



Known for excellence.
Built on trust.

GEOTECHNICAL DESIGN REPORT
Josh Bridge Replacement
BRIDGE NO. 0976
MAINE DOT WIN 027228.00
RICHMOND, MAINE

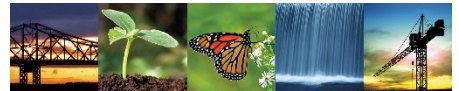
March 2026
09.0026249.00

Prepared for:
Maine Department of Transportation
Augusta, Maine

Prepared by:
GZA GeoEnvironmental, Inc.
707 Sable Oaks Drive | Suite 150 | South Portland, Maine 04106
207.879.9190

35 Offices Nationwide
www.gza.com

Copyright© 2026 GZA GeoEnvironmental, Inc.



Known for excellence.
Built on trust.

- GEOTECHNICAL
- ENVIRONMENTAL
- ECOLOGICAL
- WATER
- CONSTRUCTION MANAGEMENT

707 Sable Oaks Drive
Suite 150
South Portland, ME 04106
T: 207.879.9190
F: 207.536.1173
www.gza.com

VIA EMAIL

March 24, 2026
File No. 09.0026249.00

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

Re: Geotechnical Design Report
Josh Bridge No. 0976 Replacement
Langdon Road over Abagadasset River
Maine Department of Transportation WIN 027228.00
Richmond, Maine

Dear Laura:

We are pleased to provide this Geotechnical Design Report, which includes geotechnical design recommendations for the replacement of Josh Bridge, Langdon Road over Abagadasset River in Richmond, Maine. Our work was completed in accordance with GZA GeoEnvironmental, Inc.'s (GZA's) June 3, 2020, General Consulting Agreement (GCA CTM2020060300000000709) with the Maine Department of Transportation (MaineDOT) Bridge Program, and incorporates GZA's Proposal No. 09.P000116.26, dated December 29, 2025, and the *Limitations* Included in **Appendix A** of this report.

It has been a pleasure serving MaineDOT on this phase of the project, and we look forward to our continued work with you through project completion. If you have any questions regarding the report, or if we can provide further assistance, please do not hesitate to contact the undersigned.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Nicholas V. Williams, P.E.
Senior Project Manager

Michael P. Smith, P.E.
Consultant Reviewer



Andrew R. Blaisdell, P.E.
Associate Principal

NVW/ARB/MPS:cc

j:\09 jobs\0026200s\09.0026249.00 - medot josh bridge, richmond, me\01 final design\report\gdr\final 26249.00 josh bridge gdr.docx

Attachment: Geotechnical Design Report



TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 OBJECTIVES AND SCOPE OF SERVICES	2
2.0 SUBSURFACE EXPLORATIONS	2
2.1 TEST BORINGS	2
3.0 LABORATORY TESTING	3
4.0 SUBSURFACE CONDITIONS	4
4.1 SURFICIAL AND BEDROCK GEOLOGY	4
4.2 SUBSURFACE PROFILE	4
4.2.1 Bedrock	6
4.2.2 Groundwater	6
5.0 ENGINEERING EVALUATIONS.....	6
5.1 GENERAL	6
5.2 PROPOSED CONSTRUCTION	6
5.3 APPROACH EMBANKMENTS.....	7
5.4.1 Marsh Deposit Compressibility Properties.....	7
5.4.2 Historic Embankment Construction and Settlement.....	8
5.4.3 Estimated Stress Increase.....	8
5.4.4 Settlement Analysis	8
5.4 FOUNDATION TYPE.....	9
5.5 LOAD AND RESISTANCE FACTORS	9
5.6 SPREAD FOOTING DESIGN CONSIDERATIONS	10
5.6.1 Settlement	10
5.6.2 Strength and Service Bearing Resistance	10
5.7 SEISMIC DESIGN CONSIDERATIONS.....	11
5.8 LATERAL EARTH PRESSURE.....	11
5.9 FROST PROTECTION.....	11
6.0 RECOMMENDATIONS	11
6.1 EMBANKMENT DESIGN CONSIDERATIONS.....	11
6.2 BOX CULVERT AND INLET AND OUTLET WALL DESIGN	11
6.3 RECOMMENDATIONS FOR FOUNDATIONS	12
7.0 CONSTRUCTION CONSIDERATIONS.....	13
7.1 EXCAVATION, TEMPORARY LATERAL SUPPORT AND DEWATERING	13
7.2 SUBGRADE PREPARATION	13

FIGURES

FIGURE 1	Locus Plan
FIGURE 2	Boring Location Plan
FIGURE 3	Interpretive Subsurface Profile



TABLE OF CONTENTS (*continued*)

APPENDICES

APPENDIX A	Limitations
APPENDIX B	Test Boring Logs
APPENDIX C	Rock Core Photo Log
APPENDIX D	Laboratory Test Reports
APPENDIX E	Calculations



1.0 INTRODUCTION

This report presents the results of the geotechnical evaluation by GZA GeoEnvironmental, Inc. (GZA) for the replacement of Josh Bridge No. 0976 in Richmond, Maine. Our work was completed in accordance with GZA's June 3, 2020, General Consulting Agreement (GCA CTM2020060300000000709) with the MaineDOT Bridge Program, and incorporates GZA's Proposal No. 09.P000116.26, dated December 9, 2026, and the *Limitations* Included in **Appendix A** of this report.

1.1 BACKGROUND

The project includes replacement of the Josh Bridge No. 0976 carrying Langdon Road over the Abagadasset River in Richmond, Maine, the location of which is shown on **Figure 1**. In 1943, at the time of the original road construction, a culvert was constructed consisting of two, 5-foot-diameter corrugated metal pipes. The existing bridge was constructed in 1983 to replace the previous metal pipes, and consists of twin 66-foot-long, 171-inch-span by 107-inch-rise corrugated plate pipe arches. The roadway grade was also raised about 5 feet from a preexisting grade of elevation (El.) 142 to El. 143 to a finish pavement grade of approximately El. 147.5 to El. 148. The bituminous pavement was originally underlain by approximately 18 inches of aggregate subbase and roughly 6 inches of gravel borrow overlying the arches.

Inspection observations in 2007 indicated a sag in the middle of the pipes relative to the inlet and outlet elevations. The roadway had already been filled and repaved in the area prior to this inspection so roadway sag could not be estimated. During an inspection in 2020, severe sagging was noted in the east pipe, and both pipe ends were submerged by 6 inches. However, at the time of GZA's subsurface investigation, the pipe inlet and outlet were visible above water. Recent ground penetrating radar (GPR) testing indicated the pipes may have settled relative to the inlet and outlet, consistent with inspection observations. Differential settlement of the roadway was not visible in inspections since 2007 or at the time of GZA's subsurface investigation. Existing pavement grades within about 100 feet either side of the culvert centerline vary from El. 142 to El. 143.5. These elevations are approximately consistent with the circa 1980 elevations and approximately 5 feet lower than the elevations following construction of the existing culvert.

We understand plans are to construct a new, 80-foot-long box culvert with a span of 24 feet, a rise of 8 feet, and an 18-degree skew. The culvert will have 1-foot-tall precast headwalls and toe walls at the inlet and outlet. Special infill that is typically utilized in culverts will be omitted for this project. The project is planned to maintain the current road alignment, as shown on **Figure 2**. The pavement grades will essentially remain unchanged for the new bridge, except for shoulder fills up to 4 feet thick are proposed to increase the roadway width and allow for guardrails to be installed.

Elevations referenced in this report are in feet and refer to the North American Vertical Datum of 1988 (NAVD 88).



1.2 OBJECTIVES AND SCOPE OF SERVICES

The objectives of our work were to evaluate subsurface conditions and to provide geotechnical engineering recommendations for the proposed bridge replacement. To meet these objectives, GZA completed the following Scope of Services:

- Conducted a site visit to observe surficial and traffic conditions, and reviewed mapped surficial and bedrock geology of the site;
- Reviewed existing subsurface data and as-built plans;
- Coordinated and observed a subsurface exploration program, consisting of two test borings, to evaluate subsurface conditions and collect samples for laboratory testing;
- Conducted a laboratory testing program to evaluate engineering and index properties of the site soils;
- Conducted final design phase geotechnical engineering analyses for:
 - Soil and bedrock properties;
 - Settlement of the proposed culvert and shoulder fills;
 - Frost susceptibility and drainage of approach subgrade materials;
 - AASHTO LRFD load and resistance factors associated with geotechnical design elements; and
 - Spread footing design considerations, including bearing resistance, sliding resistance and settlement.
- Developed geotechnical engineering recommendations including spread footings bearing on soil, culvert backfill type and properties, earth pressures and seismic design parameters; geotechnical construction considerations;
- Developed geotechnical construction considerations; and
- Prepared this report summarizing our findings and design recommendations.

2.0 SUBSURFACE EXPLORATIONS

2.1 TEST BORINGS

GZA and MaineDOT completed an exploration program between August 21, 2024, and September 3, 2024, consisting of three test borings designated BB-RAR-101, -101A, and -102. The as-drilled boring locations and elevations were surveyed and provided by MaineDOT and are shown on **Figure 2**. Boring BB-RAR-101 was terminated in the fill at 14 feet below ground surface (bgs) after encountering an obstruction and practical refusal using the roller cone, the boring was abandoned. Boring BB-RAR-101A was offset 1 foot to the southeast.



The test borings were drilled using a CME-45C truck-mounted drill rig, and BB-RAR-101A and -102 were drilled to depths ranging from approximately 97 to 129 feet bgs. Boring BB-RAR-101A was terminated in bedrock, and BB-RAR-102 was terminated in dense granular material. MaineDOT provided drilling services, coordinated utility clearance, and traffic control.

The borings were drilled using 3- and 4-inch casing and drive-and-wash drilling techniques, as noted on the boring logs. SPTs were conducted using an automatic hammer with a rated hammer energy transfer ratio of 0.96 in accordance with ASTM D4633-05 procedures. Standard penetration testing (SPT) and split-spoon sampling were performed continuously through the fill material and at 5-foot typical intervals thereafter using a 24-inch-long, 1-3/8-inch inside-diameter sampler. In situ field vane shear tests were conducted at typical 5- to 10-foot depth intervals in cohesive soils. Three thin-walled tube samples were collected in both BB-RAR-101A and BB-RAR-102 (six total) to provide samples for use in laboratory compressibility testing.

Approximately 8 feet of bedrock core was obtained in boring BB-RAR-101 using NX coring equipment. Dry and wet photographs of the collected rock core can be found in **Appendix D**. At the completion of drilling, borings were backfilled with soil cuttings, sand, and bentonite chips and topped with asphalt cold patch.

GZA personnel monitored the drilling work and prepared the test boring logs that are included in **Appendix B**.

3.0 LABORATORY TESTING

GZA retained Thielsch Engineering of Cranston, Rhode Island and Soil Metrics of Cape Elizabeth, Maine to complete a laboratory testing program to assess the gradation and index properties of the soil. The testing program included:

COMPLETED LABORATORY TESTS		
Laboratory Test	ASTM Standard	Number of Tests
Grain Size Analysis	D6913	9
Hydrometer	D7928	3
Atterberg Limits	D4318	7
Moisture Content	D2216	20
Incremental Consolidation Test	D2435	4
Organic Content	D2974	4

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



4.0 SUBSURFACE CONDITIONS

4.1 SURFICIAL AND BEDROCK GEOLOGY

Based on available geologic mapping¹, the surficial units in the vicinity of the site include Stream Alluvium consisting of sand, silt, gravel and muck; and Presumpscot Formation silt and clay with local sandy beds and intercalations.

Based on available bedrock geologic mapping², bedrock in the vicinity of the site consists of light gray, medium to coarse-grained, non-rusty to slight rusty-weathering, gneiss and is mapped as the Nehumkeag Pond Formation.

4.2 SUBSURFACE PROFILE

Five soil units were encountered in the test borings beneath 2 to 6 inches of asphalt pavement and above bedrock: Fill, Marsh Deposit, Marine Clay Crust, Marine Clay and Marine Sand. The thicknesses and generalized descriptions of the soil units are presented in the following table in descending order from the ground surface. Detailed descriptions of the materials encountered at specific locations are provided in the boring logs in **Appendix B**. An interpretive subsurface profile based on the test boring results is presented as **Figure 3**.

¹ Weddle, Thomas K. and Frost, Daniel S., 2009, Surficial geology of the Richmond quadrangle, Maine: Maine Geological Survey, Open-File Map 09-13, map, scale 1:24,000.

² West, David P., Jr., Berry, Henry N., IV, and Corbett, Lee B., 2010, Bedrock geology of the Richmond quadrangle, Maine: Maine Geological Survey, Open-File Map 10-19, color map, scale 1:24,000.



Soil Unit	Approximate Encountered Thickness (ft)	Generalized Description
Fill	20.0 to 25.1	Brown to grey, loose to very dense, fine to coarse SAND, trace to some silt, trace gravel to Gravelly. Typical MaineDOT Frost Classification = II, III Results of 4 Grain Size and 4 Moisture Content Analyses: <ul style="list-style-type: none"> • AASHTO Classification: A-2-4(0), A-1-b • USCS Classification: SM • Moisture Content: 5.8 to 20.0% Encountered in all explorations
Marsh Deposit	8.2 to 14.0	Variable: <u>from</u> brown, medium dense, fine to coarse Silty SAND, little gravel <u>to</u> very stiff, CLAY with organics <u>to</u> soft to stiff Organic SILT, trace to some sand, little gravel. Results of 3 Grain Size, 7 Moisture Content Analyses, 3 Atterberg Limits, and 4 Organic Contents: <ul style="list-style-type: none"> • AASHTO Classification: A-4(0), A-1-b • USCS Classification: SM, OL, ML • Organic Content: 3.1 to 33.6% • Moisture Content: 19.4 to 210% • Liquid Limit: NP, 26 to 335, Plastic Limit: NP, 22 to 205, Plasticity Index: NP, 4 to 130 Encountered in borings <i>BB-RAR-101A and BB-RAR-102</i>
Marine Clay Crust	8.0 to 8.5	Grey, medium stiff, Silty CLAY. Results of 1 Moisture Content Analysis: <ul style="list-style-type: none"> • USCS Classification: CL • Moisture Content: 40.5% Encountered in borings <i>BB-RAR-101A and BB-RAR-102</i>
Marine Clay	32.1 to 39.0	Grey, medium stiff to soft, Silty CLAY to CLAY & SILT. (USCS: CL). Results of 6 Moisture Content Analyses and 4 Atterberg Limits. <ul style="list-style-type: none"> • USCS Classification: CL • Moisture Content: 36.5 to 43.8% • Liquid Limit: 37 to 48, Plastic Limit: 17 to 20, Plasticity Index: 20 to 28 Encountered in borings <i>BB-RAR-101A and BB-RAR-102</i>
Marine Sand	46.0	Grey, dense to very dense, fine to coarse SAND, little to some silt, some gravel to Gravelly. Results of 2 Grain Size and 2 Moisture Content Analyses: <ul style="list-style-type: none"> • AASHTO Classification: A-1-b, A-2-4(0) • USCS Classification: SM • Moisture Content: 6.8 to 8.8% Encountered in borings <i>BB-RAR-101A and BB-RAR-102</i> . <i>Strata thickness fully penetrated in only BB-RAR-101A</i>
Estimated Top of Bedrock		West Side of Culvert: Not Encountered East Side of Culvert: El. 22.1 (120.1 feet bgs)



4.2.1 Bedrock

Bedrock cored in BB-RAR-101A was generally identified as a Granite and was described as very hard to hard, fresh to slightly weathered, medium grained, and white. The joints are extremely close to close, low angle to high angle, undulating, rough, discolored, and tight to partially open. The Rock Quality Designation (RQD) in the bedrock ranged from 17 to 25 percent (weighted average of 20 percent), corresponding to a rock quality of Very Poor. Dry and wet photographs of the collected rock core are presented in **Appendix D**.

4.2.2 Groundwater

Groundwater depths were measured in borings BB-RAR-101A and BB-RAR-102 at depths between approximately 0 and 5.1 feet bgs, corresponding to approximately El. 137.2 to 142.2. The water level was observed flush with the top of casing due to possible artesian conditions encountered within the marine sand at approximately 82 feet bgs (8 feet below the marine clay) at BB-RAR-101A. Samples collected within the upper 5 feet of BB-RAR-101 were described as dry to moist, indicating the possible artesian condition occurred below the marine clay and is not indicative of shallower groundwater conditions. Groundwater level in BB-RAR-102 was measured immediately after removal of drill casing. The water level readings may have been affected by drilling procedures, which included introduction of water for drilling purposes.

The groundwater observations were made at the times and under the conditions stated in the boring logs. Fluctuations in groundwater level occur due to variations in season, precipitation, stream levels and construction activities in the area. Consequently, water levels during construction are likely to vary from those encountered at the time the observations were made.

5.0 ENGINEERING EVALUATIONS

5.1 GENERAL

GZA has conducted geotechnical engineering evaluations in accordance with *2024 AASHTO LRFD Bridge Design Specifications, 10th Edition* (herein designated as AASHTO) and the *MaineDOT Bridge Design Guide, 2003 Edition*, with updates through 2018 (MaineDOT BDG). The sections that follow describe the evaluations and the geotechnical basis for each element. Supporting calculations are included in **Appendix E**.

5.2 PROPOSED CONSTRUCTION

We understand that a full bridge replacement is planned for the project. The proposed alternative consists of replacing the two existing pipe arches with an 80-foot-long box culvert with a span of 24 feet, a rise of 8 feet, and an 18-degree skew.



5.3 APPROACH EMBANKMENTS

The proposed embankment will remain on the current horizontal alignment and vertical profile. Relatively minor grading of the side slopes, with up to 4 feet of fill in limited locations, is planned to flatten the final slope angles to 2 feet horizontal to 1 foot vertical (2H:1V) or flatter. Considering the minor embankment modifications and flatter slopes, global stability is not considered to be a concern. Potential settlement resulting from both culvert loading and minor shoulder fills is discussed subsequently.

5.4 SETTLEMENT EVALUATION

Considering the limited stress increase from the proposed improvements discussed subsequently, the primary geotechnical impact of the proposed culvert and roadway modifications is settlement of the marsh deposit. Considering that marine clay is at least 33 feet below grade, we anticipate that settlement will be minimal in that stratum, even if the marine clay is normally consolidated as is likely the case based on laboratory tests and past fill placement. Therefore, marine clay consolidation is not evaluated herein. Development of the design parameters for marsh deposit compressibility is described below.

5.4.1 Marsh Deposit Compressibility Properties

One, one-dimensional consolidation test was completed on a sample of marsh deposit soil at 32 feet below grade. We interpret the results to indicate that the marsh deposit beneath the roadway is normally consolidated. Therefore, only virgin consolidation and secondary compression properties are relevant to the evaluation.

Based on the laboratory and in-situ testing results and our review of available correlations of consolidation properties with index properties, GZA interpreted a possible range for index and compressibility properties as follows:

Soil Properties for Settlement Analyses of Marsh Deposit	
Material Property (Source)	Range in Values
Thickness of Highly Compressible Soil (Cohesive Portion of Marsh Deposit)	5 to 10 ft
Unit Weight (Lab Results)	80 pcf
Atterberg Limits (Lab Results)	LL = 26-335 PI = 4-130
Water Content (Lab Results)	107.9 to 210%
Void Ratio (Lab Results)	2.43
Modified Compression Ratio, CR (Lab, NAVFAC 2022 correlation for Organic Soils, Peats)	0.36 – 0.60
Virgin Consolidation Coefficient (C _v , Lab results)	0.04 (ft ² /day)
Secondary Compression Ratio, C _{αε} (Lab, NAVFAC 2022 correlation to natural water content)	0.011 – 0.021



The marsh deposit was assumed to have double drainage to the overlying fill and underlying marine clay crust.

5.4.2 Historic Embankment Construction and Settlement

The original 1943 river crossing consisted of two 5-foot diameter corrugated metal pipes. Based on our review of available topography information, it is estimated that the marsh was generally near El. 140 in the area of the roadway before the original construction, and the lowest level of the river was at approximately El. 136. The finish roadway grades at that time are unknown. The 1981 construction plans indicate the pipes were replaced with the existing twin corrugated plate pipe arches installed 2 to 3 feet below the proposed roadway, and the roadway grade was raised approximately 5 feet above the 1943 roadway grade. Existing topographic contours show that the current roadway grade is approximately the same as the roadway grade in 1943, suggesting that the 1983 roadway grade settled approximately 5 feet or more. Depictions of the estimated stages of previous and proposed construction are shown on a sketch in **Appendix E**.

Based on the settlement from the previous grade raise, we conclude the marsh deposit is normally consolidated, which is consistent with the laboratory consolidation test.

5.4.3 Estimated Stress Increase

The proposed replacement of the existing pipes with the concrete box culvert will result in an increase in effective stress. The net pressure increase at the proposed culvert subgrade elevation is approximately 130 psf, as shown in **Appendix E**. Without any mitigation, the final effective stress at the midpoint of the marsh deposit would be approximately 69 psf greater than the effective stress of the existing conditions, which is estimated based on a 2H:1V pressure distribution from the base of the proposed culvert.

In addition, the proposed construction includes shoulder fills of up to 4 feet above the existing grade, which results in an additional final effective stress increase of approximately 100 psf greater than the existing condition at the midpoint of the marsh deposit near the center of a filled area. This was estimated based on a Boussinesq stress pressure distribution from the base of the proposed fill. Where the shoulder fills terminate at the culvert, the stress increase beneath the culvert would be about half of the maximum calculated using Boussinesq, or 50 psf.

The estimated net effective pressure comparison of the existing and proposed conditions, and the estimated effective stress increase due to the shoulder fill are included in **Appendix E**.

5.4.4 Settlement Analysis

Without any mitigation of the increase in the effective stresses from the proposed culvert replacement and shoulder fills, the net increase in effective stress at the midpoint of the marsh deposit is approximately 119 psf, including 69 psf from the culvert and 50 psf at the edge of the shoulder fill. GZA evaluated the settlement considering no mitigation for the thickness of the cohesive portion of the marsh deposit which ranges from approximately 5 to 10 feet. It is estimated that the end of primary consolidation of the marsh deposit (90 consolidation) will occur after 0.4 and 1.5 years for thicknesses of 5 and 10 feet, respectively. After primary consolidation is complete, the layer will experience ongoing



secondary compression. Estimated total future settlement of the marsh deposit considered the range in thickness, modified compression ratio, and secondary compression ratio. Settlement estimates after 5 years, 10 years and for the lifetime of the structure (75 years) are presented in **Appendix E**.

The results indicate that placing the culvert and proposed fills with no mitigation could result in up to 5.5 inches of settlement in 10 years and 8 inches in 75 years. In our opinion and as discussed with MaineDOT during design development, this settlement is considered excessive and warrants mitigation beneath the culvert using ultra lightweight foamed glass aggregate (ULFGA).

Settlement under the shoulder fill is estimated to be up to 5 inches in 10 years and 7.5 inches in 75 years. This settlement is larger than typical accepted levels for MaineDOT roadway projects, and mitigation was considered. However, based on our discussion with MaineDOT, we understand the estimated settlement is acceptable for this project because the greatest settlement will likely be beneath the guardrail and lesser settlement is anticipated under the travel lane, and this is a low priority corridor.

GZA evaluated compensation of the stress increase under the culvert utilizing 2.5 feet of ULFGA. Considering there is no compensation for the fill areas in the shoulder, there is an effective stress increase of up to 50 psf from the shoulder fill directly adjacent to the culvert which contributes to estimated settlement. Mitigation of the stress increase beneath the culvert using 2.5 feet of ULFGA reduces the estimated settlement to less than 3 inches and 10 years and up to 4.5 inches over 75 years. This is within the typical suitable performance for MaineDOT bridge approaches and is considered acceptable for this project.

Minor additional settlement, likely on the order to 0.5 to 1 inch, may occur resulting from the minor stress increase in the marine clay, but this is anticipated to be relatively uniform and not to impact serviceability.

The calculations included in **Appendix E** provide additional details and results of the settlement analyses.

5.4 FOUNDATION TYPE

The culvert is proposed to consist of a box culvert with a span of 24 feet and a rise of 8 feet bearing on a 1-foot-thick layer of Underdrain Backfill Material, Type C (MaineDOT Pay Item 203.55 Culvert Bedding Stone), underlain by and separated from the ULFGA Fill on the bottom and sides by Stabilization/Reinforcement Geotextile (MaineDOT Standard Specification 722.01).

5.5 LOAD AND RESISTANCE FACTORS

AASHTO LRFD load factors should be applied to horizontal earth pressure (EH), vertical earth pressure (EV), earth surcharge (ES), and live load surcharge (LS) loads, using the load factors for permanent loads (γ_p) provided in LRFD Table 3.4.1-2 for strength limit state foundation design.

The recommended LRFD resistance factors for strength limit state design of foundations were derived from LRFD Tables 10.5.5.2.2-1, 10.5.5.2.3-1 and 10.5.5.2.4-1 and are presented in the following table.



GEOTECHNICAL RESISTANCE FACTORS – STRENGTH LIMIT STATE			
Foundation Resistance Type	Method/Condition	Resistance Factor (ϕ)	AASHTO Reference
Bearing	Theoretical Method in Sand using SPT	0.45	10.5.5.2.2-1
Sliding	Precast Concrete Placed on Sand	0.90	10.5.5.2.2-1

Resistance factors for service and extreme limit state design should be taken as 1.0.

5.6 SPREAD FOOTING DESIGN CONSIDERATIONS

The bottom of the culvert and inlet and outlet walls will be underlain by 12 inches of Underdrain Backfill Material and 2.5 feet of ULFGA, resulting in excavation depths of approximately 15 to 16 feet below existing grades. At these depths, the exposed soils are anticipated to consist of loose to medium dense Fill. However, the Fill is underlain at greater depths by a variable soft to very stiff Marsh Deposit and soft to medium stiff Marine Clay. The following sections discuss settlement and bearing related to the proposed culvert foundations.

5.6.1 Settlement

As described above, estimated settlement is up to 3 inches over 10 years and up to 4.5 inches over 75 years considering the planned 2.5 feet of ULFGA beneath the culvert footprint. This is considered suitable.

5.6.2 Strength and Service Bearing Resistance

The Fill stratum located below the bearing elevation is relatively thin, ranging between 5 to 8 feet thick, and is underlain by a variable strength Marsh Deposit ranging from soft to very stiff/medium dense. The fill and upper granular marsh deposit soils were evaluated as one layer of loose sand based on similar SPT blow counts, and the cohesive soft to medium stiff marsh deposit soil or marine clay was considered below. The bearing resistance values for the strength condition were developed using AASHTO Equation C10.6.3.1.2f-1 which accounts for a two-layer system with a strong layer overlying a weak layer.

5.6.2 Service Bearing Resistance

GZA utilized the presumptive bearing resistance values included in AASHTO Table C10.6.2.5.1-1 to develop a service limit bearing resistance. We recommend a service bearing resistance of 3 ksf. However, settlement evaluations were conducted using actual anticipated load increase and not the service bearing resistance, as discussed previously.

The calculated bearing resistance calculations are presented in **Appendix E**, and the design values are presented in the table below for the culvert.



BEARING RESISTANCE VALUES FOR FOOTINGS ON SOIL				
Footing	Footing Width (feet)	Nominal Bearing Resistance (ksf)	Factored Bearing Resistance, Strength Limit State (ksf)	Service Bearing Resistance (ksf)
Precast Culvert	26	7.1	3.2	3.0

5.7 SEISMIC DESIGN CONSIDERATIONS

Per AASHTO LRFD Article 3.10.1, seismic analysis is not required for buried structures except where they cross active faults. The site is not located on a known fault; therefore, seismic design parameters are not required for the box culvert alternative.

5.8 LATERAL EARTH PRESSURE

The precast culvert walls will be restrained from lateral movement at the top and bottom. Therefore, the box culvert walls should be designed for at-rest earth pressure conditions. Culvert inlet and outlet headwalls are a few feet high or shorter. These short walls should be designed for at-rest earth pressure conditions. Inlet and Outlet Walls that extend beyond the box culvert and are independent of the box culvert are considered free to rotate and should be designed for Rankine active earth pressure with a 2H:1V backslope. The material properties will be controlled by the backfill material, which is anticipated to consist of BDG Type 4 soil. Soil properties for Type 4 soil are provided in **Section 6.2** of this report.

5.9 FROST PROTECTION

Fill soils are anticipated to be present at the culvert, inlet/outlet walls and embankments, either as existing fill or imported backfill. Based on the MaineDOT BDG, Section 5.2.1, the Freezing Index for the site is 1,430, and with low-moisture content (10-20 percent) soils, the estimated depth of frost penetration is approximately 6.7 feet.

6.0 RECOMMENDATIONS

6.1 EMBANKMENT DESIGN CONSIDERATIONS

Embankment side slopes should be designed with MaineDOT typical slope angles of 2H:1V or flatter for a loam and seed surface finish. Where a riprap surface treatment is used, a 1.75H:1V slope angle is acceptable. Riprap should also be provided for scour protection where the embankment side slopes will be near or below typical water levels in the Abagadasset River. The extent and nature of scour countermeasures will be evaluated by others.

6.2 BOX CULVERT AND INLET AND OUTLET WALL DESIGN

- Backfill between the culvert and inlet and outlet walls should consist of MaineDOT 703.19 Granular Borrow, MaineDOT BDG Type 4 soil. Recommended soil properties for Type 4 soils are as follows:
 - Internal Friction Angle of Soil = 32°



- Soil Total Unit Weight = 125 pcf
- At-rest Earth Pressure, $K_o = 0.47$ (use for design of box culvert walls and inlet and outlet headwalls)
- Rankine Active Earth Pressure, $K_a = 0.46$ (use for design of culvert inlet and outlet walls unsupported from box and free to rotate, assumes slope of 2H:1V behind wall)
- Live load surcharge should be applied as a uniform lateral surcharge pressure using the equivalent fill height (H_{eq}) values developed in accordance with LRFD Section 3.11.6.4, based on the culvert/inlet and outlet wall height and distance from the wall backface to the edge of traffic. A minimum H_{eq} of 2 feet is recommended.

6.3 RECOMMENDATIONS FOR FOUNDATIONS

- The use of ULFGA is recommended beneath the entire footprint of the proposed culvert to mitigate long-term settlement under the proposed conditions. The ULFGA layer should underly the entire footprint of the culvert foundation and should be 2.5 feet thick. The ULFGA should be placed beneath a 1-foot-thick layer of culvert bedding stone (i.e., 1 foot below the proposed base of the culvert).
- Material strength, testing requirements, and installation of the ULFGA should be in accordance with Special Provision Section 203, Excavation and Embankment (Ultra-Lightweight Foamed Glass Aggregate).
- The proposed box culvert and footings should be supported on 12 inches of MaineDOT 703.22 Underdrain Backfill Material, Type C (i.e., Culvert Bedding Stone) separated on bottom and sides by Stabilization/Reinforcement Geotextile installed over the ULFGA. Culvert bearing pressures should be checked to confirm that they are less than the resistance values presented in **Section 5.6** of this report.
- The combined ULFGA/Culvert Bedding Stone materials should be completely encapsulated on all sides with woven Stabilization Geotextile (MaineDOT Standard Specification 722.01). Bi-axial geogrid should be placed between the ULFGA and Culvert Bedding Stone.
- In order to limit seepage beneath the culvert, the ULFGA and Underdrain backfill should not extend upstream or downstream beyond the limits of the key/cutoff walls on the base. The cutoff walls should bear directly on the existing fill or compacted Granular Borrow for Underwater Backfill MaineDOT 703.19. This will require deepening the key/cutoff walls to extend 3.5 feet below the bottom of mat foundation.
- The culvert subgrade surfaces should be excavated by a smooth edge bucket and cleaned of soil that is loosened by the excavation process prior to placement of the ULFGA, and if the subgrade is dry, the surface may be proof-compacted. Bearing surface preparation should be in accordance with **Section 7.2**.
- The Underdrain Backfill Material, Type C bedding for the culvert should be placed in one 12-inch lift and densified with several passes of a walk-behind roller or large plate compactor.
- The base resistance against sliding was evaluated in accordance with AASHTO Article 10.6.3.4 using $\phi'_f = 32$ degrees and $C = 0.8$ for the culvert (precast concrete). Nominal sliding resistance coefficient for culvert was calculated as $C \cdot \tan \phi'_f$ and is equal to 0.50. The factored sliding resistance coefficient



for the strength condition is 0.45 for the culvert and inlet/outlet walls, based on a resistance factor ($\phi\tau$) of 0.9 for the strength limit state.

- Passive resistance against the toe of footings should be neglected when evaluating sliding and overturning.

7.0 CONSTRUCTION CONSIDERATIONS

This section provides guidance regarding quality control during excavation, dewatering, and foundation subgrade preparation and protection. These items are discussed in the paragraphs that follow.

7.1 EXCAVATION, TEMPORARY LATERAL SUPPORT AND DEWATERING

Excavations for culvert foundations are anticipated to extend approximately 15 to 16 feet below existing grades and up to 11 feet below the Q 1.1 (El. 139). Sheet-pile-supported and/or open cut excavation techniques are anticipated to be suitable for this project. If temporary sheet piling is used, on the order of 1 inch of additional settlement would be anticipated due disturbance of the underlying Marsh Deposit when sheet piles are removed. Therefore, the removal of temporary sheeting should occur as soon as practical following culvert construction.

Damming and diversion and/or temporary dewatering are anticipated to be necessary to control groundwater and/or river inflow in excavations. Depending on permitting and water levels at the time of construction, we anticipate that it would be possible to dam the river with sandbags and an impermeable membrane, and temporarily divert the flow through a pipe so the contractor can construct foundations in the dry. It may also be necessary to employ localized pumping from sumps to maintain dewatering. It is anticipated that inflow of surface water or runoff to excavations can be handled by open pumping from sumps installed at the bottoms of excavations. Sumps should be fitted with geotextile or sand filters to prevent loss of subgrade fines during pumping. Dewatering discharge should be managed in accordance with the contractor's Stormwater Prevention Plan and MaineDOT Best Management Practices.

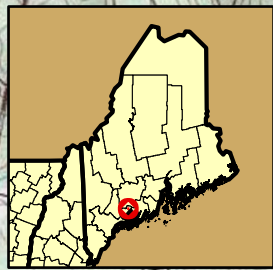
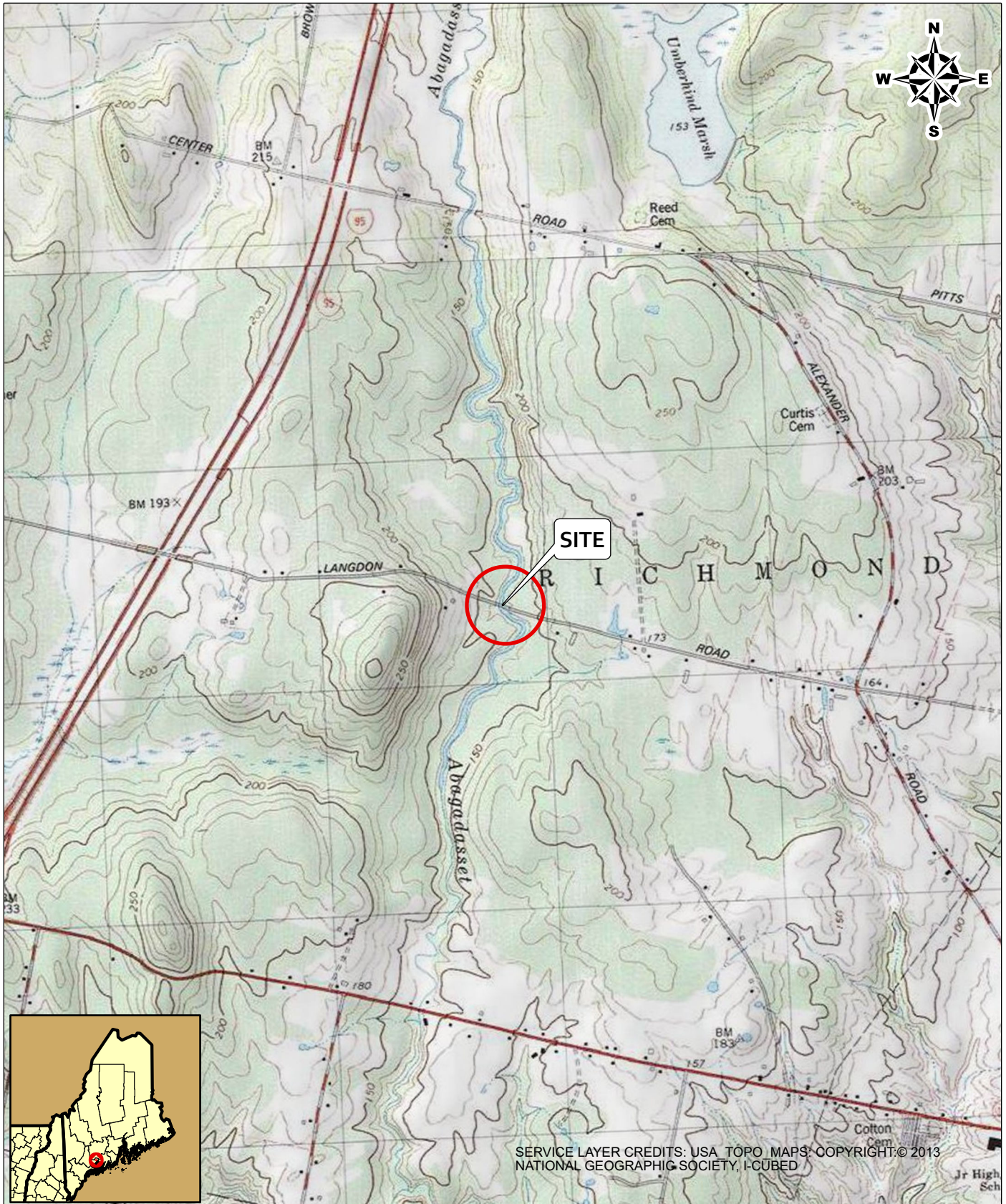
7.2 SUBGRADE PREPARATION

Even with damming and diversion, excavation bases may be wet. However, it is necessary to remove all free water from the excavation prior to placement of ULFGA. If it is not practical to maintain the water level below the fill subgrade, it may be necessary to place a thicker layer of crushed stone that can be utilized in conjunction with sumps to dewater the excavation. The culvert subgrade surfaces should be cleaned of any wood, deleterious material, and soil loosened by the excavation process prior to placement of granular backfill. Final excavation should be made with a smooth edge bucket to limit disturbance of the subgrade.

The ULFGA is lighter than water and could become buoyant and be displaced before it is overlain by Underdrain fill. The Contractor should develop methods to control ULFGA buoyancy during construction, including but not limited to the use of dewatering or keeping the ULFGA weighted with ballast.



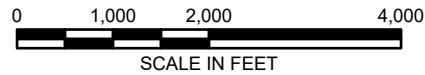
FIGURES



SERVICE LAYER CREDITS: USA TOPO MAPS, COPYRIGHT © 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED

© 2025 - GZA GeoEnvironmental, Inc. \GZAPORT1\Jobs\09 Jobs\0026249.00 - MEDOT Josh Bridge, Richmond, ME\Figures\GIS.aprx, January 27, 2025 - 11:42 AM, Elizabeth.Fulton

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.



SCALE IN FEET

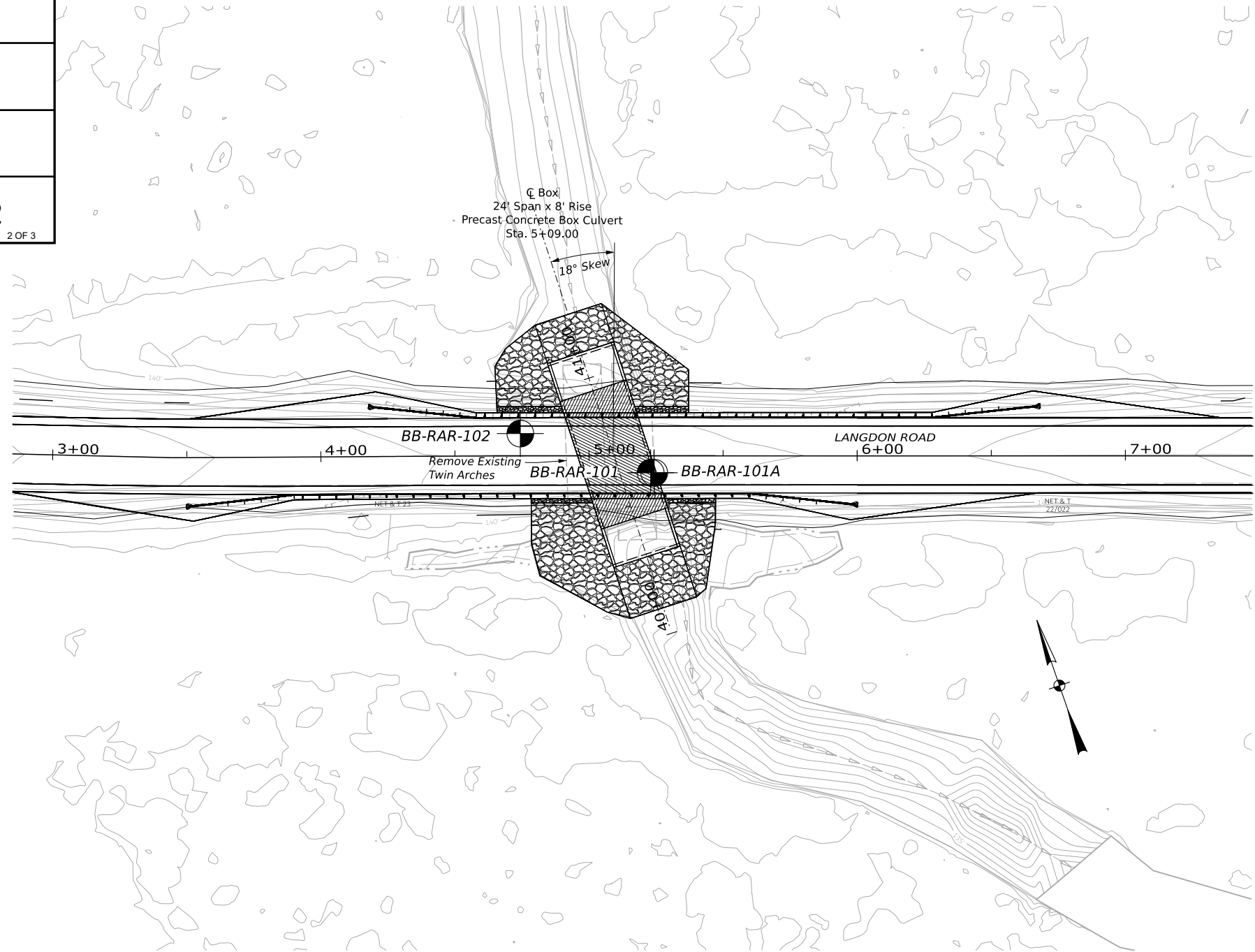
<p>JOSH BRIDGE #0976 OVER ABAGADASSET RIVER RICHMOND, ME</p>	
<p>LOCUS PLAN</p>	

<p>PREPARED BY: GZA GeoEnvironmental, Inc. www.gza.com</p>		<p>PREPARED FOR: MEDOT</p>	
<p>PROJ MGR: NVW</p>	<p>REVIEWED BY: ARB</p>	<p>CHECKED BY: CLS</p>	<p>FIGURE 1</p>
<p>DESIGNED BY: EAF</p>	<p>DRAWN BY: EAF</p>	<p>SCALE: 1 in = 2,000 ft</p>	
<p>DATE: JANUARY 2025</p>	<p>PROJECT NO: 09.0026249.00</p>	<p>REVISION NO:</p>	

JOSH BRIDGE #0976
 MAINE DOT WIN 27228.00
 RICHMOND, ME

BORING LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MAINE DOT	
PROJ MGR: NVW	REVIEWED BY: ARB	CHECKED BY: MS	FIGURE 2 SHEET NO: 2 OF 3
DESIGNED BY: NVW	DRAWN BY: NVW	SCALE: AS SHOWN	
DATE: 3/19/26	PROJECT NO: 09.0026249.01	REVISION NO: 0	



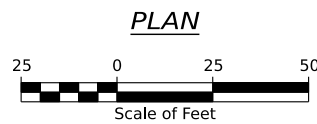
NOTES

- 1) Base map developed from electronic files (WIN 27228.00) provided by MaineDOT.
- 2) The as-drilled locations of the test borings were surveyed and provided by MaineDOT in an electronic file (2D BORINGS SEPTEMBER 24 027228.00.DGN).

BORING LOCATION PLAN LEGEND



Location and designation of BB-RAR-100 borings performed by MaineDOT of Augusta, Maine and observed by GZA personnel between August 21 and September 3, 2024



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 Federal Project No. 2722800
 WIN 027228.00
 BRIDGE PLANS

DATE	SIGNATURE	P.E. NUMBER	DATE
JAN 2026			
JAN 2026			

PROJ. MANAGER	BY	DATE
S. ZIMMERMAN	ARB	JAN 2026
DESIGN-DETAILED	ARB	JAN 2026
CHECKED-REVIEWED	ARB	JAN 2026
DESIGN-DETAILED	NVW	
CHECKED-REVIEWED	NVW	
DESIGN-DETAILED		
CHECKED-REVIEWED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

LANGDON ROAD BRIDGE NO. 0976
 CROSSING ABAGADASSET RIVER
 RICHMOND
BORING LOCATION PLAN

SHEET NUMBER
5
 OF 22

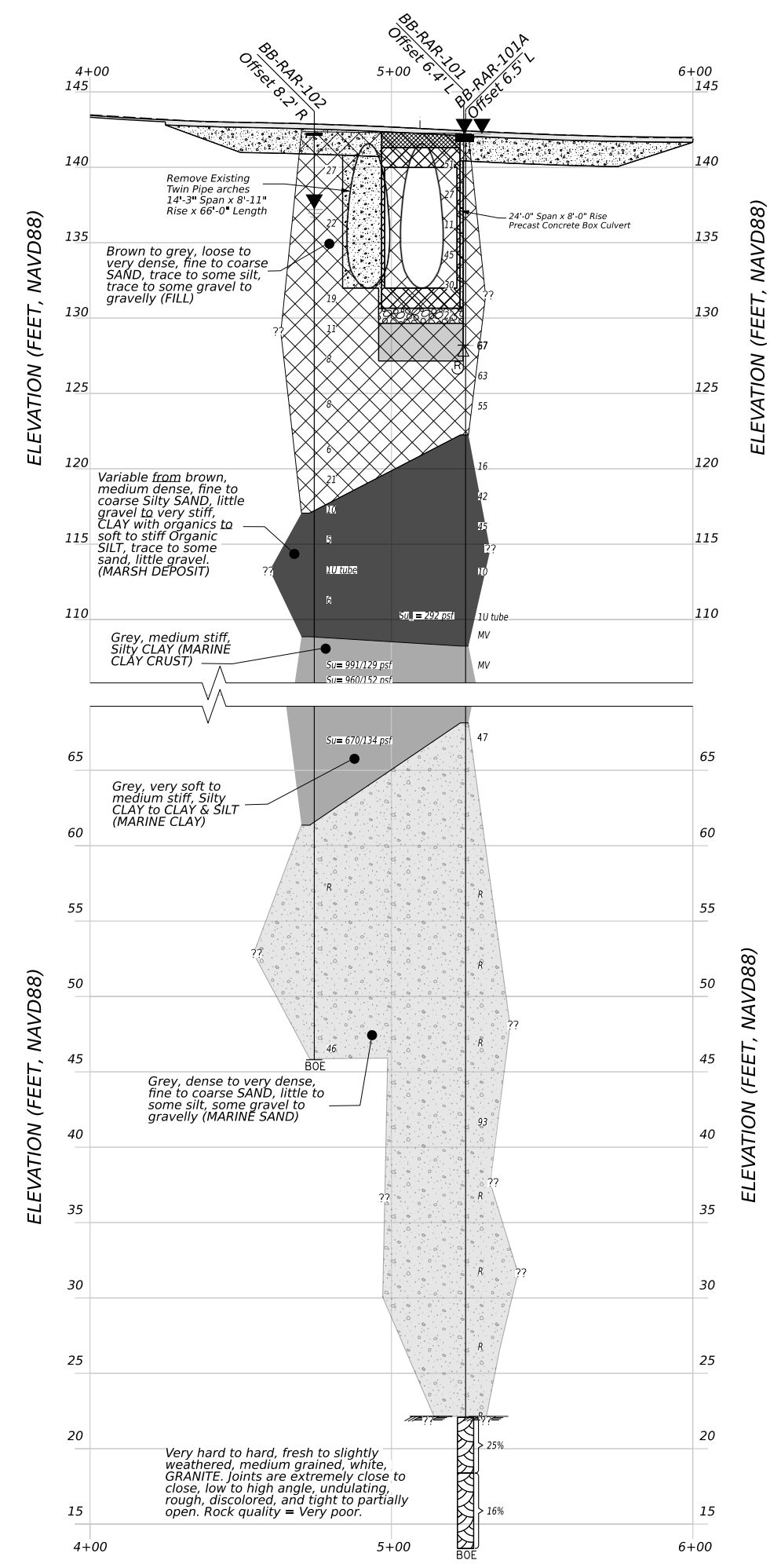


Date: 3/16/2026
 Username: jason.barnes

INTERPRETIVE SUBSURFACE PROFILE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MAINEDOT	
PROJ MGR: NVW	REVIEWED BY: ARB	CHECKED BY: MS	FIGURE 3
DESIGNED BY: NVW	DRAWN BY: NVW	SCALE: AS SHOWN	
DATE: 3/19/26	PROJECT NO.: 09.0026249.01	REVISION NO.: 0	SHEET NO.: 2 OF 3

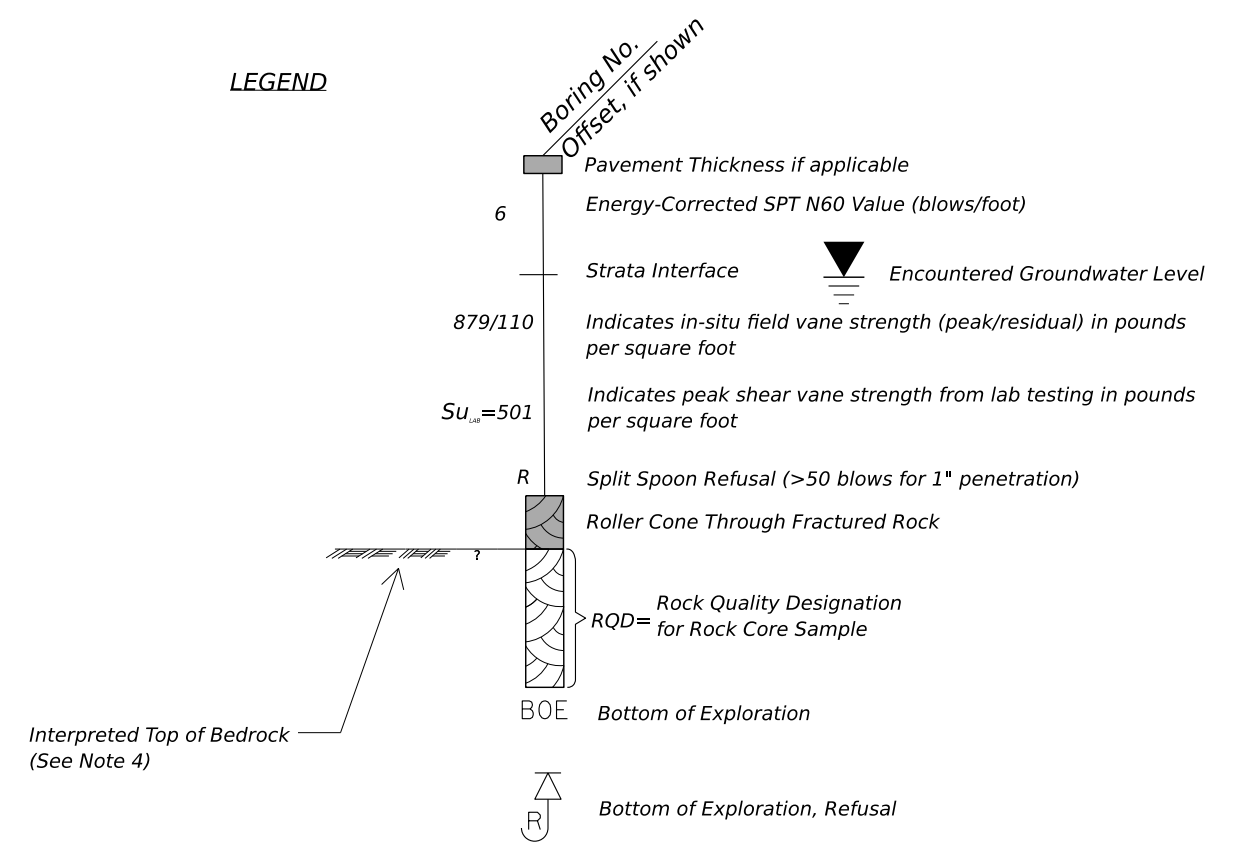
STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 Federal Project No. 2722800
 WIN 027228.00
 BRIDGE PLANS



NOTES:

- 1) Profile developed from electronic files (WIN 27228.00 Workset).
- 2) The as-drilled boring locations were surveyed by MaineDOT survey crew and provided to GZA in an electronic file (2D BORINGS SEPTEMBER 24 027228.00.DGN).
- 3) BB-RAR-100 series borings were performed by MaineDOT and observed by GZA personnel between August 21 and September 3, 2024.
- 4) This generalized interpretive soil and rock profile is intended to convey trends in the subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples. Actual soil transitions may vary and are probably more erratic. For more specific information, refer to the boring logs.

LEGEND



Username: jason.barnes Date: 3/24/2026

LANGDON ROAD BRIDGE NO. 0976
 CROSSING ABAGADASSET RIVER
 RICHMOND
INTERPRETIVE SUBSURFACE PROFILE

SHEET NUMBER
6
 OF 22





3/24/2026

MAINE DEPARTMENT OF TRANSPORTATION
JOSH BRIDGE NO. 0976 CULVERT REPLACEMENT
09.0026249.01

APPENDIX A – LIMITATIONS



GEOTECHNICAL LIMITATIONS

Use of Report

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

Standard of Care

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report, as appropriate, to reflect the unanticipated changed conditions .
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.
4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

Subsurface Conditions

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.



7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.
8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.
9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

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

Cost Estimates

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

Additional Services

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



3/24/2026

MAINE DEPARTMENT OF TRANSPORTATION
JOSH BRIDGE NO. 0976 CULVERT REPLACEMENT
09.0026249.01

APPENDIX B – TEST BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM				MODIFIED BURMISTER SYSTEM																																											
MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES	Descriptive Term		Portion of Total (%)																																									
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. GP Poorly-graded gravels, gravel sand mixtures, little or no fines. (little or no fines)	trace	0 - 10																																										
		GRAVEL WITH FINES (Appreciable amount of fines)	GM Silty gravels, gravel-sand-silt mixtures. GC Clayey gravels, gravel-sand-clay mixtures.	little	11 - 20																																										
				some	21 - 35																																										
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS	SW Well-graded sands, Gravelly sands, little or no fines SP Poorly-graded sands, Gravelly sand, little or no fines. (little or no fines)	adjective (e.g. Sandy, Clayey)	36 - 50																																										
		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.		TERMS DESCRIBING DENSITY/CONSISTENCY Coarse-grained soils (more than half of material is larger than No. 200 sieve): Includes (1) clean gravels; (2) Silty or Clayey gravels; and (3) Silty, Clayey or Gravelly sands. Density is rated according to standard penetration resistance (N-value). <table border="1"> <thead> <tr> <th>Density of Cohesionless Soils</th> <th>Standard Penetration Resistance N₆₀-Value (blows per foot)</th> </tr> </thead> <tbody> <tr> <td>Very loose</td> <td>0 - 4</td> </tr> <tr> <td>Loose</td> <td>5 - 10</td> </tr> <tr> <td>Medium Dense</td> <td>11 - 30</td> </tr> <tr> <td>Dense</td> <td>31 - 50</td> </tr> <tr> <td>Very Dense</td> <td>> 50</td> </tr> </tbody> </table> Fine-grained soils (more than half of material is smaller than No. 200 sieve): Includes (1) inorganic and organic silts and clays; (2) Gravelly, Sandy or Silty clays; and (3) Clayey silts. Consistency is rated according to undrained shear strength as indicated. <table border="1"> <thead> <tr> <th>Consistency of Cohesive soils</th> <th>SPT N₆₀-Value (blows per foot)</th> <th>Approximate Undrained Shear Strength (psf)</th> <th>Field Guidelines</th> </tr> </thead> <tbody> <tr> <td>Very Soft</td> <td>WOH, WOR, WOP, <2</td> <td>0 - 250</td> <td>Fist easily penetrates</td> </tr> <tr> <td>Soft</td> <td>2 - 4</td> <td>250 - 500</td> <td>Thumb easily penetrates</td> </tr> <tr> <td>Medium Stiff</td> <td>5 - 8</td> <td>500 - 1000</td> <td>Thumb penetrates with moderate effort</td> </tr> <tr> <td>Stiff</td> <td>9 - 15</td> <td>1000 - 2000</td> <td>Indented by thumb with great effort</td> </tr> <tr> <td>Very Stiff</td> <td>16 - 30</td> <td>2000 - 4000</td> <td>Indented by thumbnail</td> </tr> <tr> <td>Hard</td> <td>>30</td> <td>over 4000</td> <td>Indented by thumbnail with difficulty</td> </tr> </tbody> </table>				Density of Cohesionless Soils	Standard Penetration Resistance N ₆₀ -Value (blows per foot)	Very loose	0 - 4	Loose	5 - 10	Medium Dense	11 - 30	Dense	31 - 50	Very Dense	> 50	Consistency of Cohesive soils	SPT N ₆₀ -Value (blows per foot)	Approximate Undrained Shear Strength (psf)	Field Guidelines	Very Soft	WOH, WOR, WOP, <2	0 - 250	Fist easily penetrates	Soft	2 - 4	250 - 500	Thumb easily penetrates	Medium Stiff	5 - 8	500 - 1000	Thumb penetrates with moderate effort	Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort	Very Stiff	16 - 30	2000 - 4000	Indented by thumbnail	Hard	>30	over 4000	Indented by thumbnail with difficulty
		Density of Cohesionless Soils	Standard Penetration Resistance N ₆₀ -Value (blows per foot)																																												
		Very loose	0 - 4																																												
	Loose	5 - 10																																													
Medium Dense	11 - 30																																														
Dense	31 - 50																																														
Very Dense	> 50																																														
Consistency of Cohesive soils	SPT N ₆₀ -Value (blows per foot)	Approximate Undrained Shear Strength (psf)	Field Guidelines																																												
Very Soft	WOH, WOR, WOP, <2	0 - 250	Fist easily penetrates																																												
Soft	2 - 4	250 - 500	Thumb easily penetrates																																												
Medium Stiff	5 - 8	500 - 1000	Thumb penetrates with moderate effort																																												
Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort																																												
Very Stiff	16 - 30	2000 - 4000	Indented by thumbnail																																												
Hard	>30	over 4000	Indented by thumbnail with difficulty																																												
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.		Rock Quality Designation (RQD): 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) Rock Quality Based on RQD <table border="1"> <thead> <tr> <th>Rock Quality</th> <th>RQD (%)</th> </tr> </thead> <tbody> <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> </tbody> </table>				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																																														
Desired Soil Observations (in this order, if applicable): Color (Munsell color chart) Moisture (dry, damp, moist, wet) Density/Consistency (from above right hand side) Texture (fine, medium, coarse, etc.) Name (Sand, Silty Sand, Clay, etc., including portions - trace, little, etc.) Gradation (well-graded, poorly-graded, uniform, etc.) Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic) Structure (layering, fractures, cracks, etc.) Bonding (well, moderately, loosely, etc.,) Cementation (weak, moderate, or strong) Geologic Origin (till, marine clay, alluvium, etc.) Groundwater level				Desired Rock Observations (in this order, if applicable): Color (Munsell color chart) Texture (aphanitic, fine-grained, etc.) Rock Type (granite, schist, sandstone, etc.) Hardness (very hard, hard, mod. hard, etc.) Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.) Geologic discontinuities/jointing: -dip (horiz - 0-5 deg., low angle - 5-35 deg., mod. dipping - 35-55 deg., steep - 55-85 deg., vertical - 85-90 deg.) -spacing (very close - <2 inch, close - 2-12 inch, mod. close - 1-3 feet, wide - 3-10 feet, very wide >10 feet) -tightness (tight, open, or healed) -infilling (grain size, color, etc.) Formation (Waterville, Ellsworth, Cape Elizabeth, etc.) RQD and correlation to rock quality (very poor, poor, etc.) ref: ASTM D6032 and FHWA NHI-16-072 GEC 5 - Geotechnical Site Characterization, Table 4-12 Recovery (inch/inch and percentage) Rock Core Rate (X.X ft - Y.Y ft (min:sec))																																											
Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information				Sample Container Labeling Requirements: WIN Blow Counts Bridge Name / Town Sample Recovery Boring Number Date Sample Number Personnel Initials Sample Depth																																											

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Josh Bridge No. 0976 Culvert Replacement
Langdon Street over Abagadasset River
Location: Richmond, Maine

Boring No.: BB-RAR-101

WIN: 27228.00

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/21/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: N/A
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0
Hammer Efficiency Factor: 0.962	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_p = Peak/Remolded Field Vane Undrained Shear Strength (psf)
 S_{u(lab)} = Lab Vane Undrained Shear Strength (psf)
 q_p = Unconfined Compressive Strength (ksf)
 N-uncorrected = Raw Field SPT N-value
 Hammer Efficiency Factor = Rig Specific Annual Calibration Value
 N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency
 N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 T_v = Pocket Torvane Shear Strength (psf)
 WC = Water Content, percent
 LL = Liquid Limit
 PL = Plastic Limit
 PI = Plasticity Index
 G = Grain Size Analysis
 C = Consolidation Test

Depth (ft.)	Sample 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 ₆₀	Casing Blows					
0									141.7	0'-0.5': Hot Mix Asphalt		
	1D	24/13	1.0 - 3.0	8-13-19-14	32	51				Brown, dry, dense, fine to coarse SAND, trace silt, (Fill).		
	2D	24/9	3.0 - 5.0	7-8-9-8	17	27				Brown, moist, medium dense, fine to coarse SAND, some Silt, trace gravel, (Fill).	G#24-S-3991 A-2-4(0), SM WC = 10.6	
5	3D	24/7	5.0 - 7.0	1-2-5-11	7	11				Grey, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (Fill).		
	4D	24/12	7.0 - 9.0	6-11-17-16	28	45				Grey, wet, dense, fine to coarse Gravelly SAND, trace silt, (Fill).		
10	5D	24/7	9.0 - 11.0	9-12-7-6	19	30	46			Brown-grey, wet, dense, fine to coarse Gravelly SAND, trace silt, (Fill).		
							34					
	6D	24/5	11.0 - 13.0	4-6-8-4	14	22	36			Brown-grey, wet, medium dense, fine to coarse Gravelly SAND, trace silt, (Fill).		
							75					
								R/C		Observed increase in resistance during roller cone advancement and spoon refusal at 13.4'. Metal shavings and rock cuttings in wash return.		
15									128.2	Advanced roller cone to 14.0'. Boring hole abandoned at 14.0.		
										Bottom of Exploration at 14.0 feet below ground surface.		
25												

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Boring abandoned at 14' after observing metal shavings in wash return and losing spin shoe. Shifted 1' to the southeast and conducted BB-RAR-101A.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Josh Bridge No. 0976 Culvert Replacement
Langdon Street over Abagadasset River
Location: Richmond, Maine

Boring No.: BB-RAR-101A

WIN: 27228.00

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0
Hammer Efficiency Factor: 0.962	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_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
 S_u(lab) = Lab Vane Undrained Shear Strength (psf)
 q_p = Unconfined Compressive Strength (ksf)
 N-uncorrected = Raw Field SPT N-value
 Hammer Efficiency Factor = Rig Specific Annual Calibration Value
 N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency
 N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 T_v = Pocket Torvane Shear Strength (psf)
 WC = Water Content, percent
 LL = Liquid Limit
 PL = Plastic Limit
 PI = Plasticity Index
 G = Grain Size Analysis
 C = Consolidation Test

Depth (ft.)	Sample 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 ₆₀	Casing Blows					
0								SSA		Spin shoe was lost during advancement of BB-RAR-101 (see log). Shifted 1' southeast and conducted BB-RAR-101A.		
										Advanced solid stem augurs to 10' and advanced casing to 13.0' prior to sampling.		
5												
10												
	1D	24/6	13.0 - 15.0	9-20-22-21	42	67	44	129.2		Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Fill).		
15	2D	24/12	15.0 - 17.0	13-26-13-17	39	63	15			Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#24-S-3992 A-1-b, SM WC = 9.6	
	3D	24/6	17.0 - 19.0	6-17-17-11	34	55	106			Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Fill).		
20								122.2				
	4D	24/8	21.0 - 23.0	5-5-5-6	10	16	38			Brown, wet, medium dense, fine to coarse Silty SAND, little gravel, (Marsh Deposit).	G#24-S-3993 A-4(0), SM WC = 19.4 G#24-S-3994	
	5D	24/11	23.0 - 25.0	2-6-20-16	26	42	45			Brown, wet, hard, Clayey SILT, with organics, (Marsh Deposit).	LL = 26 PL = 22 PI = 4 OC = 3.9	
25												

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows					
25	6D	24/20	25.0 - 27.0	6-5-23-42	28	45	64		108.2	6D (Top 8"): Brown, wet, hard, CLAY, some sand, with organics, (Marsh Deposit).	G#24-S-3995 WC = 24.4 OC = 3.1	
							109	6D (Bottom 12"): Wood. Advanced roller cone to 28' prior to sampling (driller noted change in resistance at 27.5' indicating probable bottom of wood).				
							142					
30	7D	24/4	28.0 - 30.0	2-3-3-4	6	10	76		108.2	Brown, wet, stiff, Organic SILT, some fine to coarse SAND, little gravel, (Marsh Deposit).	G#24-S-3996 A-4(0), OL WC = 120	
							85					
							82	Brown, wet, soft, Organic SILT, (Marsh Deposit). S _{u(lab)} = 292 psf				
							88	Unable to advance vane.				
35			33.0 - 33.4				97		108.2		ICON 68-425 LL = 335 PL = 205 PI = 130 WC = 107.9 OC = 21.8	
	8D MV2	24/2	35.0 - 37.0 35.0 - 35.4	1-WOH-WOH-1			PUSH					
40							98		100.2	Grey, wet, medium stiff, Silty CLAY, (Marine Clay Crust). Unable to advance vane.	ICON 65-436 WC = 40.5	
	U2	24/24	40.0 - 42.0					Grey, wet, medium stiff, Silty CLAY, (Marine Clay Crust).				
45			42.6 - 43.0	S _u =504/103 psf					100.2	55x110mm raw torque readings: V1: 11.3/2.3 ft-lbs V2: 11.2/2.1 ft-lbs	G#24-S-3997 LL = 37 PL = 17 PI = 20 WC = 36.5	
			43.6 - 44.0	S _u =504/94 psf								
50	9D V3	24/24	45.0 - 47.0 45.6 - 46.0	PUSH THRU VANE S _u =469/89 psf					100.2	Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V3: 10.6/2.0 ft-lbs V4: 9.4/2.1 ft-lbs		
			46.6 - 47.0	S _u =420/94 psf								

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

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_{60}	Casing Blows					
50	10D	24/10	50.0 - 52.0	PUSH THRU VANE						Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V5: 11.1/1.7 ft-lbs V6: 9.8/1.3 ft-lbs		
	V5		50.6 - 51.0	$S_u=496/76$ psf								
	V6		51.6 - 52.0	$S_u=437/58$ psf								
55	11D	24/24	55.0 - 57.0	PUSH THRU VANE						Grey, wet, soft, Silty CLAY, trace sand (Marine Clay). 55x110mm raw torque readings: V7: 10.5/1.5 ft-lbs V8: 11.6/1.6 ft-lbs		
	V7		55.6 - 56.0	$S_u=469/67$ psf								
	V8		56.6 - 57.0	$S_u=518/71$ psf								
60	U3	24/22	60.0 - 62.0							Grey, wet, very soft, Silty CLAY, (Marine Clay). $S_{u(lab)} = 240$ psf 55x110mm raw torque readings: V9: 9.6/1.9 ft-lbs V10: 10.0/1.7 ft-lbs	ICON 65-435 WC = 36.6	
	V9		62.6 - 63.0	$S_u=429/85$ psf								
	V10		63.6 - 64.0	$S_u=446/76$ psf								
65	12D	24/12	65.0 - 67.0	PUSH THRU VANE						Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V11: 9.8/2.2 ft-lbs V12: 9.6/1.6 ft-lbs	G#24-S-3998 LL = 48 PL = 20 PI = 28 WC = 43.8	
	V11		65.6 - 66.0	$S_u=437/98$ psf								
	V12		66.6 - 67.0	$S_u=429/71$ psf								
70	13D	24/0	70.0 - 72.0	PUSH THRU VANE						No recovery. Similar material to 12D observed in wash return and outside of tube. 55x110mm raw torque readings: V13: 10.9/1.9 ft-lbs V14: 11.7/1.9 ft-lbs		
	V13		70.6 - 71.0	$S_u=487/85$ psf								
	V14		71.6 - 72.0	$S_u=522/85$ psf								
75								68.1		Increase in resistance during roller cone advancement at 74.1' indicates probable strata break.		

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_u(lab) = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows					
75	14D	24/10	75.0 - 77.0	9-18-11-20	29	46	10			Grey, wet, dense, fine to coarse Gravelly SAND, some silt, (Marine Sand).		
							49					
							77					
							75					
							62					
80	14DA R1	0/0 4/0	80.5 - 80.5 80.7 - 81.0	50/0"	R		146			Casing refusal at 79.5. Switch to 3" casing. Increase in resistance during roller cone advancement at 80.5' (3" casing dropped to 80.0 during roller cone advancement). Split spoon Refusal at 80.5'. Advanced roller cone to 80.7' and setup to core. No recovery. Core barrel dropped after 4", indicating probable boulders. Advance roller cone to 82.0'. Observed water rise through the casing during advancement of roller cone indicating possible artesian groundwater conditions.		
							58					
							72					
							112					
							308					
85	15D	9/9	85.0 - 85.8	58-42/3"	R					Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Marine Sand).		
90	16D	2/1	90.0 - 90.2	50/2"	R					Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Marine Sand).		
95	17D	6/6	95.0 - 95.5	87/6"	R					Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Marine Sand).		
100												

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows					
100	18D	12/6	100.0 - 101.0	36-93	R					Grey, wet, very dense, fine to coarse SAND, some gravel, little silt, (Marine Sand).		
105	19D	9/8	105.0 - 105.8	60-72/3"	R					Grey, wet, very dense, Gravelly SAND, little silt, (Marine Sand).		
110	20D	10/7	110.0 - 110.8	56-64/4"	R					Grey, wet, very dense, Gravelly SAND, little silt, (Marine Sand).	G#24-S-3999 A-1-b, SM WC = 6.8	
115	21D	9/7	115.0 - 115.8	53-73/3"	R					Grey, wet, very dense, Gravelly SAND, little silt, (Marine Sand).		
120	22D R2	1/0 44/44	120.0 - 120.1 120.1 - 123.8	50/1" RQD = 25%	R				22.1	No recovery. Spoon refusal at 120.1' indicates probable top of bedrock. Set up to core at 120.1'. R2: Very hard to hard, fresh to slightly weathered, medium grained, white, GRANITE. Joints are extremely close to close, low to high angle, undulating, rough, discolored, tight to partially open. Recovery = 100% Rock Quality = Very Poor Rock Core Times (min:sec): 120.1-121.1' (1:38), 121.1-122.1' (1:54), 122.1-123.1' (1:37), 123.1-123.8' (2:34)		
125	R3	60/58	123.8 - 128.8	RQD = 17%								

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Josh Bridge No. 0976 Culvert Replacement
Langdon Street over Abagadasset River
Location: Richmond, Maine

Boring No.: BB-RAR-101A


WIN: 27228.00

Driller: MaineDOT	Elevation (ft.): 142.2	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/21/24-8/27/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: NX
Boring Location: Sta. 5+24.4, 6.5' Rt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 0.0

Hammer Efficiency Factor: 0.962

Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions:
 D = Split Spoon Sample
 MD = Unsuccessful Split Spoon Sample Attempt
 U = Thin Wall Tube Sample
 MU = Unsuccessful Thin Wall Tube Sample Attempt
 V = Field Vane Shear Test, PP = Pocket Penetrometer
 MV = Unsuccessful Field Vane Shear Test Attempt
 R = Rock Core Sample
 SSA = Solid Stem Auger
 HSA = Hollow Stem Auger
 RC = Roller Cone
 WOH = Weight of 140 lb. Hammer
 WOR/C = Weight of Rods or Casing
 WO1P = Weight of One Person
 S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
 S_u(lab) = Lab Vane Undrained Shear Strength (psf)
 q_p = Unconfined Compressive Strength (ksf)
 N-uncorrected = Raw Field SPT N-value
 Hammer Efficiency Factor = Rig Specific Annual Calibration Value
 N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency
 N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 T_v = Pocket Torvane Shear Strength (psf)
 WC = Water Content, percent
 LL = Liquid Limit
 PL = Plastic Limit
 PI = Plasticity Index
 G = Grain Size Analysis
 C = Consolidation Test

Depth (ft.)	Sample 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 ₆₀	Casing Blows					
125									13.4		R3: Very hard to hard, fresh to slightly weathered, medium grained, white, GRANITE. Joints are extremely close to close, low to high angle, undulating, rough, discolored, tight to partially open. Recovery = 97% Rock Quality = Very Poor Rock Core Times (min:sec): 123.8-124.8' (1:47), 124.8-125.8' (2:07), 125.8-126.8' (1:43), 126.8-127.8' (2:06), 127.8-128.8' (2:51) Bottom of Exploration at 128.8 feet below ground surface.	
130												
135												
140												
145												
150												


Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level observed flush with casing due to probable artesian conditions.
- As-drilled boring locations were surveyed by MaineDOT in the field (466243.2N, 1124986.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.3	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/28/24-9/3/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: N/A
Boring Location: Sta. 4+74.4, 8.2' Lt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 5.1'

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows				
0							SSA	142.1		0'-0.2': Hot Mix Asphalt	
	1D	24/15	1.5 - 3.5	6-9-8-5	17	27				Brown, dry, medium dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#24-S-4000 A-1-b, SM WC = 5.8
5	2D	24/11	5.0 - 7.0	3-3-11-15	14	22				Brown-grey, wet, medium dense, fine to medium SAND, some silt, trace gravel, (Fill).	G#24-S-4001 A-2-4(0), SM WC = 20.0
10	3D	24/9	10.0 - 12.0	4-5-7-7	12	19				Grey, wet, medium dense, fine to medium SAND, some Silt, trace Gravel (Fill).	
	4D	24/8	12.0 - 14.0	7-4-3-4	7	11				Grey, wet, medium dense, fine to coarse SAND, some gravel, trace silt, (Fill).	
15	5D	24/0	14.0 - 16.0	6-3-2-1	5	8				No Recovery.	
	6D	24/9	17.0 - 19.0	3-3-2-1	5	8				Grey-brown, wet, loose, fine to medium SAND, some silt, trace gravel (Fill).	
20	7D	24/7	20.0 - 22.0	3-3-1-2	4	6				Grey-brown, wet, loose, fine to medium SAND, some silt, some gravel, (Fill).	
	8D	24/2	22.0 - 24.0	3-2-11-58	13	21				Grey-brown, wet, medium dense, fine to medium SAND, some gravel, trace silt, (Fill).	
25	9D	24/0	24.0 - 26.0	8-5-1-2	6	10				No recovery. Wood pieces in wash return; no wash return at 25.3'.	

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level taken before casing was advanced.
- As-drilled boring locations were surveyed by MaineDOT in the field (446273.4N, 1124943.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.3	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/28/24-9/3/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: N/A
Boring Location: Sta. 4+74.4, 8.2' Lt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 5.1'

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample S_u(lab) = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows					
25								56	117.0			
	10D	24/11	26.0 - 28.0	4-2-1-5	3	5	11			Grey-brown, wet, medium stiff, Organic SILT, (Marsh Deposit).		G#24-S-4002 LL = NV PL = NP PI = NA WC = 210 OC = 33.6
								31				
	U1	24/22	28.0 - 30.0					42		Brown, wet, Organic Silt (Marsh Deposit).		G#24-S-4003 A-4(0), ML WC = 120
								42				
30	11D MV1	24/14	30.0 - 32.0 30.0 - 30.0	2-2-2-3	4	6	RC			Brown, wet, medium stiff, Organic SILT & CLAY, little gravel, trace sand, (Marsh Deposit). MVI: Unable to advance vane.		
									108.8	Grey wash in cuttings at approximately 34.0'.		
35	12D V1 V2	24/24	35.0 - 37.0 35.6 - 36.0 36.6 - 37.0	PUSH THRU VANE S _u =996/129 psf S _u =960/152 psf						Grey, wet, medium stiff, Silty CLAY, (Marine Clay Crust). 55x110mm raw torque readings: V1: 22.3/2.9 ft-lbs V2: 21.5/3.4 ft-lbs		
40	U2	24/24	40.0 - 42.0							Grey, wet, medium stiff, Silty CLAY, (Marine Clay Crust).		
									100.3	55x110mm raw torque readings: V3: 11.1/2.6 ft-lbs V4: 11.4/3.0 ft-lbs		
45	13D V5 V6	24/24	45.0 - 47.0 45.6 - 46.0 46.6 - 47.0	PUSH THRU VANE S _u =491/85 psf S _u =482/76 psf						Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V5: 11.0/1.9 ft-lbs V6: 10.8/1.7 ft-lbs		G#24-S-4004 LL = 40 PL = 19 PI = 21 WC = 38.9
50												

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level taken before casing was advanced.
- As-drilled boring locations were surveyed by MaineDOT in the field (446273.4N, 1124943.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.

Driller: MaineDOT	Elevation (ft.): 142.3	Auger ID/OD: 4.5"
Operator: Travis Daggett	Datum: NAVD88	Sampler: Standard Splitspoon
Logged By: L. Hailey	Rig Type: GME 45	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 8/28/24-9/3/24	Drilling Method: SSA/Drive-and-Wash	Core Barrel: N/A
Boring Location: Sta. 4+74.4, 8.2' Lt	Casing ID/OD: 4.0/4.5", 3.0/3.5"	Water Level*: 5.1'

Hammer Efficiency Factor: 0.962 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

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 ₆₀	Casing Blows					
50	U3	24/24	50.0 - 52.0							Grey, wet, soft, Silty CLAY, (Marine Clay). S _{u(lab)} = 251 psf	ICON 65-435 WC = 37.3	
	V7		52.6 - 53.0	S _{u(lab)} 7/76						Increased casing resistance at 52.6'. Drove casing to 55.0' prior to sampling. 55x110mm raw torque readings: V7: 9.8/1.7 ft-lbs V8: 11.9/1.4 ft-lbs		
	V8		53.6 - 54.0	S _u =531/62 psf			45					
55	14D V9	24/24	55.0 - 57.0 55.6 - 56.0	PUSH THRU VANE S _u =473/67 psf					PUSH	Grey-black, wet, soft to medium stiff, Silty CLAY, trace sand, (Marine Clay). 55x110mm raw torque readings: V9: 10.6/1.5 ft-lbs V10: 17.0 /2.1 ft-lbs, readings may be inflated due possible granular material		
	V10		56.6 - 57.0	S _u =759/94 psf								
60	15D V11	24/18	60.0 - 62.0 60.6 - 61.0	PUSH THRU VANE S _u =388/94 psf						Grey-black, wet, soft, Silty CLAY, trace sand, (Marine Clay). 55x110mm raw torque readings: V11: 8.7/2.1 ft-lbs V12: 9.4/1.9 ft-lbs		
	V12		61.6 - 62.0	S _u =420/85 psf								
65	16D V13	24/22	65.0 - 67.0 65.6 - 66.0	PUSH THRU VANE S _u =393/54 psf						Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V13: 8.8/1.2 ft-lbs V14: 8.5/1.3 ft-lbs	G#24-S-4005 LL = 43 PL = 20 PI = 23 WC = 39.8	
	V14		66.6 - 67.0	S _u =379/58 psf								
70	17D V15	24/14	70.0 - 72.0 70.6 - 71.0	PUSH THRU VANE S _u =420/85 psf						Grey, wet, soft, Silty CLAY, (Marine Clay). 55x110mm raw torque readings: V15: 9.4/1.9 ft-lbs V16: 10.4/1.6 ft-lbs.		
	V16		71.6 - 72.0	S _u =464/71 psf								
75												

Remarks:

- Automatic Hammer MaineDOT, ETR = 0.962
- Water level taken before casing was advanced.
- As-drilled boring locations were surveyed by MaineDOT in the field (446273.4N, 1124943.0E).
- Fine-Grained Soil Descriptions on this log are based on plasticity estimated using visual-manual classification techniques or laboratory Atterberg Limit tests if available, rather than the MaineDOT Standard based on percentages passing specific grain sizes.
- Field vanes conducted with a 55 x 110mm rectangular vane.



3/24/2026

**MAINE DEPARTMENT OF TRANSPORTATION
JOSH BRIDGE NO. 0976 CULVERT REPLACEMENT**

09.0026249.01

APPENDIX C – LABORATORY TEST RESULTS



195 Frances Avenue
 Cranston RI, 02910
 Phone: (401)-467-6454
 Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:
 GZA GeoEnvironmental, Inc.
 South Portland, ME
 Project Manager: Logan Hailey
 Assigned By: Logan Hailey
 Collected By: GZA

Project Information:
 Langdon Road, Josh Bridge #0976
 Richmond, ME
 Project Number: 09.0026249.00
 Summary Page: 1 of 1
 Report Date: 10/8/2024

LABORATORY TESTING DATA SHEET, Report No.: 7424-K-102

Boring No.	Sample ID	Depth (ft)	Laboratory No.	Identification Tests										Proctor / CBR / Permeability Tests						Laboratory Log and Soil Description	
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	9 _d MAX (pcf) W _{opt} (%)	9 _d MAX (pcf) W _{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"		Permeability cm/sec
				D2216	D4318			D6913			D2974	D4792	D1557								
BB-RAR-101	2D	3-5	24-S-3991	10.6				8.2	68.5	23.3											Brown f-c SAND, some Silt, trace fine Gravel
BB-RAR-101A	2D	15-17	24-S-3992	9.6				33.8	52.7	13.5											Brown f-c SAND, some f-c Gravel, little Silt
BB-RAR-101A	4D	21-23	24-S-3993	19.4				10.5	46.2	43.3											Olive SILTY CLAYEY SAND, little fine Gravel
BB-RAR-101A	5D	23-25	24-S-3994	26.6	26	22					3.9										Brown CLAYEY SILT
BB-RAR-101A	6D	25-27	24-S-3995	24.4							3.1										Organic Content Only
BB-RAR-101A	7D	28-30	24-S-3996	120				10.4	23.2	66.4											Brown Organic SILT, some f-c Sand, little fine Gravel
BB-RAR-101A	9D	45-47	24-S-3997	36.5	37	17															Grey CLAY & SILT
BB-RAR-101A	12D	65-67	24-S-3998	43.8	48	20															Grey SILTY CLAY
BB-RAR-101A	20D	110-110.8	24-S-3999	6.8				40.9	43.2	15.9											Grey GRAVELLY SAND, little Silt
Organic Content tested by RB 10-7-24.																					

Date Received: 10/1/2024

Reviewed By: 

Date Reviewed: 10/8/2024



195 Frances Avenue
 Cranston RI, 02910
 Phone: (401)-467-6454
 Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:
 GZA GeoEnvironmental, Inc.
 South Portland, ME
 Project Manager: Logan Hailey
 Assigned By: Logan Hailey
 Collected By: GZA

Project Information:
 Langdon Road, Josh Bridge #0976
 Richmond, ME
 Project Number: 09.0026249.00
 Summary Page: 1 of 1
 Report Date: 10/8/2024

LABORATORY TESTING DATA SHEET, Report No.: 7424-K-103

Boring No.	Sample ID	Depth (ft)	Laboratory No.	Identification Tests										Proctor / CBR / Permeability Tests						Laboratory Log and Soil Description	
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	9 _d MAX (pcf) W _{opt} (%)	9 _d MAX (pcf) W _{opt} (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"		Permeability cm/sec
				D2216	D4318			D6913			D2974	D4792	D1557								
BB-RAR-102	1D	0-2	24-S-4000	5.8				32.1	52.3	15.6											Brown f-c SAND, some f-c Gravel, little Silt
BB-RAR-102	2D	5-7	24-S-4001	20.0				5.2	74.8	20.0											Grey f-m SAND, some Silt, trace fine Gravel
BB-RAR-102	10D	26-28	24-S-4002	210	NV	NP					33.6										Dark Brown Organic SILT
BB-RAR-102	11D	30-32	24-S-4003	120				15.4	4.1	80.5											Brown Organic SILT & CLAY, little fine Gravel, trace f-c Sand
BB-RAR-102	13D	35-37	24-S-4004	38.9	40	19															Grey SILTY CLAY
BB-RAR-102	16D	65-67	24-S-4005	39.8	43	20															Grey SILTY CLAY
BB-RAR-102	20D	95-96.5	24-S-4006	8.8				23.3	53.1	23.6											Grey f-m SAND, some Silt, some f-c Gravel
Organic Content tested by RB 10-4-24.																					

Date Received: 10/1/2024

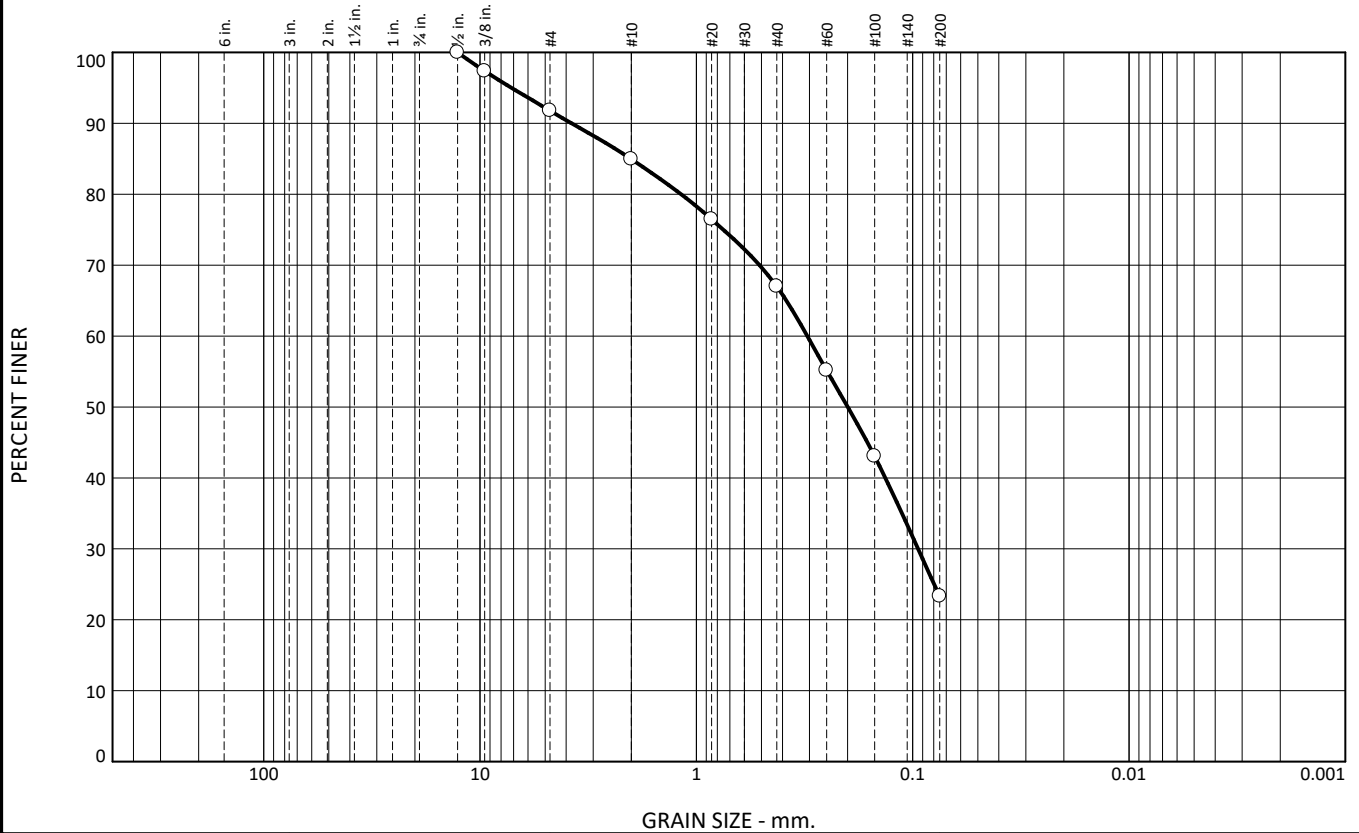
Reviewed By: 

Date Reviewed: 10/8/2024

This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.
 This report shall not be reproduced, except in full, without prior written approval from the Agency, as defined in ASTM E329.

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.2	6.8	18.0	43.7	23.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	97.4		
#4	91.8		
#10	85.0		
#20	76.5		
#40	67.0		
#60	55.2		
#100	43.1		
#200	23.3		

Soil Description

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

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 3.7694 D₈₅= 2.0089 D₆₀= 0.3070
D₅₀= 0.1996 D₃₀= 0.0945 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

* (no specification provided)

Source of Sample: BB-RAR-101
Sample Number: 2D

Depth: 3-5'

Date: 10.3.24

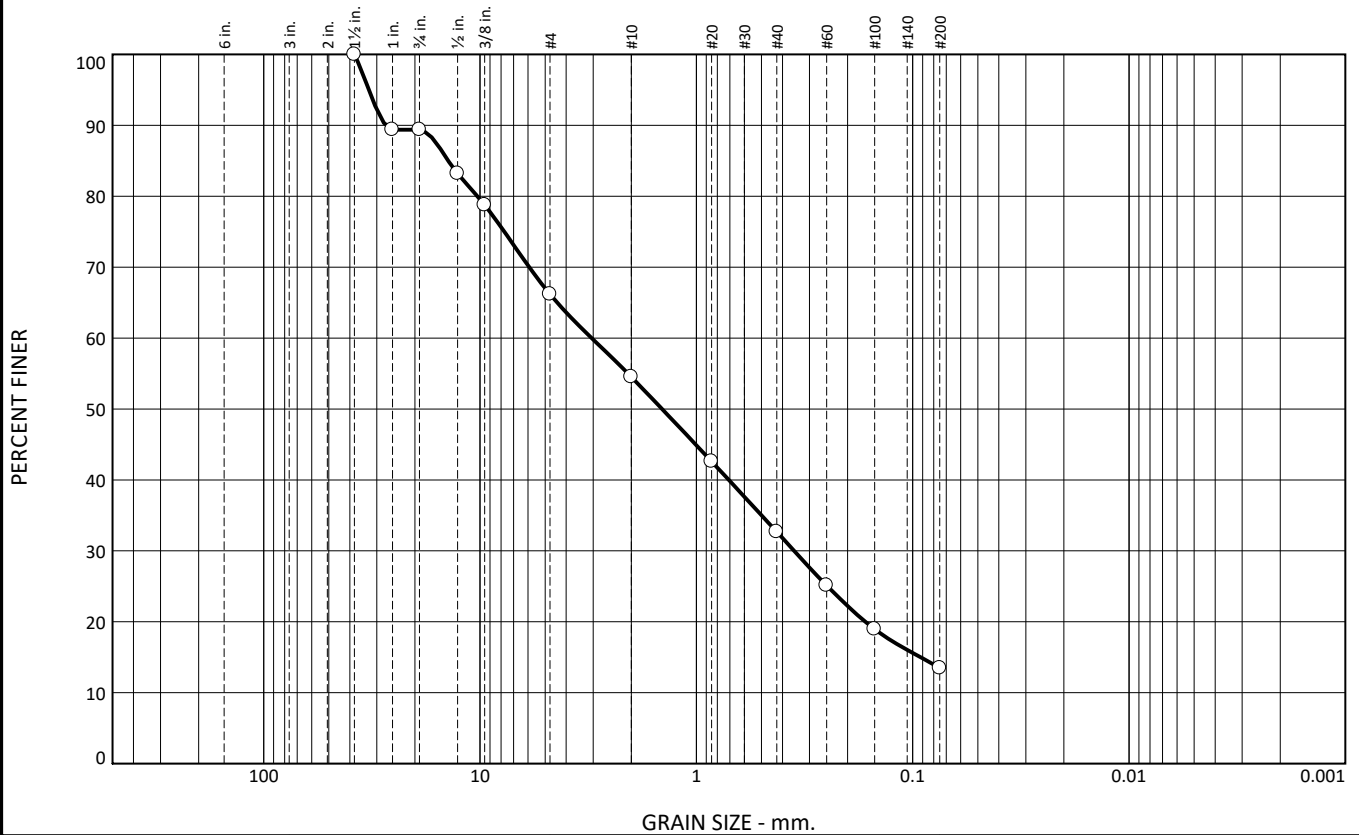
Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
Fig. 24-S-3991	

Tested By: SBR

Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.6	23.2	11.7	21.8	19.2	13.5	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	89.4		
3/4"	89.4		
1/2"	83.2		
3/8"	78.8		
#4	66.2		
#10	54.5		
#20	42.6		
#40	32.7		
#60	25.1		
#100	19.0		
#200	13.5		

Soil Description

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

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 27.3180 D₈₅= 14.0267 D₆₀= 3.0479
 D₅₀= 1.4405 D₃₀= 0.3532 D₁₅= 0.0920
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-1-b

Remarks

* (no specification provided)

Source of Sample: BB-RAR-101A Depth: 15-17'
 Sample Number: 2D

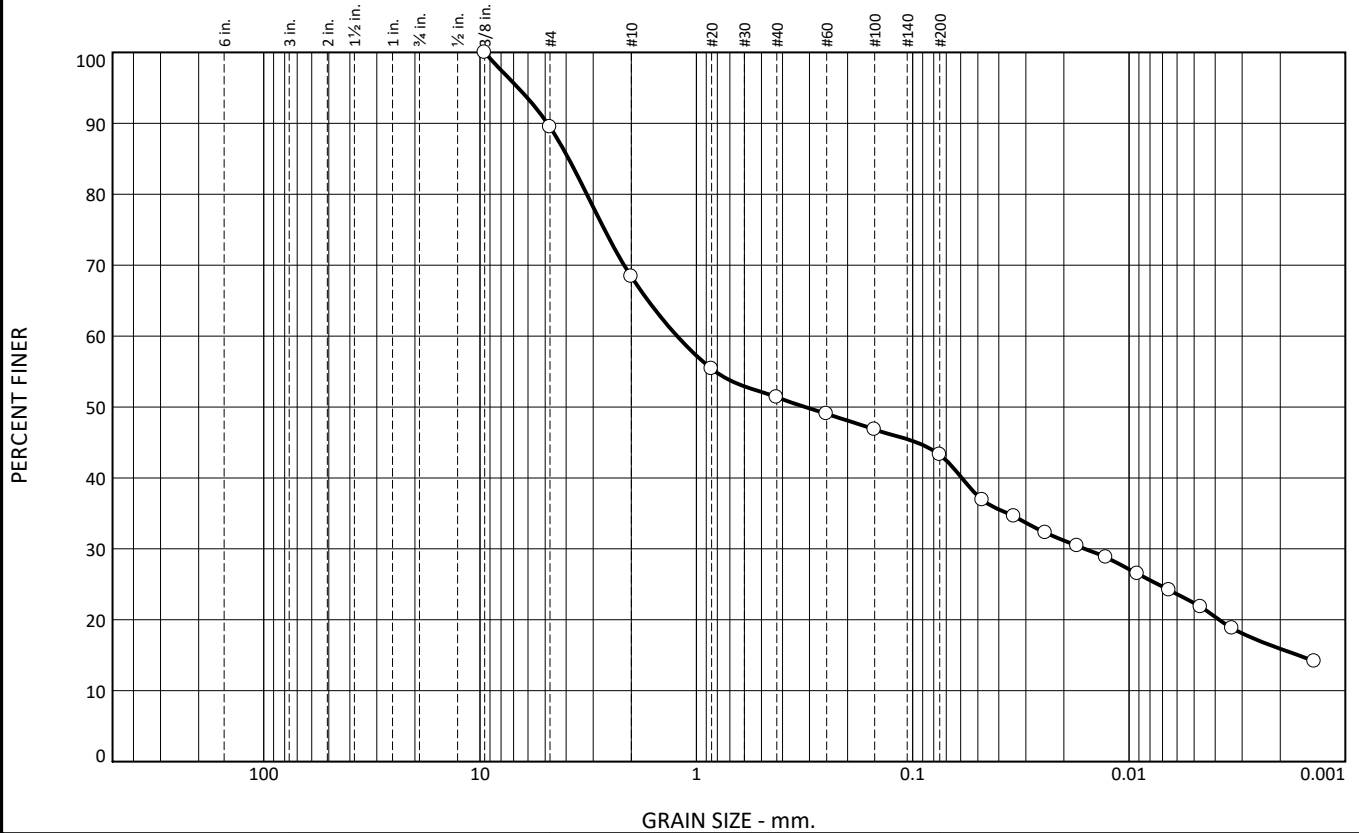
Date: 10.3.24

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
Fig. 24-S-3992	

Tested By: SBR Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.5	21.1	17.0	8.1	27.4	15.9

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	89.5		
#10	68.4		
#20	55.4		
#40	51.4		
#60	49.0		
#100	46.8		
#200	43.3		
0.0476 mm.	36.9		
0.0341 mm.	34.6		
0.0244 mm.	32.3		
0.0174 mm.	30.4		
0.0128 mm.	28.8		
0.0091 mm.	26.5		
0.0065 mm.	24.2		
0.0047 mm.	21.8		
0.0033 mm.	18.8		
0.0014 mm.	14.1		

* (no specification provided)

Soil Description

Olive SILTY CLAYEY SAND, little fine Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 4.8791 D₈₅= 3.8910 D₆₀= 1.2277

D₅₀= 0.3142 D₃₀= 0.0160 D₁₅= 0.0017

D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-4(0)

Remarks

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

Source of Sample: BB-RAR-101A Depth: 21-23'
 Sample Number: 4D

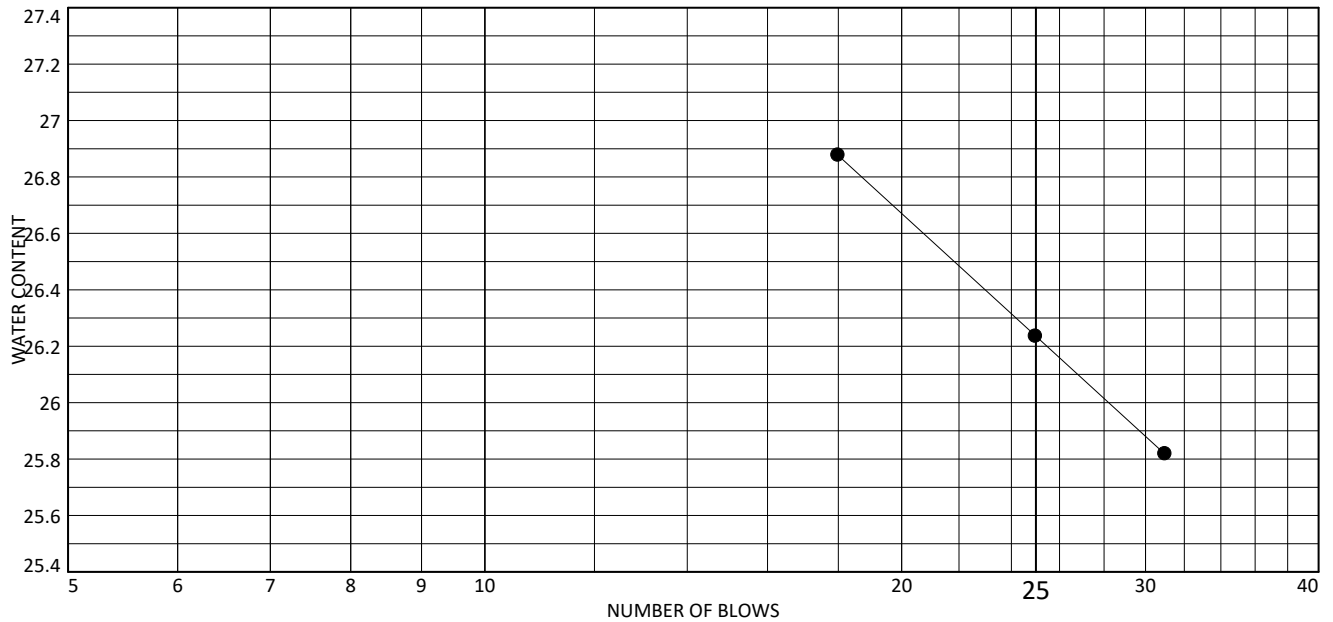
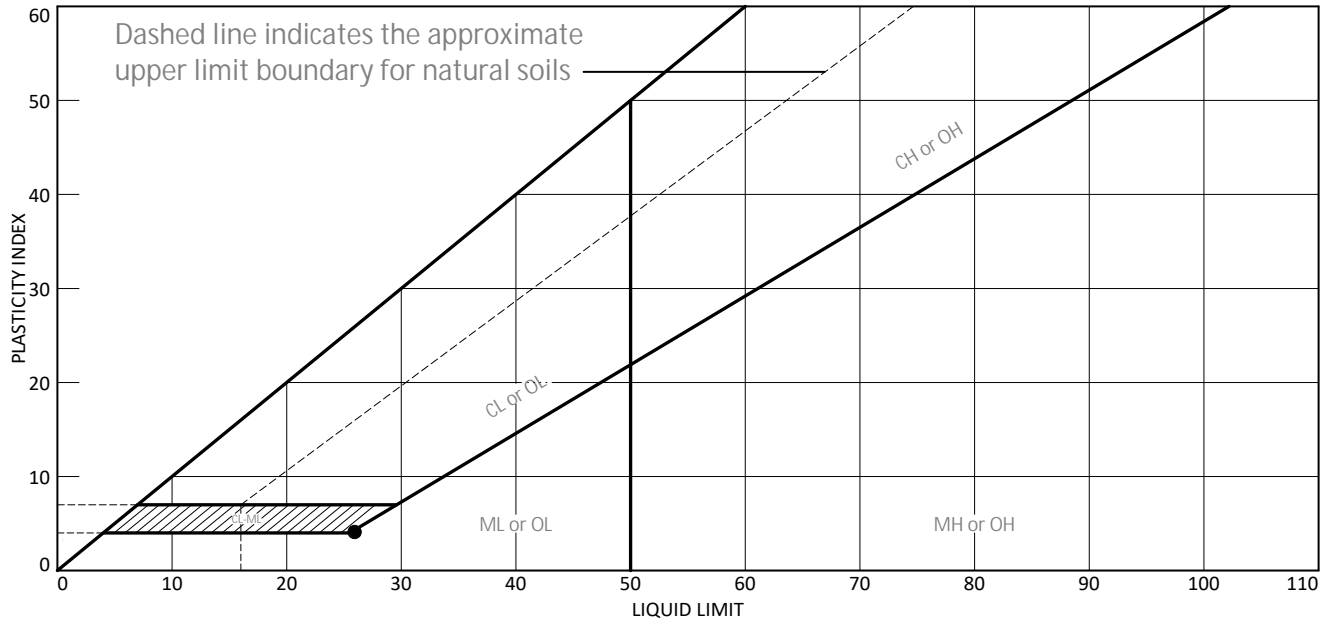
Date: 10.7.24

<p style="font-size: 1.2em; margin: 0;">Thielsch Engineering Inc.</p> <p style="margin: 0;">Cranston, RI</p>	<p>Client: GZA GeoEnvironmental</p> <p>Project: Langdon Road, Josh Bridge #0976 Richmond, ME</p> <p>Project No: 09.0026249.00</p>
<p>Fig. 24-S-3993</p>	

Tested By: RB/SBR Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Brown CLAYEY SILT	26	22	4			

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-101A Depth: 23-25'
 Sample Number: 5D

Thielsch Engineering Inc.
 Cranston, RI

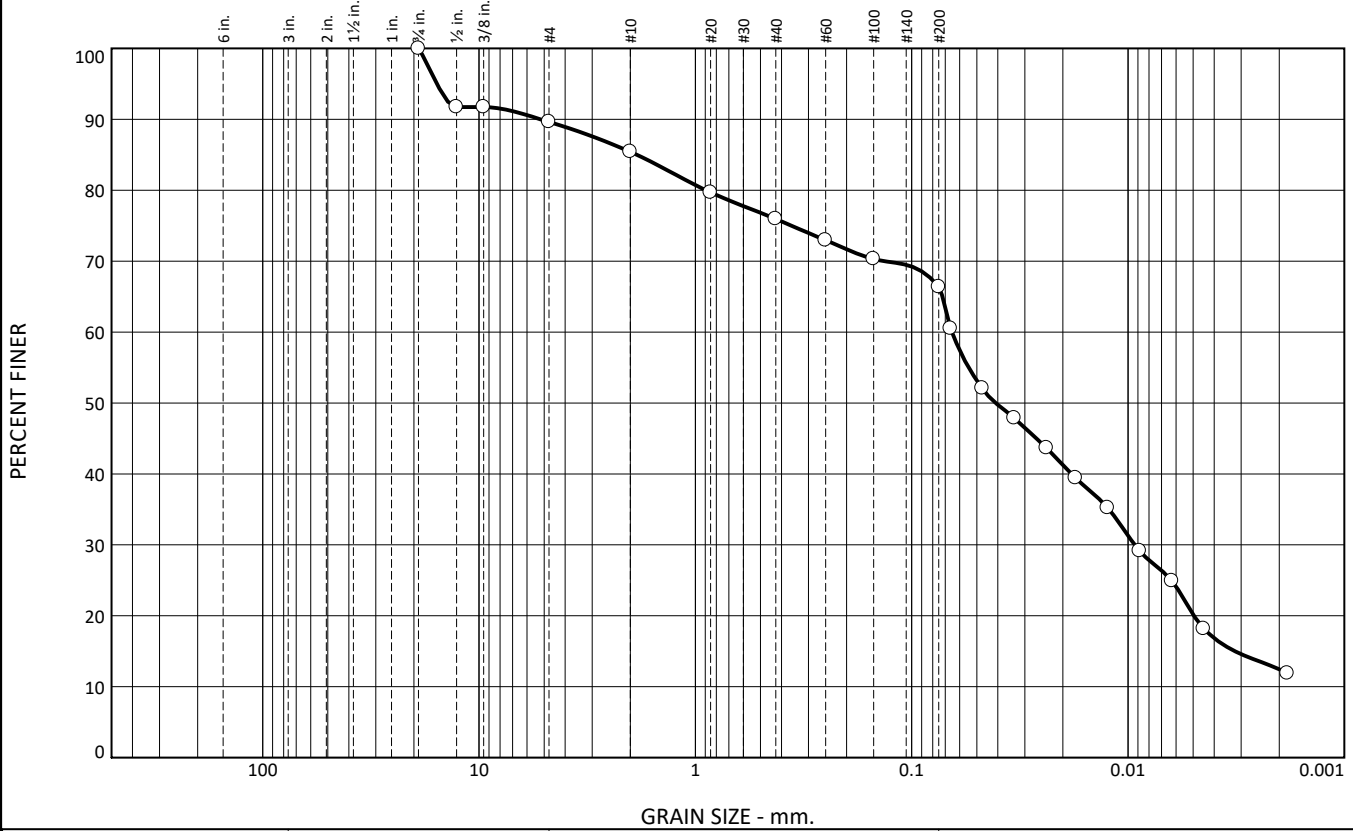
Remarks:

Fig. 24-L-3994

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.4	4.2	9.5	9.5	54.0	12.4

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	91.7		
3/8"	91.7		
#4	89.6		
#10	85.4		
#20	79.7		
#40	75.9		
#60	73.0		
#100	70.3		
#200	66.4		
0.0661 mm.	60.5		
0.0472 mm.	52.0		
0.0335 mm.	47.8		
0.0238 mm.	43.6		
0.0175 mm.	39.4		
0.0124 mm.	35.2		
0.0088 mm.	29.1		
0.0063 mm.	24.9		
0.0045 mm.	18.2		
0.0018 mm.	11.9		

* (no specification provided)

Soil Description

Brown Organic SILT, some f-c Sand, little fine Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 5.1918 D₈₅= 1.8622 D₆₀= 0.0652

D₅₀= 0.0409 D₃₀= 0.0093 D₁₅= 0.0032

D₁₀= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Sample contains fine-grained organic material.

Source of Sample: BB-RAR-101A
Sample Number: 7D

Depth: 28-30'

Date: 10.7.24

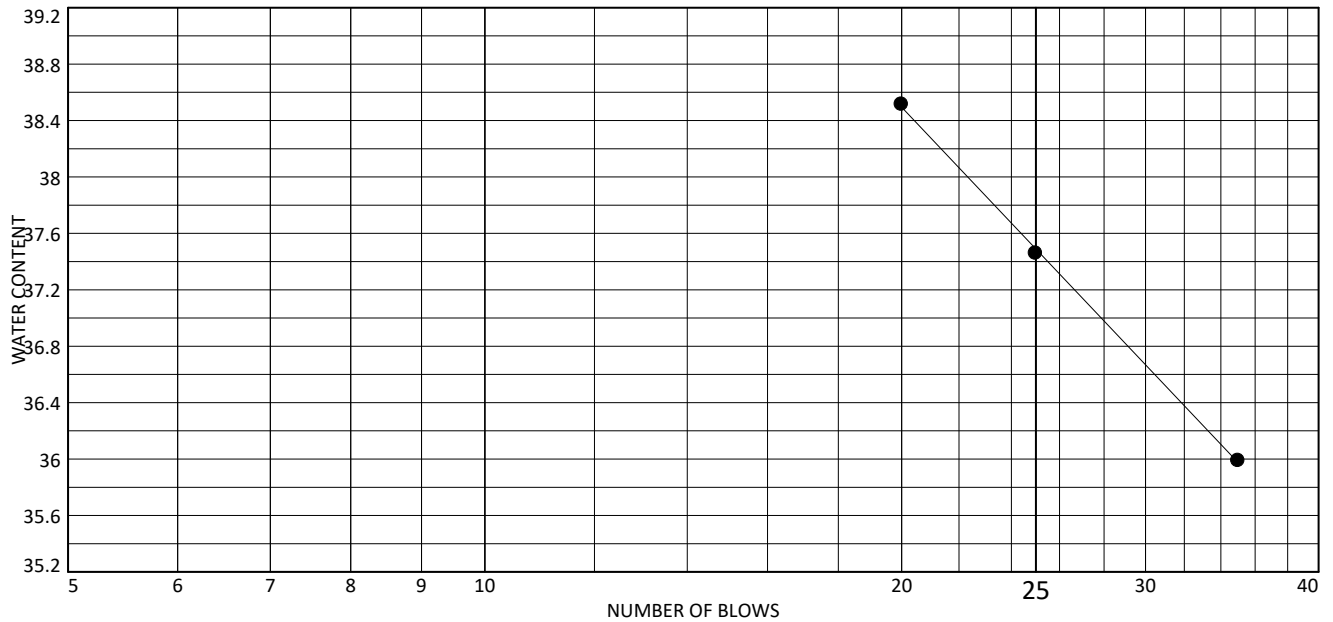
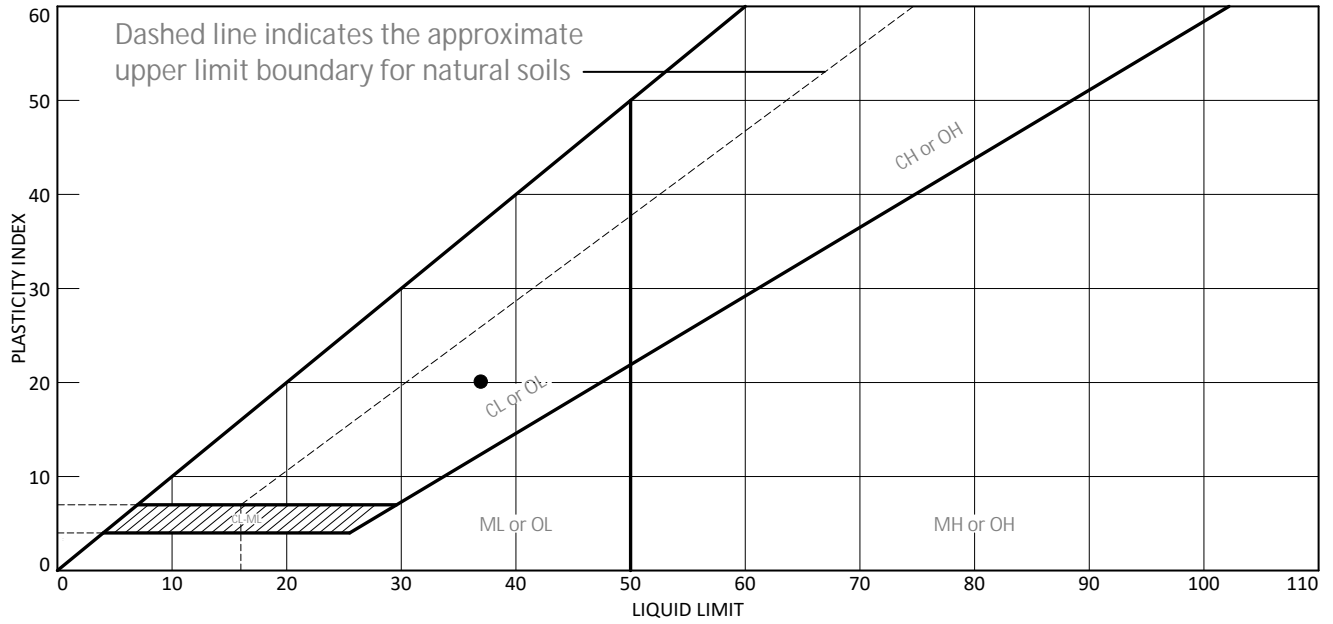
Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00 Fig. 24-S-3996
--	--

Tested By: RB/SBR

Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Grey CLAY & SILT	37	17	20			

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-101A Depth: 45-47'
 Sample Number: 9D

Thielsch Engineering Inc.
 Cranston, RI

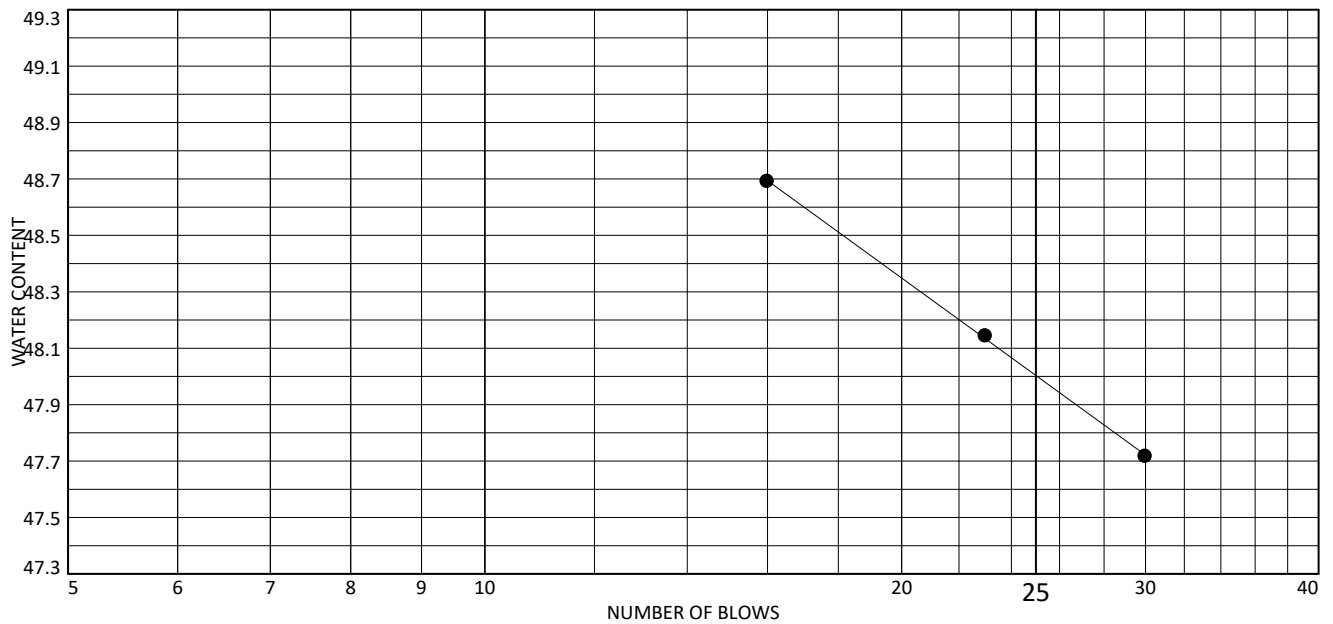
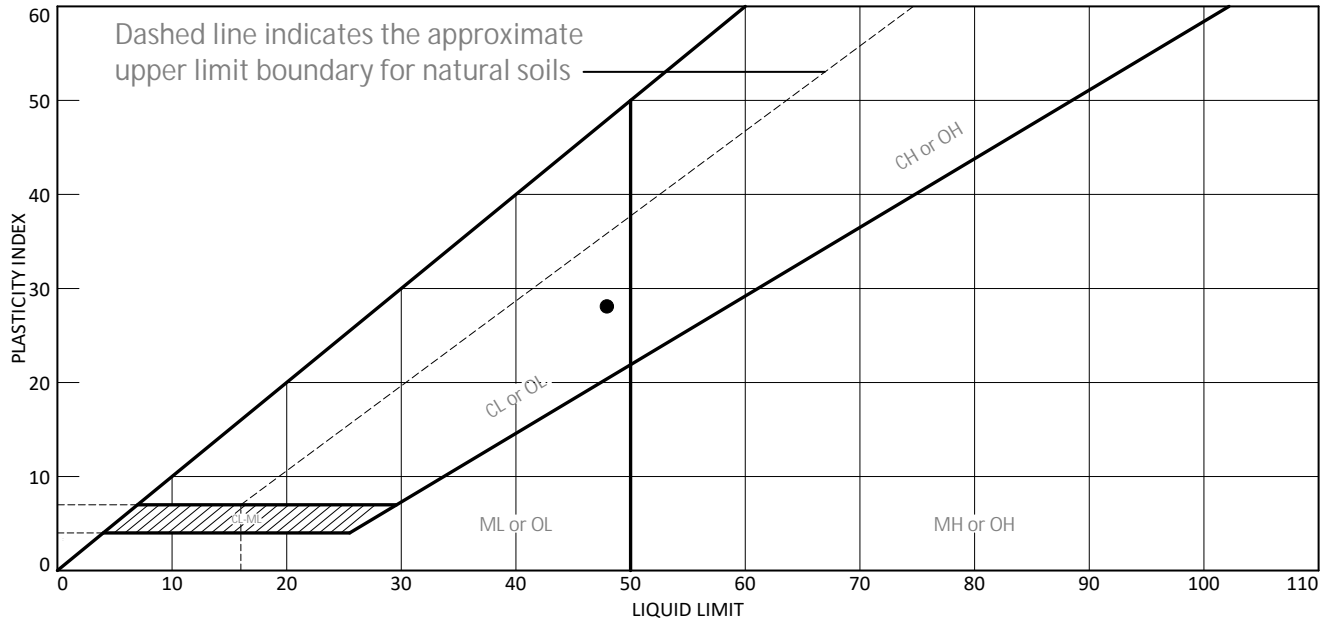
Remarks:

Fig. 24-L-3997

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Grey SILTY CLAY	48	20	28			

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-101A Depth: 65-67'
 Sample Number: 12D

Thielsch Engineering Inc.
Cranston, RI

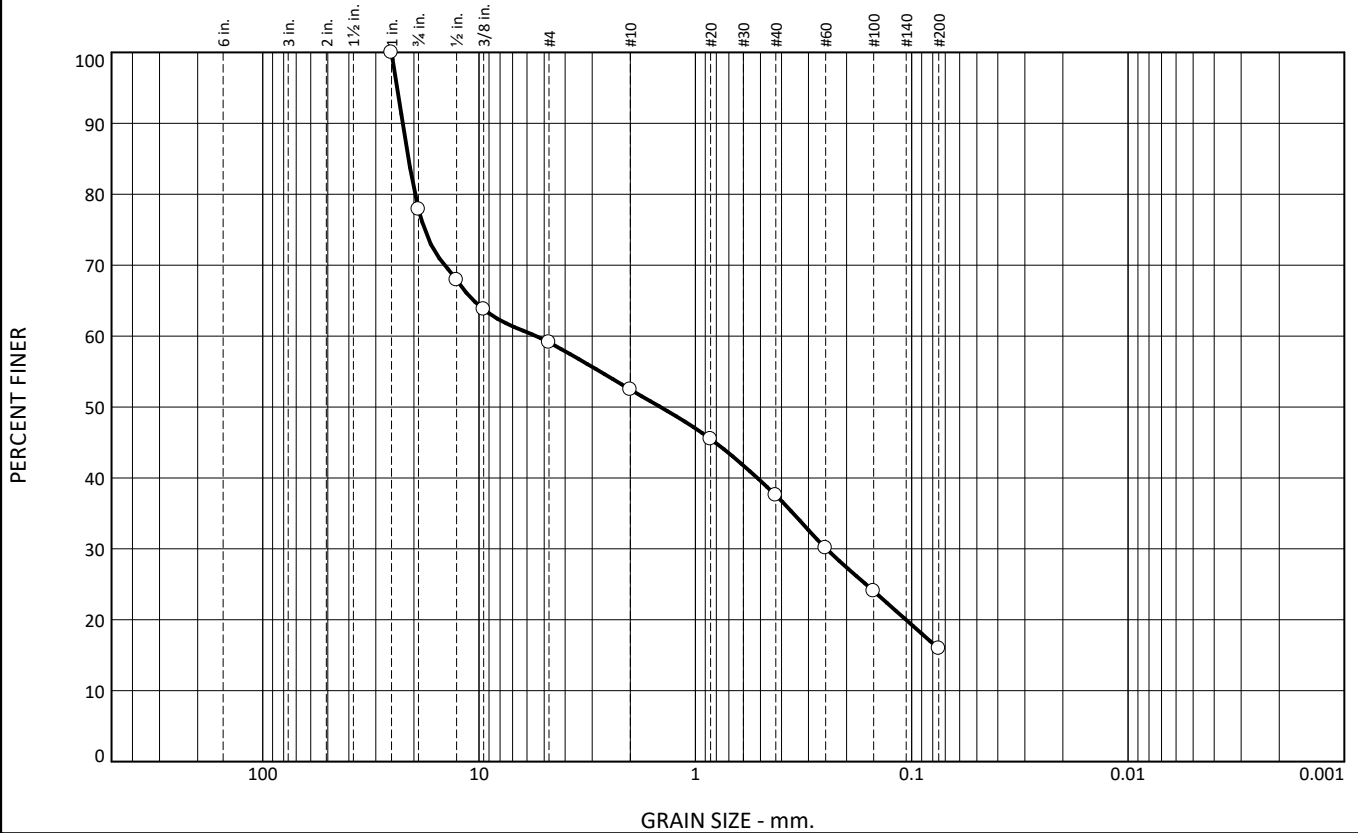
Remarks:

Fig. 24-L-3998

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	22.1	18.8	6.6	14.9	21.7	15.9	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	77.9		
1/2"	67.9		
3/8"	63.8		
#4	59.1		
#10	52.5		
#20	45.5		
#40	37.6		
#60	30.1		
#100	24.0		
#200	15.9		

Soil Description
Grey GRAVELLY SAND, little Silt

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 22.5248 D₈₅= 21.2000 D₆₀= 5.4492
 D₅₀= 1.4509 D₃₀= 0.2480 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-1-b

Remarks

* (no specification provided)

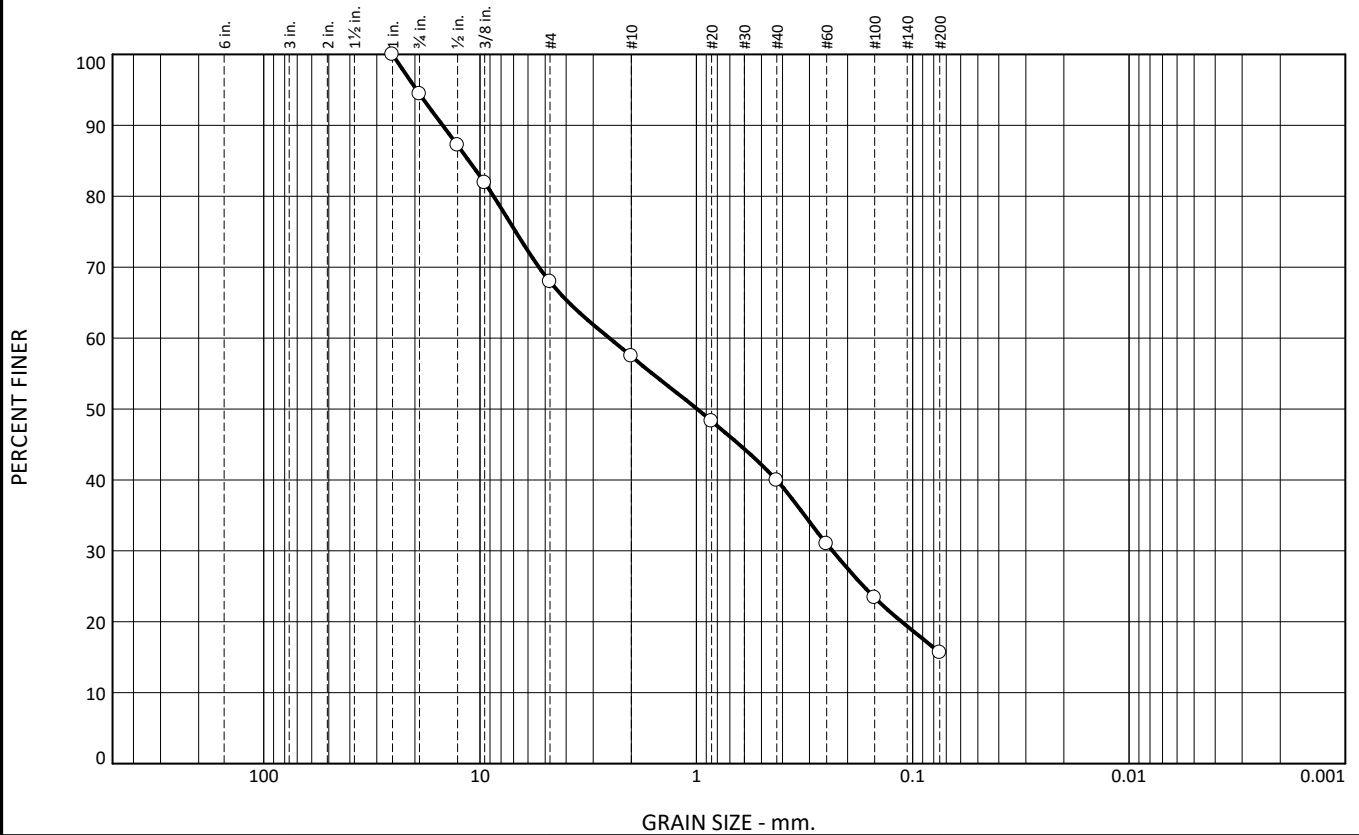
Source of Sample: BB-RAR-101A Depth: 110-110.8' Date: 10.3.24
 Sample Number: 20D

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
Fig. 24-S-3999	

Tested By: SBR Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.6	26.5	10.4	17.6	24.3	15.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	94.4		
1/2"	87.2		
3/8"	81.9		
#4	67.9		
#10	57.5		
#20	48.3		
#40	39.9		
#60	31.0		
#100	23.4		
#200	15.6		

Soil Description

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

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 14.8776 D₈₅= 11.2514 D₆₀= 2.5226
D₅₀= 0.9918 D₃₀= 0.2348 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

* (no specification provided)

Source of Sample: BB-RAR-102
Sample Number: 1D

Depth: 0-2'

Date: 10.3.24

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
Fig. 24-S-4000	

Tested By: SBR

Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.2	2.0	18.7	54.1	20.0	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	97.9		
3/8"	97.9		
#4	94.8		
#10	92.8		
#20	88.0		
#40	74.1		
#60	54.0		
#100	35.1		
#200	20.0		

* (no specification provided)

Soil Description

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

PL= NP	<u>Atterberg Limits</u>	PI= NP
	LL= NV	

	<u>Coefficients</u>	
D ₉₀ = 1.0315	D ₈₅ = 0.6921	D ₆₀ = 0.2908
D ₅₀ = 0.2250	D ₃₀ = 0.1229	D ₁₅ =
D ₁₀ =	C _u =	C _c =

USCS= SM	<u>Classification</u>	AASHTO= A-2-4(0)
----------	-----------------------	------------------

Remarks

Source of Sample: BB-RAR-102
Sample Number: 2D

Depth: 5-7'

Date: 10.3.24

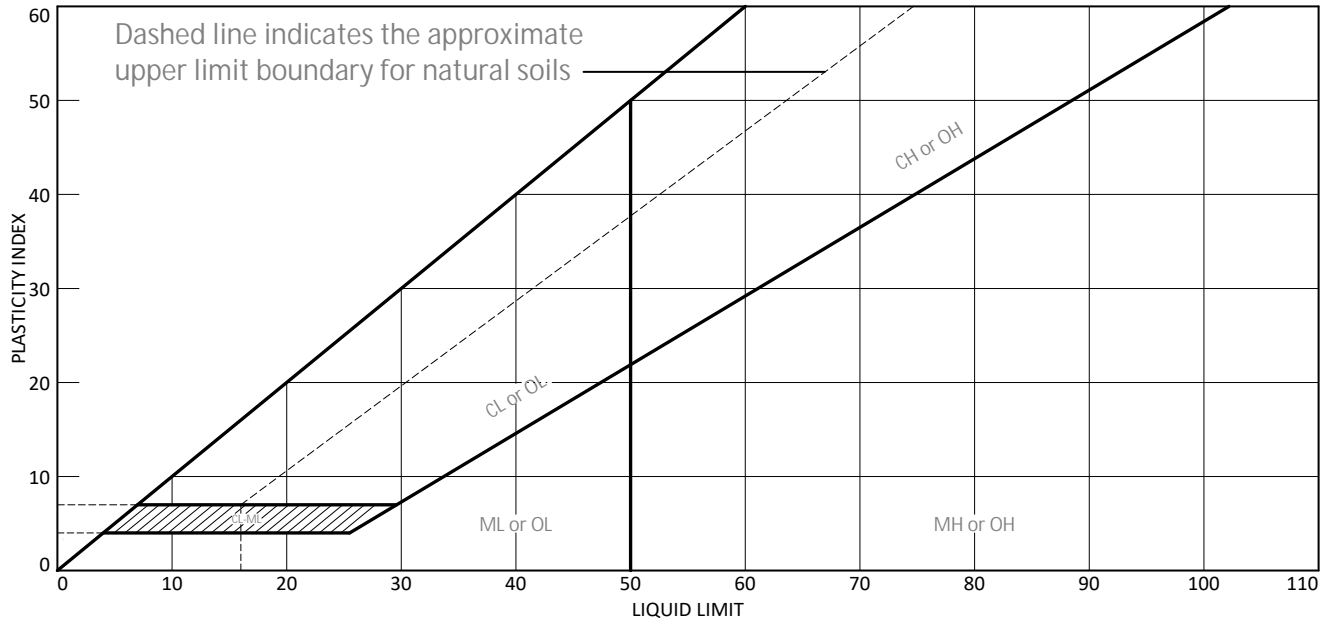
<p style="font-size: 1.2em; margin: 0;">Thielsch Engineering Inc.</p> <p style="margin: 0;">Cranston, RI</p>	<p>Client: GZA GeoEnvironmental</p> <p>Project: Langdon Road, Josh Bridge #0976 Richmond, ME</p> <p>Project No: 09.0026249.00</p>
<p>Fig. 24-S-4001</p>	

Tested By: SBR

Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Dark Brown Organic SILT	NV	NP	NP			

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-102 Depth: 26-28'
 Sample Number: 10D
 Thielsch Engineering Inc.
 Cranston, RI

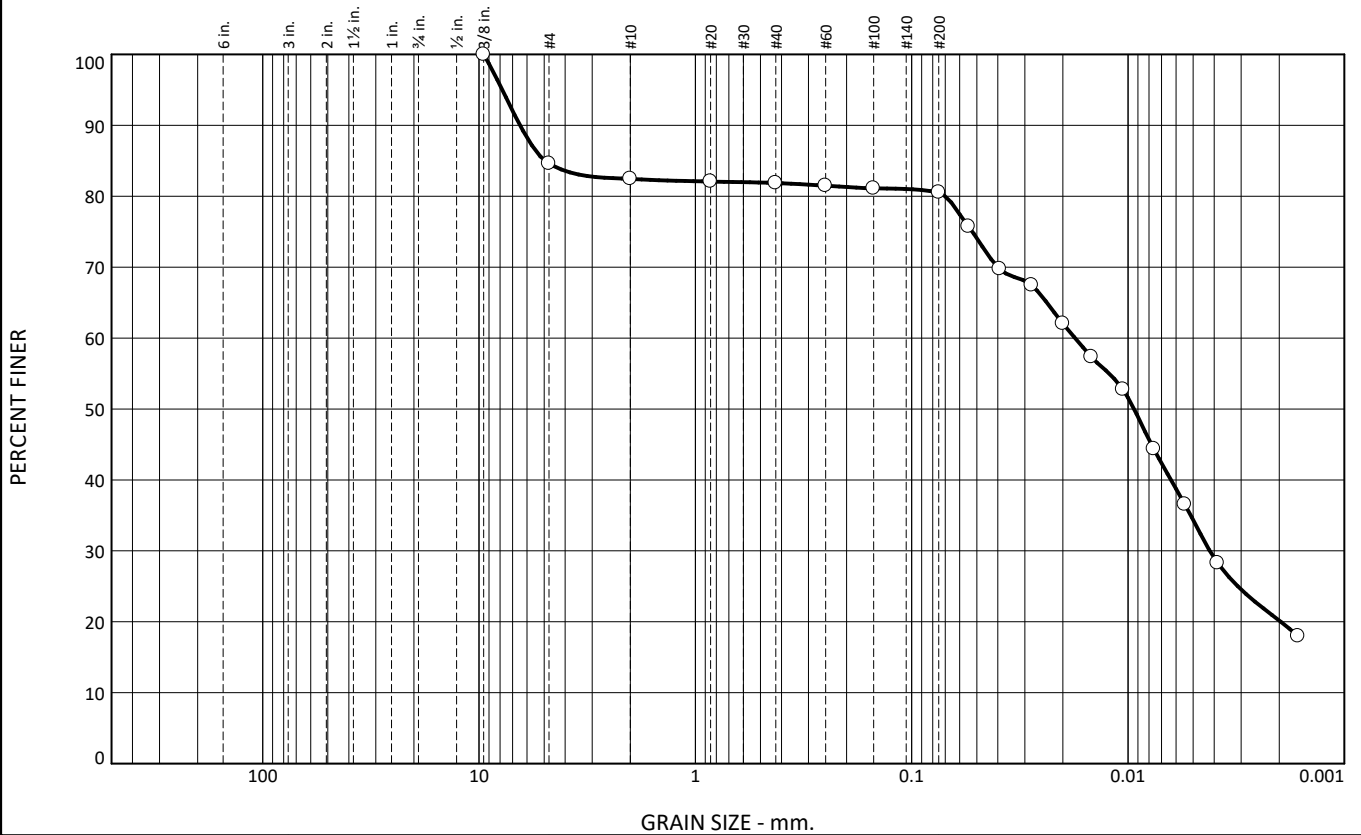
Remarks:
 ● Sample classified as non-plastic and non-viscous. Sample could not roll past 1/4" and could not achieve more than 25 blows.

Fig. 24-L-4002

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.4	2.2	0.5	1.4	60.3	20.2

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	84.6		
#10	82.4		
#20	82.1		
#40	81.9		
#60	81.5		
#100	81.1		
#200	80.5		
0.0547 mm.	75.7		
0.0392 mm.	69.7		
0.0279 mm.	67.4		
0.0200 mm.	62.0		
0.0148 mm.	57.3		
0.0106 mm.	52.7		
0.0076 mm.	44.4		
0.0055 mm.	36.6		
0.0039 mm.	28.3		
0.0016 mm.	18.0		

* (no specification provided)

Soil Description

Brown Organic SILT & CLAY, little fine Gravel, trace f-c Sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 6.4596 D₈₅= 4.9585 D₆₀= 0.0176
D₅₀= 0.0094 D₃₀= 0.0042 D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

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

Source of Sample: BB-RAR-102
Sample Number: 11D

Depth: 30-32'

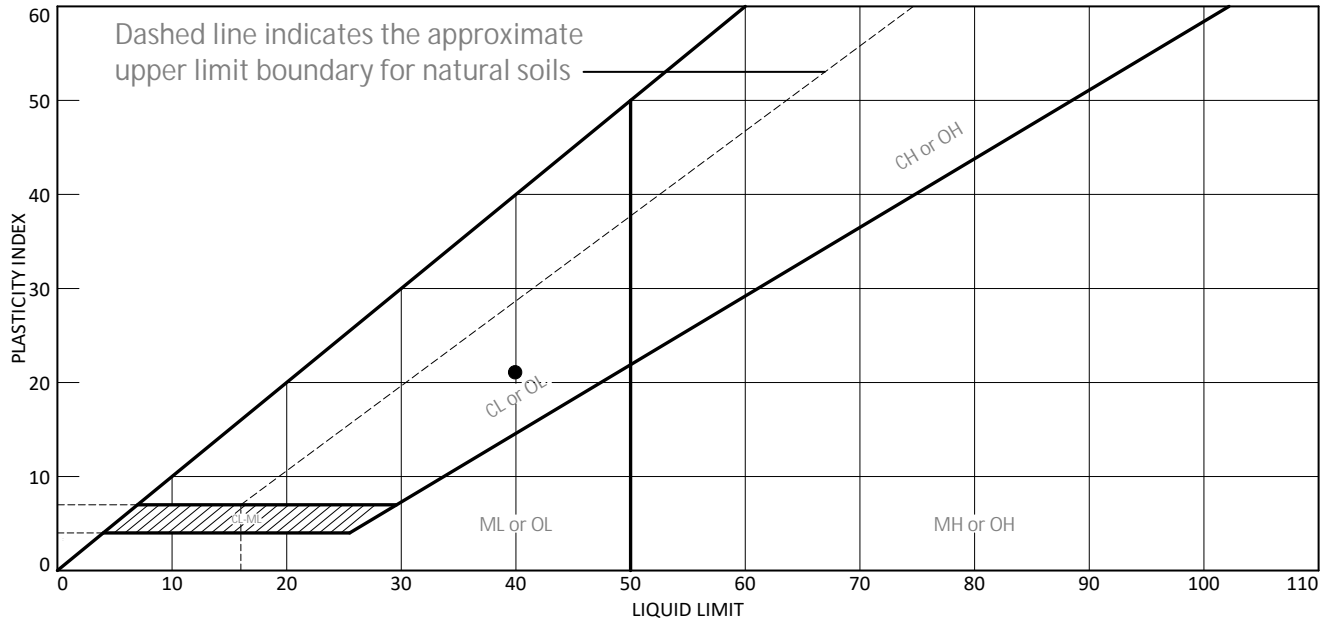
Date: 10.7.24

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
	Fig. 24-S-4003

Tested By: RB/SBR Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Grey SILTY CLAY	40	19	21			

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-102 Depth: 35-37'
 Sample Number: 13D
 Thielsch Engineering Inc.
 Cranston, RI

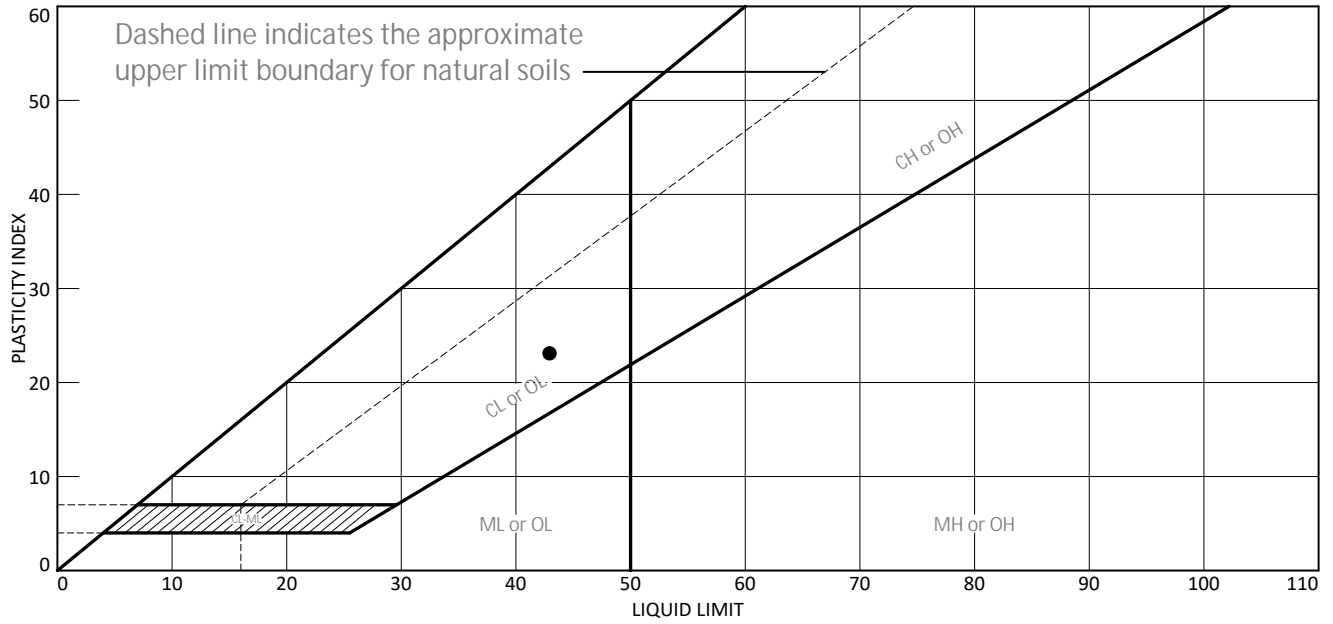
Remarks:

Fig. 24-L-4004

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

LIQUID AND PLASTIC LIMITS TEST REPORT



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

Project No. 09.0026249.00 Client: GZA GeoEnvironmental
 Project: Langdon Road, Josh Bridge #0976
 Richmond, ME
 Source of Sample: BB-RAR-102 Depth: 65-67'
 Sample Number: 16D
 Thielsch Engineering Inc.
 Cranston, RI

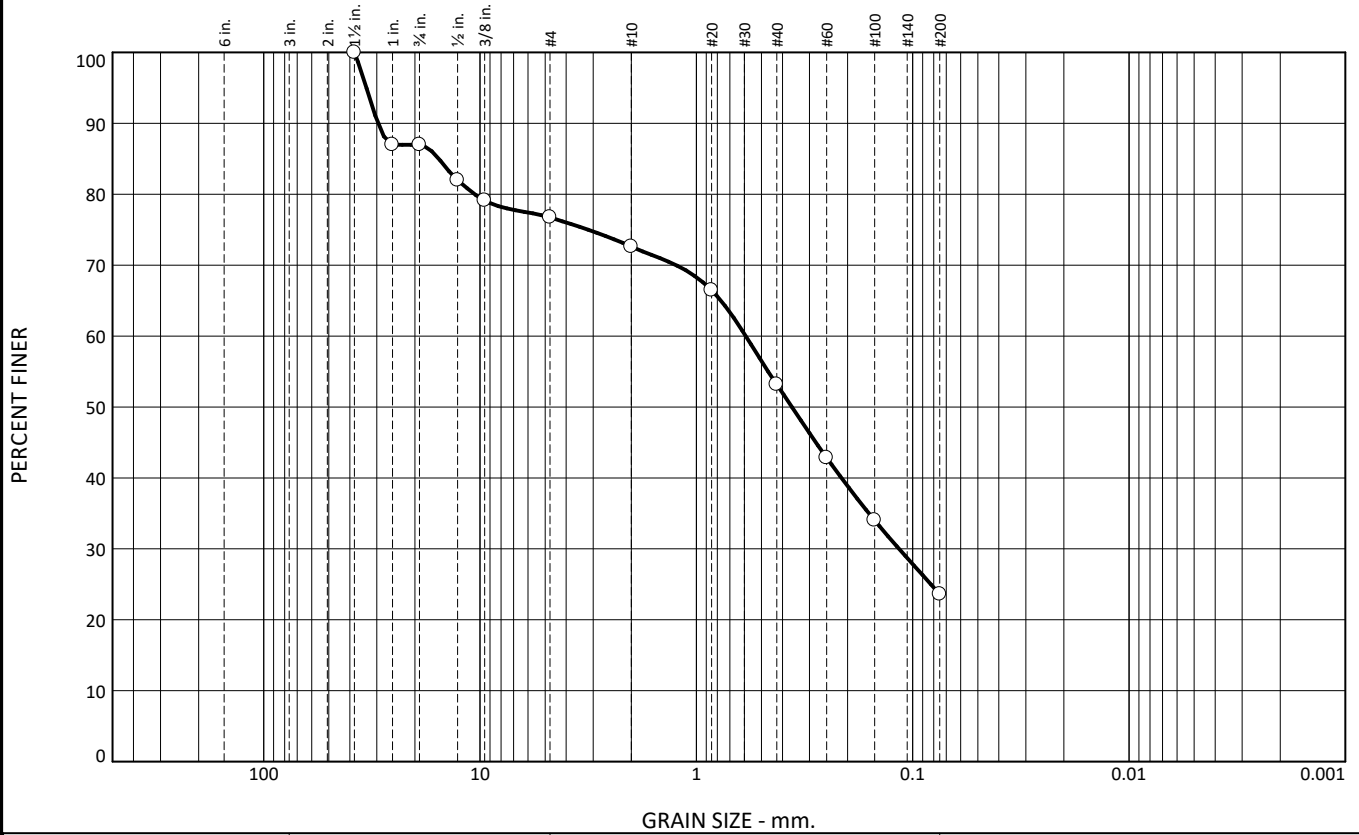
Remarks:

Fig. 24-L-4005

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.0	10.3	4.1	19.4	29.6	23.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	87.0		
3/4"	87.0		
1/2"	82.0		
3/8"	79.1		
#4	76.7		
#10	72.6		
#20	66.5		
#40	53.2		
#60	42.8		
#100	34.0		
#200	23.6		

* (no specification provided)

Soil Description

Grey f-m SAND, some Silt, some f-c Gravel

PL= NP	<u>Atterberg Limits</u>	PI= NP
	LL= NV	
	<u>Coefficients</u>	
D ₉₀ = 29.6071	D ₈₅ = 15.5025	D ₆₀ = 0.5911
D ₅₀ = 0.3617	D ₃₀ = 0.1157	D ₁₅ =
D ₁₀ =	C _u =	C _c =
USCS= SM	<u>Classification</u>	AASHTO= A-2-4(0)
	<u>Remarks</u>	

Source of Sample: BB-RAR-102
Sample Number: 20D

Depth: 95-96.5'

Date: 10.3.24

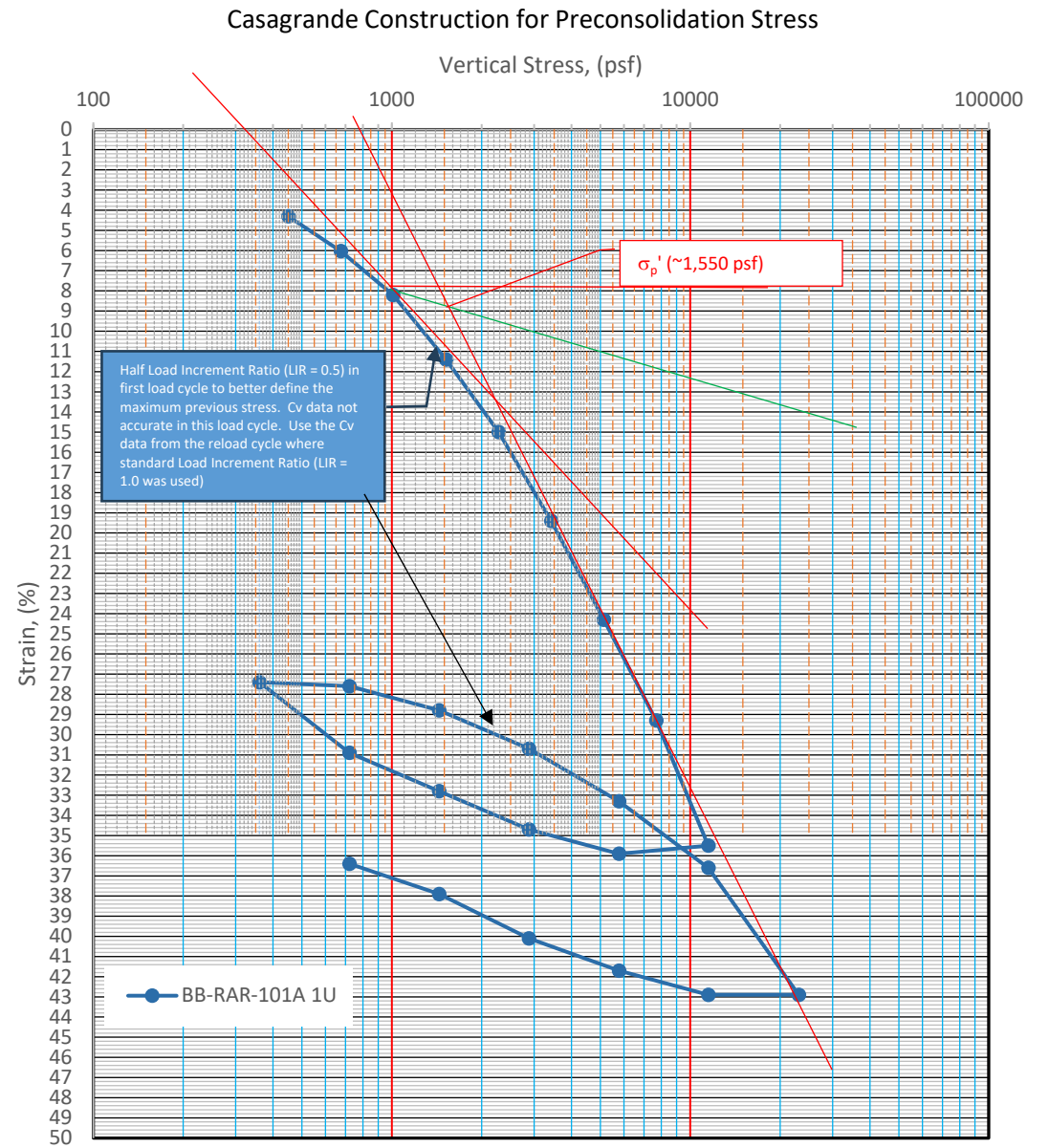
Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: Langdon Road, Josh Bridge #0976 Richmond, ME Project No: 09.0026249.00
	Fig. 24-S-4006

Tested By: SBR

Checked By: Kris Roland

Consolidation Test Data
Summary Report

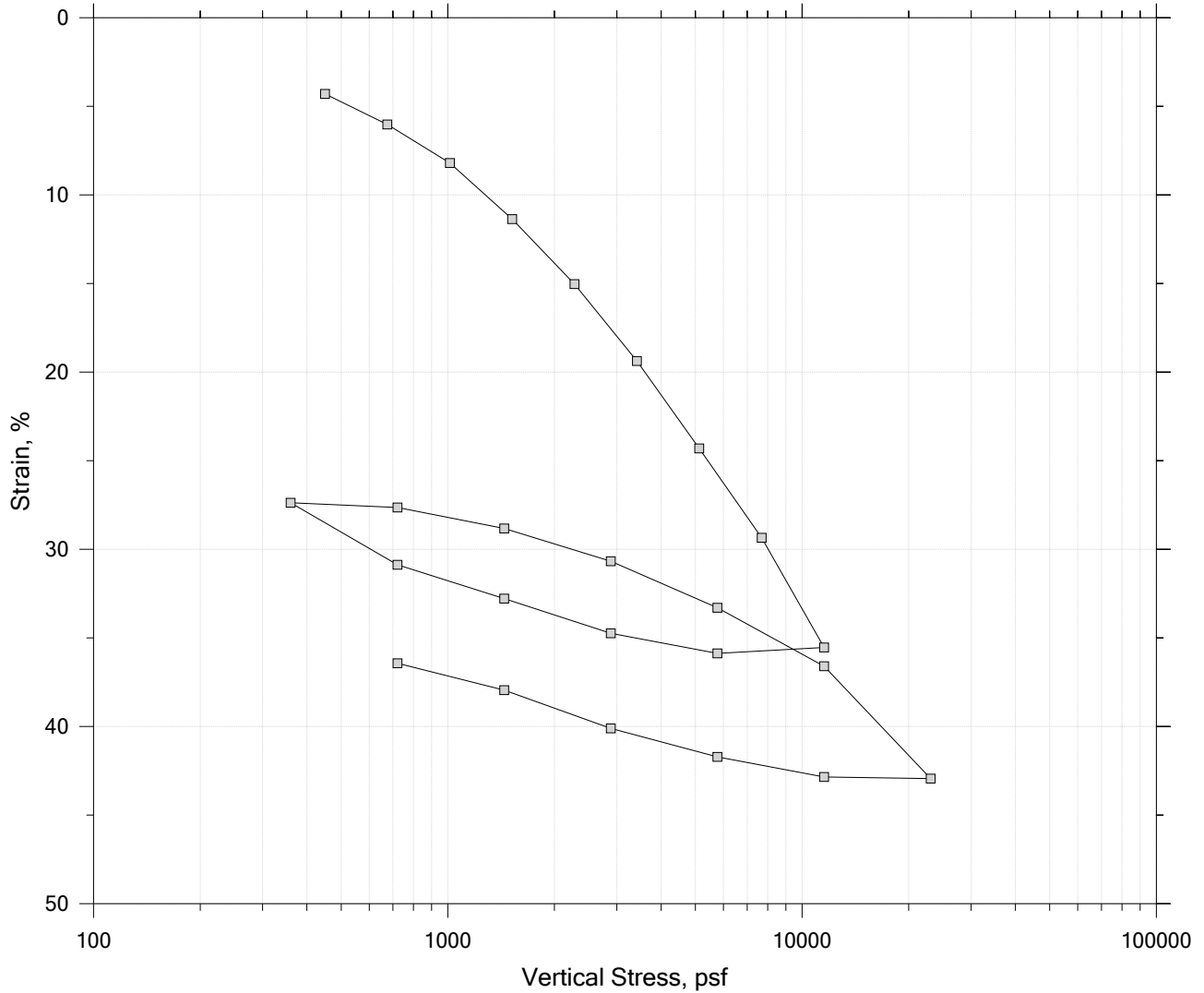
Project Name:	MDOT Josh Bridge #0976		
Project Number:	166-37		
Project Location:	Richmond, Maine		
Client:	GZA - PN: 09.0026249		
Sample Description:	Peat/Organic Silt		
Preparation:	Trimmed Shelby Tube		
Lab Test No:	ICON 68-425		
Boring No.	BB-RAR-101A		
Sample No:	1U		
Boring Elevation (ft).	--		
Sample Depth (ft):	31-33		
Test Specimen Depth (Ft):	32.65		
Test Specimen Elevation:	---		
Water Content (%):	107.9		
Dry Unit Weight (pcf):	38.8		
Wet Unit Weight (pcf):	80.7		
Saturation Before (%):	94.5		
Saturation After (%):	100		
Void Ratio Before:	2.43		
Void Ratio After:	1.18		
Overburden Pressure (psf):	--		
Max Previous stress (psf):	1,550		
Max Prev. stress (Work) (psf):			
OCR:	--		
Compression Index (C_{CE}):	0.29		
Recompression Index (C_{RE}):	0.075 from re-load curve		
Liquid Limit:	335		
Plastic Limit:	205		
Plasticity Index:	130		
Liquidity Index:	-0.7		
Organic Content	21.8		
Lab Vane S_u at 32.85 ft. (psf)	292		
Tested By:	sjr		
Date Tested:	10/28/2024		
Checked By:	sjr		




Note 1: The calculations for the Max Previous Stress, the Compression Index and the Recompression Index are provided for the convenience of the Specifier. The Specifier should make their own independent assessment of Maximum Previous stress, Cce and Cre for use in any engineering analyses.

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report



				Before Test	After Test	
Current Vertical Effective Stress: 0 psf				Water Content, %	107.93	55.50
Preconsolidation Stress: 0 psf				Dry Unit Weight, pcf	38.739	60.944
Compression Ratio: 0				Saturation, %	94.49	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	2.43	1.18
LL: 335	PL: 205	PI: 130	GS: 2.13			


	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		
Displacement at End of Primary			

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Implied Specific Gravity: 2.13	Liquid Limit: 335
Initial Height: 1.00 in	Initial Void Ratio: 2.43	Plastic Limit: 205
Final Height: 0.64 in	Final Void Ratio: 1.18	Plasticity Index: 130

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	208	RING	"ring"	321
Mass Container, gm	36.86	109.53	109.53	60.4
Mass Container + Wet Soil, gm	99.16	213.32	187.15	127.11
Mass Container + Dry Soil, gm	58.41	159.45	159.45	103.3
Mass Dry Soil, gm	21.55	49.916	49.916	42.9
Water Content, %	189.10	107.93	55.50	55.50
Void Ratio	---	2.43	1.18	---
Degree of Saturation, %	---	94.49	100.00	---
Dry Unit Weight, pcf	---	38.739	60.944	---


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: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

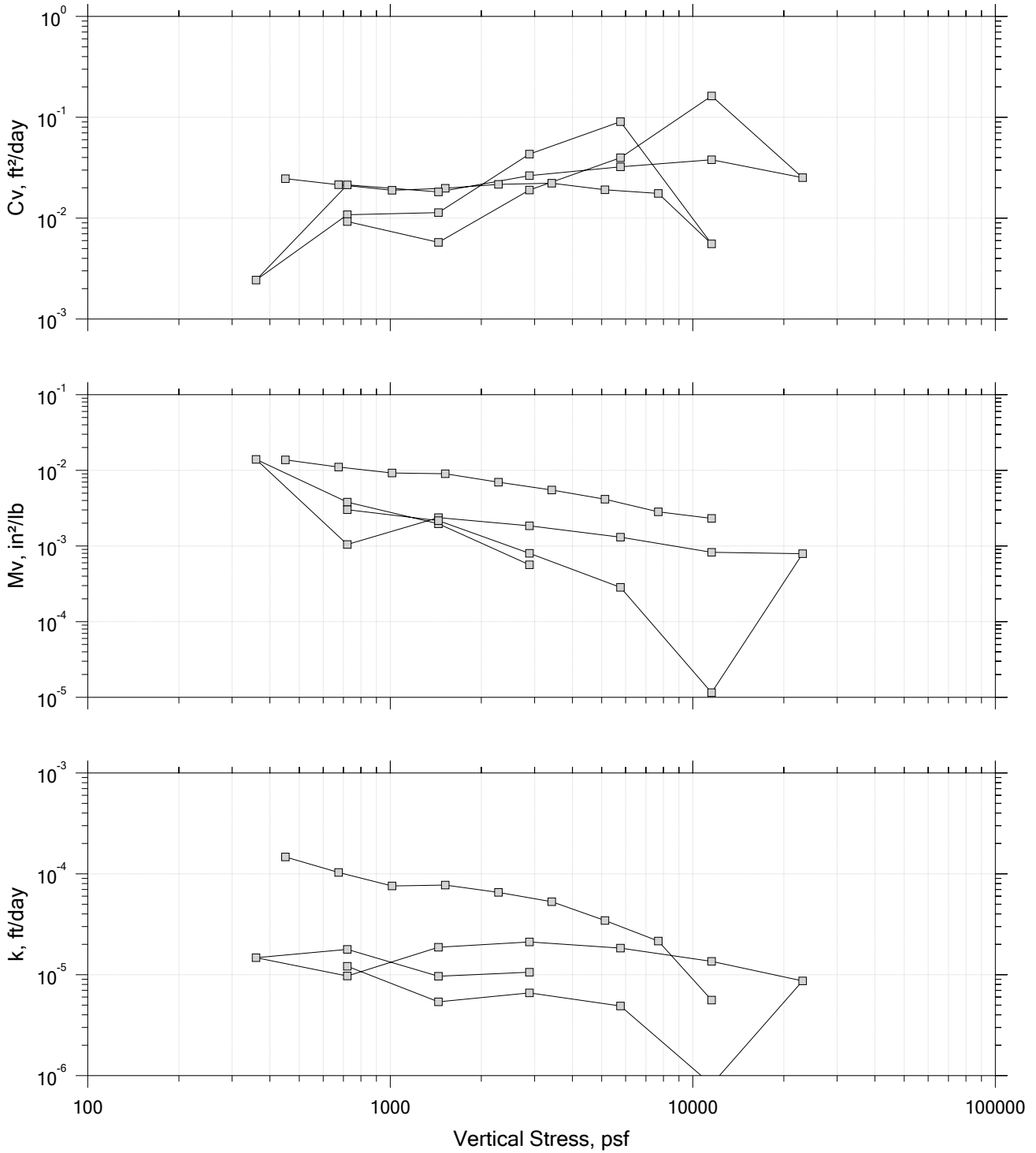
Square Root of Time Coefficients


Step	Applied Stress psf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft ² /day	Mv 1/psf	k ft/day
1	450.	0.04296	2.29	4.30	82.408	2.46e-02	9.55e-05	1.47e-04
2	675.	0.06026	2.23	6.03	88.792	2.15e-02	7.69e-05	1.03e-04
3	1.01e+03	0.08196	2.15	8.20	96.742	1.89e-02	6.42e-05	7.58e-05
4	1.52e+03	0.1136	2.04	11.4	87.283	1.98e-02	6.26e-05	7.73e-05
5	2.28e+03	0.1503	1.92	15.0	73.758	2.17e-02	4.84e-05	6.54e-05
6	3.42e+03	0.1938	1.77	19.4	65.426	2.22e-02	3.81e-05	5.28e-05
7	5.13e+03	0.2431	1.60	24.3	67.629	1.91e-02	2.89e-05	3.45e-05
8	7.69e+03	0.2935	1.43	29.3	64.609	1.76e-02	1.97e-05	2.16e-05
9	1.15e+04	0.3554	1.21	35.5	173.924	5.56e-03	1.61e-05	5.60e-06
10	5.77e+03	0.3588	1.20	35.9	9.687	9.05e-02	-5.80e-07	-3.28e-06
11	2.88e+03	0.3474	1.24	34.7	20.543	4.32e-02	3.92e-06	1.06e-05
12	1.44e+03	0.3278	1.31	32.8	81.872	1.14e-02	1.36e-05	9.66e-06
13	721.	0.3088	1.37	30.9	91.050	1.08e-02	2.64e-05	1.78e-05
14	360.	0.2738	1.49	27.4	437.363	2.43e-03	9.70e-05	1.47e-05
15	721.	0.2764	1.48	27.6	52.039	2.14e-02	7.27e-06	9.72e-06
16	1.44e+03	0.2883	1.44	28.8	59.958	1.82e-02	1.65e-05	1.87e-05
17	2.88e+03	0.3067	1.38	30.7	39.628	2.64e-02	1.28e-05	2.11e-05
18	5.77e+03	0.3330	1.29	33.3	30.334	3.23e-02	9.10e-06	1.84e-05
19	1.15e+04	0.3660	1.18	36.6	23.661	3.79e-02	5.72e-06	1.35e-05
20	2.31e+04	0.4295	0.959	42.9	30.473	2.52e-02	5.51e-06	8.67e-06
21	1.15e+04	0.4285	0.962	42.9	4.241	1.63e-01	8.01e-08	8.14e-07
22	5.77e+03	0.4172	1.00	41.7	17.764	3.98e-02	1.97e-06	4.90e-06
23	2.88e+03	0.4011	1.06	40.1	38.941	1.90e-02	5.57e-06	6.61e-06
24	1.44e+03	0.3795	1.13	37.9	136.989	5.75e-03	1.50e-05	5.39e-06
25	721.	0.3644	1.18	36.4	90.432	9.25e-03	2.10e-05	1.21e-05

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		
Displacement at End of Primary			

One-Dimensional Consolidation by ASTM D2435 - Method B

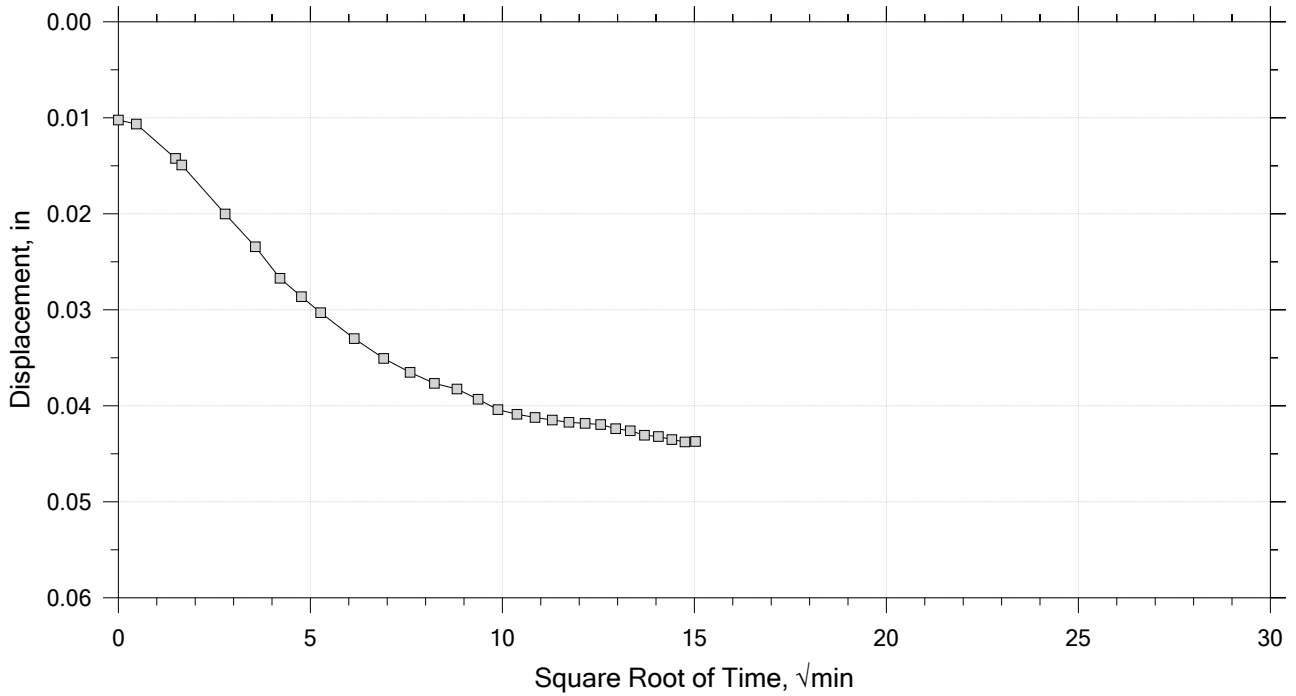
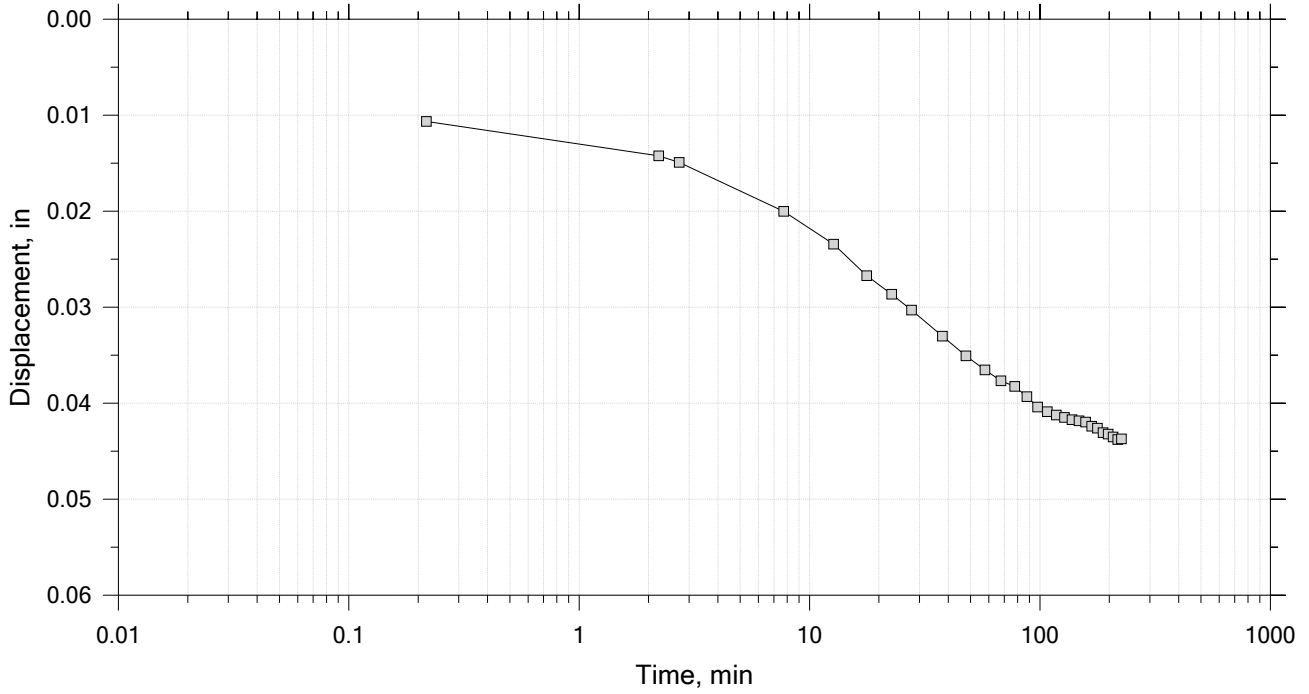
Square Root of Time Coefficients




	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

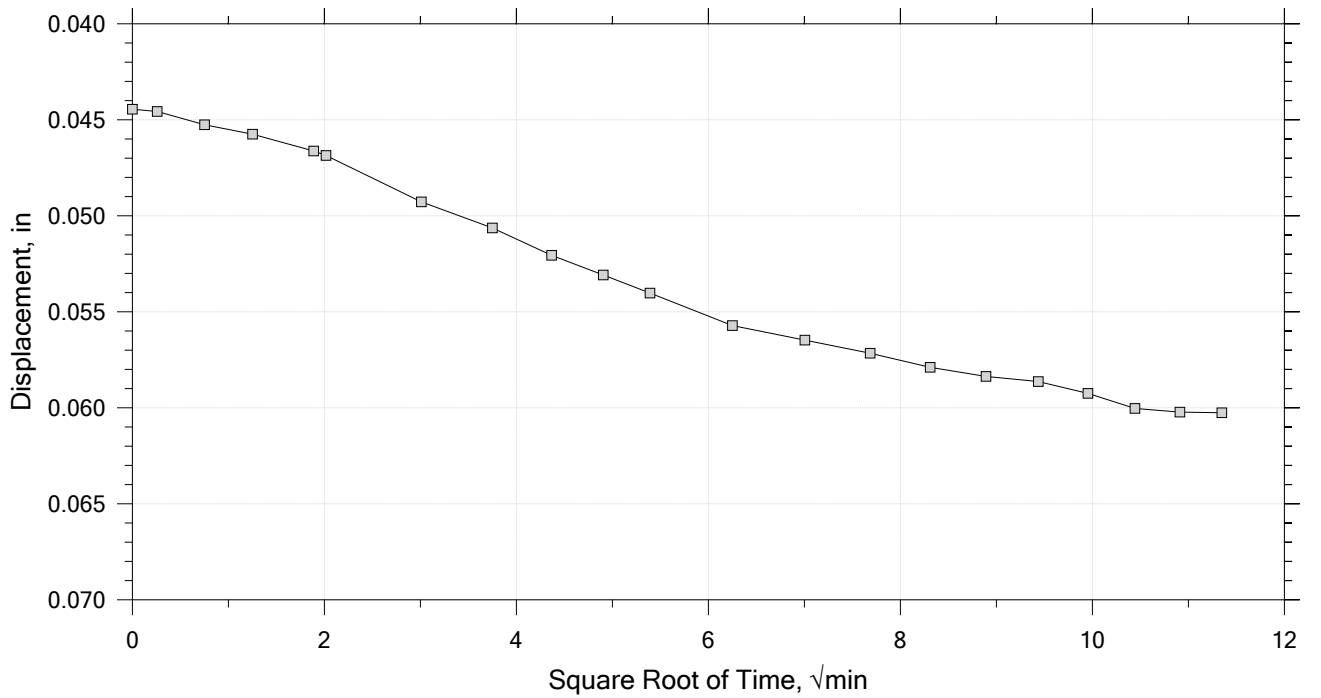
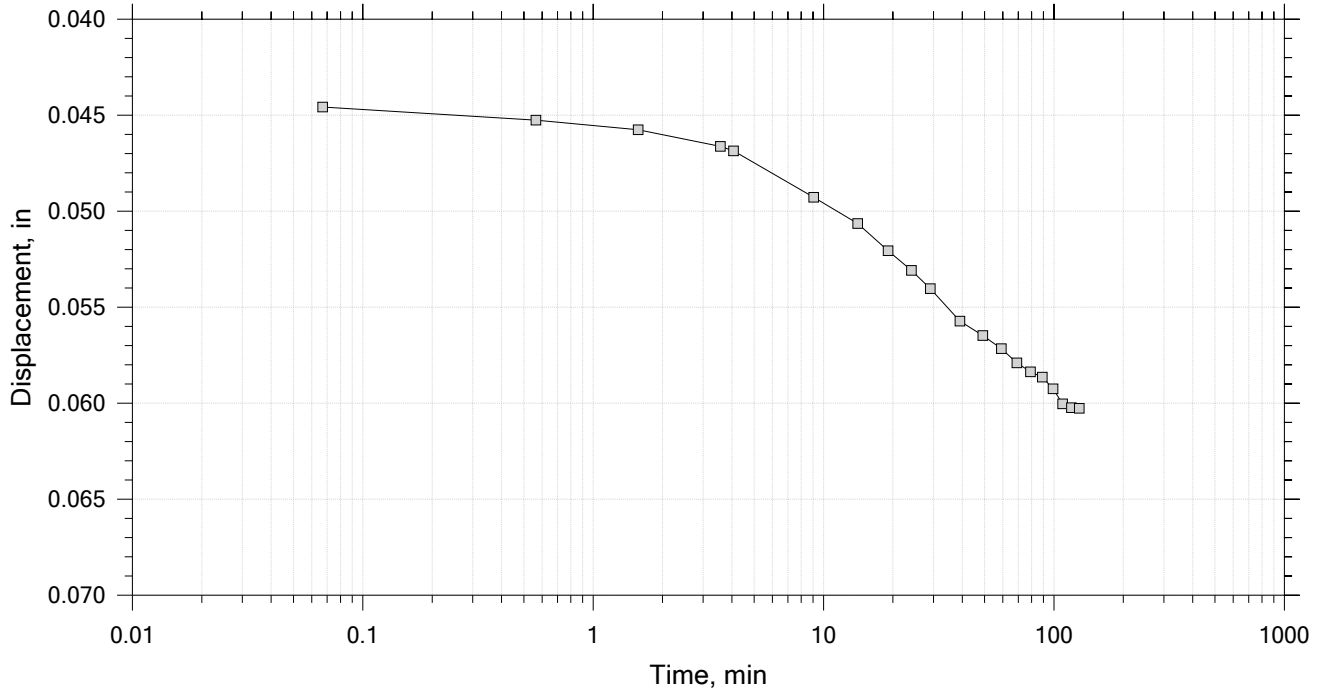
Time Curve 1 of 25
 Constant Load Step
 Stress: 450 psf




	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 25
 Constant Load Step
 Stress: 675 psf



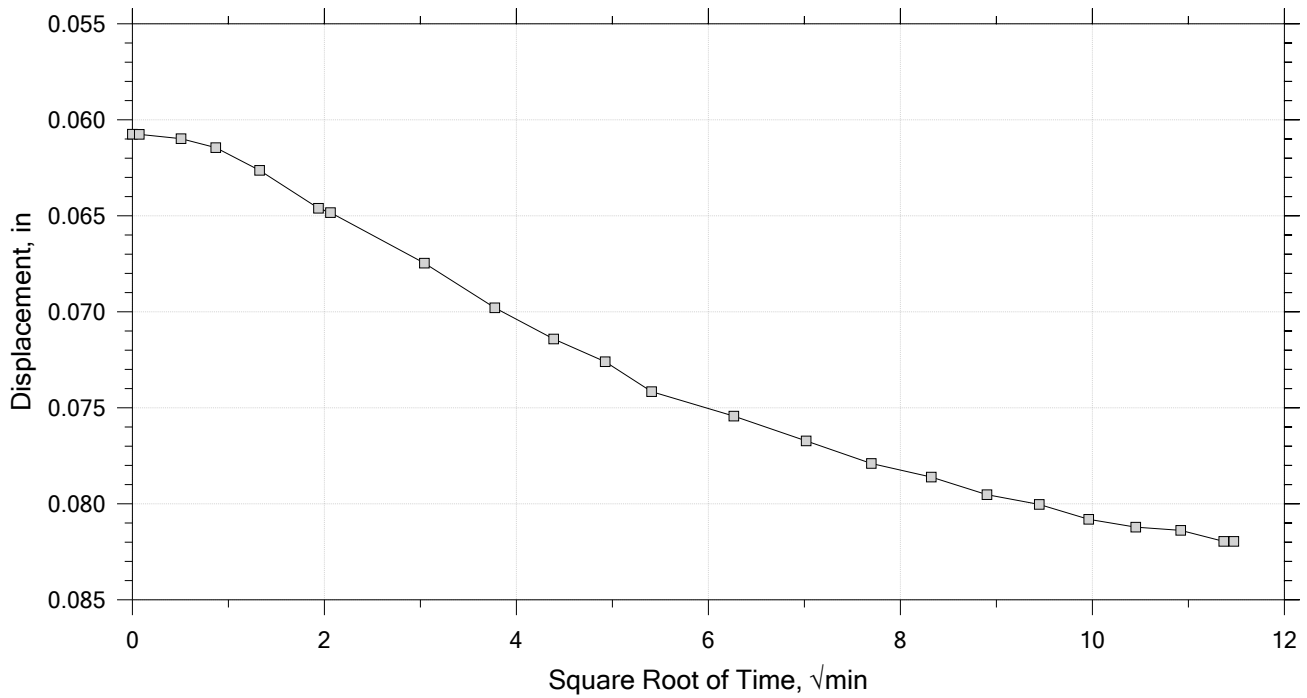
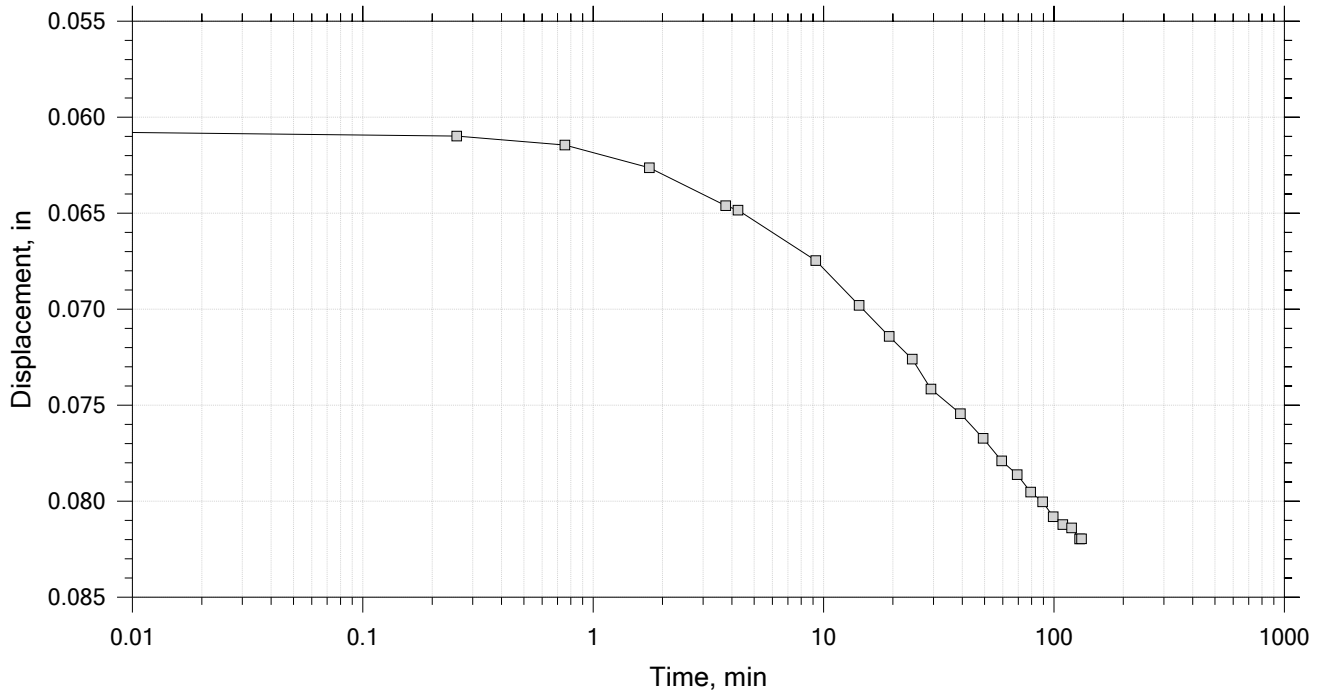
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 25

Constant Load Step

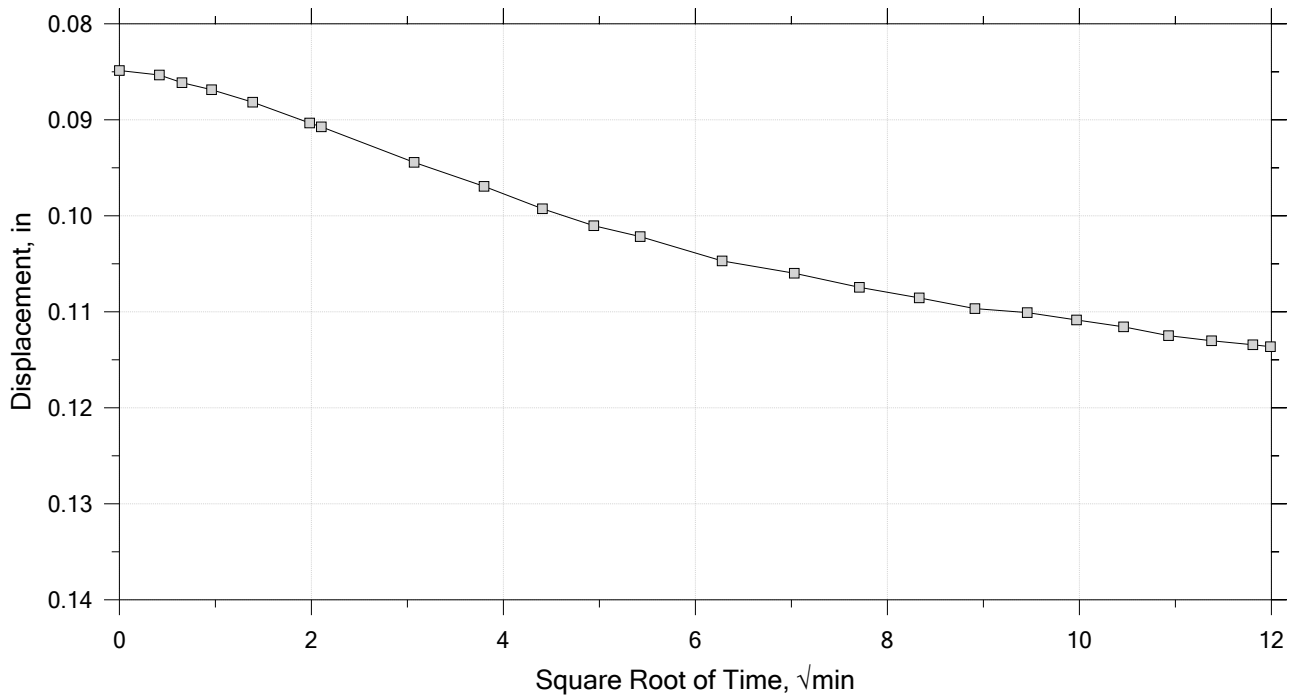
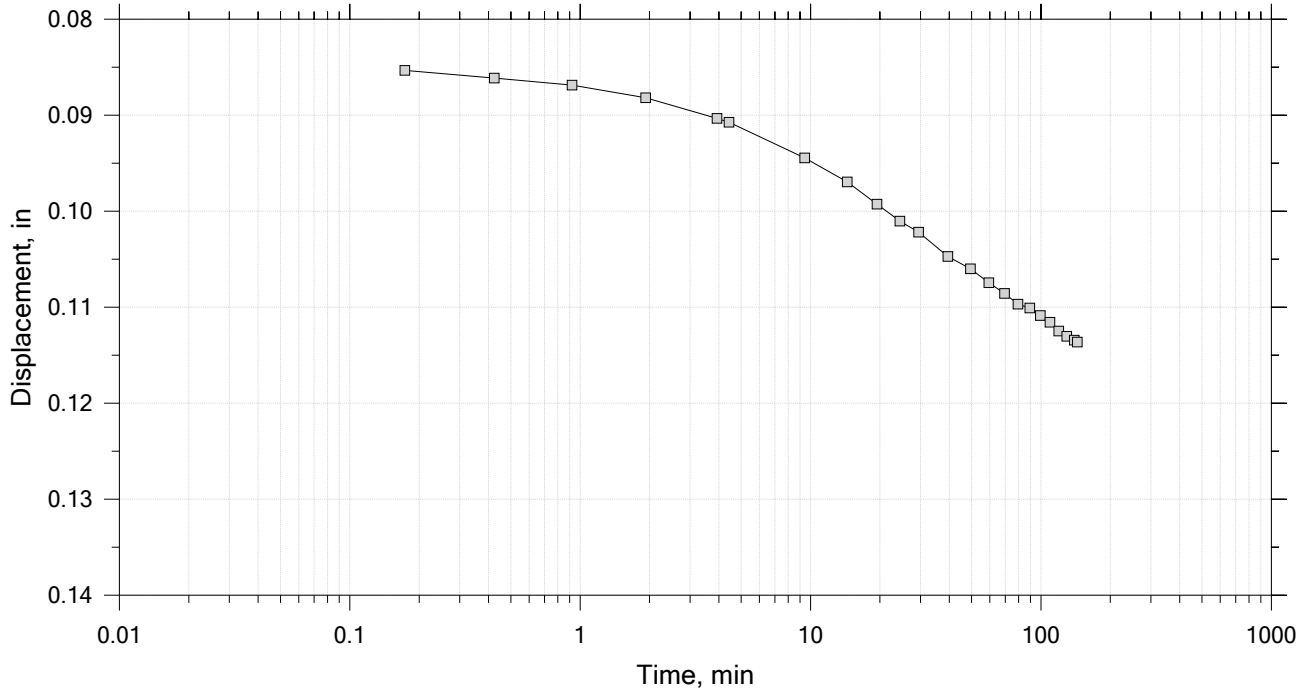
Stress: 1.01e+03 psf




	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

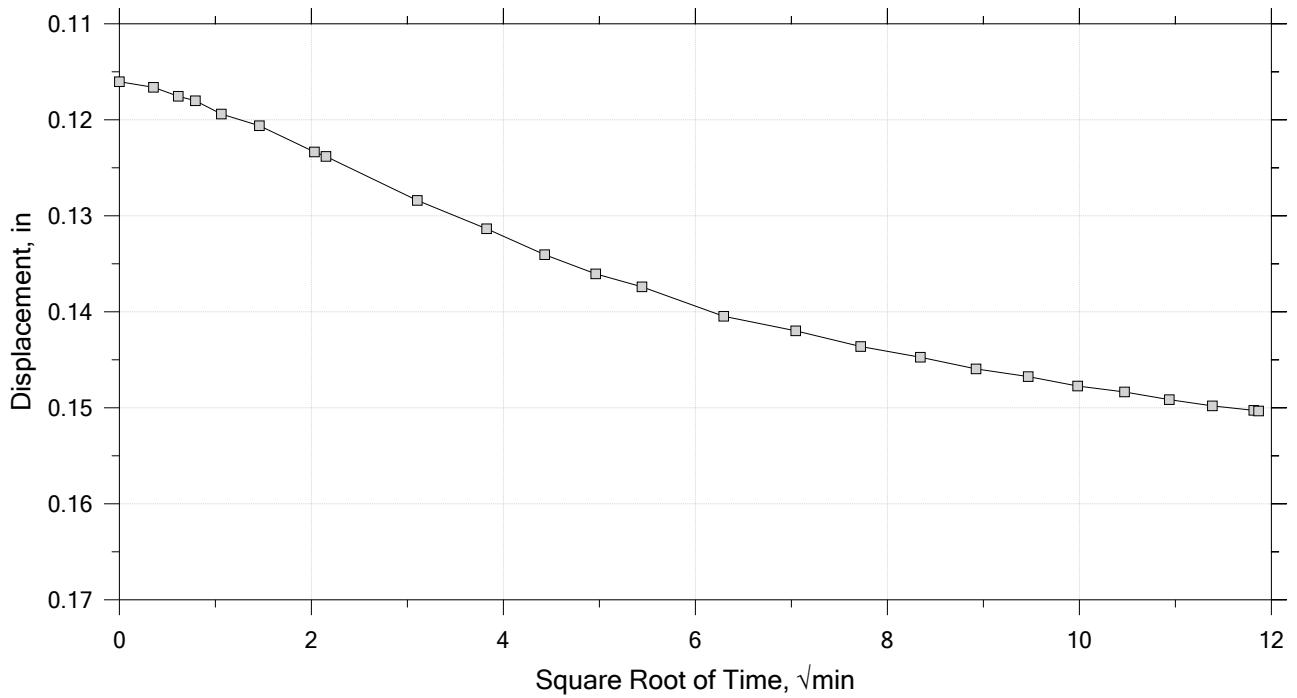
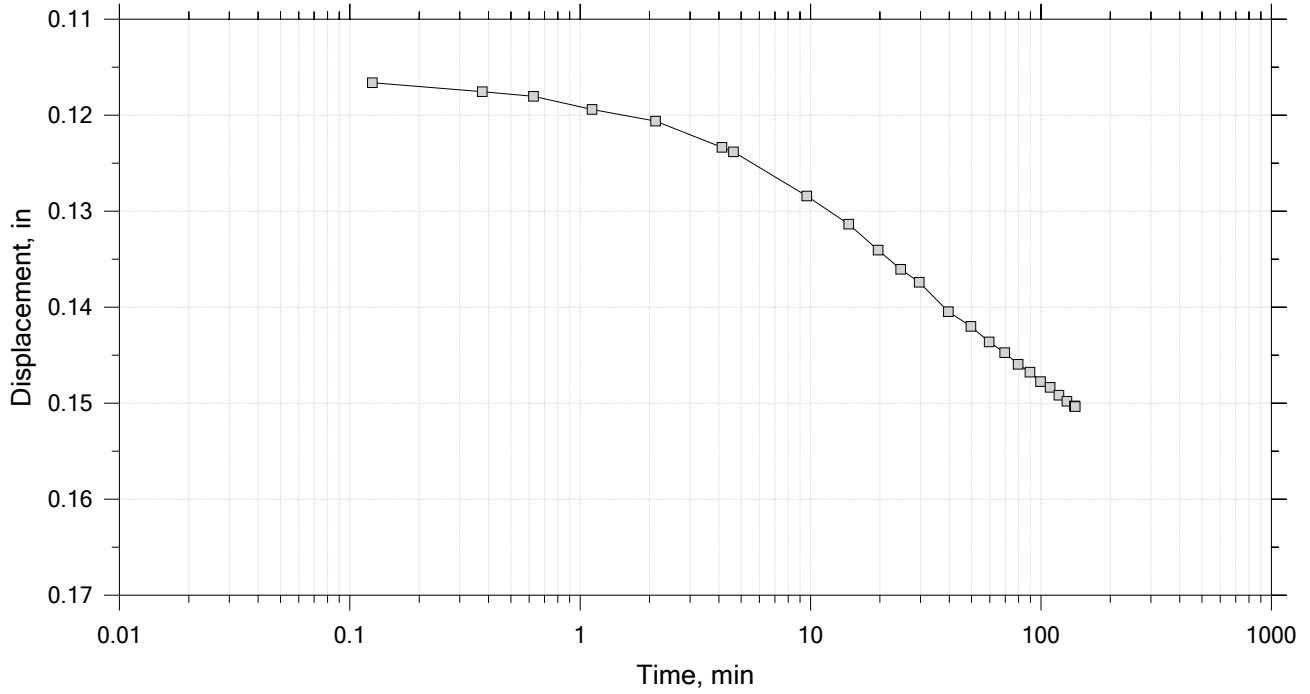
Time Curve 4 of 25
 Constant Load Step
 Stress: 1.52e+03 psf




	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 25
 Constant Load Step
 Stress: 2.28e+03 psf



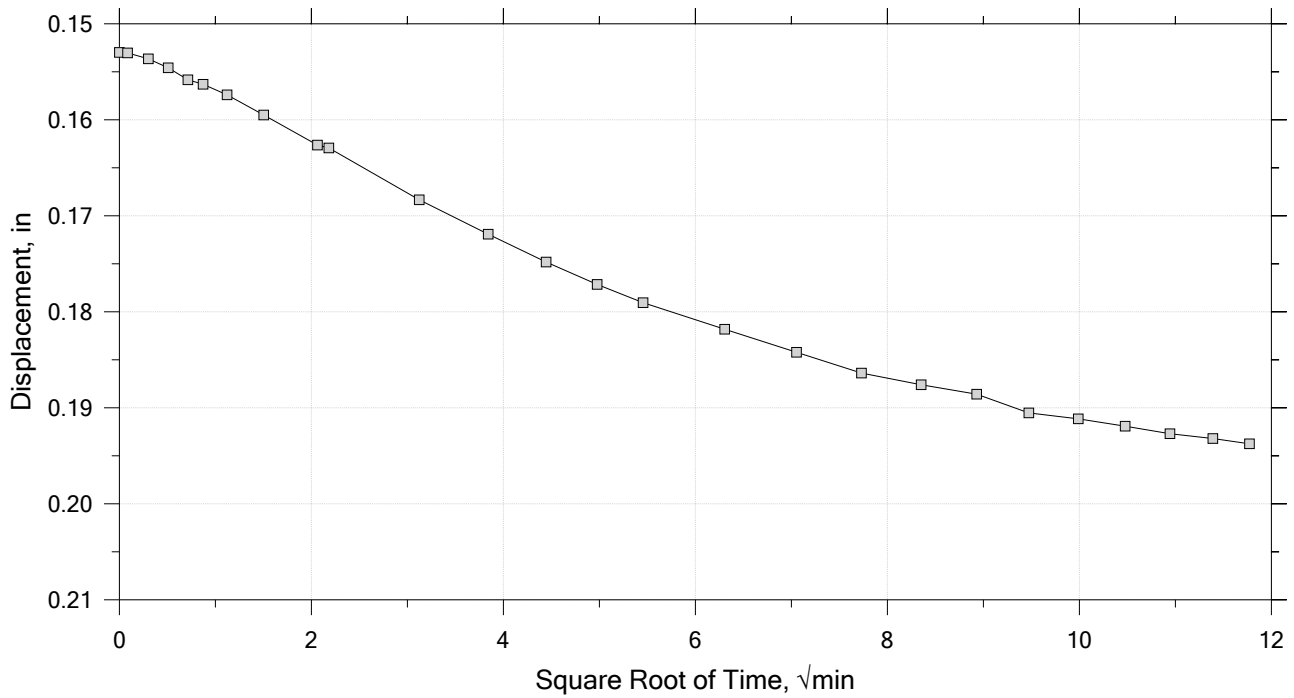
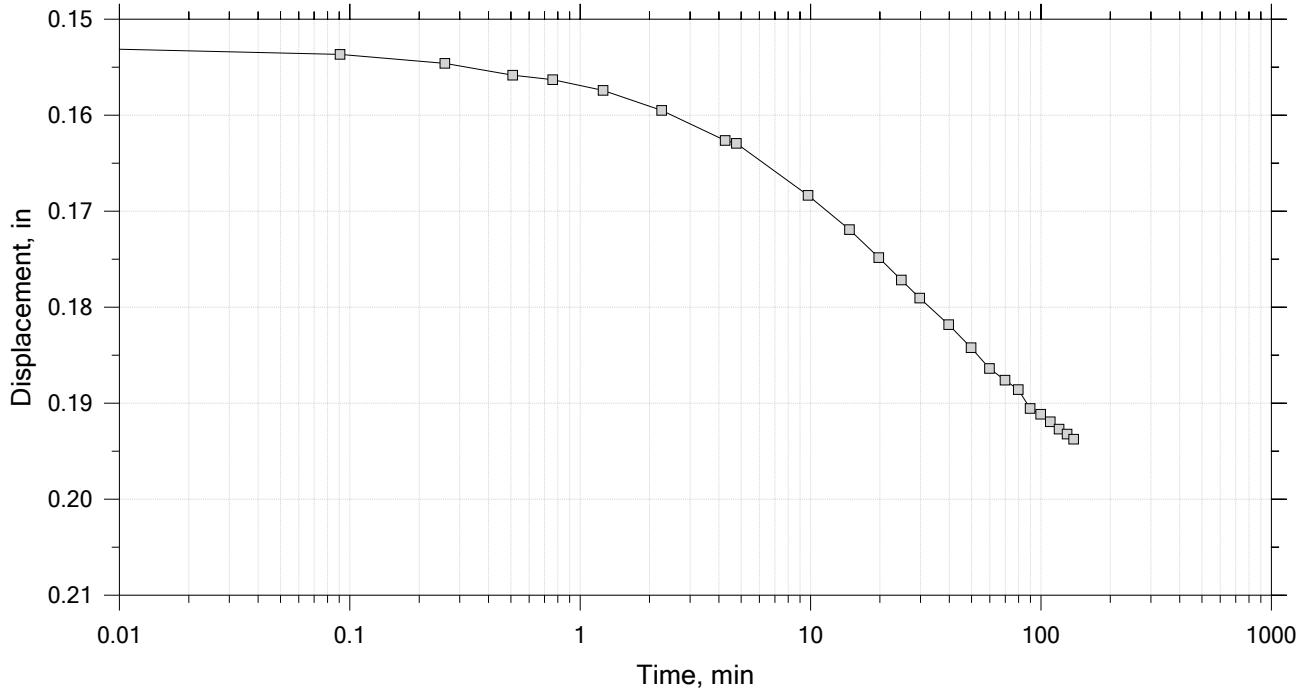
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 25

Constant Load Step

Stress: 3.42e+03 psf



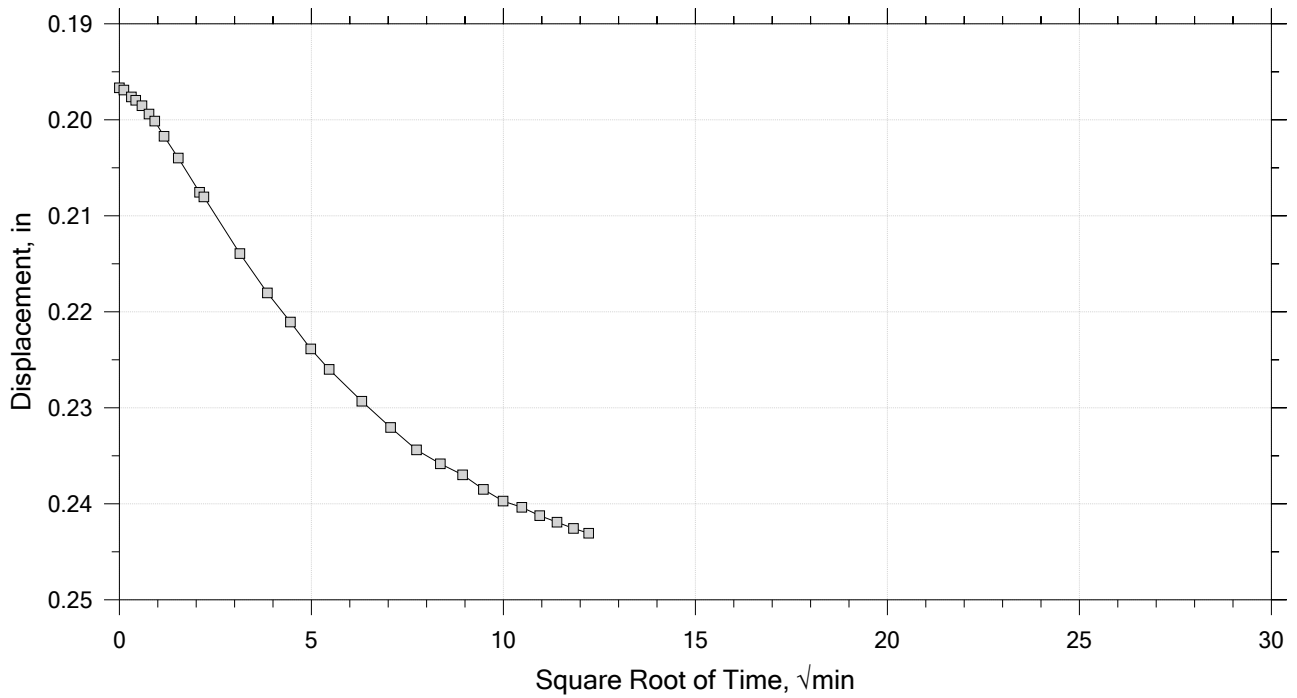
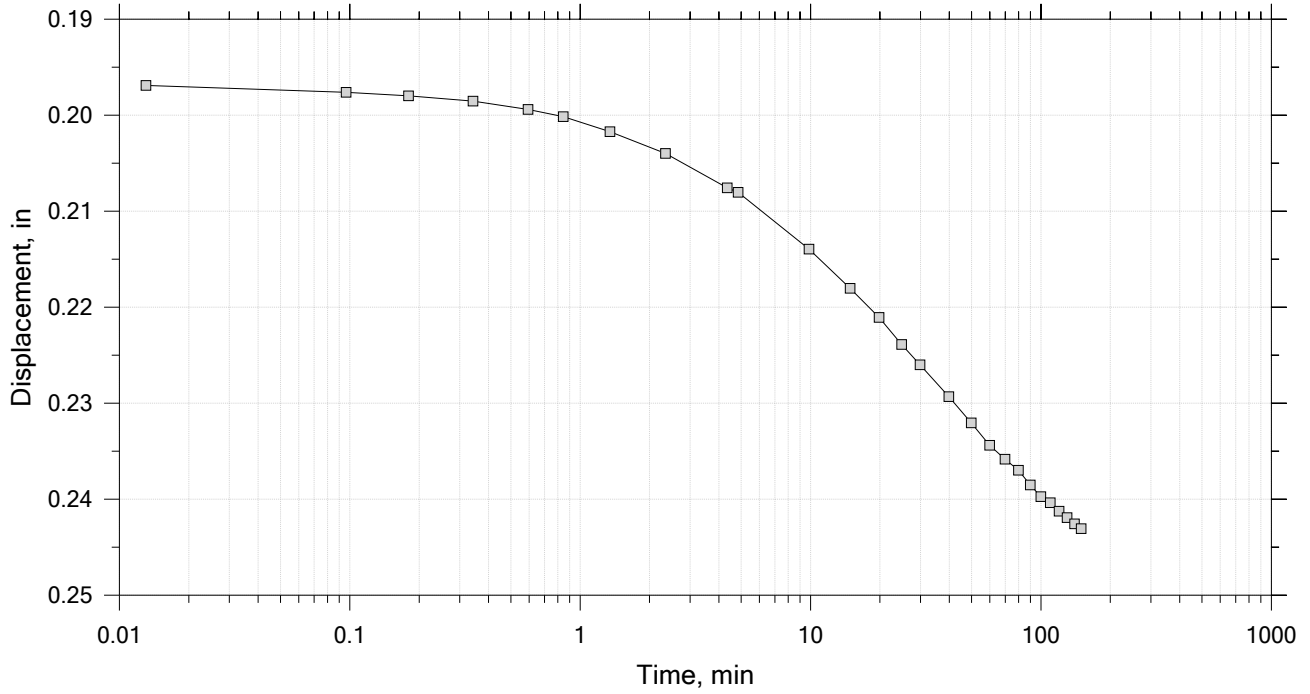
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 25

Constant Load Step

Stress: 5.13e+03 psf



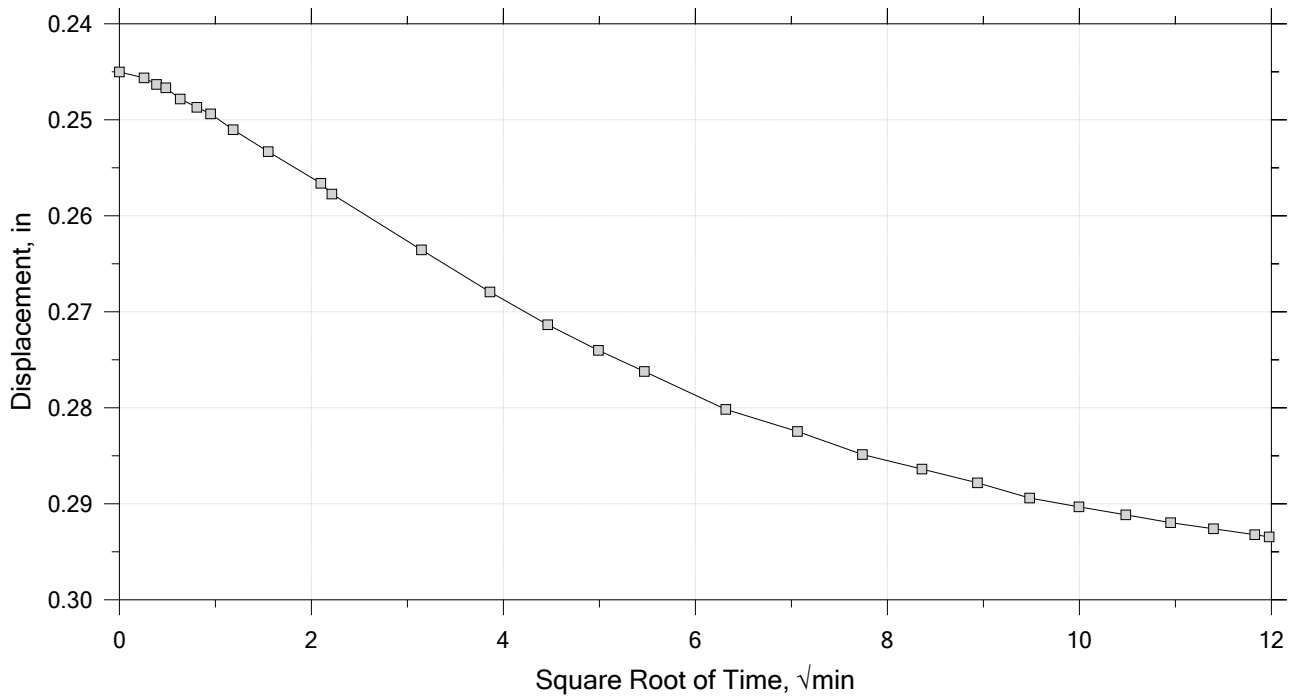
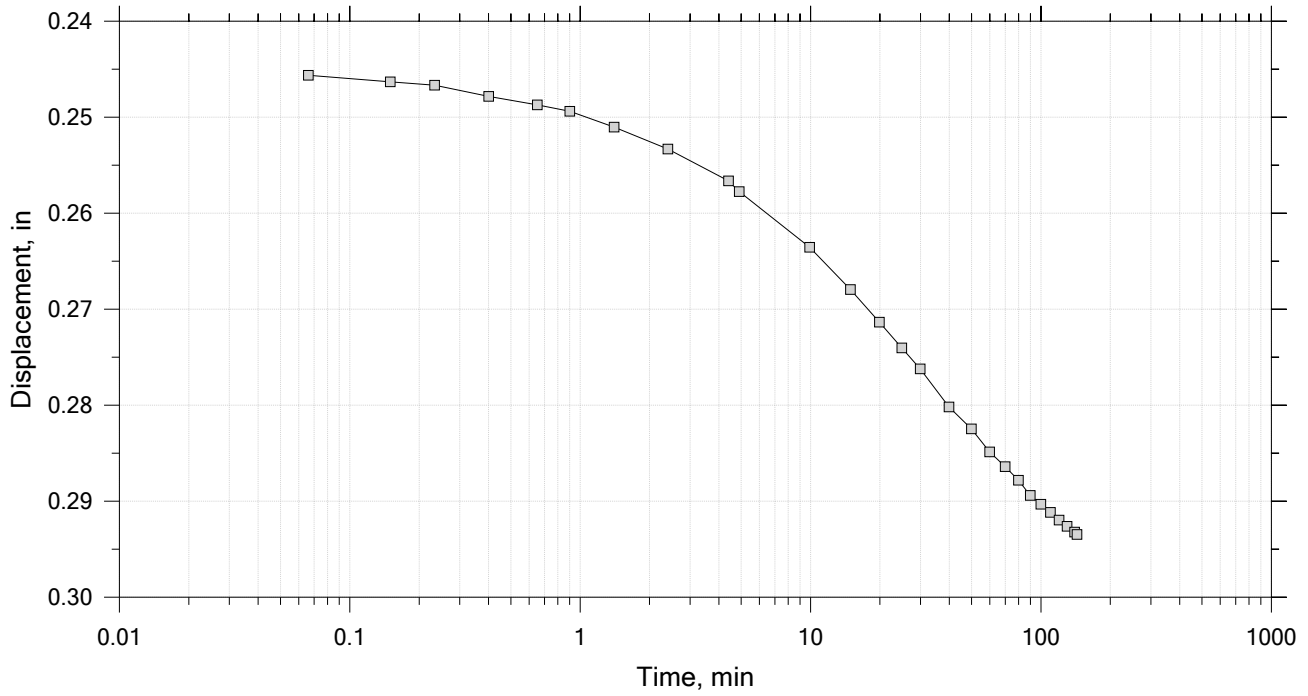
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 25

Constant Load Step

Stress: 7.69e+03 psf



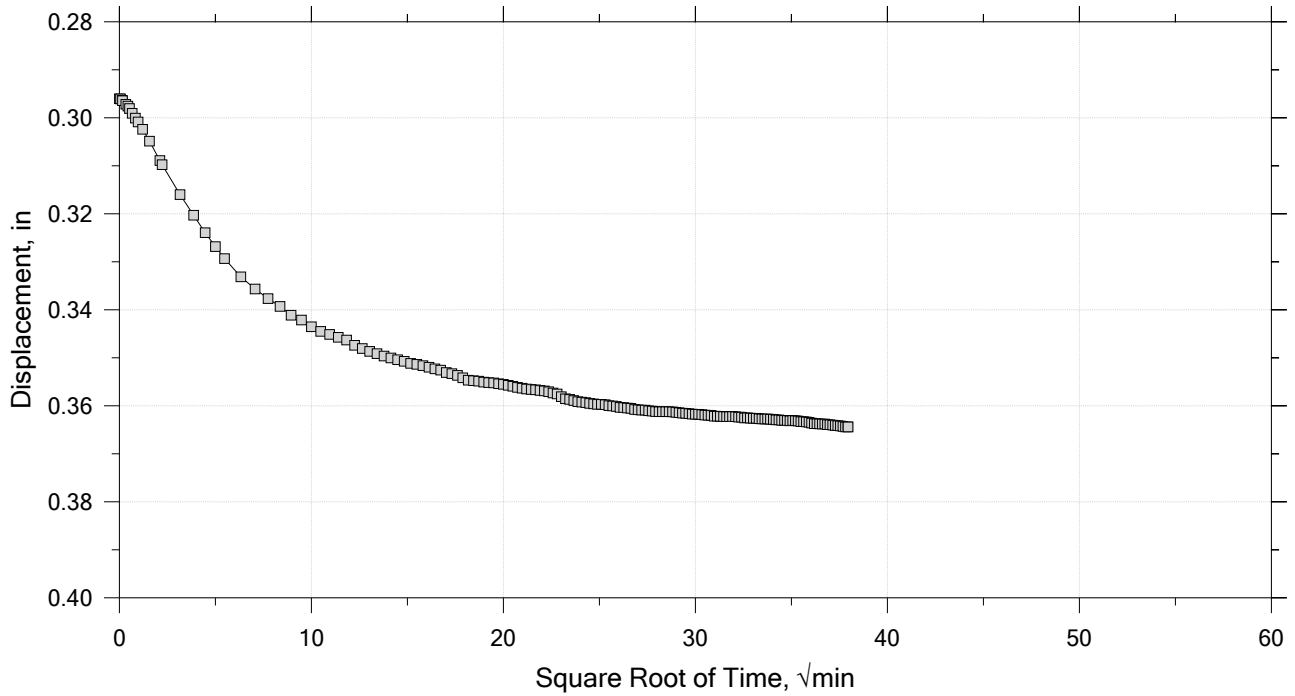
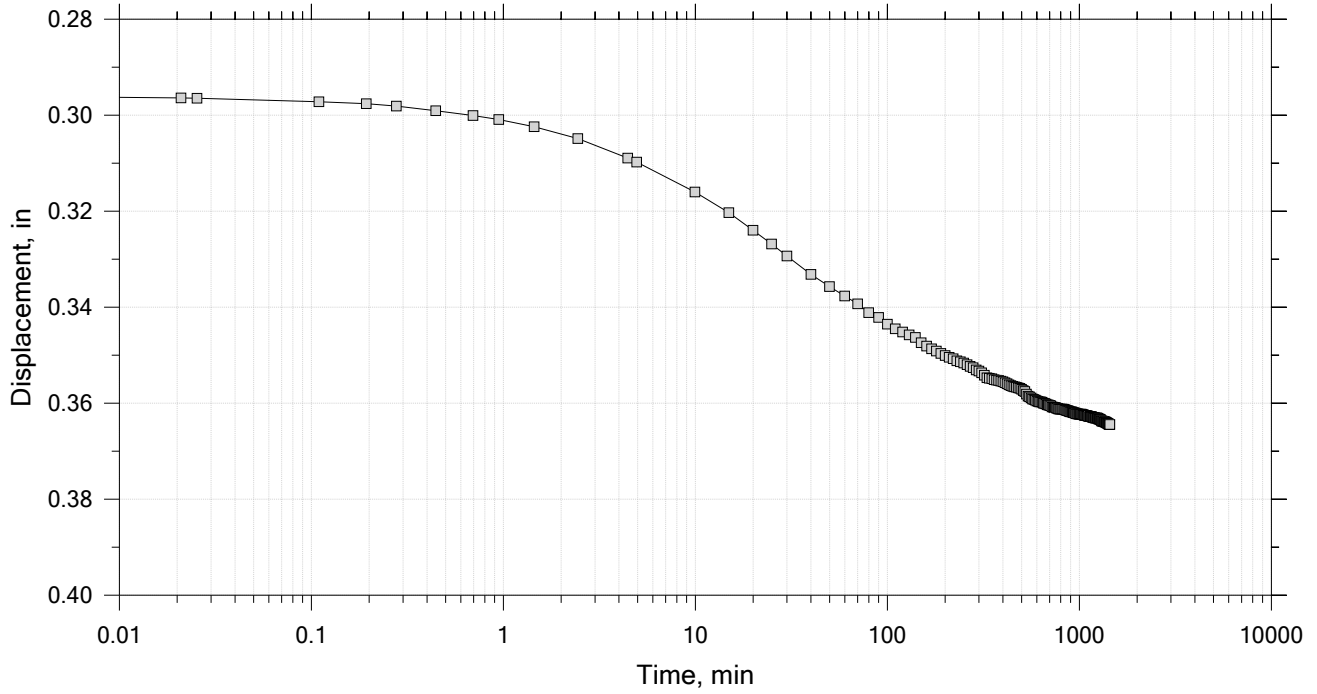
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf



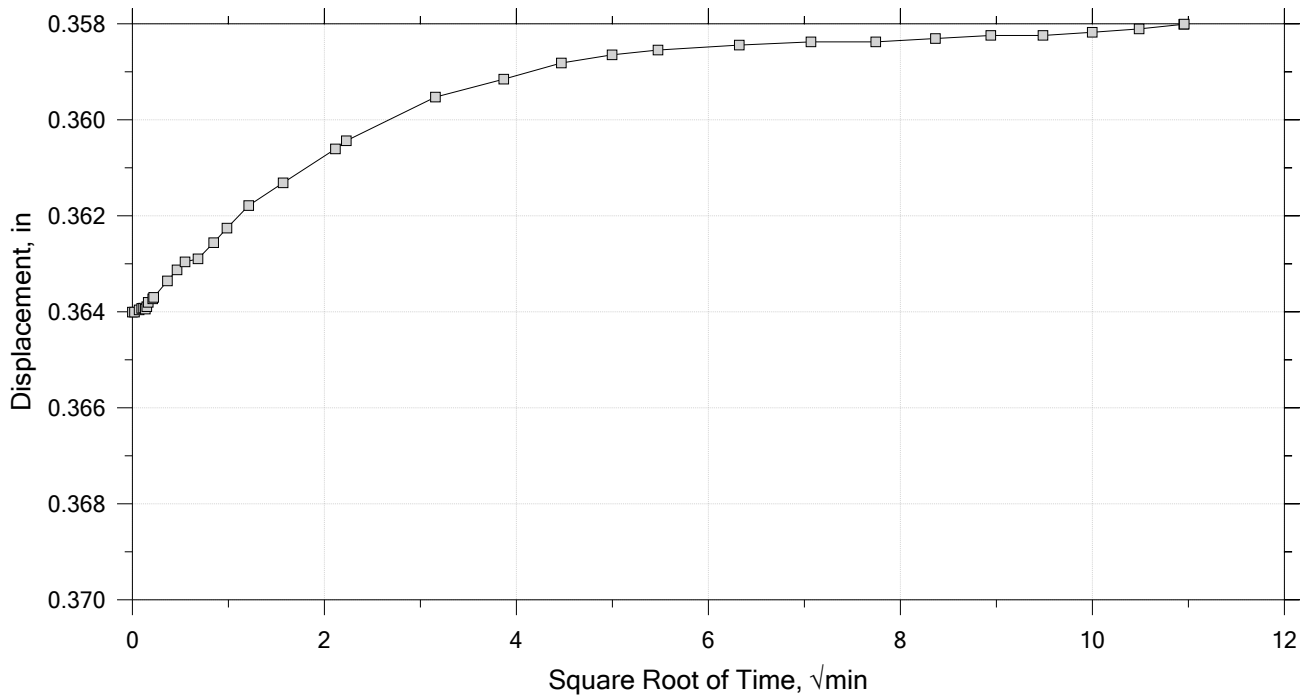
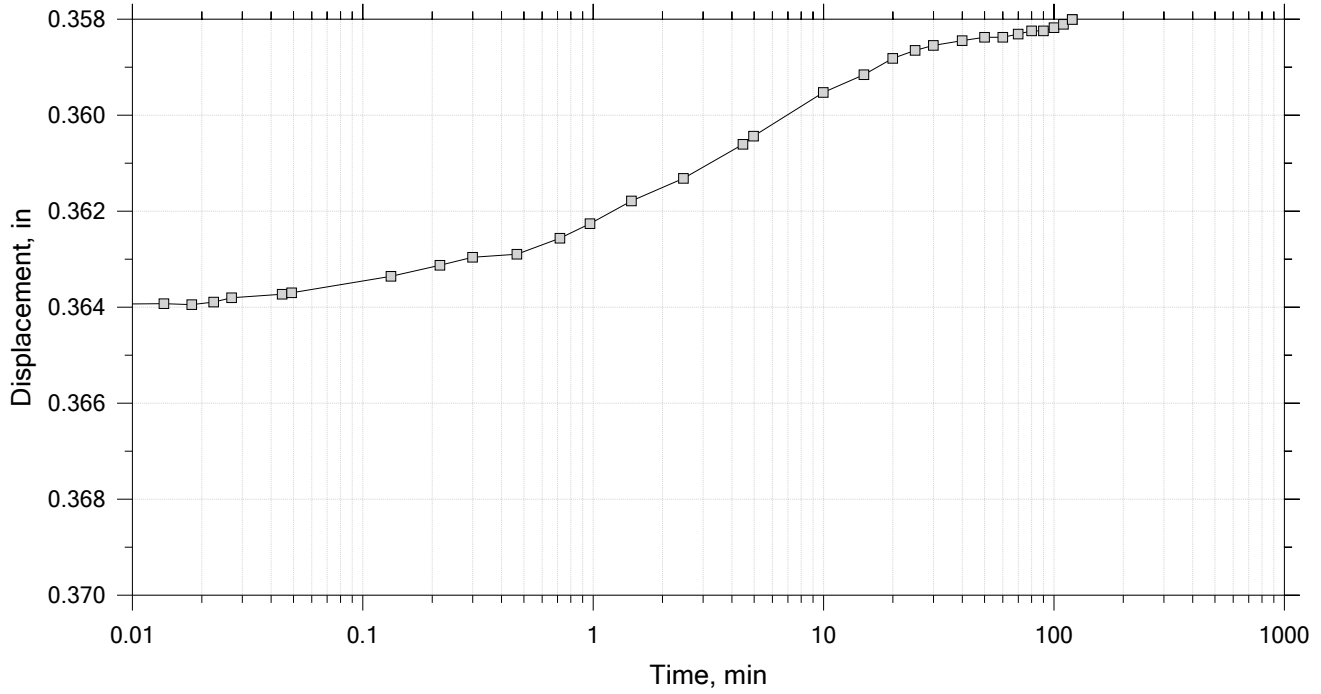
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 25

Constant Load Step

Stress: 5.77e+03 psf



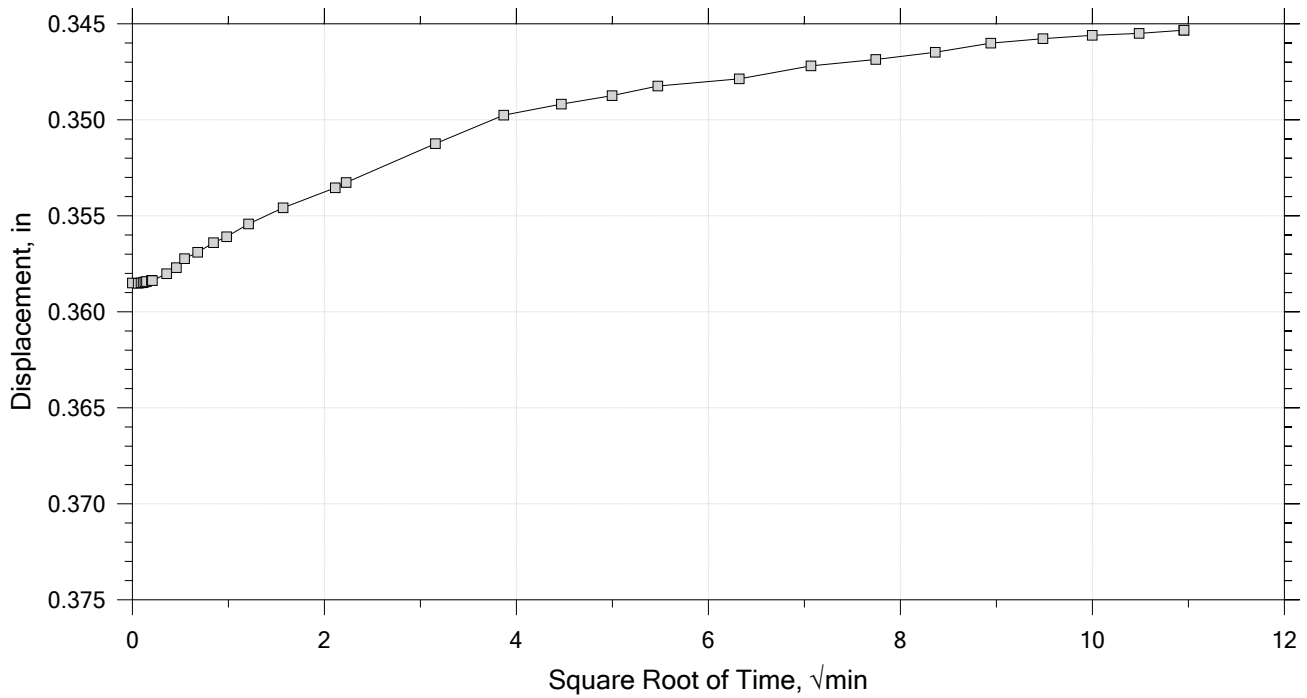
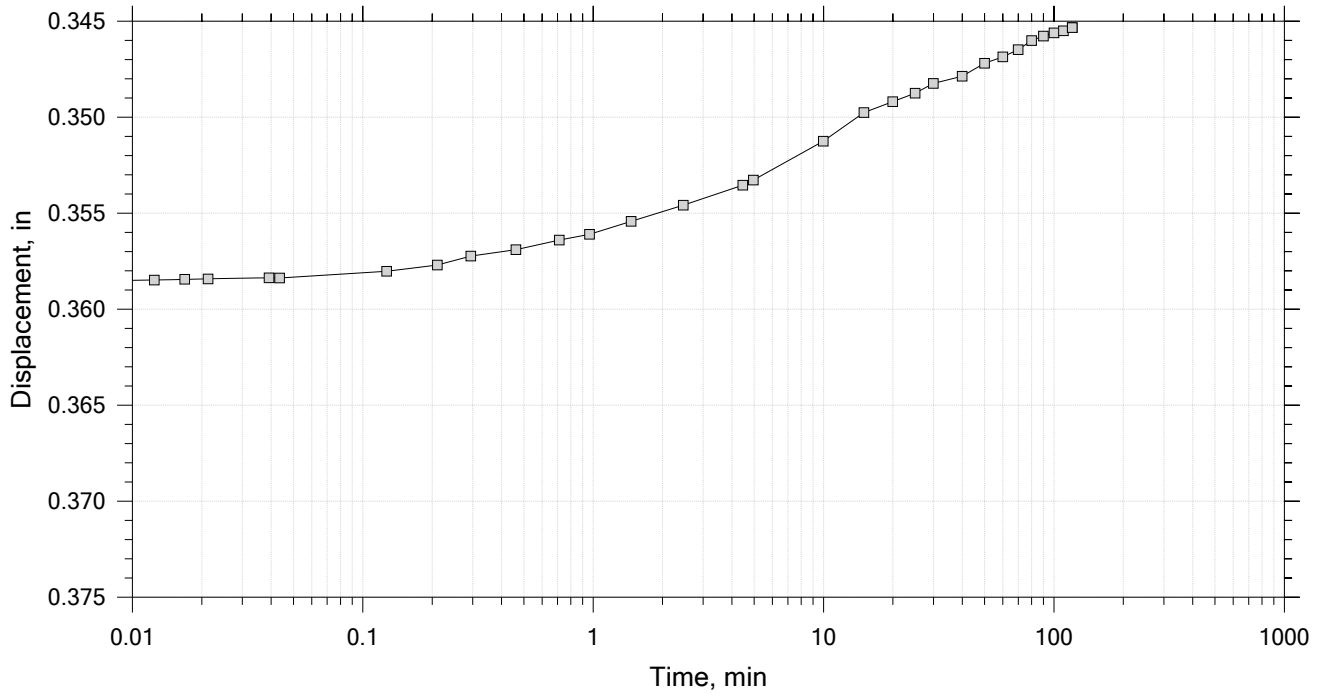
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 25

Constant Load Step

Stress: 2.88e+03 psf



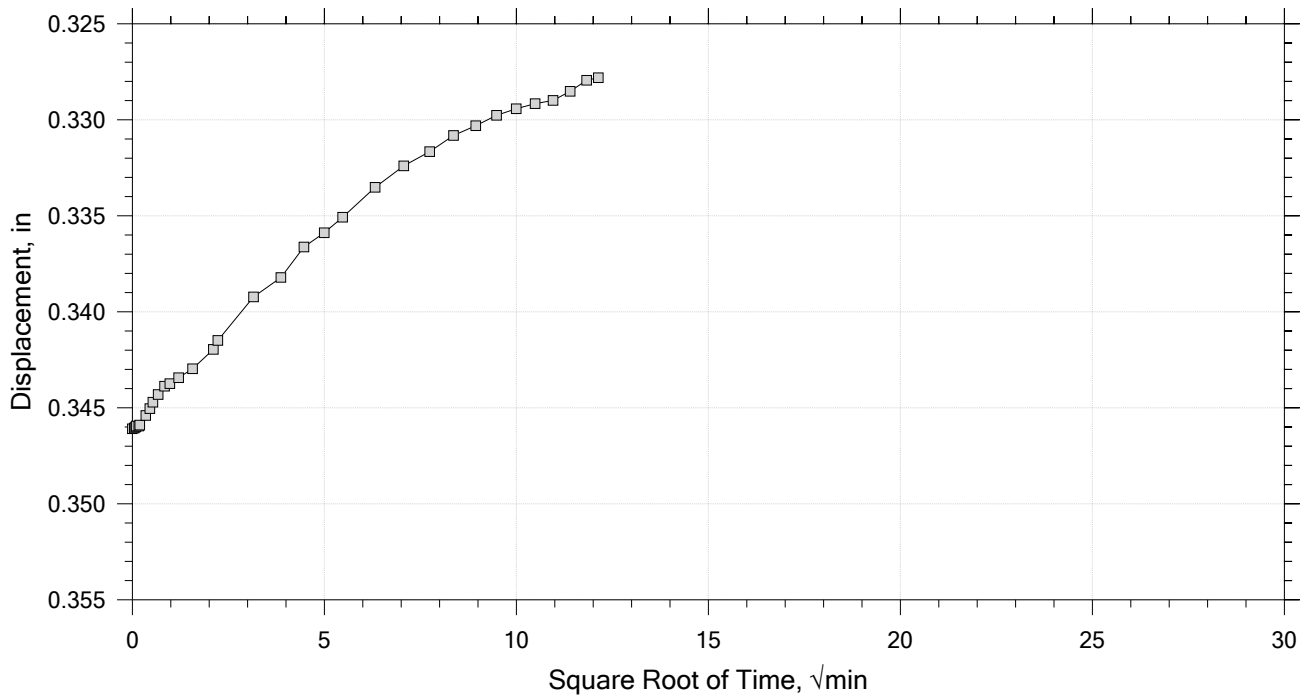
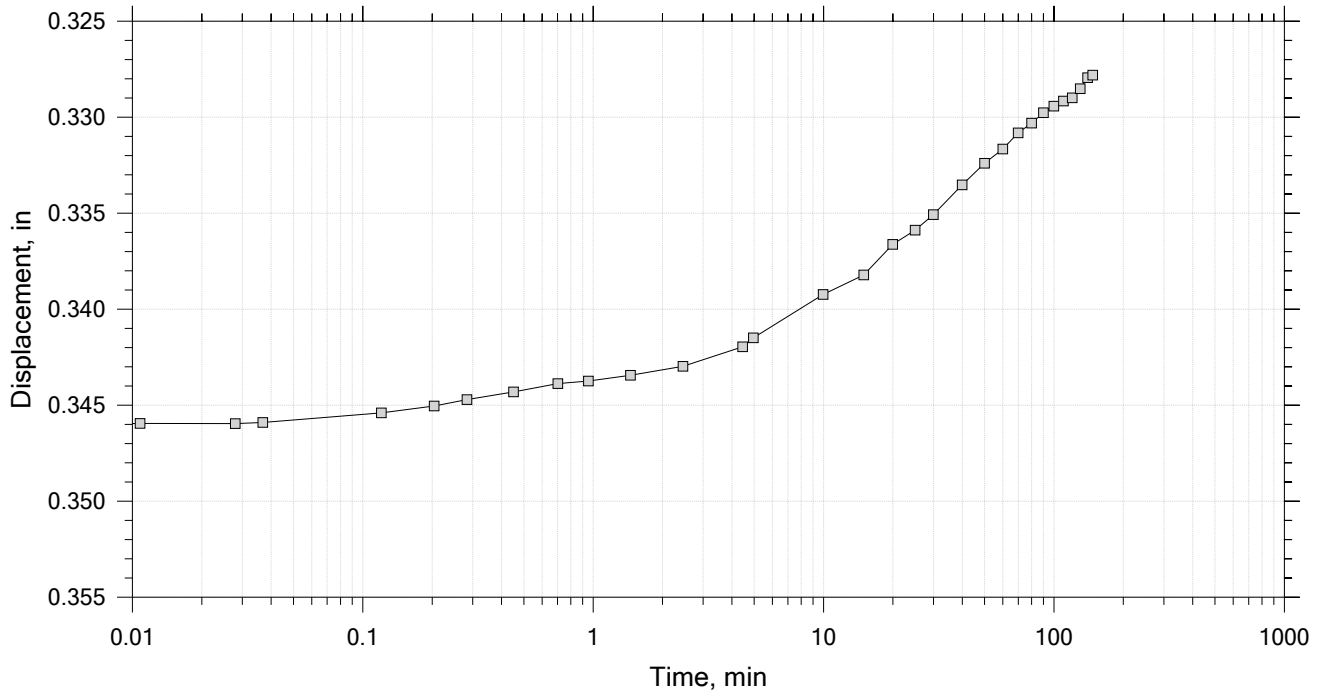
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 25

Constant Load Step

Stress: 1.44e+03 psf



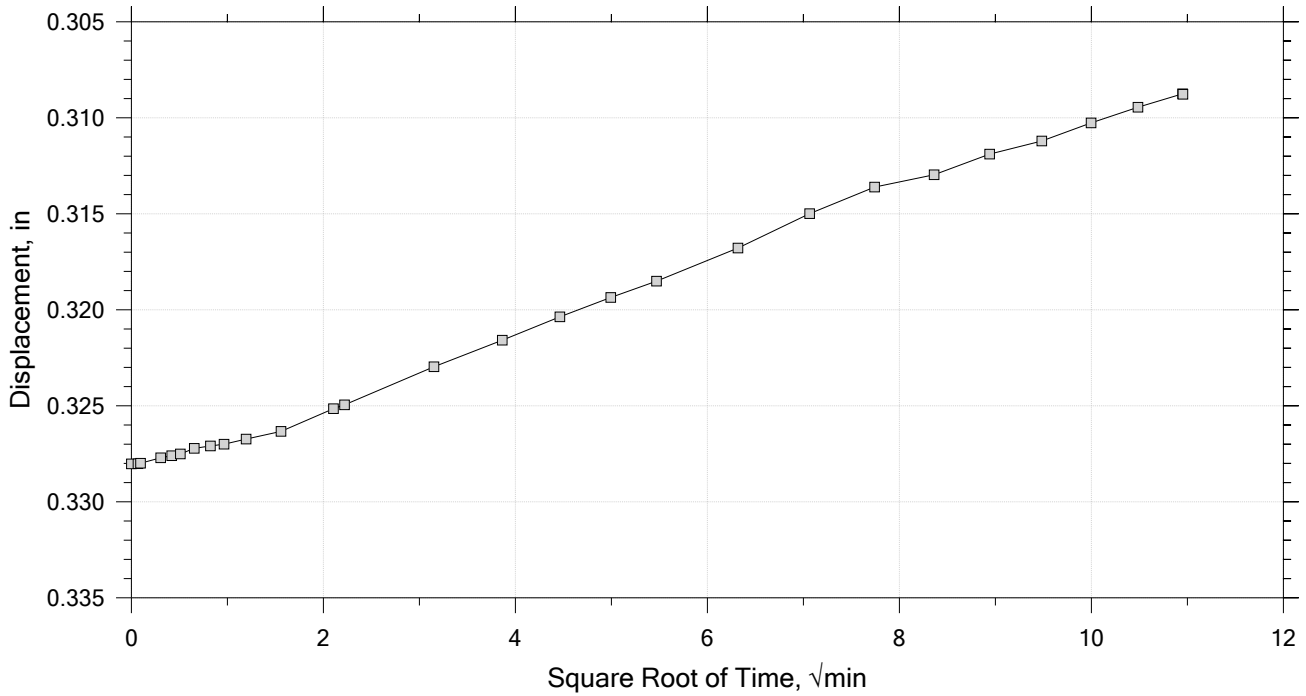
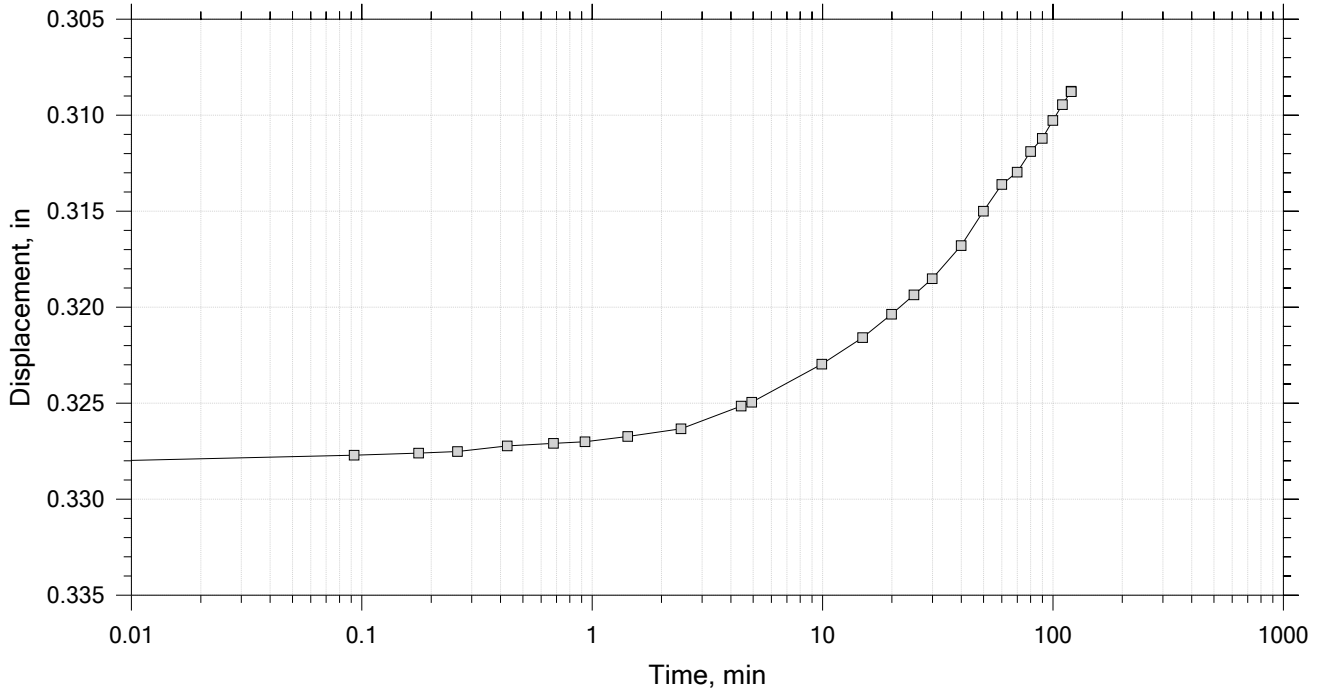
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 25

Constant Load Step

Stress: 721 psf



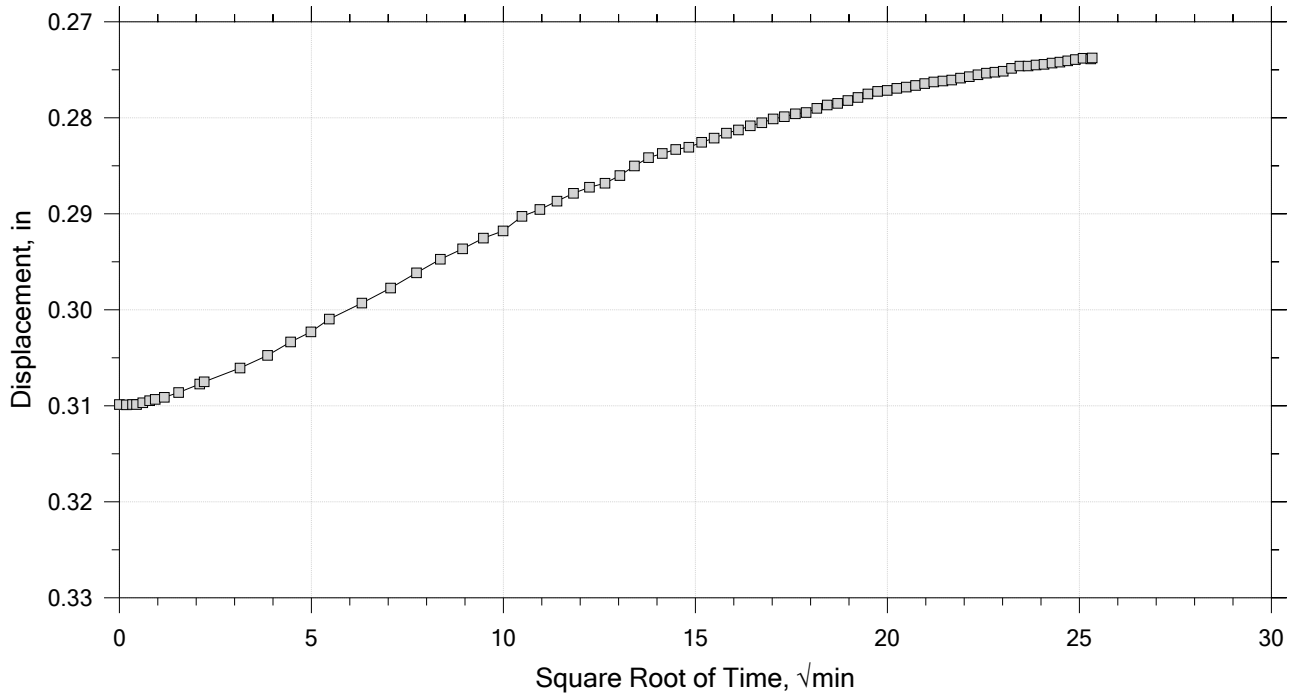
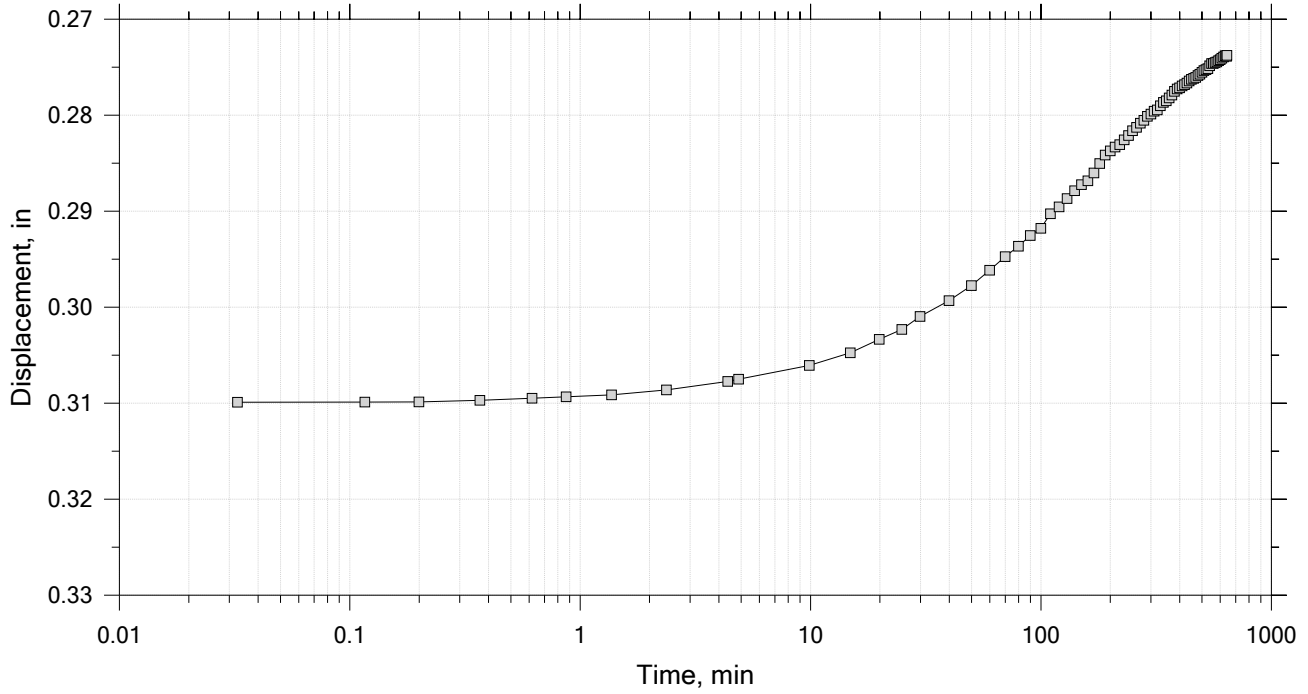
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 25

Constant Load Step

Stress: 360 psf



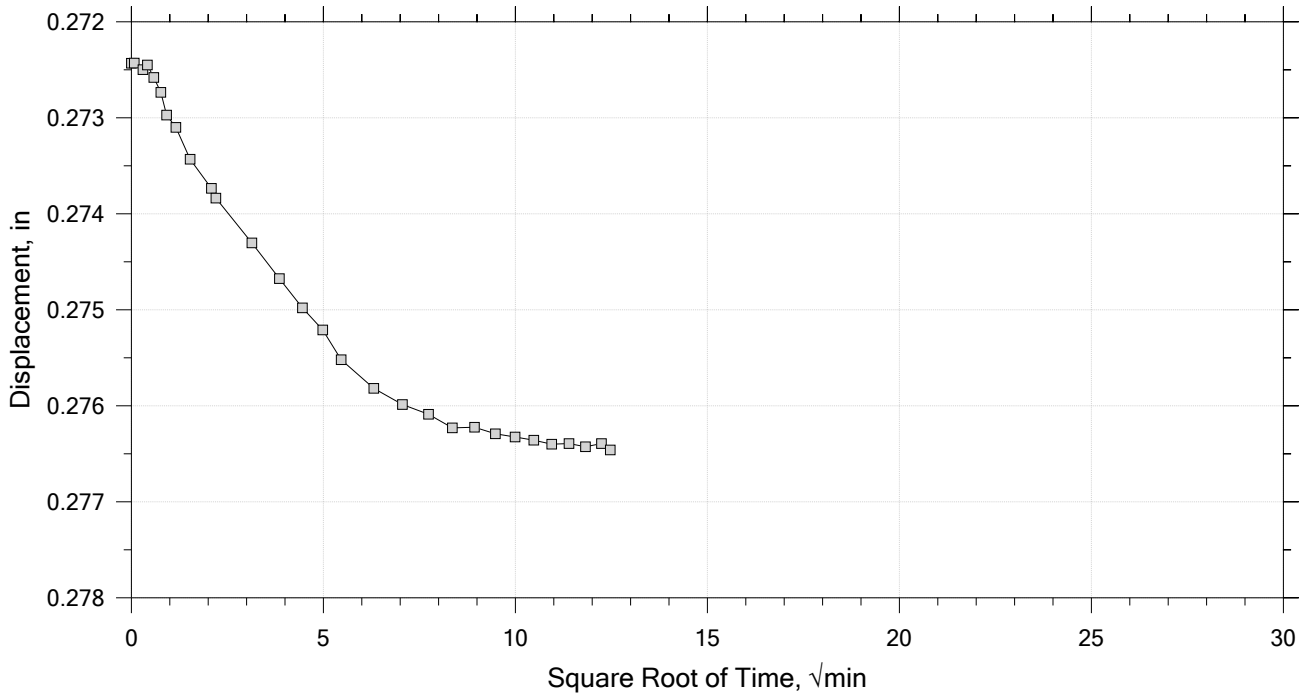
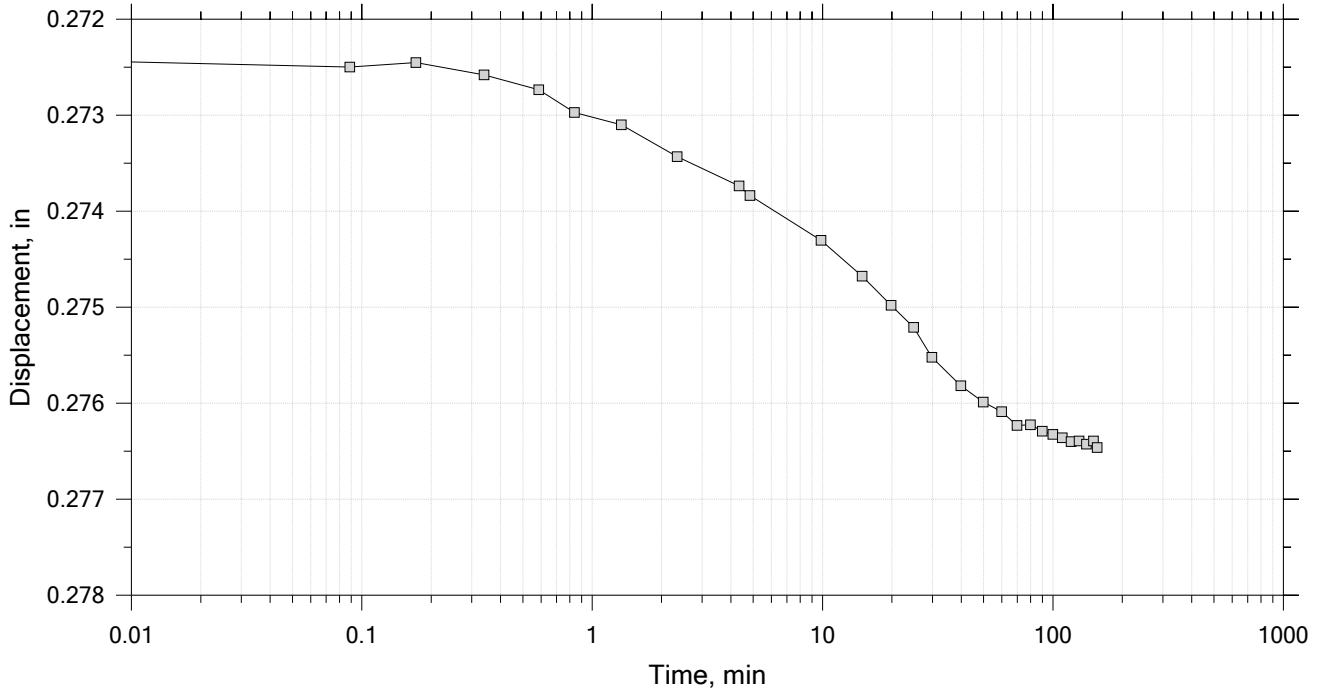
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 25

Constant Load Step

Stress: 721 psf



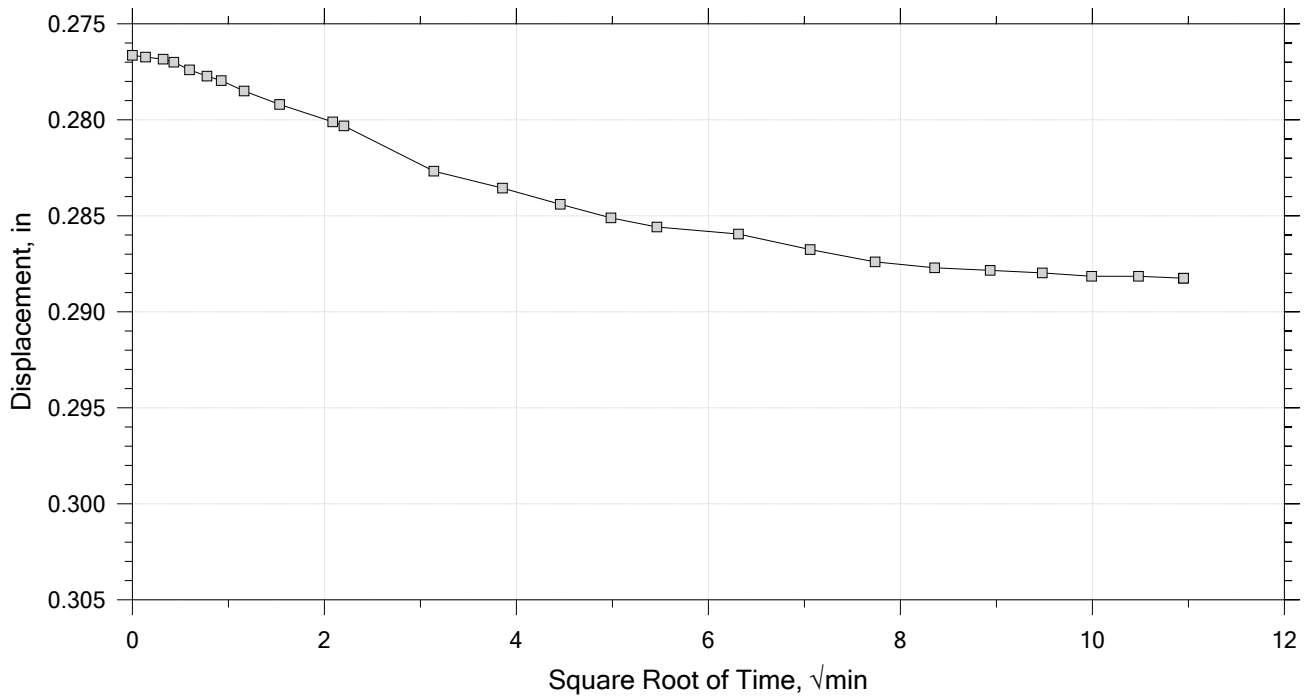
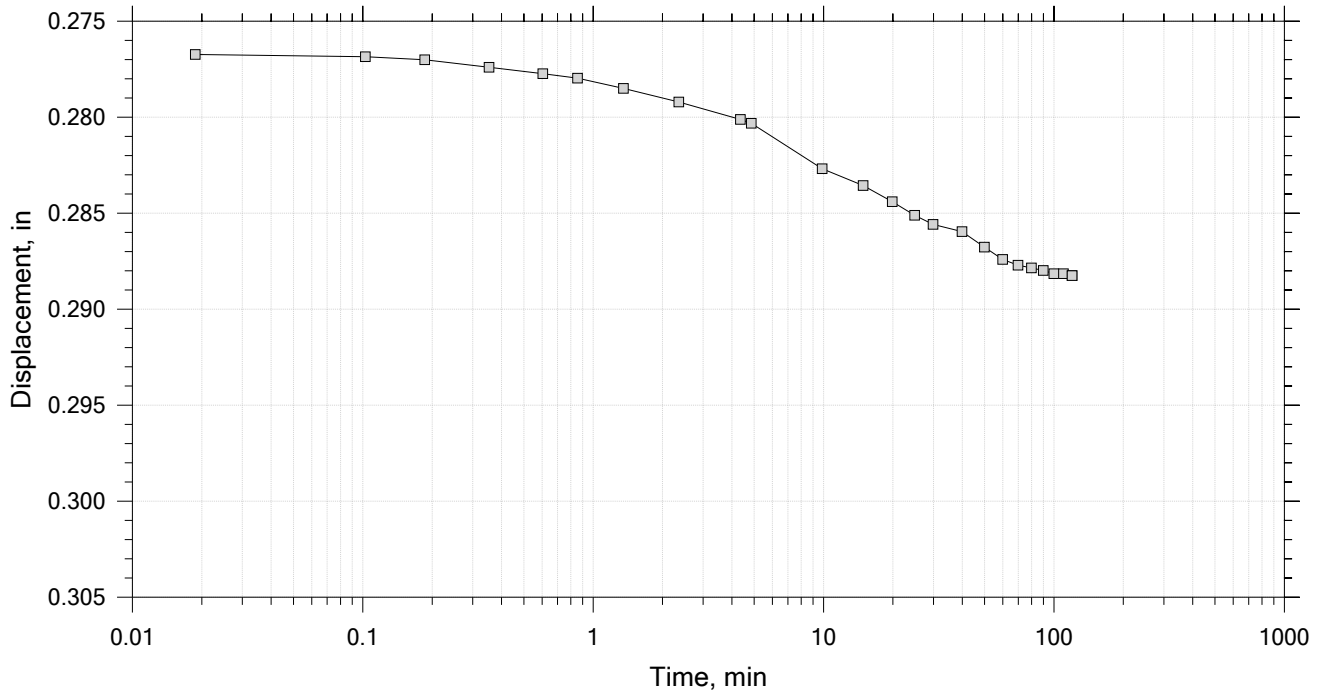
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 25

Constant Load Step

Stress: 1.44e+03 psf



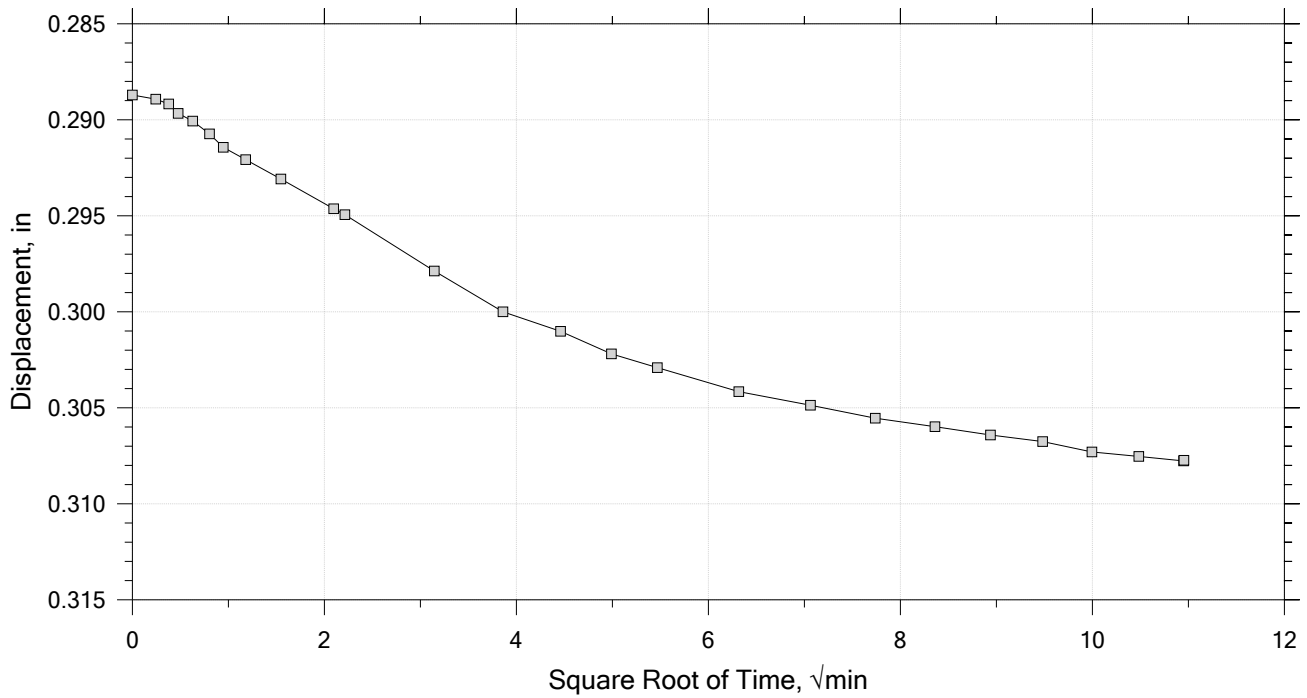
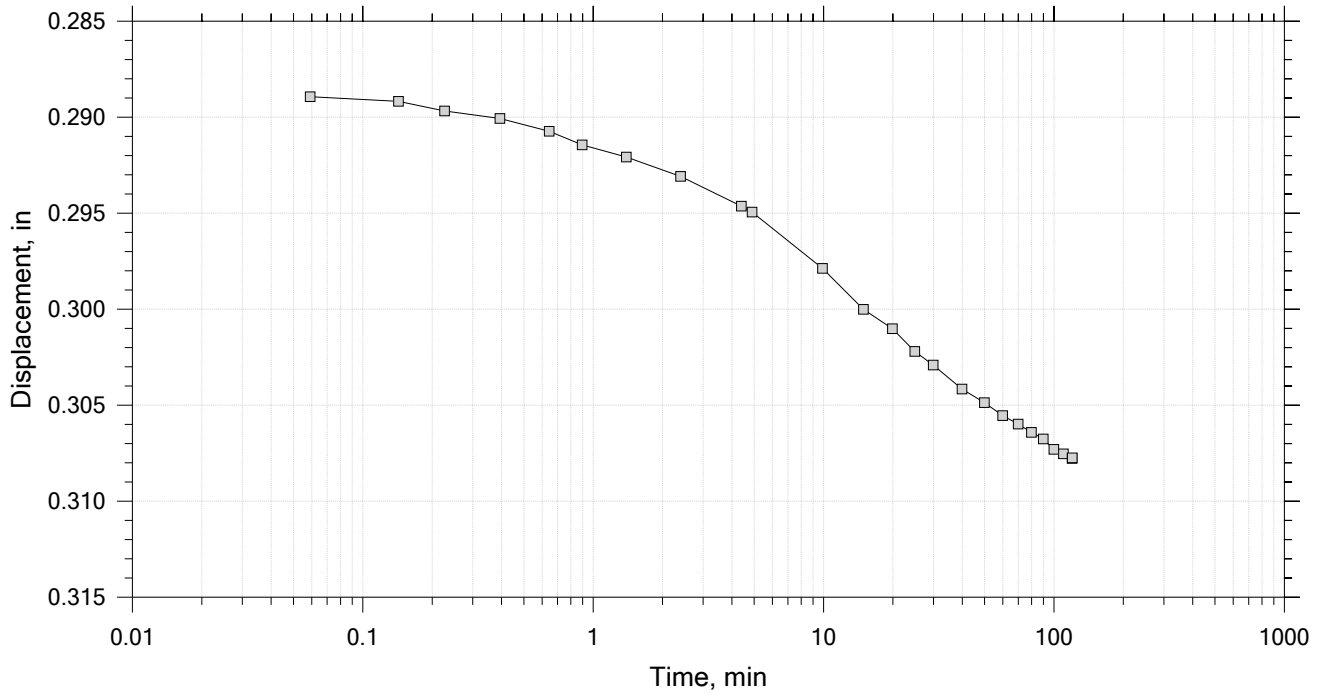
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 25

Constant Load Step

Stress: 2.88e+03 psf



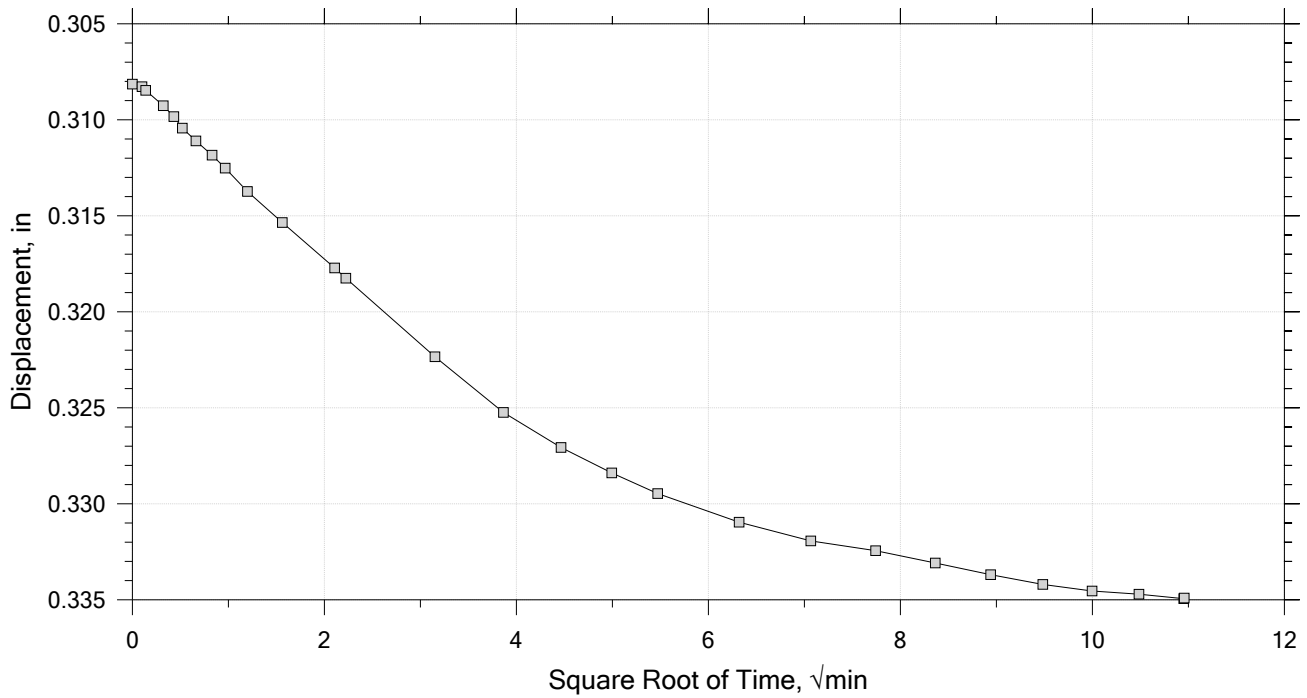
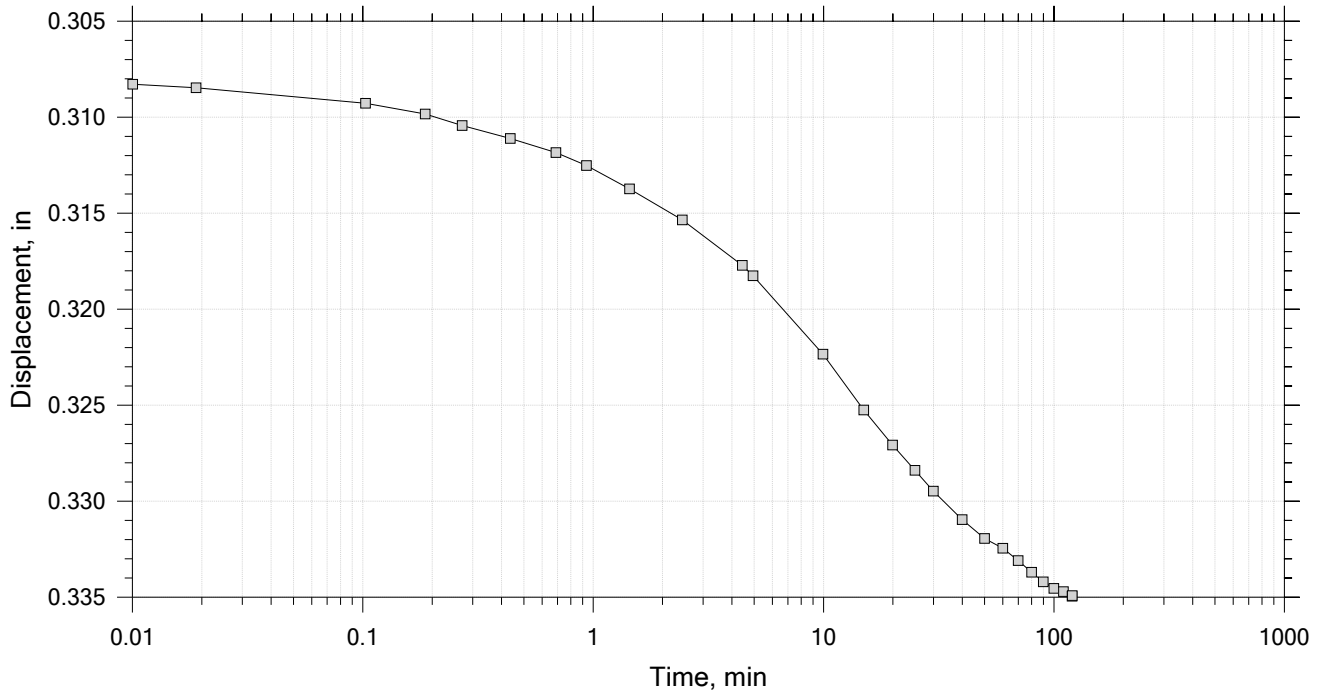
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 25

Constant Load Step

Stress: 5.77e+03 psf



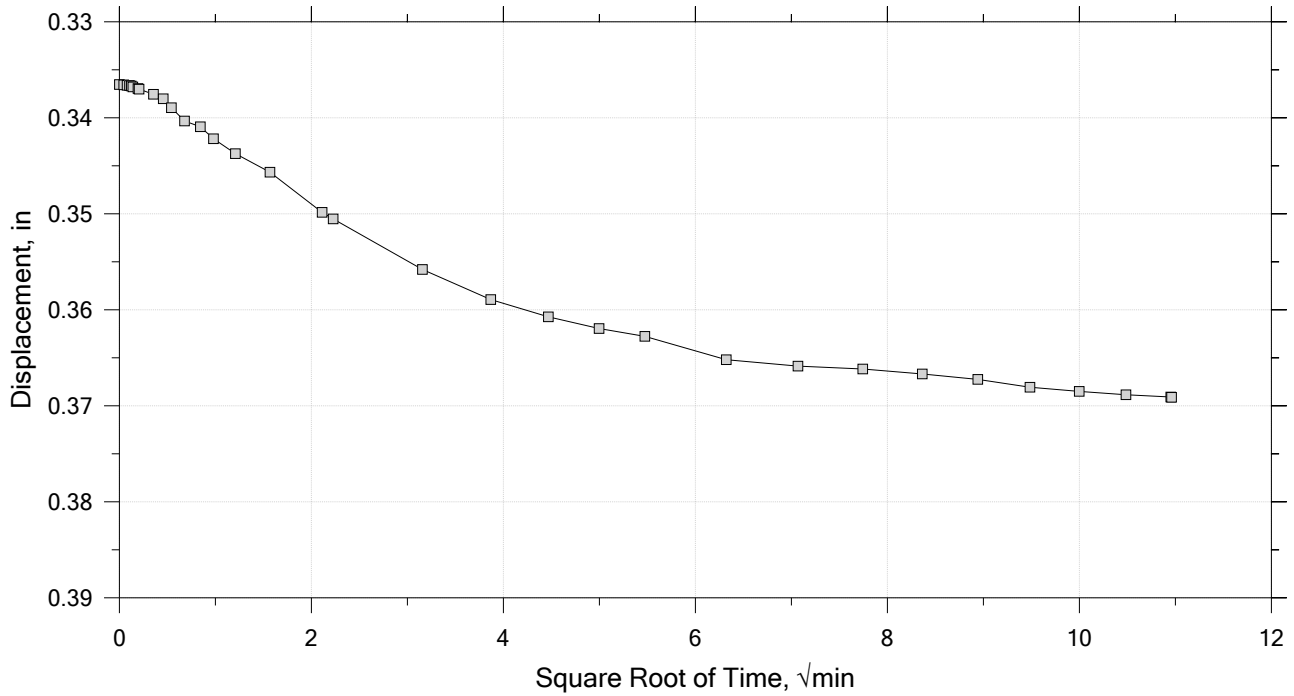
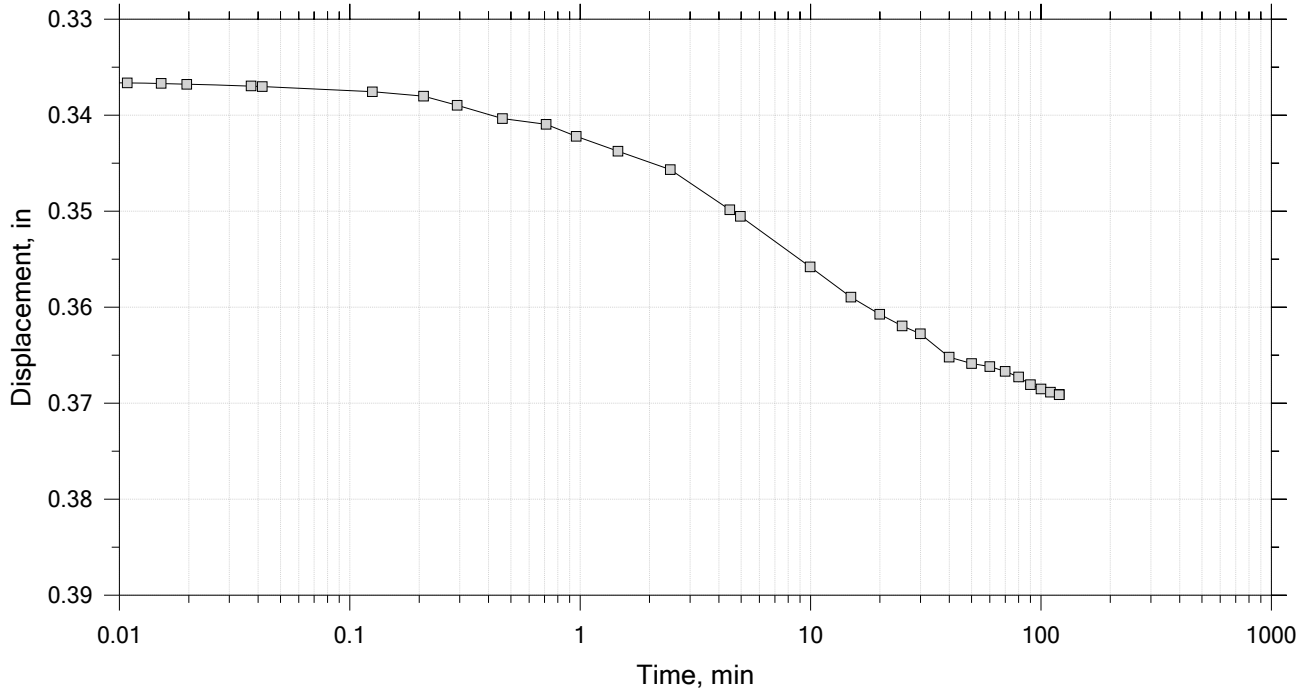
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 25

Constant Load Step

Stress: 1.15e+04 psf



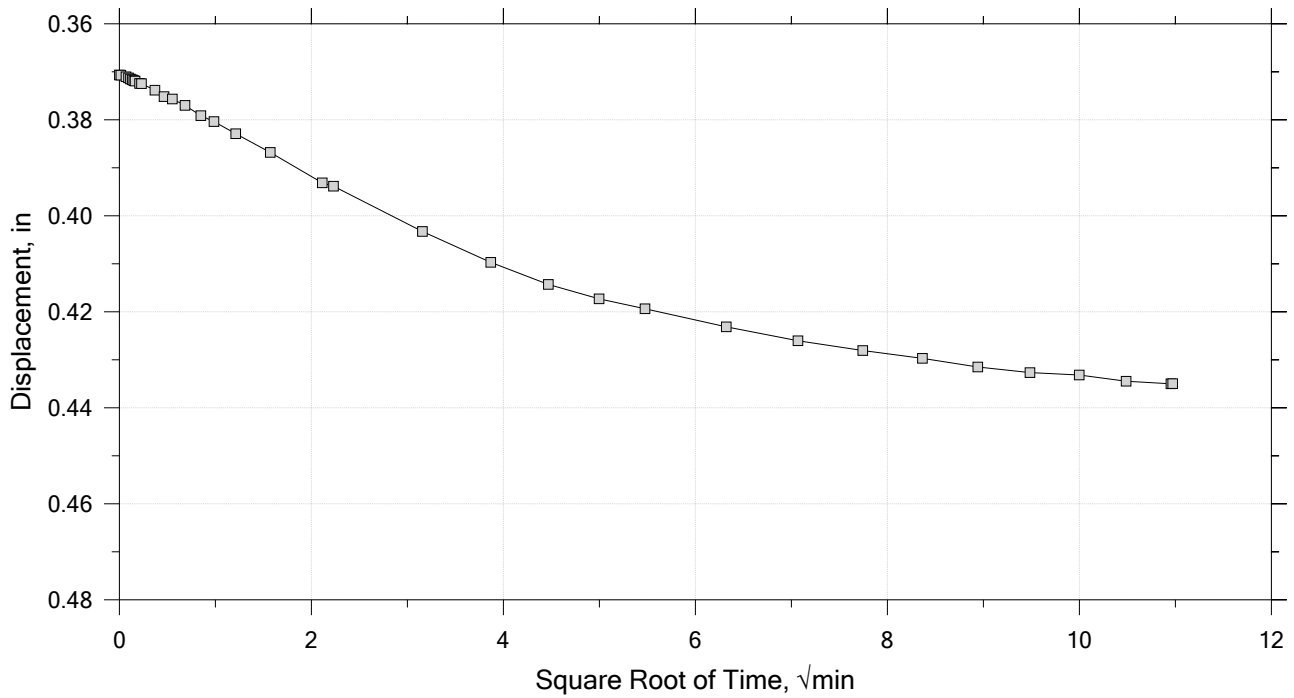
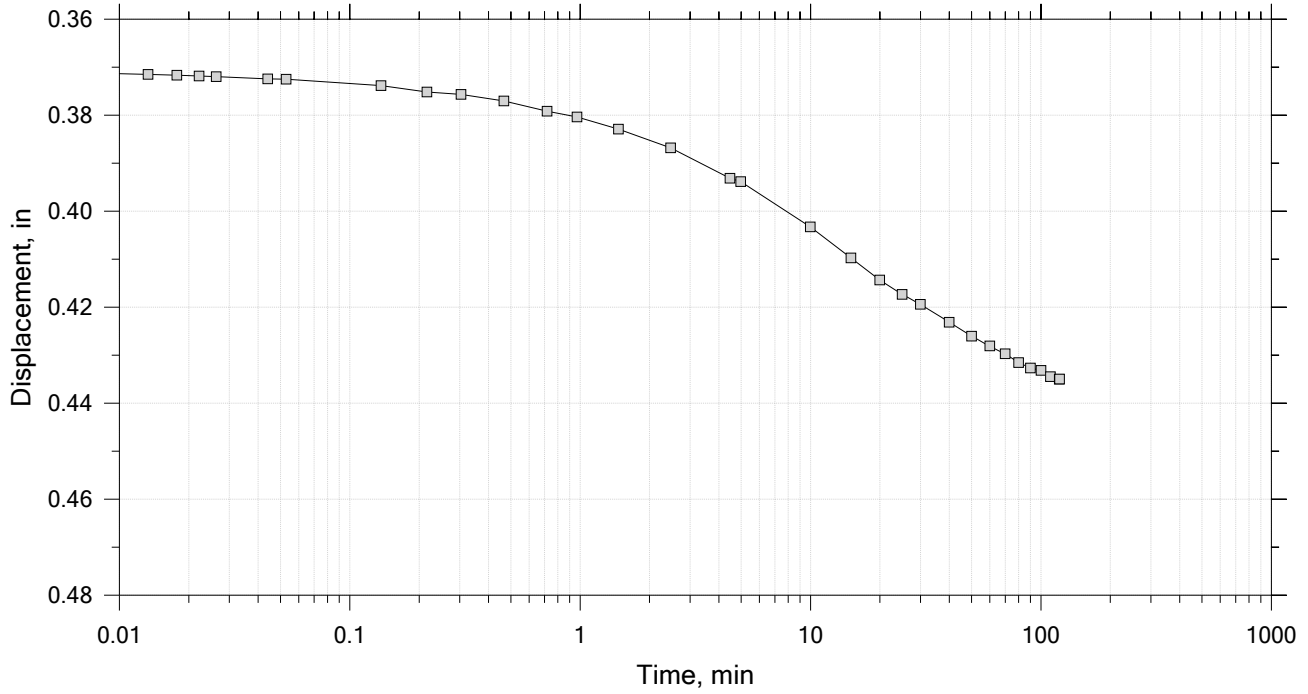
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 25

Constant Load Step

Stress: 2.31e+04 psf



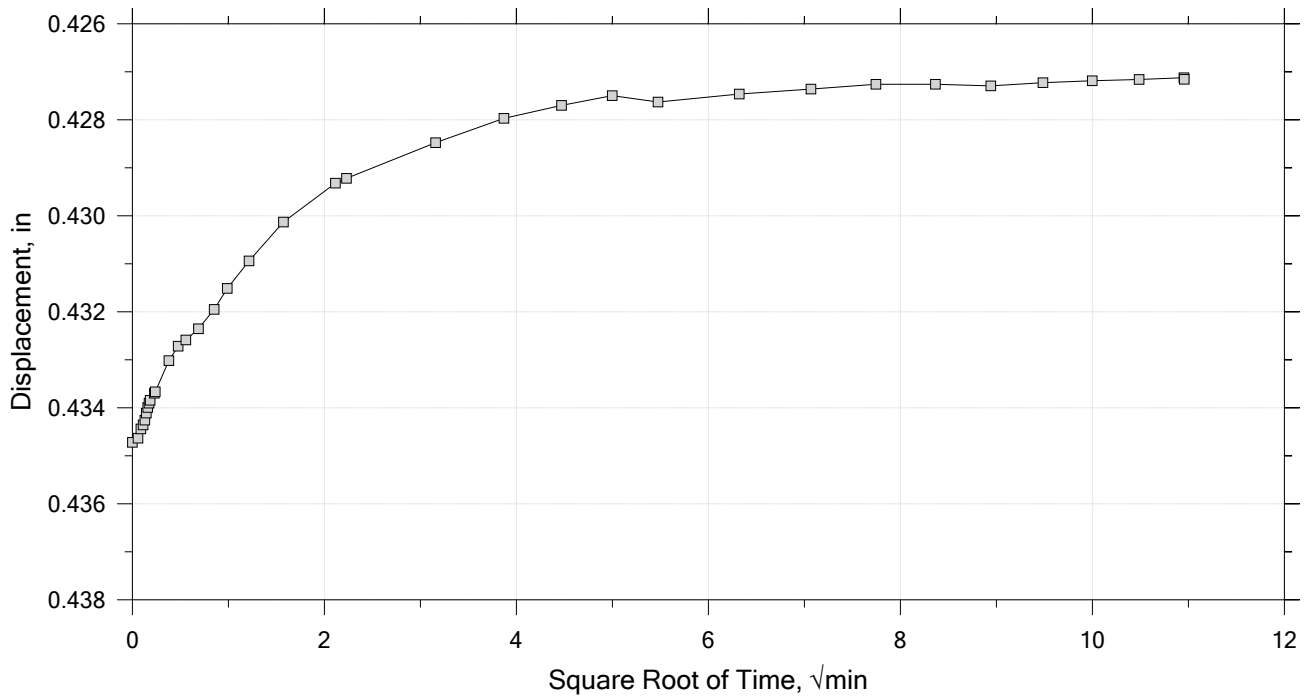
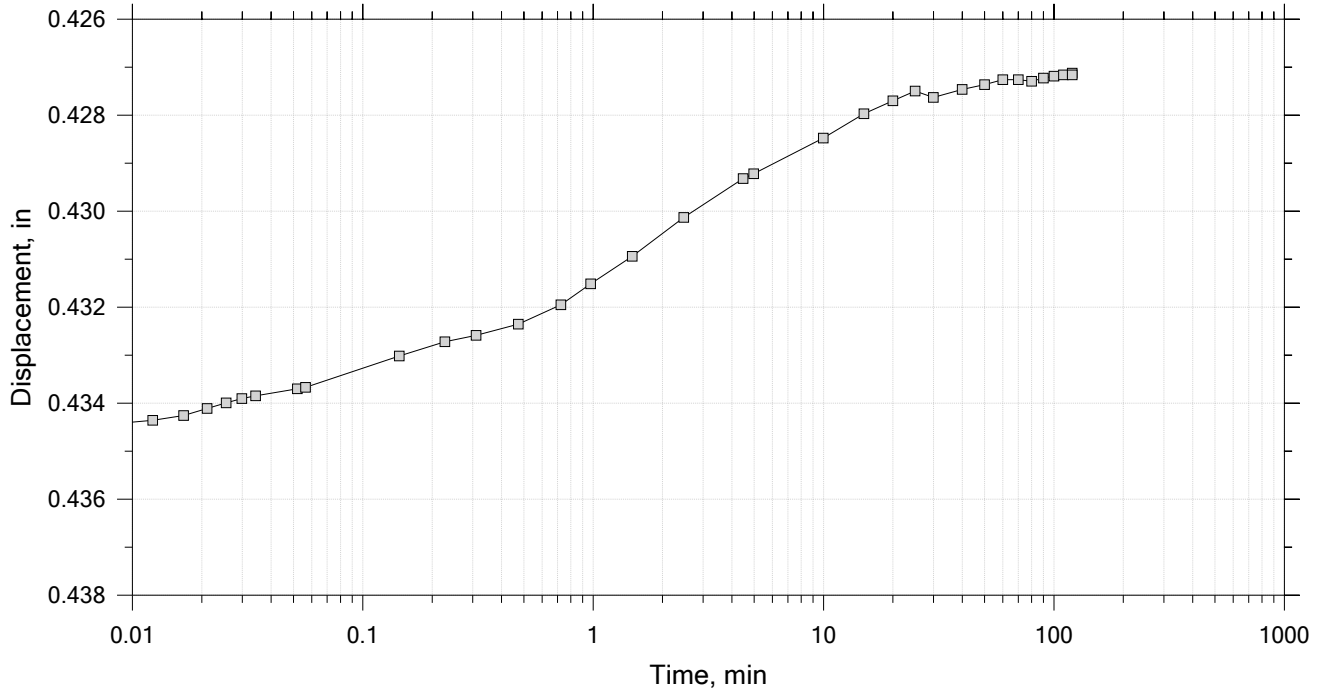
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 25

Constant Load Step

Stress: 1.15e+04 psf



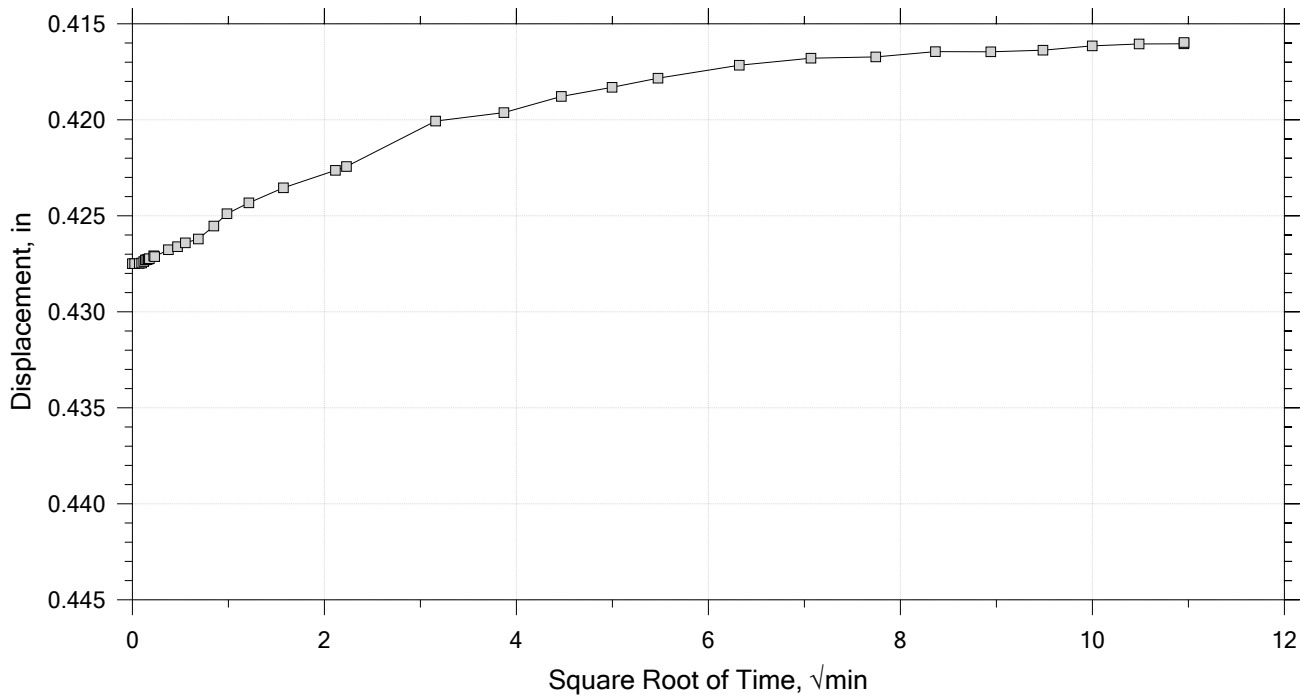
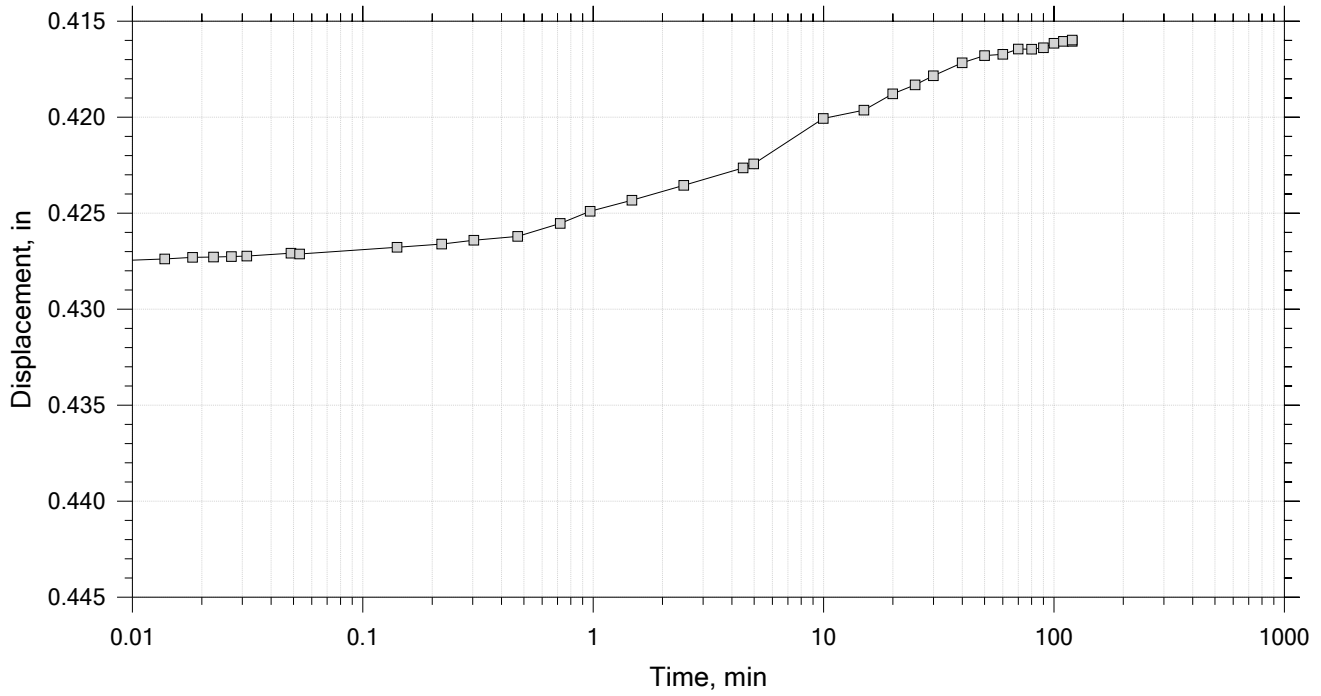
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 25

Constant Load Step

Stress: 5.77e+03 psf



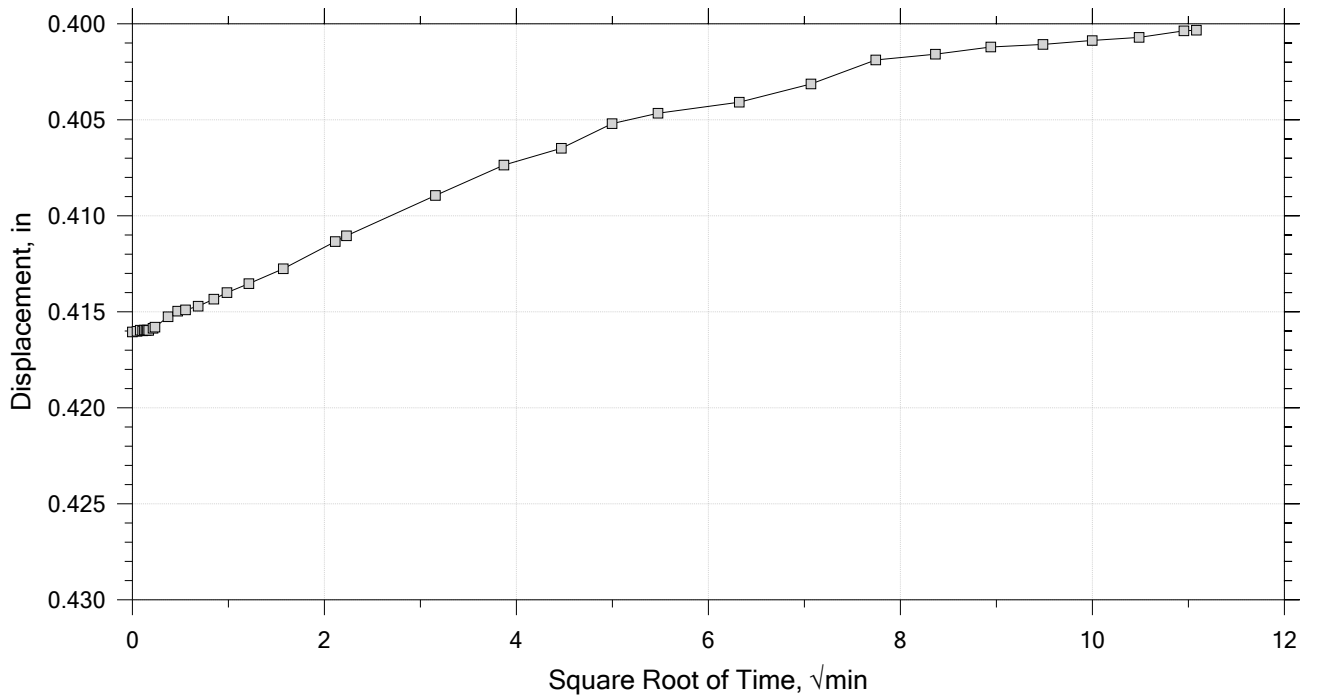
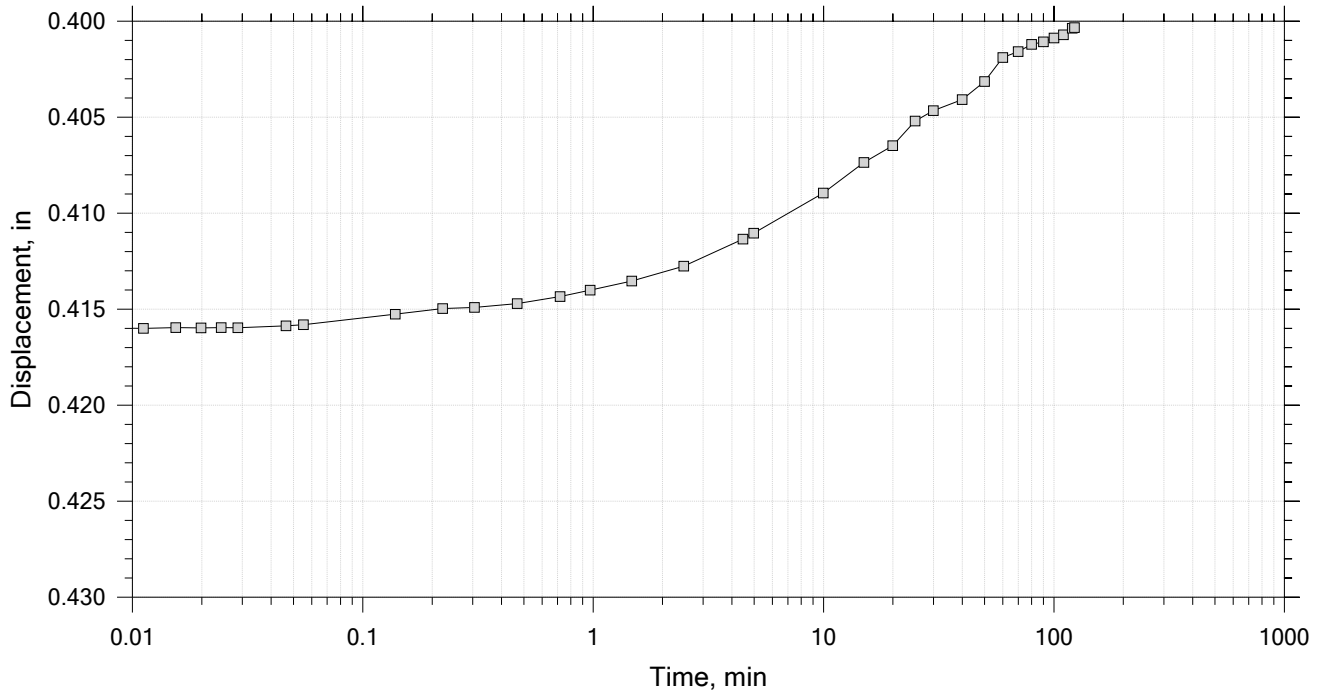
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 25

Constant Load Step

Stress: 2.88e+03 psf



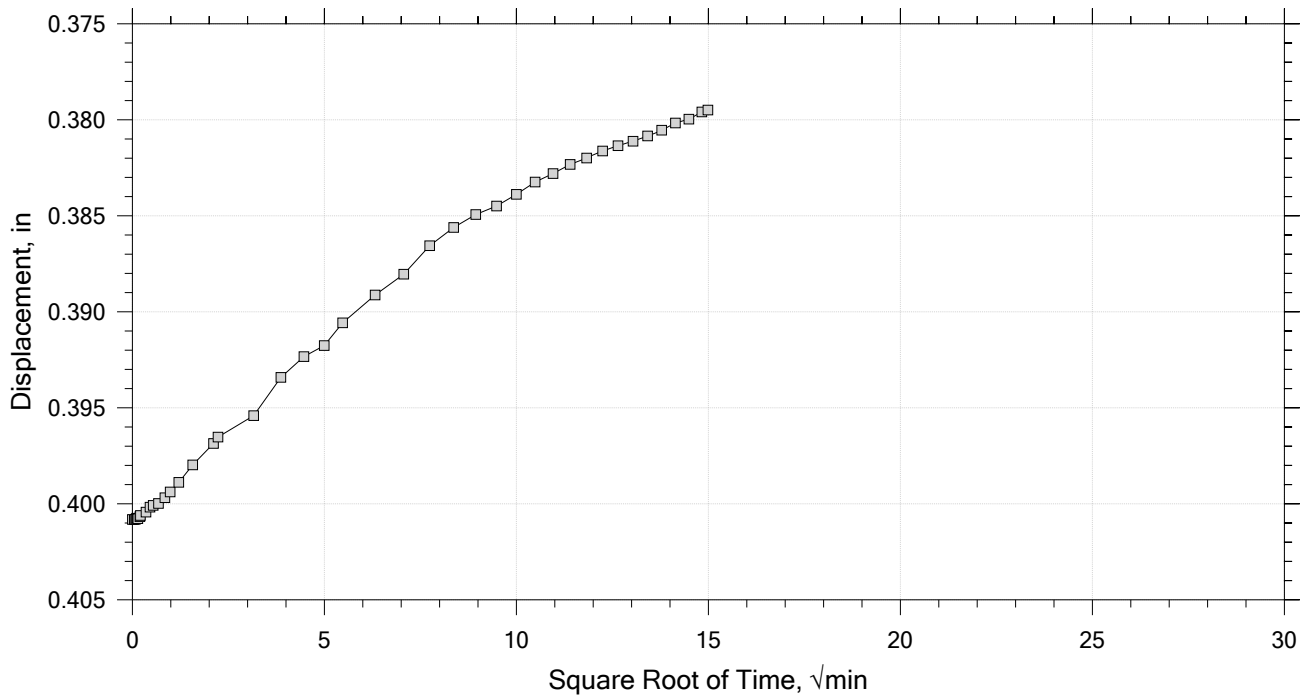
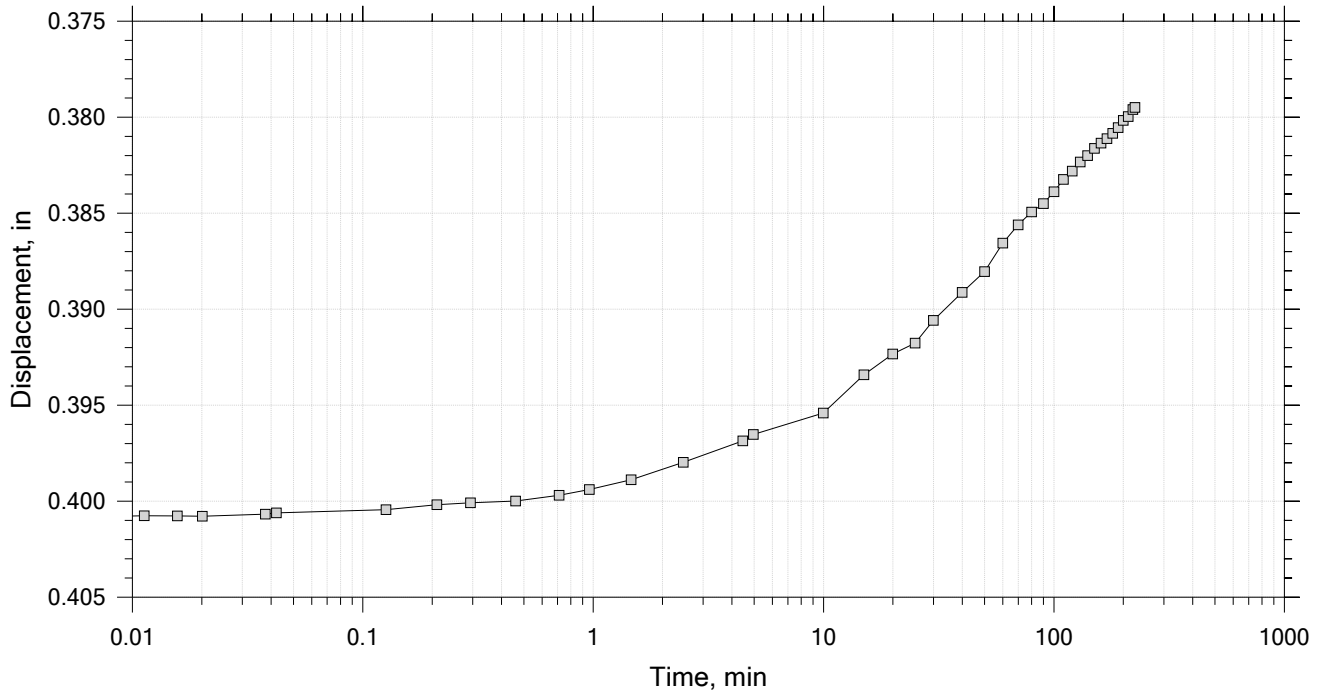
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 25

Constant Load Step

Stress: 1.44e+03 psf



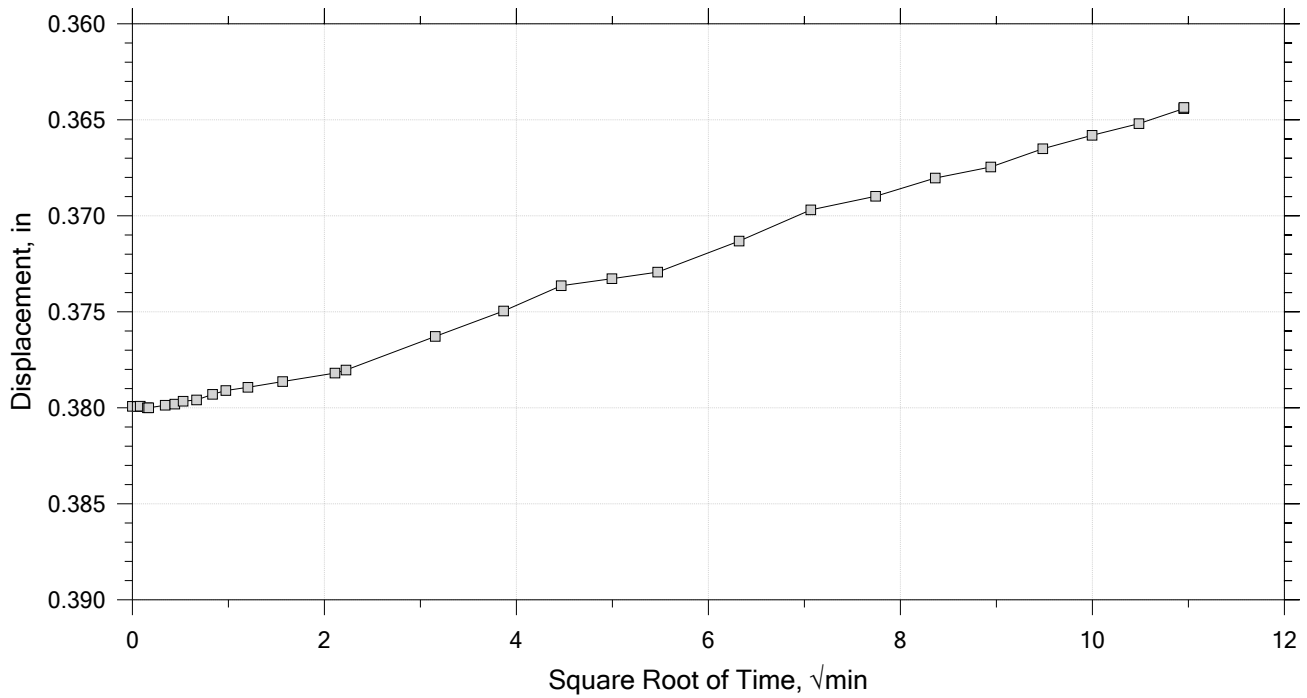
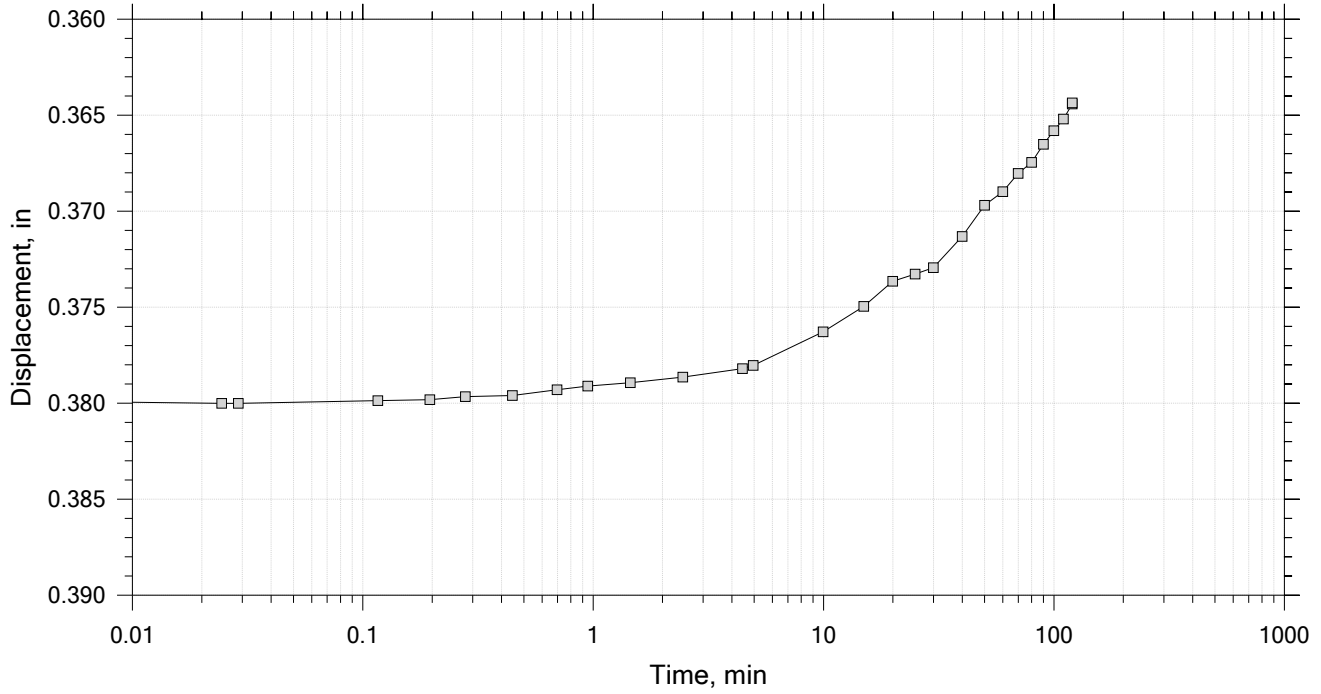
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 25

Constant Load Step

Stress: 721 psf



	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 25

Constant Load Step

Stress: 450 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-2.287		9.05	0.0003006	0.0000	0.000	2.43
2	-2.282		9.05	0.0003006	0.0000	0.000	2.43
3	-2.278		11.3	0.0003335	9.221e-07	9.22e-05	2.43
4	-2.273		15.8	0.0003993	7.038e-05	0.00704	2.43
5	-2.269		18.1	0.0004321	0.0001389	0.0139	2.43
6	-2.265		20.4	0.0004650	0.0001737	0.0174	2.43
7	-2.260		22.6	0.0004979	0.0002084	0.0208	2.43
8	-2.256		27.1	0.0005637	0.0002440	0.0244	2.43
9	-2.251		29.4	0.0005966	0.0003802	0.0380	2.43
10	-2.247		31.7	0.0006295	0.0004825	0.0483	2.43
11	-2.242		33.9	0.0006623	0.0005849	0.0585	2.43
12	-2.238		36.2	0.0006952	0.0006872	0.0687	2.43
13	-2.234		40.7	0.0007610	0.0007567	0.0757	2.43
14	-2.229		43.0	0.0007939	0.0008252	0.0825	2.43
15	-2.225		45.2	0.0008268	0.0008938	0.0894	2.43
16	-2.207		56.5	0.0009912	0.001304	0.130	2.43
17	-2.203		56.5	0.0009912	0.001338	0.134	2.43
18	-2.119		111.	0.001781	0.002408	0.241	2.43
19	-2.035		179.	0.002767	0.002875	0.288	2.42
20	-1.952		226.	0.003458	0.003469	0.347	2.42
21	-1.784		285.	0.004313	0.004744	0.474	2.42
22	-1.532		335.	0.005036	0.005779	0.578	2.41
23	-1.286		364.	0.005464	0.006399	0.640	2.41
24	-0.784		389.	0.005826	0.008776	0.878	2.40
25	0.000	0.000	405.	0.006057	0.01024	1.02	2.40
26	0.217	0.466	409.	0.006122	0.01064	1.06	2.40
27	2.215	1.488	423.	0.006319	0.01423	1.42	2.38
28	2.718	1.649	425.	0.006352	0.01491	1.49	2.38
29	7.716	2.778	432.	0.006450	0.02002	2.00	2.36
30	12.714	3.566	437.	0.006516	0.02343	2.34	2.35
31	17.714	4.209	439.	0.006549	0.02672	2.67	2.34
32	22.717	4.766	441.	0.006582	0.02864	2.86	2.34
33	27.715	5.265	443.	0.006615	0.03030	3.03	2.33
34	37.717	6.141	446.	0.006648	0.03301	3.30	2.32
35	47.715	6.908	446.	0.006648	0.03507	3.51	2.31
36	57.714	7.597	446.	0.006648	0.03652	3.65	2.31
37	67.717	8.229	446.	0.006648	0.03767	3.77	2.30
38	77.715	8.816	448.	0.006681	0.03825	3.82	2.30
39	87.714	9.366	446.	0.006655	0.03932	3.93	2.30
40	97.715	9.885	446.	0.006655	0.04040	4.04	2.29
41	107.718	10.379	448.	0.006681	0.04088	4.09	2.29
42	117.716	10.850	448.	0.006681	0.04122	4.12	2.29
43	127.717	11.301	446.	0.006655	0.04149	4.15	2.29
44	137.717	11.735	446.	0.006655	0.04172	4.17	2.29
45	147.718	12.154	450.	0.006714	0.04183	4.18	2.29
46	157.717	12.559	448.	0.006688	0.04196	4.20	2.29
47	167.717	12.951	446.	0.006662	0.04239	4.24	2.29
48	177.714	13.331	448.	0.006688	0.04260	4.26	2.29
49	187.718	13.701	446.	0.006662	0.04307	4.31	2.29
50	197.717	14.061	448.	0.006688	0.04321	4.32	2.29

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 25

Constant Load Step

Stress: 675 psf


	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.937		448.	0.006688	0.04379	4.38	2.28
2	-0.933		448.	0.006688	0.04379	4.38	2.28
3	-0.929		461.	0.006878	0.04356	4.36	2.28
4	-0.924		473.	0.007042	0.04343	4.34	2.28
5	-0.920		482.	0.007174	0.04333	4.33	2.28
6	-0.915		491.	0.007306	0.04324	4.32	2.29
7	-0.911		498.	0.007404	0.04314	4.31	2.29
8	-0.907		507.	0.007492	0.04308	4.31	2.29
9	-0.902		511.	0.007535	0.04304	4.30	2.29
10	-0.898		518.	0.007601	0.04301	4.30	2.29
11	-0.894		523.	0.007645	0.04300	4.30	2.29
12	-0.889		529.	0.007710	0.04293	4.29	2.29
13	-0.885		534.	0.007754	0.04285	4.29	2.29
14	-0.880		538.	0.007798	0.04291	4.29	2.29
15	-0.876		541.	0.007820	0.04289	4.29	2.29
16	-0.859		556.	0.007973	0.04280	4.28	2.29
17	-0.850		563.	0.008039	0.04281	4.28	2.29
18	-0.766		602.	0.008410	0.04281	4.28	2.29
19	-0.683		620.	0.008585	0.04294	4.29	2.29
20	-0.600		631.	0.008695	0.04303	4.30	2.29
21	-0.433		642.	0.008804	0.04346	4.35	2.28
22	-0.184		649.	0.008870	0.04414	4.41	2.28
23	0.000	0.000	653.	0.008902	0.04445	4.45	2.28
24	0.067	0.259	654.	0.008914	0.04457	4.46	2.28
25	0.564	0.751	656.	0.008936	0.04526	4.53	2.28
26	1.567	1.252	660.	0.008979	0.04575	4.58	2.28
27	3.566	1.889	665.	0.009023	0.04662	4.66	2.27
28	4.065	2.016	665.	0.009023	0.04686	4.69	2.27
29	9.064	3.011	667.	0.009045	0.04927	4.93	2.26
30	14.064	3.750	670.	0.009067	0.05064	5.06	2.26
31	19.067	4.367	670.	0.009067	0.05206	5.21	2.25
32	24.067	4.906	672.	0.009089	0.05308	5.31	2.25
33	29.064	5.391	672.	0.009089	0.05403	5.40	2.25
34	39.065	6.250	672.	0.009089	0.05572	5.57	2.24
35	49.066	7.005	674.	0.009111	0.05648	5.65	2.24
36	59.063	7.685	672.	0.009104	0.05716	5.72	2.24
37	69.066	8.311	674.	0.009111	0.05790	5.79	2.23
38	79.067	8.892	674.	0.009111	0.05837	5.84	2.23
39	89.064	9.437	674.	0.009111	0.05864	5.86	2.23
40	99.064	9.953	674.	0.009111	0.05925	5.92	2.23
41	109.066	10.443	672.	0.009104	0.06003	6.00	2.23
42	119.064	10.912	674.	0.009111	0.06023	6.02	2.23
43	128.791	11.349	674.	0.009111	0.06026	6.03	2.23

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37		
	Boring No.: BB-RAR-101A		Tested By: sjr		Checked By: sjr		
	Sample No.: 1U		Test Date: 10/29/024		Depth: 32.65		
	Test No.: 68-425		Sample Type: wet		Elevation: --		
	Description:						
	Remarks: 24 hour load hold on load step 9 for C-alpha						

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 25
 Constant Load Step
 Stress: 1.01e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.747		674.	0.009111	0.06026	6.03	2.23
2	-0.743		674.	0.009111	0.06026	6.03	2.23
3	-0.739		697.	0.009329	0.06004	6.00	2.23
4	-0.734		717.	0.009526	0.05991	5.99	2.23
5	-0.730		735.	0.009701	0.05981	5.98	2.23
6	-0.726		746.	0.009811	0.05973	5.97	2.23
7	-0.721		760.	0.009942	0.05960	5.96	2.23
8	-0.717		771.	0.01005	0.05956	5.96	2.23
9	-0.712		780.	0.01014	0.05950	5.95	2.23
10	-0.708		789.	0.01023	0.05942	5.94	2.23
11	-0.704		798.	0.01031	0.05940	5.94	2.23
12	-0.699		808.	0.01040	0.05934	5.93	2.23
13	-0.695		817.	0.01049	0.05932	5.93	2.23
14	-0.690		821.	0.01053	0.05935	5.93	2.23
15	-0.686		828.	0.01060	0.05925	5.92	2.23
16	-0.668		850.	0.01082	0.05916	5.92	2.23
17	-0.664		855.	0.01086	0.05915	5.92	2.23
18	-0.580		909.	0.01139	0.05917	5.92	2.23
19	-0.496		936.	0.01165	0.05955	5.95	2.23
20	-0.413		952.	0.01180	0.05997	6.00	2.23
21	-0.246		968.	0.01195	0.06043	6.04	2.23
22	0.000	0.000	979.	0.01206	0.06075	6.08	2.23
23	0.005	0.072	979.	0.01206	0.06076	6.08	2.23
24	0.256	0.506	984.	0.01211	0.06098	6.10	2.22
25	0.754	0.868	988.	0.01215	0.06145	6.14	2.22
26	1.754	1.324	995.	0.01222	0.06263	6.26	2.22
27	3.757	1.938	998.	0.01224	0.06461	6.46	2.21
28	4.254	2.063	1.00e+03	0.01224	0.06484	6.48	2.21
29	9.254	3.042	1.00e+03	0.01225	0.06747	6.75	2.20
30	14.255	3.776	1.01e+03	0.01225	0.06980	6.98	2.19
31	19.253	4.388	1.01e+03	0.01225	0.07142	7.14	2.19
32	24.253	4.925	1.01e+03	0.01225	0.07260	7.26	2.18
33	29.255	5.409	1.01e+03	0.01225	0.07416	7.42	2.18
34	39.253	6.265	1.01e+03	0.01226	0.07544	7.54	2.17
35	49.253	7.018	1.01e+03	0.01226	0.07672	7.67	2.17
36	59.255	7.698	1.01e+03	0.01226	0.07790	7.79	2.17
37	69.256	8.322	1.01e+03	0.01226	0.07861	7.86	2.16
38	79.254	8.902	1.01e+03	0.01226	0.07953	7.95	2.16
39	89.254	9.447	1.01e+03	0.01226	0.08004	8.00	2.16
40	99.255	9.963	1.01e+03	0.01226	0.08081	8.08	2.16
41	109.255	10.453	1.01e+03	0.01226	0.08122	8.12	2.15
42	119.253	10.920	1.01e+03	0.01226	0.08139	8.14	2.15
43	129.256	11.369	1.01e+03	0.01226	0.08196	8.20	2.15
44	131.633	11.473	1.01e+03	0.01226	0.08196	8.20	2.15

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37	
	Boring No.: BB-RAR-101A		Tested By: sjr		Checked By: sjr	
	Sample No.: 1U		Test Date: 10/29/024		Depth: 32.65	
	Test No.: 68-425		Sample Type: wet		Elevation: --	
	Description:					
	Remarks: 24 hour load hold on load step 9 for C-alpha					


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 25

Constant Load Step

Stress: 1.52e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.579		1.01e+03	0.01226	0.08196	8.20	2.15
2	-0.575		1.01e+03	0.01226	0.08196	8.20	2.15
3	-0.570		1.05e+03	0.01233	0.08192	8.19	2.15
4	-0.566		1.09e+03	0.01240	0.08203	8.20	2.15
5	-0.561		1.12e+03	0.01245	0.08211	8.21	2.15
6	-0.557		1.14e+03	0.01249	0.08213	8.21	2.15
7	-0.553		1.16e+03	0.01253	0.08216	8.22	2.15
8	-0.548		1.18e+03	0.01256	0.08224	8.22	2.15
9	-0.544		1.20e+03	0.01259	0.08237	8.24	2.15
10	-0.539		1.21e+03	0.01262	0.08238	8.24	2.15
11	-0.535		1.23e+03	0.01264	0.08236	8.24	2.15
12	-0.531		1.24e+03	0.01266	0.08240	8.24	2.15
13	-0.526		1.25e+03	0.01268	0.08245	8.25	2.15
14	-0.522		1.26e+03	0.01270	0.08250	8.25	2.15
15	-0.517		1.27e+03	0.01272	0.08258	8.26	2.15
16	-0.500		1.30e+03	0.01277	0.08283	8.28	2.15
17	-0.496		1.31e+03	0.01279	0.08282	8.28	2.15
18	-0.412		1.39e+03	0.01293	0.08356	8.36	2.15
19	-0.329		1.43e+03	0.01299	0.08411	8.41	2.14
20	-0.245		1.44e+03	0.01302	0.08431	8.43	2.14
21	-0.078		1.46e+03	0.01306	0.08465	8.46	2.14
22	0.000	0.000	1.47e+03	0.01306	0.08486	8.49	2.14
23	0.173	0.416	1.48e+03	0.01308	0.08533	8.53	2.14
24	0.424	0.651	1.49e+03	0.01310	0.08613	8.61	2.14
25	0.921	0.960	1.49e+03	0.01310	0.08687	8.69	2.14
26	1.925	1.387	1.50e+03	0.01312	0.08817	8.82	2.13
27	3.925	1.981	1.50e+03	0.01312	0.09033	9.03	2.12
28	4.424	2.103	1.50e+03	0.01313	0.09073	9.07	2.12
29	9.424	3.070	1.51e+03	0.01314	0.09444	9.44	2.11
30	14.423	3.798	1.51e+03	0.01314	0.09694	9.69	2.10
31	19.422	4.407	1.51e+03	0.01314	0.09927	9.93	2.09
32	24.421	4.942	1.51e+03	0.01314	0.1010	10.1	2.09
33	29.422	5.424	1.51e+03	0.01314	0.1022	10.2	2.08
34	39.424	6.279	1.52e+03	0.01315	0.1047	10.5	2.07
35	49.422	7.030	1.52e+03	0.01315	0.1060	10.6	2.07
36	59.422	7.709	1.52e+03	0.01315	0.1074	10.7	2.06
37	69.423	8.332	1.52e+03	0.01315	0.1086	10.9	2.06
38	79.422	8.912	1.52e+03	0.01315	0.1097	11.0	2.06
39	89.425	9.456	1.52e+03	0.01315	0.1101	11.0	2.06
40	99.425	9.971	1.52e+03	0.01315	0.1109	11.1	2.05
41	109.422	10.461	1.52e+03	0.01315	0.1116	11.2	2.05
42	119.424	10.928	1.52e+03	0.01315	0.1125	11.2	2.05
43	129.425	11.377	1.52e+03	0.01315	0.1130	11.3	2.05
44	139.425	11.808	1.52e+03	0.01315	0.1134	11.3	2.04
45	143.781	11.991	1.52e+03	0.01315	0.1136	11.4	2.04

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 25

Constant Load Step

Stress: 2.28e+03 psf


	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.376		1.52e+03	0.01315	0.1136	11.4	2.04
2	-0.372		1.52e+03	0.01315	0.1136	11.4	2.04
3	-0.368		1.59e+03	0.01329	0.1135	11.4	2.04
4	-0.363		1.66e+03	0.01341	0.1135	11.4	2.04
5	-0.359		1.72e+03	0.01350	0.1136	11.4	2.04
6	-0.354		1.76e+03	0.01357	0.1136	11.4	2.04
7	-0.350		1.79e+03	0.01363	0.1137	11.4	2.04
8	-0.345		1.82e+03	0.01369	0.1138	11.4	2.04
9	-0.341		1.85e+03	0.01374	0.1139	11.4	2.04
10	-0.337		1.87e+03	0.01377	0.1140	11.4	2.04
11	-0.332		1.89e+03	0.01381	0.1140	11.4	2.04
12	-0.328		1.91e+03	0.01385	0.1140	11.4	2.04
13	-0.323		1.93e+03	0.01388	0.1141	11.4	2.04
14	-0.319		1.95e+03	0.01391	0.1142	11.4	2.04
15	-0.314		1.96e+03	0.01393	0.1142	11.4	2.04
16	-0.301		2.00e+03	0.01400	0.1144	11.4	2.04
17	-0.292		2.02e+03	0.01401	0.1145	11.5	2.04
18	-0.208		2.13e+03	0.01411	0.1152	11.5	2.04
19	-0.126		2.17e+03	0.01415	0.1155	11.6	2.04
20	-0.042		2.20e+03	0.01417	0.1158	11.6	2.04
21	0.000	0.000	2.20e+03	0.01417	0.1160	11.6	2.04
22	0.125	0.354	2.22e+03	0.01419	0.1166	11.7	2.03
23	0.376	0.613	2.23e+03	0.01420	0.1176	11.8	2.03
24	0.627	0.792	2.24e+03	0.01420	0.1180	11.8	2.03
25	1.125	1.061	2.24e+03	0.01421	0.1194	11.9	2.02
26	2.125	1.458	2.25e+03	0.01422	0.1206	12.1	2.02
27	4.125	2.031	2.26e+03	0.01422	0.1233	12.3	2.01
28	4.627	2.151	2.26e+03	0.01422	0.1238	12.4	2.01
29	9.627	3.103	2.27e+03	0.01423	0.1284	12.8	1.99
30	14.626	3.824	2.27e+03	0.01423	0.1313	13.1	1.98
31	19.627	4.430	2.27e+03	0.01423	0.1341	13.4	1.97
32	24.624	4.962	2.27e+03	0.01423	0.1360	13.6	1.97
33	29.627	5.443	2.27e+03	0.01423	0.1374	13.7	1.96
34	39.624	6.295	2.28e+03	0.01423	0.1405	14.0	1.95
35	49.625	7.044	2.28e+03	0.01423	0.1420	14.2	1.95
36	59.627	7.722	2.28e+03	0.01423	0.1436	14.4	1.94
37	69.624	8.344	2.28e+03	0.01423	0.1447	14.5	1.94
38	79.625	8.923	2.28e+03	0.01424	0.1459	14.6	1.93
39	89.626	9.467	2.28e+03	0.01423	0.1468	14.7	1.93
40	99.625	9.981	2.28e+03	0.01423	0.1477	14.8	1.93
41	109.627	10.470	2.28e+03	0.01423	0.1483	14.8	1.92
42	119.625	10.937	2.28e+03	0.01423	0.1492	14.9	1.92
43	129.624	11.385	2.28e+03	0.01424	0.1498	15.0	1.92
44	139.627	11.816	2.28e+03	0.01423	0.1503	15.0	1.92
45	140.835	11.867	2.28e+03	0.01424	0.1503	15.0	1.92

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 25
Constant Load Step
Stress: 3.42e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.244		2.28e+03	0.01424	0.1504	15.0	1.92
2	-0.239		2.28e+03	0.01424	0.1504	15.0	1.92
3	-0.235		2.43e+03	0.01437	0.1502	15.0	1.92
4	-0.231		2.56e+03	0.01448	0.1504	15.0	1.92
5	-0.226		2.65e+03	0.01456	0.1505	15.0	1.92
6	-0.222		2.73e+03	0.01462	0.1506	15.1	1.92
7	-0.217		2.79e+03	0.01468	0.1508	15.1	1.92
8	-0.213		2.84e+03	0.01472	0.1509	15.1	1.92
9	-0.209		2.88e+03	0.01475	0.1510	15.1	1.92
10	-0.204		2.92e+03	0.01479	0.1511	15.1	1.91
11	-0.200		2.95e+03	0.01481	0.1513	15.1	1.91
12	-0.195		2.98e+03	0.01484	0.1514	15.1	1.91
13	-0.191		3.00e+03	0.01486	0.1515	15.1	1.91
14	-0.187		3.02e+03	0.01488	0.1515	15.1	1.91
15	-0.182		3.05e+03	0.01490	0.1519	15.2	1.91
16	-0.164		3.11e+03	0.01496	0.1521	15.2	1.91
17	-0.160		3.13e+03	0.01497	0.1521	15.2	1.91
18	-0.077		3.26e+03	0.01509	0.1525	15.3	1.91
19	0.000	0.000	3.30e+03	0.01512	0.1530	15.3	1.91
20	0.007	0.085	3.31e+03	0.01512	0.1530	15.3	1.91
21	0.091	0.301	3.33e+03	0.01515	0.1537	15.4	1.91
22	0.258	0.508	3.35e+03	0.01516	0.1546	15.5	1.90
23	0.509	0.714	3.37e+03	0.01518	0.1558	15.6	1.90
24	0.760	0.872	3.37e+03	0.01518	0.1563	15.6	1.90
25	1.257	1.121	3.38e+03	0.01519	0.1574	15.7	1.89
26	2.257	1.502	3.39e+03	0.01519	0.1595	15.9	1.89
27	4.258	2.063	3.39e+03	0.01520	0.1626	16.3	1.88
28	4.760	2.182	3.40e+03	0.01520	0.1629	16.3	1.87
29	9.757	3.124	3.40e+03	0.01521	0.1683	16.8	1.86
30	14.757	3.842	3.40e+03	0.01521	0.1719	17.2	1.84
31	19.759	4.445	3.41e+03	0.01521	0.1748	17.5	1.83
32	24.759	4.976	3.41e+03	0.01521	0.1772	17.7	1.83
33	29.760	5.455	3.41e+03	0.01521	0.1791	17.9	1.82
34	39.758	6.305	3.41e+03	0.01521	0.1818	18.2	1.81
35	49.759	7.054	3.41e+03	0.01522	0.1842	18.4	1.80
36	59.757	7.730	3.41e+03	0.01522	0.1864	18.6	1.79
37	69.760	8.352	3.41e+03	0.01522	0.1876	18.8	1.79
38	79.760	8.931	3.41e+03	0.01522	0.1886	18.9	1.79
39	89.757	9.474	3.41e+03	0.01522	0.1905	19.1	1.78
40	99.759	9.988	3.41e+03	0.01522	0.1912	19.1	1.78
41	109.758	10.477	3.41e+03	0.01522	0.1919	19.2	1.77
42	119.760	10.944	3.42e+03	0.01522	0.1927	19.3	1.77
43	129.759	11.391	3.42e+03	0.01522	0.1932	19.3	1.77
44	138.573	11.772	3.42e+03	0.01522	0.1938	19.4	1.77

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 25

Constant Load Step

Stress: 5.13e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.158		3.42e+03	0.01522	0.1938	19.4	1.77
2	-0.153		3.42e+03	0.01522	0.1938	19.4	1.77
3	-0.149		3.72e+03	0.01548	0.1938	19.4	1.77
4	-0.144		3.97e+03	0.01570	0.1939	19.4	1.77
5	-0.140		4.13e+03	0.01582	0.1940	19.4	1.77
6	-0.136		4.25e+03	0.01591	0.1943	19.4	1.77
7	-0.131		4.35e+03	0.01599	0.1944	19.4	1.77
8	-0.127		4.43e+03	0.01605	0.1945	19.4	1.77
9	-0.122		4.49e+03	0.01609	0.1946	19.5	1.77
10	-0.118		4.54e+03	0.01614	0.1947	19.5	1.77
11	-0.114		4.59e+03	0.01617	0.1947	19.5	1.77
12	-0.110		4.63e+03	0.01620	0.1948	19.5	1.76
13	-0.105		4.67e+03	0.01623	0.1949	19.5	1.76
14	-0.101		4.70e+03	0.01625	0.1949	19.5	1.76
15	-0.096		4.73e+03	0.01627	0.1951	19.5	1.76
16	-0.079		4.81e+03	0.01634	0.1954	19.5	1.76
17	-0.070		4.84e+03	0.01636	0.1954	19.5	1.76
18	0.000	0.000	4.96e+03	0.01645	0.1967	19.7	1.76
19	0.013	0.114	4.98e+03	0.01646	0.1969	19.7	1.76
20	0.096	0.310	5.01e+03	0.01649	0.1976	19.8	1.76
21	0.180	0.424	5.04e+03	0.01651	0.1980	19.8	1.75
22	0.343	0.585	5.05e+03	0.01652	0.1985	19.9	1.75
23	0.593	0.770	5.07e+03	0.01654	0.1994	19.9	1.75
24	0.844	0.919	5.08e+03	0.01654	0.2001	20.0	1.75
25	1.346	1.160	5.08e+03	0.01655	0.2017	20.2	1.74
26	2.344	1.531	5.09e+03	0.01655	0.2040	20.4	1.73
27	4.346	2.085	5.10e+03	0.01656	0.2076	20.8	1.72
28	4.844	2.201	5.10e+03	0.01656	0.2080	20.8	1.72
29	9.843	3.137	5.11e+03	0.01657	0.2139	21.4	1.70
30	14.843	3.853	5.11e+03	0.01657	0.2180	21.8	1.68
31	19.845	4.455	5.12e+03	0.01657	0.2211	22.1	1.67
32	24.843	4.984	5.12e+03	0.01657	0.2239	22.4	1.66
33	29.844	5.463	5.12e+03	0.01657	0.2260	22.6	1.66
34	39.844	6.312	5.12e+03	0.01657	0.2293	22.9	1.65
35	49.845	7.060	5.12e+03	0.01657	0.2321	23.2	1.64
36	59.845	7.736	5.12e+03	0.01657	0.2344	23.4	1.63
37	69.846	8.357	5.12e+03	0.01658	0.2358	23.6	1.62
38	79.844	8.936	5.12e+03	0.01658	0.2370	23.7	1.62
39	89.846	9.479	5.12e+03	0.01658	0.2385	23.9	1.61
40	99.847	9.992	5.13e+03	0.01658	0.2397	24.0	1.61
41	109.843	10.481	5.13e+03	0.01658	0.2404	24.0	1.61
42	119.845	10.947	5.13e+03	0.01658	0.2412	24.1	1.61
43	129.845	11.395	5.13e+03	0.01658	0.2419	24.2	1.60
44	139.844	11.826	5.12e+03	0.01658	0.2426	24.3	1.60
45	149.355	12.221	5.12e+03	0.01658	0.2431	24.3	1.60

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 25

Constant Load Step

Stress: 7.69e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.101		5.12e+03	0.01658	0.2431	24.3	1.60
2	-0.097		5.12e+03	0.01658	0.2431	24.3	1.60
3	-0.092		5.69e+03	0.01701	0.2430	24.3	1.60
4	-0.088		6.15e+03	0.01735	0.2432	24.3	1.60
5	-0.084		6.43e+03	0.01757	0.2433	24.3	1.60
6	-0.079		6.62e+03	0.01772	0.2434	24.3	1.60
7	-0.075		6.77e+03	0.01783	0.2436	24.4	1.60
8	-0.070		6.89e+03	0.01792	0.2438	24.4	1.60
9	-0.066		6.98e+03	0.01799	0.2440	24.4	1.60
10	-0.062		7.06e+03	0.01805	0.2441	24.4	1.60
11	-0.057		7.12e+03	0.01810	0.2442	24.4	1.60
12	-0.053		7.17e+03	0.01814	0.2443	24.4	1.59
13	-0.049		7.22e+03	0.01817	0.2445	24.4	1.59
14	-0.044		7.26e+03	0.01820	0.2446	24.5	1.59
15	-0.040		7.29e+03	0.01823	0.2446	24.5	1.59
16	-0.022		7.39e+03	0.01830	0.2448	24.5	1.59
17	-0.018		7.40e+03	0.01831	0.2449	24.5	1.59
18	0.000	0.000	7.43e+03	0.01833	0.2450	24.5	1.59
19	0.066	0.257	7.54e+03	0.01842	0.2456	24.6	1.59
20	0.150	0.387	7.58e+03	0.01844	0.2463	24.6	1.59
21	0.233	0.483	7.60e+03	0.01846	0.2467	24.7	1.59
22	0.400	0.633	7.62e+03	0.01847	0.2478	24.8	1.58
23	0.651	0.807	7.63e+03	0.01848	0.2487	24.9	1.58
24	0.901	0.949	7.64e+03	0.01849	0.2494	24.9	1.58
25	1.403	1.185	7.64e+03	0.01849	0.2510	25.1	1.57
26	2.401	1.550	7.65e+03	0.01850	0.2533	25.3	1.56
27	4.403	2.098	7.66e+03	0.01851	0.2566	25.7	1.55
28	4.901	2.214	7.66e+03	0.01851	0.2577	25.8	1.55
29	9.903	3.147	7.67e+03	0.01852	0.2635	26.4	1.53
30	14.900	3.860	7.67e+03	0.01852	0.2679	26.8	1.51
31	19.901	4.461	7.68e+03	0.01852	0.2714	27.1	1.50
32	24.900	4.990	7.68e+03	0.01852	0.2740	27.4	1.49
33	29.903	5.468	7.68e+03	0.01852	0.2762	27.6	1.49
34	39.903	6.317	7.68e+03	0.01852	0.2802	28.0	1.47
35	49.899	7.064	7.69e+03	0.01853	0.2825	28.2	1.46
36	59.900	7.739	7.68e+03	0.01853	0.2849	28.5	1.46
37	69.901	8.361	7.69e+03	0.01853	0.2864	28.6	1.45
38	79.902	8.939	7.69e+03	0.01853	0.2878	28.8	1.45
39	89.900	9.482	7.69e+03	0.01853	0.2894	28.9	1.44
40	99.900	9.995	7.69e+03	0.01853	0.2903	29.0	1.44
41	109.902	10.483	7.69e+03	0.01853	0.2912	29.1	1.43
42	119.902	10.950	7.69e+03	0.01853	0.2920	29.2	1.43
43	129.900	11.397	7.69e+03	0.01853	0.2926	29.3	1.43
44	139.900	11.828	7.69e+03	0.01853	0.2932	29.3	1.43
45	143.449	11.977	7.69e+03	0.01853	0.2935	29.3	1.43

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf


	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.058		7.69e+03	0.01853	0.2935	29.3	1.43
2	-0.054		7.69e+03	0.01853	0.2935	29.3	1.43
3	-0.050		8.69e+03	0.01900	0.2936	29.4	1.43
4	-0.045		9.51e+03	0.01929	0.2941	29.4	1.42
5	-0.041		9.99e+03	0.01945	0.2944	29.4	1.42
6	-0.036		1.03e+04	0.01956	0.2947	29.5	1.42
7	-0.032		1.05e+04	0.01964	0.2948	29.5	1.42
8	-0.027		1.07e+04	0.01970	0.2950	29.5	1.42
9	-0.023		1.08e+04	0.01974	0.2952	29.5	1.42
10	-0.019		1.09e+04	0.01977	0.2955	29.5	1.42
11	-0.014		1.10e+04	0.01980	0.2957	29.6	1.42
12	-0.010		1.11e+04	0.01982	0.2958	29.6	1.42
13	-0.006		1.11e+04	0.01984	0.2959	29.6	1.42
14	-0.001		1.11e+04	0.01985	0.2960	29.6	1.42
15	0.000	0.000	1.11e+04	0.01986	0.2960	29.6	1.42
16	0.003	0.057	1.12e+04	0.01986	0.2961	29.6	1.42
17	0.021	0.145	1.13e+04	0.01990	0.2964	29.6	1.42
18	0.025	0.159	1.13e+04	0.01990	0.2964	29.6	1.42
19	0.109	0.331	1.14e+04	0.01994	0.2972	29.7	1.41
20	0.193	0.439	1.14e+04	0.01995	0.2976	29.8	1.41
21	0.277	0.526	1.14e+04	0.01996	0.2981	29.8	1.41
22	0.444	0.666	1.15e+04	0.01996	0.2991	29.9	1.41
23	0.695	0.834	1.15e+04	0.01997	0.3001	30.0	1.40
24	0.945	0.972	1.15e+04	0.01997	0.3009	30.1	1.40
25	1.446	1.202	1.15e+04	0.01997	0.3024	30.2	1.40
26	2.442	1.563	1.15e+04	0.01997	0.3049	30.5	1.39
27	4.444	2.108	1.15e+04	0.01998	0.3089	30.9	1.37
28	4.945	2.224	1.15e+04	0.01998	0.3098	31.0	1.37
29	9.944	3.153	1.15e+04	0.01998	0.3160	31.6	1.35
30	14.945	3.866	1.15e+04	0.01998	0.3203	32.0	1.33
31	19.943	4.466	1.15e+04	0.01998	0.3240	32.4	1.32
32	24.944	4.994	1.15e+04	0.01998	0.3268	32.7	1.31
33	29.946	5.472	1.15e+04	0.01999	0.3293	32.9	1.30
34	39.946	6.320	1.15e+04	0.01999	0.3331	33.3	1.29
35	49.944	7.067	1.15e+04	0.01999	0.3357	33.6	1.28
36	59.944	7.742	1.15e+04	0.01999	0.3377	33.8	1.27
37	69.944	8.363	1.15e+04	0.01999	0.3393	33.9	1.27
38	79.946	8.941	1.15e+04	0.01999	0.3411	34.1	1.26
39	89.946	9.484	1.15e+04	0.01999	0.3421	34.2	1.26
40	99.944	9.997	1.15e+04	0.01999	0.3435	34.4	1.25
41	109.946	10.486	1.15e+04	0.01999	0.3445	34.5	1.25
42	119.946	10.952	1.15e+04	0.01999	0.3451	34.5	1.25
43	129.942	11.399	1.15e+04	0.01999	0.3458	34.6	1.25
44	139.944	11.830	1.15e+04	0.01999	0.3463	34.6	1.24
45	149.945	12.245	1.15e+04	0.01999	0.3474	34.7	1.24
46	159.946	12.647	1.15e+04	0.01999	0.3481	34.8	1.24
47	169.944	13.036	1.15e+04	0.01999	0.3487	34.9	1.24
48	179.942	13.414	1.15e+04	0.01999	0.3491	34.9	1.23
49	189.942	13.782	1.15e+04	0.01999	0.3496	35.0	1.23
50	199.945	14.140	1.15e+04	0.01999	0.3500	35.0	1.23

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25
 Constant Load Step
 Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
51	209.945	14.489	1.15e+04	0.01999	0.3504	35.0	1.23
52	219.944	14.830	1.15e+04	0.01999	0.3507	35.1	1.23
53	229.942	15.164	1.15e+04	0.01999	0.3512	35.1	1.23
54	239.944	15.490	1.15e+04	0.01999	0.3514	35.1	1.23
55	249.945	15.810	1.15e+04	0.01999	0.3516	35.2	1.23
56	259.944	16.123	1.15e+04	0.01999	0.3520	35.2	1.23
57	269.945	16.430	1.15e+04	0.01999	0.3523	35.2	1.22
58	279.943	16.731	1.15e+04	0.01999	0.3526	35.3	1.22
59	289.942	17.028	1.15e+04	0.01999	0.3531	35.3	1.22
60	299.943	17.319	1.15e+04	0.01999	0.3533	35.3	1.22
61	309.942	17.605	1.15e+04	0.01999	0.3537	35.4	1.22
62	319.943	17.887	1.15e+04	0.01999	0.3542	35.4	1.22
63	329.944	18.164	1.15e+04	0.01999	0.3547	35.5	1.22
64	339.942	18.438	1.15e+04	0.01999	0.3548	35.5	1.22
65	349.943	18.707	1.15e+04	0.01999	0.3549	35.5	1.22
66	359.943	18.972	1.15e+04	0.01999	0.3551	35.5	1.21
67	369.942	19.234	1.15e+04	0.01999	0.3552	35.5	1.21
68	379.943	19.492	1.15e+04	0.01999	0.3553	35.5	1.21
69	389.944	19.747	1.15e+04	0.01999	0.3554	35.5	1.21
70	399.946	19.999	1.15e+04	0.01999	0.3555	35.6	1.21
71	409.945	20.247	1.15e+04	0.01999	0.3557	35.6	1.21
72	419.943	20.493	1.15e+04	0.01999	0.3559	35.6	1.21
73	429.942	20.735	1.15e+04	0.01999	0.3562	35.6	1.21
74	439.945	20.975	1.15e+04	0.01999	0.3563	35.6	1.21
75	449.945	21.212	1.15e+04	0.01999	0.3565	35.7	1.21
76	459.943	21.446	1.15e+04	0.01999	0.3566	35.7	1.21
77	469.943	21.678	1.15e+04	0.01999	0.3567	35.7	1.21
78	479.943	21.908	1.15e+04	0.01999	0.3568	35.7	1.21
79	489.944	22.135	1.15e+04	0.01999	0.3569	35.7	1.21
80	499.944	22.359	1.15e+04	0.01999	0.3571	35.7	1.21
81	509.945	22.582	1.15e+04	0.01999	0.3574	35.7	1.21
82	519.943	22.802	1.15e+04	0.01999	0.3576	35.8	1.21
83	529.944	23.021	1.15e+04	0.01999	0.3581	35.8	1.20
84	539.942	23.237	1.15e+04	0.01999	0.3585	35.9	1.20
85	549.942	23.451	1.15e+04	0.01999	0.3587	35.9	1.20
86	559.944	23.663	1.15e+04	0.01999	0.3589	35.9	1.20
87	569.945	23.874	1.15e+04	0.01999	0.3591	35.9	1.20
88	579.943	24.082	1.15e+04	0.01999	0.3592	35.9	1.20
89	589.942	24.289	1.15e+04	0.01999	0.3593	35.9	1.20
90	599.944	24.494	1.15e+04	0.01999	0.3595	36.0	1.20
91	609.942	24.697	1.15e+04	0.01999	0.3596	36.0	1.20
92	619.944	24.899	1.15e+04	0.01999	0.3597	36.0	1.20
93	629.945	25.099	1.15e+04	0.01999	0.3597	36.0	1.20
94	639.944	25.297	1.15e+04	0.01999	0.3598	36.0	1.20
95	649.942	25.494	1.15e+04	0.01999	0.3600	36.0	1.20
96	659.945	25.689	1.15e+04	0.01999	0.3601	36.0	1.20
97	669.943	25.883	1.15e+04	0.01999	0.3602	36.0	1.20
98	679.945	26.076	1.15e+04	0.01999	0.3603	36.0	1.20
99	689.942	26.267	1.15e+04	0.01999	0.3604	36.0	1.20
100	699.944	26.456	1.15e+04	0.01999	0.3605	36.0	1.20

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
101	709.942	26.645	1.15e+04	0.01999	0.3605	36.1	1.20
102	719.944	26.832	1.15e+04	0.01999	0.3608	36.1	1.19
103	729.942	27.017	1.15e+04	0.01999	0.3608	36.1	1.19
104	739.945	27.202	1.15e+04	0.01999	0.3609	36.1	1.19
105	749.942	27.385	1.15e+04	0.01999	0.3609	36.1	1.19
106	759.944	27.567	1.15e+04	0.01999	0.3610	36.1	1.19
107	769.943	27.748	1.15e+04	0.01999	0.3611	36.1	1.19
108	779.943	27.927	1.15e+04	0.01999	0.3612	36.1	1.19
109	789.945	28.106	1.15e+04	0.01999	0.3612	36.1	1.19
110	799.944	28.283	1.15e+04	0.01999	0.3612	36.1	1.19
111	809.945	28.460	1.15e+04	0.01999	0.3612	36.1	1.19
112	819.942	28.635	1.15e+04	0.01999	0.3612	36.1	1.19
113	829.944	28.809	1.15e+04	0.01999	0.3613	36.1	1.19
114	839.945	28.982	1.15e+04	0.01999	0.3614	36.1	1.19
115	849.944	29.154	1.15e+04	0.01999	0.3614	36.1	1.19
116	859.945	29.325	1.15e+04	0.01999	0.3615	36.2	1.19
117	869.943	29.495	1.15e+04	0.01999	0.3616	36.2	1.19
118	879.946	29.664	1.15e+04	0.01999	0.3616	36.2	1.19
119	889.943	29.832	1.15e+04	0.01999	0.3617	36.2	1.19
120	899.944	29.999	1.15e+04	0.01999	0.3618	36.2	1.19
121	909.942	30.165	1.15e+04	0.01999	0.3618	36.2	1.19
122	919.944	30.331	1.15e+04	0.01999	0.3618	36.2	1.19
123	929.946	30.495	1.15e+04	0.01999	0.3619	36.2	1.19
124	939.943	30.658	1.15e+04	0.01999	0.3620	36.2	1.19
125	949.943	30.821	1.15e+04	0.01999	0.3620	36.2	1.19
126	959.946	30.983	1.15e+04	0.01999	0.3622	36.2	1.19
127	969.942	31.144	1.15e+04	0.01999	0.3622	36.2	1.19
128	979.942	31.304	1.15e+04	0.01999	0.3622	36.2	1.19
129	989.945	31.463	1.15e+04	0.01999	0.3623	36.2	1.19
130	999.942	31.622	1.15e+04	0.01999	0.3623	36.2	1.19
131	1009.945	31.780	1.15e+04	0.01999	0.3623	36.2	1.19
132	1019.944	31.937	1.15e+04	0.01999	0.3623	36.2	1.19
133	1029.945	32.093	1.15e+04	0.01999	0.3623	36.2	1.19
134	1039.942	32.248	1.15e+04	0.01999	0.3624	36.2	1.19
135	1049.945	32.403	1.15e+04	0.01999	0.3624	36.2	1.19
136	1059.945	32.557	1.15e+04	0.01999	0.3625	36.3	1.19
137	1069.945	32.710	1.15e+04	0.01999	0.3625	36.3	1.19
138	1079.942	32.862	1.15e+04	0.01999	0.3626	36.3	1.19
139	1089.944	33.014	1.15e+04	0.01999	0.3626	36.3	1.19
140	1099.945	33.165	1.15e+04	0.01999	0.3626	36.3	1.19
141	1109.942	33.316	1.15e+04	0.01999	0.3627	36.3	1.19
142	1119.942	33.466	1.15e+04	0.01999	0.3627	36.3	1.19
143	1129.945	33.615	1.15e+04	0.01999	0.3628	36.3	1.19
144	1139.944	33.763	1.15e+04	0.01999	0.3627	36.3	1.19
145	1149.946	33.911	1.15e+04	0.01999	0.3628	36.3	1.19
146	1159.944	34.058	1.15e+04	0.01999	0.3628	36.3	1.19
147	1169.944	34.204	1.15e+04	0.01999	0.3629	36.3	1.19
148	1179.944	34.350	1.15e+04	0.01999	0.3629	36.3	1.19
149	1189.945	34.496	1.15e+04	0.01999	0.3630	36.3	1.19
150	1199.943	34.640	1.15e+04	0.01999	0.3630	36.3	1.19

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 25

Constant Load Step

Stress: 5.77e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.035		1.15e+04	0.01999	0.3644	36.4	1.18
2	-0.030		1.15e+04	0.01999	0.3644	36.4	1.18
3	-0.026		1.11e+04	0.01986	0.3645	36.5	1.18
4	-0.021		8.87e+03	0.01908	0.3640	36.4	1.18
5	-0.017		7.74e+03	0.01866	0.3640	36.4	1.18
6	-0.013		7.12e+03	0.01838	0.3641	36.4	1.18
7	-0.008		6.75e+03	0.01822	0.3640	36.4	1.18
8	-0.004		6.50e+03	0.01811	0.3640	36.4	1.18
9	0.000	0.000	6.34e+03	0.01804	0.3640	36.4	1.18
10	0.000	0.021	6.33e+03	0.01803	0.3640	36.4	1.18
11	0.005	0.070	6.21e+03	0.01798	0.3640	36.4	1.18
12	0.009	0.096	6.12e+03	0.01794	0.3639	36.4	1.18
13	0.014	0.117	6.06e+03	0.01791	0.3639	36.4	1.18
14	0.018	0.135	6.01e+03	0.01789	0.3639	36.4	1.18
15	0.023	0.150	5.98e+03	0.01787	0.3639	36.4	1.18
16	0.027	0.164	5.95e+03	0.01786	0.3638	36.4	1.18
17	0.045	0.211	5.89e+03	0.01783	0.3637	36.4	1.18
18	0.049	0.221	5.88e+03	0.01783	0.3637	36.4	1.18
19	0.133	0.364	5.82e+03	0.01780	0.3634	36.3	1.19
20	0.216	0.465	5.80e+03	0.01780	0.3631	36.3	1.19
21	0.300	0.547	5.80e+03	0.01779	0.3630	36.3	1.19
22	0.466	0.683	5.79e+03	0.01779	0.3629	36.3	1.19
23	0.717	0.847	5.78e+03	0.01779	0.3626	36.3	1.19
24	0.968	0.984	5.78e+03	0.01779	0.3623	36.2	1.19
25	1.466	1.211	5.78e+03	0.01778	0.3618	36.2	1.19
26	2.465	1.570	5.77e+03	0.01778	0.3613	36.1	1.19
27	4.469	2.114	5.77e+03	0.01778	0.3606	36.1	1.20
28	4.967	2.229	5.77e+03	0.01778	0.3604	36.0	1.20
29	9.967	3.157	5.77e+03	0.01778	0.3595	36.0	1.20
30	14.969	3.869	5.77e+03	0.01778	0.3592	35.9	1.20
31	19.966	4.468	5.77e+03	0.01778	0.3588	35.9	1.20
32	24.969	4.997	5.77e+03	0.01778	0.3586	35.9	1.20
33	29.970	5.474	5.77e+03	0.01778	0.3585	35.9	1.20
34	39.968	6.322	5.77e+03	0.01778	0.3584	35.8	1.20
35	49.966	7.069	5.77e+03	0.01778	0.3584	35.8	1.20
36	59.967	7.744	5.77e+03	0.01778	0.3584	35.8	1.20
37	69.966	8.365	5.77e+03	0.01778	0.3583	35.8	1.20
38	79.967	8.942	5.77e+03	0.01778	0.3582	35.8	1.20
39	89.968	9.485	5.77e+03	0.01778	0.3582	35.8	1.20
40	99.965	9.998	5.76e+03	0.01778	0.3582	35.8	1.20
41	109.970	10.487	5.77e+03	0.01778	0.3581	35.8	1.20
42	119.966	10.953	5.76e+03	0.01777	0.3580	35.8	1.20
43	120.042	10.956	5.77e+03	0.01778	0.3580	35.8	1.20

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37	
	Boring No.: BB-RAR-101A		Tested By: sjr		Checked By: sjr	
	Sample No.: 1U		Test Date: 10/29/024		Depth: 32.65	
	Test No.: 68-425		Sample Type: wet		Elevation: --	
	Description:					
	Remarks: 24 hour load hold on load step 9 for C-alpha					


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.040		5.77e+03	0.01778	0.3580	35.8	1.20
2	-0.035		5.77e+03	0.01778	0.3580	35.8	1.20
3	-0.031		5.30e+03	0.01757	0.3581	35.8	1.20
4	-0.027		4.38e+03	0.01716	0.3580	35.8	1.20
5	-0.022		3.94e+03	0.01692	0.3580	35.8	1.20
6	-0.018		3.64e+03	0.01660	0.3583	35.8	1.20
7	-0.014		3.46e+03	0.01640	0.3584	35.8	1.20
8	-0.009		3.33e+03	0.01627	0.3584	35.8	1.20
9	-0.005		3.25e+03	0.01617	0.3585	35.8	1.20
10	-0.001		3.18e+03	0.01610	0.3585	35.8	1.20
11	0.000	0.000	3.17e+03	0.01609	0.3585	35.9	1.20
12	0.004	0.060	3.13e+03	0.01605	0.3585	35.9	1.20
13	0.008	0.090	3.09e+03	0.01601	0.3585	35.8	1.20
14	0.012	0.112	3.07e+03	0.01598	0.3585	35.8	1.20
15	0.017	0.130	3.05e+03	0.01596	0.3584	35.8	1.20
16	0.021	0.146	3.03e+03	0.01594	0.3584	35.8	1.20
17	0.039	0.198	2.99e+03	0.01590	0.3584	35.8	1.20
18	0.044	0.209	2.99e+03	0.01589	0.3584	35.8	1.20
19	0.127	0.356	2.94e+03	0.01584	0.3580	35.8	1.20
20	0.210	0.459	2.92e+03	0.01582	0.3577	35.8	1.21
21	0.294	0.542	2.92e+03	0.01581	0.3572	35.7	1.21
22	0.462	0.679	2.91e+03	0.01581	0.3569	35.7	1.21
23	0.713	0.844	2.90e+03	0.01580	0.3564	35.6	1.21
24	0.964	0.982	2.90e+03	0.01580	0.3561	35.6	1.21
25	1.462	1.209	2.90e+03	0.01579	0.3554	35.5	1.21
26	2.462	1.569	2.90e+03	0.01579	0.3546	35.5	1.22
27	4.462	2.112	2.89e+03	0.01579	0.3535	35.4	1.22
28	4.961	2.227	2.89e+03	0.01578	0.3533	35.3	1.22
29	9.962	3.156	2.89e+03	0.01578	0.3512	35.1	1.23
30	14.963	3.868	2.89e+03	0.01578	0.3498	35.0	1.23
31	19.961	4.468	2.88e+03	0.01578	0.3492	34.9	1.23
32	24.964	4.996	2.88e+03	0.01578	0.3487	34.9	1.24
33	29.961	5.474	2.88e+03	0.01578	0.3482	34.8	1.24
34	39.963	6.322	2.88e+03	0.01578	0.3479	34.8	1.24
35	49.963	7.068	2.88e+03	0.01578	0.3472	34.7	1.24
36	59.963	7.744	2.88e+03	0.01578	0.3469	34.7	1.24
37	69.963	8.364	2.88e+03	0.01578	0.3465	34.6	1.24
38	79.964	8.942	2.88e+03	0.01578	0.3460	34.6	1.25
39	89.964	9.485	2.88e+03	0.01578	0.3458	34.6	1.25
40	99.962	9.998	2.88e+03	0.01578	0.3456	34.6	1.25
41	109.963	10.486	2.88e+03	0.01578	0.3455	34.6	1.25
42	119.962	10.953	2.88e+03	0.01578	0.3453	34.5	1.25
43	120.024	10.956	2.88e+03	0.01578	0.3453	34.5	1.25

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 25

Constant Load Step

Stress: 1.44e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.050		2.88e+03	0.01578	0.3453	34.5	1.25
2	-0.046		2.88e+03	0.01578	0.3453	34.5	1.25
3	-0.042		2.47e+03	0.01534	0.3456	34.6	1.25
4	-0.037		2.17e+03	0.01501	0.3458	34.6	1.25
5	-0.033		1.98e+03	0.01480	0.3459	34.6	1.25
6	-0.028		1.86e+03	0.01463	0.3460	34.6	1.25
7	-0.024		1.78e+03	0.01452	0.3461	34.6	1.25
8	-0.020		1.72e+03	0.01444	0.3462	34.6	1.25
9	-0.015		1.67e+03	0.01438	0.3462	34.6	1.25
10	-0.011		1.64e+03	0.01433	0.3461	34.6	1.25
11	-0.007		1.62e+03	0.01430	0.3462	34.6	1.25
12	-0.002		1.59e+03	0.01427	0.3461	34.6	1.25
13	0.000	0.000	1.59e+03	0.01426	0.3461	34.6	1.25
14	0.002	0.048	1.58e+03	0.01425	0.3460	34.6	1.25
15	0.006	0.081	1.56e+03	0.01423	0.3460	34.6	1.25
16	0.011	0.104	1.55e+03	0.01422	0.3459	34.6	1.25
17	0.028	0.167	1.52e+03	0.01418	0.3460	34.6	1.25
18	0.037	0.192	1.51e+03	0.01416	0.3459	34.6	1.25
19	0.120	0.347	1.48e+03	0.01412	0.3454	34.5	1.25
20	0.204	0.452	1.47e+03	0.01411	0.3450	34.5	1.25
21	0.283	0.532	1.47e+03	0.01410	0.3447	34.5	1.25
22	0.451	0.671	1.46e+03	0.01410	0.3443	34.4	1.25
23	0.702	0.838	1.46e+03	0.01409	0.3439	34.4	1.25
24	0.953	0.976	1.46e+03	0.01409	0.3437	34.4	1.25
25	1.451	1.204	1.46e+03	0.01409	0.3434	34.3	1.25
26	2.451	1.566	1.45e+03	0.01408	0.3430	34.3	1.26
27	4.450	2.110	1.45e+03	0.01408	0.3420	34.2	1.26
28	4.953	2.226	1.45e+03	0.01408	0.3415	34.1	1.26
29	9.952	3.155	1.45e+03	0.01407	0.3392	33.9	1.27
30	14.953	3.867	1.45e+03	0.01407	0.3382	33.8	1.27
31	19.952	4.467	1.45e+03	0.01407	0.3366	33.7	1.28
32	24.952	4.995	1.44e+03	0.01407	0.3359	33.6	1.28
33	29.950	5.473	1.44e+03	0.01407	0.3351	33.5	1.28
34	39.950	6.321	1.44e+03	0.01407	0.3335	33.4	1.29
35	49.950	7.068	1.44e+03	0.01407	0.3324	33.2	1.29
36	59.950	7.743	1.44e+03	0.01407	0.3317	33.2	1.29
37	69.953	8.364	1.44e+03	0.01407	0.3308	33.1	1.30
38	79.952	8.942	1.44e+03	0.01407	0.3303	33.0	1.30
39	89.954	9.484	1.44e+03	0.01407	0.3298	33.0	1.30
40	99.954	9.998	1.44e+03	0.01407	0.3294	32.9	1.30
41	109.950	10.486	1.44e+03	0.01407	0.3292	32.9	1.30
42	119.952	10.952	1.44e+03	0.01407	0.3290	32.9	1.30
43	129.954	11.400	1.44e+03	0.01407	0.3285	32.9	1.31
44	139.952	11.830	1.44e+03	0.01407	0.3279	32.8	1.31
45	147.215	12.133	1.44e+03	0.01407	0.3278	32.8	1.31

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 25

Constant Load Step

Stress: 721 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.074		1.44e+03	0.01407	0.3278	32.8	1.31
2	-0.070		1.44e+03	0.01407	0.3278	32.8	1.31
3	-0.066		1.28e+03	0.01385	0.3280	32.8	1.31
4	-0.061		1.14e+03	0.01367	0.3279	32.8	1.31
5	-0.057		1.06e+03	0.01355	0.3279	32.8	1.31
6	-0.052		1.00e+03	0.01347	0.3279	32.8	1.31
7	-0.048		957.	0.01334	0.3280	32.8	1.31
8	-0.043		918.	0.01323	0.3279	32.8	1.31
9	-0.039		893.	0.01315	0.3280	32.8	1.31
10	-0.035		871.	0.01309	0.3280	32.8	1.31
11	-0.030		855.	0.01304	0.3280	32.8	1.31
12	-0.026		839.	0.01299	0.3280	32.8	1.31
13	-0.022		828.	0.01296	0.3280	32.8	1.31
14	-0.017		819.	0.01293	0.3281	32.8	1.31
15	-0.013		810.	0.01291	0.3281	32.8	1.31
16	0.000	0.000	793.	0.01286	0.3280	32.8	1.31
17	0.005	0.068	787.	0.01284	0.3280	32.8	1.31
18	0.009	0.095	785.	0.01283	0.3280	32.8	1.31
19	0.093	0.304	755.	0.01274	0.3277	32.8	1.31
20	0.176	0.420	746.	0.01272	0.3276	32.8	1.31
21	0.260	0.510	742.	0.01270	0.3275	32.8	1.31
22	0.428	0.654	737.	0.01269	0.3272	32.7	1.31
23	0.679	0.824	735.	0.01268	0.3271	32.7	1.31
24	0.930	0.964	731.	0.01267	0.3270	32.7	1.31
25	1.427	1.195	731.	0.01267	0.3267	32.7	1.31
26	2.428	1.558	728.	0.01266	0.3263	32.6	1.31
27	4.430	2.105	728.	0.01266	0.3252	32.5	1.32
28	4.927	2.220	728.	0.01266	0.3249	32.5	1.32
29	9.929	3.151	724.	0.01265	0.3230	32.3	1.32
30	14.926	3.863	724.	0.01265	0.3216	32.2	1.33
31	19.928	4.464	724.	0.01265	0.3204	32.0	1.33
32	24.927	4.993	722.	0.01264	0.3194	31.9	1.34
33	29.926	5.470	722.	0.01264	0.3185	31.9	1.34
34	39.930	6.319	722.	0.01264	0.3168	31.7	1.35
35	49.928	7.066	722.	0.01264	0.3150	31.5	1.35
36	59.927	7.741	722.	0.01264	0.3136	31.4	1.36
37	69.927	8.362	722.	0.01264	0.3130	31.3	1.36
38	79.929	8.940	719.	0.01264	0.3119	31.2	1.36
39	89.930	9.483	722.	0.01264	0.3112	31.1	1.37
40	99.929	9.996	719.	0.01264	0.3103	31.0	1.37
41	109.928	10.485	722.	0.01264	0.3095	30.9	1.37
42	119.927	10.951	719.	0.01264	0.3087	30.9	1.37
43	119.972	10.953	722.	0.01264	0.3088	30.9	1.37

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 25

Constant Load Step

Stress: 360 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.134		719.	0.01264	0.3087	30.9	1.37
2	-0.130		719.	0.01264	0.3087	30.9	1.37
3	-0.126		658.	0.01245	0.3089	30.9	1.37
4	-0.121		602.	0.01229	0.3090	30.9	1.37
5	-0.117		563.	0.01217	0.3090	30.9	1.37
6	-0.113		534.	0.01208	0.3090	30.9	1.37
7	-0.108		511.	0.01202	0.3091	30.9	1.37
8	-0.104		493.	0.01191	0.3091	30.9	1.37
9	-0.099		477.	0.01173	0.3093	30.9	1.37
10	-0.095		466.	0.01160	0.3093	30.9	1.37
11	-0.090		455.	0.01147	0.3094	30.9	1.37
12	-0.086		448.	0.01139	0.3095	30.9	1.37
13	-0.082		441.	0.01132	0.3095	31.0	1.37
14	-0.077		434.	0.01124	0.3096	31.0	1.37
15	-0.073		430.	0.01119	0.3096	31.0	1.37
16	-0.055		414.	0.01101	0.3098	31.0	1.37
17	-0.047		409.	0.01096	0.3098	31.0	1.37
18	0.000	0.000	396.	0.01081	0.3099	31.0	1.37
19	0.033	0.180	387.	0.01070	0.3099	31.0	1.37
20	0.116	0.341	380.	0.01063	0.3099	31.0	1.37
21	0.199	0.447	378.	0.01060	0.3099	31.0	1.37
22	0.367	0.606	375.	0.01058	0.3097	31.0	1.37
23	0.618	0.786	371.	0.01053	0.3095	30.9	1.37
24	0.868	0.932	371.	0.01053	0.3093	30.9	1.37
25	1.369	1.170	369.	0.01050	0.3091	30.9	1.37
26	2.369	1.539	366.	0.01047	0.3086	30.9	1.37
27	4.368	2.090	366.	0.01047	0.3077	30.8	1.38
28	4.869	2.207	366.	0.01047	0.3075	30.7	1.38
29	9.868	3.141	364.	0.01045	0.3061	30.6	1.38
30	14.867	3.856	364.	0.01045	0.3047	30.5	1.39
31	19.868	4.457	362.	0.01042	0.3034	30.3	1.39
32	24.869	4.987	362.	0.01042	0.3023	30.2	1.40
33	29.868	5.465	364.	0.01045	0.3010	30.1	1.40
34	39.868	6.314	364.	0.01045	0.2993	29.9	1.41
35	49.870	7.062	362.	0.01042	0.2977	29.8	1.41
36	59.868	7.737	360.	0.01040	0.2961	29.6	1.42
37	69.868	8.359	362.	0.01042	0.2947	29.5	1.42
38	79.866	8.937	362.	0.01042	0.2937	29.4	1.43
39	89.870	9.480	362.	0.01042	0.2925	29.3	1.43
40	99.870	9.993	360.	0.01040	0.2918	29.2	1.43
41	109.869	10.482	360.	0.01040	0.2903	29.0	1.44
42	119.870	10.948	360.	0.01040	0.2896	29.0	1.44
43	129.868	11.396	362.	0.01042	0.2887	28.9	1.44
44	139.867	11.827	362.	0.01042	0.2879	28.8	1.45
45	149.867	12.242	362.	0.01042	0.2872	28.7	1.45
46	159.870	12.644	362.	0.01042	0.2868	28.7	1.45
47	169.869	13.033	362.	0.01042	0.2860	28.6	1.45
48	179.867	13.411	360.	0.01040	0.2850	28.5	1.45
49	189.869	13.779	360.	0.01040	0.2841	28.4	1.46
50	199.866	14.137	362.	0.01042	0.2837	28.4	1.46

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 25

Constant Load Step

Stress: 360 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
51	209.867	14.487	362.	0.01042	0.2833	28.3	1.46
52	219.868	14.828	360.	0.01040	0.2831	28.3	1.46
53	229.870	15.161	360.	0.01040	0.2826	28.3	1.46
54	239.866	15.488	360.	0.01040	0.2821	28.2	1.46
55	249.870	15.807	360.	0.01040	0.2816	28.2	1.47
56	259.868	16.120	360.	0.01040	0.2813	28.1	1.47
57	269.869	16.428	360.	0.01040	0.2808	28.1	1.47
58	279.870	16.729	360.	0.01040	0.2805	28.1	1.47
59	289.866	17.025	360.	0.01040	0.2801	28.0	1.47
60	299.866	17.317	360.	0.01040	0.2799	28.0	1.47
61	309.869	17.603	360.	0.01040	0.2796	28.0	1.47
62	319.867	17.885	360.	0.01040	0.2794	27.9	1.47
63	329.869	18.162	362.	0.01042	0.2790	27.9	1.48
64	339.870	18.436	360.	0.01040	0.2787	27.9	1.48
65	349.868	18.705	360.	0.01040	0.2785	27.8	1.48
66	359.868	18.970	362.	0.01042	0.2782	27.8	1.48
67	369.869	19.232	360.	0.01040	0.2779	27.8	1.48
68	379.869	19.490	360.	0.01040	0.2775	27.8	1.48
69	389.866	19.745	362.	0.01042	0.2773	27.7	1.48
70	399.869	19.997	360.	0.01040	0.2771	27.7	1.48
71	409.869	20.245	360.	0.01040	0.2769	27.7	1.48
72	419.866	20.491	360.	0.01040	0.2768	27.7	1.48
73	429.869	20.733	360.	0.01040	0.2766	27.7	1.48
74	439.870	20.973	360.	0.01040	0.2764	27.6	1.48
75	449.870	21.210	360.	0.01040	0.2763	27.6	1.49
76	459.869	21.445	360.	0.01040	0.2762	27.6	1.49
77	469.868	21.676	360.	0.01040	0.2761	27.6	1.49
78	479.869	21.906	360.	0.01040	0.2759	27.6	1.49
79	489.869	22.133	360.	0.01040	0.2757	27.6	1.49
80	499.866	22.358	360.	0.01040	0.2755	27.6	1.49
81	509.869	22.580	360.	0.01040	0.2754	27.5	1.49
82	519.867	22.801	360.	0.01040	0.2753	27.5	1.49
83	529.867	23.019	360.	0.01040	0.2751	27.5	1.49
84	539.870	23.235	360.	0.01040	0.2748	27.5	1.49
85	549.869	23.449	360.	0.01040	0.2746	27.5	1.49
86	559.867	23.661	360.	0.01040	0.2746	27.5	1.49
87	569.867	23.872	360.	0.01040	0.2745	27.5	1.49
88	579.870	24.080	360.	0.01040	0.2744	27.4	1.49
89	589.866	24.287	360.	0.01040	0.2743	27.4	1.49
90	599.867	24.492	360.	0.01040	0.2742	27.4	1.49
91	609.866	24.695	360.	0.01040	0.2741	27.4	1.49
92	619.870	24.897	360.	0.01040	0.2739	27.4	1.49
93	629.870	25.097	360.	0.01040	0.2738	27.4	1.49
94	639.869	25.296	360.	0.01040	0.2739	27.4	1.49
95	641.808	25.334	360.	0.01040	0.2738	27.4	1.49

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 25

Constant Load Step

Stress: 721 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.165		360.	0.01040	0.2738	27.4	1.49
2	-0.161		360.	0.01040	0.2738	27.4	1.49
3	-0.157		353.	0.01032	0.2739	27.4	1.49
4	-0.152		328.	0.01004	0.2744	27.4	1.49
5	-0.148		346.	0.01024	0.2743	27.4	1.49
6	-0.144		389.	0.01073	0.2738	27.4	1.49
7	-0.139		434.	0.01124	0.2733	27.3	1.50
8	-0.135		470.	0.01165	0.2729	27.3	1.50
9	-0.130		495.	0.01193	0.2727	27.3	1.50
10	-0.126		523.	0.01205	0.2727	27.3	1.50
11	-0.122		545.	0.01212	0.2726	27.3	1.50
12	-0.117		563.	0.01217	0.2725	27.3	1.50
13	-0.113		579.	0.01222	0.2725	27.3	1.50
14	-0.109		590.	0.01225	0.2724	27.2	1.50
15	-0.104		602.	0.01229	0.2724	27.2	1.50
16	-0.087		633.	0.01238	0.2724	27.2	1.50
17	-0.078		645.	0.01241	0.2725	27.2	1.50
18	0.000	0.000	685.	0.01253	0.2724	27.2	1.50
19	0.005	0.073	688.	0.01254	0.2724	27.2	1.50
20	0.089	0.298	699.	0.01258	0.2725	27.2	1.50
21	0.172	0.414	703.	0.01259	0.2725	27.2	1.50
22	0.339	0.582	706.	0.01260	0.2726	27.3	1.50
23	0.586	0.765	710.	0.01261	0.2727	27.3	1.50
24	0.837	0.915	710.	0.01261	0.2730	27.3	1.50
25	1.338	1.157	713.	0.01262	0.2731	27.3	1.50
26	2.338	1.529	715.	0.01262	0.2734	27.3	1.49
27	4.338	2.083	715.	0.01262	0.2737	27.4	1.49
28	4.836	2.199	715.	0.01262	0.2738	27.4	1.49
29	9.838	3.137	717.	0.01263	0.2743	27.4	1.49
30	14.836	3.852	717.	0.01263	0.2747	27.5	1.49
31	19.837	4.454	717.	0.01263	0.2750	27.5	1.49
32	24.836	4.984	719.	0.01264	0.2752	27.5	1.49
33	29.837	5.462	717.	0.01263	0.2755	27.6	1.49
34	39.835	6.312	719.	0.01264	0.2758	27.6	1.49
35	49.835	7.059	719.	0.01264	0.2760	27.6	1.49
36	59.836	7.735	719.	0.01264	0.2761	27.6	1.49
37	69.839	8.357	717.	0.01263	0.2762	27.6	1.49
38	79.837	8.935	719.	0.01264	0.2762	27.6	1.49
39	89.839	9.478	719.	0.01264	0.2763	27.6	1.48
40	99.837	9.992	719.	0.01264	0.2763	27.6	1.48
41	109.836	10.480	719.	0.01264	0.2764	27.6	1.48
42	119.836	10.947	717.	0.01263	0.2764	27.6	1.48
43	129.838	11.395	719.	0.01264	0.2764	27.6	1.48
44	139.837	11.825	719.	0.01264	0.2764	27.6	1.48
45	149.837	12.241	719.	0.01264	0.2764	27.6	1.48
46	155.558	12.472	719.	0.01264	0.2765	27.6	1.48

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 25

Constant Load Step

Stress: 1.44e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.148		719.	0.01264	0.2765	27.6	1.48
2	-0.144		719.	0.01264	0.2765	27.6	1.48
3	-0.140		823.	0.01295	0.2762	27.6	1.49
4	-0.136		925.	0.01325	0.2762	27.6	1.49
5	-0.131		1.00e+03	0.01347	0.2762	27.6	1.49
6	-0.127		1.06e+03	0.01355	0.2762	27.6	1.49
7	-0.122		1.10e+03	0.01361	0.2762	27.6	1.49
8	-0.118		1.14e+03	0.01366	0.2762	27.6	1.49
9	-0.113		1.17e+03	0.01370	0.2762	27.6	1.49
10	-0.109		1.20e+03	0.01374	0.2762	27.6	1.49
11	-0.105		1.22e+03	0.01377	0.2763	27.6	1.49
12	-0.100		1.24e+03	0.01379	0.2763	27.6	1.48
13	-0.096		1.26e+03	0.01382	0.2763	27.6	1.48
14	-0.091		1.27e+03	0.01384	0.2763	27.6	1.48
15	-0.087		1.28e+03	0.01386	0.2763	27.6	1.48
16	-0.069		1.32e+03	0.01390	0.2763	27.6	1.48
17	-0.065		1.33e+03	0.01391	0.2763	27.6	1.48
18	0.000	0.000	1.37e+03	0.01397	0.2766	27.7	1.48
19	0.019	0.137	1.38e+03	0.01399	0.2767	27.7	1.48
20	0.103	0.320	1.40e+03	0.01401	0.2768	27.7	1.48
21	0.186	0.431	1.41e+03	0.01402	0.2770	27.7	1.48
22	0.353	0.594	1.42e+03	0.01403	0.2774	27.7	1.48
23	0.604	0.777	1.42e+03	0.01404	0.2777	27.8	1.48
24	0.855	0.925	1.42e+03	0.01404	0.2780	27.8	1.48
25	1.352	1.163	1.43e+03	0.01405	0.2785	27.8	1.48
26	2.352	1.534	1.43e+03	0.01405	0.2792	27.9	1.47
27	4.352	2.086	1.43e+03	0.01406	0.2801	28.0	1.47
28	4.855	2.203	1.43e+03	0.01406	0.2803	28.0	1.47
29	9.855	3.139	1.44e+03	0.01406	0.2827	28.3	1.46
30	14.855	3.854	1.44e+03	0.01406	0.2836	28.4	1.46
31	19.854	4.456	1.44e+03	0.01406	0.2844	28.4	1.46
32	24.853	4.985	1.44e+03	0.01406	0.2851	28.5	1.45
33	29.855	5.464	1.44e+03	0.01406	0.2856	28.6	1.45
34	39.854	6.313	1.44e+03	0.01406	0.2860	28.6	1.45
35	49.854	7.061	1.44e+03	0.01407	0.2868	28.7	1.45
36	59.853	7.736	1.44e+03	0.01407	0.2874	28.7	1.45
37	69.852	8.358	1.44e+03	0.01407	0.2877	28.8	1.45
38	79.854	8.936	1.44e+03	0.01407	0.2878	28.8	1.45
39	89.853	9.479	1.44e+03	0.01407	0.2880	28.8	1.44
40	99.854	9.993	1.44e+03	0.01407	0.2881	28.8	1.44
41	109.854	10.481	1.44e+03	0.01406	0.2882	28.8	1.44
42	119.854	10.948	1.44e+03	0.01407	0.2883	28.8	1.44
43	119.925	10.951	1.44e+03	0.01407	0.2883	28.8	1.44

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.108		1.44e+03	0.01407	0.2883	28.8	1.44
2	-0.104		1.44e+03	0.01407	0.2883	28.8	1.44
3	-0.099		1.71e+03	0.01443	0.2881	28.8	1.44
4	-0.095		1.95e+03	0.01475	0.2880	28.8	1.44
5	-0.090		2.11e+03	0.01494	0.2880	28.8	1.44
6	-0.086		2.22e+03	0.01506	0.2881	28.8	1.44
7	-0.082		2.32e+03	0.01516	0.2882	28.8	1.44
8	-0.077		2.39e+03	0.01524	0.2883	28.8	1.44
9	-0.073		2.45e+03	0.01531	0.2883	28.8	1.44
10	-0.069		2.49e+03	0.01536	0.2884	28.8	1.44
11	-0.064		2.54e+03	0.01540	0.2884	28.8	1.44
12	-0.060		2.57e+03	0.01544	0.2885	28.8	1.44
13	-0.055		2.60e+03	0.01547	0.2884	28.8	1.44
14	-0.051		2.62e+03	0.01550	0.2885	28.8	1.44
15	-0.047		2.64e+03	0.01552	0.2886	28.9	1.44
16	-0.029		2.70e+03	0.01558	0.2886	28.9	1.44
17	-0.025		2.71e+03	0.01560	0.2886	28.9	1.44
18	0.000	0.000	2.74e+03	0.01562	0.2887	28.9	1.44
19	0.059	0.243	2.80e+03	0.01569	0.2889	28.9	1.44
20	0.143	0.378	2.82e+03	0.01571	0.2892	28.9	1.44
21	0.226	0.476	2.83e+03	0.01572	0.2897	29.0	1.44
22	0.394	0.628	2.84e+03	0.01573	0.2901	29.0	1.44
23	0.645	0.803	2.85e+03	0.01574	0.2907	29.1	1.44
24	0.896	0.946	2.85e+03	0.01575	0.2914	29.1	1.43
25	1.393	1.180	2.86e+03	0.01575	0.2921	29.2	1.43
26	2.393	1.547	2.86e+03	0.01576	0.2931	29.3	1.43
27	4.394	2.096	2.87e+03	0.01576	0.2946	29.5	1.42
28	4.896	2.213	2.87e+03	0.01576	0.2949	29.5	1.42
29	9.893	3.145	2.87e+03	0.01577	0.2979	29.8	1.41
30	14.894	3.859	2.87e+03	0.01577	0.3000	30.0	1.40
31	19.895	4.460	2.88e+03	0.01577	0.3010	30.1	1.40
32	24.895	4.989	2.88e+03	0.01577	0.3022	30.2	1.40
33	29.896	5.468	2.88e+03	0.01577	0.3029	30.3	1.39
34	39.893	6.316	2.88e+03	0.01577	0.3042	30.4	1.39
35	49.895	7.064	2.88e+03	0.01578	0.3049	30.5	1.39
36	59.893	7.739	2.88e+03	0.01578	0.3055	30.6	1.38
37	69.894	8.360	2.88e+03	0.01577	0.3060	30.6	1.38
38	79.893	8.938	2.88e+03	0.01578	0.3064	30.6	1.38
39	89.893	9.481	2.88e+03	0.01578	0.3068	30.7	1.38
40	99.895	9.995	2.88e+03	0.01578	0.3073	30.7	1.38
41	109.893	10.483	2.88e+03	0.01578	0.3075	30.8	1.38
42	119.896	10.950	2.88e+03	0.01578	0.3078	30.8	1.38
43	119.994	10.954	2.88e+03	0.01578	0.3077	30.8	1.38

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37	
	Boring No.: BB-RAR-101A		Tested By: sjr		Checked By: sjr	
	Sample No.: 1U		Test Date: 10/29/024		Depth: 32.65	
	Test No.: 68-425		Sample Type: wet		Elevation: --	
	Description:					
	Remarks: 24 hour load hold on load step 9 for C-alpha					


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 25

Constant Load Step

Stress: 5.77e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.065		2.88e+03	0.01578	0.3077	30.8	1.38
2	-0.061		2.88e+03	0.01578	0.3077	30.8	1.38
3	-0.056		3.52e+03	0.01646	0.3072	30.7	1.38
4	-0.052		4.08e+03	0.01702	0.3072	30.7	1.38
5	-0.047		4.42e+03	0.01718	0.3072	30.7	1.38
6	-0.043		4.68e+03	0.01729	0.3075	30.8	1.38
7	-0.039		4.87e+03	0.01738	0.3077	30.8	1.38
8	-0.034		5.02e+03	0.01744	0.3078	30.8	1.38
9	-0.030		5.13e+03	0.01749	0.3078	30.8	1.38
10	-0.025		5.22e+03	0.01753	0.3079	30.8	1.38
11	-0.021		5.29e+03	0.01757	0.3079	30.8	1.38
12	-0.016		5.35e+03	0.01759	0.3080	30.8	1.38
13	-0.012		5.39e+03	0.01761	0.3080	30.8	1.38
14	-0.008		5.43e+03	0.01763	0.3081	30.8	1.38
15	-0.003		5.46e+03	0.01764	0.3081	30.8	1.38
16	0.000	0.000	5.48e+03	0.01765	0.3081	30.8	1.38
17	0.010	0.100	5.53e+03	0.01767	0.3083	30.8	1.38
18	0.019	0.137	5.56e+03	0.01768	0.3085	30.8	1.37
19	0.103	0.321	5.65e+03	0.01773	0.3093	30.9	1.37
20	0.187	0.432	5.68e+03	0.01774	0.3098	31.0	1.37
21	0.270	0.520	5.69e+03	0.01775	0.3104	31.0	1.37
22	0.437	0.661	5.71e+03	0.01775	0.3111	31.1	1.37
23	0.688	0.830	5.72e+03	0.01776	0.3118	31.2	1.36
24	0.935	0.967	5.72e+03	0.01776	0.3125	31.3	1.36
25	1.437	1.199	5.73e+03	0.01776	0.3137	31.4	1.36
26	2.438	1.562	5.74e+03	0.01777	0.3154	31.5	1.35
27	4.438	2.107	5.75e+03	0.01777	0.3177	31.8	1.34
28	4.939	2.222	5.75e+03	0.01777	0.3183	31.8	1.34
29	9.937	3.152	5.76e+03	0.01777	0.3223	32.2	1.33
30	14.939	3.865	5.76e+03	0.01778	0.3252	32.5	1.32
31	19.935	4.465	5.76e+03	0.01778	0.3271	32.7	1.31
32	24.939	4.994	5.76e+03	0.01778	0.3284	32.8	1.31
33	29.936	5.471	5.76e+03	0.01778	0.3295	32.9	1.30
34	39.935	6.319	5.76e+03	0.01778	0.3310	33.1	1.30
35	49.936	7.067	5.76e+03	0.01778	0.3319	33.2	1.29
36	59.936	7.742	5.76e+03	0.01778	0.3324	33.2	1.29
37	69.937	8.363	5.77e+03	0.01778	0.3331	33.3	1.29
38	79.937	8.941	5.76e+03	0.01778	0.3337	33.4	1.29
39	89.935	9.483	5.77e+03	0.01778	0.3342	33.4	1.29
40	99.938	9.997	5.77e+03	0.01778	0.3345	33.5	1.28
41	109.937	10.485	5.77e+03	0.01778	0.3347	33.5	1.28
42	119.939	10.952	5.77e+03	0.01778	0.3349	33.5	1.28
43	120.058	10.957	5.77e+03	0.01778	0.3349	33.5	1.28

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description: Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.042		5.77e+03	0.01778	0.3349	33.5	1.28
2	-0.038		5.77e+03	0.01778	0.3349	33.5	1.28
3	-0.033		7.15e+03	0.01840	0.3345	33.5	1.28
4	-0.029		8.62e+03	0.01899	0.3346	33.5	1.28
5	-0.024		9.45e+03	0.01928	0.3350	33.5	1.28
6	-0.020		9.99e+03	0.01946	0.3355	33.6	1.28
7	-0.016		1.04e+04	0.01958	0.3359	33.6	1.28
8	-0.011		1.06e+04	0.01967	0.3361	33.6	1.28
9	-0.007		1.08e+04	0.01973	0.3364	33.6	1.28
10	-0.002		1.09e+04	0.01977	0.3365	33.7	1.28
11	0.000	0.000	1.10e+04	0.01979	0.3365	33.7	1.28
12	0.002	0.044	1.10e+04	0.01981	0.3366	33.7	1.28
13	0.006	0.080	1.11e+04	0.01983	0.3366	33.7	1.28
14	0.011	0.104	1.11e+04	0.01985	0.3366	33.7	1.28
15	0.015	0.123	1.12e+04	0.01986	0.3367	33.7	1.28
16	0.020	0.140	1.12e+04	0.01987	0.3368	33.7	1.28
17	0.037	0.193	1.13e+04	0.01990	0.3370	33.7	1.28
18	0.042	0.204	1.13e+04	0.01990	0.3370	33.7	1.28
19	0.125	0.354	1.14e+04	0.01994	0.3376	33.8	1.27
20	0.209	0.457	1.14e+04	0.01995	0.3380	33.8	1.27
21	0.292	0.541	1.14e+04	0.01995	0.3390	33.9	1.27
22	0.460	0.678	1.15e+04	0.01996	0.3403	34.0	1.27
23	0.711	0.843	1.15e+04	0.01997	0.3409	34.1	1.26
24	0.961	0.980	1.15e+04	0.01997	0.3422	34.2	1.26
25	1.458	1.208	1.15e+04	0.01997	0.3437	34.4	1.25
26	2.459	1.568	1.15e+04	0.01998	0.3457	34.6	1.25
27	4.462	2.112	1.15e+04	0.01998	0.3499	35.0	1.23
28	4.959	2.227	1.15e+04	0.01998	0.3505	35.1	1.23
29	9.959	3.156	1.15e+04	0.01998	0.3558	35.6	1.21
30	14.961	3.868	1.15e+04	0.01998	0.3589	35.9	1.20
31	19.962	4.468	1.15e+04	0.01999	0.3607	36.1	1.19
32	24.961	4.996	1.15e+04	0.01999	0.3620	36.2	1.19
33	29.960	5.474	1.15e+04	0.01999	0.3628	36.3	1.19
34	39.962	6.322	1.15e+04	0.01999	0.3652	36.5	1.18
35	49.962	7.068	1.15e+04	0.01999	0.3659	36.6	1.18
36	59.962	7.744	1.15e+04	0.01999	0.3662	36.6	1.18
37	69.962	8.364	1.15e+04	0.01999	0.3667	36.7	1.17
38	79.958	8.942	1.15e+04	0.01999	0.3673	36.7	1.17
39	89.960	9.485	1.15e+04	0.01999	0.3681	36.8	1.17
40	99.961	9.998	1.15e+04	0.01999	0.3685	36.9	1.17
41	109.959	10.486	1.15e+04	0.01999	0.3688	36.9	1.17
42	119.960	10.953	1.15e+04	0.01999	0.3691	36.9	1.17
43	120.123	10.960	1.15e+04	0.01999	0.3691	36.9	1.17

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
Remarks: 24 hour load hold on load step 9 for C-alpha			


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 25

Constant Load Step

Stress: 2.31e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.034		1.15e+04	0.01999	0.3691	36.9	1.17
2	-0.030		1.15e+04	0.01999	0.3691	36.9	1.17
3	-0.025		1.36e+04	0.02072	0.3692	36.9	1.17
4	-0.021		1.75e+04	0.02194	0.3696	37.0	1.16
5	-0.017		1.95e+04	0.02248	0.3697	37.0	1.16
6	-0.013		2.04e+04	0.02274	0.3698	37.0	1.16
7	-0.008		2.12e+04	0.02293	0.3701	37.0	1.16
8	-0.004		2.16e+04	0.02306	0.3703	37.0	1.16
9	0.000	0.000	2.19e+04	0.02314	0.3707	37.1	1.16
10	0.000	0.014	2.19e+04	0.02314	0.3707	37.1	1.16
11	0.005	0.068	2.21e+04	0.02320	0.3710	37.1	1.16
12	0.009	0.095	2.23e+04	0.02323	0.3713	37.1	1.16
13	0.013	0.115	2.24e+04	0.02326	0.3715	37.1	1.16
14	0.018	0.133	2.25e+04	0.02328	0.3717	37.2	1.16
15	0.022	0.149	2.25e+04	0.02330	0.3718	37.2	1.16
16	0.026	0.162	2.26e+04	0.02331	0.3719	37.2	1.16
17	0.044	0.210	2.27e+04	0.02334	0.3724	37.2	1.15
18	0.053	0.230	2.27e+04	0.02335	0.3725	37.2	1.15
19	0.137	0.369	2.28e+04	0.02339	0.3738	37.4	1.15
20	0.216	0.465	2.29e+04	0.02340	0.3752	37.5	1.15
21	0.304	0.551	2.29e+04	0.02341	0.3757	37.6	1.14
22	0.466	0.683	2.29e+04	0.02341	0.3770	37.7	1.14
23	0.718	0.847	2.30e+04	0.02342	0.3791	37.9	1.13
24	0.969	0.984	2.30e+04	0.02342	0.3804	38.0	1.13
25	1.466	1.211	2.30e+04	0.02343	0.3829	38.3	1.12
26	2.469	1.571	2.30e+04	0.02343	0.3868	38.7	1.11
27	4.467	2.114	2.30e+04	0.02344	0.3931	39.3	1.08
28	4.970	2.229	2.30e+04	0.02344	0.3938	39.4	1.08
29	9.966	3.157	2.30e+04	0.02344	0.4033	40.3	1.05
30	14.967	3.869	2.30e+04	0.02344	0.4097	41.0	1.03
31	19.968	4.469	2.31e+04	0.02344	0.4143	41.4	1.01
32	24.967	4.997	2.31e+04	0.02345	0.4173	41.7	1.00
33	29.968	5.474	2.31e+04	0.02345	0.4194	41.9	0.994
34	39.970	6.322	2.31e+04	0.02345	0.4231	42.3	0.981
35	49.969	7.069	2.31e+04	0.02345	0.4260	42.6	0.971
36	59.968	7.744	2.31e+04	0.02345	0.4281	42.8	0.964
37	69.970	8.365	2.31e+04	0.02345	0.4297	43.0	0.958
38	79.966	8.942	2.31e+04	0.02345	0.4315	43.2	0.952
39	89.970	9.485	2.31e+04	0.02345	0.4327	43.3	0.948
40	99.969	9.998	2.31e+04	0.02345	0.4332	43.3	0.946
41	109.969	10.487	2.31e+04	0.02345	0.4345	43.4	0.942
42	119.970	10.953	2.31e+04	0.02345	0.4350	43.5	0.940
43	120.376	10.972	2.31e+04	0.02345	0.4350	43.5	0.940

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.027		2.31e+04	0.02345	0.4350	43.5	0.940
2	-0.023		2.31e+04	0.02345	0.4350	43.5	0.940
3	-0.019		2.22e+04	0.02327	0.4347	43.5	0.941
4	-0.014		1.70e+04	0.02221	0.4342	43.4	0.943
5	-0.010		1.45e+04	0.02149	0.4346	43.5	0.941
6	-0.005		1.34e+04	0.02110	0.4347	43.5	0.941
7	-0.001		1.28e+04	0.02089	0.4347	43.5	0.941
8	0.000	0.000	1.27e+04	0.02086	0.4347	43.5	0.941
9	0.003	0.058	1.24e+04	0.02077	0.4346	43.5	0.941
10	0.008	0.088	1.22e+04	0.02069	0.4344	43.4	0.942
11	0.012	0.111	1.20e+04	0.02064	0.4344	43.4	0.942
12	0.017	0.129	1.19e+04	0.02061	0.4343	43.4	0.943
13	0.021	0.145	1.19e+04	0.02058	0.4341	43.4	0.943
14	0.026	0.160	1.18e+04	0.02057	0.4340	43.4	0.943
15	0.030	0.173	1.18e+04	0.02055	0.4339	43.4	0.944
16	0.034	0.185	1.17e+04	0.02054	0.4338	43.4	0.944
17	0.052	0.228	1.17e+04	0.02052	0.4337	43.4	0.944
18	0.056	0.237	1.17e+04	0.02052	0.4337	43.4	0.945
19	0.144	0.379	1.16e+04	0.02049	0.4330	43.3	0.947
20	0.227	0.477	1.16e+04	0.02049	0.4327	43.3	0.948
21	0.310	0.557	1.16e+04	0.02048	0.4326	43.3	0.948
22	0.473	0.688	1.16e+04	0.02048	0.4324	43.2	0.949
23	0.724	0.851	1.16e+04	0.02048	0.4319	43.2	0.950
24	0.975	0.987	1.16e+04	0.02048	0.4315	43.2	0.952
25	1.477	1.215	1.15e+04	0.02048	0.4309	43.1	0.954
26	2.473	1.573	1.15e+04	0.02047	0.4301	43.0	0.957
27	4.474	2.115	1.15e+04	0.02047	0.4293	42.9	0.959
28	4.976	2.231	1.15e+04	0.02047	0.4292	42.9	0.960
29	9.976	3.159	1.15e+04	0.02047	0.4285	42.8	0.962
30	14.975	3.870	1.15e+04	0.02047	0.4280	42.8	0.964
31	19.974	4.469	1.15e+04	0.02047	0.4277	42.8	0.965
32	24.977	4.998	1.15e+04	0.02047	0.4275	42.7	0.966
33	29.973	5.475	1.15e+04	0.02047	0.4276	42.8	0.965
34	39.975	6.323	1.15e+04	0.02047	0.4275	42.7	0.966
35	49.974	7.069	1.15e+04	0.02047	0.4274	42.7	0.966
36	59.976	7.744	1.15e+04	0.02047	0.4273	42.7	0.967
37	69.975	8.365	1.15e+04	0.02047	0.4273	42.7	0.967
38	79.973	8.943	1.15e+04	0.02047	0.4273	42.7	0.966
39	89.974	9.485	1.15e+04	0.02047	0.4272	42.7	0.967
40	99.976	9.999	1.15e+04	0.02048	0.4272	42.7	0.967
41	109.976	10.487	1.15e+04	0.02047	0.4272	42.7	0.967
42	119.976	10.953	1.15e+04	0.02047	0.4271	42.7	0.967
43	120.056	10.957	1.15e+04	0.02047	0.4272	42.7	0.967

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 25

Constant Load Step

Stress: 5.77e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.030		1.15e+04	0.02047	0.4272	42.7	0.967
2	-0.026		1.15e+04	0.02047	0.4272	42.7	0.967
3	-0.021		9.97e+03	0.01994	0.4272	42.7	0.967
4	-0.017		8.13e+03	0.01931	0.4272	42.7	0.967
5	-0.013		7.27e+03	0.01893	0.4273	42.7	0.966
6	-0.008		6.81e+03	0.01873	0.4274	42.7	0.966
7	-0.004		6.51e+03	0.01859	0.4275	42.7	0.966
8	0.000	0.000	6.34e+03	0.01852	0.4275	42.7	0.966
9	0.001	0.023	6.32e+03	0.01851	0.4275	42.7	0.966
10	0.005	0.070	6.19e+03	0.01845	0.4275	42.7	0.966
11	0.009	0.097	6.11e+03	0.01841	0.4275	42.7	0.966
12	0.014	0.118	6.04e+03	0.01838	0.4274	42.7	0.966
13	0.018	0.135	6.00e+03	0.01836	0.4273	42.7	0.966
14	0.023	0.150	5.96e+03	0.01835	0.4273	42.7	0.966
15	0.027	0.164	5.94e+03	0.01834	0.4273	42.7	0.967
16	0.031	0.177	5.93e+03	0.01833	0.4272	42.7	0.967
17	0.049	0.221	5.88e+03	0.01831	0.4271	42.7	0.967
18	0.053	0.231	5.87e+03	0.01831	0.4271	42.7	0.967
19	0.141	0.375	5.82e+03	0.01829	0.4268	42.7	0.968
20	0.220	0.469	5.81e+03	0.01828	0.4266	42.7	0.969
21	0.303	0.551	5.80e+03	0.01828	0.4264	42.6	0.969
22	0.470	0.686	5.80e+03	0.01827	0.4262	42.6	0.970
23	0.720	0.848	5.79e+03	0.01827	0.4255	42.6	0.972
24	0.970	0.985	5.79e+03	0.01827	0.4249	42.5	0.975
25	1.473	1.214	5.78e+03	0.01827	0.4243	42.4	0.977
26	2.473	1.572	5.78e+03	0.01827	0.4235	42.4	0.979
27	4.474	2.115	5.77e+03	0.01826	0.4226	42.3	0.982
28	4.972	2.230	5.77e+03	0.01826	0.4224	42.2	0.983
29	9.974	3.158	5.77e+03	0.01826	0.4201	42.0	0.991
30	14.973	3.869	5.77e+03	0.01826	0.4196	42.0	0.993
31	19.970	4.469	5.77e+03	0.01826	0.4188	41.9	0.996
32	24.971	4.997	5.77e+03	0.01826	0.4183	41.8	0.997
33	29.970	5.474	5.77e+03	0.01826	0.4178	41.8	0.999
34	39.971	6.322	5.77e+03	0.01826	0.4172	41.7	1.00
35	49.972	7.069	5.77e+03	0.01826	0.4168	41.7	1.00
36	59.970	7.744	5.77e+03	0.01826	0.4167	41.7	1.00
37	69.973	8.365	5.77e+03	0.01826	0.4165	41.6	1.00
38	79.972	8.943	5.76e+03	0.01826	0.4165	41.6	1.00
39	89.971	9.485	5.78e+03	0.01827	0.4164	41.6	1.00
40	99.972	9.999	5.77e+03	0.01826	0.4161	41.6	1.00
41	109.970	10.487	5.77e+03	0.01826	0.4160	41.6	1.01
42	119.973	10.953	5.77e+03	0.01826	0.4160	41.6	1.01
43	120.039	10.956	5.77e+03	0.01826	0.4160	41.6	1.01

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.032		5.77e+03	0.01826	0.4160	41.6	1.01
2	-0.028		5.77e+03	0.01826	0.4160	41.6	1.01
3	-0.024		4.85e+03	0.01785	0.4161	41.6	1.00
4	-0.019		4.06e+03	0.01749	0.4159	41.6	1.01
5	-0.015		3.66e+03	0.01710	0.4160	41.6	1.01
6	-0.010		3.44e+03	0.01686	0.4161	41.6	1.00
7	-0.006		3.29e+03	0.01670	0.4161	41.6	1.00
8	-0.002		3.20e+03	0.01660	0.4161	41.6	1.00
9	0.000	0.000	3.17e+03	0.01657	0.4161	41.6	1.01
10	0.002	0.048	3.14e+03	0.01653	0.4160	41.6	1.01
11	0.007	0.082	3.09e+03	0.01648	0.4160	41.6	1.01
12	0.011	0.106	3.06e+03	0.01645	0.4160	41.6	1.01
13	0.015	0.124	3.04e+03	0.01642	0.4160	41.6	1.01
14	0.020	0.141	3.02e+03	0.01641	0.4160	41.6	1.01
15	0.024	0.156	3.00e+03	0.01639	0.4160	41.6	1.01
16	0.029	0.169	2.99e+03	0.01638	0.4160	41.6	1.01
17	0.046	0.215	2.97e+03	0.01635	0.4159	41.6	1.01
18	0.055	0.235	2.96e+03	0.01634	0.4158	41.6	1.01
19	0.138	0.372	2.93e+03	0.01631	0.4153	41.5	1.01
20	0.222	0.471	2.92e+03	0.01630	0.4150	41.5	1.01
21	0.305	0.552	2.91e+03	0.01629	0.4149	41.5	1.01
22	0.468	0.684	2.91e+03	0.01629	0.4147	41.5	1.01
23	0.718	0.848	2.90e+03	0.01628	0.4143	41.4	1.01
24	0.969	0.985	2.90e+03	0.01628	0.4140	41.4	1.01
25	1.471	1.213	2.90e+03	0.01628	0.4135	41.4	1.01
26	2.471	1.572	2.90e+03	0.01627	0.4128	41.3	1.02
27	4.469	2.114	2.89e+03	0.01627	0.4113	41.1	1.02
28	4.971	2.229	2.89e+03	0.01627	0.4110	41.1	1.02
29	9.969	3.157	2.89e+03	0.01627	0.4089	40.9	1.03
30	14.972	3.869	2.89e+03	0.01626	0.4074	40.7	1.03
31	19.968	4.469	2.88e+03	0.01626	0.4065	40.6	1.04
32	24.969	4.997	2.88e+03	0.01626	0.4052	40.5	1.04
33	29.970	5.475	2.88e+03	0.01626	0.4047	40.5	1.04
34	39.971	6.322	2.88e+03	0.01626	0.4041	40.4	1.05
35	49.972	7.069	2.88e+03	0.01626	0.4031	40.3	1.05
36	59.969	7.744	2.88e+03	0.01626	0.4019	40.2	1.05
37	69.969	8.365	2.88e+03	0.01626	0.4016	40.2	1.05
38	79.970	8.943	2.88e+03	0.01626	0.4012	40.1	1.06
39	89.968	9.485	2.88e+03	0.01626	0.4011	40.1	1.06
40	99.971	9.999	2.88e+03	0.01626	0.4009	40.1	1.06
41	109.972	10.487	2.88e+03	0.01626	0.4007	40.1	1.06
42	119.969	10.953	2.88e+03	0.01626	0.4004	40.0	1.06
43	122.843	11.083	2.88e+03	0.01626	0.4003	40.0	1.06

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37	
	Boring No.: BB-RAR-101A		Tested By: sjr		Checked By: sjr	
	Sample No.: 1U		Test Date: 10/29/024		Depth: 32.65	
	Test No.: 68-425		Sample Type: wet		Elevation: --	
	Description:					
Remarks: 24 hour load hold on load step 9 for C-alpha						


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 25

Constant Load Step

Stress: 1.44e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.041		2.88e+03	0.01626	0.4003	40.0	1.06
2	-0.037		2.88e+03	0.01626	0.4003	40.0	1.06
3	-0.032		2.44e+03	0.01578	0.4006	40.1	1.06
4	-0.028		2.10e+03	0.01541	0.4007	40.1	1.06
5	-0.024		1.91e+03	0.01518	0.4007	40.1	1.06
6	-0.020		1.79e+03	0.01502	0.4008	40.1	1.06
7	-0.015		1.71e+03	0.01492	0.4008	40.1	1.06
8	-0.011		1.66e+03	0.01484	0.4008	40.1	1.06
9	-0.006		1.62e+03	0.01480	0.4008	40.1	1.06
10	-0.002		1.59e+03	0.01476	0.4008	40.1	1.06
11	0.000	0.000	1.59e+03	0.01474	0.4008	40.1	1.06
12	0.003	0.051	1.57e+03	0.01473	0.4008	40.1	1.06
13	0.007	0.084	1.56e+03	0.01470	0.4008	40.1	1.06
14	0.011	0.106	1.54e+03	0.01469	0.4008	40.1	1.06
15	0.016	0.125	1.54e+03	0.01468	0.4008	40.1	1.06
16	0.020	0.142	1.52e+03	0.01466	0.4008	40.1	1.06
17	0.038	0.194	1.50e+03	0.01463	0.4007	40.1	1.06
18	0.042	0.205	1.50e+03	0.01463	0.4006	40.1	1.06
19	0.126	0.355	1.48e+03	0.01460	0.4004	40.0	1.06
20	0.210	0.458	1.47e+03	0.01458	0.4002	40.0	1.06
21	0.293	0.542	1.46e+03	0.01458	0.4001	40.0	1.06
22	0.461	0.679	1.46e+03	0.01458	0.4000	40.0	1.06
23	0.712	0.844	1.46e+03	0.01457	0.3997	40.0	1.06
24	0.963	0.981	1.45e+03	0.01457	0.3994	39.9	1.06
25	1.460	1.208	1.45e+03	0.01456	0.3989	39.9	1.06
26	2.461	1.569	1.45e+03	0.01456	0.3980	39.8	1.07
27	4.462	2.112	1.45e+03	0.01456	0.3969	39.7	1.07
28	4.960	2.227	1.45e+03	0.01456	0.3965	39.7	1.07
29	9.962	3.156	1.45e+03	0.01456	0.3954	39.5	1.08
30	14.961	3.868	1.45e+03	0.01455	0.3934	39.3	1.08
31	19.962	4.468	1.45e+03	0.01455	0.3923	39.2	1.09
32	24.961	4.996	1.44e+03	0.01455	0.3918	39.2	1.09
33	29.960	5.474	1.44e+03	0.01455	0.3906	39.1	1.09
34	39.962	6.322	1.44e+03	0.01455	0.3891	38.9	1.10
35	49.961	7.068	1.44e+03	0.01455	0.3880	38.8	1.10
36	59.959	7.743	1.44e+03	0.01455	0.3866	38.7	1.11
37	69.962	8.364	1.44e+03	0.01455	0.3856	38.6	1.11
38	79.963	8.942	1.44e+03	0.01455	0.3849	38.5	1.11
39	89.962	9.485	1.44e+03	0.01455	0.3845	38.4	1.11
40	99.962	9.998	1.44e+03	0.01455	0.3839	38.4	1.12
41	109.959	10.486	1.44e+03	0.01455	0.3832	38.3	1.12
42	119.960	10.953	1.44e+03	0.01455	0.3828	38.3	1.12
43	129.962	11.400	1.44e+03	0.01455	0.3823	38.2	1.12
44	139.961	11.830	1.44e+03	0.01455	0.3820	38.2	1.12
45	149.960	12.246	1.44e+03	0.01455	0.3816	38.2	1.12
46	159.963	12.648	1.44e+03	0.01455	0.3814	38.1	1.12
47	169.960	13.037	1.44e+03	0.01455	0.3811	38.1	1.13
48	179.960	13.415	1.44e+03	0.01455	0.3808	38.1	1.13
49	189.962	13.783	1.44e+03	0.01455	0.3805	38.1	1.13
50	199.960	14.141	1.44e+03	0.01455	0.3802	38.0	1.13

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 25

Constant Load Step

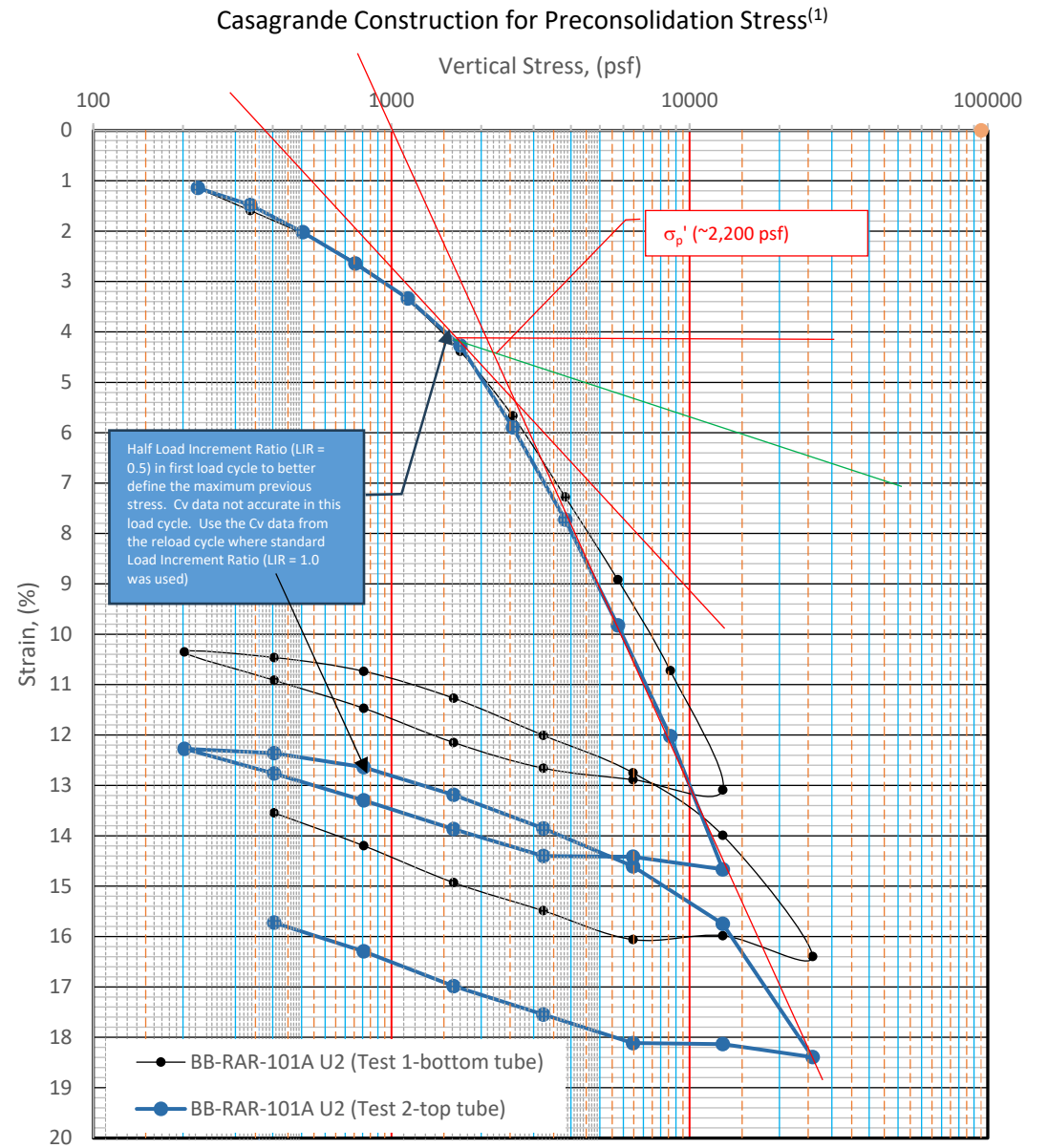
Stress: 721 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.055		1.44e+03	0.01455	0.3795	37.9	1.13
2	-0.050		1.44e+03	0.01455	0.3795	37.9	1.13
3	-0.046		1.25e+03	0.01429	0.3797	38.0	1.13
4	-0.042		1.10e+03	0.01409	0.3798	38.0	1.13
5	-0.037		1.01e+03	0.01396	0.3798	38.0	1.13
6	-0.033		946.	0.01379	0.3798	38.0	1.13
7	-0.029		903.	0.01366	0.3798	38.0	1.13
8	-0.024		871.	0.01357	0.3799	38.0	1.13
9	-0.020		848.	0.01350	0.3799	38.0	1.13
10	-0.015		830.	0.01345	0.3799	38.0	1.13
11	-0.011		817.	0.01341	0.3799	38.0	1.13
12	-0.006		805.	0.01337	0.3799	38.0	1.13
13	-0.002		796.	0.01335	0.3799	38.0	1.13
14	0.000	0.000	793.	0.01334	0.3799	38.0	1.13
15	0.002	0.049	789.	0.01333	0.3799	38.0	1.13
16	0.007	0.082	783.	0.01331	0.3799	38.0	1.13
17	0.024	0.156	767.	0.01326	0.3800	38.0	1.13
18	0.029	0.170	767.	0.01326	0.3800	38.0	1.13
19	0.116	0.341	744.	0.01319	0.3799	38.0	1.13
20	0.195	0.442	740.	0.01318	0.3798	38.0	1.13
21	0.279	0.528	735.	0.01317	0.3797	38.0	1.13
22	0.446	0.668	733.	0.01316	0.3796	38.0	1.13
23	0.697	0.835	731.	0.01315	0.3793	37.9	1.13
24	0.947	0.973	728.	0.01314	0.3791	37.9	1.13
25	1.449	1.204	728.	0.01314	0.3789	37.9	1.13
26	2.449	1.565	726.	0.01314	0.3786	37.9	1.13
27	4.449	2.109	726.	0.01314	0.3782	37.8	1.14
28	4.947	2.224	724.	0.01313	0.3780	37.8	1.14
29	9.949	3.154	722.	0.01312	0.3763	37.6	1.14
30	14.949	3.866	724.	0.01313	0.3750	37.5	1.15
31	19.948	4.466	722.	0.01312	0.3736	37.4	1.15
32	24.947	4.995	722.	0.01312	0.3733	37.3	1.15
33	29.946	5.472	722.	0.01312	0.3729	37.3	1.15
34	39.950	6.321	722.	0.01312	0.3713	37.1	1.16
35	49.949	7.067	722.	0.01312	0.3697	37.0	1.16
36	59.945	7.742	722.	0.01312	0.3690	36.9	1.17
37	69.948	8.363	722.	0.01312	0.3680	36.8	1.17
38	79.947	8.941	722.	0.01312	0.3675	36.7	1.17
39	89.945	9.484	722.	0.01312	0.3665	36.7	1.18
40	99.949	9.997	719.	0.01312	0.3658	36.6	1.18
41	109.946	10.486	719.	0.01312	0.3652	36.5	1.18
42	119.946	10.952	722.	0.01312	0.3644	36.4	1.18
43	119.981	10.954	719.	0.01312	0.3644	36.4	1.18

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-101A	Tested By: sjr	Checked By: sjr
	Sample No.: 1U	Test Date: 10/29/024	Depth: 32.65
	Test No.: 68-425	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

Consolidation Test Data
Summary Report

Project Name:		MDOT Josh Bridge #0976	
Project Number:		166-37	
Project Location:		Richmond, Maine	
Client:		GZA - PN: 09.0026249	
Sample Description:		Gray Silty Clay (CL)	
Preparation:		Trimmed Shelby Tube	
Lab Test No:	ICON 65-436		
Boring No.	BB-RAR-101A		
Sample No:	2U (test 2)	Sample from Top of tube	
Boring Elevation (ft).	--		
Sample Depth (ft):	40-42		
Test Specimen Depth (Ft):	40.6		
Test Specimen Elevation:	---		
Water Content (%):	40.5		
Dry Unit Weight (pcf):	81.9		
Wet Unit Weight (pcf):	115.1		
Saturation Before (%):	97.6		
Saturation After (%):	100		
Void Ratio Before:	1.19		
Void Ratio After:	0.85		
Overburden Pressure (psf):	--		
Max Previous stress (psf):	2,200	This is a rough estimate based on the poorly defined curve. Check against existing overburden stress.	
Max Prev. stress (Work) (psf):	2,250		
OCR:	--		
Compression Index (C _{CE}):	0.13		
Recompression Index (C _{RE}):	0.021 from re-load curve		
Liquid Limit:			
Plastic Limit:			
Plasticity Index:			
Two test run on this tube, one from the bottom of the tube, and one from the top of the tube. The bottom 0.75 feet of the tube had cracks in it, possibly tension cracks from sampling. The top 0.5 feet of the tube had shredded wood fibers in the top of the recovery. The tube was pushed through this woody material and may have pulled some fibers along the outside edge of the full recovery.			
Tested By:	sjr		
Date Tested:	11/6/2024		
Checked By:	sjr		



Note 1: The calculations for the Max Previous Stress, the Compression Index and the Recompression Index are provided for the convenience of the Specifier. The Specifier should make their own independent assessment of Maximum Previous stress, Cce and Cre for use in any engineering analyses.


One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter, in: 2.50	Specific Gravity: 2.88 (Implied)	Liquid Limit: 0
Specimen Height, in: 1.00	Initial Void Ratio: 1.12	Plastic Limit: 0
Final Height, in: 0.86	Final Void Ratio: 0.833	Plasticity Index: 0

	Before Test Trimblings	Before Test Specimen	After Test Specimen	After Test Trimblings
Container ID	222	---	"ring"	307
Mass Container, gm	36.9	109.43	109.43	60.47
Mass Container + Wet Soil, gm	145.11	260.34	250.38	201.26
Mass Container + Dry Soil, gm	115.66	218.75	218.75	169.67
Mass Dry Soil, gm	78.76	109.32	109.32	109.2
Water Content, %	37.39	38.04	28.93	28.93
Void Ratio	---	1.12	0.83	---
Degree of Saturation, %	---	97.78	100.00	---
Dry Unit Weight, pcf	---	84.777	98.058	---

Preconsolidation Stress, psf	---
Compression Ratio	0
Rebound Ratio	0
Compression Index	0
Rebound Index	0


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 Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

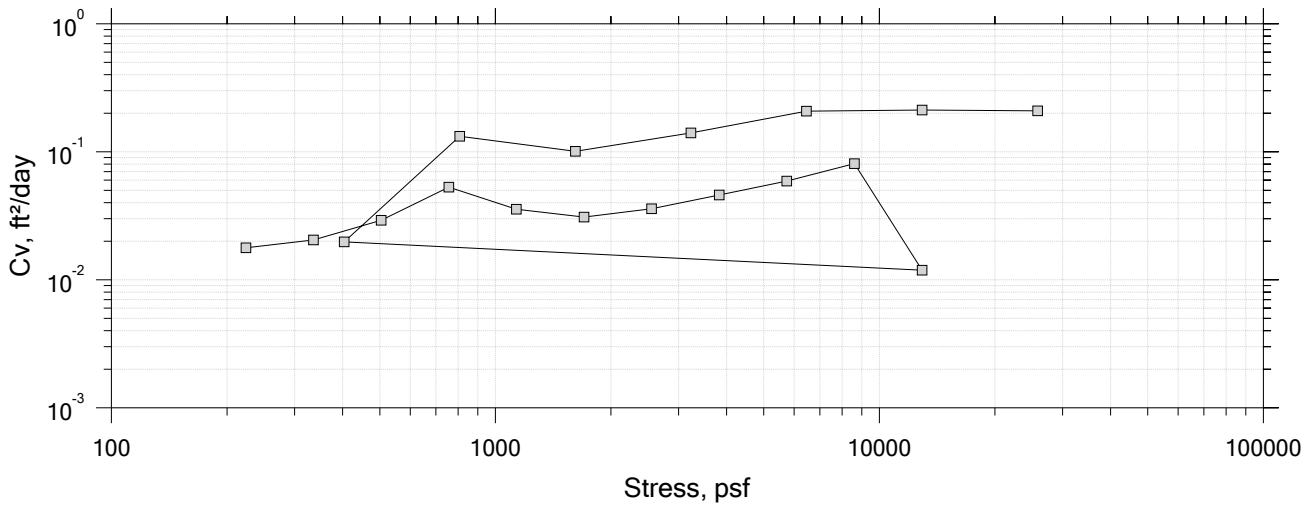
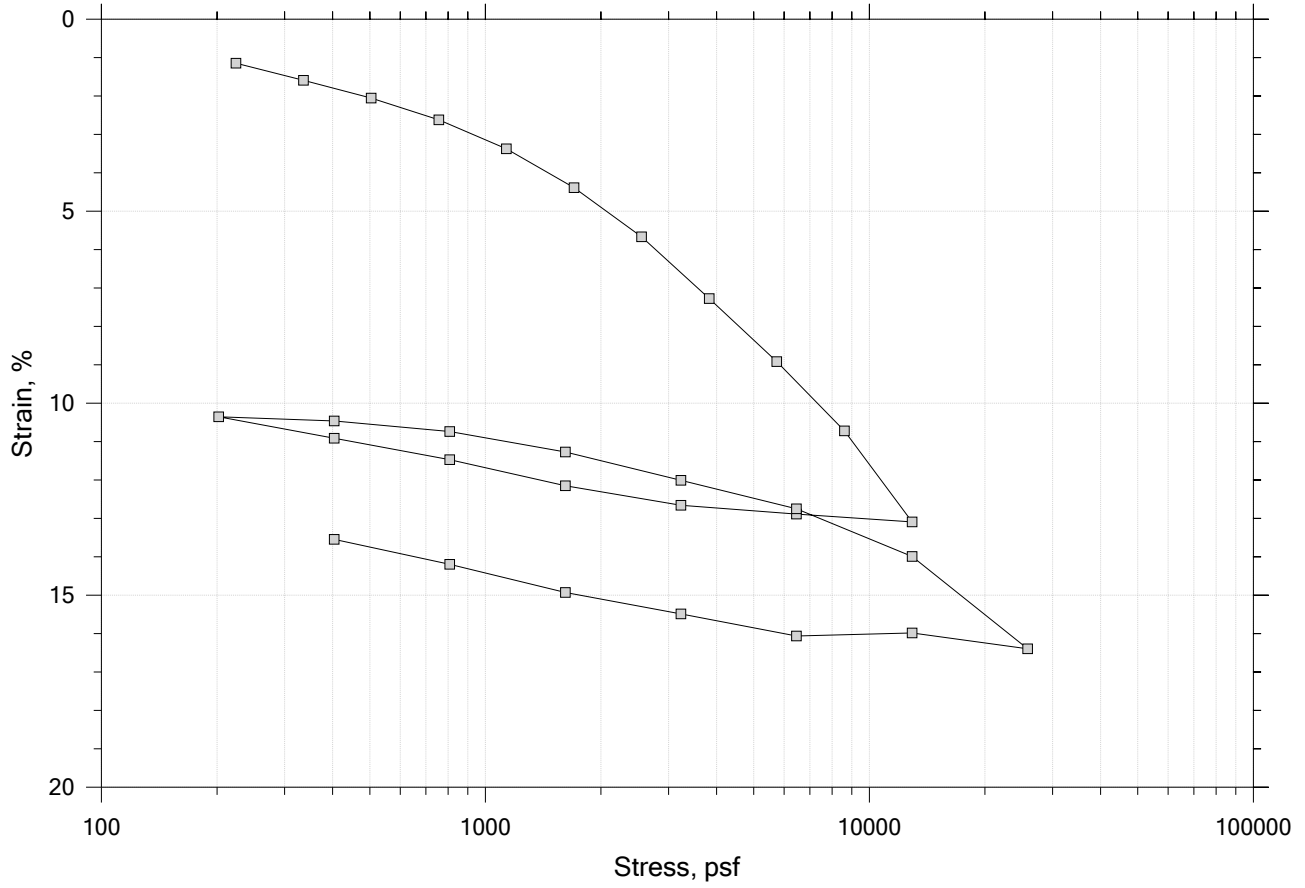
Sqrt of Time Coefficients


Step	Applied Stress psf	EOP Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft ² /day	Mv ft ² /lb	k ft/day
1	224.	0.01146	1.10	1.15	118.009	1.78e-02	5.11e+01	5.67e-05
2	336.	0.01592	1.09	1.59	100.688	2.05e-02	3.98e+01	5.09e-05
3	504.	0.02054	1.08	2.05	70.053	2.92e-02	2.75e+01	5.01e-05
4	756.	0.02621	1.06	2.62	38.248	5.29e-02	2.25e+01	7.43e-05
5	1.13e+03	0.03372	1.05	3.37	56.120	3.55e-02	1.99e+01	4.41e-05
6	1.70e+03	0.04386	1.03	4.39	63.353	3.09e-02	1.79e+01	3.45e-05
7	2.55e+03	0.05667	1.00	5.67	53.310	3.59e-02	1.50e+01	3.37e-05
8	3.83e+03	0.07276	0.966	7.28	40.383	4.59e-02	1.26e+01	3.62e-05
9	5.74e+03	0.08917	0.931	8.92	30.369	5.90e-02	8.58e+00	3.16e-05
10	8.61e+03	0.1072	0.893	10.7	21.346	8.08e-02	6.28e+00	3.17e-05
11	1.29e+04	0.1309	0.842	13.1	138.710	1.19e-02	5.50e+00	4.08e-06
12	6.46e+03	0.1289	0.847	12.9	2.870	5.59e-01	3.17e-01	1.11e-05
13	3.23e+03	0.1266	0.852	12.7	6.990	2.31e-01	7.03e-01	1.01e-05
14	1.61e+03	0.1215	0.862	12.1	18.342	8.87e-02	3.16e+00	1.75e-05
15	807.	0.1147	0.877	11.5	41.221	4.00e-02	8.40e+00	2.10e-05
16	404.	0.1091	0.889	10.9	75.212	2.22e-02	1.38e+01	1.92e-05
17	202.	0.1035	0.901	10.4	192.431	8.80e-03	2.78e+01	1.52e-05
18	404.	0.1046	0.898	10.5	86.043	1.98e-02	5.44e+00	6.72e-06
19	807.	0.1074	0.892	10.7	12.835	1.32e-01	6.78e+00	5.59e-05
20	1.61e+03	0.1127	0.881	11.3	16.674	1.01e-01	6.62e+00	4.16e-05
21	3.23e+03	0.1201	0.865	12.0	11.790	1.40e-01	4.56e+00	4.00e-05
22	6.46e+03	0.1275	0.850	12.8	7.839	2.08e-01	2.30e+00	2.99e-05
23	1.29e+04	0.1399	0.823	14.0	7.516	2.12e-01	1.92e+00	2.54e-05
24	2.58e+04	0.1640	0.772	16.4	7.293	2.09e-01	1.86e+00	2.43e-05
25	1.29e+04	0.1598	0.781	16.0	1.648	9.04e-01	3.20e-01	1.80e-05
26	6.46e+03	0.1606	0.779	16.1	4.487	3.33e-01	-1.21e-01	-2.51e-06
27	3.23e+03	0.1549	0.792	15.5	16.195	9.29e-02	1.78e+00	1.03e-05
28	1.61e+03	0.1493	0.803	14.9	10.303	1.48e-01	3.45e+00	3.18e-05
29	807.	0.1420	0.819	14.2	26.706	5.79e-02	9.06e+00	3.28e-05
30	404.	0.1354	0.833	13.5	78.090	2.01e-02	1.62e+01	2.04e-05

	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		
	Displacement at End of Primary		

One-Dimensional Consolidation by ASTM D2435 - Method B

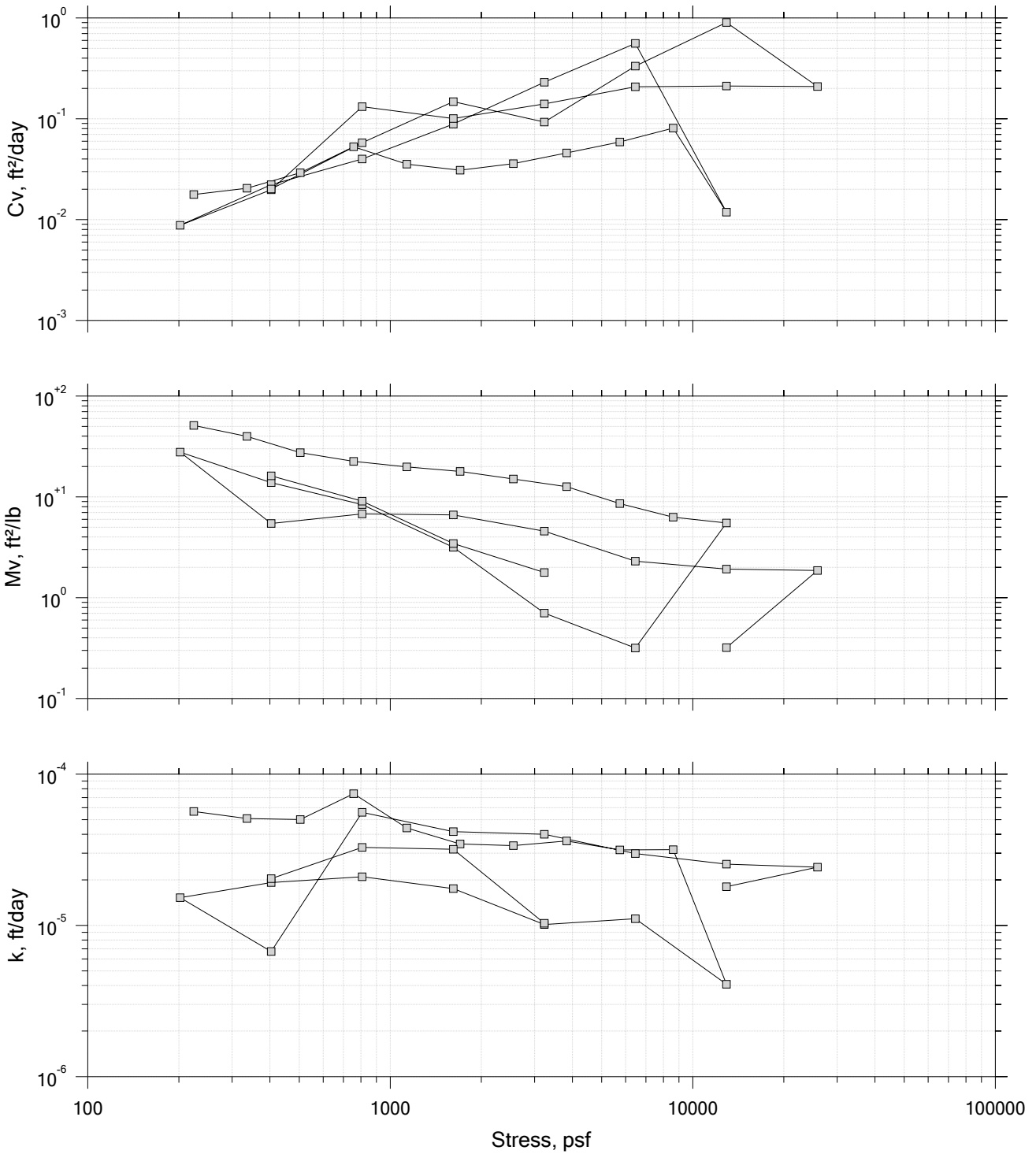
Summary Report




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		
	Displacement at End of Primary		

One-Dimensional Consolidation by ASTM D2435 - Method B

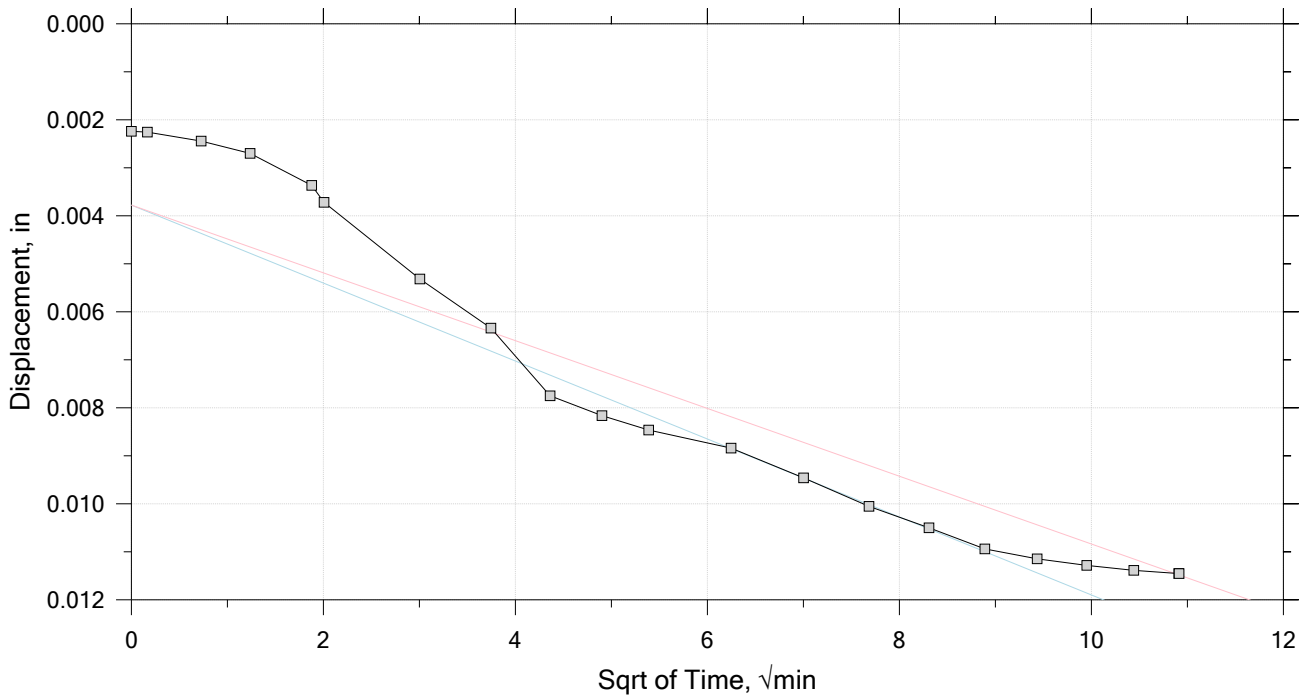
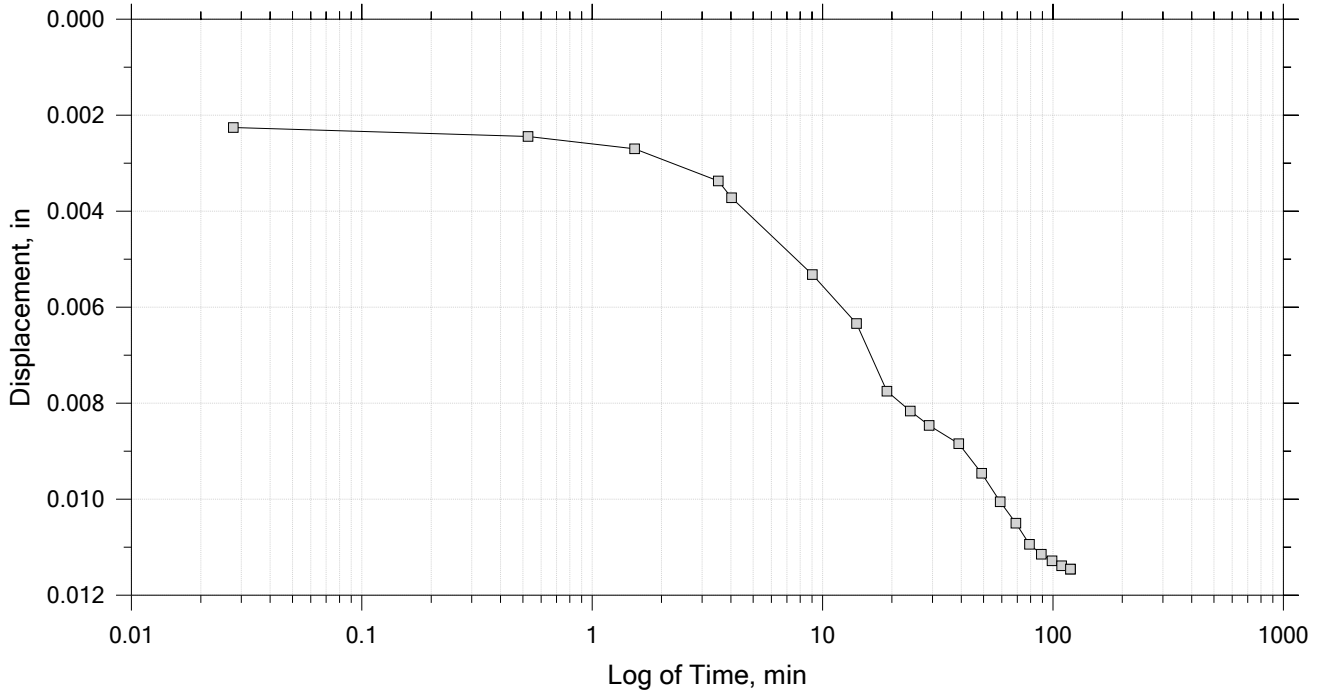
Sqrt of Time Coefficients




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

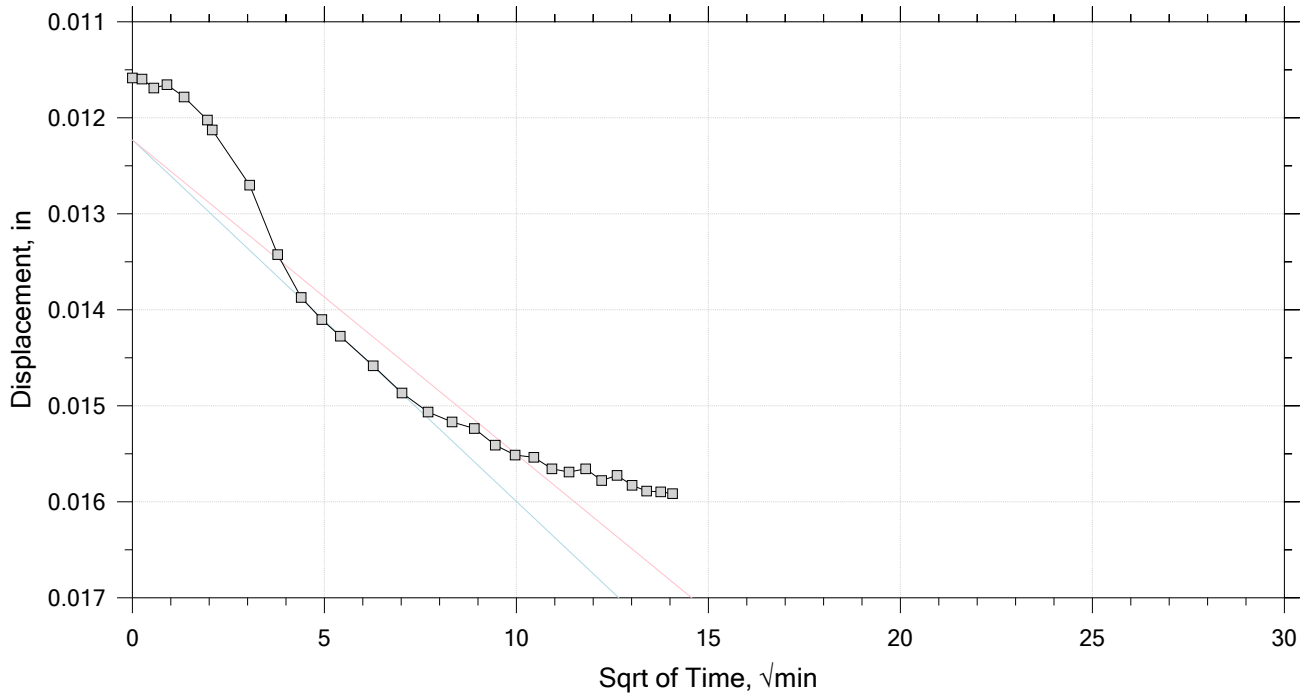
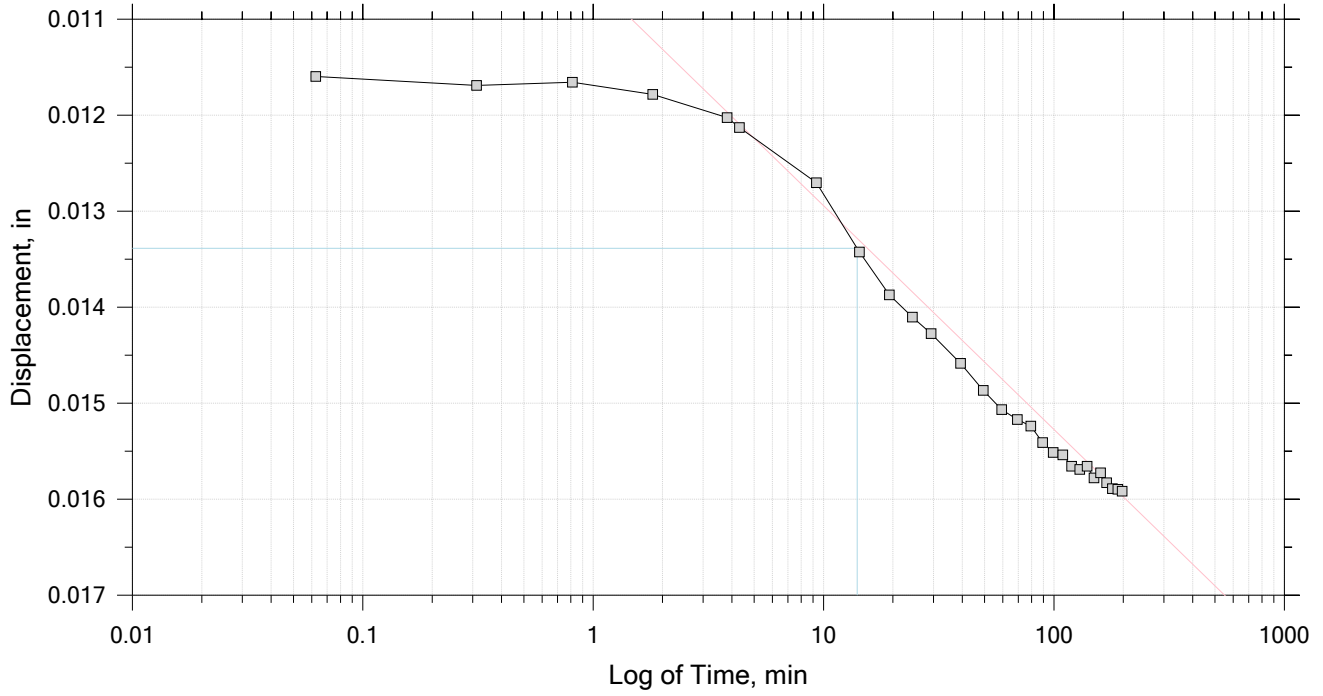
Time Curve 1 of 30
Constant Load Step
Stress: 224 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

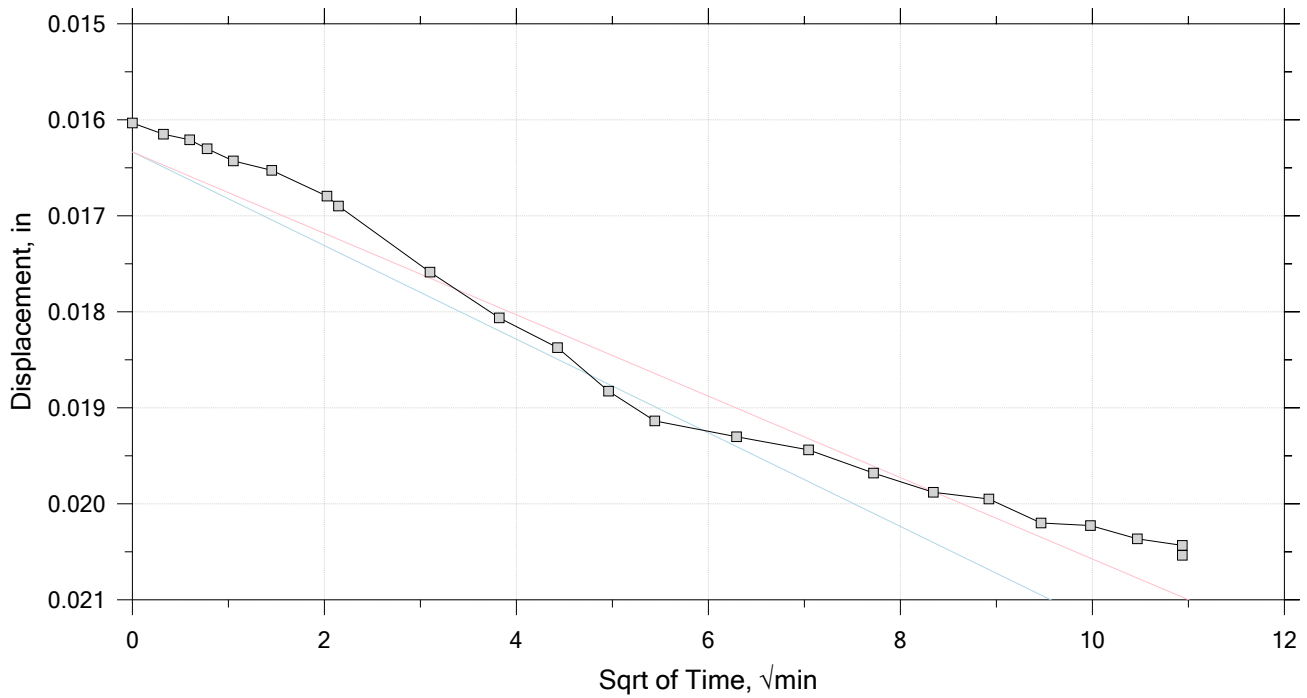
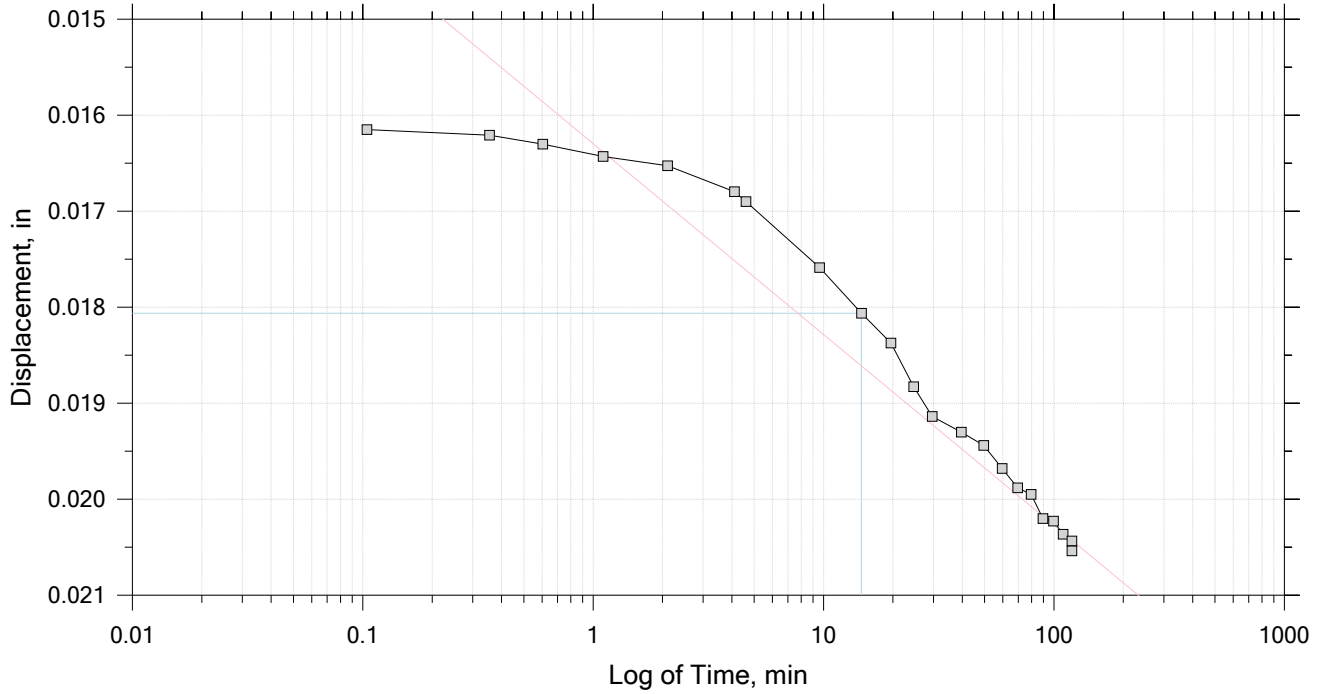
Time Curve 2 of 30
Constant Load Step
Stress: 336 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

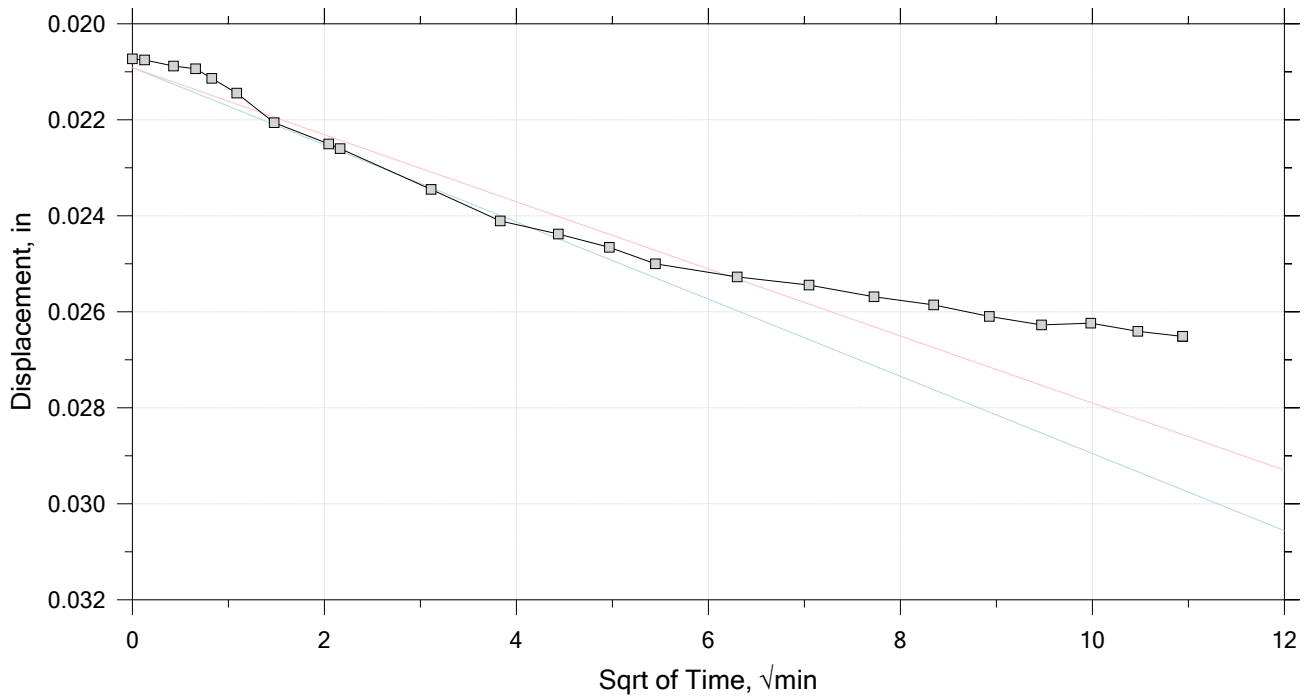
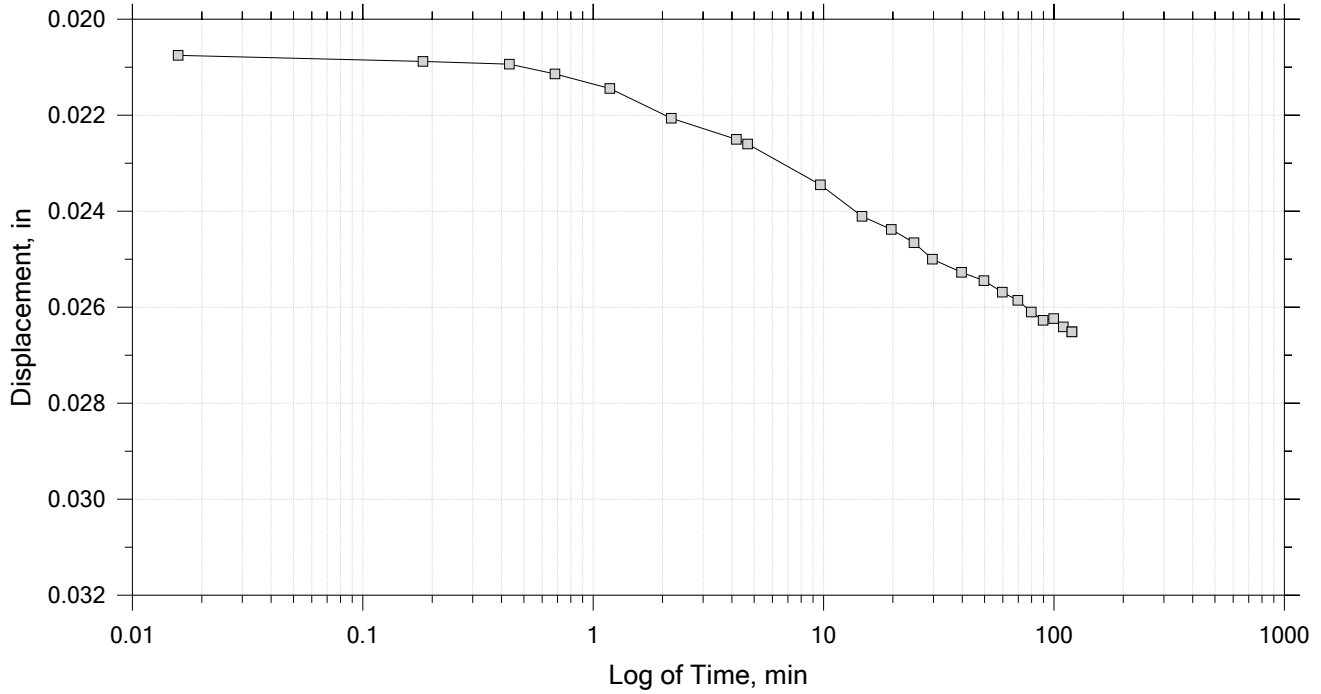
Time Curve 3 of 30
 Constant Load Step
 Stress: 504 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

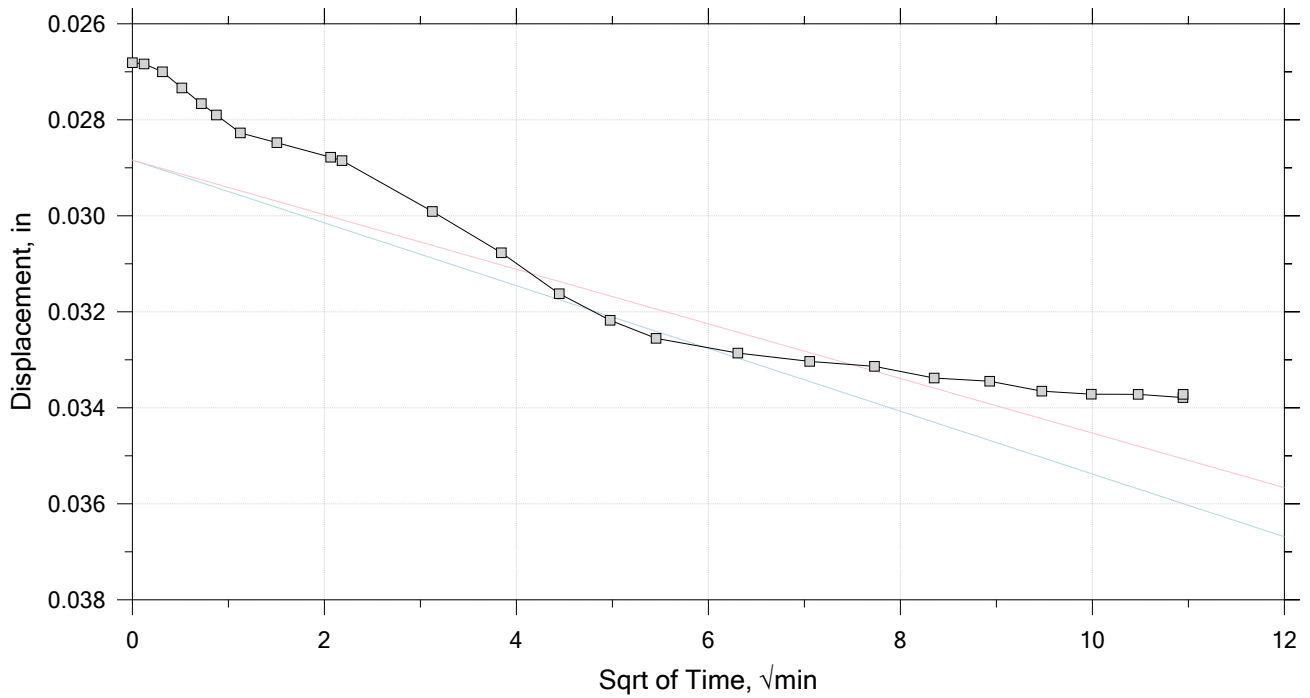
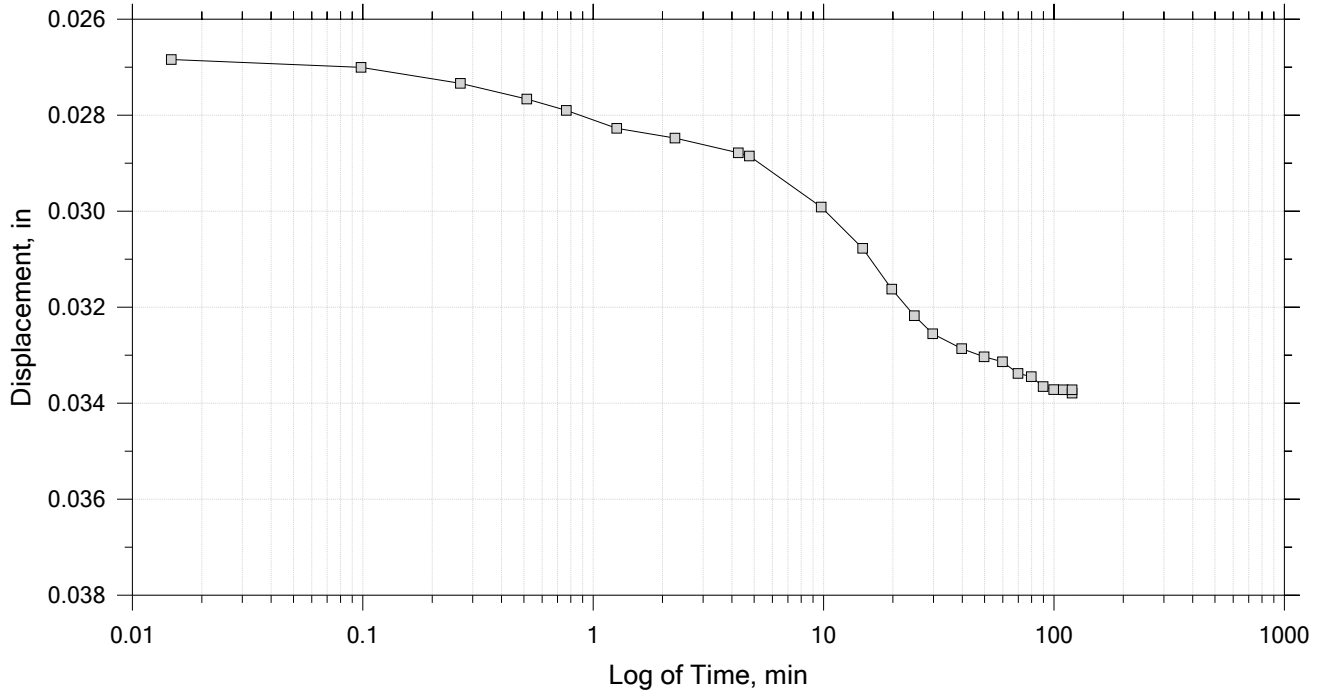
Time Curve 4 of 30
Constant Load Step
Stress: 756 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 30
 Constant Load Step
 Stress: 1.13e+03 psf



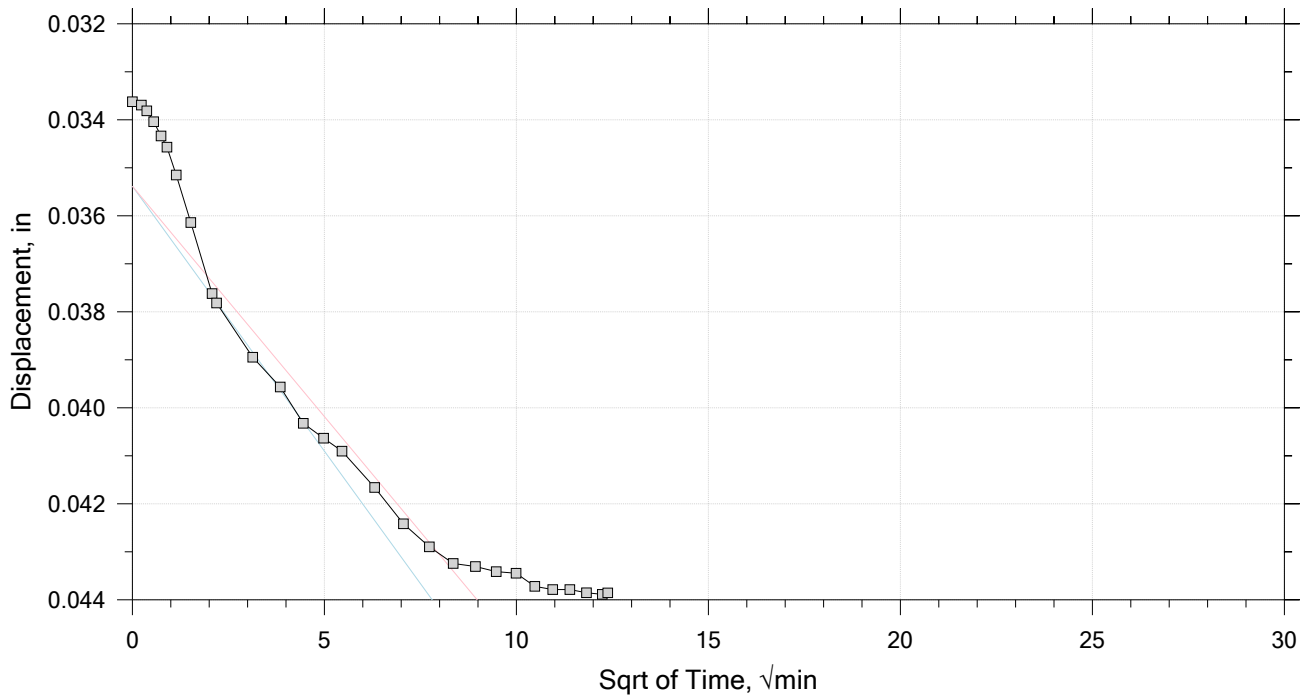
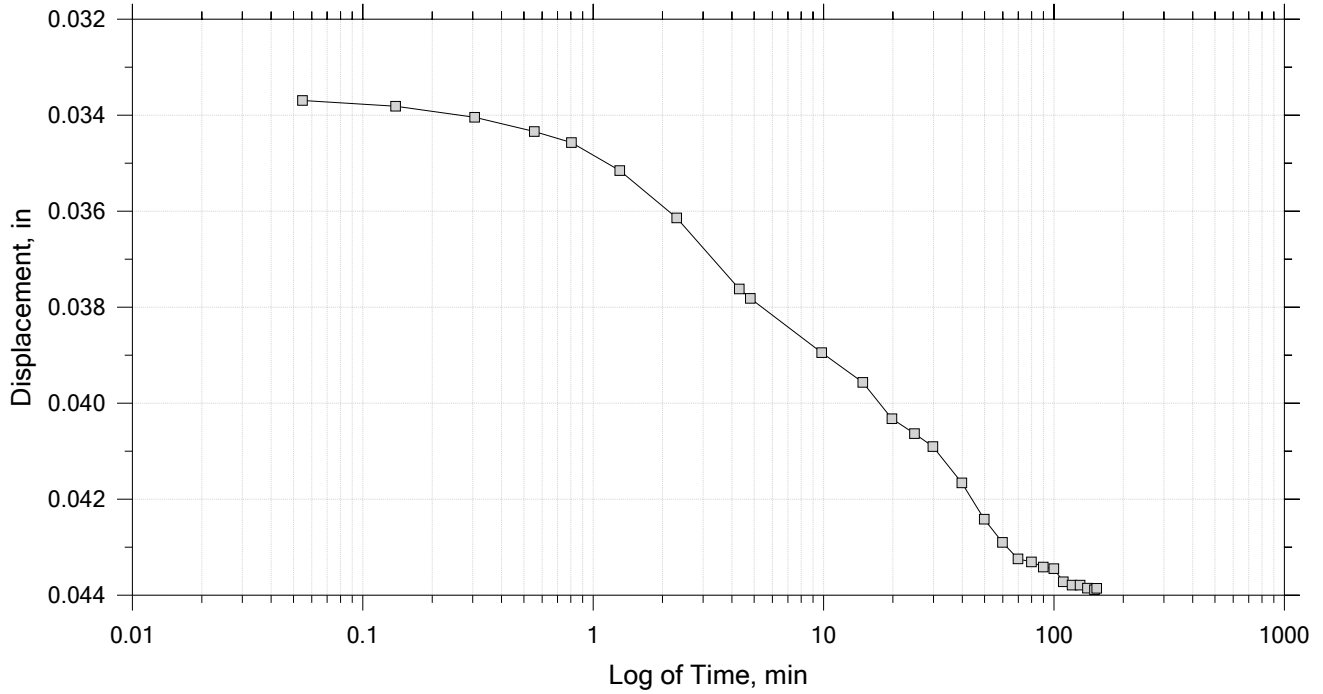
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 30

Constant Load Step

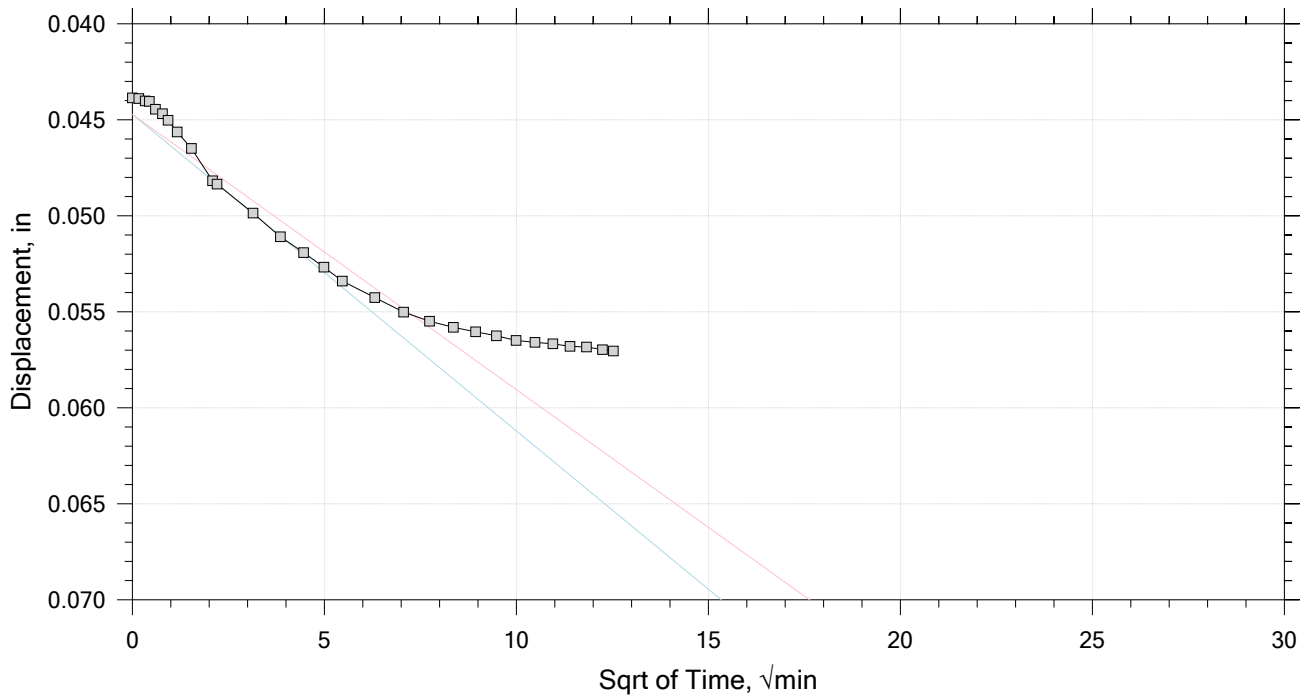
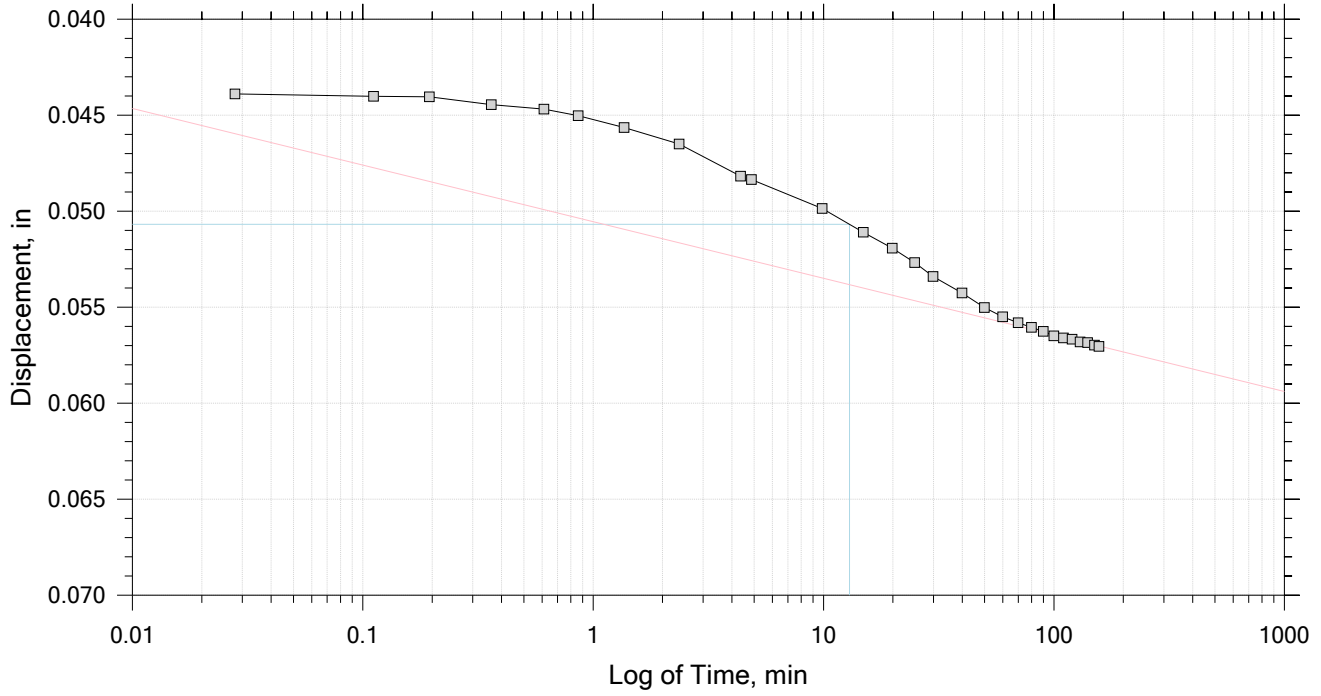
Stress: 1.7e+03 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 30
 Constant Load Step
 Stress: 2.55e+03 psf



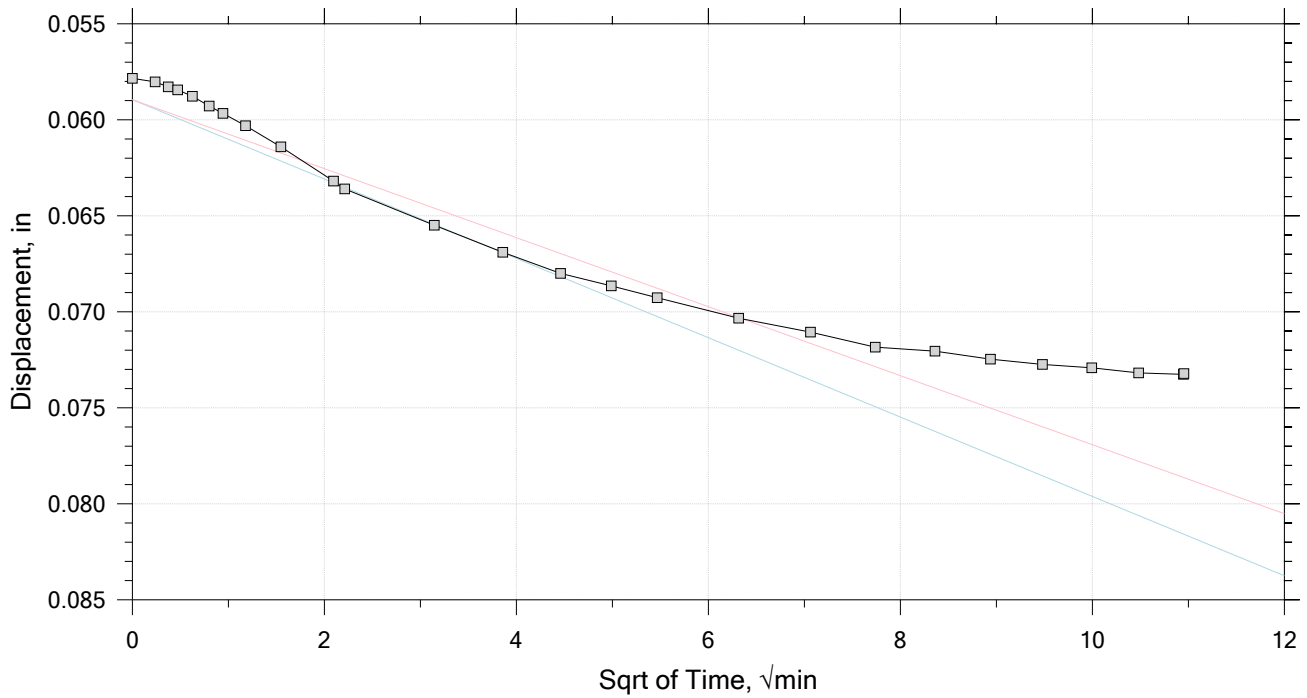
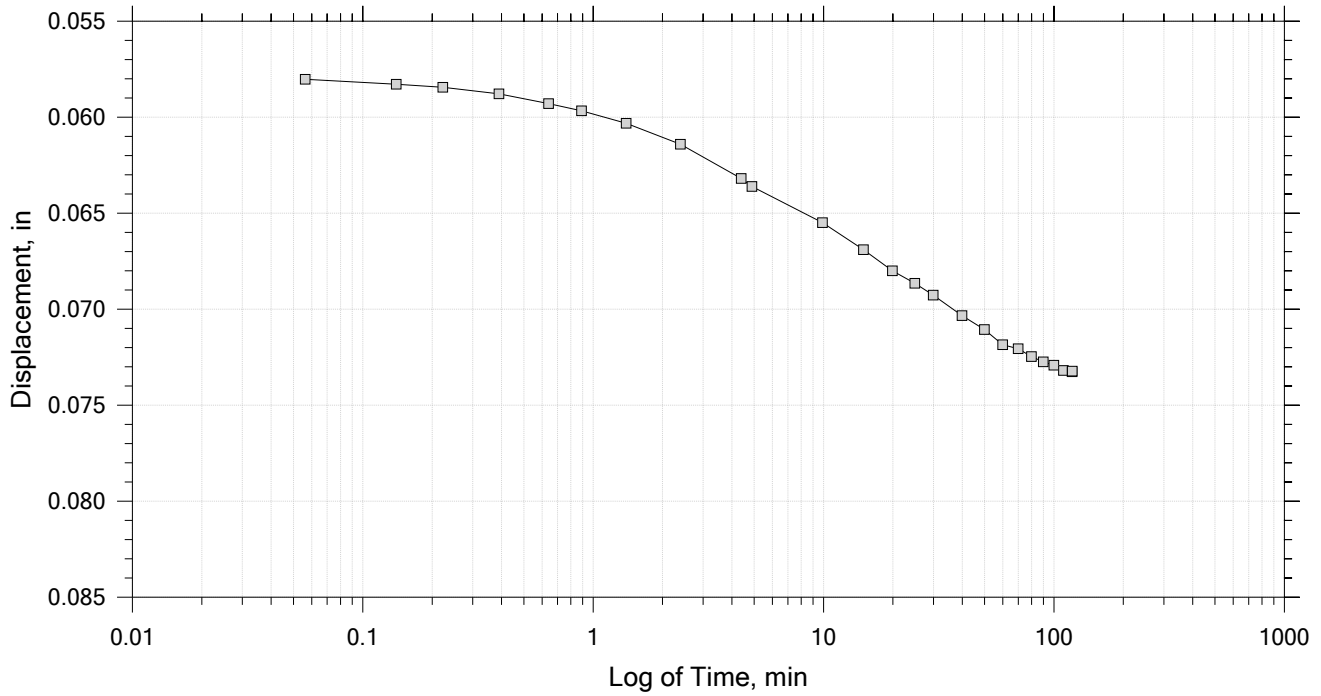
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 30

Constant Load Step

Stress: 3.83e+03 psf



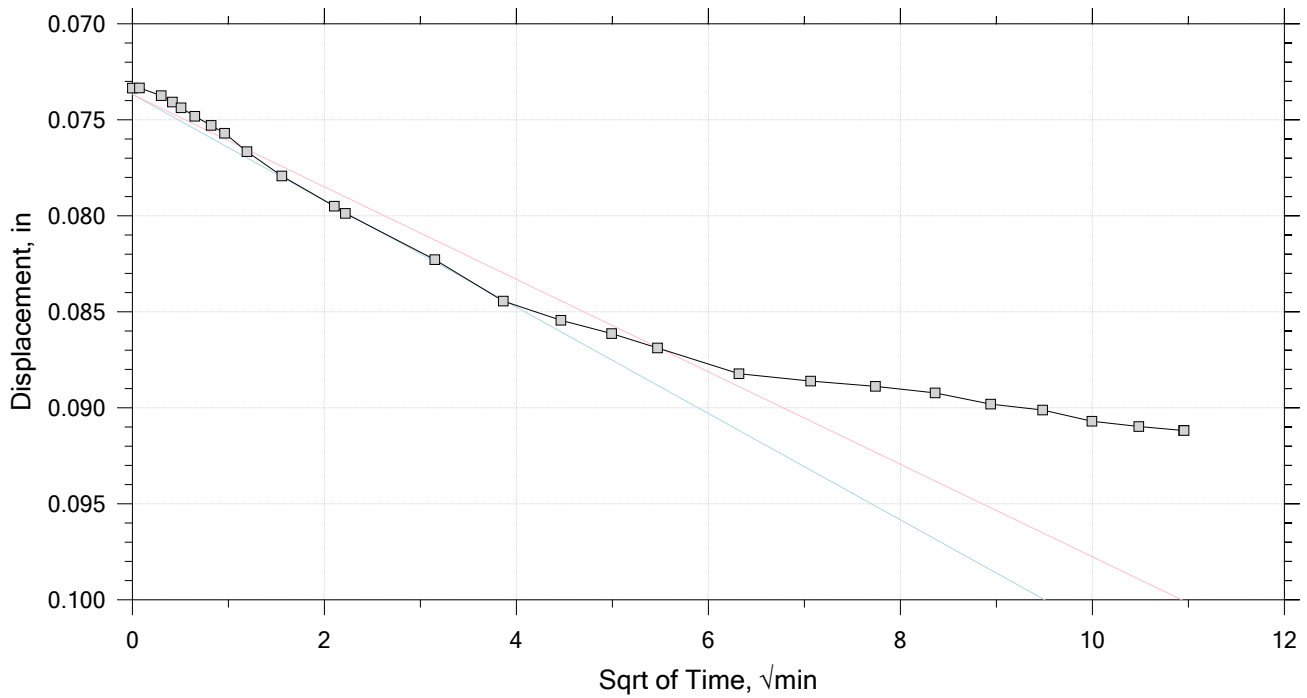
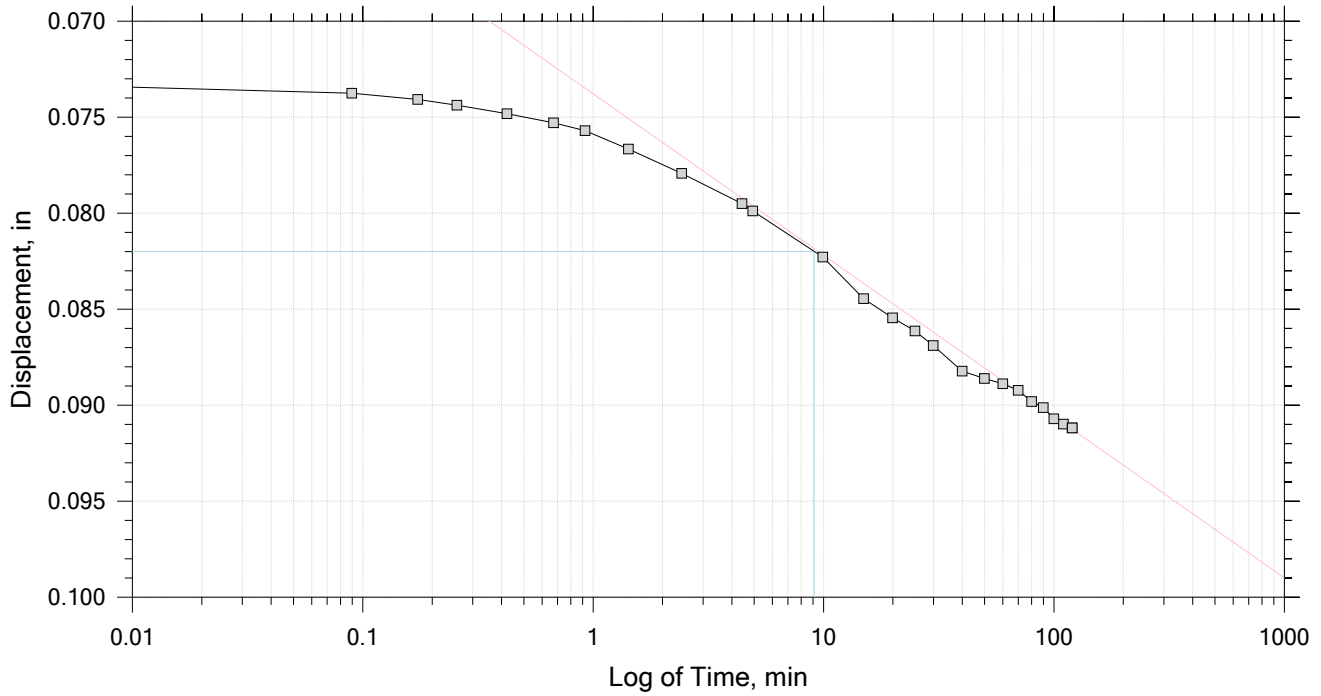
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 30

Constant Load Step

Stress: 5.74e+03 psf



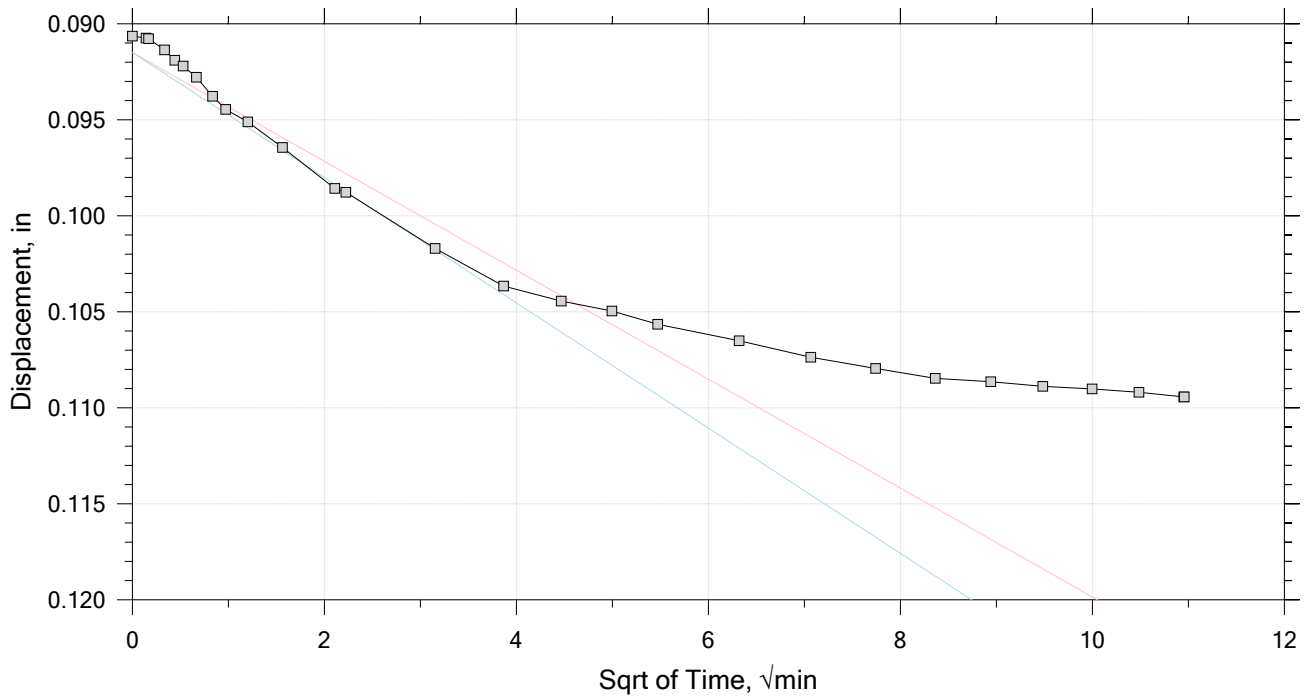
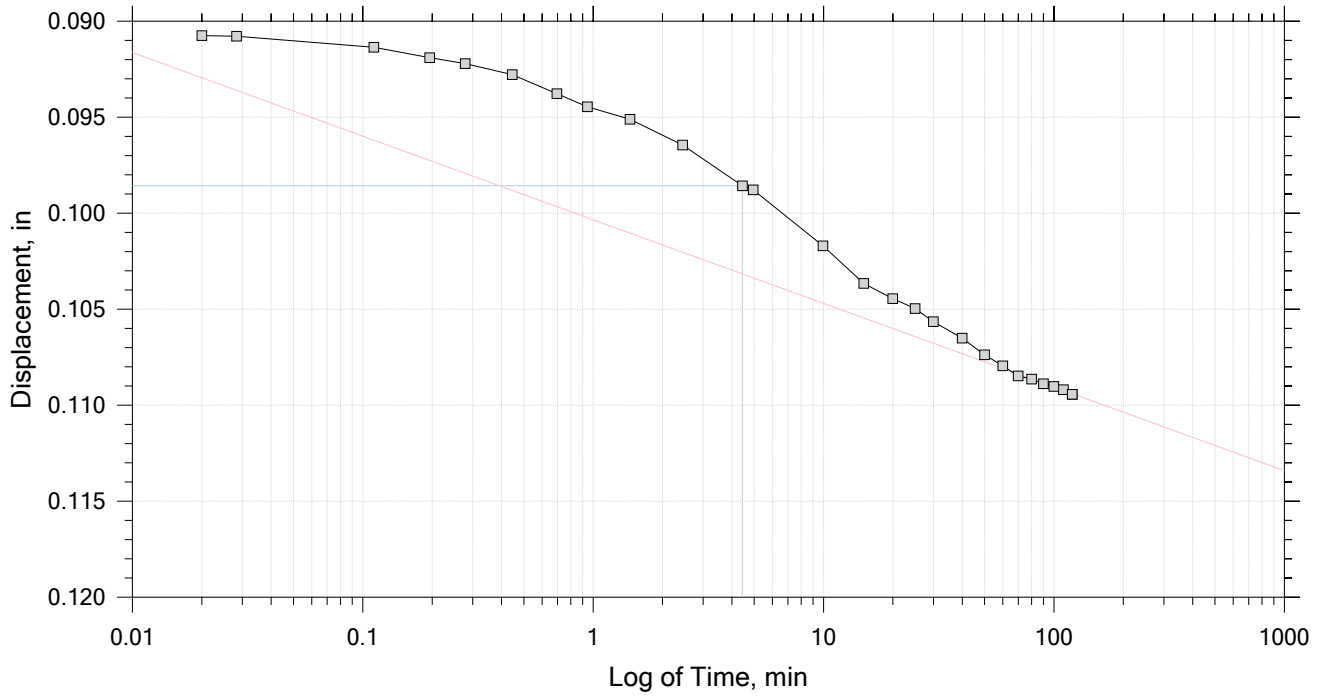
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 30

Constant Load Step

Stress: 8.61×10^3 psf



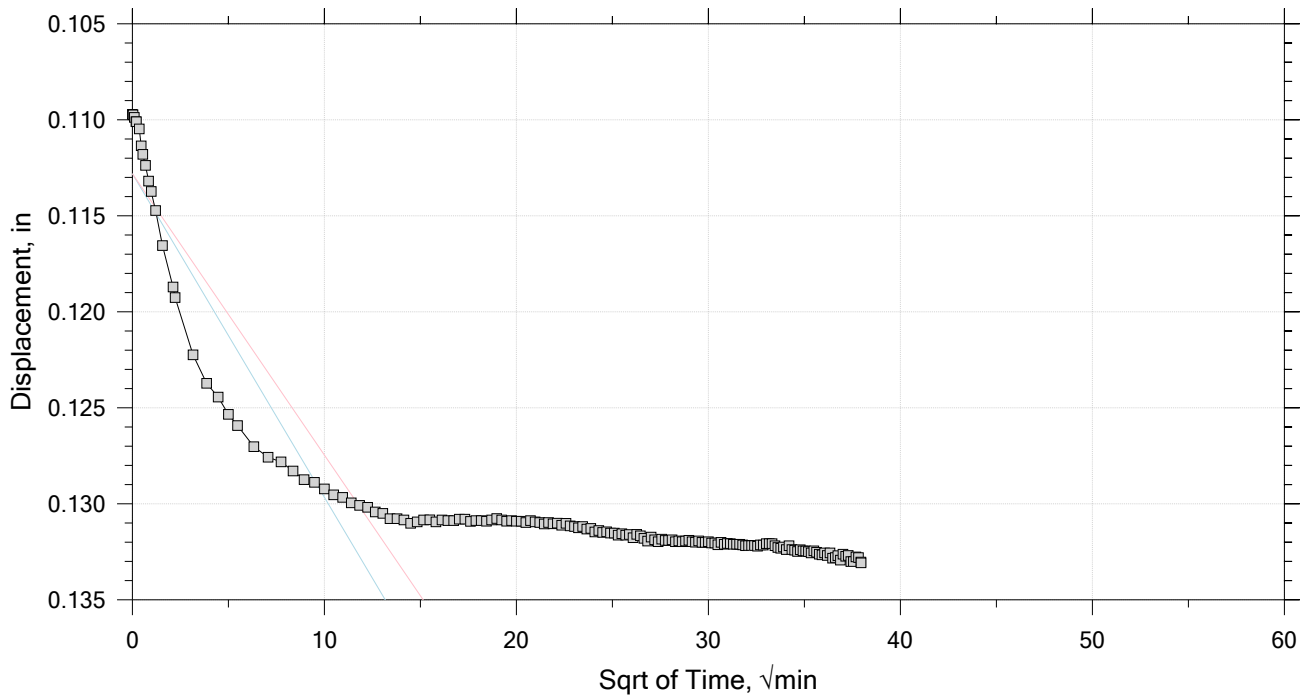
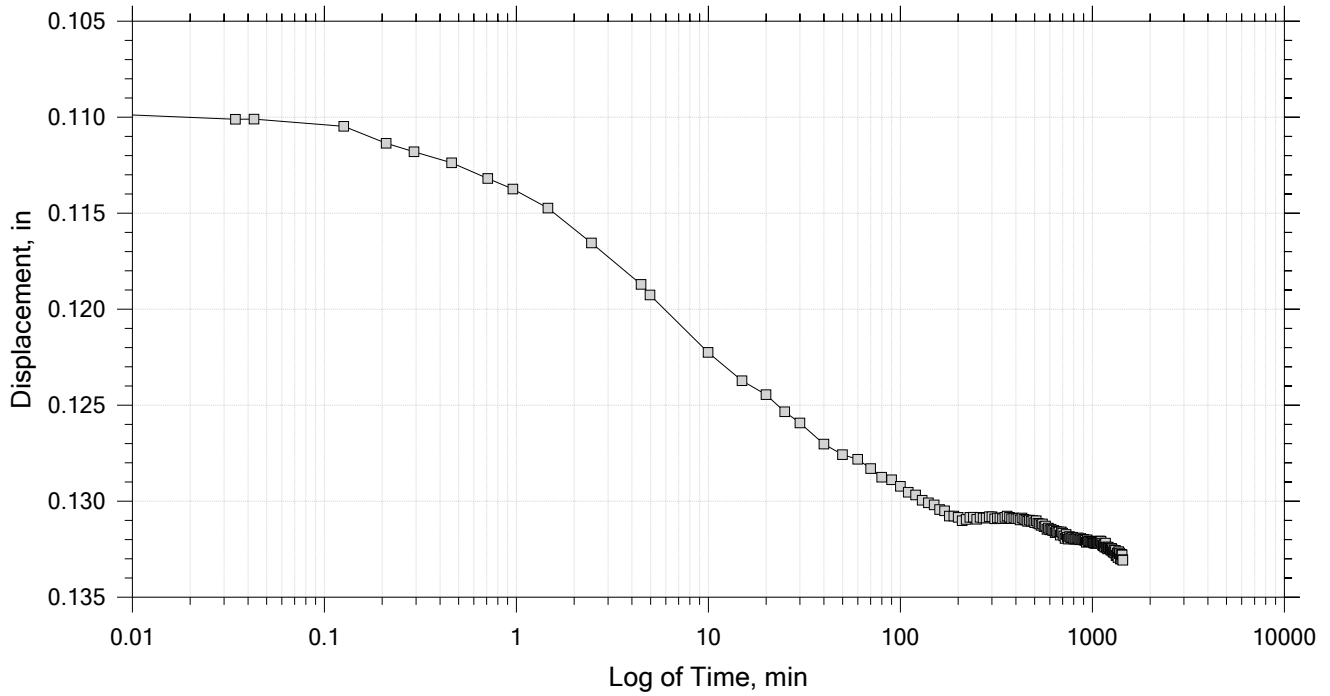
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 30

Constant Load Step

Stress: 1.29e+04 psf



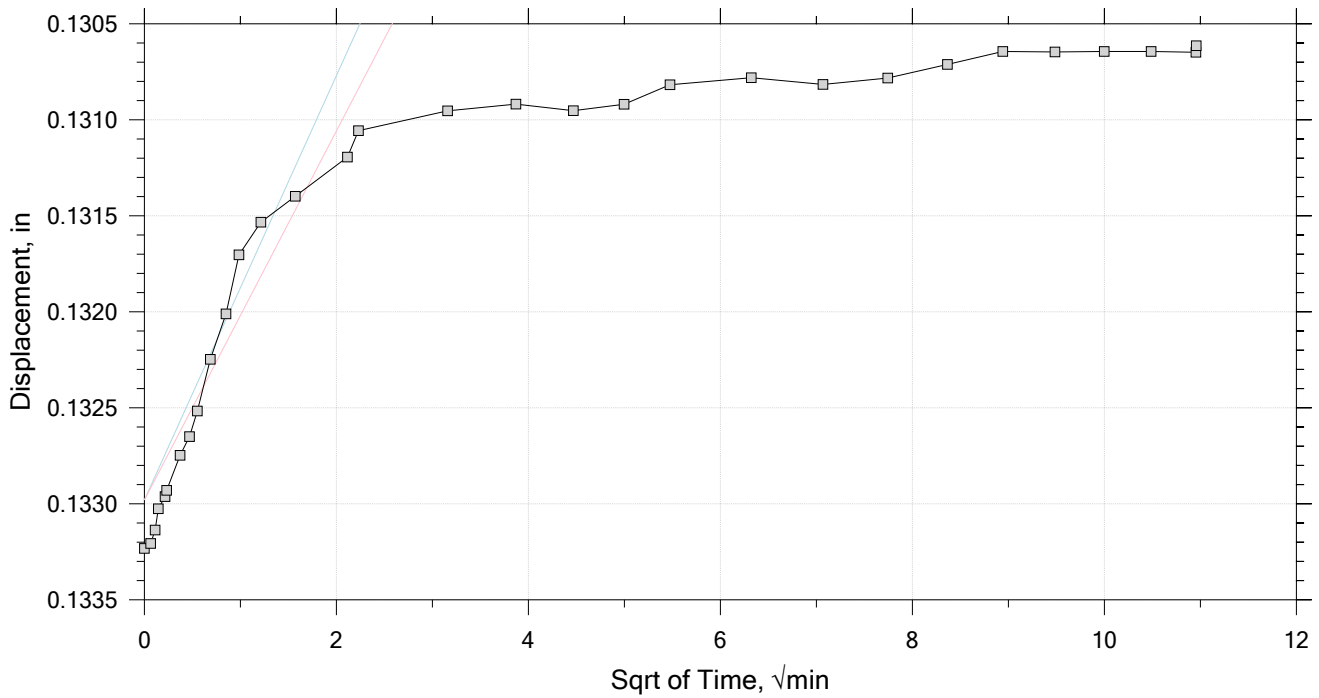
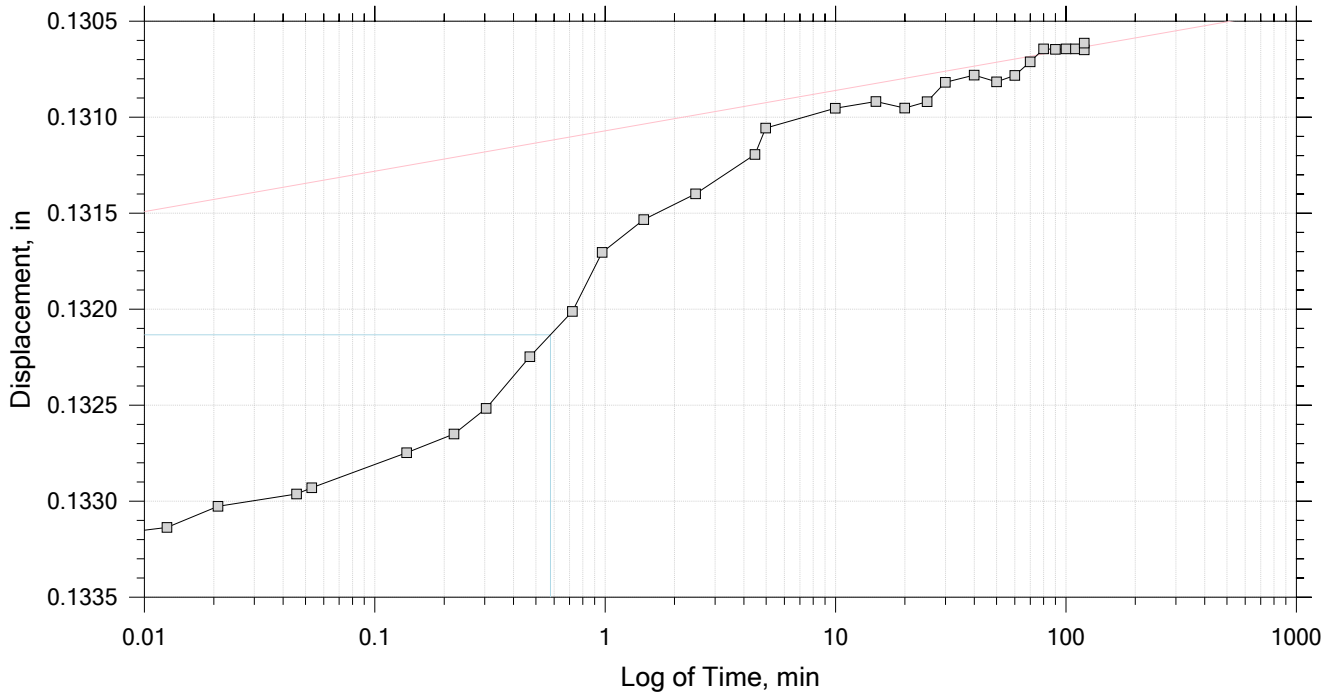
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 30

Constant Load Step

Stress: 6.46e+03 psf



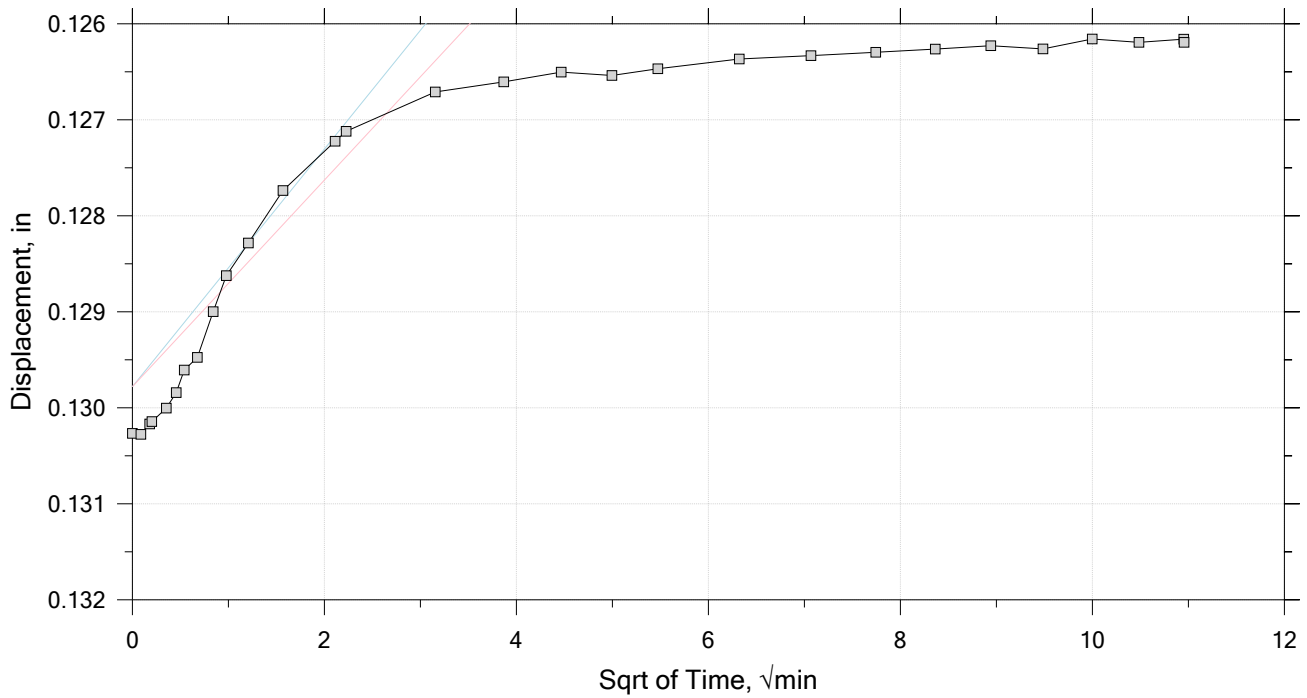
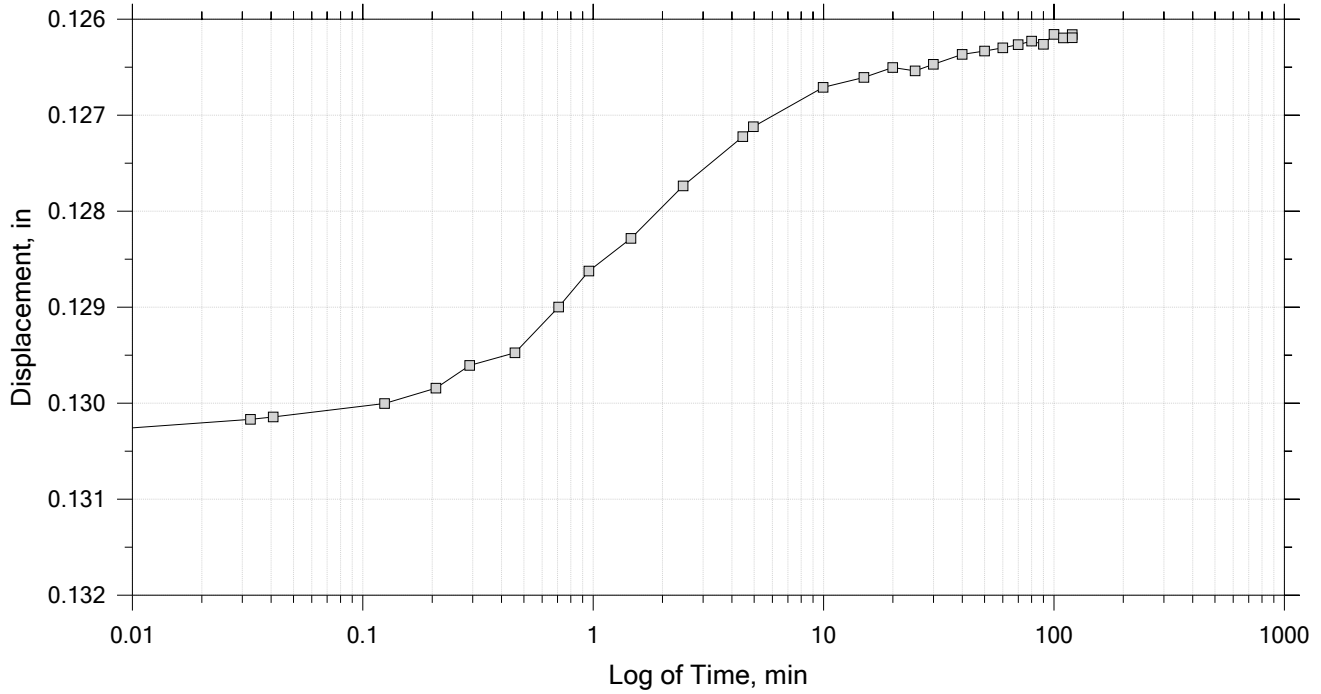
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 30

Constant Load Step

Stress: 3.23e+03 psf



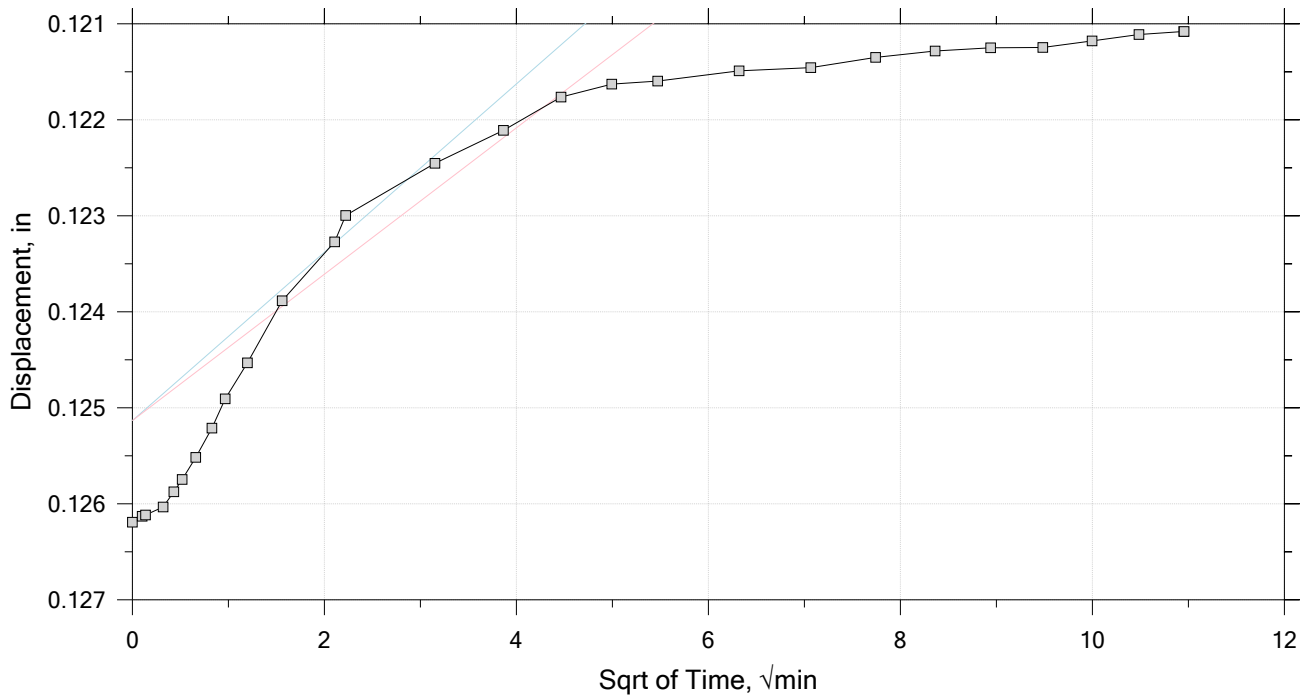
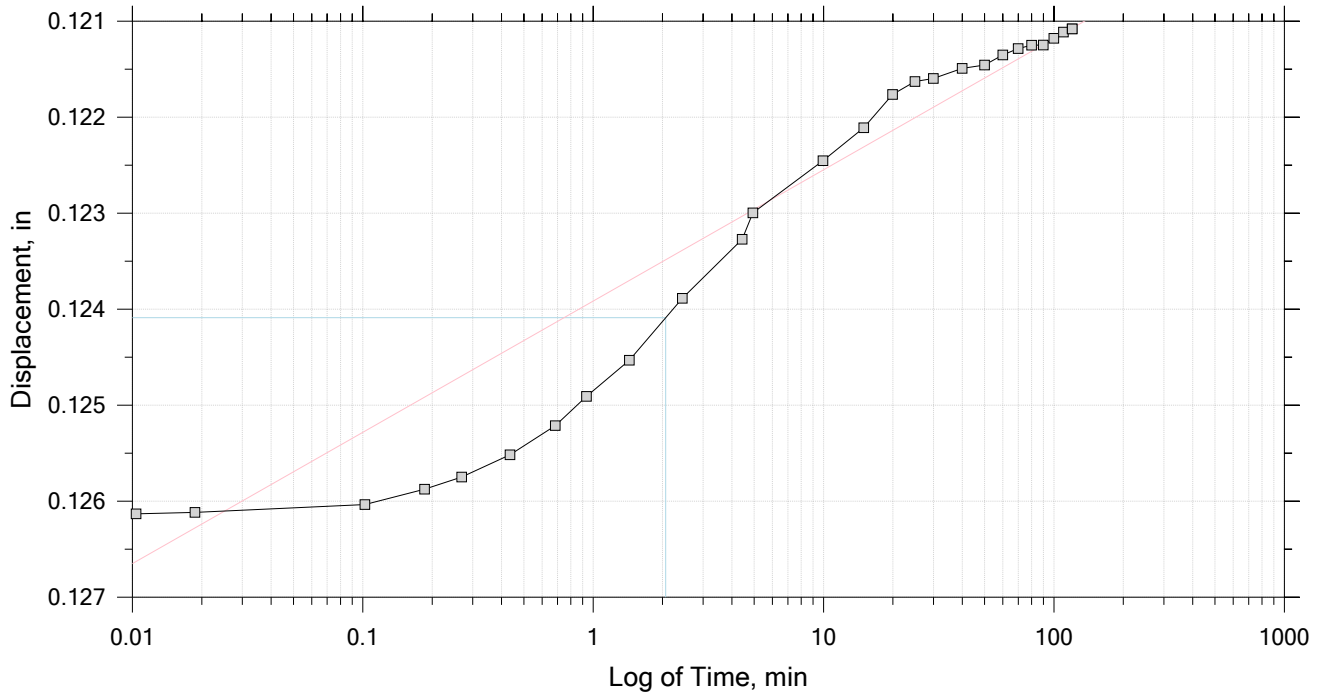
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 30

Constant Load Step

Stress: 1.61e+03 psf



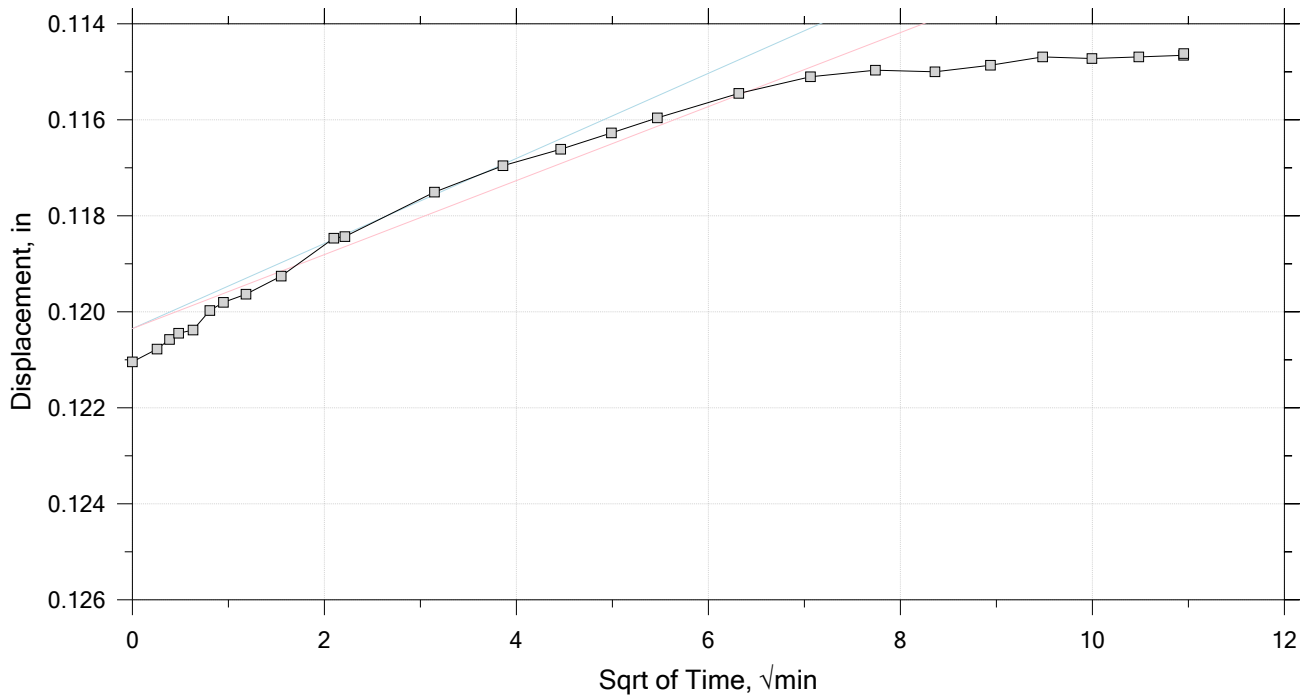
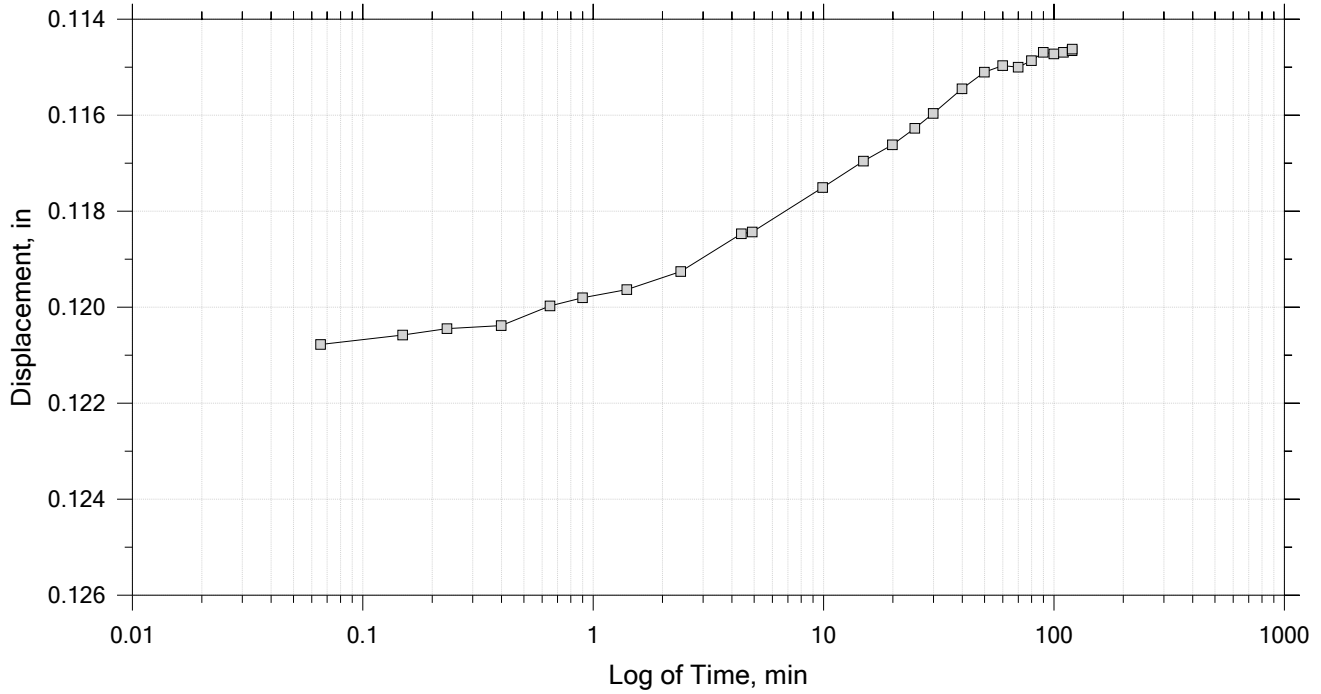
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 30

Constant Load Step

Stress: 807 psf



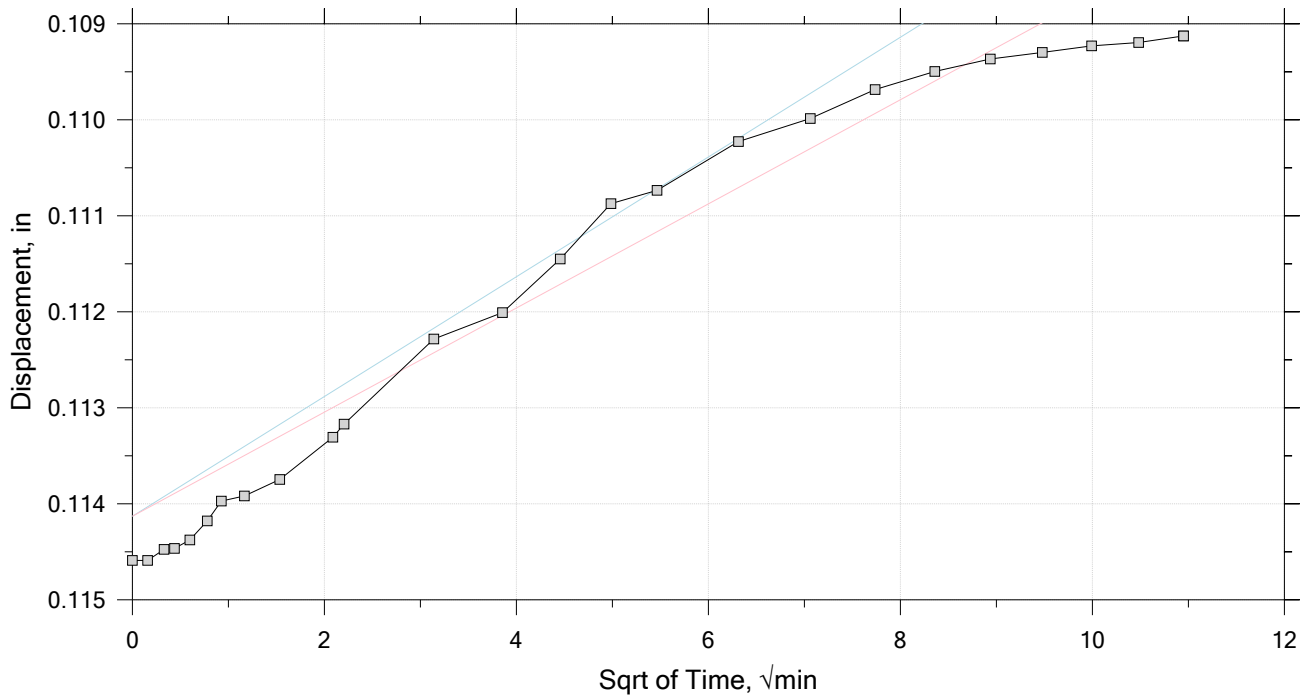
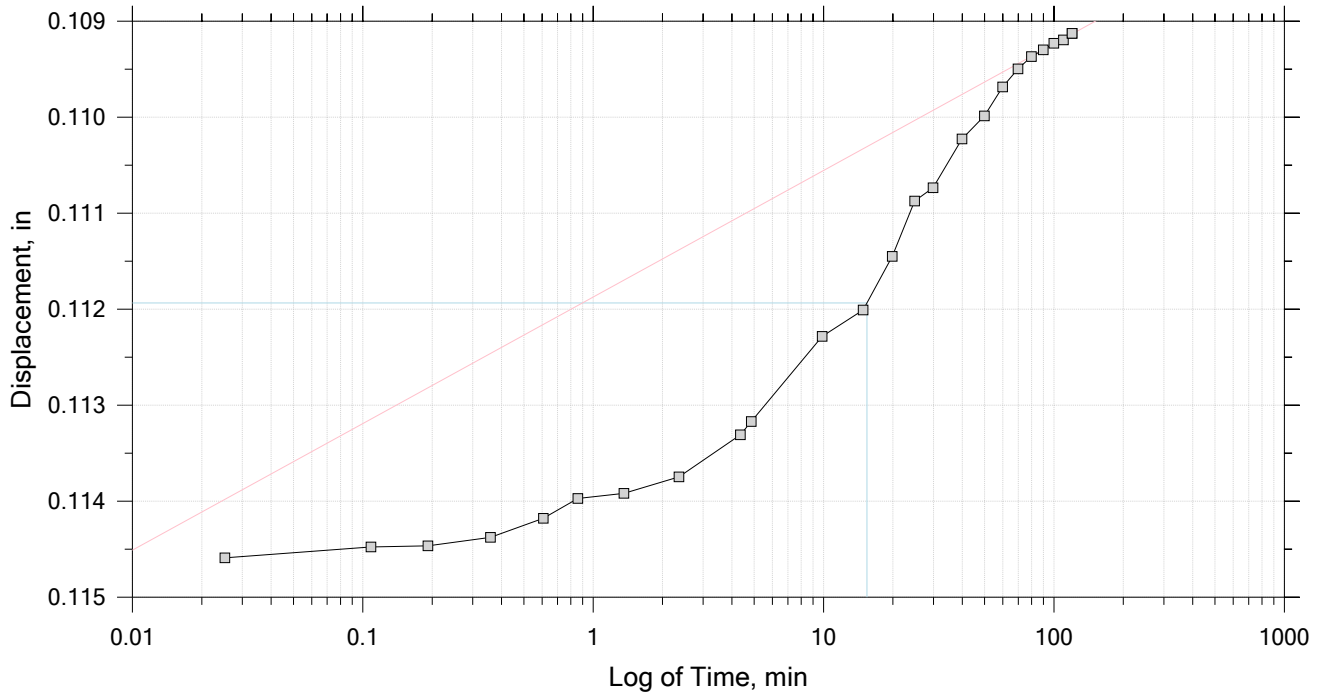
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 30

Constant Load Step

Stress: 404 psf



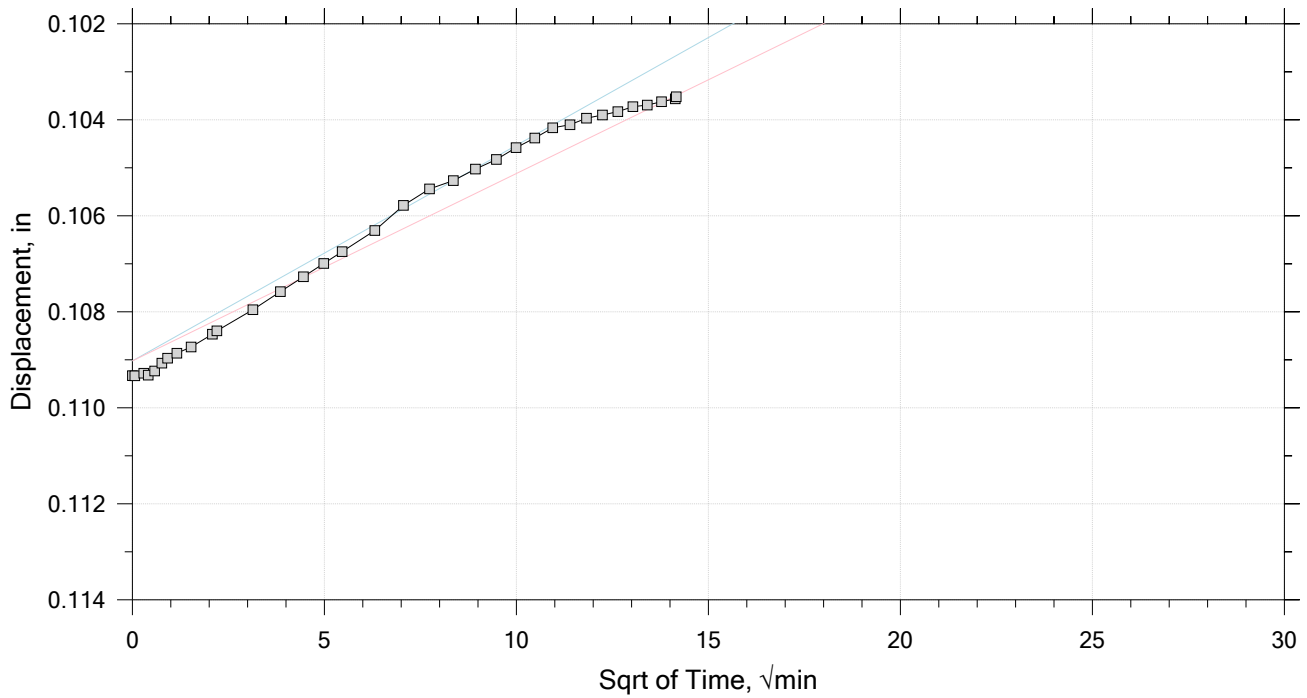
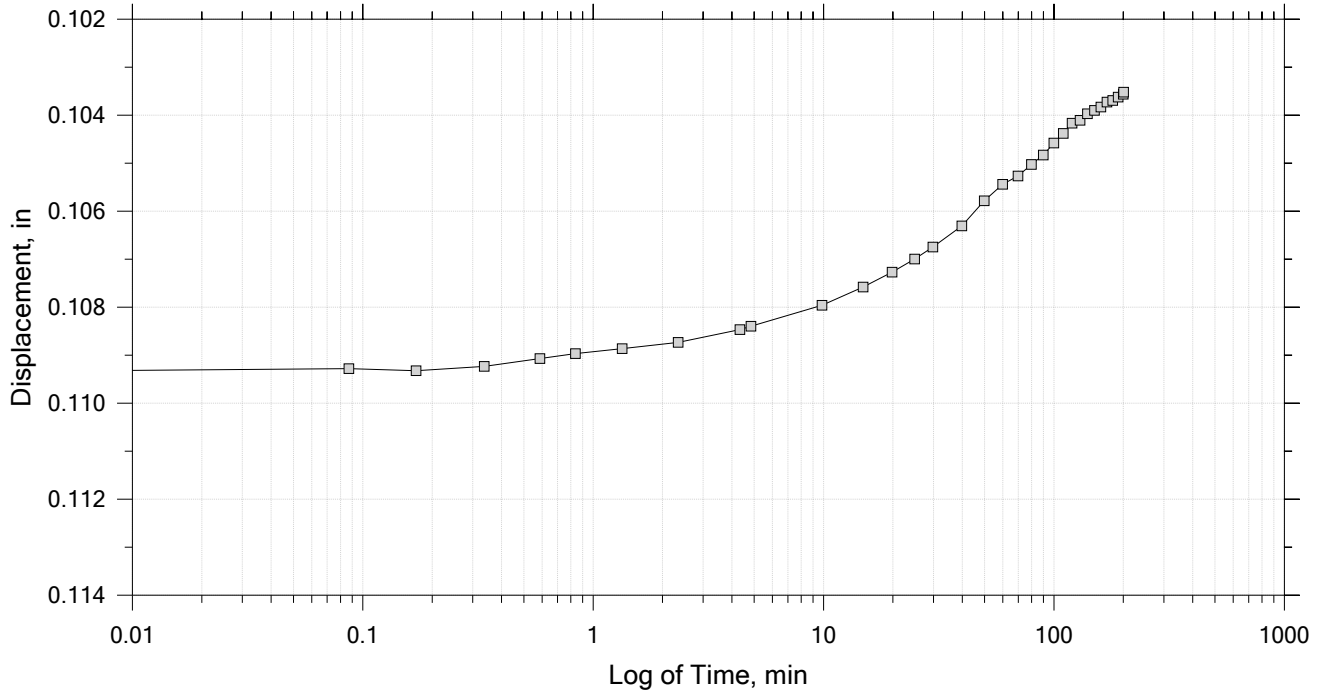
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 30

Constant Load Step

Stress: 202 psf



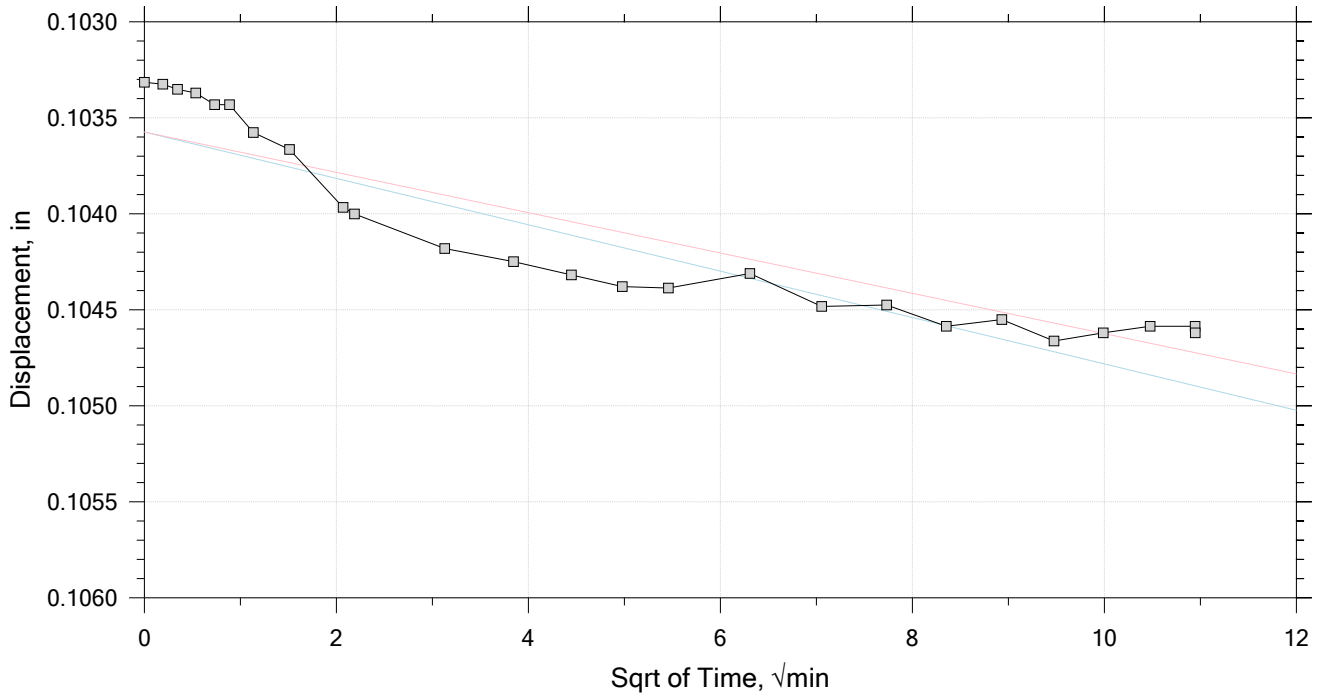
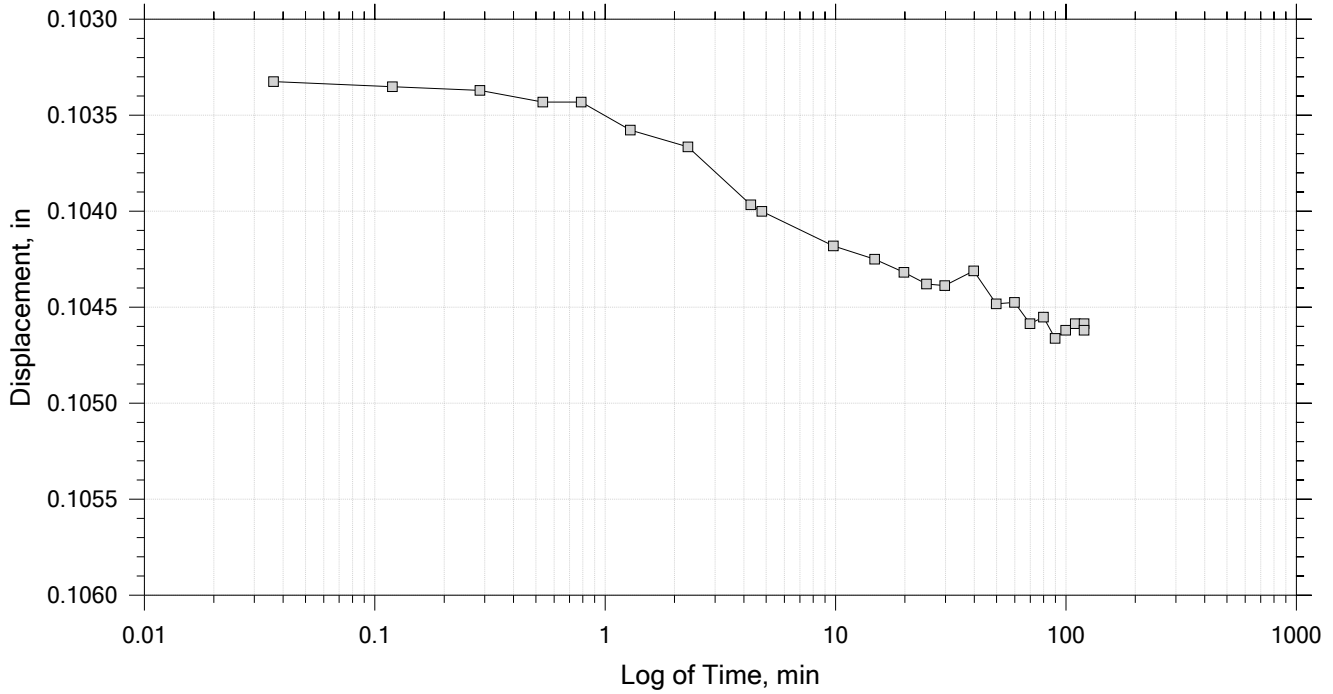
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 30

Constant Load Step

Stress: 404 psf



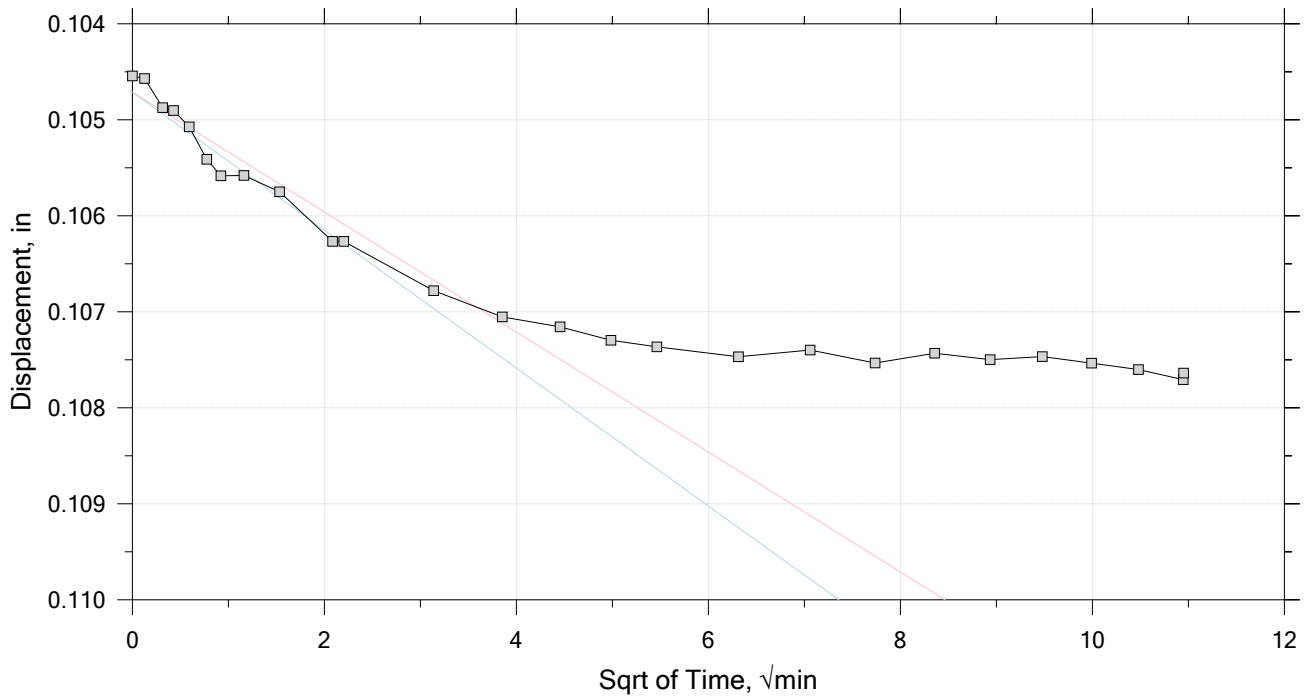
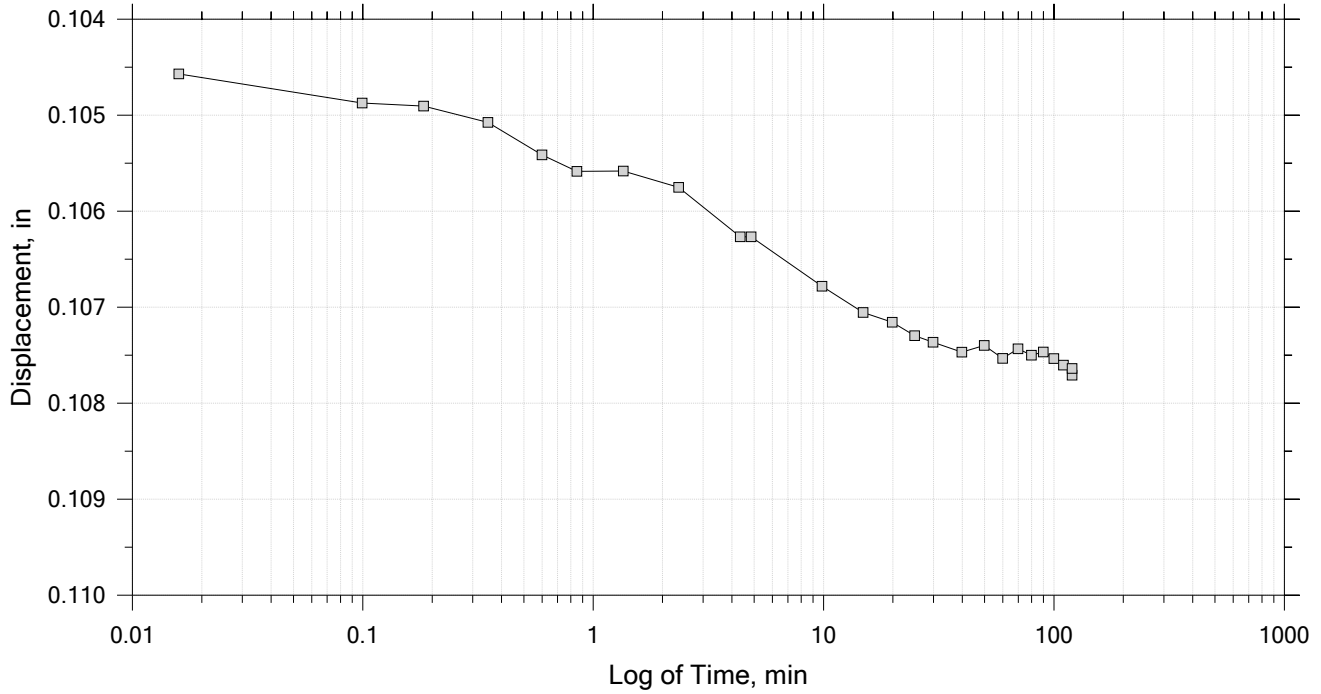
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 30

Constant Load Step

Stress: 807 psf



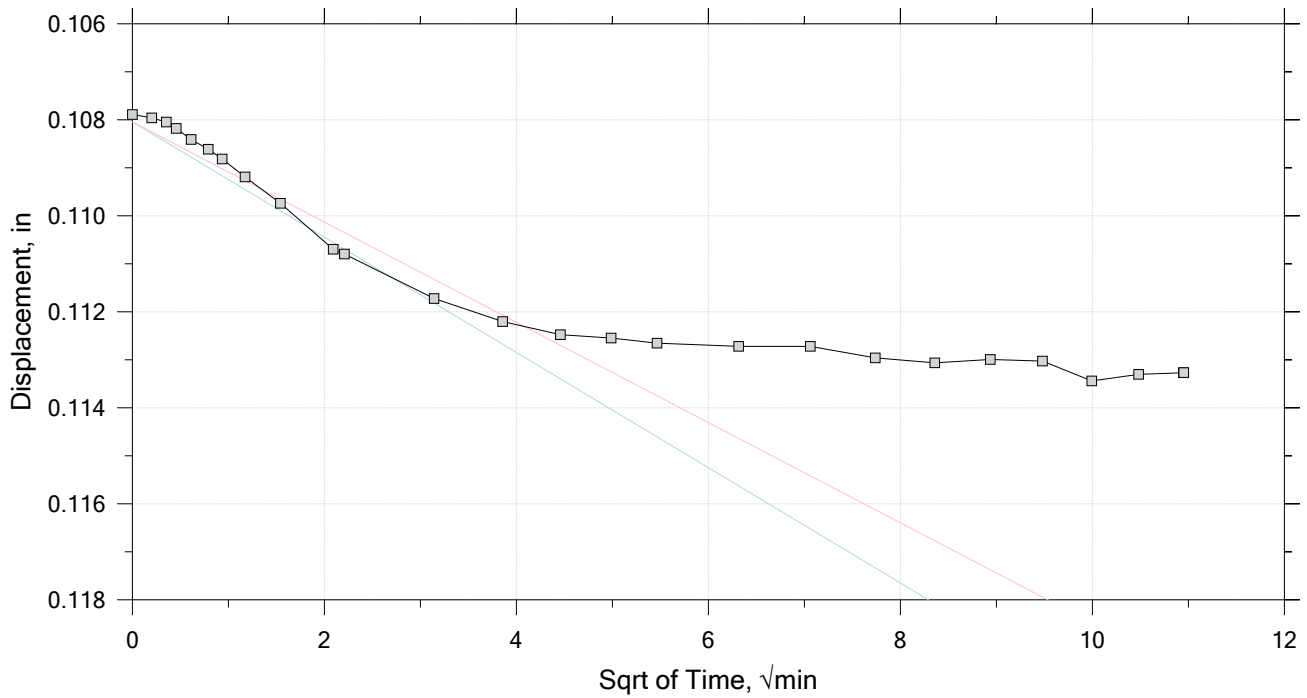
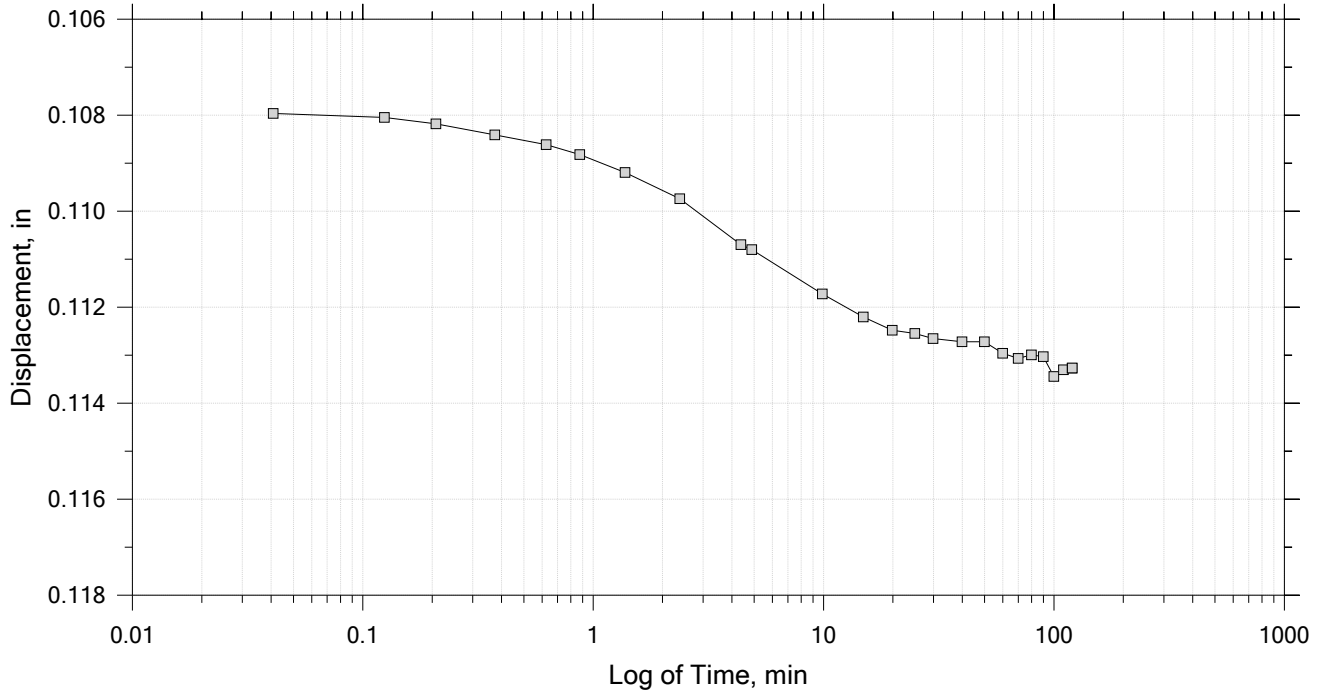
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 30

Constant Load Step

Stress: 1.61e+03 psf



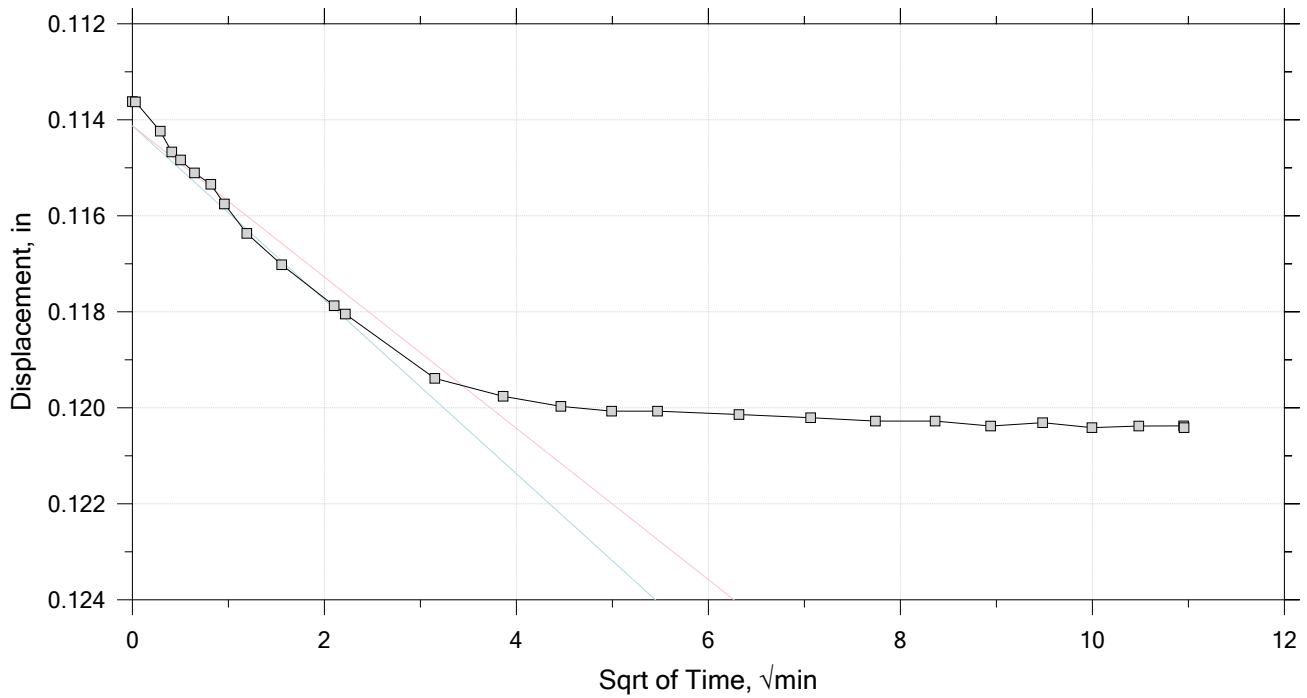
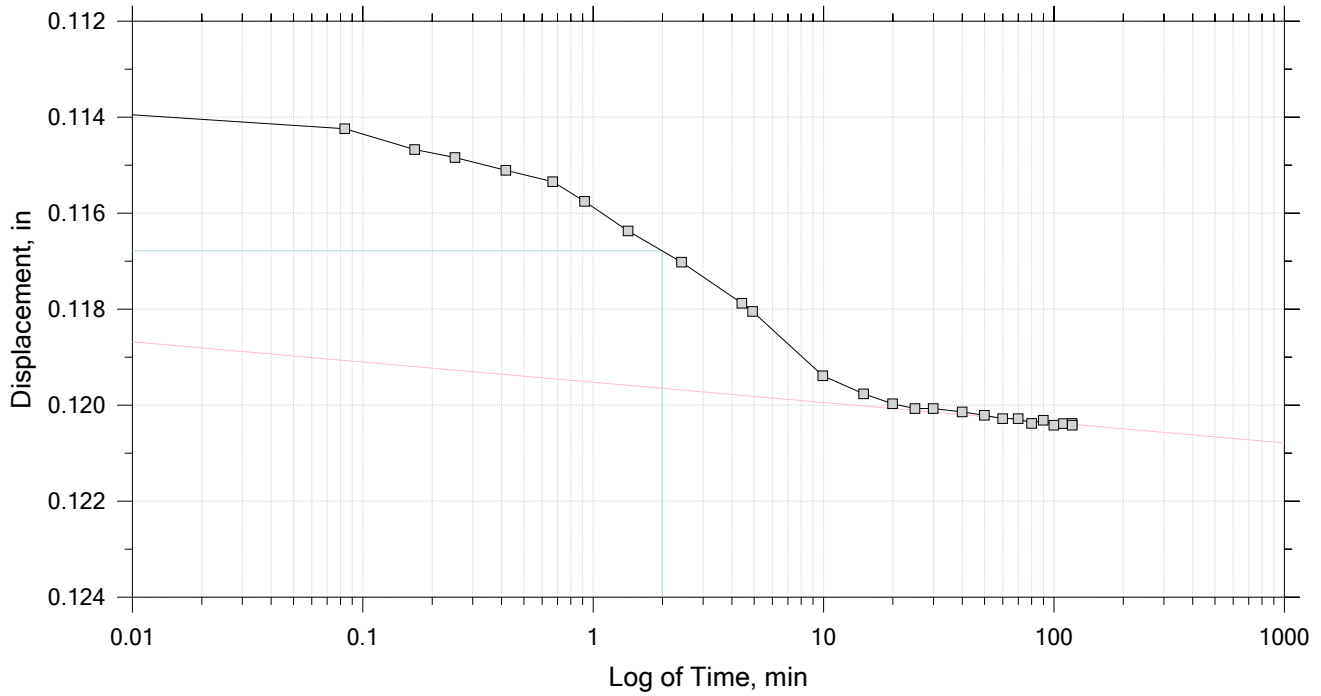
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 30

Constant Load Step

Stress: 3.23e+03 psf



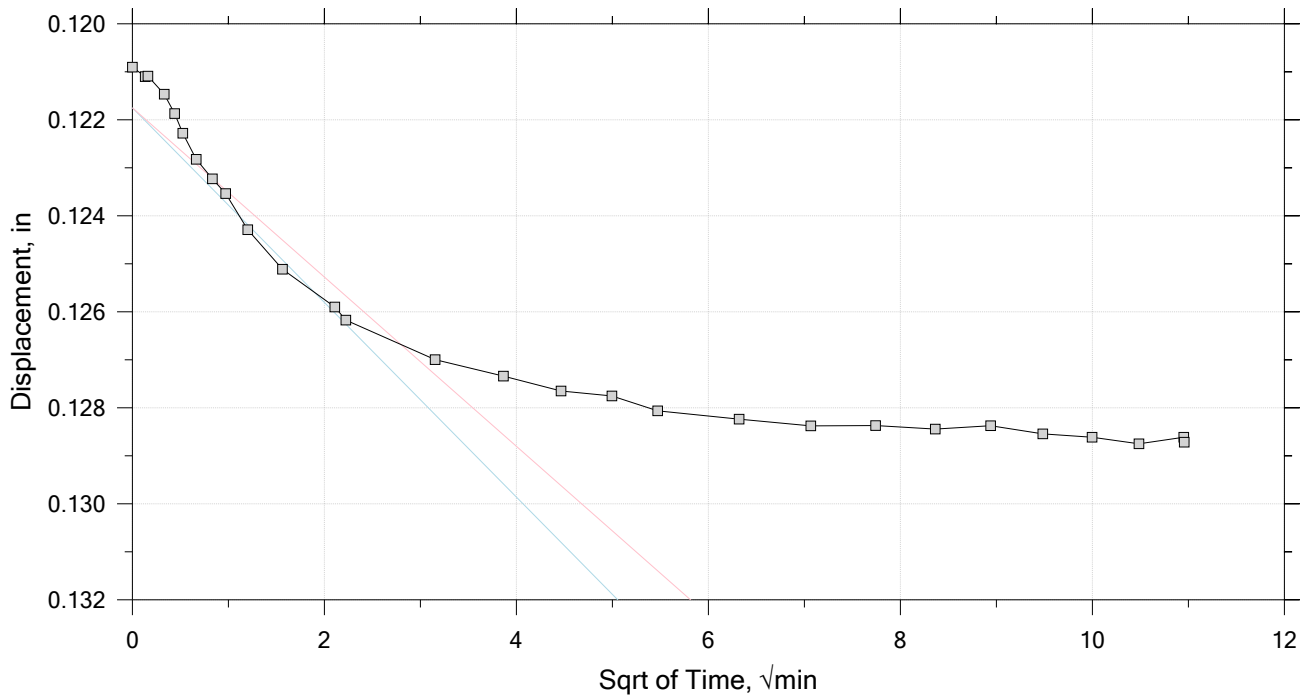
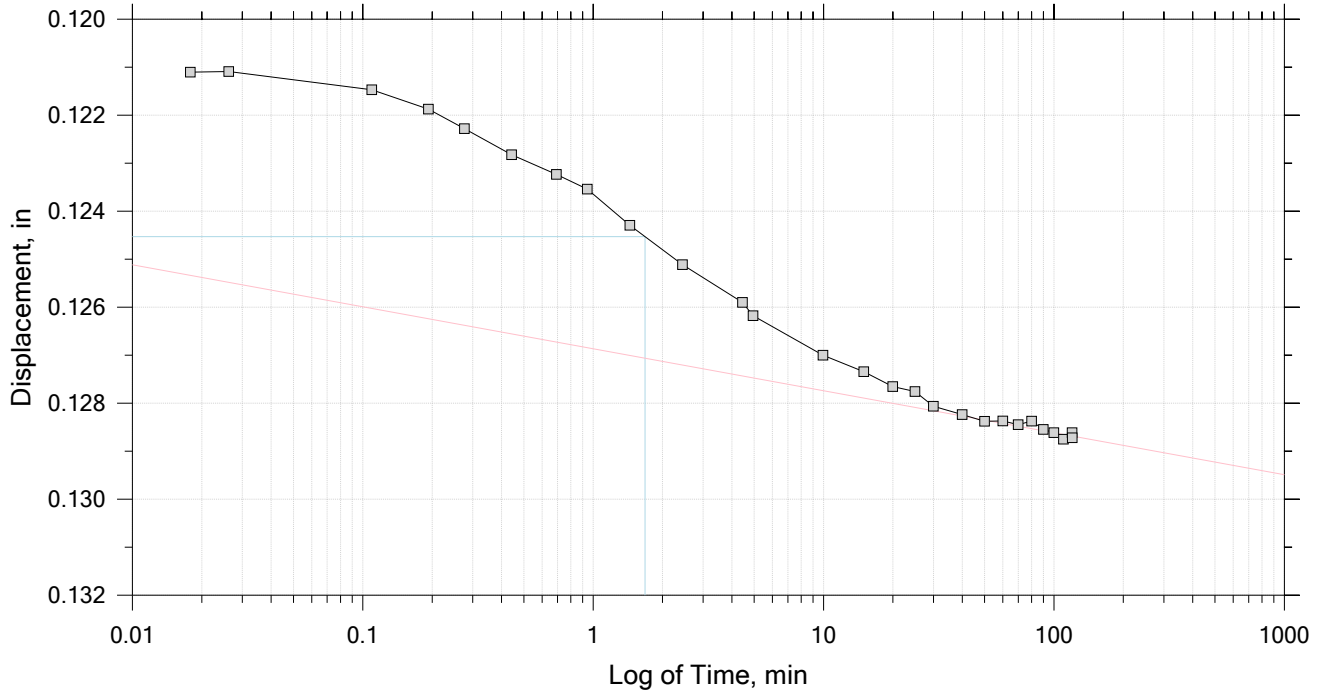
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 30

Constant Load Step

Stress: 6.46e+03 psf



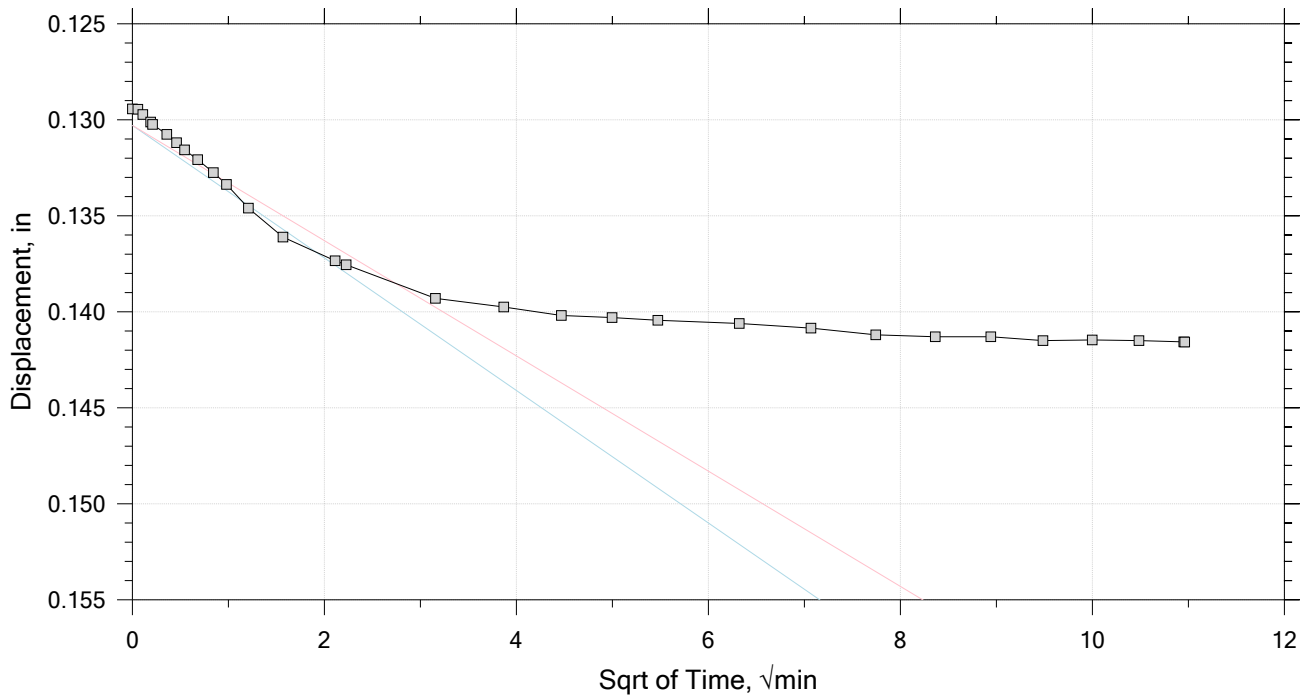
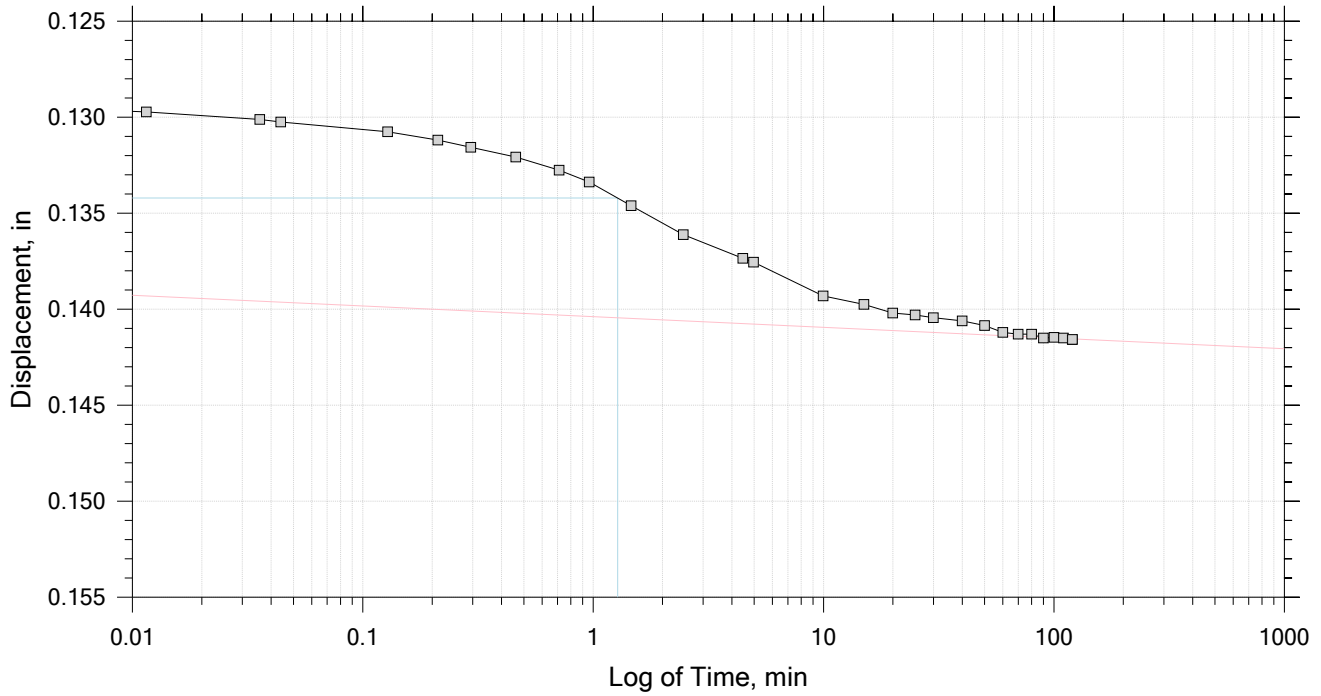
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 30

Constant Load Step

Stress: 1.29e+04 psf



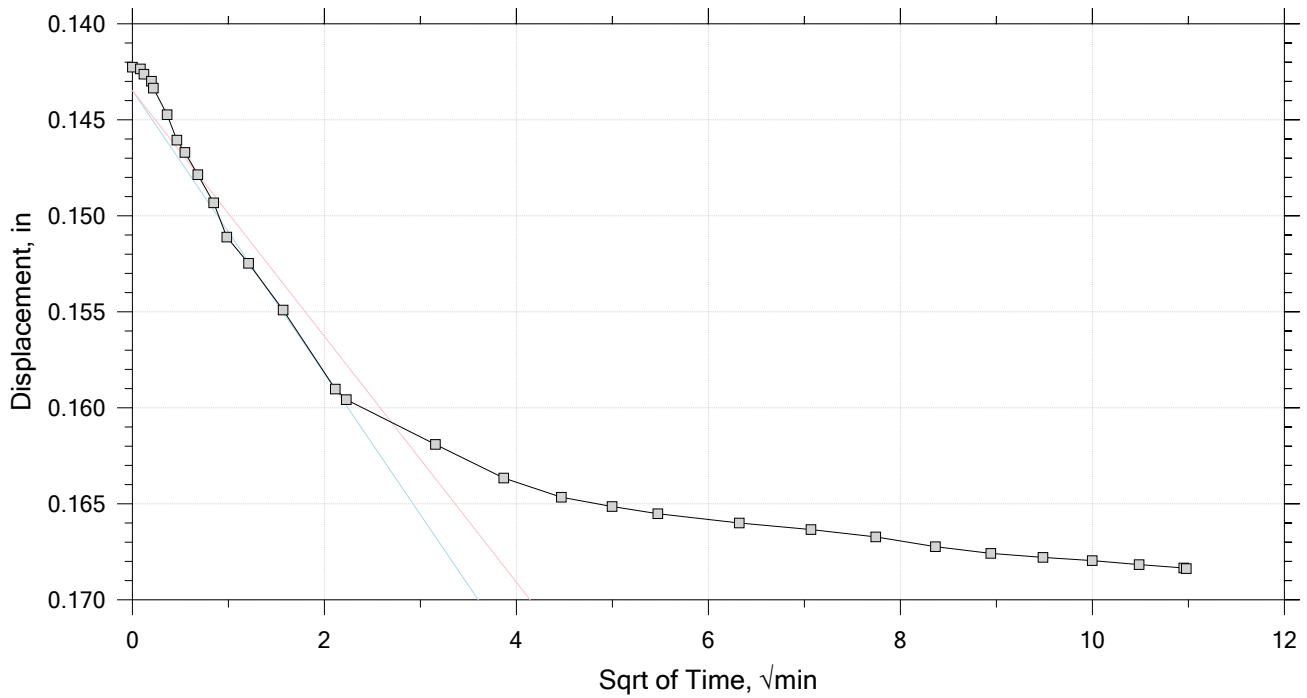
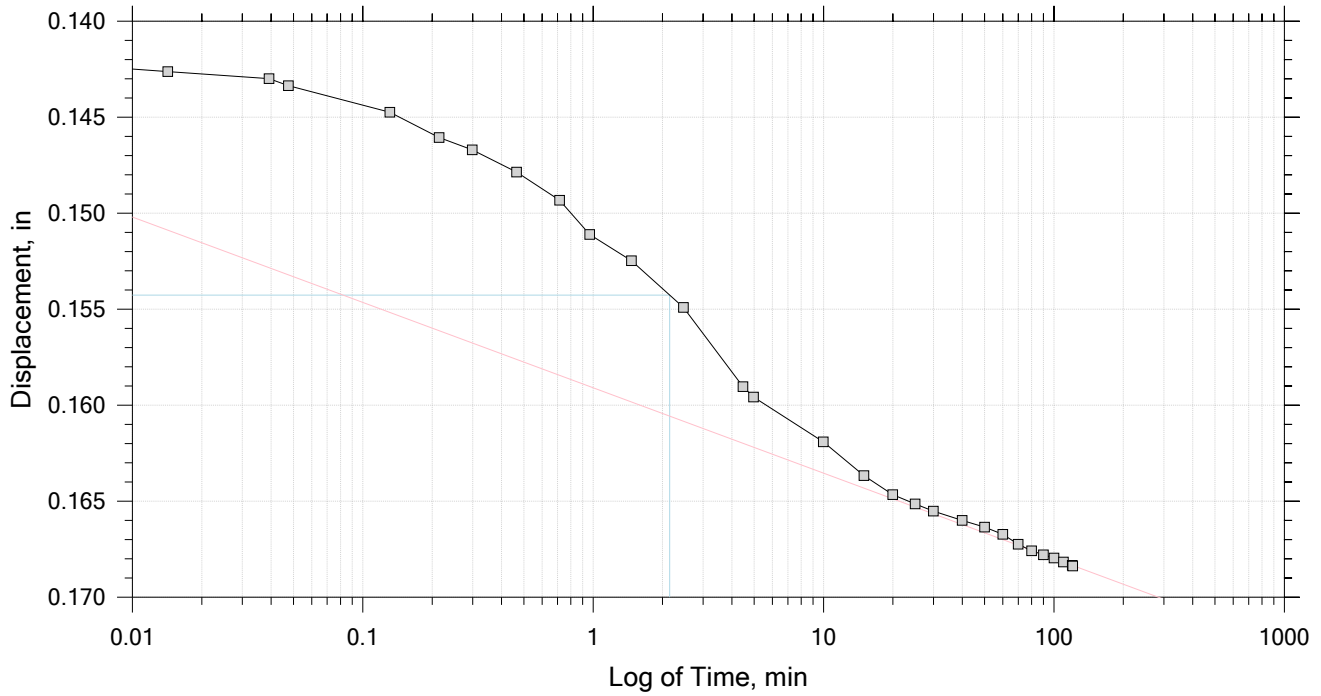
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 30

Constant Load Step

Stress: 2.58e+04 psf



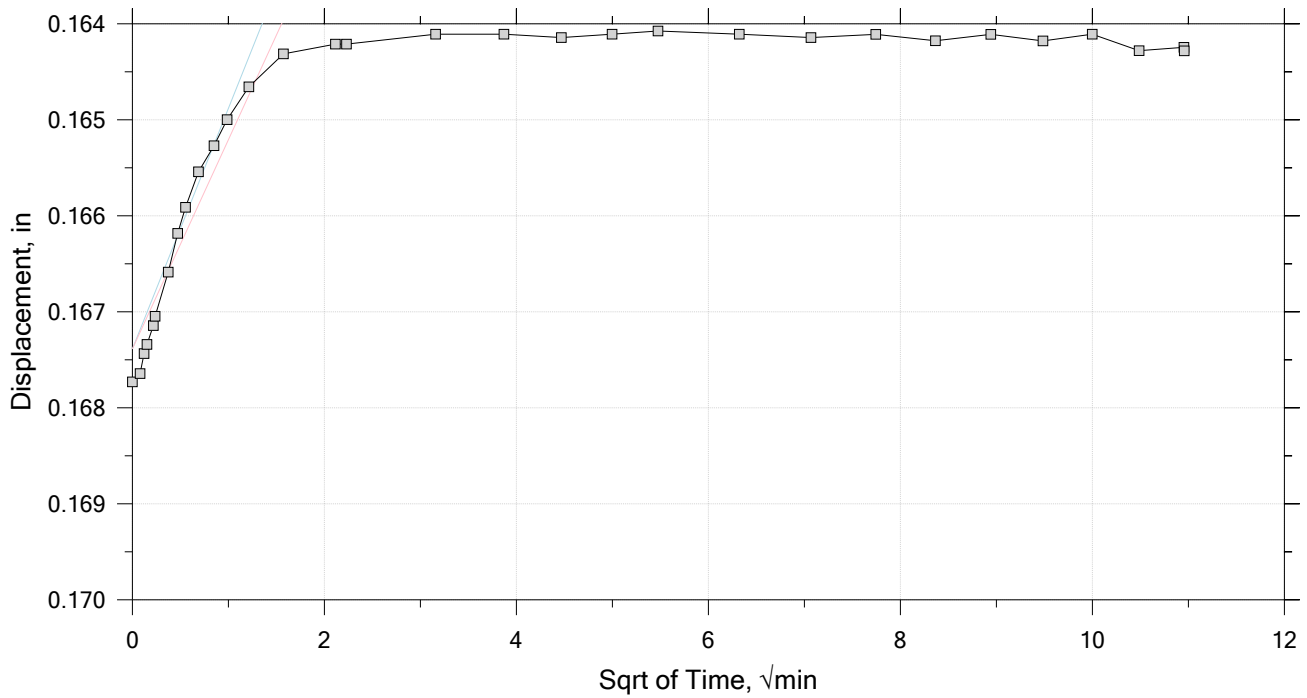
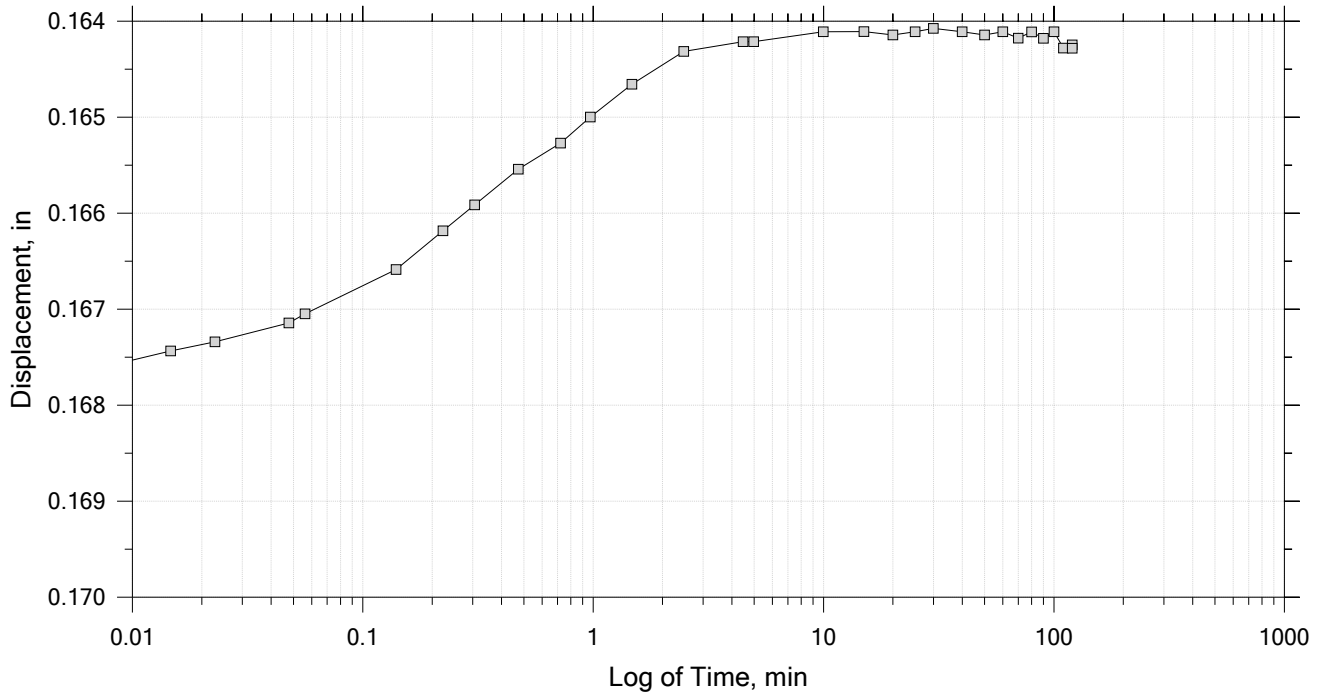
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 30

Constant Load Step

Stress: 1.29e+04 psf



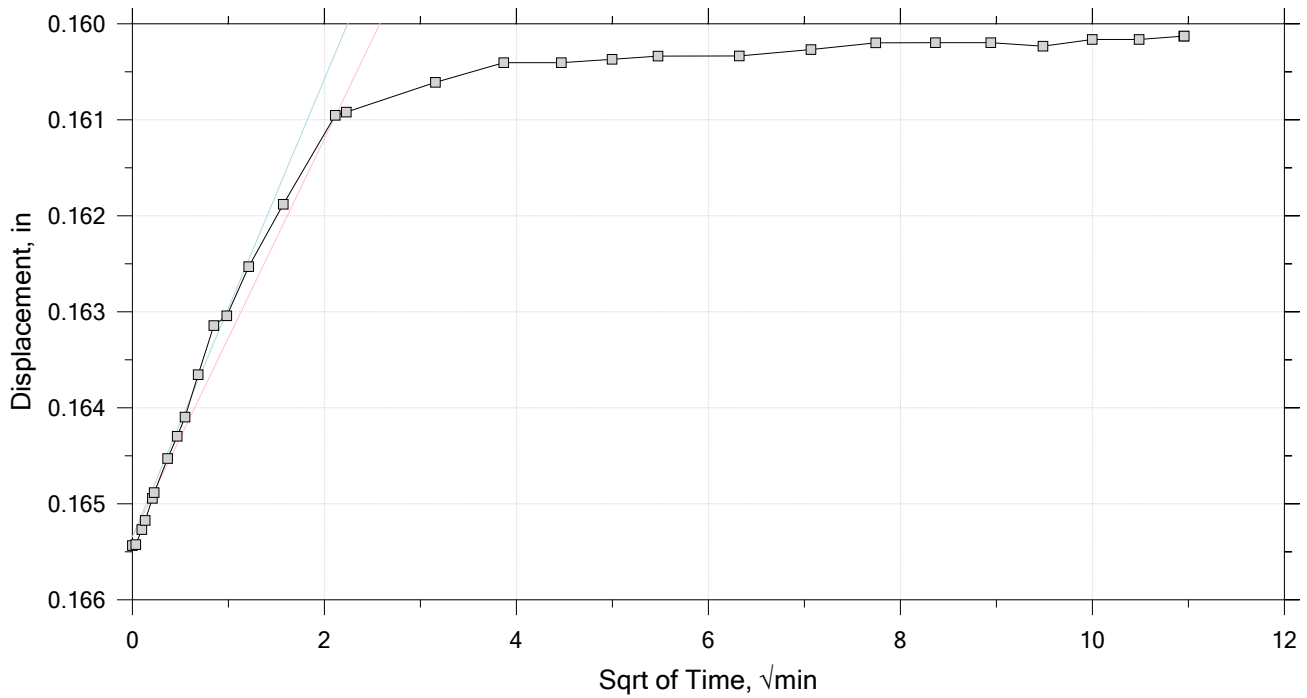
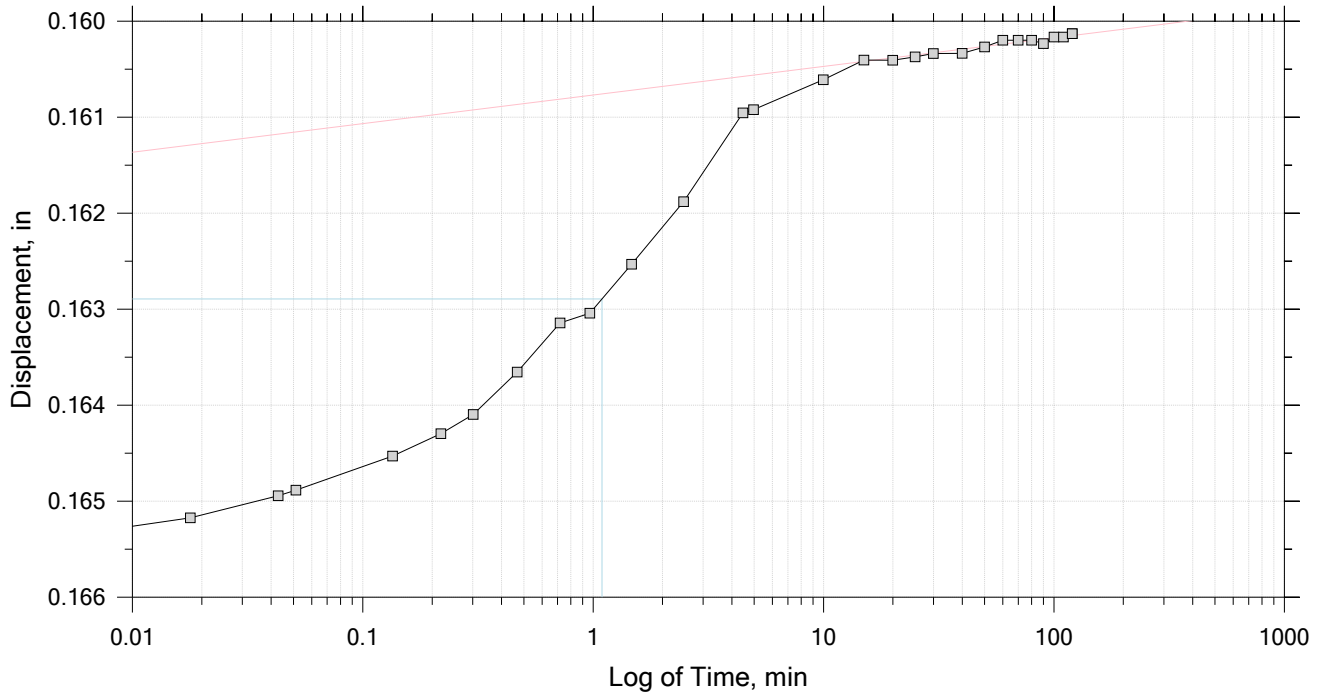
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 26 of 30

Constant Load Step

Stress: 6.46e+03 psf



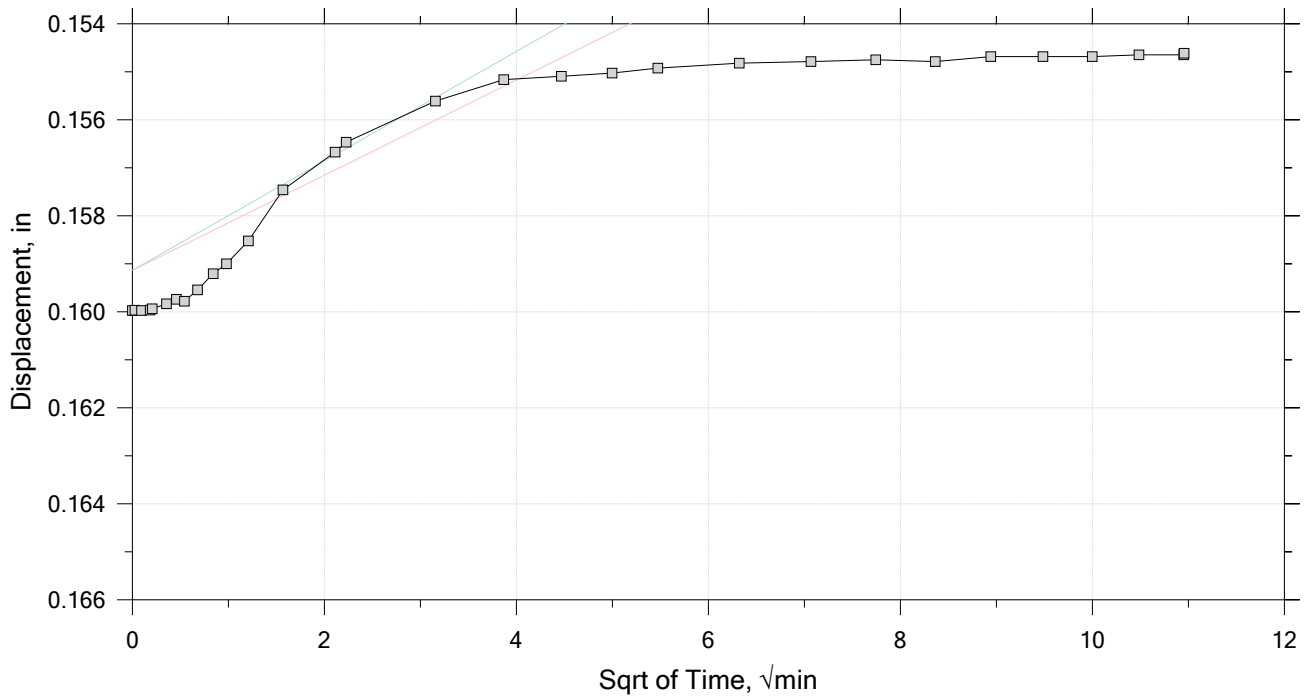
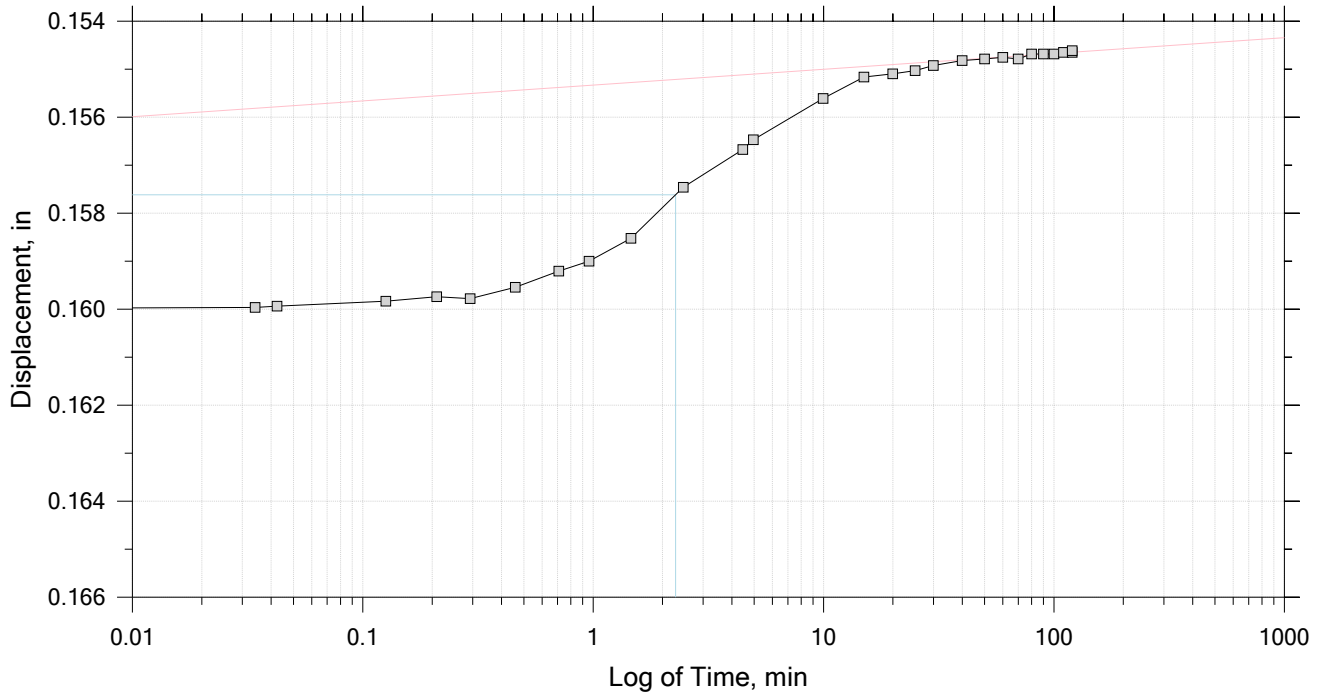
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 27 of 30

Constant Load Step

Stress: 3.23e+03 psf



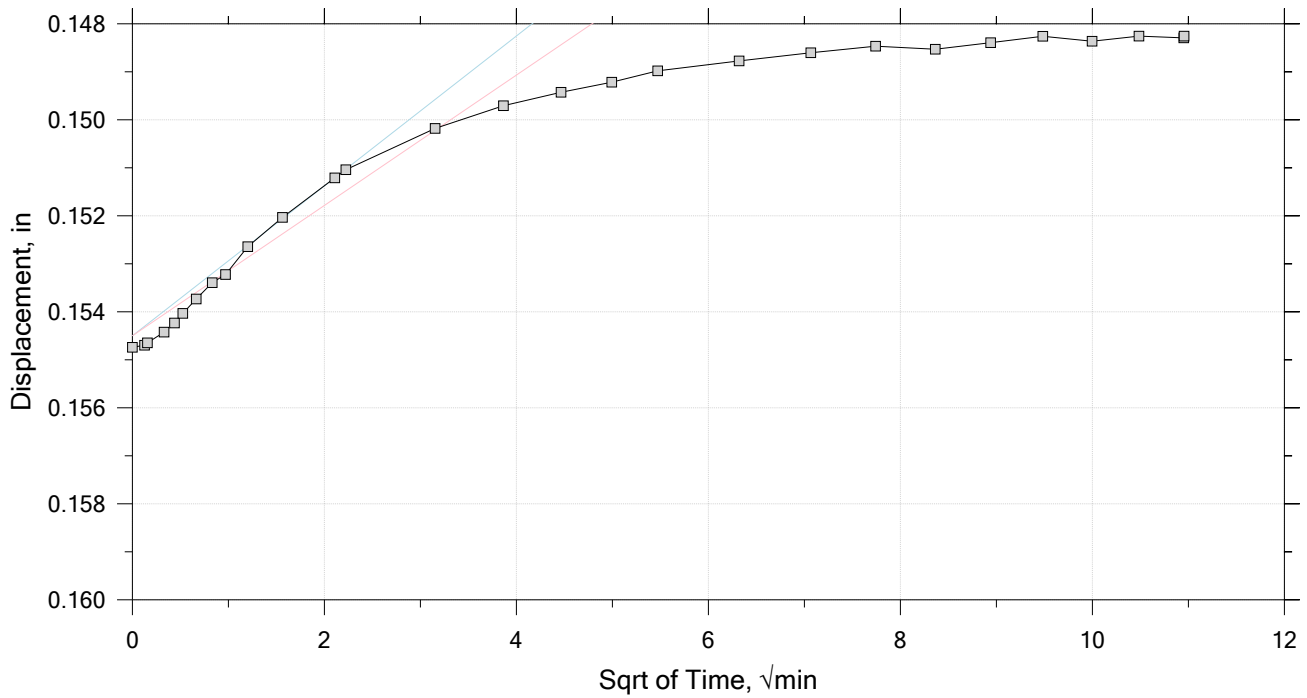
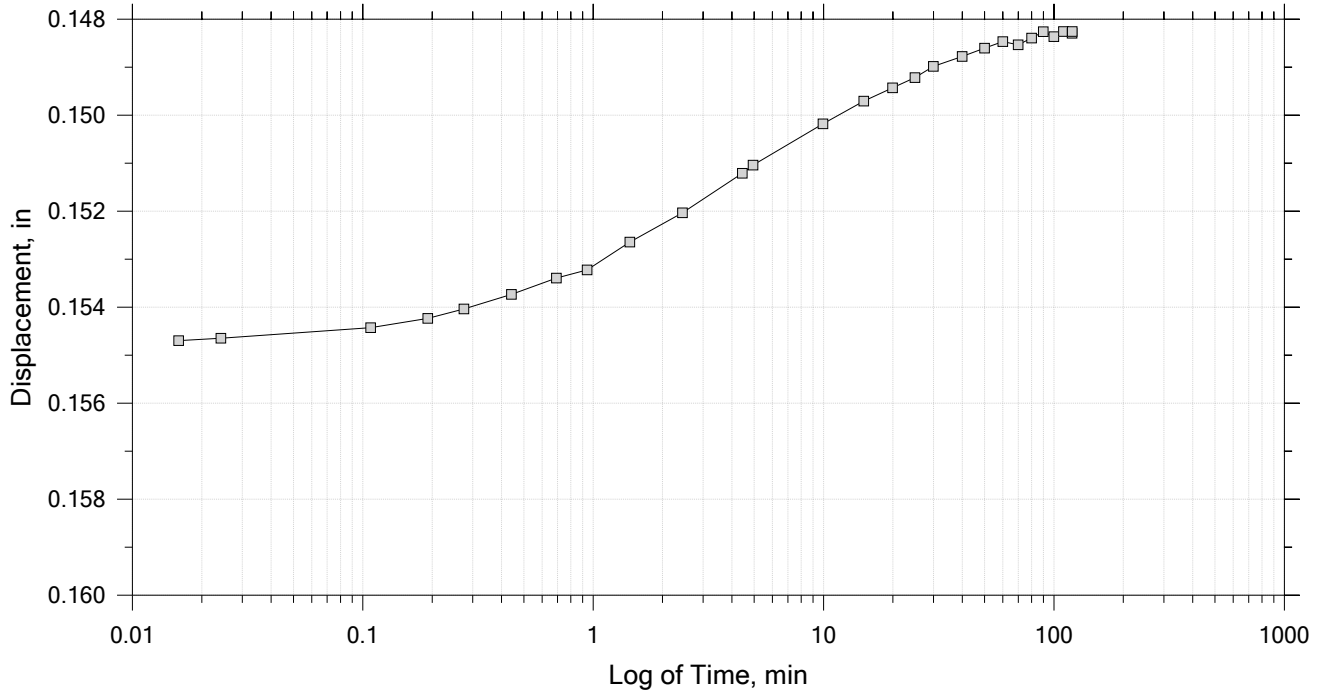
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 28 of 30

Constant Load Step

Stress: 1.61e+03 psf



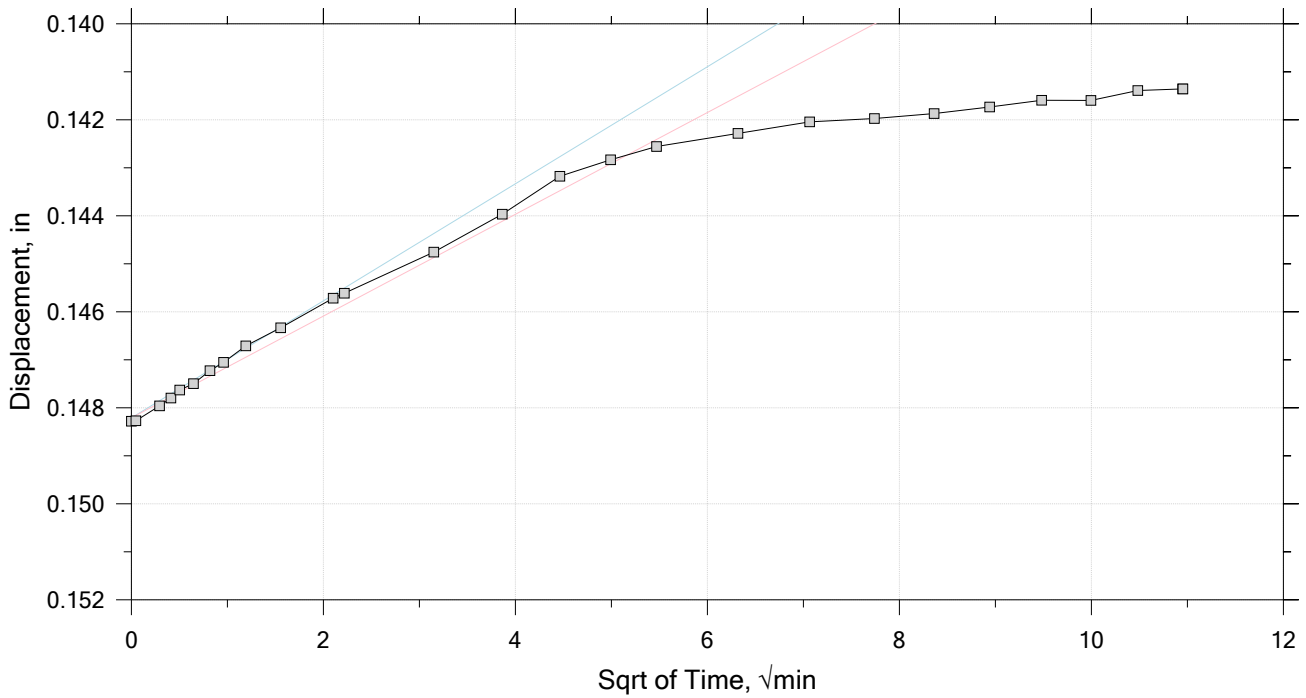
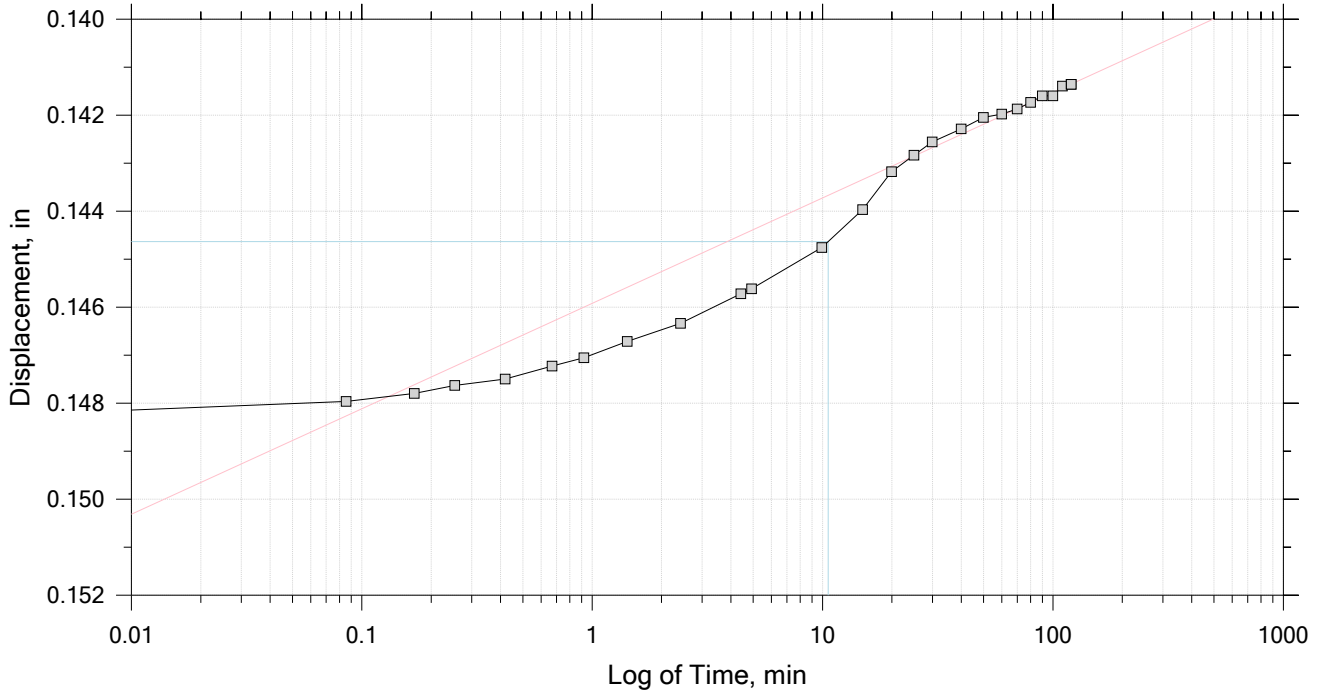
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 29 of 30

Constant Load Step

Stress: 807 psf



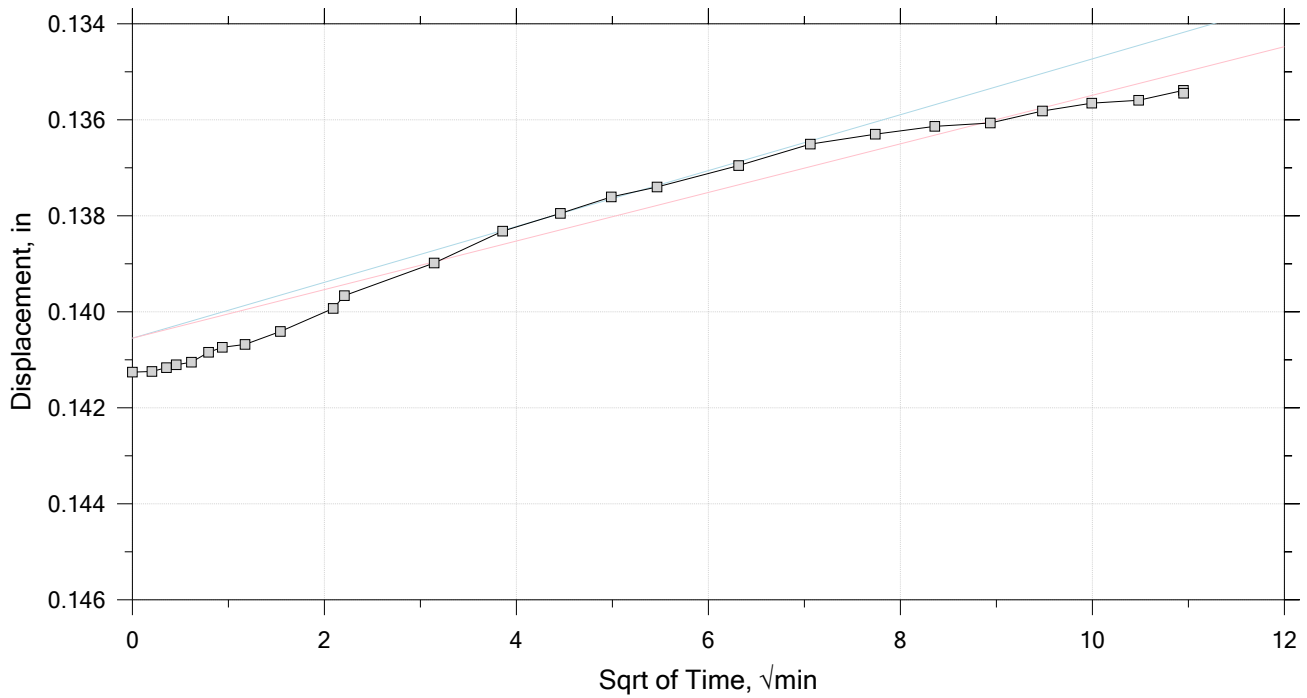
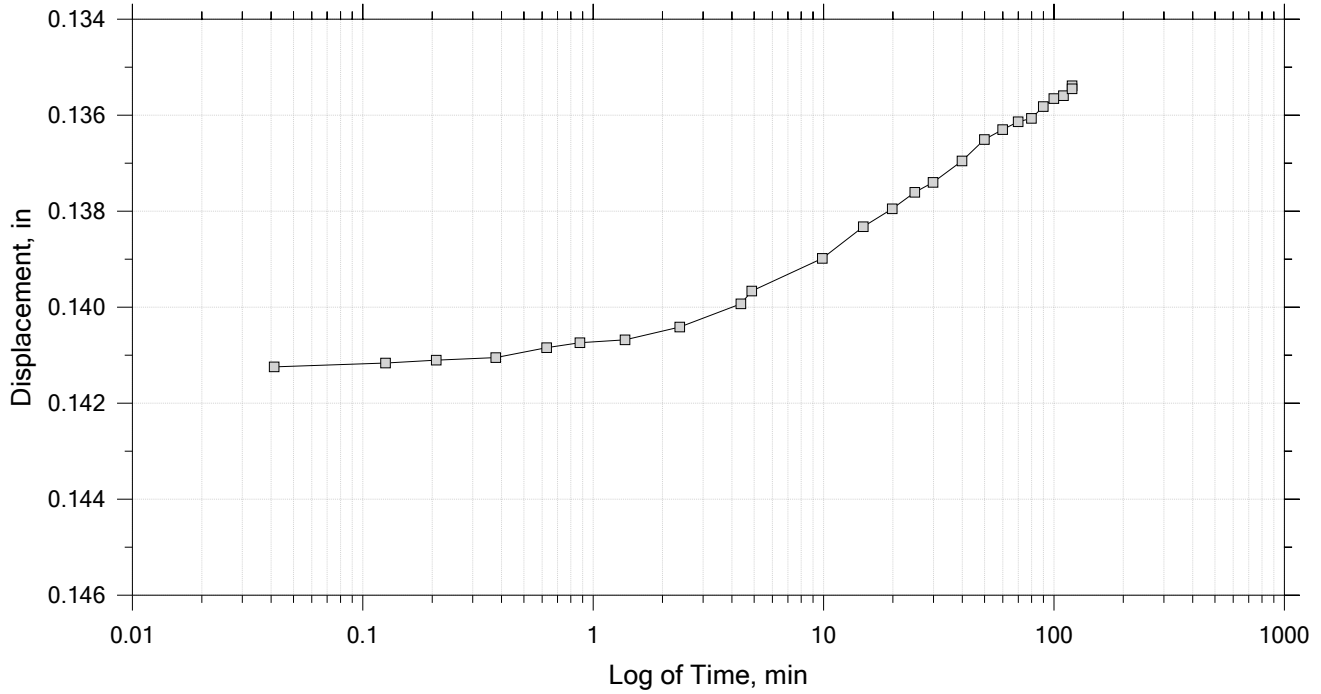
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 30 of 30

Constant Load Step

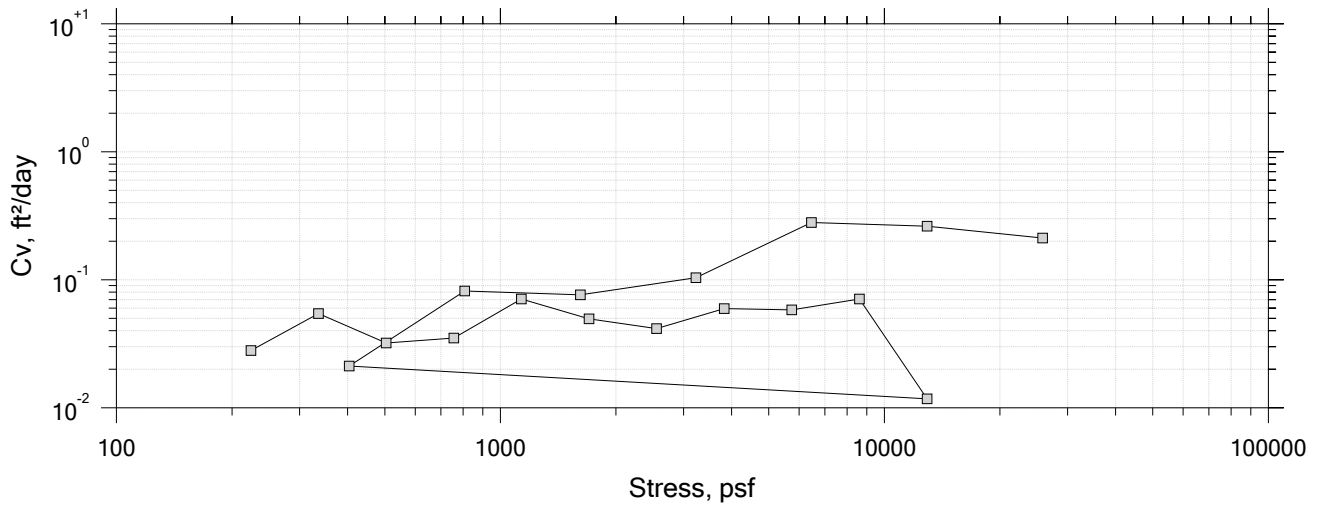
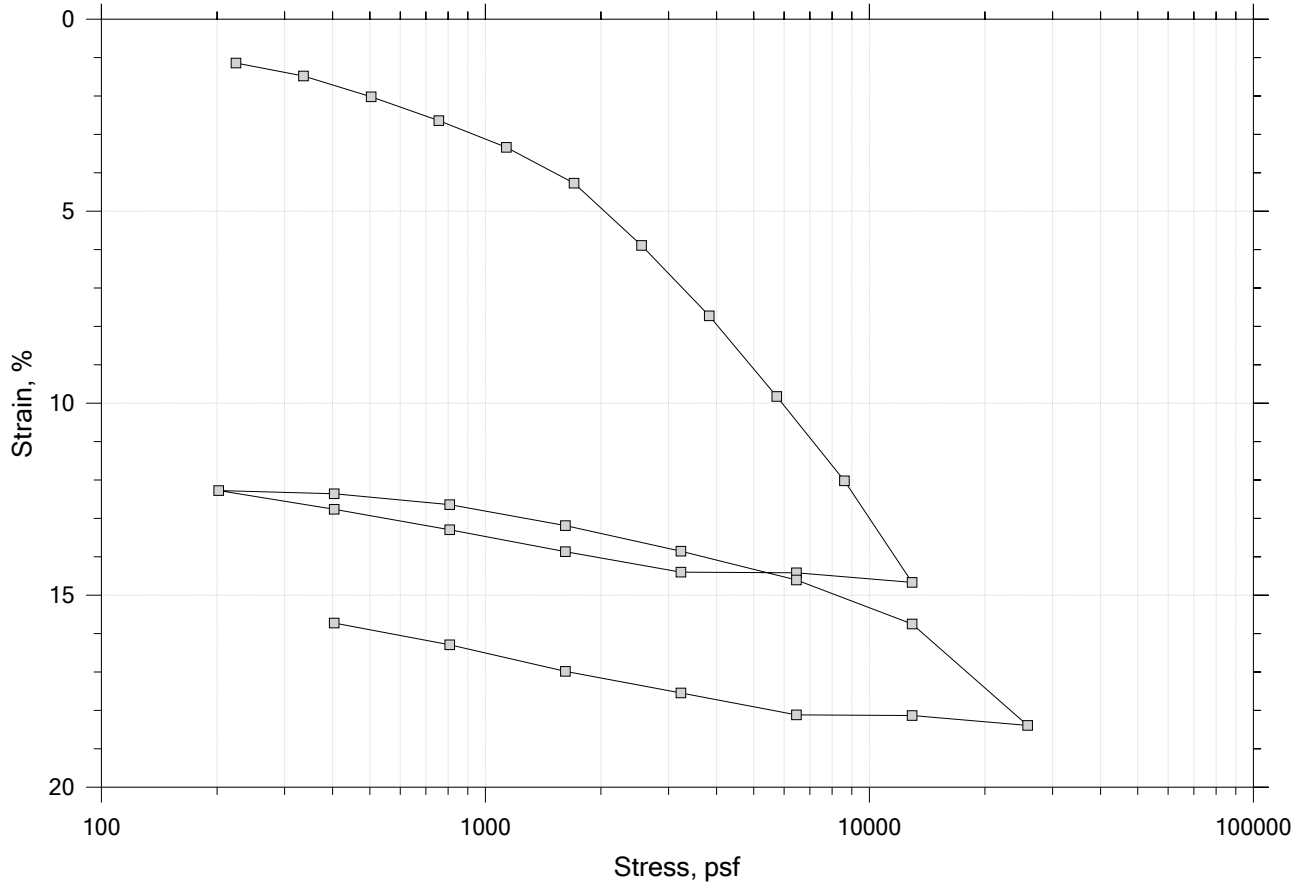
Stress: 404 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 10/29/2024	Depth: 41.25
	Test Number: ICONP 65-434	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Bottom of tube		

One-Dimensional Consolidation by ASTM D2435 - Method B

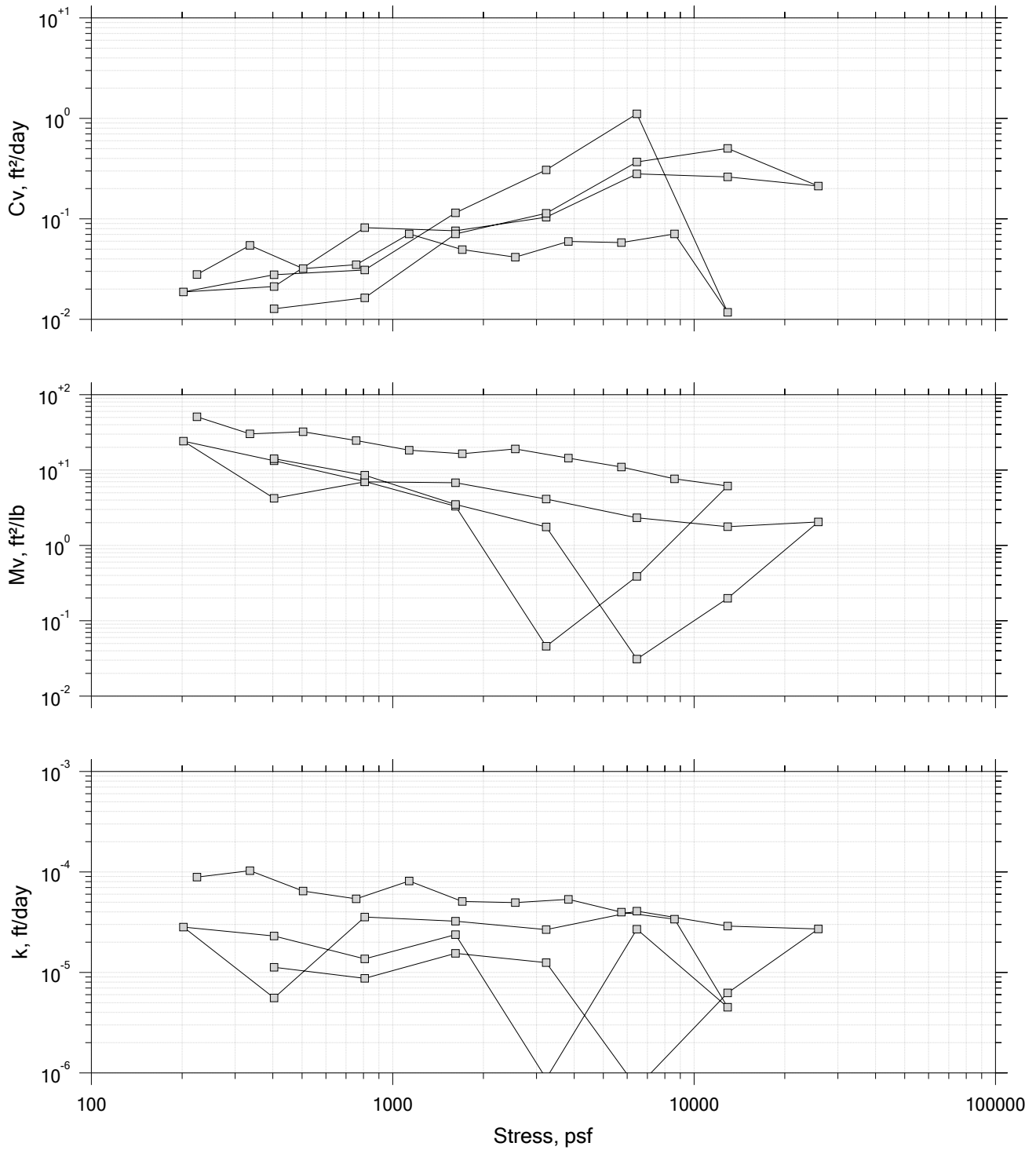
Summary Report




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		
	Displacement at End of Primary		

One-Dimensional Consolidation by ASTM D2435 - Method B

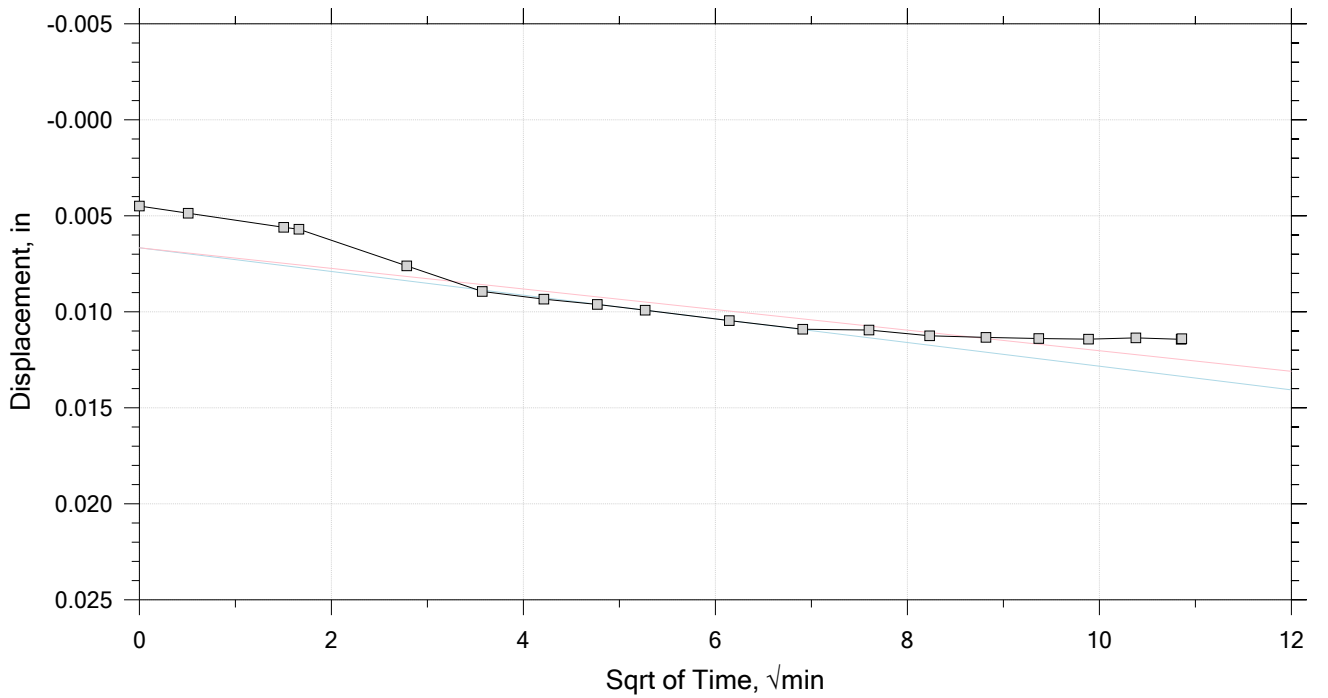
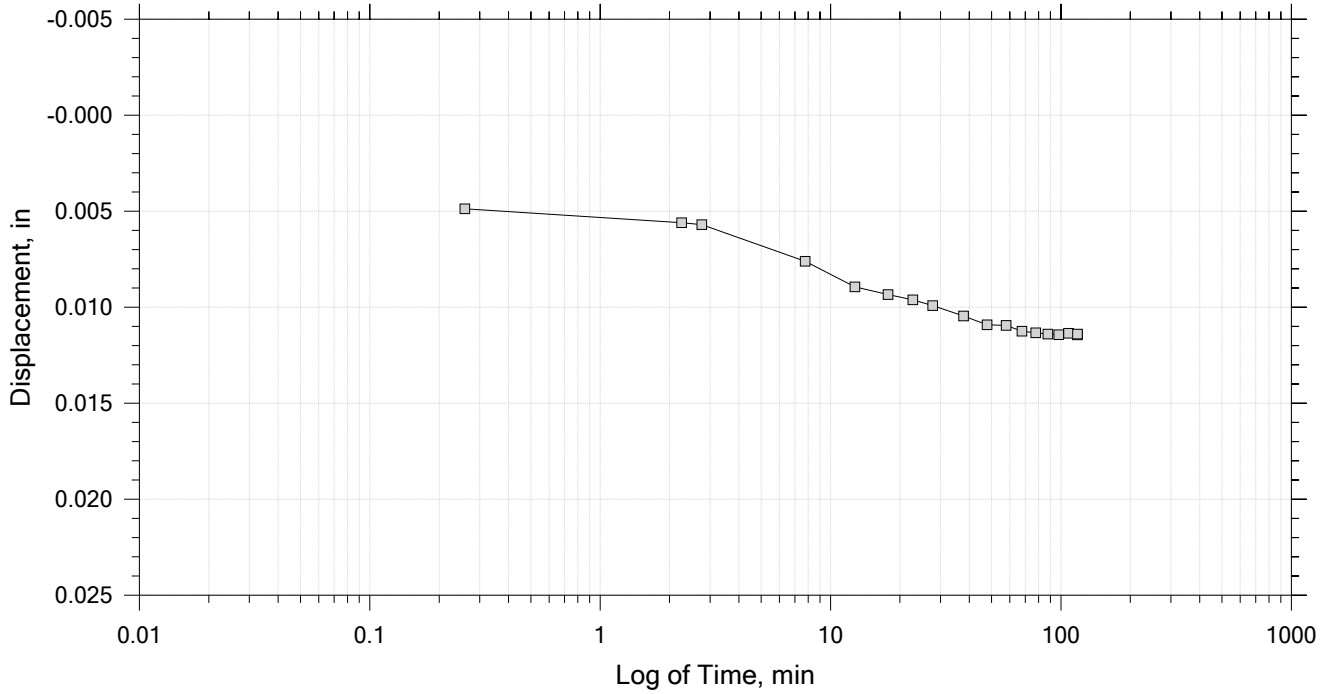
Sqrt of Time Coefficients




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

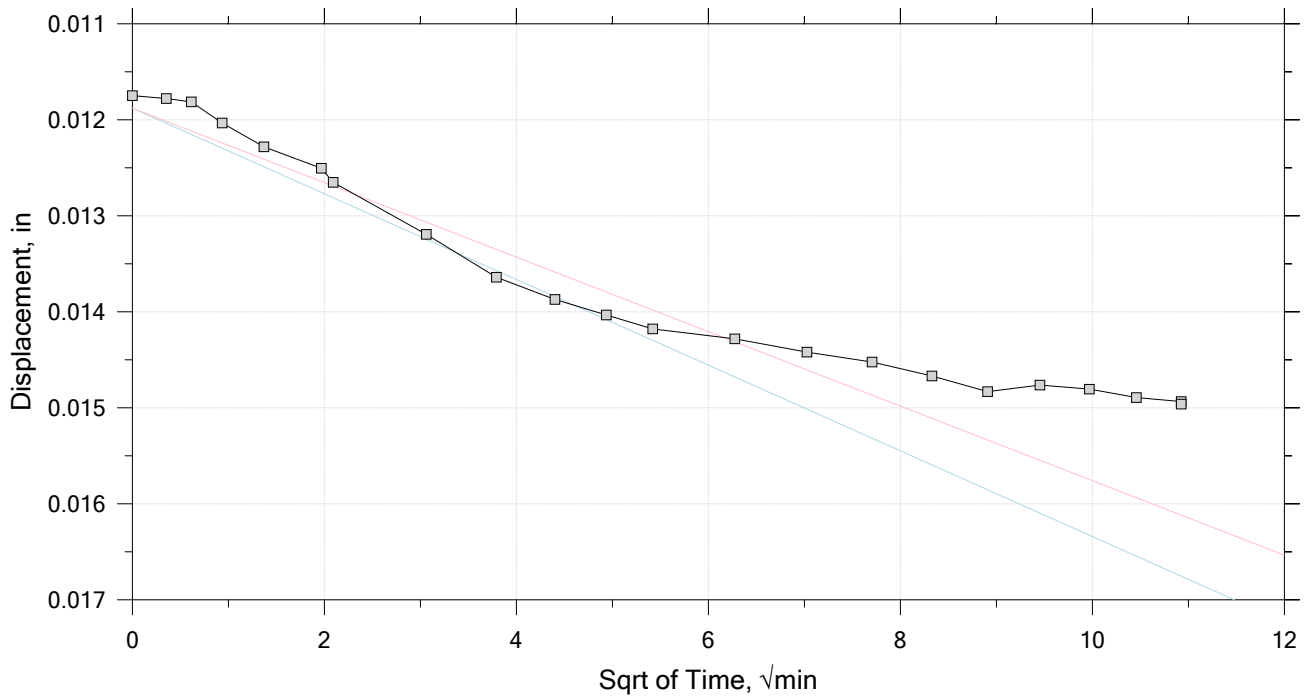
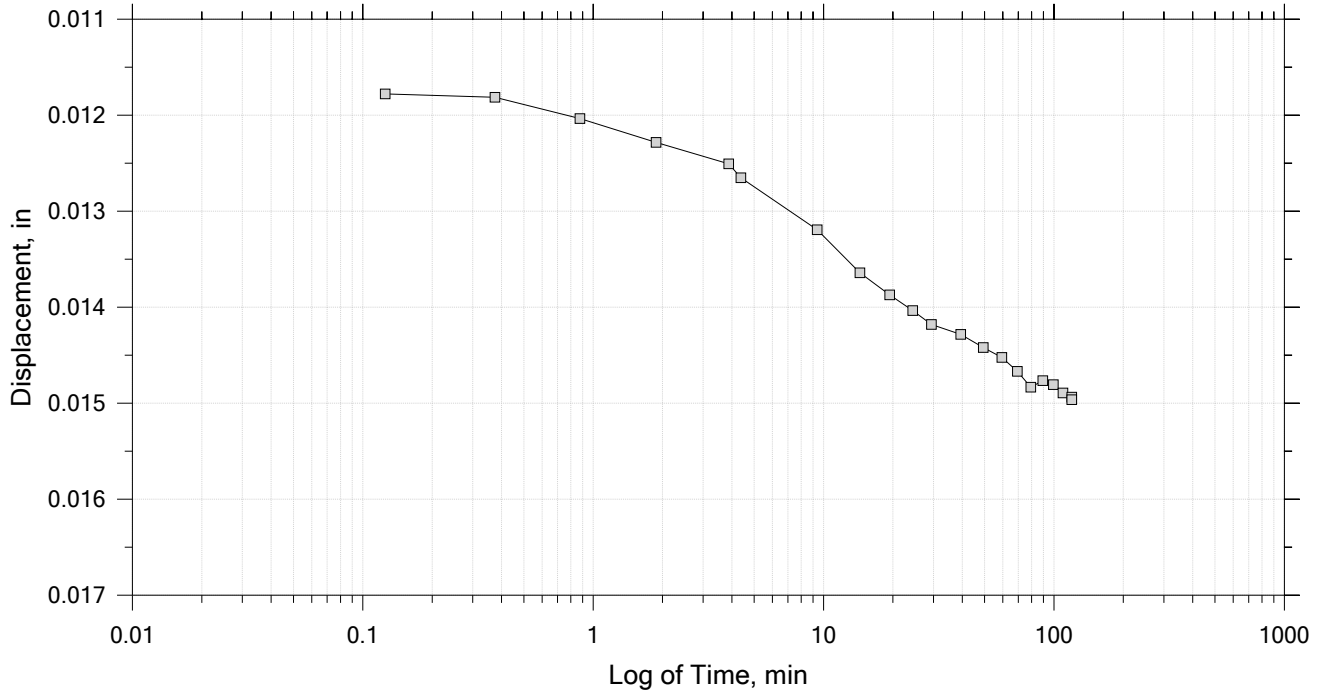
Time Curve 1 of 30
 Constant Load Step
 Stress: 224 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

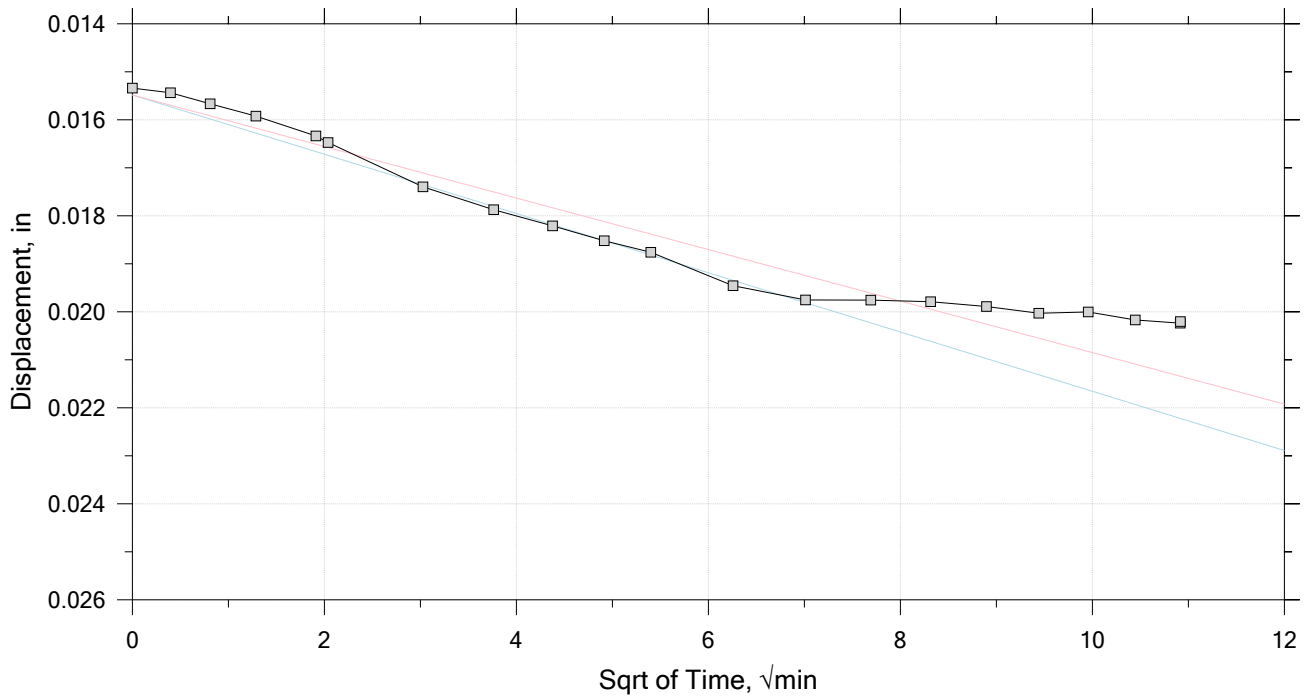
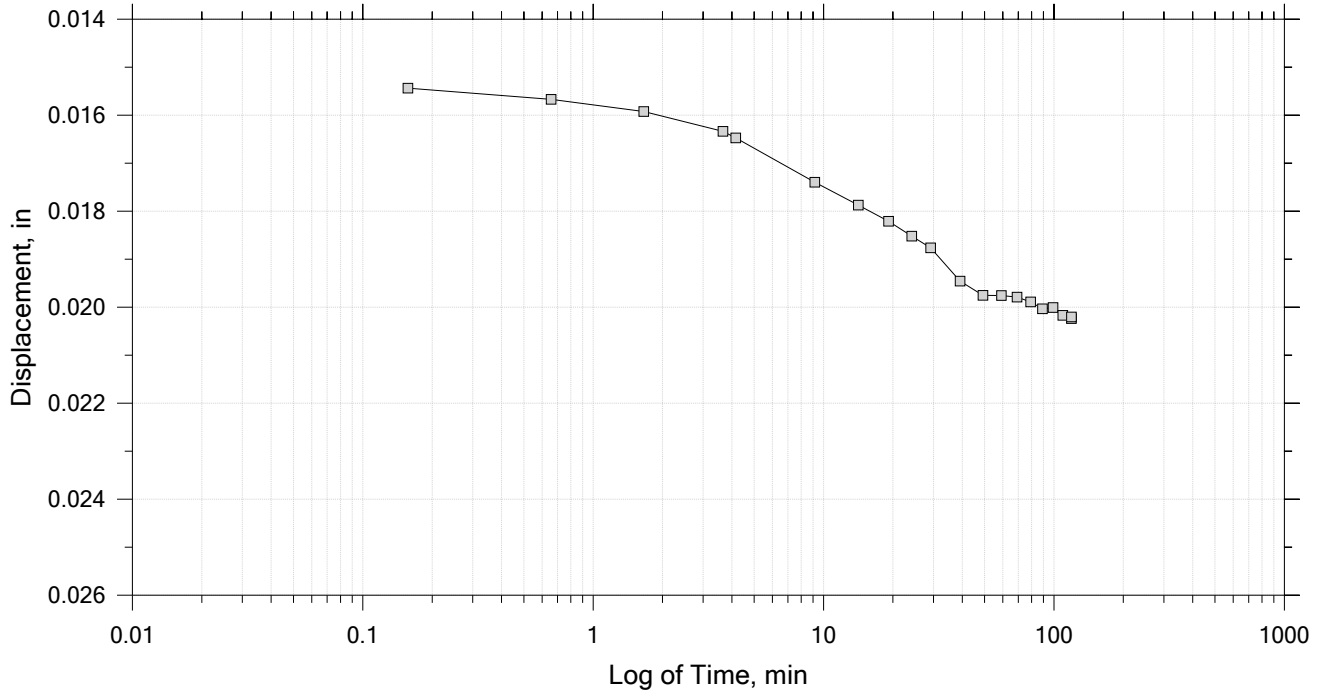
Time Curve 2 of 30
 Constant Load Step
 Stress: 336 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

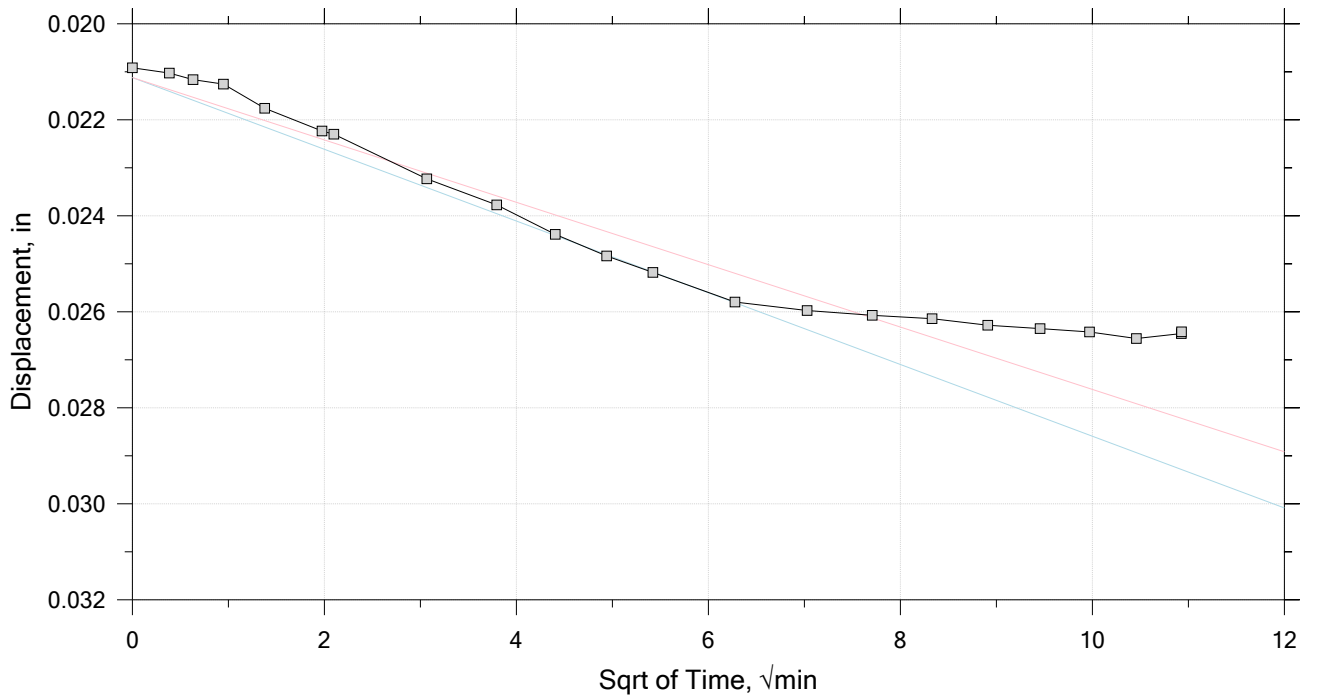
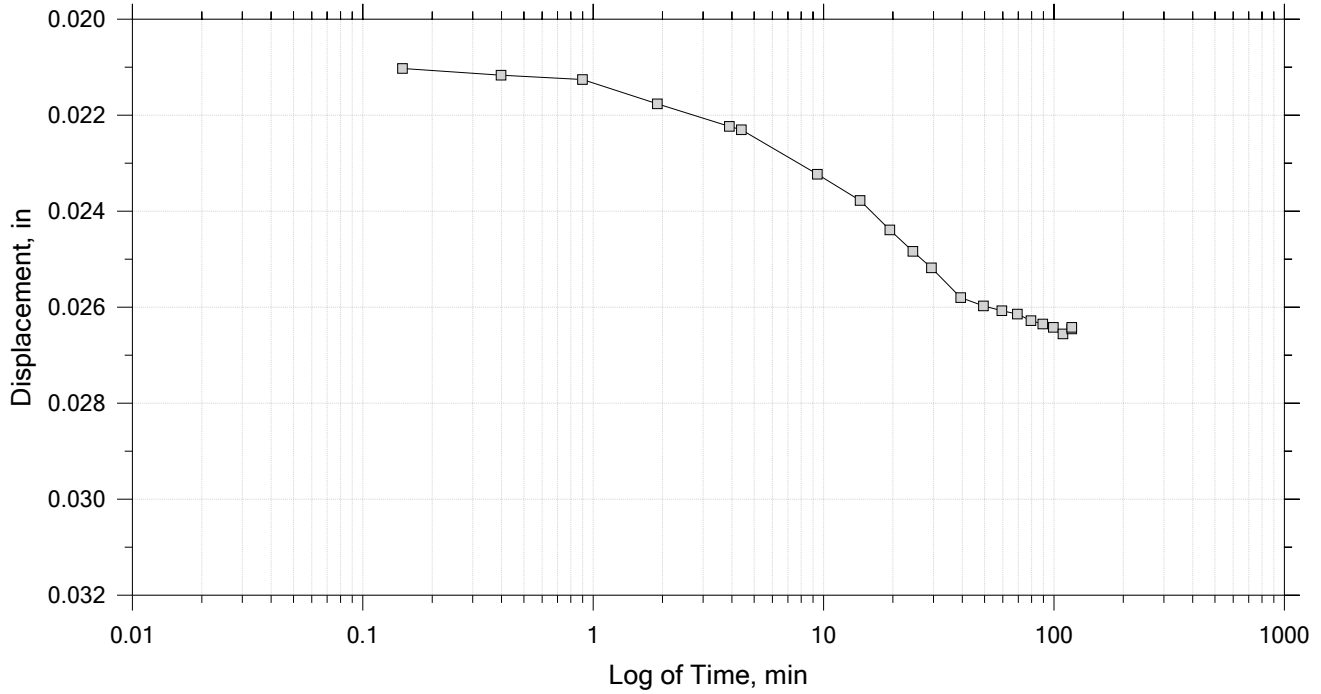
Time Curve 3 of 30
 Constant Load Step
 Stress: 504 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

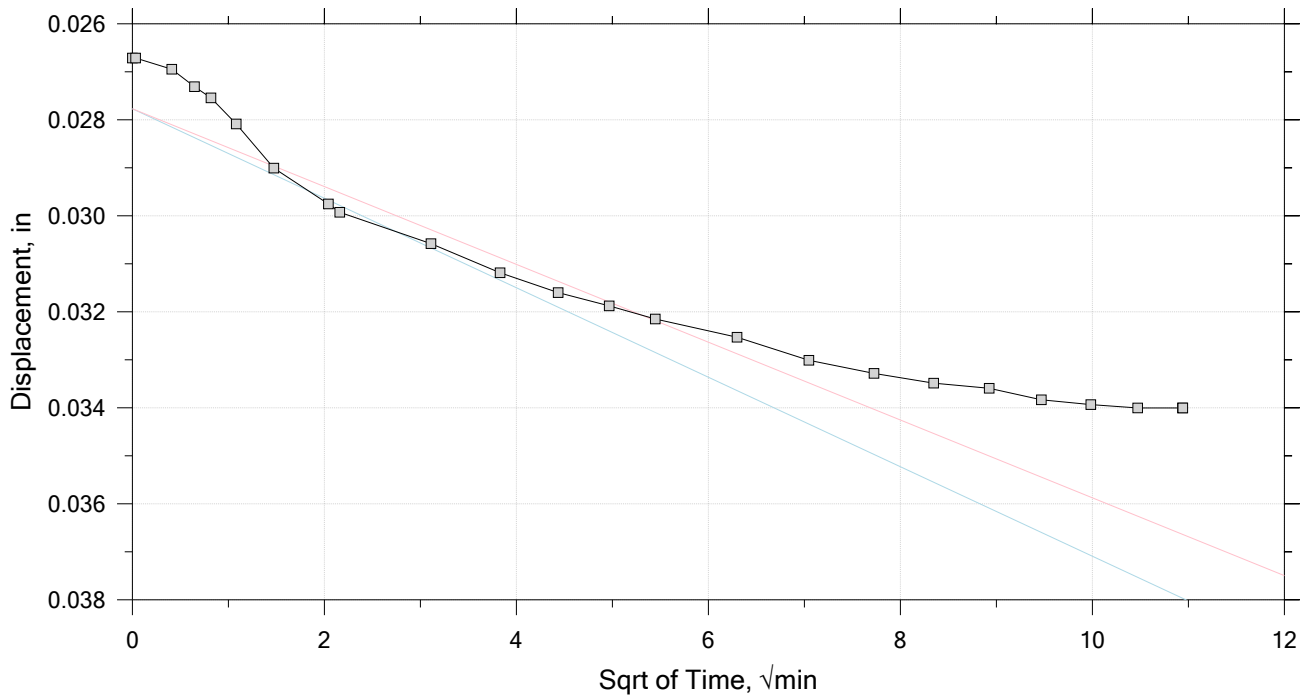
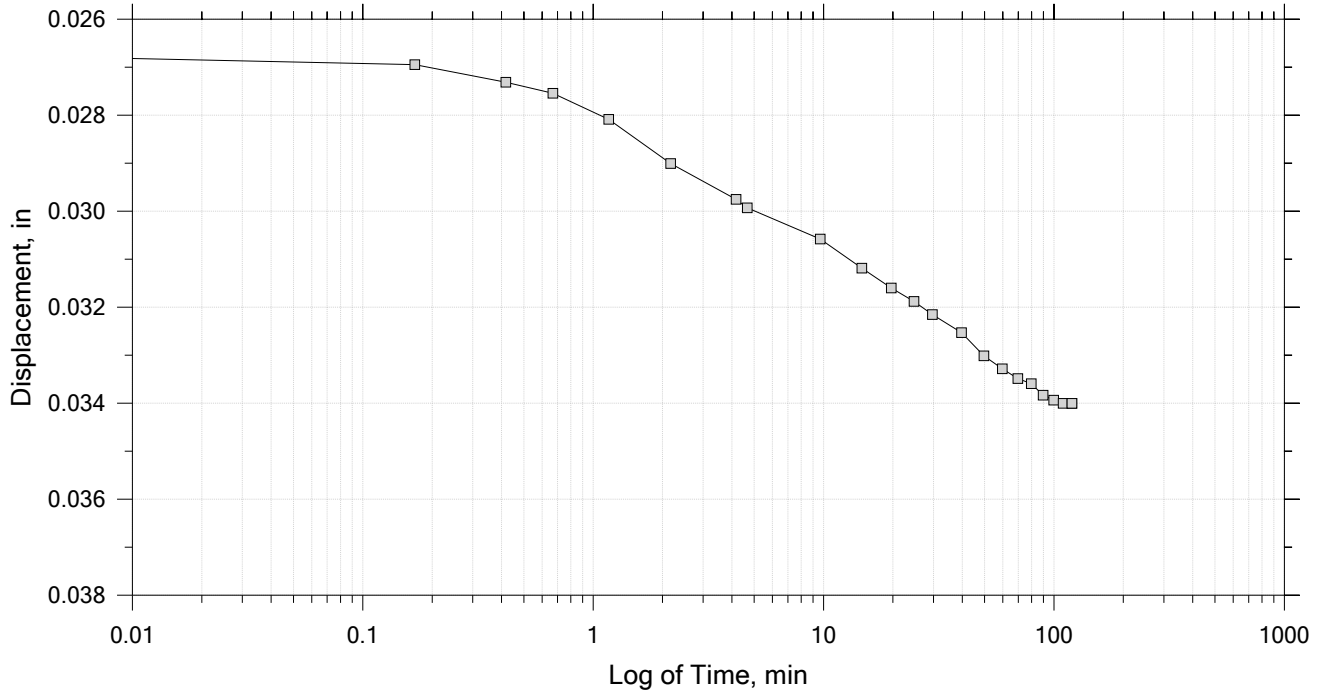
Time Curve 4 of 30
 Constant Load Step
 Stress: 756 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 30
 Constant Load Step
 Stress: 1.13e+03 psf



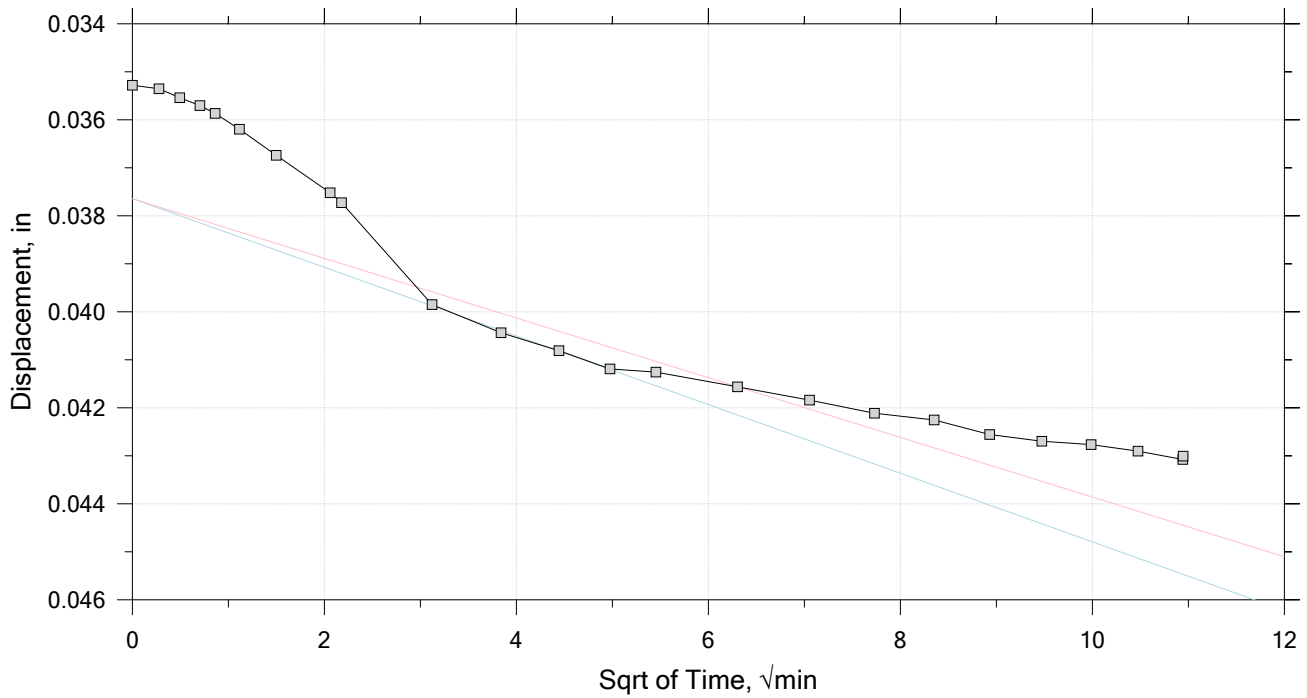
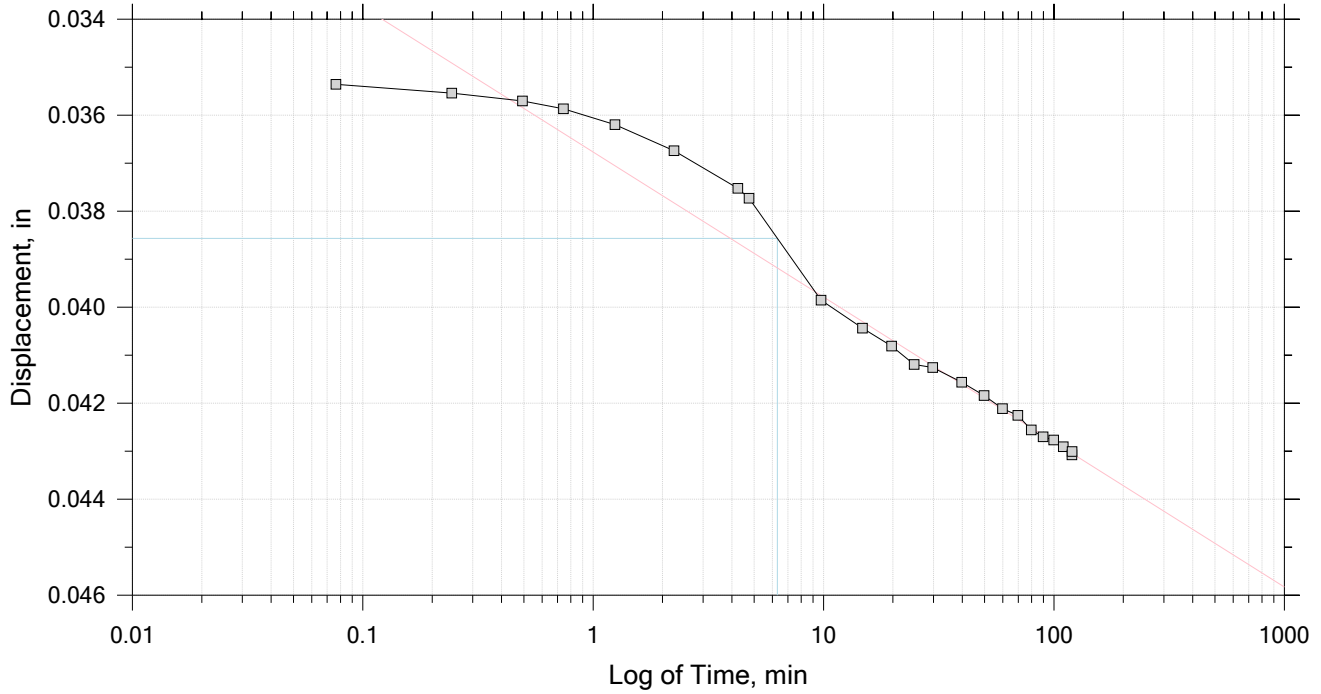
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 30

Constant Load Step

Stress: 1.7e+03 psf



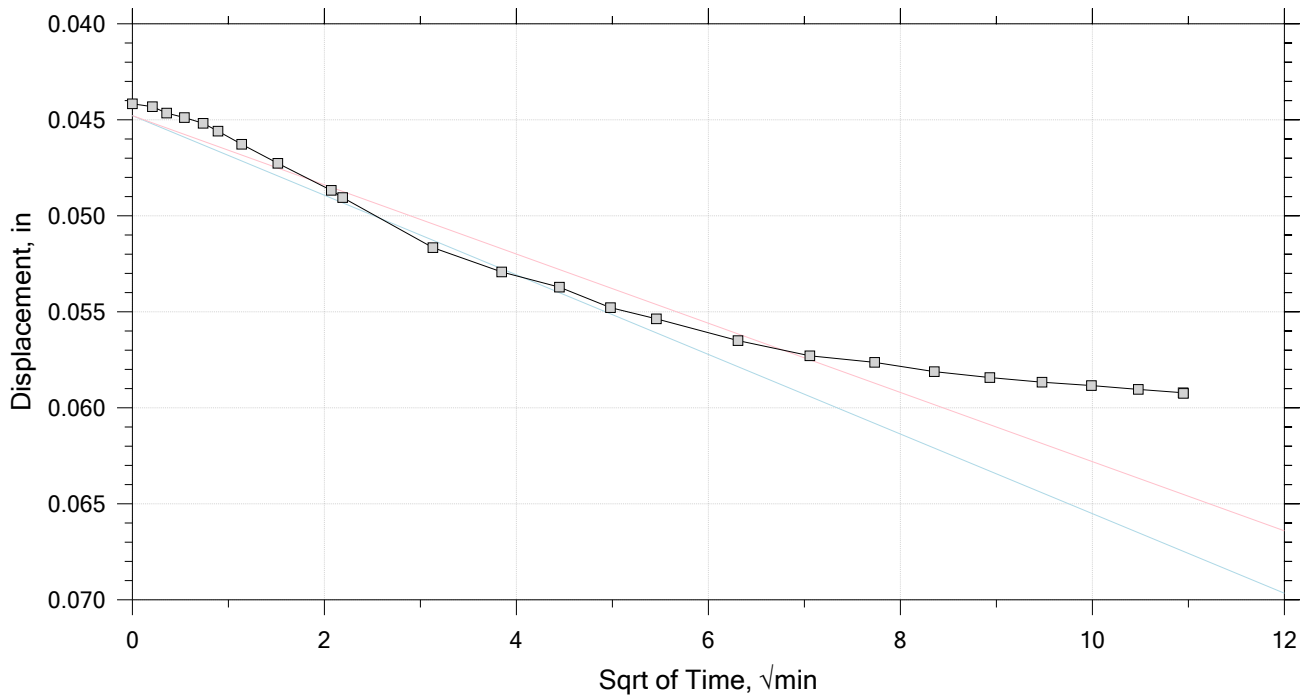
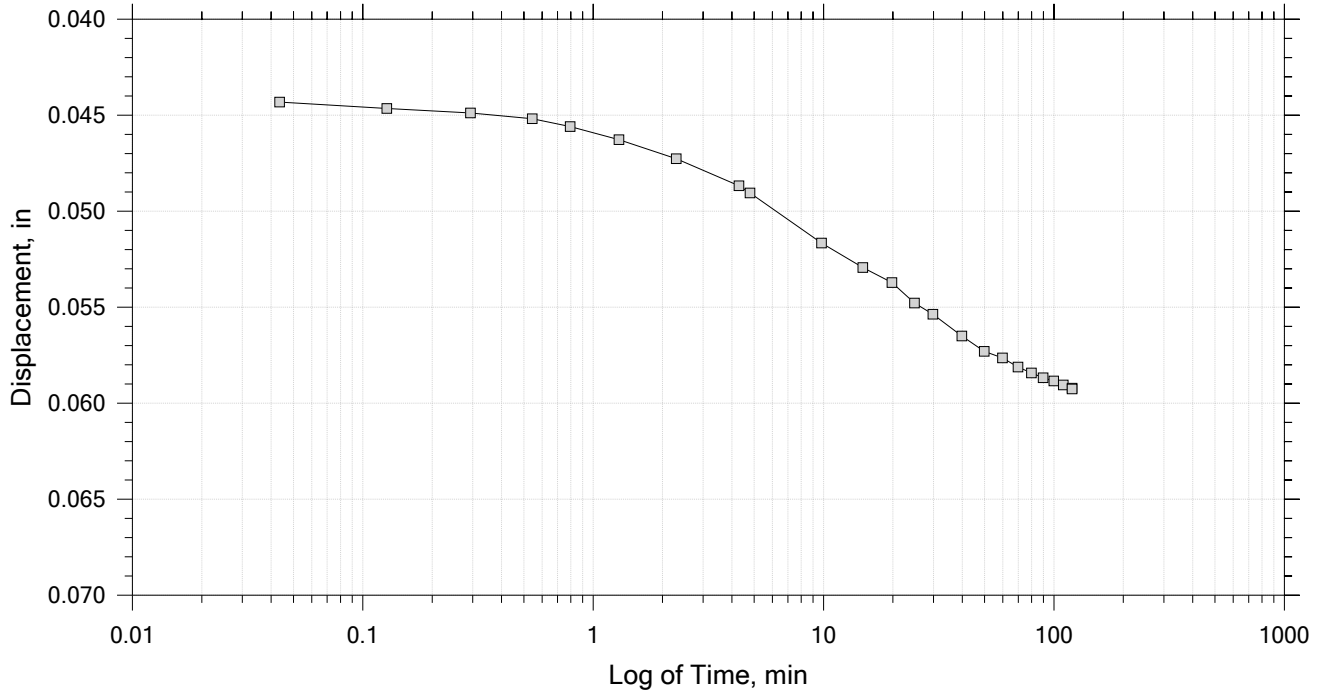
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 30

Constant Load Step

Stress: 2.55e+03 psf



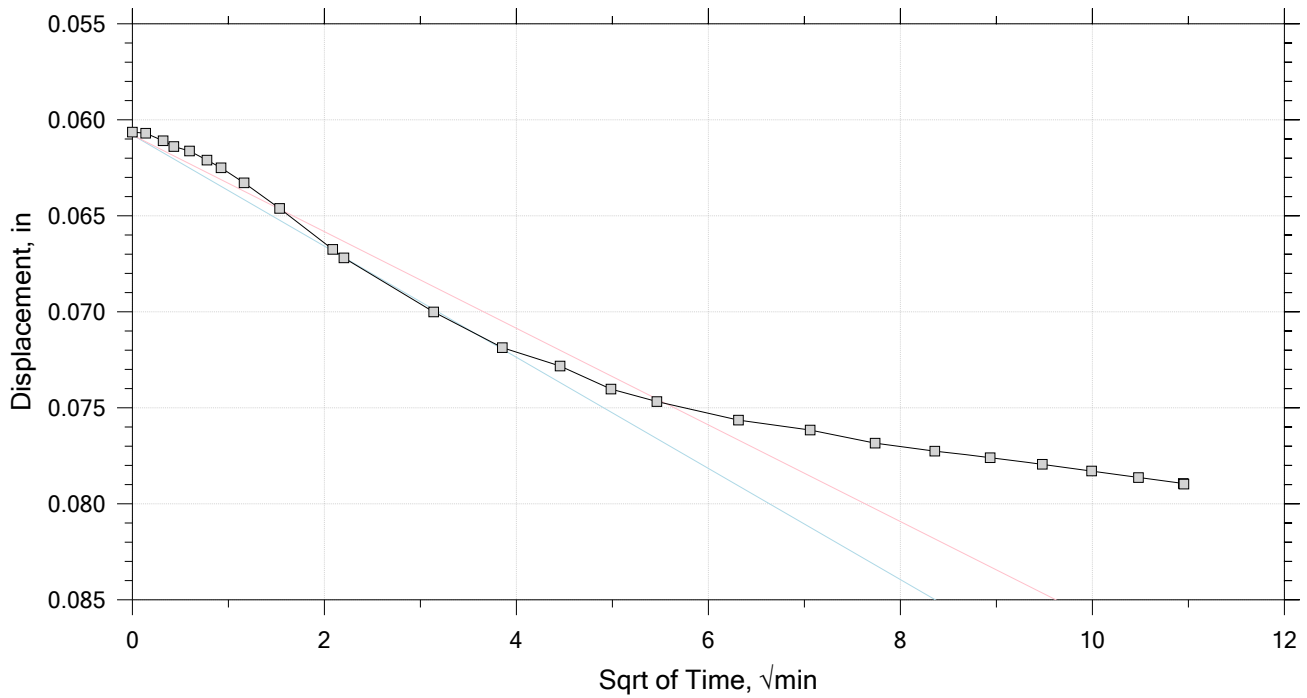
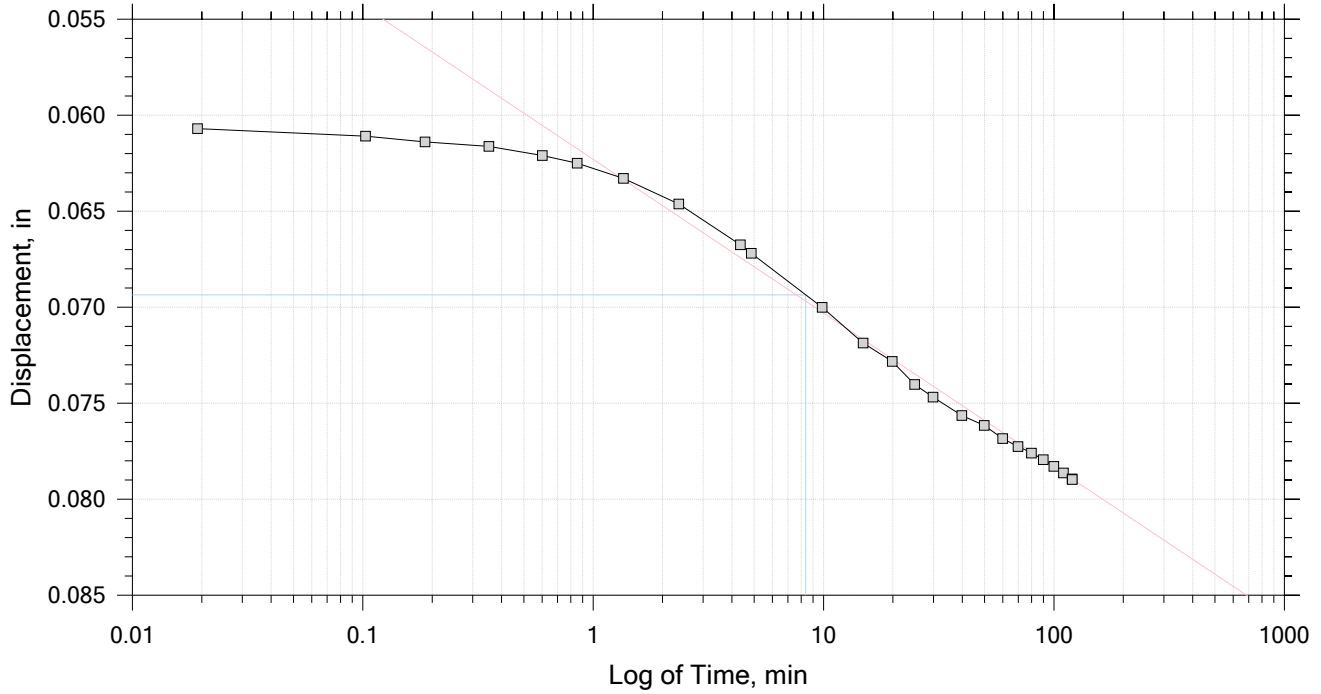
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 30

Constant Load Step

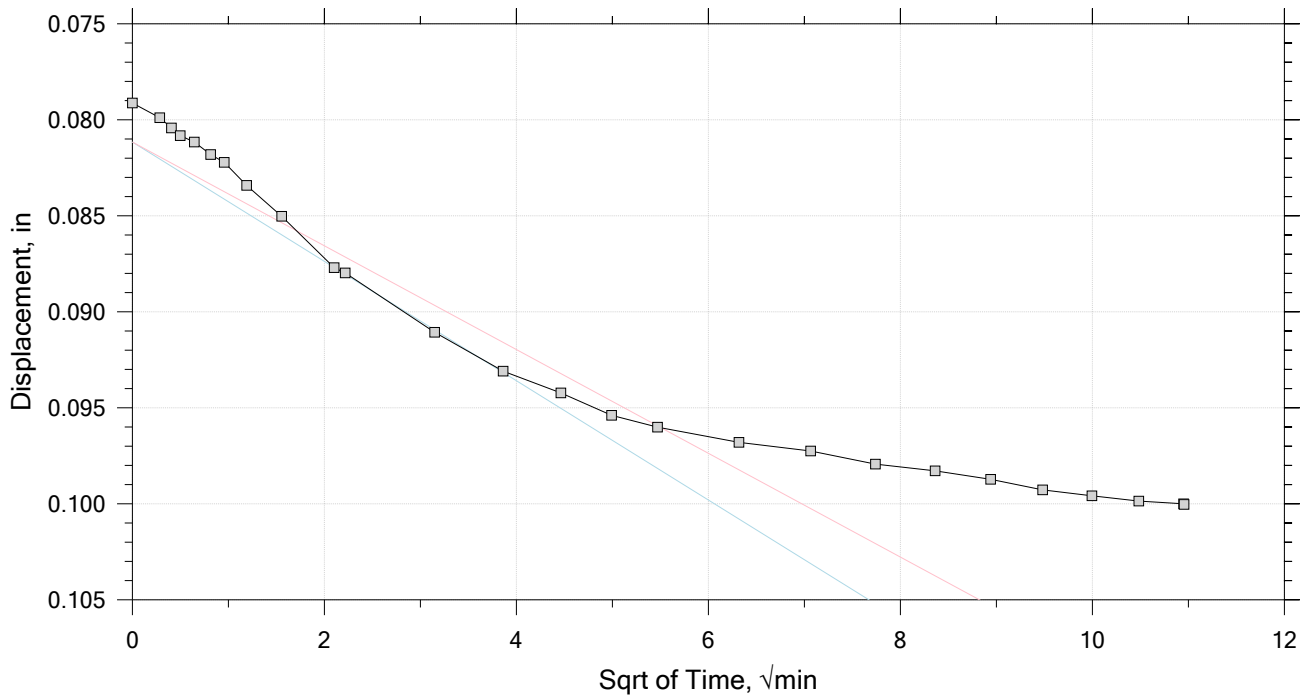
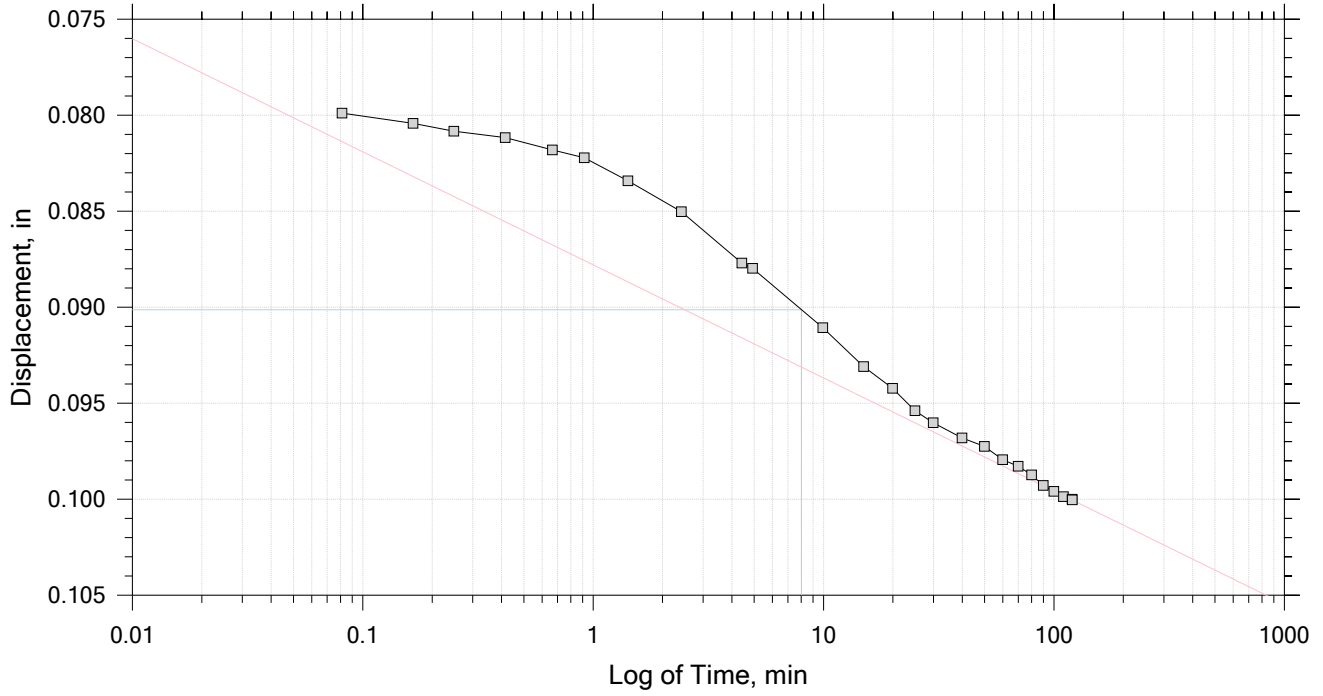
Stress: 3.83e+03 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 30
 Constant Load Step
 Stress: 5.74e+03 psf



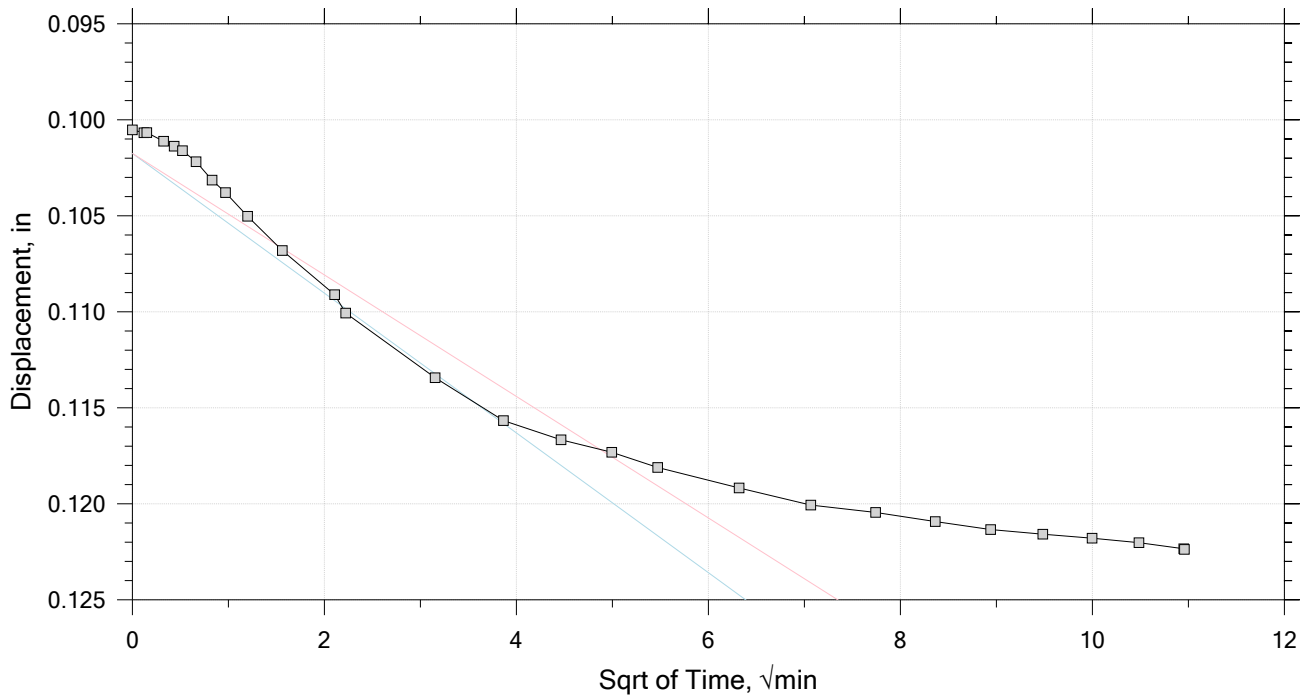
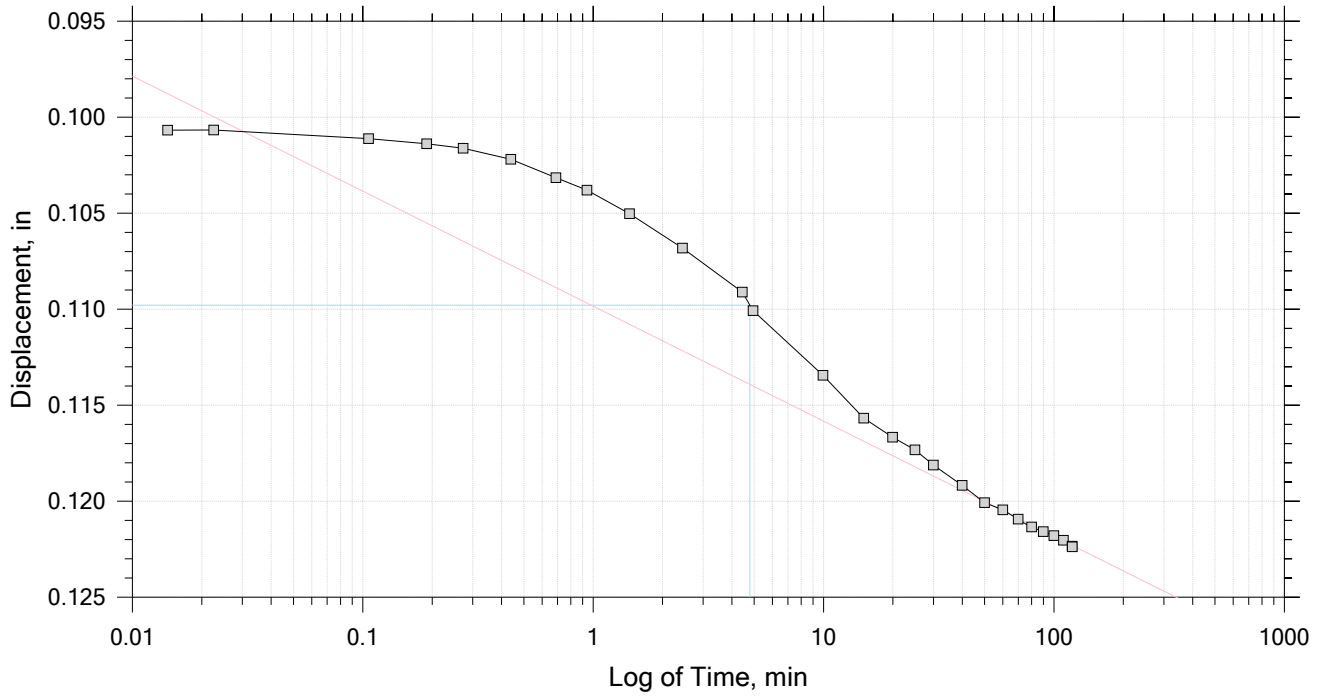
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 30

Constant Load Step

Stress: 8.61×10^3 psf



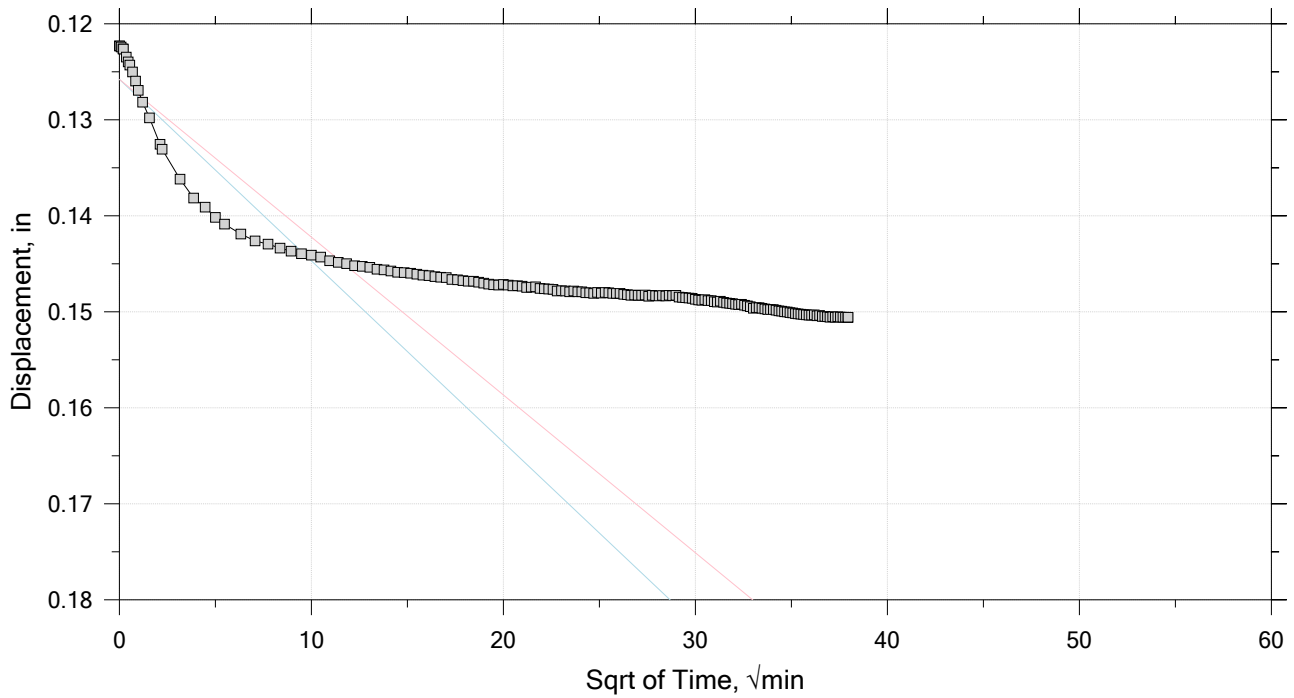
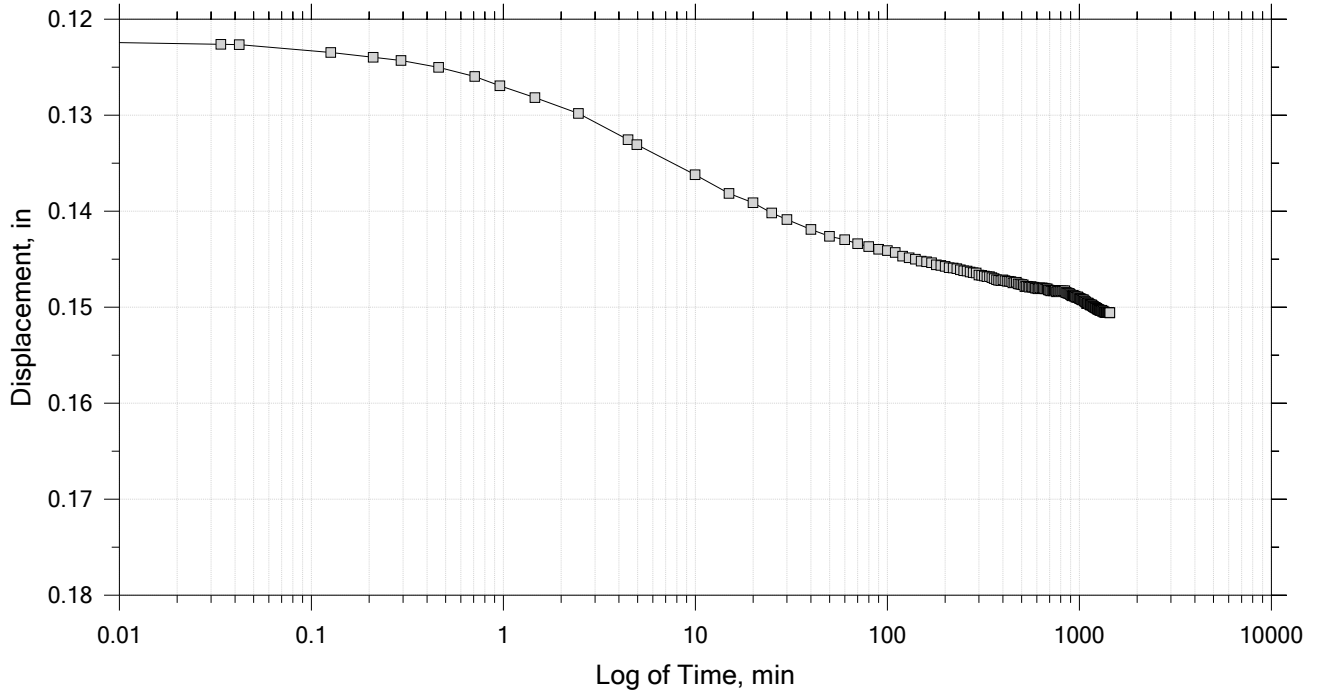
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 30

Constant Load Step

Stress: 1.29e+04 psf



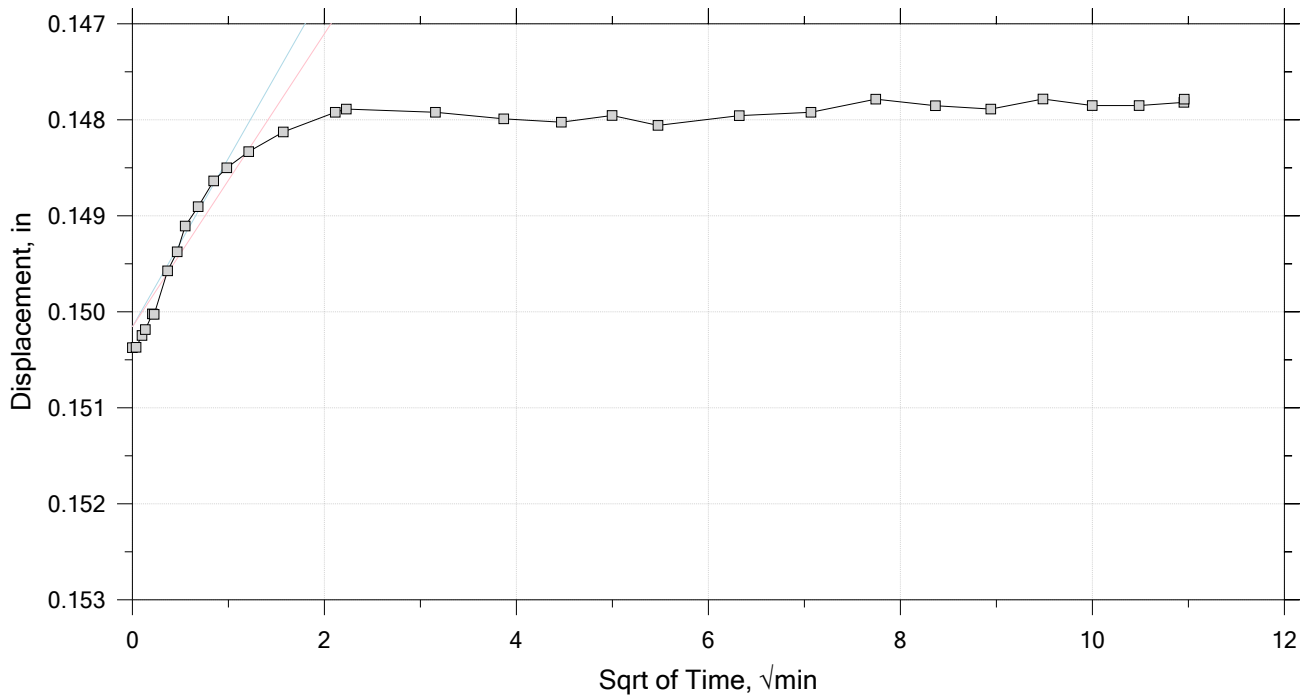
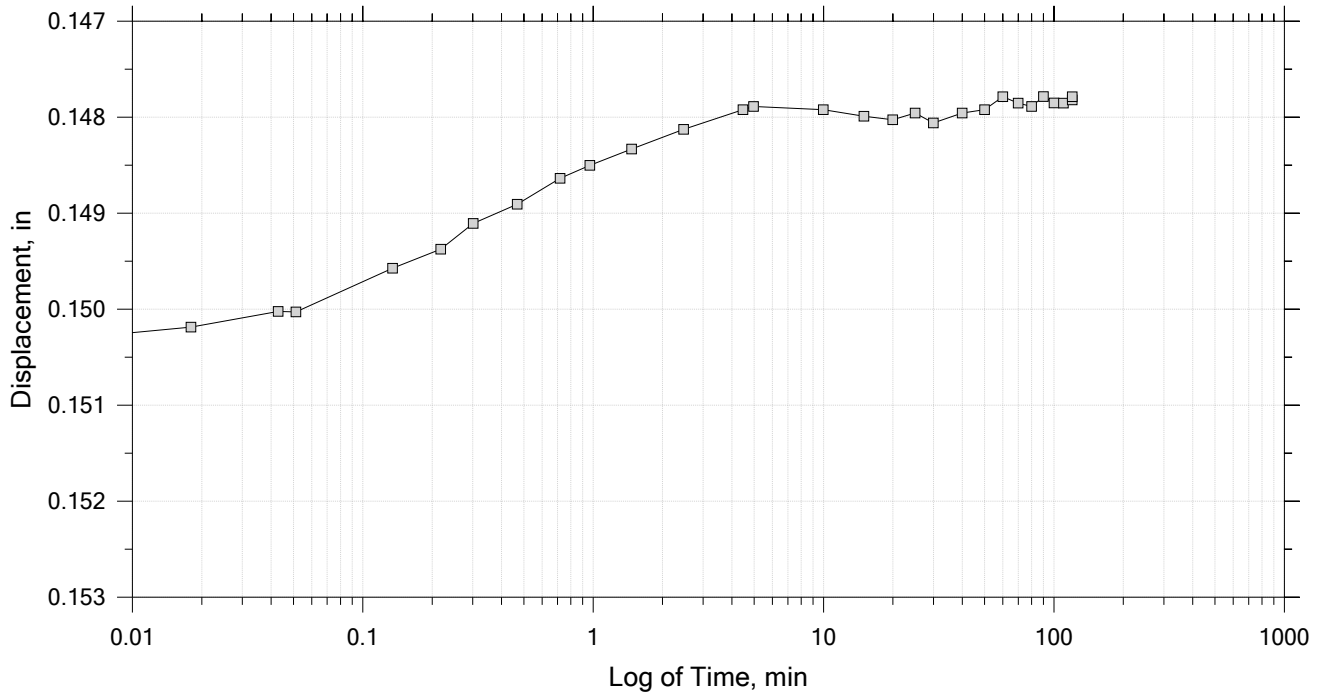
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 30

Constant Load Step

Stress: 6.46e+03 psf



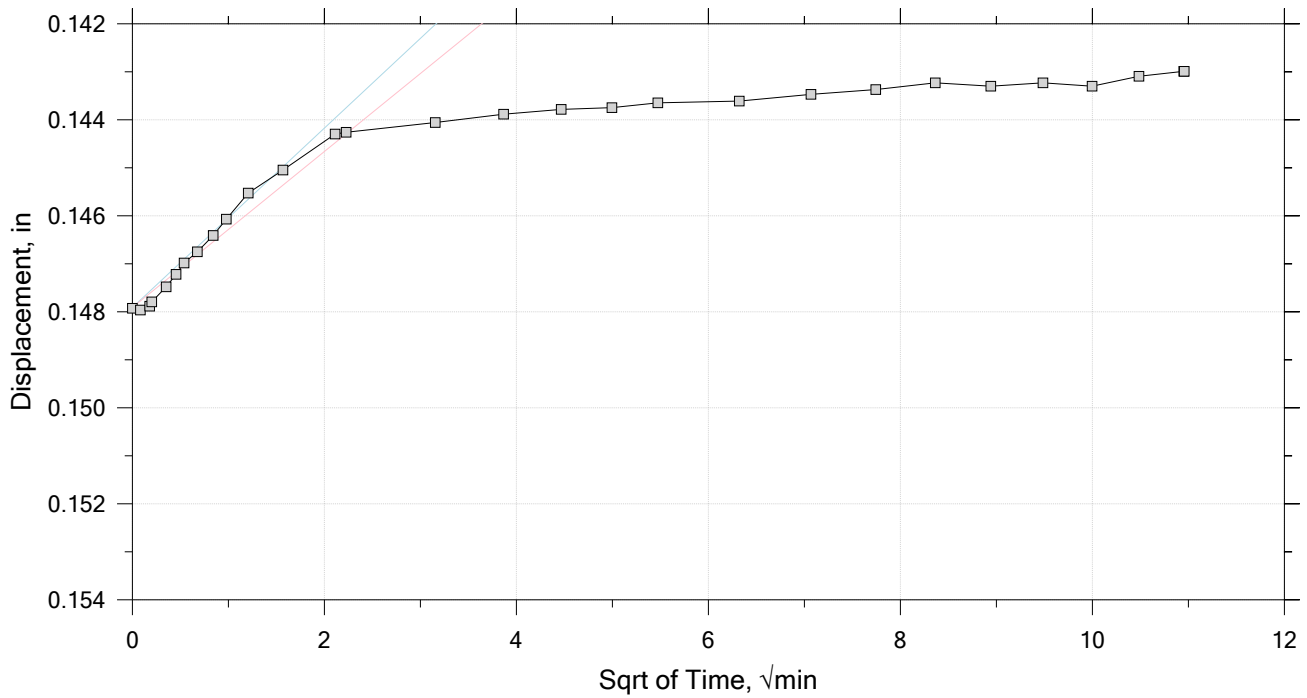
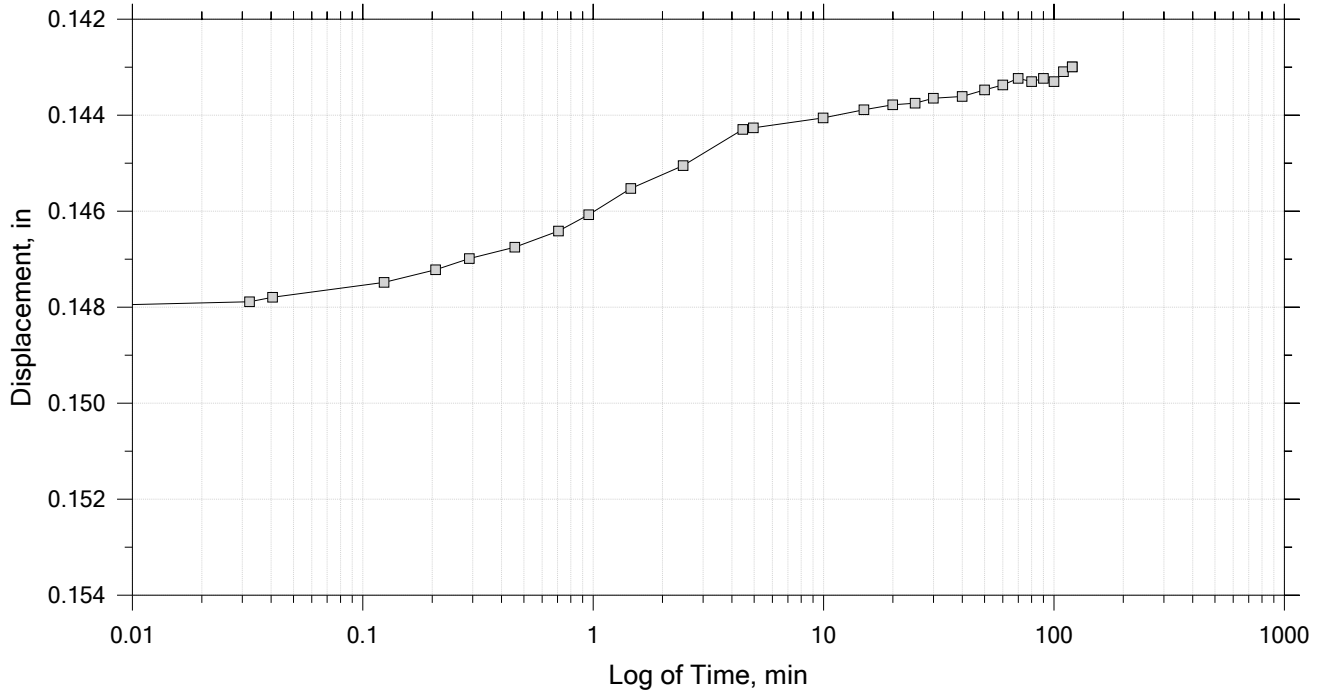
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 30

Constant Load Step

Stress: 3.23e+03 psf



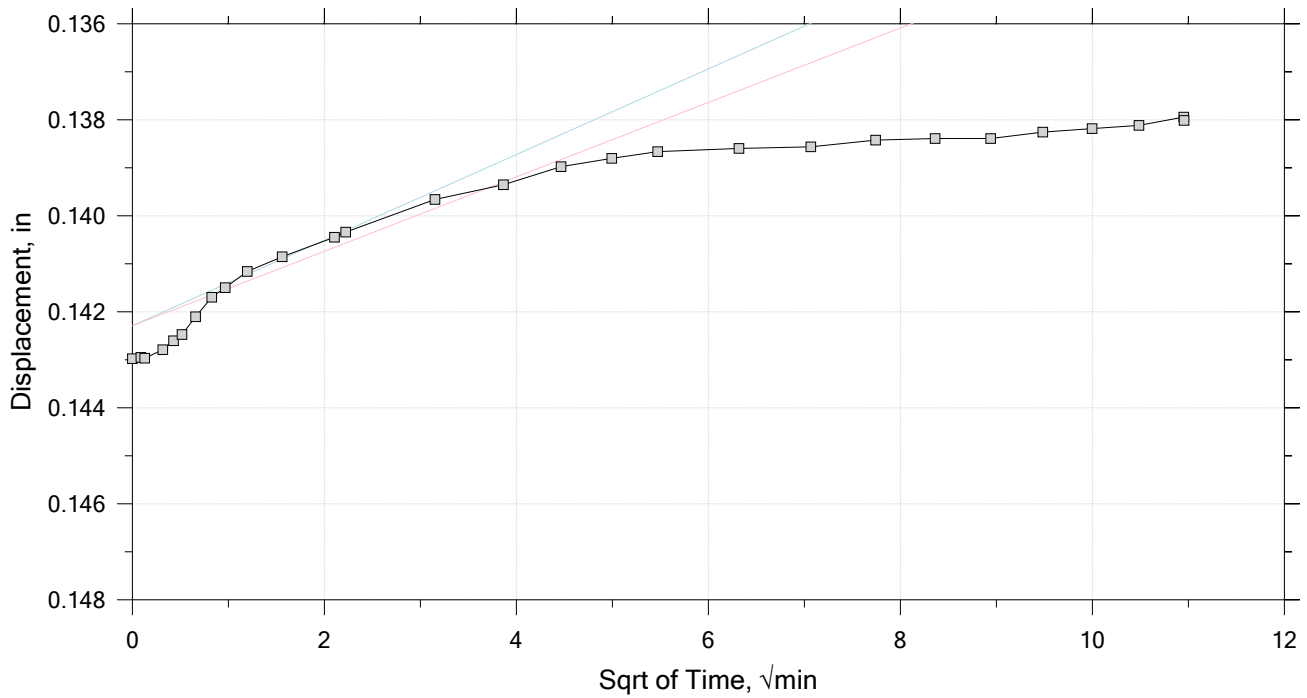
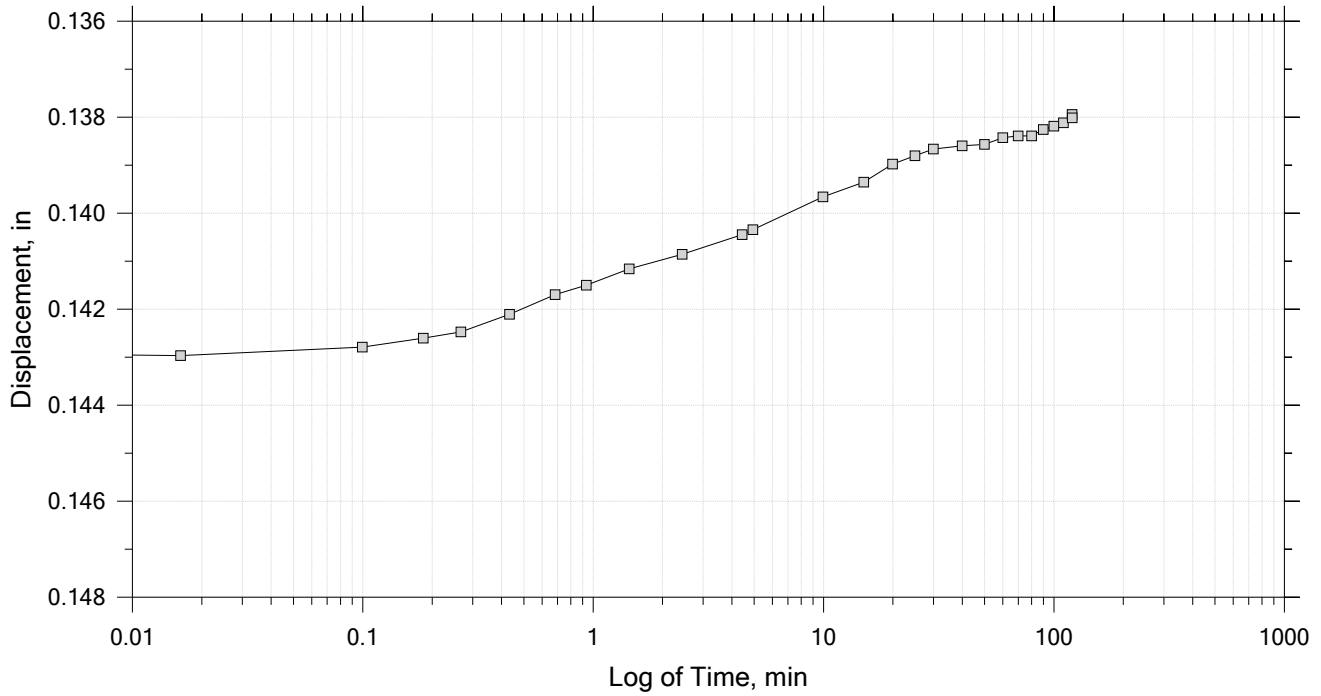
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 30

Constant Load Step

Stress: 1.61e+03 psf



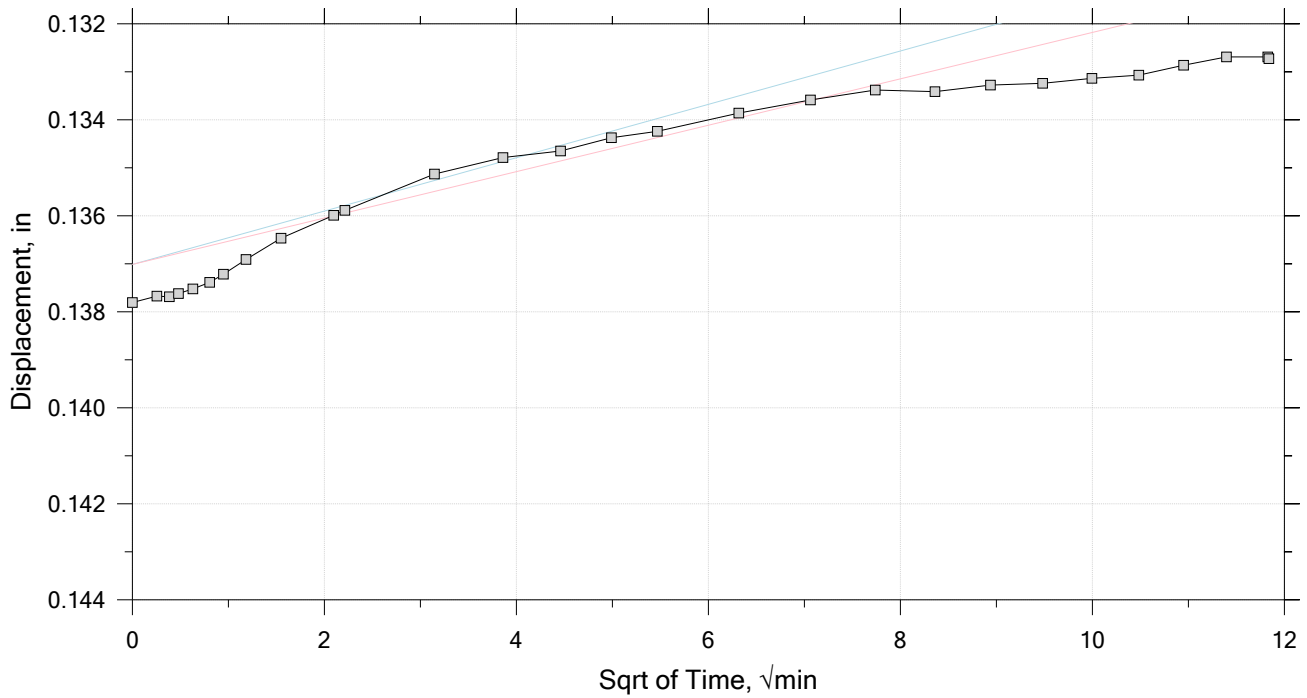
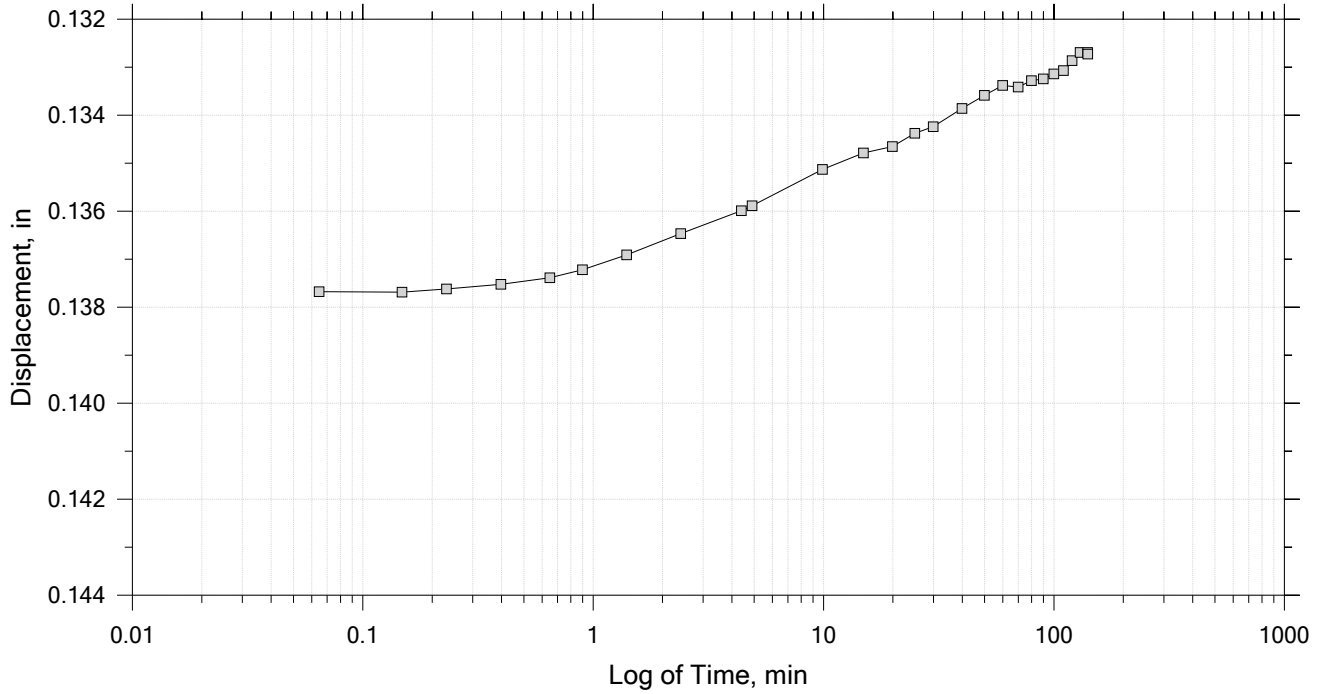
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 30

Constant Load Step

Stress: 807 psf



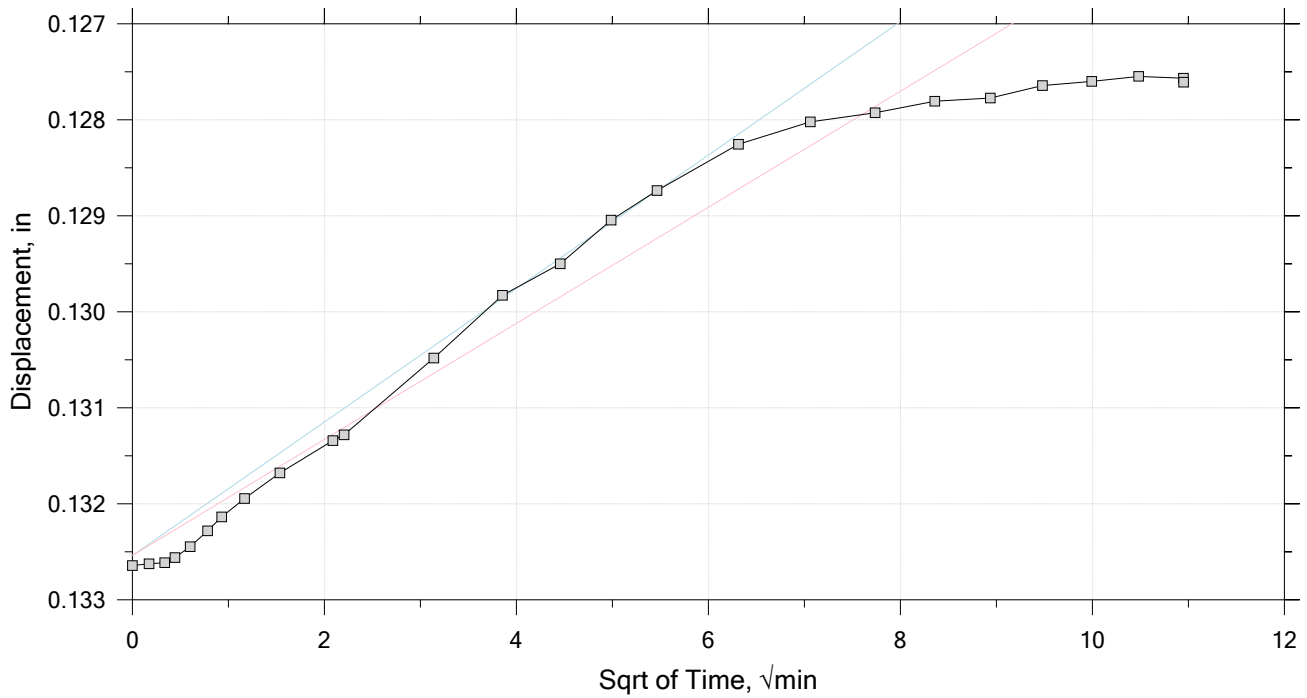
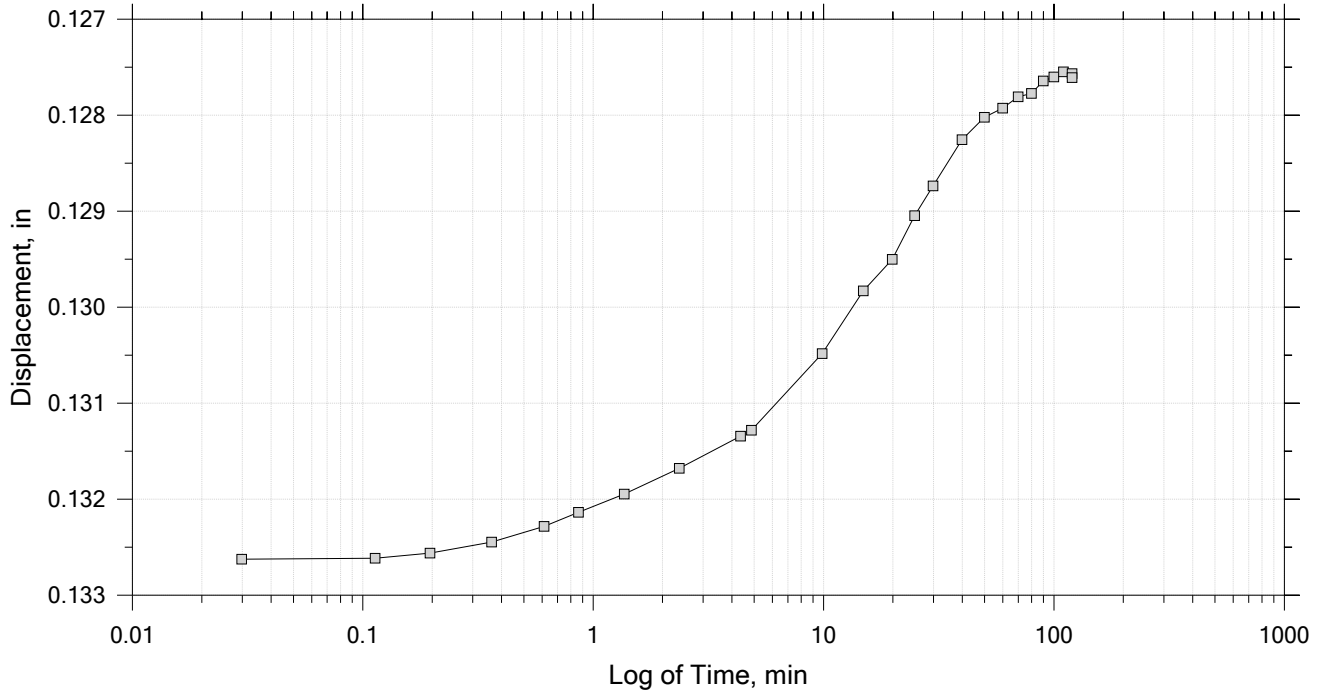
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 30

Constant Load Step

Stress: 404 psf



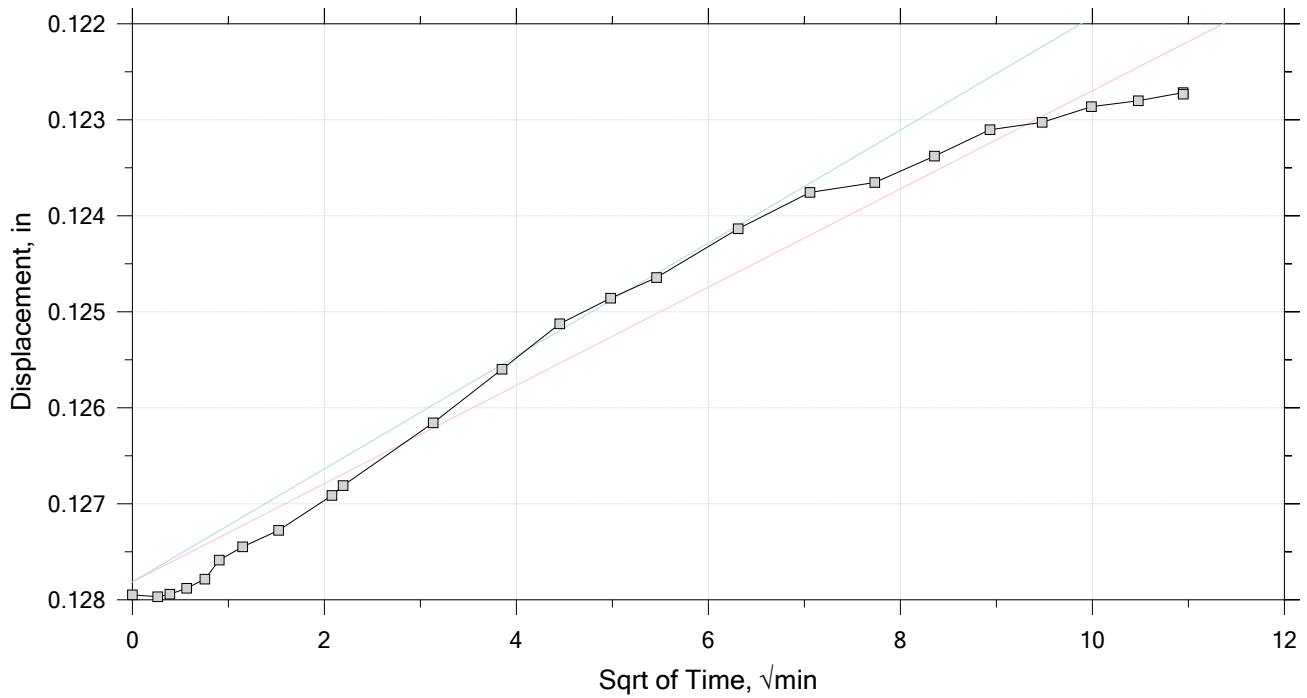
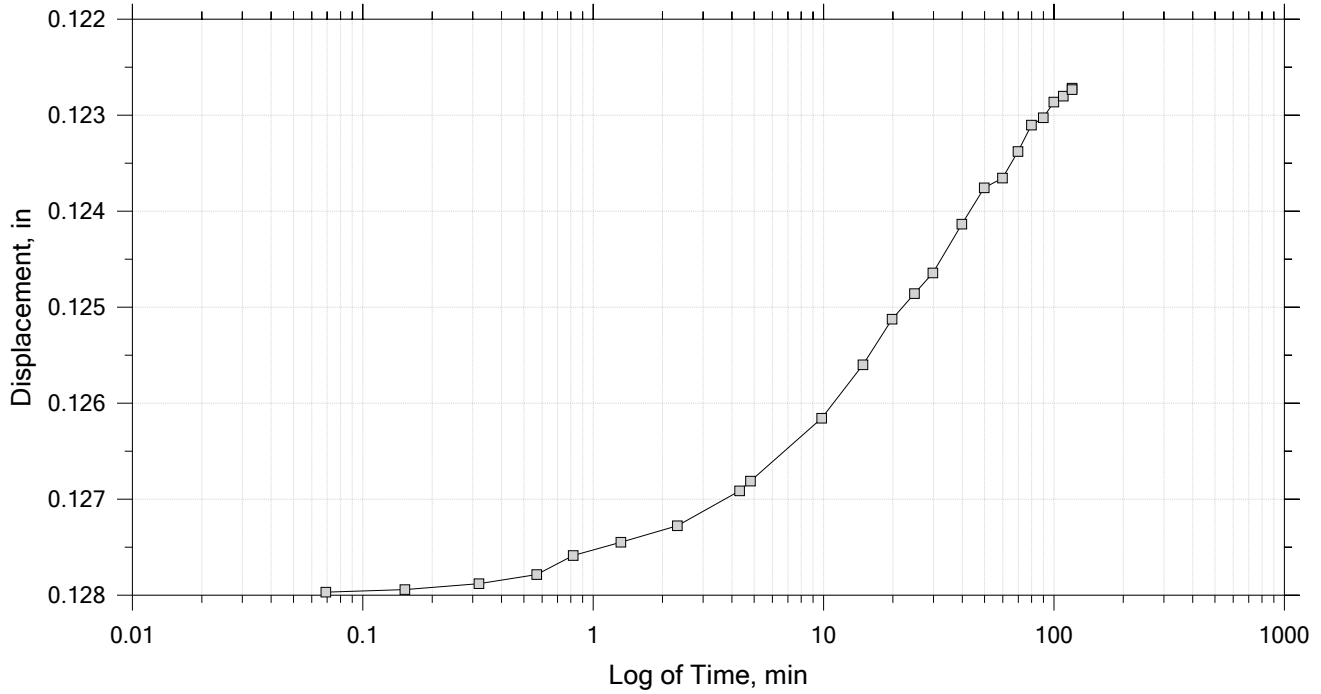
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 30

Constant Load Step

Stress: 202 psf



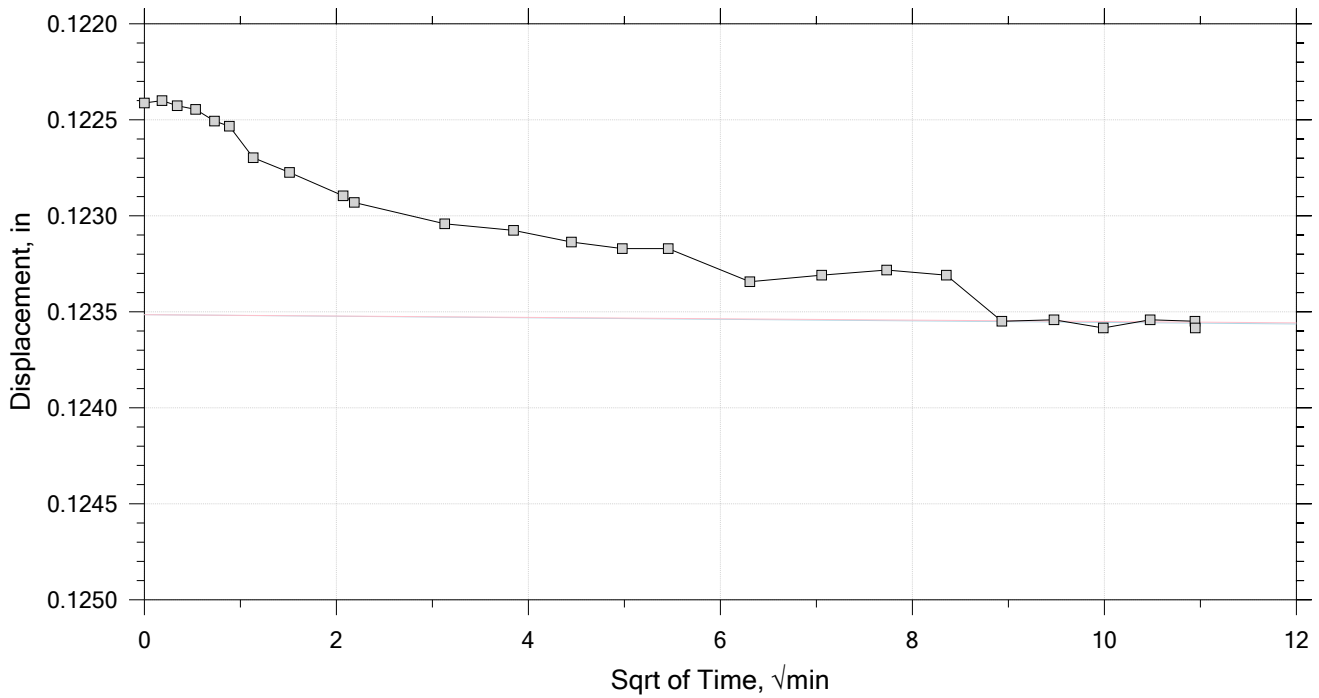
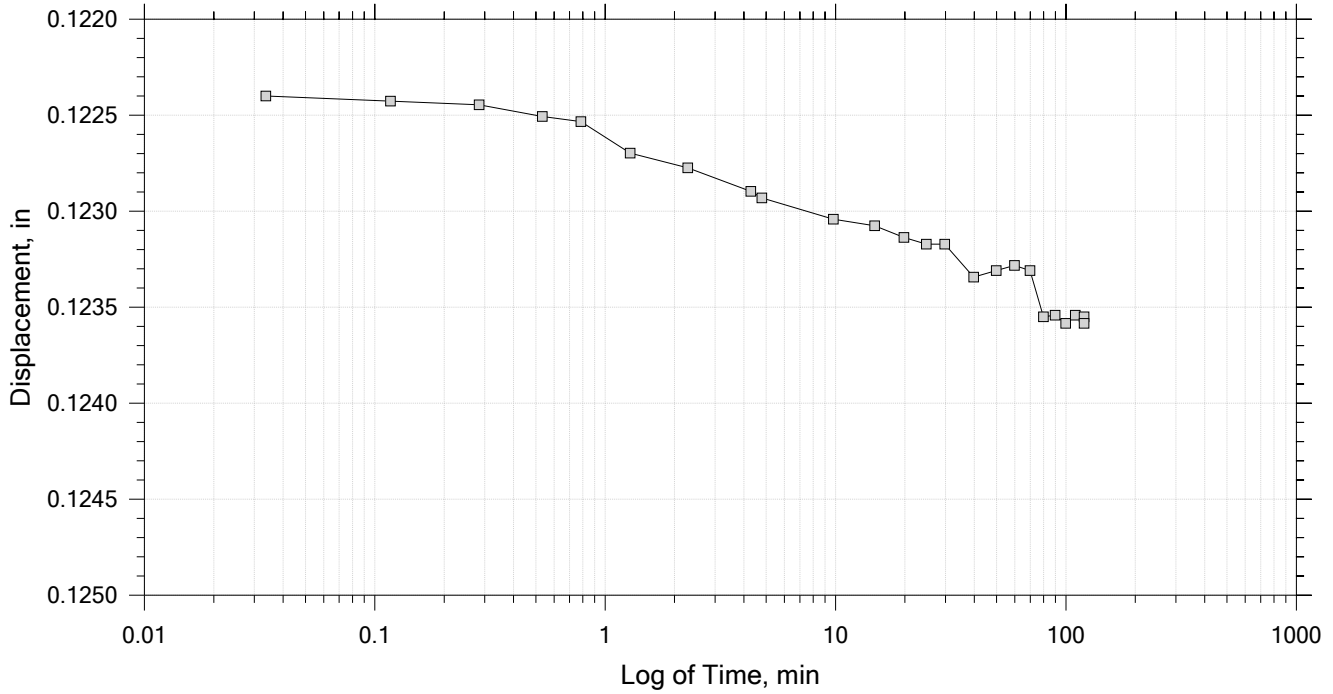
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 30

Constant Load Step

Stress: 404 psf



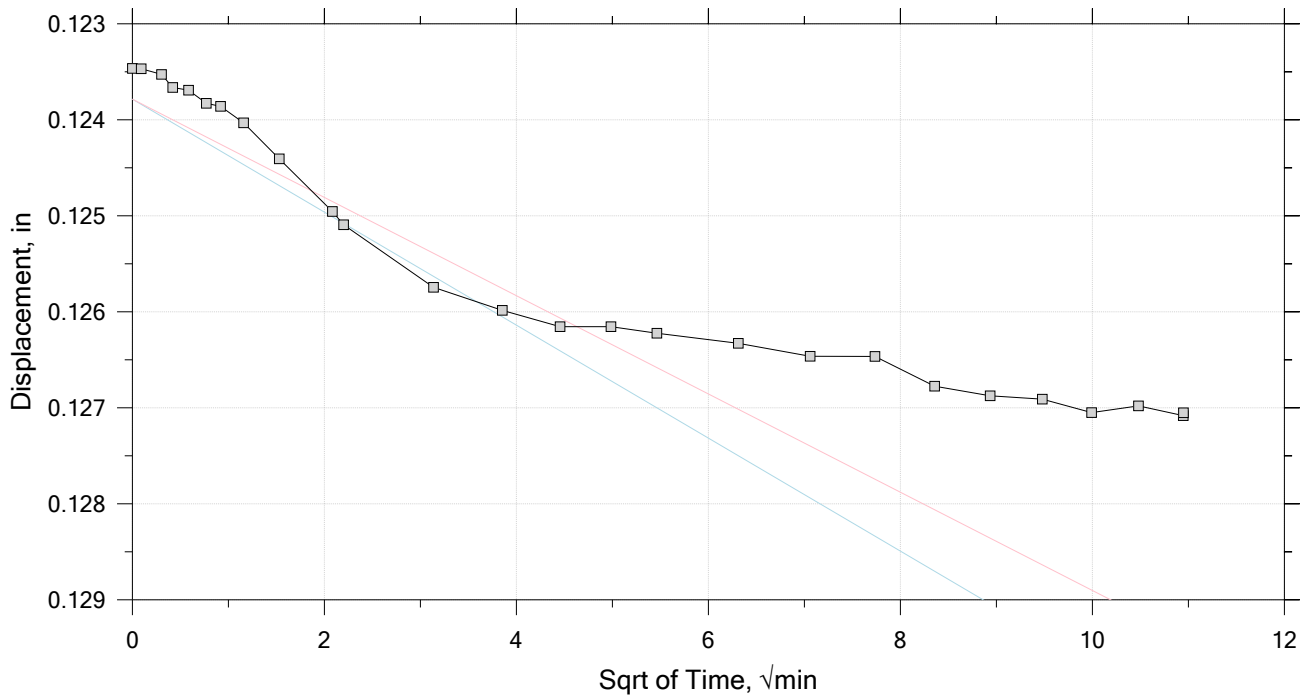
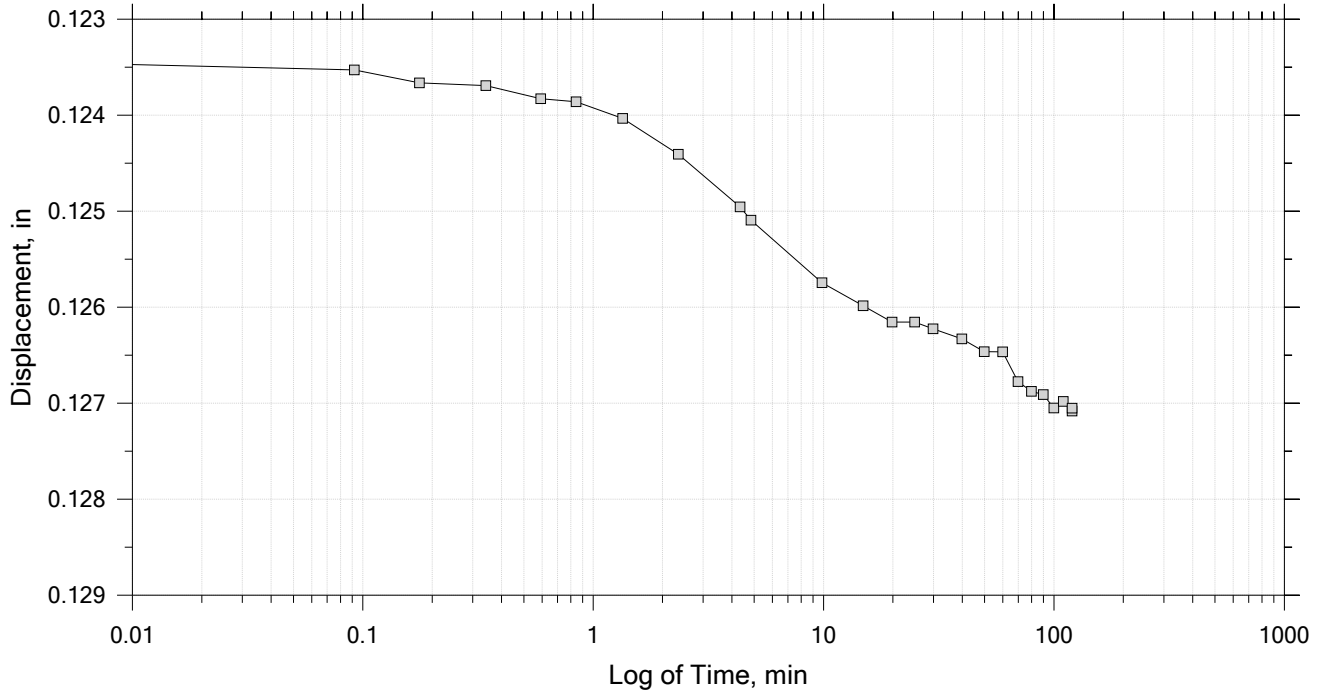
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 30

Constant Load Step

Stress: 807 psf



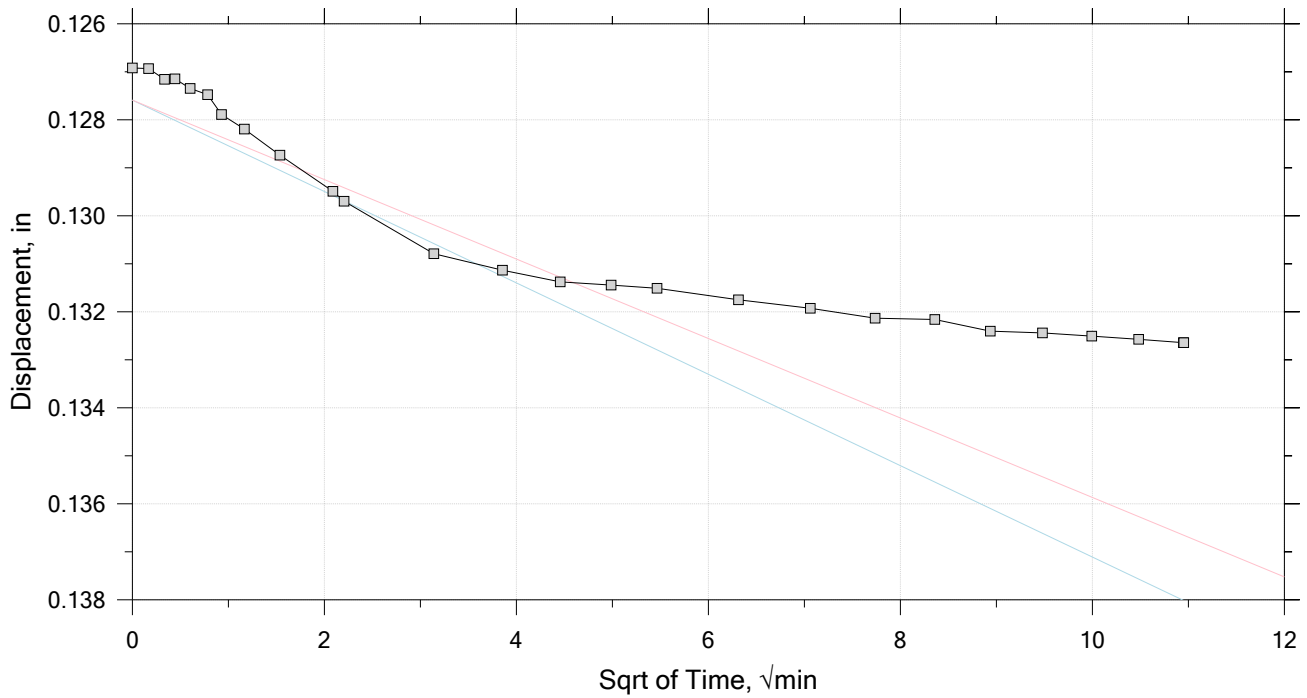
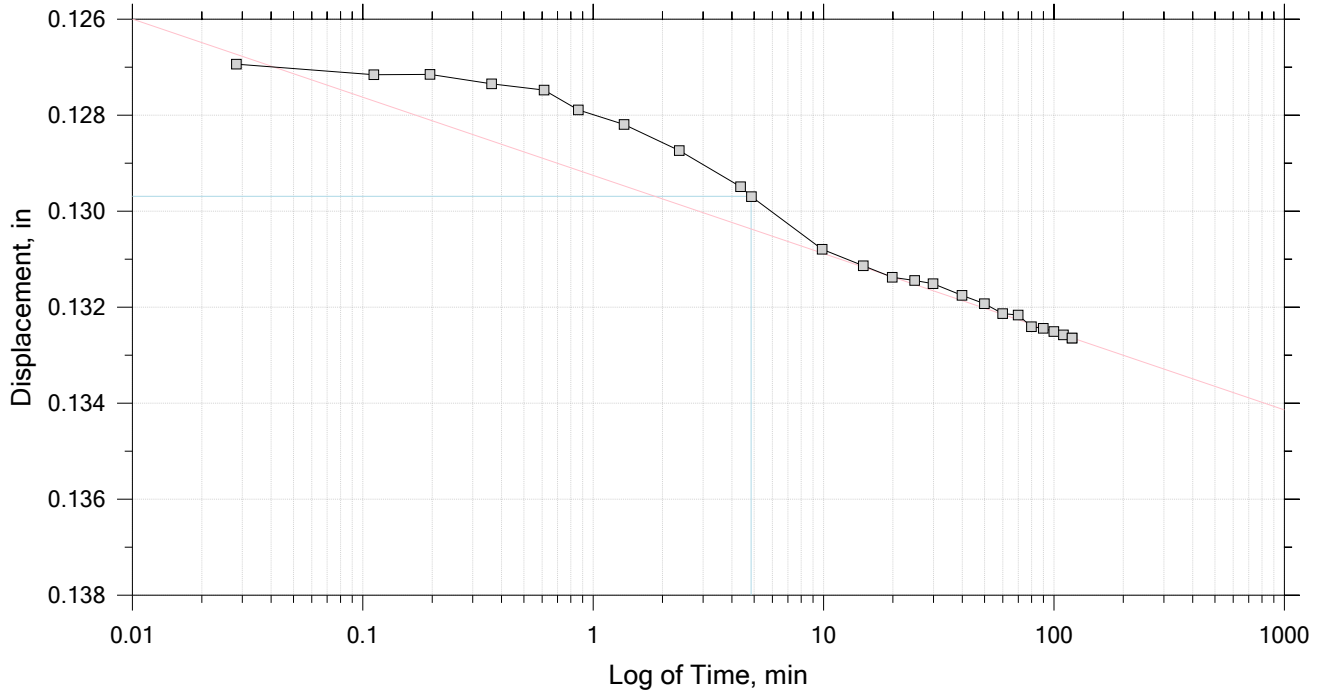
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 30

Constant Load Step

Stress: 1.61e+03 psf



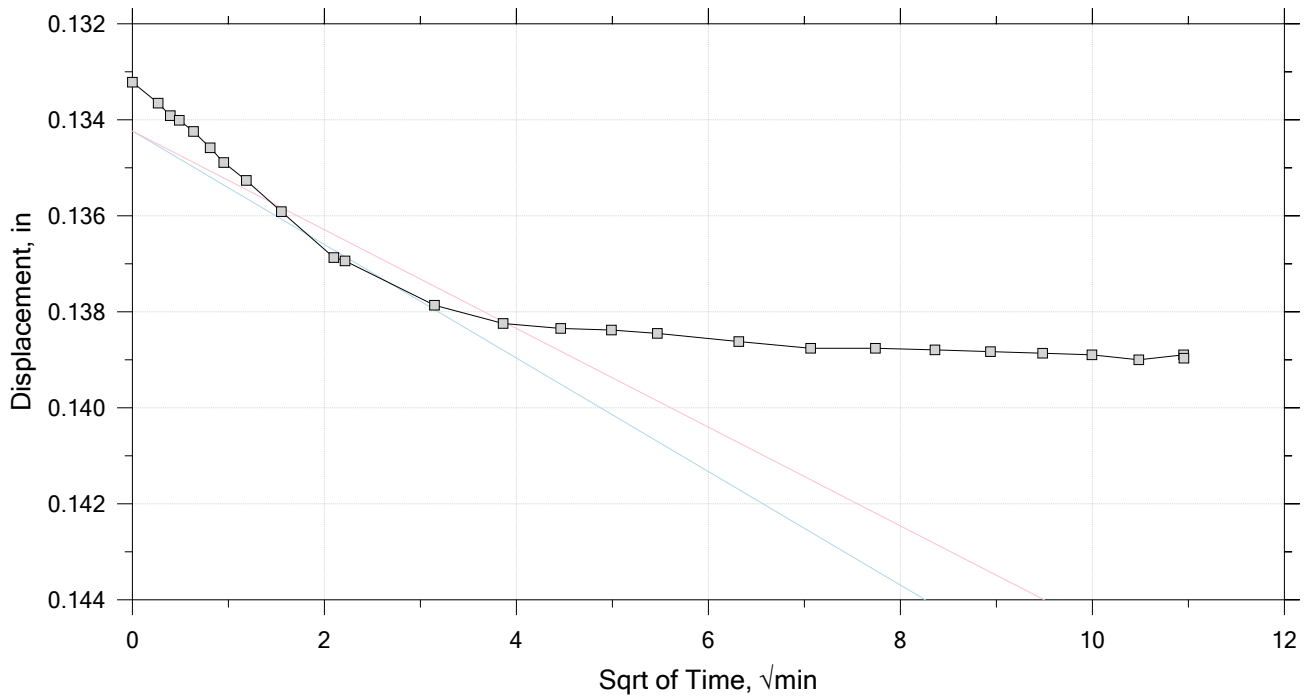
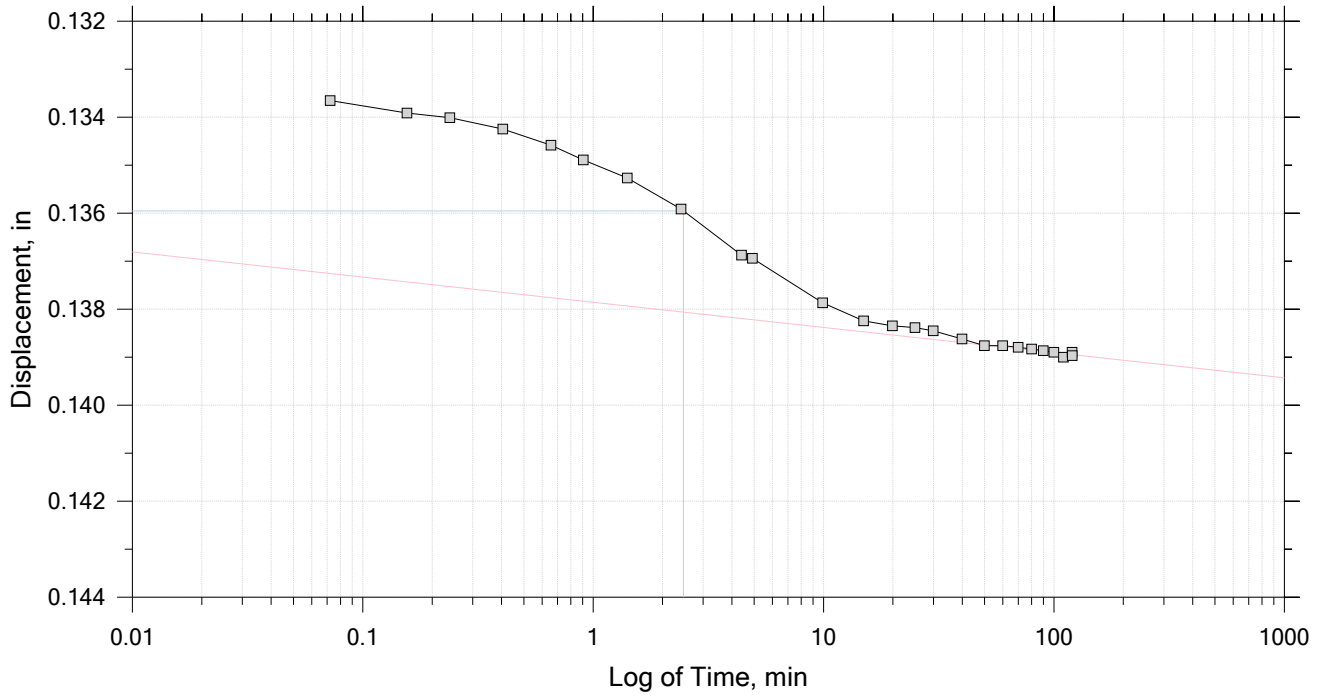
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 30

Constant Load Step

Stress: 3.23e+03 psf



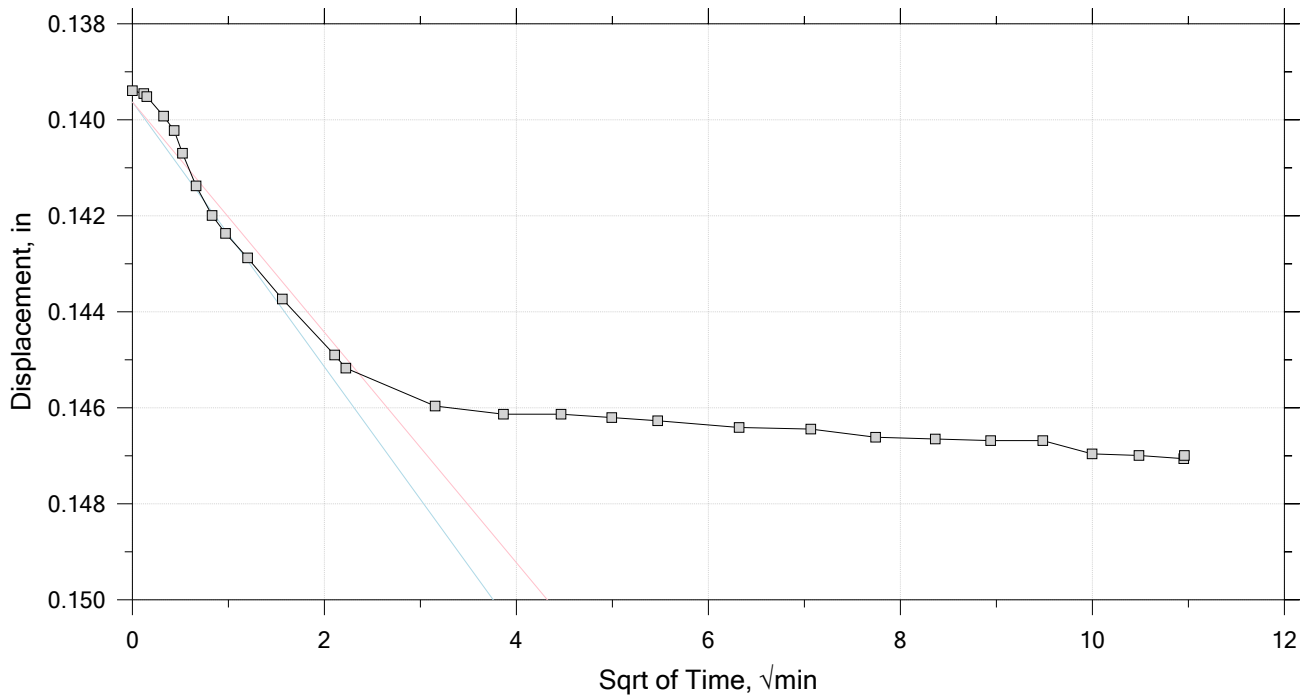
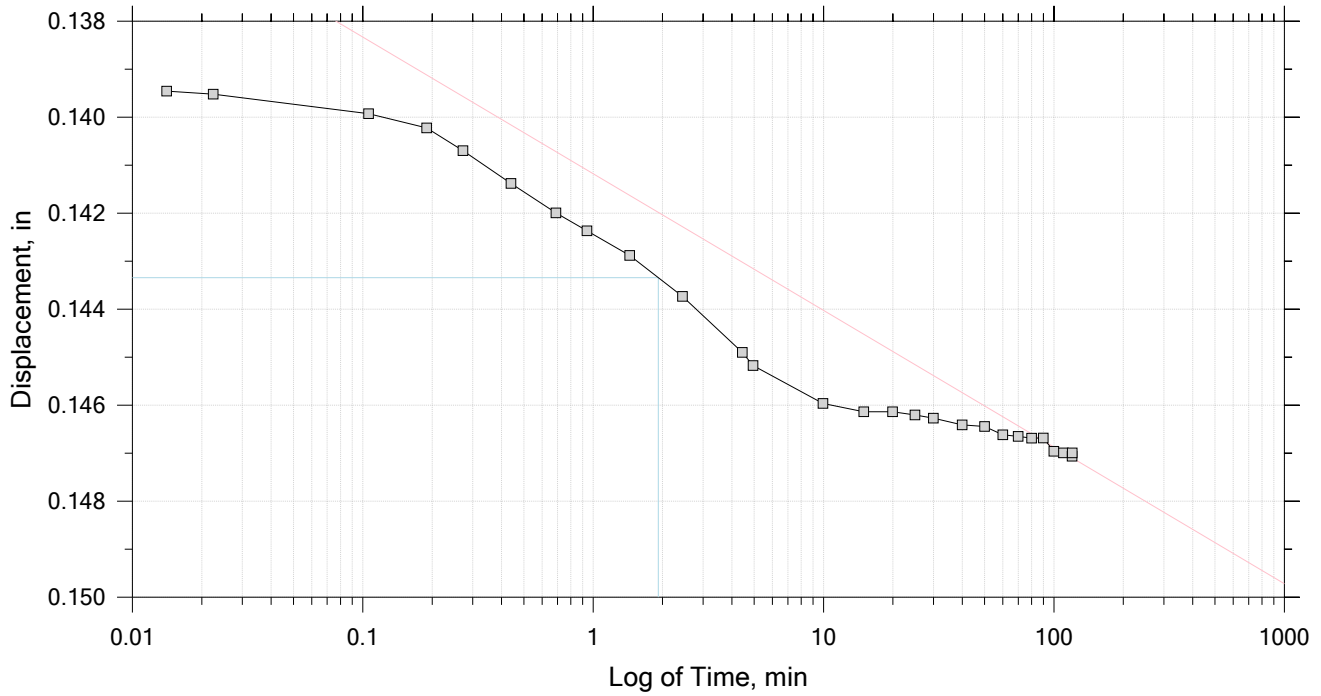
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 30

Constant Load Step

Stress: 6.46e+03 psf



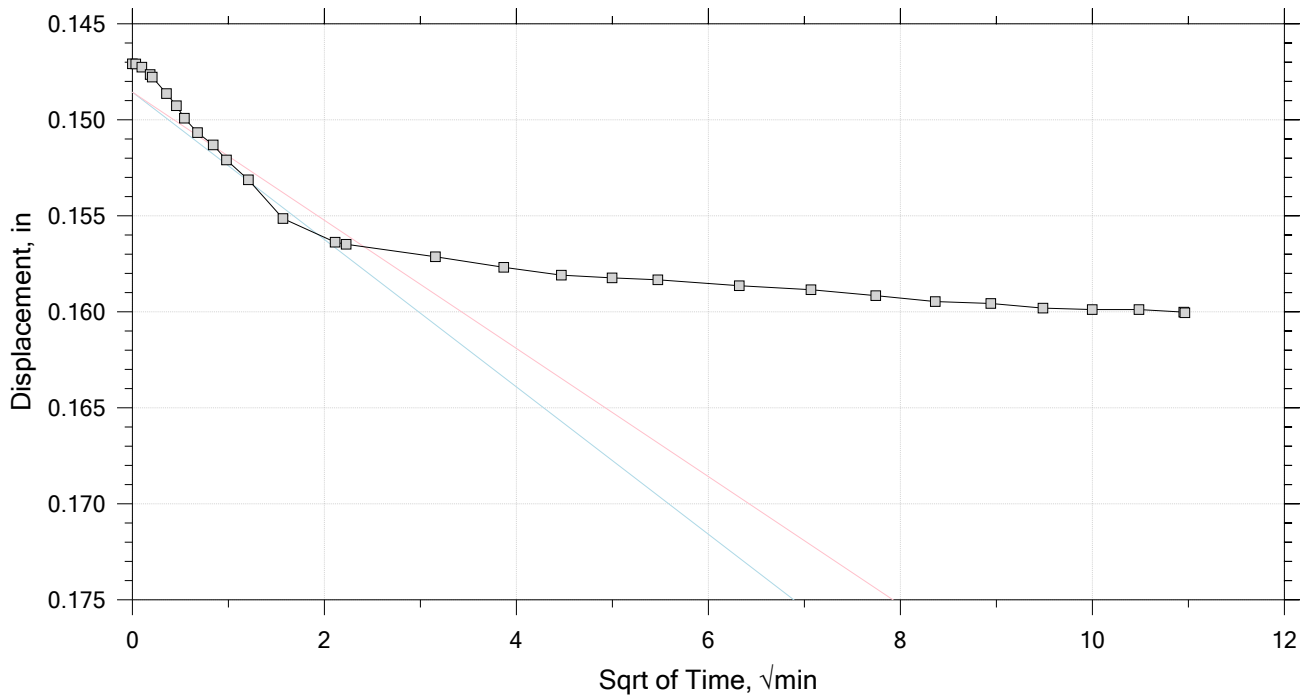
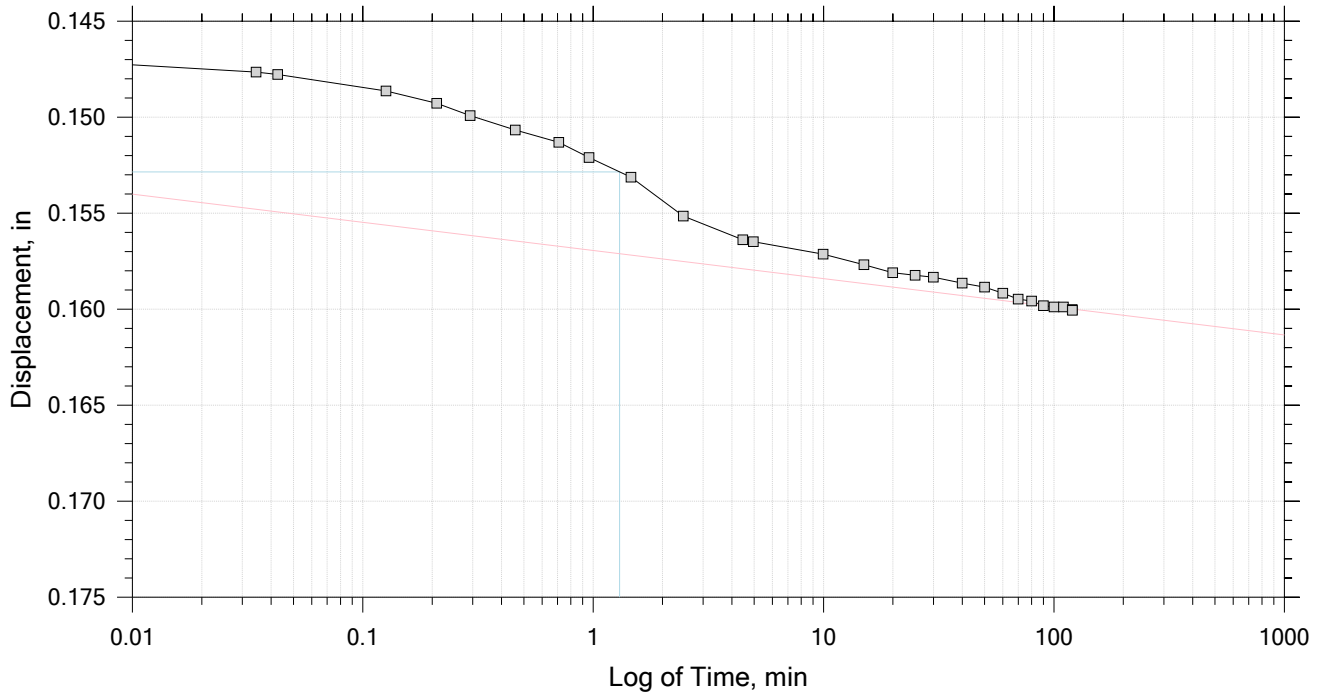
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 30

Constant Load Step

Stress: 1.29e+04 psf



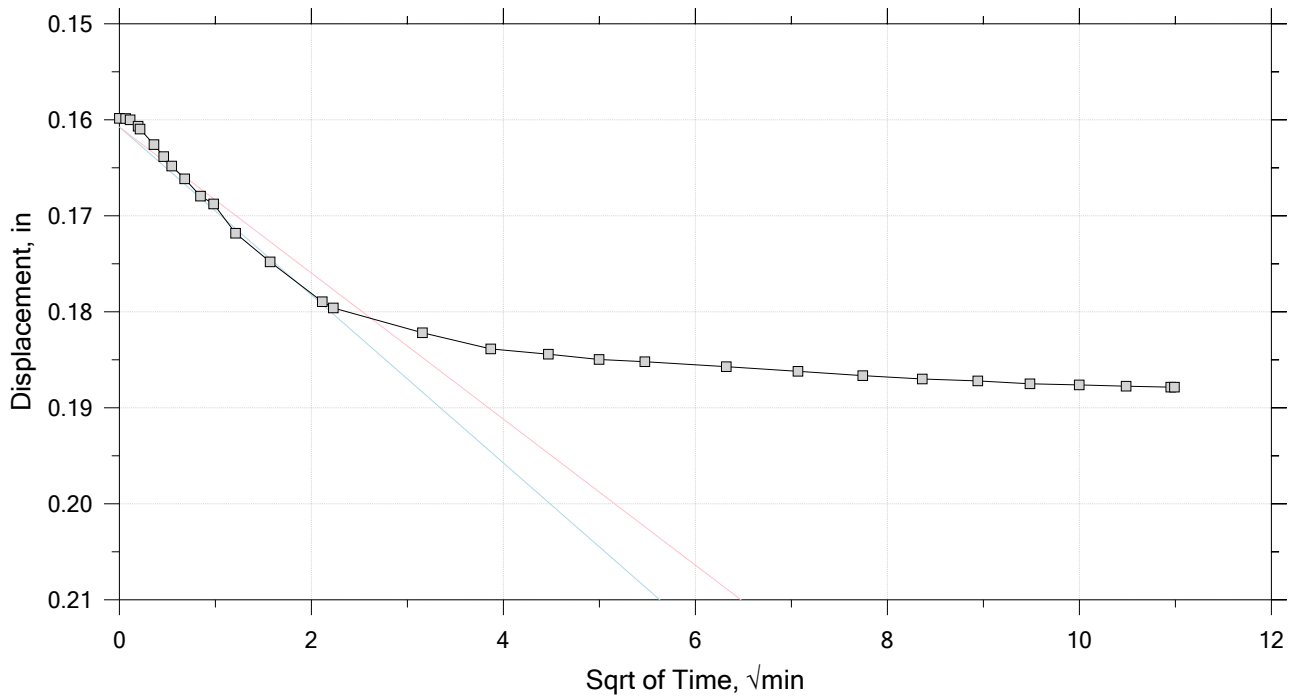
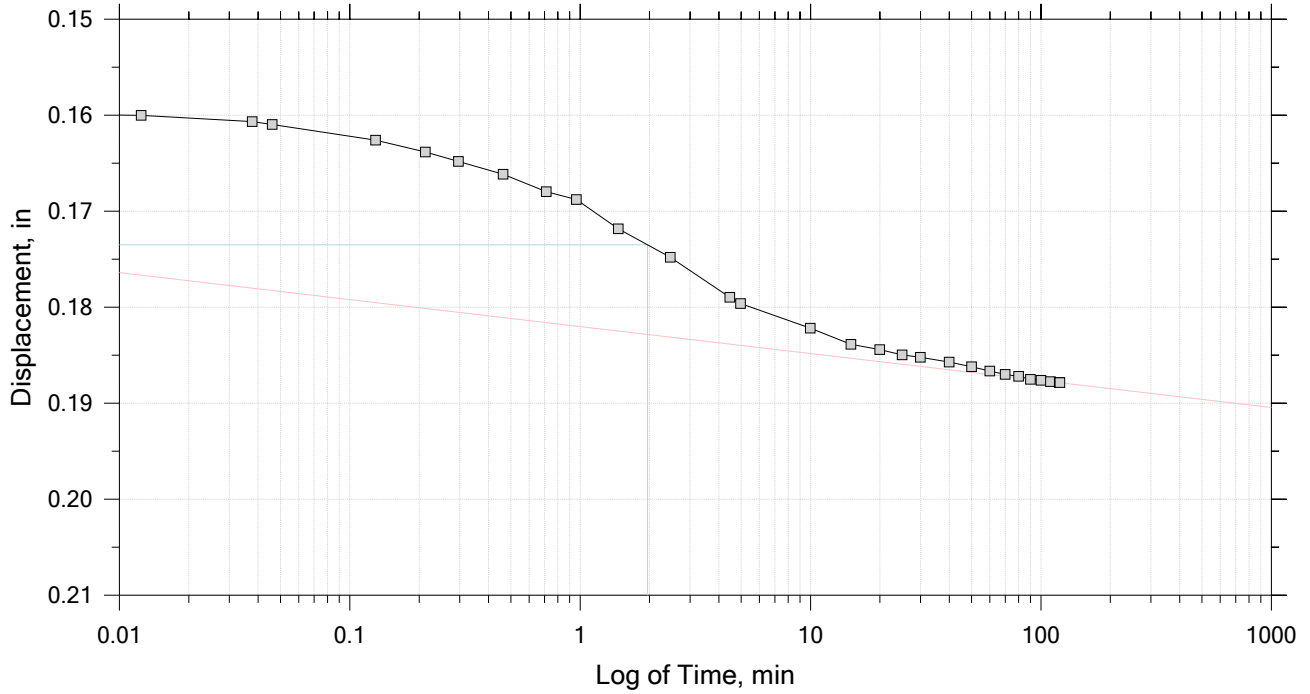
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 30

Constant Load Step

Stress: 2.58e+04 psf



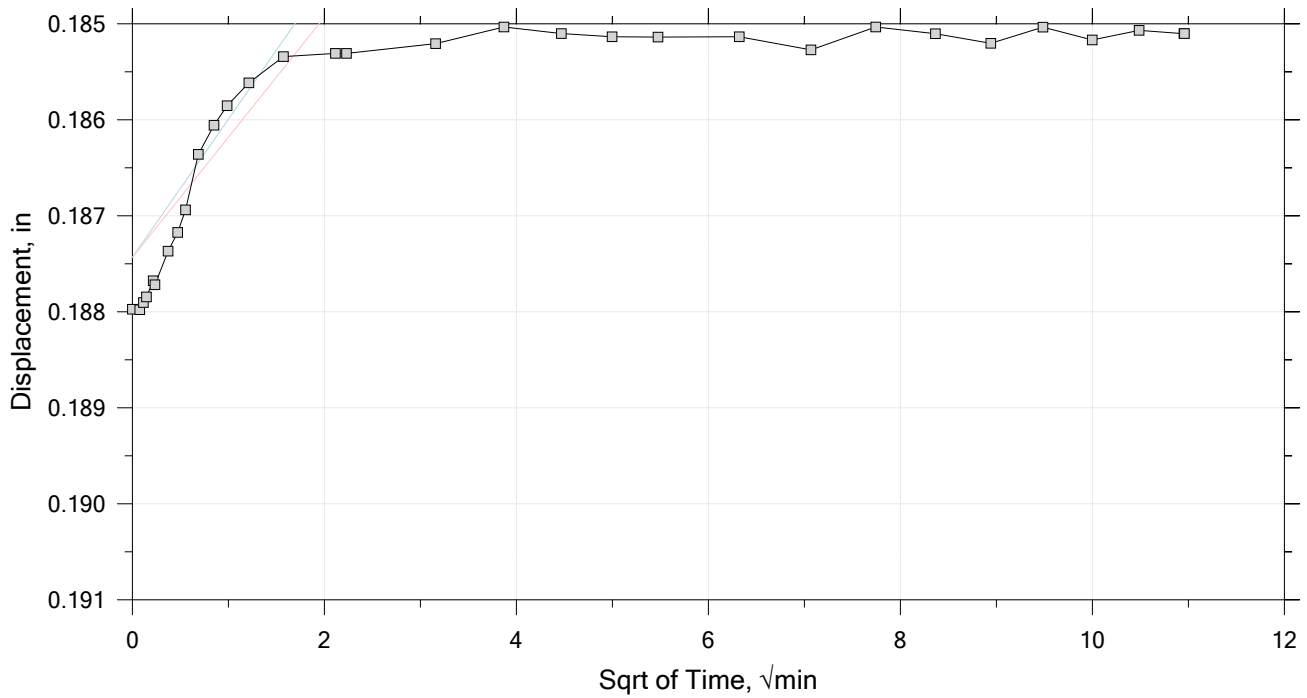
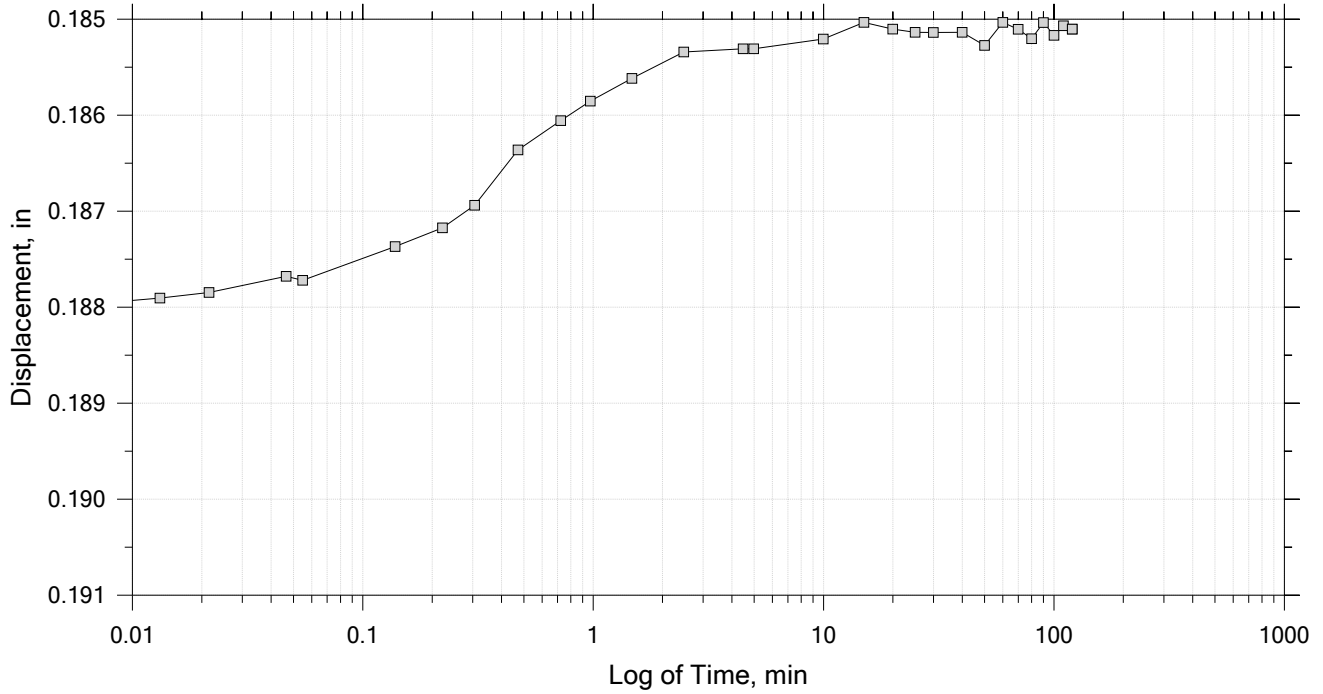
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 30

Constant Load Step

Stress: 1.29e+04 psf



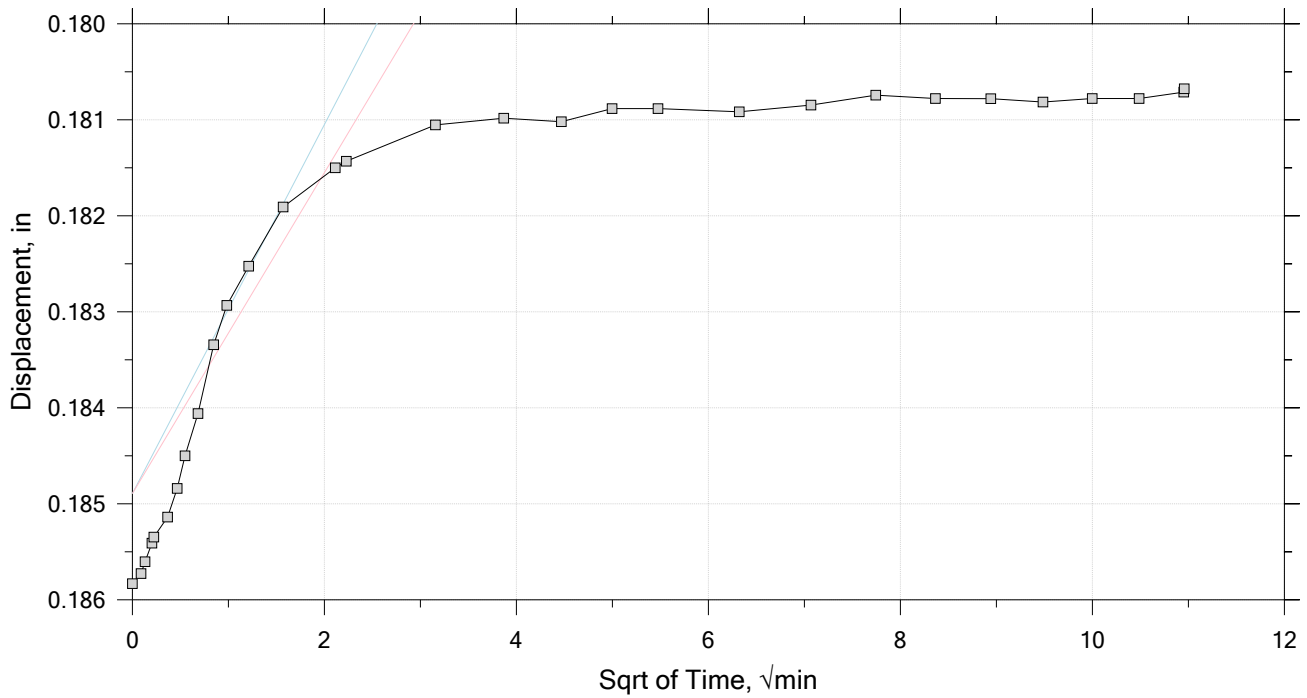
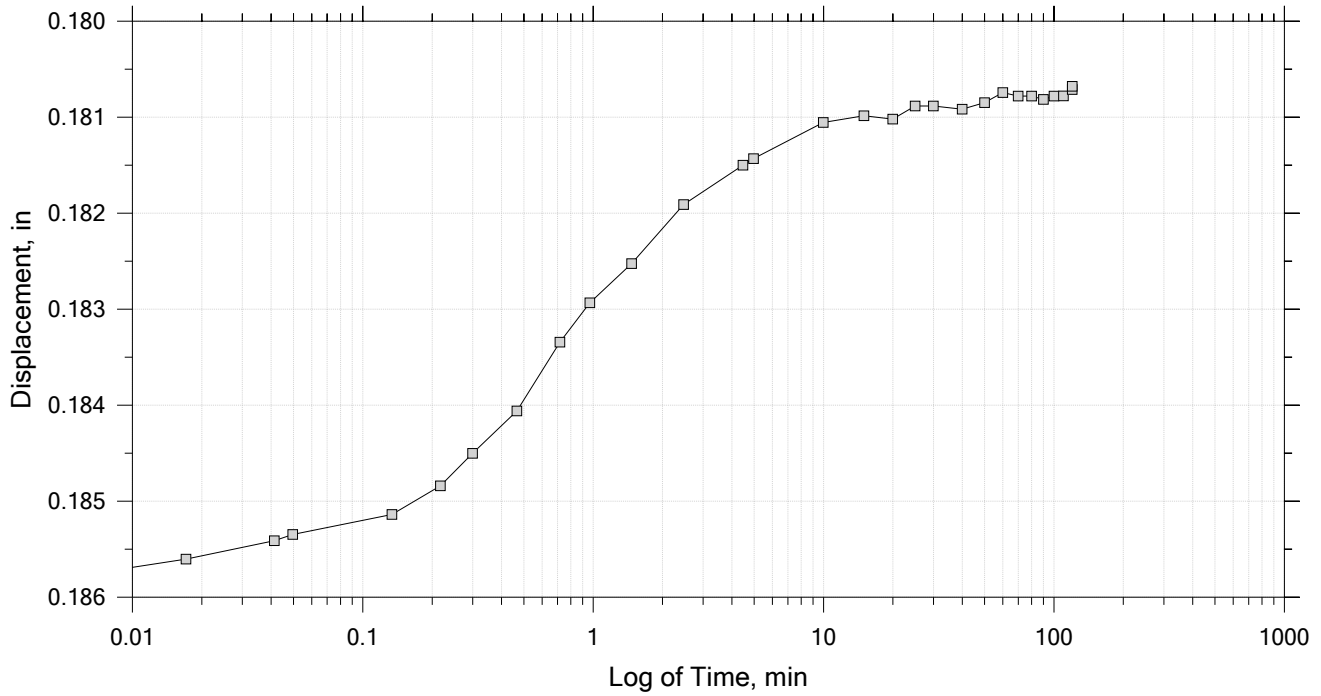
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 26 of 30

Constant Load Step

Stress: 6.46e+03 psf



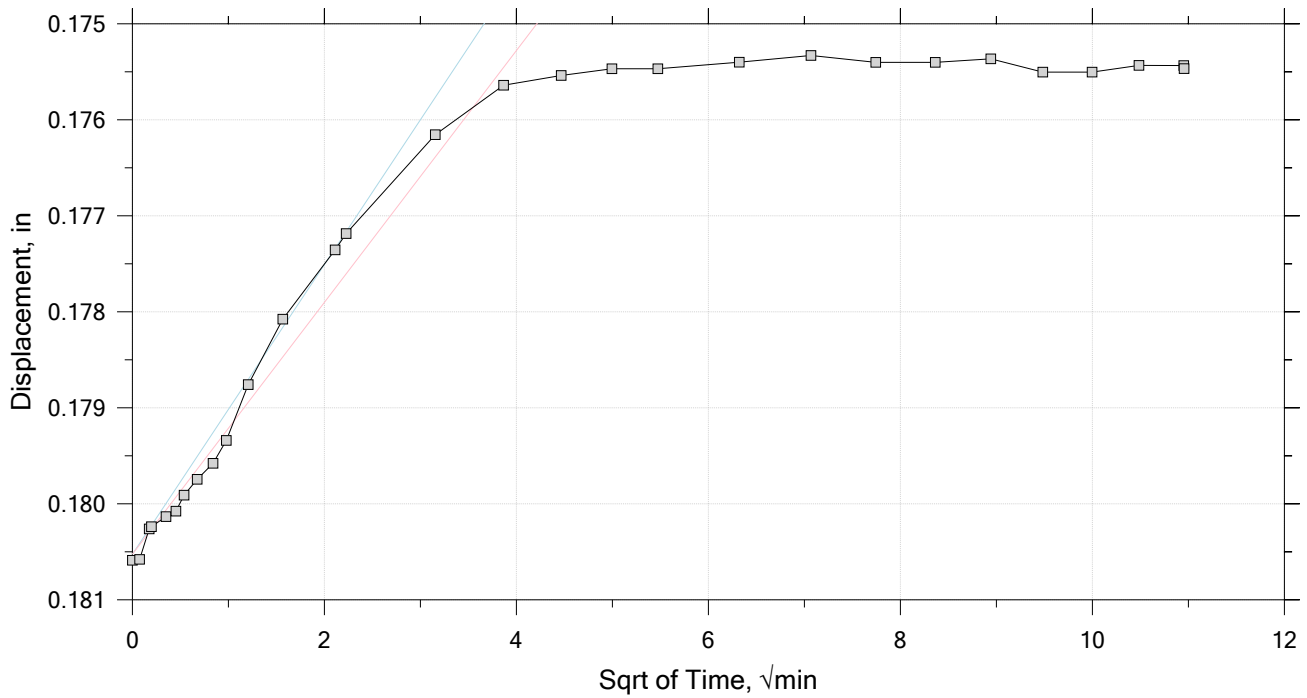
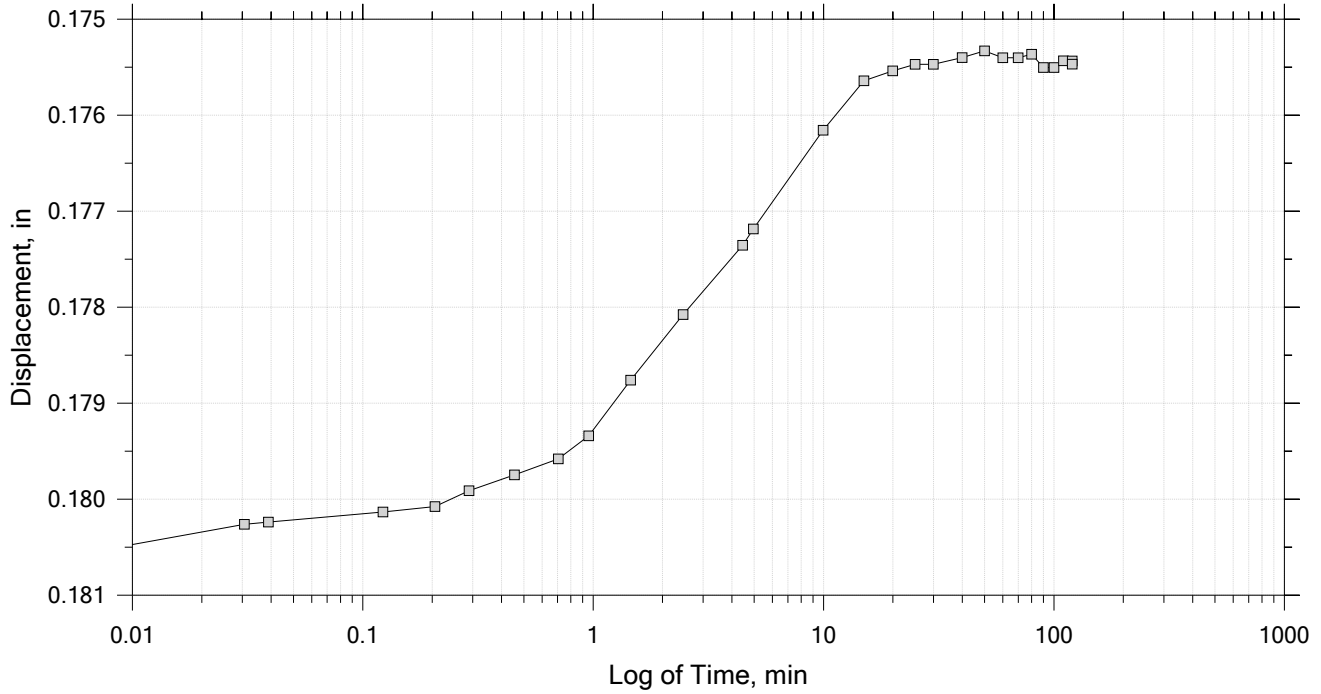
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 27 of 30

Constant Load Step

Stress: 3.23e+03 psf



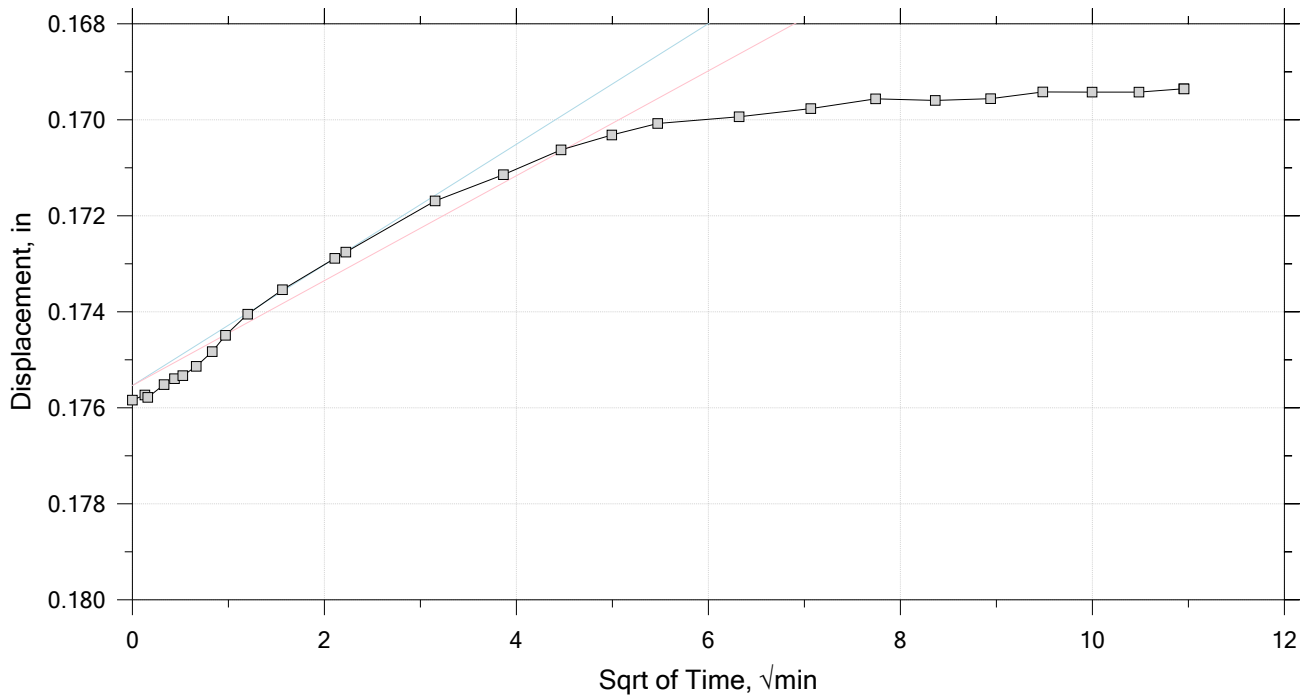
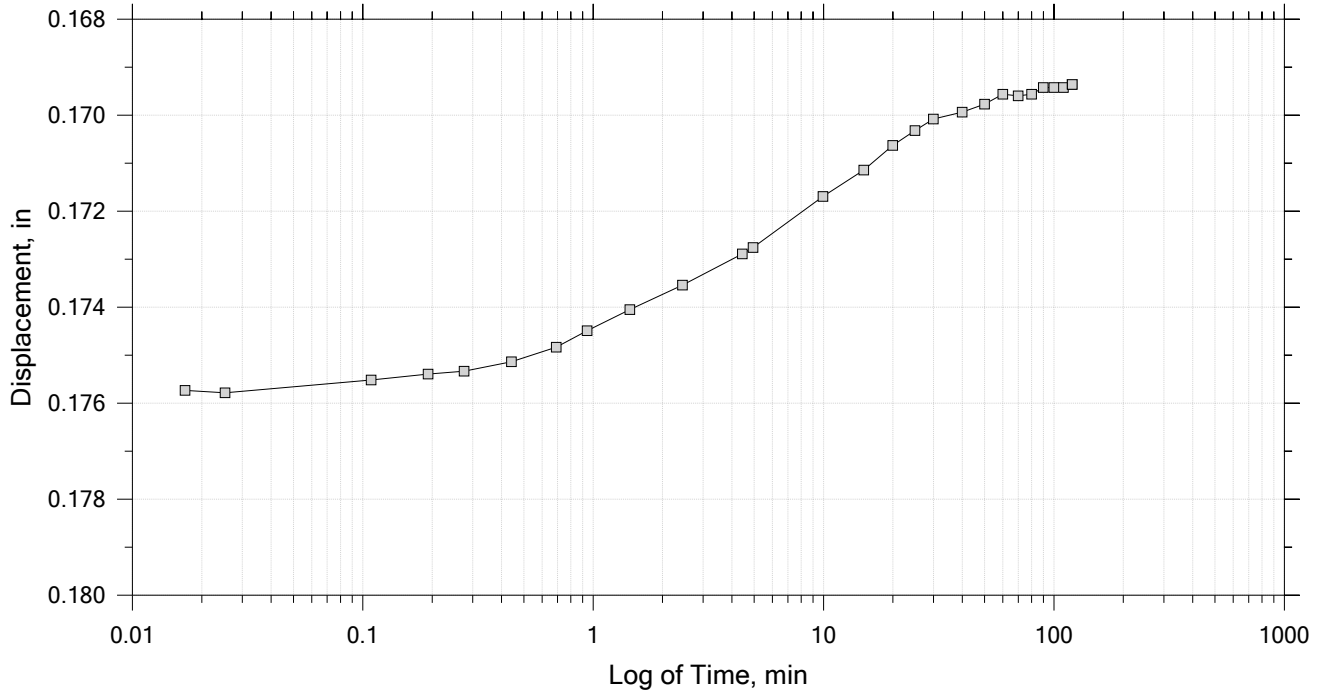
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 28 of 30

Constant Load Step

Stress: 1.61e+03 psf



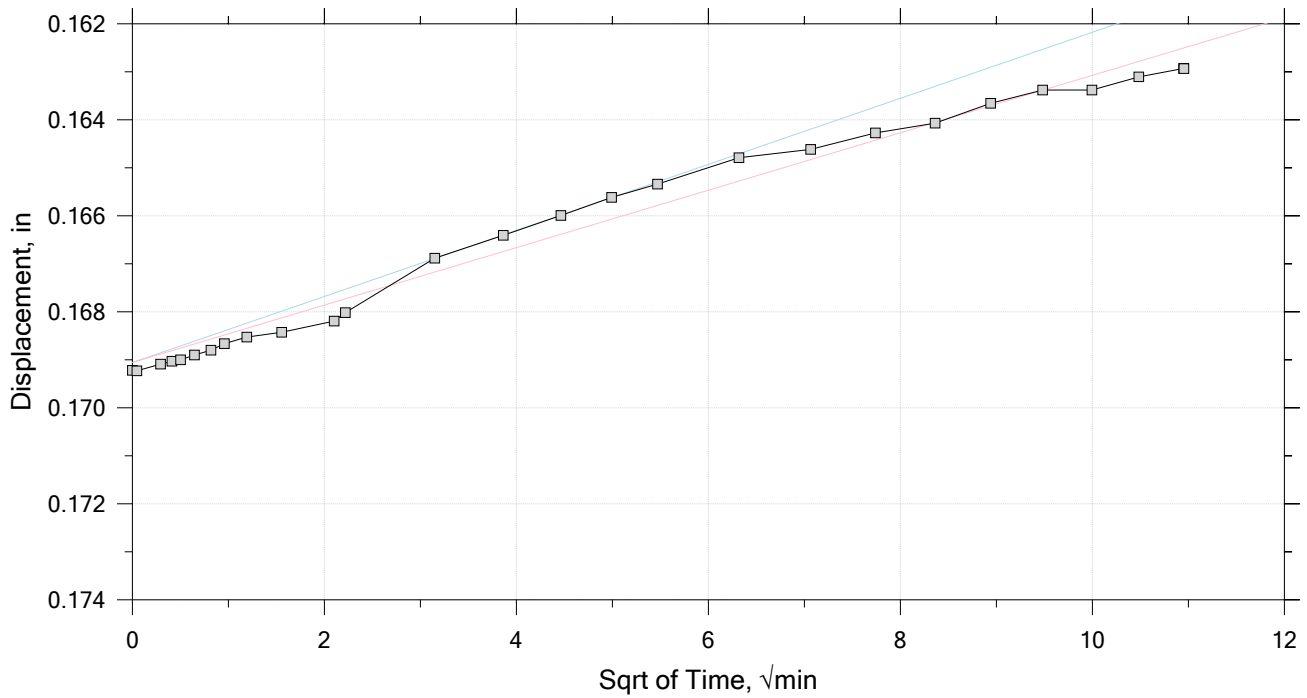
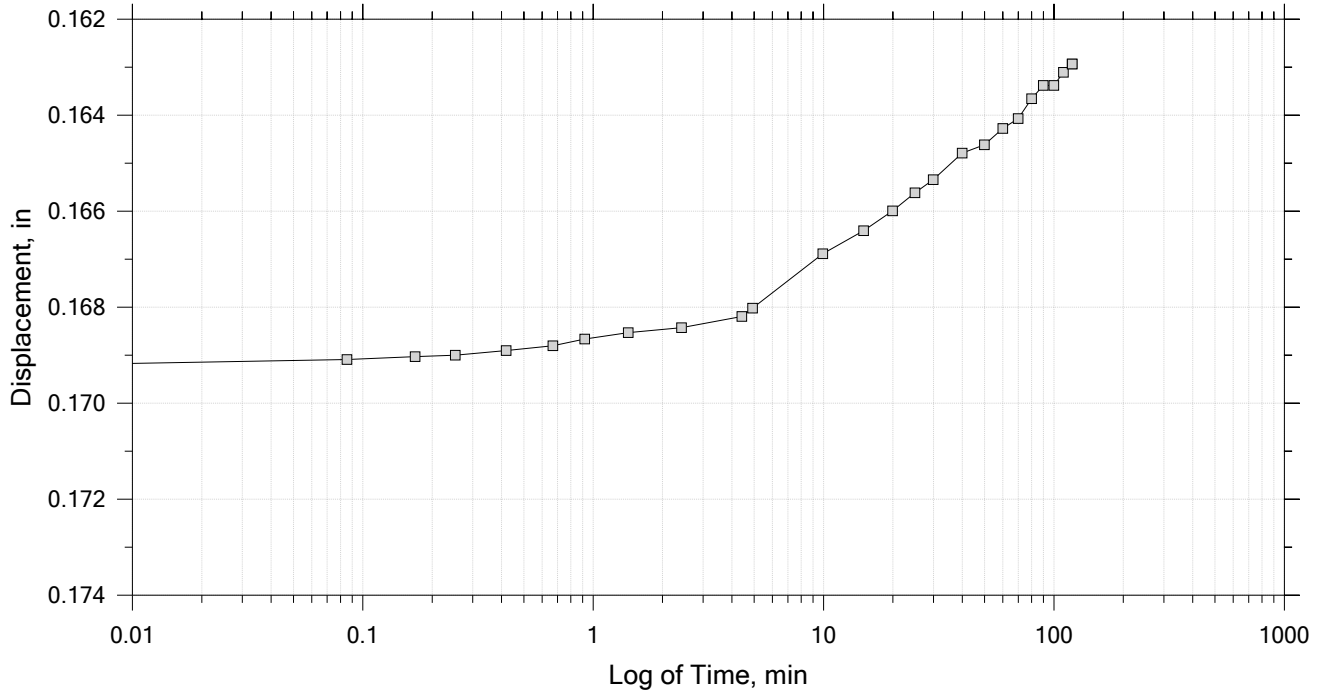
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 29 of 30

Constant Load Step

Stress: 807 psf



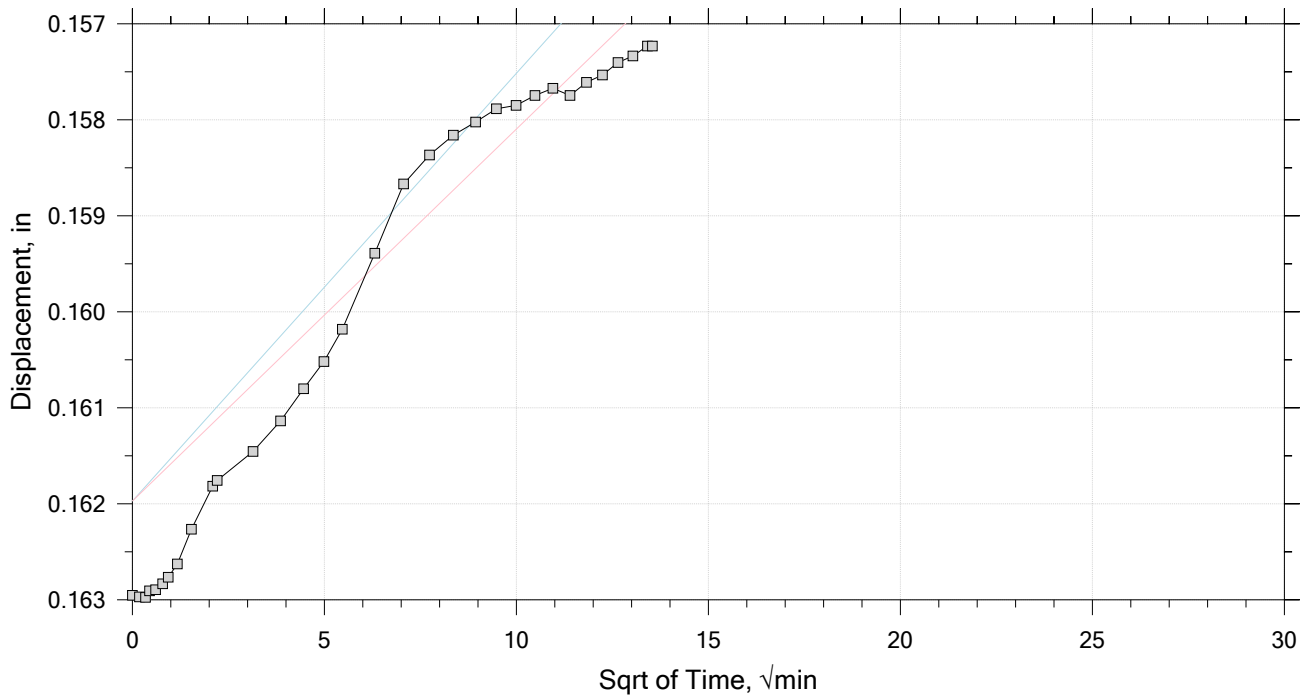
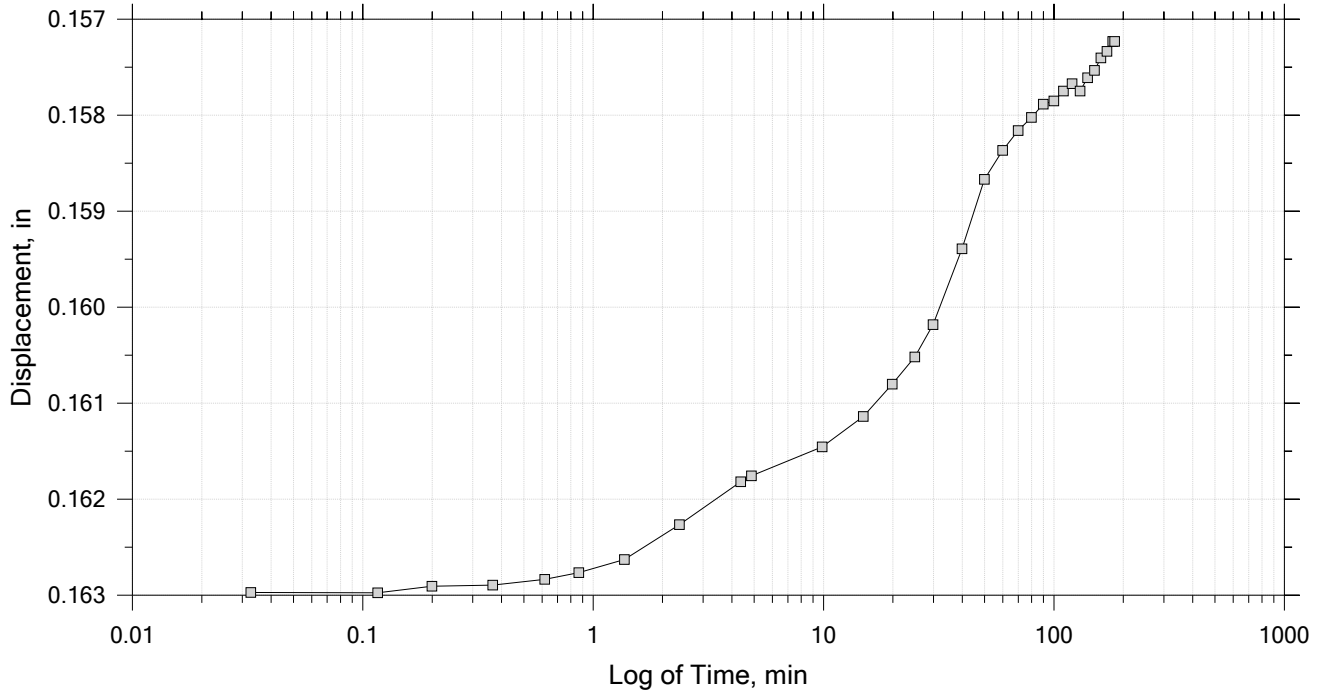
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 30 of 30

Constant Load Step

Stress: 404 psf



	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		


One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter, in: 2.50	Specific Gravity: 2.87 (Implied)	Liquid Limit: 0
Specimen Height, in: 1.00	Initial Void Ratio: 1.19	Plastic Limit: 0
Final Height, in: 0.84	Final Void Ratio: 0.847	Plasticity Index: 0

	Before Test Trimblings	Before Test Specimen	After Test Specimen	After Test Trimblings
Container ID	201	---	"ring"	320
Mass Container, gm	37.07	109.43	109.43	60.46
Mass Container + Wet Soil, gm	163.75	257.71	246.11	196.92
Mass Container + Dry Soil, gm	129.44	215	215	165.86
Mass Dry Soil, gm	92.37	105.57	105.57	105.4
Water Content, %	37.14	40.46	29.47	29.47
Void Ratio	---	1.19	0.85	---
Degree of Saturation, %	---	97.58	100.00	---
Dry Unit Weight, pcf	---	81.866	97.139	---

Preconsolidation Stress, psf	---
Compression Ratio	0
Rebound Ratio	0
Compression Index	0
Rebound Index	0


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 Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		

One-Dimensional Consolidation by ASTM D2435 - Method B

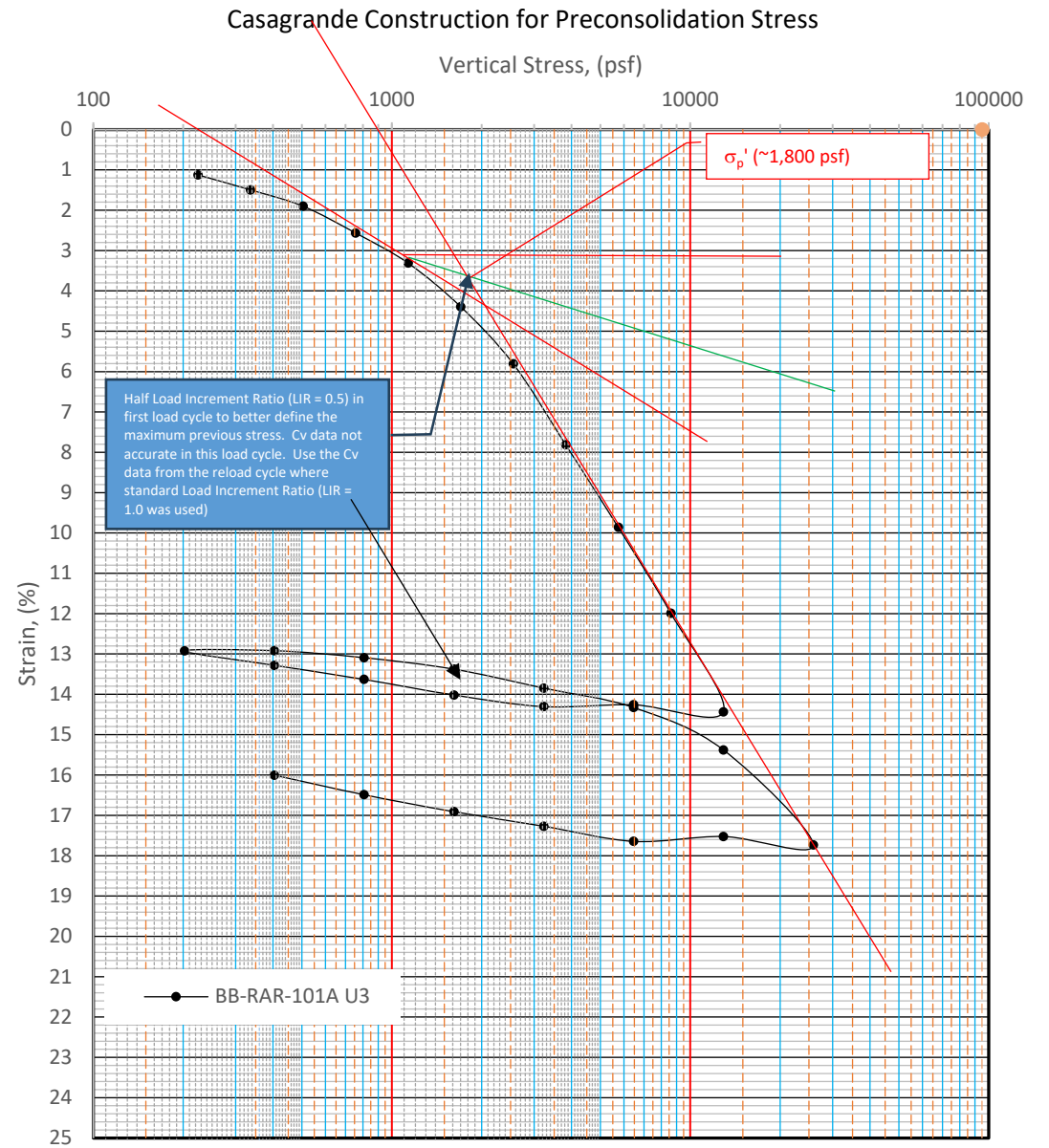
Sqrt of Time Coefficients

Step	Applied Stress psf	EOP Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft ² /day	Mv ft ² /lb	k ft/day
1	224.	0.01140	1.17	1.14	74.902	2.80e-02	5.09e+01	8.89e-05
2	336.	0.01479	1.16	1.48	37.921	5.45e-02	3.03e+01	1.03e-04
3	504.	0.02020	1.15	2.02	63.854	3.20e-02	3.22e+01	6.44e-05
4	756.	0.02642	1.13	2.64	57.738	3.50e-02	2.47e+01	5.39e-05
5	1.13e+03	0.03336	1.12	3.34	28.169	7.08e-02	1.84e+01	8.12e-05
6	1.70e+03	0.04269	1.10	4.27	39.683	4.94e-02	1.65e+01	5.08e-05
7	2.55e+03	0.05891	1.06	5.89	45.936	4.16e-02	1.91e+01	4.95e-05
8	3.83e+03	0.07725	1.02	7.72	30.934	5.95e-02	1.44e+01	5.34e-05
9	5.74e+03	0.09823	0.976	9.82	30.373	5.81e-02	1.10e+01	3.98e-05
10	8.61e+03	0.1202	0.928	12.0	23.756	7.08e-02	7.66e+00	3.39e-05
11	1.29e+04	0.1467	0.870	14.7	135.486	1.18e-02	6.14e+00	4.51e-06
12	6.46e+03	0.1442	0.876	14.4	1.393	1.11e+00	3.87e-01	2.69e-05
13	3.23e+03	0.1440	0.876	14.4	5.058	3.07e-01	4.58e-02	8.79e-07
14	1.61e+03	0.1387	0.888	13.9	13.598	1.15e-01	3.31e+00	2.38e-05
15	807.	0.1330	0.900	13.3	51.095	3.10e-02	7.05e+00	1.36e-05
16	404.	0.1276	0.912	12.8	57.727	2.78e-02	1.33e+01	2.30e-05
17	202.	0.1227	0.922	12.3	86.663	1.87e-02	2.41e+01	2.82e-05
18	404.	0.1236	0.921	12.4	76.948	2.12e-02	4.21e+00	5.57e-06
19	807.	0.1264	0.914	12.6	19.842	8.18e-02	6.97e+00	3.56e-05
20	1.61e+03	0.1319	0.902	13.2	21.095	7.62e-02	6.80e+00	3.23e-05
21	3.23e+03	0.1385	0.888	13.9	15.270	1.04e-01	4.12e+00	2.67e-05
22	6.46e+03	0.1461	0.871	14.6	5.567	2.80e-01	2.33e+00	4.08e-05
23	1.29e+04	0.1575	0.846	15.7	5.826	2.62e-01	1.77e+00	2.89e-05
24	2.58e+04	0.1839	0.788	18.4	6.881	2.12e-01	2.05e+00	2.71e-05
25	1.29e+04	0.1814	0.794	18.1	2.812	5.04e-01	1.99e-01	6.26e-06
26	6.46e+03	0.1812	0.794	18.1	3.852	3.69e-01	3.10e-02	7.13e-07
27	3.23e+03	0.1755	0.807	17.5	12.585	1.14e-01	1.76e+00	1.25e-05
28	1.61e+03	0.1698	0.819	17.0	20.458	7.09e-02	3.49e+00	1.55e-05
29	807.	0.1629	0.834	16.3	89.919	1.64e-02	8.54e+00	8.74e-06
30	404.	0.1572	0.847	15.7	117.471	1.27e-02	1.41e+01	1.12e-05

	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U2	Test Date: 11/6/2024	Depth: 40.6
	Test Number: ICONP 65-436	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha. Second test		
	Displacement at End of Primary		

Consolidation Test Data
Summary Report

Project Name:		MDOT Josh Bridge #0976	
Project Number:		166-37	
Project Location:		Richmond, Maine	
Client:		GZA - PN: 09.0026249	
Sample Description:		Gray Silty Clay (CL)	
Preparation:		Trimmed Shelby Tube	
Lab Test No:	ICON 65-435		
Boring No.	BB-RAR-101A		
Sample No:	3U		
Boring Elevation (ft).	--		
Sample Depth (ft):	60-62		
Test Specimen Depth (Ft):	61.36		
Test Specimen Elevation:	---		
Water Content (%):	36.6		
Dry Unit Weight (pcf):	86.4		
Wet Unit Weight (pcf):	118.1		
Saturation Before (%):	98.2		
Saturation After (%):	100		
Void Ratio Before:	1.07		
Void Ratio After:	0.74		
Overburden Pressure (psf):	--		
Max Previous stress (psf):	1,800	This is a rough estimate based on the poorly defined curve. Check against existing overburden stress.	
Max Prev. stress (Work) (psf):	1800		
OCR:	--		
Compression Index (C_{CE}):	0.122		
Recompression Index (C_{RE}):	0.012	from re-load curve	
Liquid Limit:			
Plastic Limit:			
Plasticity Index:			
Liquidity Index:			
Bottom of tube had a crack at 61.75 ft.			
Lab Vane S_u at 61.55 ft. (psf)	240		
Tested By:	sjr		
Date Tested:	11/2/2024		
Checked By:	sjr		



Note 1: The calculations for the Max Previous Stress, the Compression Index and the Recompression Index are provided for the convenience of the Specifier. The Specifier should make their own independent assessment of Maximum Previous stress, Cce and Cre for use in any engineering analyses.


One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter, in: 2.50	Specific Gravity: 2.86 (Implied)	Liquid Limit: 0
Specimen Height, in: 1.00	Initial Void Ratio: 1.07	Plastic Limit: 0
Final Height, in: 0.84	Final Void Ratio: 0.738	Plasticity Index: 0

	Before Test Trimblings	Before Test Specimen	After Test Specimen	After Test Trimblings
Container ID	215	---	"ring"	315
Mass Container, gm	36.78	109.43	109.43	60.23
Mass Container + Wet Soil, gm	196.07	261.73	249.6	200.1
Mass Container + Dry Soil, gm	153.26	220.89	220.89	171.45
Mass Dry Soil, gm	116.48	111.46	111.46	111.22
Water Content, %	36.75	36.64	25.76	25.76
Void Ratio	---	1.07	0.74	---
Degree of Saturation, %	---	98.19	100.00	---
Dry Unit Weight, pcf	---	86.432	102.9	---

Preconsolidation Stress, psf	---
Compression Ratio	0
Rebound Ratio	0
Compression Index	0
Rebound Index	0


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 Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

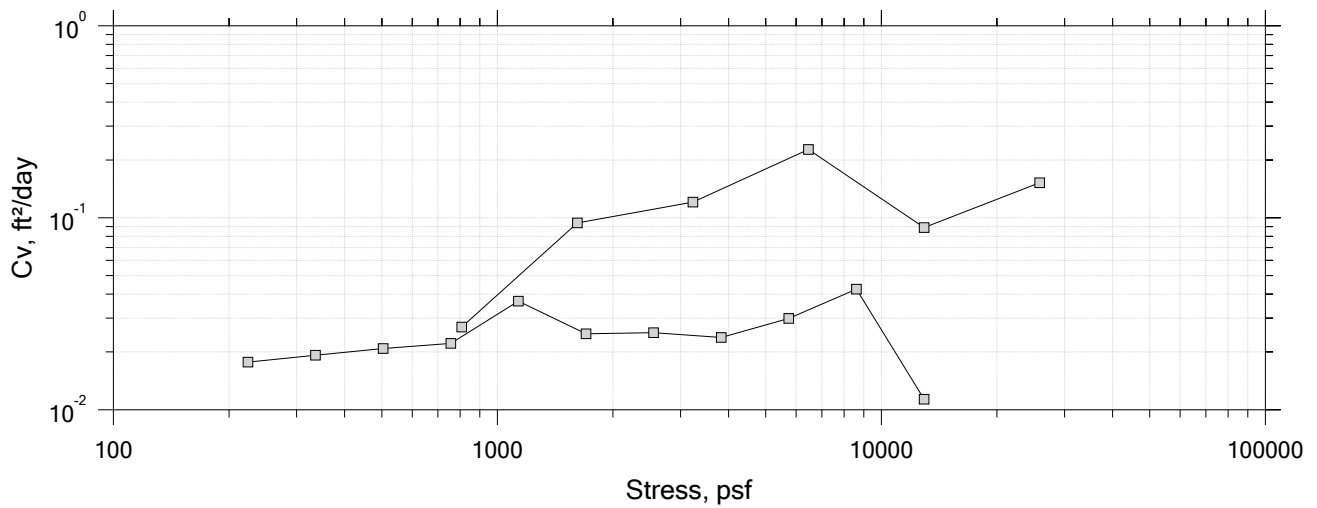
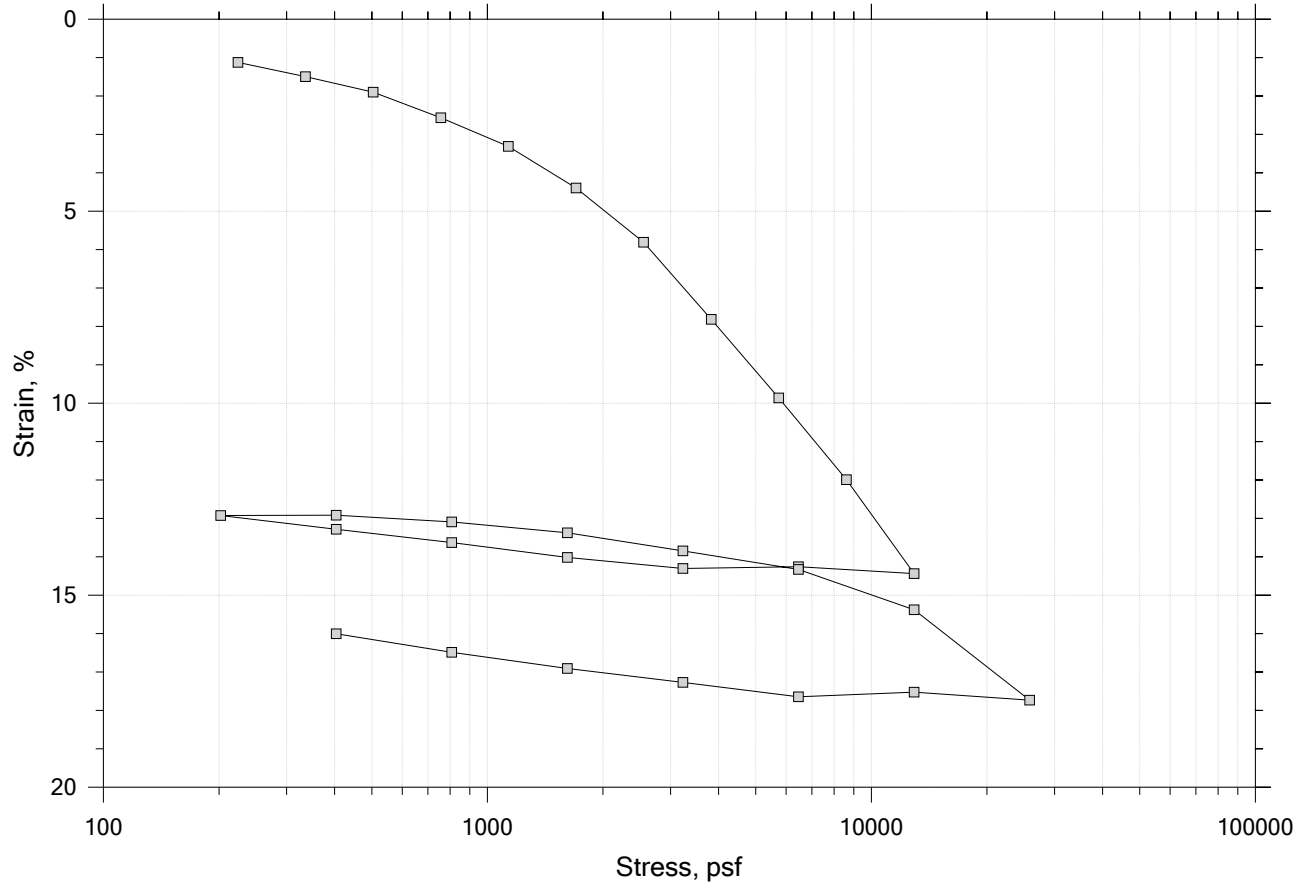
Sqrt of Time Coefficients


Step	Applied Stress psf	EOP Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv ft ² /day	Mv ft ² /lb	k ft/day
1	224.	0.01125	1.05	1.12	118.440	1.77e-02	5.02e+01	5.55e-05
2	336.	0.01496	1.04	1.50	107.348	1.92e-02	3.31e+01	3.98e-05
3	504.	0.01899	1.03	1.90	98.303	2.08e-02	2.40e+01	3.12e-05
4	756.	0.02565	1.02	2.56	91.405	2.22e-02	2.64e+01	3.66e-05
5	1.13e+03	0.03310	1.00	3.31	54.279	3.68e-02	1.97e+01	4.53e-05
6	1.70e+03	0.04393	0.978	4.39	78.828	2.49e-02	1.91e+01	2.96e-05
7	2.55e+03	0.05807	0.949	5.81	75.784	2.52e-02	1.66e+01	2.61e-05
8	3.83e+03	0.07814	0.907	7.81	77.405	2.38e-02	1.57e+01	2.34e-05
9	5.74e+03	0.09861	0.865	9.86	58.973	2.99e-02	1.07e+01	1.99e-05
10	8.61e+03	0.1199	0.821	12.0	39.586	4.25e-02	7.42e+00	1.97e-05
11	1.29e+04	0.1444	0.770	14.4	140.894	1.13e-02	5.68e+00	4.02e-06
12	6.46e+03	0.1426	0.774	14.3	1.884	8.25e-01	2.75e-01	1.42e-05
13	3.23e+03	0.1431	0.773	14.3	6.696	2.33e-01	-1.44e-01	-2.09e-06
14	1.61e+03	0.1402	0.779	14.0	17.127	9.12e-02	1.78e+00	1.01e-05
15	807.	0.1363	0.787	13.6	22.555	6.98e-02	4.83e+00	2.10e-05
16	404.	0.1328	0.794	13.3	65.055	2.44e-02	8.58e+00	1.31e-05
17	202.	0.1292	0.802	12.9	104.758	1.53e-02	1.77e+01	1.69e-05
18	404.	0.1292	0.802	12.9	0.000	0.00e+00	-3.07e-01	-0.00e+00
19	807.	0.1309	0.798	13.1	59.502	2.70e-02	4.34e+00	7.30e-06
20	1.61e+03	0.1338	0.792	13.4	16.967	9.41e-02	3.50e+00	2.06e-05
21	3.23e+03	0.1385	0.783	13.8	13.108	1.21e-01	2.92e+00	2.20e-05
22	6.46e+03	0.1433	0.773	14.3	6.897	2.27e-01	1.49e+00	2.11e-05
23	1.29e+04	0.1538	0.751	15.4	17.275	8.90e-02	1.63e+00	9.04e-06
24	2.58e+04	0.1773	0.702	17.7	9.695	1.52e-01	1.82e+00	1.73e-05
25	1.29e+04	0.1753	0.706	17.5	1.475	9.75e-01	1.62e-01	9.84e-06
26	6.46e+03	0.1764	0.704	17.6	2.896	4.97e-01	-1.83e-01	-5.69e-06
27	3.23e+03	0.1727	0.712	17.3	5.251	2.75e-01	1.15e+00	1.98e-05
28	1.61e+03	0.1691	0.719	16.9	25.344	5.75e-02	2.24e+00	8.04e-06
29	807.	0.1649	0.728	16.5	65.004	2.26e-02	5.21e+00	7.37e-06
30	404.	0.1600	0.738	16.0	79.493	1.87e-02	1.20e+01	1.40e-05

	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		
	Displacement at End of Primary		

One-Dimensional Consolidation by ASTM D2435 - Method B

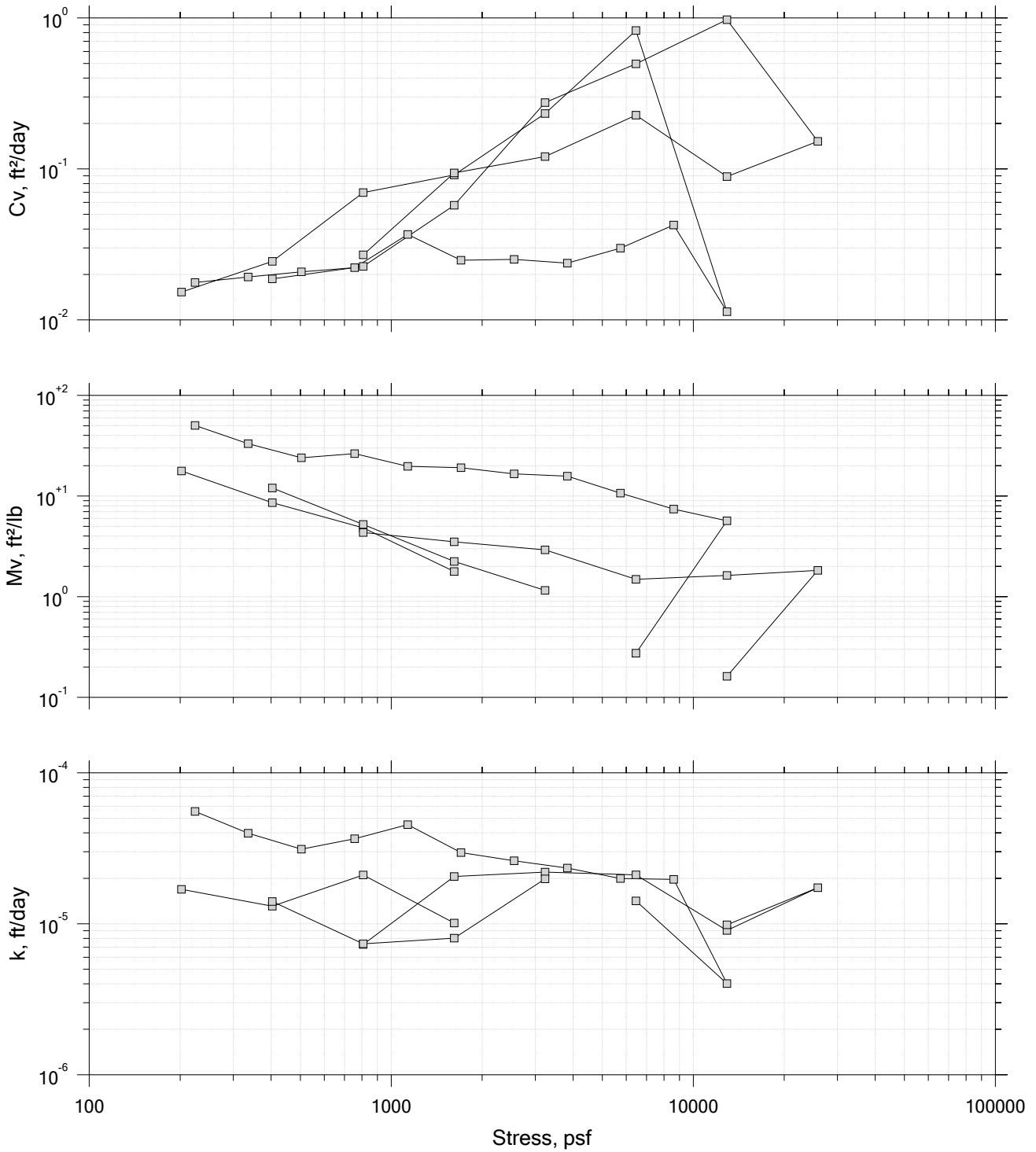
Summary Report




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		
	Displacement at End of Primary		

One-Dimensional Consolidation by ASTM D2435 - Method B

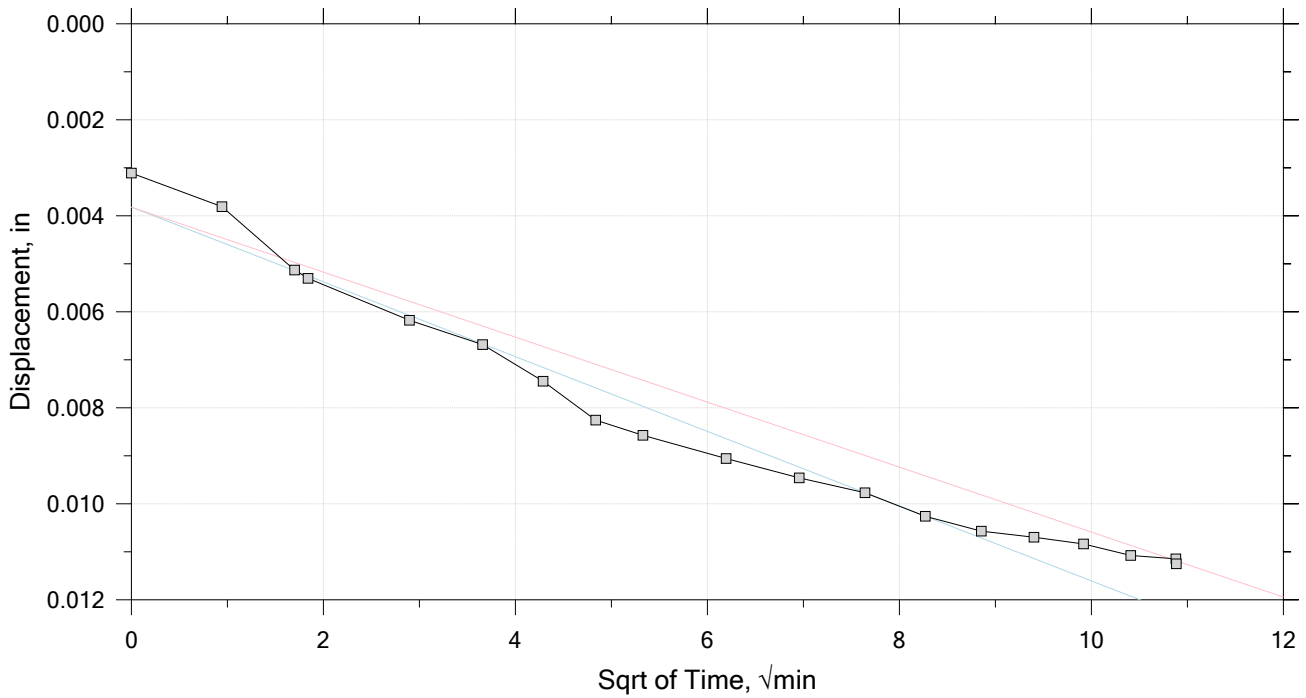
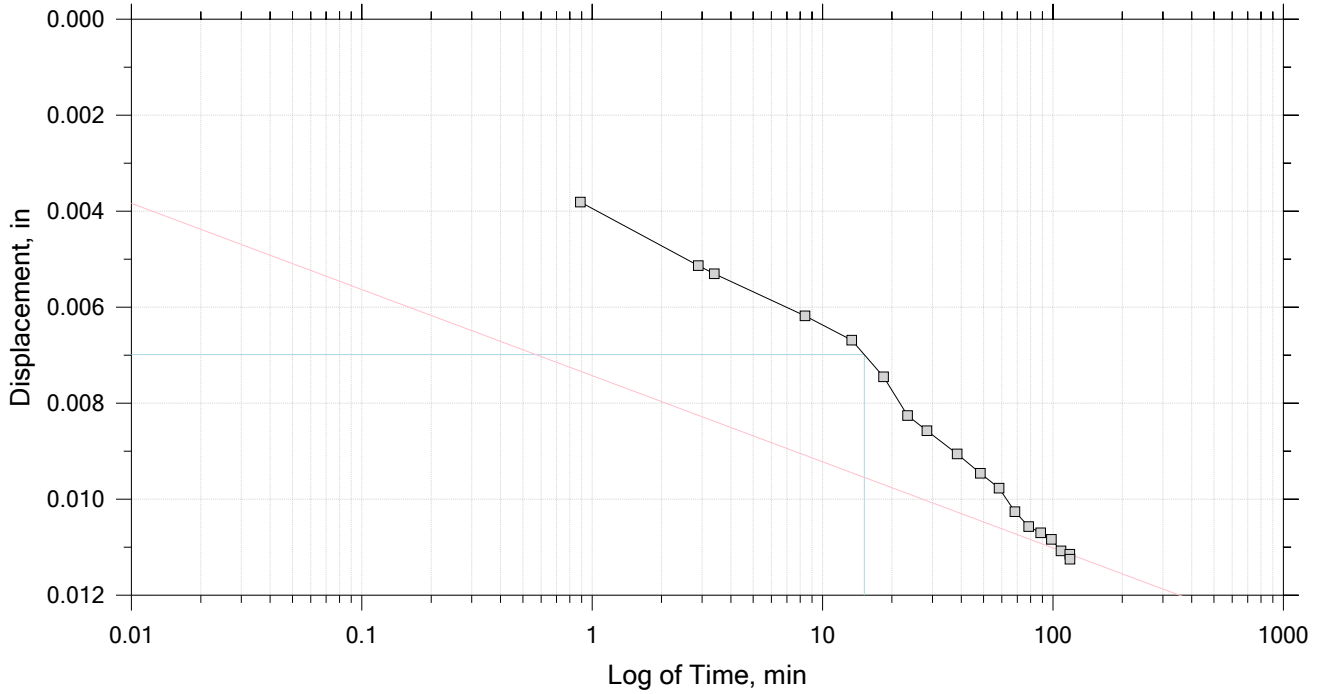
Sqrt of Time Coefficients




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

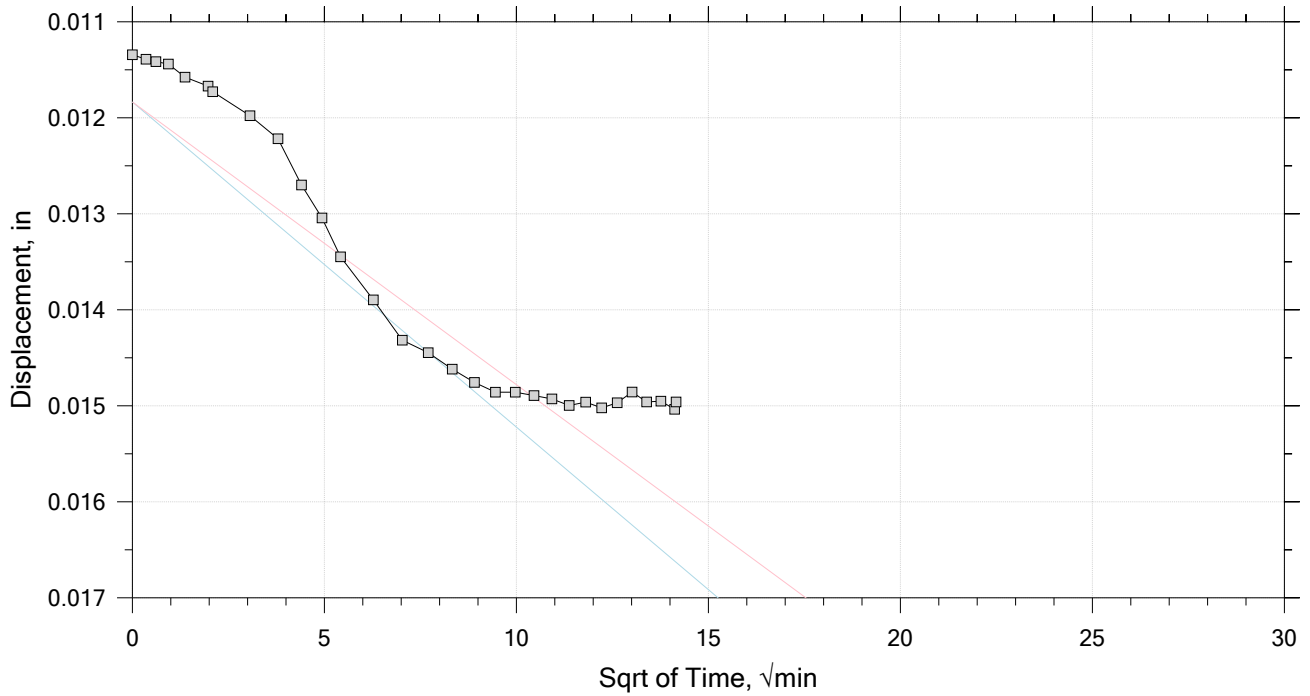
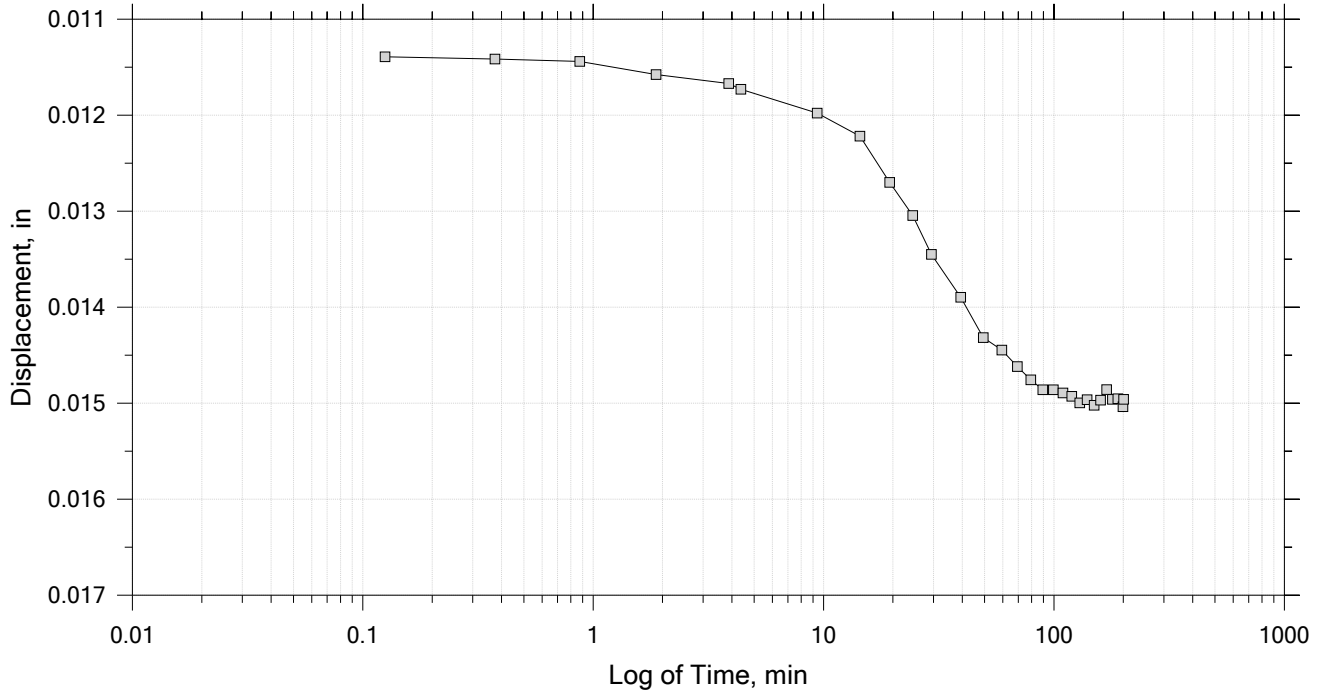
Time Curve 1 of 30
 Constant Load Step
 Stress: 224 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

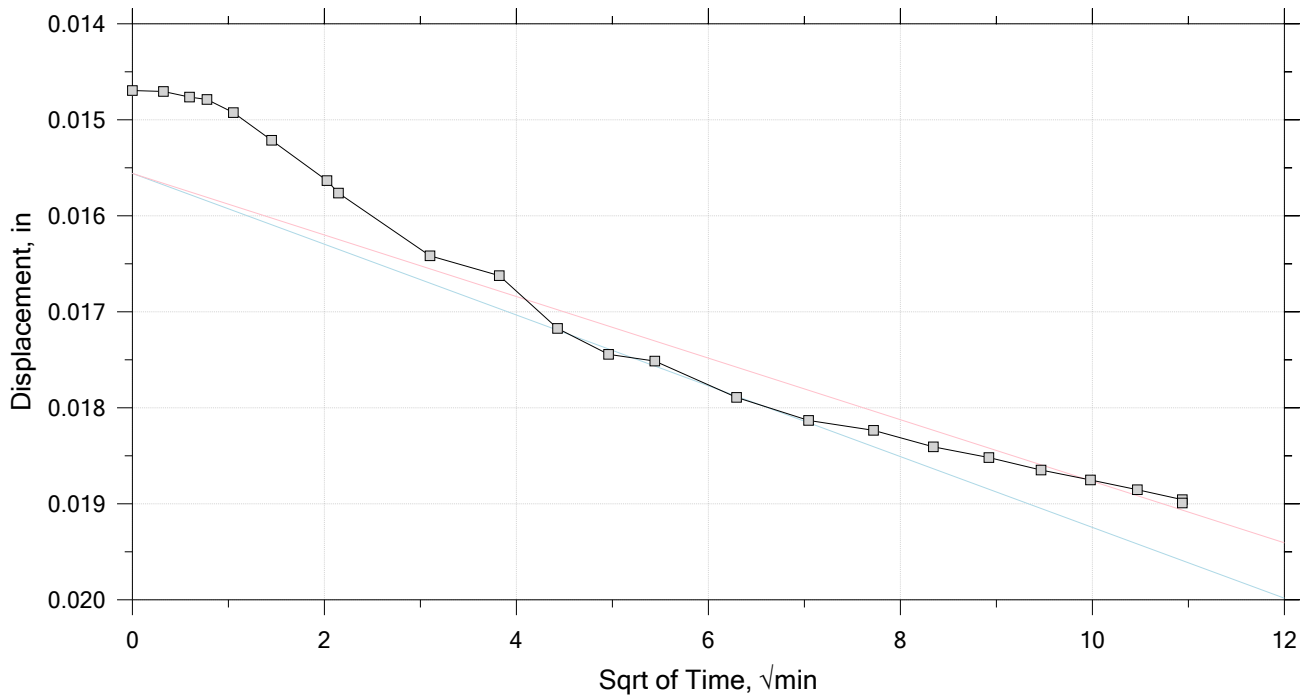
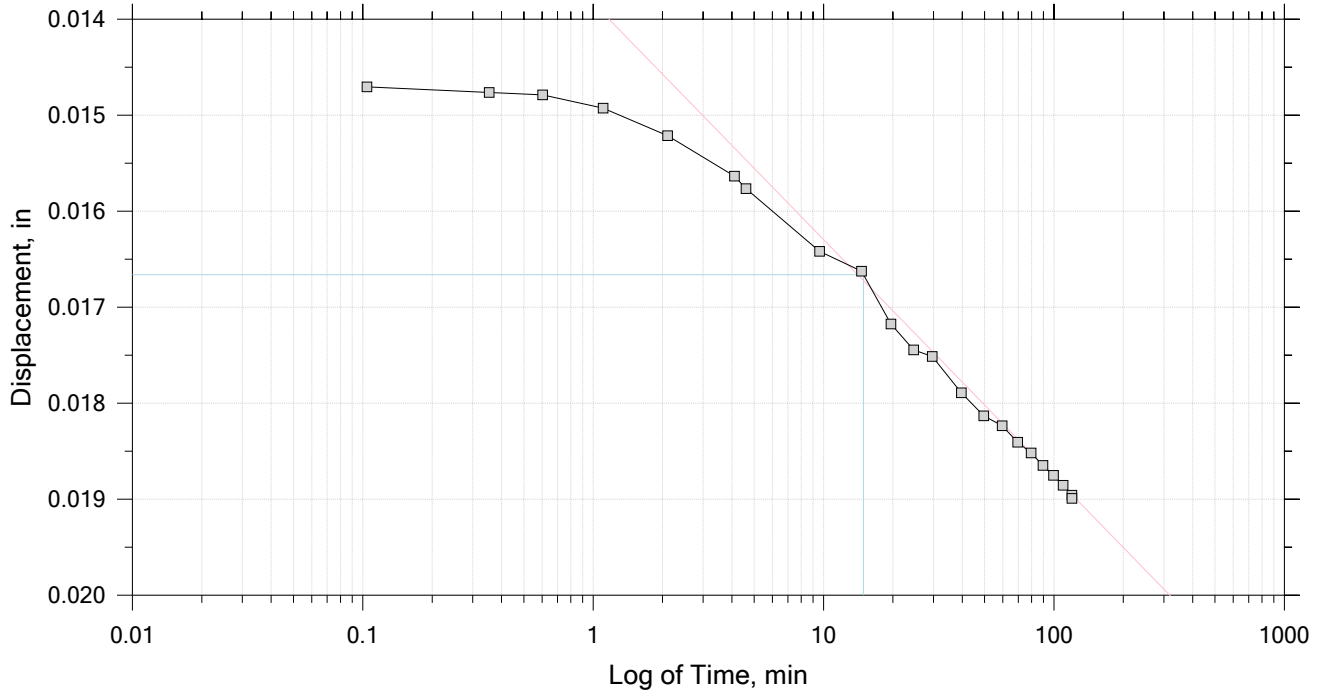
Time Curve 2 of 30
 Constant Load Step
 Stress: 336 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

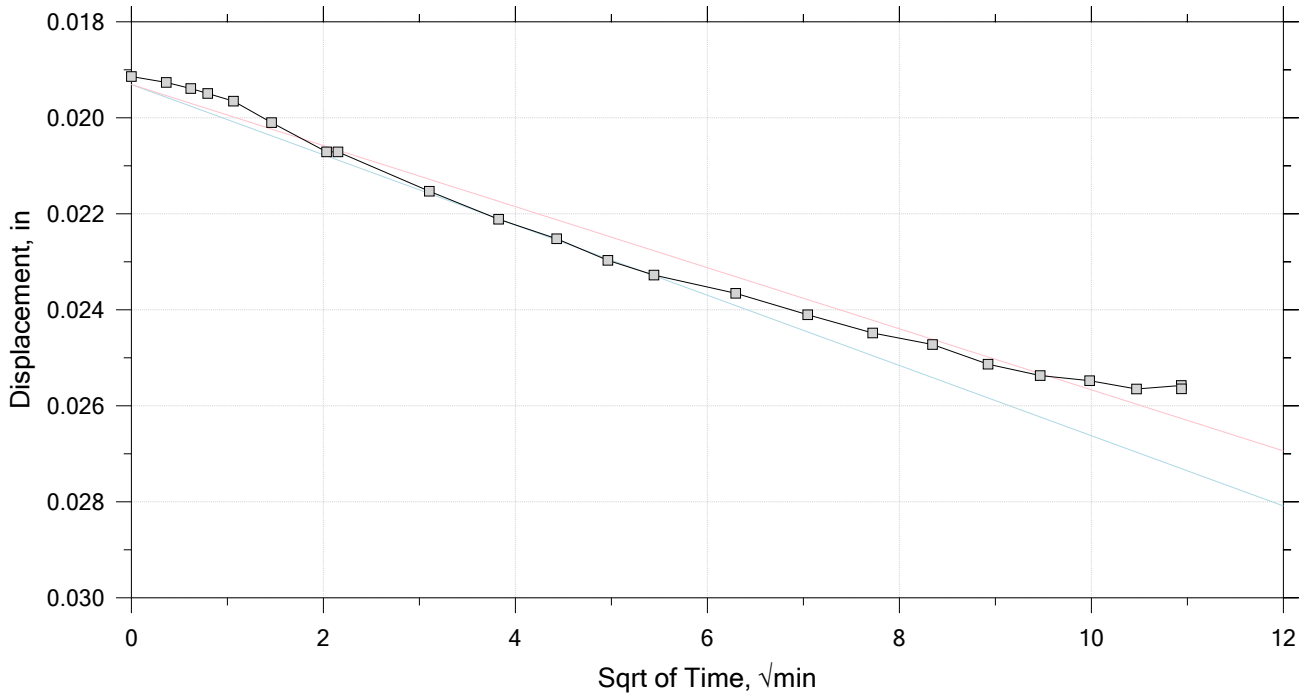
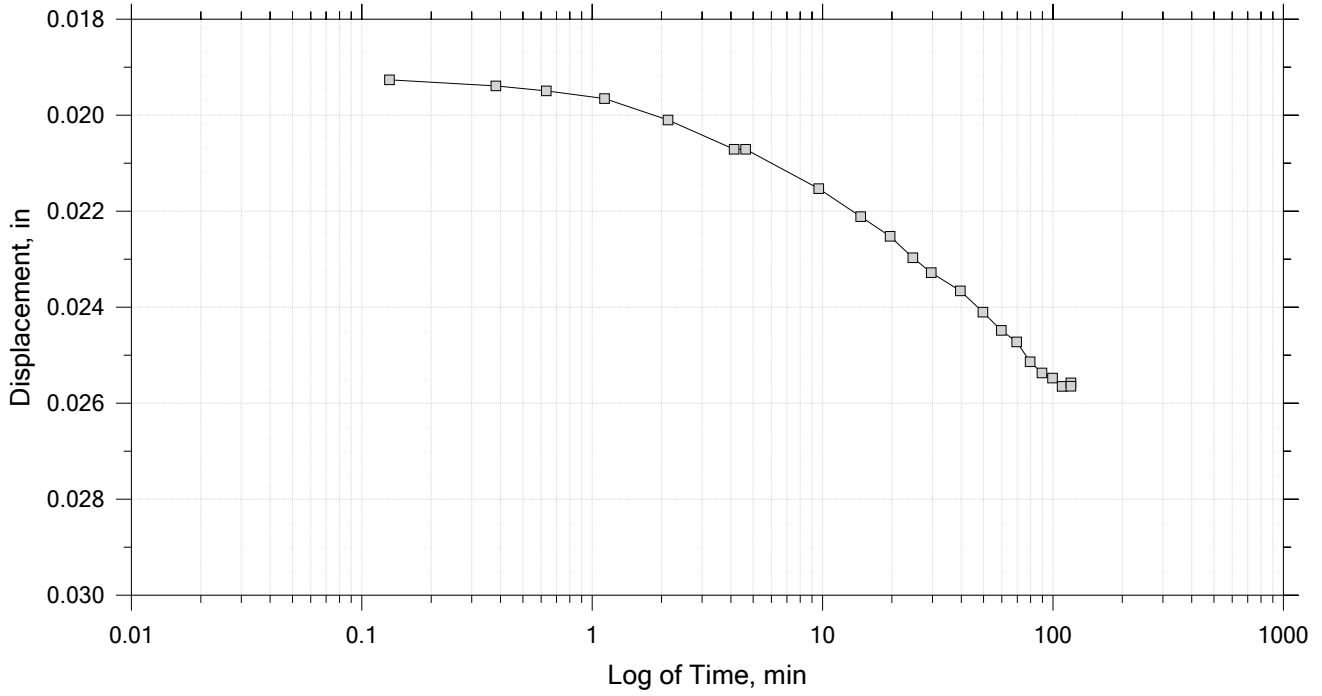
Time Curve 3 of 30
Constant Load Step
Stress: 504 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

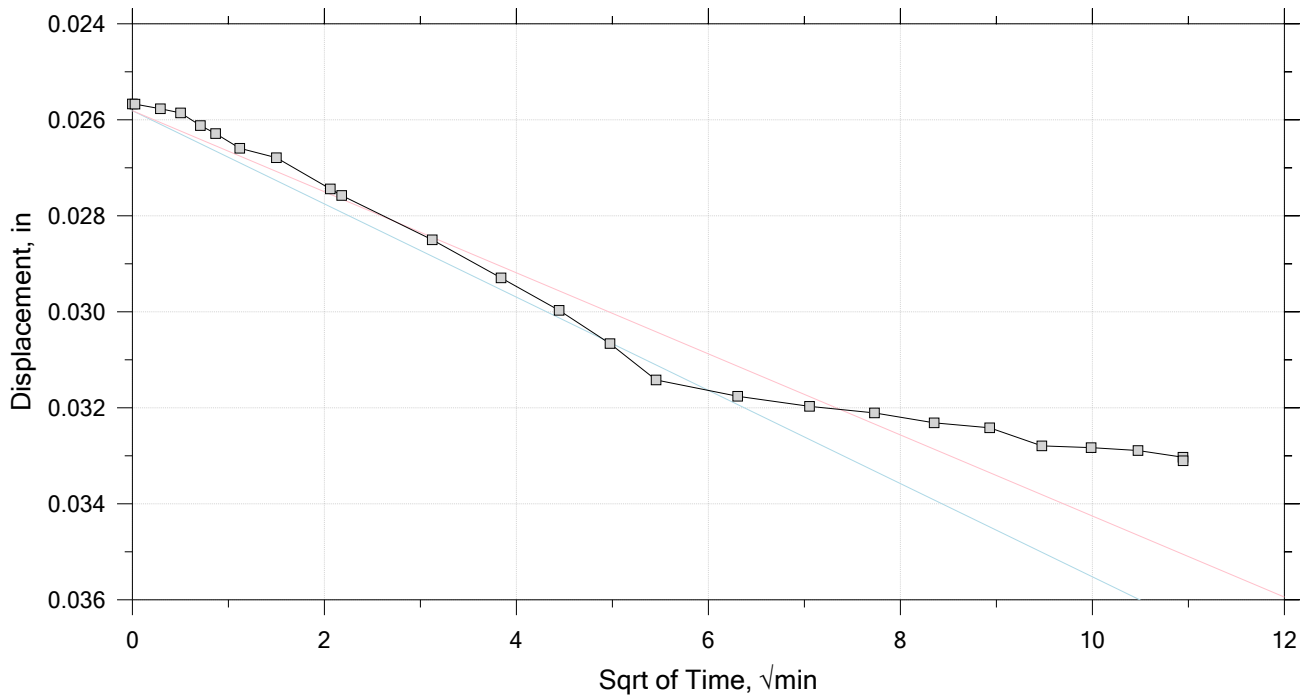
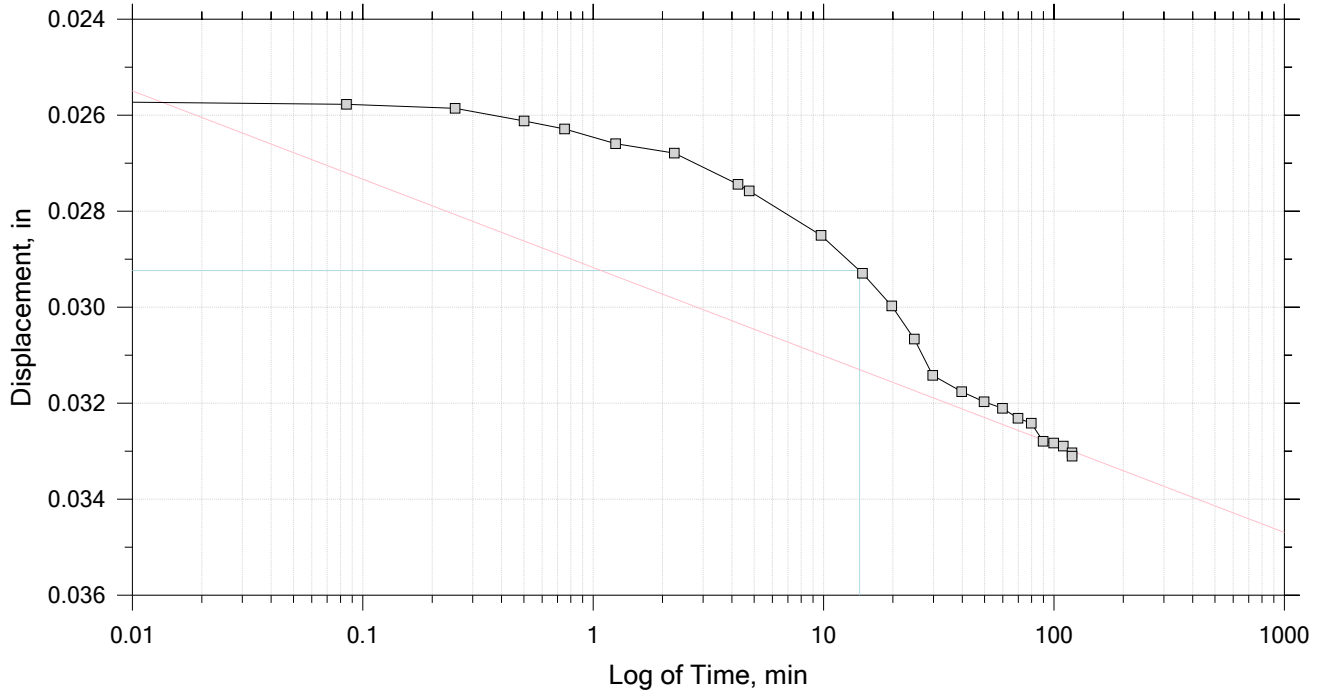
Time Curve 4 of 30
 Constant Load Step
 Stress: 756 psf




	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 30
 Constant Load Step
 Stress: 1.13e+03 psf



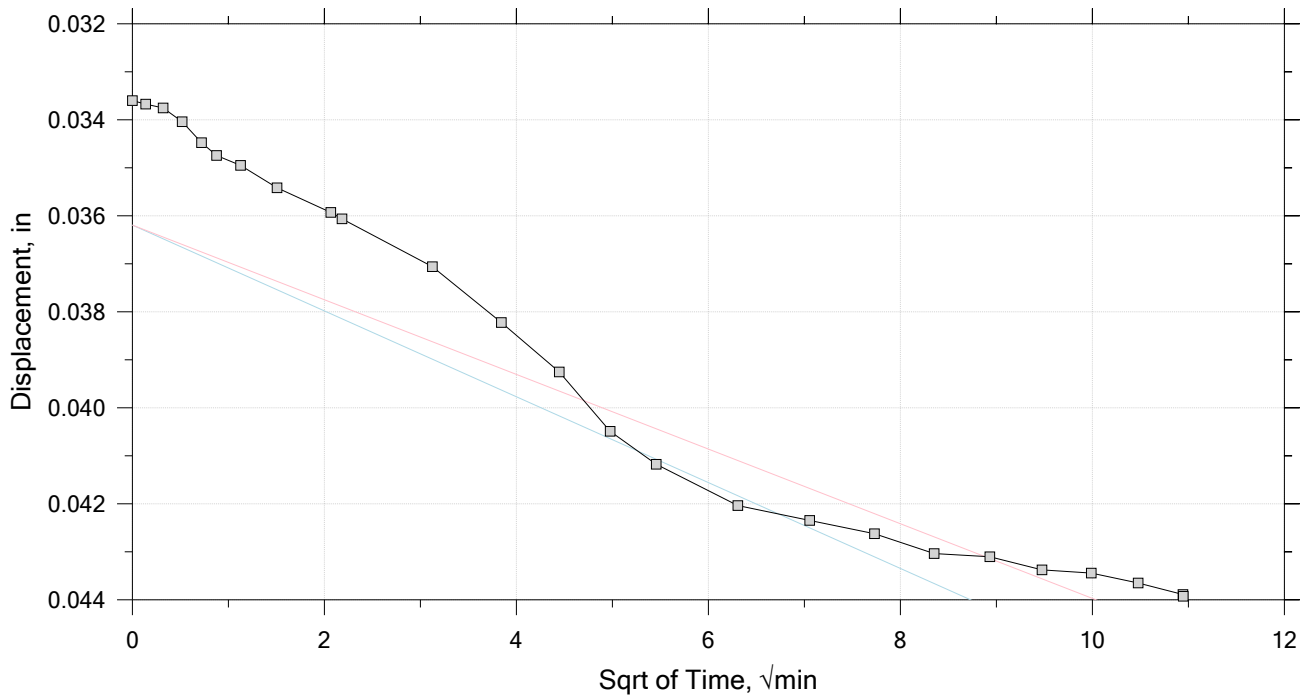
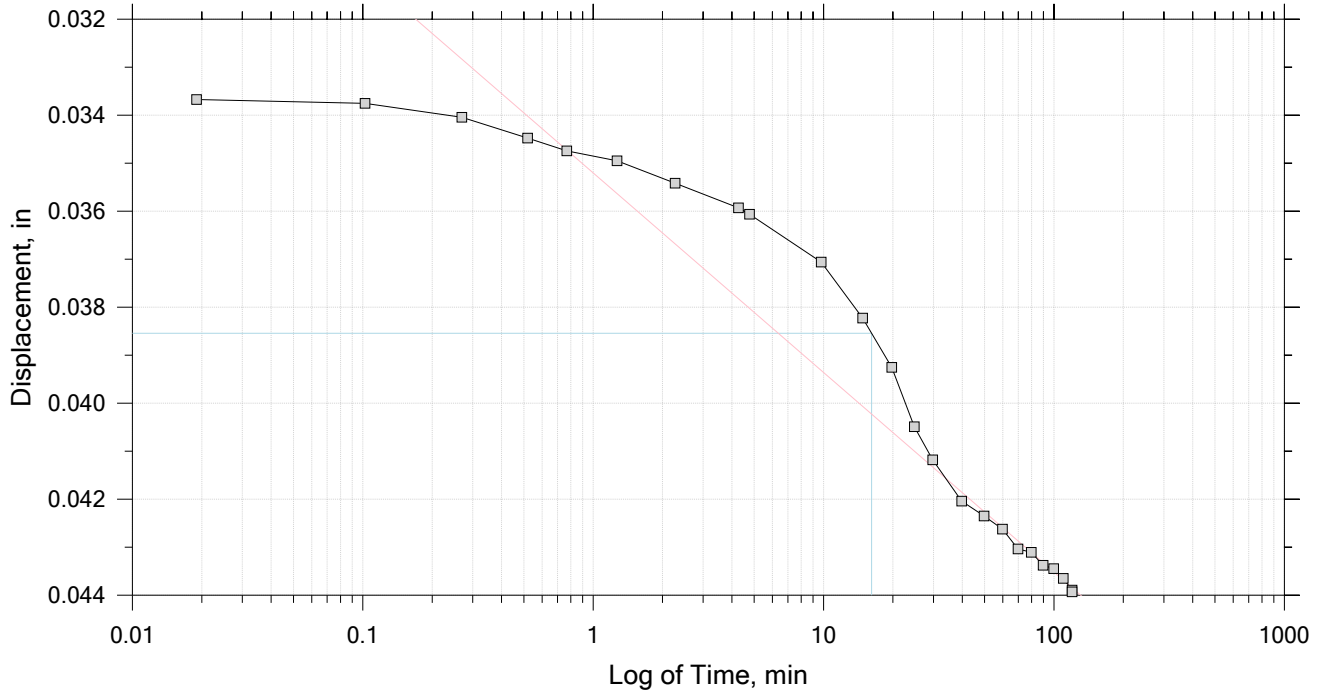
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 30

Constant Load Step

Stress: 1.7e+03 psf



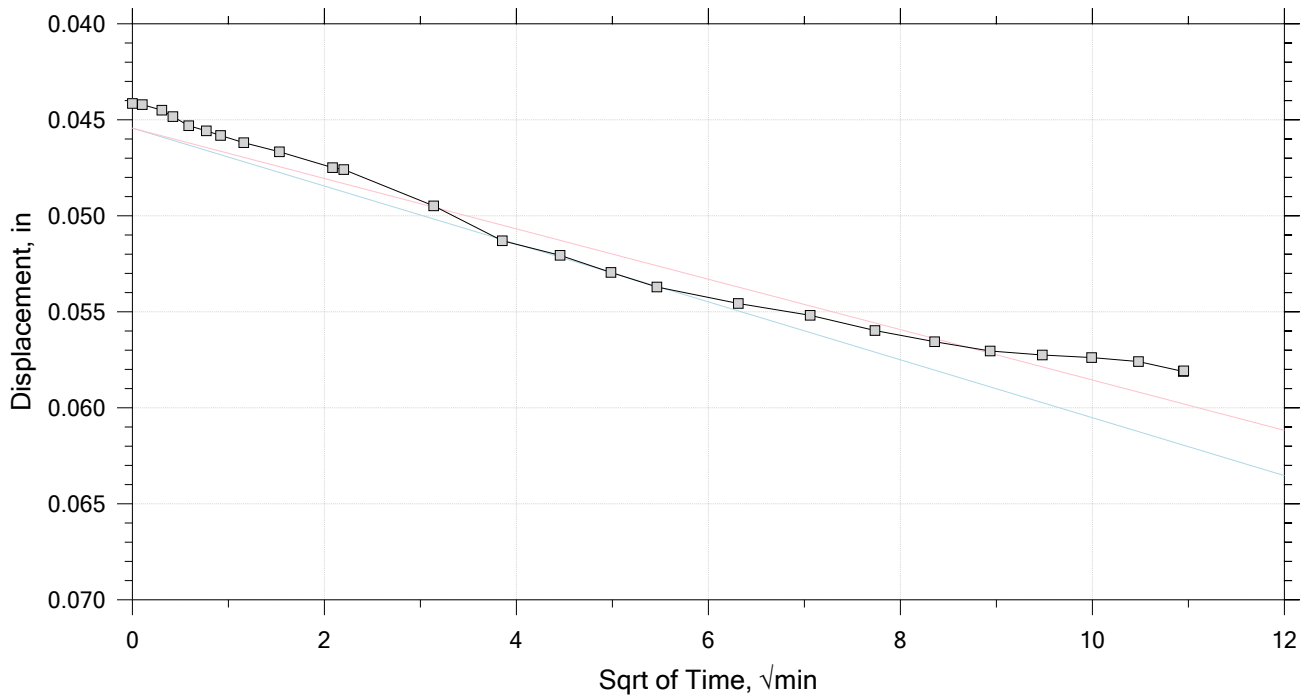
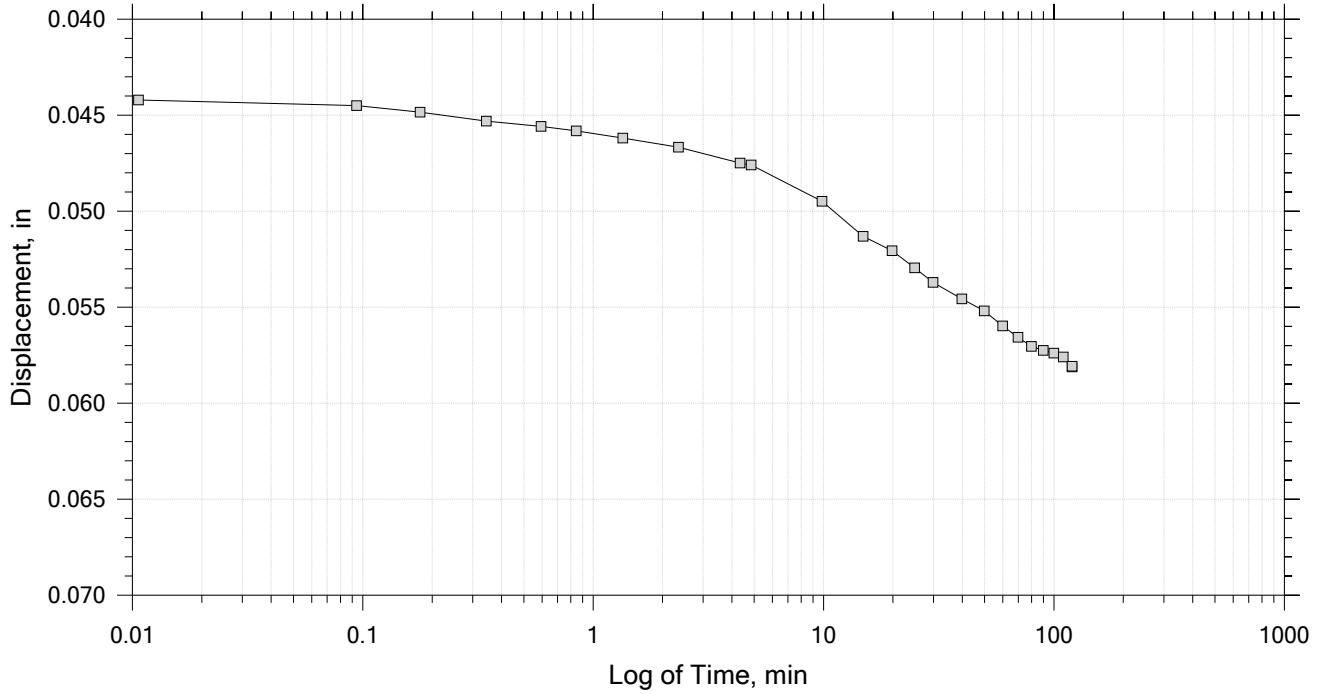
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 30

Constant Load Step

Stress: 2.55e+03 psf



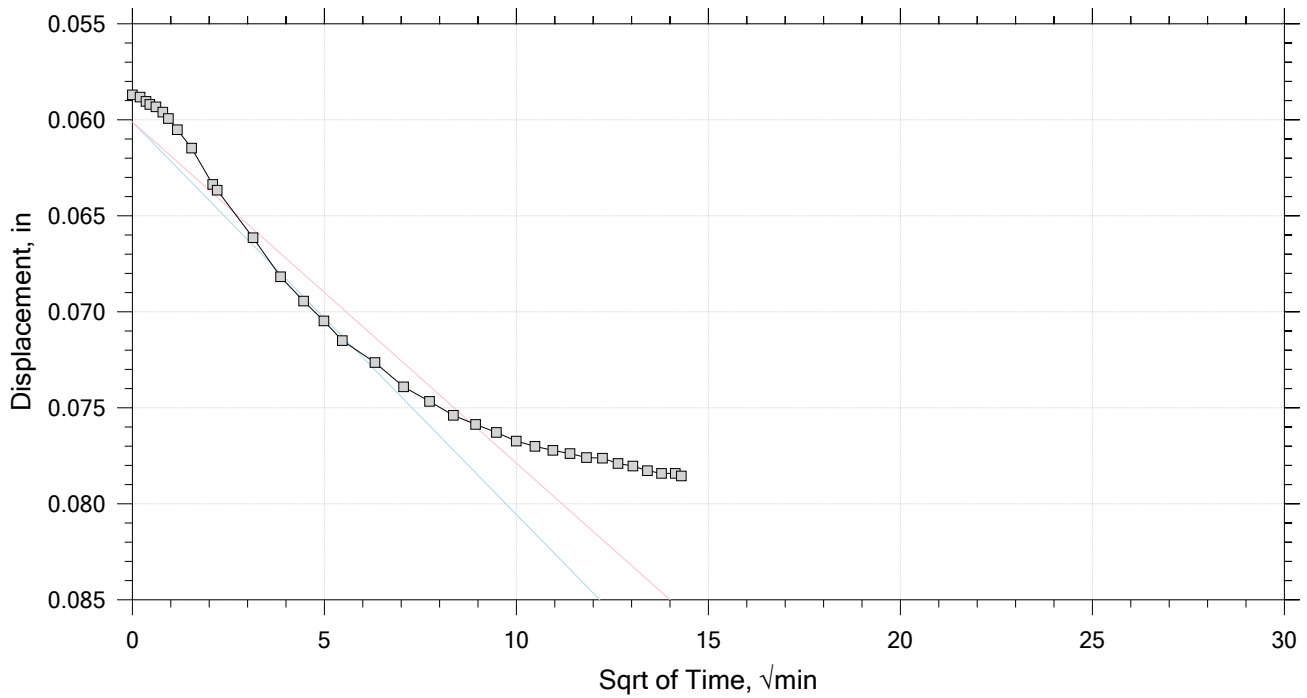
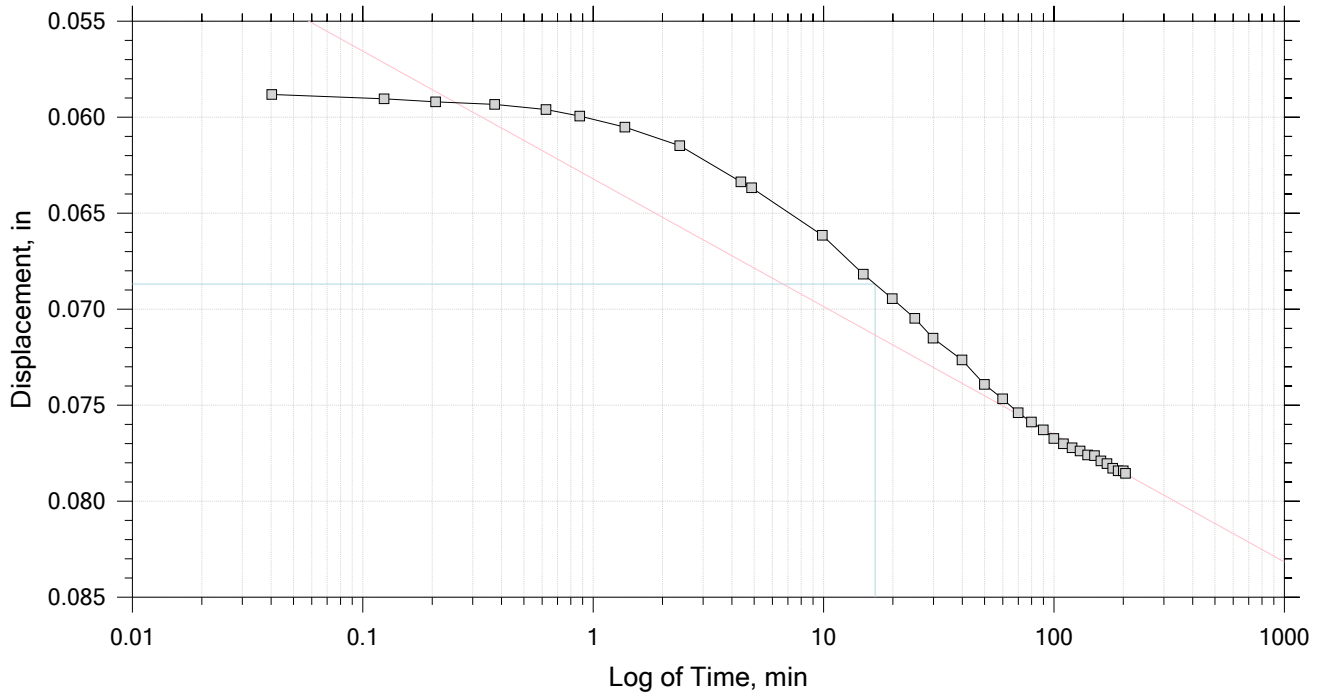
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 30

Constant Load Step

Stress: 3.83e+03 psf



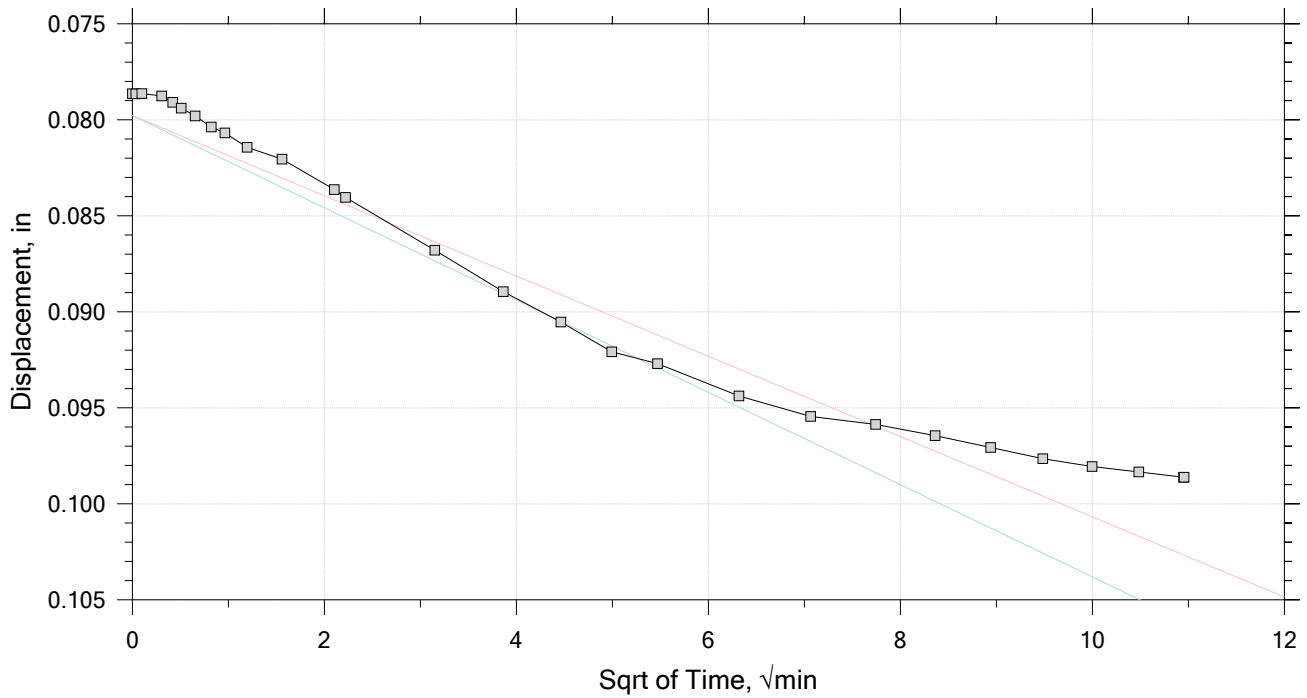
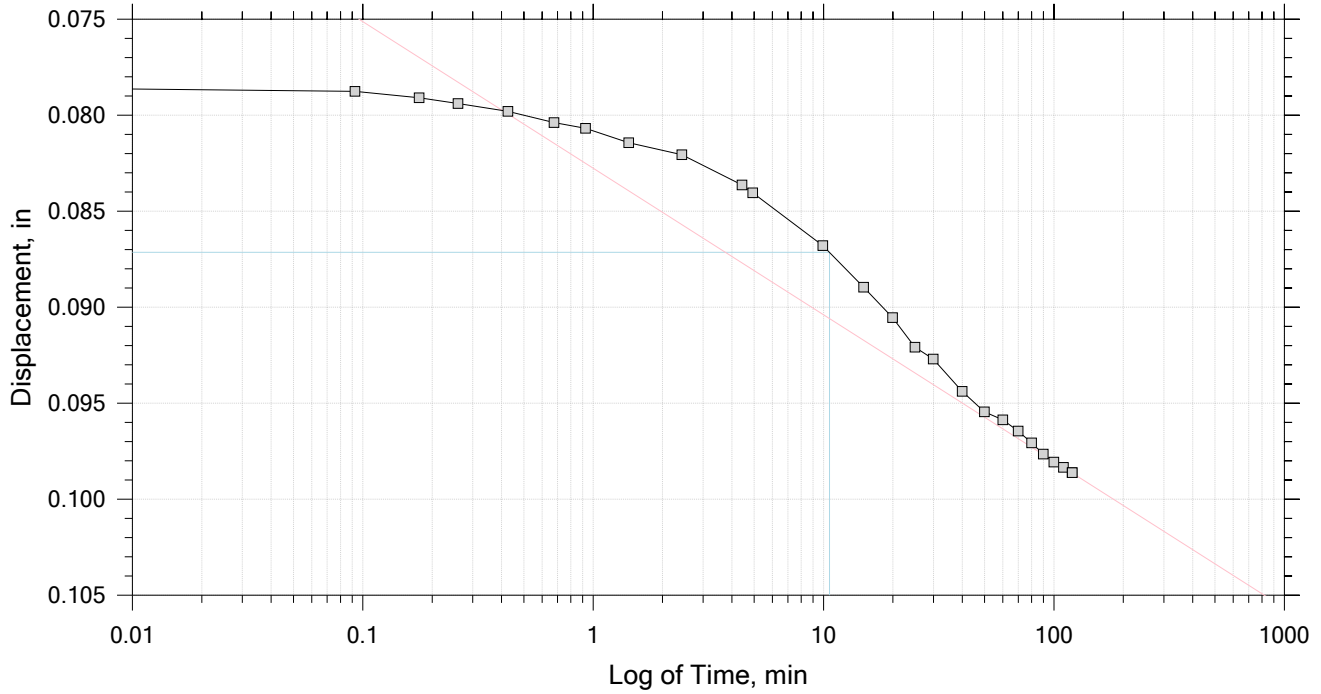
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 30

Constant Load Step

Stress: 5.74e+03 psf



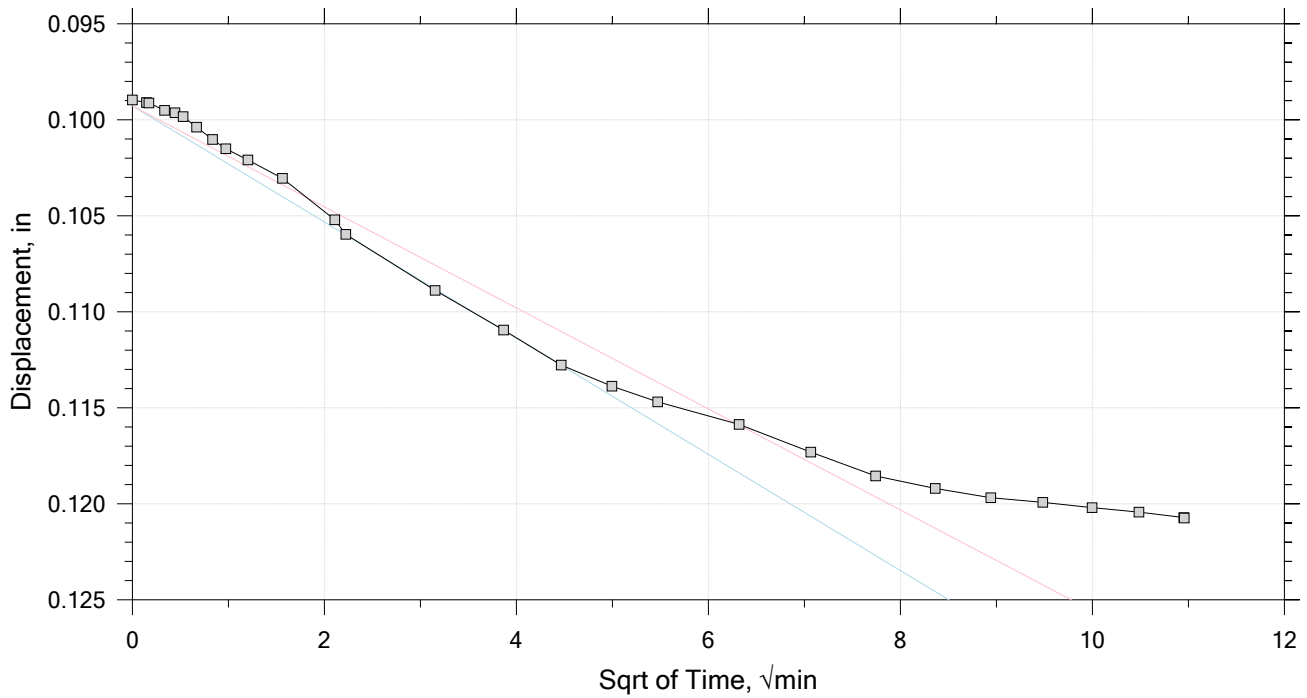
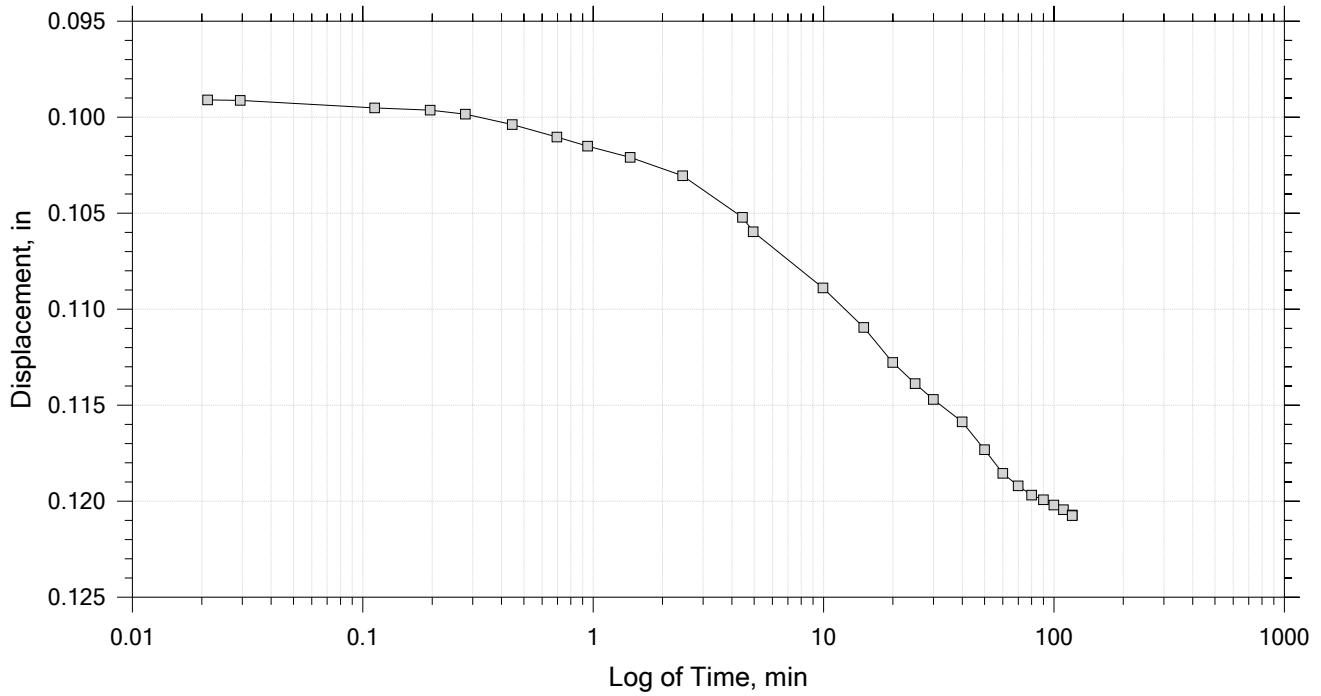
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 30

Constant Load Step

Stress: 8.61×10^3 psf



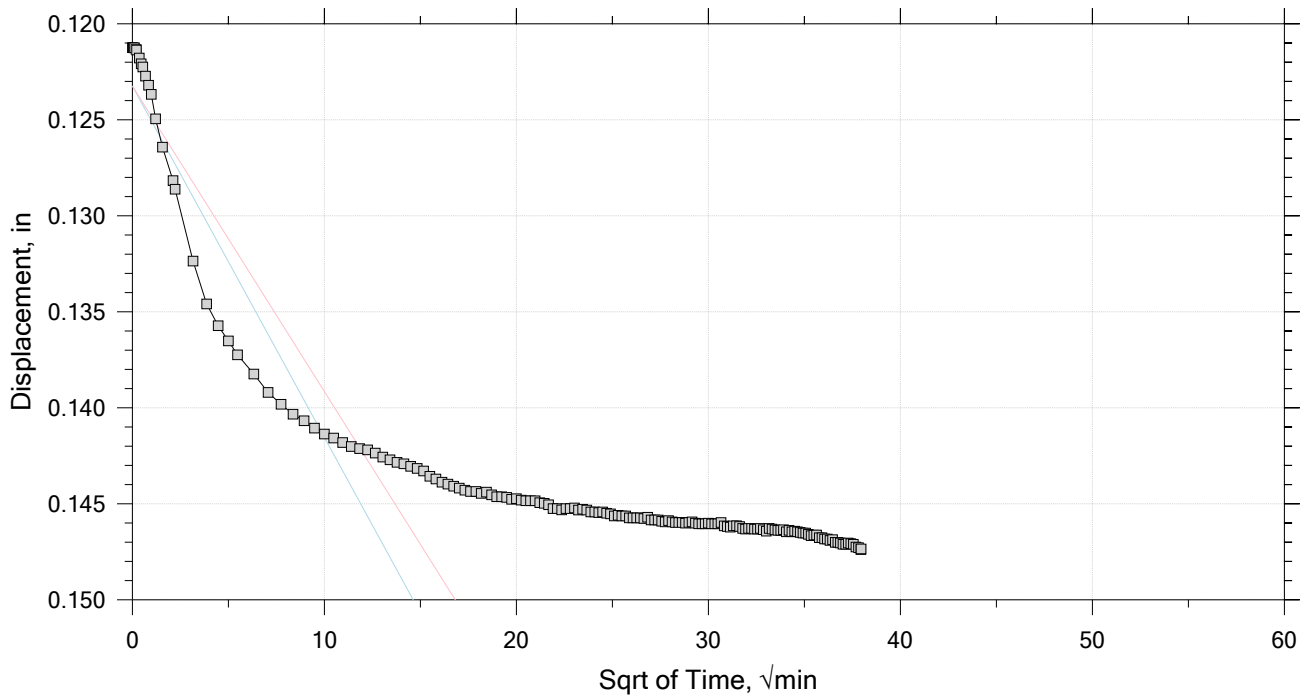
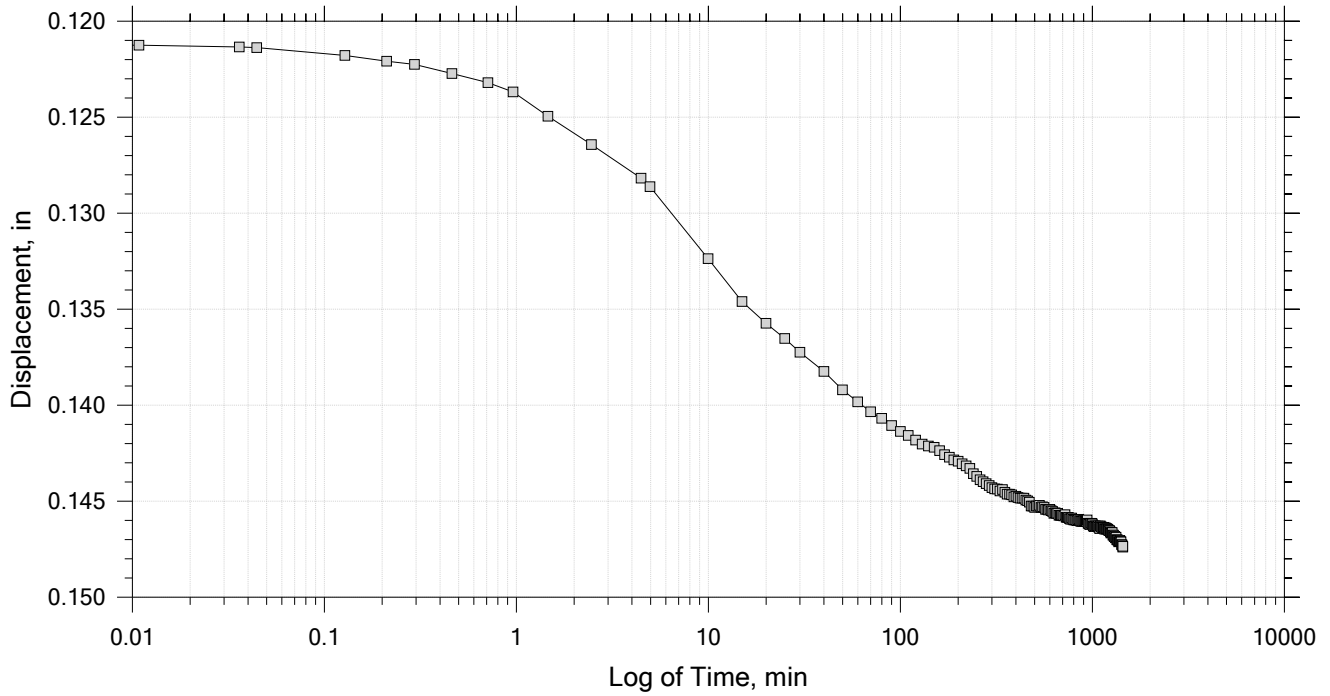
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 30

Constant Load Step

Stress: 1.29e+04 psf



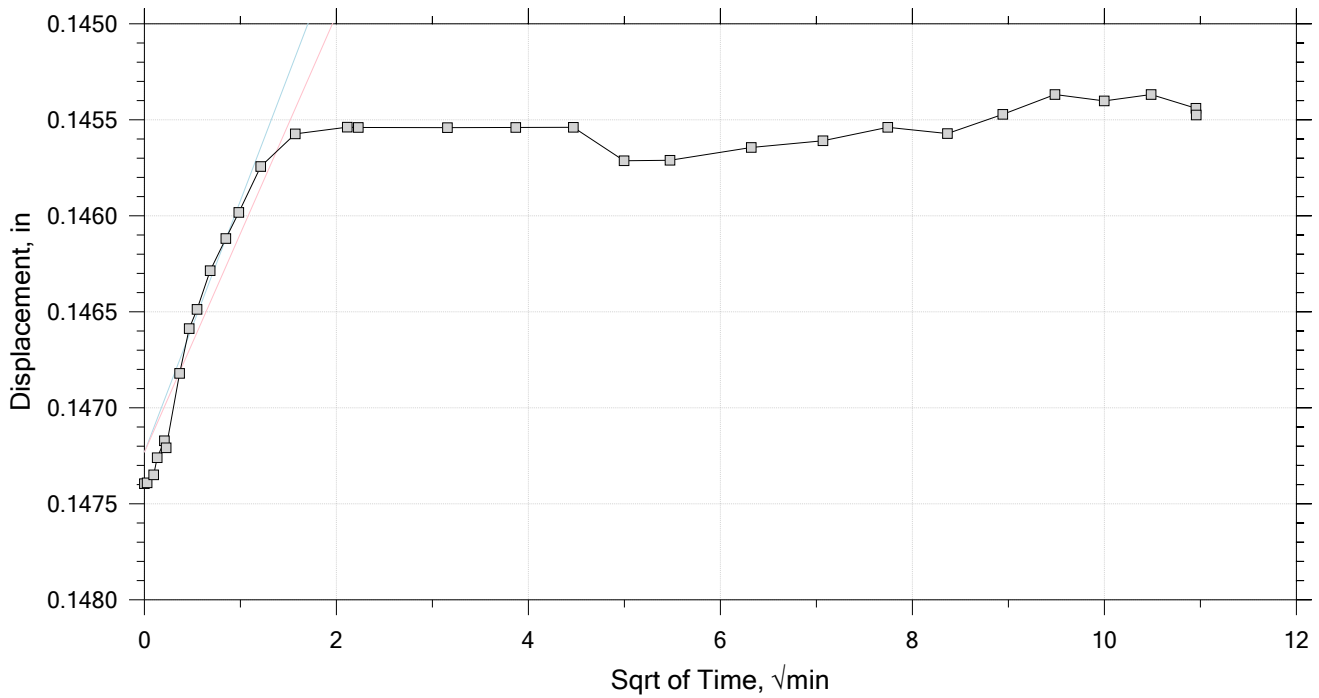
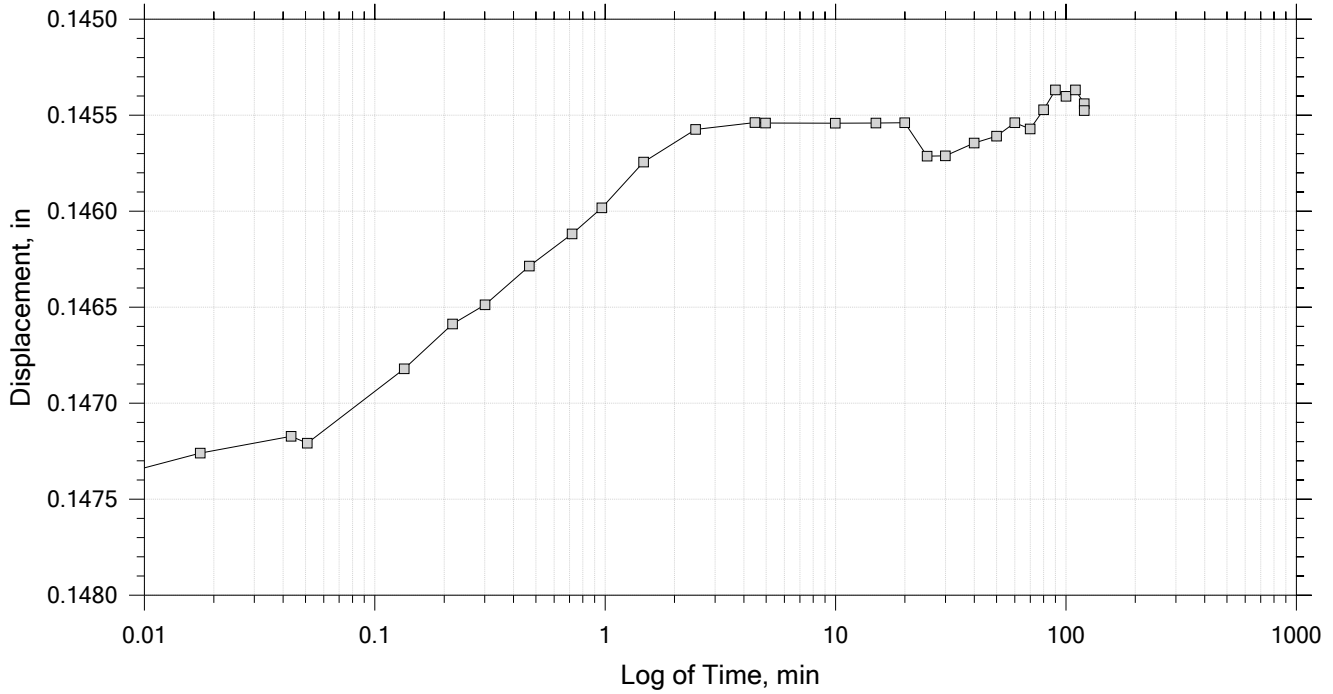
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 30

Constant Load Step

Stress: 6.46e+03 psf



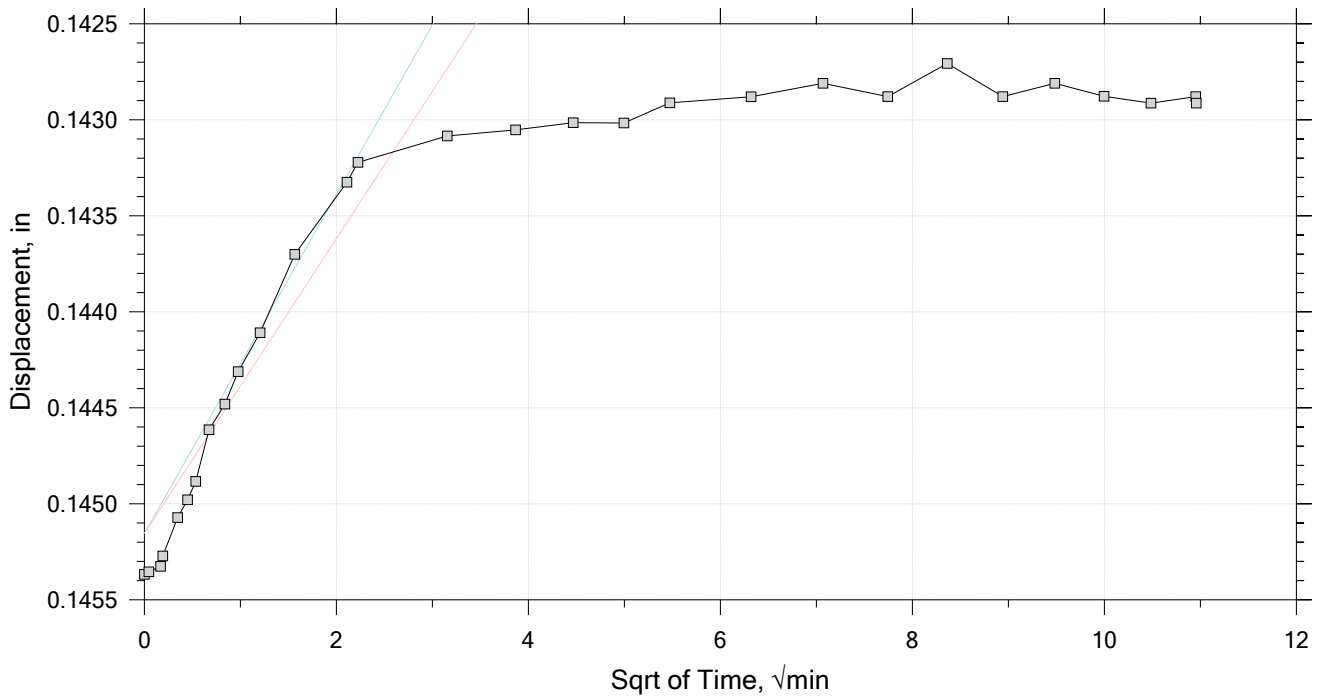
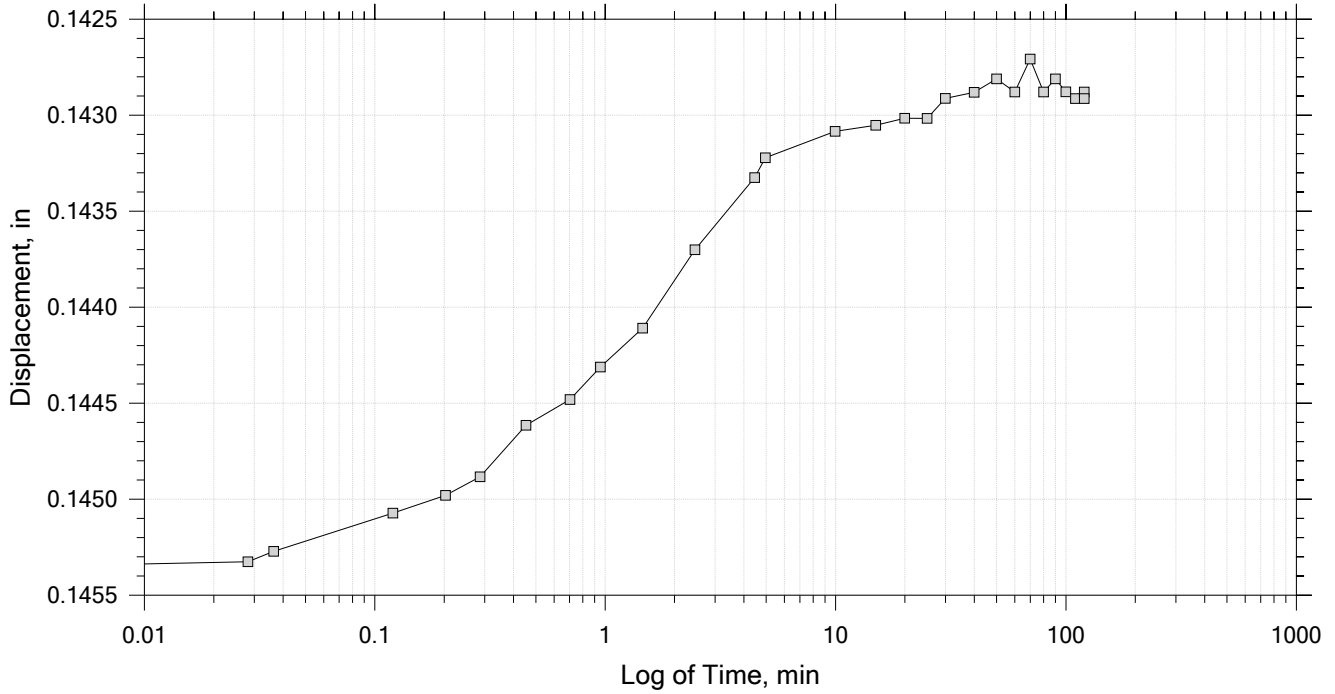
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 30

Constant Load Step

Stress: 3.23e+03 psf



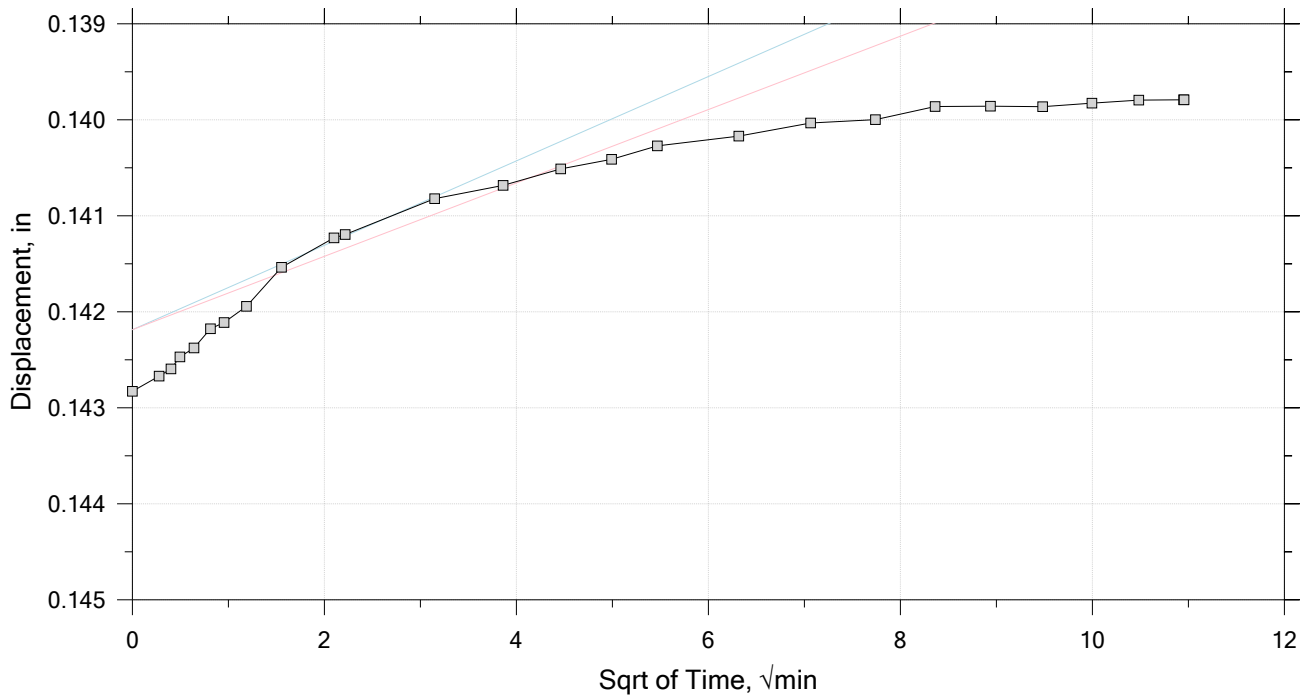
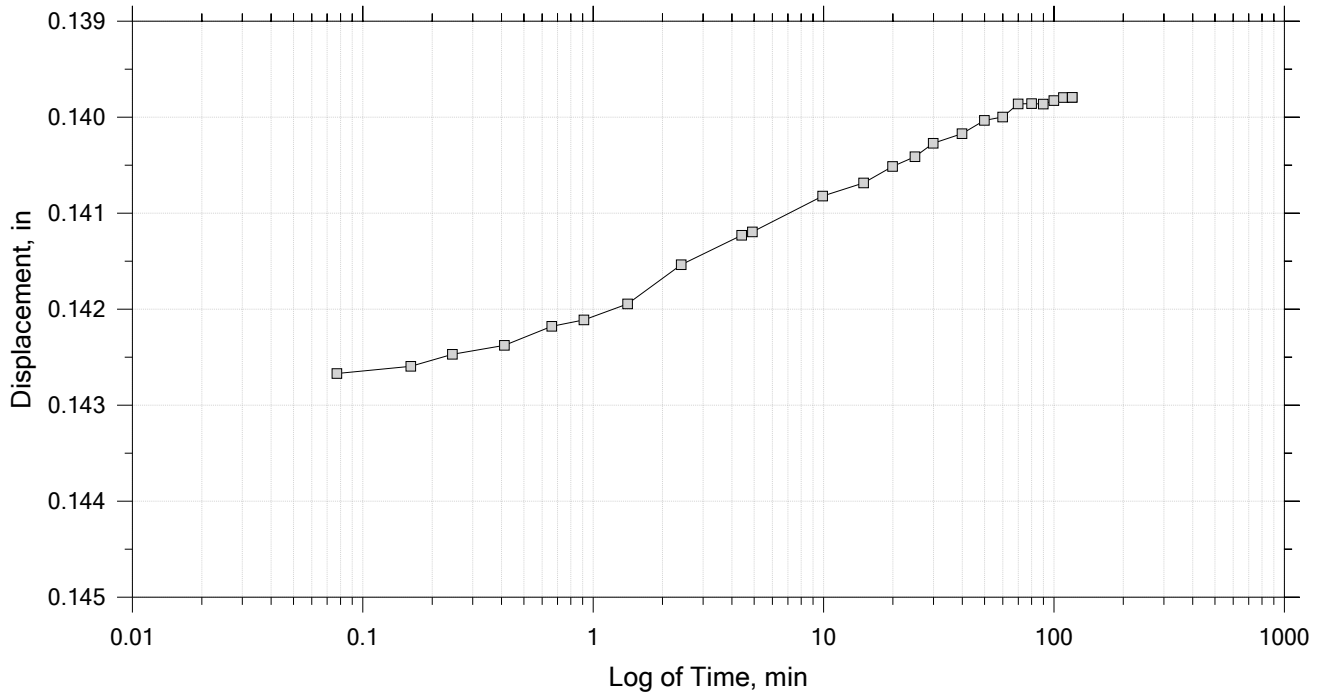
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 30

Constant Load Step

Stress: 1.61e+03 psf



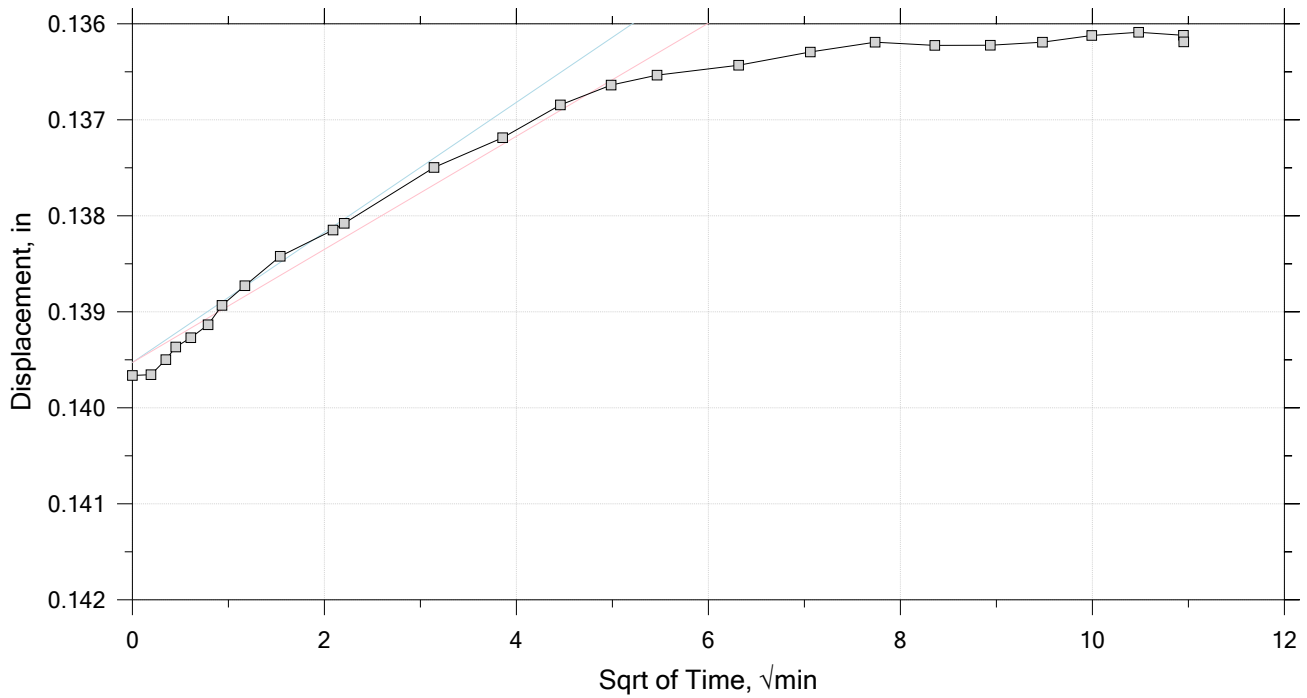
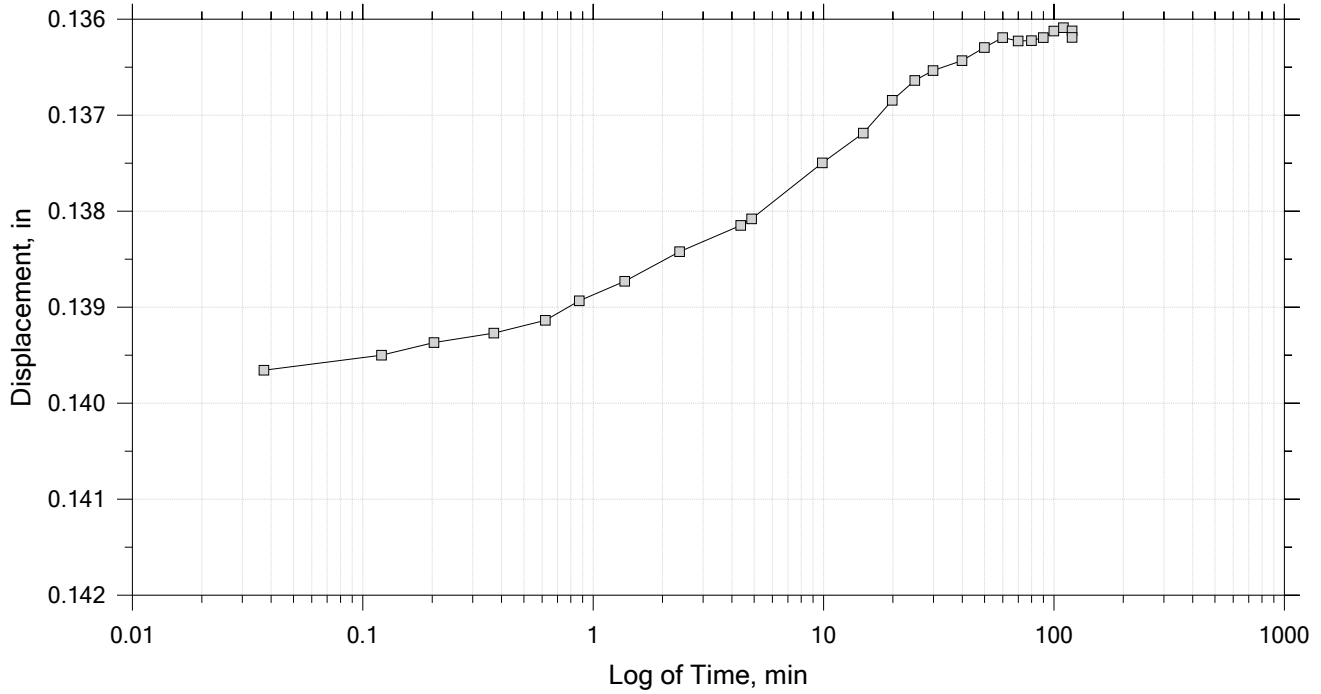
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 30

Constant Load Step

Stress: 807 psf



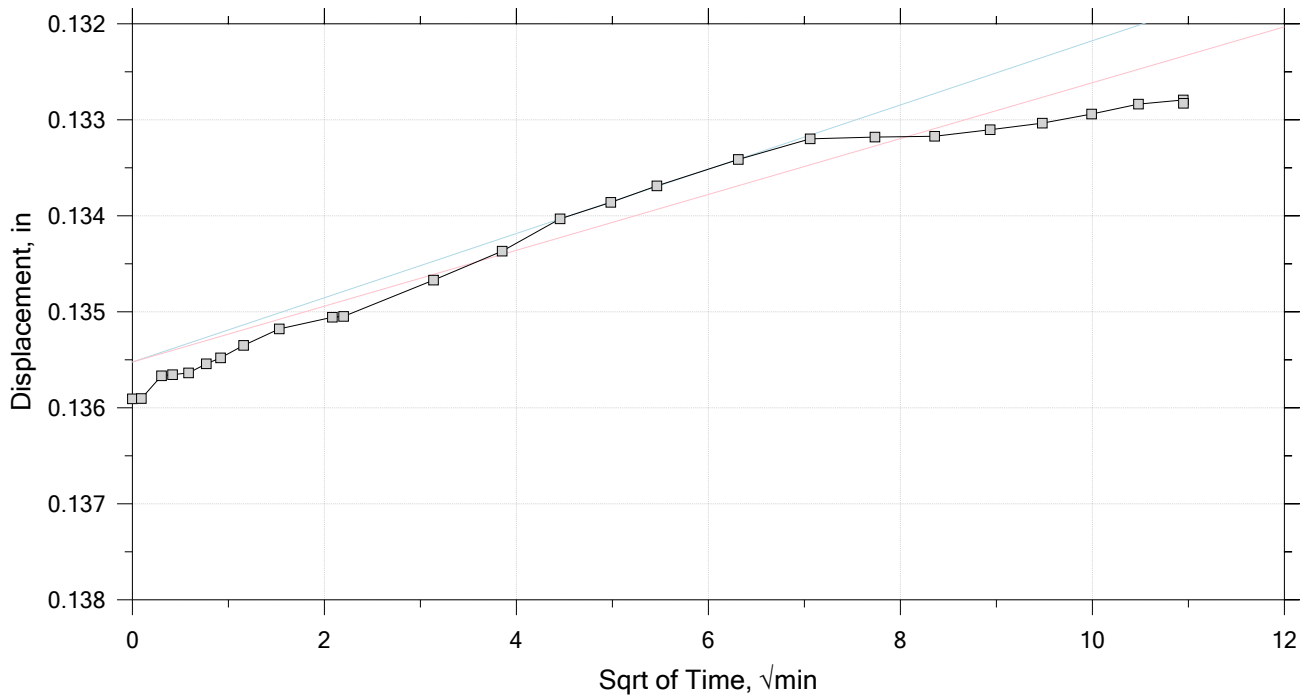
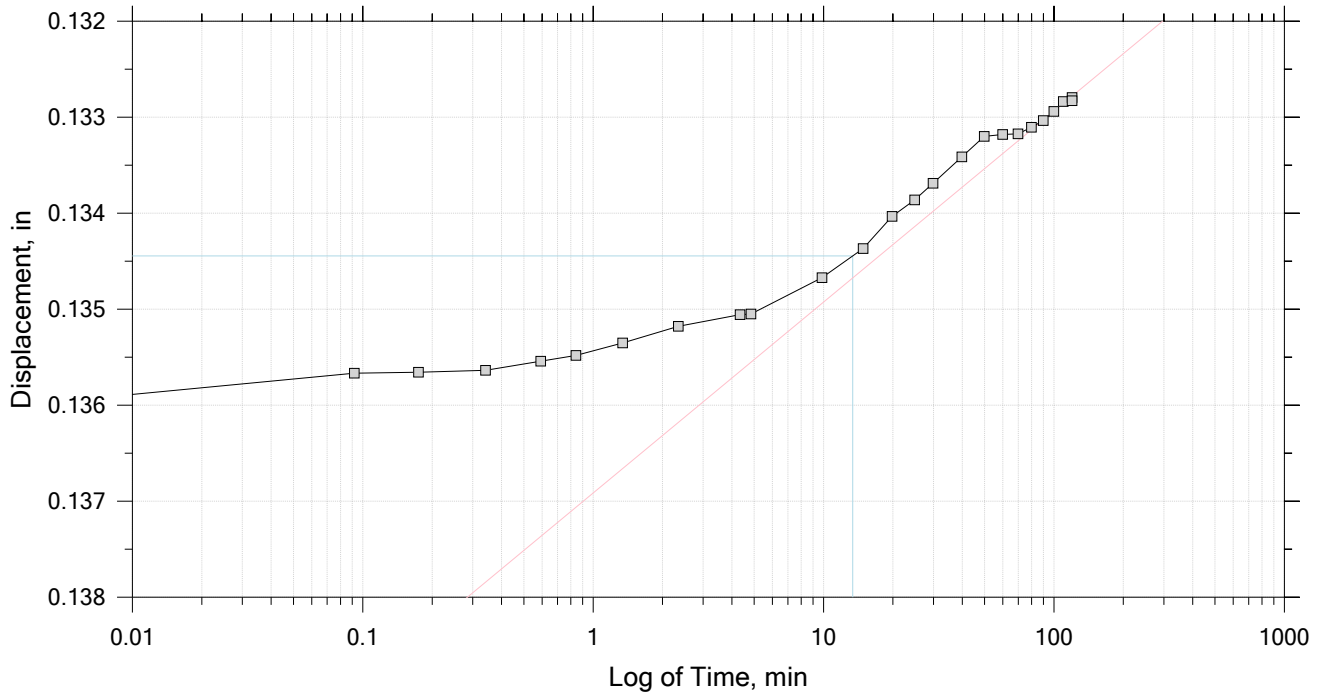
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 30

Constant Load Step

Stress: 404 psf



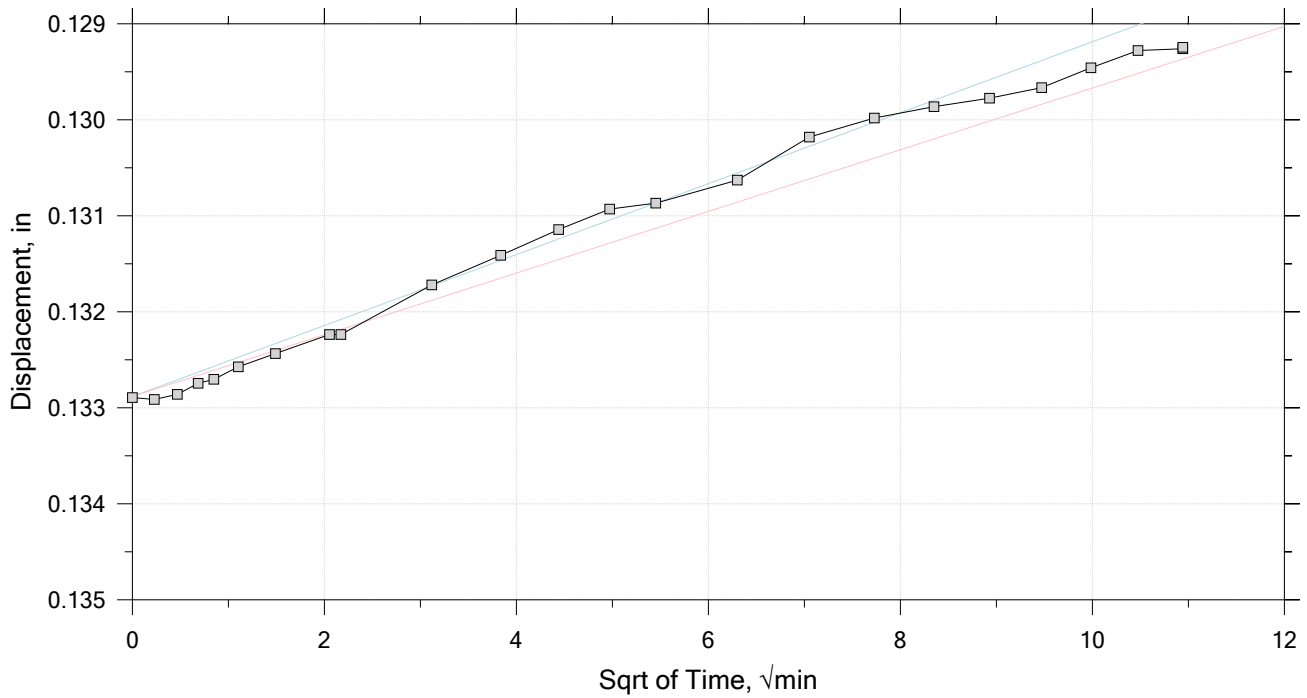
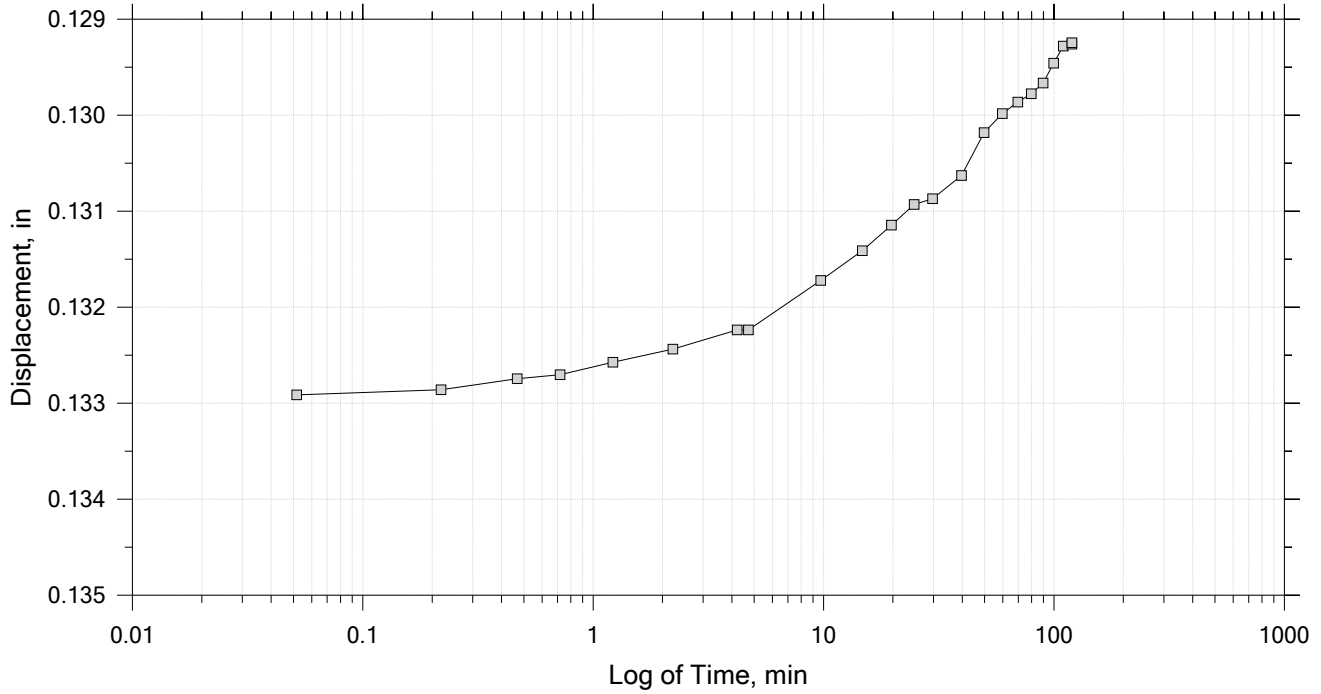
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 30

Constant Load Step

Stress: 202 psf



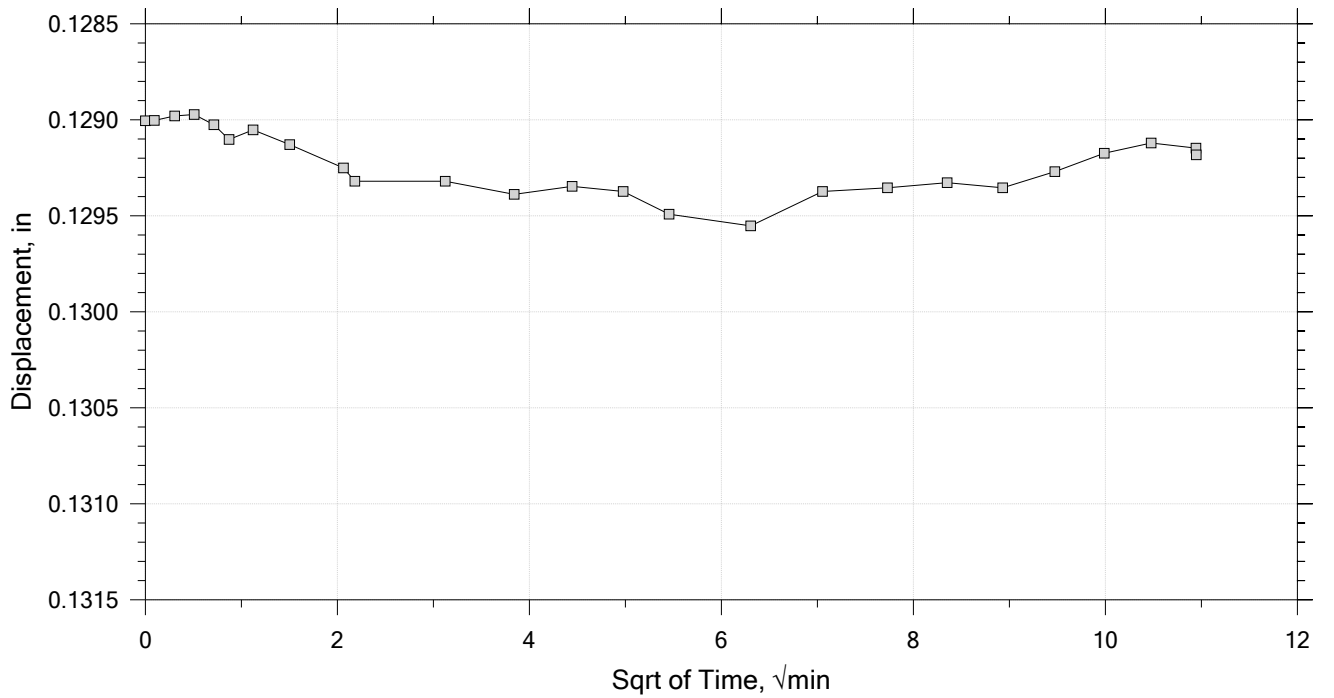
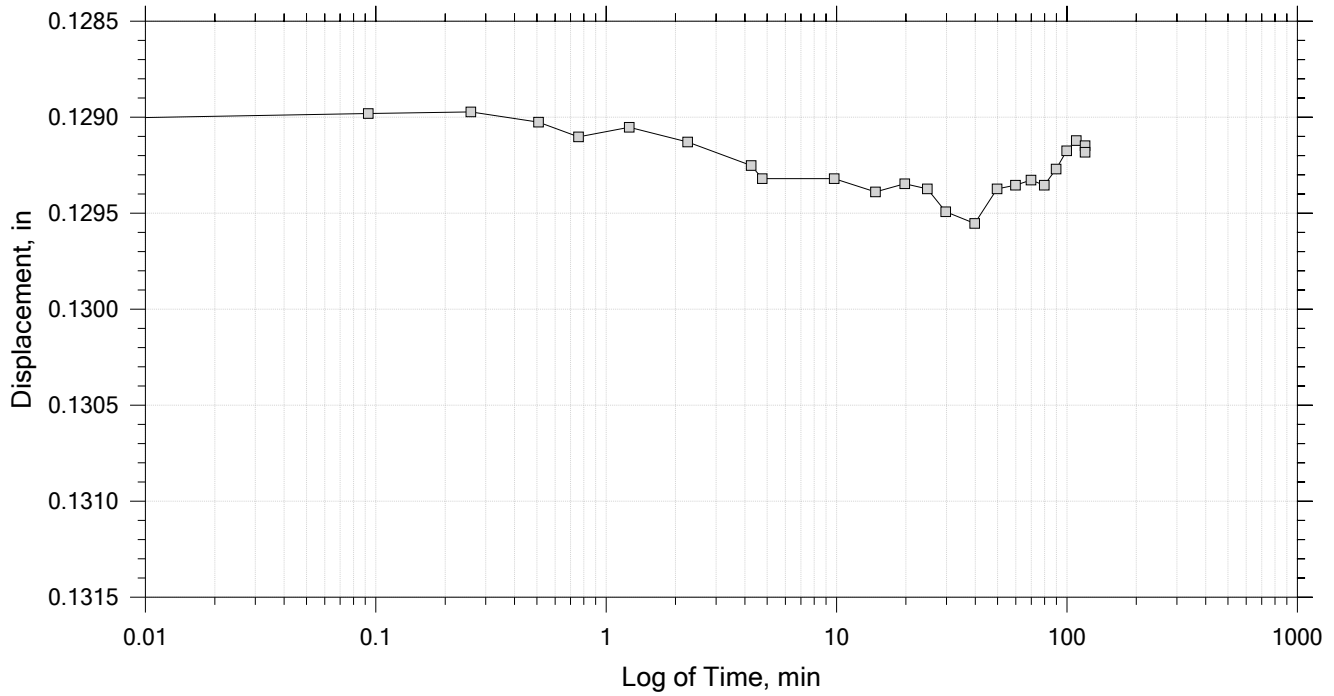
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 30

Constant Load Step

Stress: 404 psf



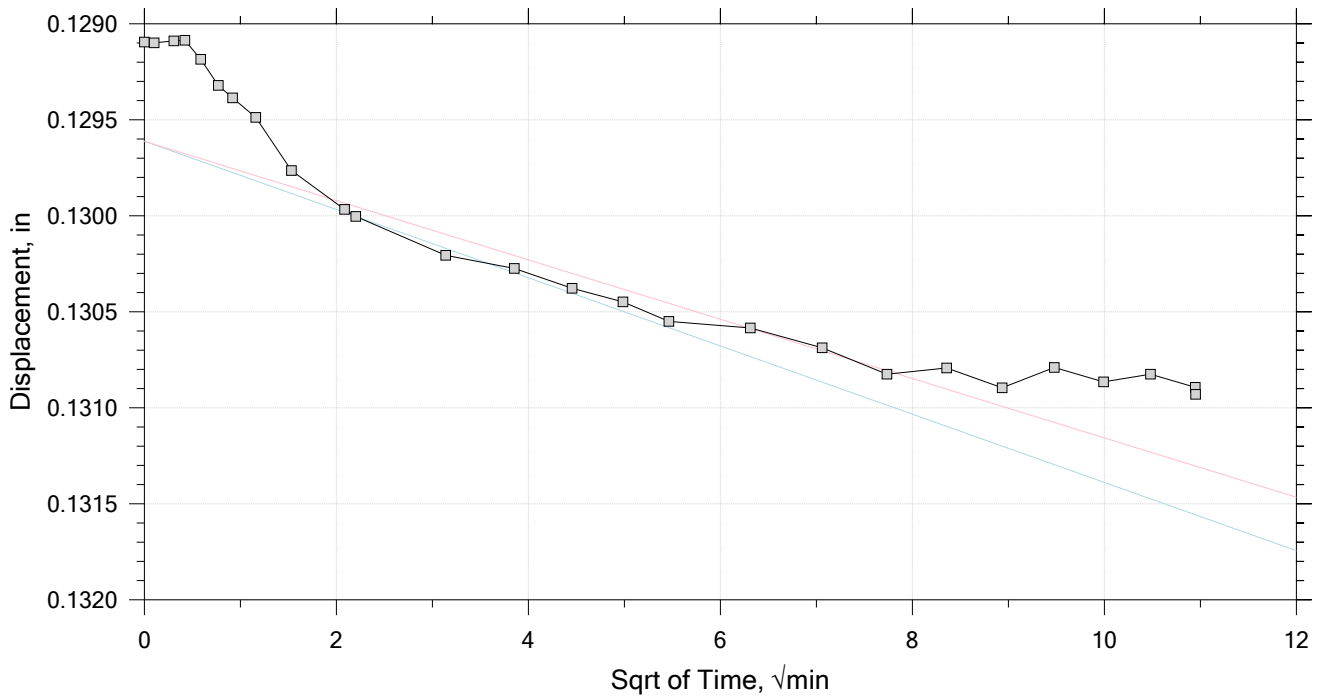
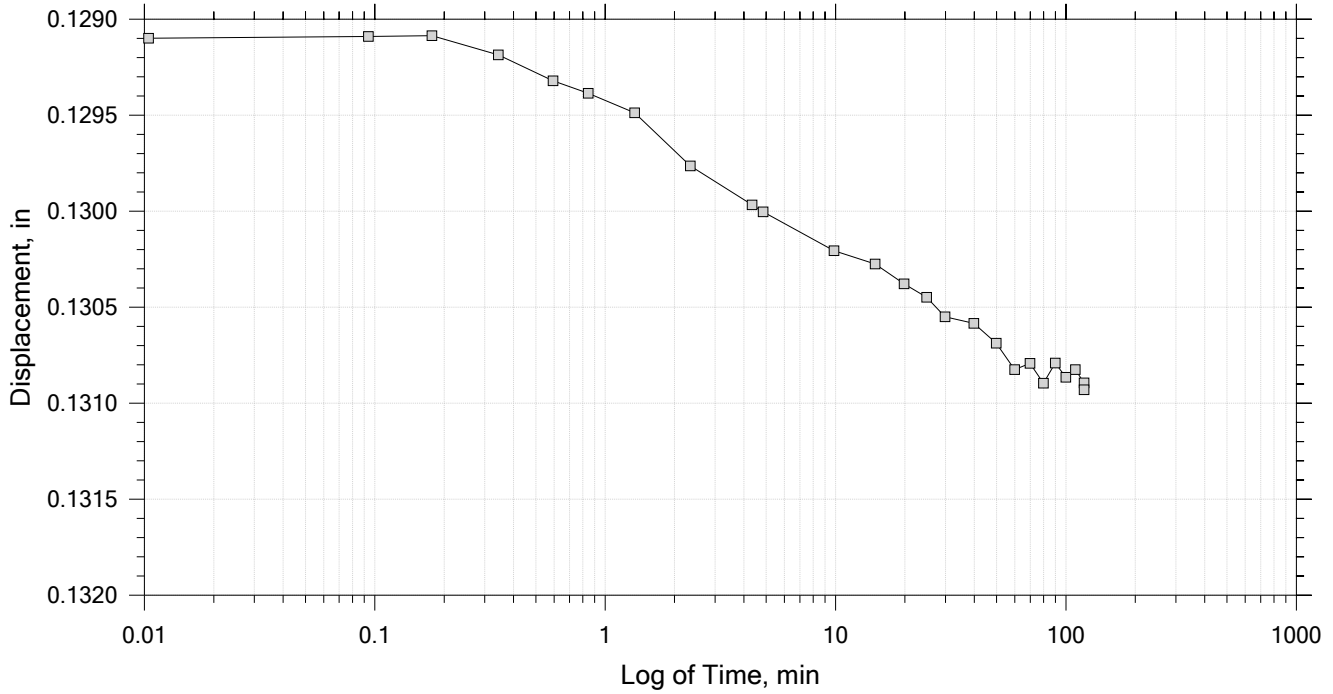
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 30

Constant Load Step

Stress: 807 psf



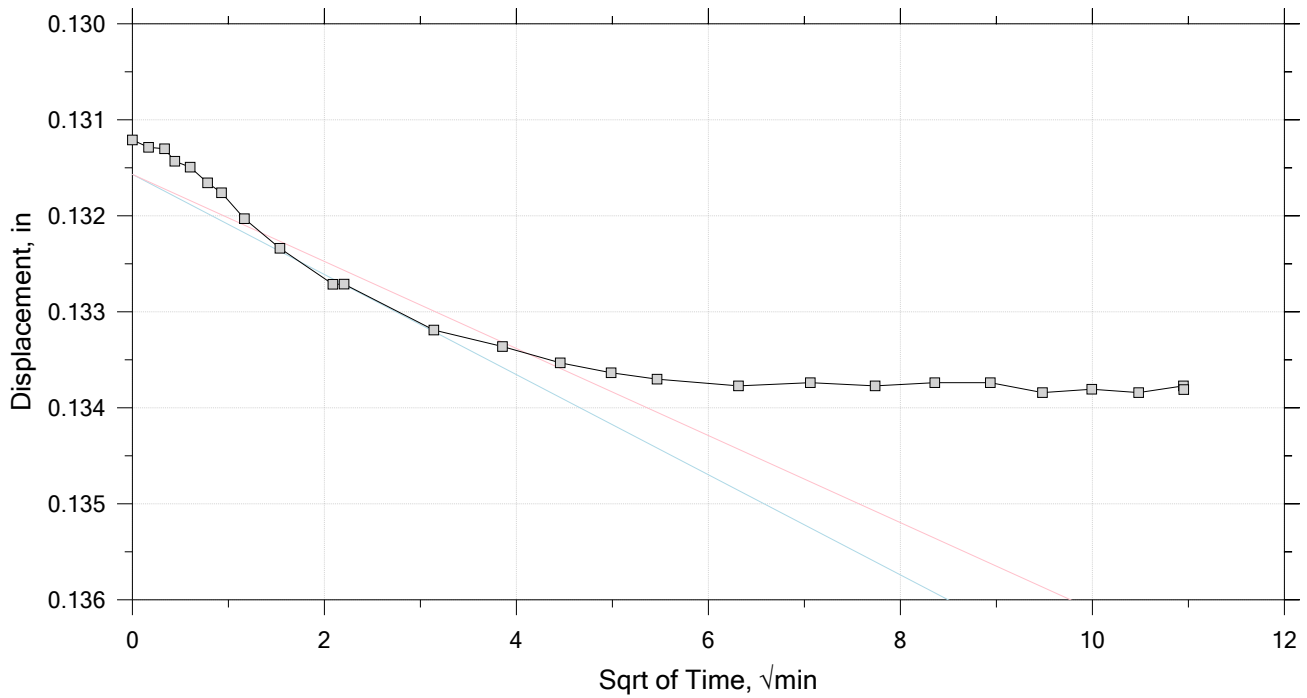
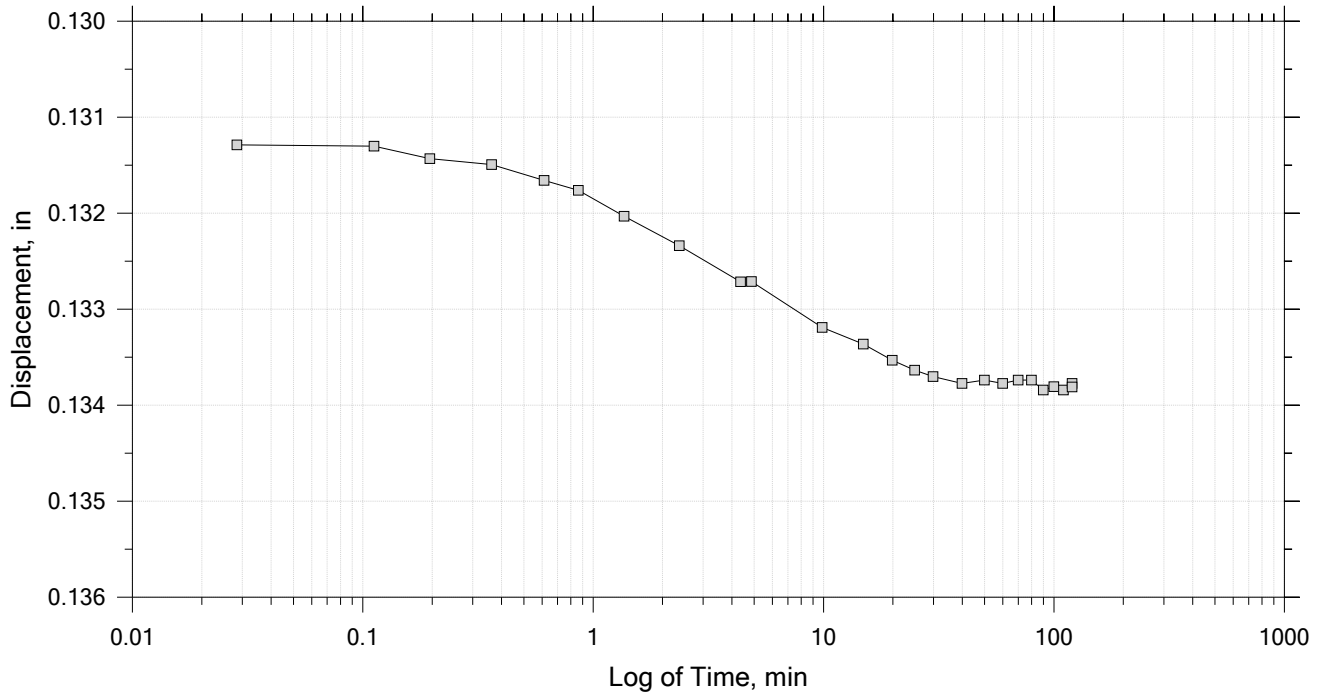
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 30

Constant Load Step

Stress: 1.61e+03 psf



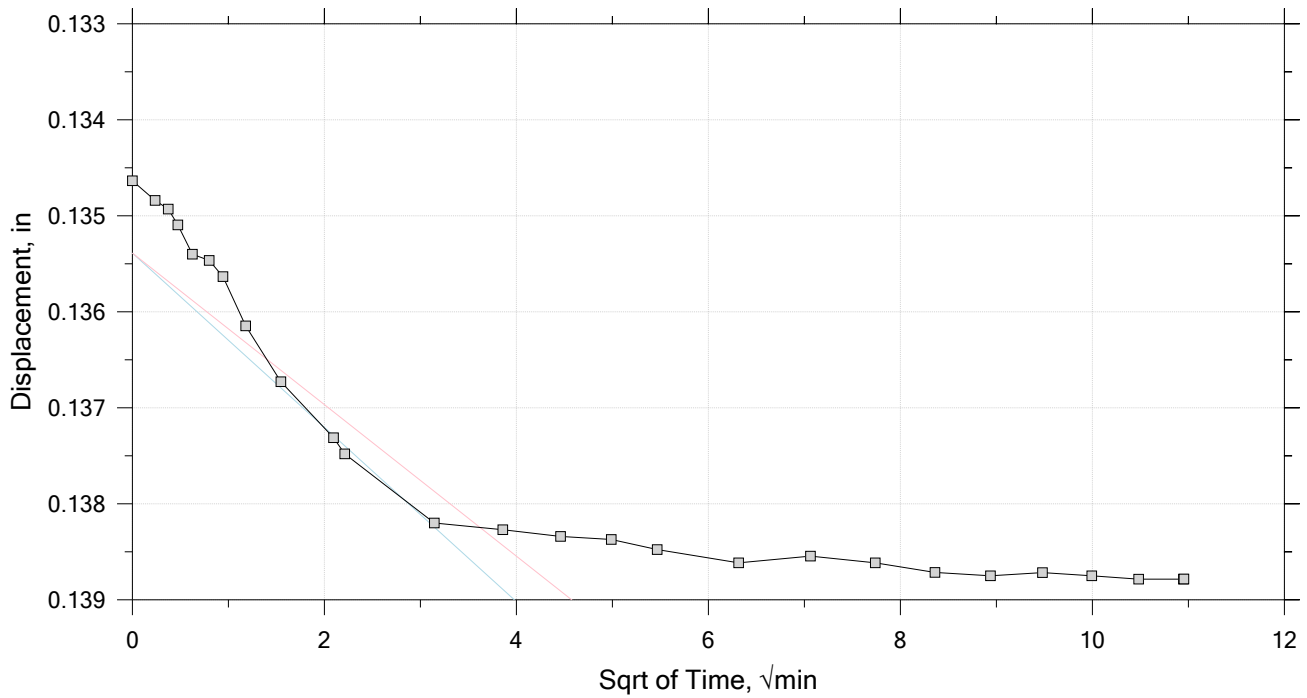
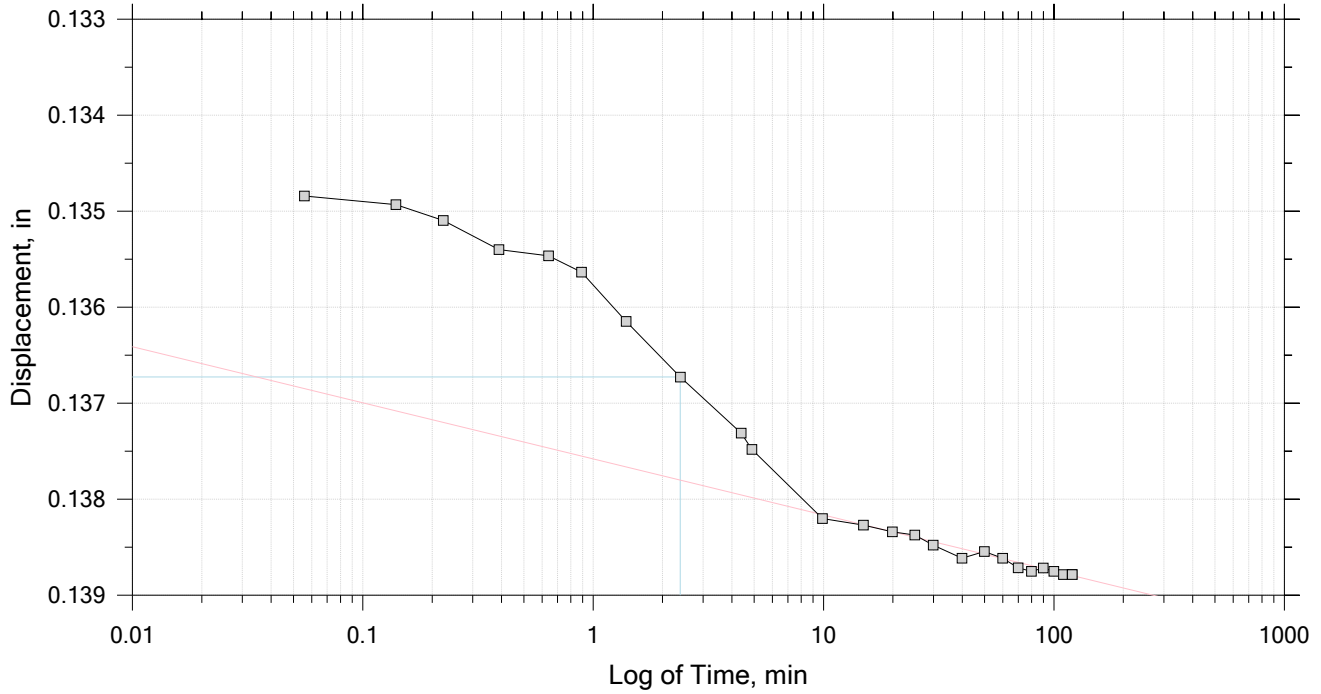
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 30

Constant Load Step

Stress: 3.23e+03 psf



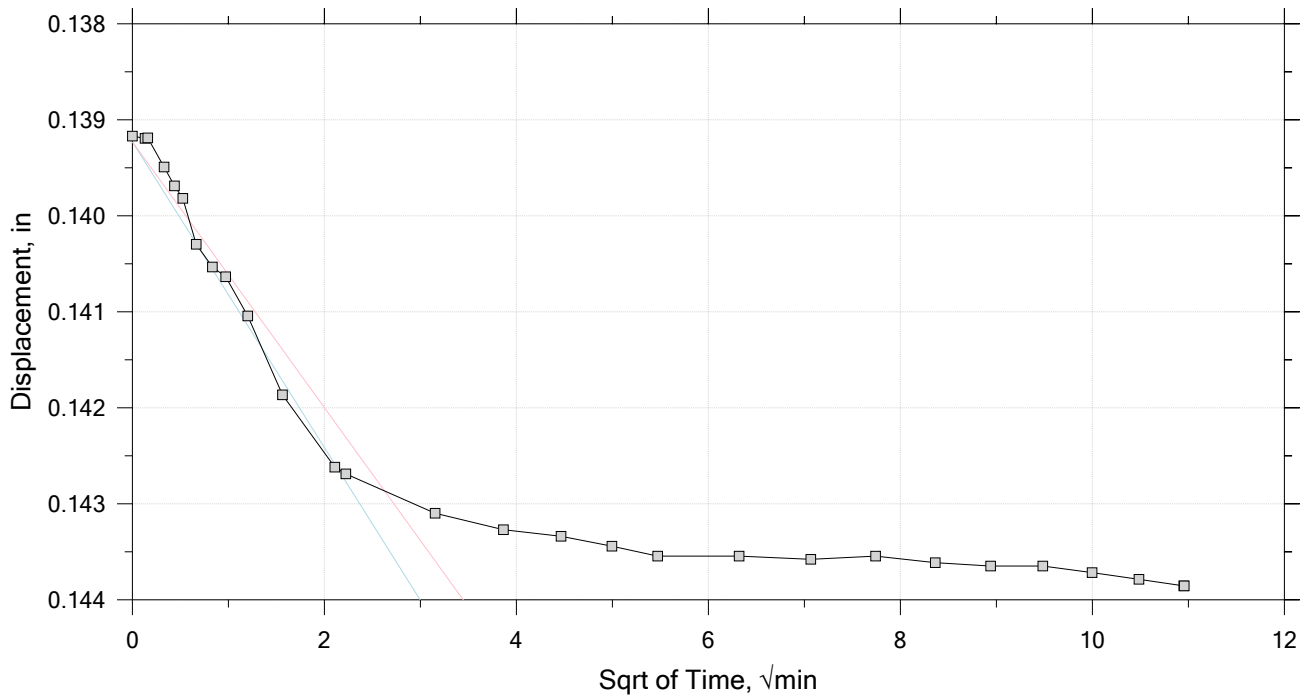
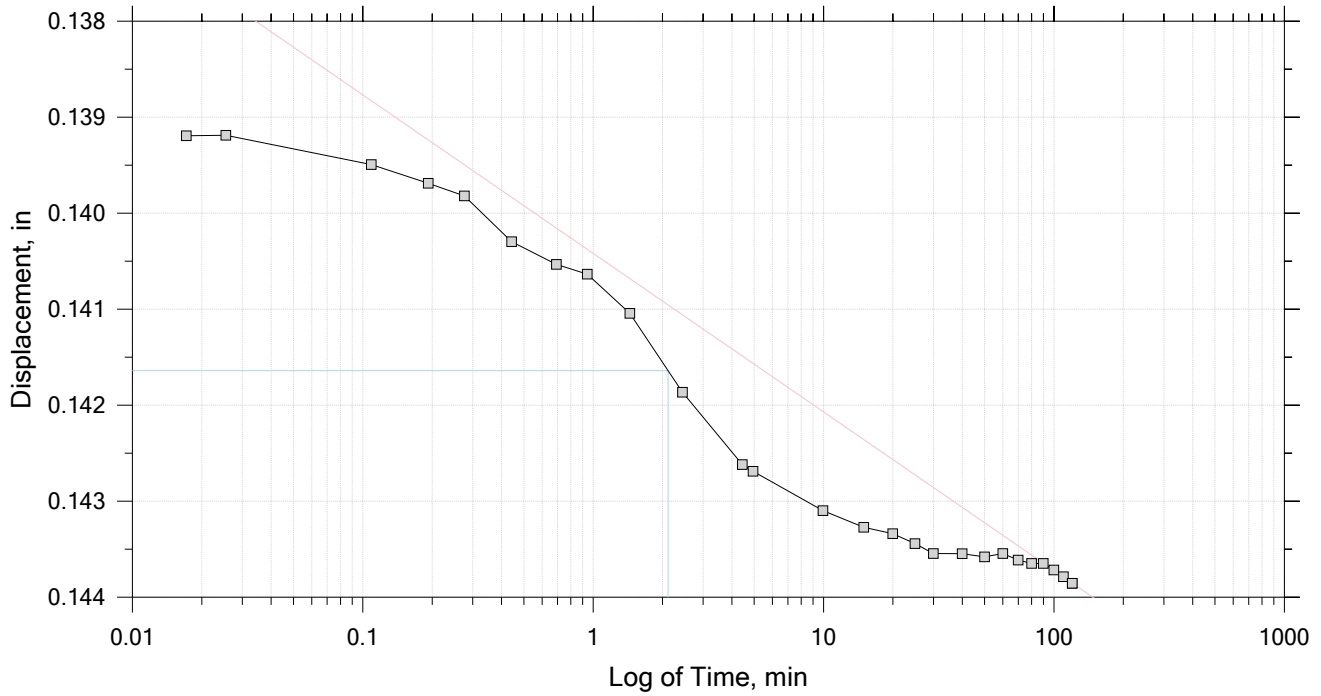
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 30

Constant Load Step

Stress: 6.46e+03 psf



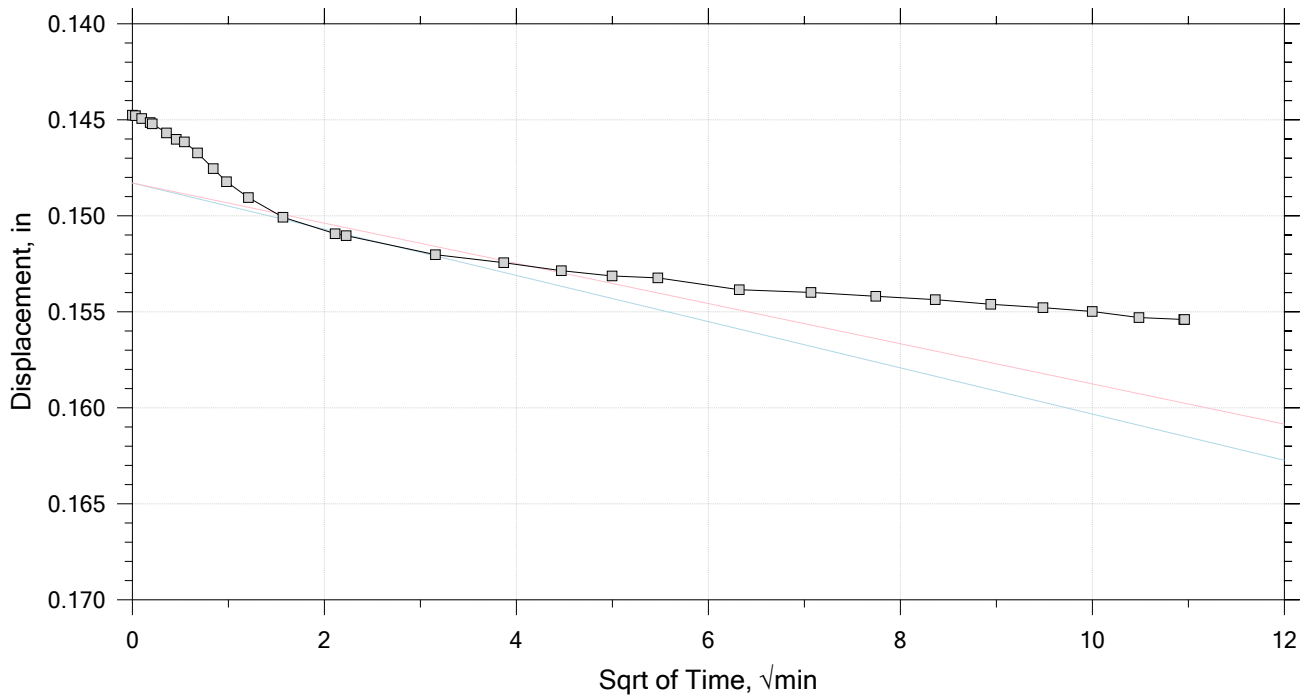
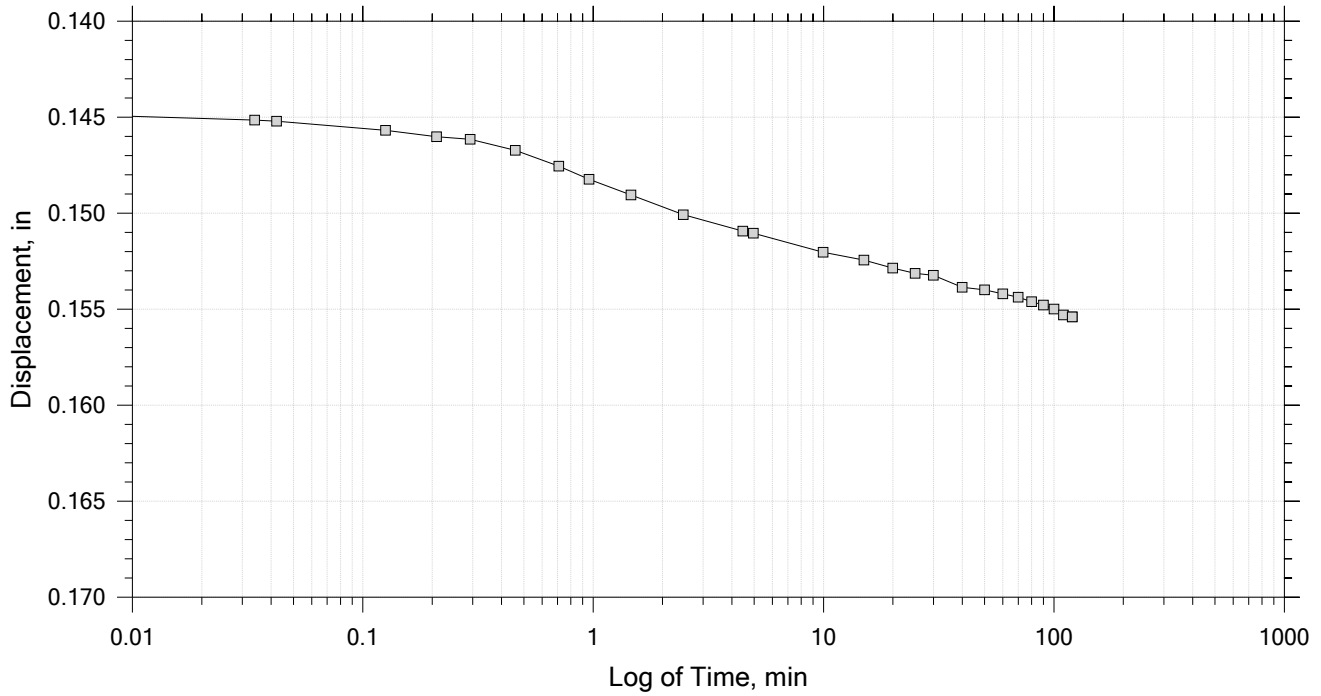
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 30

Constant Load Step

Stress: 1.29e+04 psf



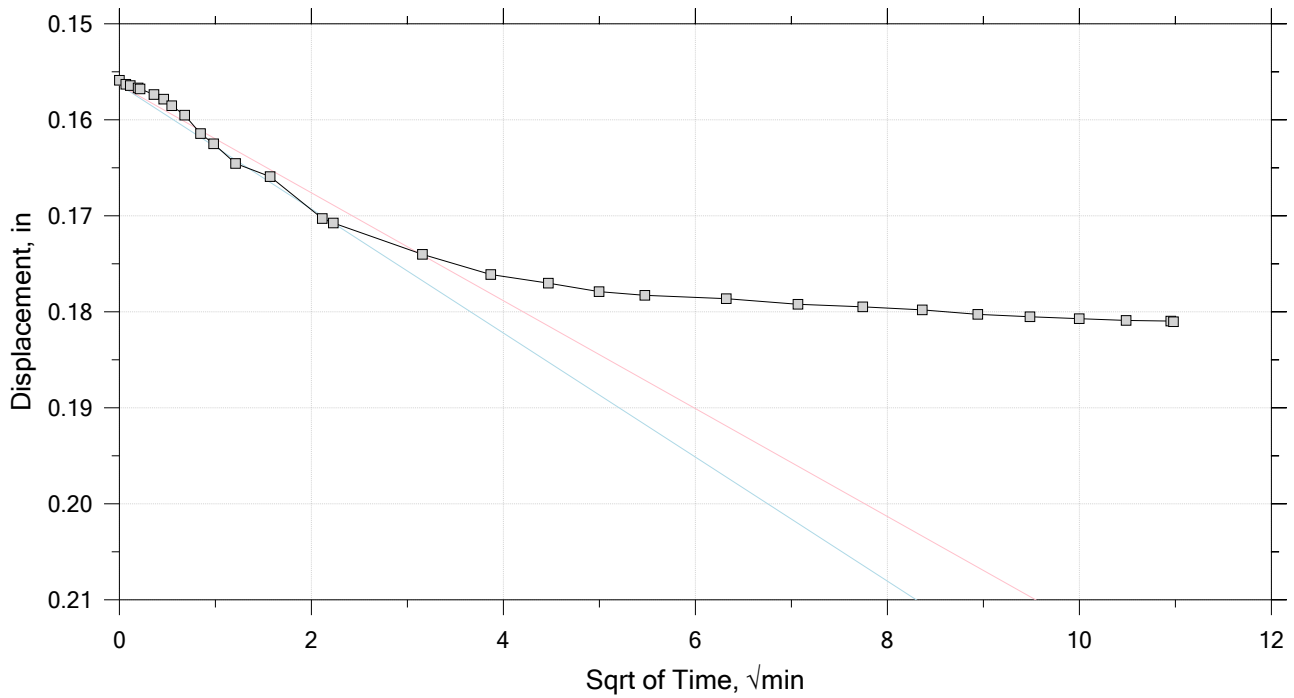
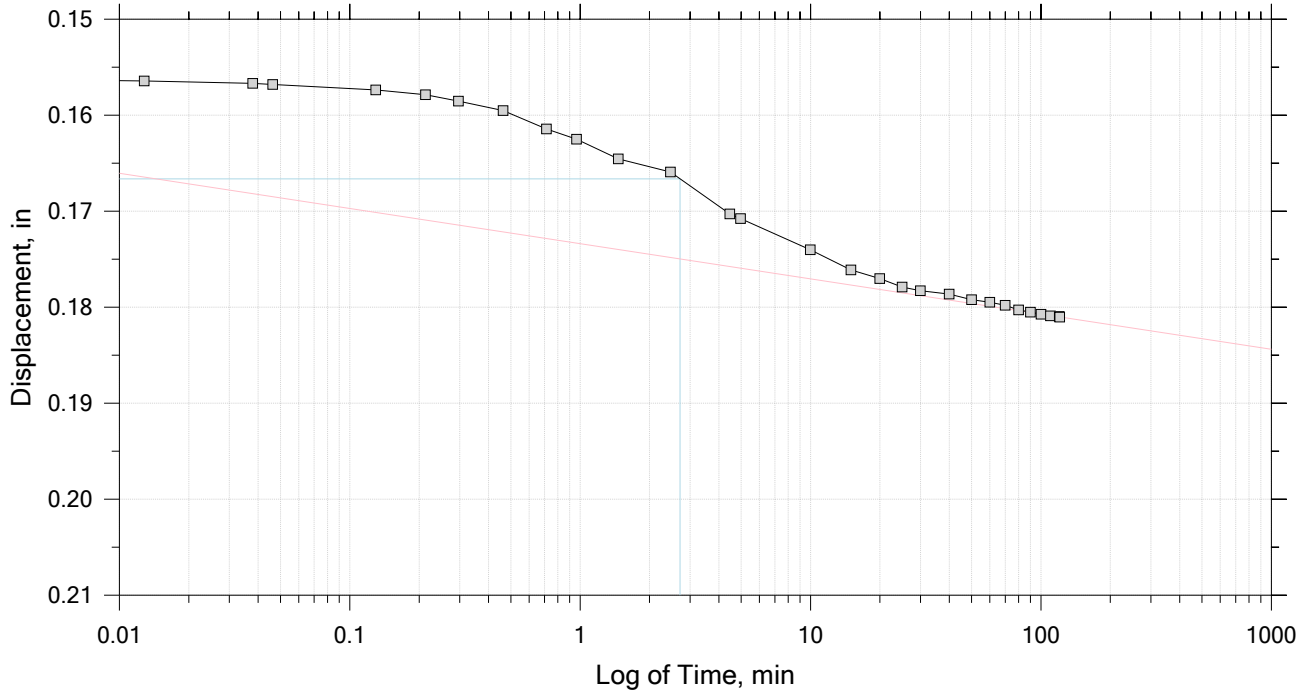
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 30

Constant Load Step

Stress: 2.58e+04 psf



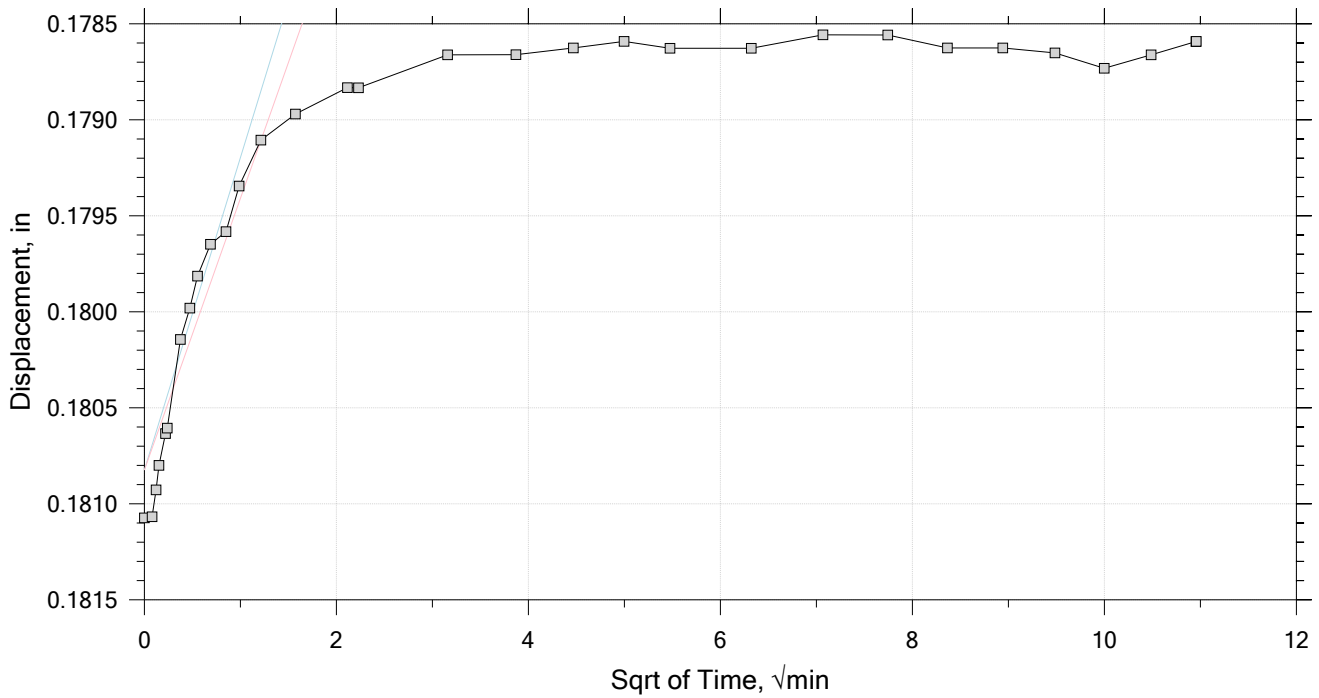
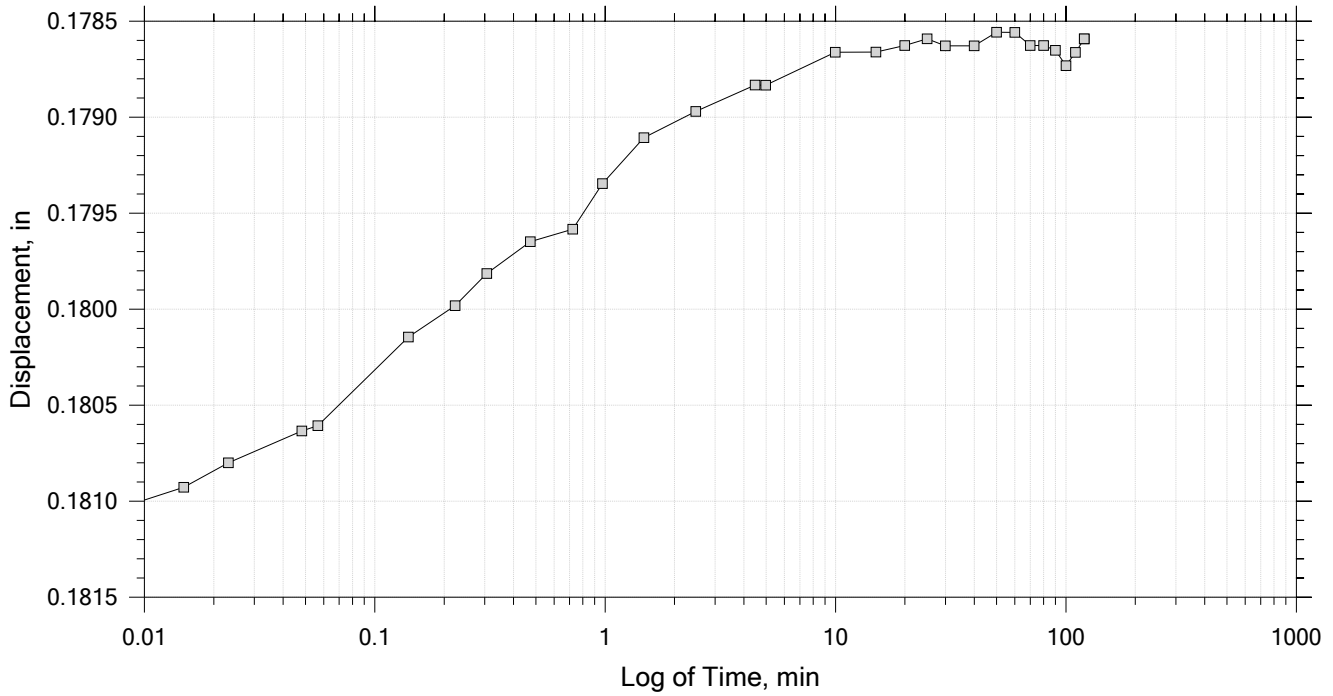
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 30

Constant Load Step

Stress: 1.29e+04 psf



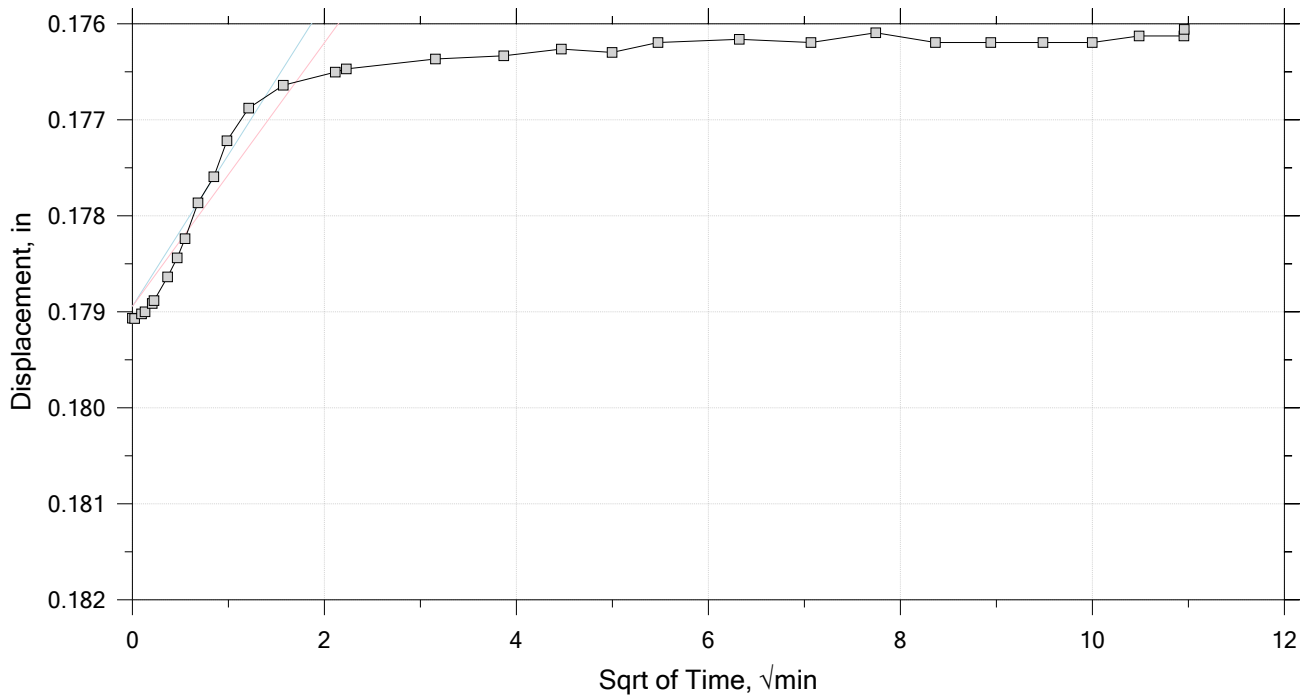
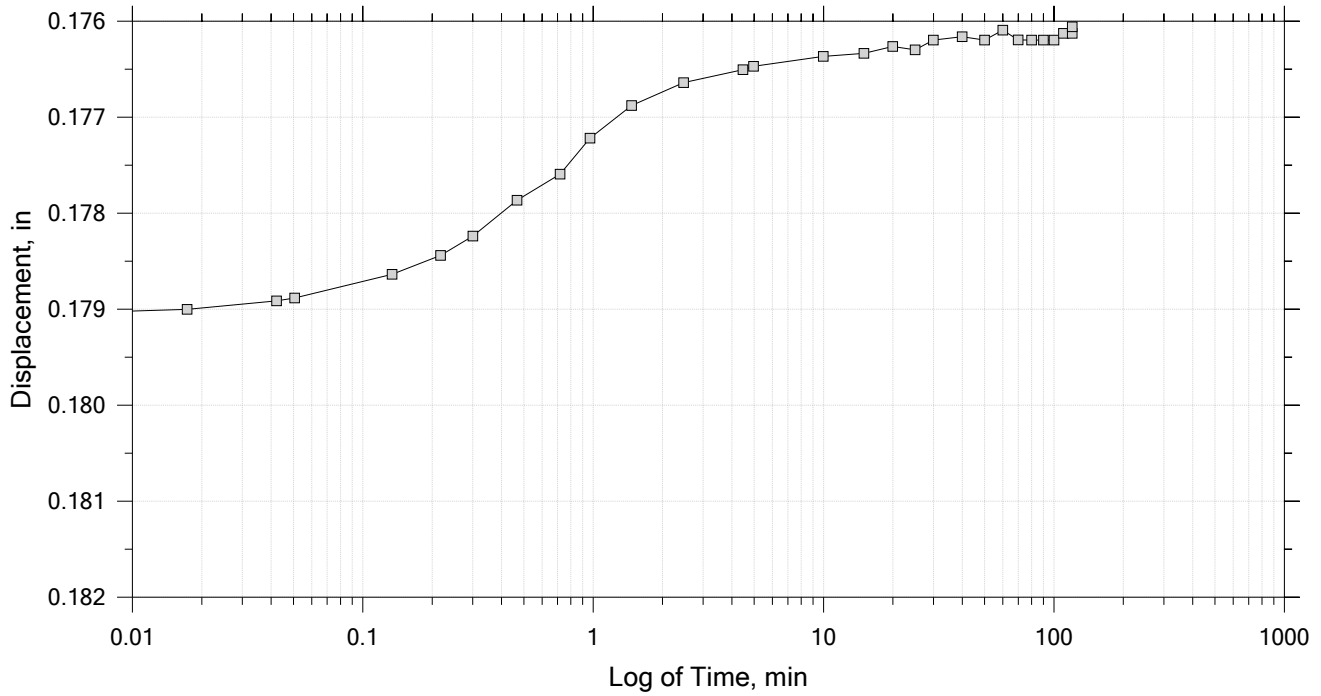
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 26 of 30

Constant Load Step

Stress: 6.46e+03 psf



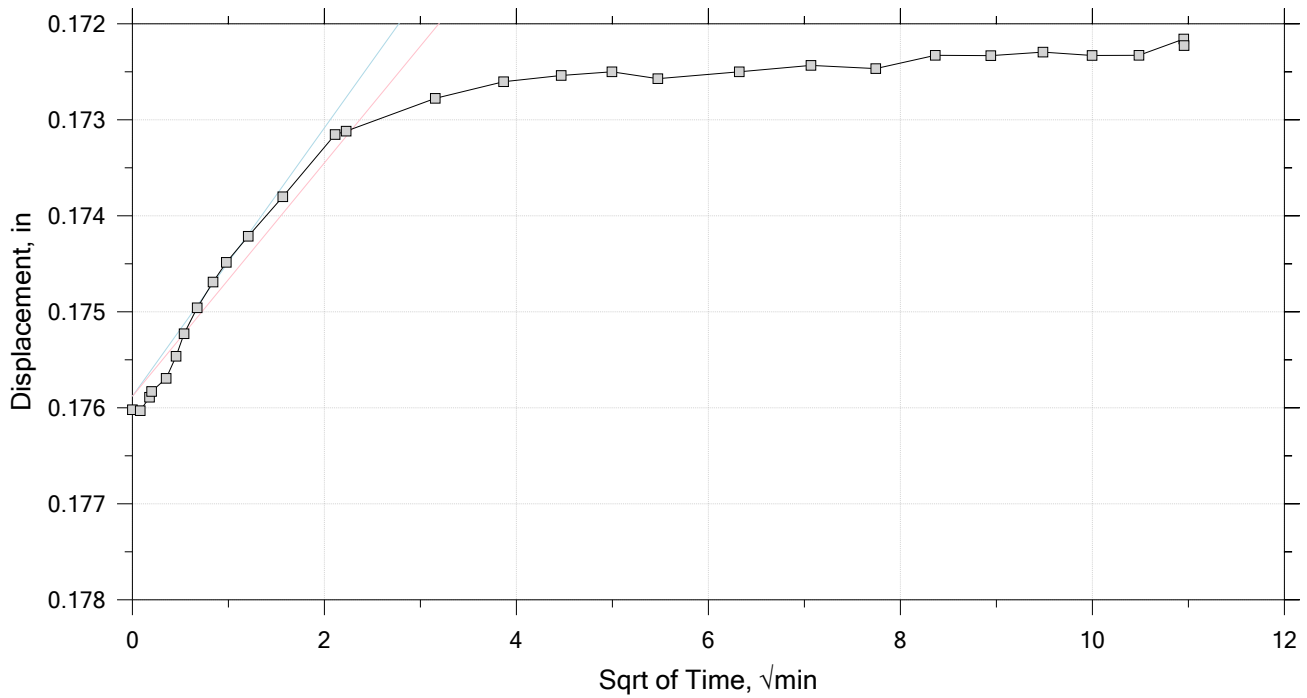
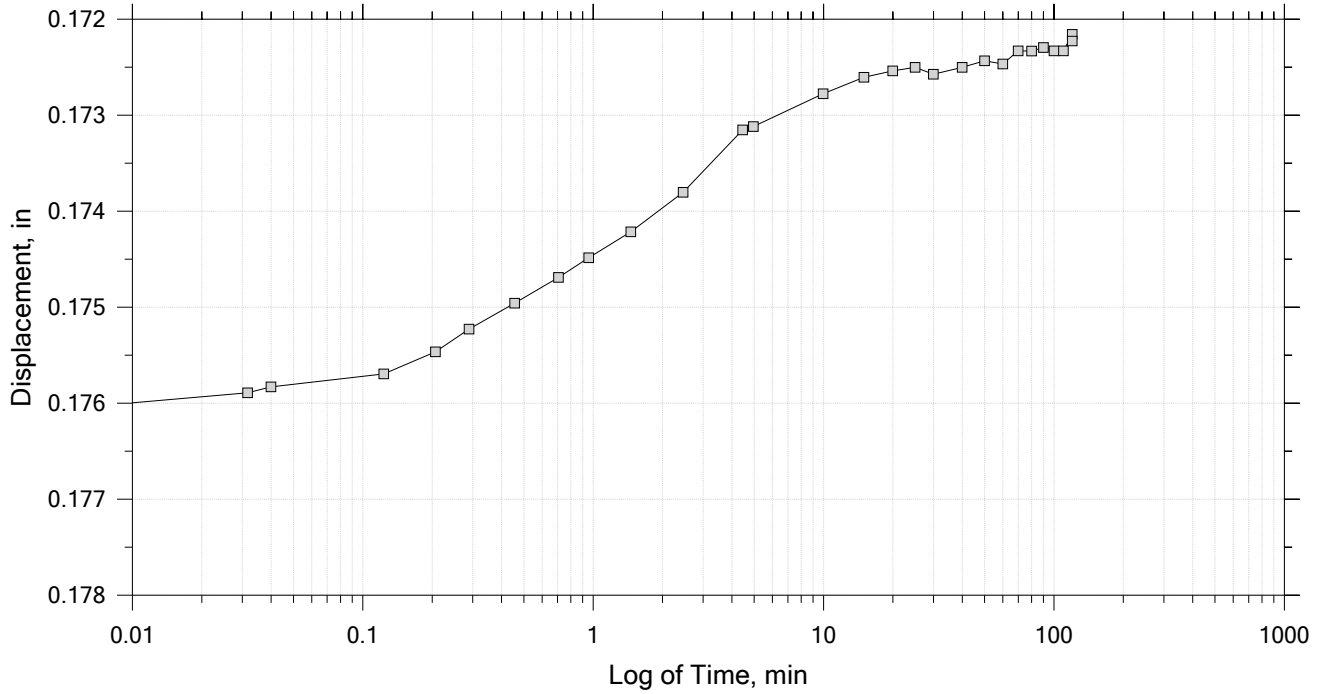
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 27 of 30

Constant Load Step

Stress: 3.23e+03 psf



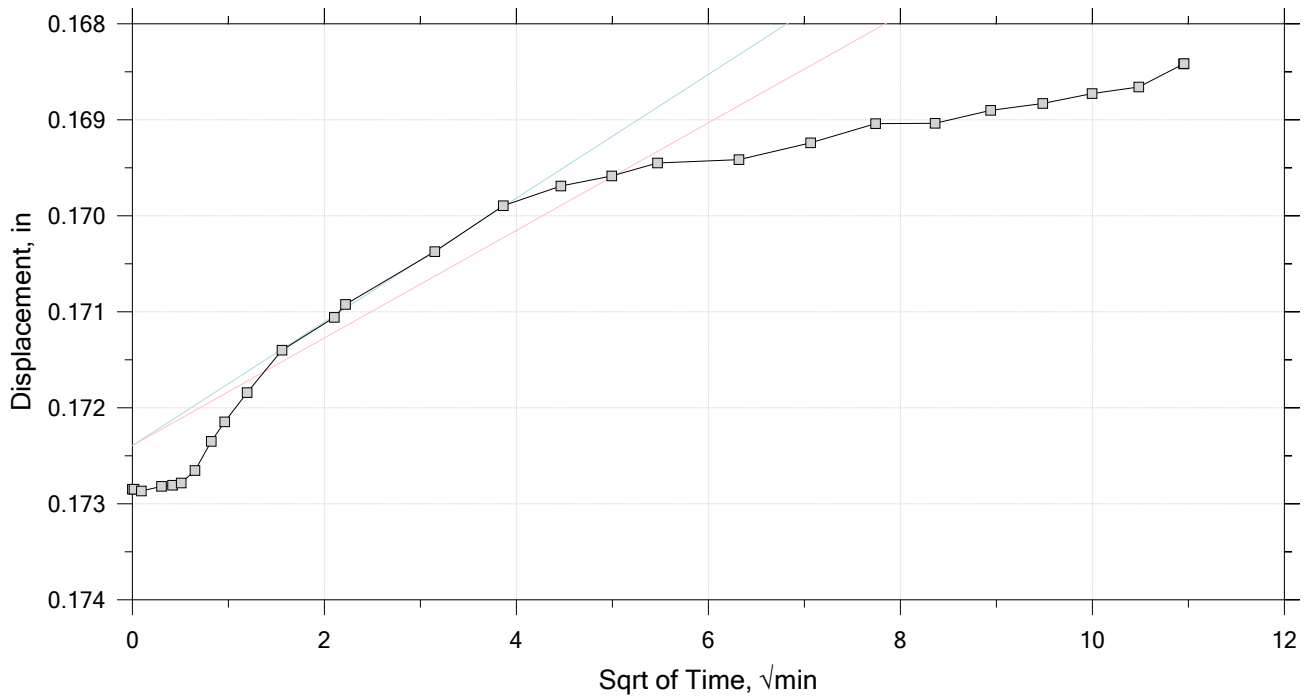
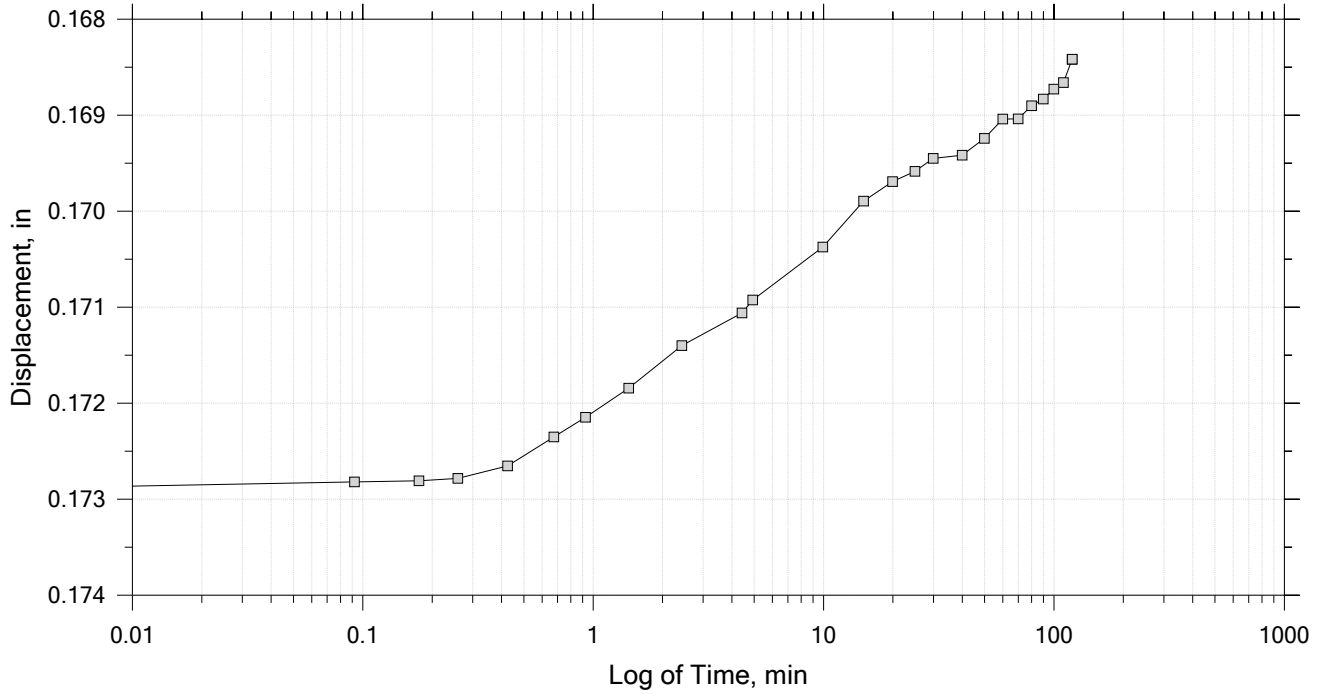
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 28 of 30

Constant Load Step

Stress: 1.61e+03 psf



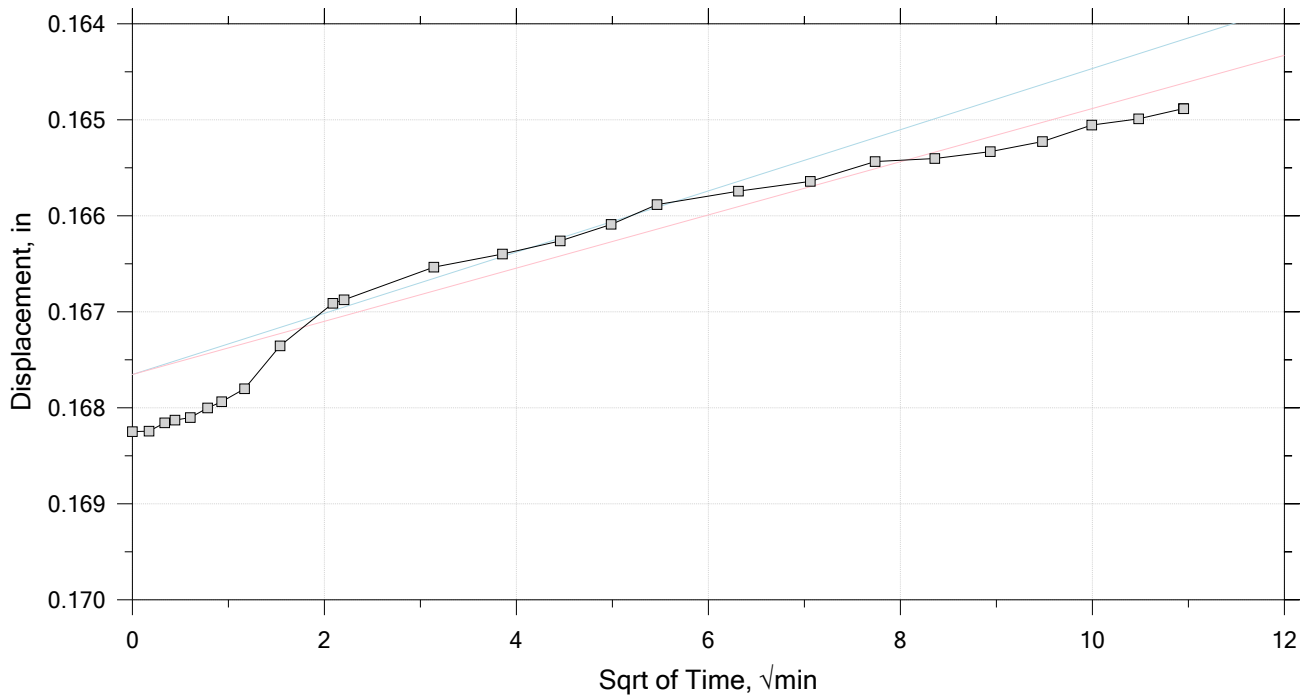
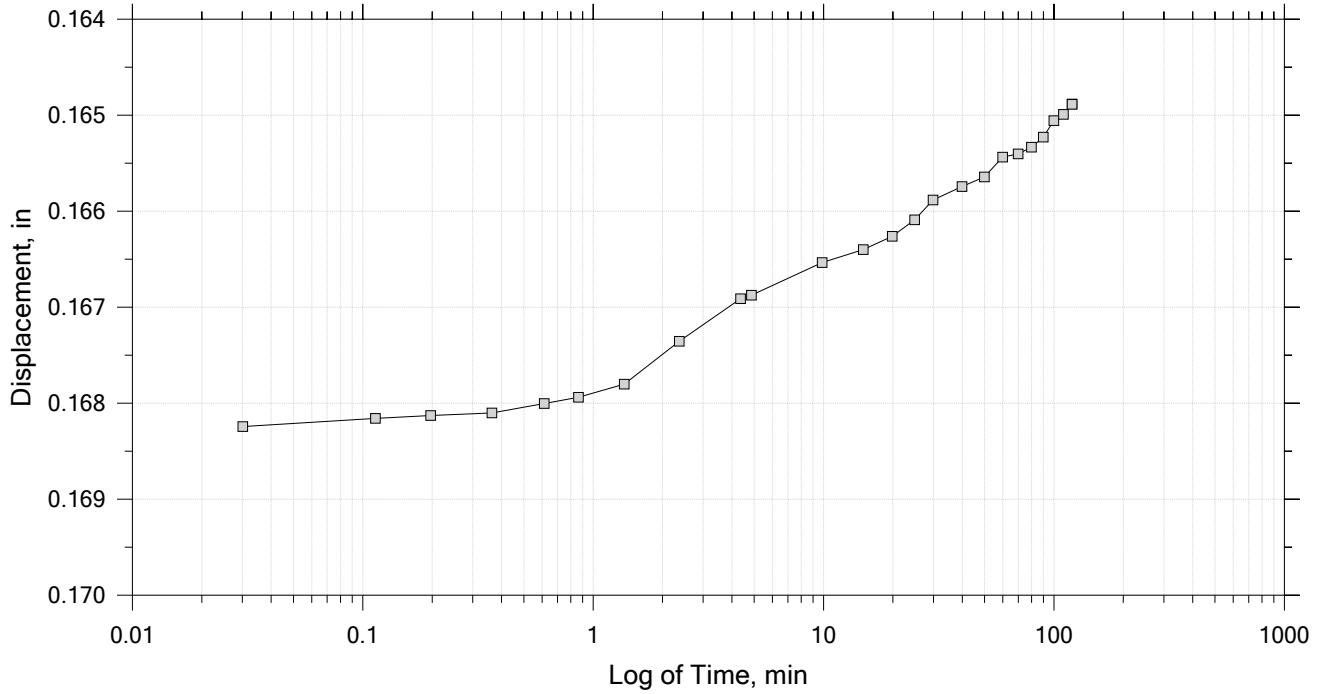
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 29 of 30

Constant Load Step

Stress: 807 psf



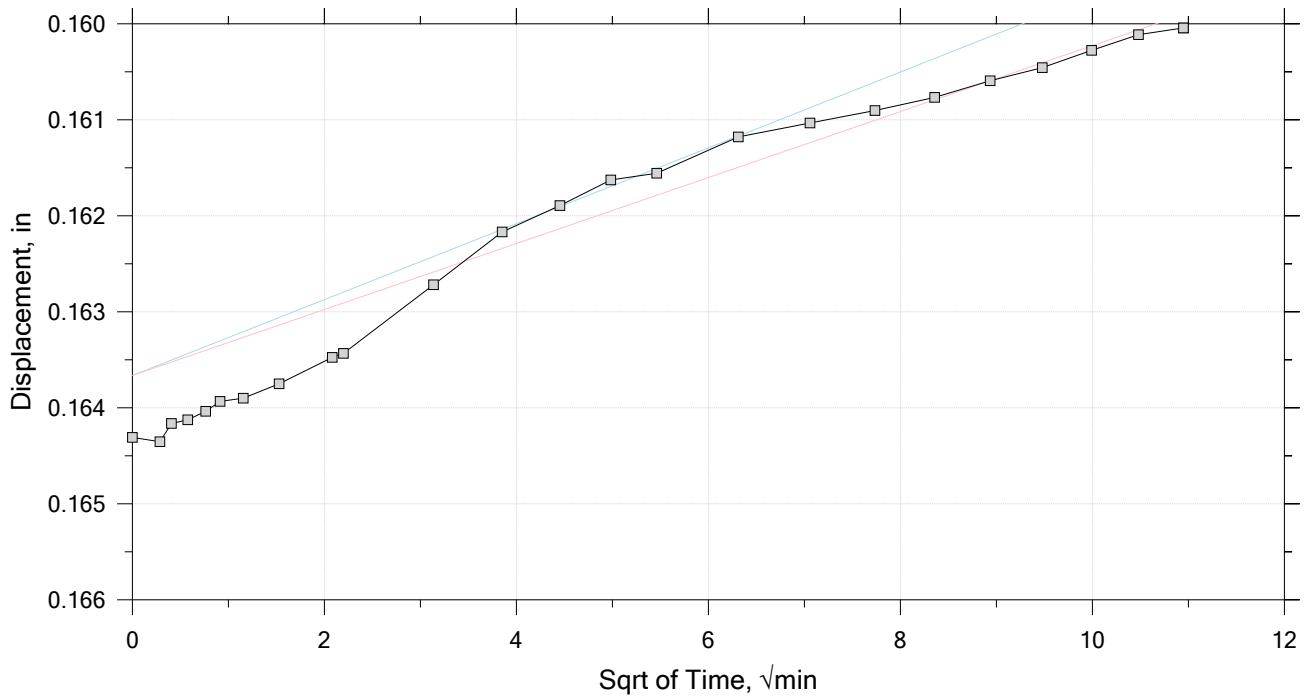
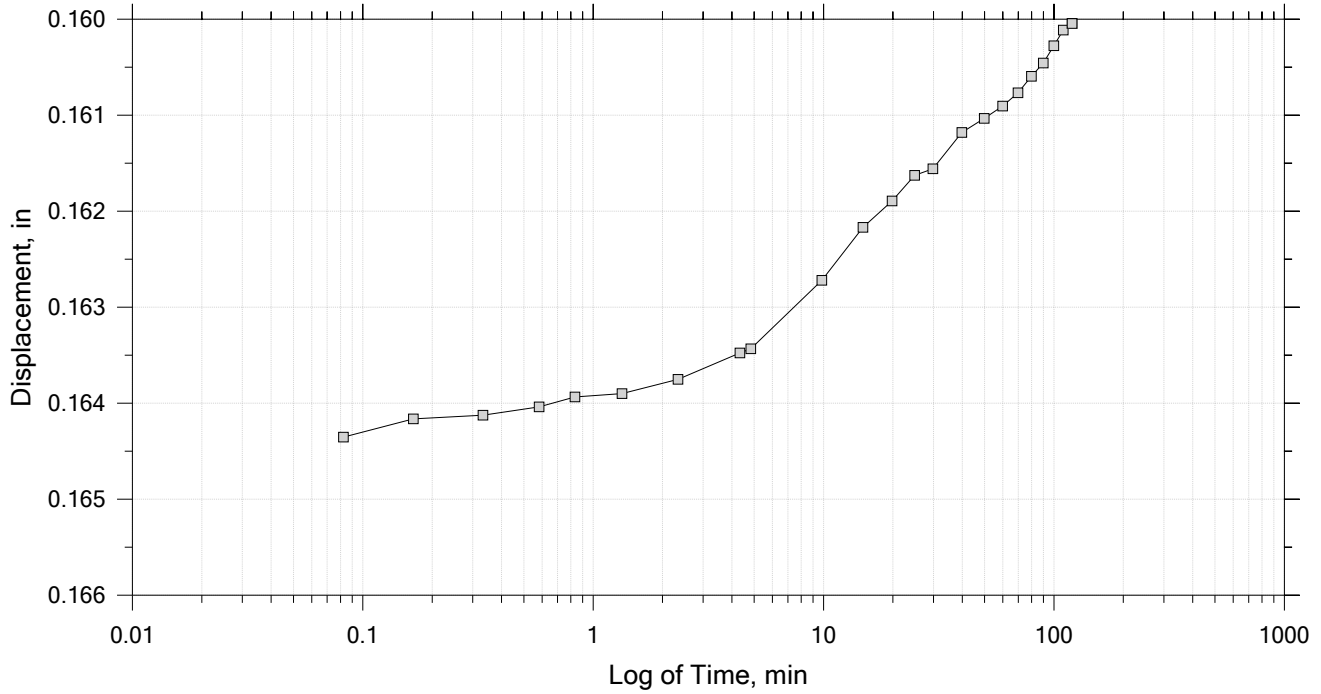
	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 30 of 30

Constant Load Step

Stress: 404 psf

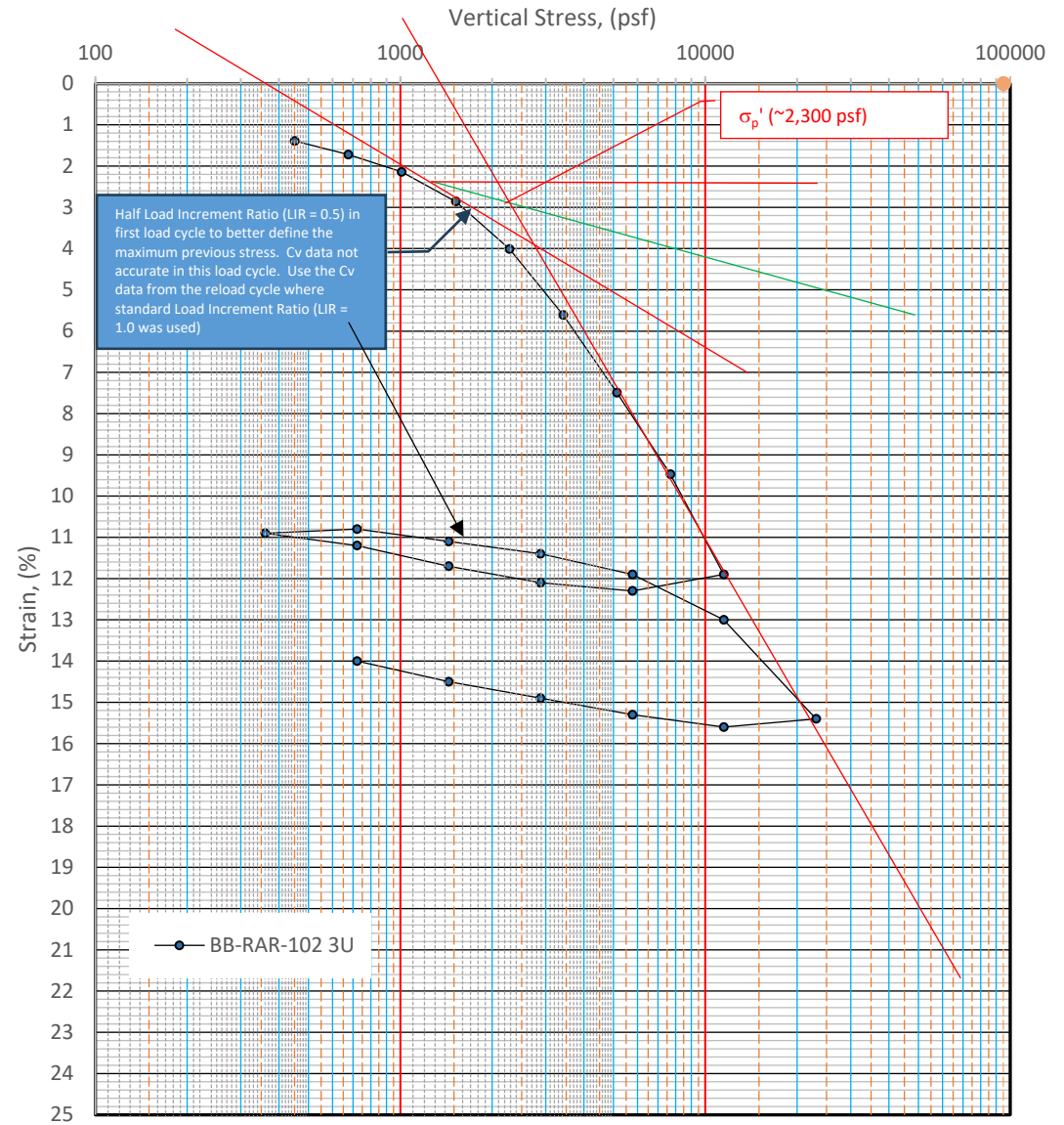


	Project Name: Josh Bridge #0976	Location: Richmond, Maine	Project Number: 166-37
	Boring Number: BB-RAR-101A	Tester: sjr	Checker: sjr
	Sample Number: U3	Test Date: 11/02/2024	Depth: 61.36
	Test Number: ICONP 65-435	Preparation: wet	Elevation: --
	Description: Gray silty clay		
	Remarks: 24 hour load hold on load step 11 for C alpha		

Consolidation Test Data
Summary Report

Project Name:		MDOT Josh Bridge #0976	
Project Number:		166-37	
Project Location:		Richmond, Maine	
Client:		GZA - PN: 09.0026249	
Sample Description:		Gray Silty Clay (CL)	
Preparation:		Trimmed Shelby Tube	
Lab Test No:	ICON 68-426		
Boring No.	BB-RAR-102		
Sample No:	3U		
Boring Elevation (ft).	--		
Sample Depth (ft):	50-52		
Test Specimen Depth (Ft):	51.65		
Test Specimen Elevation:	---		
Water Content (%):	37.3		
Dry Unit Weight (pcf):	85.6		
Wet Unit Weight (pcf):	117.5		
Saturation Before (%):	99.6		
Saturation After (%):	100		
Void Ratio Before:	1.05		
Void Ratio After:	0.77		
Overburden Pressure (psf):	--		
Max Previous stress (psf):	2,300		
Max Prev. stress (Work) (psf):	2,300		
OCR:	--		
Compression Index (C_{CE}):	0.12		
Recompression Index (C_{RE}):	0.016	from re-load curve	
Liquid Limit:			
Plastic Limit:			
Plasticity Index:			
Liquidity Index:			
Lab Vane S_u at 51.85 ft. (psf)	251		
Tested By:	sjr		
Date Tested:	11/2/2024		
Checked By:	sjr		

Casagrande Construction for Preconsolidation Stress




Note 1: The calculations for the Max Previous Stress, the Compression Index and the Recompression Index are provided for the convenience of the Specifier. The Specifier should make their own independent assessment of Maximum Previous stress, Cce and Cre for use in any engineering analyses.

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Implied Specific Gravity: 2.81	Liquid Limit: 0
Initial Height: 1.00 in	Initial Void Ratio: 1.05	Plastic Limit: 0
Final Height: 0.86 in	Final Void Ratio: 0.765	Plasticity Index: 0

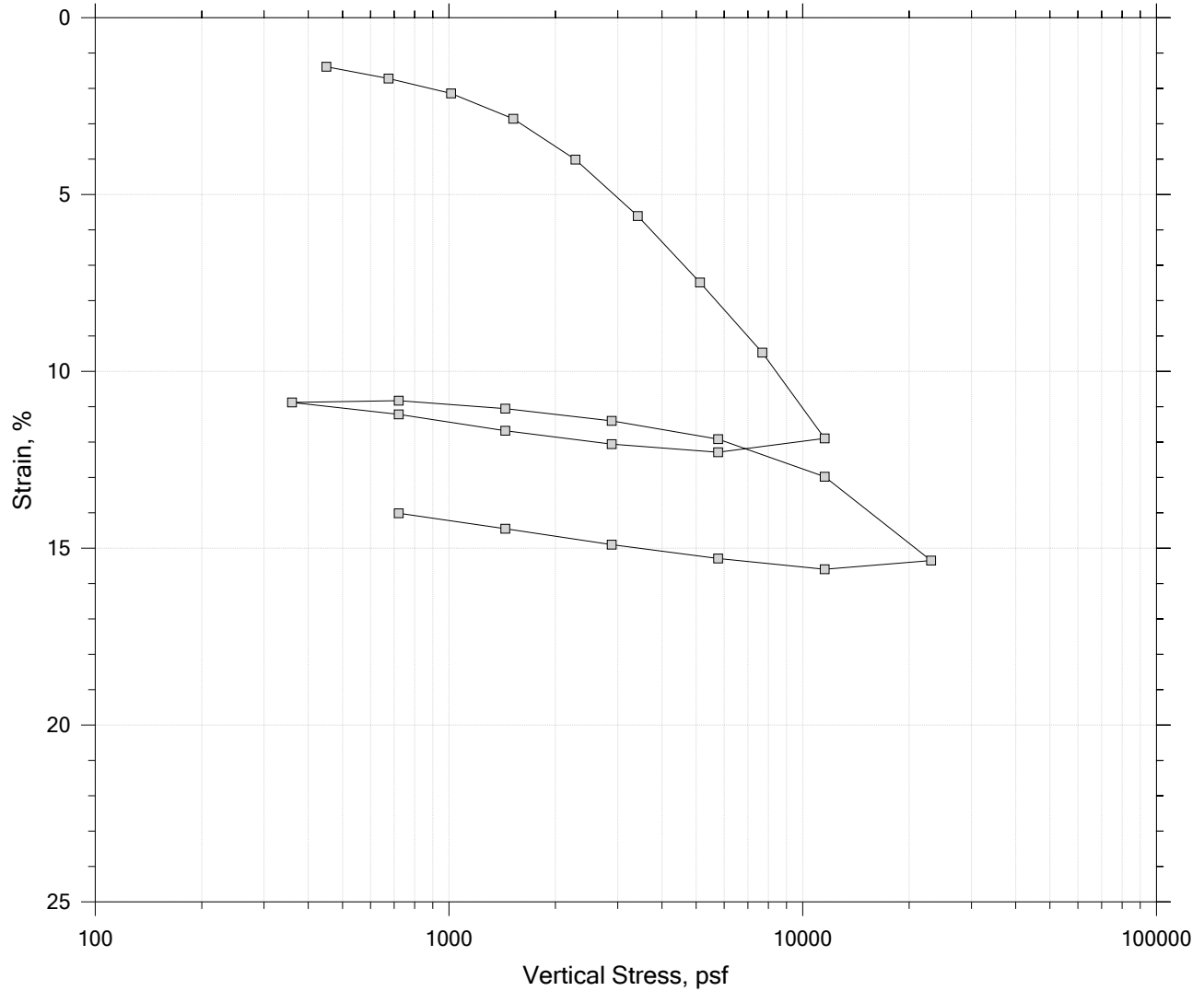
	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	206	RING	"ring"	302
Mass Container, gm	36.9	109.53	109.53	60.04
Mass Container + Wet Soil, gm	221.38	260.89	249.81	200.15
Mass Container + Dry Soil, gm	174.91	219.81	219.81	170.19
Mass Dry Soil, gm	138.01	110.28	110.28	110.15
Water Content, %	33.67	37.25	27.20	27.20
Void Ratio	---	1.05	0.77	---
Degree of Saturation, %	---	99.57	100.00	---
Dry Unit Weight, pcf	---	85.589	99.515	---

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: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

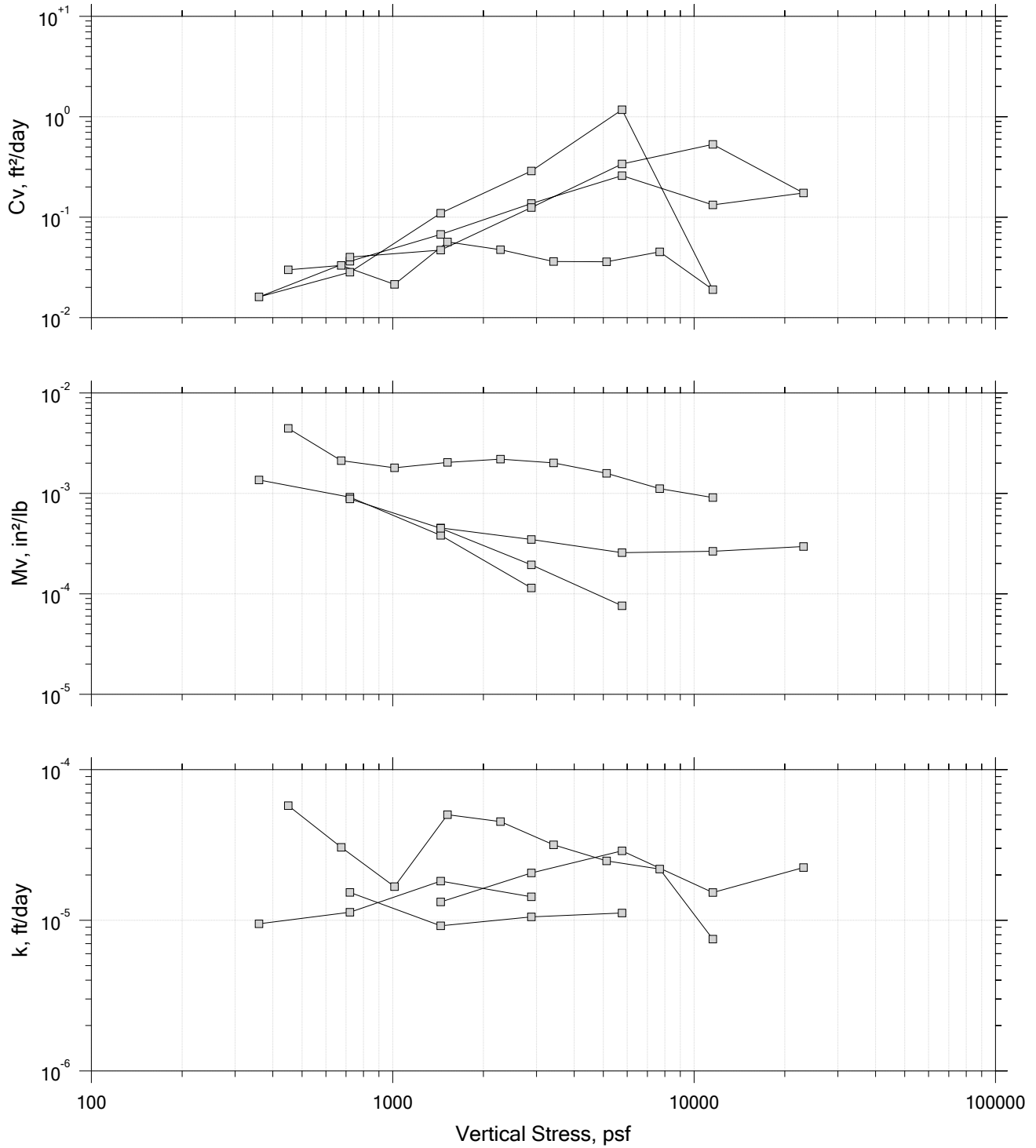



				Before Test	After Test	
Current Vertical Effective Stress: 0 psf				Water Content, %	37.25	27.20
Preconsolidation Stress: 0 psf				Dry Unit Weight, pcf	85.589	99.515
Compression Ratio: 0				Saturation, %	99.57	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.05	0.77
LL: 0	PL: 0	PI: 0	GS: 2.81			

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		
Displacement at End of Primary			

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients



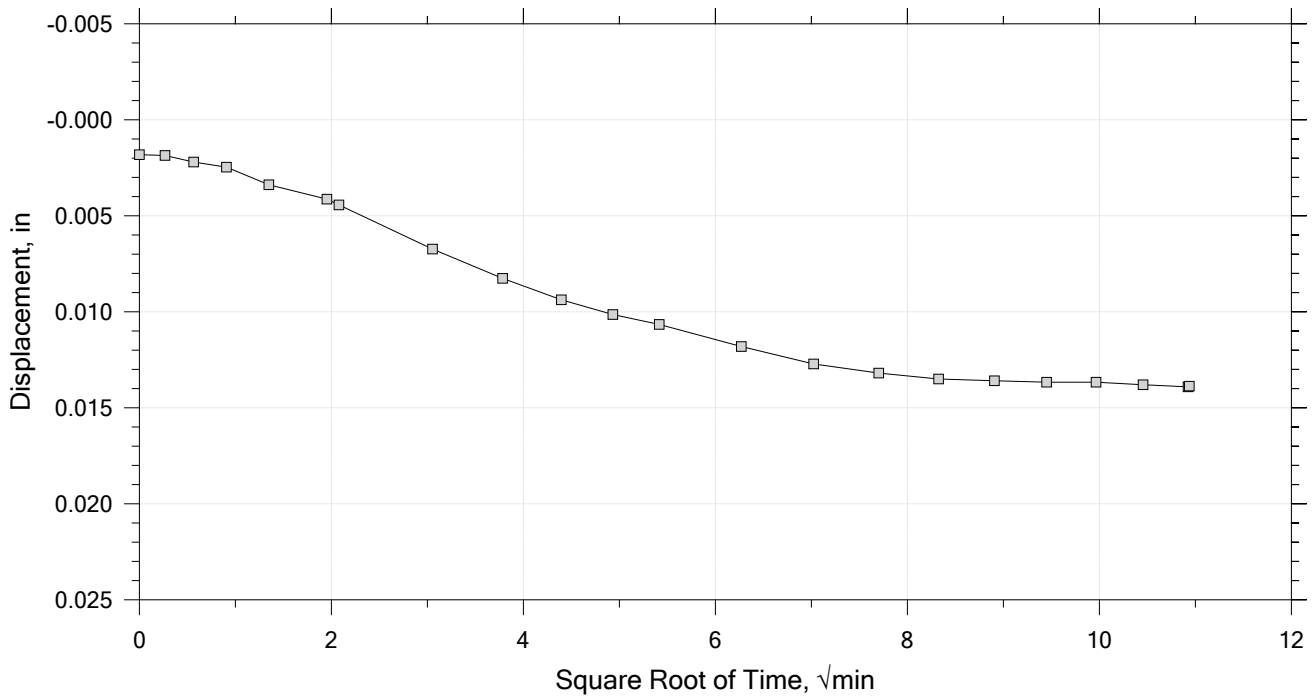
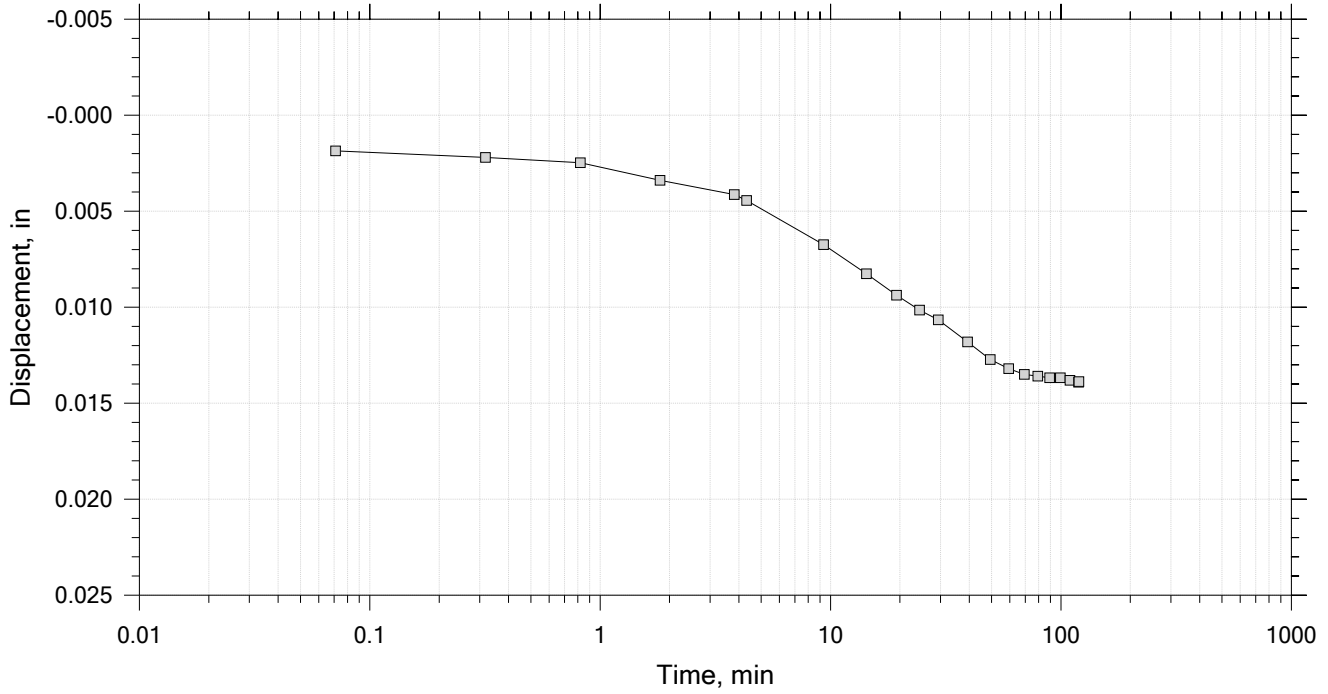
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 25

Constant Load Step

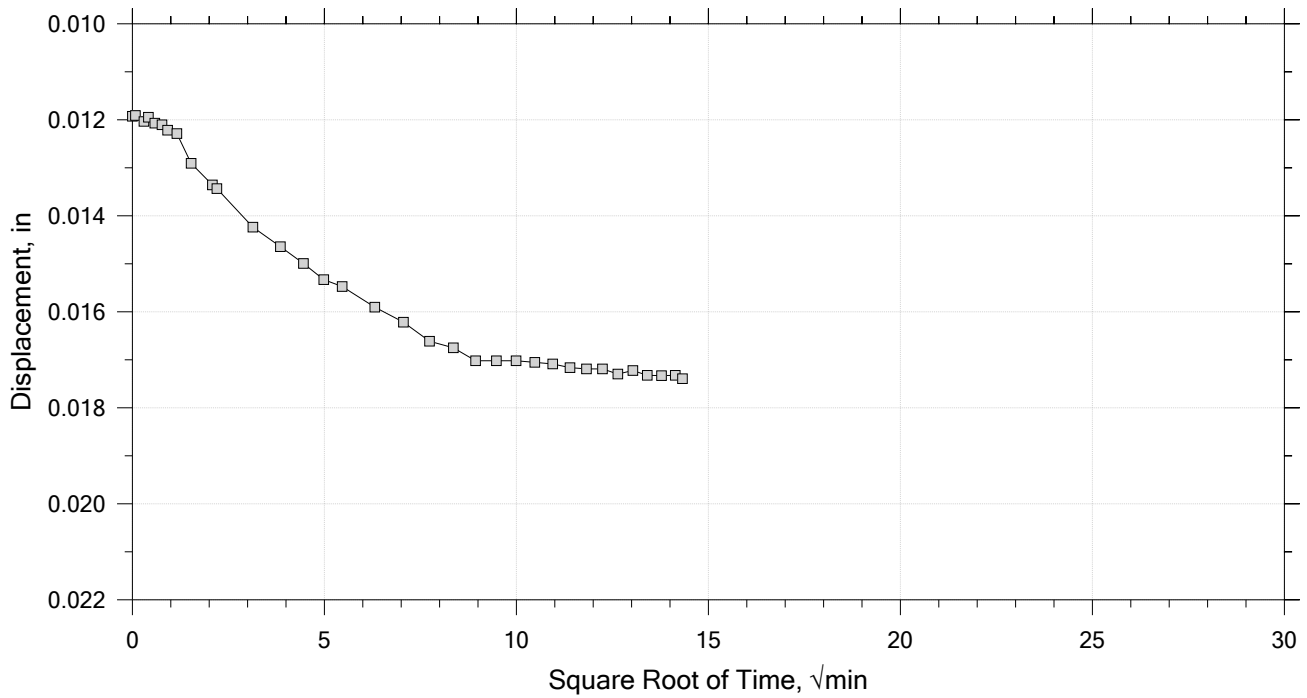
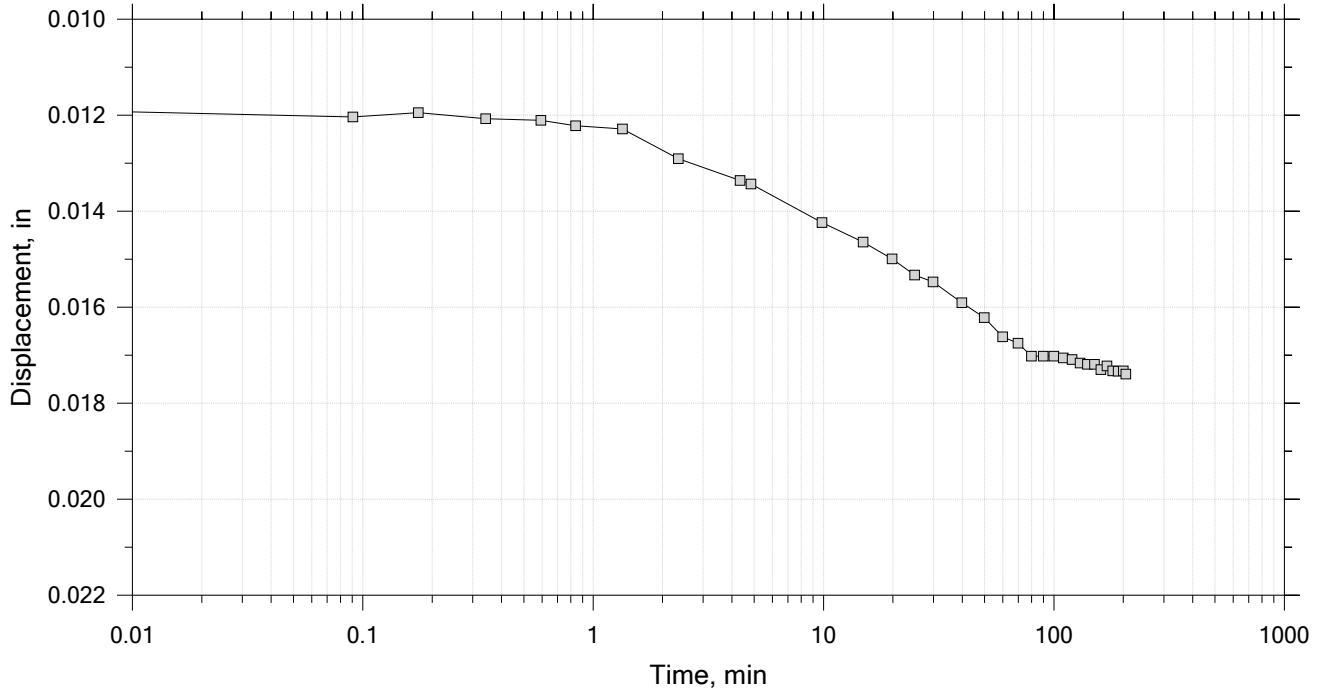
Stress: 450 psf




	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 25
 Constant Load Step
 Stress: 675 psf



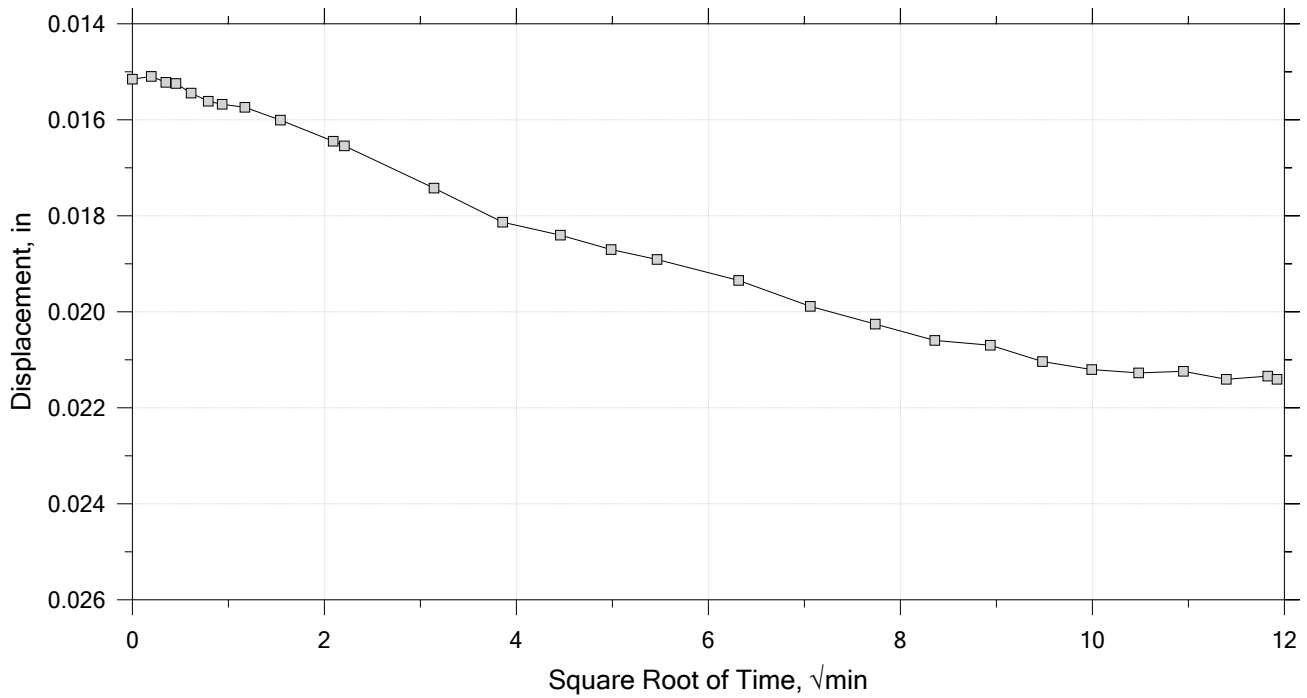
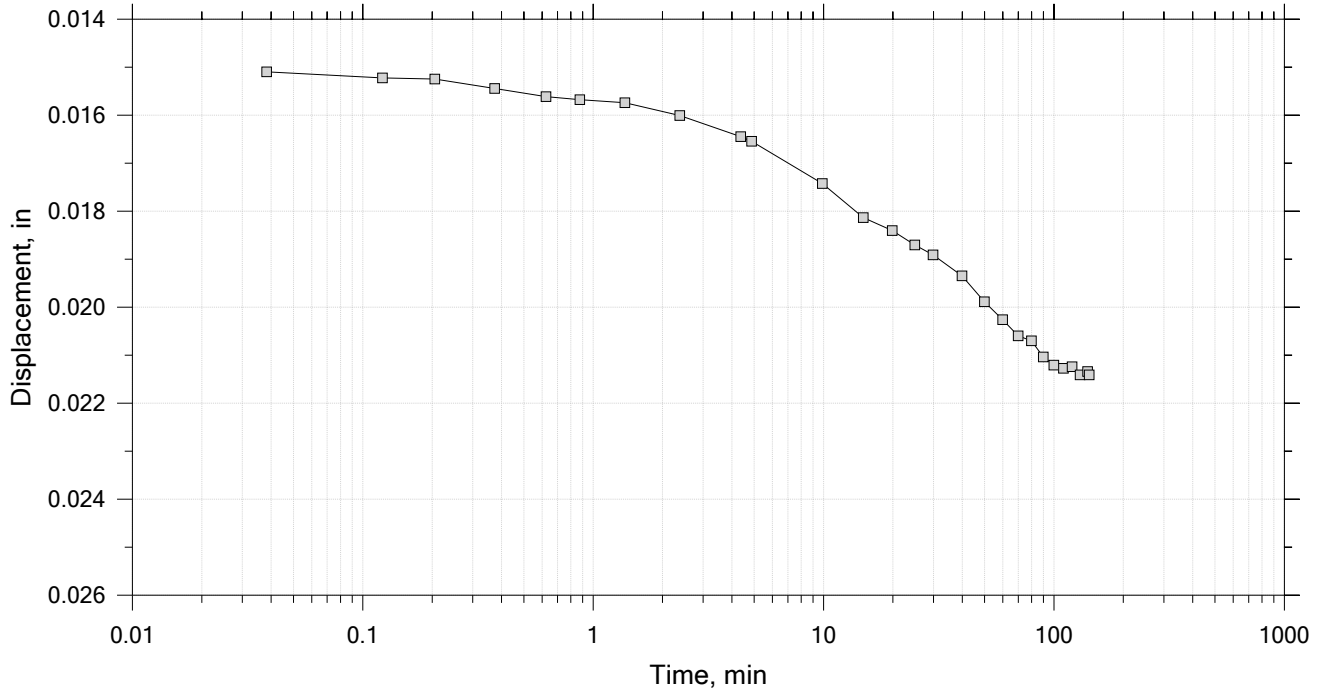
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 25

Constant Load Step

Stress: 1.01e+03 psf



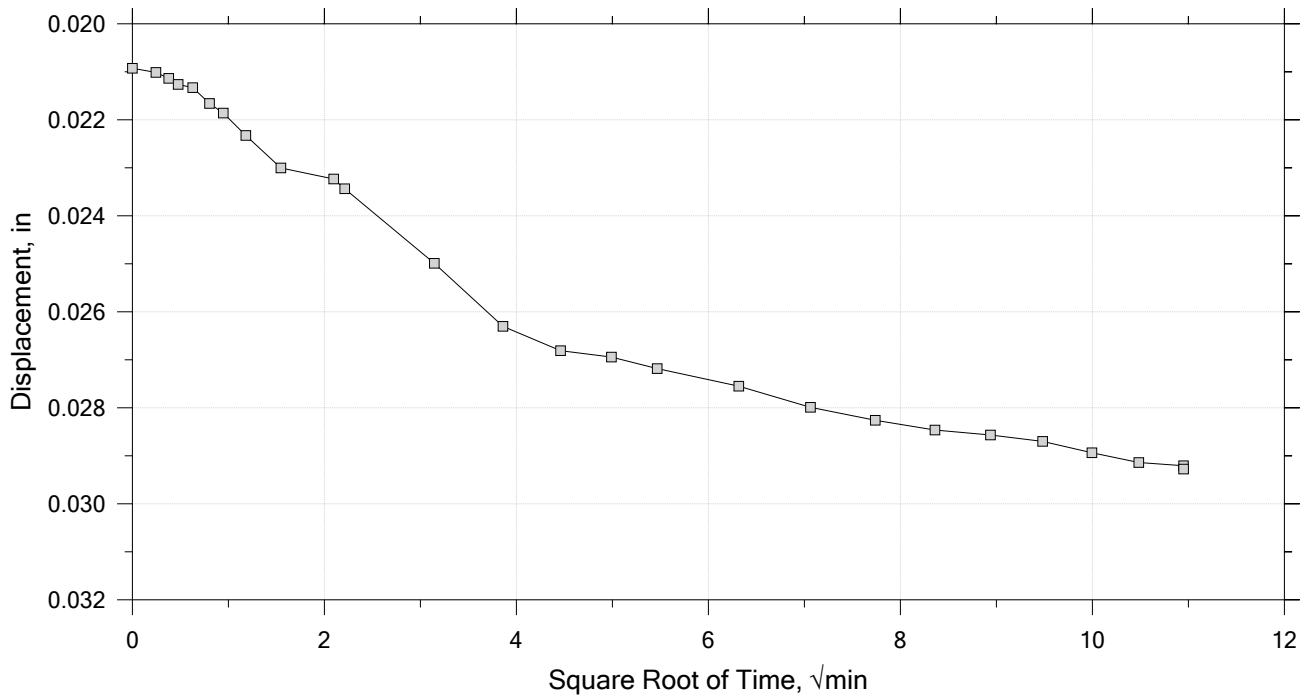
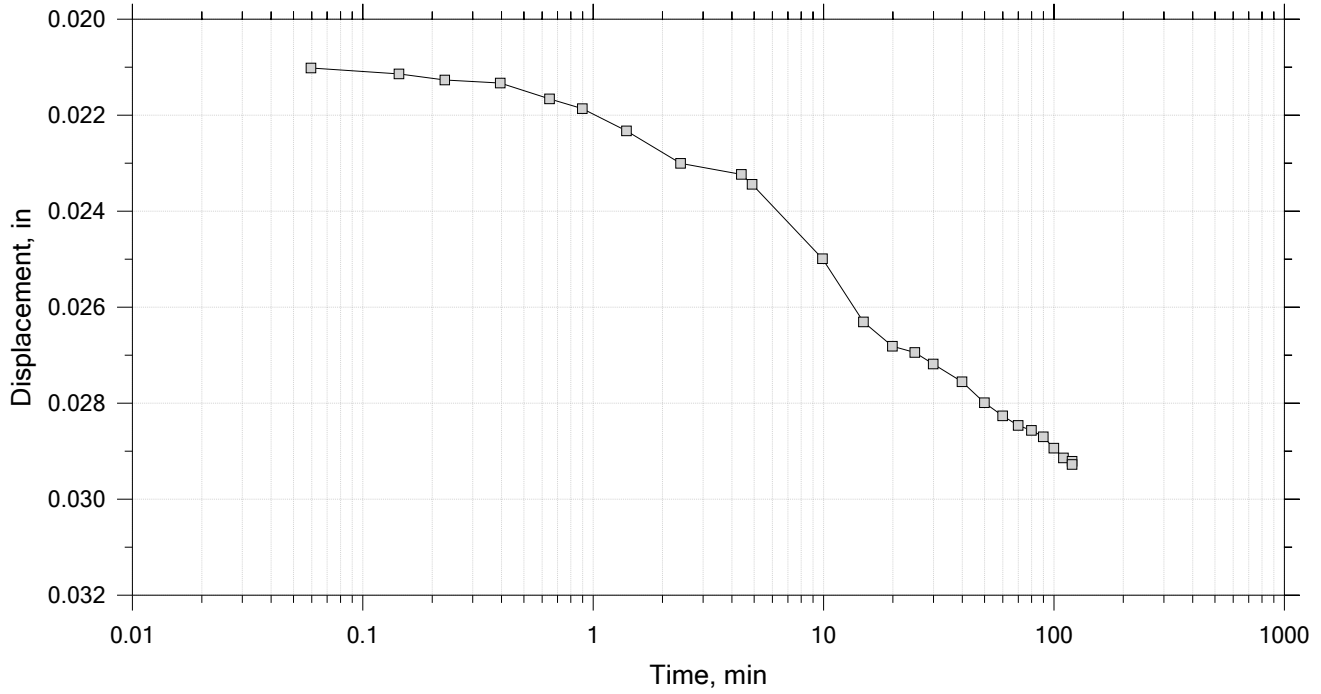
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 25

Constant Load Step

Stress: 1.52e+03 psf



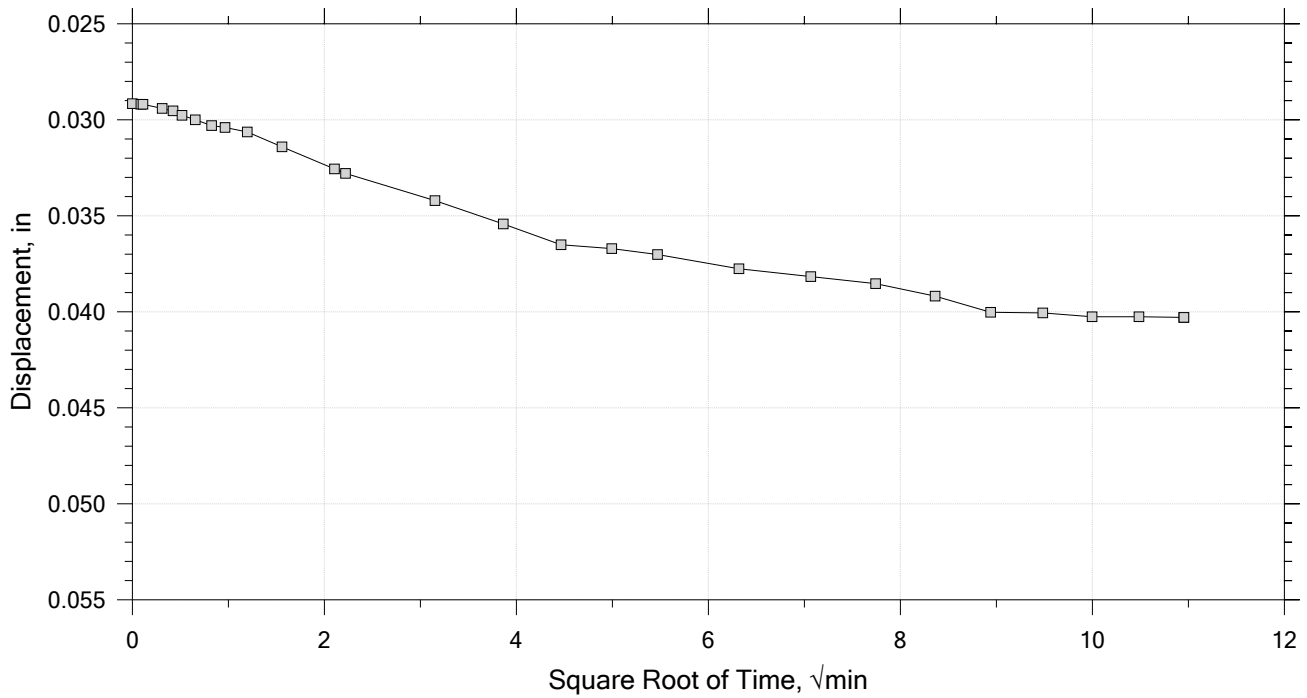
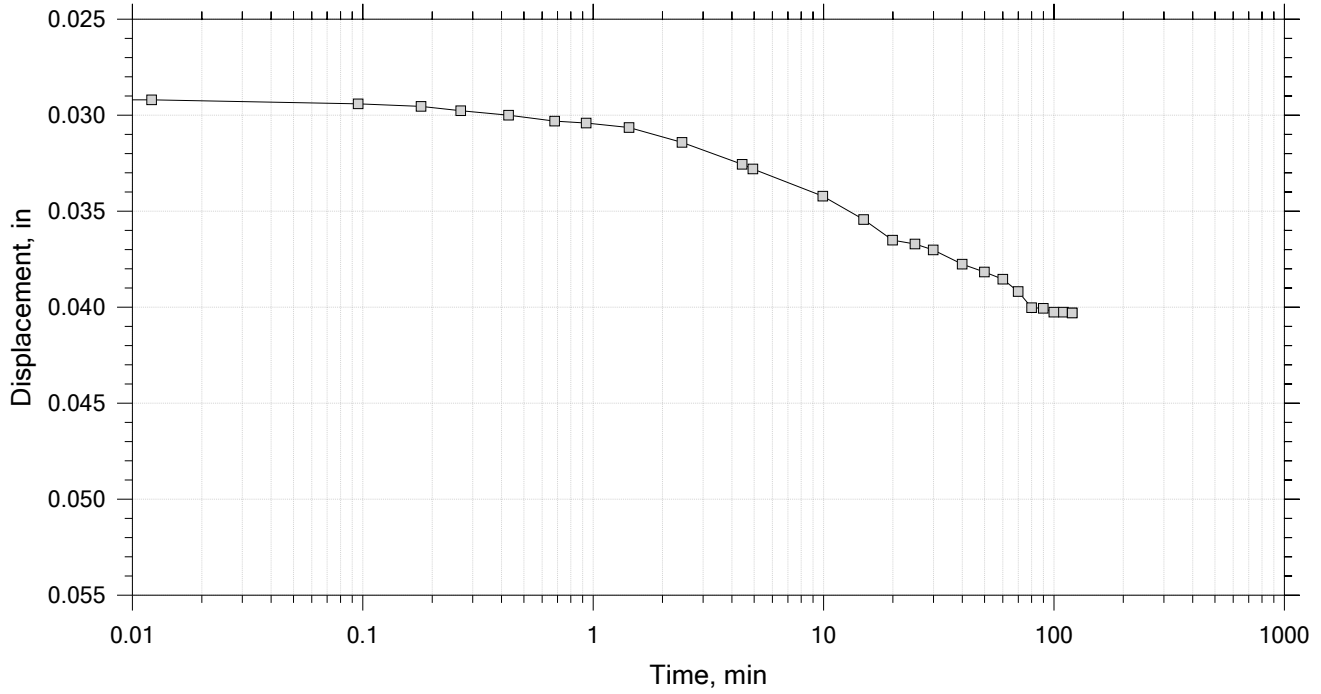
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 25

Constant Load Step

Stress: 2.28e+03 psf



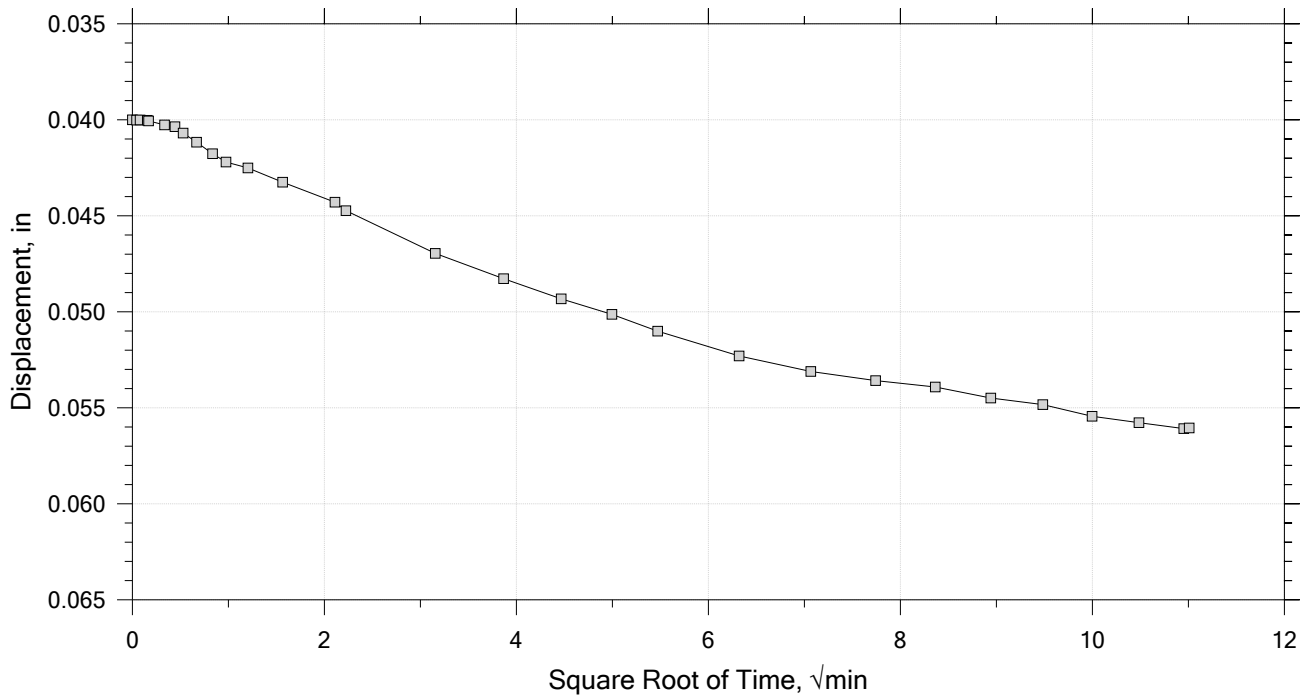
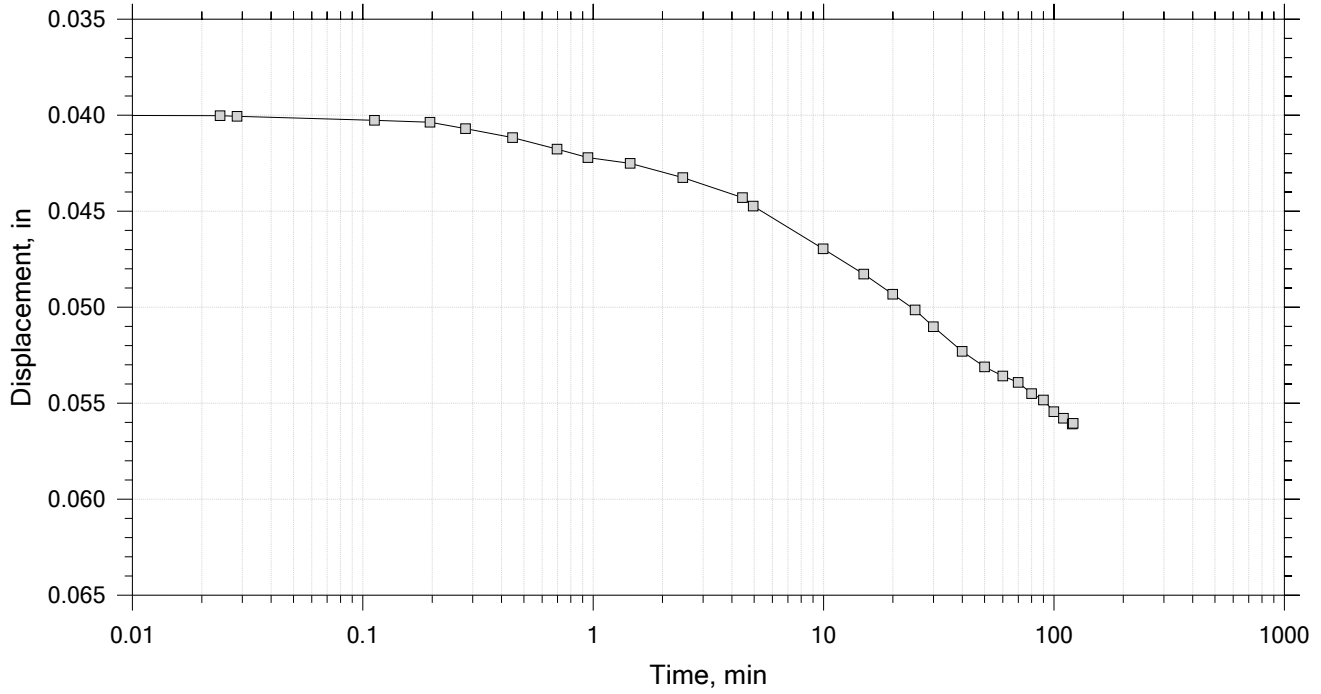
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 25

Constant Load Step

Stress: 3.42e+03 psf



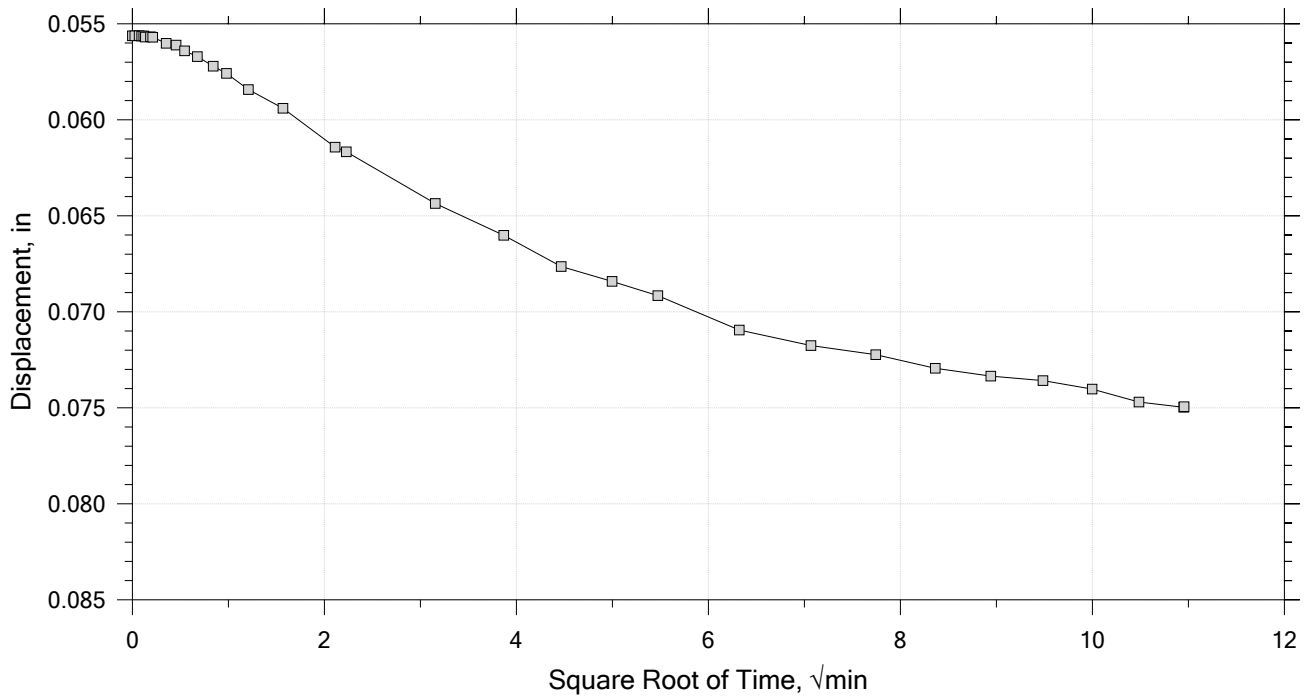
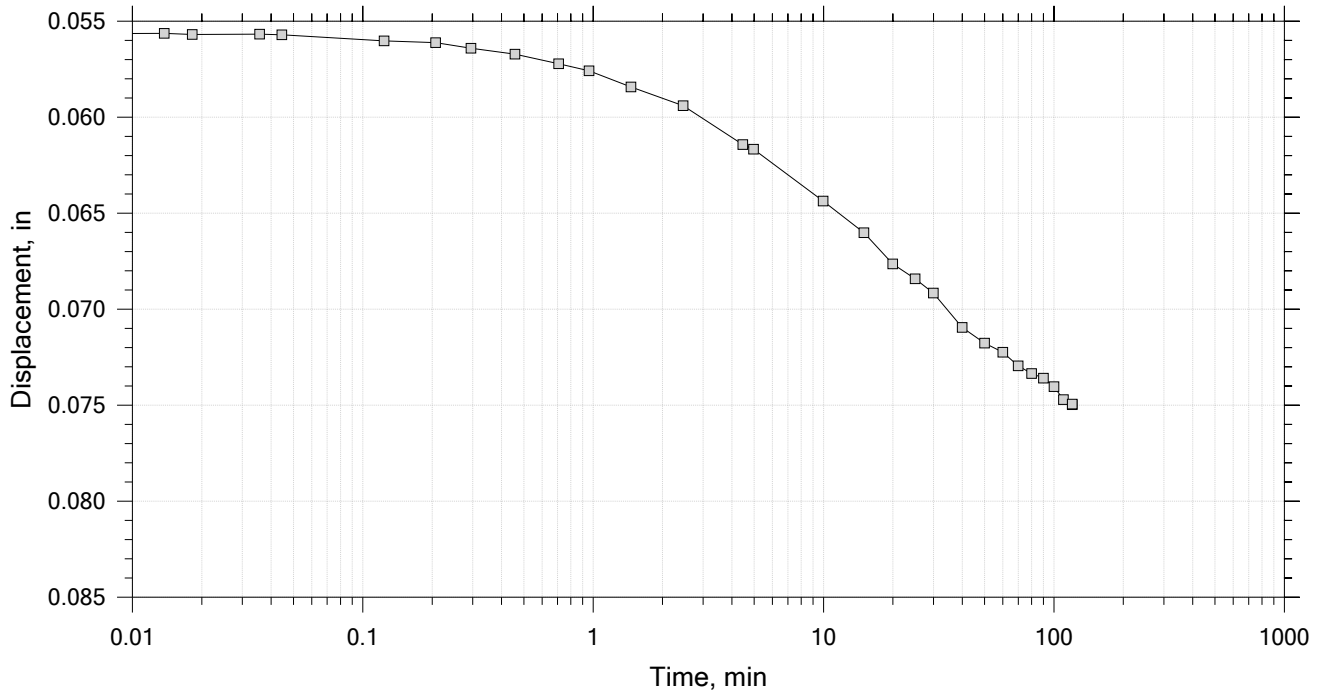
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 25

Constant Load Step

Stress: 5.13e+03 psf



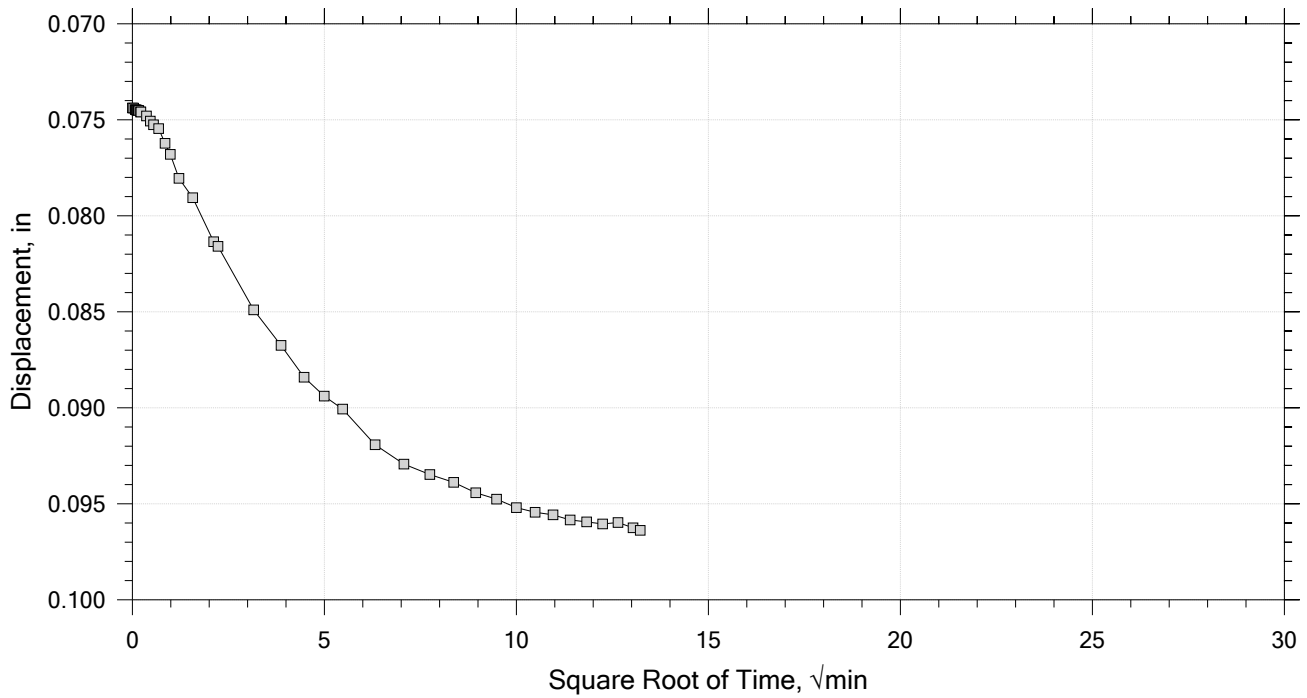
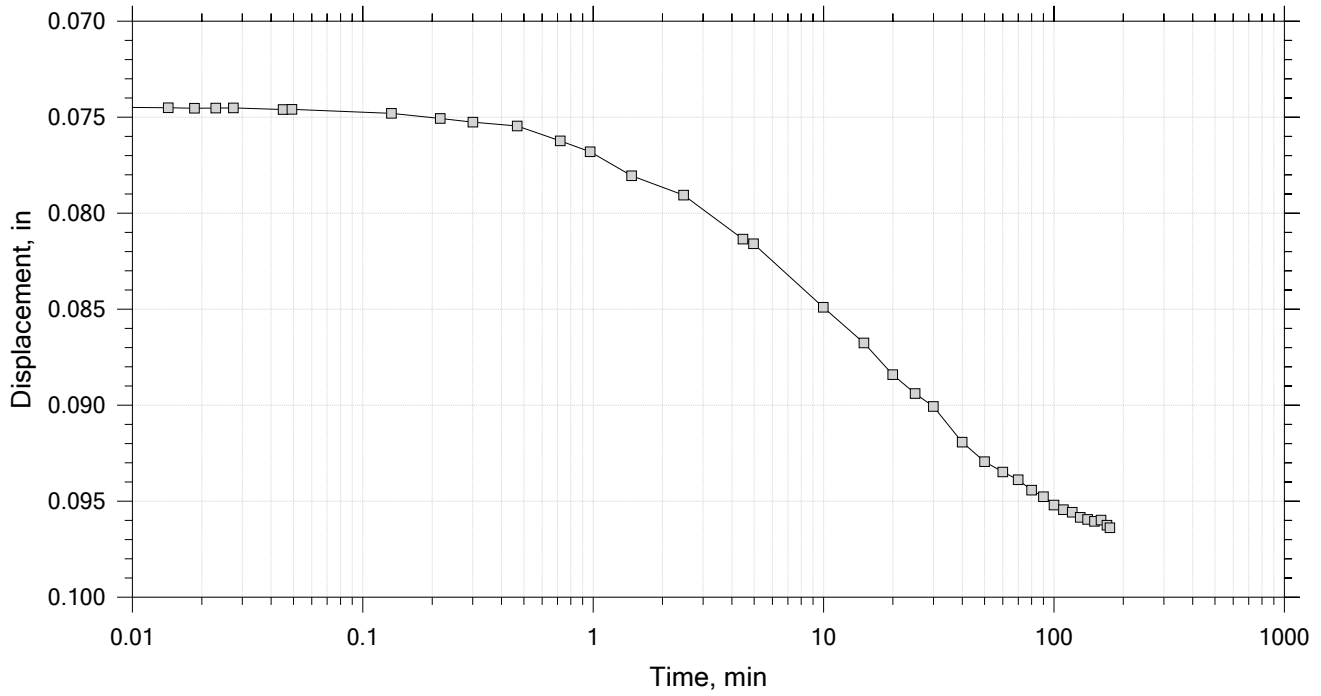
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 25

Constant Load Step

Stress: 7.69e+03 psf



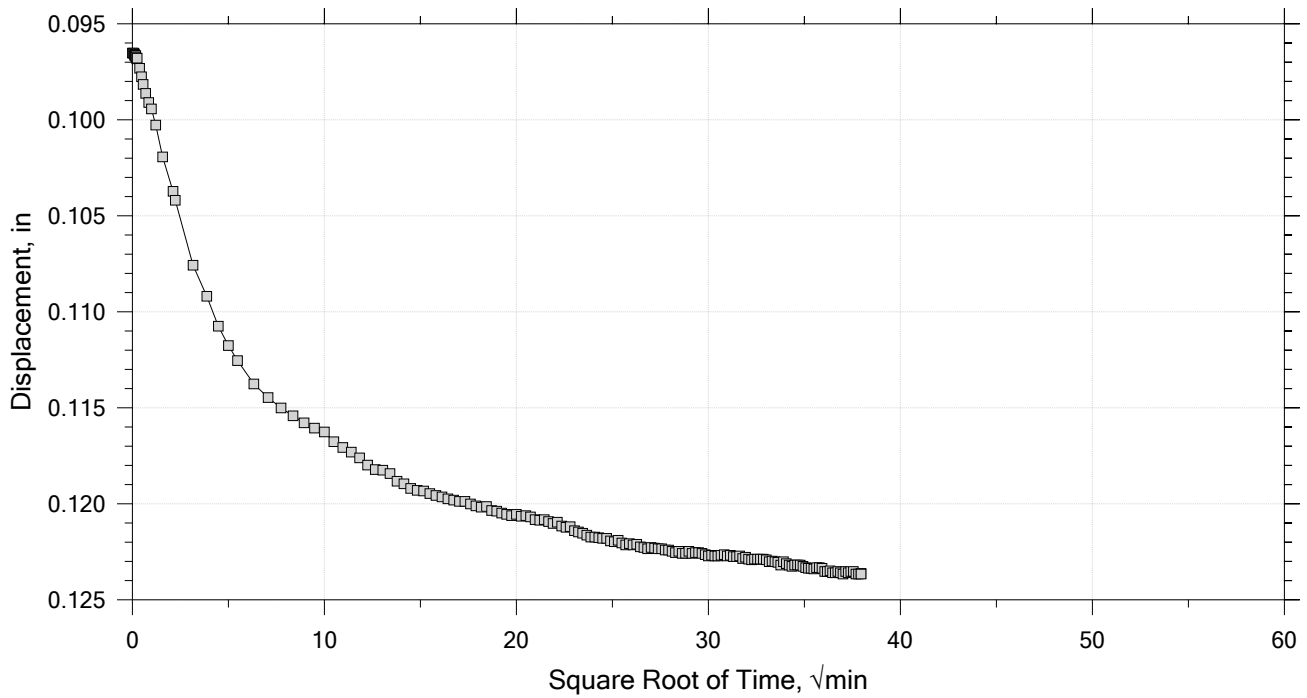
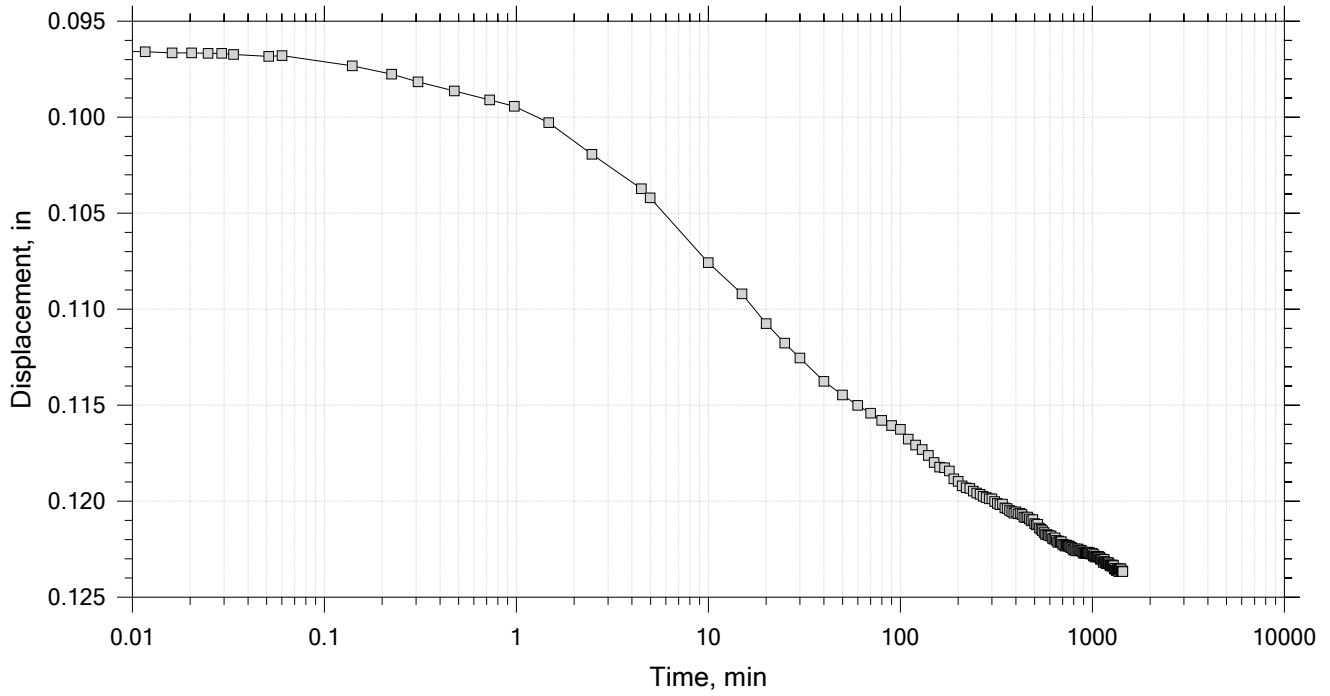
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf



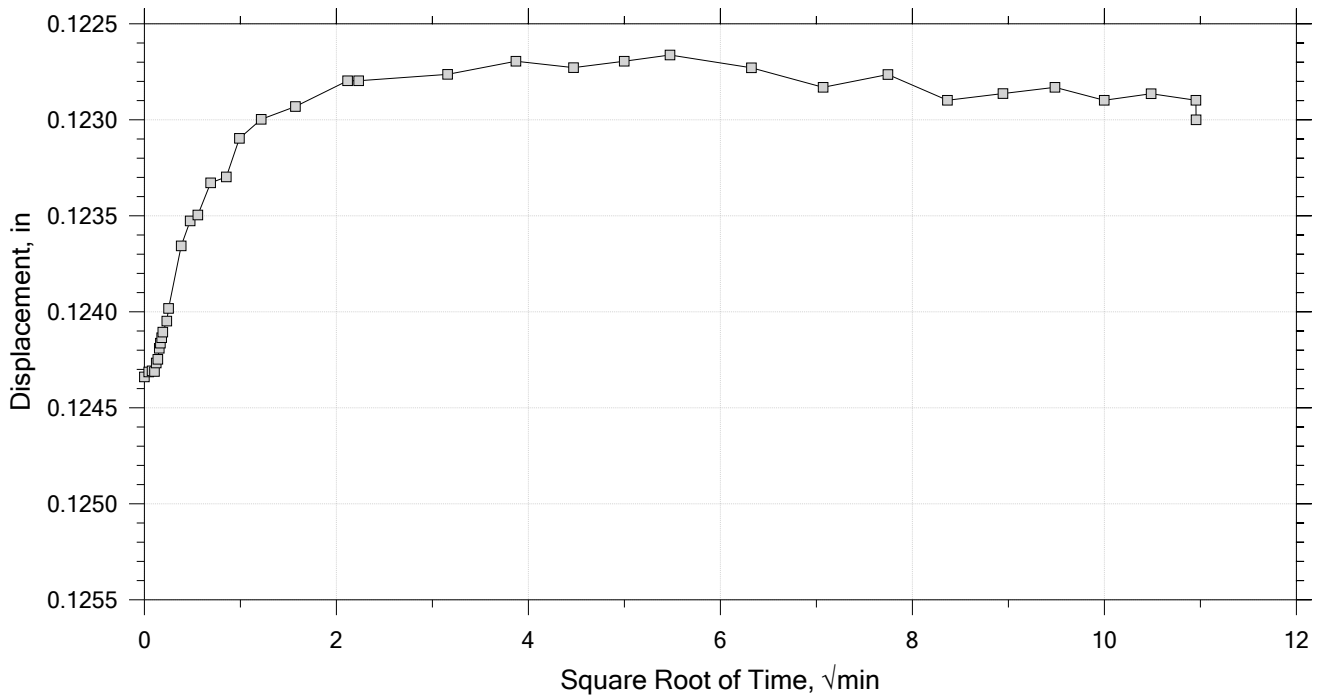
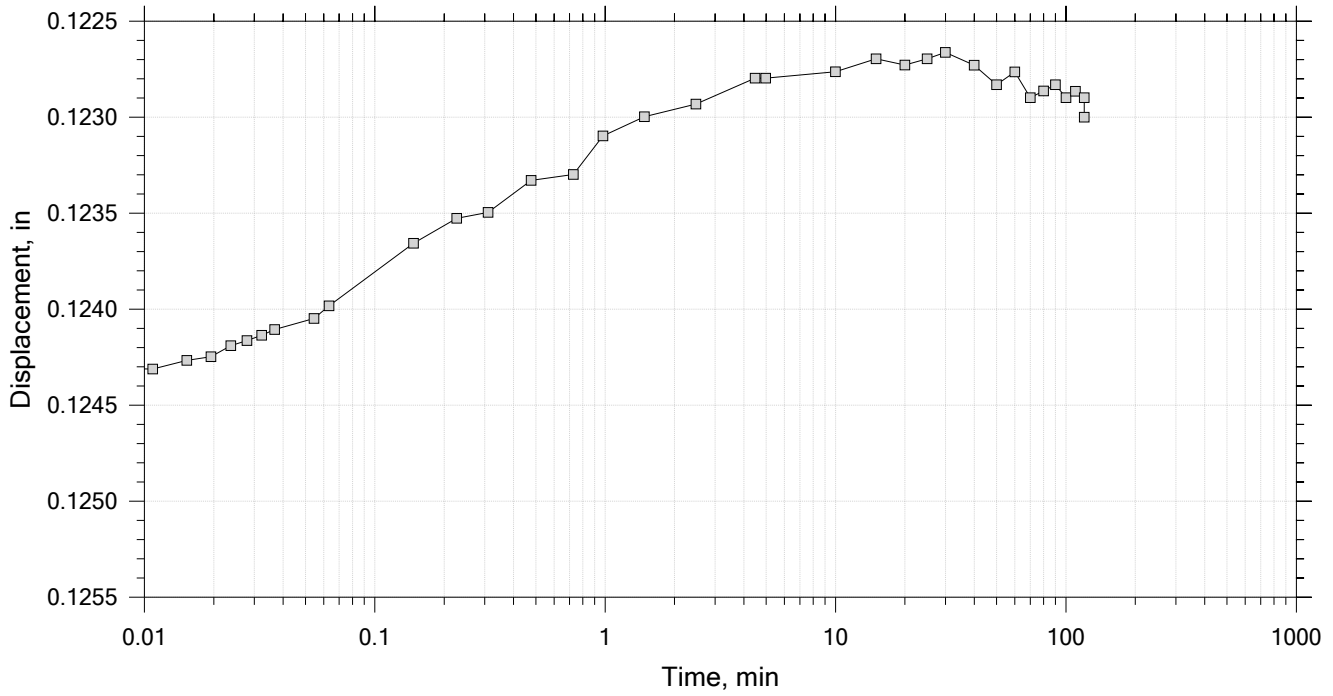
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
Remarks: 24 hour load hold on load step 9 for C-alpha			


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 25

Constant Load Step

Stress: 5.77e+03 psf



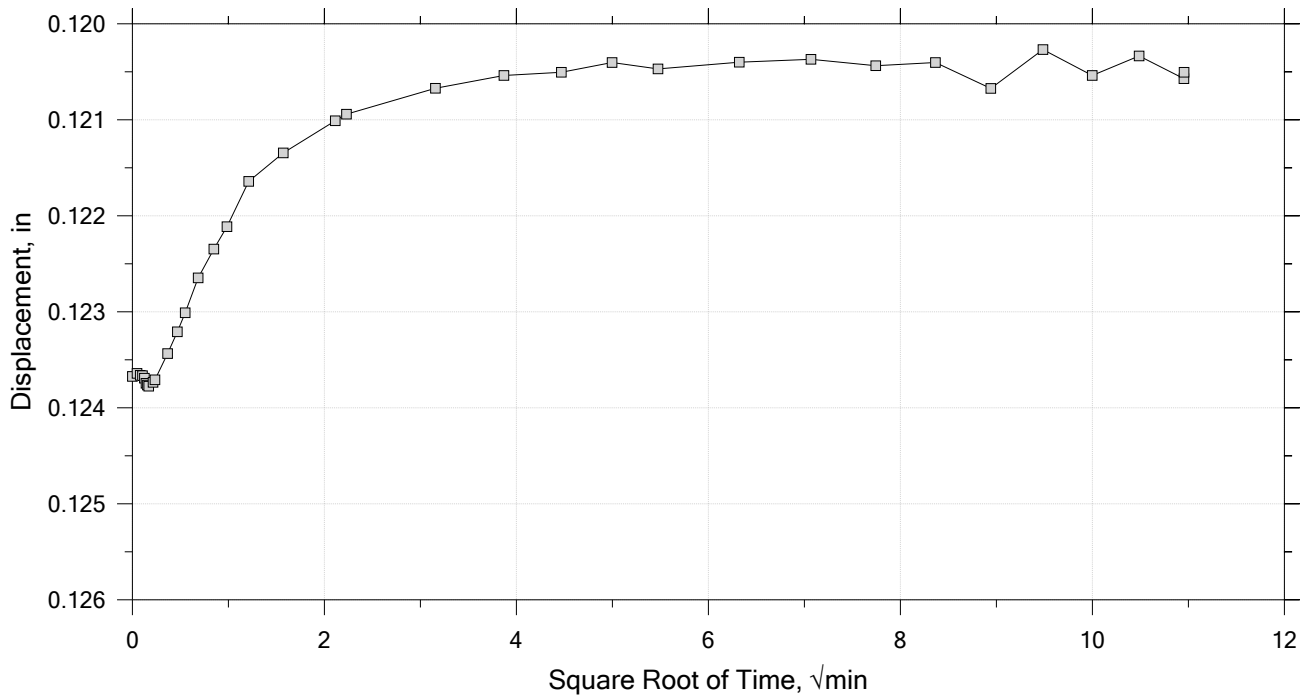
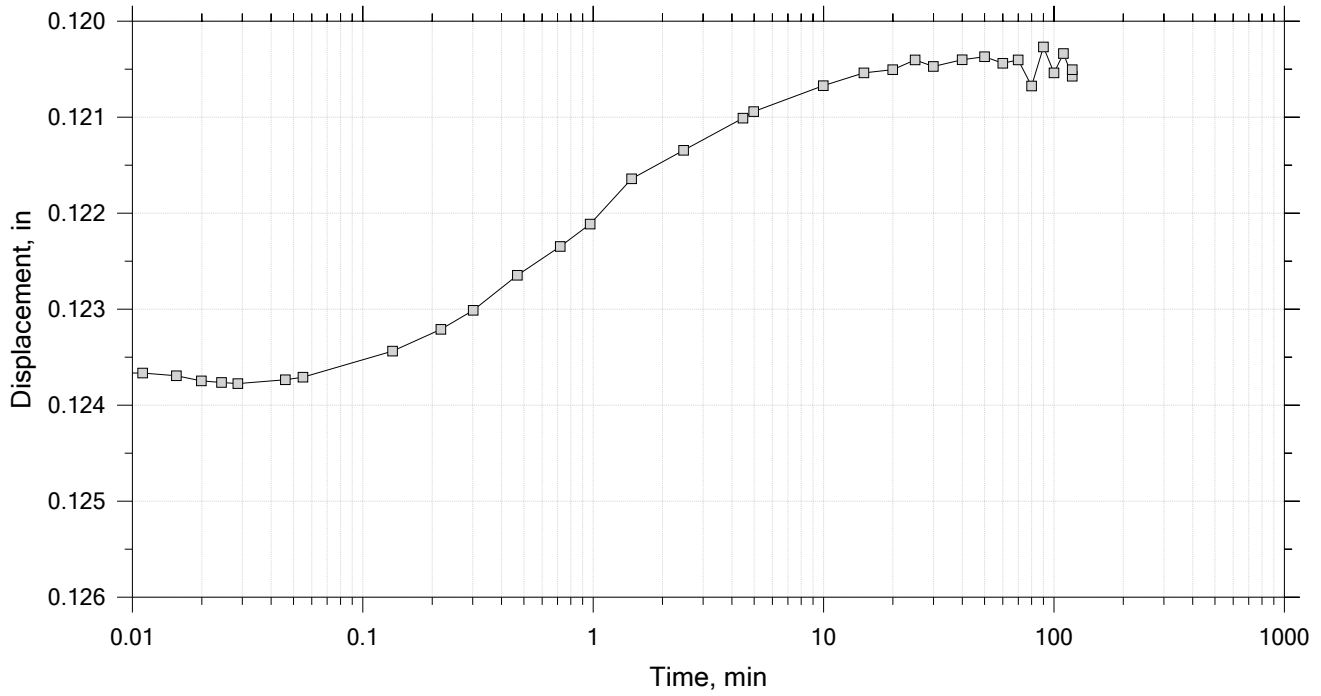
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 25

Constant Load Step

Stress: 2.88e+03 psf



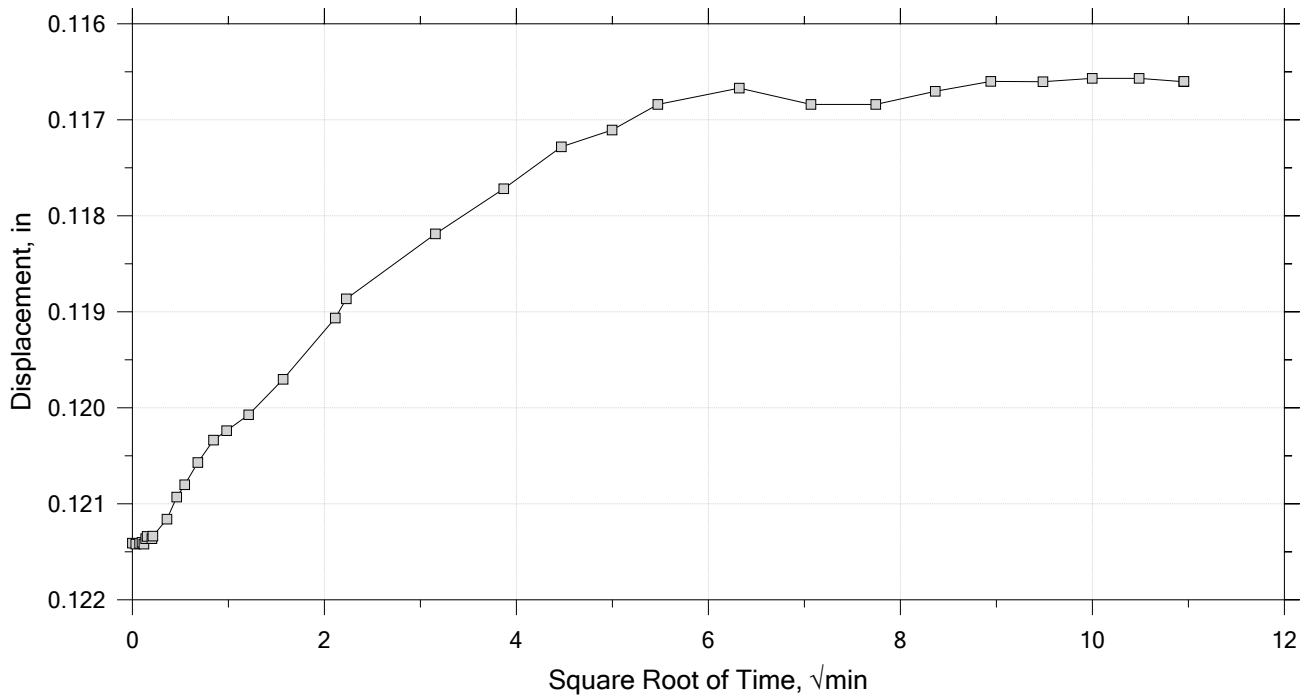
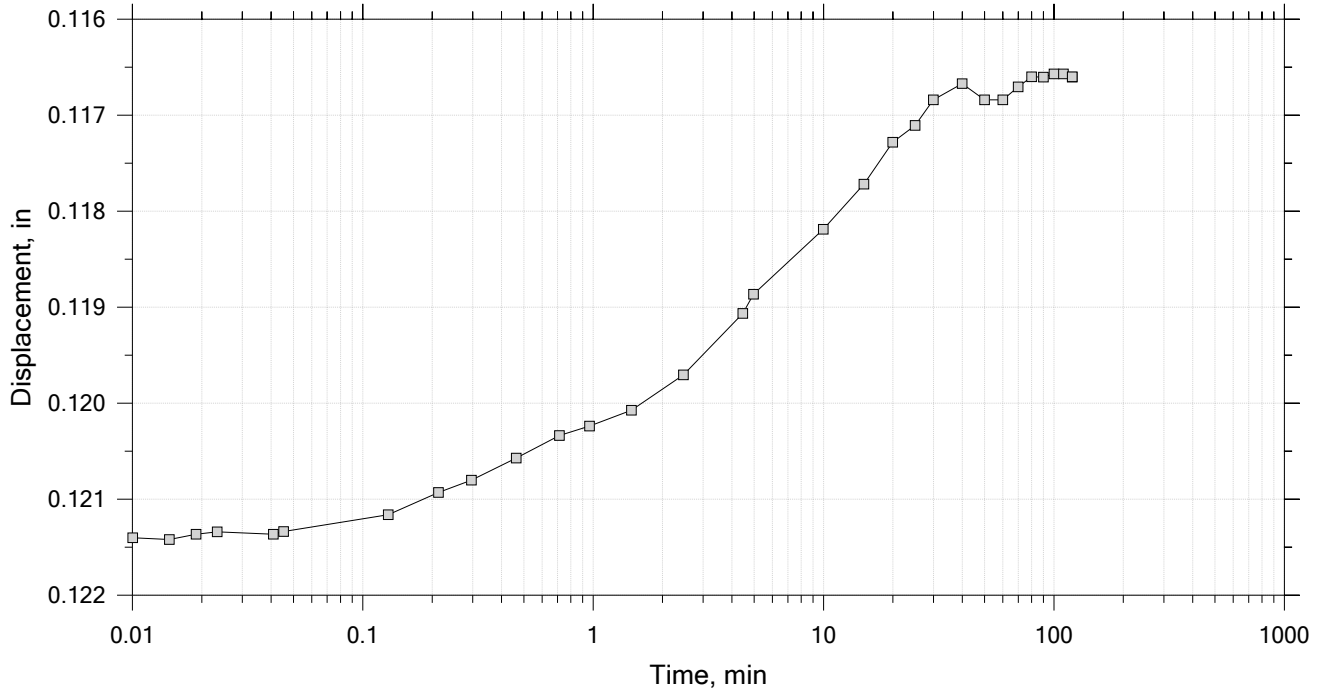
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 25

Constant Load Step

Stress: 1.44e+03 psf



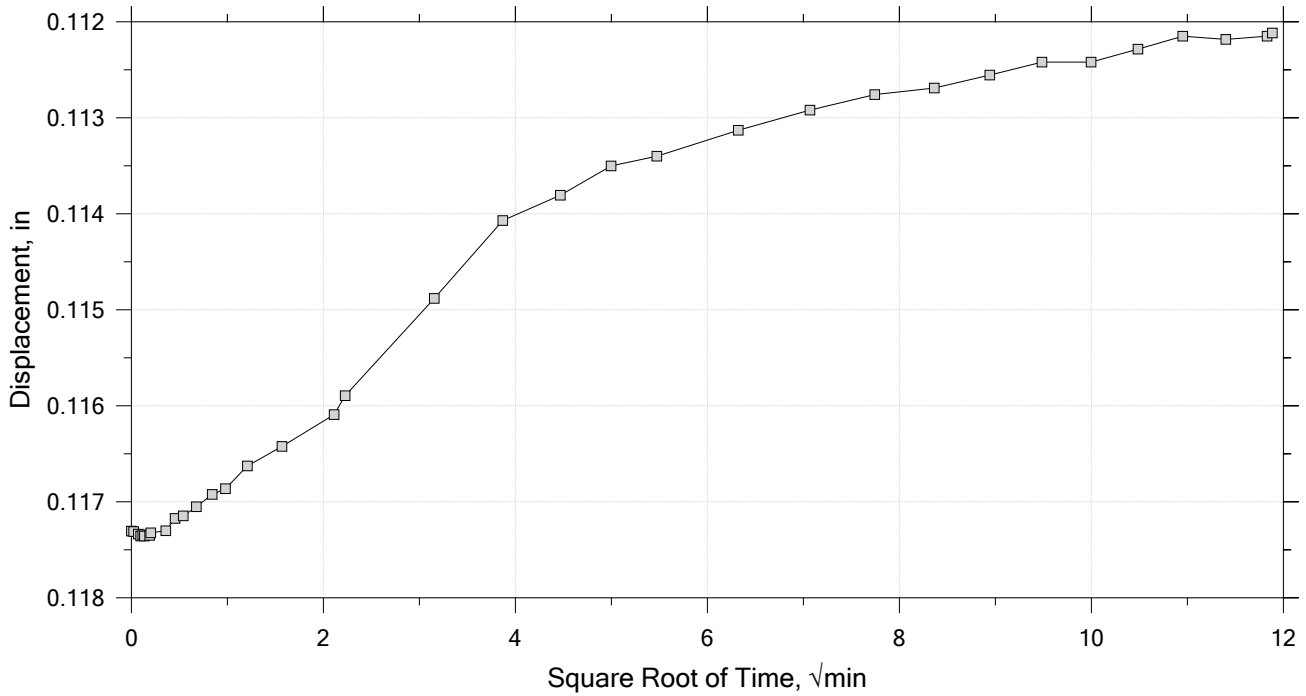
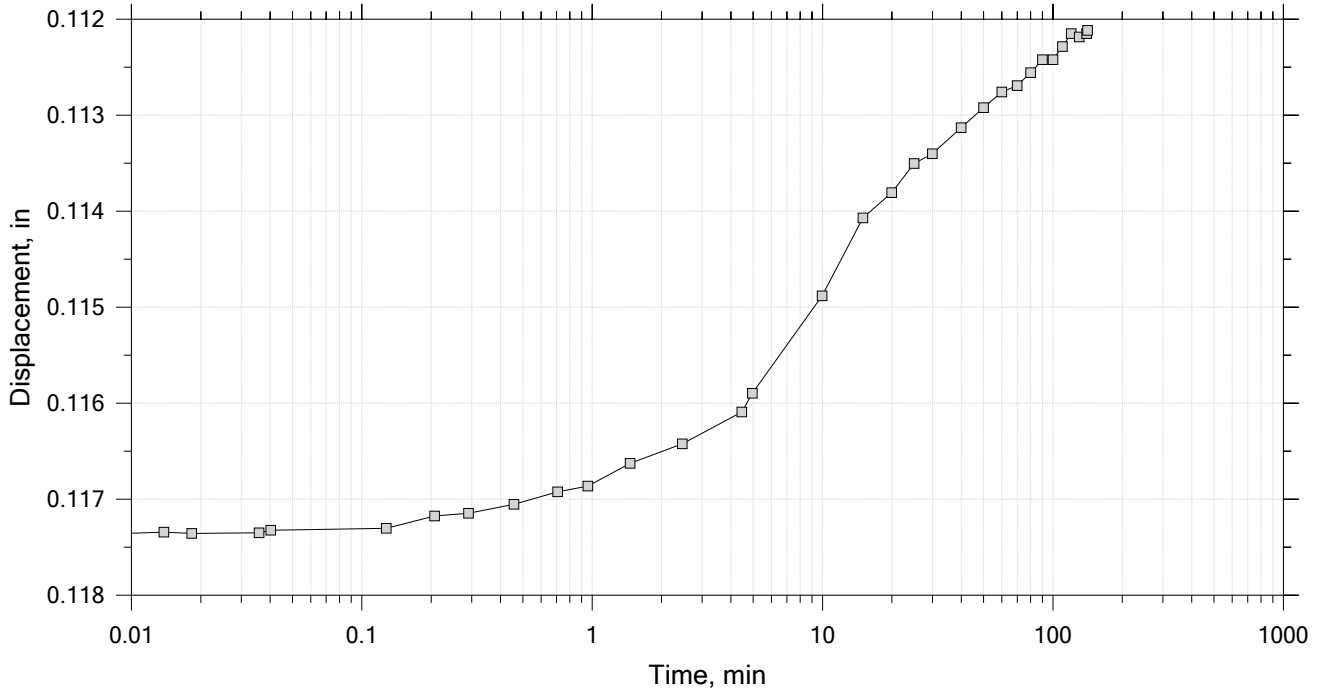
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 25

Constant Load Step

Stress: 721 psf



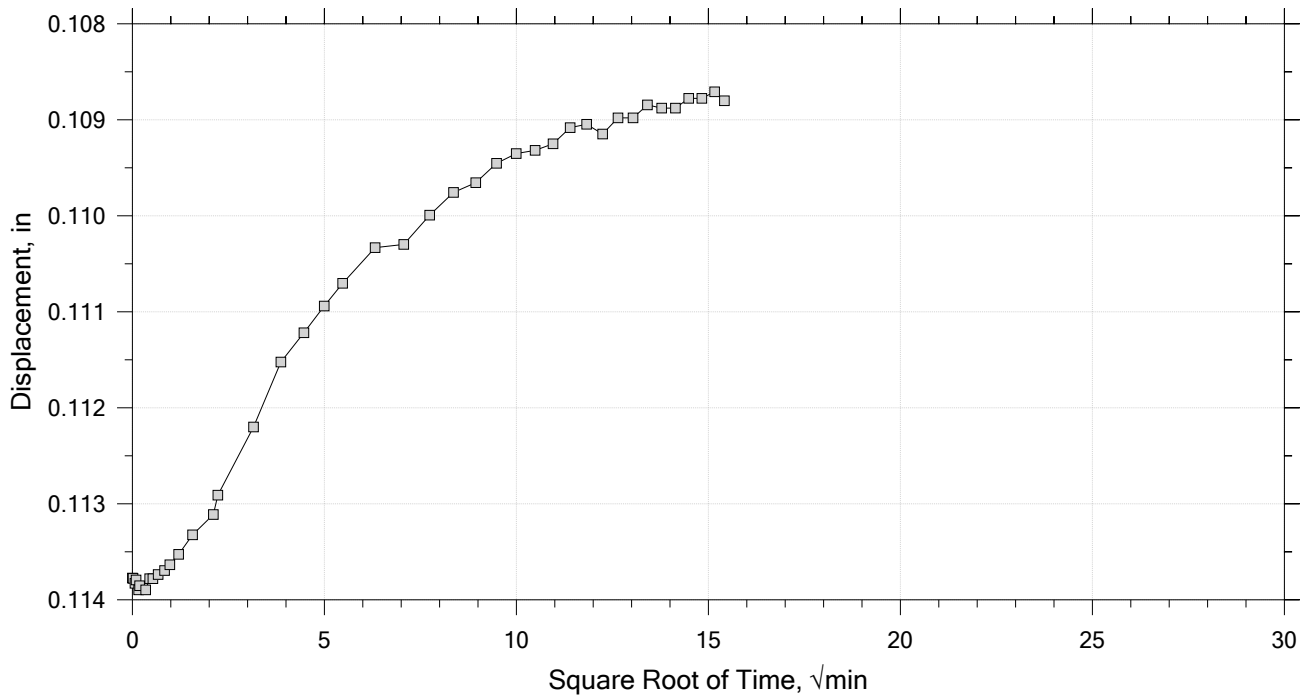
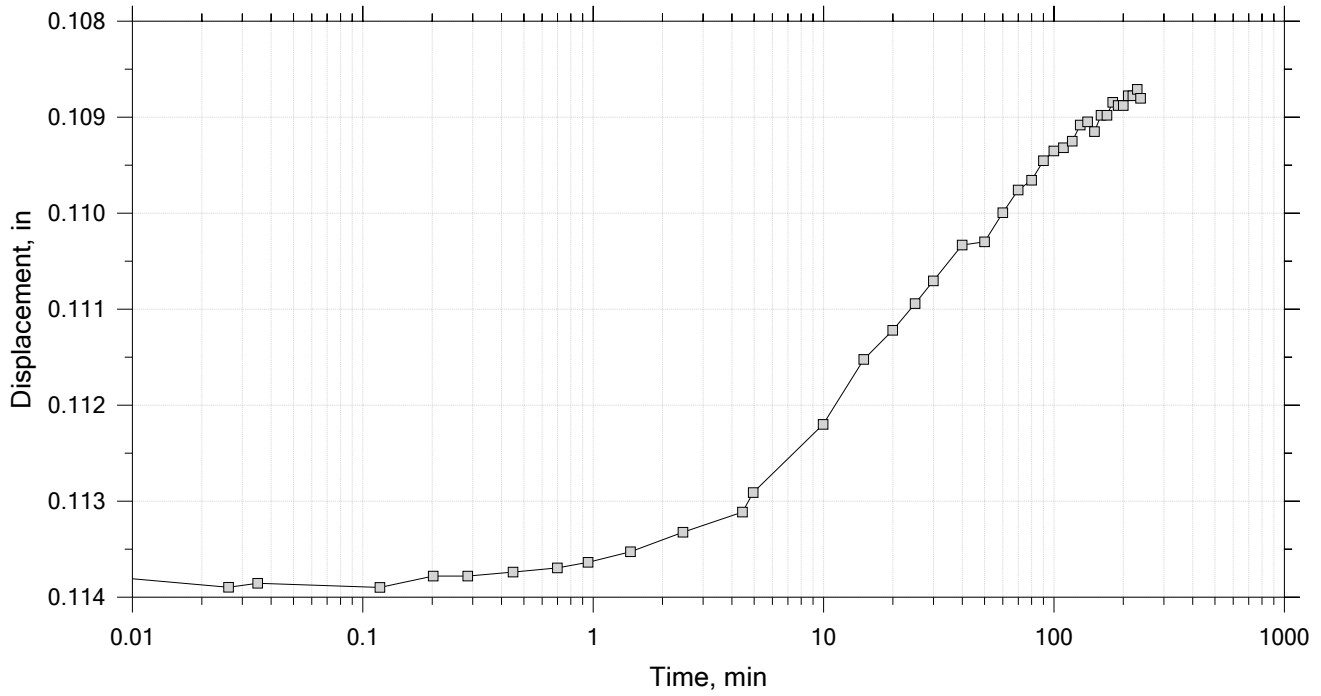
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 25

Constant Load Step

Stress: 360 psf



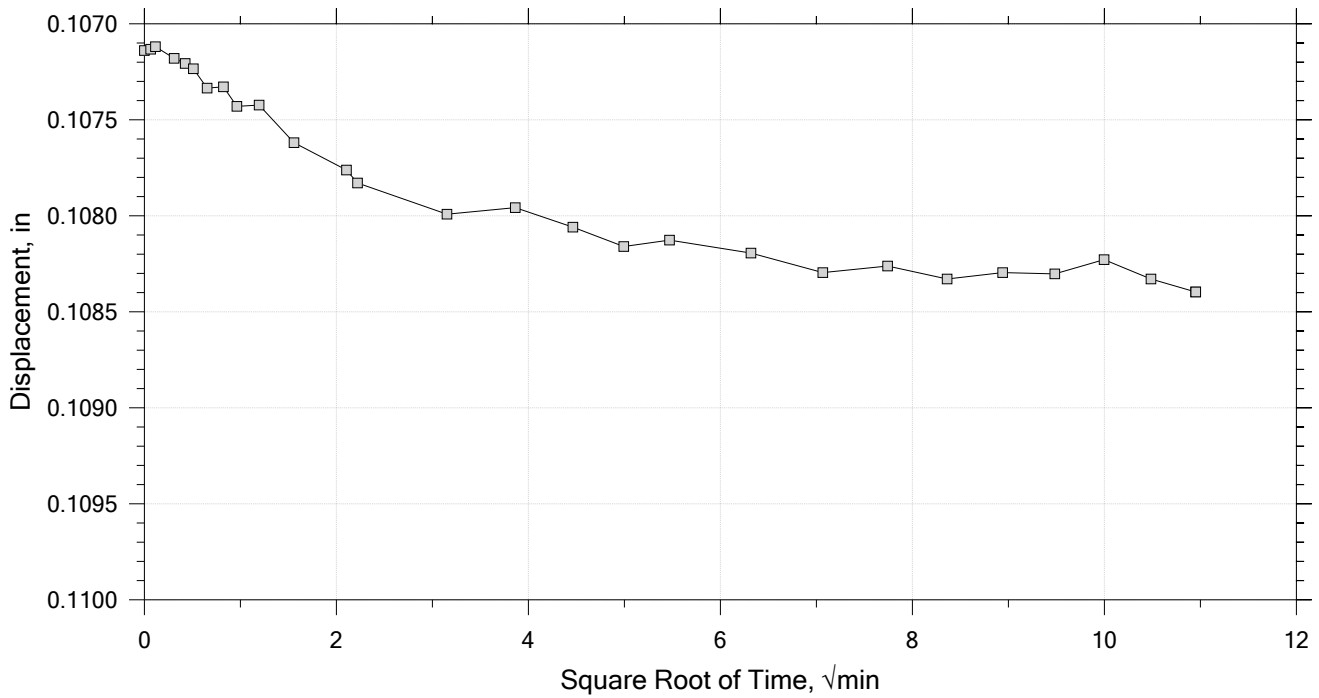
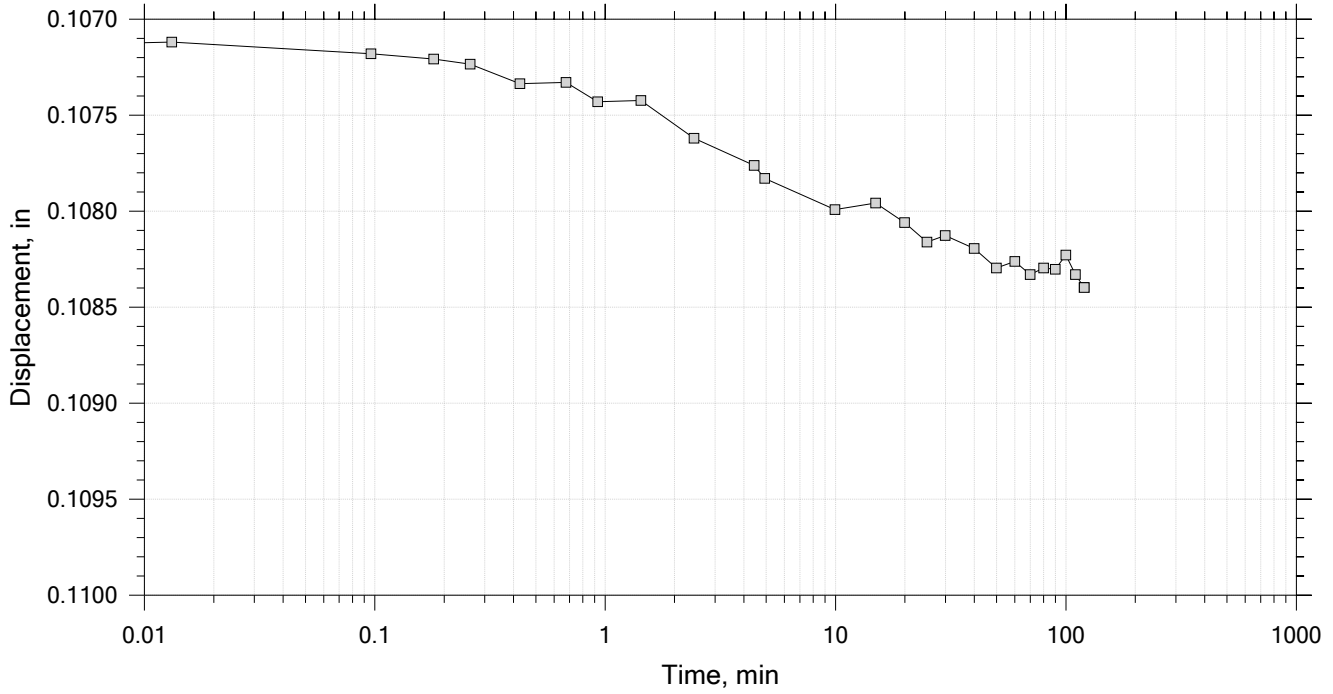
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 25

Constant Load Step

Stress: 721 psf



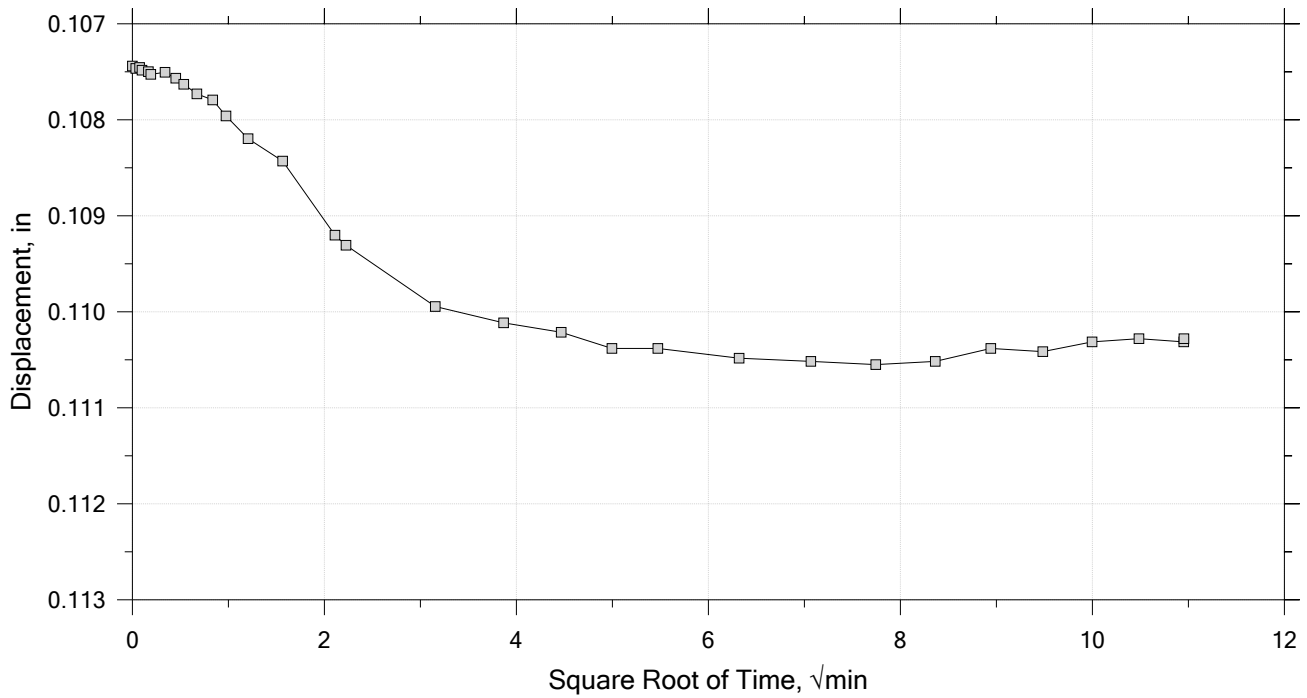
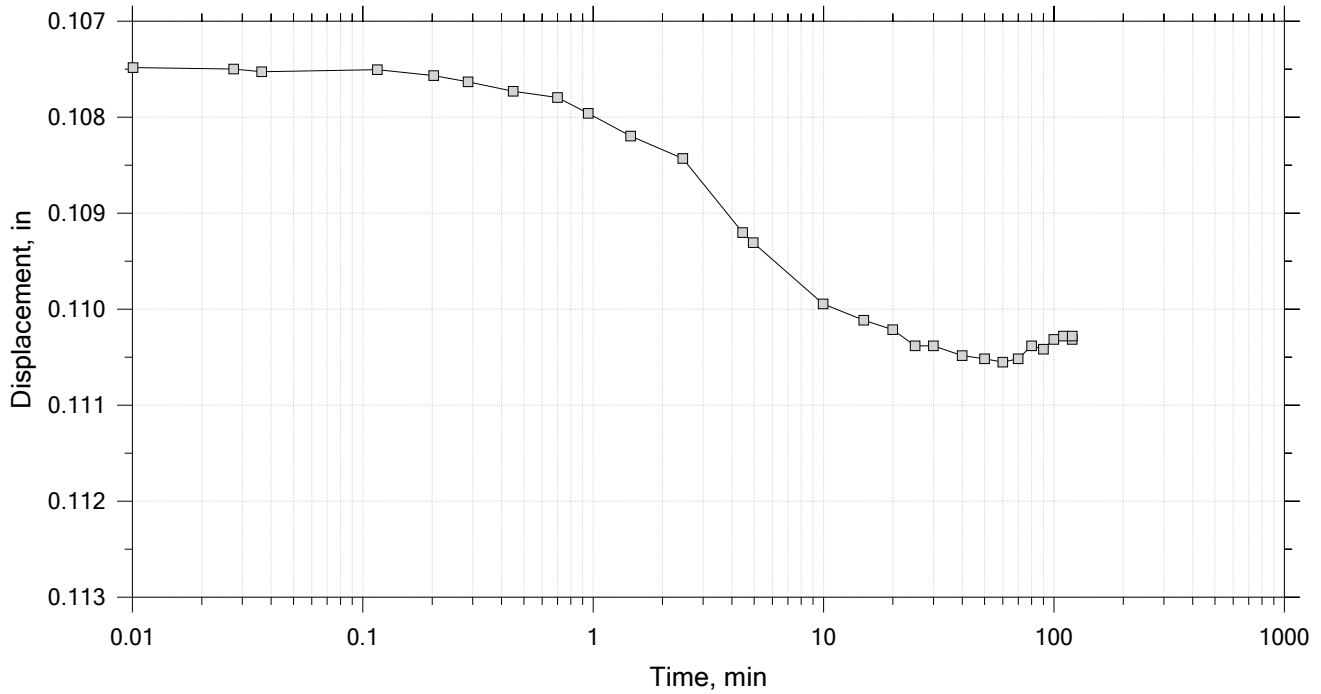
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 25

Constant Load Step

Stress: 1.44e+03 psf



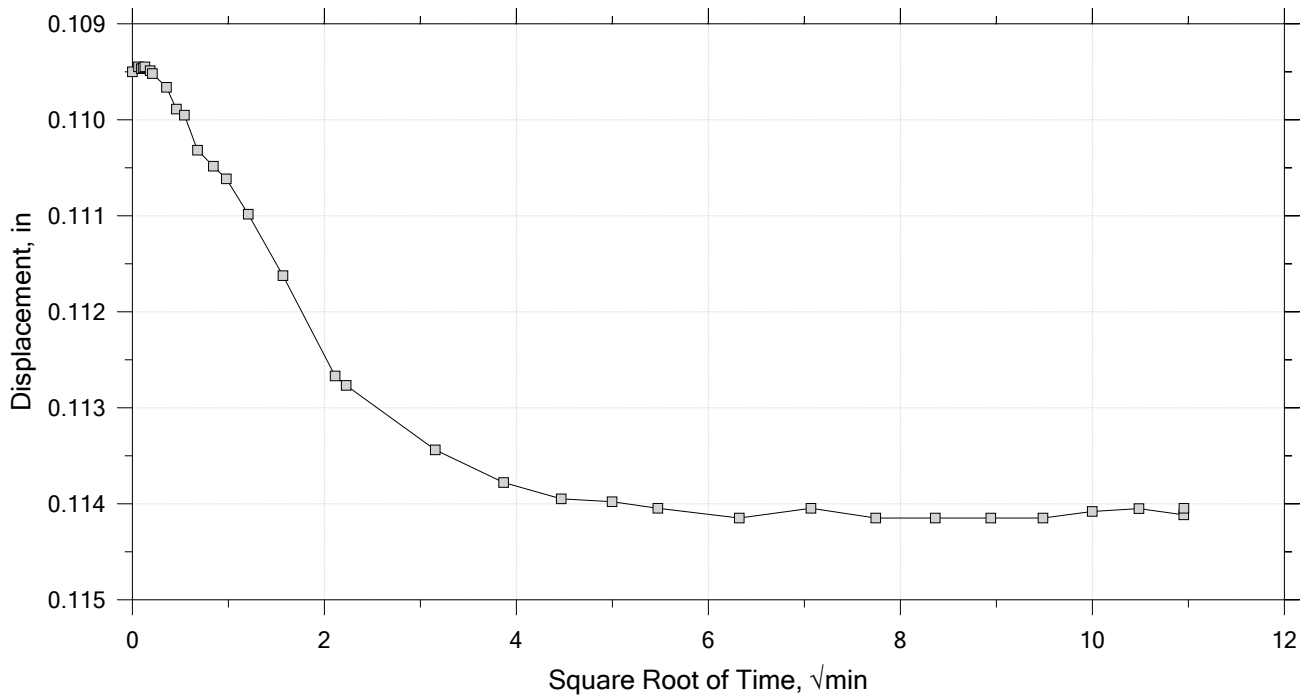
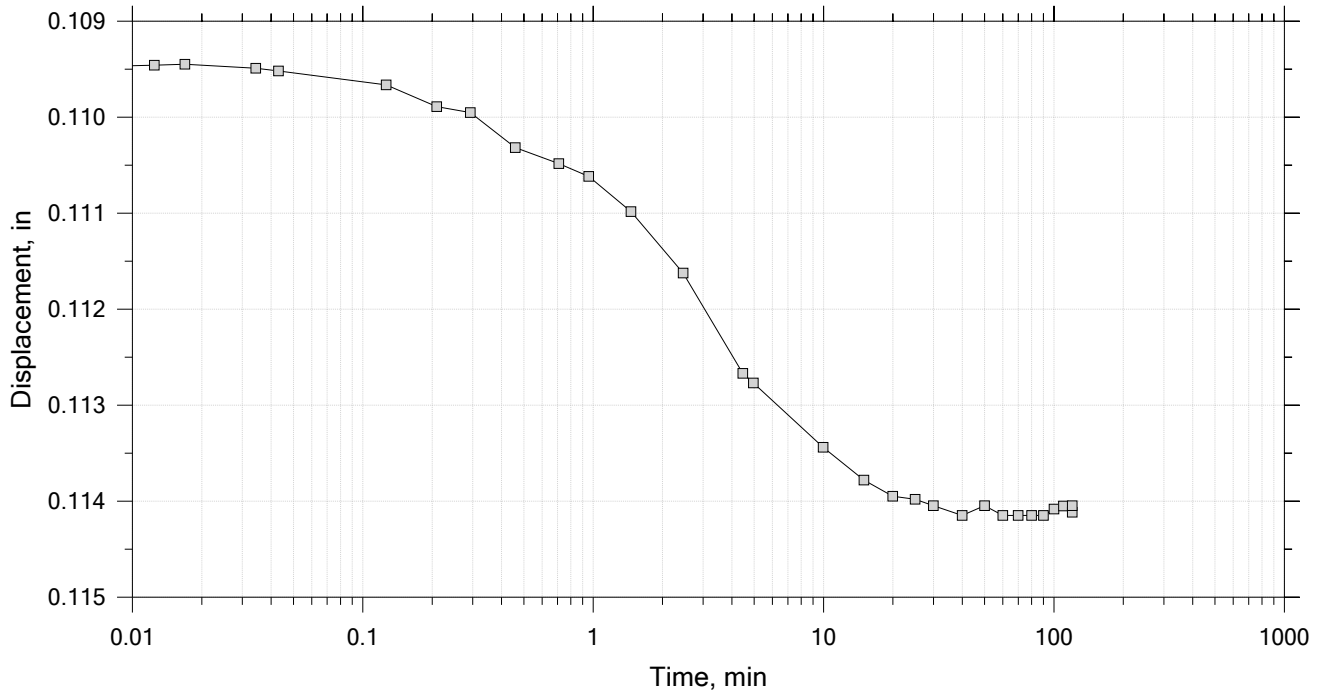
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 25

Constant Load Step

Stress: 2.88e+03 psf



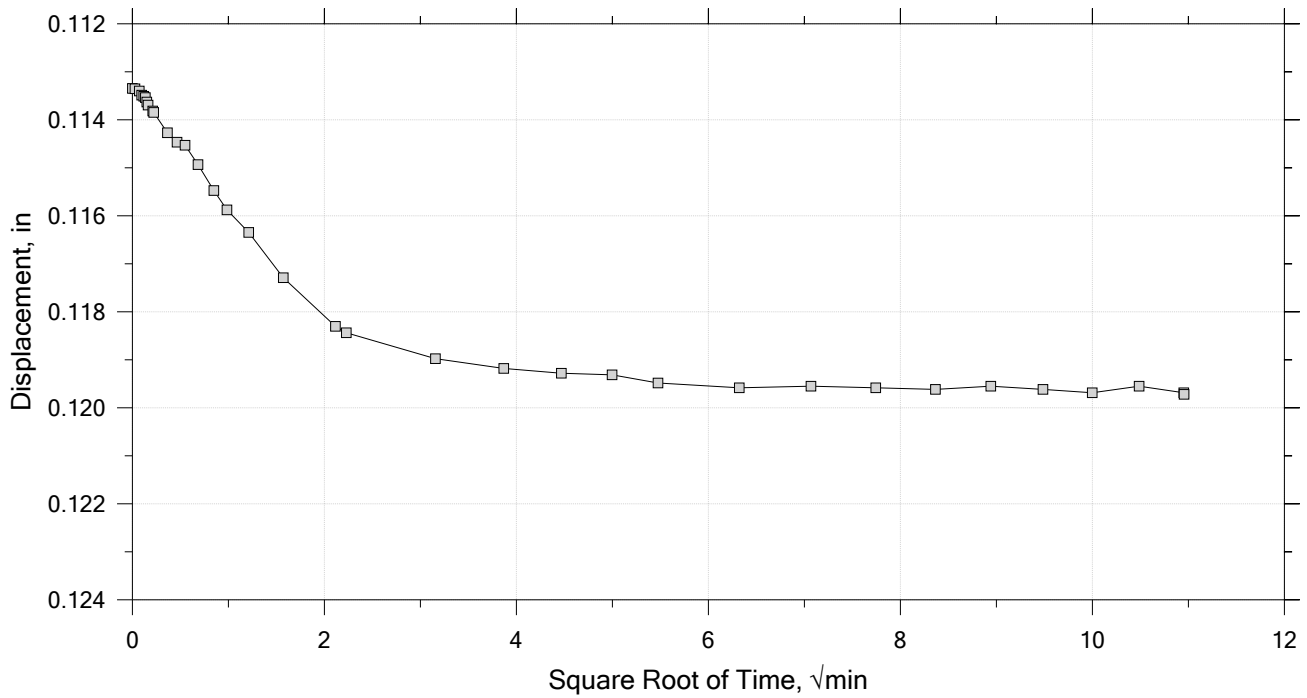
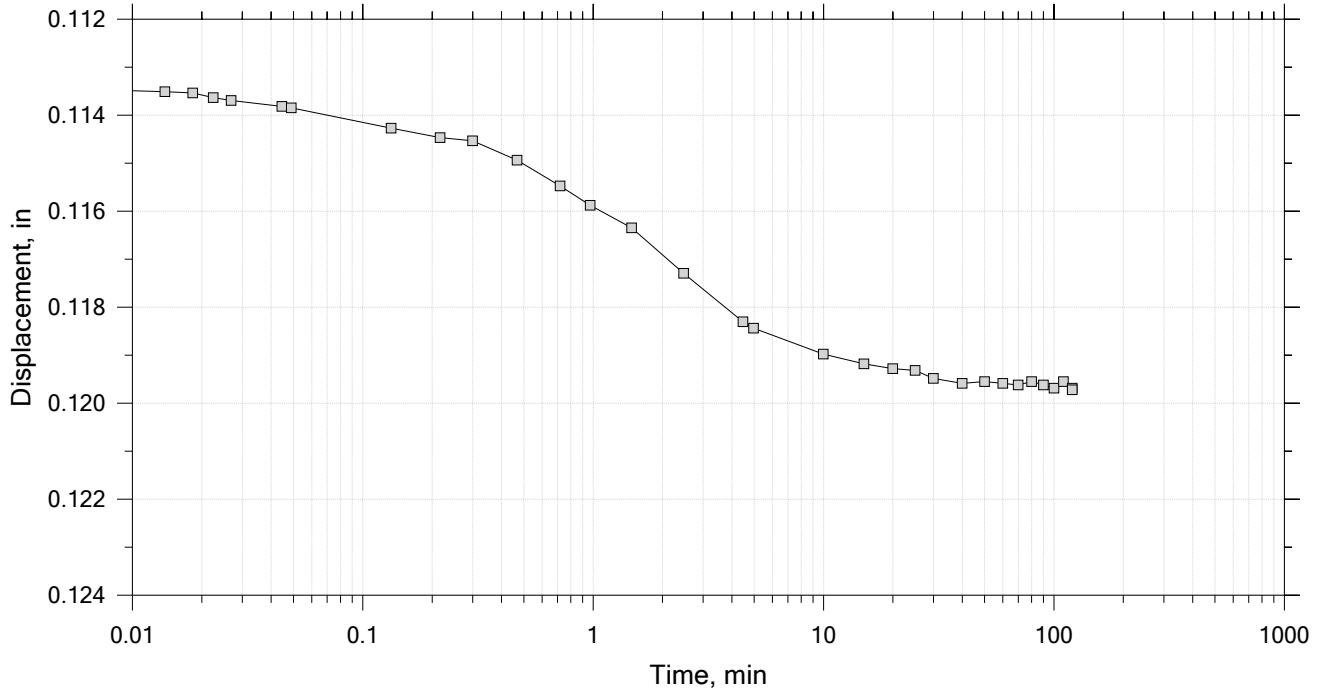
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 25

Constant Load Step

Stress: 5.77e+03 psf



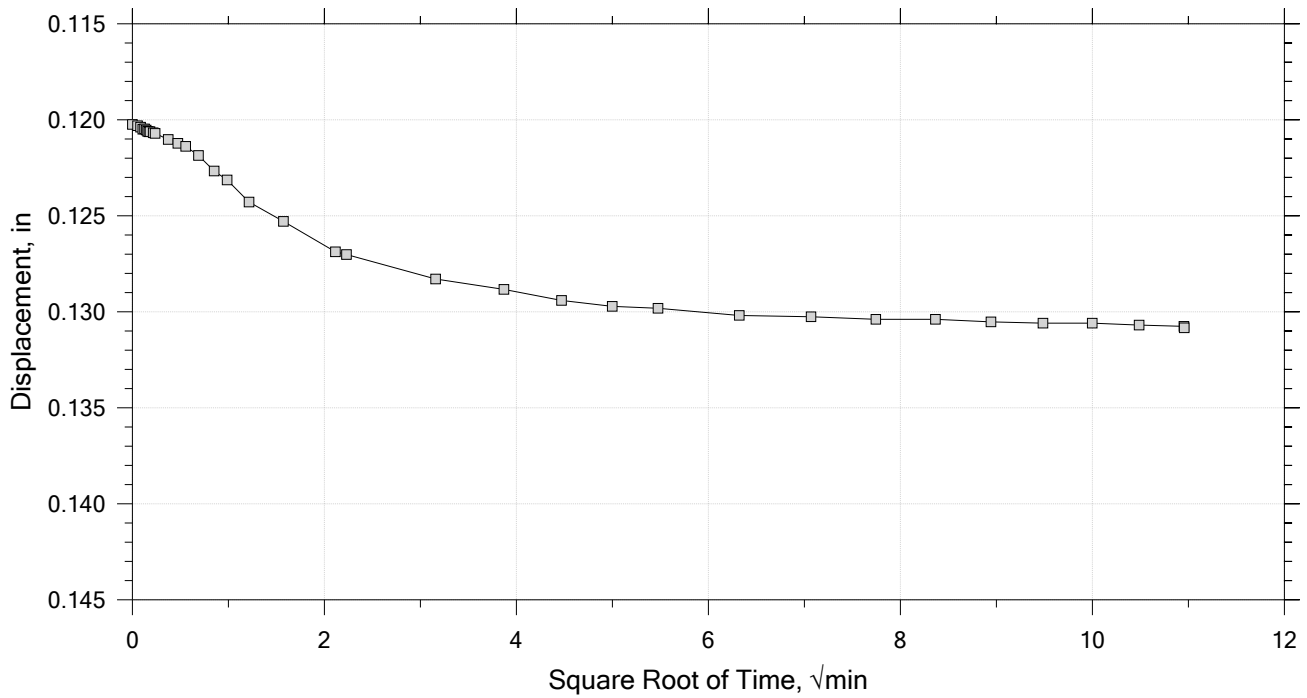
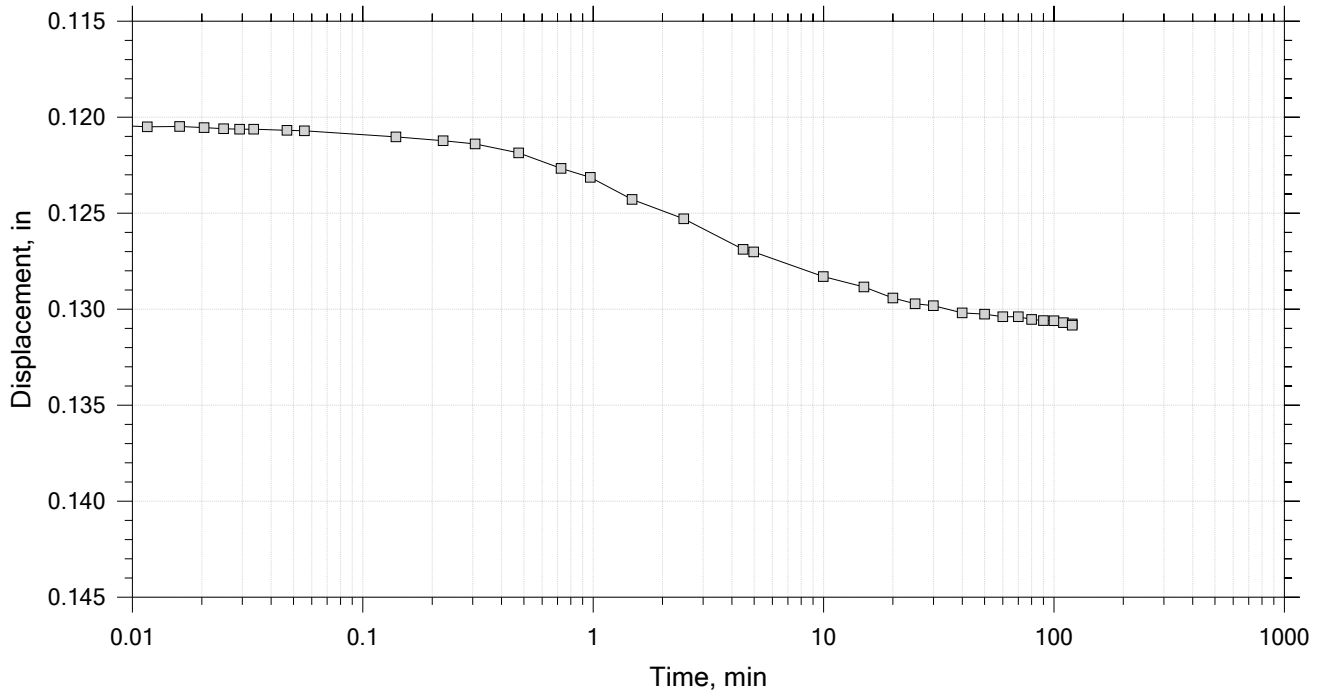
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 25

Constant Load Step

Stress: 1.15e+04 psf



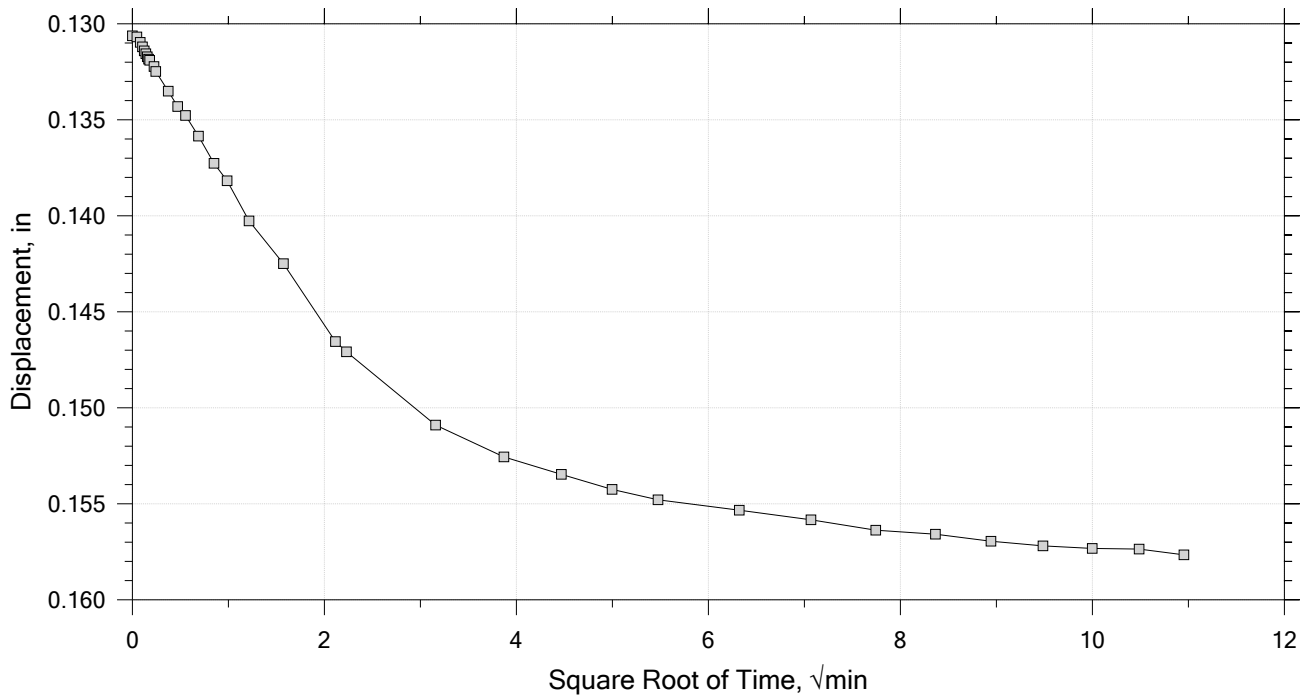
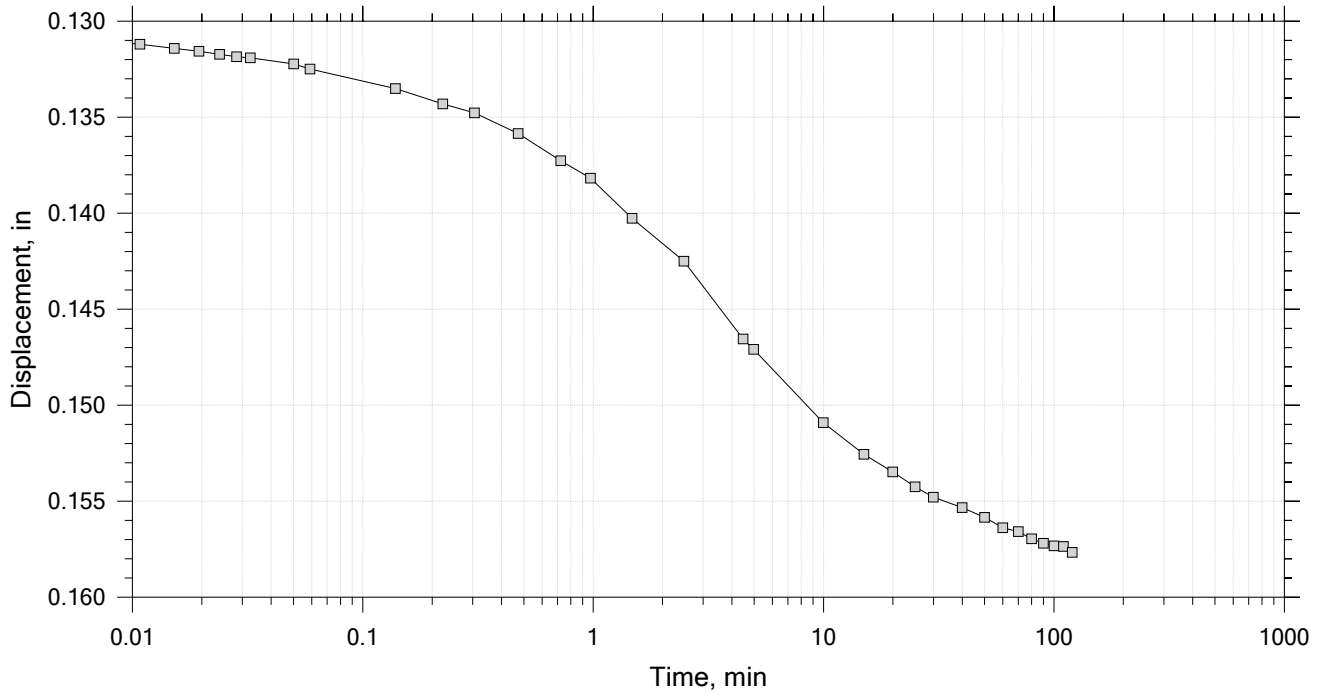
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 25

Constant Load Step

Stress: 2.31e+04 psf



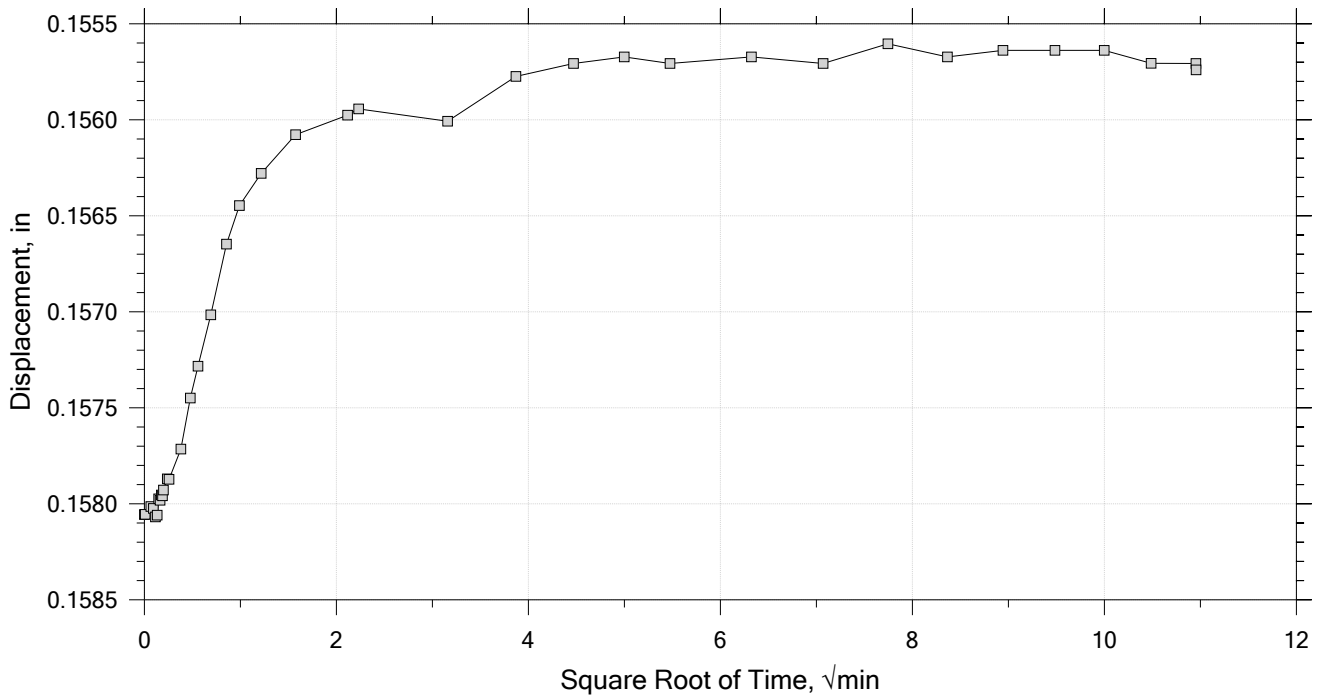
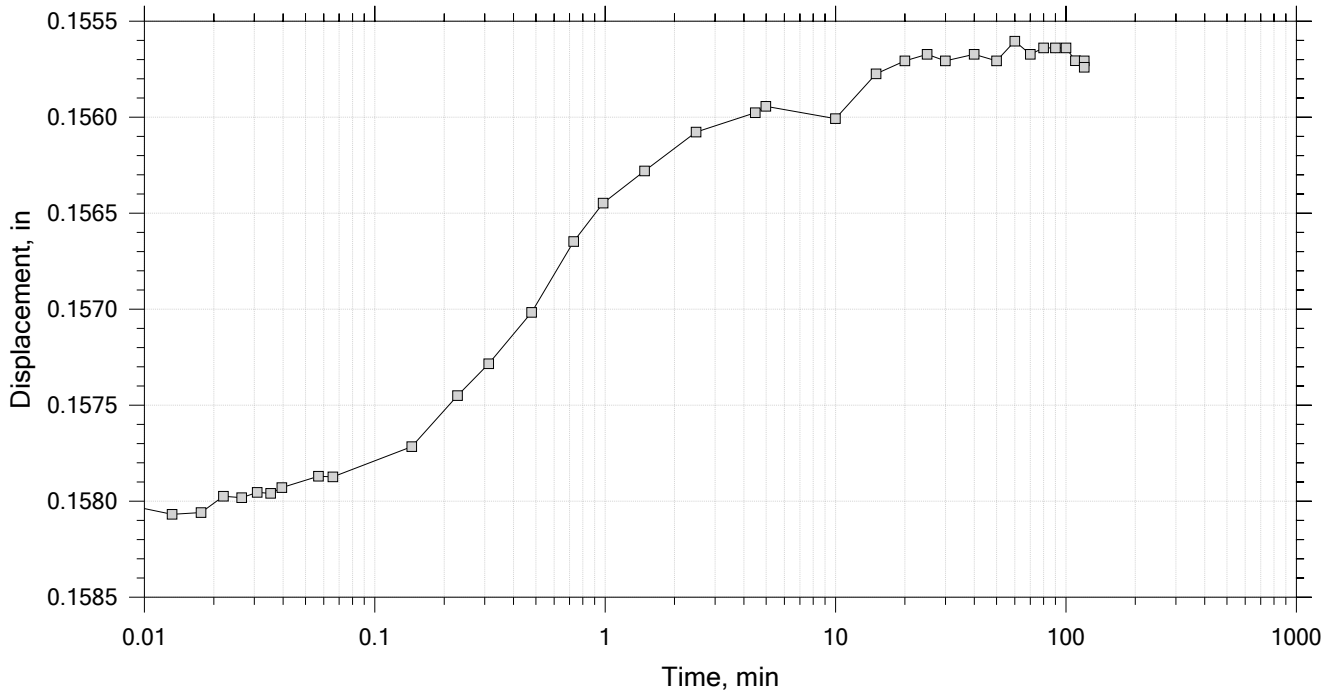
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 25

Constant Load Step

Stress: 1.15e+04 psf



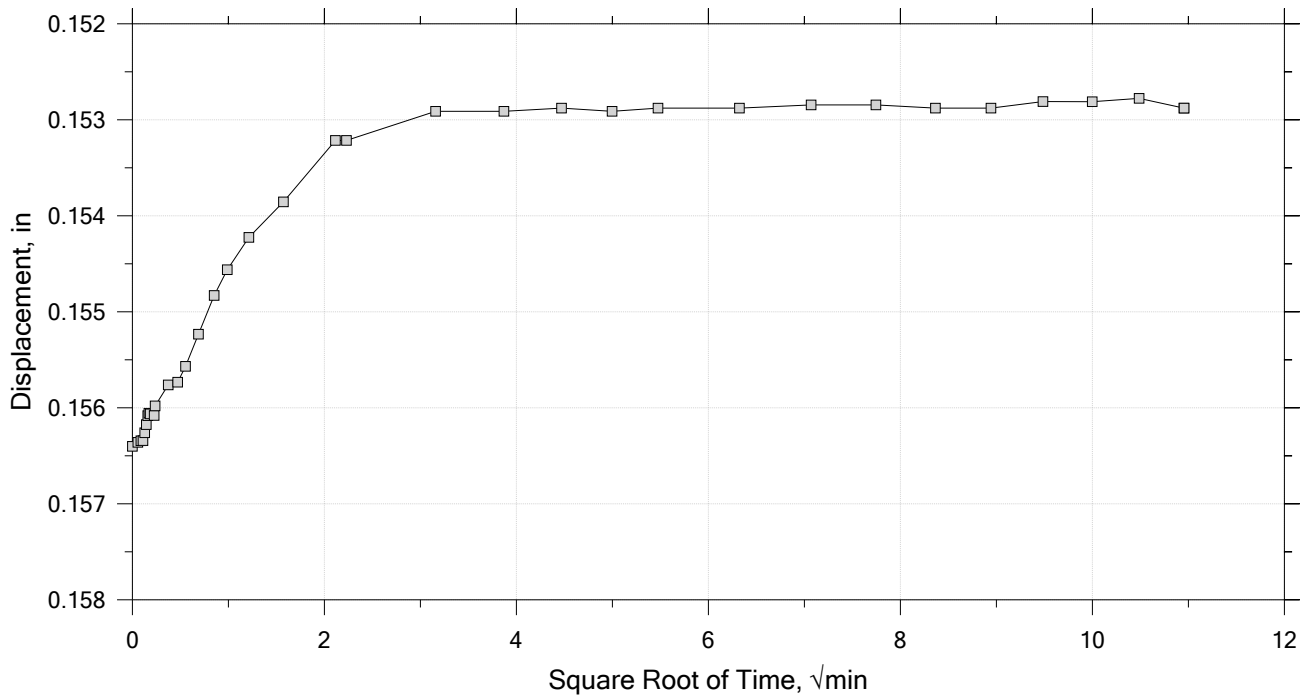
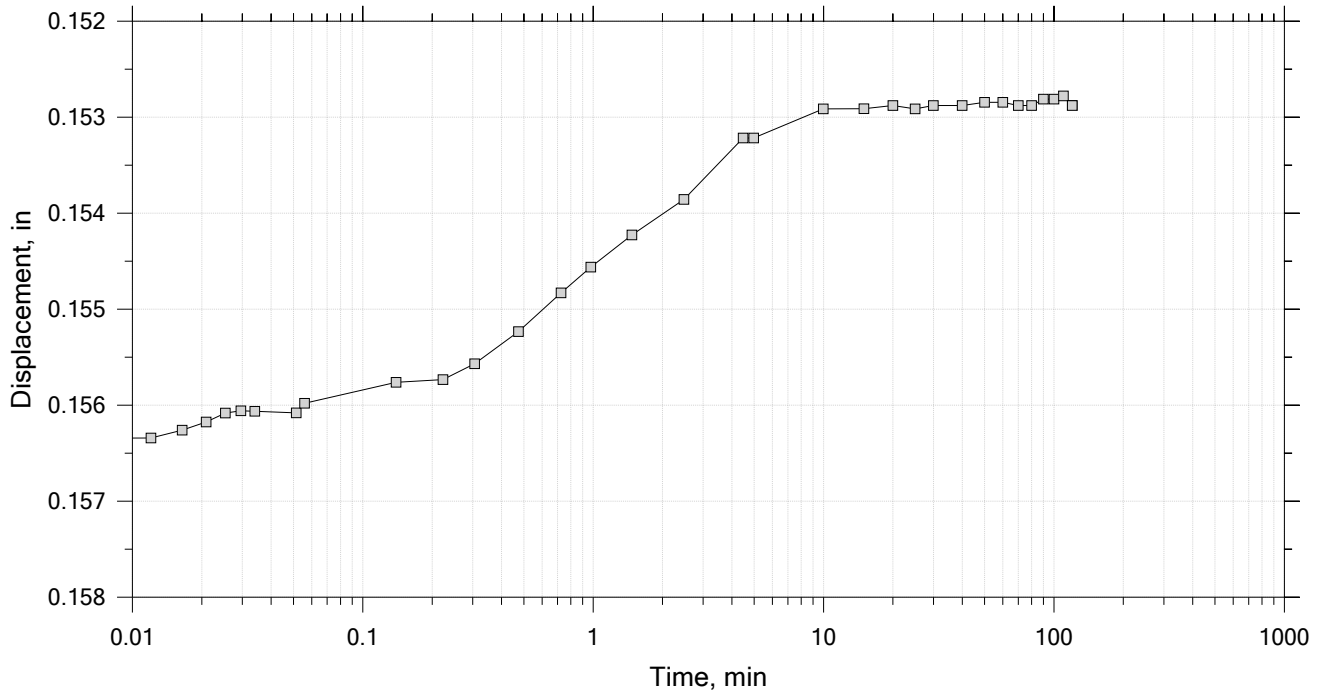
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 25

Constant Load Step

Stress: 5.77e+03 psf



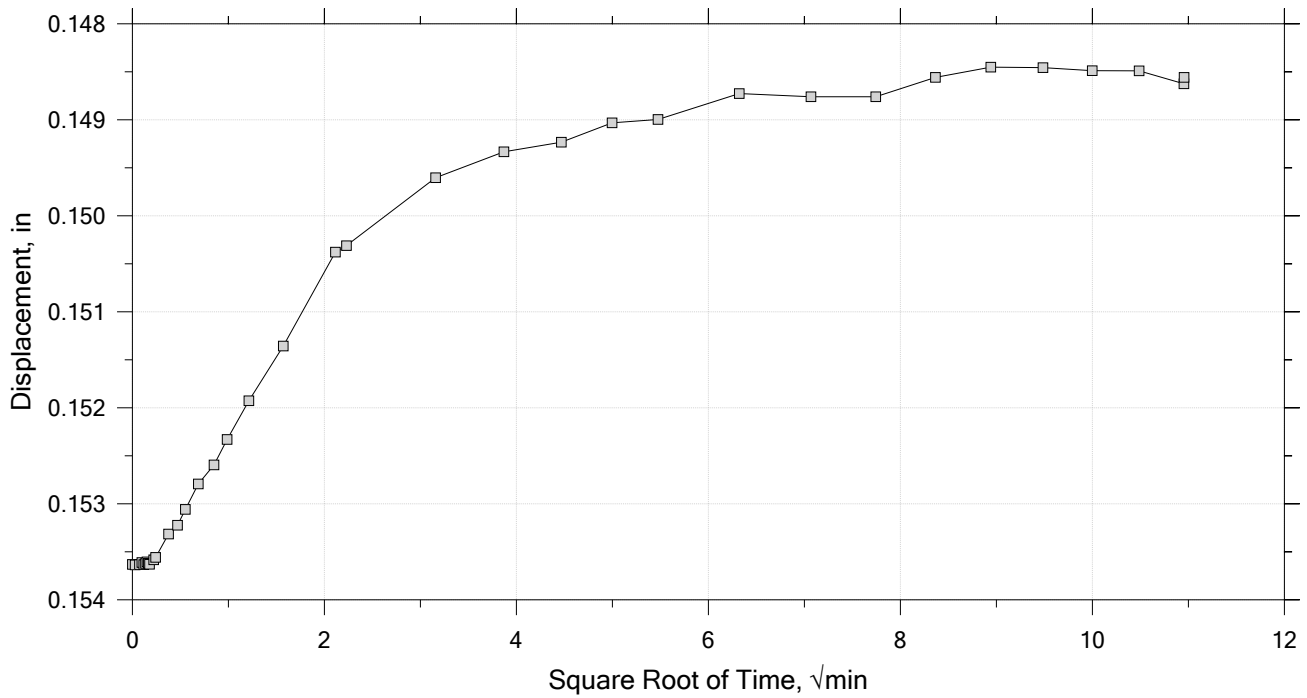
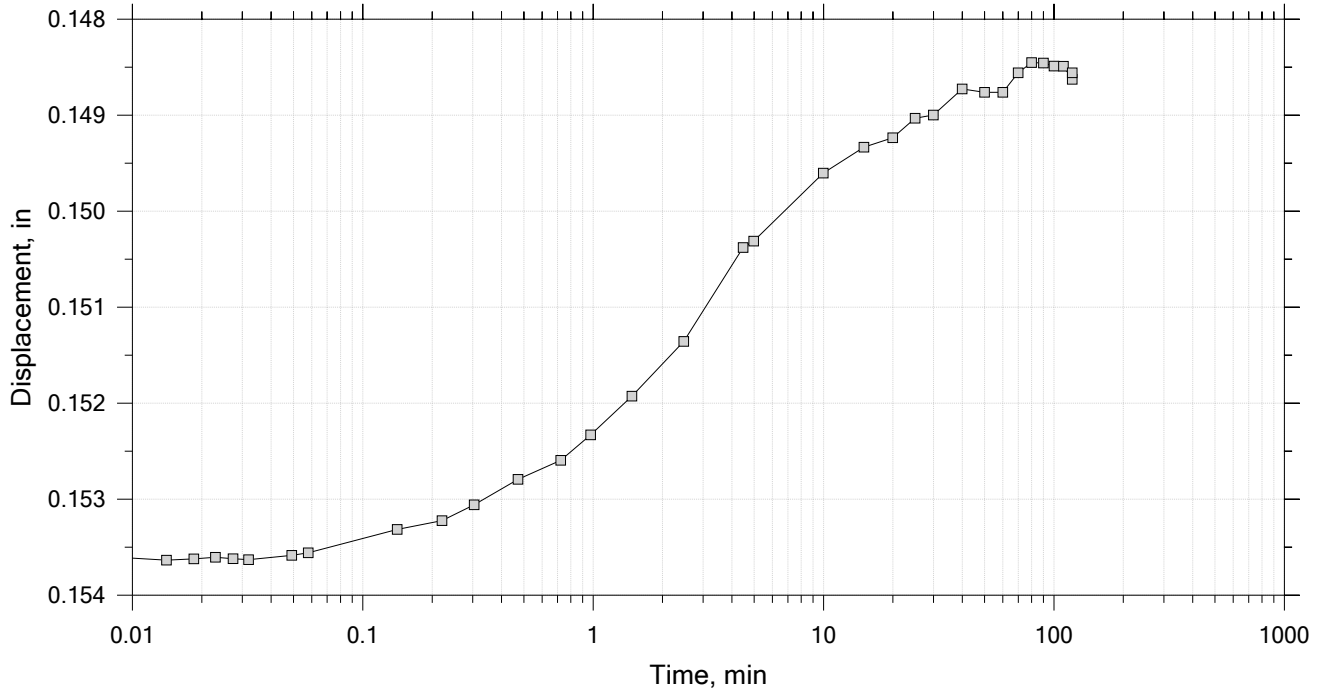
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 25

Constant Load Step

Stress: 2.88e+03 psf



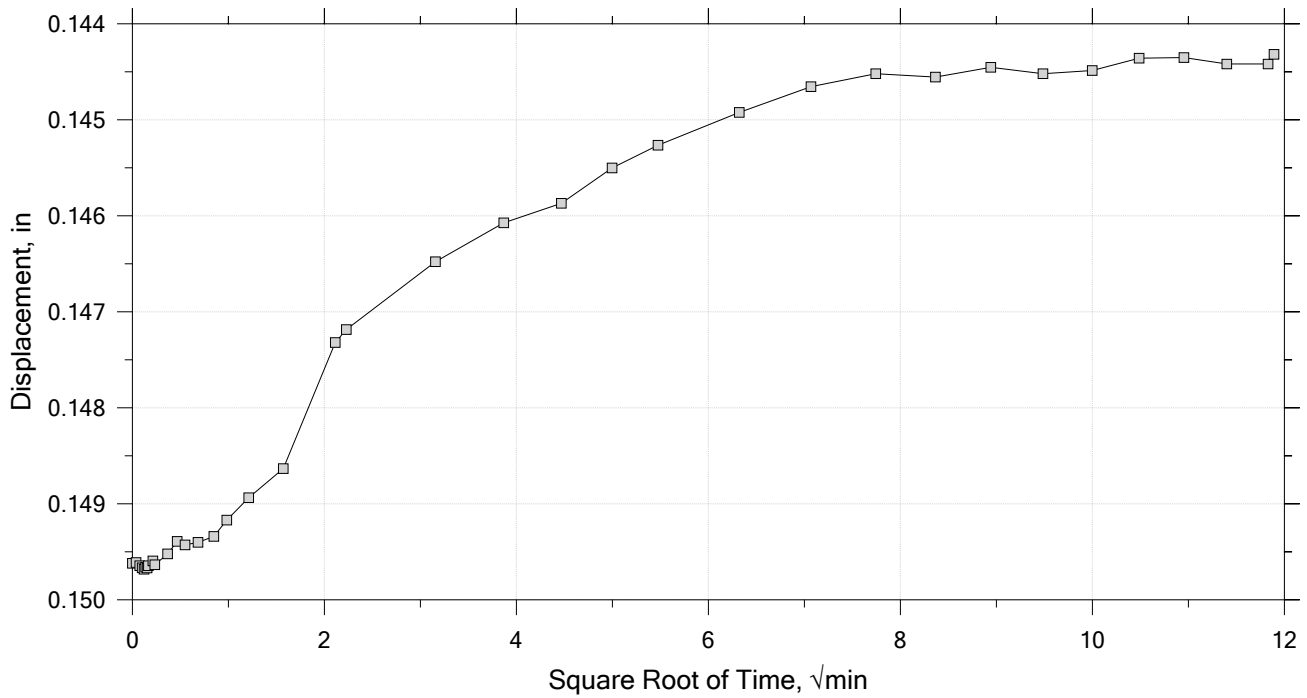
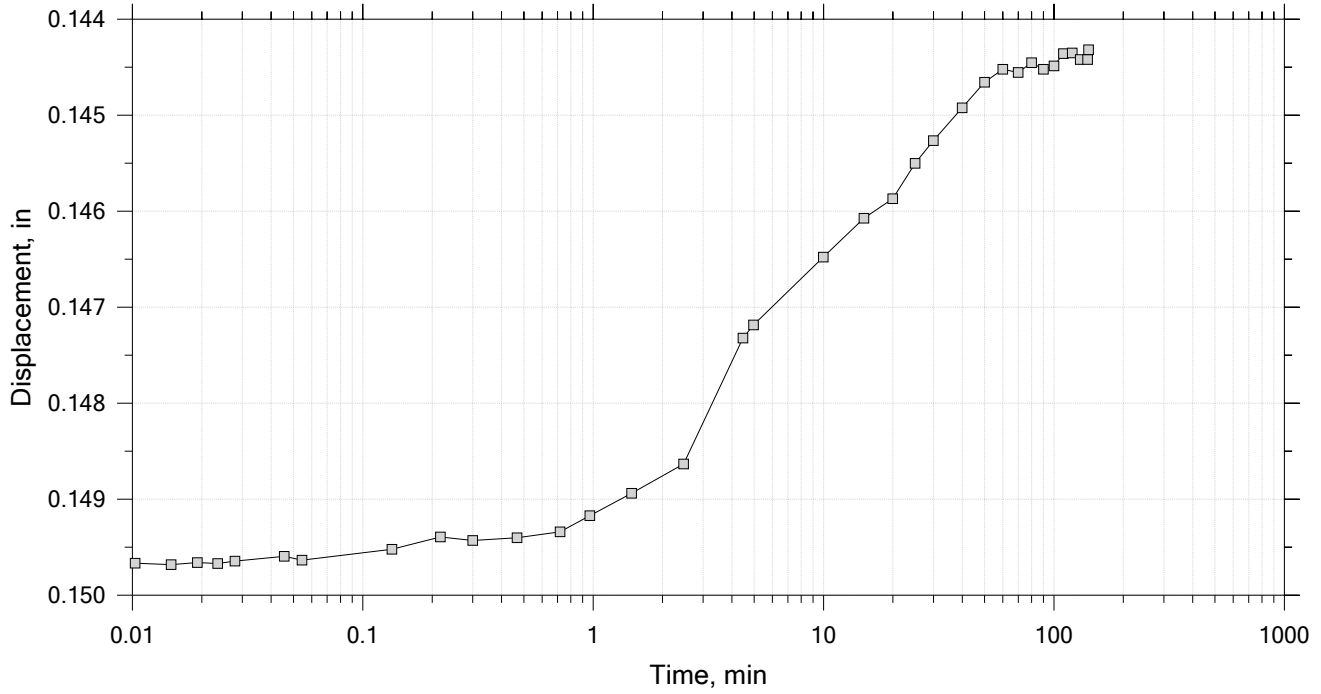
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 24 of 25

Constant Load Step

Stress: 1.44e+03 psf



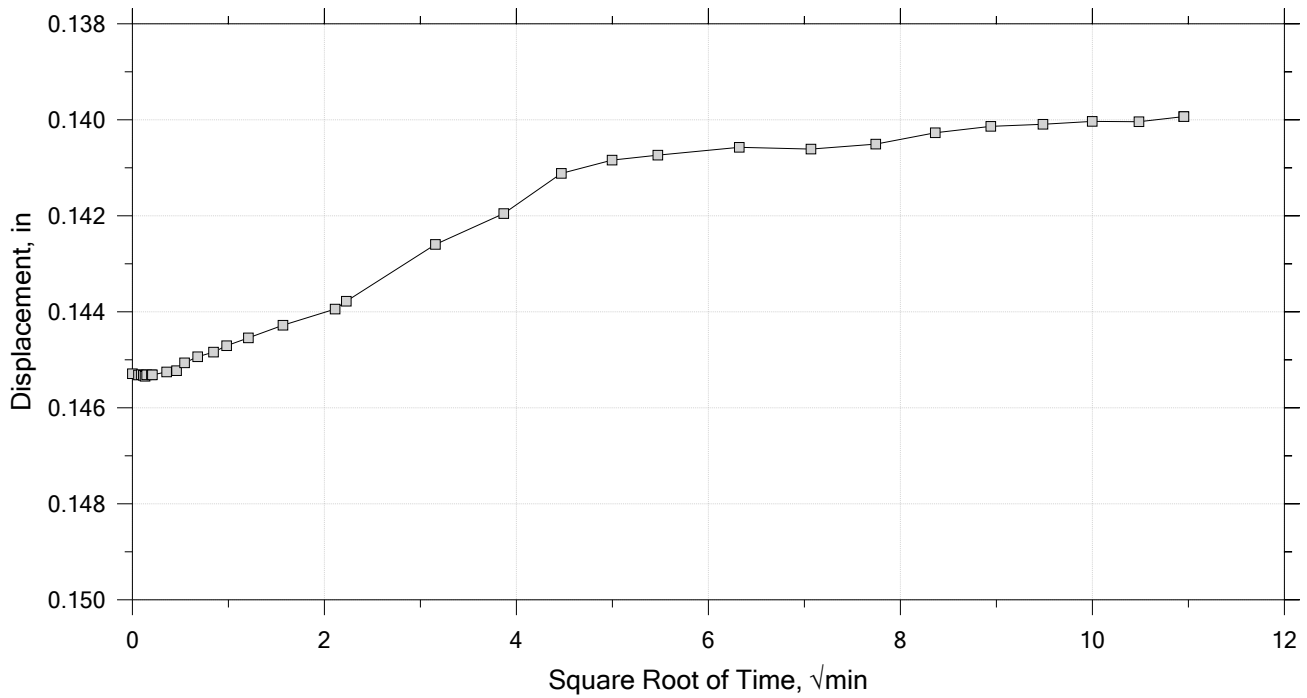
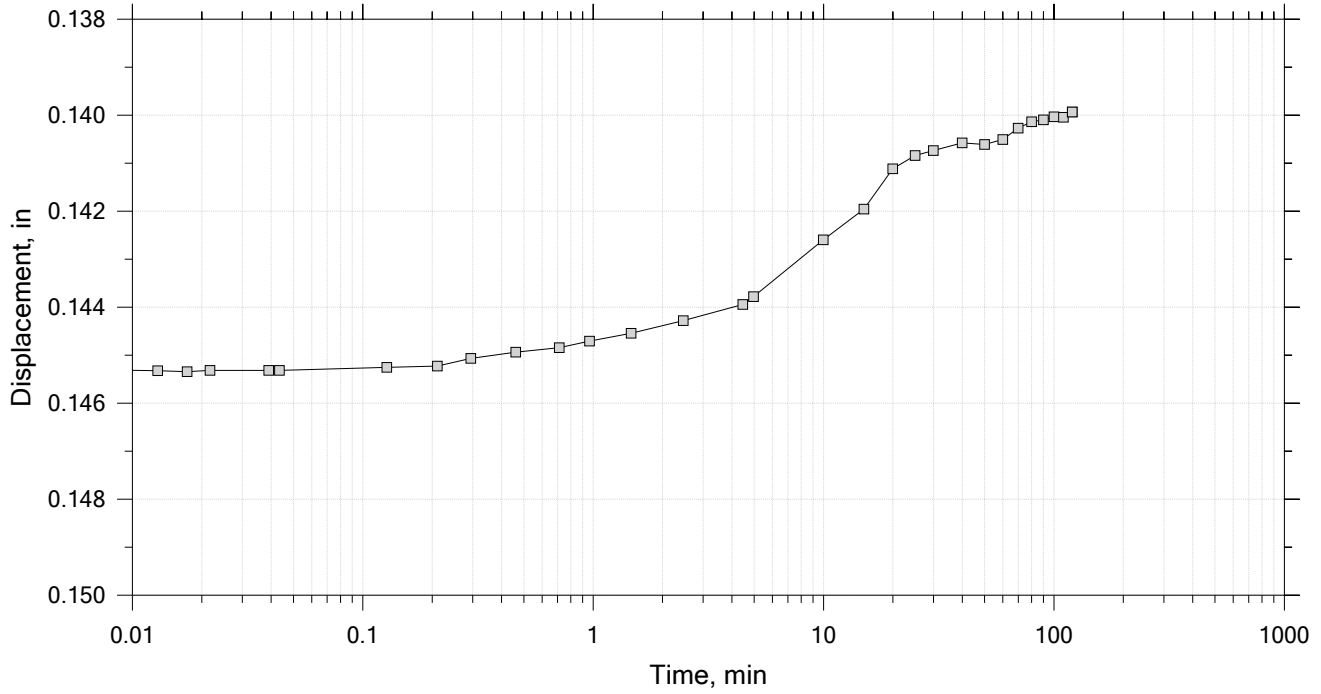
	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 25

Constant Load Step

Stress: 721 psf



	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 25

Constant Load Step

Stress: 450 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.683		6.79	0.0002677	0.0000	0.000	1.05
2	-0.679		6.79	0.0002677	0.0000	0.000	1.05
3	-0.674		13.6	0.0003664	-3.104e-05	-0.00310	1.05
4	-0.670		22.6	0.0004979	-2.735e-05	-0.00274	1.05
5	-0.665		29.4	0.0005966	4.303e-05	0.00430	1.05
6	-0.661		36.2	0.0006952	0.0002148	0.0215	1.05
7	-0.657		40.7	0.0007610	0.0004533	0.0453	1.05
8	-0.652		47.5	0.0008597	0.0006590	0.0659	1.05
9	-0.648		52.0	0.0009254	0.0006946	0.0695	1.05
10	-0.643		54.3	0.0009583	0.0007294	0.0729	1.05
11	-0.639		58.8	0.001024	0.0007650	0.0765	1.05
12	-0.634		63.3	0.001090	0.0008007	0.0801	1.05
13	-0.630		67.9	0.001156	0.0008363	0.0836	1.05
14	-0.626		67.9	0.001156	0.0009039	0.0904	1.05
15	-0.621		72.4	0.001221	0.0009058	0.0906	1.05
16	-0.604		88.2	0.001452	0.001014	0.101	1.05
17	-0.595		95.0	0.001550	0.001118	0.112	1.05
18	-0.516		179.	0.002767	0.001389	0.139	1.05
19	-0.432		240.	0.003655	0.001549	0.155	1.05
20	-0.348		323.	0.004872	0.001414	0.141	1.05
21	-0.181		382.	0.005727	0.001708	0.171	1.05
22	0.000	0.000	405.	0.006057	0.001815	0.181	1.05
23	0.071	0.266	414.	0.006187	0.001856	0.186	1.05
24	0.318	0.564	421.	0.006286	0.002197	0.220	1.05
25	0.820	0.906	428.	0.006385	0.002471	0.247	1.05
26	1.819	1.349	434.	0.006483	0.003386	0.339	1.05
27	3.817	1.954	439.	0.006549	0.004132	0.413	1.04
28	4.317	2.078	439.	0.006549	0.004436	0.444	1.04
29	9.320	3.053	441.	0.006582	0.006736	0.674	1.04
30	14.317	3.784	443.	0.006615	0.008258	0.826	1.04
31	19.320	4.395	446.	0.006648	0.009375	0.937	1.03
32	24.321	4.932	443.	0.006622	0.01014	1.01	1.03
33	29.320	5.415	446.	0.006648	0.01066	1.07	1.03
34	39.320	6.271	446.	0.006648	0.01181	1.18	1.03
35	49.321	7.023	446.	0.006648	0.01272	1.27	1.03
36	59.320	7.702	448.	0.006681	0.01320	1.32	1.03
37	69.321	8.326	448.	0.006681	0.01350	1.35	1.02
38	79.321	8.906	446.	0.006655	0.01359	1.36	1.02
39	89.321	9.451	448.	0.006681	0.01367	1.37	1.02
40	99.318	9.966	448.	0.006681	0.01367	1.37	1.02
41	109.321	10.456	448.	0.006681	0.01380	1.38	1.02
42	119.321	10.923	448.	0.006681	0.01391	1.39	1.02
43	119.625	10.937	448.	0.006681	0.01387	1.39	1.02

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 25

Constant Load Step

Stress: 675 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.161		448.	0.006681	0.01391	1.39	1.02
2	-0.157		448.	0.006681	0.01391	1.39	1.02
3	-0.152		489.	0.007273	0.01338	1.34	1.03
4	-0.148		525.	0.007667	0.01299	1.30	1.03
5	-0.144		550.	0.007907	0.01281	1.28	1.03
6	-0.139		563.	0.008039	0.01272	1.27	1.03
7	-0.135		577.	0.008170	0.01262	1.26	1.03
8	-0.131		588.	0.008279	0.01251	1.25	1.03
9	-0.126		597.	0.008367	0.01242	1.24	1.03
10	-0.122		604.	0.008432	0.01236	1.24	1.03
11	-0.117		606.	0.008454	0.01237	1.24	1.03
12	-0.113		613.	0.008520	0.01230	1.23	1.03
13	-0.108		618.	0.008564	0.01226	1.23	1.03
14	-0.104		622.	0.008607	0.01228	1.23	1.03
15	-0.099		627.	0.008651	0.01224	1.22	1.03
16	-0.086		633.	0.008717	0.01217	1.22	1.03
17	-0.077		638.	0.008761	0.01213	1.21	1.03
18	0.000	0.000	653.	0.008902	0.01193	1.19	1.03
19	0.006	0.080	654.	0.008914	0.01191	1.19	1.03
20	0.091	0.301	658.	0.008957	0.01204	1.20	1.03
21	0.174	0.417	660.	0.008979	0.01195	1.19	1.03
22	0.342	0.584	665.	0.009023	0.01207	1.21	1.03
23	0.592	0.770	665.	0.009023	0.01210	1.21	1.03
24	0.839	0.916	667.	0.009045	0.01222	1.22	1.03
25	1.340	1.158	667.	0.009045	0.01229	1.23	1.03
26	2.340	1.530	670.	0.009067	0.01291	1.29	1.03
27	4.339	2.083	672.	0.009089	0.01336	1.34	1.03
28	4.842	2.201	670.	0.009082	0.01343	1.34	1.03
29	9.840	3.137	672.	0.009089	0.01424	1.42	1.02
30	14.841	3.852	672.	0.009089	0.01464	1.46	1.02
31	19.840	4.454	674.	0.009111	0.01499	1.50	1.02
32	24.841	4.984	674.	0.009111	0.01533	1.53	1.02
33	29.841	5.463	672.	0.009104	0.01547	1.55	1.02
34	39.839	6.312	674.	0.009111	0.01591	1.59	1.02
35	49.839	7.060	672.	0.009104	0.01622	1.62	1.02
36	59.839	7.736	674.	0.009111	0.01662	1.66	1.02
37	69.841	8.357	674.	0.009111	0.01675	1.68	1.02
38	79.841	8.935	674.	0.009111	0.01702	1.70	1.02
39	89.840	9.478	674.	0.009111	0.01702	1.70	1.02
40	99.842	9.992	674.	0.009111	0.01702	1.70	1.02
41	109.840	10.480	674.	0.009111	0.01705	1.71	1.02
42	119.842	10.947	674.	0.009111	0.01709	1.71	1.02
43	129.842	11.395	672.	0.009104	0.01716	1.72	1.02
44	139.843	11.826	674.	0.009111	0.01719	1.72	1.02
45	149.841	12.241	674.	0.009111	0.01719	1.72	1.02
46	159.841	12.643	672.	0.009104	0.01730	1.73	1.02
47	169.840	13.032	674.	0.009111	0.01722	1.72	1.02
48	179.840	13.410	674.	0.009111	0.01733	1.73	1.02
49	189.839	13.778	672.	0.009104	0.01733	1.73	1.02
50	199.840	14.136	674.	0.009111	0.01733	1.73	1.02

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/2024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 25

Constant Load Step

Stress: 1.01e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.129		674.	0.009111	0.01739	1.74	1.02
2	-0.125		674.	0.009111	0.01739	1.74	1.02
3	-0.120		746.	0.009811	0.01673	1.67	1.02
4	-0.116		808.	0.01040	0.01624	1.62	1.02
5	-0.112		844.	0.01075	0.01592	1.59	1.02
6	-0.107		871.	0.01101	0.01569	1.57	1.02
7	-0.103		882.	0.01112	0.01562	1.56	1.02
8	-0.098		898.	0.01128	0.01553	1.55	1.02
9	-0.094		909.	0.01139	0.01542	1.54	1.02
10	-0.090		923.	0.01152	0.01532	1.53	1.02
11	-0.085		930.	0.01158	0.01533	1.53	1.02
12	-0.081		939.	0.01167	0.01531	1.53	1.02
13	-0.076		943.	0.01171	0.01530	1.53	1.02
14	-0.072		950.	0.01178	0.01520	1.52	1.02
15	-0.068		955.	0.01182	0.01519	1.52	1.02
16	-0.050		966.	0.01193	0.01525	1.52	1.02
17	-0.046		968.	0.01195	0.01523	1.52	1.02
18	0.000	0.000	979.	0.01206	0.01515	1.52	1.02
19	0.038	0.196	988.	0.01215	0.01510	1.51	1.02
20	0.122	0.349	993.	0.01220	0.01522	1.52	1.02
21	0.205	0.453	998.	0.01224	0.01525	1.52	1.02
22	0.373	0.611	1.00e+03	0.01224	0.01544	1.54	1.02
23	0.624	0.790	1.00e+03	0.01224	0.01561	1.56	1.02
24	0.875	0.935	1.00e+03	0.01225	0.01568	1.57	1.02
25	1.373	1.172	1.00e+03	0.01225	0.01574	1.57	1.02
26	2.374	1.541	1.01e+03	0.01225	0.01601	1.60	1.02
27	4.372	2.091	1.01e+03	0.01225	0.01645	1.64	1.02
28	4.874	2.208	1.01e+03	0.01226	0.01654	1.65	1.02
29	9.871	3.142	1.01e+03	0.01226	0.01742	1.74	1.02
30	14.875	3.857	1.01e+03	0.01226	0.01813	1.81	1.02
31	19.875	4.458	1.01e+03	0.01226	0.01840	1.84	1.01
32	24.873	4.987	1.01e+03	0.01226	0.01870	1.87	1.01
33	29.872	5.466	1.01e+03	0.01226	0.01891	1.89	1.01
34	39.875	6.315	1.01e+03	0.01226	0.01935	1.93	1.01
35	49.875	7.062	1.01e+03	0.01226	0.01989	1.99	1.01
36	59.875	7.738	1.01e+03	0.01226	0.02026	2.03	1.01
37	69.874	8.359	1.01e+03	0.01226	0.02060	2.06	1.01
38	79.872	8.937	1.01e+03	0.01226	0.02070	2.07	1.01
39	89.873	9.480	1.01e+03	0.01226	0.02104	2.10	1.01
40	99.875	9.994	1.01e+03	0.01226	0.02121	2.12	1.01
41	109.872	10.482	1.01e+03	0.01226	0.02127	2.13	1.01
42	119.873	10.949	1.01e+03	0.01226	0.02124	2.12	1.01
43	129.875	11.396	1.01e+03	0.01226	0.02141	2.14	1.01
44	139.873	11.827	1.01e+03	0.01226	0.02134	2.13	1.01
45	142.166	11.923	1.01e+03	0.01226	0.02141	2.14	1.01

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 25

Constant Load Step

Stress: 3.42e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.055		2.28e+03	0.01423	0.04030	4.03	0.970
2	-0.051		2.28e+03	0.01423	0.04030	4.03	0.970
3	-0.047		2.62e+03	0.01453	0.04007	4.01	0.970
4	-0.042		2.86e+03	0.01474	0.03992	3.99	0.971
5	-0.038		3.00e+03	0.01486	0.03984	3.98	0.971
6	-0.033		3.09e+03	0.01494	0.03986	3.99	0.971
7	-0.029		3.15e+03	0.01499	0.03984	3.98	0.971
8	-0.024		3.20e+03	0.01503	0.03987	3.99	0.971
9	-0.020		3.23e+03	0.01506	0.03988	3.99	0.971
10	-0.016		3.25e+03	0.01508	0.03989	3.99	0.971
11	-0.011		3.27e+03	0.01509	0.03991	3.99	0.971
12	-0.007		3.29e+03	0.01511	0.03997	4.00	0.971
13	-0.003		3.30e+03	0.01512	0.03999	4.00	0.971
14	0.000	0.000	3.30e+03	0.01512	0.04000	4.00	0.971
15	0.002	0.044	3.31e+03	0.01512	0.04002	4.00	0.971
16	0.006	0.079	3.31e+03	0.01513	0.04001	4.00	0.971
17	0.024	0.155	3.33e+03	0.01515	0.04003	4.00	0.971
18	0.028	0.169	3.34e+03	0.01515	0.04006	4.01	0.970
19	0.112	0.335	3.37e+03	0.01518	0.04027	4.03	0.970
20	0.196	0.442	3.37e+03	0.01518	0.04036	4.04	0.970
21	0.279	0.528	3.38e+03	0.01519	0.04069	4.07	0.969
22	0.446	0.668	3.39e+03	0.01519	0.04116	4.12	0.968
23	0.697	0.835	3.39e+03	0.01520	0.04177	4.18	0.967
24	0.949	0.974	3.40e+03	0.01520	0.04220	4.22	0.966
25	1.446	1.203	3.40e+03	0.01520	0.04251	4.25	0.965
26	2.447	1.564	3.40e+03	0.01521	0.04325	4.32	0.964
27	4.448	2.109	3.40e+03	0.01521	0.04429	4.43	0.962
28	4.946	2.224	3.41e+03	0.01521	0.04473	4.47	0.961
29	9.949	3.154	3.41e+03	0.01521	0.04696	4.70	0.956
30	14.948	3.866	3.41e+03	0.01521	0.04828	4.83	0.954
31	19.945	4.466	3.41e+03	0.01522	0.04932	4.93	0.951
32	24.947	4.995	3.41e+03	0.01521	0.05014	5.01	0.950
33	29.947	5.472	3.41e+03	0.01522	0.05101	5.10	0.948
34	39.948	6.320	3.41e+03	0.01522	0.05230	5.23	0.945
35	49.945	7.067	3.41e+03	0.01522	0.05311	5.31	0.944
36	59.947	7.743	3.41e+03	0.01522	0.05358	5.36	0.943
37	69.947	8.363	3.42e+03	0.01522	0.05392	5.39	0.942
38	79.945	8.941	3.41e+03	0.01522	0.05450	5.45	0.941
39	89.948	9.484	3.42e+03	0.01522	0.05483	5.48	0.940
40	99.948	9.997	3.42e+03	0.01522	0.05544	5.54	0.939
41	109.946	10.486	3.42e+03	0.01522	0.05578	5.58	0.938
42	119.946	10.952	3.42e+03	0.01522	0.05608	5.61	0.938
43	121.209	11.009	3.42e+03	0.01522	0.05605	5.60	0.938

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 25

Constant Load Step

Stress: 5.13e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.043		3.42e+03	0.01522	0.05605	5.60	0.938
2	-0.039		3.42e+03	0.01522	0.05605	5.60	0.938
3	-0.034		3.97e+03	0.01569	0.05574	5.57	0.938
4	-0.030		4.37e+03	0.01600	0.05564	5.56	0.938
5	-0.026		4.58e+03	0.01616	0.05568	5.57	0.938
6	-0.021		4.72e+03	0.01627	0.05564	5.56	0.938
7	-0.017		4.80e+03	0.01633	0.05564	5.56	0.938
8	-0.012		4.86e+03	0.01638	0.05563	5.56	0.939
9	-0.008		4.91e+03	0.01641	0.05563	5.56	0.939
10	-0.004		4.94e+03	0.01643	0.05561	5.56	0.939
11	0.000	0.000	4.96e+03	0.01645	0.05562	5.56	0.939
12	0.001	0.025	4.96e+03	0.01645	0.05563	5.56	0.939
13	0.005	0.070	4.97e+03	0.01646	0.05562	5.56	0.939
14	0.009	0.097	4.99e+03	0.01647	0.05564	5.56	0.938
15	0.014	0.117	5.00e+03	0.01648	0.05563	5.56	0.939
16	0.018	0.135	5.01e+03	0.01649	0.05569	5.57	0.938
17	0.036	0.189	5.03e+03	0.01650	0.05568	5.57	0.938
18	0.044	0.211	5.04e+03	0.01651	0.05570	5.57	0.938
19	0.124	0.352	5.06e+03	0.01653	0.05602	5.60	0.938
20	0.207	0.455	5.08e+03	0.01654	0.05611	5.61	0.938
21	0.295	0.543	5.08e+03	0.01655	0.05641	5.64	0.937
22	0.457	0.676	5.09e+03	0.01655	0.05671	5.67	0.936
23	0.708	0.841	5.10e+03	0.01656	0.05721	5.72	0.935
24	0.959	0.980	5.10e+03	0.01656	0.05758	5.76	0.935
25	1.457	1.207	5.11e+03	0.01656	0.05842	5.84	0.933
26	2.457	1.568	5.11e+03	0.01657	0.05940	5.94	0.931
27	4.459	2.112	5.11e+03	0.01657	0.06143	6.14	0.927
28	4.961	2.227	5.11e+03	0.01657	0.06166	6.17	0.926
29	9.958	3.156	5.12e+03	0.01657	0.06436	6.44	0.921
30	14.958	3.867	5.12e+03	0.01657	0.06602	6.60	0.917
31	19.958	4.467	5.12e+03	0.01657	0.06764	6.76	0.914
32	24.960	4.996	5.12e+03	0.01658	0.06842	6.84	0.912
33	29.958	5.473	5.12e+03	0.01658	0.06916	6.92	0.911
34	39.960	6.321	5.12e+03	0.01658	0.07095	7.10	0.907
35	49.959	7.068	5.12e+03	0.01658	0.07176	7.18	0.905
36	59.958	7.743	5.12e+03	0.01658	0.07224	7.22	0.904
37	69.957	8.364	5.13e+03	0.01658	0.07295	7.29	0.903
38	79.960	8.942	5.13e+03	0.01658	0.07335	7.34	0.902
39	89.958	9.485	5.13e+03	0.01658	0.07359	7.36	0.902
40	99.958	9.998	5.12e+03	0.01658	0.07403	7.40	0.901
41	109.960	10.486	5.12e+03	0.01658	0.07470	7.47	0.899
42	119.958	10.953	5.13e+03	0.01658	0.07497	7.50	0.899
43	120.011	10.955	5.13e+03	0.01658	0.07494	7.49	0.899

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 25

Constant Load Step

Stress: 7.69e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.034		5.13e+03	0.01658	0.07501	7.50	0.899
2	-0.030		5.13e+03	0.01658	0.07501	7.50	0.899
3	-0.025		6.01e+03	0.01725	0.07471	7.47	0.899
4	-0.021		6.67e+03	0.01775	0.07451	7.45	0.900
5	-0.017		7.01e+03	0.01801	0.07442	7.44	0.900
6	-0.012		7.20e+03	0.01815	0.07438	7.44	0.900
7	-0.008		7.32e+03	0.01825	0.07435	7.44	0.900
8	-0.003		7.39e+03	0.01830	0.07436	7.44	0.900
9	0.000	0.000	7.43e+03	0.01833	0.07439	7.44	0.900
10	0.001	0.032	7.44e+03	0.01834	0.07439	7.44	0.900
11	0.005	0.074	7.48e+03	0.01837	0.07447	7.45	0.900
12	0.010	0.099	7.50e+03	0.01839	0.07449	7.45	0.900
13	0.014	0.120	7.52e+03	0.01840	0.07450	7.45	0.900
14	0.019	0.136	7.53e+03	0.01841	0.07453	7.45	0.900
15	0.023	0.152	7.54e+03	0.01842	0.07452	7.45	0.900
16	0.027	0.166	7.55e+03	0.01842	0.07451	7.45	0.900
17	0.045	0.212	7.58e+03	0.01844	0.07460	7.46	0.900
18	0.049	0.222	7.58e+03	0.01845	0.07459	7.46	0.900
19	0.133	0.365	7.62e+03	0.01847	0.07480	7.48	0.899
20	0.217	0.466	7.63e+03	0.01848	0.07506	7.51	0.899
21	0.300	0.548	7.64e+03	0.01849	0.07526	7.53	0.898
22	0.468	0.684	7.65e+03	0.01850	0.07546	7.55	0.898
23	0.719	0.848	7.65e+03	0.01850	0.07623	7.62	0.896
24	0.970	0.985	7.66e+03	0.01850	0.07680	7.68	0.895
25	1.468	1.211	7.66e+03	0.01851	0.07805	7.80	0.892
26	2.468	1.571	7.67e+03	0.01851	0.07906	7.91	0.890
27	4.469	2.114	7.67e+03	0.01852	0.08135	8.14	0.886
28	4.967	2.229	7.67e+03	0.01852	0.08159	8.16	0.885
29	9.968	3.157	7.68e+03	0.01852	0.08490	8.49	0.878
30	14.968	3.869	7.68e+03	0.01852	0.08676	8.68	0.875
31	19.967	4.468	7.68e+03	0.01852	0.08841	8.84	0.871
32	24.967	4.997	7.68e+03	0.01852	0.08939	8.94	0.869
33	29.967	5.474	7.68e+03	0.01852	0.09007	9.01	0.868
34	39.966	6.322	7.69e+03	0.01853	0.09192	9.19	0.864
35	49.970	7.069	7.69e+03	0.01853	0.09294	9.29	0.862
36	59.969	7.744	7.69e+03	0.01853	0.09348	9.35	0.861
37	69.967	8.365	7.69e+03	0.01853	0.09388	9.39	0.860
38	79.968	8.942	7.69e+03	0.01853	0.09443	9.44	0.859
39	89.969	9.485	7.69e+03	0.01853	0.09476	9.48	0.858
40	99.969	9.998	7.69e+03	0.01853	0.09520	9.52	0.857
41	109.967	10.487	7.69e+03	0.01853	0.09544	9.54	0.857
42	119.966	10.953	7.69e+03	0.01853	0.09557	9.56	0.857
43	129.967	11.400	7.69e+03	0.01853	0.09584	9.58	0.856
44	139.968	11.831	7.69e+03	0.01853	0.09595	9.59	0.856
45	149.970	12.246	7.69e+03	0.01853	0.09605	9.60	0.856
46	159.970	12.648	7.69e+03	0.01853	0.09598	9.60	0.856
47	169.967	13.037	7.69e+03	0.01853	0.09625	9.62	0.855
48	174.935	13.226	7.69e+03	0.01853	0.09639	9.64	0.855

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.028		7.69e+03	0.01853	0.09639	9.64	0.855
2	-0.023		7.69e+03	0.01853	0.09639	9.64	0.855
3	-0.019		9.02e+03	0.01912	0.09613	9.61	0.855
4	-0.015		1.01e+04	0.01950	0.09609	9.61	0.855
5	-0.010		1.07e+04	0.01969	0.09621	9.62	0.855
6	-0.006		1.10e+04	0.01979	0.09641	9.64	0.855
7	-0.001		1.11e+04	0.01984	0.09652	9.65	0.855
8	0.000	0.000	1.11e+04	0.01986	0.09652	9.65	0.855
9	0.003	0.053	1.12e+04	0.01988	0.09652	9.65	0.855
10	0.007	0.085	1.13e+04	0.01990	0.09654	9.65	0.855
11	0.012	0.108	1.13e+04	0.01991	0.09659	9.66	0.854
12	0.016	0.127	1.13e+04	0.01992	0.09665	9.67	0.854
13	0.020	0.143	1.14e+04	0.01993	0.09664	9.66	0.854
14	0.025	0.157	1.14e+04	0.01993	0.09667	9.67	0.854
15	0.029	0.171	1.14e+04	0.01993	0.09667	9.67	0.854
16	0.034	0.183	1.14e+04	0.01994	0.09673	9.67	0.854
17	0.051	0.226	1.14e+04	0.01995	0.09683	9.68	0.854
18	0.060	0.245	1.14e+04	0.01995	0.09679	9.68	0.854
19	0.140	0.374	1.15e+04	0.01996	0.09732	9.73	0.853
20	0.224	0.473	1.15e+04	0.01997	0.09775	9.78	0.852
21	0.307	0.554	1.15e+04	0.01997	0.09816	9.82	0.851
22	0.474	0.689	1.15e+04	0.01997	0.09863	9.86	0.850
23	0.725	0.852	1.15e+04	0.01997	0.09910	9.91	0.849
24	0.976	0.988	1.15e+04	0.01998	0.09943	9.94	0.849
25	1.473	1.214	1.15e+04	0.01998	0.1003	10.0	0.847
26	2.475	1.573	1.15e+04	0.01998	0.1019	10.2	0.843
27	4.477	2.116	1.15e+04	0.01998	0.1037	10.4	0.840
28	4.975	2.230	1.15e+04	0.01998	0.1042	10.4	0.839
29	9.977	3.159	1.15e+04	0.01999	0.1076	10.8	0.832
30	14.973	3.870	1.15e+04	0.01999	0.1092	10.9	0.829
31	19.976	4.469	1.15e+04	0.01999	0.1107	11.1	0.825
32	24.976	4.998	1.15e+04	0.01999	0.1118	11.2	0.823
33	29.976	5.475	1.15e+04	0.01999	0.1125	11.3	0.822
34	39.976	6.323	1.15e+04	0.01999	0.1138	11.4	0.819
35	49.975	7.069	1.15e+04	0.01999	0.1145	11.4	0.818
36	59.975	7.744	1.15e+04	0.01999	0.1150	11.5	0.817
37	69.973	8.365	1.15e+04	0.01999	0.1154	11.5	0.816
38	79.976	8.943	1.15e+04	0.01999	0.1158	11.6	0.815
39	89.974	9.485	1.15e+04	0.01999	0.1161	11.6	0.814
40	99.973	9.999	1.15e+04	0.01999	0.1163	11.6	0.814
41	109.975	10.487	1.15e+04	0.01999	0.1168	11.7	0.813
42	119.977	10.953	1.15e+04	0.01999	0.1171	11.7	0.812
43	129.976	11.401	1.15e+04	0.01999	0.1173	11.7	0.812
44	139.976	11.831	1.15e+04	0.01999	0.1176	11.8	0.811
45	149.974	12.246	1.15e+04	0.01999	0.1180	11.8	0.811
46	159.974	12.648	1.15e+04	0.01999	0.1182	11.8	0.810
47	169.973	13.037	1.15e+04	0.01999	0.1183	11.8	0.810
48	179.973	13.415	1.15e+04	0.01999	0.1184	11.8	0.810
49	189.975	13.783	1.15e+04	0.01999	0.1188	11.9	0.809
50	199.977	14.141	1.15e+04	0.01999	0.1190	11.9	0.809

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
51	209.973	14.490	1.15e+04	0.01999	0.1192	11.9	0.808
52	219.974	14.832	1.15e+04	0.01999	0.1193	11.9	0.808
53	229.975	15.165	1.15e+04	0.01999	0.1193	11.9	0.808
54	239.976	15.491	1.15e+04	0.01999	0.1195	11.9	0.807
55	249.976	15.811	1.15e+04	0.01999	0.1196	12.0	0.807
56	259.976	16.124	1.15e+04	0.01999	0.1196	12.0	0.807
57	269.974	16.431	1.15e+04	0.01999	0.1197	12.0	0.807
58	279.975	16.732	1.15e+04	0.01999	0.1198	12.0	0.807
59	289.976	17.029	1.15e+04	0.01999	0.1199	12.0	0.807
60	299.976	17.320	1.15e+04	0.01999	0.1199	12.0	0.807
61	309.974	17.606	1.15e+04	0.01999	0.1200	12.0	0.806
62	319.975	17.888	1.15e+04	0.01999	0.1201	12.0	0.806
63	329.975	18.165	1.15e+04	0.01999	0.1202	12.0	0.806
64	339.974	18.438	1.15e+04	0.01999	0.1201	12.0	0.806
65	349.975	18.708	1.15e+04	0.01999	0.1204	12.0	0.806
66	359.977	18.973	1.15e+04	0.01999	0.1204	12.0	0.806
67	369.974	19.235	1.15e+04	0.01999	0.1205	12.0	0.805
68	379.974	19.493	1.15e+04	0.01999	0.1206	12.1	0.805
69	389.974	19.748	1.15e+04	0.01999	0.1206	12.1	0.805
70	399.976	19.999	1.15e+04	0.01999	0.1206	12.1	0.805
71	409.974	20.248	1.15e+04	0.01999	0.1207	12.1	0.805
72	419.973	20.493	1.15e+04	0.01999	0.1206	12.1	0.805
73	429.973	20.736	1.15e+04	0.01999	0.1207	12.1	0.805
74	439.975	20.976	1.15e+04	0.01999	0.1208	12.1	0.805
75	449.975	21.213	1.15e+04	0.01999	0.1209	12.1	0.805
76	459.975	21.447	1.15e+04	0.01999	0.1208	12.1	0.805
77	469.974	21.679	1.15e+04	0.01999	0.1209	12.1	0.804
78	479.973	21.908	1.15e+04	0.01999	0.1210	12.1	0.804
79	489.975	22.135	1.15e+04	0.01999	0.1210	12.1	0.804
80	499.975	22.360	1.15e+04	0.01999	0.1212	12.1	0.804
81	509.975	22.583	1.15e+04	0.01999	0.1212	12.1	0.804
82	519.975	22.803	1.15e+04	0.01999	0.1212	12.1	0.804
83	529.976	23.021	1.15e+04	0.01999	0.1214	12.1	0.804
84	539.973	23.237	1.15e+04	0.01999	0.1215	12.1	0.803
85	549.974	23.452	1.15e+04	0.01999	0.1215	12.2	0.803
86	559.973	23.664	1.15e+04	0.01999	0.1216	12.2	0.803
87	569.972	23.874	1.15e+04	0.01999	0.1217	12.2	0.803
88	579.975	24.083	1.15e+04	0.01999	0.1217	12.2	0.803
89	589.973	24.289	1.15e+04	0.01999	0.1218	12.2	0.803
90	599.976	24.494	1.15e+04	0.01999	0.1218	12.2	0.803
91	609.977	24.698	1.15e+04	0.01999	0.1218	12.2	0.803
92	619.976	24.899	1.15e+04	0.01999	0.1219	12.2	0.802
93	629.975	25.099	1.15e+04	0.01999	0.1220	12.2	0.802
94	639.975	25.298	1.15e+04	0.01999	0.1219	12.2	0.802
95	649.975	25.495	1.15e+04	0.01999	0.1220	12.2	0.802
96	659.973	25.690	1.15e+04	0.01999	0.1221	12.2	0.802
97	669.976	25.884	1.15e+04	0.01999	0.1221	12.2	0.802
98	679.973	26.076	1.15e+04	0.01999	0.1221	12.2	0.802
99	689.975	26.267	1.15e+04	0.01999	0.1221	12.2	0.802
100	699.975	26.457	1.15e+04	0.01999	0.1222	12.2	0.802

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
101	709.975	26.645	1.15e+04	0.01999	0.1223	12.2	0.802
102	719.973	26.832	1.15e+04	0.01999	0.1223	12.2	0.802
103	729.973	27.018	1.15e+04	0.01999	0.1223	12.2	0.802
104	739.974	27.202	1.15e+04	0.01999	0.1223	12.2	0.802
105	749.972	27.386	1.15e+04	0.01999	0.1223	12.2	0.802
106	759.975	27.568	1.15e+04	0.01999	0.1223	12.2	0.802
107	769.974	27.748	1.15e+04	0.01999	0.1224	12.2	0.801
108	779.977	27.928	1.15e+04	0.01999	0.1224	12.2	0.801
109	789.975	28.106	1.15e+04	0.01999	0.1225	12.2	0.801
110	799.973	28.284	1.15e+04	0.01999	0.1225	12.3	0.801
111	809.973	28.460	1.15e+04	0.01999	0.1225	12.2	0.801
112	819.976	28.635	1.15e+04	0.01999	0.1226	12.3	0.801
113	829.974	28.809	1.15e+04	0.01999	0.1226	12.3	0.801
114	839.973	28.982	1.15e+04	0.01999	0.1225	12.2	0.801
115	849.976	29.154	1.15e+04	0.01999	0.1226	12.3	0.801
116	859.974	29.325	1.15e+04	0.01999	0.1225	12.3	0.801
117	869.974	29.495	1.15e+04	0.01999	0.1225	12.3	0.801
118	879.974	29.664	1.15e+04	0.01999	0.1226	12.3	0.801
119	889.973	29.832	1.15e+04	0.01999	0.1226	12.3	0.801
120	899.975	30.000	1.15e+04	0.01999	0.1227	12.3	0.801
121	909.973	30.166	1.15e+04	0.01999	0.1227	12.3	0.801
122	919.976	30.331	1.15e+04	0.01999	0.1227	12.3	0.801
123	929.974	30.495	1.15e+04	0.01999	0.1227	12.3	0.801
124	939.974	30.659	1.15e+04	0.01999	0.1227	12.3	0.801
125	949.974	30.822	1.15e+04	0.01999	0.1226	12.3	0.801
126	959.974	30.983	1.15e+04	0.01999	0.1227	12.3	0.801
127	969.976	31.144	1.15e+04	0.01999	0.1227	12.3	0.801
128	979.974	31.305	1.15e+04	0.01999	0.1228	12.3	0.801
129	989.976	31.464	1.15e+04	0.01999	0.1228	12.3	0.801
130	999.977	31.622	1.15e+04	0.01999	0.1227	12.3	0.801
131	1009.975	31.780	1.15e+04	0.01999	0.1229	12.3	0.801
132	1019.973	31.937	1.15e+04	0.01999	0.1228	12.3	0.801
133	1029.977	32.093	1.15e+04	0.01999	0.1229	12.3	0.800
134	1039.975	32.249	1.15e+04	0.01999	0.1229	12.3	0.800
135	1049.973	32.403	1.15e+04	0.01999	0.1229	12.3	0.800
136	1059.973	32.557	1.15e+04	0.01999	0.1229	12.3	0.800
137	1069.974	32.710	1.15e+04	0.01999	0.1229	12.3	0.800
138	1079.973	32.863	1.15e+04	0.01999	0.1229	12.3	0.800
139	1089.973	33.015	1.15e+04	0.01999	0.1229	12.3	0.800
140	1099.975	33.166	1.15e+04	0.01999	0.1230	12.3	0.800
141	1109.973	33.316	1.15e+04	0.01999	0.1230	12.3	0.800
142	1119.975	33.466	1.15e+04	0.01999	0.1230	12.3	0.800
143	1129.973	33.615	1.15e+04	0.01999	0.1231	12.3	0.800
144	1139.975	33.764	1.15e+04	0.01999	0.1232	12.3	0.800
145	1149.974	33.911	1.15e+04	0.01999	0.1230	12.3	0.800
146	1159.974	34.058	1.15e+04	0.01999	0.1231	12.3	0.800
147	1169.975	34.205	1.15e+04	0.01999	0.1232	12.3	0.800
148	1179.973	34.351	1.15e+04	0.01999	0.1233	12.3	0.800
149	1189.975	34.496	1.15e+04	0.01999	0.1232	12.3	0.800
150	1199.975	34.641	1.15e+04	0.01999	0.1232	12.3	0.800

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.033		5.77e+03	0.01778	0.1230	12.3	0.800
2	-0.028		5.77e+03	0.01778	0.1230	12.3	0.800
3	-0.024		4.94e+03	0.01741	0.1233	12.3	0.800
4	-0.020		4.08e+03	0.01702	0.1234	12.3	0.799
5	-0.015		3.69e+03	0.01665	0.1237	12.4	0.799
6	-0.011		3.45e+03	0.01639	0.1237	12.4	0.799
7	-0.007		3.30e+03	0.01623	0.1238	12.4	0.799
8	-0.002		3.21e+03	0.01613	0.1237	12.4	0.799
9	0.000	0.000	3.17e+03	0.01609	0.1237	12.4	0.799
10	0.002	0.047	3.14e+03	0.01605	0.1236	12.4	0.799
11	0.007	0.081	3.09e+03	0.01600	0.1237	12.4	0.799
12	0.011	0.105	3.05e+03	0.01596	0.1237	12.4	0.799
13	0.016	0.125	3.03e+03	0.01594	0.1237	12.4	0.799
14	0.020	0.141	3.01e+03	0.01592	0.1237	12.4	0.799
15	0.024	0.156	2.99e+03	0.01590	0.1238	12.4	0.799
16	0.029	0.169	2.98e+03	0.01589	0.1238	12.4	0.799
17	0.046	0.215	2.96e+03	0.01586	0.1237	12.4	0.799
18	0.055	0.234	2.95e+03	0.01585	0.1237	12.4	0.799
19	0.135	0.367	2.92e+03	0.01582	0.1234	12.3	0.799
20	0.218	0.467	2.91e+03	0.01581	0.1232	12.3	0.800
21	0.301	0.549	2.91e+03	0.01581	0.1230	12.3	0.800
22	0.469	0.685	2.90e+03	0.01580	0.1226	12.3	0.801
23	0.719	0.848	2.90e+03	0.01579	0.1223	12.2	0.802
24	0.970	0.985	2.90e+03	0.01579	0.1221	12.2	0.802
25	1.468	1.212	2.89e+03	0.01579	0.1216	12.2	0.803
26	2.469	1.571	2.89e+03	0.01578	0.1213	12.1	0.804
27	4.468	2.114	2.88e+03	0.01578	0.1210	12.1	0.804
28	4.971	2.230	2.88e+03	0.01578	0.1209	12.1	0.804
29	9.968	3.157	2.88e+03	0.01578	0.1207	12.1	0.805
30	14.972	3.869	2.88e+03	0.01578	0.1205	12.1	0.805
31	19.971	4.469	2.88e+03	0.01578	0.1205	12.1	0.805
32	24.971	4.997	2.88e+03	0.01578	0.1204	12.0	0.806
33	29.968	5.474	2.88e+03	0.01578	0.1205	12.0	0.805
34	39.968	6.322	2.88e+03	0.01578	0.1204	12.0	0.806
35	49.970	7.069	2.88e+03	0.01578	0.1204	12.0	0.806
36	59.969	7.744	2.88e+03	0.01578	0.1204	12.0	0.805
37	69.971	8.365	2.88e+03	0.01578	0.1204	12.0	0.806
38	79.969	8.943	2.88e+03	0.01578	0.1207	12.1	0.805
39	89.971	9.485	2.88e+03	0.01578	0.1203	12.0	0.806
40	99.971	9.999	2.88e+03	0.01578	0.1205	12.1	0.805
41	109.969	10.487	2.88e+03	0.01578	0.1203	12.0	0.806
42	119.969	10.953	2.88e+03	0.01578	0.1206	12.1	0.805
43	120.023	10.955	2.88e+03	0.01578	0.1205	12.1	0.805

	Project: Josh Bridge #0976		Location: Richmond, ME		Project No.: 164-37	
	Boring No.: BB-RAR-102		Tested By: sjr		Checked By: sjr	
	Sample No.: 3U		Test Date: 11/2/024		Depth: 51.65	
	Test No.: 68-426		Sample Type: wet		Elevation: --	
	Description:					
	Remarks: 24 hour load hold on load step 9 for C-alpha					


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 25

Constant Load Step

Stress: 721 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.043		1.44e+03	0.01407	0.1166	11.7	0.813
2	-0.039		1.44e+03	0.01407	0.1166	11.7	0.813
3	-0.034		1.24e+03	0.01379	0.1168	11.7	0.813
4	-0.030		1.07e+03	0.01356	0.1170	11.7	0.813
5	-0.025		968.	0.01338	0.1171	11.7	0.812
6	-0.021		903.	0.01318	0.1170	11.7	0.812
7	-0.017		862.	0.01306	0.1172	11.7	0.812
8	-0.012		837.	0.01299	0.1172	11.7	0.812
9	-0.008		817.	0.01293	0.1172	11.7	0.812
10	-0.004		803.	0.01289	0.1173	11.7	0.812
11	0.000	0.000	793.	0.01286	0.1173	11.7	0.812
12	0.001	0.024	792.	0.01285	0.1173	11.7	0.812
13	0.005	0.070	783.	0.01282	0.1173	11.7	0.812
14	0.009	0.097	776.	0.01280	0.1174	11.7	0.812
15	0.014	0.118	769.	0.01278	0.1173	11.7	0.812
16	0.018	0.135	765.	0.01277	0.1174	11.7	0.812
17	0.036	0.189	755.	0.01274	0.1174	11.7	0.812
18	0.040	0.201	753.	0.01274	0.1173	11.7	0.812
19	0.128	0.357	737.	0.01269	0.1173	11.7	0.812
20	0.207	0.455	735.	0.01268	0.1172	11.7	0.812
21	0.291	0.539	733.	0.01268	0.1171	11.7	0.812
22	0.457	0.676	731.	0.01267	0.1171	11.7	0.812
23	0.708	0.841	728.	0.01266	0.1169	11.7	0.813
24	0.958	0.979	726.	0.01266	0.1169	11.7	0.813
25	1.460	1.208	726.	0.01266	0.1166	11.7	0.813
26	2.461	1.569	726.	0.01266	0.1164	11.6	0.814
27	4.461	2.112	724.	0.01265	0.1161	11.6	0.814
28	4.960	2.227	722.	0.01264	0.1159	11.6	0.815
29	9.958	3.156	722.	0.01264	0.1149	11.5	0.817
30	14.959	3.868	722.	0.01264	0.1141	11.4	0.819
31	19.958	4.467	719.	0.01264	0.1138	11.4	0.819
32	24.960	4.996	719.	0.01264	0.1135	11.4	0.820
33	29.959	5.473	719.	0.01264	0.1134	11.3	0.820
34	39.957	6.321	719.	0.01264	0.1131	11.3	0.820
35	49.961	7.068	722.	0.01264	0.1129	11.3	0.821
36	59.961	7.743	719.	0.01264	0.1128	11.3	0.821
37	69.957	8.364	719.	0.01264	0.1127	11.3	0.821
38	79.958	8.942	719.	0.01264	0.1126	11.3	0.822
39	89.958	9.485	719.	0.01264	0.1124	11.2	0.822
40	99.957	9.998	719.	0.01264	0.1124	11.2	0.822
41	109.961	10.486	719.	0.01264	0.1123	11.2	0.822
42	119.959	10.953	719.	0.01264	0.1121	11.2	0.822
43	129.959	11.400	719.	0.01264	0.1122	11.2	0.822
44	139.960	11.830	719.	0.01264	0.1121	11.2	0.822
45	141.260	11.885	719.	0.01264	0.1121	11.2	0.823

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 25

Constant Load Step

Stress: 360 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.052		719.	0.01264	0.1121	11.2	0.823
2	-0.048		719.	0.01264	0.1121	11.2	0.823
3	-0.044		636.	0.01239	0.1124	11.2	0.822
4	-0.039		552.	0.01214	0.1126	11.3	0.822
5	-0.035		504.	0.01200	0.1127	11.3	0.821
6	-0.031		473.	0.01168	0.1130	11.3	0.821
7	-0.026		450.	0.01142	0.1132	11.3	0.820
8	-0.022		434.	0.01124	0.1133	11.3	0.820
9	-0.017		421.	0.01109	0.1135	11.3	0.820
10	-0.013		412.	0.01099	0.1136	11.4	0.820
11	-0.009		407.	0.01093	0.1136	11.4	0.819
12	-0.004		400.	0.01086	0.1137	11.4	0.819
13	0.000	0.000	396.	0.01081	0.1138	11.4	0.819
14	0.000	0.016	396.	0.01081	0.1138	11.4	0.819
15	0.005	0.067	391.	0.01076	0.1138	11.4	0.819
16	0.009	0.093	391.	0.01076	0.1138	11.4	0.819
17	0.026	0.162	382.	0.01065	0.1139	11.4	0.819
18	0.035	0.187	380.	0.01063	0.1139	11.4	0.819
19	0.119	0.344	373.	0.01055	0.1139	11.4	0.819
20	0.202	0.450	369.	0.01050	0.1138	11.4	0.819
21	0.285	0.534	369.	0.01050	0.1138	11.4	0.819
22	0.449	0.670	366.	0.01047	0.1137	11.4	0.819
23	0.699	0.836	364.	0.01045	0.1137	11.4	0.819
24	0.950	0.975	366.	0.01047	0.1136	11.4	0.819
25	1.451	1.205	364.	0.01045	0.1135	11.4	0.820
26	2.451	1.566	364.	0.01045	0.1133	11.3	0.820
27	4.448	2.109	362.	0.01042	0.1131	11.3	0.821
28	4.950	2.225	362.	0.01042	0.1129	11.3	0.821
29	9.949	3.154	362.	0.01042	0.1122	11.2	0.822
30	14.949	3.866	362.	0.01042	0.1115	11.2	0.824
31	19.951	4.467	362.	0.01042	0.1112	11.1	0.824
32	24.949	4.995	360.	0.01040	0.1109	11.1	0.825
33	29.952	5.473	360.	0.01040	0.1107	11.1	0.825
34	39.951	6.321	360.	0.01040	0.1103	11.0	0.826
35	49.951	7.068	360.	0.01040	0.1103	11.0	0.826
36	59.952	7.743	360.	0.01040	0.1100	11.0	0.827
37	69.952	8.364	360.	0.01040	0.1098	11.0	0.827
38	79.950	8.941	360.	0.01040	0.1097	11.0	0.828
39	89.950	9.484	360.	0.01040	0.1095	10.9	0.828
40	99.952	9.998	360.	0.01040	0.1094	10.9	0.828
41	109.951	10.486	360.	0.01040	0.1093	10.9	0.828
42	119.951	10.952	360.	0.01040	0.1093	10.9	0.828
43	129.949	11.400	360.	0.01040	0.1091	10.9	0.829
44	139.949	11.830	360.	0.01040	0.1090	10.9	0.829
45	149.949	12.245	360.	0.01040	0.1091	10.9	0.829
46	159.950	12.647	360.	0.01040	0.1090	10.9	0.829
47	169.949	13.036	360.	0.01040	0.1090	10.9	0.829
48	179.948	13.414	360.	0.01040	0.1088	10.9	0.829
49	189.948	13.782	360.	0.01040	0.1089	10.9	0.829
50	199.950	14.140	360.	0.01040	0.1089	10.9	0.829

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 25

Constant Load Step

Stress: 1.44e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.051		719.	0.01264	0.1084	10.8	0.830
2	-0.047		719.	0.01264	0.1084	10.8	0.830
3	-0.043		887.	0.01313	0.1079	10.8	0.831
4	-0.038		1.04e+03	0.01352	0.1077	10.8	0.832
5	-0.034		1.14e+03	0.01366	0.1076	10.8	0.832
6	-0.029		1.21e+03	0.01375	0.1076	10.8	0.832
7	-0.025		1.25e+03	0.01381	0.1076	10.8	0.832
8	-0.020		1.29e+03	0.01386	0.1075	10.7	0.832
9	-0.016		1.32e+03	0.01390	0.1074	10.7	0.832
10	-0.012		1.34e+03	0.01393	0.1074	10.7	0.832
11	-0.007		1.35e+03	0.01394	0.1074	10.7	0.832
12	-0.003		1.36e+03	0.01396	0.1074	10.7	0.832
13	0.000	0.000	1.37e+03	0.01397	0.1074	10.7	0.832
14	0.001	0.035	1.37e+03	0.01397	0.1075	10.7	0.832
15	0.006	0.075	1.38e+03	0.01398	0.1075	10.7	0.832
16	0.010	0.100	1.38e+03	0.01399	0.1075	10.7	0.832
17	0.028	0.166	1.40e+03	0.01401	0.1075	10.7	0.832
18	0.036	0.191	1.40e+03	0.01401	0.1075	10.8	0.832
19	0.116	0.340	1.42e+03	0.01404	0.1075	10.8	0.832
20	0.203	0.451	1.42e+03	0.01404	0.1076	10.8	0.832
21	0.286	0.535	1.43e+03	0.01404	0.1076	10.8	0.832
22	0.450	0.671	1.43e+03	0.01405	0.1077	10.8	0.832
23	0.700	0.837	1.43e+03	0.01405	0.1078	10.8	0.831
24	0.951	0.975	1.43e+03	0.01405	0.1080	10.8	0.831
25	1.453	1.205	1.43e+03	0.01405	0.1082	10.8	0.831
26	2.450	1.565	1.43e+03	0.01406	0.1084	10.8	0.830
27	4.451	2.110	1.44e+03	0.01406	0.1092	10.9	0.829
28	4.952	2.225	1.44e+03	0.01406	0.1093	10.9	0.828
29	9.951	3.155	1.44e+03	0.01406	0.1099	11.0	0.827
30	14.950	3.867	1.44e+03	0.01406	0.1101	11.0	0.827
31	19.952	4.467	1.44e+03	0.01407	0.1102	11.0	0.826
32	24.951	4.995	1.44e+03	0.01407	0.1104	11.0	0.826
33	29.952	5.473	1.44e+03	0.01407	0.1104	11.0	0.826
34	39.951	6.321	1.44e+03	0.01407	0.1105	11.0	0.826
35	49.952	7.068	1.44e+03	0.01407	0.1105	11.1	0.826
36	59.951	7.743	1.44e+03	0.01407	0.1106	11.1	0.826
37	69.951	8.364	1.44e+03	0.01407	0.1105	11.1	0.826
38	79.950	8.941	1.44e+03	0.01407	0.1104	11.0	0.826
39	89.952	9.484	1.44e+03	0.01407	0.1104	11.0	0.826
40	99.949	9.997	1.44e+03	0.01407	0.1103	11.0	0.826
41	109.949	10.486	1.44e+03	0.01407	0.1103	11.0	0.826
42	119.952	10.952	1.44e+03	0.01407	0.1103	11.0	0.826
43	119.987	10.954	1.44e+03	0.01407	0.1103	11.0	0.826

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.045		1.44e+03	0.01407	0.1103	11.0	0.826
2	-0.040		1.44e+03	0.01407	0.1103	11.0	0.826
3	-0.036		1.81e+03	0.01456	0.1100	11.0	0.827
4	-0.032		2.15e+03	0.01498	0.1098	11.0	0.827
5	-0.027		2.35e+03	0.01520	0.1097	11.0	0.828
6	-0.023		2.48e+03	0.01535	0.1095	11.0	0.828
7	-0.018		2.58e+03	0.01545	0.1094	10.9	0.828
8	-0.014		2.64e+03	0.01551	0.1094	10.9	0.828
9	-0.009		2.68e+03	0.01556	0.1094	10.9	0.828
10	-0.005		2.71e+03	0.01559	0.1095	10.9	0.828
11	-0.000		2.74e+03	0.01562	0.1095	11.0	0.828
12	0.000	0.000	2.74e+03	0.01562	0.1095	10.9	0.828
13	0.004	0.063	2.76e+03	0.01564	0.1094	10.9	0.828
14	0.008	0.091	2.77e+03	0.01566	0.1095	10.9	0.828
15	0.012	0.112	2.78e+03	0.01567	0.1095	10.9	0.828
16	0.017	0.130	2.79e+03	0.01568	0.1094	10.9	0.828
17	0.034	0.185	2.81e+03	0.01570	0.1095	10.9	0.828
18	0.043	0.207	2.82e+03	0.01571	0.1095	11.0	0.828
19	0.126	0.355	2.84e+03	0.01573	0.1097	11.0	0.828
20	0.209	0.458	2.85e+03	0.01574	0.1099	11.0	0.827
21	0.293	0.541	2.85e+03	0.01575	0.1100	11.0	0.827
22	0.459	0.678	2.86e+03	0.01575	0.1103	11.0	0.826
23	0.709	0.842	2.86e+03	0.01576	0.1105	11.0	0.826
24	0.956	0.978	2.87e+03	0.01576	0.1106	11.1	0.826
25	1.457	1.207	2.87e+03	0.01576	0.1110	11.1	0.825
26	2.458	1.568	2.87e+03	0.01577	0.1116	11.2	0.824
27	4.459	2.112	2.87e+03	0.01577	0.1127	11.3	0.821
28	4.956	2.226	2.88e+03	0.01577	0.1128	11.3	0.821
29	9.956	3.155	2.88e+03	0.01578	0.1134	11.3	0.820
30	14.956	3.867	2.88e+03	0.01577	0.1138	11.4	0.819
31	19.956	4.467	2.88e+03	0.01577	0.1139	11.4	0.819
32	24.959	4.996	2.88e+03	0.01578	0.1140	11.4	0.819
33	29.959	5.473	2.88e+03	0.01578	0.1140	11.4	0.819
34	39.958	6.321	2.88e+03	0.01578	0.1141	11.4	0.818
35	49.958	7.068	2.88e+03	0.01578	0.1140	11.4	0.819
36	59.958	7.743	2.88e+03	0.01578	0.1141	11.4	0.818
37	69.957	8.364	2.88e+03	0.01578	0.1141	11.4	0.818
38	79.960	8.942	2.88e+03	0.01578	0.1141	11.4	0.818
39	89.956	9.485	2.88e+03	0.01578	0.1141	11.4	0.818
40	99.960	9.998	2.88e+03	0.01578	0.1141	11.4	0.819
41	109.956	10.486	2.88e+03	0.01577	0.1140	11.4	0.819
42	119.958	10.953	2.88e+03	0.01578	0.1141	11.4	0.818
43	120.002	10.955	2.88e+03	0.01578	0.1140	11.4	0.819

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.028		5.77e+03	0.01778	0.1197	12.0	0.807
2	-0.024		5.77e+03	0.01778	0.1197	12.0	0.807
3	-0.019		7.51e+03	0.01856	0.1195	12.0	0.807
4	-0.015		9.33e+03	0.01923	0.1198	12.0	0.807
5	-0.010		1.02e+04	0.01953	0.1199	12.0	0.807
6	-0.006		1.06e+04	0.01969	0.1200	12.0	0.806
7	-0.002		1.09e+04	0.01977	0.1202	12.0	0.806
8	0.000	0.000	1.10e+04	0.01979	0.1202	12.0	0.806
9	0.003	0.052	1.11e+04	0.01982	0.1203	12.0	0.806
10	0.007	0.085	1.11e+04	0.01986	0.1204	12.0	0.806
11	0.012	0.108	1.12e+04	0.01988	0.1205	12.0	0.805
12	0.016	0.127	1.13e+04	0.01989	0.1205	12.0	0.805
13	0.020	0.143	1.13e+04	0.01990	0.1205	12.1	0.805
14	0.025	0.158	1.13e+04	0.01991	0.1206	12.1	0.805
15	0.029	0.171	1.13e+04	0.01992	0.1206	12.1	0.805
16	0.034	0.183	1.13e+04	0.01992	0.1206	12.1	0.805
17	0.047	0.217	1.14e+04	0.01993	0.1207	12.1	0.805
18	0.056	0.236	1.14e+04	0.01994	0.1207	12.1	0.805
19	0.139	0.373	1.14e+04	0.01995	0.1210	12.1	0.804
20	0.223	0.472	1.15e+04	0.01996	0.1212	12.1	0.804
21	0.307	0.554	1.15e+04	0.01997	0.1214	12.1	0.804
22	0.474	0.689	1.15e+04	0.01997	0.1219	12.2	0.803
23	0.726	0.852	1.15e+04	0.01997	0.1227	12.3	0.801
24	0.972	0.986	1.15e+04	0.01998	0.1231	12.3	0.800
25	1.474	1.214	1.15e+04	0.01998	0.1243	12.4	0.798
26	2.473	1.573	1.15e+04	0.01998	0.1253	12.5	0.796
27	4.474	2.115	1.15e+04	0.01998	0.1269	12.7	0.792
28	4.975	2.231	1.15e+04	0.01998	0.1270	12.7	0.792
29	9.974	3.158	1.15e+04	0.01999	0.1283	12.8	0.789
30	14.976	3.870	1.15e+04	0.01999	0.1288	12.9	0.788
31	19.974	4.469	1.15e+04	0.01999	0.1294	12.9	0.787
32	24.975	4.998	1.15e+04	0.01999	0.1297	13.0	0.786
33	29.976	5.475	1.15e+04	0.01999	0.1298	13.0	0.786
34	39.974	6.322	1.15e+04	0.01999	0.1302	13.0	0.785
35	49.975	7.069	1.15e+04	0.01999	0.1303	13.0	0.785
36	59.975	7.744	1.15e+04	0.01999	0.1304	13.0	0.785
37	69.974	8.365	1.15e+04	0.01999	0.1304	13.0	0.785
38	79.975	8.943	1.15e+04	0.01999	0.1305	13.1	0.785
39	89.973	9.485	1.15e+04	0.01999	0.1306	13.1	0.785
40	99.973	9.999	1.15e+04	0.01999	0.1306	13.1	0.785
41	109.972	10.487	1.15e+04	0.01999	0.1307	13.1	0.784
42	119.975	10.953	1.15e+04	0.01999	0.1308	13.1	0.784
43	120.068	10.958	1.15e+04	0.01999	0.1308	13.1	0.784

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 25

Constant Load Step

Stress: 1.15e+04 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.022		2.31e+04	0.02345	0.1577	15.8	0.729
2	-0.018		2.31e+04	0.02345	0.1577	15.8	0.729
3	-0.013		2.18e+04	0.02319	0.1578	15.8	0.729
4	-0.009		1.61e+04	0.02202	0.1579	15.8	0.728
5	-0.004		1.37e+04	0.02121	0.1581	15.8	0.728
6	0.000	0.000	1.27e+04	0.02086	0.1581	15.8	0.728
7	0.000	0.009	1.27e+04	0.02086	0.1581	15.8	0.728
8	0.004	0.066	1.22e+04	0.02070	0.1580	15.8	0.728
9	0.009	0.094	1.20e+04	0.02062	0.1580	15.8	0.728
10	0.013	0.115	1.18e+04	0.02058	0.1581	15.8	0.728
11	0.018	0.133	1.18e+04	0.02055	0.1581	15.8	0.728
12	0.022	0.148	1.17e+04	0.02053	0.1580	15.8	0.728
13	0.026	0.163	1.17e+04	0.02053	0.1580	15.8	0.728
14	0.031	0.176	1.17e+04	0.02052	0.1580	15.8	0.728
15	0.035	0.188	1.17e+04	0.02052	0.1580	15.8	0.728
16	0.039	0.199	1.17e+04	0.02051	0.1579	15.8	0.729
17	0.057	0.239	1.16e+04	0.02050	0.1579	15.8	0.729
18	0.066	0.256	1.16e+04	0.02050	0.1579	15.8	0.729
19	0.145	0.380	1.16e+04	0.02049	0.1577	15.8	0.729
20	0.229	0.478	1.16e+04	0.02048	0.1574	15.7	0.730
21	0.312	0.559	1.16e+04	0.02048	0.1573	15.7	0.730
22	0.479	0.692	1.16e+04	0.02048	0.1570	15.7	0.730
23	0.729	0.854	1.15e+04	0.02048	0.1566	15.7	0.731
24	0.980	0.990	1.15e+04	0.02047	0.1564	15.6	0.732
25	1.482	1.217	1.15e+04	0.02047	0.1563	15.6	0.732
26	2.482	1.575	1.15e+04	0.02047	0.1561	15.6	0.732
27	4.480	2.117	1.15e+04	0.02047	0.1560	15.6	0.733
28	4.981	2.232	1.15e+04	0.02047	0.1559	15.6	0.733
29	9.979	3.159	1.15e+04	0.02047	0.1560	15.6	0.732
30	14.982	3.871	1.15e+04	0.02047	0.1558	15.6	0.733
31	19.981	4.470	1.15e+04	0.02047	0.1557	15.6	0.733
32	24.981	4.998	1.15e+04	0.02047	0.1557	15.6	0.733
33	29.979	5.475	1.15e+04	0.02047	0.1557	15.6	0.733
34	39.980	6.323	1.15e+04	0.02047	0.1557	15.6	0.733
35	49.980	7.070	1.15e+04	0.02047	0.1557	15.6	0.733
36	59.979	7.745	1.15e+04	0.02047	0.1556	15.6	0.733
37	69.980	8.365	1.15e+04	0.02047	0.1557	15.6	0.733
38	79.982	8.943	1.15e+04	0.02047	0.1556	15.6	0.733
39	89.981	9.486	1.15e+04	0.02047	0.1556	15.6	0.733
40	99.982	9.999	1.15e+04	0.02047	0.1556	15.6	0.733
41	109.981	10.487	1.15e+04	0.02047	0.1557	15.6	0.733
42	119.979	10.954	1.15e+04	0.02047	0.1557	15.6	0.733
43	120.037	10.956	1.15e+04	0.02047	0.1557	15.6	0.733

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 25

Constant Load Step

Stress: 5.77e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.028		1.15e+04	0.02047	0.1557	15.6	0.733
2	-0.023		1.15e+04	0.02047	0.1557	15.6	0.733
3	-0.019		9.80e+03	0.01988	0.1561	15.6	0.732
4	-0.015		7.97e+03	0.01925	0.1564	15.6	0.732
5	-0.010		7.13e+03	0.01887	0.1564	15.6	0.732
6	-0.006		6.67e+03	0.01866	0.1564	15.6	0.732
7	-0.001		6.39e+03	0.01854	0.1564	15.6	0.732
8	0.000	0.000	6.34e+03	0.01852	0.1564	15.6	0.732
9	0.003	0.056	6.22e+03	0.01846	0.1564	15.6	0.732
10	0.008	0.087	6.11e+03	0.01841	0.1563	15.6	0.732
11	0.012	0.110	6.03e+03	0.01838	0.1563	15.6	0.732
12	0.016	0.128	5.99e+03	0.01836	0.1563	15.6	0.732
13	0.021	0.145	5.95e+03	0.01834	0.1562	15.6	0.732
14	0.025	0.159	5.94e+03	0.01834	0.1561	15.6	0.732
15	0.030	0.172	5.92e+03	0.01833	0.1561	15.6	0.732
16	0.034	0.184	5.90e+03	0.01832	0.1561	15.6	0.732
17	0.051	0.227	5.87e+03	0.01830	0.1561	15.6	0.732
18	0.056	0.236	5.86e+03	0.01830	0.1560	15.6	0.733
19	0.139	0.373	5.82e+03	0.01828	0.1558	15.6	0.733
20	0.223	0.472	5.81e+03	0.01828	0.1557	15.6	0.733
21	0.306	0.553	5.80e+03	0.01828	0.1556	15.6	0.733
22	0.474	0.688	5.79e+03	0.01827	0.1552	15.5	0.734
23	0.725	0.851	5.79e+03	0.01827	0.1548	15.5	0.735
24	0.976	0.988	5.78e+03	0.01827	0.1546	15.5	0.735
25	1.473	1.214	5.78e+03	0.01826	0.1542	15.4	0.736
26	2.474	1.573	5.77e+03	0.01826	0.1539	15.4	0.737
27	4.475	2.115	5.77e+03	0.01826	0.1532	15.3	0.738
28	4.973	2.230	5.77e+03	0.01826	0.1532	15.3	0.738
29	9.976	3.159	5.77e+03	0.01826	0.1529	15.3	0.739
30	14.976	3.870	5.77e+03	0.01826	0.1529	15.3	0.739
31	19.976	4.469	5.77e+03	0.01826	0.1529	15.3	0.739
32	24.974	4.997	5.77e+03	0.01826	0.1529	15.3	0.739
33	29.973	5.475	5.77e+03	0.01826	0.1529	15.3	0.739
34	39.977	6.323	5.77e+03	0.01826	0.1529	15.3	0.739
35	49.976	7.069	5.77e+03	0.01826	0.1528	15.3	0.739
36	59.976	7.744	5.77e+03	0.01826	0.1528	15.3	0.739
37	69.975	8.365	5.77e+03	0.01826	0.1529	15.3	0.739
38	79.976	8.943	5.77e+03	0.01826	0.1529	15.3	0.739
39	89.974	9.485	5.77e+03	0.01826	0.1528	15.3	0.739
40	99.974	9.999	5.76e+03	0.01826	0.1528	15.3	0.739
41	109.973	10.487	5.77e+03	0.01826	0.1528	15.3	0.739
42	119.973	10.953	5.77e+03	0.01826	0.1529	15.3	0.739
43	120.035	10.956	5.77e+03	0.01826	0.1529	15.3	0.739

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 25

Constant Load Step

Stress: 2.88e+03 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.030		5.77e+03	0.01826	0.1529	15.3	0.739
2	-0.025		5.77e+03	0.01826	0.1529	15.3	0.739
3	-0.021		4.80e+03	0.01783	0.1532	15.3	0.738
4	-0.017		3.99e+03	0.01746	0.1531	15.3	0.738
5	-0.012		3.61e+03	0.01705	0.1534	15.3	0.738
6	-0.008		3.39e+03	0.01680	0.1535	15.3	0.738
7	-0.004		3.25e+03	0.01665	0.1536	15.4	0.737
8	0.000	0.000	3.17e+03	0.01657	0.1536	15.4	0.737
9	0.001	0.028	3.16e+03	0.01655	0.1536	15.4	0.737
10	0.005	0.072	3.10e+03	0.01649	0.1536	15.4	0.737
11	0.010	0.098	3.05e+03	0.01644	0.1536	15.4	0.737
12	0.014	0.119	3.03e+03	0.01642	0.1536	15.4	0.737
13	0.018	0.136	3.01e+03	0.01640	0.1536	15.4	0.737
14	0.023	0.151	3.00e+03	0.01638	0.1536	15.4	0.737
15	0.027	0.165	2.98e+03	0.01637	0.1536	15.4	0.737
16	0.032	0.179	2.97e+03	0.01636	0.1536	15.4	0.737
17	0.049	0.222	2.95e+03	0.01634	0.1536	15.4	0.737
18	0.058	0.241	2.95e+03	0.01633	0.1536	15.4	0.737
19	0.141	0.376	2.92e+03	0.01630	0.1533	15.3	0.738
20	0.221	0.470	2.91e+03	0.01629	0.1532	15.3	0.738
21	0.304	0.552	2.91e+03	0.01629	0.1531	15.3	0.739
22	0.472	0.687	2.90e+03	0.01628	0.1528	15.3	0.739
23	0.723	0.850	2.90e+03	0.01628	0.1526	15.3	0.739
24	0.974	0.987	2.90e+03	0.01627	0.1523	15.2	0.740
25	1.472	1.213	2.89e+03	0.01627	0.1519	15.2	0.741
26	2.471	1.572	2.89e+03	0.01627	0.1514	15.1	0.742
27	4.472	2.115	2.89e+03	0.01626	0.1504	15.0	0.744
28	4.973	2.230	2.89e+03	0.01626	0.1503	15.0	0.744
29	9.972	3.158	2.88e+03	0.01626	0.1496	15.0	0.746
30	14.972	3.869	2.88e+03	0.01626	0.1493	14.9	0.746
31	19.971	4.469	2.88e+03	0.01626	0.1492	14.9	0.746
32	24.972	4.997	2.88e+03	0.01626	0.1490	14.9	0.747
33	29.974	5.475	2.88e+03	0.01626	0.1490	14.9	0.747
34	39.973	6.322	2.88e+03	0.01626	0.1487	14.9	0.747
35	49.972	7.069	2.88e+03	0.01626	0.1488	14.9	0.747
36	59.971	7.744	2.88e+03	0.01626	0.1488	14.9	0.747
37	69.971	8.365	2.88e+03	0.01626	0.1486	14.9	0.748
38	79.971	8.943	2.89e+03	0.01626	0.1485	14.8	0.748
39	89.973	9.485	2.88e+03	0.01626	0.1485	14.8	0.748
40	99.971	9.999	2.88e+03	0.01626	0.1485	14.8	0.748
41	109.974	10.487	2.88e+03	0.01626	0.1485	14.8	0.748
42	119.971	10.953	2.88e+03	0.01626	0.1486	14.9	0.748
43	120.020	10.955	2.88e+03	0.01626	0.1486	14.9	0.748

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		


One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 25 of 25

Constant Load Step

Stress: 721 psf

	Elapsed Time min	Sq.Rt. of Time min	Stress psf	Displacement Correction in	Corrected Displacement in	Strain %	Void Ratio
1	-0.040		1.44e+03	0.01454	0.1444	14.4	0.756
2	-0.036		1.44e+03	0.01454	0.1444	14.4	0.756
3	-0.031		1.27e+03	0.01432	0.1446	14.5	0.756
4	-0.027		1.07e+03	0.01405	0.1447	14.5	0.756
5	-0.023		961.	0.01384	0.1449	14.5	0.755
6	-0.018		898.	0.01365	0.1450	14.5	0.755
7	-0.014		857.	0.01353	0.1451	14.5	0.755
8	-0.009		828.	0.01344	0.1452	14.5	0.755
9	-0.005		810.	0.01339	0.1452	14.5	0.755
10	-0.000		794.	0.01334	0.1453	14.5	0.754
11	0.000	0.000	793.	0.01334	0.1453	14.5	0.754
12	0.004	0.063	785.	0.01331	0.1453	14.5	0.754
13	0.008	0.092	776.	0.01329	0.1453	14.5	0.754
14	0.013	0.113	771.	0.01327	0.1453	14.5	0.754
15	0.017	0.131	765.	0.01325	0.1453	14.5	0.754
16	0.022	0.147	762.	0.01325	0.1453	14.5	0.754
17	0.039	0.198	751.	0.01321	0.1453	14.5	0.754
18	0.043	0.208	751.	0.01321	0.1453	14.5	0.754
19	0.127	0.356	737.	0.01317	0.1453	14.5	0.755
20	0.211	0.459	735.	0.01317	0.1452	14.5	0.755
21	0.294	0.542	733.	0.01316	0.1451	14.5	0.755
22	0.461	0.679	731.	0.01315	0.1449	14.5	0.755
23	0.712	0.844	728.	0.01314	0.1448	14.5	0.755
24	0.963	0.981	728.	0.01314	0.1447	14.5	0.756
25	1.460	1.208	726.	0.01314	0.1445	14.5	0.756
26	2.460	1.568	724.	0.01313	0.1443	14.4	0.757
27	4.461	2.112	724.	0.01313	0.1439	14.4	0.757
28	4.964	2.228	722.	0.01312	0.1438	14.4	0.758
29	9.962	3.156	722.	0.01312	0.1426	14.3	0.760
30	14.960	3.868	722.	0.01312	0.1420	14.2	0.761
31	19.960	4.468	719.	0.01312	0.1411	14.1	0.763
32	24.964	4.996	722.	0.01312	0.1408	14.1	0.764
33	29.960	5.474	722.	0.01312	0.1407	14.1	0.764
34	39.960	6.321	719.	0.01312	0.1406	14.1	0.764
35	49.963	7.068	719.	0.01312	0.1406	14.1	0.764
36	59.960	7.743	719.	0.01312	0.1405	14.1	0.764
37	69.963	8.364	719.	0.01312	0.1403	14.0	0.765
38	79.963	8.942	719.	0.01312	0.1401	14.0	0.765
39	89.961	9.485	722.	0.01312	0.1401	14.0	0.765
40	99.964	9.998	719.	0.01312	0.1400	14.0	0.765
41	109.960	10.486	717.	0.01311	0.1400	14.0	0.765
42	119.963	10.953	719.	0.01312	0.1399	14.0	0.765
43	119.986	10.954	719.	0.01312	0.1399	14.0	0.765

	Project: Josh Bridge #0976	Location: Richmond, ME	Project No.: 164-37
	Boring No.: BB-RAR-102	Tested By: sjr	Checked By: sjr
	Sample No.: 3U	Test Date: 11/2/024	Depth: 51.65
	Test No.: 68-426	Sample Type: wet	Elevation: --
	Description:		
	Remarks: 24 hour load hold on load step 9 for C-alpha		



APPENDIX D – ROCK CORE PHOTO LOG



MaineDOT Bridge No. 0976
Langdon Rd
Richmond, ME
WIN 27228.00
Rock Core Photographs

Boring No.	Run	Depth (ft)	Recovery (in)	Recovery (%)	RQD (in)	RQD (%)	Rock Type	Box Row
BB - RAR - 101A	R2	120.1 - 123.8	44	100%	11	25%	GRANITE	1
BB - RAR - 101A	R3	123.8 - 128.8	58	97%	10	17%	GRANITE	2



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



APPENDIX E – CALCULATIONS



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

Engineers and
 Scientists

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Lateral Earth Pressures
 SHEET: 1 OF 1
 CALCULATED BY E. Tome 3/25/2024
 CHECKED BY N. Williams 3/25/2024

Subject:

Evaluate lateral earth pressure coefficients for a precast box culvert walls, inlet and outlet head walls and in-line wingwalls.

References:

1. MaineDOT Bridge Design Guide, Chapter 3
2. AASHTO LRFD Bridge Design Specifications, 10th Edition (2024)
3. U.S. Army Corps of Engineers Engineer Manual 1110-2-2502, Retaining and Flood Walls

Input Parameters:

- $\phi := 32\text{deg}$ Effective angle of internal friction (*Granular borrow, Soil Type 4, BDG Table 3-3*)
- $\delta_f := 19.5\text{deg}$ Average value, precast concrete against clean sand/silty sand-gravel mixture (*AASHTO LRFD Table 3.11.5.3-1*)
- $\beta := 26.6\text{deg}$ Angle of backfill to the horizontal (2H:1V Backfill Slope behind unsupported in-line wingwalls)
- $\theta := 90\text{-deg}$ Angle of back face of wall to the horizontal

Earth Pressure Coefficients:

Outlet Walls Fixed to Box Culvert:

Assume translation and rotation of culvert with inlet and outlet walls is inadequate to achieve active earth pressure. Therefore, design for at-rest earth pressure.

$K_o := 1 - \sin(\phi) = 0.47$ At-rest Earth Pressure Coefficient

Outlet Walls free to rotate:

The earth pressure is applied to a plane extending vertically up from the heel of the wall base, and the weight of the soil on the inside of the vertical plane is considered as part of the wall weight. The failure sliding surface is not restricted by the top of the wall or back face of wall. Use Rankine theory for active earth pressure.

For unsupported culvert walls extending beyond the box, with horizontal backslope:

$K_{ar} := \tan\left(45\text{deg} - \frac{\phi}{2}\right)^2$ $K_{ar} = 0.31$

For a sloped 2H:1V backfill:

$K_{ar} := \cos(\beta) \cdot \frac{\left[\cos(\beta) - \sqrt{(\cos(\beta))^2 - (\cos(\phi))^2}\right]}{\left[\cos(\beta) + \sqrt{(\cos(\beta))^2 - (\cos(\phi))^2}\right]}$

$K_{ar} = 0.46$

March 2014

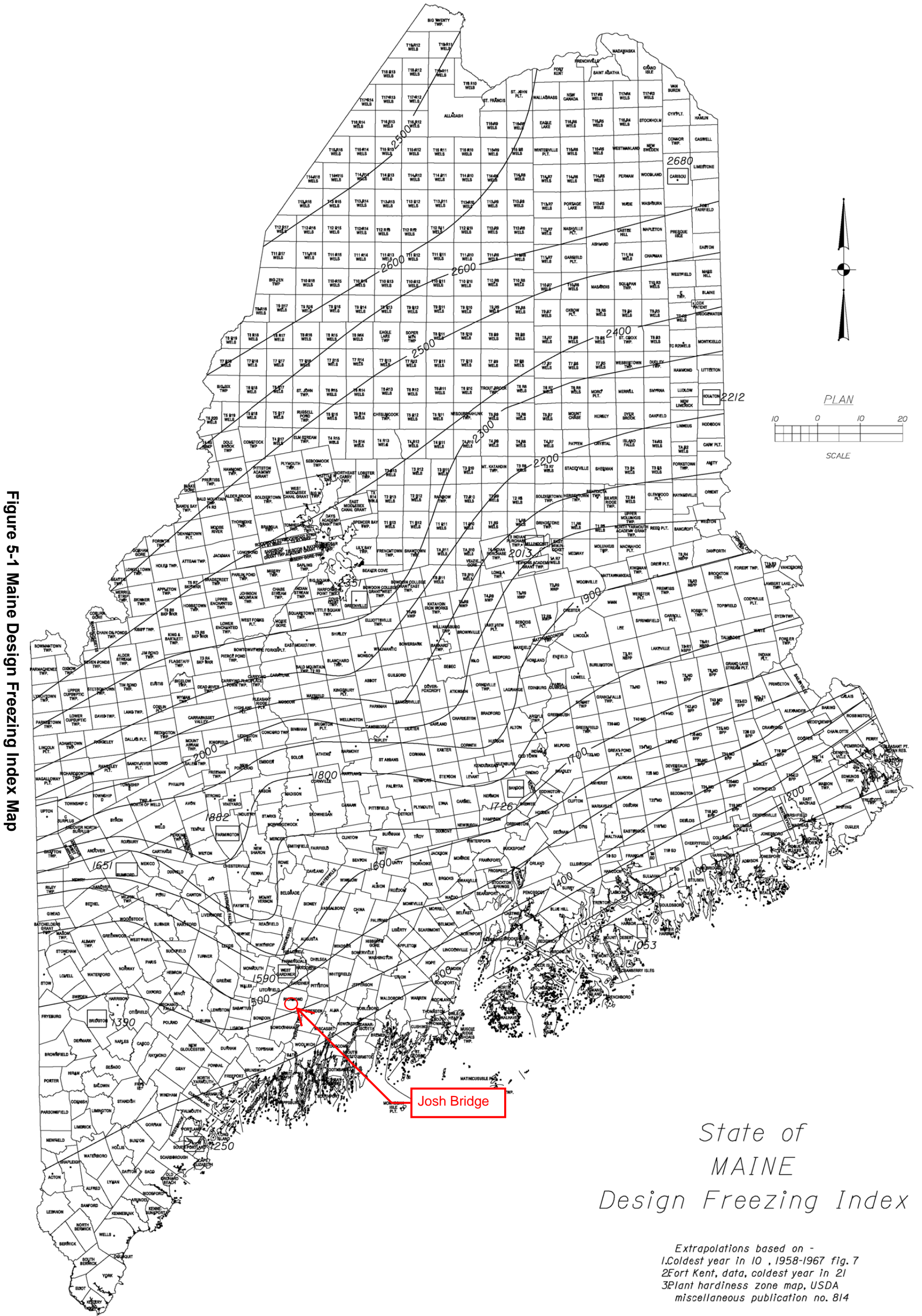


Figure 5-1 Maine Design Freezing Index Map

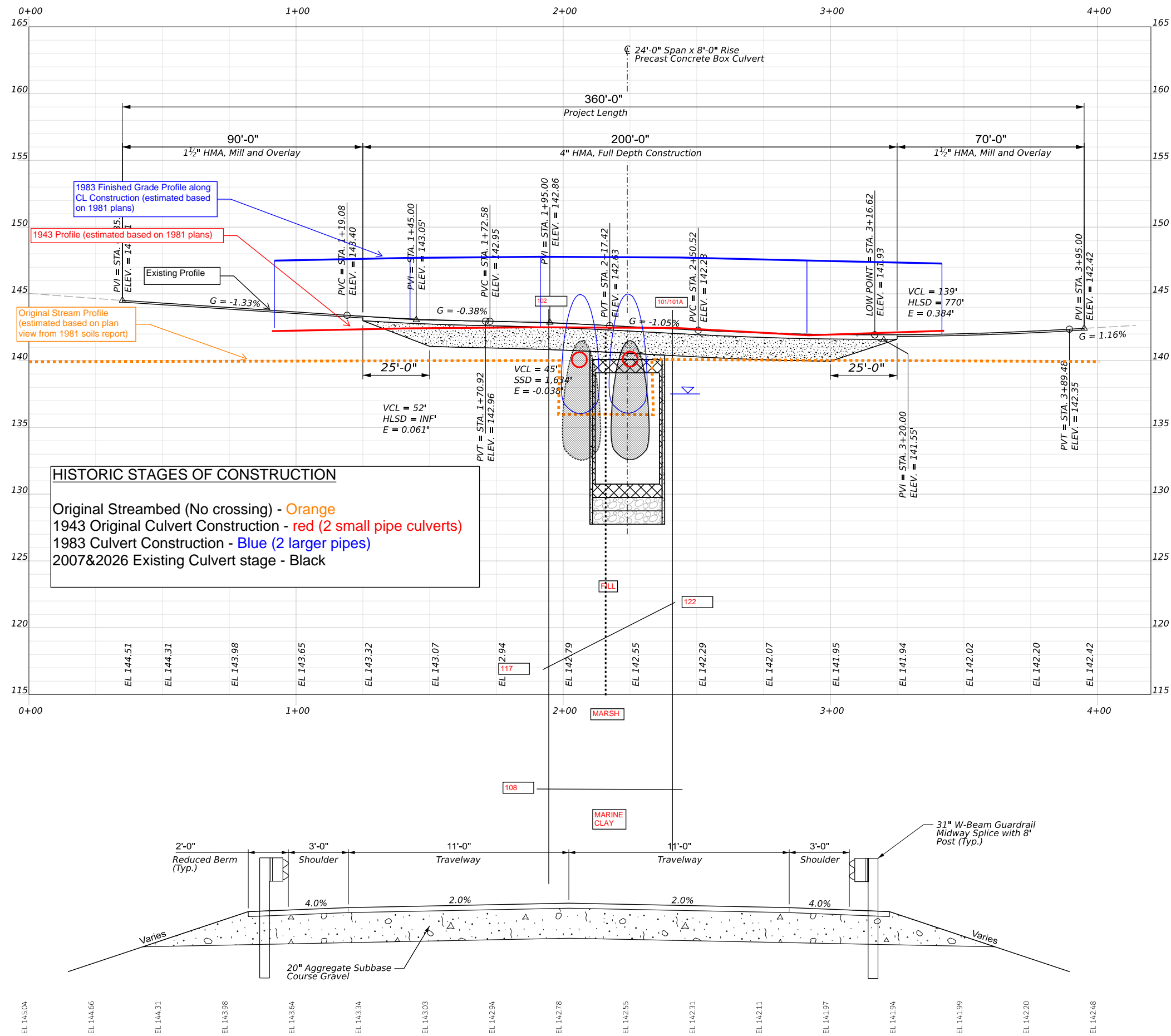
Table 5-1 Depth of Frost Penetration

Design Freezing Index	Frost Penetration (in)					
	Coarse Grained			Fine Grained		
	w=10%	w=20%	w=30%	w=10%	w=20%	w=30%
1000	66.3	55.0	47.5	47.1	40.7	36.9
1100	69.8	57.8	49.8	49.6	42.7	38.7
1200	73.1	60.4	52.0	51.9	44.7	40.5
1300	76.3	63.0	54.3	54.2	46.6	42.2
1400	79.2	65.5	56.4	56.3	48.5	43.9
1500	82.1	67.9	58.4	58.3	50.2	45.4
1600	84.8	70.2	60.3	60.2	51.9	46.9
1700	87.5	72.4	62.2	62.1	53.5	48.4
1800	90.1	74.5	64.0	64.0	55.1	49.8
1900	92.6	76.6	65.7	65.8	56.7	51.1
2000	95.1	78.7	67.5	67.6	58.2	52.5
2100	97.6	80.7	69.2	69.3	59.7	53.8
2200	100.0	82.6	70.8	71.0	61.1	55.1
2300	102.3	84.5	72.4	72.7	62.5	56.4
2400	104.6	86.4	74.0	74.3	63.9	57.6
2500	106.9	88.2	75.6	75.9	65.2	58.8
2600	109.1	89.9	77.1	77.5	66.5	60.0

- Notes: 1. w = water content
 2. Where the Freezing Index and/or water content is between the presented values, linear interpretation may be used to determine the frost penetration.

Granular materials anticipated near the culvert bearing elevation have an average water content of 10 percent. Based on the MaineDOT BDG, Section 5.2.1 and a Freezing index of 1,430 the estimated depth of frost penetration is 80 inches or 6.7 feet.

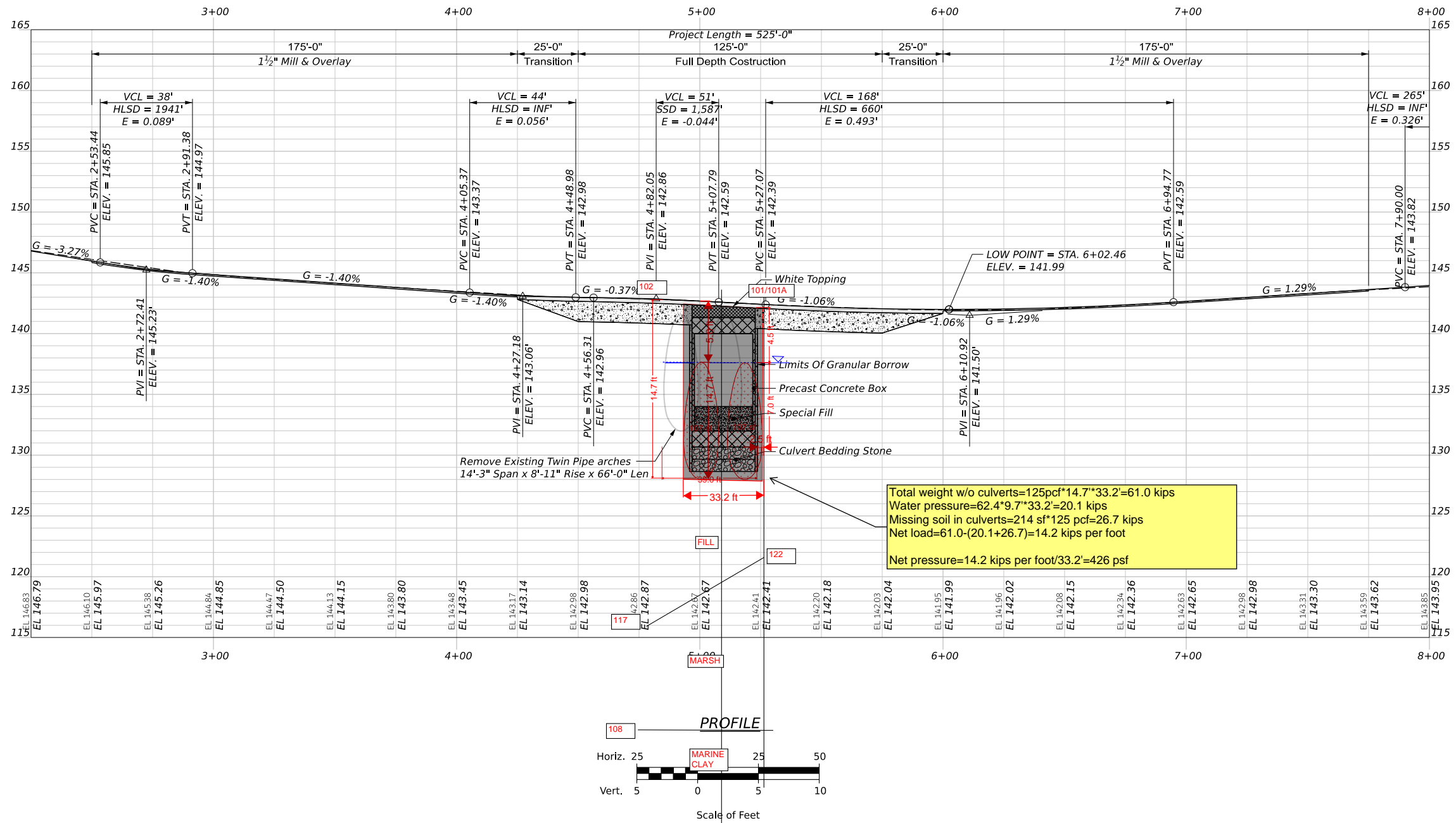
Net Effective Stress Comparison (Existing vs. Proposed)



PROJ. MANAGER	G. LIBBY	BY	DATE
CHECKED-REMOVED	J. PRAUL	J. PRAUL	7/22/2024
DESIGNED-REMOVED			
DESIGNED-REMOVED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE	P.E. NUMBER	DATE

Profile showing 1983 construction (Existing Culvert)
 - Estimate effective stress based on existing culverts;
 - Strata based on borings conducted by MaineDOT and observed by GZA

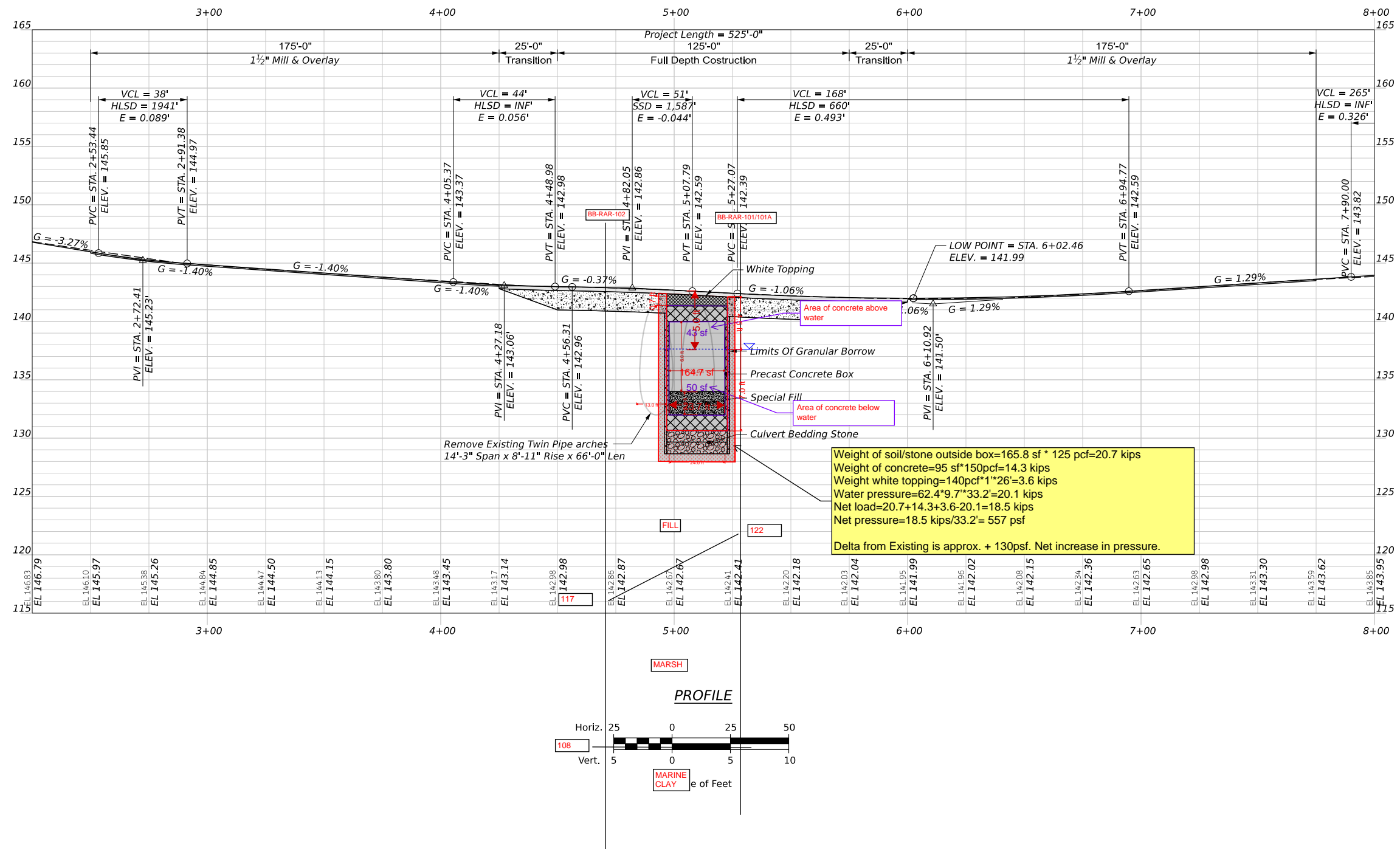


PROJ. MANAGER	BY	DATE
S. ZIMMERMAN	J. PRAUL	DEC 2025

CHECKED-REVIEWED	DESIGN-REVIEWED	DESIGN-REVIEWED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES

JOSH BRIDGE #0976
 CROSSING ABAGADASSETT RIVER
 RICHMON

Profile showing Existing/Proposed Culvert
 - Used for estimation of effective stress based on proposed box culvert; and
 - Strata based on borings conducted by MaineDOT and observed by GZA



Username: jacob,praul Date: 12/23/2025

PROJ. MANAGER	DATE
S. ZIMMERMAN	DEC 2025

CHECKED-DETAILED	BY	DATE
J. PRAUL	MRP	

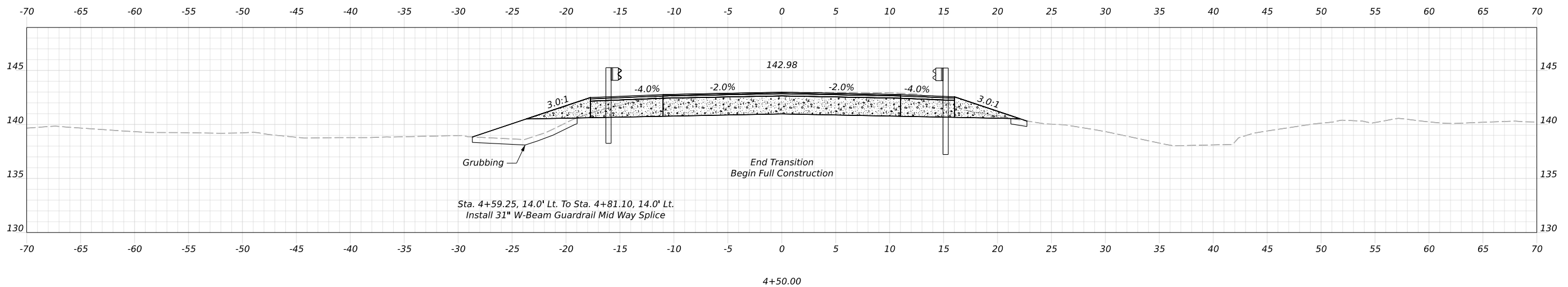
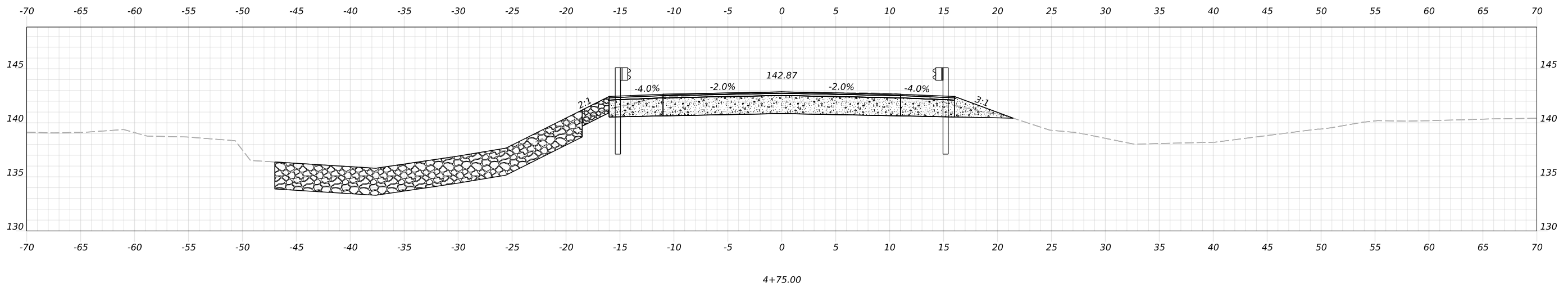
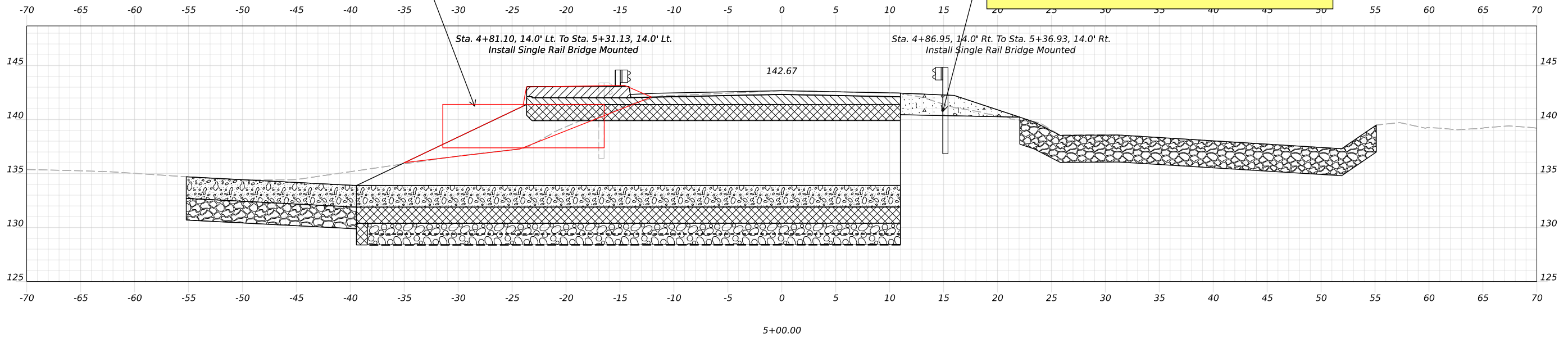
CHECKED-REMOVED	BY	DATE

REVISIONS 1	P.E. NUMBER	DATE

Estimate of Pressure Distribution of Proposed Construction

Evaluate Boussinesq stress of an avg. 4' thick and 15' wide/long fill. Unit weight = 125 pcf

Assume same fill increase on opposite side and incorporate the stress influence



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
Federal Project No. 2722800
BRIDGE NO. 0976
WIN 27228.00
BRIDGE PLANS

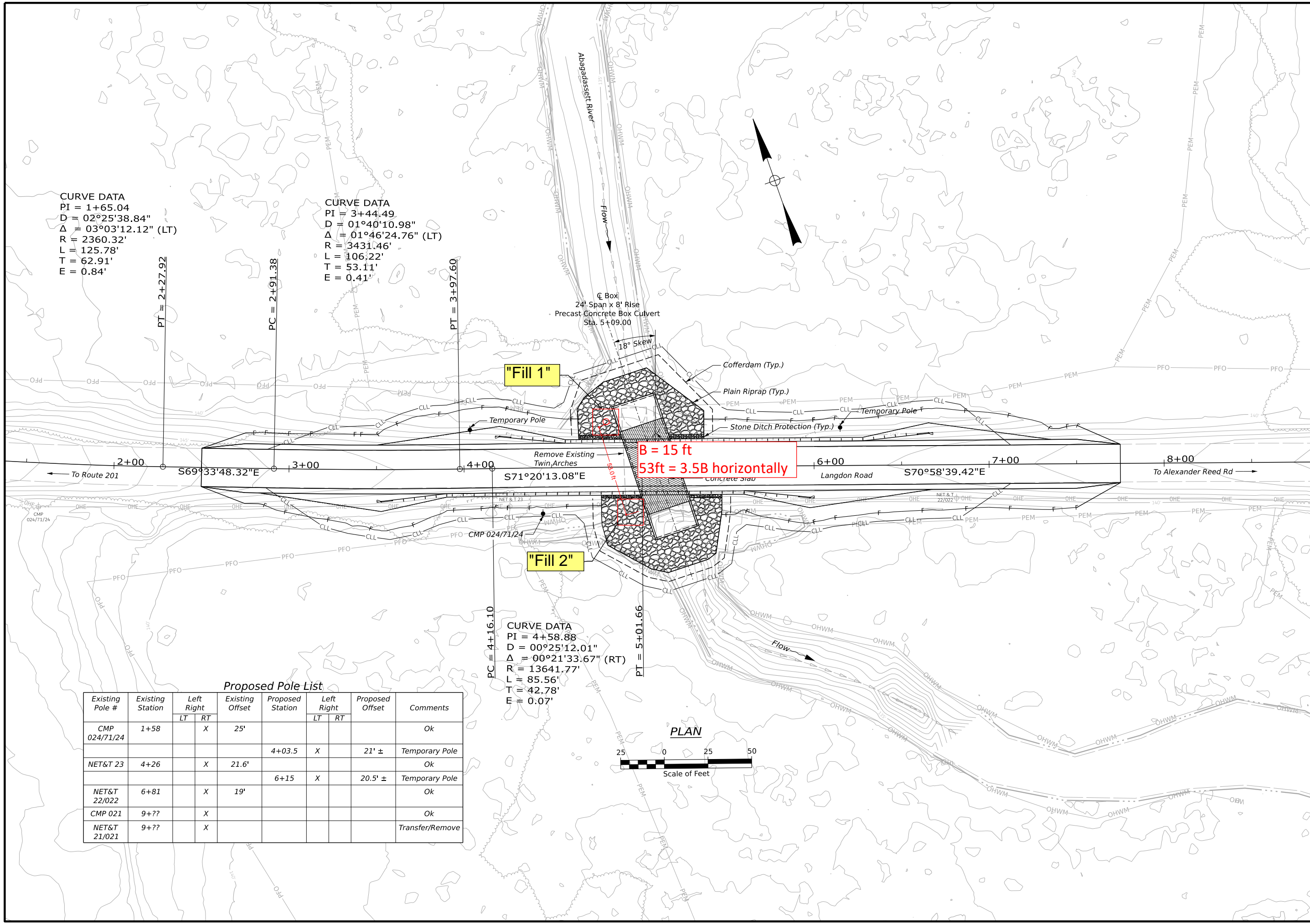
SIGNATURE
P.E. NUMBER
DATE

PROJ. MANAGER	BY	DATE
S. ZIMMERMAN	J. PRAUL	DEC 2025
CHECKED-REVIEWED		
DESIGN-REVIEWED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

JOSH BRIDGE
ABAGADASSETT RIVER
SAGadahoc COUNTY
RICHMOND
CROSS SECTIONS

SHEET NUMBER
10
OF 22

Username: jacob.praul
Date: 12/23/2025



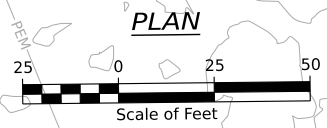
CURVE DATA
 PI = 1+65.04
 D = 02°25'38.84"
 Δ = 03°03'12.12" (LT)
 R = 2360.32'
 L = 125.78'
 T = 62.91'
 E = 0.84'

CURVE DATA
 PI = 3+44.49
 D = 01°40'10.98"
 Δ = 01°46'24.76" (LT)
 R = 3431.46'
 L = 106.22'
 T = 53.11'
 E = 0.41'

CURVE DATA
 PI = 4+58.88
 D = 00°25'12.01"
 Δ = 00°21'33.67" (RT)
 R = 13641.77'
 L = 85.56'
 T = 42.78'
 E = 0.07'

Proposed Pole List

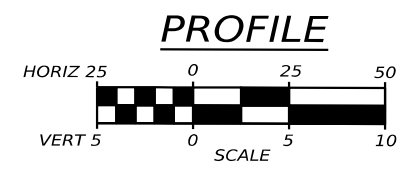
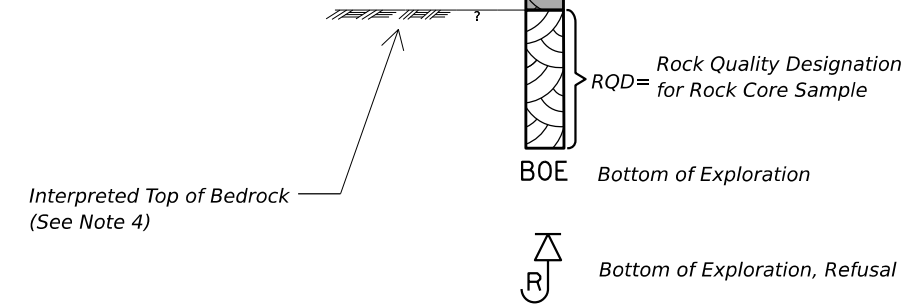
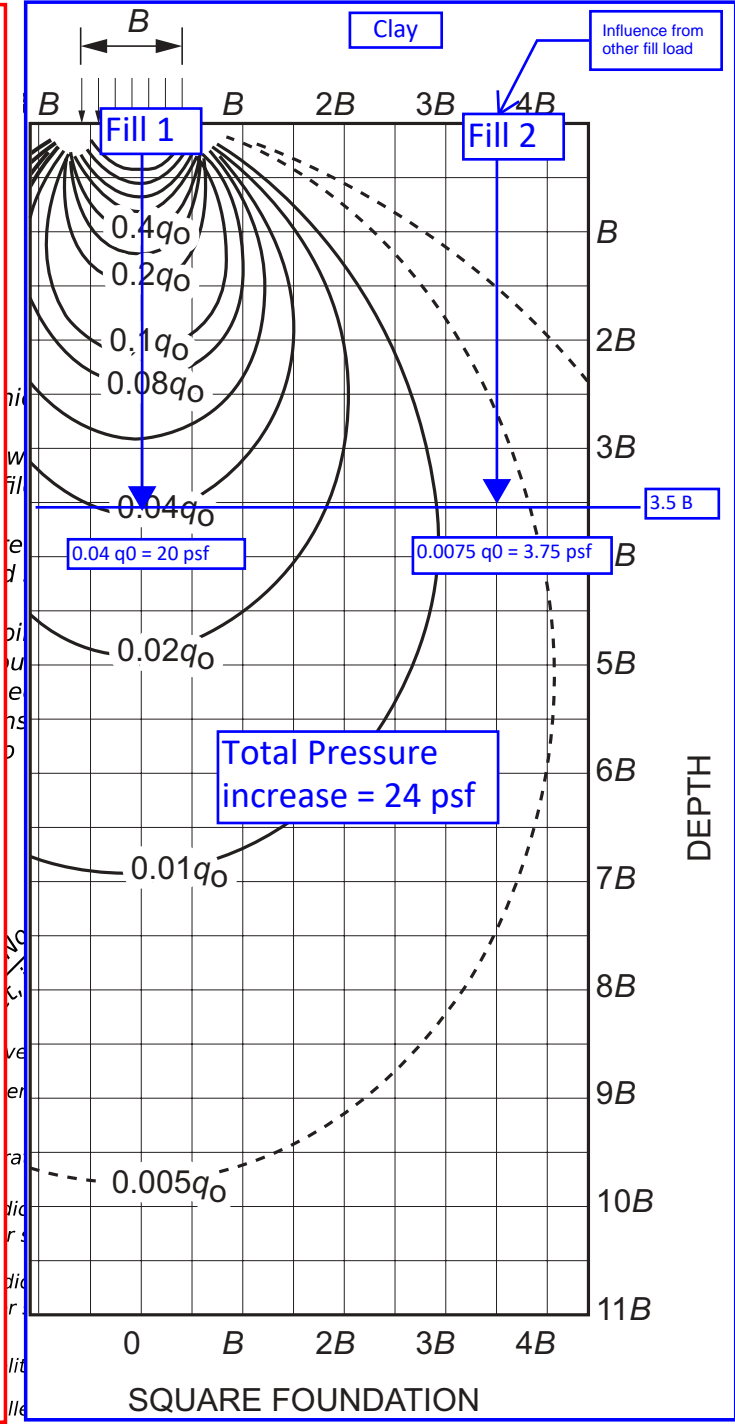
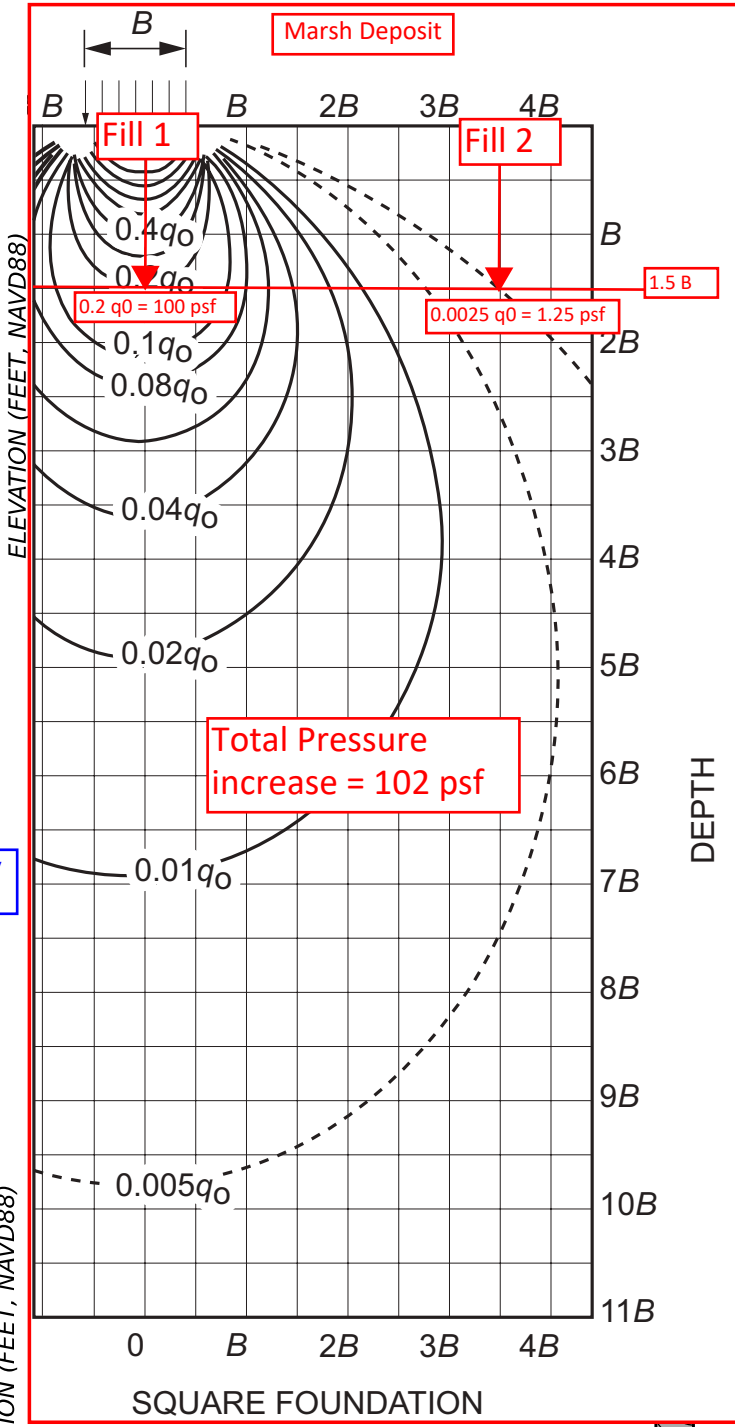
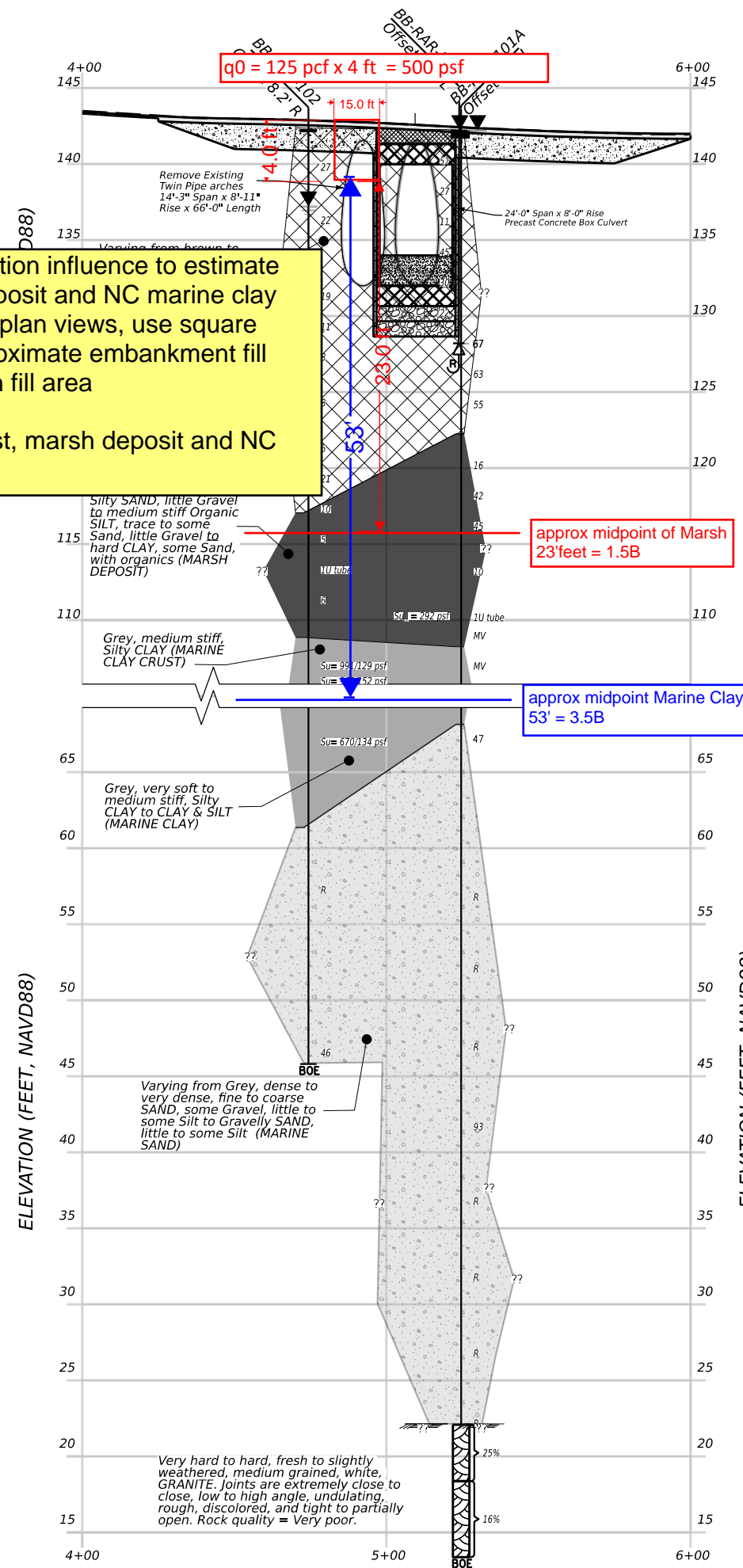
Existing Pole #	Existing Station	Left Right		Existing Offset	Proposed Station	Left Right		Proposed Offset	Comments
		LT	RT			LT	RT		
CMP 024/71/24	1+58		X	25'					Ok
NET&T 23	4+26		X	21.6'	4+03.5	X		21' ±	Temporary Pole
NET&T 22/022	6+81		X	19'					Ok
CMP 021	9+??		X						Ok
NET&T 21/021	9+??		X						Transfer/Remove



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION											
Federal Project No. 2722800		WIN 027228.00											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>DATE</th> <th>BY</th> <th>SIGNATURE</th> </tr> <tr> <td>DEC 2025</td> <td>J. PRAUL</td> <td></td> </tr> </table>	DATE	BY	SIGNATURE	DEC 2025	J. PRAUL		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>DATE</th> <th>P.E. NUMBER</th> <th>DATE</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	DATE	P.E. NUMBER	DATE			
DATE	BY	SIGNATURE											
DEC 2025	J. PRAUL												
DATE	P.E. NUMBER	DATE											
JOSH BRIDGE #0976 CROSSING ABAGADASSETT RIVER RICHMOND		GENERAL PLANS											
SHEET NUMBER		3											
OF		22											

Use Boussinesq stress distribution influence to estimate pressure increase in marsh deposit and NC marine clay deposit. Based on section and plan views, use square foundation based on new approximate embankment fill heights. 125pcf, 15'x15'x4' high fill area

Ignoring stress increase in crust, marsh deposit and NC clay will control



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
Federal Project No. 2722800
WIN 027228.00
BRIDGE PLANS

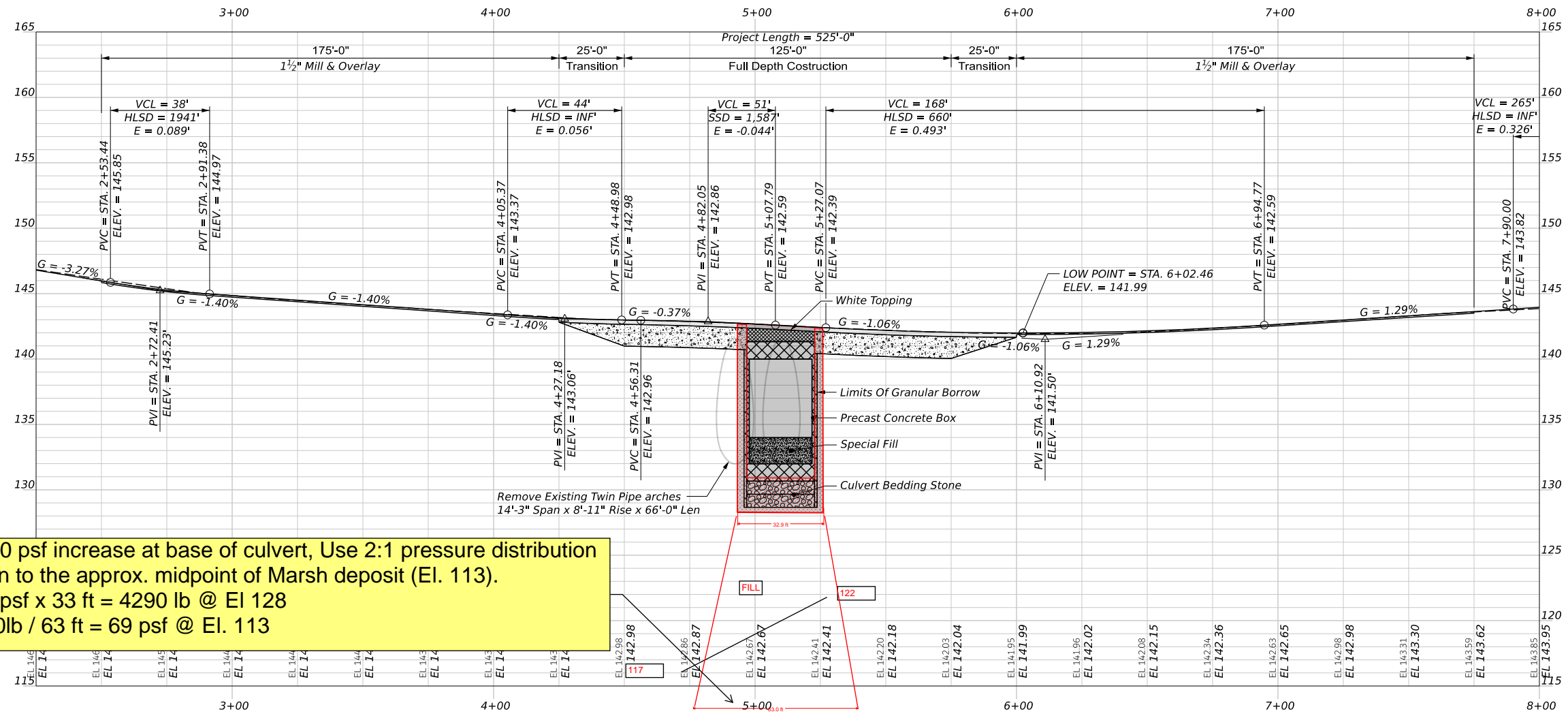
LANGDON ROAD BRIDGE NO. 0976
CROSSING ABAGADASSET RIVER
RICHMOND

INTERPRETIVE SUBSURFACE PROFILE

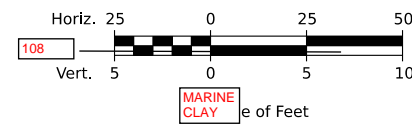
PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
S. ZIMMERMAN	S. ZIMMERMAN	JAN 2026			
CHECKED/REVIEWED	E. TOWE	JAN 2026			
DESIGNED/DRAWN	A. BLANDELL	JAN 2026			
DESIGNED/DRAWN	N. WILLIAMS	JAN 2026			
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

SHEET NUMBER **6** OF 22

PREPARED BY:



PROFILE



PROJ. MANAGER	BY	DATE
S. ZIMMERMAN	J. PRAUL	DEC 2025

CHECKED-REVIEWED	DESIGN-REVIEWED	DESIGN-REVIEWED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES

SIGNATURE	P.E. NUMBER	DATE

JOSH BRIDGE #0976
 CROSSING ABAGADASSETT RIVER
 RICHMOND

Josh Bridge Settlement Evaluations



Project:	Josh Bridge No. 0976	GZA File No.:	09.0026249.00
Location:	Richmond, Maine		
Prepared by:	N. Williams	Date:	3/11/2026
Checked by:	A. Blaisdell	Date:	3/23/2026

Objective

The purpose of this calculation package is to evaluate potential long-term settlement of the culvert considering the proposed effective stress profile at the stream crossing along the current alignment. Considering the relatively minimal stress increases from the proposed improvements, the primary geotechnical impact of the proposed culvert and roadway modifications is consolidation and secondary compression of the marsh deposit. Considering that normally consolidated marine clay is at least 33.5 feet below grade and the maximum stress increase is on the order of 130 psf more than 20 feet above the marine clay, we anticipate that settlement will be minimal in that stratum.

GZA analyzed two alternatives for settlement mitigation at the culvert, including no mitigation and mitigation for proposed culvert footprint only (not for shoulder grade raises adjacent to culvert). We separately analyzed the settlement occurring at an area where a shoulder fill up to 4 feet thick was placed at a greater distance from the culvert to assess roadway shoulder settlement.

Steps:

1. Develop settlement properties from recent lab data and correlations for a range of the compressible thickness of marsh deposit.
2. Use the effective stress increase for each case to calculate primary consolidation and secondary compression settlement at critical locations.
3. Estimate total settlement (Primary consolidation + Secondary Compression) based on the estimated change in effective stress for the following alternatives:
 - No Mitigation at Culvert (increase in effective stress 119 psf at the culvert location, and 100 psf along the shoulder)
 - Mitigation of the Culvert (increase in effective stress of 50 psf at culvert location, and 100 psf along the shoulder)
 - No Mitigation at shoulder (increase in effective stress of 100 psf along the shoulder)

References

- Documents that were used as a basis of our evaluation include:
1. Naval Facilities Engineering Systems Command (NAVFAC DM7), 2022
 2. AASHTO LRFD Bridge Design Specifications, 10th Edition, 2024

Attachments

- Appendix A – Excerpts from NAVFAC DM7 for Cohesive Soil property correlations**
Appendix B – Summary of Primary Consolidation and Secondary Settlement Calculations

Soil Properties

GZA developed consolidation properties for the Marsh Deposit on laboratory data, and correlations from NAVFAC which are shown in Appendix A. The upper portion of the marsh deposit appears more granular and likely less compressible. The thickness contributing to high compressibility is therefore uncertain, so a range of 5 to 10 feet was evaluated.

Soil Properties for Settlement Analyses of Marsh Deposit	
Material Property	Range in Values
Thickness of Highly Compressible Soil (H, Cohesive Portion of Marsh Deposit)	5 to 10 ft
Unit Weight (Lab Results)	80 pcf
Atterberg Limits (Lab Results)	LL = 26-335, PI = 4-130
Water Content (Lab Results)	107.9 to 210%
Void Ratio (Lab Results)	2.43
Modified Compression Ratio (CR, NAVFAC 2022 correlation for Organic Soils, Peats)	0.36 – 0.60
Virgin Consolidation Coefficient (C _v , Lab results)	0.04 (ft ² /day)
Secondary Compression Coefficient (C _α , NAVFAC 2022 correlation to natural water content)	0.011 – 0.021

Josh Bridge Settlement Evaluations



Project:	Josh Bridge No. 0976	GZA File No.:	09.0026249.00
Location:	Richmond, Maine		
Prepared by:	N. Williams	Date:	3/11/2026
Checked by:	A. Blaisdell	Date:	3/23/2026

Settlement Evaluation and Results

For each case noted above, settlement was evaluated at 5 years, 10 years, and 75 years after completion of construction. Future primary consolidation and secondary compression are indicated in Appendix B. Total settlement at each location over the evaluated time intervals are presented below.

H org (ft)	No Mitigation (S_{tot} 119 psf (in))			Mitigate Culvert (S_{tot} 50 psf (in))			Shoulder Fill (S_{tot} 100 psf (in))		
	5 yr	10 yr	75 yr	5 yr	10 yr	75 yr	5 yr	10 yr	75 yr
5-10	2-5	2-5.5	2.5-8	1-2.5	1-3	1.5-4.5	1.5-4.5	2-5	2.5-7.5

The results indicate that no mitigation using lightweight fill could result in up to 5.5 inches of settlement in 10 years and 8 inches in 75 years. Mitigation of the stress increase beneath the culvert using 2.5' of ULFGA reduces the settlement to less than 4 inches and 10 years and up to 4.5 inches over 75 years. Therefore, mitigation of settlement beneath the culvert is appropriate.

Settlement under the shoulder fill could result in up to 5 inches in 10 years and 7.5 inches in 75 years. Based on our discussion with MaineDOT, we understand this is acceptable since the greatest settlement will likely be beneath the guardrail and lesser settlement is anticipated under the travel lane.

Conclusions

Settlement mitigation using 2.5 feet of ULFGA is recommended beneath the culvert. No ULFGA will be placed to compensate shoulder fills.



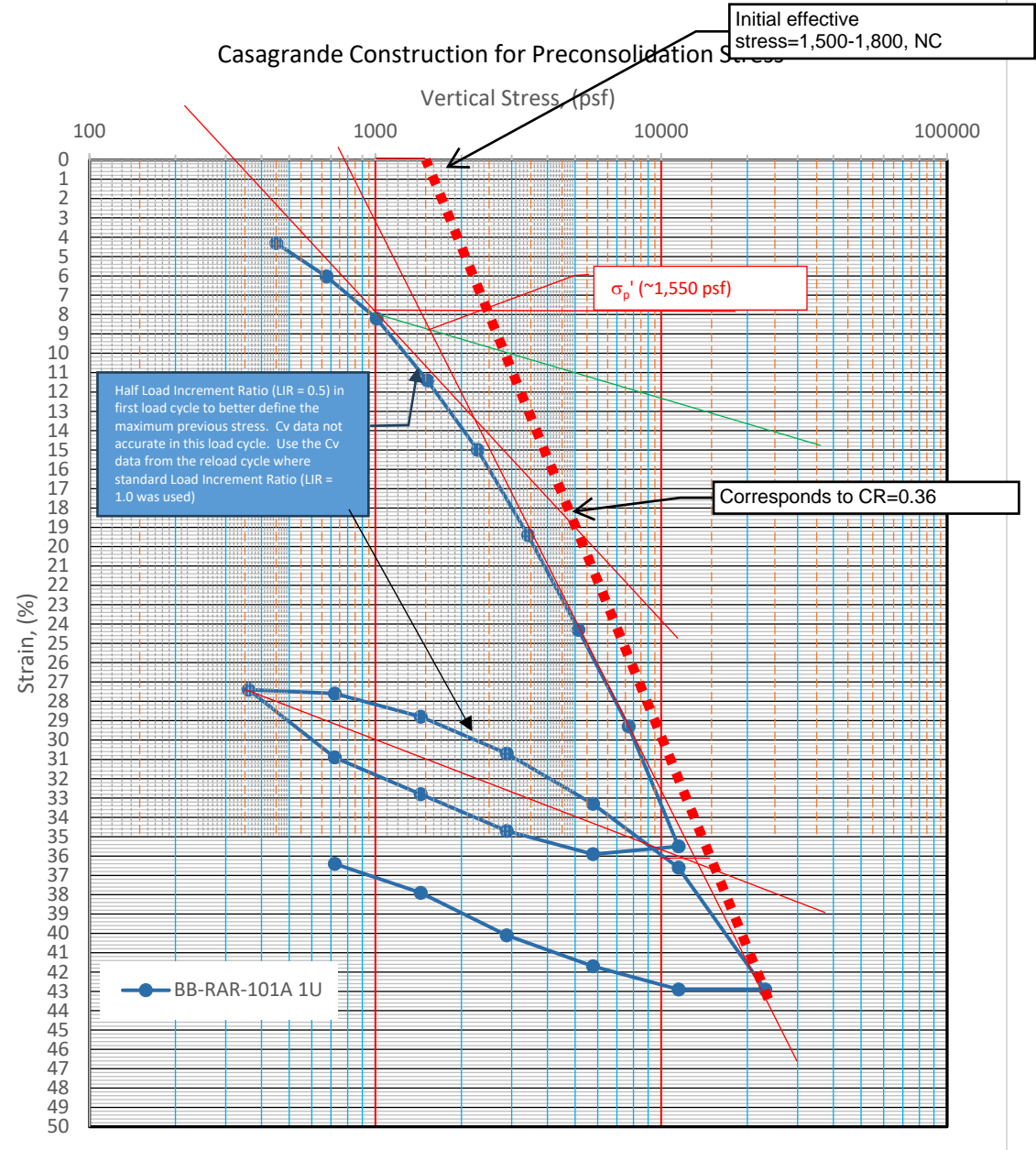
**Josh Bridge Settlement Evaluations
Josh Bridge No. 0976
Richmond, ME
GZA File No. 09.0026249.01**

APPENDIX A

Excerpts from NAVFAC DM7 for Cohesive Soil Property Correlations

Consolidation Test Data
Summary Report

Project Name:		MDOT Josh Bridge #0976	
Project Number:		166-37	
Project Location:		Richmond, Maine	
Client:		GZA - PN: 09.0026249	
Sample Description:		Peat/Organic Silt	
Preparation:		Trimmed Shelby Tube	
Lab Test No:	ICON 68-425		
Boring No.	BB-RAR-101A		
Sample No:	1U		
Boring Elevation (ft).	--		
Sample Depth (ft):	31-33		
Test Specimen Depth (Ft):	32.65		
Test Specimen Elevation:	---		
Water Content (%):	107.9		
Dry Unit Weight (pcf):	38.8		
Wet Unit Weight (pcf):	80.7		
Saturation Before (%):	94.5		
Saturation After (%):	100		
Void Ratio Before:	2.43		
Void Ratio After:	1.18		
Overburden Pressure (psf):	--		
Max Previous stress (psf):	1,550		
Max Prev. stress (Work) (psf):			
OCR:	--		
Compression Index (C_{CE}):	0.29		
Recompression Index (C_{RE}):	0.075	from re-load curve	
Liquid Limit:	335		
Plastic Limit:	205		
Plasticity Index:	130		
Liquidity Index:	-0.7		
Organic Content	21.8		
Lab Vane S_u at 32.85 ft. (psf)	292		
Tested By:	sjr		
Date Tested:	10/28/2024		
Checked By:	sjr		



Note 1: The calculations for the Max Previous Stress, the Compression Index and the Recompression Index are provided for the convenience of the Specifier. The Specifier should make their own independent assessment of Maximum Previous stress, Cce and Cre for use in any engineering analyses.

Note:

s_u = undrained shear strength in kPa, σ'_v = vertical effective stress in kPa,
 K_D = horizontal stress index from dilatometer, and E_D = dilatometer modulus in kPa.

8-4 CONSOLIDATION PARAMETERS.

8-4.1 Compression and Recompression Indices – Fine-Grained.

The *compression index* (C_c) is the slope of the virgin consolidation line of the e vs. $\log(\sigma'_v)$ plot. The *recompression index* (C_r) is the slope of the recompression line of the e vs. $\log(\sigma'_v)$ plot. These parameters are used to calculate the compression of the clay when subjected to an increase in stress in the normally consolidated and overconsolidated ranges (See Section 5-5.2.1). An alternative of the compression and recompression indices are the *modified compression index* (C_{ec}) and *modified recompression index*, C_{er} (a.k.a., compression and recompression ratio). The modified compression and recompression indices are equal to the compression and recompression indices divided by $(1 + e_0)$, respectively. These are the slopes of the compression and recompression curves when vertical strain is used instead of void ratio.

8-4.1.1 Typical Values.

Typical values of the compression index for different clays and silts are summarized in Table 8-12.

Table 8-12 Typical Values for C_c for Undisturbed Clays

Soil	C_c	Reference
Boston Blue Clay, undisturbed (CL)	0.35	Lambe and Whitman (1969)
Chicago clay undisturbed (CH)	0.42	
Cincinnati Clay (CL)	0.17	
Louisiana Clay, undisturbed	0.33	
New Orleans Clay, undisturbed (CH)	0.29	
Siburua clay (CH)	0.21	
Kaolinite	0.21 – 0.26	
Na-Montmorillonite (CH)	2.6	
Normally consolidated medium sensitive clays	0.2 – 0.5	Holtz and Kovacs (1981)
Organic silt and clayey silts (ML-MH)	1.5 – 4.0	
Organic clays (OH)	> 4.0	
Peat (Pt)	10 – 15	
Chicago silty clay (CL)	0.15 – 0.30	
Boston Blue Clay (CL)	0.3 – 0.5	
Vicksburg Buckshot Clay (CH)	0.5 – 0.6	
Swedish medium sensitive clays (CL-CH)	1 – 3	
Canadian Leda clays (CL-CH)	1 – 4	
Mexico City Clay	7 – 10	
San Francisco Bay Mud (CL)	0.4 – 1.2	

Bangkok Clays (CH)	0.4	USACE (1990)
Uniform sand, loose (SP)	0.05 – 0.06	
Uniform sand, dense (SP)	0.02 – 0.03	
Uniform silts (ML)	0.2	

8-4.1.2 Correlations with Index Properties.

Many relationships have been developed to estimate the compression and recompression indices based on parameters, such as water content, liquid limit, and void ratio. Some of these correlations are summarized in Table 8-13 and Table 8-14 and plotted in Figure 8-33 thru Figure 8-38. As can be seen from these plots, the presented correlations estimate values of compression and recompression indices that vary significantly. For the compression index, the correlations using the natural water content tend to be in closer agreement compared to those based on other index properties. Prior to use, the soil type(s) used to develop the correlations and the sensitivity of the project to errors in the prediction of settlement should be considered to determine if the intended application matches.

Leroueil et al. (1983) showed that the sensitivity of the clay also affects the value of the compression index, especially for marine deposits. The results presented in Figure 8-39 show a significant effect of the sensitivity on the compression index.

Lambe and Whitman (1969) presented typical ranges of the modified compression index of clays as a function of the natural water content and these are shown in Figure 8-40.

Table 8-13 Compression Index Correlations

Correlation	Comments	References
$C_c = 0.007(LL - 10)$	Remolded clays.	Skempton (1944)
$C_c = 0.0046(LL - 9)$	Clays from Sao Paulo, Brazil	Cozzolino (1961)
$C_c = \frac{LL^{1.673}}{2040}$	Hong Kong soft marine clay	Lumb and Holt (1968)
$C_c = 0.0083(LL - 9)$	Remolded clays	Schofield and Wroth (1968)
$C_c = 0.003(LL - 10)$	Cohesive soils of the Rhone Alps and Valley of the Seine River	Gielly et al. (1969)
$C_c = 0.006(LL - 9)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.008(LL - 5)$	Dredging material	Salem and Krizek (1976)
$C_c = 0.00797(LL - 8.16)$	Indiana soils	Lo and Lovell (1982)
$C_c = 0.01(LL - 13)$	All clays	USACE (1990)
$C_c = 0.009(LL - 10)$	Undisturbed clay of sensitivity less than 4. Reliability 30%	Terzaghi et al. (1996)

Correlation	Comments	References
$C_c = 1.15(e_0 - 0.91)$	All clays (Lower limit)	Nishida (1956)
$C_c = 0.30(e_0 - 0.27)$	Inorganic silty clays	Hough (1957)
$C_c = 0.256 + 0.43(e_0 - 0.84)$	Brazilian motley clays	Cozzolino (1961)
$C_c = 1.21 + 1.055(e_0 - 1.87)$	Brazilian soft silty clays	

Table 8 13 (cont.) Compression Index Correlations

Correlation	Comments	References
$C_c = 0.75(e_0 - 0.50)$	Soils of very low plasticity	Sowers (1970)
$C_c = 0.40(e_0 - 0.25)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.22 + 0.29e_0$	Weathered and soft Bangkok clays	Adikari (1977)
$C_c = 0.575e_0 - 0.241$	French clays	Vidalie (1977)
$C_c = 0.5363(e_0 - 0.411)$	Indiana soils	Goldberg et al. (1979)
$C_c = 0.5673(e_0 - 0.4422)$	Wabash Lowland	
$C_c = 0.4941(e_0 - 0.3507)$	Crawford Upland	
$C_c = 0.5621(e_0 - 0.4215)$	Outwash and alluvial deposits	
$C_c = 0.496e_0 - 0.195$	Indiana soils	Lo and Lovell (1982)
$C_c = 0.3745e_0$	Saturated clays	Rendon-Herrero (1983)
$C_c = 0.434(e_0 - 0.336)$	Soils from nine states in the USA	
$C_c = 0.85 \left(\frac{w_n}{100} \right)^{3/2}$	Finnish muds and clays	Helenelund (1951)
$C_c = 0.01404w_n - 0.189$	All clays	Nishida (1956)
$C_c = 0.01w_n$	Chicago and Canada clays	Koppula (1981)
$C_c = 0.01(w_n - 5)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.008w_n + 0.2$	Weathered and soft Bangkok clays	Adikari (1977)
$C_c = 0.0147w_n - 0.213$	French clays	Vidalie (1977)
$C_c = 0.0133w_n - 0.1621$	Crawford Upland	Goldberg et al. (1979)
$C_c = 0.0126w_n - 0.162$	Indiana soils	Lo and Lovell (1982)
$C_c = 0.01w_n - 0.07549$	Soils from nine states in the USA	Rendon-Herrero (1983)
$C_c = 0.0115w_n$	Organic soils, peats	USACE (1990)
$C_c = 0.012w_n$	All Clays	
$C_c = 0.135PI$	Remolded clays	Wroth and Wood (1978)
$C_c = 0.005PI \cdot G_s$		

WC=109-210
Cc=1.25-2.4
e0=2.43
CR=0.36-0.70

434

Lab matches well with correlation

$C_c = 0.37(e_0 + 0.003LL - 0.34)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.009e_0 + 0.008LL + 0.20$	Weathered and soft Bangkok clays	Adikari (1977)
$C_c = 0.0101(e_0LL - 0.5765LL + 12.665)$	Crawford Upland	Goldberg et al. (1979)
$C_c = 0.40(e_0 + 0.001w_n - 0.25)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.009w_n + 0.002LL - 0.1$		

Table 8 13 (cont.) Compression Index Correlations

$C_c = 0.0129(w_n + 0.1015LL - 16.1875)$	Indiana soils	Goldberg et al. (1979)
$C_c = 0.0114(w_n + 0.2491LL - 18.8134)$	Crawford Upland	Goldberg et al. (1979)
$C_c = 0.0082w_n + 0.0043CF - 0.1403$	Cohesive soils in Alberta, Canada	Koppula (1981)
$C_c = 0.37(e_0 + 0.003LL + 0.0004w_n - 0.34)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_c = 0.0153(w_n + 0.1022LL - 0.3104PL - 11.623)$	Indiana soils	Goldberg et al. (1979)
$C_c = 0.5684(e_0 + 0.033LL - 0.0082PL + 0.0329\sigma'_p - 0.4322)$		
$C_c = 0.6076(e_0 + 0.003LL - 0.0095PL + 0.43\sigma'_p - 0.4186)$		
$C_c = 0.0025CF + 0.1165e_0 + 0.0036w_n + 0.0014PI + 0.0009PL - 0.997$	Cohesive soils in Alberta, Canada	Koppula (1981)
$C_c = 0.5 \left(\frac{1+e_0}{G_s} \right)^{2.4}$	Saturated clay	Al-Khafaji and Andersland (1992)
$C_c = 0.0121w_n G_s$	Saturated sediment fine-grained soil	Rendon-Herrero (1983)
$C_c = 0.185 \left[\frac{(1+e_0)^2}{G_s} - 0.144 \right]$	Soils from nine states in USA	
$C_c = 0.489 \left[\ln \left(\frac{(1+e_0)^2}{G_s} \right) + 0.296 \right]$		
$C_c = 0.141 G_s^{1.2} \left(\frac{1+e_0}{G_s} \right)^{2.382}$		

Table 8-14 Recompression Index Correlations

Correlation	Comments	References
$C_r = 0.0045LL$	Marine clays of Southeast Asia	Cox (1968)
$C_r = 0.002(LL + 9)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_r = 0.00463LL - 0.013$	Bangkok clays	Balasubramaniam and Brenner (1981)
$C_r = 0.00238LL + 0.0294$	Indiana soils	Lo and Lovell (1982)
$C_r = 0.208e_0 + 0.0083$	Chicago clays	Peck and Reed (1954)
$C_r = 0.156e_0 + 0.0107$	Inorganic and organic clayey and silty soil	Elnaggar and Krizek (1970)
$C_r = 0.14(e_0 + 0.007)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_r = 0.2037(e_0 - 0.2465)$	Indiana soils	Goldberg et al. (1979)
$C_r = 0.221(e_0 - 0.3074)$	Wabash Lowland	
$C_r = 0.152e_0 + 0.0125$	Indiana soils	Lo and Lovell (1982)
$C_r = 0.0043w_n$	Marine clays of Southeast Asia	Cox (1968)
$C_r = 0.003(w_n + 7)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_r = 0.0039w_n + 0.013$ for $w_n < 100\%$	French clays	Vidalie (1977)
$C_r = 0.403 \log(w_n) - 0.478$		
$C_r = 0.0065(w_n - 11.6361)$	Wabash Lowland	Goldberg et al. (1979)
$C_r = 0.00566w_n - 0.037$	Bangkok clays	Balasubramaniam and Brenner (1981)
$C_r = 0.003w_n + 0.0249$	Indiana soils	Lo and Lovell (1982)
$C_r = PI/370$	Remolded clays	Wroth and Wood (1978)
$C_r = 0.126(e_0 + 0.003LL - 0.06)$	Clays for Greece and USA	Azzouz et al. (1976)
$C_r = 0.142(e_0 - 0.0009w_n + 0.006)$		
$C_r = 0.0034(e_0w_n + 8.3647)$	Wabash Lowland	Goldberg et al. (1979)
$C_r = 0.0033(e_0w_n + 12.5168)$	Crawford Upland	
$C_r = 0.003w_n + 0.0006LL + 0.004$	Clays for Greece and USA	Azzouz et al. (1976)
$C_r = 0.135(e_0 + 0.01LL - 0.002w_n - 0.06)$		

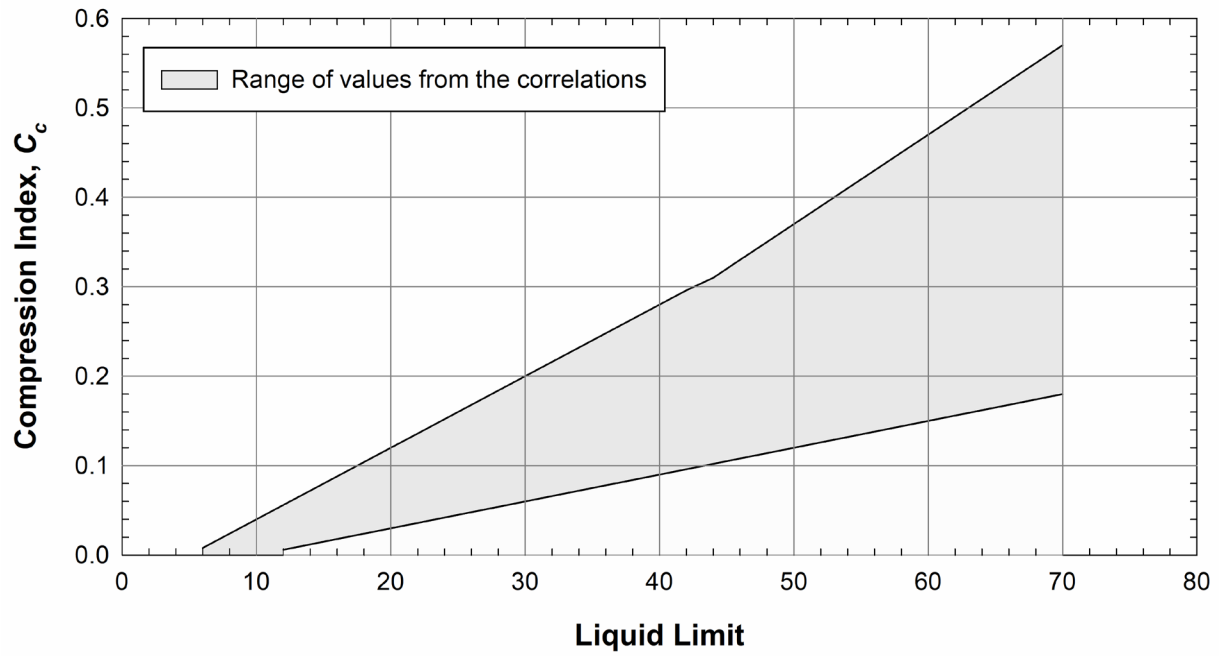


Figure 8-33 Range of Compression Index based on Liquid Limit Predicted by Correlations

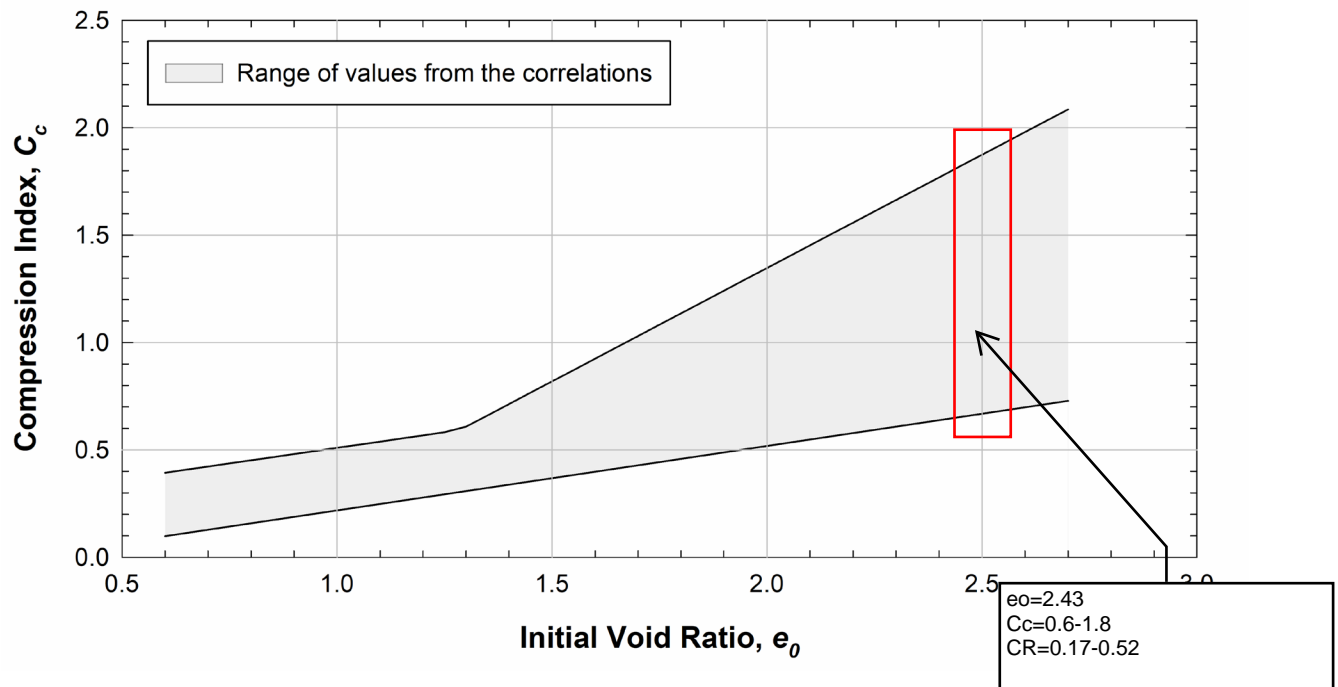


Figure 8-34 Range of Compression Index based on Initial Void Ratio Predicted by Correlations

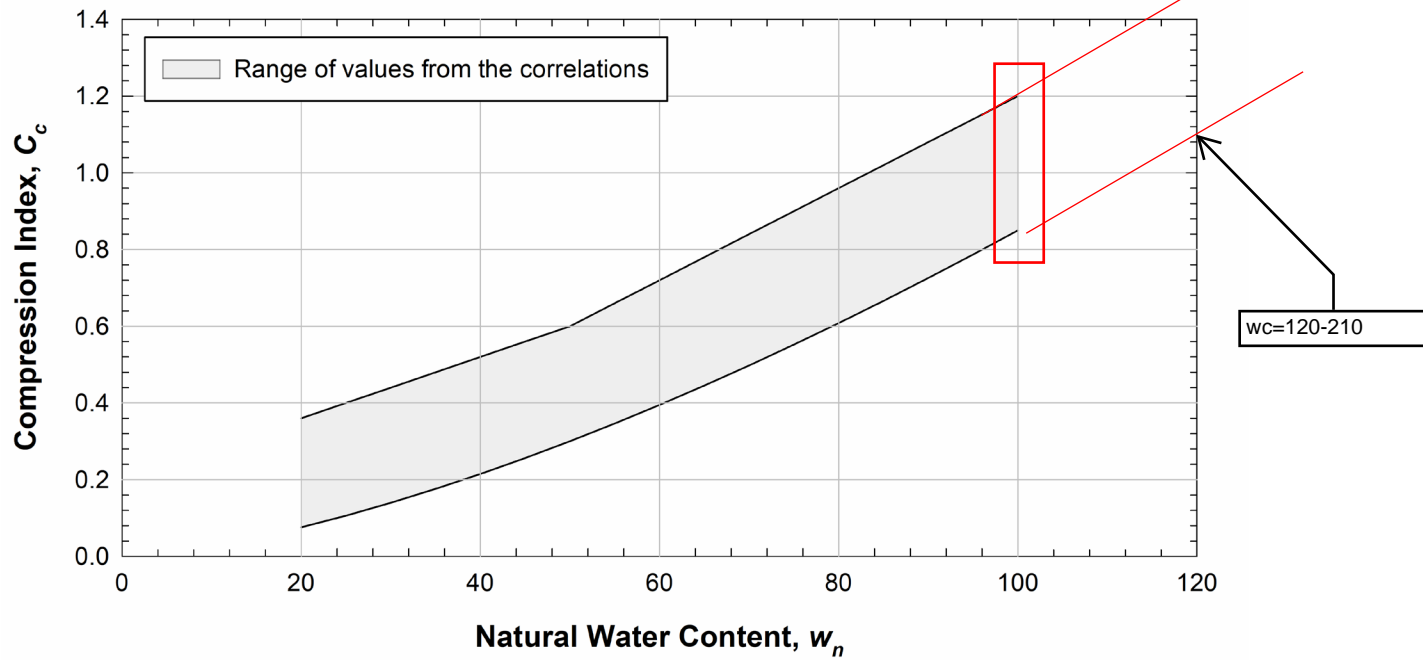


Figure 8-35 Range of Compression Index based on Natural Water Content Predicted by Correlations

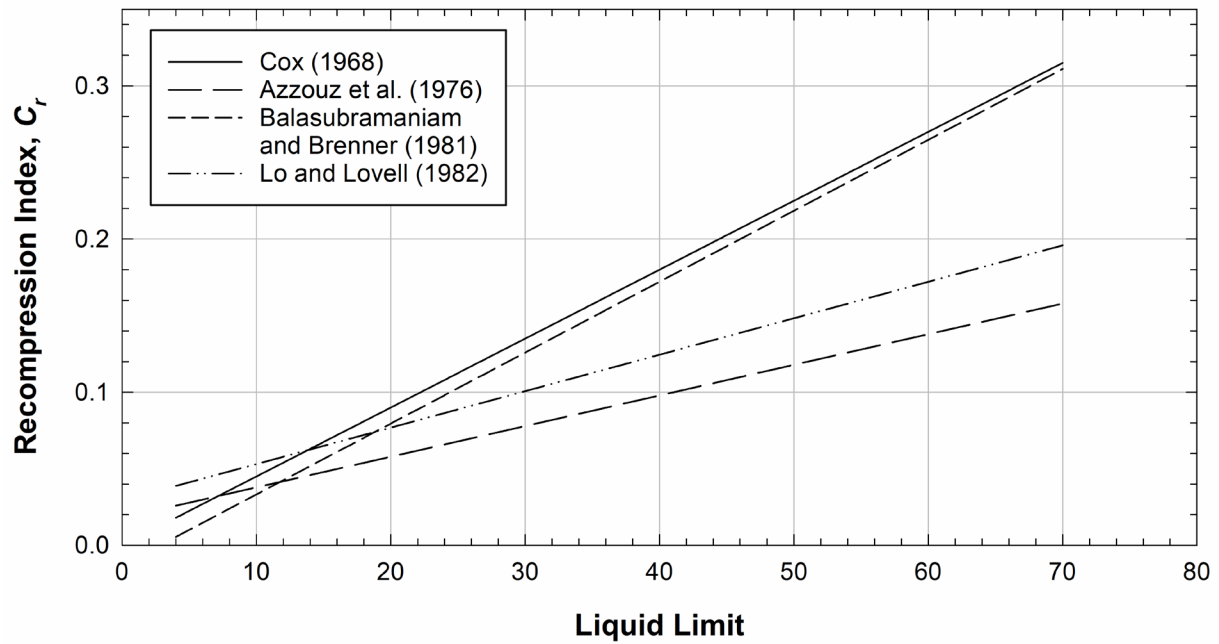


Figure 8-36 Correlations for Recompression Index based on Liquid Limit

Figure 8-47 Correlation between Normalized Constrained Modulus and Normalized q_t from CPTu for Clays (after Kulhawy and Mayne 1990)

8-4.4 Coefficient of Secondary Compression.

The coefficient of secondary compression defines the settlement as a function of time after primary consolidation is completed. As with the compression ratios, the coefficient of secondary compression can be defined as a function of strain ($C_{\epsilon\alpha}$) or as a function of the void ratio (C_α). See Section 5-5.4 for more details.

Mesri (1973) summarized the data shown in Figure 8-48 to estimate the coefficient of secondary compression of NC clays using the natural water content. Based on that data, the modified coefficient of secondary compression can be estimated as:

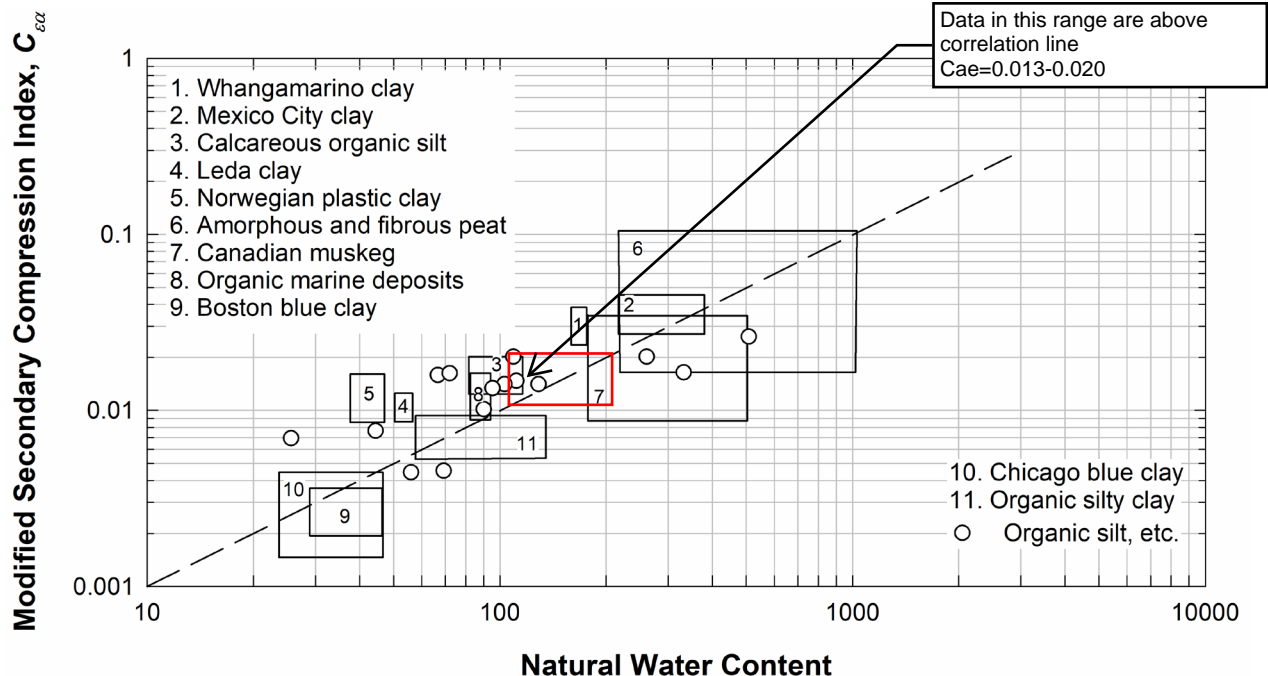
$$C_{\epsilon\alpha} = 0.0001w_n \tag{8-35}$$

where:

$C_{\epsilon\alpha}$ = secondary compression ratio and
 w_n = natural water content.

wc=109-210
Cae=0.011-0.021

According to Kulhawy and Mayne (1990), $C_{\epsilon\alpha}$ ranges from 0.0005 and 0.001 for most overconsolidated clays. The ratio of the coefficient of secondary compression to the compression index ($C_\alpha/C_c = C_{\epsilon\alpha}/C_{\epsilon c}$) is more or less constant for a given soil (Mesri and Godlewski 1977). Values of C_α/C_c are summarized in Table 8-17. Another correlation for the coefficient of correlation for silts and clays is presented in Figure 8-49.





Josh Bridge Settlement Evaluations
Josh Bridge No. 0976
Richmond, ME
GZA File No. 09.0026249.01

APPENDIX B

Summary of Primary Consolidation and Secondary Settlement Calculations

Summary of Consolidation and Secondary Compression Settlement - Marsh Deposit

Josh Bridge, Richmond

GZA File No. 09.0026249.01

Calculated by: N. Williams, 3/11/26

Checked by: A. Blaisdell, 3/23/26

Future Primary Consolidation						
H org (ft)	CR	Existing Eff Stress (psf)	$\Delta\sigma_v$ (psf)	Final Effective Stress (psf)	Sc (in)	Notes
5	0.36	974.8	119	1093	1.1	Alternative 1, No Mitigation: Delta P=119 psf is 130 psf net increase of culvert at subgrade, reduced at 1:2 spread to middle of marsh, plus 50 psf from shoulder fill up to edge of culvert
5	0.6	974.8	119	1093	1.8	
10	0.36	974.8	119	1093	2.2	
10	0.6	974.8	119	1093	3.6	
5	0.36	974.8	50	1025	0.5	Alternative 2, Mitigation of Culvert Only: Delta P=50 psf is from half of shoulder fill, considered max increase that could influence culvert.
5	0.6	974.8	50	1025	0.8	
10	0.36	974.8	50	1025	0.9	
10	0.6	974.8	50	1025	1.6	
5	0.36	974.8	100	1075	0.9	Settlement of Shoulder Fill away from Culvert: Delta P=100 psf is from shoulder fill, 500 psf net increase of new fill reduced based on Boussinesq pressure distribution
5	0.6	974.8	100	1075	1.5	
10	0.36	974.8	100	1075	1.8	
10	0.6	974.8	100	1075	3.1	

Future Secondary Compression												
H org (ft)	C_α	Cv (ft ² /day)	t_{exp} (yr)	t, (yr)	Ss shoulder (in)	Ss culvert (in) (2/3 of shoulder)	tf (yr)	Ss shoulder (in)	Ss culvert (in) (2/3 of shoulder)	tf (yr)	Ss shoulder (in)	Ss culvert (in) (2/3 of shoulder)
5	0.011	0.04	0.36	75	1.5	1.0	10	1.0	0.6	5	0.8	0.5
5	0.021	0.04	0.36	75	2.9	2.0	10	1.8	1.2	5	1.4	1.0
10	0.011	0.04	1.45	75	2.3	1.5	10	1.1	0.7	5	0.7	0.5
10	0.021	0.04	1.45	75	4.3	2.9	10	2.1	1.4	5	1.4	0.9

Future Total Settlement (nearest 0.5 in)												
H org (ft)	CR	C_α	5 yr			10 yr			75 yr			
			S _{tot} 119psf (in)	S _{tot} 50 psf (in)	S _{tot} 100psf (in)	S _{tot} 119psf (in)	S _{tot} 50 psf (in)	S _{tot} 100psf (in)	S _{tot} 119psf (in)	S _{tot} 50 psf (in)	S _{tot} 100psf (in)	
5	Low	Low	2.0	1.0	1.5	2.0	1.0	2.0	2.5	1.5	2.5	
5	High	High	3.0	1.5	3.0	3.5	1.5	3.5	4.5	2.5	4.5	
10	Low	Low	3.0	1.5	2.5	3.5	1.5	3.0	4.5	2.5	4.0	
10	High	High	5.0	2.5	4.5	5.5	3.0	5.0	8.0	4.5	7.5	



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

*Engineers and
 Scientists*

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 1 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

Objective

Calculate soil bearing resistance for a culvert bearing on sand over a weaker cohesive soil. Evaluate strength and service bearing resistance at the top of the cohesive marsh deposit. Additionally check bearing resistance of the fill/cohesionless marsh deposit for punching failure into the underlying cohesive soils.

References

1. American Association of State Highway and Transportation Officials, AASHTO LRFD Bridge Design Specifications: Customary U.S. Units, 10th edition, 2024, (AASHTO LRFD), Articles 10.5.5.2.2 and 10.6.3.1.
2. Terzaghi, Peck & Mesri, Soil Mechanics in Engineering Practice, Third Edition, 1996.

Soil Properties and Inputs, Lower Cohesive Deposit

$\phi_f := 0\text{deg}$	Internal friction angle of cohesive soil (Cohesive Marsh Deposit)
$\phi_b := 0.45$	Bearing resistance factor as specified in Table 10.5.5.2.2-1 (Theoretical Method, SPT Data, Strength Limit, Spread Footing)
$c_m := 0.4\text{ksf}$	Cohesion of the Cohesive Marsh Deposit, taken as undrained shear strength
$\gamma := 125\text{pcf}$	Unit weight of soil above or below the bearing depth of the footing
$N_c := 5.14$	Cohesion term bearing capacity factor as specified in Table 10.6.3.1.2a-1
$N_q := 1$	Surcharge term bearing capacity factor as specified in Table 10.6.3.1.2a-1
$N_\gamma := 0$	Total unit weight term bearing capacity factor as specified in Table 10.6.3.1.2a-1
$C_{wq}, C_{w\gamma} :=$	Correction factors to account for the location of the groundwater table as specified in Table 10.6.3.1.2a-2
	Depth to water table at or below depth of footing (D_f)
	$C_{wq} := 0.5 \quad C_{w\gamma} := 0.5$

Methodology

The subsurface strata underlying the proposed culvert include loose to very dense existing fill, medium dense granular marsh deposit, soft to stiff cohesive marsh deposit, marine clay crust, and marine clay. The granular marsh deposit was grouped with the fill for engineering purposes to form the upper "strong layer", and the cohesive marsh deposit was modeled as a soft clay and formed the "weak layer".

AASHTO Equation C10.6.3.1.2f-1 was utilized to calculate the nominal bearing resistance of a strong cohesionless over a weaker cohesive layer. Per 10.6.3.1.2, the nominal bearing resistance of the cohesive material was calculated assuming a "fictitious" footing of the same dimensions supported directly on the weaker deposit. The calculated nominal resistance of the weaker layer was then used in Equation 10.6.3.1.2f-1. Additionally, the bearing of the cohesionless deposit layer was checked to show that it is greater than the combined bearing resistance for resistance of local punching shear into the underlying marine clay layer.



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

Engineers and
 Scientists

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 2 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

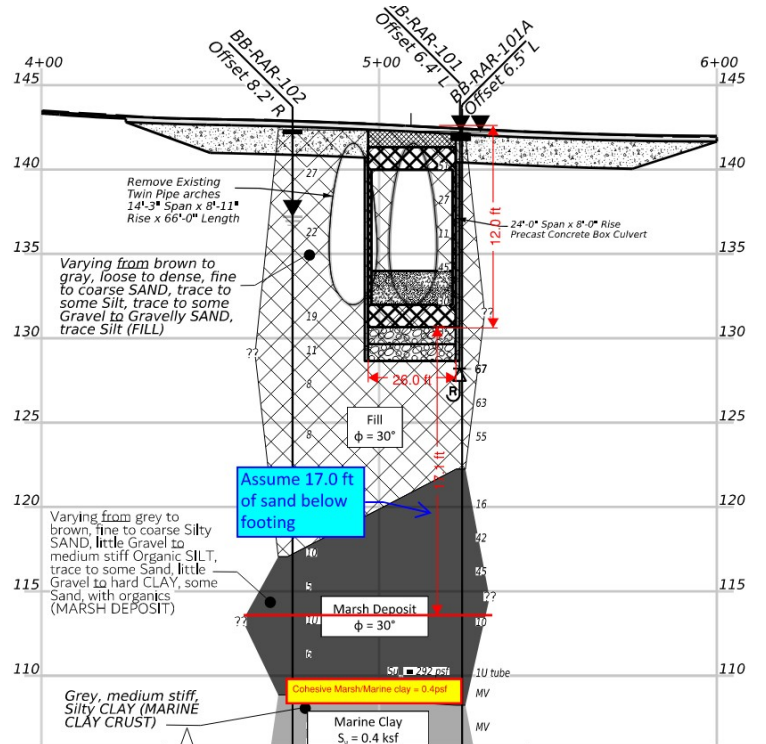
Footing Dimensions

$B_{1,max} := 26\text{-ft}$ Maximum Footing Width (Plans show a 26' wide culvert) Use width of 26 feet at top of cohesive material

$B_1 := 20\text{-ft}, 22\text{-ft}.. B_{1,max}$ Range of effective footing widths considered (includes eccentricity)

$L_1 := 80\text{ft}$ Length of culvert Base

$D_f := 29\text{ft}$ Footing embedment depth (distance from bottom of culvert to top of clay)



Strength Limit Design, Layered System

$$q_n = cN_{cm} + \gamma D_f N_{qm} C_{wq} + 0.5 \gamma B N_{ym} C_{wy}$$

Nominal Bearing Resistance Formula

$$q.D = \phi_b \times q_n$$

Factored Bearing Resistance Formula

Correction Factors

$$d_{qtable}(B_1) := \frac{D_f}{B_1}$$

$d_{qtable}(B_1)$ Using Table 10.6.3.1.2a-4

$d_q := 1$ d_q assumed soil above footing less competent than soil below footing.

$$s_c(B_1) := 1 + \left(\frac{B_1}{L_1} \right) \left(\frac{N_q}{N_c} \right)$$

$$s_q(B_1) := 1 + \left(\frac{B_1}{L_1} \right) \tan(\phi_f)$$

$$s_\gamma(B_1) := 1 - 0.4 \left(\frac{B_1}{L_1} \right)$$

$$s_c(B_1) =$$

1.05
1.05
1.06
1.06

$$s_q(B_1) =$$

1
1
1
1

$$s_\gamma(B_1) =$$

0.9
0.89
0.88
0.87



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

*Engineers and
 Scientists*

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 3 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

Bearing Capacity Factors

$$N_{cm}(B_1) := N_c \cdot s_c(B_1)$$

$$N_{cm}(B_1) =$$

5.39
5.42
5.44
5.46

$$N_{qm}(B_1) := N_q \cdot s_q(B_1) \cdot d_q$$

$$N_{qm}(B_1) =$$

1
1
1
1

$$N_{\gamma m}(B_1) := N_{\gamma} \cdot s_{\gamma}(B_1)$$

$$N_{\gamma m}(B_1) =$$

0
0
0
0

Nominal Bearing Resistance

$$q_n(B_1) := \overrightarrow{(c \cdot N_{cm}(B_1) + \gamma \cdot D_f \cdot N_{qm}(B_1) \cdot C_{wq} + 0.5 \cdot \gamma \cdot B_1 \cdot N_{\gamma m}(B_1) \cdot C_{w\gamma})}$$

$$q_n(B_1) =$$

4.0
4.0
4.0
4.0

·ksf

Check nominal bearing resistance using AASHTO equation C10.6.3.1.2f-1

$$q_b := 4.0 \cdot \text{ksf}$$

Nominal bearing resistance of a fictitious footing supported directly on the lower layer surface (Calculated above)

$$H_{s2} := 17.0 \cdot \text{ft}$$

Distance to top of clay below bottom of footing (thickness of cohesionless layer)

$$B := 26 \cdot \text{ft}$$

Width of culvert base

$$L_1 = 80 \cdot \text{ft}$$

Length of culvert base

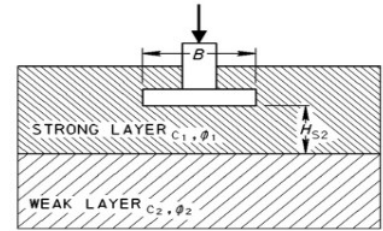


GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

Engineers and
 Scientists

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over Weak Soil (Culvert)
 SHEET: 4 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

$$q_{n,layered} := q_b \cdot e^{0.67 \cdot \left(1 + \frac{B}{L_1}\right) \cdot \left(\frac{H_{s2}}{B}\right)} = 7.1 \cdot \text{ksf} \quad \text{AASHTO Equation C.10.6.3.1.2f-1}$$



(b)
 Figure 10.6.3.1.2e-1—Two-Layer Soil Profiles

Factored Bearing Resistance - Strength Limit State

$$q_D := \phi_b \cdot q_{n,layered} = 3.2 \cdot \text{ksf}$$

GZA recommends the use of the nominal bearing resistance of 7.1 ksf and a factored bearing resistance of 3.2 ksffor design.

Soil Properties and Inputs, Upper Sand Layer

- $\phi_{f,s} := 30 \text{deg}$ Internal friction angle of cohesionless soil above weaker deposit
- $\phi_b = 0.45$ Bearing resistance factor as specified in Table 10.5.5.2.2-1 (Theoretical Method, SPT Data, Strength Limit, Spread Footing)
- $c_s := 0 \text{ksf}$ Cohesion of the fill/marsh deposit layer, taken as undrained shear strength
- $\gamma_s := 125 \text{pcf}$ Unit weight of soil above or below the bearing depth of the footing
- $N_{c,s} := 30.1$ Cohesion term bearing capacity factor as specified in Table 10.6.3.1.2a-1
- $N_{q,s} := 18.4$ Surcharge term bearing capacity factor as specified in Table 10.6.3.1.2a-1
- $N_{\gamma,s} := 22.4$ Total unit weight term bearing capacity factor as specified in Table 10.6.3.1.2a-1
- $D_{f,s} := 12.0 \text{ft}$ Footing embedment depth



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

Engineers and
 Scientists

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 5 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

Strength Limit Design Check, Upper Sand Layer

Correction Factors

$$d_{qtable.s}(B_1) := \frac{D_{f.s}}{B_1} \quad d_{qtable.s}(B_1) \text{ Using Table 10.6.3.1.2a-4} \quad d_{\gamma\gamma} := 1 \quad d_q \text{ assumed soil above footing less competent than soil below footing.}$$

$$s_{c.s}(B_1) := 1 + \left(\frac{B_1}{L_1}\right) \left(\frac{N_{q.s}}{N_{c.s}}\right) \quad s_{q.s}(B_1) := 1 + \left(\frac{B_1}{L_1} \tan(\phi_{f.s})\right) \quad s_{\gamma.s}(B_1) := 1 - 0.4 \left(\frac{B_1}{L_1}\right)$$

 $s_c(B_1) =$

1.05
1.05
1.06
1.06

 $s_q(B_1) =$

1
1
1
1

 $s_\gamma(B_1) =$

0.9
0.89
0.88
0.87

Bearing Capacity Factors

$$N_{cm.s}(B_1) := N_{c.s} \cdot s_{c.s}(B_1) \quad N_{cm.s}(B_1) = \begin{matrix} 34.7 \\ 35.16 \\ 35.62 \\ 36.08 \end{matrix} \quad N_{qm.s}(B_1) := N_{q.s} \cdot s_{q.s}(B_1) \cdot d_q \quad N_{qm.s}(B_1) = \begin{matrix} 21.1 \\ 21.3 \\ 21.6 \\ 21.9 \end{matrix}$$

$$N_{\gamma m.s}(B_1) := N_{\gamma.s} \cdot s_{\gamma.s}(B_1) \quad N_{\gamma m.s}(B_1) = \begin{matrix} 20.2 \\ 19.9 \\ 19.7 \\ 19.5 \end{matrix}$$

Nominal Bearing Resistance

$$q_{n.s}(B_1) := \overline{(c_s \cdot N_{cm.s}(B_1) + \gamma_s \cdot D_{f.s} \cdot N_{qm.s}(B_1) \cdot C_{wq} + 0.5 \cdot \gamma_s \cdot B_1 \cdot N_{\gamma m.s}(B_1) \cdot C_{w\gamma})} \quad q_{n.s}(B_1) = \begin{matrix} 28.4 \\ 29.7 \\ 31 \\ 32.2 \end{matrix} \cdot \text{ksf}$$

Since the nominal bearing resistance of the cohesionless soil is greater than the underlying material, the bearing resistance of the cohesive material controls.



GZA
GeoEnvironmental, Inc
707 Sable Oaks Drive
Suite 150
South Portland, Maine 04106
207-879-9190
Fax 207-879-0099

*Engineers and
Scientists*

JOB: 09.0026249.00 Josh Bridge
SUBJECT: Footing Bearing on Strong over
Weak Soil (Culvert)
SHEET: 6 OF 9
CALCULATED BY N. Williams 3/11/2026
CHECKED BY A. Blaisdell 3/23/2026

Service Limit Design

AASHTO provides Table C10.6.2.5.1-1 (attached) of presumptive bearing resistances of spread footings when a settlement limited bearing resistance is required. This table may be used with sufficient knowledge of the geological conditions present at the site.

It is noted that settlement evaluations did not consider the service limit bearing resistance above, but instead the calculated net pressure increase and the resulting stress increase in cohesive marsh deposit soils.

Type of Bearing Material	Consistency in Place	Bearing Resistance (ksf)	
		Ordinary Range	Recommended Value
Homogeneous Inorganic clay, sandy or silty clay (CL,CH)	Medium dense to dense	2 - 6	3

Conclusion

GZA recommends a nominal bearing resistance of 7.1 ksf and a factored bearing resistance of 3.2 ksf based on a resistance factor of 0.45. GZA recommends utilizing a service bearing resistance of 3.0 ksf, based on a homogeneous inorganic clay, sandy or silty clay (CL,CH) that is medium stiff.



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

*Engineers and
 Scientists*

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 7 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

Table C10.6.2.5.1-1—Presumptive Bearing Resistance for Spread Footing Foundations at the Service Limit State Modified after U.S. Department of the Navy (1982)

Type of Bearing Material	Consistency in Place	Bearing Resistance (ksf)	
		Ordinary Range	Recommended Value of Use
Massive crystalline igneous and metamorphic rock: granite, diorite, basalt, gneiss, thoroughly cemented conglomerate (sound condition allows minor cracks)	Very hard, sound rock	120–200	160
Foliated metamorphic rock: slate, schist (sound condition allows minor cracks)	Hard sound rock	60–80	70
Sedimentary rock: hard cemented shales, siltstone, sandstone, limestone without cavities	Hard sound rock	30–50	40
Weathered or broken bedrock of any kind, except highly argillaceous rock (shale)	Medium hard rock	16–24	20
Compaction shale or other highly argillaceous rock in sound condition	Medium hard rock	16–24	20
Well-graded mixture of fine- and coarse-grained soil: glacial till, hardpan, boulder clay (GW-GC, GC, SC)	Very dense	16–24	20
Gravel, gravel-sand mixture, boulder-gravel mixtures (GW, GP, SW, SP)	Very dense	12–20	14
	Medium dense to dense	8–14	10
	Loose	4–12	6
Coarse to medium sand, and with little gravel (SW, SP)	Very dense	8–12	8
	Medium dense to dense	4–8	6
	Loose	2–6	3
Fine to medium sand, silty or clayey medium to coarse sand (SW, SM, SC)	Very dense	6–10	6
	Medium dense to dense	4–8	5
	Loose	2–4	3
Fine sand, silty or clayey medium to fine sand (SP, SM, SC)	Very dense	6–10	6
	Medium dense to dense	4–8	5
	Loose	2–4	3
Homogeneous inorganic clay, sandy or silty clay (CL, CH)	Very dense	6–12	8
	Medium dense to dense	2–6	4
	Loose	1–2	1
Inorganic silt, sandy or clayey silt, varved silt-clay-fine sand (ML, MH)	Very stiff to hard	4–8	6
	Medium stiff to stiff	2–6	3
	Soft	1–2	1



GZA
GeoEnvironmental, Inc
 707 Sable Oaks Drive
 Suite 150
 South Portland, Maine 04106
 207-879-9190
 Fax 207-879-0099

Engineers and
 Scientists

JOB: 09.0026249.00 Josh Bridge
 SUBJECT: Footing Bearing on Strong over
 Weak Soil (Culvert)
 SHEET: 8 OF 9
 CALCULATED BY N. Williams 3/11/2026
 CHECKED BY A. Blaisdell 3/23/2026

Table 10.6.3.1.2a-1—Bearing Capacity Factors N_c (Prandtl, 1921), N_q (Reissner, 1924), and N_γ (Vesic, 1975)

ϕ_f	N_c	N_q	N_γ	ϕ_f	N_c	N_q	N_γ
0	5.14	1.0	0.0	23	18.1	8.7	8.2
1	5.4	1.1	0.1	24	19.3	9.6	9.4
2	5.6	1.2	0.2	25	20.7	10.7	10.9
3	5.9	1.3	0.2	26	22.3	11.9	12.5
4	6.2	1.4	0.3	27	23.9	13.2	14.5
5	6.5	1.6	0.5	28	25.8	14.7	16.7
6	6.8	1.7	0.6	29	27.9	16.4	19.3
7	7.2	1.9	0.7	30	30.1	18.4	22.4
8	7.5	2.1	0.9	31	32.7	20.6	26.0
9	7.9	2.3	1.0	32	35.5	23.2	30.2
10	8.4	2.5	1.2	33	38.6	26.1	35.2
11	8.8	2.7	1.4	34	42.2	29.4	41.1
12	9.3	3.0	1.7	35	46.1	33.3	48.0
13	9.8	3.3	2.0	36	50.6	37.8	56.3
14	10.4	3.6	2.3	37	55.6	42.9	66.2
15	11.0	3.9	2.7	38	61.4	48.9	78.0
16	11.6	4.3	3.1	39	67.9	56.0	92.3
17	12.3	4.8	3.5	40	75.3	64.2	109.4
18	13.1	5.3	4.1	41	83.9	73.9	130.2
19	13.9	5.8	4.7	42	93.7	85.4	155.6
20	14.8	6.4	5.4	43	105.1	99.0	186.5
21	15.8	7.1	6.2	44	118.4	115.3	224.6
22	16.9	7.8	7.1	45	133.9	134.9	271.8

Table 10.6.3.1.2a-2—Coefficients C_{wq} and $C_{w\gamma}$ for Various Groundwater Depths

D_w	C_{wq}	$C_{w\gamma}$
0.0	0.5	0.5
D_f	1.0	0.5
$>1.5B + D_f$	1.0	1.0

Where the position of groundwater is at a depth less than 1.5 times the footing width below the footing base, the bearing resistance is affected. The highest anticipated groundwater level should be used in design.

Table 10.6.3.1.2a-3—Shape Correction Factors s_c , s_γ , s_q

Factor	Friction Angle	Cohesion Term (s_c)	Unit Weight Term (s_γ)	Surcharge Term (s_q)
Shape Factors s_c, s_γ, s_q	$\phi_f = 0$	$1 + \left(\frac{B}{5L}\right)$	1.0	1.0
	$\phi_f > 0$	$1 + \left(\frac{B}{L}\right)\left(\frac{N_q}{N_c}\right)$	$1 - 0.4\left(\frac{B}{L}\right)$	$1 + \left(\frac{B}{L} \tan \phi_f\right)$



GZA
GeoEnvironmental, Inc
707 Sable Oaks Drive
Suite 150
South Portland, Maine 04106
207-879-9190
Fax 207-879-0099

*Engineers and
Scientists*

JOB: 09.0026249.00 Josh Bridge
SUBJECT: Footing Bearing on Strong over
Weak Soil (Culvert)
SHEET: 9 OF 9
CALCULATED BY N. Williams 3/11/2026
CHECKED BY A. Blaisdell 3/23/2026

Table 10.6.3.1.2a-4—Depth Correction Factor d_q

Friction Angle, ϕ_f (degrees)	D_f/B	d_q
32	1	1.20
	2	1.30
	4	1.35
	8	1.40
37	1	1.20
	2	1.25
	4	1.30
	8	1.35
42	1	1.15
	2	1.20
	4	1.25
	8	1.30

The depth correction factor should be used only when the soils above the footing bearing elevation are as competent as the soils beneath the footing level; otherwise, the depth correction factor should be taken as 1.0.

Linear interpolations may be made for friction angles in between those values shown in Table 10.6.3.1.2a-4.