REPORT

October 12, 2012
12-0561 S

Geotechnical Engineering Services

Proposed Building Addition
Seaside Rehabilitation and Healthcare Center
850 Baxter Boulevard
Portland, Maine

PREPARED FOR:
First Atlantic Healthcare
Attention: Craig Coffin, Chief Operating Officer
100 Waterman Drive, 4th Floor
South Portland, Maine 04106

PREPARED BY:
S.W.COLE ENGINEERING, INC.
286 Portland Road
Gray, Maine 04039
207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing*
- *GeoEnvironmental Services*
- *Ecological Services*

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First Atlantic Healthcare
Attention: Craig Coffin, Chief Operating Officer
100 Waterman Drive, 4th Floor
South Portland, Maine 04106

Subject: Geotechnical Engineering Services
Proposed Building Addition
Seaside Rehabilitation and Healthcare Center
850 Baxter Boulevard
Portland, Maine

Dear Craig:

In accordance with our Proposal dated June 29, 2012, we have performed subsurface explorations for the Proposed Building Addition at Seaside Rehabilitation and Healthcare Center at 850 Baxter Boulevard in Portland, Maine. This report presents our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our work was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork associated with the proposed construction. Our scope of work included the making of six test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Proposed Construction

Based on information provided by Foreside Architects, we understand the project will include construction of a two-story patient wing on the southwest side of the existing facility. The building addition is proposed to primarily infill the southwest quadrant of the

"X" shaped building. The new building addition is to occupy a plan area of about 10,970 square feet and will be wood-framed with an on-grade floor slab approximately level with the existing building. We understand a finish floor elevation of about 15.85 feet (project datum) is proposed. Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Six test borings (B-101 through B-107, excluding B-103) were made at the site on August 30, 2012. Test boring B-103 was not performed due to lack of equipment access. The test borings were made by Great Works Test Boring, Inc. of Rollinsford, New Hampshire working under subcontract to S.W.COLE ENGINEERING, INC. The exploration locations were selected by Becker Structural Engineers and established in the field by S.W.COLE ENGINEERING, INC. utilizing taped measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1.

Logs of the explorations are attached as Sheets 2 through 10. The ground surface elevations shown on the logs were estimated based on topographic information shown on Sheet 1. A key to the notes and symbols used on the logs is attached as Sheet 11.

2.2 Testing

The test borings were made using a combination of solid stem auger and cased, wash-boring drilling techniques. The soils were sampled at 2 to 5-foot intervals using a split spoon sampler and Standard Penetration Test (SPT) methods. Vane shear testing (VST) and Shelby tube sampling were performed in softer clay soils. Penetrometer testing (PPT) was performed on samples of relatively stiff clay soils. SPT blow counts, VST and PPT results are shown on the logs.

Soil samples obtained from the test borings were returned to our laboratory for classification and testing. Laboratory testing includes one-dimensional consolidation testing, Atterberg Limits testing, and moisture content testing. Results of one-dimensional consolidation testing are attached as Sheets 12 and 13. Results of the Atterberg Limits and moisture content testing are shown on the logs.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The site is located at the existing Seaside Rehabilitation and Healthcare Center, located at 850 Baxter Boulevard in Portland, Maine. The proposed building addition is located on the southwest side of the existing building, in an area which is currently occupied by grassed lawn and a landscaped courtyard with several sitting walls and a fountain. We understand a paved driveway loop previously existed in this area. The site is relatively level and flat with existing topography varying from about elevation 13 to 15 feet.

Existing site conditions and approximate topography around the site boundary are shown on the "Exploration Location Plan" attached as Sheet 1.

3.2 Subsurface Conditions

The test borings generally encountered a soils profile consisting of uncontrolled fill overlying marine sands with organics (relic marsh deposits), overlying glaciomarine clays overlying refusal surfaces. The principle soil strata encountered are described below. Refer to the attached logs for more detailed descriptions of the subsurface findings at the exploration locations.

Uncontrolled Fill: Underlying a surficial layer of topsoil, the borings encountered a layer of loose to medium dense fill consisting of brown, black, and orange sand with varying portions of silt, gravel, and miscellaneous debris such as glass, wood, metal, ash, and coal. A petroleum-like odor was present in the fill at borings B-102 and B-104. The fill extended to depths varying from about 14 to 16.8 feet at the borings.

Relic Marsh Deposits: Underlying the fill, the borings encountered relic marsh deposits consisting of loose to medium dense gray and dark sand with organics, shells, silt and clay. Organics and shells were observed within this deposit. The relic marsh deposits extended to depths varying from about 20 to 23 feet at the borings.

Glaciomarine Clay: Underlying the relic marsh deposits, the borings encountered glaciomarine clays consisting of a relatively thin, stiff to hard brown and gray-brown silty clay extending to depths varying from about 28 to 30 feet, then transitioning to a relatively thick, soft to medium gray silty clay. The gray silty clay was penetrated at borings B-101,

B-105, and B-107 at depths of about 70 to 75 feet. VST performed on the gray silty clay indicated undrained shear strengths on the order of 0.7 to 1.0 ksf.

Refusal Surfaces: Rod probing performed at borings B-101, B-105 and B-107 encountered refusal surfaces (probable dense granular soils or bedrock) below the glaciomarine clay at depths of about 70 to 75 feet.

3.3 Groundwater Conditions

Saturated soils were encountered at the borings at depths varying from about 10 to 15 feet. Groundwater is likely perched in the fill and organics and on top of the relatively impermeable glaciomarine clays. Groundwater levels will fluctuate tidally, seasonally and following periods of precipitation and snowmelt.

3.4 Seismic and Frost Considerations

The 25-year Air Freezing Index for the Portland, Maine area is about 1,250-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the findings at the test borings, we interpret the site soils to correspond to Seismic Site Class E in accordance with 2009 IBC N-value and vane shear methods.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. We offer the following geotechnical considerations:

- The uncontrolled fills and relic marsh deposit with organics are unsuitable for support of the proposed building addition. We recommend the building, including the floor slab, derive support from a deep foundation system (timber or steel H-piles) which penetrates the fill and relic marsh deposits. Alternatively, ground improvement by grouted rammed aggregate piers (RAP) could be utilized across the building footprint to support spread footing foundations and a slab-on-grade floor.

- Perimeter foundation underdrains should be provided for the proposed building.

- The uncontrolled fills are unsuitable for backfill in the building area and for foundation backfill. Imported Structural Fill and Crushed Stone will be needed for construction.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. The soils that will be exposed will be subject to erosion. As much existing pavement and vegetation as possible should remain adjacent to the construction site to lessen the potential for erosion.

In general, subgrades will consist of loose to medium dense uncontrolled fill containing miscellaneous debris. Perched groundwater may be encountered, particularly in deeper excavations for foundations and utilities. We recommend that excavation to subgrade be performed with a smooth-edged bucket to lessen disturbance of subgrade soils. We recommend that foundation subgrades be overexcavated by 6-inches and backfilled with compacted Crushed Stone. The Crushed Stone will help provide a stable working mat and a drainage media for dewatering.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil and uncontrolled fills. Handling and disposal of excavation spoils must follow all local and federal regulations. The uncontrolled fills may have premium disposal costs due to uncharacterized contaminants.

Groundwater perched in the existing fills may be encountered in excavations. Ditching with sump and pump dewatering methods should be adequate to control groundwater in shallow excavations. The layer of Crushed Stone provided below foundations will provide a drainage media from which to sump and pump. Controlling groundwater to a depth of at least one foot below subgrade will help to stabilize subgrades.

Excavations must be properly shored and/or sloped according to OSHA Regulations to prevent sloughing and caving of the sidewalls during construction.

4.4 Foundations

We recommend the proposed building addition derive support from a deep foundation system (driven timber pile or steel H-pile) or from spread footing foundations bearing on ground improved by RAP's. The design of pile foundations or ground improvement should be performed as an engineered design-build submittal by a qualified geotechnical contractor. We offer the following considerations for a RAP ground improvement option and driven pile foundation options.

4.4.1 Grouted Rammed Aggregate Piers

RAP's consist of aggregate columns that densify the soil column through the uncontrolled fill and relic marsh deposit to the top of the stiff brown silty clay layer. Care must be taken not to extend RAP's through the stiffer brown silty clay into the softer gray silty clay. Due to the presence of organics in the relic marsh deposits, we recommend the RAP's be grouted through the zone of relic marsh deposits. The building addition may derive support from shallow spread footing foundations bearing on the RAP improved ground considering the follow parameters:

- Design Frost Depth = 4.5 feet
- Net Allowable Soil Bearing Pressure = 3 ksf or less
- Base Friction Factor = 0.40 (Concrete to Crushed Stone)
- Passive Lateral Earth Pressure Coefficient = 3.0
- At-Rest Lateral Earth Pressure Coefficient = 0.5
- Total Unit Weight of Backfill = 130 pcf (Structural Fill)
- Internal Friction Angle of Backfill = 30 degrees
- Seismic Soil Site Class = E (2009 IBC, N-value and Vane Shear methods)

We recommend at least 6-inches of Crushed Stone be provided below the spread footings after ground improvement is performed.

4.4.2 Driven Piles

Working pile capacities must consider the strength of the materials with adequate factors of safety against yielding, corrosion, and damage during driving. Details relative to pile capacity, section type, and installation should be developed by the geotechnical design-build contractor. Obstructions may be encountered in the uncontrolled fill encountered at the site. The contractor should be prepared to pre-auger or excavate and remove obstructions, as necessary, during pile installation.

Timber Piles: Based on the subsurface findings, timber piles driven through the uncontrolled fill and relic marsh deposits into the stiffer brown silty clay stratum may be used to support the building foundations and a structural floor slab. For 8-inch tip, natural taper pressure-treated timber piles driven 2-feet into the stiffer brown silty clay, we estimate an allowable capacity of 6 kips per pile. Based on the findings at the borings, timber pile lengths on the order of 20 to 25 feet should be anticipated. Care must be taken not to drive timber piles more than 2 feet into the stiffer brown silty clay.

Steel H-Piles: Based on the subsurface findings, steel H-piles driven to end bearing on bedrock may be used to support the building foundations and a structural floor slab. We recommend the following H-pile sizes and allowable axial compressive capacities:

RECOMMENDED STEEL H-PILE CAPACITIES	
50 ksi Steel H-Pile Section	Allowable Axial Compressive Capacity (kips)
HP 8X36	75
HP 10X42	80
HP 10X57	150
Notes: 1. Piles driven to practical refusal on hard, sound bedrock with cast driving tips and (1/8-inch) corrosion allowance 2. Capacities greater than 80 kips require pile load test	

Pile Spacing: Piles should be spaced a minimum center-to-center distance of at least 3 pile diameters, but no less than 30 inches. Piles in groups should be driven from the interior outward to help preclude excessively hard driving conditions of the interior piles due to soil densification.

Lateral Resistance: We recommend that lateral loads be resisted by passive earth pressures acting on the grade beams and pile caps. Passive lateral resistance acting on grade beams and pile caps backfilled with compacted Structural Fill should consider a total unit weight of granular backfill of 130 pcf, an angle of internal friction of 30 degrees with an ultimate passive lateral earth pressure coefficient of 3.0. Additional resistance to lateral loads can be mobilized along the pile shafts, if needed. S.W.COLE

ENGINEERING, INC. can assist with lateral pile capacities, as deemed necessary by the structural engineer.

Pile Load Testing: For piles with a capacity over 40 tons (80 kips), we recommend the contractor coordinate a test pile program including monitoring of several piles with a Pile Driving Analyzer (PDA) to determine pile and driving equipment compatibility as well as to define the "set" criteria and allowable pile capacity. The test pile program should include PDA monitoring of the test piles during re-strikes in order to assess pile capacity and driving resistance after pore water pressures have relaxes. The pile driving contractor should submit a WEAP analysis and information relative to pile driving equipment prior to beginning driving. S.W.COLE ENGINEERING, INC. should be retained to observe pile driving.

4.5 Settlement Estimate

We have made an analysis of the post-construction consolidation of the underlying compressible gray silty clay beneath the proposed building. Our analysis has been based upon the following:

1. The subsurface information obtained at the borings
2. The existing grading information shown on Sheet 1
3. A finish floor elevation of 15.85 feet
4. The consolidation information from Borings B-101 and B-105
5. Estimated floor loads of 150 psf or less and column loads of 60 kips or less

Based on the above, we estimate that post-construction settlement due to consolidation of the gray silty clay may approach 1-inch of total settlement and ¾-inch of differential settlement. The project owner and designers should review estimated settlement to determine if it is within tolerable limits and adjust site grading and utilities to offset estimated post-construction settlement.

4.6 Foundation Drainage

We recommend an underdrain system be installed near footing grade around the perimeter footings. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe enveloped in 12-inches of Crushed Stone, fully wrapped in non-woven geotextile filter fabric. The underdrain pipe must be connected to a positive

gravity outlet protected from freezing, clogging and backflow. We recommend backflow prevents be installed for the underdrain outlet.

Exterior foundation backfill should be sealed with a surficial layer of clayey or loamy soil in areas that are not paved or occupied by entrance slabs. This is to reduce direct surface water infiltration into the backfill. Surface grades should be sloped away from the building for positive surface water drainage. General underdrain details are shown on Sheet 14.

4.7 Slab-On-Grade Floors

We recommend on-grade concrete floors be supported on a minimum of 24 inches of compacted Structural Fill overlying RAP improved subgrades. On-grade floor slabs founded on properly prepared subgrades may be designed considering a modulus of subgrade reaction of 150 pci. If a pile supported structural floor slab option is selected, we recommend at least 12 inches of compacted Structural Fill be provided below the slab. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material shall be placed according to the manufacturer's recommended method, including the taping and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.8 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to buildings must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances.

We recommend that clean, non-frost susceptible sand and gravel meeting the requirements of Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slabs and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement subbase gravel at a 3H:1V or flatter slope. General details of this frost transition zone are attached as Sheet 14.

4.9 Backfill and Compaction

Based on the subsurface findings, the existing fill soils and native soils are unsuitable for reuse in the building area. We recommend the following imported fill and backfill materials.

Structural Fill: Fill to raise building grades, backfill for foundations, and base gravel below floor slabs should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below.

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 5

Crushed Stone: Crushed Stone, used beneath foundations and for underdrain aggregate, should meet the gradation requirements of MDOT Standard Specifications 703.22 “Underdrain Backfill Type C”.

MDOT 703.22 Underdrain Backfill Type C – Crushed Stone	
Sieve Size	**Percent Finer by Weight**
1 inch	100
¾ inch	90-100
⅜ inch	0-75
#4	0-25
#10	0-5

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that fill and backfill in building areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted in loose lifts not exceeding 12 inches.

4.10 Weather Considerations

Earthwork and foundation construction activities should be limited during wet and freezing weather. The contractor should anticipate the need to moisture condition fills in order to facilitate compaction. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.11 Design Review and Construction Testing

S.W.COLE ENGINEERING, INC. should be retained to review the final design and specifications to determine that our earthwork and foundation recommendations have been properly interpreted and implemented.

A soils and concrete testing program should also be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE ENGINEERING, INC. is available to observe RAP and driven pile installations for foundations as well as testing services for soils, concrete, asphalt, steel and spray-applied fireproofing construction materials.

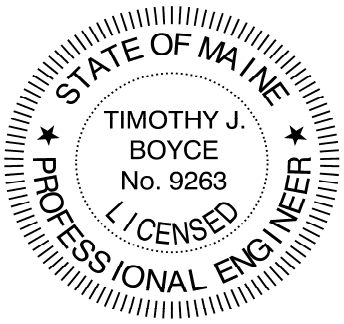
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S.W.COLE ENGINEERING, INC.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb

Attachment A
Limitations

This report has been prepared for the exclusive use of First Atlantic Healthcare for specific application to the Proposed Building Addition at Seaside Rehabilitation and Healthcare Center located at 850 Baxter Boulevard in Portland, Maine. S.W.COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

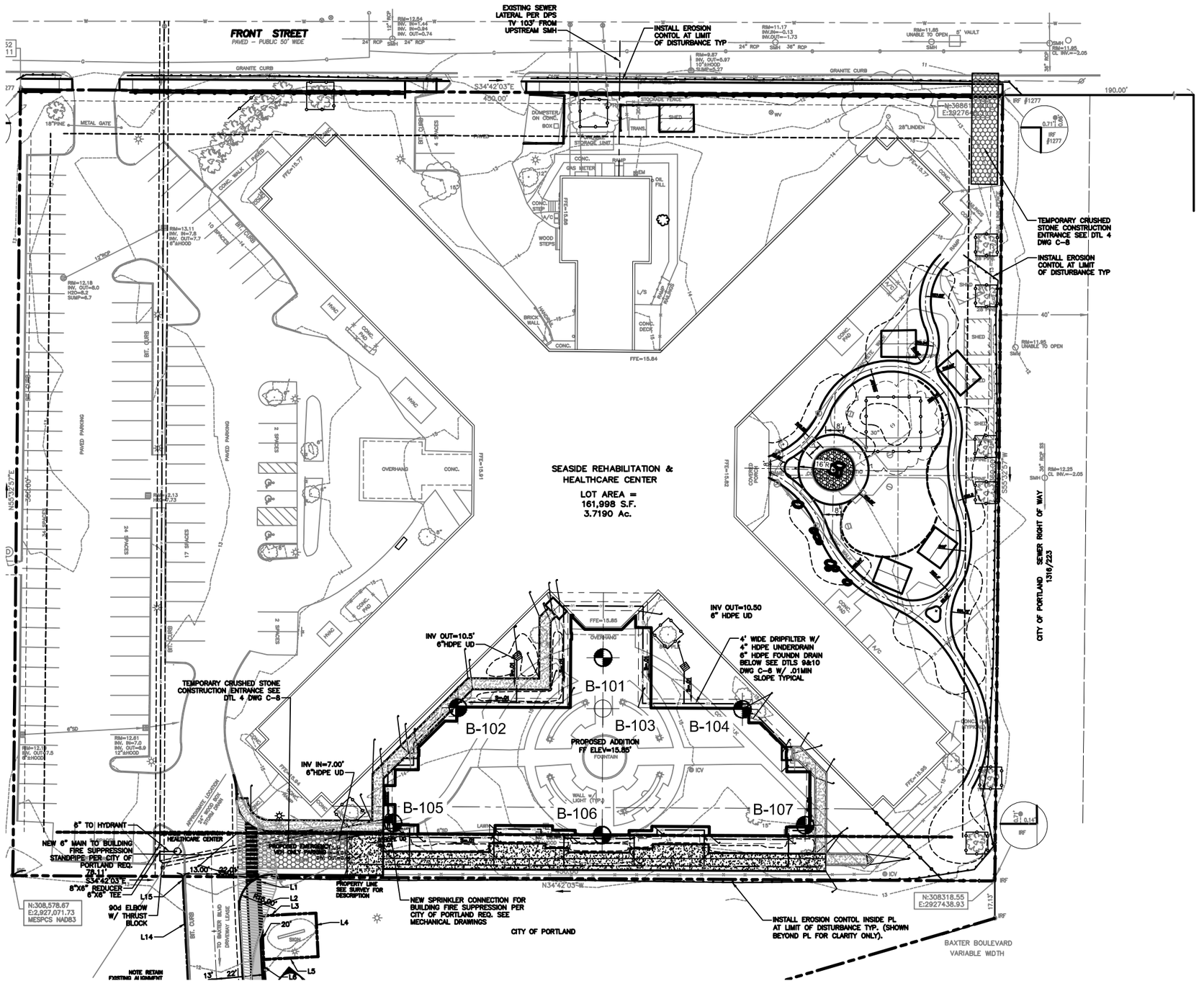
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE ENGINEERING, INC.'s scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE ENGINEERING, INC. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE ENGINEERING, INC.



LEGEND:

- APPROXIMATE TEST BORING LOCATION
- TEST BORING LOCATION NOT DRILLED DUE TO ACCESS

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE ENTITLED "GRADING, DRAINAGE & EROSION CONTROL PLAN", PREPARED BY STANTEC CONSULTING SERVICES INC., DATED 07/17/2012.
2. THE TEST BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S.W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 25' 50' 100' 150' 200'

SCALE IN FEET

S.W.COLE ENGINEERING, INC.

FIRST ATLANTIC HEALTHCARE

EXPLORATION LOCATION PLAN

PROPOSED BUILDING ADDITION
SEASIDE REHABILITATION AND HEALTHCARE CENTER
850 BAXTER BOULEVARD
PORTLAND, MAINE

Job No.	12-0561 S	Scale	1" = 50'
Date :	08/30/2012	Sheet	1

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-101**
SHEET: 1 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/20/2012
DATE FINISH: 8/20/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	TOPSOIL
	1D	24"	15"	2.0'	1	3	3	6		~LOOSE BECOMING…
	2D	24"	12"	4.0'	3	2	23	14		BROWN SILTY GRAVELLY SAND (FILL) …MEDIUM DENSE BECOMING…
	3D	24"	15"	7.0'	2	2	1	1	7.0'	…LOOSE~
	4D	24"	12"	9.0'	1	1	1 FOR 12"			~LOOSE~
	5D	24"	8"	12.0'	2	3	5	4		BROWN / BLACK SILTY SAND SOME GRAVEL WITH WOOD AND METAL (FILL)
NW										
	6D	24"	12"	14.0'	3	3	3	3	15.0'	
	7D	24"	18"	17.0'	7	7	3	11		~MEDIUM DENSE~ GRAY SILTY SAND WITH MARSH ORGANICS AND SHELLS (MARSH DEPOSIT)
OPEN									20.6'	
HOLE	8D	24"	22"	22.0'	1	6	13	17		~HARD BECOMING… q_p = 9.0 KSF OLIVE BROWN SILTY CLAY WITH OCCASIONAL FINE SAND PARTINGS
	9D	24"	20"	27.0'	5	6	12	14		…VERY STIFF~ q_p = 5.0 TO 6.0 KSF
									29.0'	
	1S	24"	0"	32.0'	PISTON SAMPLER					NO TUBE RECOVERY GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS
	2S	24"	22"	37.0'	PISTON SAMPLER					
	1V			37.7'	3.5 X 7" VANE					S_v = 0.88 KSF / 0.17 KSF ~MEDIUM~
	1V'			38.4'	3.5 X 7" VANE				38.4'	S_v = 0.92 KSF / 0.16 KSF BEGIN ROD PROBE @ 38.4'
										HYDRAULIC PUSH ROD PROBE 38.4'-71.5' - PROBABLE GRAY SILTY CLAY

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-101**
SHEET: 2 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/21/2012
DATE FINISH: 8/21/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										HYDRAULIC PUSH ROD PROBE 38.4'-71.5'
										PROBABLE GRAY SILTY CLAY - ADVANCE BY ROD PROBE
									71.6'	BECOMING DENSER @ 71.5' - SWITCH TO 140 LB. HAMMER: 25 BLOWS FOR 1"
										ROD PROBE REFUSAL @ 71.6'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-101**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-102**
SHEET: 1 OF 1
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/21/2012
DATE FINISH: 8/21/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	TOPSOIL
	1D	24"	15"	2.0'	1	2	7	5	2.0'	BROWN GRAVELLY SILTY SAND (FILL) ~LOOSE~
	2D	24"	12"	7.0'	2	1	2	2		BLACK / ORANGE / BROWN GRAVELLY SILTY SAND WITH GLASS AND PETROLEUM ODOR (FILL) ~LOOSE~
	3D	24"	5"	12.0'	2	2	2	2		
NW									14.0'	
	4D	24"	16"	17.0'	8	12	3	2		GRAY SAND SOME SILT WITH SHELLS (MARSH DEPOSIT) ~MEDIUM DENSE~
									20.0'	
OPEN HOLE	5D	24"	22"	22.0'	5	8	12	15		~HARD BECOMING… q_p = 9.0 KSF
	6D	24"	22"	27.0'	3	5	5	5		OLIVE BROWN SILTY CLAY WITH FINE SAND AND GRAY SILT SEAMS …STIFF~ q_p = 2.5 KSF
									29.0'	
	7D	24"	24"	32.0'	W O R	W O H / 18"			32.0'	GRAY SILTY CLAY ~SOFT~
										BOTTOM OF EXPLORATION AT 32.0'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-102**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-104**
SHEET: 1 OF 1
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/21/2012
DATE FINISH: 8/21/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	TOPSOIL
	1D	24"	15"	2.0'	1	2	4	4		~LOOSE BECOMING…
										GRAY / BLACK / BROWN GRAVELLY SILTY SAND
										WITH WOOD PETROLEUM ODOR (FILL)
	2D	24"	15"	7.0'	5	7	3	3		…MEDIUM DENSE~
	3D	24"	18"	12.0'	11	6	5	4		
NW									14.0'	
	4D	24"	18"	17.0'	7	14	14	5		GRAY SAND SOME SILT WITH SHELLS
										~MEDIUM DENSE~
									19.0'	
	5D	24"	24"	22.0'	1	W O H / 18"				GRAY SANDY SILTY CLAY WITH SHELLS AND MARSH ORGANICS
										(MARSH DEPOSIT) ~SOFT~
OPEN									23.0'	
HOLE										GRAYISH BROWN SILTY CLAY
										WITH OCCASIONAL FINE SAND SEAMS
	6D	24"	14"	28.0'	1	3	5	6		~VERY STIFF~ q_p = 6.0 KSF
									28.0'	
										BOTTOM OF EXPLORATION AT 28.0'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-104**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-105**
SHEET: 1 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/20/2012
DATE FINISH: 8/20/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	TOPSOIL
	1D	24"	16"	2.0'	3	8	9	7	2.0'	BROWN GRAVELLY SILTY SAND (FILL) ~MEDIUM DENSE~
	2D	24"	12"	4.0'	5	5	4	3	5.0'	BROWN / BLACK / ORANGE SILTY SAND SOME GRAVEL WITH WOOD, GLASS AND ASH (FILL)
	3D	24"	16"	7.0'	2	2	2	3	7.0'	BROWN SAND SOME SILT WITH WOOD (FILL) ~LOOSE~
	4D	24"	12"	9.0'	2	3	1	2		BROWN / BLACK / ORANGE SILTY SAND SOME GRAVEL WITH WOOD, GLASS AND ASH (FILL)
	5D	24"	1"	12.0'	4	2	3	10		~LOOSE~
NW										
	6D	24"	8"	14.0'	3	4	3	3		
	7D	24"	8"	17.0'	3	1	1	1	16.8'	
										~LOOSE~ GRAY SANDY SILTY CLAY WITH MARSH ORGANICS AND BLACK ORGANIC SILT LAYERS (MARSH DEPOSIT)
									21.0'	
OPEN HOLE	8D	24"	16"	22.0'	2	4	6	8		~VERY STIFF BECOMING… q_p = 7.0 KSF GRAYISH BROWN SILTY CLAY
	9D	24"	20"	27.0'	7	12	14	14		…STIFF~ q_p = 5.0 KSF
									29.0'	
	1V			30.7'	3.5 X 7" VANE					S_v = 1.05 KSF / 0.25 KSF ~STIFF BECOMING…
	1V'			31.4'	3.5 X 7" VANE					S_v = 0.97 KSF / 0.22 KSF GRAY SILTY CLAY
	2V			35.7'	3.5 X 7" VANE					S_v = 0.70 KSF / 0.13 KSF …MEDIUM~
	2V'			36.4'	3.5 X 7" VANE					S_v = 0.67 KSF / 0.11 KSF

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-105**
SHEET: 2 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/20/2012
DATE FINISH: 8/20/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
	1S	24"	20"	42.0'	PISTON SAMPLER					WITH OCCASIONAL SAND SEAMS
	3V			42.7'	3.5 X 7" VANE					S_v = 0.89 KSF / 0.16 KSF
	3V'			43.4'	3.5 X 7" VANE					S_v = 0.92 KSF / 0.16 KSF ~MEDIUM~
	4V			45.7'	3.5 X 7" VANE					S_v = 0.72 KSF / 0.16 KSF
	4V'			46.4'	3.5 X 7" VANE				46.4'	S_v = 0.70 KSF / 0.16 KSF BEGIN ROD PROBE @ 46.4'
										HYDRAULIC PUSH ROD PROBE 46.4'-74.5'
										PROBABLE GRAY SILTY CLAY - ADVANCE BY ROD PROBE
									74.6'	BECOMING DENSER @ 74.5' - SWITCH TO 140 LB. HAMMER: 25 BLOWS FOR 1"
										ROD PROBE REFUSAL @ 74.6'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-105**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-106**
SHEET: 1 OF 1
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/21/2012
DATE FINISH: 8/21/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.4'	TOPSOIL
	1D	24"	17"	2.0'	4	19	18	15		BROWN SAND AND GRAVEL (FILL)
									3.0'	~DENSE~
										DARK BROWN / ORANGE SILTY GRAVELLY SAND (FILL)
	2D	24"	4"	7.0'	2	5	2	2		~LOOSE~
									9.0'	
										GRAY CLAYEY SILT AND SAND (REWORKED FILL)
	3D	24"	8"	12.0'	1	1	1	1		WITH MARSH ORGANICS ~LOOSE~
									14.0'	
										GRAY FINE TO MEDIUM SAND SOME SILT
	4D	24"	16"	17.0'	4	7	7	8		~MEDIUM DENSE~
									18.0'	
										GRAY / DARK BROWN ORGANIC SAND AND SILT
										(MARSH DEPOSIT)
	5D	24"	18"	22.0'	1	1	3	6		~LOOSE~
									23.0'	
										GRAYISH BROWN SANDY SILTY CLAY
	6D	24"	22"	27.0'	6	11	14	15		~HARD~ q_p = 9.0 KSF
									29.0'	
										GRAY SILTY CLAY
	7D	24"	24"	32.0'	W O R / 12"		W O M / 12"		32.0'	~SOFT~
										BOTTOM OF EXPLORATION AT 32.0'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-106**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-107**
SHEET: 1 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/20/2012
DATE FINISH: 8/20/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	TOPSOIL
	1D	24"	15"	2.0'	1	3	5	7		~LOOSE BECOMING…
	2D	24"	18"	4.0'	5	5	4	4		BROWN GRAVELLY SILTY SAND WITH GLASS, COAL AND BRICK (FILL)
	3D	24"	20"	7.0'	6	6	5	5		…MEDIUM DENSE BECOMING...
	4D	24"	18"	9.0'	4	4	4	3		
	5D	24"	8"	12.0'	2	2	3	4		
NW										
	6D	24"	4"	14.0'	5	3	3	2		…LOOSE~
									15.0'	
									16.0'	GRAY SILTY SAND WITH SHELLS ~MEDIUM DENSE~
	7D	24"	18"	17.0'	10	8	2	2		GRAY CLAYEY SILTY SAND WITH MARSH ORGANICS, SHELLS AND FREQUENT SILTY CLAY LAYERS (MARSH DEPOSIT)
	8D	24"	24"	22.0'	W O H / 18"			2		~LOOSE~
									23.0'	
OPEN HOLE	9D	24"	20"	27.0'	2	4	6	7		~VERY STIFF TO STIFF~ q_p = 6.0 TO 2.5 KSF GRAYISH BROWN SILTY CLAY
									30.0'	
	10D	24"	20"	32.0'	W O H / 12"		1	3		GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS
	1V			35.7'	3.5 X 7" VANE					S_v = 0.65 KSF / 0.14 KSF ~MEDIUM~
	1V'			36.4'	3.5 X 7" VANE				36.4'	S_v = 0.78 KSF / 0.14 KSF BEGIN ROD PROBE @ 36.4'
										HYDRAULIC PUSH ROD PROBE 36.4' TO 69.5' - PROBABLE GRAY SILTY CLAY

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-107**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-107**
SHEET: 2 OF 2
PROJECT NO.: 12-0561

PROJECT / CLIENT: PROPOSED ADDITION SEASIDE REHAB. CENTER / FIRST ATLANTIC HEALTHCARE
LOCATION: 805 BAXTER BLVD. PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORINGS, INC. DRILLER: WILL AIKMAN

DATE START: 8/21/2012
DATE FINISH: 8/21/2012
ELEVATION: 15' +/-
SWC REP.: PJO

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	NW	3 1/2"	140 LBS	30"
SAMPLER:	SS	1 5/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										HYDRAULIC PUSH ROD PROBE 36.4' TO 69.5'
										PROBABLE GRAY SILTY CLAY - ADVANCE BY ROD PROBE
									69.6'	BECOMING DENSER @ 69.5' - SWITCH TO 140 LB. HAMMER: 50 BLOWS FOR 6"
										ROD PROBE REFUSAL @ 69.6'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-107**

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight
f	-	fines content (percent by weight passing U.S. No. 200 Sieve)

Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

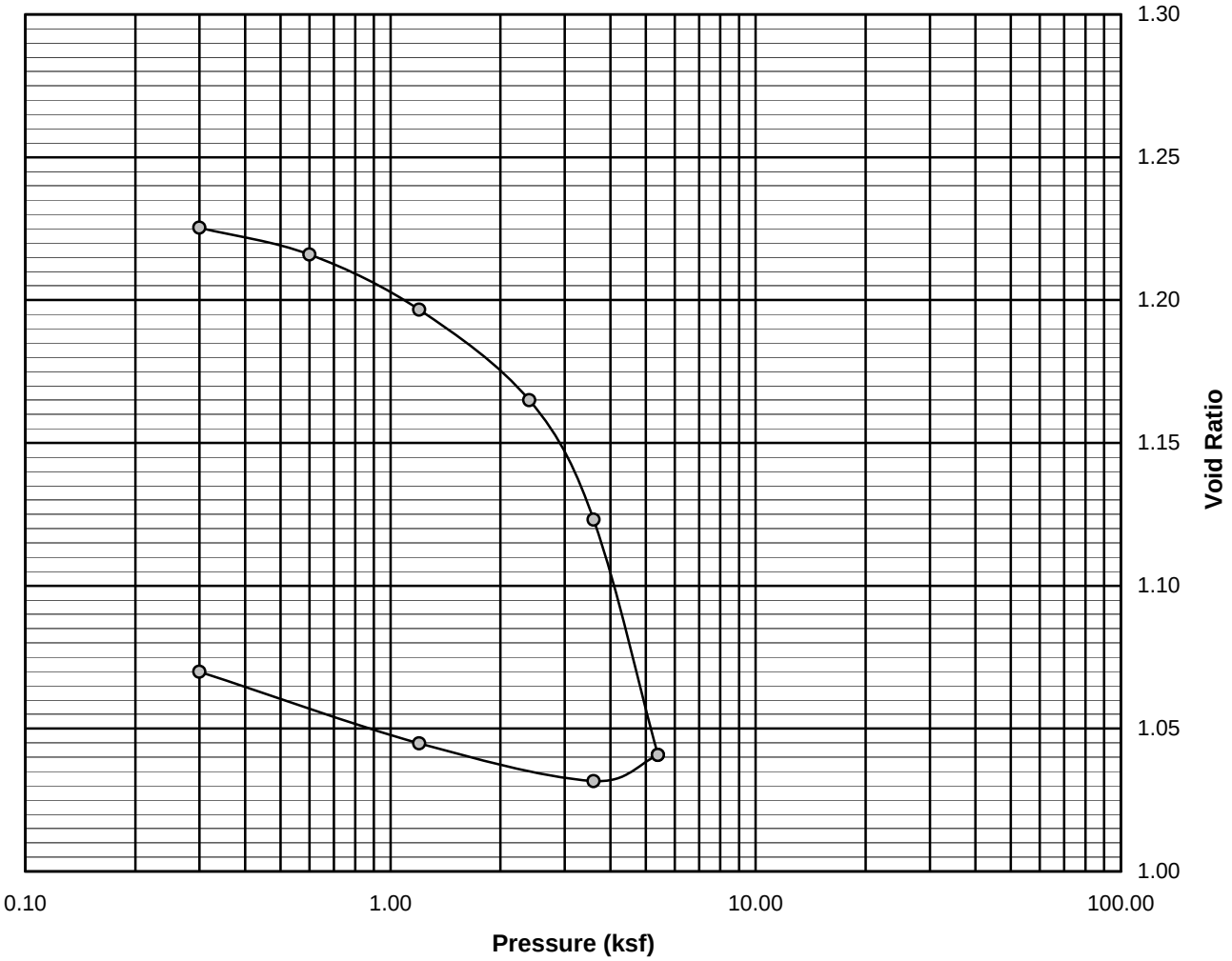
S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-2435

Project Name	Seaside Rehab & Healthcare	Project Number	12-0561
Client	First Atlantic Healthcare	Lab ID	15320B
		Date	8/23/2012
Boring	B-101	Date Complete	9/28/2012
Sample	Clay		
Depth	35'- 37'		

P_C = 3.1 KSF +/-
C_C = 0.47
C_R = 0.03
w = 42.4%



Comments:

EMW
Reviewed By

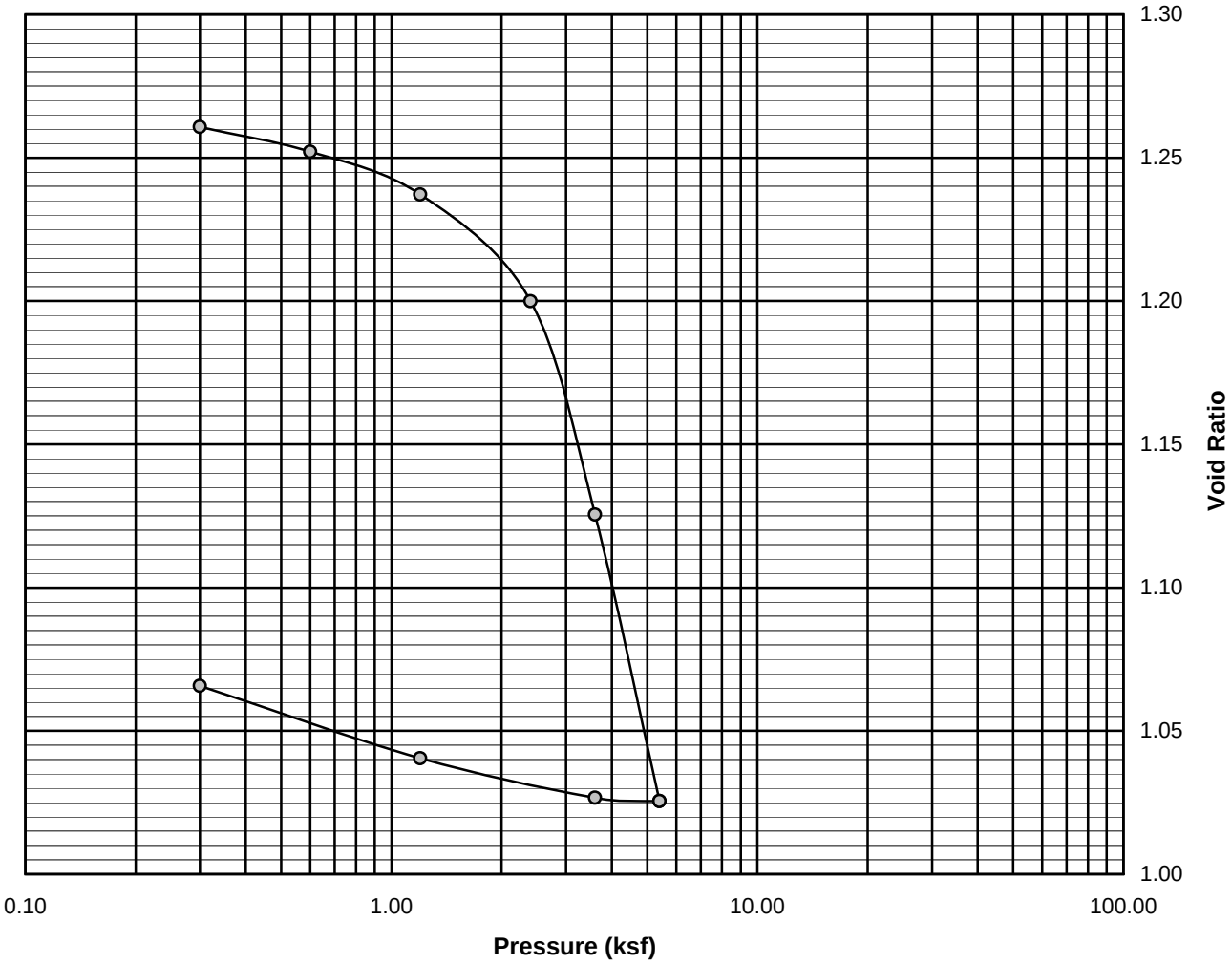
S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-2435

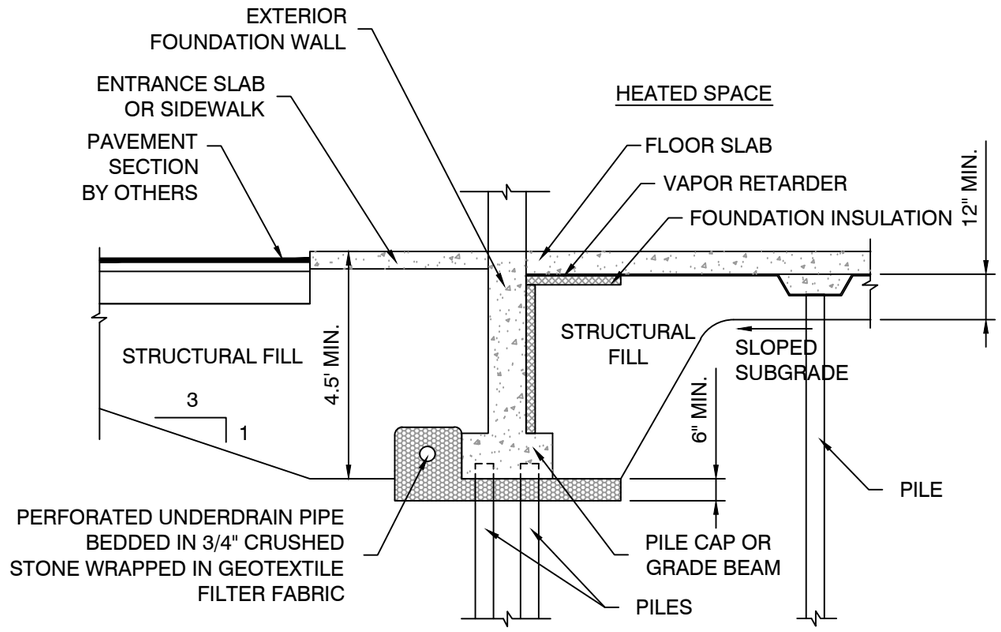
Project Name	Seaside Rehab & Healthcare	Project Number	12-0561
Client	First Atlantic Healthcare	Lab ID	15321B
		Date	8/23/2012
Boring	B-105	Date Complete	9/28/2012
Sample	Clay		
Depth	40'- 42'		

P_C = 2.8 KSF +/-
C_C = 0.57
C_R = 0.03
w = 45.9%

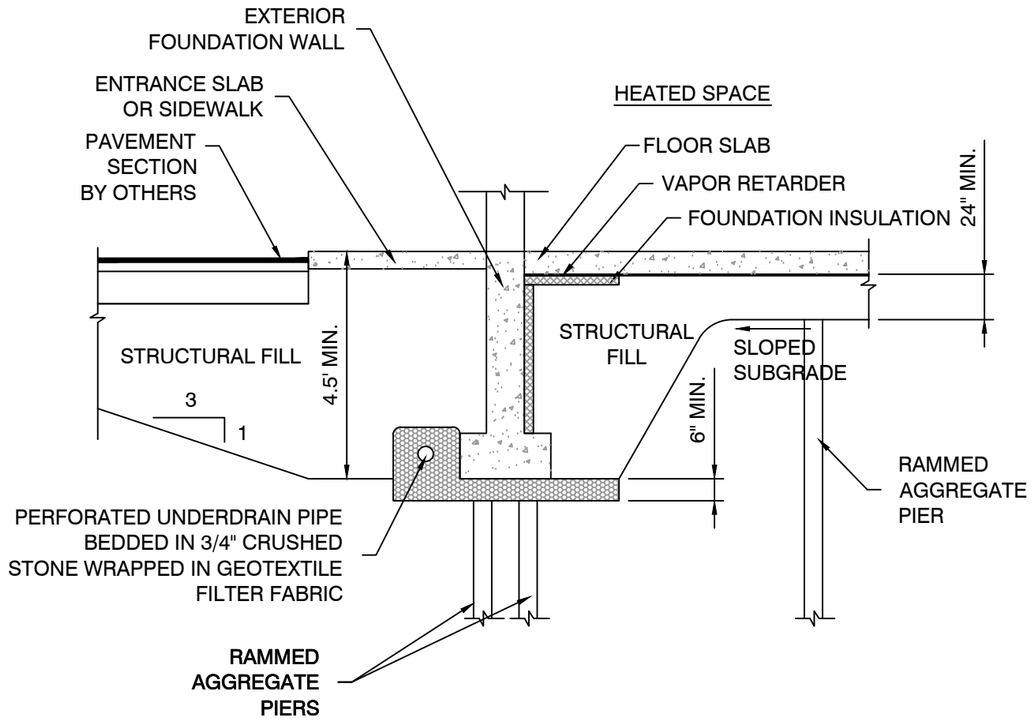


Comments:

EMW
Reviewed By



DRIVEN PILE OPTION



RAMMED AGGREGATE PIER OPTION

NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.
2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE ENGINEERING, INC.

FIRST ATLANTIC HEALTHCARE

UNDERDRAIN DETAILS

PROPOSED BUILDING ADDITION
SEASIDE REHABILITATION AND HEALTHCARE CENTER
850 BAXTER BOULEVARD
PORTLAND, MAINE

Job No.	12-0561 S	Scale	Not to Scale
Date :	08/30/2012	Sheet	14