

**GEOTECHNICAL DATA REPORT
PORTLAND INTERNATIONAL MARINE TERMINAL
IMPROVEMENTS
PORTLAND, MAINE
PIN: 17820.00**

by

**Haley & Aldrich, Inc.
Portland, Maine**

for

**HNTB Corporation
Westbrook, Maine**

**File No. 37272-000
7 January 2011**



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File No. 37272-000

HNTB Corporation
340 County Road, Suite 6-C
Westbrook, Maine 04092

Attention: Mr. Craig R. Morin, P.E.

Subject: Geotechnical Data Report
Portland International Marine Terminal Improvements
Portland, Maine
PIN: 17820.00

Ladies and Gentlemen:

This report presents the results of the subsurface explorations and laboratory testing program conducted in support of the subject project. This work was undertaken by Haley & Aldrich, Inc. (Haley & Aldrich) at your request in accordance with our proposal dated 30 July 2010 and our Agreement dated 6 October 2010.

ELEVATION DATUM

Elevations referenced herein are in feet and reference the National Geodetic Vertical Datum of 1929 (NGVD 29). Site specific tidal data (i.e. mean low water, MLW, and mean lower low water, MLLW) has been provided by HNTB, and relate to NGVD 29 datum as follows:

- El. 0 MHW = El. +4.95 NGVD 29
- El. 0 MLW = El. -4.23 NGVD 29
- El. 0 MLLW = El. -4.52 NGVD 29

EXISTING SITE CONDITIONS

The project site (referred to hereinafter as the “site,” shown in Figure 1) is located on a portion of a 13.5-acre parcel in Portland, Maine. The site is bounded by Commercial Street to the northwest, the Fore River to the southeast, and the Casco Bay Bridge to the west, as shown in Figure 2.

The southeastern portion of the parcel is currently occupied by a pier and several buildings formerly used by the City of Portland for loading and unloading of passengers and vehicles for the Scotia Prince ferry to Nova Scotia, Canada. The remaining area of the site is paved and used as a container storage/shipping facility. The ground surface is relatively flat across the site, ranging from El. 12 near Commercial Street to El. 15 on the existing pier. There is a low area around El. 11 near a 4-ft high retaining wall located northwest of the pier and buildings.

PROPOSED SITE DEVELOPMENT

The project consists of improvements and additions to the International Marine Terminal (IMT). As described in a Request for Proposal (RFP) prepared by Maine Department of Transportation (MaineDOT), project elements include:

- Demolish and remove approximately 36,000 sq. ft. (sf) of existing terminal building and ancillary structures,
- Design and construction of approximately 1,000 sf of pier space,
- Strengthen soils as needed in the approximate 4 acre container storage area,
- Remove existing office trailers and construct a new 3,400 sf office building, and
- Maintain operations at IMT during design and construction of improvements.

Based on our review of proposed grading as shown on the 30% drawings prepared by HNTB, we understand that in general fill will be required in order to reach the proposed design grades, with a maximum fill height of about 4 ft in front of the existing retaining wall. Minor excavation (to frost depth) is anticipated for construction of the proposed building footings.

REGIONAL GEOLOGY

A review of the surficial geology map for the area indicates that the site and vicinity along Commercial Street is underlain by artificial fill identified as variable mixtures of surficial sediments, rock fragments and artificial material which was placed to create land for waterfront uses.

Explorations at the site indicate the fill is underlain by silt, sand and clay deposits of the Presumpscot Formation, sand and gravel ice contact deposits, and dense glacial till. Bedrock at the site and vicinity is mapped as the Spring Point Formation, part of the Casco Bay Group, identified as an Ordovician-aged greenish-gray phyllite, some light-gray granofels and zones of metavolcanics.

SUBSURFACE EXPLORATION PROGRAM

Recent Testing Borings

Haley & Aldrich performed a geotechnical subsurface exploration program in support of the subject project. The program consisted of the following:

- One boring for the proposed building;
- Two borings for the proposed raise-in-grade in the existing parking area;
- Six borings for pavement design in the new storage container areas;
- Two borings in the area of existing container storage;
- One boring at the proposed pier infill area.

The test boring locations were laid out in the field by Haley & Aldrich by taping distances from existing site features. The “as-drilled” test boring locations were surveyed by James D. Nadeau, LLC and are shown on Figure 2, Site and Subsurface Exploration Location Plan. Ground surface elevations were

estimated based on the topographic information shown on existing conditions plan by James D. Nadeau, LLC.

All test borings were drilled by Maine Test Borings of Brewer, Maine during the period 15 through 18 November 2010. Test borings were drilled with a Mobile Drill B-53 truck-mounted drill rig.

Soil samples obtained in test borings were typically collected continuously through the fill, then at standard, 5-ft intervals through natural soil, by driving a 1-3/8-in. ID split-spoon sampler with a 140-lb hammer dropped from a height of 30 in., as indicated on the test boring logs. The number of hammer blows required to advance the sampler through each 6-in. interval was recorded and is provided on the test boring logs. The Standard Penetration Test (SPT) N-value is defined as the total number of blows required to advance the sampler through the middle 12 in. of the 24-in. sampling interval.

In-situ vane shear tests were attempted in the marine clay deposits encountered in several test borings. However we were unable to advance the vane in the desired sampling depths due to the presence of sand/silt layers at the attempted test locations.

Relatively undisturbed samples of marine clay were obtained in select test borings by advancing a 3-in. OD thin-wall Shelby Tube into the clay using a piston sampler. The samples were obtained so that we could conduct laboratory tests to assess the compressibility characteristics of the deposit, if needed.

All test borings were monitored in the field by Haley & Aldrich personnel. All soil samples were collected and preserved in glass jars and the samples that were not submitted for laboratory testing are available for review upon request. The soil samples are being stored at the Haley & Aldrich laboratory facility in Portland, Maine.

The boreholes were backfilled using drill cuttings. Cold patch was used to replace the bituminous pavement for test borings drilled in paved areas.

Logs showing the soil and groundwater conditions encountered in the test borings are presented in Appendix A. Additional details of our subsurface explorations are presented below.

Building Borings

One test boring (HA10-1) was drilled within the building footprint. The test boring was drilled to a depth of 27 ft below ground surface (BGS) using HW-size (4 in. ID) steel casing.

Raise In Grade Borings

Two test borings (HA10-5 and HA10-9) were drilled within the limits of proposed storage container area where up to 4 ft of new fill will be placed. The test borings were drilled through potentially compressible soils to depths ranging from 26 to 44 ft BGS using HW-size (4 in. ID) or NW-size (3 in. ID) steel casing.

New Storage Container Area

A total of six shallow test borings (HA10-2 through HA10-4, HA10-6 through HA10-8) were drilled within the proposed container storage area. Test borings were drilled to depths ranging from 11 to 13 ft BGS using solid-stem augers.

Existing Storage Container Area

A total of two shallow test borings (HA10-11 and HA10-12) were drilled within the existing container storage area to identify the pavement section in this area that is reportedly performing well. Test borings were drilled to depths ranging from 3 to 5 ft BGS using solid-stem augers.

Pier Boring

One test boring (HA10-10) was drilled within the proposed pier space. The test boring was drilled from the existing pier deck, through compressible soils to a depth of 85 ft BGS using HW-size (4 in. ID) and NW-size (3 in. ID) steel casing. The boring was terminated 16 ft into glacial till.

Historic Test Borings

Numerous previous explorations have been conducted at and near the site in association with development of the site, pier and adjacent Fore River Bridge replacement. The locations of the explorations that we determined to be useful to the current site development are shown on Figure 2, Site and Subsurface Exploration Location Plan and logs are included in Appendix B.

Proposed Renovations International Ferry Terminal, 1992 – Four test borings, designated B101 through B104, were performed for the proposed 1992 renovations by Maine Test Borings, Inc. of Brewer, Maine during the period between 22 July and 3 August 1992. Drilling was performed from the existing pier using 3 in. diameter casing and a truck-mounted rotary drilling rig. These borings were monitored by Haley & Aldrich personnel.

Proposed Fore River Bridge Replacement, 1988 and 1989 – A series of explorations were drilled in 1988 and 1989 by Maine Test Borings, Inc. for the proposed bridge replacement. Eight of the explorations (B553, B555, B556, B557, B558, B559, B568 and B569) were at or near the IMT site and logs included in Appendix B. These borings were monitored by Haley & Aldrich personnel.

Proposed Cargo Pier, 1987 – One of the test borings (B-9) for the proposed cargo pier was conducted near the proposed building for the current IMT project. The test boring was drilled from 1 to 2 October 1987 by Maine Test Borings, Inc. A piezometer, consisting of a standpipe connected to a perforated pipe, was installed in the borehole to obtain information on groundwater levels at the site. Piezometer installation details and a summary of measured water levels are presented in Appendix B. These borings were monitored by Haley & Aldrich personnel.

Portland International Ferry Terminal, 1969 – Test borings at the ferry terminal site consisted of seven 2-½ in. diameter cased borings, designated B1 through B7, drilled during the period of 16 October to 26 November 1969 by Northeast Soil Services of Brewer, Maine.

SUBSURFACE CONDITIONS

Soil/Bedrock Conditions

Generally, the subsurface explorations encountered the following geologic units, presented in order of increasing depth below existing ground surface:

- Bituminous Pavement
- Fill
- Harbor Bottom Deposit
- Marine Deposit (Clay)
- Marine Deposit (Sand)
- Ice Contact Deposit
- Glacial Till

A brief description of each geologic unit is provided below based on recent explorations. Refer to Table I for a summary of the test borings and Appendix A for test boring logs.

Bituminous Pavement

Bituminous pavement was encountered in all of the test borings except HA10-10. The thickness ranged from 0.2 to 0.4 ft.

Fill

Man-placed fill was encountered in all of the test borings. The fill was variable, consisting of well graded SAND with gravel (SW) to silty SAND (SM) to ORGANIC SILT (OL/OH). Rip rap was encountered in boring HA10-10. Brick fragments, wood fragments, ash, coal, cobbles, and boulders were encountered at several locations. The thickness of the fill encountered at these locations varied from approximately 3.5 to 15 ft. The fill soils were generally very loose to very dense with SPT N-values ranging from 2 to in excess of 50 blows per foot (bpf).

Harbor Bottom Deposit

A harbor bottom deposit was encountered directly beneath the fill in three of the deeper test borings closest to the existing seawall (HA10-5, HA10-9 and HA10-10). The layer ranged in thickness from 11.5 to 14 ft. The deposit consisted of gray silty SAND (SM), sandy SILT (ML), ORGANIC SILT (OL/OH), or CLAY (CL). It typically contained shell and wood fragments. The soils were generally loose to very loose, or soft to very soft, with SPT N-values ranging from weight of rods (WOR) to 7 bpf.

Marine Deposit (Clay)

Marine clay deposits were encountered in four of the explorations (HA10-4, HA10-6, HA10-9 and HA10-10). The material typically consisted of gray to olive-brown, lean CLAY (CL) with varying amounts of fine sand, or sandy SILT (ML). The encountered thickness of the deposit ranged from about 8 to 14 ft. The marine clay deposits were generally very soft to stiff with SPT N-values ranging from weight of hammer (WOH) to 10 bpf.

Marine Deposit (Sand)

Marine sand deposits were encountered in five test borings (HA10-1, HA10-2, HA10-5, HA10-9 and HA10-10). The material typically consisted of gray to brown, poorly graded SAND (SP), well graded SAND (SW), or clayey SAND (SC). The deposit occasionally contained varying amounts of gravel. The deposit was fully penetrated in only one boring (HA10-10) where the encountered thickness was 32 ft. The marine sand deposits were generally loose to dense with SPT N-values ranging from 2 to 49 bpf.

Ice Contact Deposit

Ice contact deposit soils were encountered in HA10-10, which was the only boring that fully penetrated the overlying marine deposits. The material consisted of gray, well graded SAND with gravel (SW). A cobble was noted within the deposit. The encountered thickness of the deposit was 14 ft. These soils were found to be medium dense with SPT N-values ranging from 10 to 24 bpf.

Glacial Till

Glacial till soils were encountered in HA10-10, which was the only boring that fully penetrated the overlying marine and ice contact deposits. The material consisted of gray to brown, poorly graded SAND with gravel (SP). The material was poorly to well bonded. The deposit was not fully penetrated in any of the recent explorations. Test boring HA10-10 extended 16 ft into glacial till without penetrating the layer. In historic explorations the deposit was up to 93 ft thick. These soils were found to be very dense with SPT N-values in excess of 50 bpf.

Bedrock

Bedrock was not encountered in any of the recent explorations, which were drilled to depths up to 85 ft BGS. Bedrock was cored in one of the historic explorations (for the Fore River Bridge; B569-89) at a depth of 136 ft. Another historic boring, B568-88, extended to a depth of 200 ft without encountering bedrock.

Groundwater Conditions

Groundwater levels were not typically observed in the borings due to drilling methods. However a piezometer was installed in one historic boring near Commercial Street (B-9) in 1987. The water level readings taken indicate that water levels at the site fluctuate with tide levels in Portland Harbor. The

water elevation in this piezometer ranged from El. 0.8 to El. 3.6. The piezometer data is included in Appendix B (note that the 1987 data in the appendix references the MLW datum).

Groundwater levels can be expected to fluctuate, subject to seasonal variation, local soil conditions, topography and precipitation. Water levels encountered during construction may differ from those summarized above.

LABORATORY SOIL TESTING

A limited laboratory testing program was conducted to assist in soil classification and for determination of engineering properties and reuse potential of the in-situ soils. The testing program included two grain size analyses (sieve only) in the vicinity of the proposed building, three Atterberg Limits tests, and one consolidation test. All laboratory testing was conducted in accordance with appropriate ASTM test procedures by Geotesting Express of Boxborough, Massachusetts. The laboratory test reports are presented in Appendix C. A summary of laboratory test results is provided below.

Test Boring No.	Sample Designation	Sample Depth	Stratum	Percent Passing No. 200 Sieve
HA10-1	S1A	0.5 to 1.5 ft	Fill	20.3
HA10-1	S2	2.5 to 4.5 ft	Fill	17.6

Test Boring No.	Sample Designation	Sample Depth	Stratum	Natural Moisture Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
HA10-5	U1 (upper)	14.5 to 16.5 ft	Marine	33	38	18	20
HA10-5	U1 (lower)	14.5 to 16.5 ft	Marine	21	NP	NP	NP
HA10-9	U1	35 to 37 ft	Marine	29	30	17	13

¹- NP = non-plastic

Recommendations regarding reuse potential will be provided under separate cover.

CLOSURE

It is our intention that this report be distributed to the project team for use during design development. This report should also be included in the contract document package for use by prospective contractors to provide baseline information on subsurface conditions in preparation of their bids. We are currently in the process of completing our engineering evaluations for this project and will provide geotechnical design recommendations under separate cover.

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

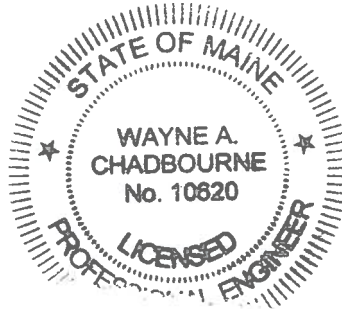
Sincerely yours,
HALEY & ALDRICH, INC.



Erin F. Wood, P.E.
Senior Engineer



Wayne A. Chadbourne, P.E.
Vice President



Enclosures:

- Table I - Summary of Subsurface Explorations
- Figure 1 - Project Locus
- Figure 2 - Site and Subsurface Exploration Location Plan
- Appendix A - Recent Test Boring Logs
- Appendix B - Historic Test Boring Logs
- Appendix C - Laboratory Test Reports

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REFERENCES

1. Boone, Gary M., Hussey, Arthur M. and Philip H. Osberg (1985), Bedrock Geologic Map of Maine, Maine Geological Survey, Department of Conservation, Augusta, Maine.
2. Hussey, Arthur M. (2003), Bedrock Geology, Portland West Quadrangle, Maine, Maine Geological Survey, Department of Conservation, Augusta, Maine, Open File No. 03-94.
3. Thompson, Woodrow B. and Robert G. Marvinney (2008), Surficial Geology, Portland West Quadrangle, Maine, Maine Geological Survey, Department of Conservation, Augusta, Maine, Open File Report No. 08-16.
4. HNTB Corporation, "Portland International Marine Terminal Improvements, Pin: 17820.00," 30% Submission, dated 23 November 2010.
5. Haley & Aldrich data report entitled "Pavement Evaluation, International Marine Terminal, Portland, Maine," dated February 2002, prepared for Maguire Group, Inc., Providence, Rhode Island.
6. Haley & Aldrich report entitled "Pavement Evaluation, International Marine Terminal Cargo Yard, Portland, Maine," dated 10 September 1997, prepared for TAMS Consultants, Inc., Boston, Massachusetts.
7. Haley & Aldrich report entitled "Geotechnical Data, Fixed Span approaches, Abutments, Beach Street Ramp, and Dolphins, Portland/South Portland Bridge, Portland, Maine," dated 28 December 1993, prepared for T.Y. Lin International, Falmouth, Maine.
8. Haley & Aldrich report entitled "Subsurface and Foundation Investigation for Proposed Renovations to International Ferry Terminal, Portland, Maine," dated 25 August 1992, prepared for TEC Associates, South Portland, Maine.
9. Haley & Aldrich report entitled "Proposed Cargo Pier, Portland, Maine," dated 8 January 1988, prepared for Childs Engineering Corporation, Medford, Massachusetts.

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TABLE I

Summary of Subsurface Explorations
 Portland International Marine Terminal Improvements
 Portland, Maine

Haley & Aldrich File No.: 37272-000

Test Boring No. ¹	Ground Surface Elevation ³	Approximate Strata Thickness ⁴ (ft)						Approximate Elevation of Bottom of Exploration
		Fill	Harbor Bottom Deposit	Marine Deposit		Ice Contact	Glacial Till	
				Clay	Sand			
HA10-1	11.5	15.0	NE	NE	> 12	--	--	-15.5
HA10-2	11.0	7.0	NE	NE	> 4	--	--	0.0
HA10-3	11.5	> 10.5	--	--	--	--	--	1.0
HA10-4	11.0	10.0	NE	> 0.5	--	--	--	0.5
HA10-5	11.5	12.5	11.5	NE	> 2	--	--	-14.5
HA10-6	11.0	6.5	NE	> 6	--	--	--	-1.5
HA10-7	10.5	> 10.5	--	--	--	--	--	0.0
HA10-8	10.5	> 10.5	--	--	--	--	--	0.0
HA10-9	11.5	13.0	14.0	14.0	> 3	--	--	-32.5
HA10-10	-3.5	3.5	11.5	3.5	36.5	14.0	> 16.3	-88.8
HA10-11	12.5	> 3	--	--	--	--	--	9.5
HA10-12	13.5	> 4.5	--	--	--	--	--	9.0

Notes:

¹ Test boring locations are shown on Figure 2, Site and Subsurface Exploration Location Plan.

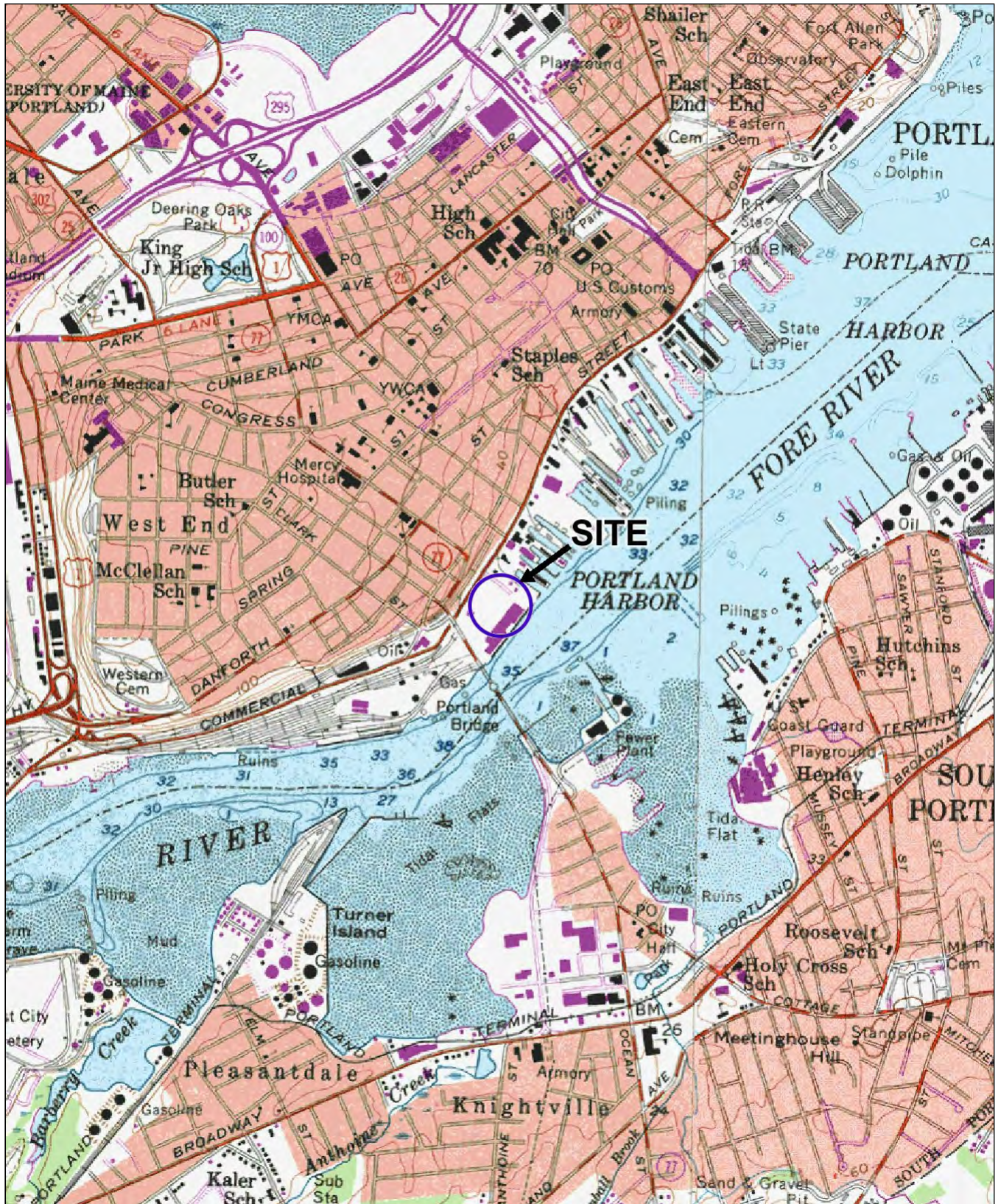
² As-drilled locations of test borings were determined by James D. Nadeau, LLC.

³ Ground surface elevations at test boring locations were estimated by Haley & Aldrich based on ground surface contours shown on existing conditions plan by James D. Nadeau, LLC. and reference NGVD 29.

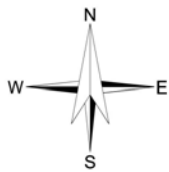
⁴ "NE" indicates stratum was not encountered in test boring.

⁵ "--" indicates test boring was not advanced deep enough to determine the presence of stratum.

COMPLETED BY:	MLS
CHECKED BY:	EFW
REVIEWED BY:	WAC



SITE COORDINATES: 43°38'52"N 70°15'29"W



U.S.G.S. QUADRANGLE: PORTLAND WEST, ME

HALEY & ALDRICH

PORTLAND INTERNATIONAL MARINE TERMINAL IMPROVEMENTS
PORTLAND, MAINE

PROJECT LOCUS

SCALE: 1:24,000
DECEMBER 2010

FIGURE 1

- Legend:**
- Catch Basin
 - Sanitary Manhole
 - Drain Manhole
 - Manhole
 - Telephone Manhole
 - Electrical Manhole
 - Project Benchmark
 - Utility Point (by others)
 - Apparent Underground Utility
 - Test Borings (See Note 19)
 - Fire Hydrant

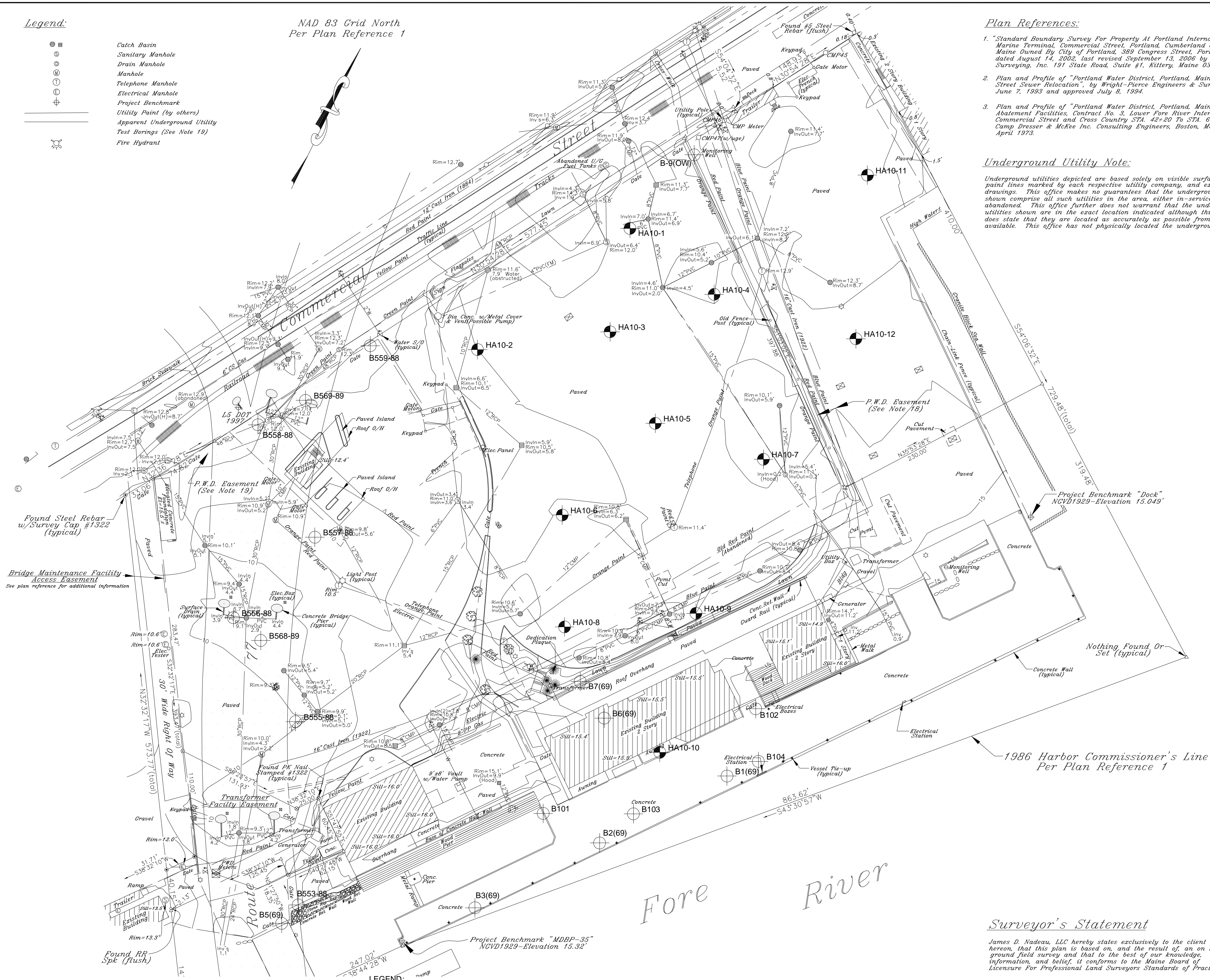
NAD 83 Grid North
Per Plan Reference 1

Plan References:

- "Standard Boundary Survey For Property At Portland International Marine Terminal, Commercial Street, Portland, Cumberland County, Maine Owned By City of Portland, 389 Congress Street, Portland, Maine" dated August 14, 2002, last revised September 13, 2006 by Northeastery Surveying, Inc. 191 State Road, Suite #1, Kittery, Maine 03804.
- Plan and Profile of "Portland Water District, Portland, Maine, Commercial Street Sewer Relocations", by Wright-Pierce Engineers & Surveyors, dated June 7, 1993 and approved July 8, 1994.
- Plan and Profile of "Portland Water District, Portland, Maine, Pollution Abatement Facilities, Contract No. 3, Lower Fore River Interceptor, Commercial Street and Cross Country STA. 43+20 To STA. 60+25", by Camp Dresser & McKee Inc. Consulting Engineers, Boston, Mass., dated April 1973.

Underground Utility Note:

Underground utilities depicted are based solely on visible surface structures, point lines marked by each respective utility company, and existing drawings. This office makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. This office further does not warrant that the underground utilities shown are in the exact location indicated although this office does state that they are located as accurately as possible from information available. This office has not physically located the underground utilities.



NOTES:

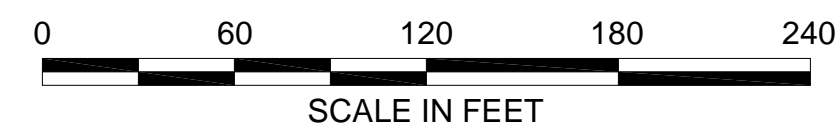
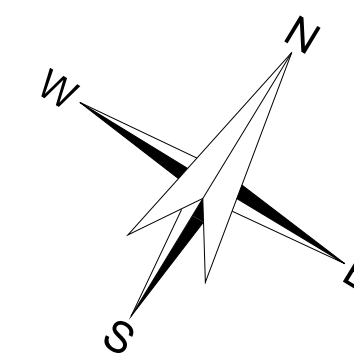
- EXISTING SITE FEATURES AND TOPOGRAPHIC INFORMATION TAKEN FROM PLAN TITLED "PLAN DEPICTING EXISTING CONDITIONS OF THE PORTLAND INTERNATIONAL MARINE TERMINAL, BY JAMES D. NADEAU, LLC, DATED 29 NOVEMBER 2010.
- THE "HA10" SERIES OF EXPLORATION LOCATIONS WERE SURVEYED BY JAMES D. NADEAU, LLC. LOCATIONS OF HISTORIC BORINGS ARE APPROXIMATE AND WERE SCALED OFF OTHER, HISTORIC SITE PLANS.
- ELEVATIONS ARE IN FEET AND REFERENCE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
- SITE SPECIFIC TIDAL DATA FOR THE PROJECT, AS PROVIDED BY HNTB ARE AS FOLLOWS:

EL. 0 MHW = EL. +4.95 NGVD29
 EL. 0 MLW = EL. -4.23 NGVD29
 EL. 0 MLLW = EL. -4.52 NGVD29

- LEGEND:**
- HA10-1 DESIGNATION AND LOCATION OF TEST BORING CONDUCTED BY MAINE TEST BORINGS BETWEEN 15 AND 18 NOVEMBER 2010 AND MONITORED BY HALEY & ALDRICH, INC.
 - B101 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING CONDUCTED IN 1992 FOR PROPOSED TERMINAL MODIFICATIONS
 - B553-88 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING CONDUCTED IN 1988 AND 1989 FOR THE ROUTE 77 BRIDGE REPLACEMENT PROJECT.
 - B9 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING CONDUCTED IN 1987 FOR THE PROPOSED CARGO PIER.
 - B1(69) DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING CONDUCTED IN 1969 FOR DESIGN OF THE TERMINAL.
 - (OW) INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE
 - 15 — ELEVATION CONTOUR OF EXISTING GROUND SURFACE

Surveyor's Statement

James D. Nadeau, LLC hereby states exclusively to the client listed herein, that this plan is based on, and the result of, an on the ground field survey and that to the best of our knowledge, information, and belief, it conforms to the Maine Board of Licensure For Professional Land Surveyors Standards of Practice.



DRAWN BY	MLS
CHECKED BY	EFW
REVIEWED BY	WAC

HALEY & ALDRICH

PORTLAND INTERNATIONAL MARINE TERMINAL IMPROVEMENTS
PORTLAND, MAINE

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
JANUARY 2011

APPENDIX A

Recent Test Boring Logs

TEST BORING REPORT

Boring No. HA10-1

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 2
 Start 15 November 2010
 Finish 15 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 11.5 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	4.0	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	300	140	-	Drill Mud: None
Hammer Fall (in.)	16	30	-	Casing: SSA to 5', HSA to 15.0', HW to 25.0'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel					Sand					Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0				11.3		-BITUMINOUS CONCRETE-														
7		S1	0.5	0.2	SM	Medium dense, brown, silty SAND (SM), mps 0.75 in., no odor, moist	3	3	5	33	36	20								
9		18	2.5			-BASE/SUBBASE-														
10				10.0	SW	Medium dense, dark brown, well graded SAND with gravel (SW), mps 0.75 in., no odor, moist, contains brick and wood fragments	20	5	15	55	5									
14				1.5																
12		S2	2.5	9.0	SM	Medium dense, brown, silty SAND (SM), mps 1.25 in., no odor, moist	4	6	8	30	34	18								
11		18	4.5	2.5		-FILL-														
7																				
8																				
5		S3	4.5		SW-SM	Medium dense, brown, well graded SAND with silt and gravel (SW-SM), mps 0.3 in., no odor, moist, rust-staining around schist gravel	15	5	10	60	10									
6		11	6.5																	
6																				
9																				
7		S4	6.5		SW-SM	Medium dense, brown, well graded SAND with silt and gravel (SW-SM), mps 1.3 in., no odor, moist, rust-staining around schist gravel	25	10	15	40	10									
9		13	8.5																	
8																				
10																				
5		S5	8.5		SM	Medium dense, brown, silty SAND with gravel (SM), mps 0.75 in., no odor, wet	30	5	25	25	15									
3		7	10.5																	
13						-FILL-														
25																				
6		S6A	10.5		SW	Loose, brown, well graded SAND with gravel (SM), mps 1.5 in., no odor, wet	25	10	20	40	5									
2		4	12.5																	
7																				
5																				
						Note: Advance roller bit through boulder from 12.5 to 13.0 ft.														
14		S6B	13.0		SW	Dense, gray, well graded SAND with gravel (SW), mps 1.0 in., no odor, saturated, brick fragments in coarse sand	15	5	15	60	5									
22		11	15.0																	
23						-FILL-														
23																				
15		S7	15.0	-3.5	SP	Loose, gray, poorly graded SAND (SP), mps 0.3 in., no odor, wet	10	5	5	75	5									
5		13	17.0	15.0																
5					SP-SW	Loose, brown, well graded SAND (SW), trace gravel, mps 0.2 in., no odor, wet	10	10	30	50										
5																				
8																				
9		S8	17.0	-4.5	SP	Medium dense, brown, poorly graded SAND with silt (SP), mps 2.0 mm, no odor, wet, thin (1 cm) layer of clay in the top of the spoon, thin (1.5 in.) layer of rust-stained sand at approximately 18.0 ft			15	75	10									
8		8	19.0	16.0																
10																				
13																				
						-MARINE DEPOSIT- (Sand)														
20																				

Water Level Data						Sample ID		Well Diagram			Summary				
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Riser Pipe	Screen	Filter Sand	Overburden (ft)	Rock Cored (ft)	Samples
			Bottom of Casing	Bottom of Hole	Water										
11/15/10	1445	0	pulled	27.0	4.5								27.0	--	11S

Boring No. HA10-1

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-1

File No. 37272-000

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	7 11 15 16	S9 11	20.0 22.0		SP	Medium dense, brown, poorly graded SAND (SP), mps 2.0 mm, no odor, wet, thin (0.75 in.) layer of rust-stained sand at bottom of spoon -MARINE DEPOSIT- (Sand)			25	75						
25	7 8 9 10	S10 11	25.0 27.0	-15.5 27.0	SP	Medium dense, brown, poorly graded SAND (SP), mps 2.0 mm, no odor, wet			25	75						
						Bottom of Exploration 27.0 ft										

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-09-08.GLB HA-TB-CORE-WELL-07-1.GDT G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ 15 Mar 11

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-1

TEST BORING REPORT

Boring No. HA10-2

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 11.0 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 9.0'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0				10.8		-BITUMINOUS CONCRETE-													
				0.2		Note: Cobble at 0.5 ft.													
	10	S1	1.0		SW	Medium dense, dark brown to brown at 2.0 ft, well graded SAND with gravel (SW), mps 0.75 in., no odor, dry to moist	25	15	15	45									
	10	15	3.0			-BASE/SUBBASE-													
	8																		
	6	S2	3.0	7.9	SP	Loose, brown, poorly graded SAND (SP), mps 0.42 mm, no odor, moist, frequent 0.5 in. thick horizontal layers of black sand			20	80									
	5	18	5.0	3.1															
	4																		
	3																		
5	2	S3	5.0		SP	Loose, brown, poorly graded SAND (SP), mps 0.3 in., no odor, moist, dark brown layers from 5.0 to 5.5 ft	5		20	75									
	1	22	7.0			-FILL-													
	3																		
	2																		
	2	S4	7.0	4.0	SW	Very loose, brown, well graded SAND (SW), mps 4.0 mm, no odor, wet			15	25	60								
	1	22	9.0	7.0		-MARINE DEPOSIT- (Sand)													
	2																		
	2																		
10	1	S5	9.0		SW	Very loose, brown, well graded SAND (SW), mps 1.0 in., no odor, wet	5	15	30	50									
	1	21	11.0																
	1																		
	2																		
				0.0		Bottom of Exploration 11.0 ft													
				11.0															

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	Riser Pipe	T - Thin Wall Tube	Screen
			Bottom of Casing	Bottom of Hole	Water				
						U - Undisturbed Sample <td>Cuttings <td></td> <td>Overburden (ft) 11.0</td> </td>	Cuttings <td></td> <td>Overburden (ft) 11.0</td>		Overburden (ft) 11.0
						S - Split Spoon Sample <td>Grout <td></td> <td>Rock Cored (ft) --</td> </td>	Grout <td></td> <td>Rock Cored (ft) --</td>		Rock Cored (ft) --
							Concrete		Samples 5S
							Bentonite Seal		Boring No. HA10-2

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-3

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 11.5 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 8.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
0				11.3	SW	-BITUMINOUS CONCRETE-	25	10	15	50								
12	24	S1	0.5	0.2	SW	Very dense, brown, well graded SAND with gravel (SW), mps 0.75 in., no odor, dry to moist	15	10	10	60	5							
24	50/0"	14	1.8	10.5	SP													
				1.0		-BASE/SUBBASE-												
					SP	Dense, black, poorly graded SAND with gravel (SP), mps 1.3 in., no odor, dry to moist, brick and coal fragments Note: Augered through boulder from approximately 1.8 to 2.5 ft.	15	10	10	65								
					SP	Medium dense, black, poorly graded SAND with gravel (SP), mps 1.0 in., no odor, dry to moist, 0.5 in. ash layer, brick and coal fragments												
					SW	Loose, dark brown to black, well graded SAND with gravel (SW), mps 1.0 in., no odor, dry, contains ash and coal	20	15	25	40								
					SP	Loose, dark brown to black, poorly graded SAND with gravel (SP), mps 0.3 in., no odor, dry	15	10	10	65								
						-FILL-												
					SP	Very loose, black, poorly graded SAND with gravel (SP), mps 0.7 in., no odor, moist to wet	20	10	10	60								
				1.0		Bottom of Exploration 10.5 ft												
				10.5														

15 Mar 11 G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ HA-TB-CORE-WELL-07-1.GDT HA-LIB07-1R-POR-06-09-08.GLB HA-TB-CORE-WELL-07-1.GDT HA-LIB07-1R-POR-06-09-08.GLB

Water Level Data				Sample ID		Well Diagram		Summary				
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Overburden (ft) 10.5	Rock Cored (ft) --	Samples 5S
			Bottom of Casing	Bottom of Hole	Water							

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-4

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 11.0 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 8.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0				10.7	SW	-BITUMINOUS CONCRETE-													
14	21	S1	0.5	0.3	SW	Dense, brown, well graded SAND with gravel (SW), mps 2.0 in., no odor, dry to damp	25	15	15	45									
16	19	19	2.5	10.0	SP	-BASE/SUBBASE-	30	5	10	55									
19				1.0	SP	Dense, black, poorly graded SAND with gravel (SP), mps 2.0 in., no odor, dry to moist, contains coal													
12	16	S2	2.5		SW	Medium dense, brown to dark brown, well graded SAND with silt and gravel (SW), mps 1.0 in., no odor, moist, contains coal and large wood fragments	15	10	15	50	10								
12	12	17	4.5		SW	-FILL-													
12	12				SW	Medium dense, dark brown, well graded SAND with silt and gravel (SW), mps 0.8 in., no odor, moist, contains wood fragments	15	10	10	55	10								
7	6	S3	4.5		SW	Medium dense, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, moist	25	15	10	50									
6	5	5	6.5		SW	Very loose, brown, silty SAND (SM), mps 0.5 in., no odor, saturated	5		10	70	15								
5	5				SW	Soft, brown, sandy CLAY (CL), mps 0.47 mm, no odor, saturated						30	70						
5	5	S4	6.5		SW	-MARINE DEPOSIT- (Clay)													
7	7	7	8.5		SW	Bottom of Exploration 10.5 ft													
4	4				SM														
4					SM														
1	1	S5	8.5		SM														
2	2	24	10.5		SM														
2				1.0	CL														
10				10.0	CL														
				0.5															
				10.5															

15 Mar 11 G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ HA-TB-CORE+WELL-07-1.GDT HA-LIB07-IR-POR-06-08-08.GLB HA-TB-CORE+WELL-07-1.GDT HA-LIB07-IR-POR-06-08-08.GLB

Water Level Data				Sample ID		Well Diagram		Summary				
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Overburden (ft) 10.5	Rock Cored (ft) --	Samples 5S
			Bottom of Casing	Bottom of Hole	Water							

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-4

TEST BORING REPORT

Boring No. HA10-5

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 2
 Start 15 November 2010
 Finish 16 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 11.5 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	4.0	1.375	-	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb)	300	140	-	Casing: SSA to 8.5,' HW to 24.0'
Hammer Fall (in.)	16	30	-	Hoist/Hammer: Winch / Safety Hammer PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel					Sand			Field Test					
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0				11.3		-BITUMINOUS CONCRETE-														
14	14	S1	0.5	11.3	SW	Dense, brown, well graded SAND with gravel (SW), mps 2.0 in., no odor, moist	20	10	15	55										
24	14		2.5	10.0		-BASE/SUBBASE-														
14	13			10.0	SW	Dense, dark brown to black, well graded SAND with gravel (SW), mps 1.75 in., no odor, moist, contains ash and brick fragments and coal	25	20	15	40										
9	6	S2	2.5	8.5	SW	Medium dense, dark brown to black, well graded SAND with gravel (SW), mps 1.75 in., no odor, moist, contains ash and brick fragments and coal							85	15						
6	18		4.5	3.0	SP	Medium dense, dark brown, silty SAND (SP), mps 0.42 mm, no odor, moist														
12				7.5	SW	Medium dense, brown, well graded SAND with gravel (SW), mps 1.5 in., no odor, moist	30	15	15	40										
15				4.0																
4	6	S3	4.5	7.0	SP	Medium dense, light brown, poorly graded SAND (SP), mps 0.42 mm, no odor, moist								100						
6	6		6.5	4.5																
5	5																			
4	5	S4	6.5	5.0	SM	-FILL- Loose, light brown, silty SAND (SM), mps 0.42 mm, no odor, moist							75	25						
5	5		8.5	6.5																
1	4	S5	8.5		SM	Loose, light brown, silty SAND (SM), mps 0.42 mm, no odor, wet							10	75	15					
3	10		10.5																	
4				1.5																
10	4			10.0	SP	Loose, brown, poorly graded SAND (SP), mps 4.75 mm, no odor, wet		10	60	30										
1	3	S6	10.5	1.0	SP	Loose, brown, poorly graded SAND (SP), mps 0.75 in., no odor, wet	10		65	25										
3	7		12.5	10.5																
3						-FILL-														
2	2																			
2	2	S7	12.5	-1.0	CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet													100	
1	24		14.5	12.5																
2	2																			
15		U1	14.5			U1 (14.5-16.5 ft) Recovery = 18.5 in.														
			16.5																	
						Note: Unable to advance vane through soil from 16.5 to 17.5 ft.														
2	1	S8	17.0		OL/OH	Very soft, gray, ORGANIC SILT with sand (OL/OH), mps 4.0 mm, strong organic odor, wet, shell and wood fragments							5	5	30	60				
1	24		19.0			-HARBOR BOTTOM DEPOSIT-														
2	2																			
20		WOH																		
		S9	19.0		SC/OL/OH	Very loose, gray, clayey SAND and ORGANIC SILT (SC/OL/OH), mps 1.0 in., organic odor, wet, contains shell and wood fragments and fibrous	5	5	10	55	35									
		WOH	21.0																	

Water Level Data				Sample ID		Well Diagram			Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample				
			Bottom of Casing	Bottom of Hole	Water					
										Overburden (ft) 26.0 Rock Cored (ft) -- Samples 10S, 1U
									Boring No. HA10-5	

Field Tests: Dilatancy: R - Rapid S - Slow N - None
 Toughness: L - Low M - Medium H - High
 Plasticity: N - Nonplastic L - Low M - Medium H - High
 Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

15 Mar 11
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 HA-TB-CORE-WELL-07-1.GDT
 HA-LIB07-IR-POR-06-08-08.GLB
 HA-TEST BORING-07-1

TEST BORING REPORT

Boring No. HA10-5

File No. 37272-000

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
20	WOH 3					organics, some seams of medium to coarse sand -HARBOR BOTTOM DEPOSIT-												
25	12 11 12 14	S10 24	24.0 26.0	-12.5 24.0	SC	Medium dense, light brown, clayey SAND (SC), mps 4.0 mm, slight organic odor, wet, contains red-brown to dark brown layers of iron staining -MARINE DEPOSIT- (Sand) Bottom of Exploration 26.0 ft			5	60	35							

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-09-08.GLB HA-TB-CORE+WELL-07-1.GDT G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ 15 Mar 11

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-5

TEST BORING REPORT

Boring No. HA10-6

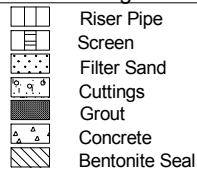
Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 10.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

H&A Rep. M. Foley
 Elevation 11.0 (approx.)
 Datum NGVD 29
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0				10.7		-BITUMINOUS CONCRETE-													
10		S1	0.5	0.3	SW	Medium dense, brown, well graded SAND with gravel (SW), mps 0.75 in., no odor, dry	20	15	15	50									
16		17	2.5	10.2	SW		15	10	15	60									
14				8.5		-BASE/SUBBASE-													
14		S2	2.5	2.5	SW	Medium dense, brown to black, well graded SAND with gravel (SW), mps 0.75 in., no odor, dry, contains brick fragments, ash and wood	20	15	15	45	5								
13		18	4.5			Medium dense, brown, well graded SAND with gravel (SW), mps 1.3 in., no odor, dry													
15						-FILL-													
10		S3	4.5	6.0	SW	Loose, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, dry	20	15	15	50									
5		24	6.5	5.0	SP	Loose, light brown, poorly graded SAND (SP), mps 0.42 mm, no odor, moist, 1.4 in. layers of iron staining				5	95								
1		S4	6.5	4.9	CL	Medium stiff, gray, sandy lean CLAY (CL), mps 0.42 mm, no odor, moist, iron staining						30	70						
1		23	8.5	6.1	CL	Very soft, olive-brown, lean CLAY (CL), with fine sand layers, organics, mps 0.42 mm, no odor, wet, mottled						30	70						
1				4.5		-MARINE DEPOSIT- (Clay)													
2		S5	8.5	6.5	CL	Soft, olive-brown, lean CLAY (CL), with fine sand layers, mps 0.42 mm, no odor, wet						30	70						
2		24	10.5																
10																			
2		S6	10.5		CL/	Soft, olive-brown, lean CLAY (CL), alternating with loose, brown, poorly graded SAND (SP), mps 0.42 mm, no odor, wet, gray clay in bottom of sampler						50	50						
2		23	12.5		SP														
1																			
1																			
				-1.5		-Bottom of Exploration 12.5 ft													
				12.5															

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water				
								12.5	--
									6S
								Boring No. HA10-6	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-7

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 10.5 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 8.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
0				10.1		-BITUMINOUS CONCRETE-												
17		S1	0.5	0.4	SW	Dense, brown, well graded SAND with gravel (SW), mps 1.5 in., no odor, dry	25	15	15	45								
20		16	2.5	0.5	SW													
17				1.0		-BASE/SUBBASE-												
11		S2	2.5		SP	Dense, black, well graded SAND with gravel (SW), mps 0.5 in., no odor, moist, contains coal and ash	15	5	10	60	10							
12		16	4.5		SP	Medium dense, dark brown, poorly graded SAND with silt and gravel (SP), mps 0.2 in., no odor, moist, contains ash and trace bricks												
9																		
5		S3	4.5		SM	Loose, dark brown, silty SAND with gravel (SM), mps 1.3 in., no odor, wet	20	5	10	45	20							
2		17	6.5			-FILL-												
2																		
3																		
8																		
10		S4	6.5	4.0	OL/OH	Medium stiff, dark brown, ORGANIC SILT (OL/OH), contains abundant brick fragments, mps 1.0 in., no odor, wet				10	90							
6		10	8.5	0.5	OH													
2																		
9																		
1		S5	8.5	1.6	OL/OH	Very soft, dark brown, ORGANIC SILT (OL/OH), contains abundant brick fragments, mps 1.0 in., no odor, wet				5	20	75	90					
1		24	10.5	0.7	OH													
2					SP	Very loose, brown, poorly graded SAND (SP), mps 4.0 mm, no odor, wet												
2						-FILL-												
10				0.0		Bottom of Exploration 10.5 ft												
				10.5														

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	Riser Pipe	Screen	Overburden (ft)
			Bottom of Casing	Bottom of Hole	Water				
						T - Thin Wall Tube <td>Filter Sand <td>Rock Cored (ft)</td> <td>--</td> </td>	Filter Sand <td>Rock Cored (ft)</td> <td>--</td>	Rock Cored (ft)	--
						U - Undisturbed Sample <td>Cuttings <td>Samples</td> <td>5S</td> </td>	Cuttings <td>Samples</td> <td>5S</td>	Samples	5S
						S - Split Spoon Sample <td>Grout <td></td> <td></td> </td>	Grout <td></td> <td></td>		
							Concrete <td></td> <td></td>		
							Bentonite Seal <td></td> <td></td>		

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-8

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard
 H&A Rep. M. Foley
 Elevation 10.5 (approx.)
 Datum NGVD 29
 Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 8.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test					
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
0				10.3	SW	-BITUMINOUS CONCRETE-	25	15	15	45							
9	11	S1	0.5	9.5	SP	Medium dense, brown, well graded SAND with gravel (SW), mps 0.75 in., no odor, moist	20	10	10	60							
11	11	21	2.5	1.0		-BASE/SUBBASE-											
13	13	S2	2.5	8.0	SW	Medium dense, brown to black, poorly graded SAND with gravel (SP), mps 0.4 in., no odor, moist, contains coal, brick fragments and glass shards	15	20	15	50							
15	13	15	4.5	2.5		Medium dense, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, moist, trace brick fragments and ash											
5	5	S3	4.5		SW	Dense, brown, well graded SAND with silt and gravel (SW), mps 1.5 in., no odor, moist, some ash layers	20	15	15	40	10						
23	17	21	6.5														
15	20	S4	6.5		SW	Medium dense, brown, well graded SAND with gravel (SW), mps 0.75 in., no odor, moist	30	15	10	45							
17	15	12	8.5			-FILL-											
10	4	S5	8.5		SW	Loose, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, moist to wet, gravel in tip of sampler, split spoon tip is wet	20	15	15	50							
2	2	4	10.5														
10	3			0.0		Bottom of Exploration 10.5 ft											
				10.5													

15 Mar 11 G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ HA-TB-CORE+WELL-07-1.GDT HA-LIB07-IR-POR-06-09-08.GLB HA-TB-CORE+WELL-07-1.GDT H&A-TEST BORING-07-1

Water Level Data				Sample ID		Well Diagram		Summary				
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample	Overburden (ft) 10.5	Rock Cored (ft) --	Samples 5S
			Bottom of Casing	Bottom of Hole	Water							

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-9

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 2
 Start 16 November 2010
 Finish 16 November 2010
 Driller R. Leonard

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	3.0	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	300	140	-	Drill Mud: None
Hammer Fall (in.)	16	30	-	Casing: SSA to 10', NW to 42.0'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

H&A Rep. M. Foley
 Elevation 11.5 (approx.)
 Datum NGVD 29
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
0				11.2	SW	-BITUMINOUS CONCRETE-												
10	10	S1	0.5	0.3	SW	Medium dense, brown, well graded SAND with gravel (SW), mps 1.3 in., no odor, moist	35	5	20	40								
15	15	9	2.5	10.0	SW	-BASE/SUBBASE-												
14	14			1.5	SW	Medium dense, black, well graded SAND with gravel (SW), mps 1.3 in., no odor, moist, brick fragments in tip, coal and brick fragments	20	5	10	65								
6	4	S2	2.5		SW	Loose, brown, well graded SAND with gravel (SW), mps 1.3 in., no odor, moist, abundant brick fragments	20	15	25	40								
4	5	8	4.5															
5	1	S3	4.5		SW	Very dense, brown, well graded SAND with gravel (SW), mps 1.3 in., no odor, moist, abundant brick fragments	20	15	25	40								
2	2	4	5.5															
50/1"																		
4	4	S4	6.5		SW	Loose, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, moist, abundant brick fragments, 2 in. dark brown fill in tip of spoon	20	15	25	35	5							
5	5	16	8.5															
3	3																	
3																		
2	1	S5	8.5		SW	Very loose, brown, well graded SAND (SW), mps 0.75 in., no odor, wet	15	10	25	50								
1	1	5	10.5															
14						-FILL-												
						Note: Roller coned through cobble from 10.5 to 11.0 ft.												
8	5	S6	11.0		SW	Loose, brown, well graded SAND (SW), mps 0.5 in., no odor, wet, contains abundant brick fragments	10	25	15	50								
5	2	7	13.0															
2	1																	
1	1	S7	13.0	-1.5	CL	Very soft, gray, sandy CLAY (CL), mps 0.42 mm, organic odor, wet, contains shell fragments			35	65								
1	1	14	15.0	13.0		-HARBOR BOTTOM DEPOSIT-												
15	WOH	S8	15.0		OL/OH/CL	Note: Attempted vane shear test at 15.0 ft, unable to push to full depth of test.			15	85								
1	6	15	17.0															
4	4			-4.5	SP	Very soft, gray, ORGANIC SILT with clay and sand (OL/OH/CL), mps 0.42 mm, organic odor, wet, contains shell fragments		10	40	45	5							
4	2	S9	17.0	16.0	SM	Loose, gray, poorly graded SAND (SP), mps 4.0 mm, organic odor, wet, contains brick and shell fragments	5	5	15	55	20							
3	3	18	19.0			Loose, gray, silty SAND (SM), mps 4.0 mm, strong organic odor, wet												
5						-HARBOR BOTTOM DEPOSIT-												
2	2	S10	19.0	-7.5	SM/ML	Very loose, gray, silty SAND (SM) to sandy SILT with organics (ML), mps 4.0 mm, strong organic odor, wet, contains shell and wood fragments				55	45							
1	1	14	21.0	19.0														

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample
			Bottom of Casing	Bottom of Hole	Water				
									Overburden (ft) 44.0
									Rock Cored (ft) --
									Samples 14S, 1U
									Boring No. HA10-9

Field Tests: Dilatancy: R - Rapid S - Slow N - None
 Toughness: L - Low M - Medium H - High
 Plasticity: N - Nonplastic L - Low M - Medium H - High
 Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.
 Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

15 Mar 11 G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-L_HA10-12.GPJ HA-TB-CORE-Well-07-1.GDT HA-LIB07-IR-POR-06-08-08.GLB HA-TEST BORING-07-1

TEST BORING REPORT

Boring No. HA10-9

File No. 37272-000

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
20	2 2					-HARBOR BOTTOM DEPOSIT-													
25	2 1 2 2	S11 9	24.0 26.0		ML	Soft, gray, sandy SILT with organics (ML), mps 0.42 mm, contains shell fragments, mps 0.075 mm, organic odor, wet				35	65								
				-15.5 27.0															
30	WOH WOH WOH 2	S12 24	29.0 31.0		CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet, black streaks of organics -MARINE DEPOSIT- (Clay) Note: Attempted vane shear test at 33.0 ft, vane would not advance due to probable sand seam.					100								
35		U1 16	35.0 37.0			U1 (35.0-37.0 ft)													
40	1 2 2 6	S13 24	39.5 41.5	-28.0 39.5	CL	Note: Attempted vane shear test at 39.5 ft, unable to advance through soils. Soft, gray, lean CLAY with sand (CL), mps 0.42 mm, no odor, wet, frequent gray, fine sand seams. Brown, fine sand seam in bottom 2 in. of spoon.					25	75							
				-29.5 41.0	SC	-MARINE DEPOSIT- (Clay) Medium dense, brown, clayey SAND (SC), mps 0.42 mm, thin (0.1 in.) horizontal layers of iron staining in the sand					65	35							
	3 10 16 18	S14 20	42.0 44.0			-MARINE DEPOSIT- (Sand)													
				-32.5 44.0		Bottom of Exploration 44.0 ft													

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-08-08.GLB HA-TB-CORE-WELL-07-1.GDT G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ 15 Mar 11

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-9

TEST BORING REPORT

Boring No. HA10-10

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

File No. 37272-000
 Sheet No. 1 of 4
 Start 16 November 2010
 Finish 18 November 2010
 Driller R. Leonard

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW/NW	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	4.0/3.0	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	300	140	-	Drill Mud: None
Hammer Fall (in.)	16	30	-	Casing: HW 4" to 20', NW 3" to 70'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

H&A Rep. M. Foley
 Elevation -3.5 (approx.)
 Datum NGVD 29
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0						Note: Test boring drilled from deck level (approx. El. 15.5). Depth from deck level to mudline approx. 19 ft. Note: Advance casing through rip rap/mud to 3.5 ft. -RIP RAP- -FILL-													
	WOH	S1	3.5	-7.0	OL/	Very soft, dark gray to black, sandy ORGANIC SILT with sand (OL/OH), mps 0.3 in., strong organic odor, wet, contains brick fragments, contains wood and shell fragments No Recovery					20	80							
	WOH	10	5.5	3.5	OH														
	WOR	S2	5.5																
	WOR	0	7.5																
	WOH																		
5																			
	WOR	S3	10.0	-18.5	OL/OH	Very soft, gray, sandy ORGANIC SILT (OL/OH), 0.42 in., strong organic odor, wet -HARBOR BOTTOM DEPOSIT-					30	70							
	WOH	24	12.0	15.0															
10																			
	WOR	S4	15.0	-18.5	SP	Medium dense, gray, poorly graded SAND (SP), mps 4.0 mm, no odor, wet -MARINE DEPOSIT- (Sand)					20	80							
	WOH	14	17.0	15.0															
15																			
	5																		
	10																		
	13																		
	16																		
20																			

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod	T - Thin Wall Tube	U - Undisturbed Sample	S - Split Spoon Sample
			Bottom of Casing	Bottom of Hole	Water				
									Overburden (ft) 85.3
									Rock Cored (ft) --
									Samples 16S
									Boring No. HA10-10

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**
Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-07-1 HA-LIB07-IR-POR-06-09-08.GLB HA-TB-CORE-WELL-07-1.GDT G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ 15 Mar 11

TEST BORING REPORT

Boring No. HA10-10

File No. 37272-000

Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test					
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
20	10	S5 14	20.0	-24.5	SP	Medium dense, gray, poorly graded SAND with silt (SP), mps 4.0 mm, no odor, wet			5	15	70	10					
	9		22.0		ML	Stiff, gray, sandy SILT (ML), mps 0.42 mm, organic odor						35	65				
	6					-MARINE DEPOSIT- (Sand)											
	4																
25	2	S6 24	25.0	-29.0	ML	Very soft, gray, sandy SILT (ML), mps 2.0 mm, organic odor, wet, contains shell fragments			5	35	60						
	WOH 1		27.0		CL	Very soft, gray, lean CLAY (CL), with frequent seams of very fine sand						25	75				
						-MARINE DEPOSIT- (Clay)											
30	8	S7 14	30.0	-32.5	SM	Medium dense, gray, silty SAND (SM), mps 0.42 mm, organic odor, wet, black organic staining					85	15					
	7		32.0		SC	Medium dense, olive-brown, clayey SAND (SC), mps 2.0 mm, no odor, wet						5	65	30			
	12					-MARINE DEPOSIT- (Sand)											
	17																
35	10	S8 13	35.0	-34.0	SP	Medium dense, light brown grading to rusty-brown, poorly graded SAND (SP), mps 2.0 mm, no odor, wet					25	75					
	14		37.0														
	8																
	19																
40	7	S9 21	40.0	-47.5	SM	Medium dense, brown, silty SAND (SM), mps 2.0 mm, no odor, wet, occasional clayey sand layers, occasional iron staining					5	65	30				
	11		42.0														
	14					Note: Drill action indicates gravel in sand at 42.0 ft.											
	12																
45	40	S10 10	45.0	-44.0	SW	Dense, brown grading to gray at 46 ft, well graded SAND with gravel (SW), mps 1.3 in., no odor, wet			25	15	20	45					
	25		47.0														
	24					-MARINE DEPOSIT- (Sand)											
	19																

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-10

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-08-08 GLB HA-TB-CORE-WELL-07-1 GDT G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ 15 Mar 11

TEST BORING REPORT

Boring No. HA10-10

File No. 37272-000

Sheet No. 3 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	13 11 11 20	S11 10	50.0 52.0		SP	Medium dense, gray, poorly graded SAND (SP), mps 1.0 in., no odor, wet -MARINE DEPOSIT- (Sand)		5	10	25	55	5				
55	40 11 6 5	S12 8	55.0 57.0	-58.5 55.0	SW	Medium dense, gray, well graded SAND with gravel (SW), mps 1.3 in., no odor, wet Note: Casing pushed on cobble at 55.5 ft. -ICE CONTACT DEPOSIT- Note: No recovery. Sand and gravel in casing.		35	20	20	20	5				
60	5 5 5 6	NR 0	60.0 62.0													
65	11 11 13 17	S13 8	65.0 67.0		SW	Medium dense, gray, well graded SAND with gravel (SW), mps 0.75 in., no odor, wet		15	35	30	20					
70	67 100/4"	S14 8	70.0 70.8	-72.5 69.0	SP	Very dense, gray, poorly graded SAND with gravel (SP), mps 0.75 in., well bonded, no odor, wet -GLACIAL TILL-		20	10	10	55	5				
75	106/2"	S15 2	75.0 75.2		SP	Very dense, gray, poorly graded SAND with gravel (SP), mps 0.75 in., no odor, wet Note: 0.5 ft of sand in casing at 75.0 ft.		20	5	10	65					

15 Mar 11 G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_HA10-12.GPJ HA-TB-CORE+WELL-07-1.GDT HA-LIB07-1R-POR-06-08-08.GLB HA-LIB07-1R-POR-06-08-08.GLB

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-10

TEST BORING REPORT

Boring No. HA10-10

File No. 37272-000

Sheet No. 4 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev./Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test					
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
80	100/3	S16 3	80.0 80.2		SP	Very dense, blue-gray to gray, poorly graded SAND with silt and gravel (SP), mps 1.0 in., well bonded, no odor, wet -GLACIAL TILL-		20	5	10	55	10					
85	120/4	S17 2	85.0 85.3	-88.8 85.3	SP	Very dense, brown, poorly graded SAND with gravel (SP), mps 0.3 in., poorly bonded, no odor, wet Note: 4.5 in. sand in casing at 85.0 ft. Bottom of Exploration 85.3 ft		25	5	10	60						

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-09-08.GLB HA-TB-CORE-WELL-07-1.GDT G:\PROJECTS\37272 - IMT\000\FIELD\37272-000_HA10-1_L_HA10-12.GPJ 15 Mar 11

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-10

TEST BORING REPORT

Boring No. HA10-11

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings

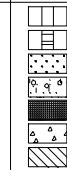
File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 1.0'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

H&A Rep. M. Foley
 Elevation 12.5 (approx.)
 Datum NGVD 29
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0				12.3	SW	-BITUMINOUS CONCRETE-													
				0.2		Augered through cobble at 0.5 ft													
	11	S1	1.0	11.5	SW	Dense, brown, well graded SAND with gravel (SW)		20	10	15	55								
	30	22	3.0	11.0	SP	Very dense, white, poorly graded SAND (SP)		10	5	75	10								
	30			11.0		-BASE/SUBBASE-													
	15			11.5		Very dense, dark brown, well graded SAND with gravel (SW), contains brick fragments, ash, mps 2.0 in., no odor, dry		20	10	15	50	5							
				9.5		-FILL-													
				3.0		Bottom of Exploration 3.0 ft													

H&A-TEST BORING-07-1 HA-LIB07-IR-POR-06-09-08 GLB HA-TB-CORE+WELL-07-1.GDT G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-11_HA10-12.GPJ 15 Mar 11

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water				
								3.0	--
								1S	

Boring No. HA10-11

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA10-12

Project Portland International Marine Terminal Improvements, Portland, Maine
 Client HNTB Corporation
 Contractor Maine Test Borings


File No. 37272-000
 Sheet No. 1 of 1
 Start 18 November 2010
 Finish 18 November 2010
 Driller R. Leonard

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	-	Rig Make & Model: Mobile Drill B53
Inside Diameter (in.)	-	1.375	-	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: SSA to 0.5'
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: N/A

H&A Rep. M. Foley
 Elevation 13.5 (approx.)
 Datum NGVD 29
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0				13.2		-BITUMINOUS CONCRETE-													
13		S1	0.5	0.3	SW	Dense, brown, well graded SAND with gravel (SW), mps 1.0 in., no odor, damp	20	15	15	50									
30		17	2.5	12.5	SP	Dense, dark brown to black, poorly graded SAND with gravel (SP), mps 1.5 in., no odor, moist	15	5	10	70									
14				11.0		-BASE/SUBBASE-													
18				2.5	SM	Medium dense, dark brown, silty SAND with gravel (SM), mps 1.5 in., no odor, moist, contains ash, decomposed wood and brick fragments	20	5	10	45	20								
17		S2	2.5	4.5		-FILL-													
11		13	4.5																
18				9.0															
12				4.5		Bottom of Exploration 4.5 ft													

H&A-TEST BORING-07-1 HA-LIB07-IR-POR-06-09-08.GLB HA-TB-CORE+WELL-07-1.GDT G:\PROJECTS\37272 - INT\000\FIELD\37272-000_HA10-12.GPJ 15 Mar 11

Water Level Data				Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water				
								4.5	--
								2S	

Boring No. HA10-12

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

APPENDIX B

Historic Test Boring Logs

**Proposed Renovations International Ferry Terminal
1992**



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B101**

PROJECT PROPOSED RENOVATIONS INTERNATIONAL FERRY TERMINAL, PORTLAND, MAINE
CLIENT TEC ASSOCIATES
CONTRACTOR MAINE TEST BORINGS, INC.

FILE NO. 80349-00
SHEET NO. 1 OF 3
LOCATION SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	NW	SS	-	RIG TYPE MOBILE B53 TRUCK RIG	ELEVATION 0.6
INSIDE DIAMETER (IN)	3.0	1 3/8	-	BIT TYPE ROLLER BIT	DATUM MLW
HAMMER WEIGHT (LB)	300	140	-	DRILL MUD NONE	START 28 July 1992
HAMMER FALL (IN)	24	30	-	OTHER HNU BACKGROUND = 0.0	FINISH 29 July 1992
				PPMS	DRILLER D. MCKEEN
					H & A REP C. KARAM

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
	10	6	S1	0.0		Medium dense brown coarse to fine sandy GRAVEL with wood fragments HNU = 0.0 ppm -FILL-
		9	4"	1.5		
	27	12				
	34					
	9				-2.4	
	4				3.0	
5						Very soft dark gray fine sandy SILT, with shell fragments and organics HNU reading 15 ppm (peak) above background
	2	1	S2	5.0		
		WOH	16"	6.5		
	2	WOH				
	3					
	8					
	4					
10						Very loose gray silty fine SAND, with organics and shells HNU peak = 17 ppm -HARBOR BOTTOM DEPOSIT-
	5	1	S3	10.0		
		WOH	10"	11.5		
	5	WOH				
	9					
	7					
	7					
15						Very loose gray silty fine SAND to fine sandy SILT, with organics and shells HNU = 13 ppm
	15	WOH	S4	15.0		
		WOH	16"	16.5		
	14	WOH				
	13					
	15					
20						Very loose gray silty fine SAND, with organics and shells HNU = 6 ppm
	22	1	S5	20.0		
		1	16"	21.5		
	17	1				
	19					
	20					
	19				-21.4	
					22.0	
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT.) TO:		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O	OPEN END ROD
T	THIN WALL TUBE
U	UNDISTURBED SAMPLE
S	SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	91.5
ROCK CORED (LIN FT)	0.0
SAMPLES	19S

BORING NO. **B101**



TEST BORING REPORT

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25	29	WOH	S6	25.0		Soft to medium stiff gray silty CLAY with occasional fine sand seams and black streaks HNU = 0.0 ppm -MARINE CLAY-
		WOH	12"	26.5		
	23	WOH				
	25					
	23					
	24					
30	34	WOH	S7	30.0	-32.4 33.0	No Recovery Gray silty CLAY -MARINE CLAY-
		WOH	NR	31.5		
	30	1				
	33					
	40					
35	44					Medium dense brown fine SAND, occasional silt seams -MARINE SAND-
	48	4	S8	35.0		
		10	12"	36.5		
	37	9				
	44					
40	47				-42.4 43.0	Medium dense olive brown silty fine SAND, little clay
	56					
	49	6	S9	40.0		
		8	1"	41.5		
	51	10				
	81					
45	97					Medium dense gray silty fine SAND -MARINE SAND-
	54					
	65	4	S10	45.0		
		5	8"	46.5		
	57	9				
50	48					Medium dense gray medium to fine SAND
	45					
	40					
	42	5	S11	50.0		
		5	10"	51.5		
	38	6				
55	30					Very loose gray silty fine SAND, occasinal silt and clay seams
	35					
	33					
	42	1	S12	55.0		
		1	18"	56.5		
60	39	1				
	38					
	40					
	41					



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B101**
FILE NO. 80349-00
SHEET NO. 3 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
60	49	6	S13 14"	60.0		Medium dense gray medium to fine SAND, trace coarse sand -MARINE SAND-
		8		61.5		
	48	10				
	54					
	64					
65	62					
	68	4	S14 10"	65.0		Medium dense gray coarse to fine SAND
		5		66.5		
	64	5				
	60					
65						
70	60					
	77	8	S15 6"	70.0	-69.4 70.0	Medium dense gray gravelly coarse to fine SAND, poorly bonded -ICE CONTACT DEPOSIT-
		14		71.5		
	85	5				
	80					
79						
75	72					
	83	21	S16 12"	75.0	-77.4 78.0	Medium dense gray gravelly medium to fine SAND, little coarse sand and silt, (bonded - not tightly)
		8		76.5		
	83	4				
	86					
135						
80	217					Encountered cobbles from 78.0 to 80.0 ft.
	154	66	S17 12"	80.0		Very dense gray gravelly coarse to fine SAND (well bonded), little silt *Washed ahead with roller cone from 80.0 to 90.0 ft. -GLACIAL TILL-
		90		81.5		
	112	91				
	106					
139						
85	286					
	107	68	S18 4"	85.0		Very dense gray coarse to fine sandy GRAVEL
		30		86.5		
	163	41				
	142					
163						
90	306					
		200/.2	S19 0"	90.0	-90.9 91.5	No Recovery (wash = gravel) Bottom of Exploration at 91.5 ft. No Refusal
				91.5		



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. B102

PROJECT PROPOSED RENOVATIONS INTERNATIONAL FERRY TERMINAL, PORTLAND, MAINE
CLIENT TEC ASSOCIATES
CONTRACTOR MAINE TEST BORINGS, INC.

FILE NO. 80349-00
SHEET NO. 1 OF 3
LOCATION SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	NW	SS	-	RIG TYPE MOBILE B53 TRUCK RIG	ELEVATION -0.8
INSIDE DIAMETER (IN)	3.0	1 3/8	-	BIT TYPE ROLLER BIT	DATUM MLW
HAMMER WEIGHT (LB)	300	140	-	DRILL MUD NONE	START 22 July 1992
HAMMER FALL (IN)	24	30	-	OTHER FV = 2 IN. X 7 IN. FIELD VANE SHEAR	FINISH 23 July 1992
					DRILLER D. MCKEEN H & A REP C. KARAM

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0	2	2	S1	0.0	-1.3	Very loose brown gravelly coarse to fine SAND -FILL-
	1	1	12"	1.5	0.5	
	1					Very loose black to dark gray fine sandy SILT, with organics
	WOH					
	1					No Recovery
	WOH	W	S2	4.0		
5		O	NR	5.5		-HARBOR BOTTOM DEPOSIT-
	WOH	H				
	4					-7.8
	15				7.0	
	17					Loose gray silty medium to fine SAND -HARBOR BOTTOM DEPOSIT-
10	6	1	S3	9.0		
		3	12"	10.5		
	9	3				Medium dense gray coarse to fine SAND, with trace shell fragments
	14					
	15					Very loose gray silty fine SAND, with organics
	8					
15	7	3	S4	14.0		
		4	18"	15.5		
	11	6				-23.8
	17				23.0	
	21					Soft to medium stiff gray silty CLAY with shell fragments
	25					
20	12	1	S5	19.0		
		1	10"	20.5		
	13	1				
	17					
	18					
	22					
25	25	W	S6	24.0		
		O	18"	25.5		

WATER LEVEL DATA					SAMPLE IDENTIFICATION		SUMMARY					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT.) TO:			O	T	U	S	OVERBURDEN (LIN FT)	ROCK CORED (LIN FT)	SAMPLES
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER							
										79.8	0.0	17S
										BORING NO.	B102	



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B102**
FILE NO. 80349-00
SHEET NO. 2 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25	19	H				-MARINE CLAY-
	21					
	22					
	22					
	40	W	S7	29.0		Stiff gray silty CLAY FV#1, 30.5 to 31.1 ft. Undrained Shear Strength (Su) = 1.48 ksf FV#2, 30.1 to 31.7 ft. Undrained Shear Strength (Su) = 1.67 ksf
30		O	18"	30.5		
	34	H				
	37					
	43					
	54					
	40	7	S8	34.0		Medium dense brown silty fine SAND
35		5	12"	35.5		
	34	8				
	37					
	43					
	51					
	41	7	S9	39.0		Dense brown silty medium to fine SAND -MARINE SAND-
40		15	10"	40.5		
	48	15				
	57					
	110					
	51					
	28	10	S10	44.0		Medium dense rusty brown silty medium to fine SAND
45		8	12"	45.5		
	30	10				
	34					
	32					
	39					
	24	6	S11	49.0		Loose brown silty fine SAND
50		5	8"	50.5		
	22	3				
	27					
	33					
	30					
	29	6	S12	54.0		Medium dense gray silty fine SAND -MARINE SAND-
55		5	10"	55.5		
	26	6				
	25					
	34					
	30					
	29	4	S13	59.0		Medium dense gray silty medium to fine SAND
60		5	12"	60.5		

-32.8
32.0

-52.8
52.0



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B102**
FILE NO. 80349-00
SHEET NO. 3 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
60		5				
	31					
	32					
	37					
	32					
65		1	S14	64.0	-65.8	Very loose gray silty fine SAND, with clayey silt seams
	29	1	12"	65.5	65.0	
	39	1				
	45					
	42					
	40					
70		20	S15	69.0		Very dense gray gravelly medium to fine SAND, little silt (bonded and gravel is rough and angular)
	53	50	6"	70.5		
	70	40				
	79					
	61					
	71					
75		15	S16	74.0	-74.8	Very dense gray gravelly medium to fine SAND, little silt (well bonded)
	40	30	8"	75.5	74.0	
	91	100				
	131					
	234					
		92	S17	79.0	-80.6	Very dense brown gravelly medium to fine SAND, little silt, trace coarse sand (well bonded) Split spoon refusal at 79.8 ft. Bottom of Exploration at 79.8 ft.
		100/.3		79.8	79.8	
		50/0				

-ICE CONTACT DEPOSIT-

-GLACIAL TILL-

NOTE: Washed ahead of casing with roller bit from 78.0 to 79.0 ft.



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B103**

PROJECT PROPOSED RENOVATIONS INTERNATIONAL FERRY TERMINAL, PORTLAND, MAINE
CLIENT TEC ASSOCIATES
CONTRACTOR MAINE TEST BORINGS, INC.

FILE NO. 80349-00
SHEET NO. 1 OF 1
LOCATION SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	NW	SS	-	RIG TYPE MOBILE B53 TRUCK RIG	ELEVATION -15.2
INSIDE DIAMETER (IN)	3.0	1 3/8	-	BIT TYPE ROLLER BIT	DATUM MLW
HAMMER WEIGHT (LB)	300	140	-	DRILL MUD NONE	START 30 July 1992
HAMMER FALL (IN)	24	30	-	OTHER HNU BACKGROUND = 0.0	FINISH 30 July 1992
				PPMS	DRILLER C. KARAM
					H & A REP D. MCKEEN

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0	WOC	W	S1	18"	0.0	Very soft black fine sandy SILT, with organics HNU reading above background = 7.0 ppm -HARBOR BOTTOM DEPOSIT-
		O			1.5	
	WOC	R				
	WOC					
	WOC					
5	WOC	WOR	S2	6"	5.0	Very soft black fine sandy SILT, with organics HNU = 5 ppm -21.2 6.0 Very loose black silty fine SAND, with organics HNU = 5 ppm -24.2 9.0
	WOC	WOR			6.5	
		2				
10	3Q					Dense dark gray silty medium to fine SAND, with organics HNU = 0.0 ppm -HARBOR BOTTOM DEPOSIT-
	25	8	S3	10"	10.0	
		16			11.5	
	38	18				
	47					
15	54					Bottom of Exploration at 15.0 ft. No Refusal Casing broke off Moved boring 1 ft. North and continued at 15 ft. See boring B103A.
	17				15.0	

WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY				
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT.) TO:			O	T	U	S	OVERBURDEN (LIN FT)	ROCK CORED (LIN FT)	SAMPLES
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER							
										15.0	0.0	3S
										BORING NO. B103		



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B103A**

PROJECT PROPOSED RENOVATIONS INTERNATIONAL FERRY TERMINAL, PORTLAND, MAINE
CLIENT TEC ASSOCIATES
CONTRACTOR MAINE TEST BORINGS, INC.

FILE NO. 80349-00
SHEET NO. 1 OF 3
LOCATION SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	NW	SS	-	RIG TYPE MOBILE B53 TRUCK RIG	ELEVATION -15.2
INSIDE DIAMETER (IN)	3.0	1 3/8	-	BIT TYPE ROLLER BIT	DATUM MLW
HAMMER WEIGHT (LB)	300	140	-	DRILL MUD NONE	START 30 July 1992
HAMMER FALL (IN)	24	30	-	OTHER	FINISH 3 August 1992
					DRILLER D. MCKEEN
					H & A REP C. KARAM

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						No samples taken from 0-15.0 ft. See Boring B103 for soil descriptions.
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15	19	3	S1 4"	15.0	-30.2	Loose gray silty fine SAND, with organics and shell fragments -HARBOR BOTTOM DEPOSIT-
		2		16.5	15.0	
	18	3				Medium dense olive brown silty fine SAND -MARINE SAND-
	23					
	21					
	22					
20	26		S2 8"	20.0	-32.2	
				21.5	17.0	
	28					
	31					
	34					
	42					

WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY				
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT.) TO:			O	T	U	S	OVERBURDEN (LIN FT)	ROCK CORED (LIN FT)	SAMPLES
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER							
										75.4	0.0	16S
										BORING NO. B103A		



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B103A**
FILE NO. 80349-00
SHEET NO. 2 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25	16	9	S3 12"	25.0		Medium dense brown fine SAND, trace silt
		12		26.5		
	30	15				
	32					
	40					
30	45				-44.2	
	22	3	S4	30.0	-29.0	Medium dense gray medium to fine SAND, trace silt
		5		31.5		
	23	6				
	26					
20						
35	25					
	26	6	S5 12"	35.0		Medium dense gray medium to fine SAND, trace coarse sand and silt -MARINE SAND-
		5		36.5		
	26	7				
	32					
45						
40	50					
	24	4	S6 12"	40.0		Medium dense gray coarse to fine SAND, trace fine gravel
		5		41.5		
	29	8				
	44					
49						
45	45					
	29	13	S7 10"	45.0		Loose gray medium to fine SAND, trace coarse sand
		4		46.5		
	38	5				
	60					
64						
50	61				-62.2	
	56	10	S8 12"	50.0	-47.0	Medium dense gray medium to fine SAND, little gravel and silt (slightly bonded) -ICE CONTACT DEPOSIT-
		7		51.5		
	53	7				
	66					
100						
55	126					
	83	25	S9 12"	55.0		Very dense gray gravelly medium to fine SAND, little sand and silt (well bonded) -GLACIAL TILL-
		27		56.5		
	112	44				
	223					
280						
60	425				-68.2	
					53.0	

BORING NO. **B103A**



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B103A**
FILE NO. 80349-00
SHEET NO. 3 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
60	148	69 250/.4	S10 6"	60.0 60.9		<p>Very dense gray gravelly fine SAND, trace silt (well bonded) Washed ahead of casing from 60.0 to 70.0 ft.</p> <p style="text-align: center;">-GLACIAL TILL-</p>
	225					
	270					
	376					
	158/.4					
65		184 104/.1	S11 6"	65.0 65.6		<p>Used drilling mud from 65.0 to 70.0' ft. Very dense gray gravelly medium to fine SAND, little silt and coarse sand NOTE: Drilled ahead of casing using drilling mud from 65.0 to 75.4 ft.</p>
70		165 100/.1	S12 4"	70.0 70.6		<p>Very dense gray gravelly fine SAND, little silt (well bonded)</p> <p style="text-align: center;">-GLACIAL TILL-</p>
75		200/.4	S13 2"	75.0 75.4	-90.6 75.4	<p>Very dense gray silty medium to fine SAND (well bonded) Bottom of Exploration at 75.4 ft. No Refusal</p>

BORING NO. **B103A**



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B104**

PROJECT PROPOSED RENOVATIONS INTERNATIONAL FERRY TERMINAL, PORTLAND, MAINE
CLIENT TEC ASSOCIATES
CONTRACTOR MAINE TEST BORINGS, INC.

FILE NO. 80349-00
SHEET NO. 1 OF 3
LOCATION SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	NW	SS	-	RIG TYPE MOBILE B53 TRUCK RIG	ELEVATION -17.7
INSIDE DIAMETER (IN)	3.0	1 3/8	-	BIT TYPE ROLLER BIT	DATUM MLW
HAMMER WEIGHT (LB)	300	140	-	DRILL MUD NONE	START 23 July 1992
HAMMER FALL (IN)	24	30	-	OTHER	FINISH 28 July 1992
					DRILLER D. MCKEEN
					H & A REP C. KARAM

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0	WOC	W	S1	0.0		Very soft black organic SILT
		O		1.5		
	WOC	R				
	43					
	12					
	3					
5	9					
	5					
	WOC	2	S2	7.5		
	6	2	6"	9.0		
		5				-26.7
	15					9.0
	18					
	13					
	WOC					
	4	1	S3	12.8		Loose black silty medium to fine SAND, little organics
		1	10"	14.3		
		3				
	8					
15	9					
	10					
	22	2	S4	17.0		
		2	14"	18.5		
		3				
	26					
	31					14.0
	31					
	29	4	S5	22.0		Loose gray silty fine SAND, trace shell fragments
		4	1"	23.5		
		4				
	27					
	29					
25						



WATER LEVEL DATA					SAMPLE IDENTIFICATION		SUMMARY											
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT.) TO:			O	T	U	S									
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER					OVERBURDEN (LIN FT)	ROCK CORED (LIN FT)	SAMPLES						
										BORING NO.	B104							



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B104**
FILE NO. 80349-00
SHEET NO. 2 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25						<p>Medium dense brown silty fine SAND</p> <p>NOTE: Probable silt and clay seams at 30 ft. based on observations of wash water.</p> <p>Loose gray silty fine SAND -MARINE SAND-</p>
30						
35						
24	3		S6	12"	27.0	
	6				28.5	
27	6					
30						
33						
29						
32						
44	8		S7	18"	32.0	
	5				33.5	
21	4					
35						<p>Loose gray silty fine SAND, little medium sand</p> <p>Loose gray silty fine SAND with occasional silt seams</p> <p>Loose gray gravelly medium to fine SAND, little silt (slightly bonded gravel is rounded) -ICE CONTACT DEPOSIT-</p> <p>Dense gray gravelly coarse to fine SAND, little silt (well bonded angular rough gravel)</p>
27						
32						
38						
35	2		S8	14"	37.0	
	4				38.5	
32	5					
40						
41						
46						
41						
37	2		S9	12"	42.0	
	1				43.5	
30	2					
45						
38						
57						
51						
54	10		S10	8"	47.0	
	1				48.5	
50	6					
66						
50						
64						
87						
64	18		S11	6"	52.0	
	19				53.5	
90	20					
55						<p>NOTE: Washed ahead before driving casing from 57.0 to 82.0 ft.</p> <p>Very dense gray gravelly coarse to fine SAND, little silt (well bonded)</p> <p>-GLACIAL TILL-</p>
105						
248						
75	124		S12	12"	57.0	
	69				58.5	
75	103					
60						
115						

BORING NO. **B104**



HALEY & ALDRICH, INC.
SCARBOROUGH,
MAINE

TEST BORING REPORT

BORING NO. **B104**
FILE NO. 80349-00
SHEET NO. 3 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	ELEV./DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
60	143					Very dense gray medium to fine sandy GRAVEL, trace silt (very well bonded, rough angular gravel)
	137					
	82	87 91	S13 8"	62.0 63.5		
	87	101				
	135					
65	138					Very dense gray coarse to fine sandy GRAVEL
	239					
	61	330/.4	S14 4"	67.0 67.4		
	49					
	141					
70	406					NOTE: Drilled ahead of casing from 71.0 to 71.5 ft. 71.5 to 72.0 ft.; wash sample 72.0 to 72.2 ft.; Very dense gray/olive brown gravelly medium to fine SAND, little sand and silt -GLACIAL TILL-
	200	154	S15 2"	71.5 72.2		
	80	200/.2				
	78					
	127					
75	312					Very dense gray sandy GRAVEL
	458					
	181	200/.3	S16 1"	77.0 77.3		
	92					
	88					
80	241					Very dense gray medium to fine SAND
	465					
		246 300	S17 10"	82.0 83.0	-100.7 83.0	
						Bottom of Exploration at 83.0 ft. No Refusal

**Proposed Fore River Bridge Replacement
1988 and 1989**

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B553-88	
PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE						FILE NO. 08946-00		
CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE						SHEET NO. 1 OF 4		
CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE						LOCATION:		
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			
TYPE		NW	SS	-	RIG TYPE: TRUCK RIG			
INSIDE DIAMETER (IN)		30	1 3/8	-	BIT TYPE: ROLLER BIT			
HAMMER WEIGHT (LB)		300	140	-	DRILL MUD: -			
HAMMER FALL (IN)		16	30	-	OTHER: SAFETY HAMMER, AUGER TO 5.0 FT			
					ELEVATION: +14.70			
					DATUM: NGVD			
					START: 7 SEPT.1988			
					FINISH: 8 SEPT.1988			
					DRILLER: D. McKEEN			
					H&A REP: S. PARKER			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
5	WOH	7	S1	0.0	0.2	-PAVEMENT-		
		11 16	9"	1.5		Medium dense, brown with reddish mottling, silty fine SAND, little medium sand, little gravel, trace coarse sand		
10	WOH	4	S2	5.0	22.0	-FILL-		
		WOH WOH	8"	6.5		Very loose, brown to dark brown, silty fine SAND, trace coarse to medium sand, trace gravel		
15	5	WOR	S3	10.0	22.0	Loose, dark brown silty fine SAND, some clay, little medium sand, trace coarse sand, trace gravel, trace wood fragments		
		1	2"	11.5				
20	15	9			22.0	Loose, light brown silty fine SAND, some clay, trace medium sand		
25	18	3			22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
25	10	1			22.0	-MARINE CLAY-		
						10		
25	18	8			22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
25	20	6			22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
25	22	6			22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
25	10				22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
25	14				22.0	Medium dense, light brown silty fine SAND and GRAVEL, some clay, little medium sand, rootlets		
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 120.5 ROCK CORED (LIN FT): - SAMPLES: S25	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			
9-8-88	0730	-	100	101.5	14.5	BORING NO. B553-88		
9-8-88	1230	-	-	-	12.0			

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
17	1	1	S6 11"	25.0		Very soft, gray silty CLAY, trace fine sand -MARINE CLAY-
16	1	1		26.5		
15						
17						
17						
30	1	1	S7 16"	30.0		
24	1	1		31.5		
19	1	1				
20						
20						
35	WOH		S8 18"	35.0		Very soft, gray silty CLAY, trace fine sand, pebble
26				36.5		
23						
25						
22						
40	WOH		S9 18"	40.0		
20	WOH			41.5		
27	WOH					
26						
26						
45	1	1	S10 18"	45.0		Very soft, gray silty CLAY, trace fine sand
27	1	1		46.5		
33	1	1				
30						
32						
31						
50	1	1	S11 18"	50.0		
36	WOH			51.5		
38	WOH					
48						
53	11	13	S12 8"	55.0	53.0	55.0 - 55.3, Stiff, light gray silty CLAY 55.3 -55.7, Dense, light brown with red partings, silty fine SAND, trace medium sand
55	13	18		56.5		
53						
85						
111						
109						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
100		7	S13	60.0	62.5	Dense, light brown to red fine SAND, trace medium sand, trace silt
102		18	8"	61.5		
102		24				
99						
108						
65	74	5	S14	65.0		
	111	12	7"	66.5		
	98	15				
	65					
	67					
70	65	3	S15	70.0	Medium dense, gray fine SAND, trace silt	
	75	8	11"	71.5		
	80	12				
	105					
	86					
75	50	3	S16	75.0		
	80	7	9"	76.5		
	83	10				
	84					
	82					
80	72	2	S17	80.0	Loose, gray silty fine SAND, layer of sandy clay from 81.0 - 81.2 ft.	
	75	2	18"	81.5		
	106					
	116					
	109					
85	71	8	S18	85.0		
	71	9	3"	86.5		
	94	10				
	98					
	105					
90	81	8	S19	90.0	Medium dense, gray silty fine SAND, little medium sand, trace coarse sand	
	86	15	12"	91.5		
	119	13				
	135					
	123					

-MARINE SAND-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
81		7	S20	95.0		Medium dense, gray fine SAND, little medium sand, trace silt -MARINE SAND-
88		8	9"	96.5		
93		8				
125						
136						
140						
100-142		6	S21	100.0		
148		8	12"	101.5		
137		9				
145						
170						
167						
105-152		6	S22	105.0	105.2	Medium dense, gray silty fine SAND
158		7	9"	106.5		Medium dense, gray silty medium to fine SAND, little coarse sand, little coarse angular gravel
174		8				
213						
235						
283						
110-172		9	S23	110.0		Loose, gray silty fine SAND, little coarse to medium sand, little gravel
178		4	18"	111.5		
170		WOH				
213						
243						
115-275		59	S24	115.0	115.0	Very dense, gray to olive-green, silty coarse to fine SAND, some clay, some dark gray to white subrounded to angular GRAVEL
281		82	12"	116.5		
270		153				
700						-GLACIAL TILL-
710						
120-119		41	S25	119.0		Very dense, gray to olive-green, silty coarse to fine SAND, some clay, some dark gray to white subrounded to angular GRAVEL
120-120		39		120.5		
120-120		42			120.5	No Refusal Bottom of Exploration at 120.5 ft.

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8555-88	
PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE						FILE NO. 08946-00 SHEET NO. 1 OF 5 LOCATION:	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		NW 3 300 16	SS 1 3/8 140 30	BX 1 1/2 - -	RIG TYPE: TRUCK RIG BIT TYPE: ROLLER CONE DRILL MUD: - OTHER: PROBE AUGER TO 5.0 FT.		
					ELEVATION: +9.97 DATUM: NGVD START: 17 AUG. 1988 FINISH: 25 AUG. 1988 DRILLER: D. McKEEN H&A REP: S. CALKIN		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5	20	26	S1	0.5	0.3	Bituminous concrete -PAVEMENT-	
		32 28	17"	2.0		Very dense, brown to black, coarse to fine SAND, little coarse to fine gravel	
10	24	11	S2	5.0	18.0	Medium dense, brown coarse to fine SAND, little coarse to fine GRAVEL	
		11	16"	6.5		-FILL-	
15	31	6	S3	10.0	18.0	Medium dense, brown silty coarse to fine SAND, little coarse to fine gravel	
				15		5"	11.5
20	22	2	S4	15.0	18.0	Loose to very loose, dark gray to black silty coarse to fine SAND, little clay, trace fine gravel, some organics	
				8		12"	16.5
25	16	6	S5	20.0	18.0	Stiff, olive-brown to gray mottled silty CLAY, little fine sand, trace fine gravel, some organics	
		13	8"	21.5		-MARINE CLAY-	
					WATER LEVEL DATA		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SAMPLE IDENTIFICATION	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
-	-	-	-	-	-	BORING NO. 8555-88	

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
30	19	3	S6	25.0	40.2	Stiff, olive-brown to gray silty CLAY, little fine sand, some organics	
	16	7	13"	26.5			
35	15						-MARINE CLAY-
	14						
	15						
	27	WOH 1	S7	30.0			Medium stiff, gray mottled silty CLAY, trace fine sand, some organics
	21	6	18"	31.5			
23							
24							
25							
40	28	WOH 2	S8	35.0			Medium stiff, gray to black silty CLAY, trace fine sand, some organics, layers silty fine sand
	25	4	17"	36.5			
	24						
	27						
	43	6	S9	40.0			
45	50	18	-	41.5		Dense, light-brown to rusty-brown silty coarse to fine SAND, frequent gray silty clay pockets	
	69	23					
	53						
	99						
	52	35	S10	45.0			
50	51	43	14"	46.5		Very dense, light brown silty coarse to fine SAND	
	66	55					
	73						
	94						
	64	24	S11	50.0			
55	59	28	11"	51.5		Very dense, light brown silty coarse to fine SAND	
	79	32					
	117						
	98						
	58	22	S12	55.0			
60	88	21	17"	56.5		Very dense, light brown silty coarse to fine SAND	
	90	34					
	57						
	61						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	69	11	S13	60.0	62.3	Medium dense, gray, silty medium to fine SAND
		14	12"	61.5		
	65	12				
	82					
	73					
65	90	3	S14	65.0	74.2	NO RECOVERY
		5	NR	66.5		
	72	5				
	75					
	85					
	92					
70	50	6	S15	70.0	74.2	NO RECOVERY
		10	NR	71.5		
	98	13				
	103					
	115					
	161					
75	174	17	S16	75.0	74.2	Very dense, gray, silty coarse to fine SAND, little fine gravel
		29	2"	76.5		
	196	25				
	197					
	172					
	175					
80	122	4	S17	80.0	74.2	Dense, gray, silty coarse to fine SAND, little coarse to fine gravel
		12	8"	81.5		
	153	35				
	136					
	132					
	141					
85	110	6	S18	85.0	74.2	NO RECOVERY
		12	NR	86.5		
	147	20				
	146					
	148					
	139					
90	118	5	S19	90.0	74.2	NO RECOVERY
		6	NR	91.5		
	111	15				
	106					
	120					
	127					

-MARINE SAND-

-GLACIAL TILL-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
135		19	S20	95.0		Dense, gray silty coarse to fine SAND, little coarse to fine gravel	
128		16	4"	96.5			
120		20					
129							
134							
-100							
116		WOR	S21	100.0			Medium dense, gray coarse to fine SAND, little coarse to fine gravel
99		4	12"	101.5			
124		13					
139							
129							
-105							
92		14	S22	105.0		NO RECOVERY	
107		21	NR	106.5			
117		43					
126							
142							
-110							
132		38	S23	110.5		NO RECOVERY	
117		15	NR	112.0			
134		24					
149							
162							
-115							
156		14	S24	115.0		Dense, gray silty medium to fine SAND	
164		21	18"	116.5			
168		27					
173							
192							
-120							
117		6	S25	120.0		Medium dense, gray silty coarse to fine SAND, trace fine gravel	
94		14	9"	121.5			
93		13					
130							
159							
-125							
146		29	S26	125.0		Very dense, gray silty coarse to fine SAND, little fine gravel	
136		38	10"	126.5			
154		59					
177							
159							
-130							

-GLACIAL TILL-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	146	13	S27	130.0		Very dense, gray silty coarse to fine SAND, little coarse to fine gravel and clay, grading to very dense, brown medium to fine SAND
	137	26	14"	131.5		
	239	76				
	316	86	S28	133.8		Very dense, gray silty medium to fine SAND, trace fine gravel
-135	155	150/0.2'	9"	134.5		
	276					Probable cobble at 136.1 ft.
	453					
	145					
	209					
	348					
-140	76	69	S29	140.0		Very dense, gray silty medium to fine SAND
	318	195/.3	8"	141.5		
	692					Very dense, gray silty medium to fine SAND, layer gray coarse to fine SAND
	973					
	3000					
-145		41	S30	145.0		Very dense, brown silty coarse to fine SAND, little fine gravel
		93	14"	146.5	146.1	
		125			146.5	NW refusal in dense till at 145.0 ft. Bottom of Exploration at 146.5 ft.

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B556-88		
PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE						FILE NO. 08946-00			
CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE						SHEET NO. 1 OF 5			
CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE						LOCATION:			
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES				
TYPE		NW	SS	-	RIG TYPE: TRUCK RIG				
INSIDE DIAMETER (IN)		3.0	1 3/8	-	BIT TYPE: ROLLER BIT				
HAMMER WEIGHT (LB)		300	140	-	DRILL MUD: AT 70 FT.				
HAMMER FALL (IN)		16	30	-	OTHER: AUGER TO 5 FT.				
					ELEVATION: +10.00				
					DATUM: NGVD				
					START: 15 SEP. 1988				
					FINISH: 20 SEP. 1988				
					DRILLER: D. McKEEN				
					H&A REP: S. PARKER				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		10	S1	0	0.2	Pavement			
		10	10"	1.5		Medium dense, light to dark brown fine SAND, some gravel, trace medium sand and silt, trace brick fragments			
		9				-FILL-			
5									
	10	2	S2	5		Loose, brown silty fine SAND, little coarse to medium sand and gravel, trace brick			
	10	3	18"	6.5					
	12								
	14								
10									
	11								
	6	5	S3	10		Loose, light brown to gray mottled silty fine SAND, little gravel, medium sand, and clay			
	17	3	8"	11.5					
	16	5							
	9								
	9								
15									
	7	3	S4	15	15.5	Loose, brown silty fine SAND, little coarse sand			
	3	2	18"	16.5		Soft, light gray silty CLAY, trace fine sand			
	2	1				-MARINE CLAY-			
	3								
	3								
20									
	8	WOH	S5	20		Very soft, gray silty CLAY, trace fine sand			
	8	WOH	18"	21.5					
	8	WOH							
	9								
	11								
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 141.5		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): -		
9-15-88	-	-	9.5	9.5	9.5		SAMPLES: 28S		
						BORING NO.		B556-88	

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
10		1	S6	25	31.3	Very soft, gray silty CLAY -MARINE CLAY- Very soft, gray silty CLAY, trace medium to fine sand, layer brown fine SAND, trace silt, and layer brown silty CLAY
12		WOH	18"	26.5		
14						
17						
16						
30		1	S7	30		
15		WOH	18"	31.5		
24		3				
37						
63						
67						
35		22	S8	35		
53		29	13"	36.5		
83		35				
77						
62						
59						
40		29	S9	40	Very dense, light brown fine SAND, some gravel, little medium sand, trace coarse sand and silt	
69		33	12"	41.5		
81		44				
60						
65						
61						
45		8	S10	45		Dense, light brown fine SAND, trace gravel, coarse to medium sand and clay
47		13	2"	46.5		
55		18				
67						
68						
62						
50		5	S11	50	Medium dense, light brown fine SAND, little medium sand, trace silt	
39		9	3"	51.5		
47		13				
63						
70						
93						
55		7	S12	55		Medium dense, light brown fine SAND, trace medium sand and silt
34		10	6"	56.5		
53		14				
65						
80						
106						
60						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	56	15	S13	60	60.6	Dense, brown to red-brown medium to fine SAND, some gravel
		22	9"	61.5		Dense, light gray medium to fine SAND
	66	21				
	79					
	73					
	59					
65	53	11	S14	65		
		11	3"	66.5		Dense, light gray fine SAND, trace coarse to medium sand and silt
	55	19				
	80					
	89					
	89					
70	75	8	S15	70		
		9	12"	71.5	Medium dense, gray to white GRAVEL and gray coarse to fine SAND, trace silt, grading to gray fine SAND, little medium sand, trace silt	
	90	9				
	103					
	107					
	108					
75	78	9	S16	75		
		8	14"	76.5	Medium dense, gray medium to fine SAND, trace coarse sand and silt	
	95	9				
	101					
	95					
	88					
80	76	3	S17	80		
		5	13"	81.5	Medium dense, gray fine SAND, little gravel and medium sand, trace coarse sand and silt	
	89	8				
	101					
	99					
	106					
85	94	6	S18	85		
		5	14"	86.5	Medium dense, gray coarse to fine SAND, trace fine gravel and silt	
	100	8				
	96					
	97					
	100					
90	103	4	S19	90		
		7	13"	91.5	Medium dense gray coarse to fine SAND, little fine gravel	
	107	5				
	101					
	111					
	106					
95						

-MARINE SAND-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
97		5	S20	95	99	Medium dense, gray coarse to fine SAND, trace fine gravel -MARINE SAND-
95		9	15"	96.5		
109		10				
122						
100-132						
130	8		S21	100		
160	34		18"	101.5		
179	15					
256						
105-225						
190		20	S22	105	Dense, gray medium to fine SAND, some gravel, little coarse sand, trace silt -GLACIAL-FILL-	
182		21	12"	106.5		
183		24				
210						
110-179						
153		9	S23	110		
166		7	11"	111.5		
165		16				
155						
115-167						
154		8	S24	115	Dense, gray fine SAND, little medium sand, trace silt, trace gravel	
187		16	14"	116.5		
183		25				
248						
120-240						
110		21	S25	120		
191		41	12"	121.5		
189		31				
163						
125-180						
212		21			NO RECOVERY	
209		17				
210		15				
207						
130-193						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
197		13	S26	130		Dense, gray coarse to fine SAND, little silt, trace gravel and clay
202		17	13"	131.5		
195		20				Very dense, gray medium to fine SAND, stratified with clayey SILT lenses
171						
174						
135	243	21	S27	135		
	198	39	13"	136.5		
	273	48				Very dense, gray, silty coarse to fine SAND, some fine gravel
	305					
140	248					
		46	S28	140	141.5	No Refusal Bottom of Exploration at 141.5 ft.
		58	15"	141.5		
		65				
145						
150						
155						
160						
165						

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST BORING REPORT			BORING NO. B557-88		
PROJECT: PROPOSED FORD RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE						FILE NO. 08946-00		
CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE						SHEET NO. 1 OF 4		
CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE						LOCATION:		
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			
TYPE		NW	SS	-	RIG TYPE: TRUCK RIG			
INSIDE DIAMETER (IN)		30	1 3/8	-	BIT TYPE: ROLLER BIT			
HAMMER WEIGHT (LB)		300	140	-	DRILL MUD: -			
HAMMER FALL (IN)		16	30	-	OTHER: AUGER TO 5.0 FT.			
			ELEVATION: +10.40			DATUM: NGVD		
			START: 1 SEPT. 1988			FINISH: 6 SEPT. 1988		
			DRILLER: D. McKEEN			H&A REP: S. PARKER		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
5	14	16	S1	0.5	0.2	Bituminous Concrete -PAVEMENT-		
		16 17	8"	2.0		Dense, light brown to black silty fine SAND, little medium sand, trace rock fragments, trace black cinders		
10	25	4	S2	5.0	14.0	Loose, brown to red-brown coarse to fine SAND, little gravel, trace silt		
		5 5	12"	6.5		-FILL-		
15	16	8	S3	10.0	22.5	Medium dense, dark brown coarse to fine SAND, little gravel and silt		
		10 13	4"	11.5		Very loose, gray silty CLAY, little fine sand, trace gravel		
20	5	1	S4	15.0	22.5	-MARINE CLAY-		
		1 1	6"	16.5		Very loose, gray silty CLAY, trace fine sand		
25	6	1	S5	20.0	22.5			
		1 1	18"	21.5				
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 131.5 ROCK CORED (LIN FT): - SAMPLES: 26S	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			
9-2-88	0630	-	55	56.5	10.5	BORING NO. B557-88		
9-7-88	0600	-	130	131.5	19.5			

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	32	9	S6 11"	25.0		Medium dense, gray and red-brown layered fine SAND, trace silt
	42	13		26.5		
	37	16				
	47					
	56					
30	30	7	S7 9"	30.0		Dense, light brown medium to fine SAND, trace gravel and silt -MARINE SAND-
	42	10		31.5		
	44	20				
	51					
	68					
35	34					Probable cobble at 35.0 ft.
	24	5	S8 11"	36.0		Medium dense, light brown fine SAND, trace medium sand and silt
	40	9		37.5		
	32	13				
	41					
40	8	10	S9 9"	40.0		Dense, brown fine SAND, little gravel, trace coarse to medium sand and silt
	55	10		41.5		
	64	25				
	63					
	143					
45	44	13	S10 7"	45.0		Medium dense, brown medium to fine SAND, little gravel and coarse sand, trace silt
	59	7		46.5		
	75	7				
	110					
	92					
50	28	5	S11 8"	50.0		Medium dense, brown medium to fine SAND, trace gravel, coarse sand and silt
	72	8		51.5		
	137	15				
	270					Probable cobble near 53.0 ft.
	212					
55	97	15	S12 9"	55.0		Dense, brown medium to fine SAND and GRAVEL, little coarse sand, trace silt
	80	20		56.5		
	99	19				
	145					
60	158					

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	144	48	S13	60		Very dense, brown coarse to fine SAND and GRAVEL, little silt
		40	9"	61.5		
	125	27				
	137					
	126					
	75					
65	62	9	S14	65		
		28	8"	66.5		
	82	18				
	89					
	91					
	74					
70	68	7	S15	70		Dense, brown coarse to fine SAND, some gravel, little silt
		16	11"	71.5		
	78	22				
	91					
	83					
	80					
	89	5	S16	75		
		6	6"	76.5		
	102	11				
	103					
	101					
	86					
80	87	8	S17	80		Medium dense, brown medium to fine SAND, little gravel, trace coarse sand and silt
		9	5"	81.5		
	85	9				
	103					
	103					
	95					
	80	7	S18	85		
		8	8"	86.5		
	90	11				
	130					
	111					
	101					
90	88	7	S19	90		Medium dense, brown medium to fine SAND, little gravel and coarse sand, trace silt
		7	8"	91.5		
	89	9				
	91					
	107					
	100					
95						

-MARINE SAND-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
84		2	S20	95	114	Medium dense, brown medium to fine SAND, little coarse sand, layer brown fine SAND, little silt
84		4	7"	96.5		
81		11				
103						
99						
100						
105		8	S21	100		Medium dense, brown coarse to medium SAND, little fine gravel, little fine sand, trace silt
111		12	6"	101.5		
112		13				
110						-MARINE SAND-
100						
105						
98		4	S22	105		Medium dense, brown medium to fine SAND, little gravel and coarse sand
121		5	14"	106.5		
125		9				
131						
143						
110						
112		2	S23	110	Dense, brown medium to fine SAND, trace fine gravel, coarse sand and silt	
138		9	14	111.5		
147		22				
187						
115						
132						
130		8	S24	115	Medium dense, gray coarse to medium SAND, some coarse to fine gravel, little fine sand, trace silt	
133		6	9"	116.5		
141		6				
131					-GLACIAL TILL-	
125						
120						
130		10	S25	120	Medium dense, gray coarse to fine SAND, little gravel, trace silt	
116		6	12"	121.5		
164		10				
199						
125						
247						
155		8	S26	125	NO RECOVERY	
179		29	NR	126.5		
314		39				
430						
130						
667					Very dense, gray medium to fine SAND, little coarse sand, trace silt	
		36	S26	130	Bottom of Exploration at 131.5, No Refusal	
		68	13"	131.5		
		108			131.5	

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. 8558-88
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PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE	FILE NO. 08946-00 SHEET NO. 1 OF 4 LOCATION:
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ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
				RIG TYPE: TRUCK RIG BIT TYPE: ROLLER BIT DRILL MUD: AT 75 FT. OTHER: AUGER TO 5 FT.	
ELEVATION: +12.33					
DATUM: NGVD					
START: 30 AUG. 1988					
FINISH: 31 AUG. 1988					
DRILLER: D. McKEEN					
H&A REP: S. PARKER					

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		10	S1	0.5	0.2	Pavement
		11	18"	2.0		Medium dense, black fine SAND, little silt, trace coarse to medium sand, cinders, wood
						-FILL-
5	19	6	S2	5		Medium dense, dark brown coarse to fine SAND, trace fine gravel, trace silt
	21	11	18"	6.5		
	28					
	36					
10	17					
	6	3	S3	10		Very loose, brown coarse to fine SAND, some fine gravel, and silt
	9	1	6"	11.5		
	21	2			13	
	42					
15	63					
	84	100/4"	S4	15		NO RECOVERY
	172		NR	16.5		probable cobble at 15 ft.
	167					
	126					
20	172					
	55	16	S5	20		Dense, brown coarse to fine SAND, little fine gravel, trace silt and clay
	71	17	8"	21.5		
	92	16				
	264					
25	127					-MARINE SAND-

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 121.5 ROCK CORED (LIN FT): - SAMPLES: 24S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
8-31-88	0630	-	40	41.5	9.4		
9-1-88	0630	-	105	106.5	20.8		BORING NO. 8558-88

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
	46	18	S6	25		Dense, dark brown silty fine SAND, trace medium sand and gravel, pyrite throughout sample	
	81	16	3"	26.5			
	105	13					
	75						
30	86						
	67	23	S7	30			Dense, brown coarse to fine SAND and GRAVEL, trace clayey silt
	76	20	6"	31.5			
	75	14					
	61						
35	94						
	31	11	S8	35		Medium dense, brown coarse to fine SAND and fine GRAVEL	
	72	9	6"	36.5			
	60	14					
	34						
	84						
	30	5	S9	40			Medium dense, brown medium to fine SAND, trace gravel, coarse sand, and silt
40	65	5	4"	41.5			
	85	10					
	81						
	110						
	62	14	S10	45		Dense, brown to white coarse GRAVEL and red-brown silty coarse to fine SAND	
	93	17	5"	46.5			
	100	17					
	96						
	86						
50	53	8	S11	50			Dense, brown silty medium to fine SAND, some coarse sand, little gravel
	77	15	8"	51.5			
	121	17					
	102						
	87						
55	50	11	S12	55		Dense, brown silty medium to fine SAND and brown to white coarse GRAVEL, mica	
	72	16	8"	56.5			
	64	23					
	73						
	95						
60							

-MARINE SAND-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
66		18	S13	60		Dense, dark gray to white coarse GRAVEL and brown to black silty coarse to fine SAND
86		14	6"	61.5		
107		16				
83						
56						
65						
75		28	S14	65		Very dense, brown silty medium to fine SAND, little coarse sand, trace gravel
92		30	9"	66.5		
80		27				
85						-MARINE SAND-
96						
70						
57		14	S15	70		Dense, light brown medium to fine SAND, trace gravel, coarse sand, and silt
93		17	10"	71.5		
151		21				
170						
293						
75						
98		17	S16	75		Dense, brown to reddish brown medium to fine SAND, some to trace silt, trace coarse sand and gravel
21		36	12"	76.5		
273		54				
171						
135						
80						
58		8	S17	80		Medium dense, brown to red coarse to fine SAND, some gravel, trace silt
73		12	9"	81.5		
100		16				
143						
116						
85						
73		5	S18	85		Medium dense, brown to red-brown fine SAND, some to trace gravel, trace coarse to medium sand, and silt, at 86 ft. light gray fine SAND, trace coarse sand and silt
73		8	14"	86.5	86.5	
97		9				
105						
96						
90						
80		5		90		NO RECOVERY
75		8	NR	91.5		
100		14				
110						
111						
95						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	74	9	S19	95	96	Medium dense, light gray to white to black, medium SAND, trace coarse to fine sand
	105	10	18"	96.5		Medium dense, light gray silty fine SAND
	122	16				-GLACIAL TILL-
	134					
	135					
100	104	10	S20	100		Medium dense, light gray to white to black medium to fine sand, trace gravel, coarse sand and silt
	110	13	14"	101.5		
	129	16				
	152					
	178					
105	127	33	S21	105	121.5	Dense, light gray silty fine SAND, little gravel and coarse to medium sand
	132	20	10"	106.5		
	181	18				
	205					
	201					
110	152	16	S22	110		Very dense, light gray to white to black medium SAND, trace fine sand
	214	25	11"	111.5		
	289	35				
	481					
	130					
115	339	32	S23	115	121.5	Very dense, light gray silty fine SAND, trace coarse sand
	613	49	14"	116.5		
	450	84				
	495					
	442					
120		50	S24	120		Very dense, light gray medium to fine SAND, trace gravel, coarse sand and silt
		91	--	121.5		No Refusal
		115				Bottom of Exploration at 121.5 ft.
125						
130						

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8559-88	
PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE						FILE NO. 08946-00		
CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE						SHEET NO. 1 OF 4		
CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE						LOCATION:		
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			
TYPE		NW	SS	-	RIG TYPE: TRUCK RIG			
INSIDE DIAMETER (IN)		3	1 3/8	-	BIT TYPE: ROLLER BIT			
HAMMER WEIGHT (LB)		300	140	-	DRILL MUD: -			
HAMMER FALL (IN)		16	30	-	OTHER: AUGER TO 5 FT.			
					ELEVATION: +12.43			
					DATUM: NGVD			
					START: 25 AUG. 1988			
					FINISH: 30 AUG. 1988			
					DRILLER: D. McKEEN			
					H&A REP: S. CALKIN			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
5	1	8	S1	0.2	0.2	Pavement		
		15	12"	1.7		Dense, brown medium to fine GRAVEL, little coarse to fine sand		
10	2	19			13.1	Very loose, brown coarse to fine SAND, little medium to fine gravel		
		WOH	S2	5		-FILL-		
15	16	WOH	3"	6.5	Probable cobble at 10 ft.			
		20	18	1			Dense, brown coarse to fine SAND and GRAVEL	
25	9			8	S3	10	-MARINE SAND-	
		28	NR	11.5	Dense, dark gray to black, silty medium to fine SAND, trace medium to fine gravel and coarse sand, pyrite			
25	71	77						
		39						
25	13	10	S4	15				
		14	4"	16.5				
25	40	60						
		60						
25	58	18	S5	20				
		45	3"	21.5				
25	84	19						
		97						
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 115.8	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): -	
8-26-88	0600	12	65	65	15.5	SAMPLES: 24S		
8-30-88	1215	-	-	115.8	9.5	BORING NO. 8559-88		

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	41	21	S6	25		NO RECOVERY
	29	19	NR	26.5		
	32	22				
	67					
	44					
30	20	11	S7	30		
	13	13	15"	31.5		
	68	8				
	48					
	55					
	59					-MARINE-SAND-
35	27	7	S8	35		Dense, brown coarse to fine SAND and GRAVEL, little silt, pyrite
	8	8	9"	36.5		
	33	35				
	48					
	41					
40	38					Same
	18	7	S9	40		
	9	9	9"	41.5		
	25	25				
	45					
45	40					Medium dense, brown coarse to fine SAND, little coarse to fine gravel, trace silt
	16	8	S10	45		
	7	7	-	46.5		
	36	28				
	44					
	27					Medium dense, brown coarse to fine SAND, little coarse to fine gravel, trace silt, pyrite
	25					
50	15	10	S11	50		
	10	10	-	51.5		
	58	41				
	41					Very dense, brown silty coarse to fine SAND, little coarse to fine gravel, trace clay
	29					
	47					
55	39	13	S12	55		
	62	13	18"	56.5		
	125	37				
	136					
	135					
60	119					

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	46	19	S13	60		Very dense, brown silty coarse to fine SAND, little coarse to fine gravel, trace clay
	92	27	16"	61.5		
	78	25				
	102					
	65					
65	50	10	S14	65		Medium dense, brown coarse to fine SAND and GRAVEL, little silt
	55	13	13"	66.5		
	58	14				
	68					
	70					
70	40	10	S15	70		Medium dense, light brown coarse to fine SAND and GRAVEL, trace silt, pyrite
	54	8	14"	71.5		
	57	15				
	87					
	74					
75	62	11	S16	75		Dense, brown coarse to fine SAND and GRAVEL, little silt
	85	18	12"	76.5		
	86	29				
	88					
	87					
80	45	11	S17	80		Dense, brown coarse to fine SAND, little fine gravel, trace silt
	55	20	11"	81.5		
	83	20				
	108					
	133					
85	85	12	S18	85	85.3	Dense, brown coarse to fine SAND, little fine gravel, trace silt
	62	12	12"	86.5		
	63	21				
	69					
	95					
90	64	10	S19	90		Dense, gray silty medium to fine SAND, trace coarse to fine gravel
	82	16	11"	91.5		
	126	22				
	136					
95	130					

-MARINE SAND-

-GLACIAL TILT-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	66	9	S20	95		Dense, gray silty medium to fine SAND, little coarse to fine gravel
	95	14	14"	96.5		
	112	18				
	130					
	187					
100	126	19	S21	100		Very dense, gray coarse to fine SAND, trace coarse to fine gravel -GLACIAL TILL-
	155	42	15"	101.5		
	306	49				
	402					
	467					
105	79/6"	19	S22	105		Very dense, gray silty medium to fine SAND, trace fine gravel and coarse sand Boulders encountered between 106.4 and 109 ft.
	75/6"	45	18"	106.5		
	173	129				
	500					
	388					
110	233					Very dense, gray fine SAND, trace medium sand, gray silty fine SAND lense
	130	17	S23	110		
	510	29	12"	111.5		
	650/3"					
	132/9"					
115	310/1"	34	S24	115	115.8	Very dense, gray fine SAND, trace medium sand No Refusal Bottom of Exploration at 115.8 ft.
	369/11"	172/4"	12"	116.5 115.8		
120						
125						
130						

HALEY & ALDRICH, INC., PORTLAND, MAINE Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B568
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PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND/SOUTH PORTLAND, MAINE CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE CONTRACTOR: MAINE TEST BORINGS, INC., BREWER, MAINE	FILE NO. 08946-00 SHEET NO. 1 OF 6 LOCATION: SEE PLAN
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ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)	HW/NW 4 300 24	SS 1 3/8 140 30	-- -- -- --	RIG TYPE: MOBILE B53 BIT TYPE: ROLLER BIT DRILL MUD: OTHER: AUGER TO 5.0 FT.

ELEVATION: 10.27
DATUM: NGVD
START: 18 OCT 1989
FINISH: 25 OCT 1989
DRILLER: J. RUDNICKI
H&A REP: D. BOIS

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		17			0.2	-PAVEMENT-
		15	S1 (8")	0.5		Top 3 in. - Dense, brown medium to fine SAND, trace coarse to fine gravel
		11		2.0		Bottom 5 in. - Dense, black fine SAND, little medium sand, trace silt, trace fine gravel, with black ash/cinders
5		8	S2 (3")	5.0		Loose, brown, medium to fine SAND, trace silt, trace coarse to fine gravel, with few wood and brick particles
	17	5		6.5		
	17	4				-FILL-
	16					
	11					
10	14	5	S3 (8")	10.0		Loose, dark gray medium to fine SAND, trace silt, trace coarse to fine gravel, trace brick particles (Top 2 in. same as S2)
	8	4		11.5		
	12	4				
	9				13.0	
	7					
15	7	1	S4 (15")	15.0		Top 7 in. - Soft, gray fine sandy SILT interlayered with silty CLAY, little fine sand with few partings of silty fine sand
	15	2		16.5		Bottom 8 in. - Soft, black silty CLAY, little fine sand
	14	1				NOTE: Strong organic/decay odor
	24					-MARINE CLAY-
	34					
20	33	3	S5 (18")	20.0		Soft, gray silty CLAY, (trace fine sand 20.0-20.9 ft.), few clamshell fragments at 20.9 ft.
	33	2		21.5		
	28	2				
	30					
	31					
25	28					

WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 200.5 ROCK CORED (LIN FT): -- SAMPLES: 39S	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER				
10-19-89	0646	--	65.0	66.5	8.5				
10-24-89	0630	--	155.0	155.0	9.1				BORING NO. B568

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
37		1	S6 (16")	25.0	32.7	Soft, gray silty CLAY, trace silt
33		2		26.5		
32						
29						
39						
30		1	S7 (8")	30.0		
30		1		31.5		
37						
44						
60						
91		26				
86		39	S8 (12")	35.0		Very dense, light brown silty fine SAND, trace clay, trace fine gravel with few layers of silty clay
71		34		36.5		
80						
115						
142		14				
63		18	S9 (18")	40.0		Dense, brown medium to fine SAND, trace silt with few layers of clayey silt
127		27		41.5		
218						
52						
63		5				
54		12	S10 (18")	45.0		45.0-45.5 Brown medium to fine SAND, with few silty clay layers
50		15		46.5		45.5-46.0 Olive silty CLAY, with few fine sand layers
43						46.0-46.5 Tan fine sandy SILT, trace fine gravel
50						
67		14				
63		23	S11 (14")	50.0		50.0-51.0 Dense, brown medium to fine SAND, few silty clay layers
54		21		51.5		51.0-51.5 Olive-gray silty CLAY, little fine sand, trace fine gravel
64						
74						
86						
55		6	S12 (12")	55.0		Medium dense, brown medium to fine SAND, trace silt, 1/8 in. clay layer at 55.0 ft.
50		9		56.5		
53		12				
79						
75						
79						
60					60.0	-ABLATION TILL-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
53		5	S13 (4")	60.0		Medium dense, gray medium to fine SAND, trace silt -MARINE SAND-
58		6		61.5		
73		8				
84						
88						
65		3				
66		3	S14 (11")	65.0		
53		5		66.5		
59						
83						
70		8				
88		6	S15 (5")	70.0		Medium dense, gray SAND Top 3 in. - Silty fine SAND Bottom 2 in. - Medium SAND, little fine sand
91		6		71.5		
93						
124						
147						
75		8				
106		10	S16 (1")	75.0		
124		11		76.5		
157						
155						
80		7				
125		8	S17 (4")	80.0		Medium dense, gray medium SAND, little fine sand
134		13		81.5		
139						
156						
200						
85		5	S18 (3")	85.0		
144		4		86.5		
129		7				
163						
204						
90		6				
235						
123		6	S19 (3")	90.0		Medium dense, gray fine GRAVEL, trace medium to fine sand
111		7		91.5		
108						
112						
125						
95						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
56		13		95.0		Top 2 in. - Fine gravel Bottom 3 in. - Medium dense, gray medium to fine SAND, little coarse sand to fine gravel, trace silt
63		10	S20 (5")	96.5		
82		11				
105						
132		24				
98		22	S21 (6")	100.0		Dense, gray medium to fine SAND, little coarse sand, trace silt Top 2 in. - Coarse to fine gravel in wash
101		21		101.5		
132						
146						
175						
105		27				
120		31	S22 (8")	105.0		Very dense, gray medium to fine SAND, trace silt
133		42		106.5		
165					107.5	-MARINE SAND-
200						Encountered cobbles at 107.5 ft.
179						-GLACIAL TILL-
110		17				
136		20	S23 (6")	110.0		Very dense, gray medium to fine SAND, trace silt, trace coarse sand to fine gravel
150		36		111.5		
172						
189						
204						
115		13				
169		13	S24 (3")	115.0		Medium dense, gray medium to fine SAND, little coarse sand to fine gravel
192		15		116.5		
220						
238						
256						
120		15				
171		18	S25 (2")	120.0		Dense, gray fine GRAVEL, trace coarse sand (wash sample) Encountered cobbles at 121.0 ft.
158		15		121.5		
183						
217						NOTE: Washed ahead of casing from 120.0-200.5 ft. in 5.0 ft. intervals
275						
125		22				
126		34	S26 (10")	125.0		Very dense, gray silty fine SAND, trace medium sand Encountered cobbles at 126.0 ft.
138		33		126.5		
218						
235						
258						
130						

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
168			NR	130.2		No Recovery	
183				131.7			
271							
245							
322							
-135- 197	16	6	S27 (2")	135.2 136.7			Medium dense, gray coarse to fine gravel (wash sample)
203		5					
267							
339							
476							
-140- 196	10	8	S28 (7")	140.0 142.0		Top 4 in. - Medium dense, gray coarse to medium SAND, little fine gravel, trace fine sand Bottom 3 in. - Medium dense, gray silty fine SAND	
187		8					
254		7					
310							
612							
-145- 273	23	42	S29 (12")	145.0 146.5		Very dense, gray medium to fine SAND, little coarse sand, little silt, fine gravel	
443		60					
800							
893							
510	37	82	S30 (12")	148.9 149.9			-GLACIAL TILL- Very dense, gray gravelly coarse to fine SAND, little silt
-150- 317							
400							
572							
403							
541							
-155- 337	56	100/.4	S31 (10")	155.8 156.7		NOTE: Roller bit through cobbles at 155.0 ft.	
383						Very dense, gray silty fine SAND	
491							
696						NOTE: Medium to fine sand in wash 155.0-160.0 ft.	
389							
-160- 330	61	117	S32 (10")	160.0 161.0		Very dense, gray medium to fine SAND, trace coarse sand, trace silt, trace gravel	
436							
440							
425							
701							
-165- 701							

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	339	113	S33 (20")	165.3 166.1		Very dense, gray medium to fine SAND, little silt, trace coarse sand -GLACIAL TILL- Same as S33
	292	100/.3				
	308					
	326					
-170-	366	66	S34 (10")	170.0 171.0		
	336	96				
	325					
	416					
	850					
-175-	815	118	S35 (9")	175.0 175.8		
	200	100/.3				
	334					
	482					
	415					
-180-	720	67	S36 (10")	180.0 180.9		
	138	150/.4				
	130					
	199					
	193					
-185-	333					Very dense, medium to coarse SAND, little coarse to fine gravel, trace silty fine sand, trace clay Boulder encountered at 186.0 ft., casing does not advance beyond 186.4 ft. Very dense, gray medium to coarse SAND, little fine gravel, little silty fine sand, trace clay
	191	178	S37 (6")	185.0 185.5		
-190-		115	S38 (6")	190.0 190.7		
		100/.2				
-195-		58	S39 (5")	195.0 195.8		
		189/.3				
-200-						-GLACIAL TILL-
Bottom of Exploration at 200.5 ft. No Refusal						

HALEY & ALDRICH, INC., PORTLAND, MAINE
 Consulting Geotechnical Engineers,
 Geologists and Hydrogeologists

TEST BORING REPORT

BORING NO. B569-89

PROJECT: PROPOSED FORE RIVER BRIDGE REPLACEMENT, PORTLAND-SOUTH PORTLAND, MAINE
 CLIENT: T.Y. LIN INTERNATIONAL, FALMOUTH, MAINE
 CONTRACTOR: MAINE TEST BORINGS, BREWER, MAINE

FILE NO. 08946-00
 SHEET NO. 1 OF 6
 LOCATION: SEE PLAN

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HW/NW	SS	NX	RIG TYPE: MOBILE B53
INSIDE DIAMETER (IN)	4/3	1 3/8	2 3/8	BIT TYPE: ROLLER BIT
HAMMER WEIGHT (LB)	300	140	--	DRILL MUD:
HAMMER FALL (IN)	16	30	--	OTHER: AUGER TO 5.0 FT.

ELEVATION: 12.8
 DATUM: NGVD
 START: 12 OCT 1989
 FINISH: 17 OCT 1989
 DRILLER: J. RUDNICKI
 H&A REP: J. WIECK

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN.	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		21			0.3	Bituminous concrete -PAVEMENT-
		12	S1 (11")	0.5		Medium dense, dark brown, fine SAND, little coarse to medium sand, trace silt, gravel, particles coal, wood
		8		2.0		
5	23	10				
	41	10	S2 (10")	5.0		Medium dense, brown, medium to fine SAND, little gravel, trace coarse sand, silt
	36	13		6.5		
	40					
	30					
10	14	8				
	29	7	S3 (7")	10.0		Medium dense, brown SAND, little gravel, silt, trace metal particles
	27	7		12.0		
	82	4				-FILL-
	76				13.0	
15	39	20				
	60	16	S4 (15")	15.0		Dense, brown SAND, little gravel, trace silt, poorly bonded
	75	17		17.0		
	167					
	119					
20	79	64				
	108	22	S5 (12")	20.0		Dense, brown, gravelly SAND, trace silt
	125	20		22.0		
	126	22				-ABLATION TILL-
	98					
25	38					

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 137.4 ROCK CORED (LIN FT): 5.0 SAMPLES: 27S, 1C
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
10-12-89	1723	--	52.0	52.0	12.8		
10-13-89	1412	--	100.0	100.0	14.3		

BORING NO. B569-89

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	39	16				
	48	14	S6 - (13")	25.5 - 27.5		Dense, brown, medium to fine SAND, little gravel, trace coarse sand, SILT
	55	14				
	97	15				
30	47	17				
	52	15	S7 - (13")	30.0 - 32.0		Dense, brown SAND, little gravel, trace silt
	105	19				
	120	25				
	114					
35	60	15				
	89	18	S8 - (11")	35.7 - 37.7		Dense, brown, gravelly SAND, little silt
	82	19				
	90	21				
	61					
40	62	12				
	74	17	S9 - (10")	40.0 - 42.0		Similar to S8
	112	16				
	157	14				
	171					
45	77	14				
	89	11	S10 - (7")	45.5 - 47.5		Medium dense, brown sandy GRAVEL, trace silt
	89	12				
	81	14				
	73					
50	70	7				
	71	24	S11 - (7")	50.0 - 52.0		Similar to S10 except dense
	76	15				
	155	13				
	86					
55	69	9				
	85	12	S12 - (11")	55.0 - 57.0		Medium dense, brown, medium to fine SAND, little gravel, silt, trace coarse sand
	108	15				
	88	22				
	100					
60	68					

-ABLATION TILL-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	69	16	S13 -	60.0		Dense, brown SAND, little gravel, silt
	74	15	(11")	62.0		
	83	14				
	94					
65	69	12	S14 -	65.0		Medium dense, brown, medium to fine SAND, little gravel, trace coarse sand, silt
	68	10	(8")	67.0		
	89	12				
	116					
	137					
70	91	13	S15 -	70.0		Dense, light brown, fine SAND, little coarse to medium sand, trace fine gravel
	96	17	(11")	72.0		
	112	17				
	139	21				
	150					-ABLATION TILL-
75	132	15	S16 -	75.0		Dense, brown, medium to fine SAND, little gravel, trace coarse sand, silt
	129	20	(14")	77.0		
	127	19				
	132	18				
	144					
80	126	11	S17 -	80.0		Dense, brown, medium to fine SAND, trace fine gravel, coarse sand, silt, with occasional brown, fine sand, trace silt seams
	119	15	(12")	82.0		
	136	15				
	146	19				*Last 1.0 in. brown, fine SAND, trace silt See sample S178
	159				84.0	
85	139	12	S18 -	85.0		Medium dense, gray, medium to fine SAND, trace fine gravel, coarse sand, silt, with occasional gray, silty fine sand seams
	147	13	(12")	87.0		
	191	9				
	202	14				
	210					-MARINE SAND-
90	143	6	S19 -	90.0		Medium dense, gray fine SAND, trace coarse sand
	145	8	(12")	92.0		
	207	15				
	206	17				
	237					
95	157					

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	155	9	S20	95.0		Dense, gray, medium to fine SAND, trace gravel, coarse sand interbedded with gray, fine SAND -MARINE SAND- NOTE: Advanced roller bit ahead of casing from 95.0-100.0 ft. Advanced roller bit into probable cobbles at 97.3 ft. Medium dense, gray, medium to fine SAND, little coarse sand and gravel, little silt
	232	20	(12")	97.0		
	231	15				
	256					
-100-	125	17				
	142	11	S21	100.0		
	191	13	(14")	102.0		
	202	17				
	248					
-105-	145	18			105.0	
	179	19	S22	105.0		Dense, gray, medium to fine SAND, little coarse sand and gravel, trace silt NOTE: Advanced roller bit ahead of casing from 100.0-105.0 ft. and 105.0-110.0 ft. Very dense, gray, fine SAND, little silt, trace medium sand, trace gravel Very dense, gray, medium to fine SAND, trace silt, trace fine gravel
	217	29	(18")	107.0		
	250	28				
	315					
-110-	163	45				
	199	72	S23	110.0		
	222	100	(18")	111.5		
	330					
	330					
-115-	235	25				
	335	50	S24	115.0		
	388	100	(14")	116.5		
	510					
	885					
-120-	177	101				
	222	100	S25/(10")	120/121.0		
	282					
	268					
	277					
-125-	440	100/0				
	221					
	189					
	245					
	330					
-130-	270					

-GLACIAL TILL-

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	312	222	S26 (6")	130.2 130.7		Very dense, gray, fine SAND, little silt -GLACIAL TILL-
	310					
	398					
	450					
-135-	561					
	600/0.4	57 100/3	S27 (10")	135.4 136.3		Very dense, gray, silty fine SAND
						Probable Weathered Bedrock Surface at 136.3 ft. Roller cone to 137.4 ft. Begin NX Rock Core at 137.4 ft. (See Core Boring Report)
-140-						
-145-						
-150-						
-155-						
-160-						
-165-						

DEPTH (FT)	DRILLING RATE MIN./FT.	CORE NO. DEPTH(FT)	RECOVERY/ROD		WEATH- ERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
			IN.	%			
135							136.3 ft. of overburden (See Test Boring Report) Roller cone from 136.4-137.4 ft. Begin NX Rockcore at 137.4 ft.
						136.4	Probable bedrock surface at 136.4 ft.
140		137.4 C1	60	100			Hard, fresh, dark green-gray, porphyritic METAVOLCANICS, with a chloritized amorphous groundmass, and medium grained plagioclase phenocrysts; primary joint set is close, undulating, rough and stepped, tight to slightly open, and moderately to steeply dipping; zone from 139.4-139.8 ft. of very closely spaced joints of the primary set; primary joint set is controlled by very closely spaced fracture cleavage; one joint at 140.4 ft. is planar, rough, tight and moderately dipping, this joint strikes perpendicular to the general strike of the primary set; one undulating, rough, slightly open, low angle joint at 141.6 ft.; secondary mineralization includes pervasive thin quartz veins and stringers and stringers of calcareous material, and trace amounts of pyrite; joints contain a very thin veneer of dark gray silty weathering product -SPRING POINT FORMATION-
		142.4	47	78			
145							Bottom of Exploration at 142.4 ft.
150							
155							
160							
165							

**Proposed Cargo Pier
1987**

MAINE TEST BORINGS, INC.
BREWER, MAINE 04412

Haley & Aldrich, Inc.

SHEET 1 OF 3
HOLE NO. B-9

DRILLER Darrel McKeen	PROJECT NAME Proposed Cargo Pier	LINE & STATION
M.T.B. JOB NUMBER 87-213	LOCATION Portland, Maine	OFFSET
GROUND WATER OBSERVATIONS AT _____ FT. AFTER _____ HOURS AT _____ FT. AFTER _____ HOURS	CASING TYPE <u>NW</u> SAMPLER <u>SS</u> CORE BARREL _____ SIZE I.D. <u>3"</u> HAMMER WT. <u>300</u> HAMMER FALL <u>16"</u>	DATE START <u>10/1/87</u> DATE FIN. <u>10/2/87</u> SURFACE ELEV. _____ GROUND WATER ELEV. _____

CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6" ON SAMPLER				DEPTH	STRATUM DESCRIPTION
	NO.	O.O.	PEN.	REC.	DEPTH @ BOT.	0-6	6-12	12-18	18-24		
Auger	1D	2"	18"		1.5	4	10	14			Brown gravelly silty sand
"											
"											
"											
19	2D	2"	18"		6.5	4	4	5		10.5	Brown gravelly silty sand w/cobbles and boulders
13											
15											
31											
65											
14	3D	2"	12"		11.0	25	60			13.0	
23											
35											
14											
23	4D	2"	24"		17.0	4	6	8	12	20.0	Brown fine to medium sand w/trace of coarse sand trace of silt trace of gravel
35											
47											
34											
14											
26	5D	2"	24"		22.0	7	7	9	9		Brown fine to coarse sand w/trace of silt w/trace gravel
38											
46											
66											
28											
36	6D	2"	24"		27.0	12	15	18	19		
55											
57											
61											
23											
30	7D	2"	24"		32.0	9	14	14	9		
50											
76											
71											
27											
41	8D	2"	24"		37.0	9	12	16	25		
65											
79											
144										40.0	

SAMPLES

- D = Split Spoon
- C = 2" Shelby Tube
- U = 3 1/2" Shelby Tube

SOIL CLASSIFIED BY:

- Driller - Visually
- Soil Technician - Visually
- Laboratory Tests

REMARKS:

* Changes made by Haley & Aldrich

HOLE NO. B-9

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Haley & Aldrich, Inc.	SHEET <u>2</u> OF <u>3</u> HOLE NO. <u>B-9</u>																				
DRILLER Darrel McKeen	PROJECT NAME Proposed Cargo Pier	LINE & STATION																				
M.T.B. JOB NUMBER 87-213	LOCATION Portland, Maine	OFFSET																				
GROUND WATER OBSERVATIONS AT _____ FT. AFTER _____ HOURS AT _____ FT. AFTER _____ HOURS	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;"></td> <td style="width:33%; text-align: center;">CASING</td> <td style="width:33%; text-align: center;">SAMPLER</td> <td style="width:33%; text-align: center;">CORE BARREL</td> </tr> <tr> <td>TYPE</td> <td style="text-align: center;">NW</td> <td style="text-align: center;">SS</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>SIZE I.D.</td> <td style="text-align: center;">3"</td> <td style="text-align: center;">1 3/8"</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>HAMMER WT.</td> <td style="text-align: center;">300</td> <td style="text-align: center;">140</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>HAMMER FALL</td> <td style="text-align: center;">16"</td> <td style="text-align: center;">30"</td> <td style="text-align: center;">_____</td> </tr> </table>		CASING	SAMPLER	CORE BARREL	TYPE	NW	SS	_____	SIZE I.D.	3"	1 3/8"	_____	HAMMER WT.	300	140	_____	HAMMER FALL	16"	30"	_____	DATE START <u>10/1/87</u> DATE FIN <u>10/2/87</u> SURFACE ELEV. _____ GROUND WATER ELEV. _____
	CASING	SAMPLER	CORE BARREL																			
TYPE	NW	SS	_____																			
SIZE I.D.	3"	1 3/8"	_____																			
HAMMER WT.	300	140	_____																			
HAMMER FALL	16"	30"	_____																			

CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6" ON SAMPLER				DEPTH	STRATUM DESCRIPTION
	NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER					
						0-6	6-12	12-18	18-24*		
47											
51	9D	2"	24"		42.0	19	19	18	15		Brown fine to coarse sand w/trace of silt w/ trace of gravel w/trace of cobbles
67											
67											
74											
38											
62	10D	2"	24"		47.0	6	12	14	17		
104											
120											
113											
45											
55	11D	2"	24"		52.0	12	12	15	16		
75											
80											
82											
45											
74	12D	2"	24"		57.0	7	17	15	15		
91											
90											
90										60.0	
83											
85	13D	2"	24"		62.0	10	12	12	15		
90											
95											
100											
71											
71	14D	2"	24"		67.0	37	18	12	10		
69											
77											
96											
72											
73	15D	2"	24"		72.0	11	15	15	16		
82											
91											
83											
65											
100	16D	2"	24"		77.0	10	15	20	18	77.0	
185											
144											
160											

SAMPLES D = Split Spoon C = 2" Shelby Tube U = 3 1/2" Shelby Tube	SOIL CLASSIFIED BY: <input checked="" type="checkbox"/> Driller - Visually <input type="checkbox"/> Soil Technician - Visually <input type="checkbox"/> Laboratory Tests	REMARKS: * Changes made by Haley & Aldrich
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HOLE NO. B-9

Piezometer Installed in B9

PIEZOMETER INSTALLATION REPORT

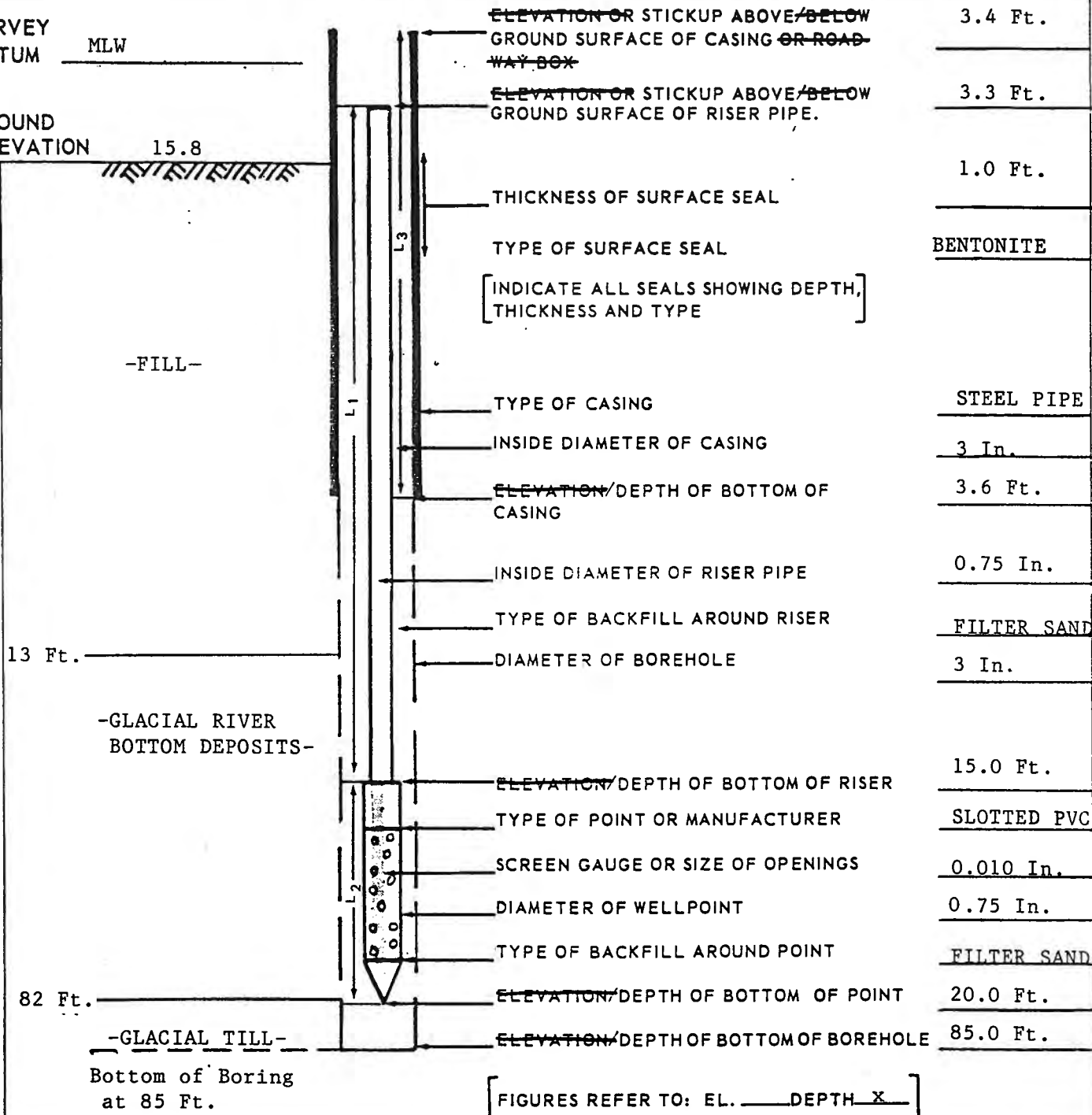
PROJECT: PROPOSED CARGO PIER
 LOCATION: PORTLAND, MAINE
 CLIENT: CHILDS ENGINEERING CORPORATION
 CONTRACTOR: MAINE TEST BORINGS, INC.
 DRILLER: D. MCKEEN INSPECTOR: M. THOMPSON
 INSTALLATION DATE: 2 OCTOBER 1987

FILE NO. 8872
 WELL NO. B9-PZ
 BORING NO. B9
 LOCATION SEE PLAN
 SHEET 1 OF 1

SURVEY DATUM MLW

GROUND ELEVATION 15.8

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)



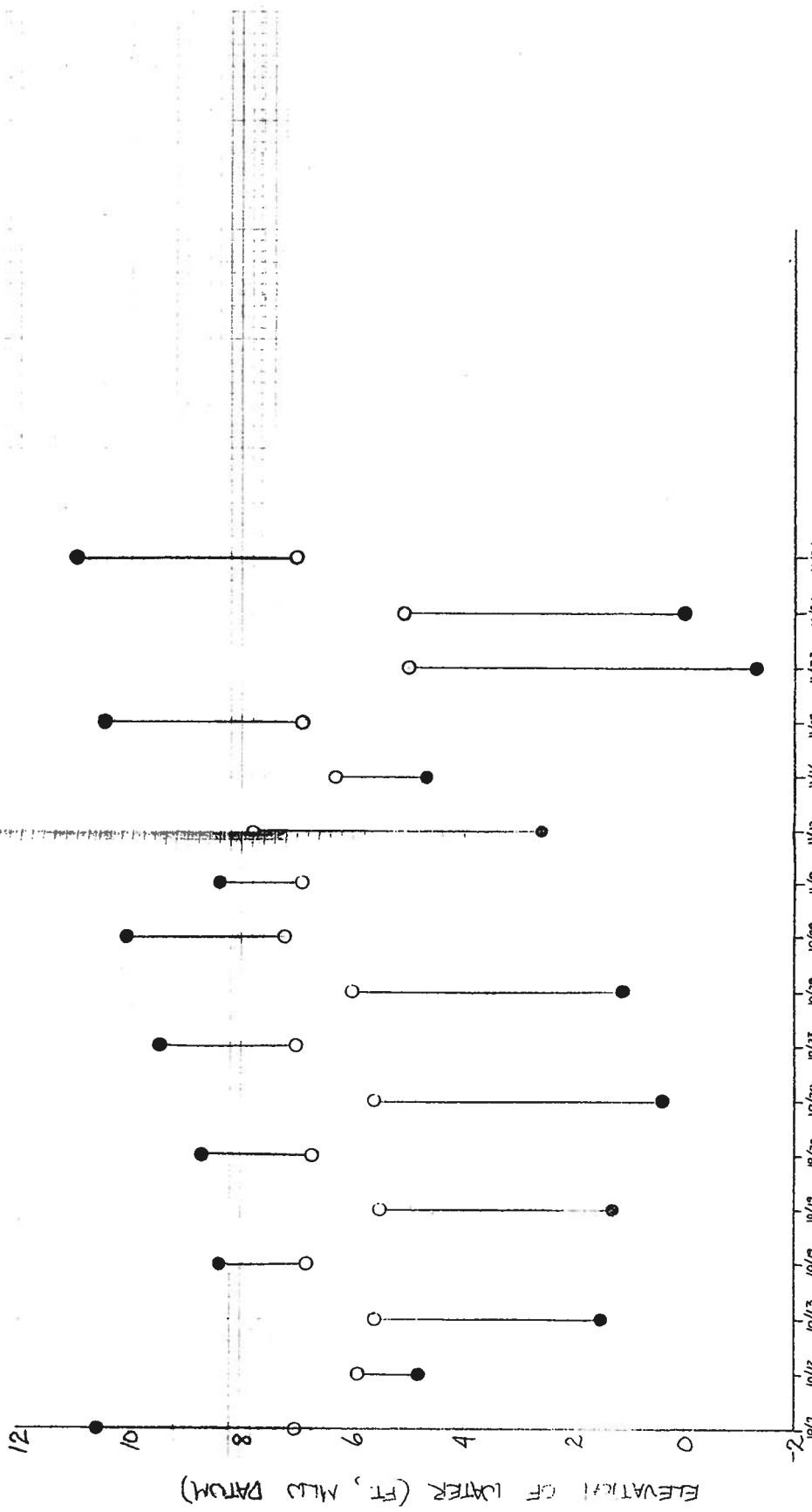
H & A FORM 59
SEP. 72

$$\left[\frac{7.0 \text{ Ft.}}{\text{LENGTH OF CASING } L_3} \right] \left[\frac{18.3 \text{ Ft.}}{\text{LENGTH OF RISER PIPE } (L_1)} \right] + \frac{5.0 \text{ Ft.}}{\text{LENGTH OF POINT } (L_2)} = \frac{23.0 \text{ Ft.}}{\text{PAY LENGTH}}$$

GROUND WATER MONITORING REPORT

OW/PZ NUMBER: B9-PZ GROUND SURFACE ELEVATION 15.8 FILE NO. 8872
PAGE NO. 1 OF 2

DATE	TIME	ELAPSED TIME (DAYS)	DEPTH OF WATER FROM GROUND SURFACE (FT.)	ELEVATION OF WATER IN PIEZOMETER	ELEVATION OF WATER IN HARBOR	REMARKS	READ BY
10-7-87	1030	5	8.8	7.0	10.6	HIGH TIDE	MTT
10-12-87	1200	10	9.9	5.9	4.8		MTT
10-13-87	1020	11	10.2	5.6	1.5	LOW TIDE	MTT
10-19-87	0930	17	9.0	6.8	8.4		MDB
10-19-87	1630	17	10.3	5.5	1.3		MTT
10-20-87	1006	18	9.1	6.7	8.7	HIGH TIDE	MDB
10-20-87	1610	18	10.2	5.6	0.4	LOW TIDE	MTT
10-23-87	1205	21	8.8	7.0	9.5	HIGH TIDE	MTT
NOTE: ALL TIMES AFTER 24 OCTOBER 1987 ARE IN EASTERN STANDARD TIME							
10-28-87	1015	26	9.8	6.0	1.1		JEN
10-28-87	1520	26	8.6	7.2	10.1	HIGH TIDE	SRD
11-9-87	1400	38	8.9	6.9	8.4		MTT
11-12-87	0955	41	8.0	7.8	2.6		JEN
11-16-87	0940	45	9.5	6.3	4.7		MTT
11-23-87	0820	52	10.0	5.8	4.3		MTT
11-23-87	1007	52	9.3	6.5	9.0		MTT
11-23-87	1145	52	8.9	6.9	10.5	HIGH TIDE	MTT
11-23-87	1330	52	8.6	7.2	8.8		MTT
11-23-87	1510	52	9.4	6.4	4.3		MTT
11-23-87	1647	52	10.1	5.7	0.3		MTT
11-23-87	1840	52	10.8	5.0	-1.3	LOW TIDE	MDB
11-24-87	0632	53	10.7	5.1	0	LOW TIDE	MDB
11-24-87	0823	53	10.2	5.6	2.5		MTT
11-24-87	0940	53	9.8	6.0	5.8		MTT
11-24-87	1128	53	9.0	6.8	9.2		SRD
11-24-87	1250	53	8.6	7.2	11.0	HIGH TIDE	SRD
11-24-87	1435	53	8.6	7.2	9.6		SRD
11-24-87	1600	52	9.2	6.6	4.8		MTT
11-24-87	1740	53	10.4	5.4	-0.2		MDB



Haley & Aldrich, Inc.
 PROPOSED CARGO PIER
 PORTLAND, MAINE
 ELEVATION OF WATER IN
 PIEZOMETER AND HARBOUR
 B9-PZ
 DECEMBER 1987

LEGEND:
 ○ EL. OF WATER IN PIEZO.
 ● EL. OF WATER IN HARBOUR

DATE OF READING

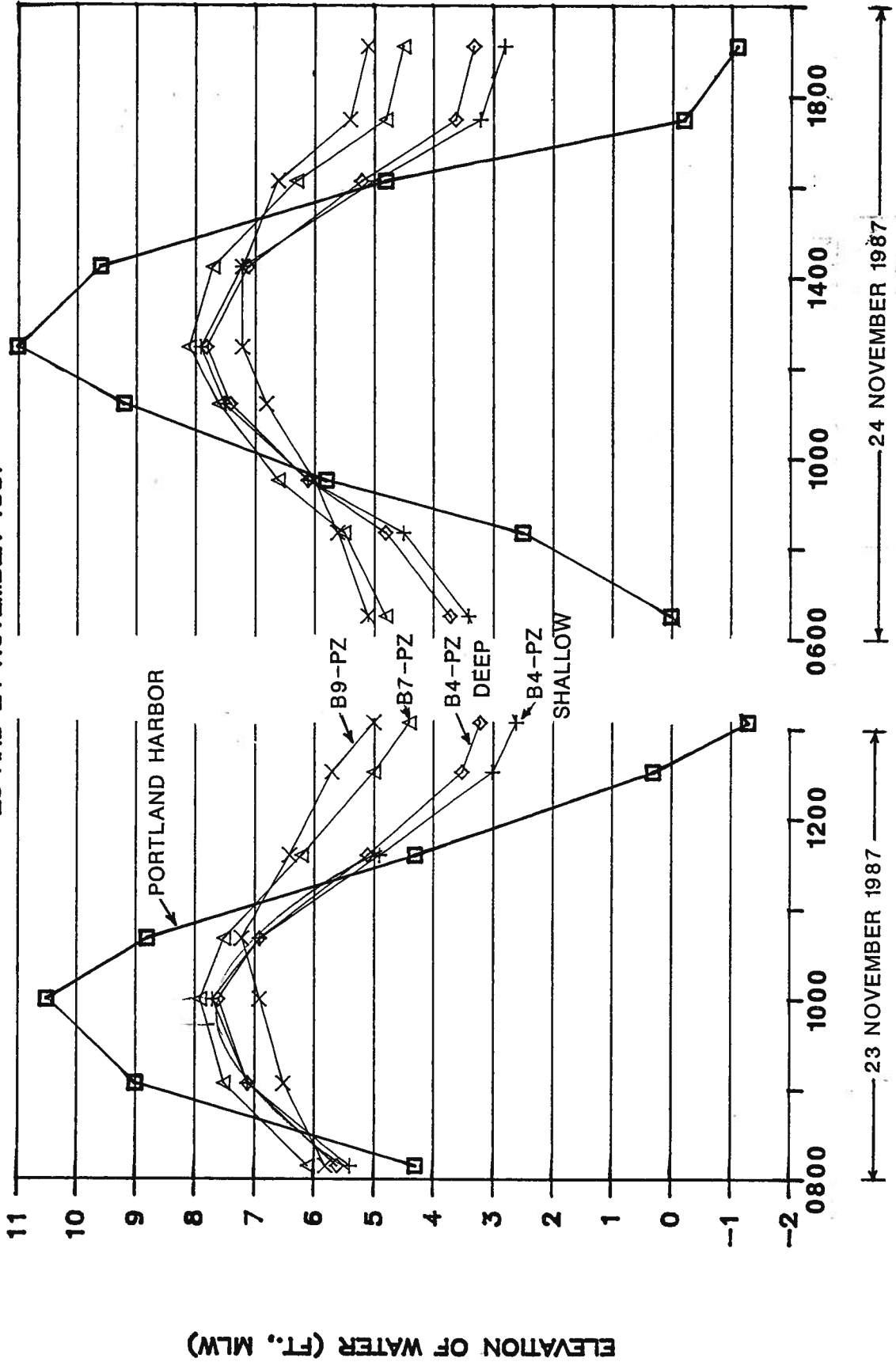
ELEVATION OF WATER (FT., MMS DARTON)

FIGURE D3

Water Levels Measured
on 23 and 24 November 1987

EL. OF WATER IN PIEZOMETERS AND HARBOR

23 AND 24 NOVEMBER 1987

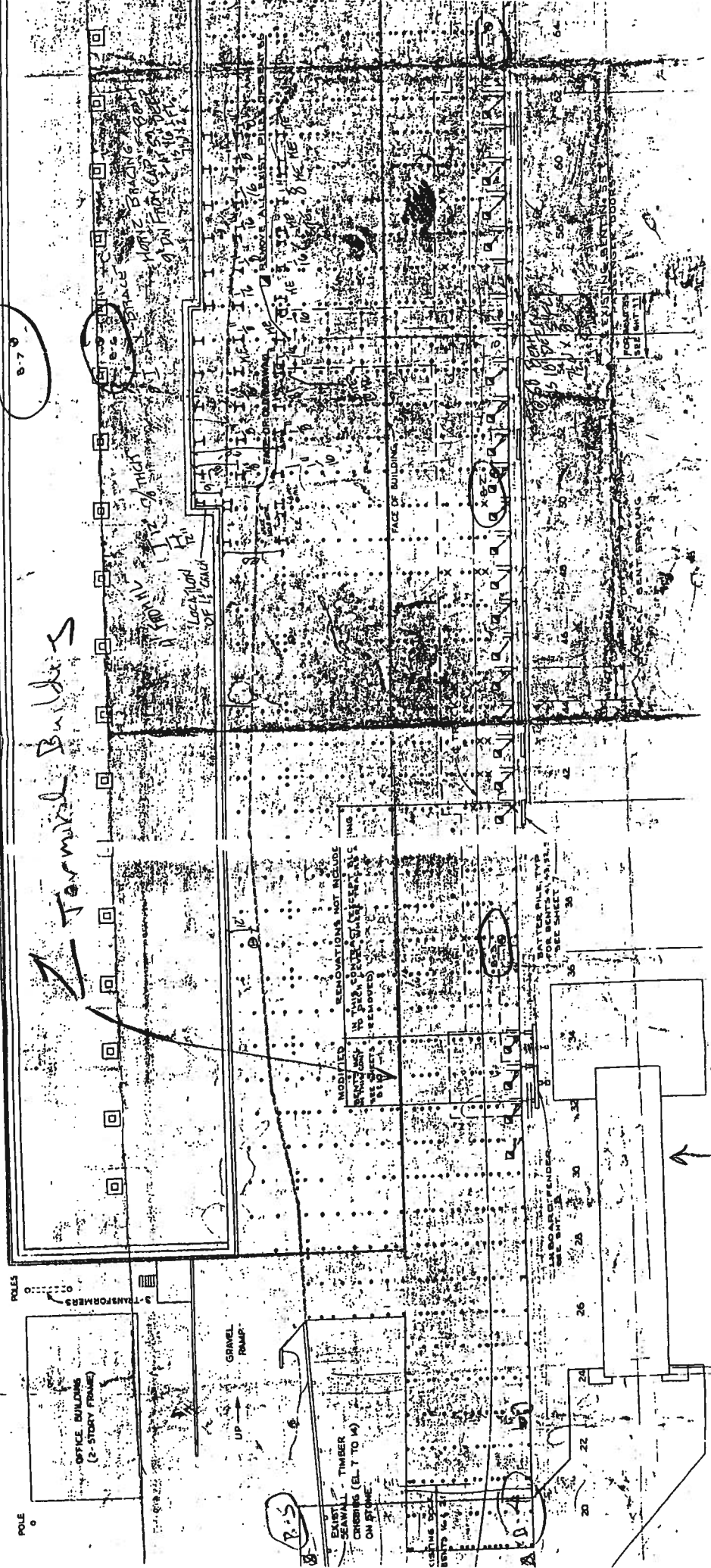


**Portland International Ferry Terminal
1969**

West ←

East →

Terminal Buildings



Huber

Early

8-7-9

8-7-9

8-7-9

20

22

24

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32

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BORING LOG

Job # 760

13-1

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 1 OF 3

BORING No. 1 DATUM: U.S.C.S.

BORING INSPECTOR: _____ DATE: 10-21-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION MLLW = 4.0	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
-19'	0'0"	Top of ground						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Black silty sand, coal, ashes, organics, etc.	0	12"				CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O D <u>1 3/8"</u> I D.
		LOOSE (?)	1	"				
			2	"				
			4	"				
			7	"	3	6"	1D	
			8	"	3	6"		
	9'0"	Gray silty sand w/trace of coal	10	"				
		LOOSE--FIRM (?)	8	"	4	6"	2D	
			6	"	6	6"		
			12	"				
			9	"				
	15'0"	Brown very silty sand	8	"	3	6"	3D	
			5	"	4	6"		
		LOOSE	10	"				
			27	"				
			24	"				
			13	"	3	6"	D	Missed sample
			11	"	3	6"		
			10	"				
				"				
	25'0"			"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

102.3, 102.4 & 102.5

2A - Steel H Piles - 6

Northeast Soil Services

BORING LOG

Job # 760

13-2

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 3

BORING No. 1 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 10-21-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		
	25'0"	Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Brown very silty sand	12	12"	4	6"	D	Missed sample
		LOOSE	18	"	6	6"		
			21	"				
			18	"				
	30'0"		17	"				
		Gray very silty sand	2	"	3	6"	4D	
			3	"	7	6"		
		LOOSE--FIRM	3	"				
			6	"				
			17	"				
			6	"	4	6"	1W	Missed D sample took W sample
			8	"	5	6"		
			10	"				
			12	"				
			12	"				
			1	"	4	6"	2W	Missed D sample took W sample
			1	"	6	6"		
			9	"				
			11	"				
			12	"				
	46'0"		2	"	7	6"	5D	
		Gray gravelly silty sand	2	"	10	6"		
		FIRM TO COMPACT (?)	4	"				
			49	"				
	50'0"		80	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

102.3, 102.4 & 102.5

2A - Steel H Piles - 7

BORING LOG

13-3

Job # 760

LOCATION Portland, Me.

STRUCTURE Ferry Terminal

SHEET No. 3 Of 3

BORING No. 1 DATUM U.S.G.S.

BORING INSPECTOR _____

DATE 10-21-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	HAMMER		
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		CASING #	AVG. FALL ins.	SAMPLER #
	50'0"	Continued						300	16	
		Gray gravelly silty sand	16	12"			3W			
		FIRM TO COMPACT (?)	90	"						
		136*	117	"						
			160	"						
			140	"						
			34	"			4W			
			61	"						
			80	"						
	59'0"		175	"						
		Refusal								

CASING SIZE 2 1/2"
SPOON 2" O. D. 1 3/8" I. D.

REMARKS

* Designate dry samples by D. Wash samples by W. 3/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. = Ground Water Surface

BORING LOG

Job # 760

Portland, Me.

LOCATION: _____

STRUCTURE: Ferry Terminal

SHEET No. 1 OF 3

BORING No. 2 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 10-16-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
-13	0'0"	Top of ground						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O D. <u>1 3/8"</u> I. D.
	1'5"	Black silty sand	WCH	12"				
		Gray silty sand & shells,	WCH	"				
		Organic	WCH	"				
		LOOSE	WCH	"				
				"	3"	6"	LD	
			2	"	4	6"		
	8'0"		5	"				
		Gray silty sand w/traces	9	"				
		of gray silty clay	16	"				
			2	"	3	6"	2D	
		LOOSE TO VERY LOOSE	5	"	2	6"		
			9	"				
			6	"				
			5	"				
	16'0"		3	"	1	6"	3D	
		Brown silty sand w/traces	4	"	1	6"		
		of gravel	7	"				
		VERY LOOSE TO LOOSE-FIRM	6	"				
			5	"				
			19	"	3	6"	4D	
			21	"	3	6"		
	24'0"		29	"				
		Gray silty sand	25	"				
	25'0"	LOOSE-FIRM	23	"				

• Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. = Ground Water Surface

BORING LOG

13-5

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 3

BORING No. 2 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 10-16-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	25' 0"	Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		Gray silty sand	11	12"	3	6"	D	Missed sample
		LOOSE-FIRM	15	"	5	6"		
			31	"				
			33	"				
			36	"				
			19	"	3	5"	SD	
			21	"	5	6"		
			27	"				
			29	"				
			28	"	2	5"	D	Missed sample
			24	"	5	6"		
			26	"				
			24	"				
			24	"				
			15	"	3	6"	D	Missed sample
			22	"	5	6"		
			28	"				
	44' 0"		30	"				
		dirty gravelly silty sand	36	"				Sand flowing into casing
		LOOSE-FIRM (?)	34	"				unable to get sample
			40	"				
			41	"				
			43	"				
	50' 0"		43	"				

• Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
102.3, 102.4 & 102.5

over

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 4

BORING No. 3 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 10-28-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	25'0"	Continued						HAMMER 300 # AVG. FALL 16 ins. CASING _____ # AVG. FALL _____ ins. SAMPLER 140 # AVG. FALL 30 ins. REMARKS CASING SIZE 2 1/2" SPOON 2" O.D. 1 3/8" I.D.
		Brown silty sand	0	12"	3	6"	D	Missed sample
		FIRM	3	"	6	6"	1W	took wash sample
		BECOMING LOOSE	7	"				
			18	"				
	30'0"		20	"				
		Gray silty sand	16	"	7	5"	3D	
		FIRM BECOMING	18	"	8	6"		
		LOOSE-FIRM	28	"				
			31	"				
			30	"				
			16	"	4	6"	D	Missed sample
			19	"	4	6"	2W	
			28	"				
			28	"				
			14	"	3	6"	D	Missed sample
			25	"	5	6"	3W	
			24	"				
			25	"				
			30	"				
			29	"	4	6"	D	Missed sample
			26	"	4	6"	4W	
			35	"				
	50'0"		36	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

102.4 & 102.5

2A - Steel H Piles - 13

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 3 OF 4

BORING No. 3 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 10-28-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
								HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Continued						CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
	50'0"	Gray silty sand	61	12"	6"	6"	D	Missed sample
	52'0"	FRIM BECOMING LOOSE-FIRM	58	"	4	6"	5W	
		Gray gravelly silty sand	60	"				
		VERY COMPACT	60	"				
			63	"				
			142	"			6W	
			480	"				
			330	"				
			240	"				
			261	"				
			192	"			7W	
			260	"				
			123	"				
			130	"				
			221	"				
			170	"				
			70	"				
			130	"				
			283	"				
			427	"				
			170	"	6"	6"	4W	
			334	"				
			148	"				
			400	"				
	75'0"		430	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 4 OF 4

BORING No. 3 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 10-28-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	75'0"	Continued						HAMMER 300 # AVG. FALL 16 ins.
	77'0"	Gray gravelly silty sand VERY COMPACT	134	12"	120	6"	5L	SAMPLER 140 # AVG. FALL 30 ins.
		Brown gravelly silty sand VERY COMPACT BECOMING FIRM	300	"				CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O.D. <u>1 3/8"</u> I.D.
			270	"	112	5"	6D	
			470	"				
			118	"				
			119	"				
			111	"				
					8	6"	D	Missed sample
					7	5"	8W	
		run carbide down from 86'6" to 92'6"						
	92'6"	Bottom of exploration						

• Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
102.3, 102.4 & 102.5

Northeast Soil Services

BORING LOG

Portland, Me.

Job# 760

13-11

LOCATION: _____

STRUCTURE: Ferry Terminal

SHEET No. 1 Of 3

BORING No. 4

DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE: 11-24-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OK SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
18' 0"	0'	Top of ground						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. REMARKS
	2'	Black silty sand	0	12"				CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
	2' 10"	Gray silty sand w/trace of shells	0	"				
		VERY LOOSE	0	"				
	4' 0"		0	"	0	6"	1D	
			2	"	1	6"		
	8' 10"	Gray silty clay	2	"				
		VERY SOFT (?)	3	"				
			2	"				
			1	"		6"	2D	Pushed by 10,000# Hydraulic
			4	"		6"		" " "
	9' 1/2"		6	"				
			8	"				
			8	"				
			6	"		6"	3D	Weight of 1 Man
	17' 0"	Gray silty sand w/gray silty clay	9	"		6"		" "
		VERY LOOSE BECOMING FIRM	11	"				
			12	"				
			14	"				
			11	"	1	6"	4D	
			14	"	1	6"		
			24	"				
			30	"				
	25' 0"		36	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
102.3, 102.4 & 102.5

Northeast Soil Services

BORING LOG

13-12

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 3

BORING No. 4 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE: 11-24-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		
		Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
	25'0"	Gray silty sand cont.	22	12"	11	8"	5D	CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O.D. <u>1 3/8"</u> I.D.
		Brown silty sand	27	"	19	6"		
		LOOSE-FIRM	30	"				
			30	"				
			33	"				
			22	"	5	6"	D	Missed sample
	22'0"		27	"	6	5"		
		Gray silty sand	33	"				
		FIRM BECOMING COMPACT	32	"				
		WITH DEPTH	29	"				
			24	"	7	6"	6D	
			24	"	9	6"		
			37	"				
			41	"				
			39	"				
			56	"	5	6"	D	Missed sample
			50	"	9	6"		
			56	"				
			60	"				
			73	"				
			33	"	10	8"	D	Missed sample
			41	"	15	6"		
			43	"				
			48	"				
	50'0"		95	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

Northeast Soil Services

BORING LOG

Job # 760

13-13

LOCATION: Portland, Me.
 BORING No. 4 DATUM: U.S.G.S.

STRUCTURE: Ferry Terminal SHEET No. 3 OF 3
 BORING INSPECTOR: _____ DATE: 11-24-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	50'0"	Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		Gray silty sand	22	12"	12	6"	7D	
		FIRM BECOMING COMPACT WITH DEPTH	43	"				
			57	"				
			76	"				
			80	"				
			60	"	5	6"	1W	
			83	"	10	6"		
			80	"				
			86	"				
			70	"				
			75	"	13	6"	2W	Missed D sample
			68	"	17	6"		
			77	"				
			85	"				
			90	"				
			120	"	17	6"	3W	Missed sample
			140	"	26	6"		
			93	"				
			121	"				
			111	"				
			150	"	15	6"	8D	
			143	"	25	6"		
			112	"				
			133	"				
	75'0"	Bottom of exploration	42	"			4W	

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

BORING LOG

Job # 760

13-14

LOCATION Portland, Me.

STRUCTURE Ferry Terminal

SHEET No. 1 OF 3

BORING No. 5 DATUM U.S.G.S.

BORING INSPECTOR _____

DATE 11-26-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
+16.0'	0'0"	Top of ground						HAMMER CASING <u>300</u> # AVG. FALL <u>10</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Sand, & coal ashes, organic, etc.	10	12"				CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O.D. <u>1 3/8"</u> I.D.
		VERY LOOSE (?)	9	"				
			7	"				
			5	"				
			7	"	1	6"	1D	
			7	"	1	6"		
			10	"				
			10	"				
		Brown gravelly silty sand	9	"	3	6"	2D	
		Fill	5	"	5	6"		
		VERY LOOSE TO FIRM	19	"				
			17	"				
			20	"				
			13	"				
			6	"	1	8"	2D	
			6	"	1	6"		
			18	"				
			42	"				
			50	"				
			10	"	30	6"	4D	
			34	"	17	6"		
			27	"				
		Gray sandy silt	15	"				
		VERY LOOSE	14	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. = Ground Water Surface

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 3

BORING No. 5 DATUM: U.S.G.S.

BORING INSPECTOR:

DATE 11-26-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	25'0"	Continued						HAMMER 300 # AVG. FALL 16 ins. 140 # AVG. FALL 30 ins. CASING SIZE 2 1/2" SPOON 2" O.D. 1 3/8" I.D.
	27'0"	Gray sandy silt VERY LOOSE	24	12"	1	6"	5D	
		Gray silty clay w/black streaks and sand layers	16	"				
		SOFT (?)	25	"				
			40	"	1	6"	6D	
			21	"	1	6"		
			28	"				
			38	"				
			30	"				
			40	"	-	6"	7D	Pushed by 1500# Hydraulic
			40	"	-	6"		" " "
			28	"				
			28	"				
			30	"				
			48	"	-	6"	8D	Pushed by 2000# Hydraulic
			48	"	-	6"		" " "
			38	"				
			36	"				
			28	"				
			20	"	-	6"	9D	Pushed by 2000# Hydraulic
			50	"	-	5"		" " "
			48	"				
			47	"				
	50'0"		40	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
102.3, 102.4 & 102.5

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 1 OF 4

BORING No. 6 DATUM: U.S.G.S.

BORING INSPECTOR:

DATE 11-18-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	HAMMER
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		
+3'	0'0"	Top of ground						CASING 300 # AVG. FALL 16 ins.
	1'0"	Boulders	12	12"				SAMPLER 140 # AVG. FALL 30 ins.
		Gray silty sand	10	"				REMARKS
			9	"				
	4'0"	Black silty sand w/tracee	7	"				
		of shells	4	"				
		VERY LOOSE TO LOOSE	2	"	1	6"	D	Missed sample
			3	"	2	6"		
			4	"				
			4	"				
			5	"				
			6	"	4	6"	1D	
			11	"	3	6"		
			10	"				
			10	"				
			11	"				
			18	"	1	6"	2D	
			10	"	1	6"		
			11	"				
			13	"				
			23	"				
			28	"	0	5"	3D	
				"	3	6"		
			24	"	2	6"		
			25	"				
			23	"				
	25'0"		22	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
 102.3, 102.4 & 102.5
 2A - Steel H Piles - 22

Northeast Soil Services

13-18

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 2 OF 4

BORING No. 6 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 11-18-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	HAMMER		
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		CASING #	AVG. FALL	REMARKS
	25' 0"	Continued						300 #	16 ins.	CASING SIZE <u>2 1/2"</u>
		Gray silty clay	35	12"	3	6"	4D	140 #	30 ins.	SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		MEDIUM CONSISTENCY	30	"	3	0"				
			26	"						
			24	"						
			20	"						
			28	"	-	12"	10			Pushed by Hydraulic 2500#
			23	"	-	12"				Pushed by Hydraulic 2500#
		Brown silty sand	68	"						
		COMPACT	72	"						
			82	"						
			56	"	10	6"	5D			
			70	"	12	6"				
			70	"	16	5"				
			52	"						
			62	"						
			54	"						
			50	"	10	6"	6D			
			80	"	16	2"				
			80	"	19	6"				
			82	"						
			78	"						
			70	"						
			50	"	9	6"	7D			
			70	"		0"				
			45	"						
			20	"						
	50' 0"			"						

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

Northeast Soil Services

BORING LOG

13-19

Job # 760

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 3 OF 4

BORING No. 6 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 11-18-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	50'0"	Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Brown silty sand w/some gray silty clay	52	12"	11	6"	8D	
		FIRM	56	"		6"		
			72	"				
			72	"				
			72	"				
			52	"	4	0"	D	Missed sample
			57	"	6	6"		
			60	"				
			60	"				
			74	"				
			65	"	9	6"	D	Missed sample
			80	"	9	6"		
			85	"				
			85	"				
			80	"				
			77	"	4	6"	D	Missed sample
	67'0"		80	"	9	6"	W	
		Gray gravelly silty sand	70	"				
		FIRM BECOMING COMPACT	80	"				
			95	"				
			85	"	11	6"	9D	
			70	"	5	6"		
			75	"				
			80	"				
	75'0"		120	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. = Ground Water Surface

102.3, 102.4 & 102.5

2A - Steel H Piles - 24

Northeast Soil Services

BORING LOG

Job # 760

13-21

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 1 OF 6

BORING No. 7 DATUM: U.S.G.S.

BORING INSPECTOR: _____ DATE 11-10-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
+15	0'0"	Top of ground						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. REMARKS CASING SIZE: <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		Gravel, brick & cobbles	8	12"				
		LOOSE	85	"				
			168	"				
			24	"				
			18	"				
			14	"	6	6"	1D	
			15	"	5	6"		
			17	"				
			11	"				
			12	"	2	6"	2D	
			24	"	8	6"		
			24	"				
			30	"				
	15'0"		17	"				
		Black silty sand & stones	9	"	4	6"	D	Missed sample
		VERY LOOSE	12	"	1	6"		
			9	"				
			13	"				
	20'0"		16	"				
		Gray sandy silty	4	"	1	6"	3D	
		VERY LOOSE	1	"	1	6"		
			0	"				
			11	"				
	25'0"		12	"				

• Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

BORING LOG

Job # 760

LOCATION: Portland, Me.

STRUCTURE Ferry Terminal

SHEET No. 2 OF 6

BORING No. 7 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 11-10-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
		Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
		Gray sandy silt	20	R	1	6"	4D	CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O.D. <u>1 3/8"</u> I.D.
		VERY LOOSE	20	"	1	6"		
			20	"				
			26	"				
			18	"				
			30	"	1	6"	5D	Pushed by one man
			26	"	1	6"		" "
		Gray silty clay w/black streaks	24	"				
		VERY SOFT	24	"				
			19	"				
			25	"	1	6"	6D	Pushed by one man
			20	"	1	6"		" "
			30	"				
			26	"				
			25	"				
			60	"			12" C	Mixed C tube
			54	"			12"	Pushed by hydraulic 1500#
		Brown silty sand	56	"				2 x 7 Vane test <u>40/30</u> <u>50</u> +
		FIRM	50	"				
			42	"				
			30	"	1	6"	7D	
			20	"				
			20	"				
			20	"				
			34	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. = Ground Water Surface

Northeast Soil Services

BORING LOG

Job # 760

13-23

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 3 OF 6

BORING No. 7 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 11-10-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	HAMMER	
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		CASING <u>300</u> # AVG. FALL <u>16</u> ins.	SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins.
	50'0"	Continued							CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O.D. <u>1 3/8"</u> I.D.
		Brown silty sand	35	12"	10	6"	8D		
		FINI	44	"	"	6"			
			68	"					
			74	"					
			74	"					
			26	"	5	6"	D		Missed sample
			27	"	5	6"			
			41	"					
			40	"					
			58	"					
			60	"	10	6"	9D		
			53	"	10	6"			
			59	"					
			61	"					
			63	"					
			80	"	2	6"	D		Missed sample
			72	"	7	6"	1W		
			84	"					
			86	"					
			85	"					
			90	"	2	6"	2W		Missed D sample
			82	"	9	6"			
			118	"					
			94	"					
	75'0"		85	"					

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

Northeast Soil Services

BORING LOG

13-24

Job # 760

Portland, Me.

LOCATION: _____

STRUCTURE: Ferry Terminal

SHEET No. 4 OF 6

BORING No. 7 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE 11-10-69

STRATIFICATION			CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	BLOWS	PENETRATION	BLOWS	PENETRATION		
	75'0"	Continued						HAMMER CASING <u>300</u> # AVG. FALL <u>16</u> ins. SAMPLER <u>140</u> # AVG. FALL <u>30</u> ins. REMARKS CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		Gray silty sand	93	12"	5"	5"	3W	Missed D sample
		FIRM	70	"	5"	0"		
			80	"				
			85	"				
			78	"				
			70	"	5"	6"	4W	Missed D sample
			68	"	7	6"		
			97	"				
			107	"				
			103	"				
	86'0"		100	"	6"	6"	5W	Missed D sample
		Gray gravely silty sand	100	"	18	6"		
		COMPACT	110	"	19	6"		
			115	"				
			148	"				
			148	"	6"	6"	10D	
			250	"	6"	6"		
			254	"				
			550	"				
			457	"				
	96'0"		385	"	6"	6"	6W	Missed D sample
		Brownish gray clayey silty sand	562	"				
			110	"				
		VERY COMPACT	170	"				
	102'0"		345	"				

* Designate dry samples by D. Wash samples by W. 3 1/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface
 102.3, 102.4 & 102.5

Northeast Soil Services

BORING LOG

Job # 760

13-25

LOCATION: Portland, Me.

STRUCTURE: Ferry Terminal

SHEET No. 5 OF 6

BORING No. 7 DATUM: U.S.G.S.

BORING INSPECTOR: _____

DATE: 11-10-69

STRATIFICATION		DESCRIPTION OF MATERIALS (TYPE, COLOR & CONSISTENCY)	CASING		SAMPLER OR SPOON		SAMPLE NO.	REMARKS
ELEVATION	DEPTH		BLOWS	PENETRATION	BLOWS	PENETRATION		
	100'0"	Continued						HAMMER 300 # AVG. FALL 16 ins. CASING SAMPLER 140 # AVG. FALL 30 ins. REMARKS
		Brownish gray gravelly silty sand	500	12"	85	6"	L1D	CASING SIZE <u>2 1/2"</u> SPOON <u>2"</u> O. D. <u>1 3/8"</u> I. D.
		VERY COMPACT	280	"				
			273	"				
			170	"				
			225	"			7W	
			670	"				
			275	"				
			310	"				
			1160	"				
			790	"			8W	
			410	"				
	112'0"		310	"	22	6"	L2D	
		Gray gravelly silty sand	430	"	12	6"		
		VERY COMPACT	580	"				
			486	"				
		washed ahead with carbide from 115' to 119'6"		"	50	6"	D	Missed sample
				"	50	1"		
				"				
				"				
		washed ahead with carbide from 119'4" to 135'		"				
				"	48"		1R	Recovery 26" or 54%
				"				
				"				
				"				
	124'0"			"			L2W	

* Designate dry samples by D. Wash samples by W. 3/2" undisturbed tube samples by U. Rock cores by R. 2" tube samples by C. ≡ Ground Water Surface

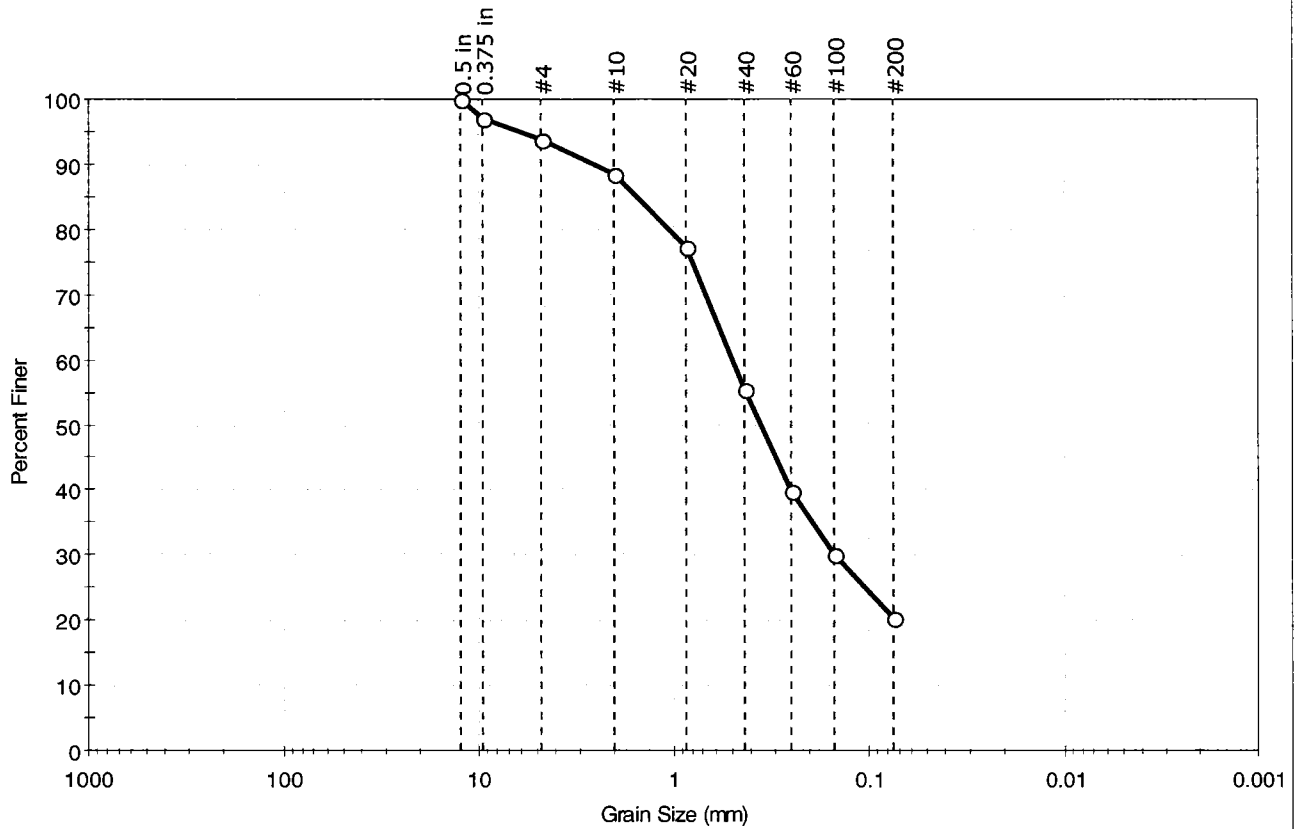
APPENDIX C

Laboratory Test Reports



Client: Haley & Aldrich, Inc.	Project: International Marine Terminal Improvements	Project No: GTX-10419
Location: Portland, ME	Boring ID: HA10-1	Sample Type: jar
Sample ID: S1A	Test Date: 11/30/10	Checked By: jdt
Depth: 0.5-1.5 ft	Test Id: 199463	Tested By: jbr
Test Comment: ---		
Sample Description: Moist, dark brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	6.2	73.5	20.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	94		
#10	2.00	89		
#20	0.85	77		
#40	0.42	56		
#60	0.25	40		
#100	0.15	30		
#200	0.075	20		

Coefficients

D ₈₅ = 1.5257 mm	D ₃₀ = 0.1485 mm
D ₆₀ = 0.4898 mm	D ₁₅ = N/A
D ₅₀ = 0.3520 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

Classification

ASTM N/A

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

Sample/Test Description

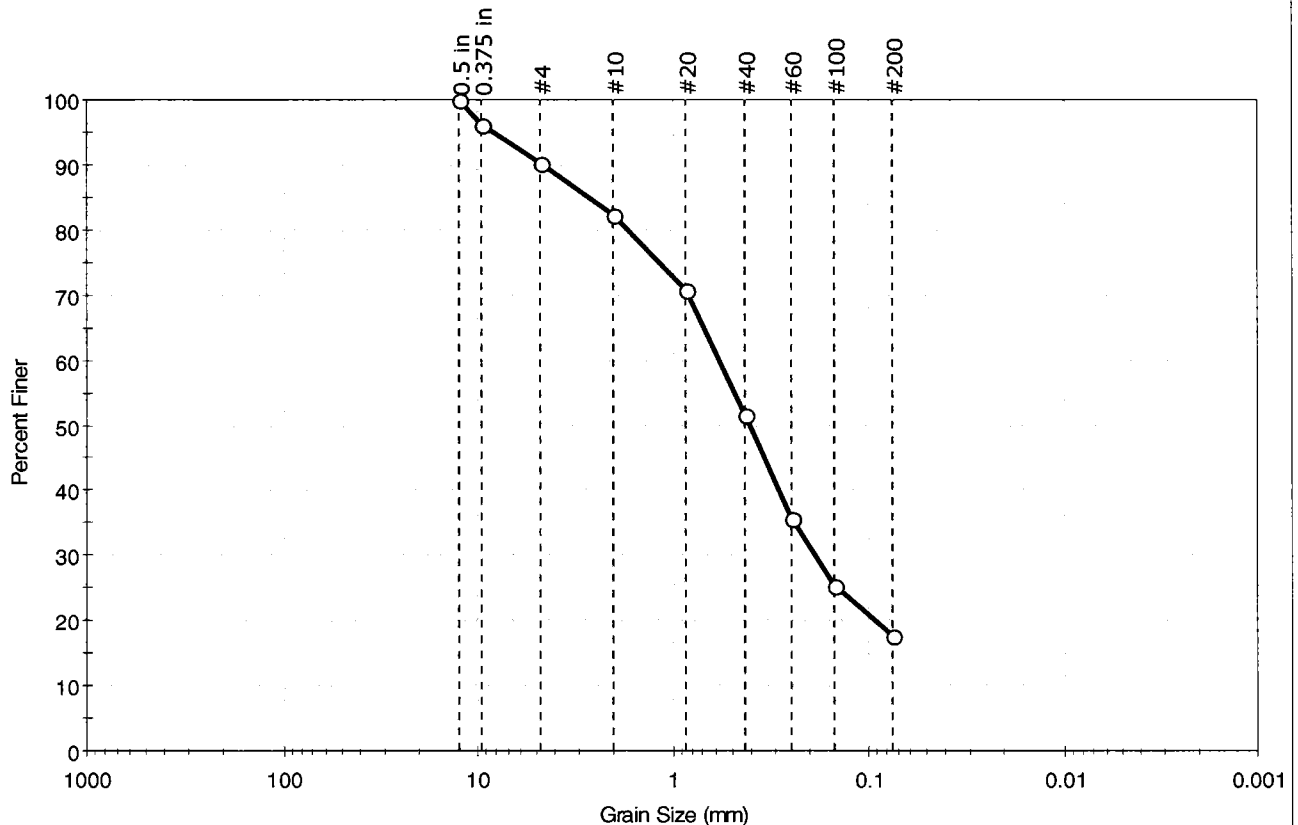
Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD



Client: Haley & Aldrich, Inc.	Project: International Marine Terminal Improvements	
Location: Portland, ME	Project No: GTX-10419	
Boring ID: HA10-1	Sample Type: jar	Tested By: jbr
Sample ID: S2	Test Date: 11/30/10	Checked By: jdt
Depth: 2.5-4.5 ft	Test Id: 199464	
Test Comment: ---		
Sample Description: Moist, dark brownish gray silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	9.7	72.7	17.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	96		
#4	4.75	90		
#10	2.00	82		
#20	0.85	71		
#40	0.42	52		
#60	0.25	36		
#100	0.15	25		
#200	0.075	18		

Coefficients

D ₈₅ = 2.6857 mm	D ₃₀ = 0.1880 mm
D ₆₀ = 0.5741 mm	D ₁₅ = N/A
D ₅₀ = 0.4013 mm	D ₁₀ = N/A
C _u = N/A	C _c = N/A

Classification

ASTM N/A

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

Sample/Test Description

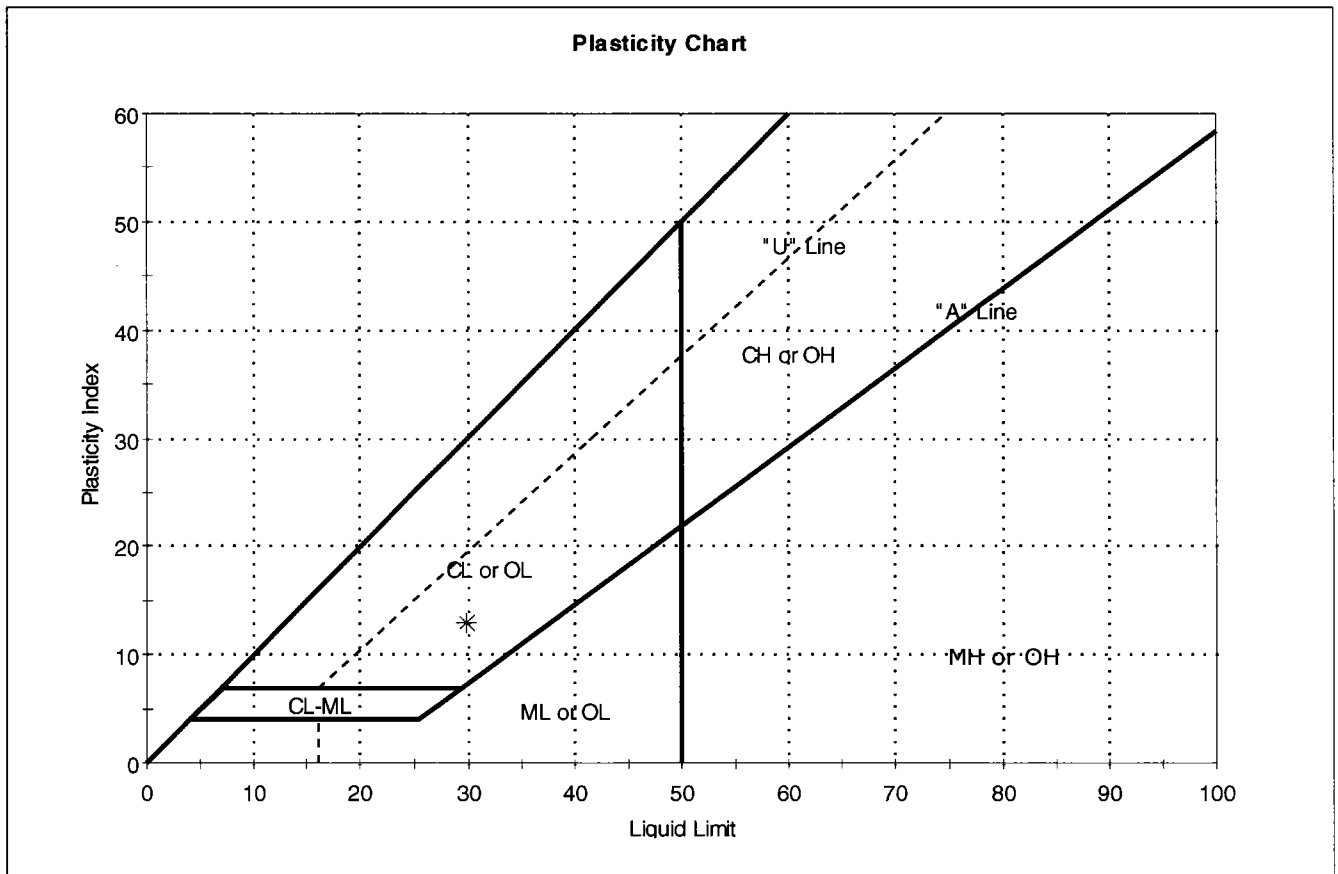
Sand/Gravel Particle Shape : **ROUNDED**

Sand/Gravel Hardness : **HARD**



Client: Haley & Aldrich, Inc.	Project: International Marine Terminal Improvements	Project No: GTX-10419
Location: Portland, ME	Boring ID: HA10-9	Sample Type: jar
Sample ID: U1	Depth: 35-37 ft	Test Date: 12/02/10
Test Comment: ---	Sample Description: Moist, dark olive gray clay	Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	U1	HA10-9	35-37 ft	29	30	17	13	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

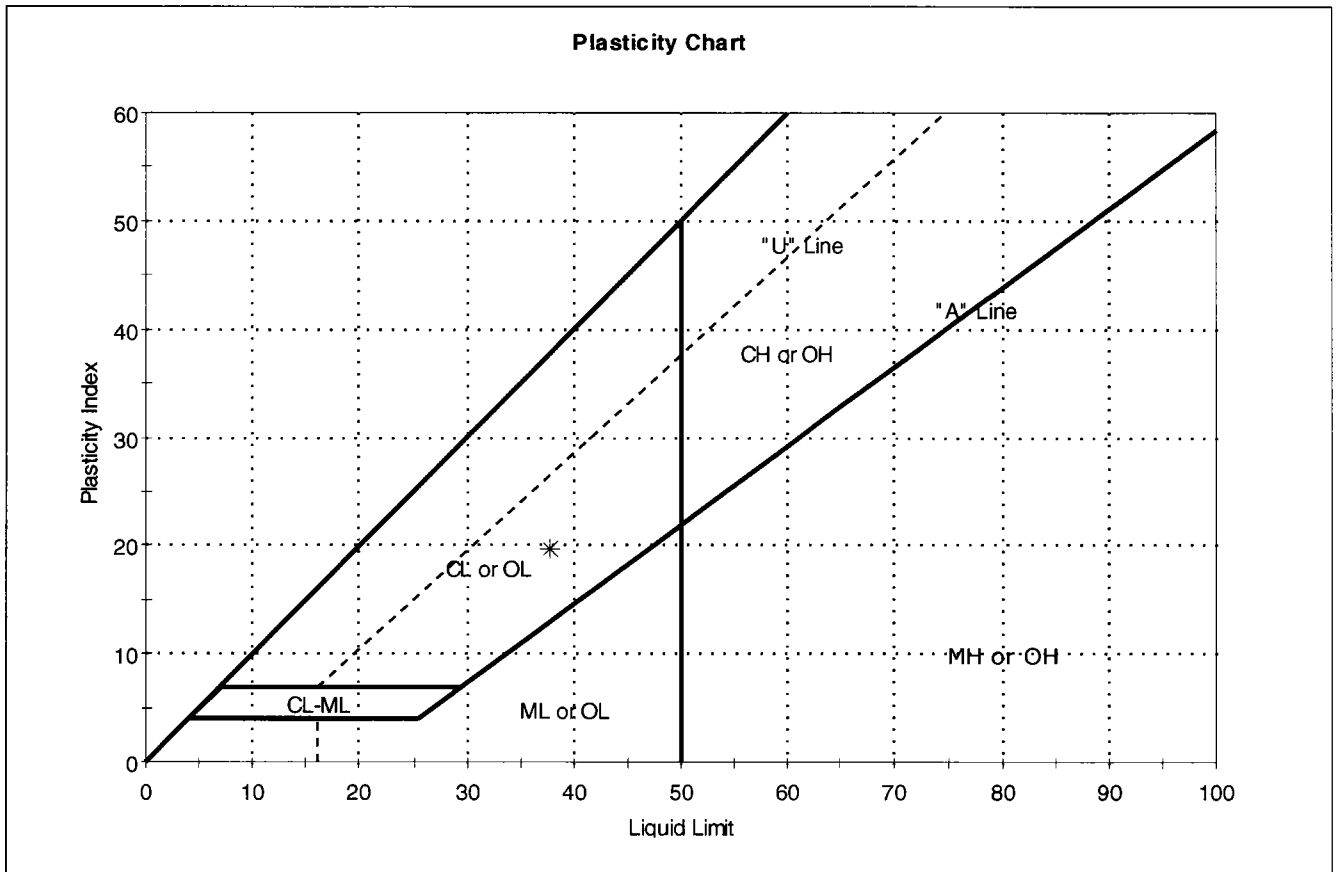
Dilatancy: SLOW

Toughness: LOW



Client:	Haley & Aldrich, Inc.		
Project:	International Marine Terminal Improvements		
Location:	Portland, ME	Project No:	GTX-10419
Boring ID:	HA10-5	Sample Type:	tube
Sample ID:	U1 (0-2 in of recovery)	Test Date:	12/03/10
Depth:	14.5-16.5 ft	Test Id:	199753
Test Comment:	---		
Sample Description:	Moist, dark gray clay		
Sample Comment:	---		

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	U1 (0-2 in of recovery)	HA10-5	14.5-16.5 ft	33	38	18	20	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilutancy: SLOW

Toughness: LOW



Client:	Haley & Aldrich, Inc.		
Project:	International Marine Terminal Improvements		
Location:	Portland, ME	Project No:	GTX-10419
Boring ID:	HA10-5	Sample Type:	tube
Sample ID:	U1 (2-22 in of recovery)	Test Date:	12/03/10
Depth :	14.5-16.5 ft	Test Id:	199754
Test Comment:	---		
Sample Description:	Moist, dark olive gray silty sand		
Sample Comment:	Sample contains shell fragments and organics		

Atterberg Limits - ASTM D 4318-05

Sample Determined to be non-plastic

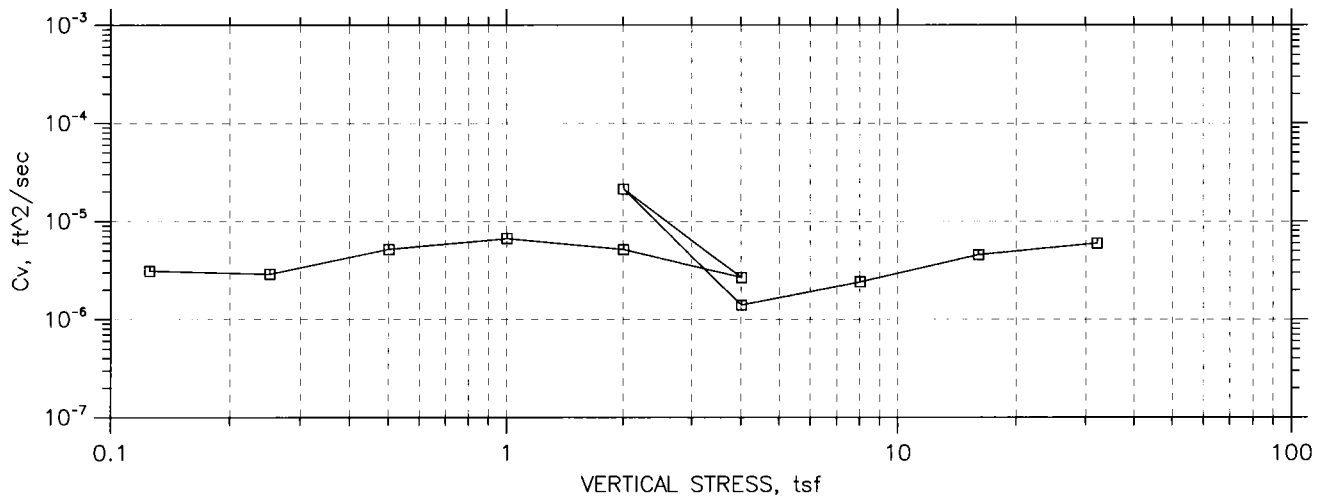
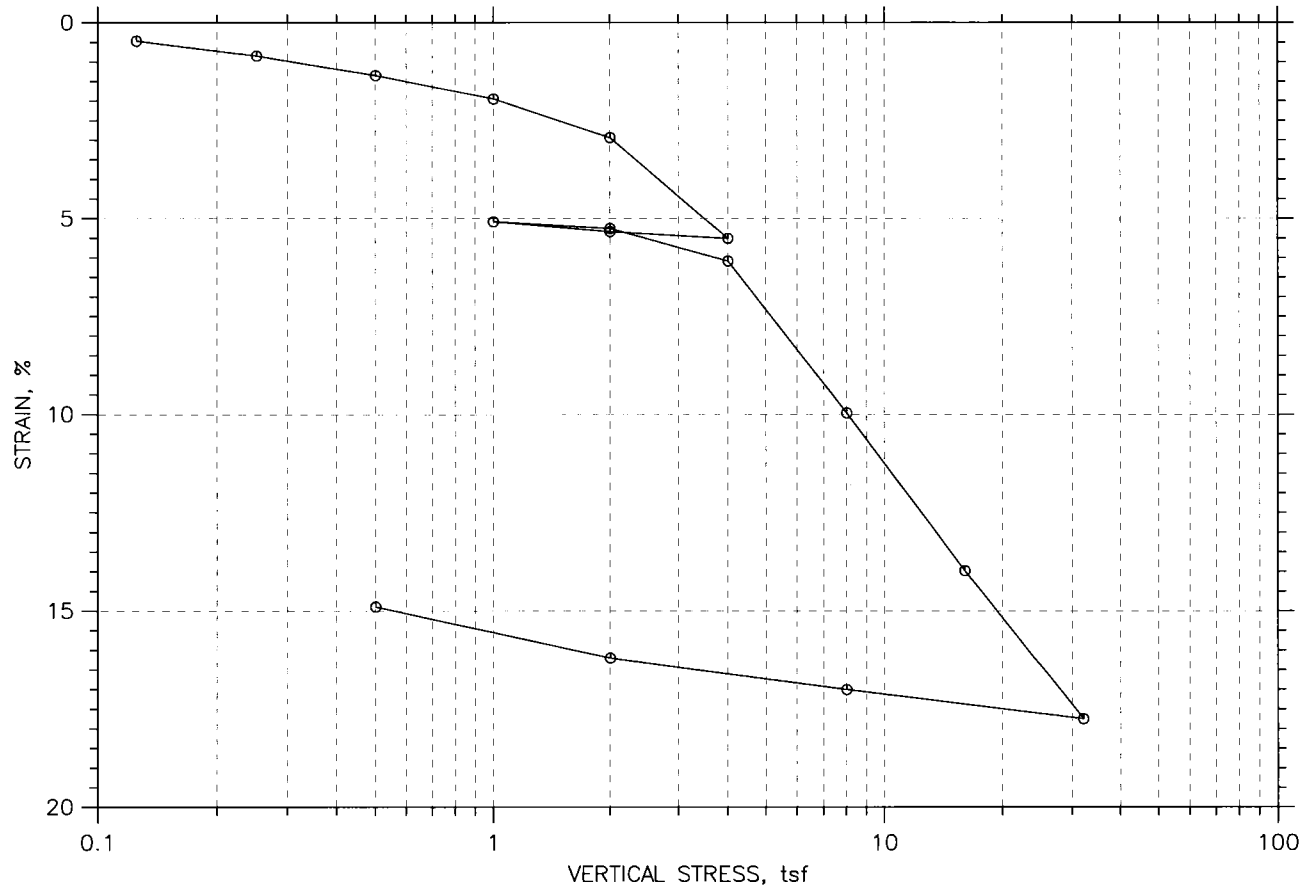
Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	U1 (2-22 in of recovery)	HA10-5	14.5-16.5 ft	21	n/a	n/a	n/a	n/a	


Dry Strength: LOW
 Dilatancy: RAPID
 Toughness: n/a
 The sample was determined to be Non-Plastic

ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B

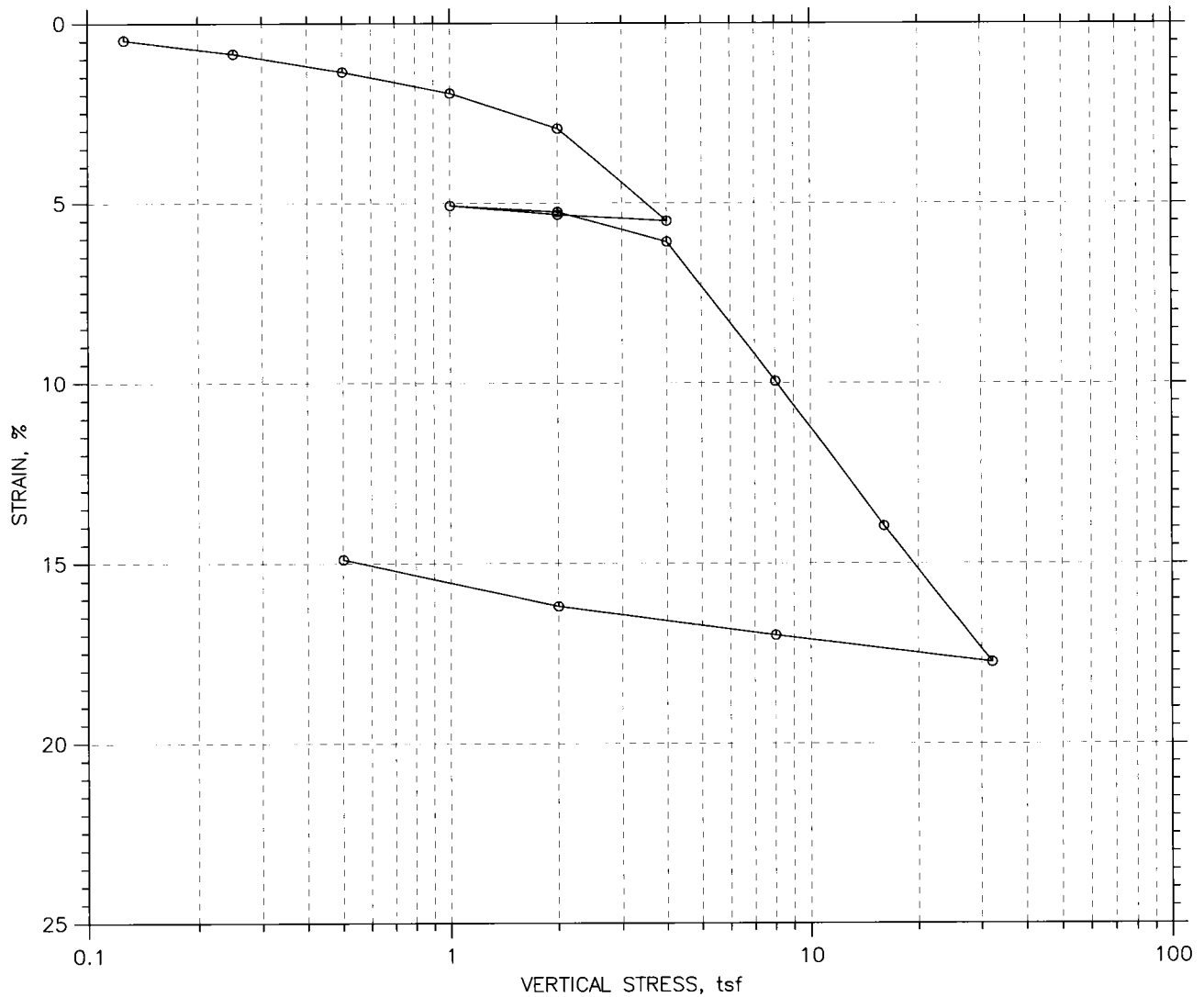
CONSOLIDATION TEST DATA

SUMMARY REPORT




	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

CONSOLIDATION TEST DATA
SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: ---		Water Content, %		30.10	20.29
Preconsolidation Pressure: ---		Dry Unit Weight, pcf		94.67	111.3
Compression Index: ---		Saturation, %		99.88	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	
				0.84	0.57
LL: 30	PL: 17	PI: 13	GS: 2.79		

	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B
 CONSOLIDATION TEST DATA

Project: International Marine
 Boring No.: HA-10-9
 Sample No.: U1
 Test No.: C-1

Location: Portland, ME
 Tested By: md
 Test Date: 12/01/10
 Sample Type: tube

Project No.: GTX-10419
 Checked By: jdt
 Depth: 35-37 ft
 Elevation: ---

Soil Description: Moist, dark olive gray
 Remarks: System Y

Estimated Specific Gravity: 2.79
 Initial Void Ratio: 0.84
 Final Void Ratio: 0.57

Liquid Limit: 30
 Plastic Limit: 17
 Plasticity Index: 13

Initial Height: 1.00 in
 Specimen Diameter: 2.50 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	6110	RING		7614
Wt. Container + Wet Soil, gm	208.3	267.94	255.98	155.35
Wt. Container + Dry Soil, gm	159.71	231.23	231.23	130.54
Wt. Container, gm	8.42	109.24	109.24	8.27
Wt. Dry Soil, gm	151.29	121.99	121.99	122.27
Water Content, %	32.12	30.10	20.29	20.29
Void Ratio	---	0.84	0.57	---
Degree of Saturation, %	---	99.88	100.00	---
Dry Unit Weight, pcf	---	94.672	111.28	---

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.

ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B

CONSOLIDATION TEST DATA

Project: International Marine
 Boring No.: HA-10-9
 Sample No.: U1
 Test No.: C-1

Location: Portland, ME
 Tested By: md
 Test Date: 12/01/10
 Sample Type: tube

Project No.: GTX-10419
 Checked By: jdt
 Depth: 35-37 ft
 Elevation: ---

Soil Description: Moist, dark olive gray
 Remarks: System Y

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft ² /sec	Log ft ² /sec	Ave. ft ² /sec
1	0.125	0.004744	0.833	0.47	1.9	0.0	3.06e-006	0.00e+000	3.06e-006
2	0.25	0.008533	0.826	0.85	1.8	2.2	3.20e-006	2.58e-006	2.86e-006
3	0.5	0.01354	0.817	1.35	1.1	1.1	5.03e-006	5.18e-006	5.10e-006
4	1	0.0195	0.806	1.95	0.8	0.0	6.57e-006	0.00e+000	6.57e-006
5	2	0.02939	0.787	2.94	1.1	0.0	5.07e-006	0.00e+000	5.07e-006
6	4	0.05511	0.740	5.51	1.8	2.2	2.88e-006	2.43e-006	2.63e-006
7	2	0.05338	0.743	5.34	0.1	0.0	7.39e-005	0.00e+000	7.39e-005
8	1	0.05086	0.748	5.09	0.2	0.0	2.73e-005	0.00e+000	2.73e-005
9	2	0.05261	0.745	5.26	0.2	0.0	2.08e-005	0.00e+000	2.08e-005
10	4	0.06091	0.729	6.09	3.7	0.0	1.38e-006	0.00e+000	1.38e-006
11	8	0.09983	0.658	9.98	1.8	2.2	2.68e-006	2.15e-006	2.39e-006
12	16	0.14	0.584	14.00	0.9	1.1	4.96e-006	4.12e-006	4.50e-006
13	32	0.1778	0.514	17.78	0.7	0.0	5.88e-006	0.00e+000	5.88e-006
14	8	0.1703	0.528	17.03	0.0	0.0	1.84e-004	0.00e+000	1.84e-004
15	2	0.1622	0.543	16.22	0.6	0.0	7.16e-006	0.00e+000	7.16e-006
16	0.5	0.1493	0.567	14.93	3.6	3.9	1.13e-006	1.06e-006	1.09e-006

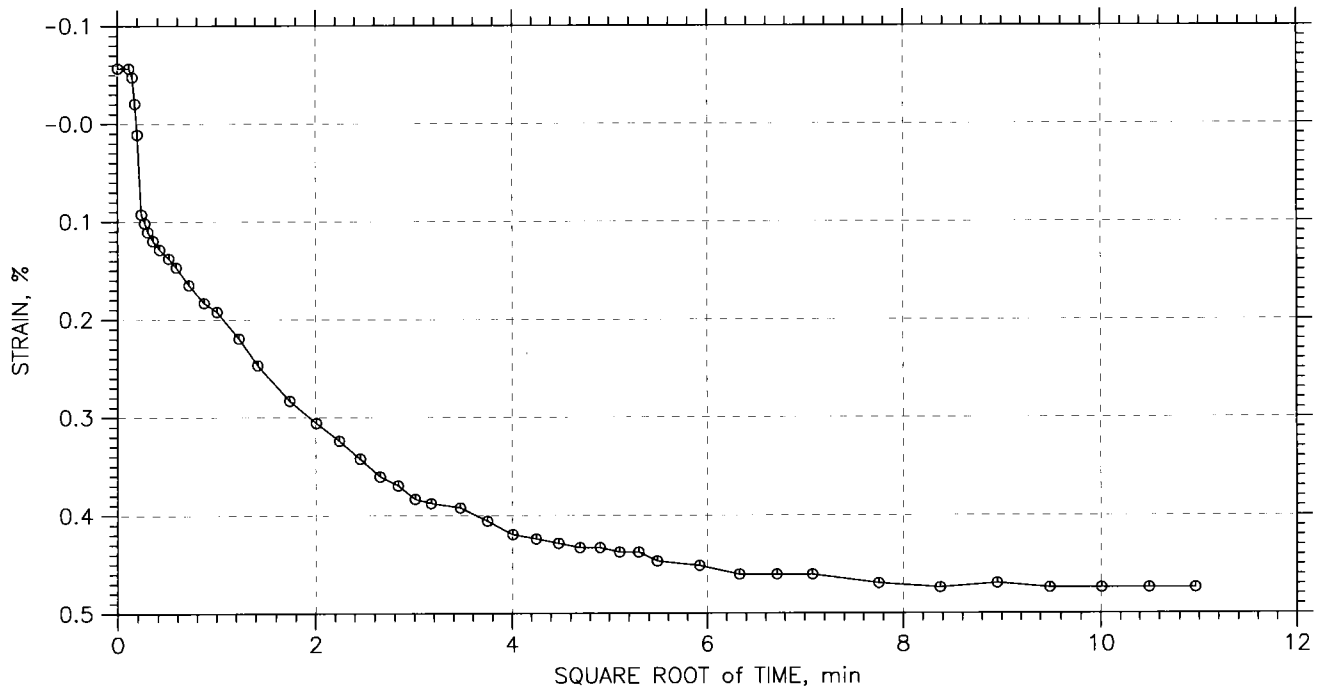
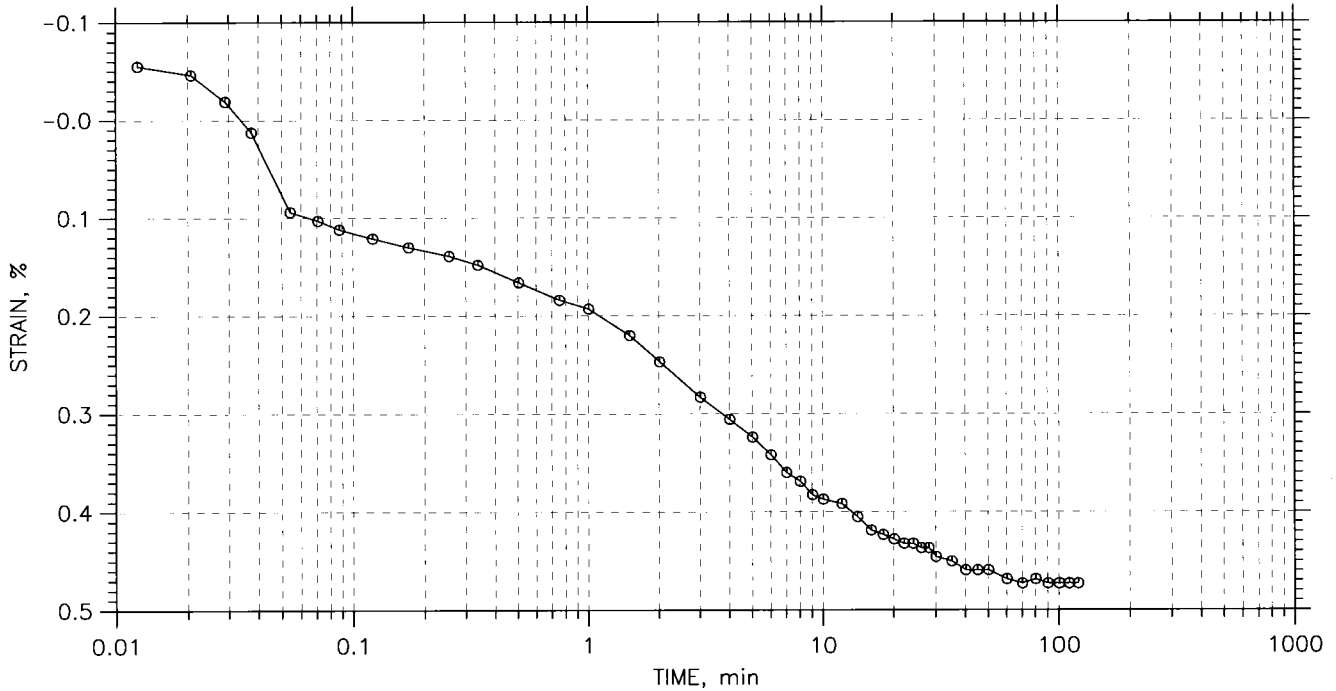
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 16

Stress: 0.125 tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

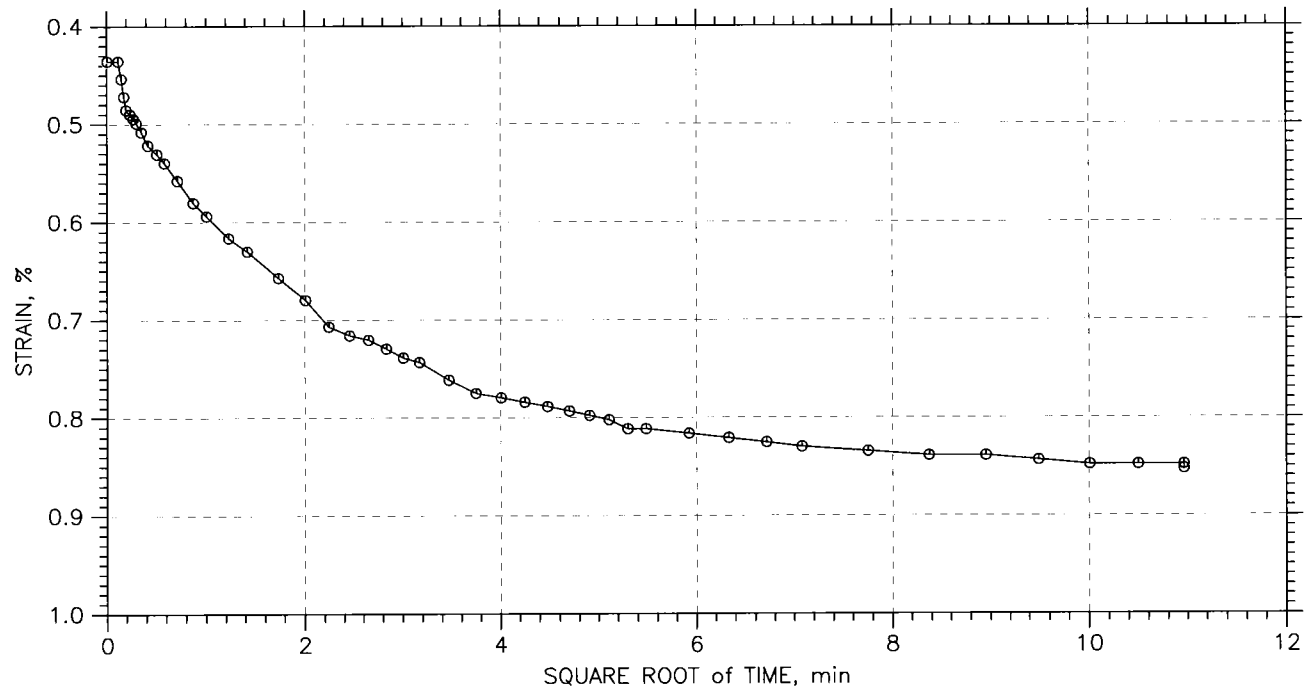
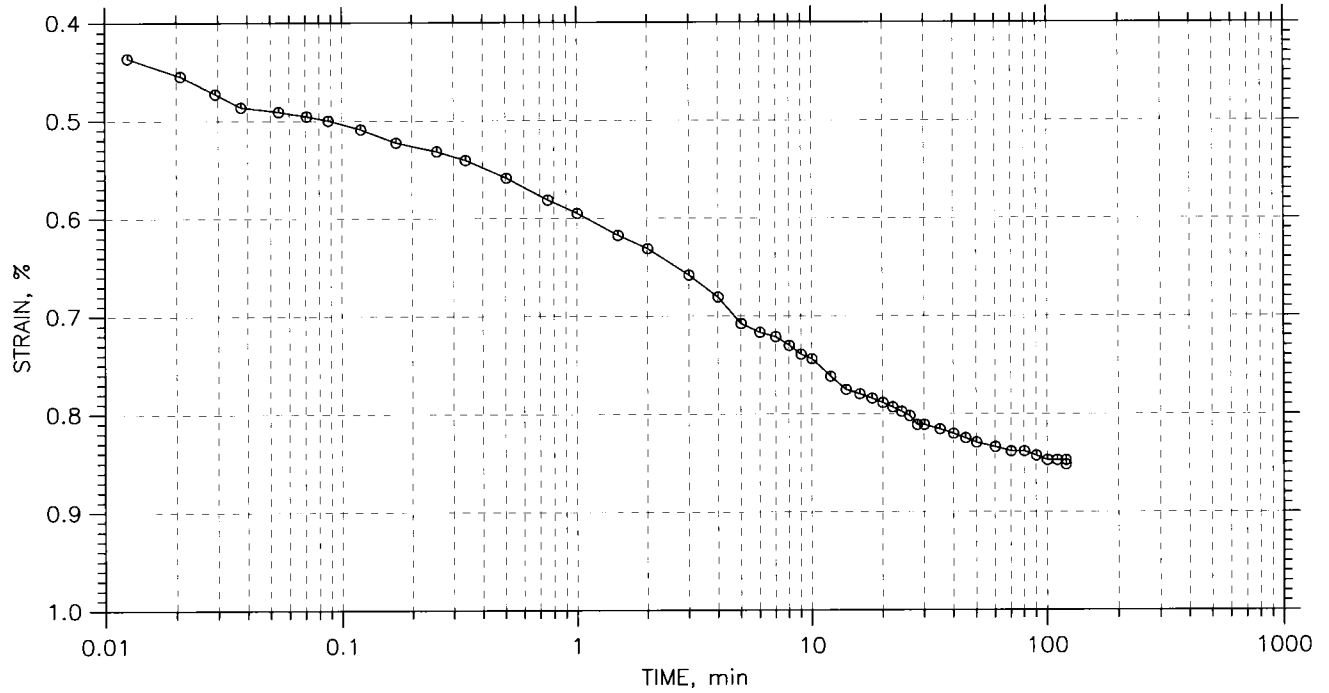
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 16

Stress: 0.25 tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

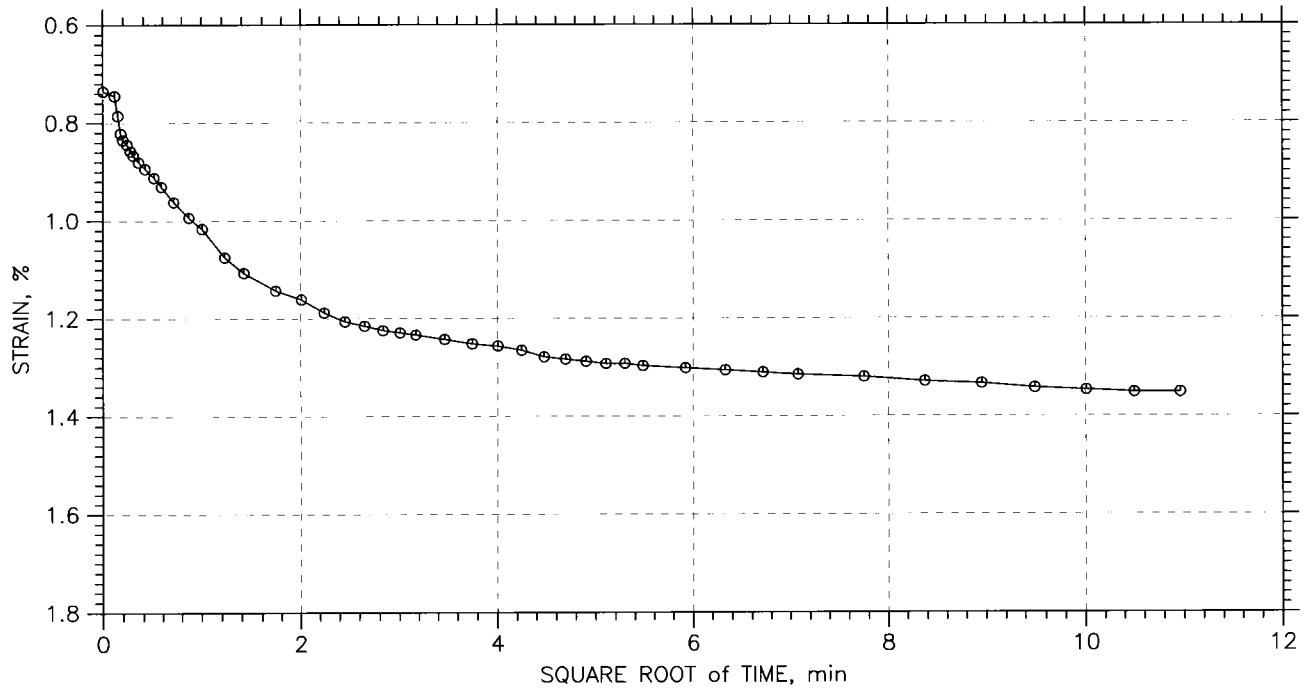
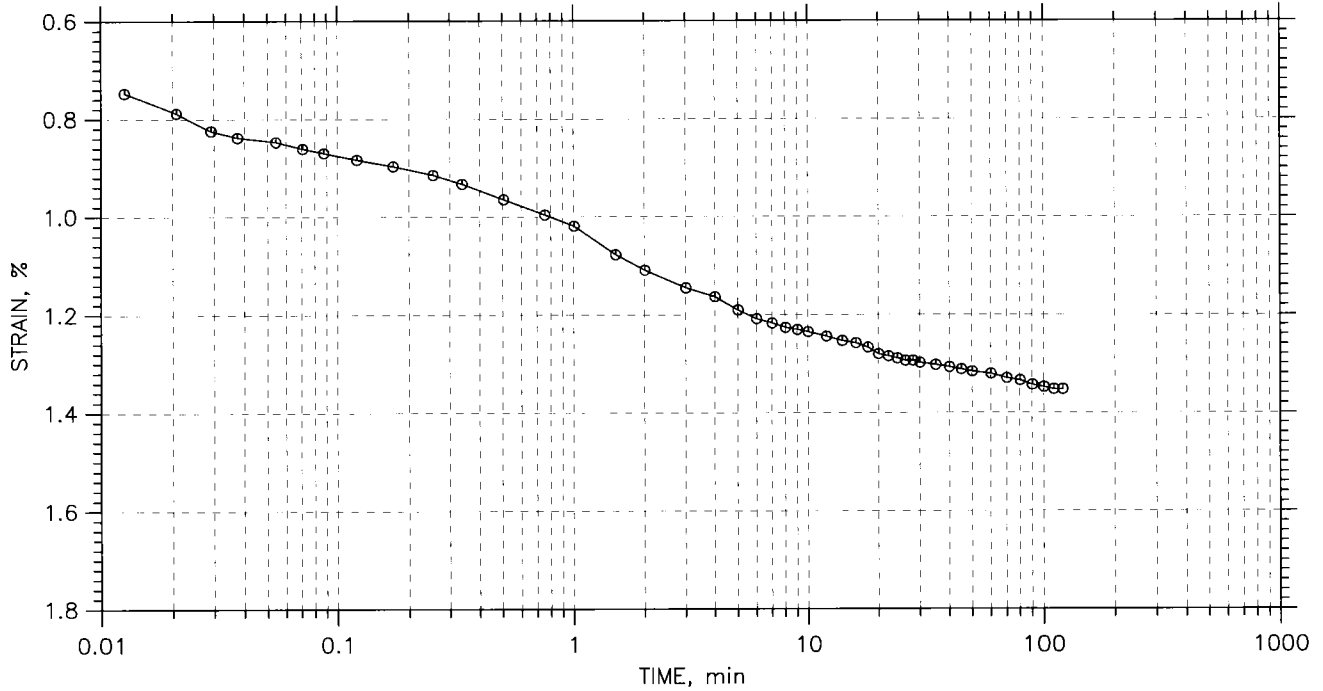
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 16

Stress: 0.5 tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

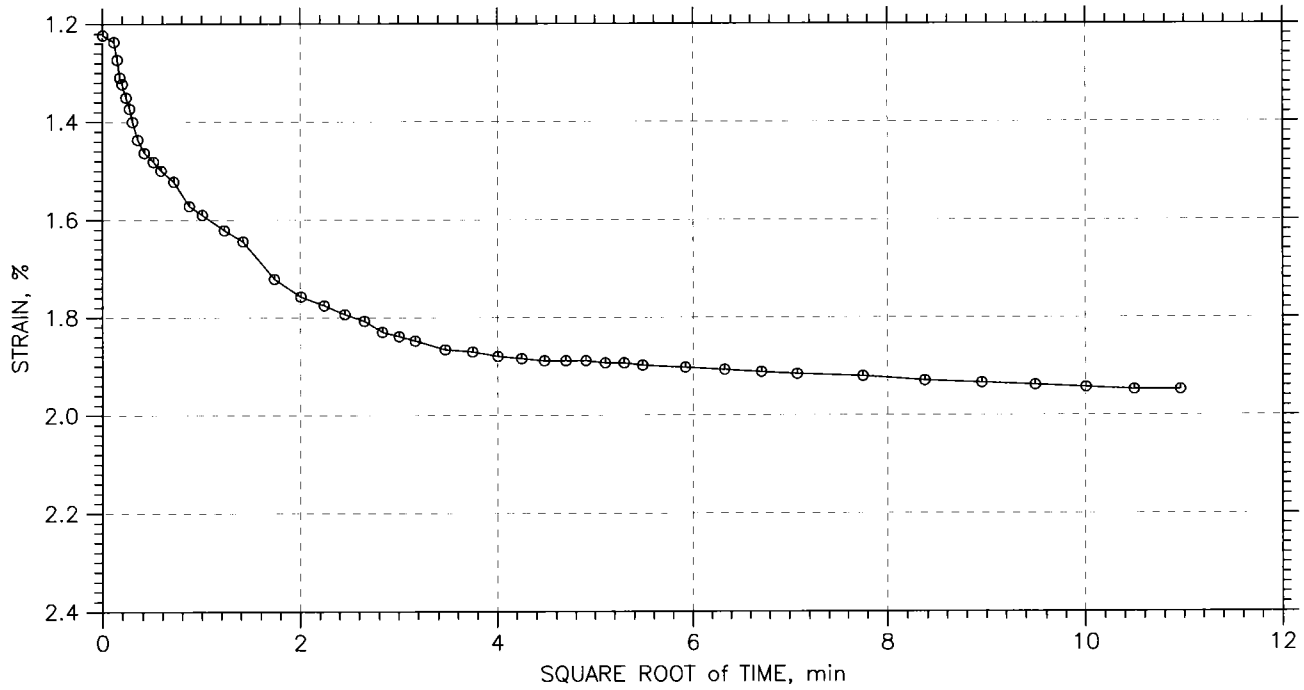
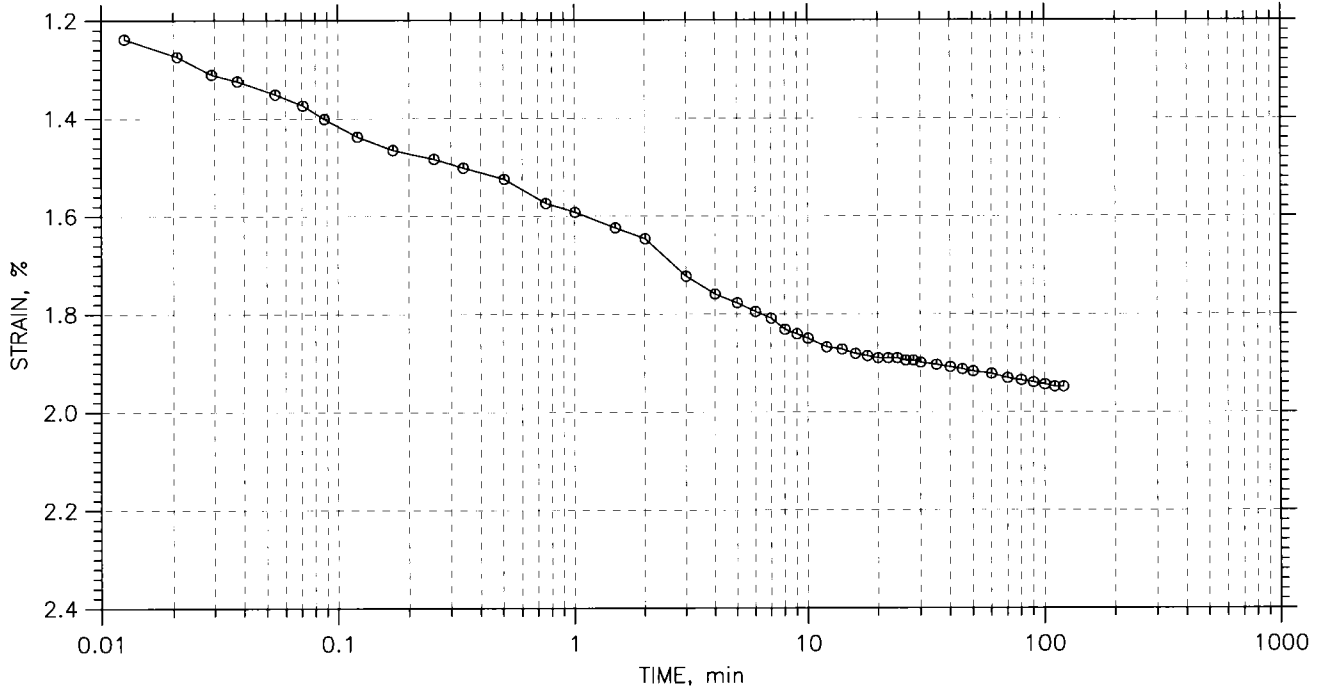
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 16

Stress: 1. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

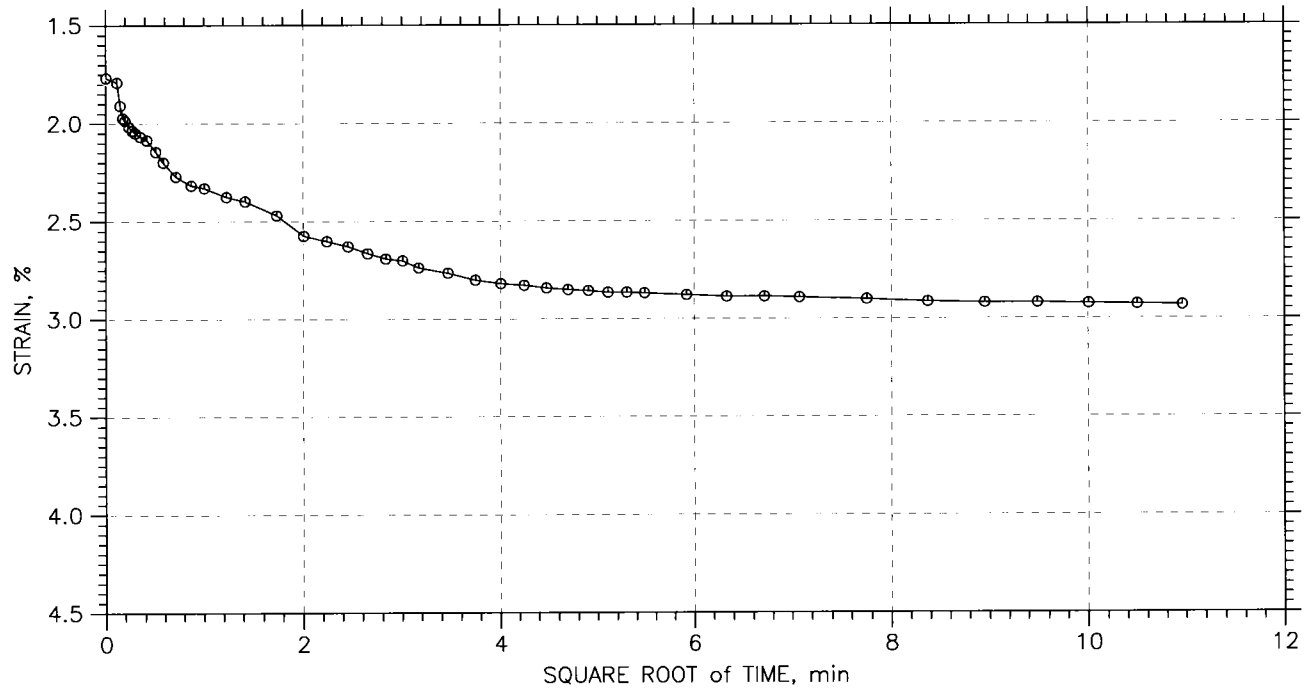
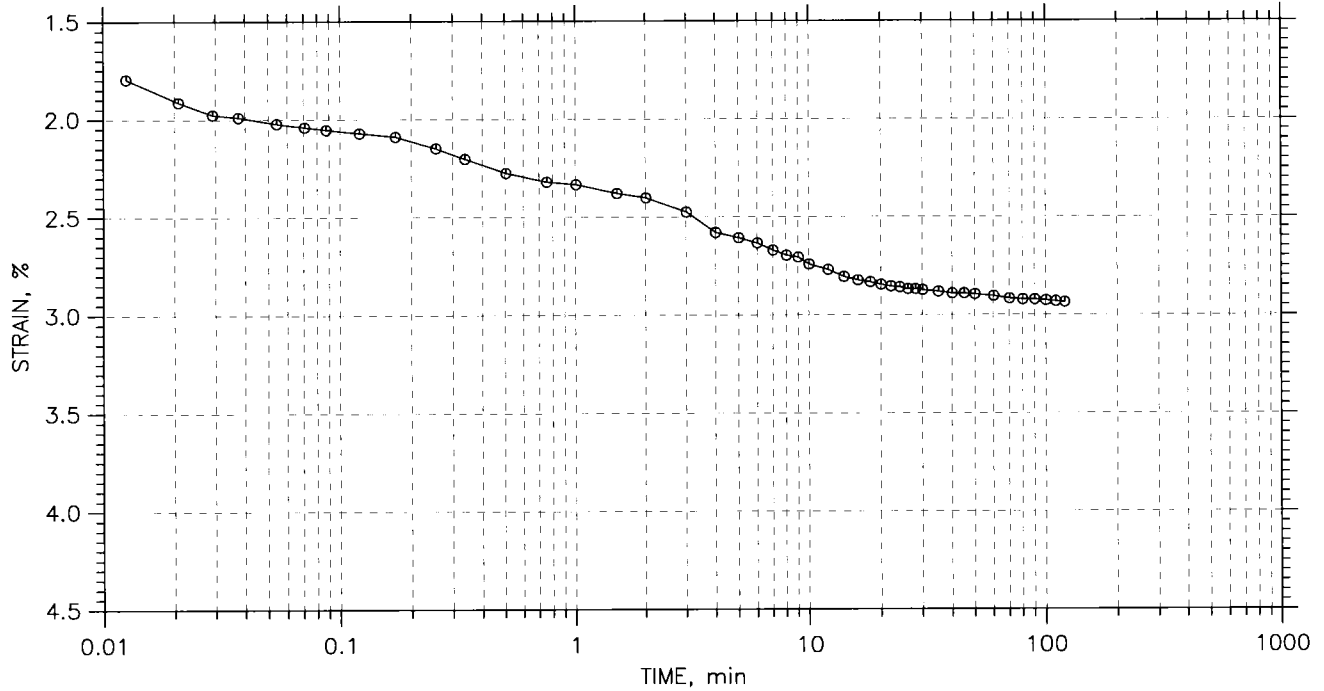
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 16

Stress: 2. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

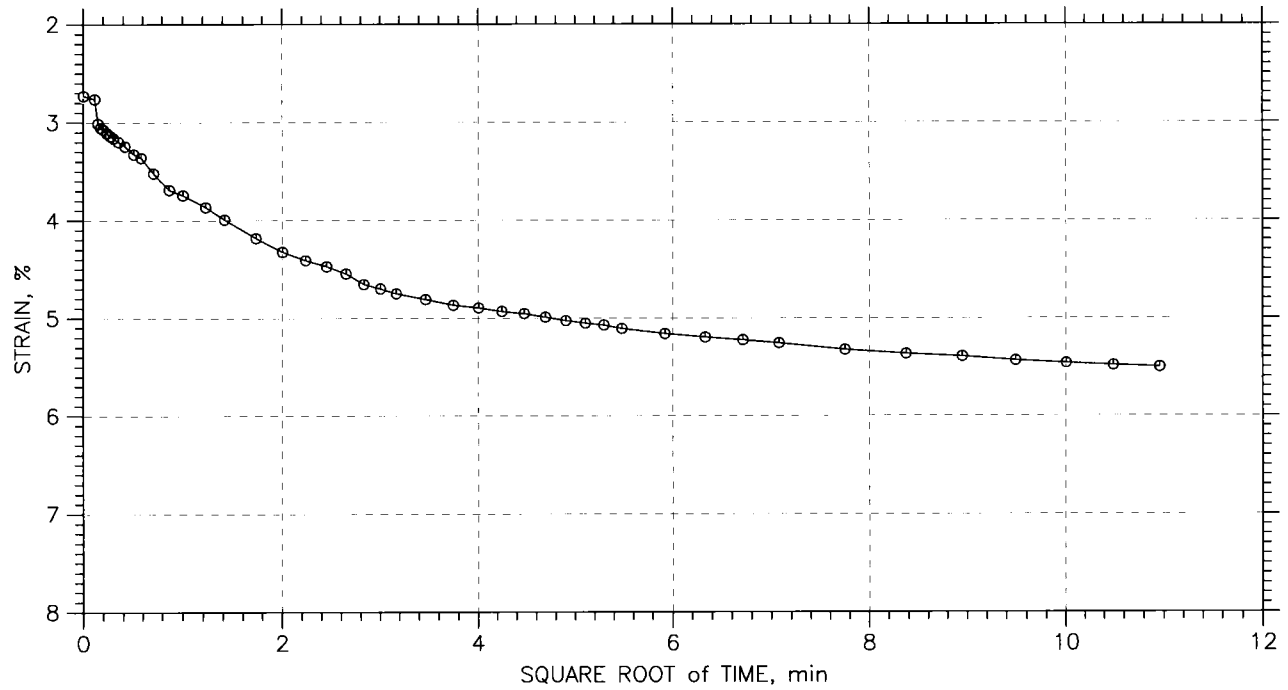
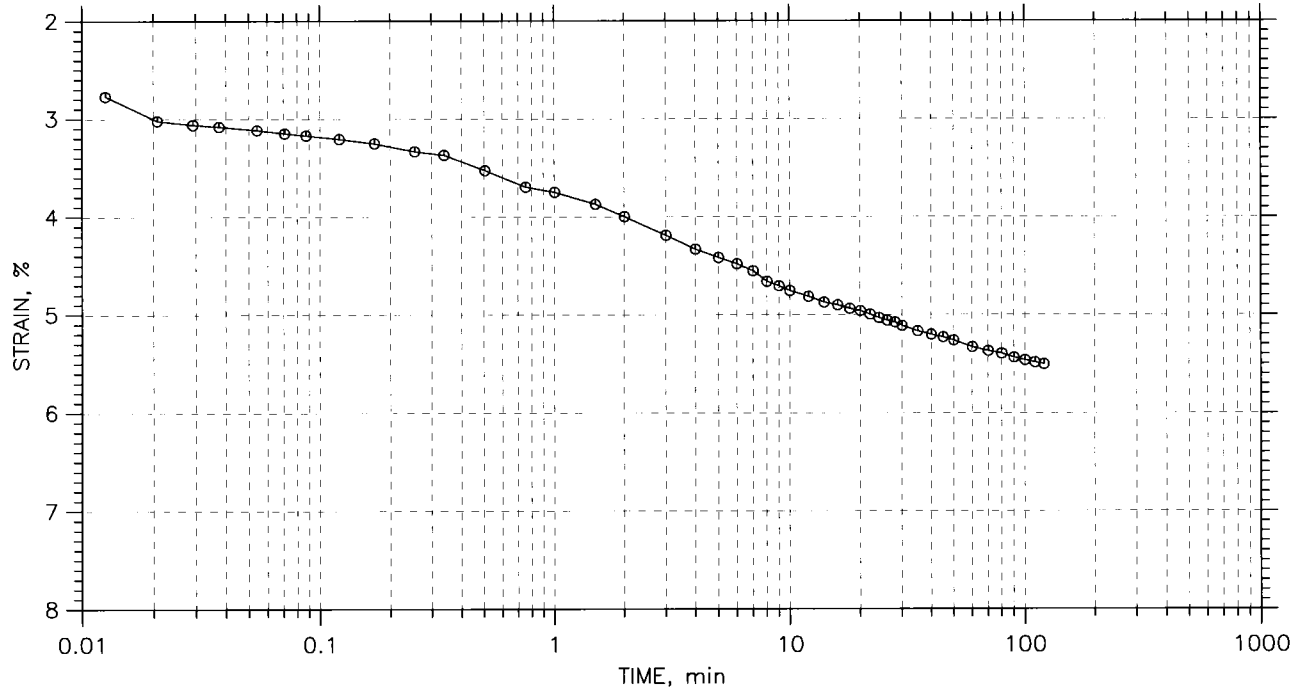
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 16

Stress: 4. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

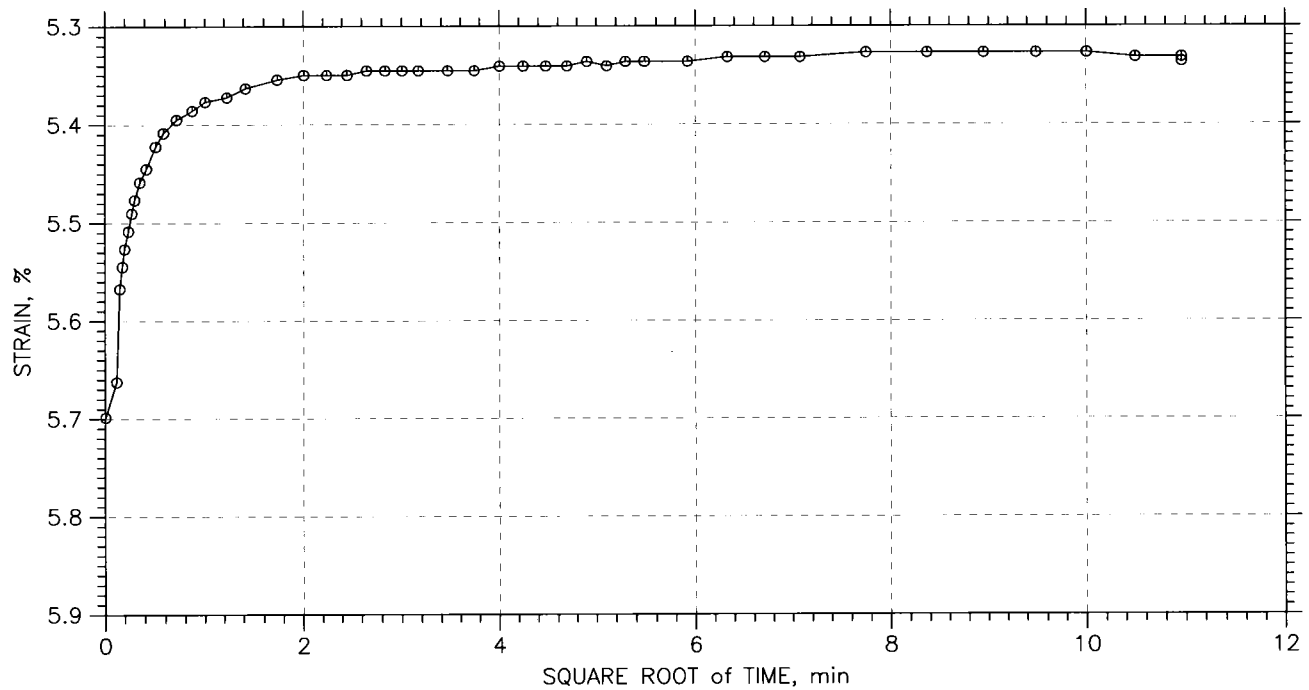
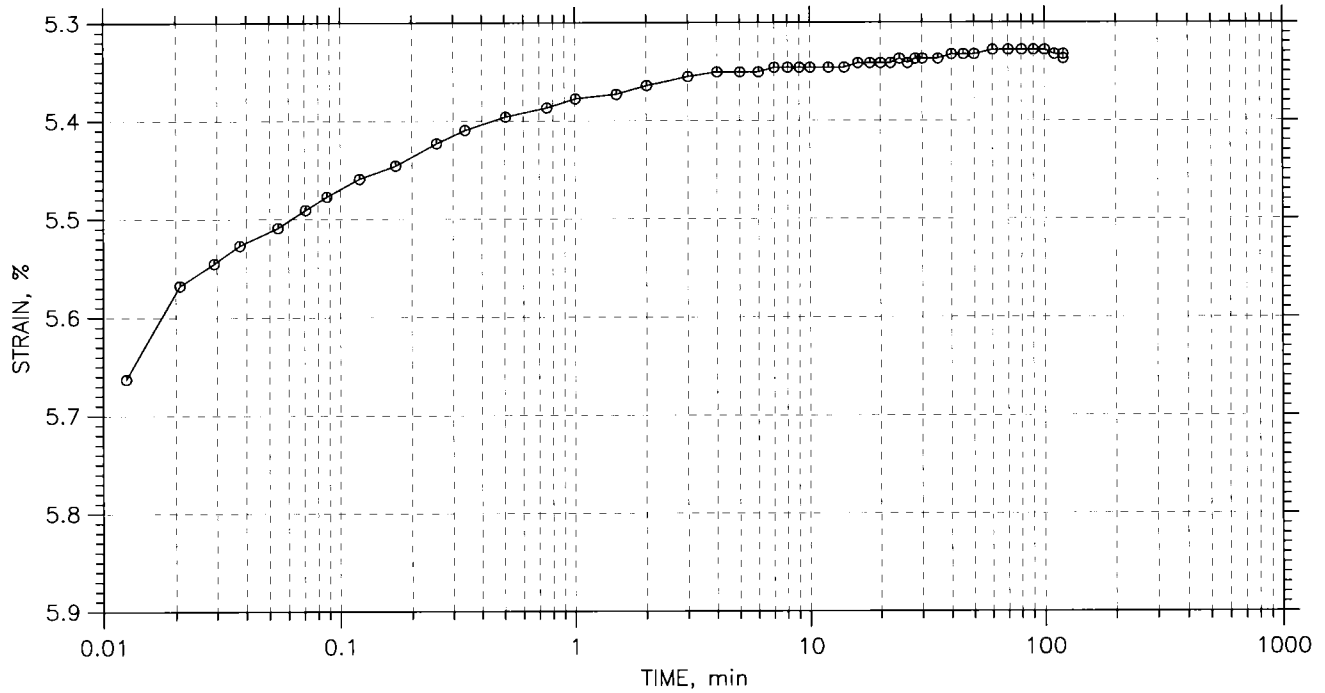
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 16

Stress: 2. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

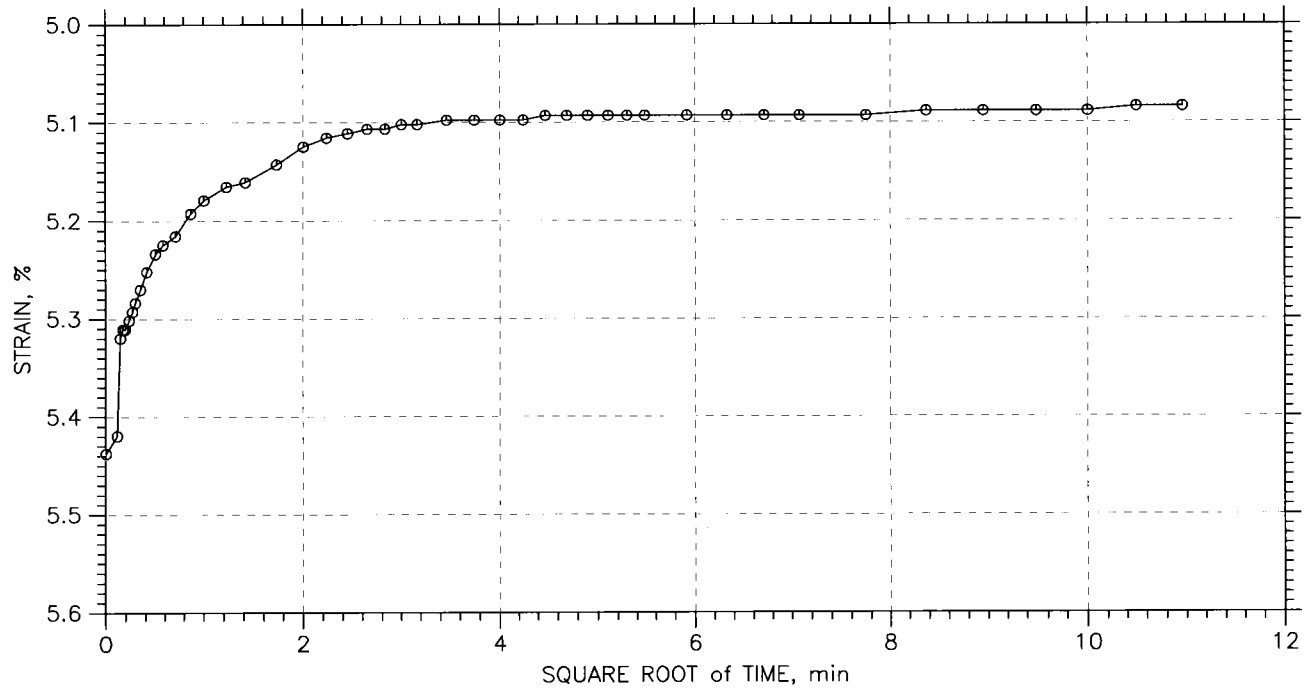
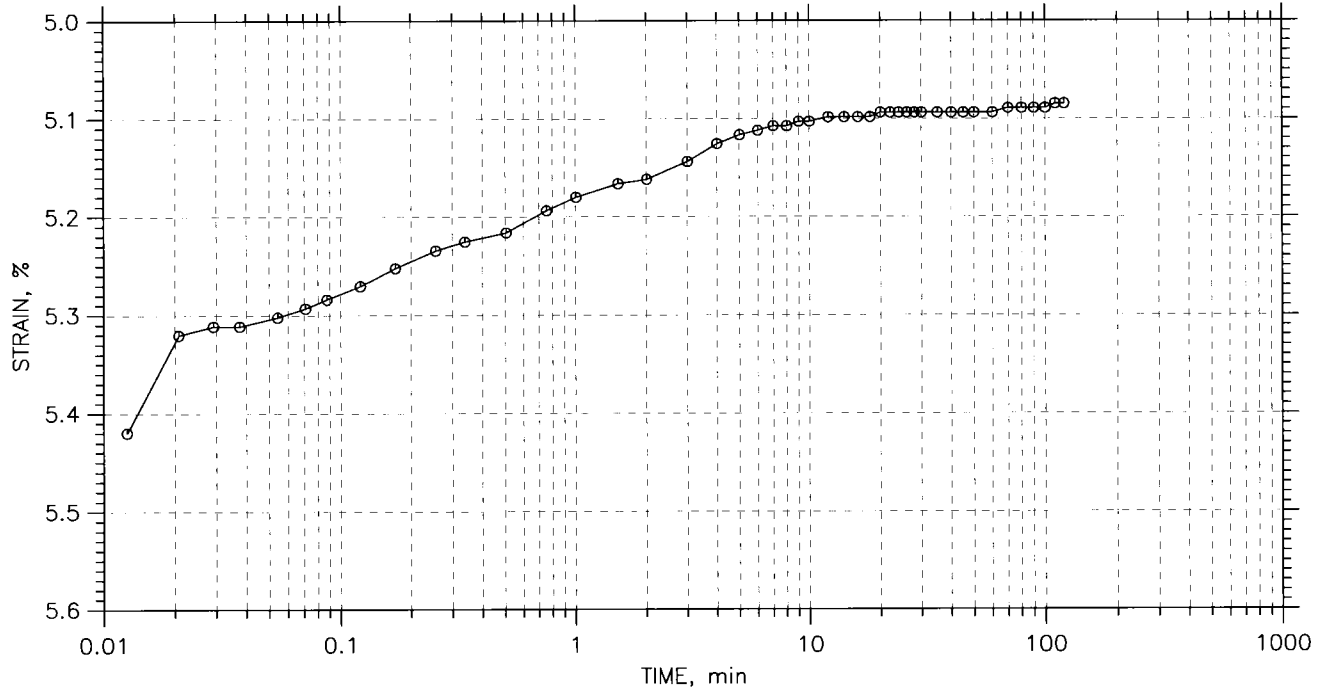
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 16

Stress: 1. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

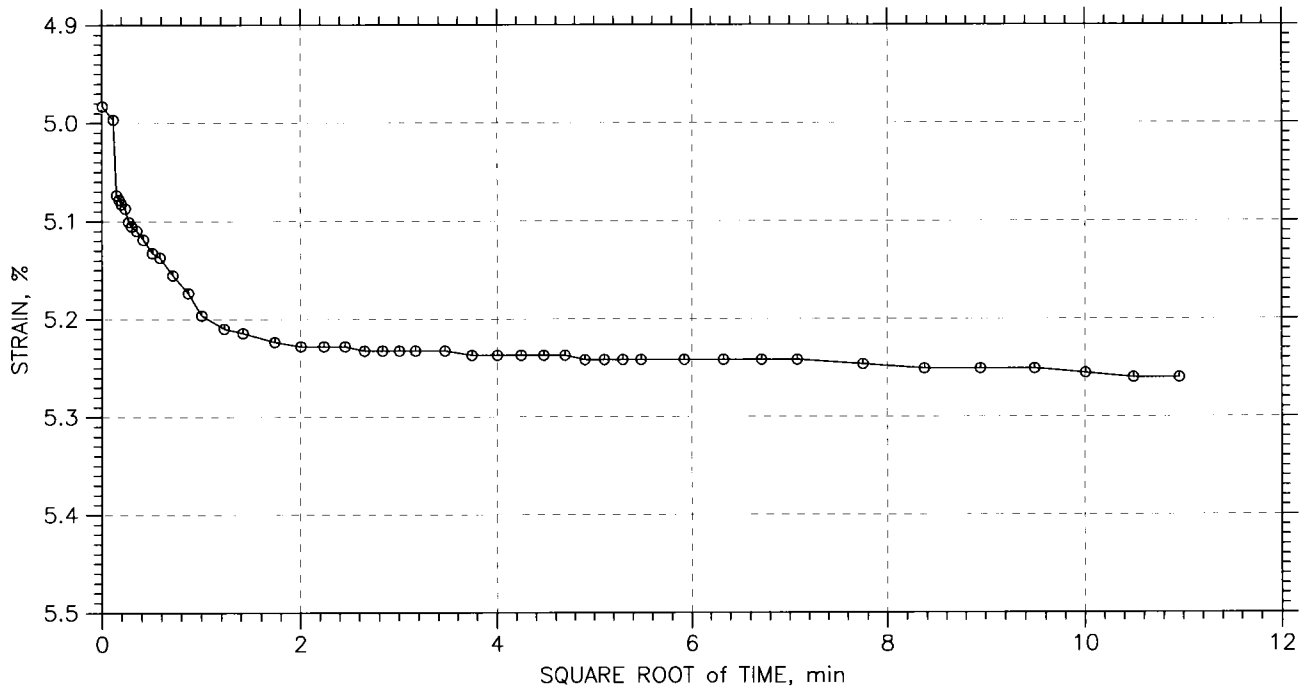
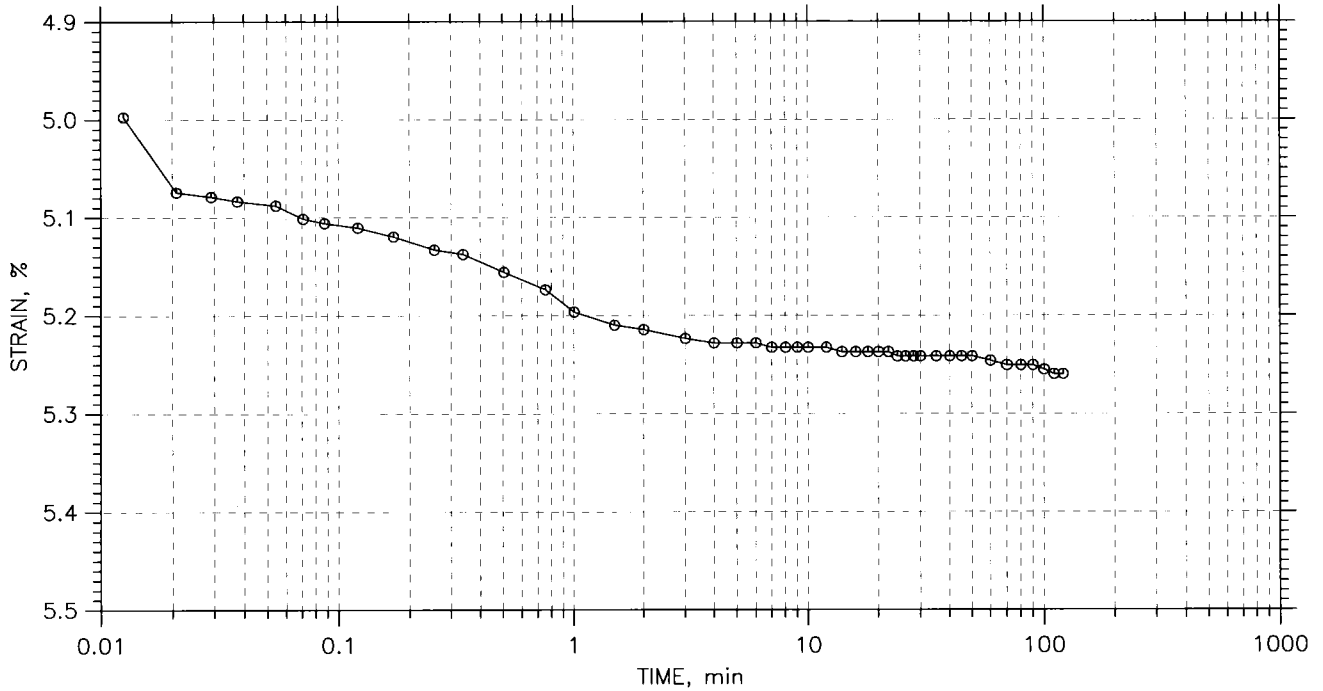
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 16

Stress: 2. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

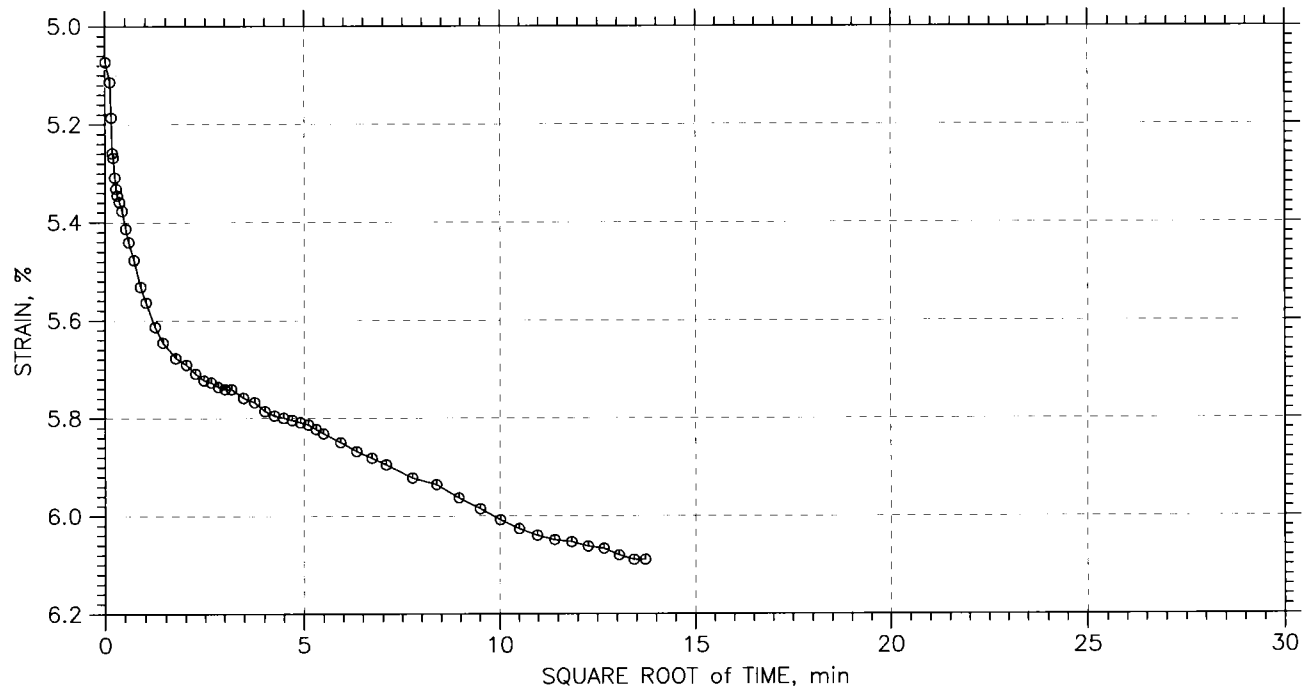
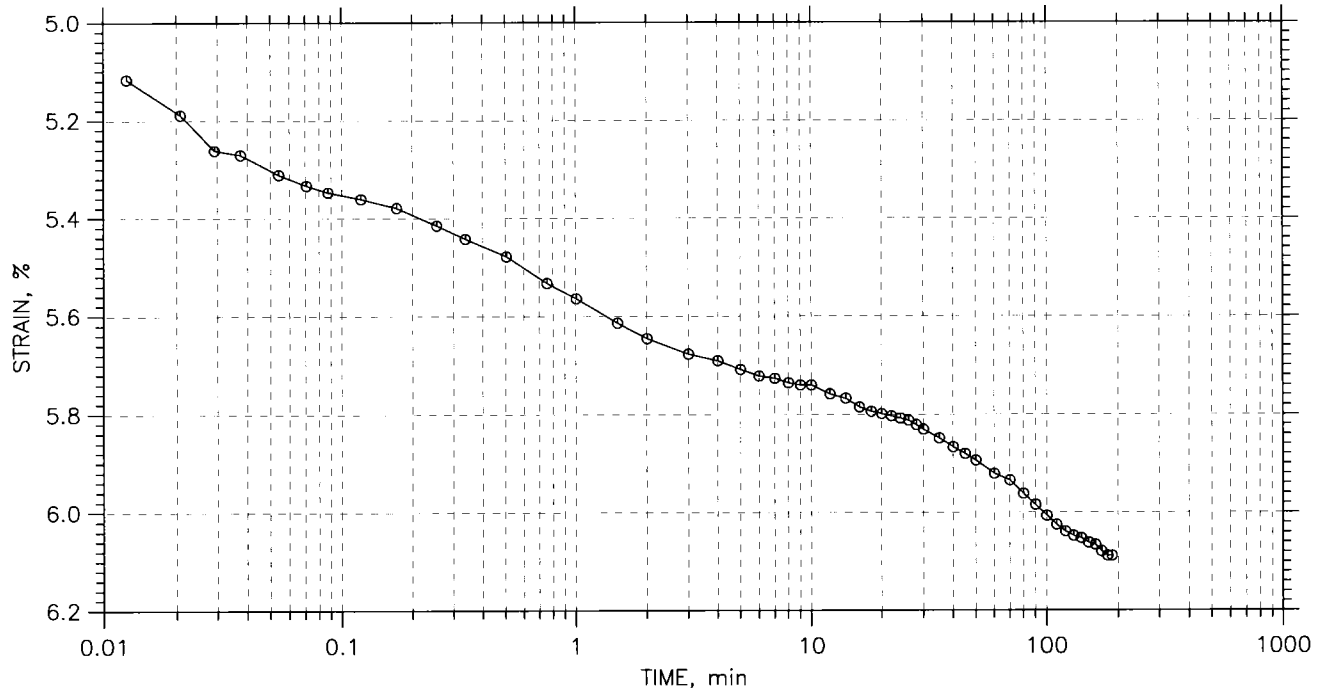
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 16

Stress: 4. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

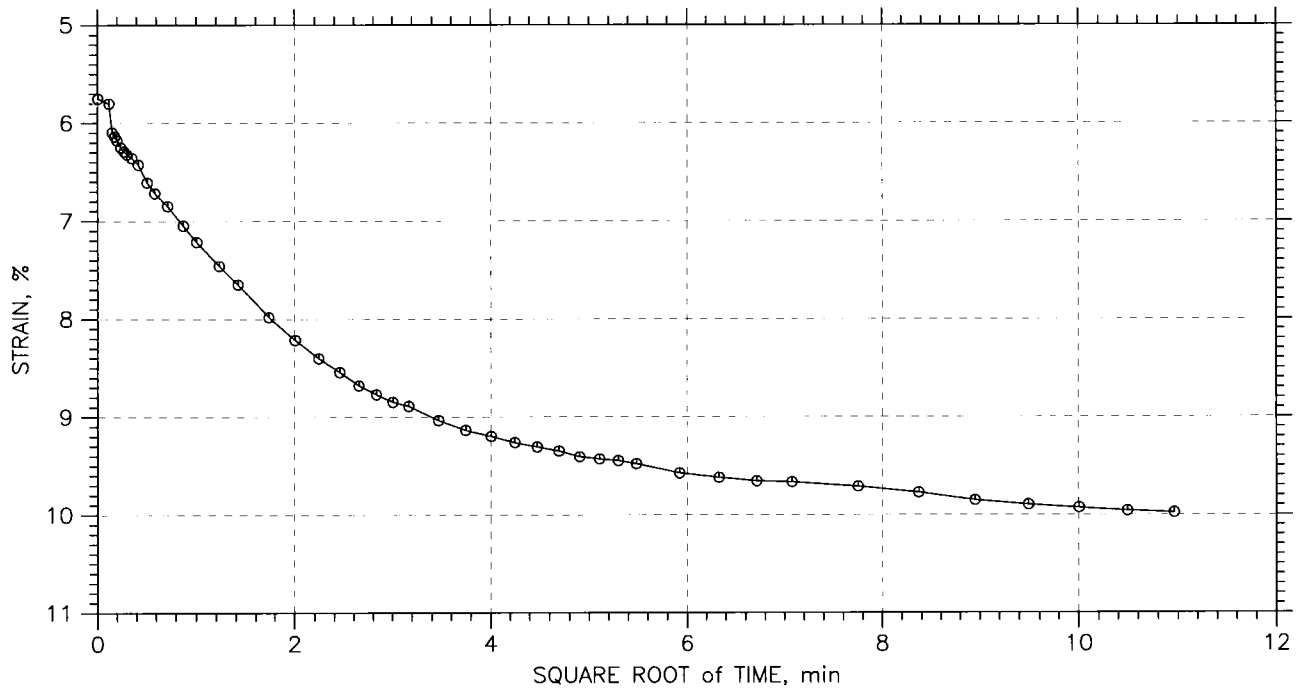
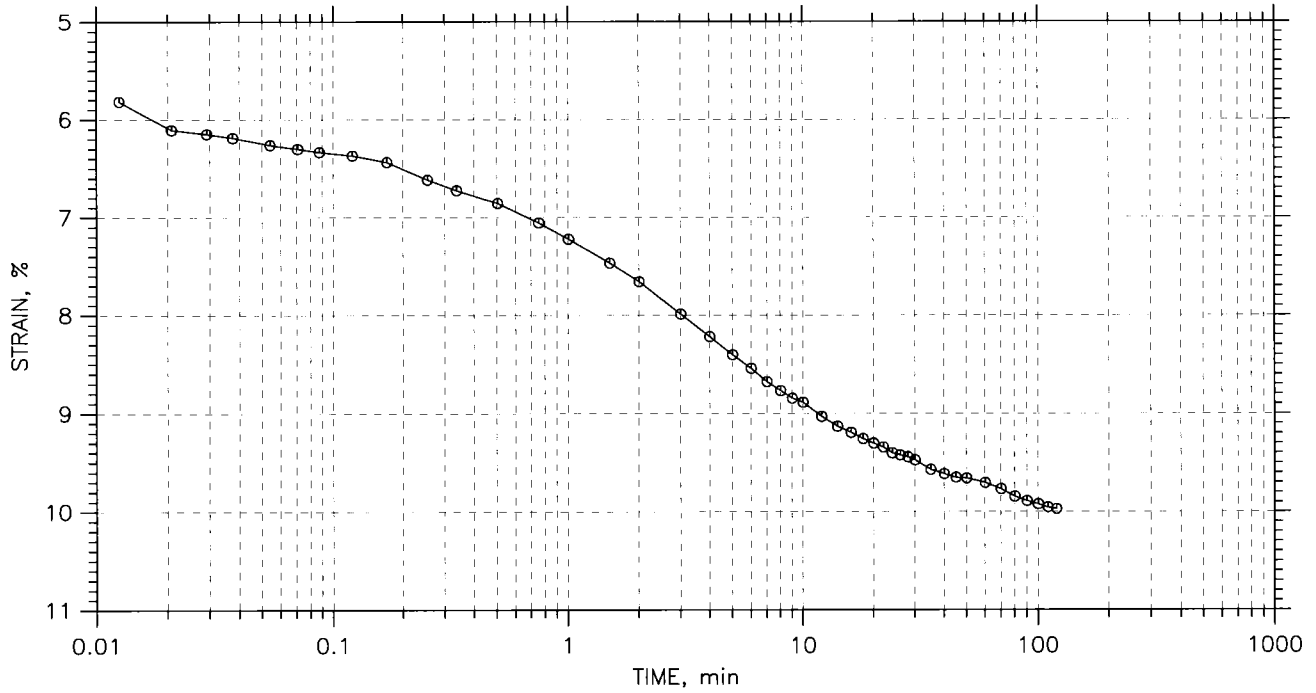
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 16

Stress: 8. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

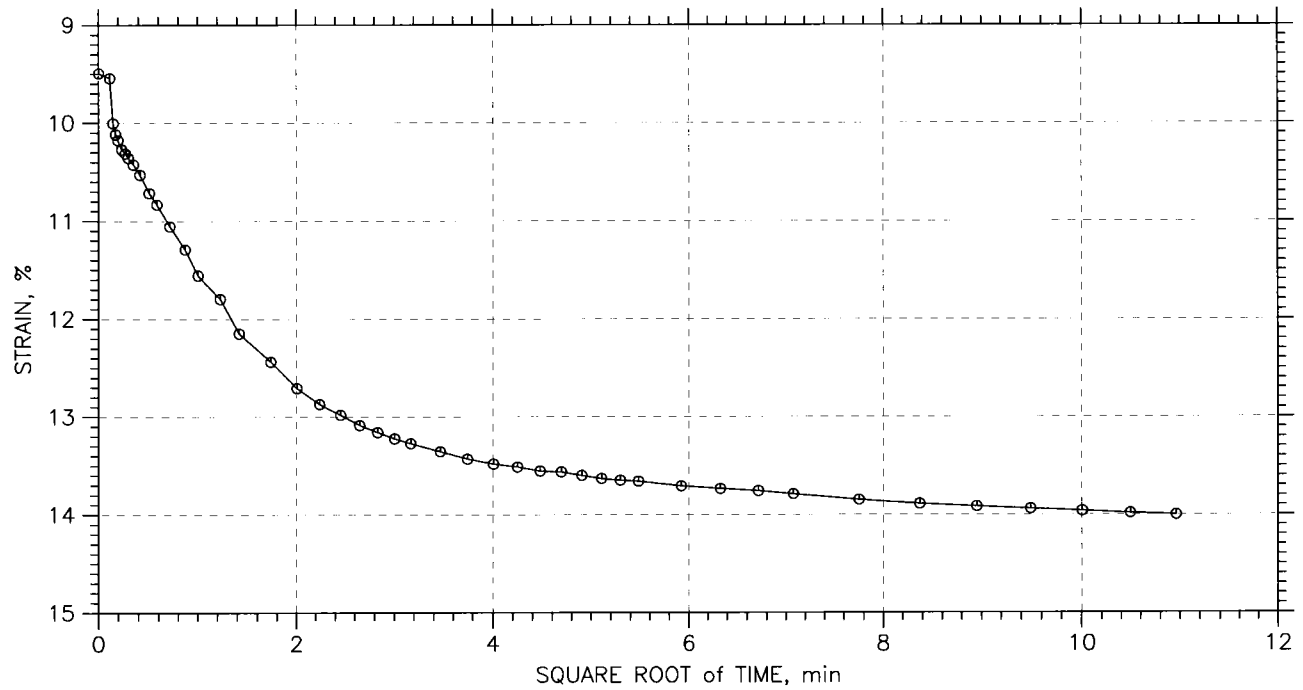
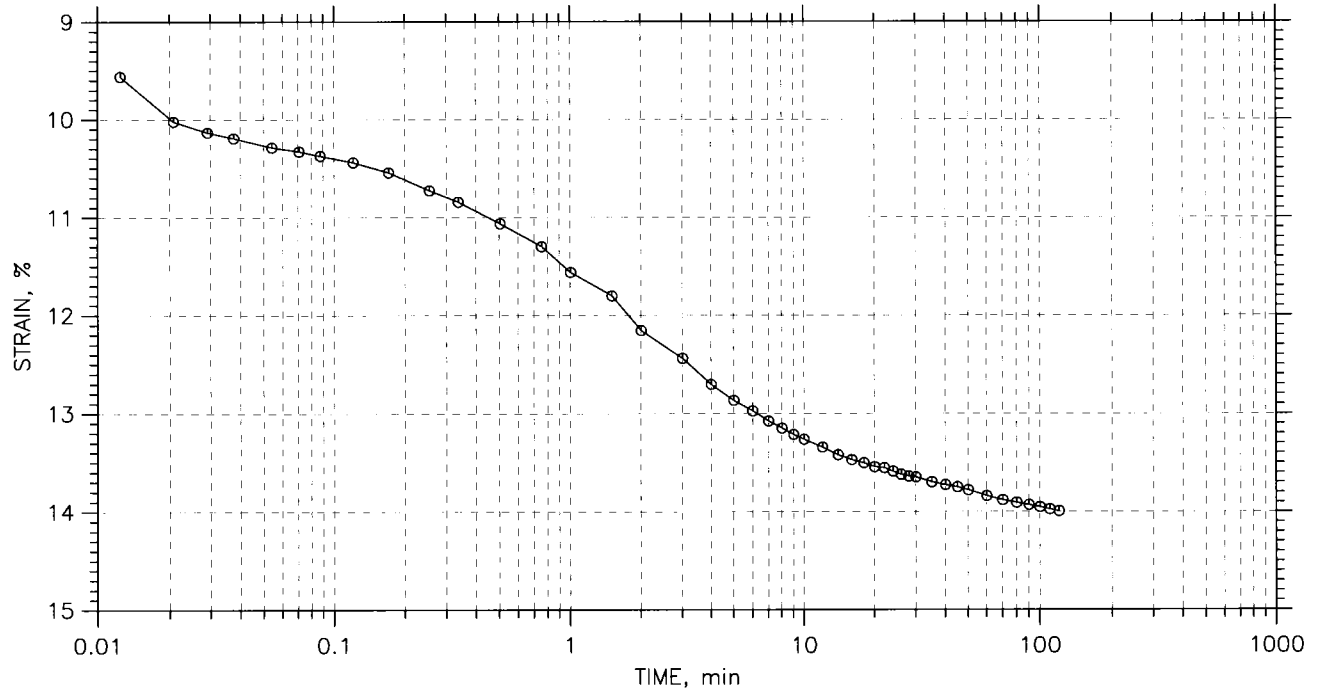
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 16

Stress: 16. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

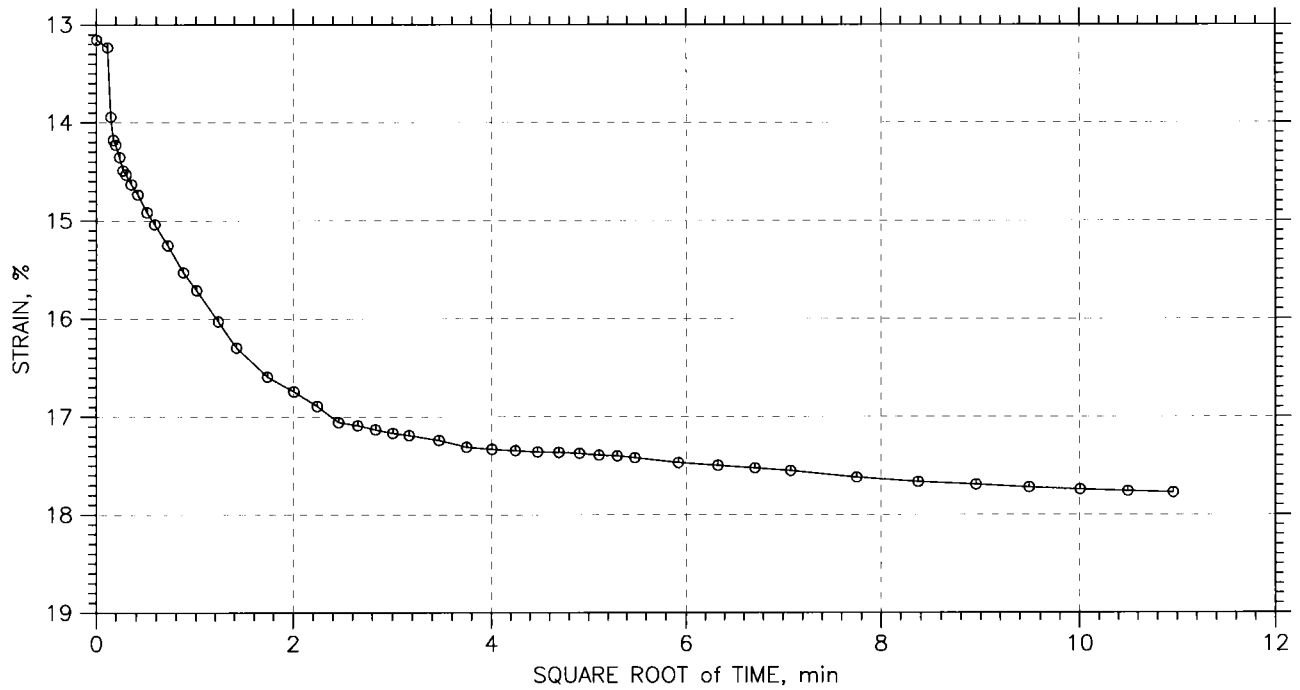
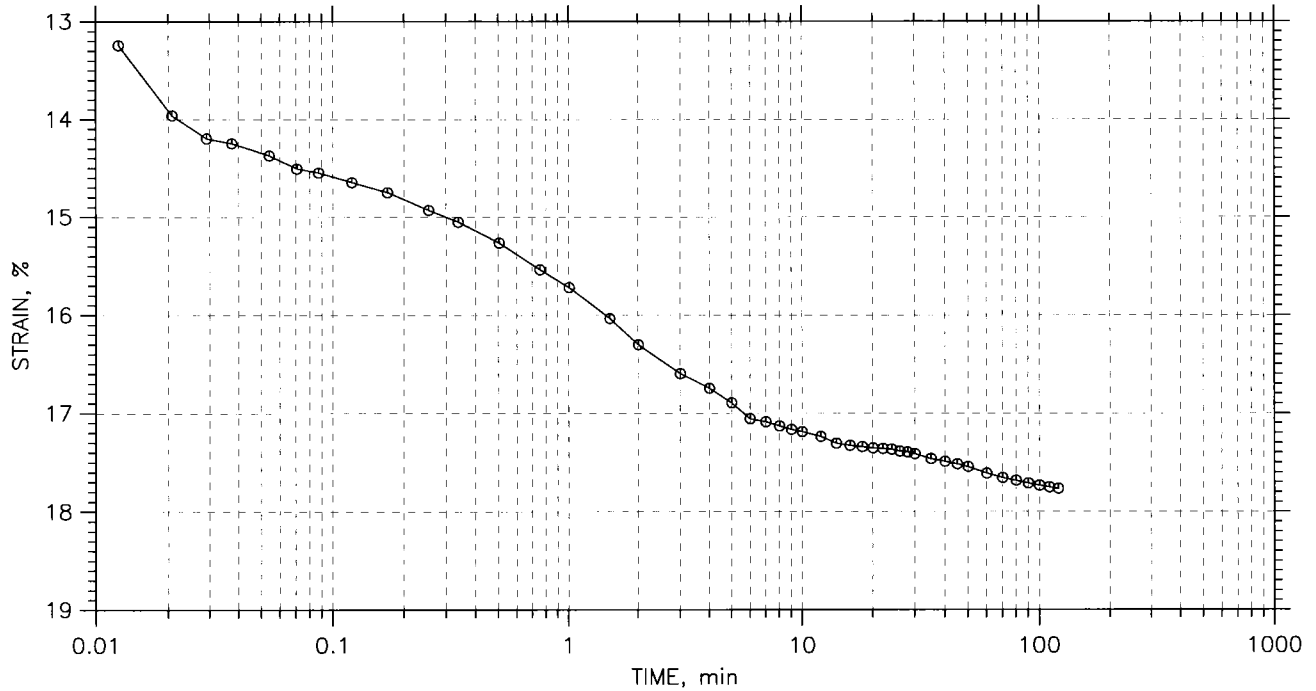
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 16

Stress: 32. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

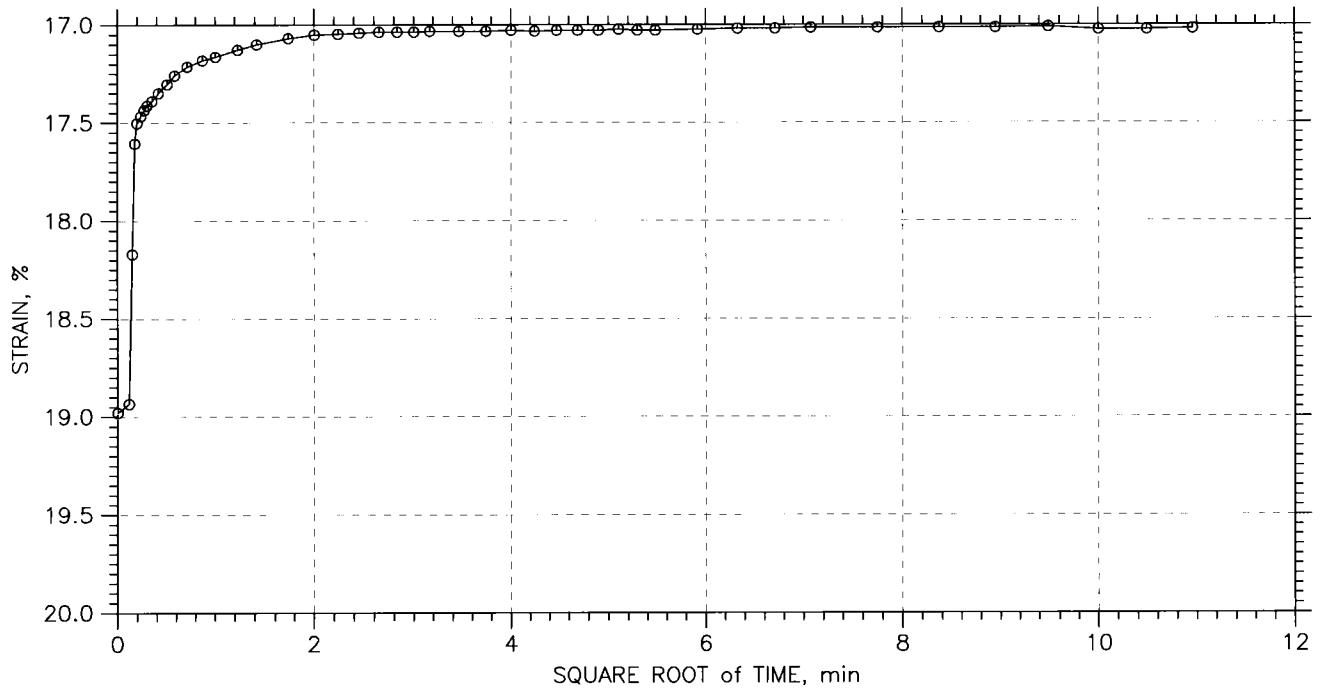
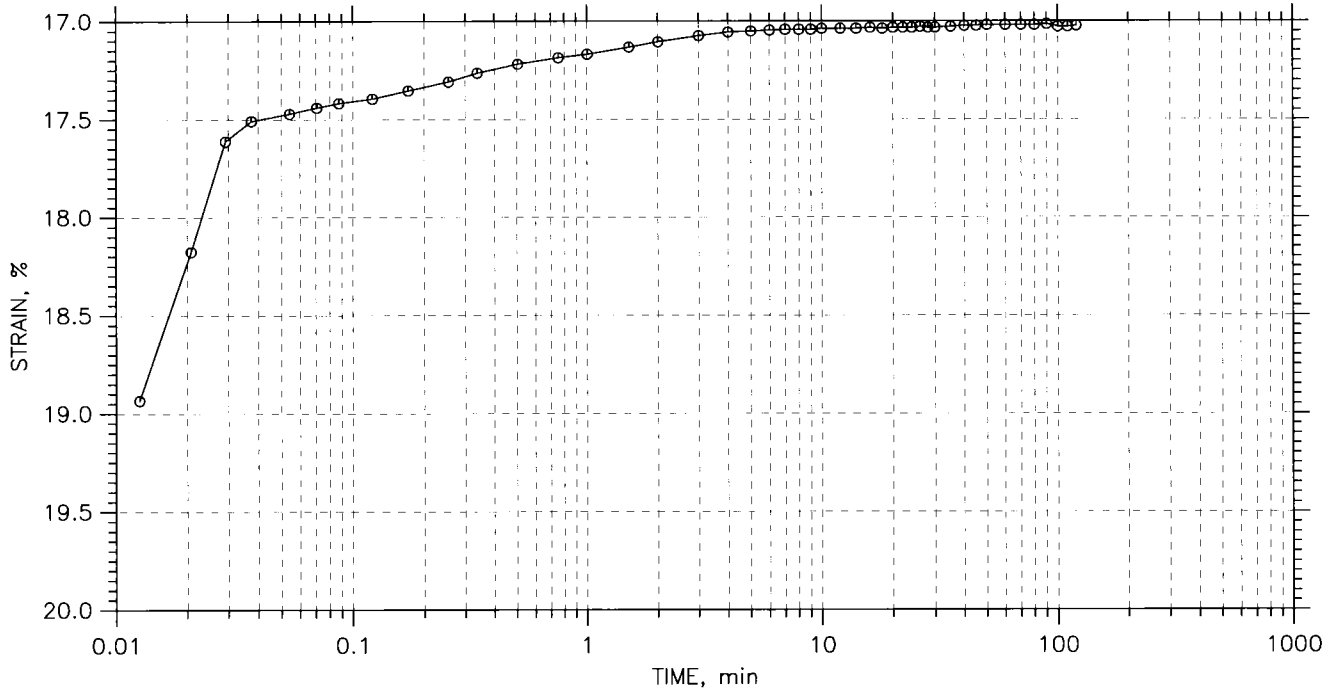
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 16

Stress: 8. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

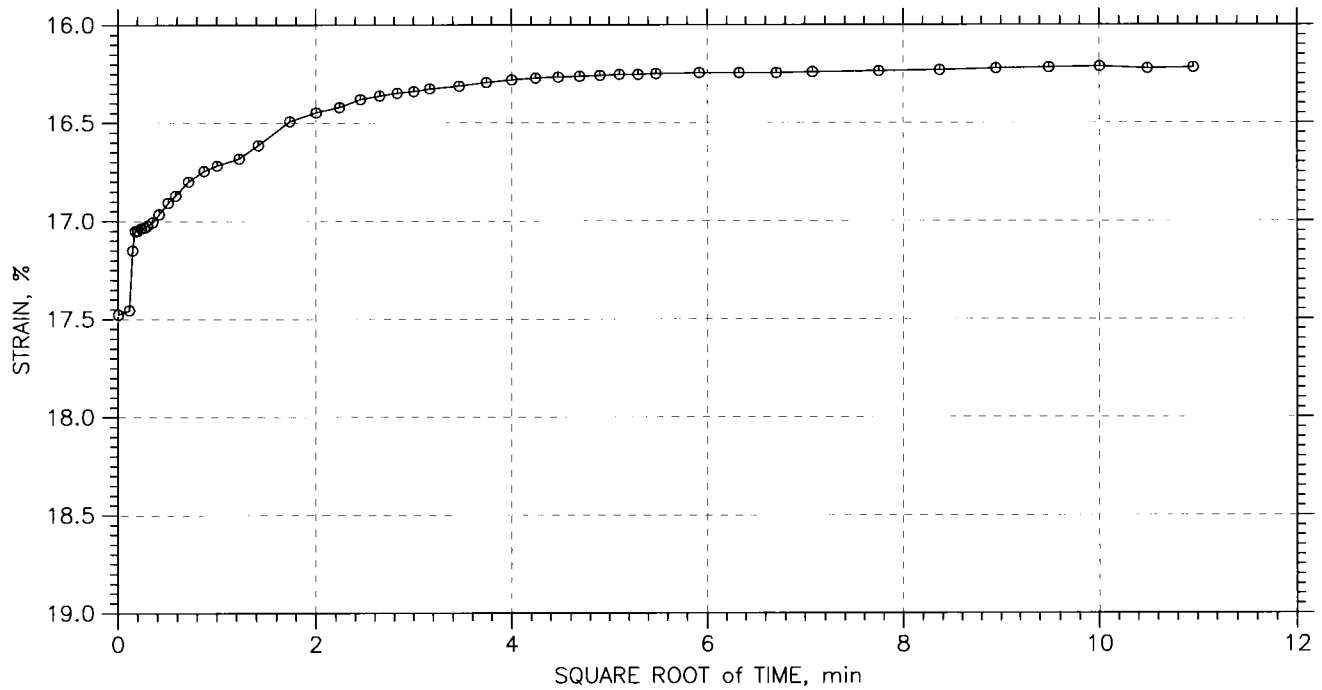
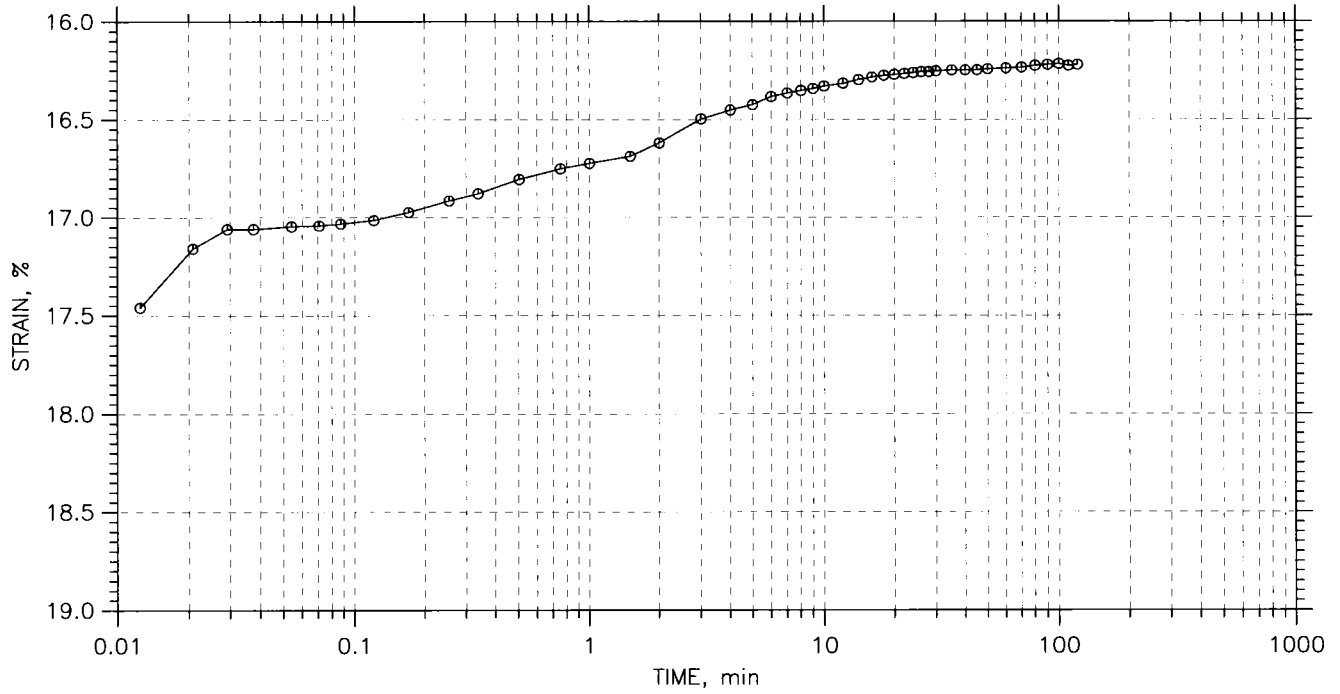
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 16

Stress: 2. tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		

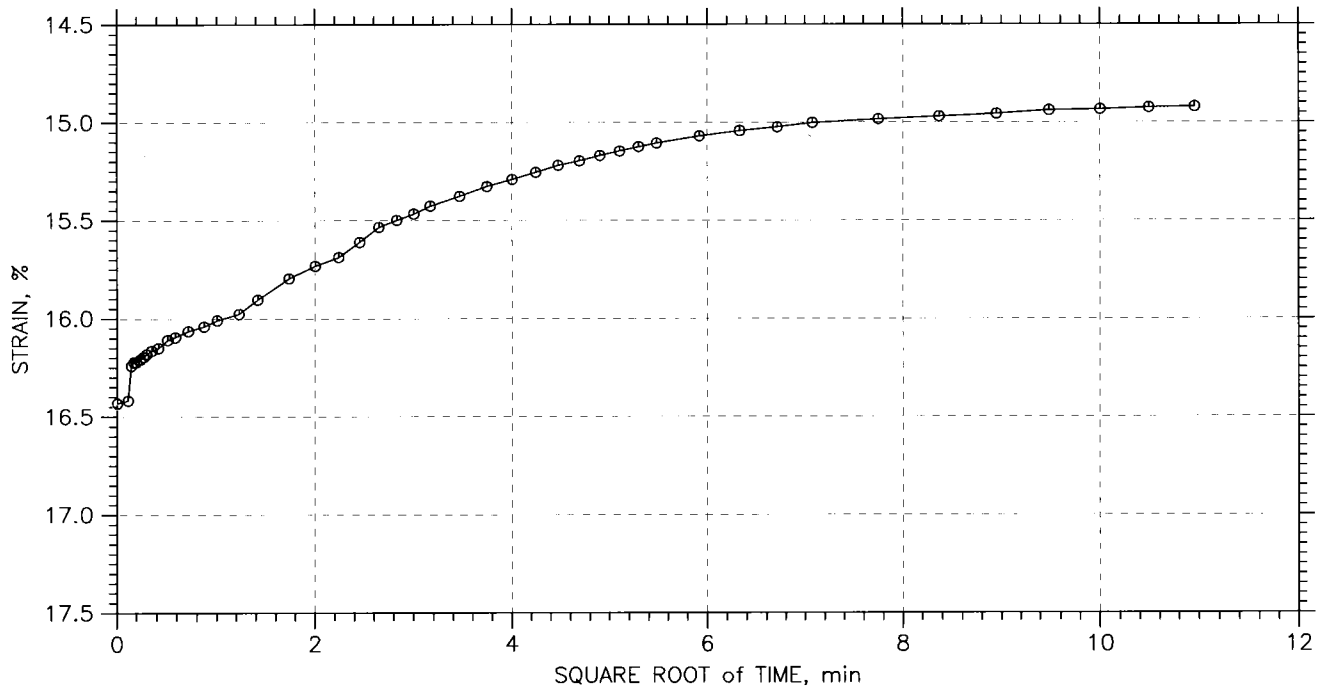
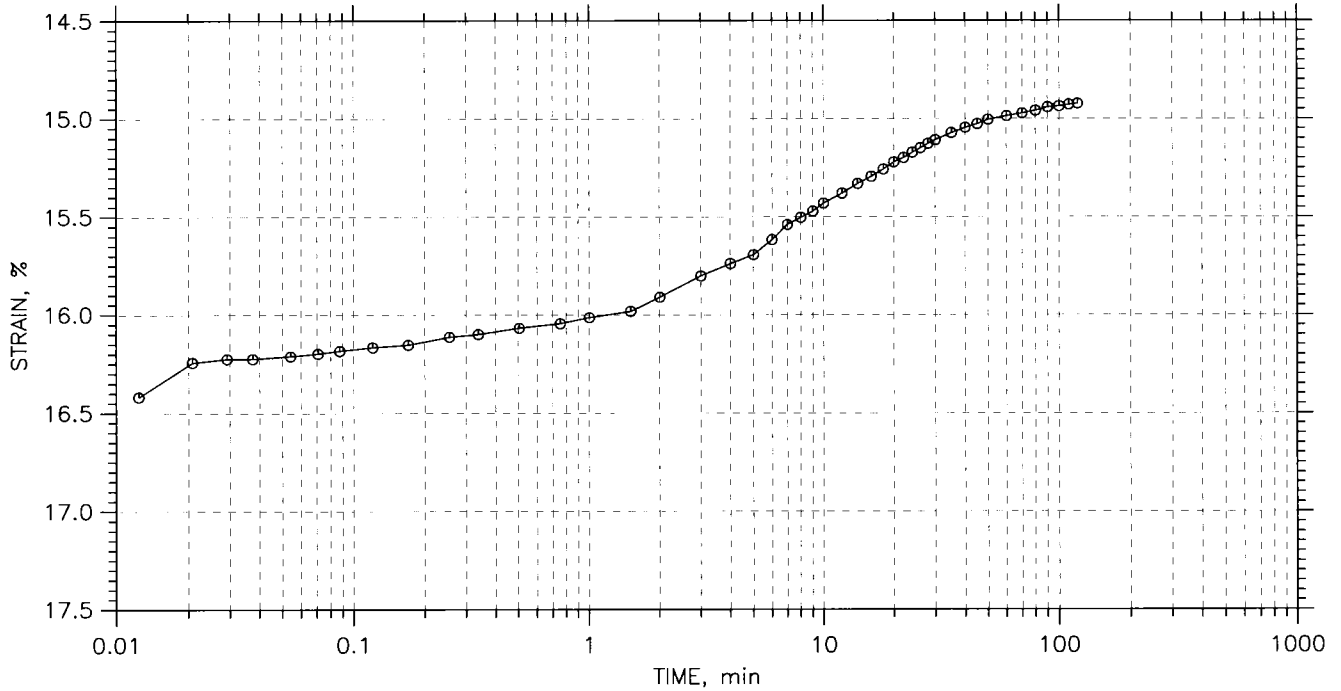
ONE-DIMENSIONAL CONSOLIDATION by ASTM D 2435-04 - Method B


CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 16

Stress: 0.5 tsf



	Project: International Marine	Location: Portland, ME	Project No.: GTX-10419
	Boring No.: HA-10-9	Tested By: md	Checked By: jdt
	Sample No.: U1	Test Date: 12/01/10	Depth: 35-37 ft
	Test No.: C-1	Sample Type: tube	Elevation: ---
	Description: Moist, dark olive gray		
	Remarks: System Y		