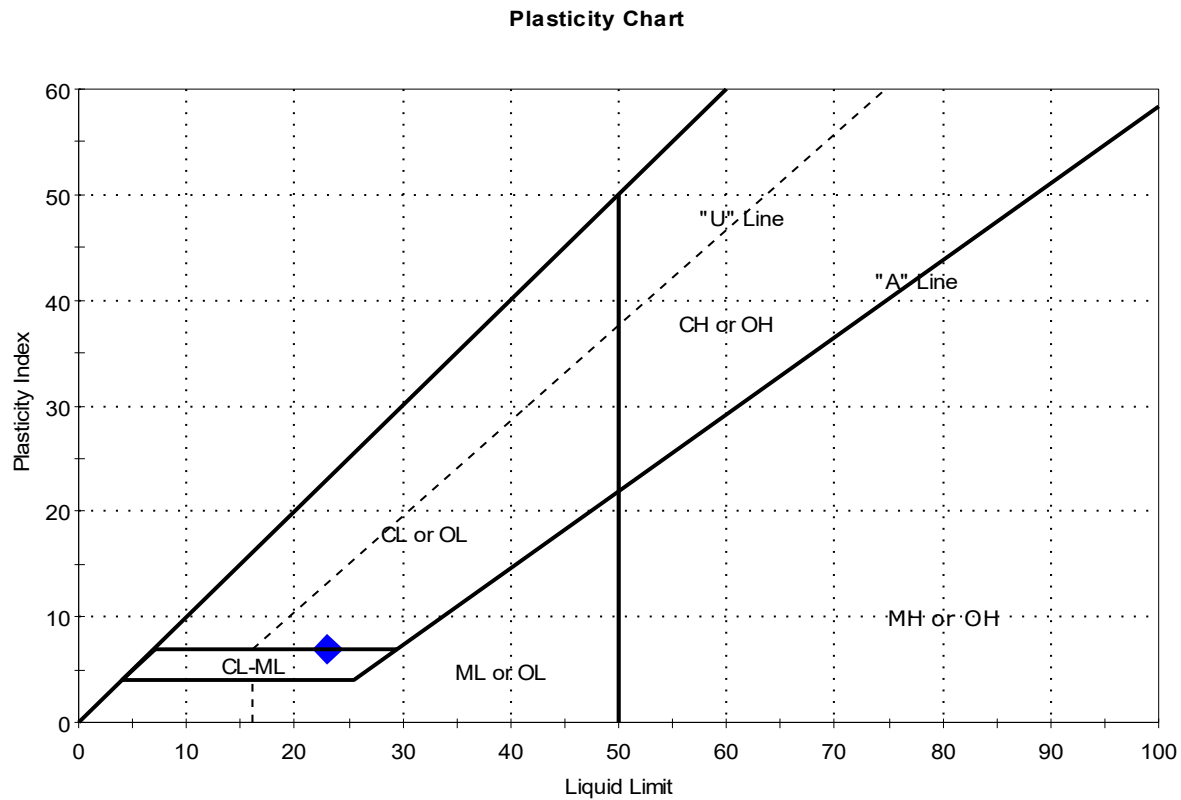
AASHTO Silty Gravel and Sand (A-2-4 (0))

### Sample/Test Description

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

Client:	Haley & Aldrich, Inc.		
Project:	I-395 MCRR Bridge No. 1559		
Location:	Brewer, ME	Project No:	GTX-322340
Boring ID:	BB-MCRR-101	Sample Type:	Tube
Sample ID:	1U	Test Date:	12/19/25
Depth :	46-48'	Test Id:	847818
Test Comment:	---		
Visual Description:	Moist, 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
◆	1U	BB-MCRR-1	46-48'	27	23	16	7	1.5	

Sample Prepared using the WET method

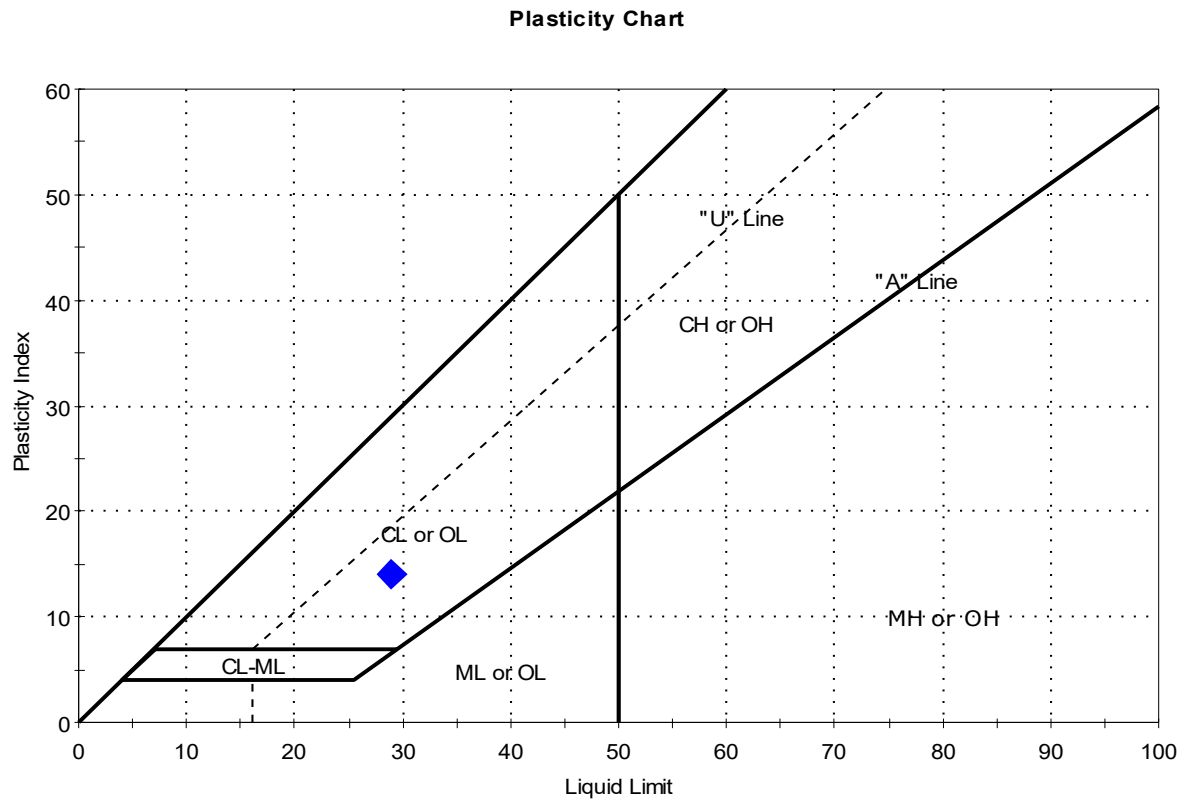
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Haley & Aldrich, Inc.		
Project:	I-395 MCRR Bridge No. 1559		
Location:	Brewer, ME	Project No:	GTX-322340
Boring ID:	BB-MCRR-102	Sample Type:	Tube
Sample ID:	1U	Test Date:	12/19/25
Depth :	41-43'	Test Id:	847819
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-MCRR-1	41-43'	29	29	15	14	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

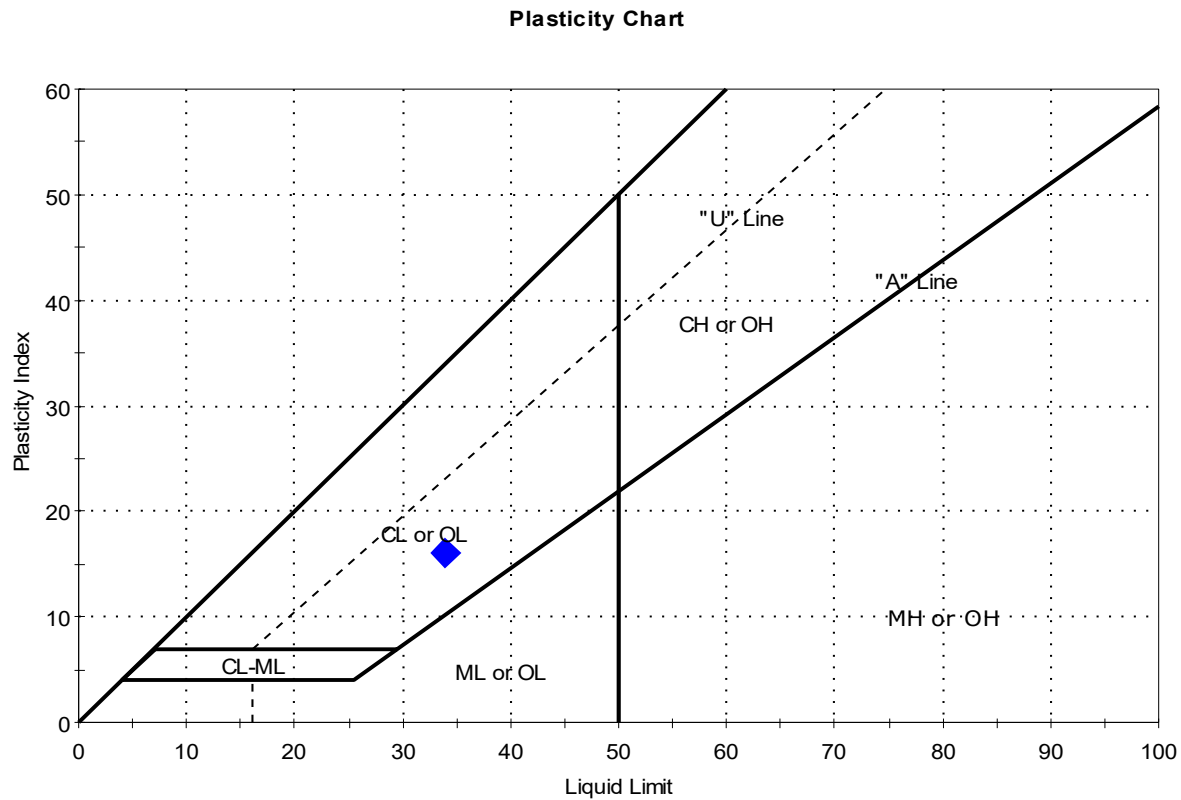
Dilatancy: SLOW

Toughness: LOW



Client:	Haley & Aldrich, Inc.		
Project:	I-395 MCRR Bridge No. 1559		
Location:	Brewer, ME	Project No:	GTX-322340
Boring ID:	BB-MCRR-104	Sample Type:	Tube
Sample ID:	1U	Test Date:	12/19/25
Depth :	39-41'	Test Id:	847820
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-MCRR-1	39-41'	26	34	18	16	0.5	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW



Client:	Haley & Aldrich, Inc.
Project Name:	I-395 MCRR Bridge No. 1559
Project Location:	Brewer, ME
GTX #:	322340
Test Date:	12/22/2025
Tested By:	jlw
Checked By:	dgz
Boring ID:	BB-MCRR-101
Sample ID:	1U
Depth, ft:	46-48'
Location in sample, ft:	47.7-47.9'
Visual Description:	Moist, dark gray silty clay

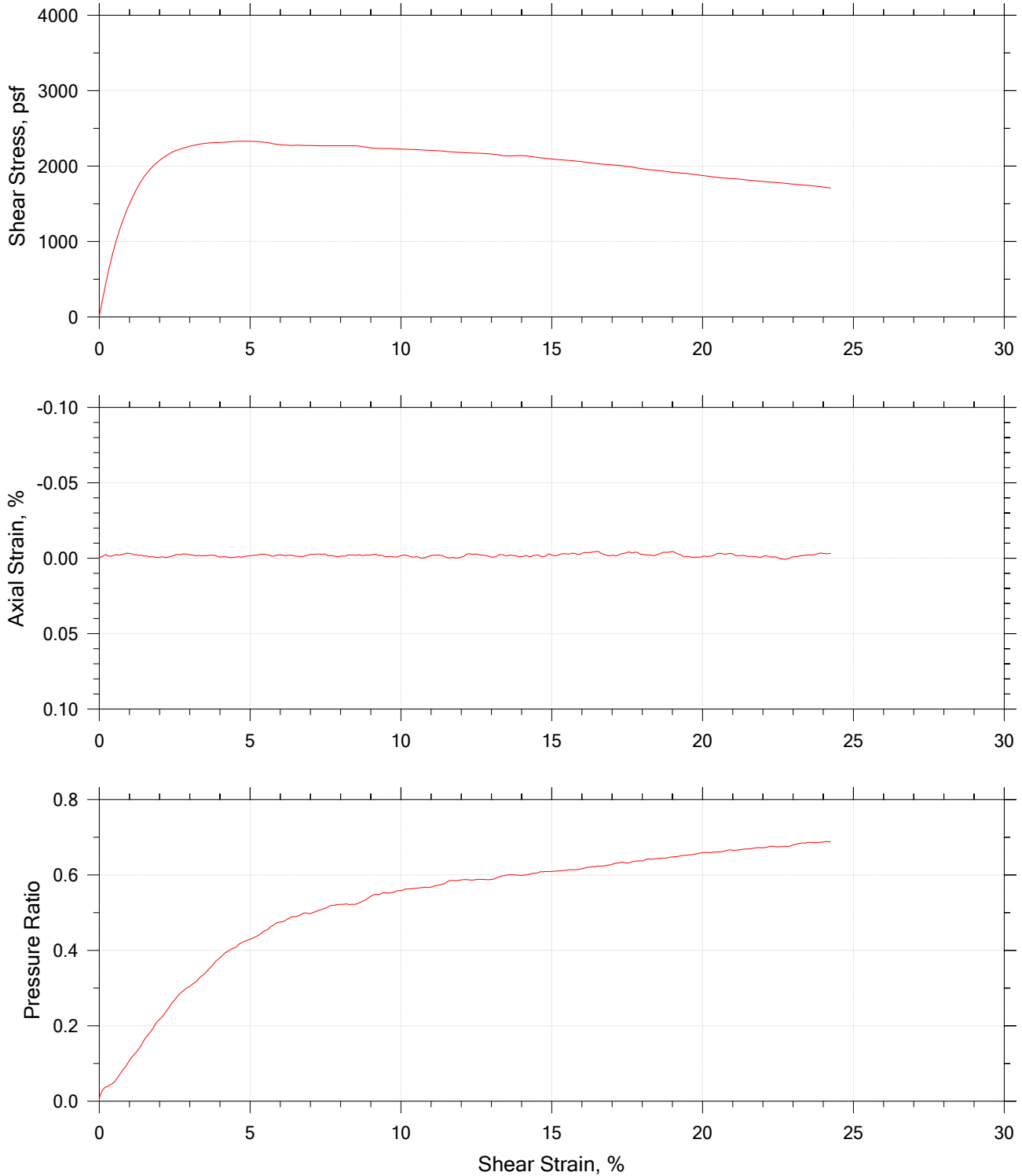
## Consolidated Undrained Direct Simple shear Testing of Fine-Grained Soils by ASTM D6528


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:	2.74
% Passing #200 sieve:	---	Liquid Limit:	23
Soil Classification:	---	Plastic Limit:	16
Group Symbol:	---	Plasticity Index:	7

Parameter	Point 1	Point 2	Point 3	Point 4
Test No.	DSS-3	---	---	---
Initial Diameter, in	2.50	---	---	---
Initial Height, in	1.00	---	---	---
Initial Area, in <sup>2</sup>	4.91	---	---	---
Initial Mass, g	160.4	---	---	---
Initial Moisture Content, %	26.7	---	---	---
Initial Dry Density, pcf	98.2	---	---	---
Initial Void Ratio	0.74	---	---	---
Initial Degree of Saturation, %	99.0	---	---	---
Nominal Rate of Shear Strain, %/hour	5.0	---	---	---
Max. Vertical Consolidation Stress, psf	12,500	---	---	---
Vertical Consolidation Stress at shear, psf	12,500	---	---	---
Pre-shear Moisture Content, %	20.3	---	---	---
Pre-shear Void Ratio	0.55	---	---	---
Pre-shear Vertical Strain, %	10.4	---	---	---
Final Consolidation Loading Duration, min	746	---	---	---
Final Moisture Content, %	20.4	---	---	---
Measured Peak Shear Stress, psf	2,331	---	---	---
Shear Strain at Peak Shear Stress, %	4.8	---	---	---
Membrane Correction, psf	40	---	---	---
Corrected Peak Shear Stress, psf	2,291	---	---	---
$S_u/\sigma'_{vc}$	0.18	---	---	---

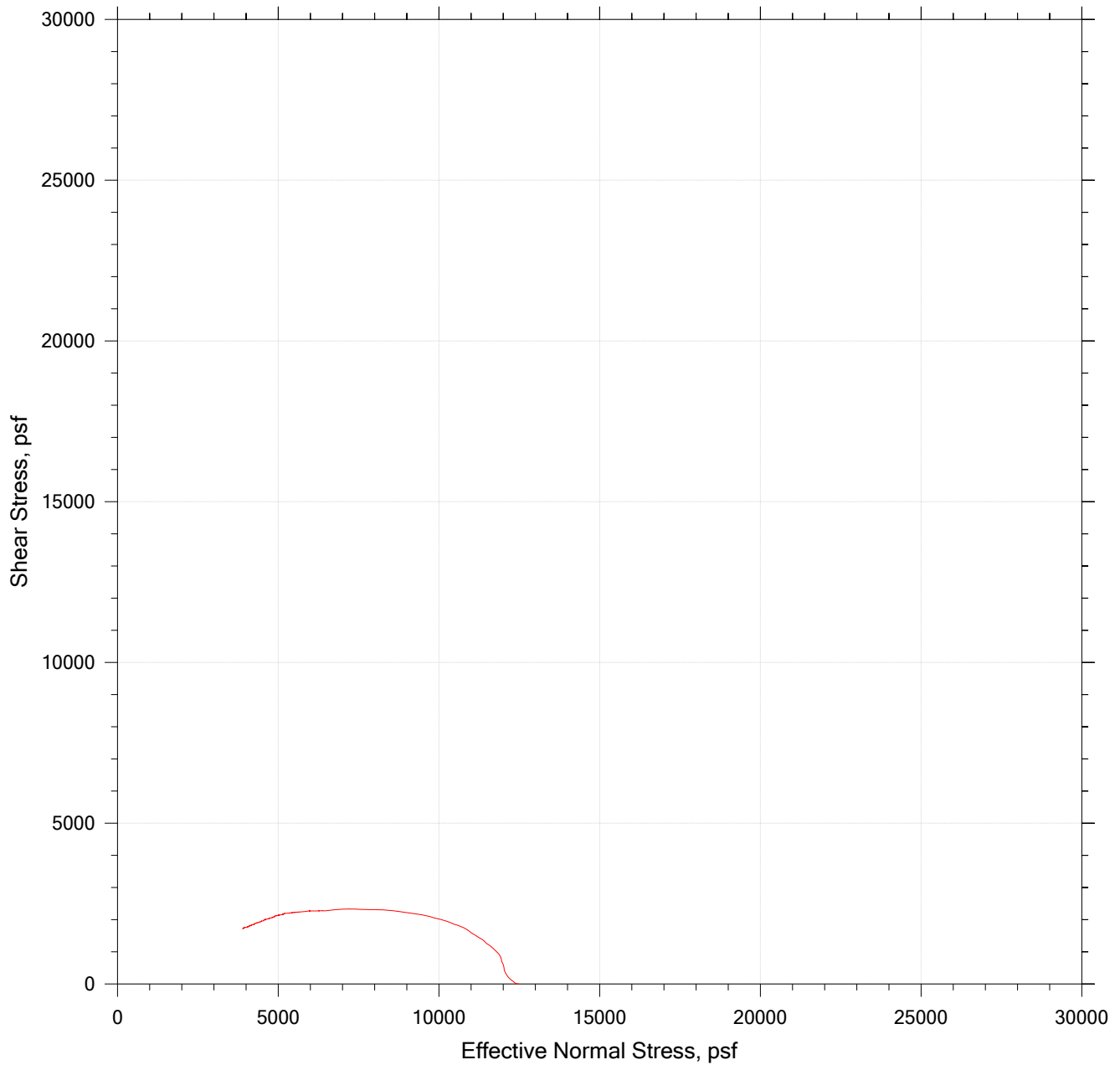
Comments:	Please see attached plots for additional information
Notes:	These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning,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


# Direct Simple Shear Test



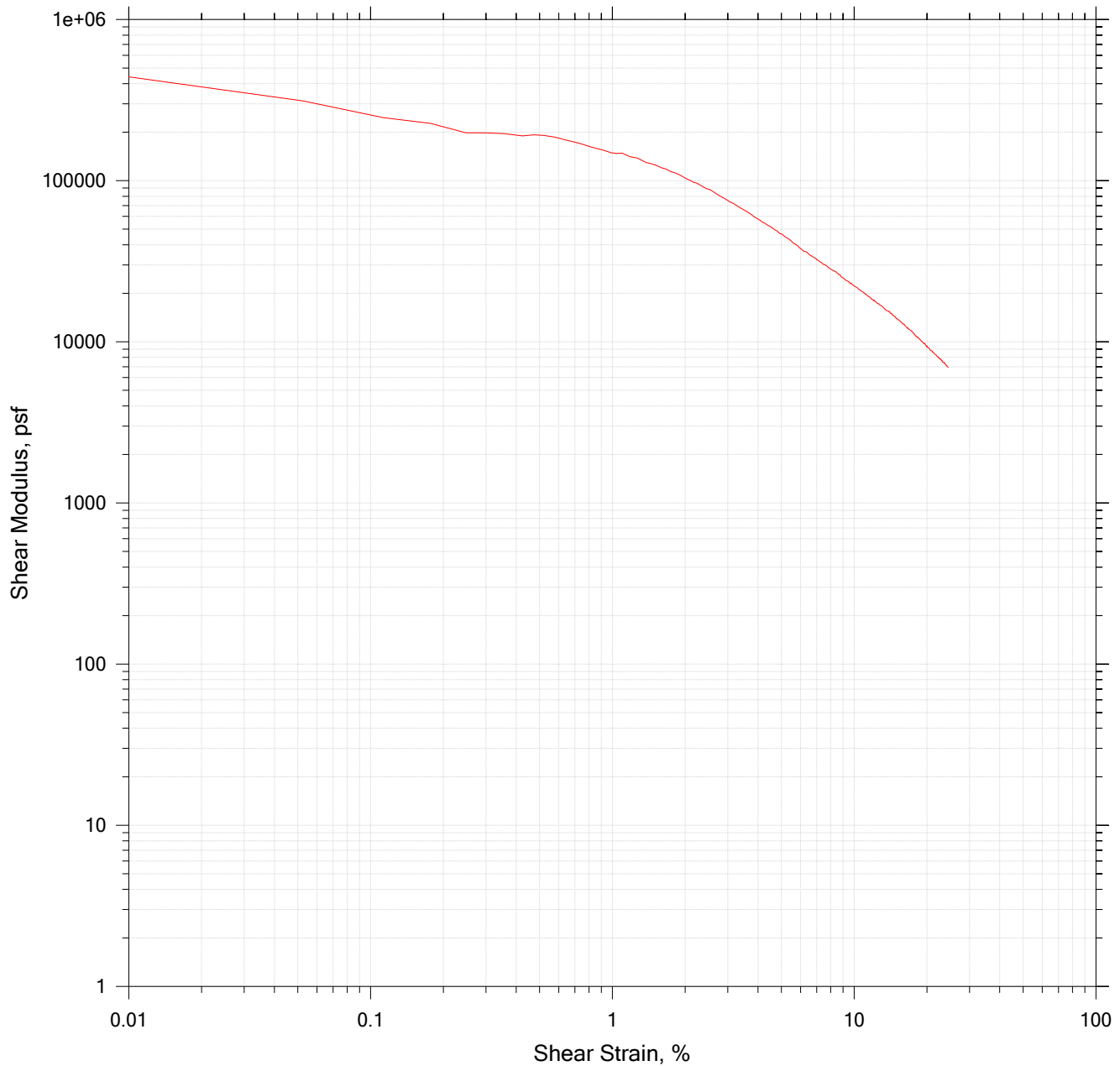
	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-101	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/22/25	Depth: 46-48'
	Test Number: DSS-3	Preparation: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: CST-001		


# Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-101	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/22/25	Depth: 46-48'
	Test Number: DSS-3	Preparation: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: CST-001		

# Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-101	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/22/25	Depth: 46-48'
	Test Number: DSS-3	Preparation: intact	Elevation: ---
	Description: Moist, dark gray silty clay		
	Remarks: CST-001		



Client:	Haley & Aldrich, Inc.
Project Name:	I-395 MCRR Bridge No. 1559
Project Location:	Brewer, ME
GTX #:	322340
Test Date:	12/19/2025
Tested By:	jlw
Checked By:	dgz
Boring ID:	BB-MCRR-102
Sample ID:	1U
Depth, ft:	41-43'
Location in sample, ft:	42.8-43.0'
Visual Description:	Moist, dark gray clay

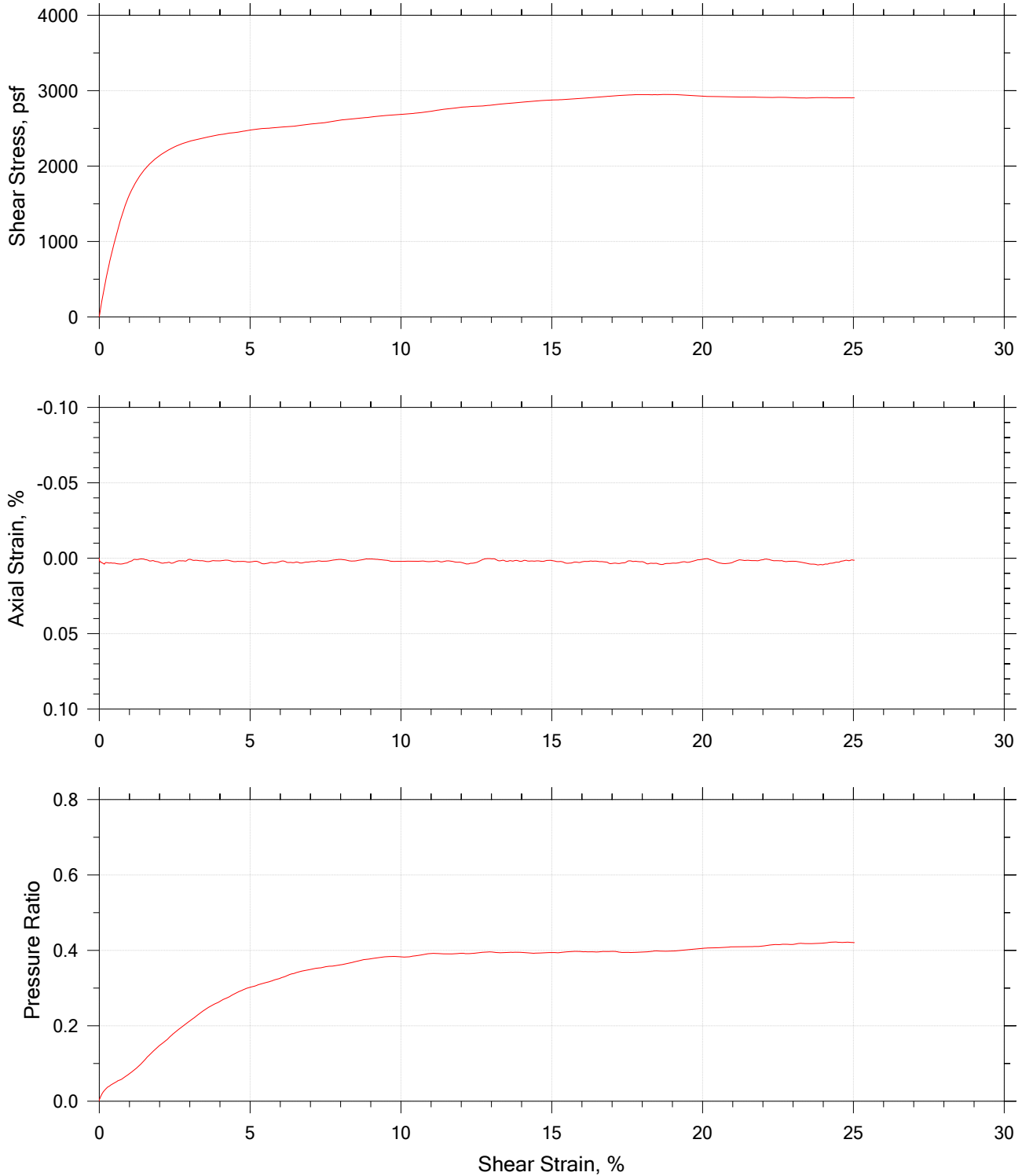
## Consolidated Undrained Direct Simple shear Testing of Fine-Grained Soils by ASTM D6528


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:	2.82
% Passing #200 sieve:	---	Liquid Limit:	29
Soil Classification:	---	Plastic Limit:	15
Group Symbol:	---	Plasticity Index:	13

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	156.5	---	---	---
Initial Moisture Content, %	28.9	---	---	---
Initial Dry Density, pcf	94.2	---	---	---
Initial Void Ratio	0.86	---	---	---
Initial Degree of Saturation, %	93.8	---	---	---
Nominal Rate of Shear Strain, %/hour	5.0	---	---	---
Max. Vertical Consolidation Stress, psf	11,300	---	---	---
Vertical Consolidation Stress at shear, psf	11,300	---	---	---
Pre-shear Moisture Content, %	22.0	---	---	---
Pre-shear Void Ratio	0.62	---	---	---
Pre-shear Vertical Strain, %	13.2	---	---	---
Final Consolidation Loading Duration, min	2,364	---	---	---
Final Moisture Content, %	21.9	---	---	---
Measured Peak Shear Stress, psf	2,950	---	---	---
Shear Strain at Peak Shear Stress, %	18.9	---	---	---
Membrane Correction, psf	51	---	---	---
Corrected Peak Shear Stress, psf	2,899	---	---	---
$S_u/\sigma'_{vc}$	0.26	---	---	---

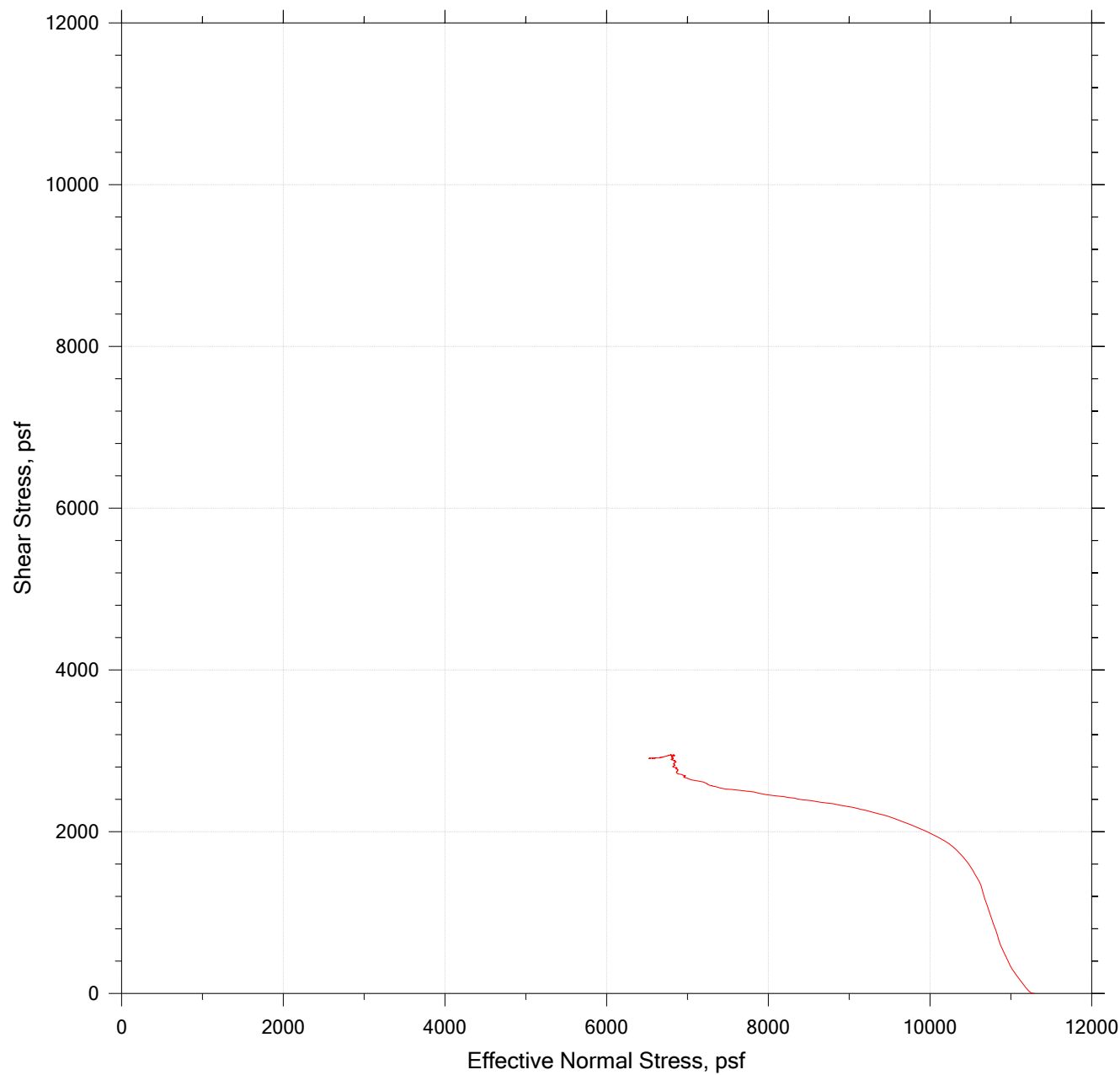
Comments:	Please see attached plots for additional information
Notes:	These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning,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


# Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-102	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/19/25	Depth: 41-43'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		

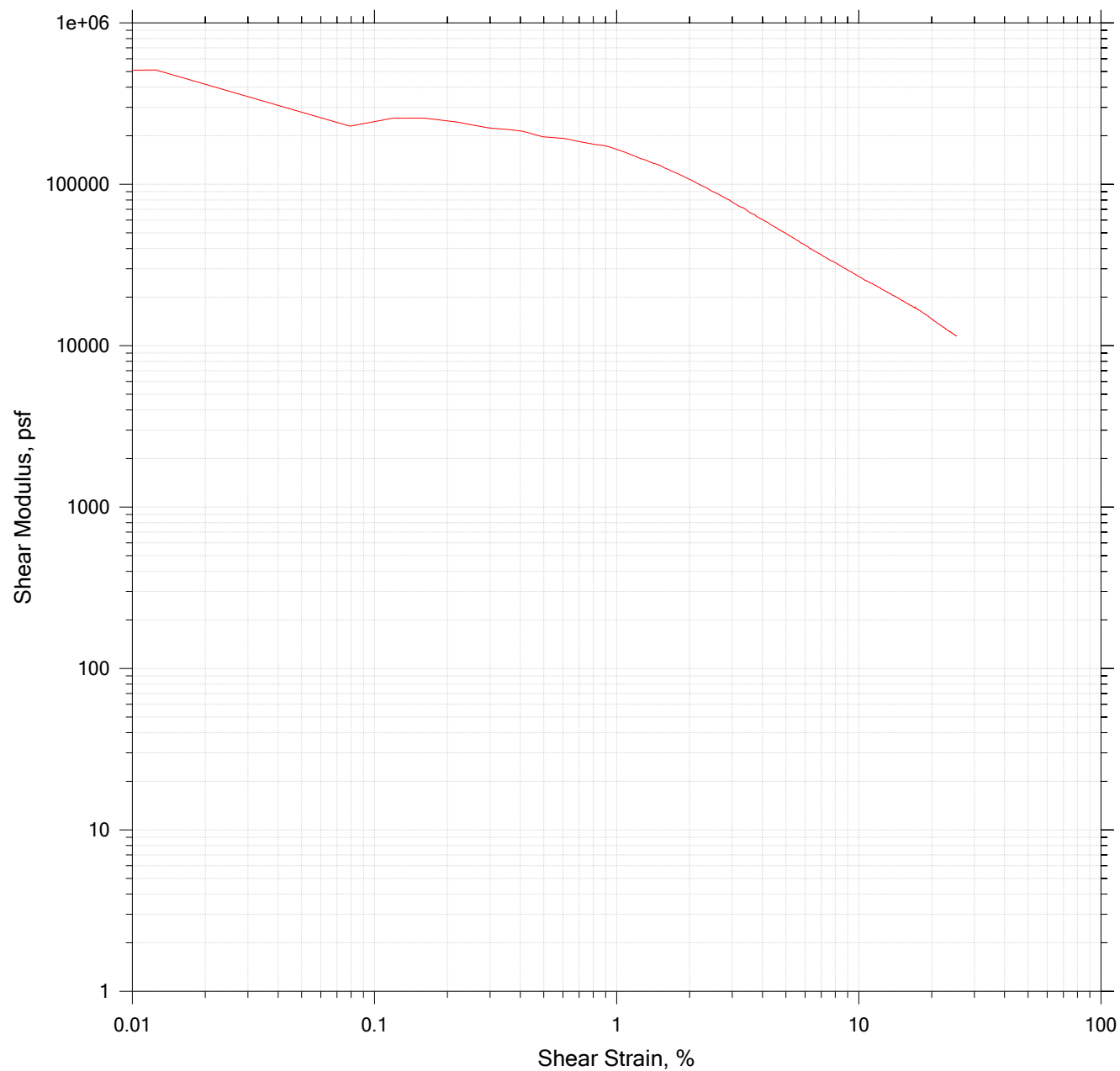
Direct Simple Shear Test




	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-102	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/19/25	Depth: 41-43'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		



Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-102	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/19/25	Depth: 41-43'
	Test Number: DSS-1	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		



Client:	Haley & Aldrich, Inc.
Project Name:	I-395 MCRR Bridge No. 1559
Project Location:	Brewer, ME
GTX #:	322340
Test Date:	12/18/2025
Tested By:	jlw
Checked By:	dgz
Boring ID:	BB-MCRR-104
Sample ID:	1U
Depth, ft:	39-41'
Location in sample, ft:	40.8-41.0'
Visual Description:	Moist, dark gray clay

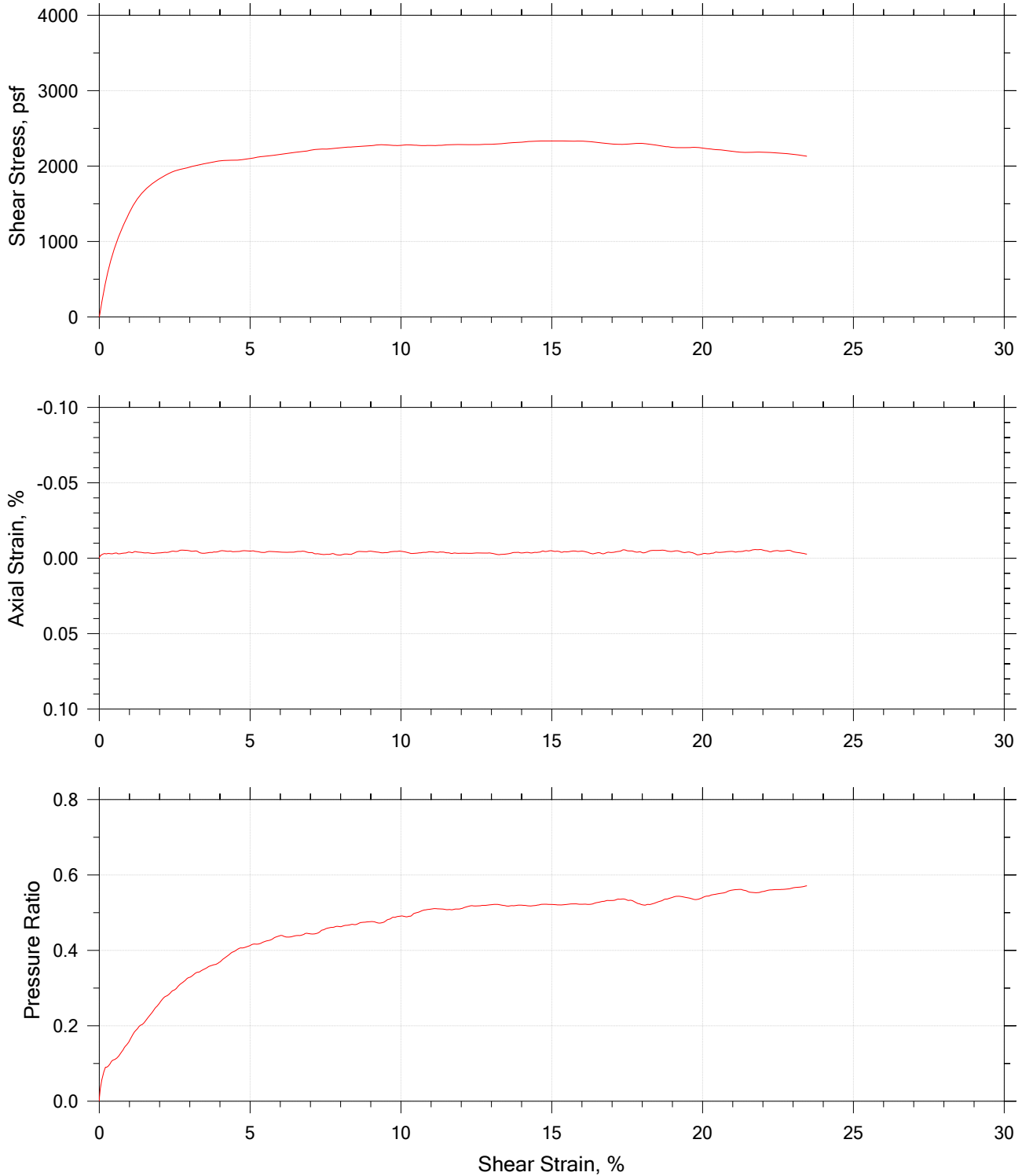
## Consolidated Undrained Direct Simple shear Testing of Fine-Grained Soils by ASTM D6528


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	Measured Specific Gravity:	2.75
% Passing #200 sieve:	---	Liquid Limit:	34
Soil Classification:	---	Plastic Limit:	18
Group Symbol:	---	Plasticity Index:	16

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	161.8	---	---	---
Initial Moisture Content, %	25.6	---	---	---
Initial Dry Density, pcf	100.0	---	---	---
Initial Void Ratio	0.72	---	---	---
Initial Degree of Saturation, %	98.2	---	---	---
Nominal Rate of Shear Strain, %/hour	5.0	---	---	---
Max. Vertical Consolidation Stress, psf	10,000	---	---	---
Vertical Consolidation Stress at shear, psf	10,000	---	---	---
Pre-shear Moisture Content, %	21.4	---	---	---
Pre-shear Void Ratio	0.59	---	---	---
Pre-shear Vertical Strain, %	7.48	---	---	---
Final Consolidation Loading Duration, min	741	---	---	---
Final Moisture Content, %	21.4	---	---	---
Measured Peak Shear Stress, psf	2,334	---	---	---
Shear Strain at Peak Shear Stress, %	15.0	---	---	---
Membrane Correction, psf	59	---	---	---
Corrected Peak Shear Stress, psf	2,275	---	---	---
$S_u/\sigma'_{vc}$	0.23	---	---	---

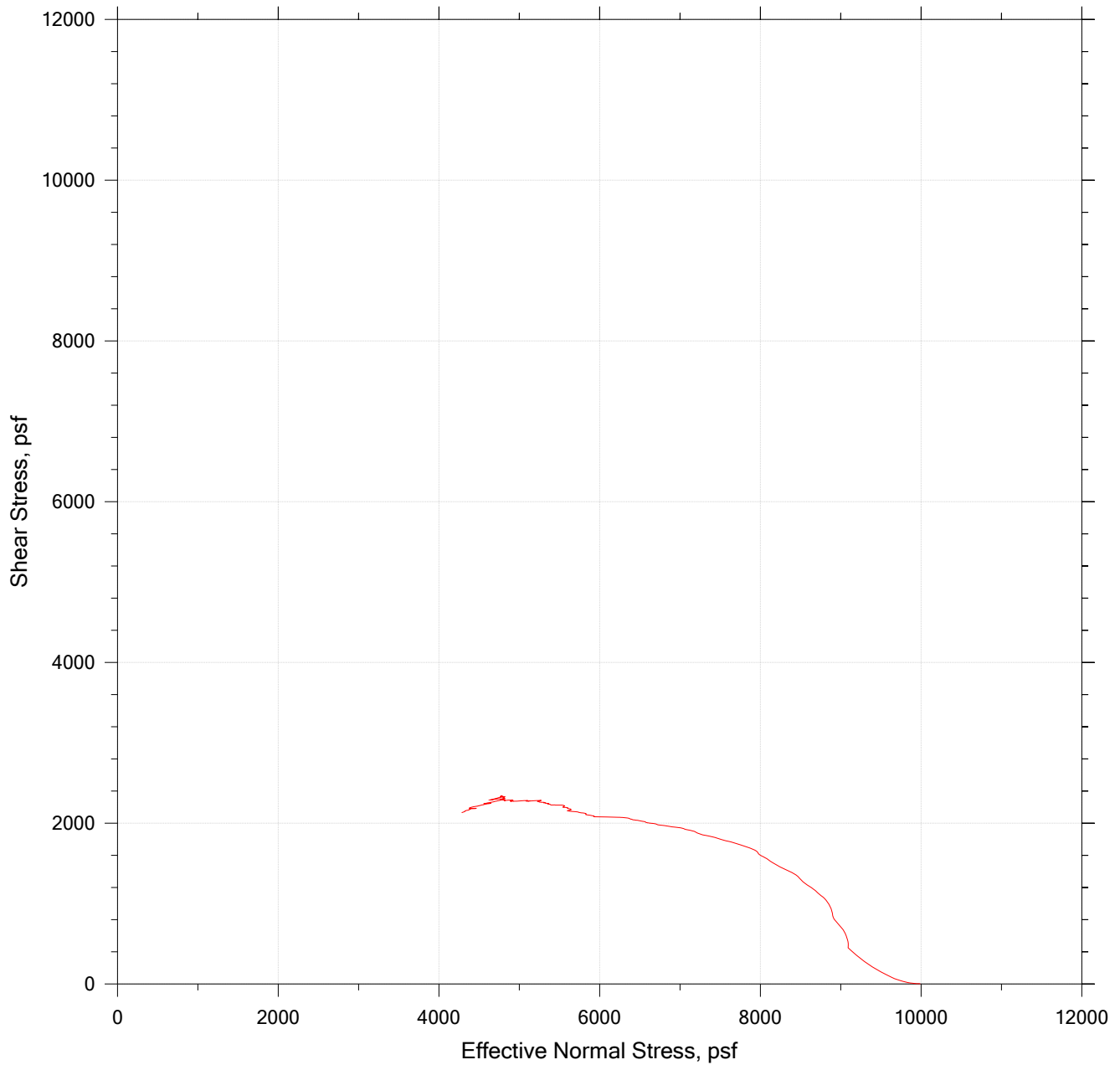
Comments:	Please see attached plots for additional information
Notes:	These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning,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


# Direct Simple Shear Test



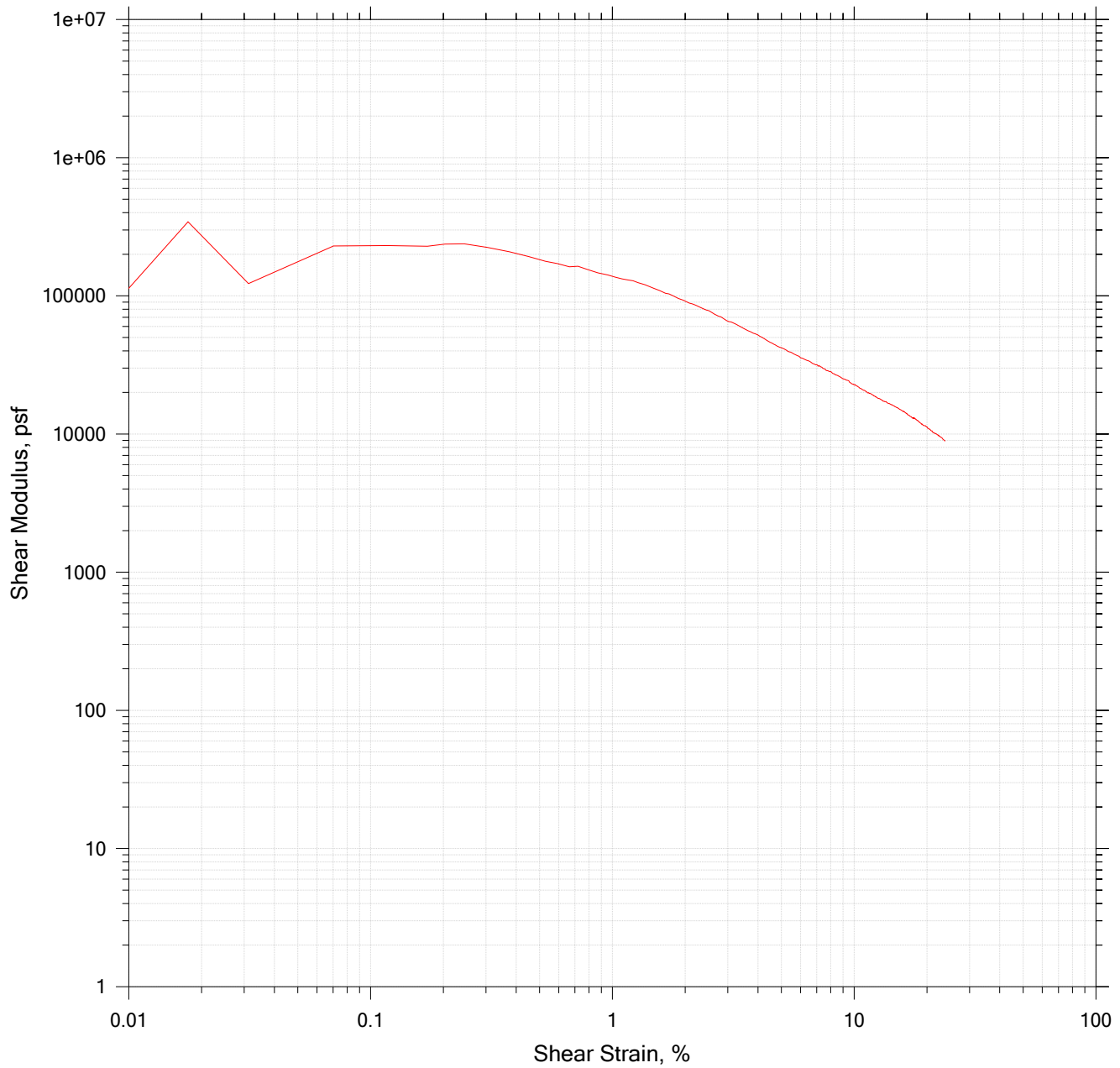
	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-104	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/18/25	Depth: 39-41
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		


# Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-104	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/18/25	Depth: 39-41
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		

# Direct Simple Shear Test



	Project Name: I-395 MCRR Bridge No. 1559	Location: Brewer, ME	Project Number: GTX-322340
	Boring Number: BB-MCRR-104	Tester: jlw	Checker: dgz
	Sample Number: 1U	Test Date: 12/18/25	Depth: 39-41
	Test Number: DSS-2	Preparation: intact	Elevation: ---
	Description: Moist, dark gray clay		
	Remarks: CST-001		