

EXHIBIT 10

SOILS & GEOTECHNICAL

The applicant has retained Summit Geoengineering to perform a site geotechnical and soils evaluation. Onsite drilling was conducted over the campus in December 2014 and 9 test borings logged. A final report is attached dated March, 2015.

Soils onsite are generally deep granular till or fill material over marine clay with relatively deep bedrock. The soil conditions do not present any unusual design constraints for site development. The granular soils and deep groundwater depths are favorable for storm water infiltration BMP's which are proposed on the site to encourage groundwater treatment and recharge.



PRELIMINARY GEOTECHNICAL REPORT

**McAuley Place Development
Stevens Avenue & Walton Street
Portland, Maine**

Prepared for:

Sea Coast Management Company

Prepared by:

Summit Geoengineering Services
145 Lisbon St.
Lewiston, Maine

Project #14238
March 2015



March 27, 2015
Summit #14238

Matthew Teare
Sea Coast Management Company
30 Governors Way
Topsham, Maine 04101

Reference: Preliminary Geotechnical Investigation, McAuley Place Site Development
Stevens Avenue and Walton Street, Portland, Maine

Dear Matt;

Summit Geoengineering Services (SGS) has completed the geotechnical investigation for the proposed development and renovations at the site referenced above. Our scope of service included nine borings, laboratory testing of collected samples, and this geotechnical report summarizing our findings and providing geotechnical recommendations. This report is intended to identify and address the geotechnical issues at the site and provide recommendations for the construction of the new development. We understand that the proposed building layout, building sizes, parking (above ground and below ground), and finish grades are currently conceptual and subject to change. The recommendations included in this report are general in nature to accommodate for potential changes to the development. The project and site description below summarize the current development concepts and were used to guide the assumptions made for our analysis. We recommend that SGS be allowed to review final concepts to verify the geotechnical recommendations provided in this report.

1.0 Project and Site Description

The McAuley Place site is located at the intersection of Stevens Avenue and Walton Street in Portland, Maine. Located at the site is the Sisters of Mercy Motherhouse on the western end, the McAuley high school building to the northwest, paved parking on the northern portion, and multiple athletic fields on the eastern portion. Multiple paved walkways throughout the property connect these locations. Grades at the site slope gently downwards from elevation 128 feet to elevation 114 feet in an easterly direction.

We understand that a total of 4 senior living housing buildings and a main lodge are being proposed to be constructed at the site. A single story retail/commercial building is also proposed. These buildings are anticipated to range from 3 to 5 floors, will be wood framed, and may include underground parking. The senior living and main lodge buildings are proposed to be built within the existing athletic field. The retail/commercial building will be built in the existing grassed area south of the Motherhouse. We understand that the existing buildings will remain, with renovations being proposed to the Motherhouse. We also understand that stormwater

treatments systems at the site may include a wet pond below the slope on the east side of the existing athletic fields and Low Impact Development (LID) systems, potentially rain gardens, scattered throughout the site.

2.0 Explorations and Laboratory Testing

2.1 Explorations

Summit Geoengineering Services (SGS) observed the subsurface conditions at the site with the drilling of 9 test borings on December 29 and 30, 2014. All borings were drilled using a 2 1/4” hollow stem auger with split spoon samples collected at 5 foot intervals. Standard Penetration Testing (SPT) was conducted in general accordance with *ASTM D1586* to collect blow counts during the advancement of the split spoon sampler. All borings were advanced to refusal. Groundwater observations wells were installed at Boring B-6 and B-8.

The locations of the borings were marked by SGS prior to the days of drilling by measuring from existing structures and landmarks. These locations can be seen in the SGS Boring Plan in Appendix A. A copy of the Boring Logs can be found in Appendix B. Borings were widely spaced throughout the site with the intent to characterize as much of the subsurface as possible, with a general focus in the area of proposed development

2.2 Laboratory Testing

Laboratory testing included two grain size analyses on samples collected from Borings B-6 and B-8. Grain size analyses were performed in general accordance with *ASTM D422*. The table below summarizes the grain size results:

GRAIN SIZE ANALYSIS RESULTS						
Boring	Sample	Depth (ft)	Composition			USCS
			Gravel	Sand	Silt/Clay	
B-6	S-2	5 to 7	0.3%	97.2%	2.5%	SP
B-8	S-3	10 to 12	0.4%	97.6%	2.0%	SP

Detailed results of the laboratory tests can be found in Appendix C.

3.0 Subsurface Conditions

3.1 Soil

The subsurface conditions at the site generally consist of *topsoil* or *pavement* overlying *fill/reworked native soil* overlying *marine fan deposit* overlying *bedrock*.

The *topsoil* was encountered in all of the borings except for Boring B-1. It is described as dark brown silt with some to little sand, trace gravel and rootlets, firm, and damp. The thickness of this layer ranges from 0.5 feet to 1.0 feet. It classifies as ML in accordance with the Unified Soil Classification System (USCS).

The *pavement*, encountered only in Boring B-1, is four inches thick.

The *fill/reworked native* layer, encountered in in all Borings except B-3, B-4, and B-5, is described as light brown to dark brown fine to coarse sand with little to some silt and gravel. In Boring B-9, the *fill/reworked native* is olive brown clayey silt to silty clay with little silt and gravel. The layer ranges from damp to wet and from loose to compact. The thickness of the layer ranges from 1.1 to 10.0 feet. It classifies as SP, SM, SP-SM, SW-SM, ML, or CL in accordance with the Unified Soil Classification System (USCS).

The *marine fan deposit* was encountered in all of the borings overlying bedrock. There are two sub-layers within the *marine fan deposit*. The top layer consists of light brown to tan fine to coarse sand with trace to some silt and trace clay and gravel. The top sub-layer ranges from loose to dense and humid to wet. SPT-N values ranged from 4 to 28 with an average of 16. The layer classifies as SP, SM, or SP-SM in accordance with the Unified Soil Classification System (USCS).

The lower sub-layer of the *marine fan deposit* consists of silty or gravelly sand, silty clay, and sandy silt. It ranges from very soft to compact and is wet. Thickness of this layer ranges from 8.9 feet to 24.3 feet. SPT-N values ranged from WOH (weight of hammer) to 37, with an average of 17. Pockets of gray silty clay were encountered in this layer in Borings B-4, B-5, and B-9 ranging from 4.1 to 4.5 feet thick. Two samples were collected for laboratory grain size analyses in this lower marine fan layer, and both resulted in a classification of SP in accordance with the Unified Soil Classification System. From visual classification, this layer classifies as SM, ML, CL, SP, and SP-SM in accordance with the Unified Soil Classification System (USCS).

3.2 Groundwater

Groundwater was encountered in all of the borings and ranged from 5.4 feet to 11.4 feet below ground surface (elevation 104.6 feet to elevation 113.1 feet). In general, the groundwater table elevation was observed to be within or at the top of the marine fan deposit

Groundwater elevation was measured on 2/15/2015 and again on 3/23/2015 in Borings B-6 OW and B-8 OW. Groundwater at Boring B-6 was encountered at 8 feet below ground surface (elevation 107 ft. +/-). Groundwater was encountered at 6.1 feet below ground surface (elevation 107.9 ft. +/-) at Boring B-8.

3.3 Bedrock

Bedrock was encountered in all of the borings except for Boring B-7, which was terminated 22 feet. Depth to bedrock from the ground surface (where it was encountered) ranged from 12.9 feet to 25.1 feet (elevation 92 feet +/- to elevation 106.9 feet +/-). Bedrock depths and corresponding elevations are summarized in the table below. According to the Maine Geologic Survey, the bedrock at the site is of the Silurian – Ordovician Vassalboro Formation typically consisting of sandstone and quartzite with occasional schist and limestone.

BEDROCK DEPTH & ELEVATION		
Boring	Depth (ft)	Elevation (ft)
B-1	12.9	106.9 +/-
B-2	15.1	106.9 +/-
B-3	20.0	99.0 +/-
B-4	25.1	95.9 +/-
B-5	22.0	93.0 +/-
B-6	13.1	101.9 +/-
B-7	*	*
B-8	13.1	100.9 +/-
B-9	20.1	93.9 +/-

*Boring B-7 was terminated at depth 22 ft. (elevation 92 ft. +/-), no bedrock was encountered

4.0 Evaluation

In general the soils throughout the area of the site we explored are stable and competent and will safely support all proposed structures on conventional spread footings. An important consideration is the presence of shallow groundwater and its effects on the dewatering of the new buildings and stormwater treatment systems.

5.0 Preliminary Foundation Design Recommendations

The following recommendations are preliminary and based on conceptual building layouts. The general recommendations presented below may require refining based on the final building layouts.

Based on the current proposed development, the newly constructed buildings can be supported by conventional frost walls on continuous spread footings. Where underground parking is desired, foundation walls can also be supported on continuous spread footings. Columns on isolated footings may be used where needed.

5.1 Bearing Capacity

For planning purposes, we recommend that frost wall and basement footings be proportioned using an allowable bearing capacity of 3,000 psf. This includes footings supported by existing fill and by the native marine fan deposit. This allowable bearing capacity is based upon the following:

- Fill required to raise the grade at the site does not exceed 3 to 4 feet.
- Exposed existing fill and native soils are improved by proofrolling.
- Any soft, unsuitable soils below the bottom of footing elevation exposed during the excavation are removed and replaced with crushed stone or competent specified soil.

Depending on final footing locations and elevations, this allowable bearing capacity may be able to be increased. SGS can evaluate this possibility once more detailed footing foundation information is available.

5.2 Frost Protection

The design air freezing index for the Portland area is approximately 1,200 degree F days (10 year, 90% probability). Based on this, exterior footings should be constructed at a minimum depth of 4 feet below the exterior finish grade.

5.3 Basement Walls

We recommend that foundation walls acting as retaining walls be designed for the lateral earth pressures taken from the following table.

CAST-IN-PLACE RETAINING WALL LATERAL LOADS			
Condition	Drained at Base	Equivalent Fluid Pressure	Live Load Surcharge
Free at Top	Yes	37 psf/ft	100
	No	81 psf/ft	
Fixed at Top	Yes	61 psf/ft	100
	No	94 psf/ft	

Passive resisting pressure in front of cast-in-place walls can be taken as 400 psf per foot of embedment depth. A value of 0.5 should be used for the friction coefficient at the base of the wall for walls constructed on the native marine fan soil or fill.

5.4 Seismic Design and Liquefaction Potential

Based on Standard Penetration Testing (SPT) N blow counts collected from the borings as well as the presence of relatively shallow bedrock, the subgrade profile at the site is categorized as Site Class C “Very dense soil and soft rock” in accordance with the 2009 International Building Code. The following seismic site coefficients should be used:

SEISMIC DESIGN COEFFICIENTS	
Seismic Coefficient	Site Class C
Short period spectral response (S_S)	0.318
1 second spectral response (S_1)	0.078
Maximum factored spectral response (S_{MS})	0.382
1 second factored spectral response (S_{1S})	0.132
Design short period spectral response (S_{DS})	0.255
Design 1 second spectral response (S_{D1})	0.088

Liquefiable soils were not encountered at the site.

5.5 Groundwater Consideration

Groundwater was encountered in all of the borings ranging from 5.4 feet to 11.4 feet below ground surface. Based on this and the proposed building layouts (particularly those with underground parking), we believe that groundwater elevation may be as high as 5 to 6 feet above the bottom of constructed basement footings and potentially even higher during large rainfall events.

There are two available options for dealing with the presence of groundwater for the new foundations. The first option is to construct perimeter undrains around the entire foundation to draw the surrounding water down below the footing. If installed correctly, the underdrains will alleviate basement flooding and reduce the pressure on the foundation walls. For foundations which include underground parking, the undrain will either need to be trenched for outletting to daylight or de-watered with a pump.

The second option is to provide no de-watering system and design the foundations to include the presence of water against the wall. If this option is selected, we anticipate that a waterproofing membrane will be required along the entirety of the foundation wall. Recommendations for foundation wall pressures with and without the presence of groundwater are presented in Section 5.3. In addition to the added pressure against the foundation walls, the basement slabs and foundations will be required to resist uplift forces from hydrostatic uplift pressures if groundwater is not lowered around the constructed buildings. Recommendations for design groundwater elevations can be provided once final building layouts are complete.

6.0 Pavement Section Recommendations

Based on a mean annual air freezing index of 900 degree F days for the Portland, Maine region, we recommend a minimum total pavement section thickness of 18 inches, equal to 50% of the approximate mean annual frost penetration of 36 inches. We further recommend that the pavement section consist of the following materials.

PAVEMENT SECTION RECOMMENDATION		
Material	Thickness (in)	Specification
Asphalt Surface Course	1	MDOT Superpave
Asphalt Binder Course	2	MDOT Superpave
Base Soil	3	MDOT 703.06 Type A
Subbase Soil	15	MDOT 703.06 Type D

The maximum particle size of the subbase soil should be limited to 4 inches and the maximum particle size of the MDOT 703.06 Type A should be limited to 2 inches. All placed fill should be placed in a maximum of 12-inch lifts, and be compacted to 95 percent, in accordance with ASTM D1557.

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½” square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous material.

7.0 Preliminary Stormwater System Recommendations

7.1 General

We understand that the stormwater runoff from the added impervious area for the proposed development will be treated mainly by a wet pond to be located at the bottom of the existing slope to the east of the existing athletic fields. We further understand that there may be some LID infiltration stormwater BMPs scattered throughout the new development. The locations, configurations, and elevation of the stormwater features were not available to SGS for this report. The following recommendations should be reviewed and amended as necessary by SGS once final stormwater systems have been determined.

7.2 Infiltration Rates

Grain size analyses were conducted on two separate samples of the marine fan soil collected from Borings B-6 and B-8. The detailed results of these tests are presented in Appendix C. From the grain size analysis results, infiltration rates were estimated and are presented in the table below:

INFILTRATION RESULTS				
Boring	Sample	Depth (ft)	D₁₀ (mm)	Hydraulic Conductivity (in/hr)
B-6	S-2	5 to 7	0.20	60
B-8	S-3	10 to 12	0.18	

The above values can be used for design of the stormwater treatment systems and for construction and permanent dewatering of building foundations.

7.2 Proposed Wet Pond

A groundwater elevation of 107.9 feet in the vicinity of Boring B-8 can be used for layout of the wet pond. An impermeable liner may be required for construction of the wet pond to maintain a permanent pool if the pond is elevated above the groundwater. If the construction of the wet pond results in an embankment greater than 10 feet, certification by a geotechnical engineer will

be required. Furthermore, if the groundwater elevation intersects the constructed slope above the permanent pool elevation, subsurface drainage will be necessary to avoid creating a seasonal spring on the face of the slope.

8.0 Construction and Earthwork Considerations

Areas within the limits of the proposed buildings footprints should be cleared, stripped and grubbed of organic matter, topsoil, and other deleterious materials prior to placing engineered fill or constructing footings. Should pockets of soft soils be encountered during excavation we recommend the subgrade be visually inspected by the geotechnical engineer to determine if stabilization and/or removal is necessary as part of preparation for the new building foundations.

Utility trenching and general excavations below 4 feet should be sloped no greater than 1.5H to 1V (OSHA type C) in granular soils and/or below groundwater. These slopes are based on the current OSHA Excavation Guidelines. Depending on the extent of available area beyond excavations for sloping, sheet piles may be needed for the construction of the foundations of the buildings which include underground parking basements.

Dewatering will likely be required for some excavations. Dewatering may consist of shallow sumps, a well point system, or other dewatering methods. The marine fan subgrade is generally considered relatively pervious with transmissivity rates at approximately 60 in/hr, based on the gradation results. The contractor should furnish, install, operate, maintain, and remove the temporary dewatering systems to lower and control groundwater levels at least 2 feet below subgrade of excavations and to permit construction in-the-dry.

9.0 Closure

Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering. Although unanticipated at this site, some changes in subsurface conditions from those presented in this report may occur. Should soil conditions differ materially from those described in this report, Summit should be notified so that we can re-evaluate our recommendations.

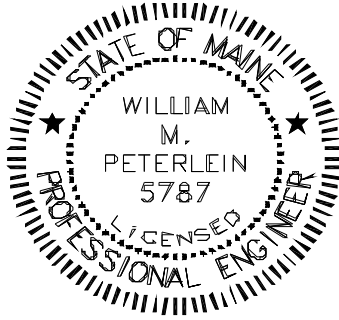
This report is intended to identify and address the geotechnical issues at the site and provide recommendations for the construction of the new development. We understand that the proposed building configurations, parking (above ground and below ground), finish grades, and stormwater treatment systems are currently conceptual and subject to change. The recommendations included in this report are general in nature to accommodate for potential changes to the development. Prior to final design or construction of all buildings, Summit should be retained to review final proposed building layouts to verify our recommendations and provide more refined, building-specific recommendations if appropriate. Additional geotechnical investigations may be required, depending on the building location and layout.

We appreciate the opportunity to provide geotechnical engineering and consulting services on this phase of the project. If there are any questions please do not hesitate to contact us.

Sincerely,
Summit Geoenvironmental Services, Inc.



Mathew Hardison, EI
Geotechnical Engineer



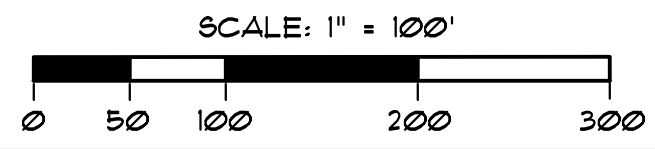
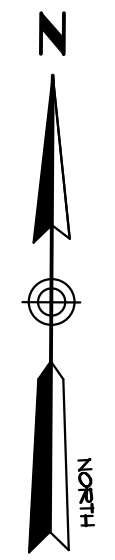
William M. Peterlein, PE
Principal Geotechnical Engineer

APPENDIX A

BORING LOCATION PLAN

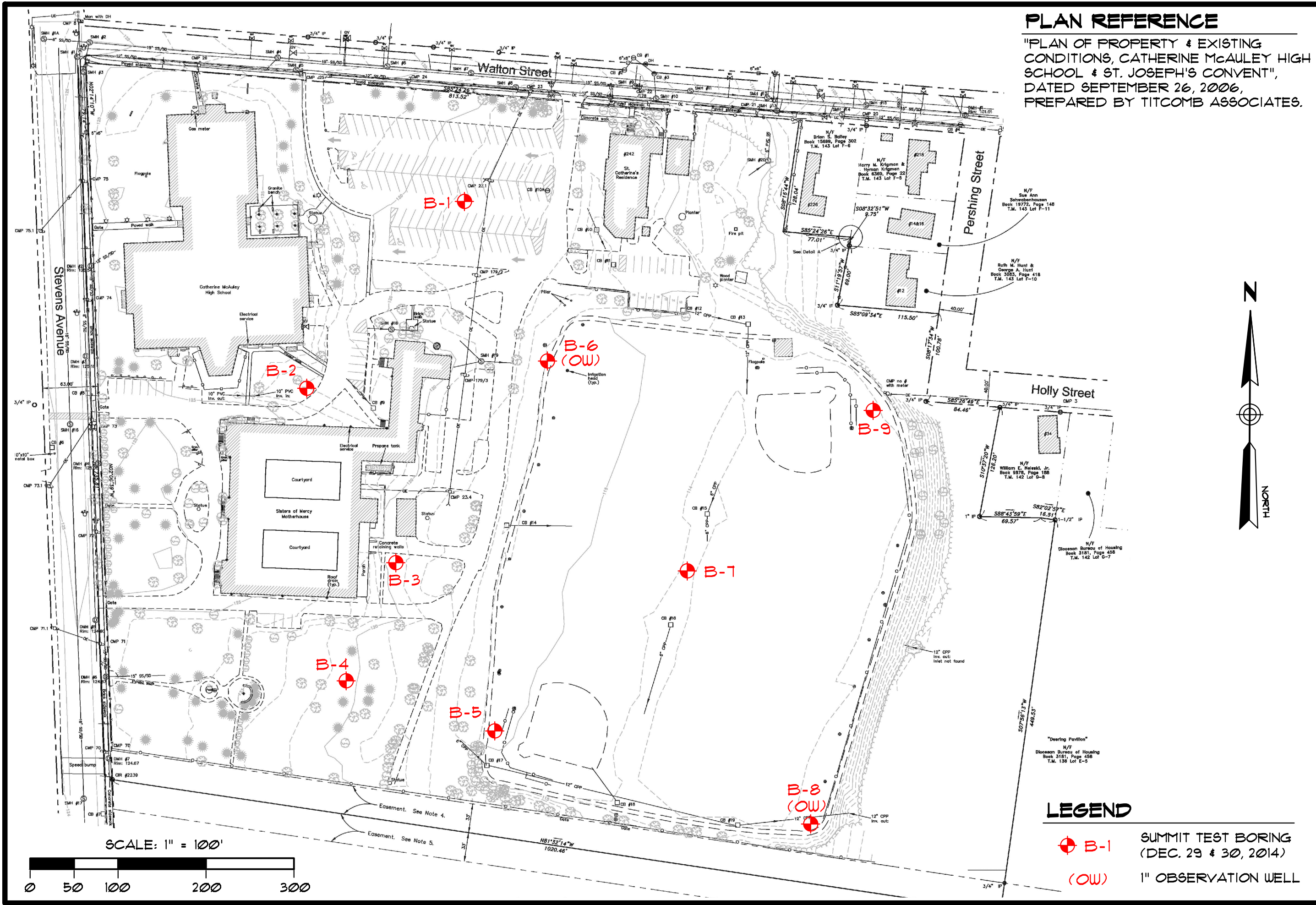


PLAN REFERENCE
 "MCAULEY PLACE, CONCEPTUAL PHASING PLAN - PHASE 5"



- LEGEND**
- ⊕ B-1 SUMMIT TEST BORING (DEC. 29 & 30, 2014)
 - (OW) 1" OBSERVATION WELL

145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel: (207) 576-3313	113 PLEASANT STREET ROCKLAND, ME 04841 Tel: (207) 318-7161	PROJECT: MCAULEY PLACE STEVENS AVENUE - FORTLAND, MAINE	CLIENT: SEACOAST MANAGEMENT CO.
		TITLE: TEST BORING LOCATION PLAN	
		DRAWN BY: KRF AFFR BY: WAP	PROJ.#: 14238 FIGURE: 2



PLAN REFERENCE

"PLAN OF PROPERTY & EXISTING CONDITIONS, CATHERINE MCAULEY HIGH SCHOOL & ST. JOSEPH'S CONVENT", DATED SEPTEMBER 26, 2006, PREPARED BY TITCOMB ASSOCIATES.

PROJECT: **MCAULEY PLACE**
 STEVENS AVENUE - PORTLAND, MAINE
 CLIENT: **SEACOAST MANAGEMENT CO.**

TITLE: **TEST BORING LOCATION PLAN**
 SCALE: 1" = 100'
 DATE: JANUARY 5, 2015
 DRAIN BY: KRF
 AFFR BY: WAP

145 LISBON ST. - SUITE 601
 LEWISTON, ME 04240
 Tel: (207) 576-3313
SUMMIT
 GEOENGINEERING SERVICES

173 PLEASANT STREET
 ROCKLAND, ME 04841
 Tel: (207) 318-7161

PROJ.#: 14238
 FIGURE: 1

LEGEND

- B-1 SUMMIT TEST BORING (DEC. 29 & 30, 2014)
- 1" OBSERVATION WELL

SCALE: 1" = 100'



APPENDIX B

BORING LOGS



EXPLORATION COVER SHEET

The exploration logs are prepared by the geotechnical engineer from both field and laboratory data. Soil descriptions are based upon the Unified Soil Classification System (USCS) per ASTM D2487 and/or ASTM D2488 as applicable. Supplemental descriptive terms for estimated particle percentage, color, density, moisture condition, and bedrock may also be included to further describe conditions.

Drilling and Sampling Symbols:

SS = Split Spoon Sample
 UT = Thin Wall Shelby Tube
 SSA = Solid Stem Auger
 HSA = Hollow Stem Auger
 RW = Rotary Wash
 SV = Shear Vane
 PP = Pocket Penetrometer
 RC = Rock Core Sample

Hyd = Hydraulic Advancement of Drilling Rods
 Push = Direct Push of Drilling Rods
 WOH = Weight of Hammer
 WOR = Weight of Rod
 PI = Plasticity Index
 LL = Liquid Limit
 W = Natural Water Content
 USCS = Unified Soil Classification System

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. Groundwater monitoring wells may be required to record accurate depths and fluctuation.

Gradation Description and Terminology:

Boulders:	Over 12 inches	Trace:	Less than 5%
Cobbles:	12 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 30%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 30%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	Consistency	SPT N-value blows/ft	Relative Density
0 to 2	Very Soft	0 to 4	Very Loose
2 to 4	Soft	5 to 10	Loose
5 to 8	Firm	11 to 30	Compact
9 to 15	Stiff	31 to 50	Dense
16 to 30	Very Stiff	>50	Very Dense
>30	Hard		



SOIL BORING LOG

Boring #: **B-1**
 Project #: 14238
 Sheet: 1 of 1
 Chkd by: WMP

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Drilling Co: Summit Geoenengineering Services Boring Elevation: 119 feet
 Driller: Craig Coolidge, P.E. Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I. Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/29/2014	5.9 ft	113.1 ft	Measured in augers
Method:	2-1/4" HSA	Hammer:	140 lb				
Hammer Style:	Auto	Method:	ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/18	0 - 2	8		Bituminous Pavement = 4 inches		PAVEMENT
				6		Dark brown SAND, little Silt and Gravel, mixed with black reclaim asphalt, compact, humid, SM		0.3'
				5				
2				5		Light brown medium grained SAND, trace Silt, compact, humid, SP		1'
3								
4								
5						Tan and slightly mottled Silty fine SAND, trace to little Clay with depth, compact/stiff, moist to wet, SM	Water at 5.9'	4'+/- MARINE FAN DEPOSIT
6	S-2	24/20	5 - 7	8				
7				7				
8				7				
9						Denser drilling at 8'		8'+/-
10								
11	S-3	24/3	10 - 12	15		Light brown to olive brown Gravelly SAND, some Silt, little Clay, dense, wet, SM (Rocks in spoon tip; little sample recovery.)		
12				12				
13				20				
14				28				
15						End of Exploration at 12.9', Auger Refusal		12.9'
16								BEDROCK
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-2**
 Project #: 14238
 Sheet: 1 of 1
 Chkd by: WMP

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Drilling Co: Summit Geoenengineering Services Boring Elevation: 122 feet
 Driller: Craig Coolidge, P.E. Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I. Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/29/2014	10.4 ft	111.6 ft	Measured in augers
Method:	2-1/4" HSA	Hammer:	140 lb	12/29/2014	Caved at 5.4 ft	N/A	Measured in open hole
Hammer Style:	Auto	Method:	ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/18	0 - 2	2		Dark brown SILT, some to little Sand, trace Gravel, rootlets, firm, damp, ML		TOPSOIL
2				3		Dark brown SAND, some Silt, loose, damp, SM		0.5'
3				3		Light brown medium to fine grained SAND, little Silt, loose, damp, SP-SM		1.7' FILL/ REWORKED NATIVE
4								
5								4'+/- MARINE FAN DEPOSIT
6	S-2	24/18	5 - 7	9		Tan medium to coarse grained SAND, trace Silt, compact, damp, SP		
7				11				
8				13				
9				15				
10								
11	S-3	24/24	10 - 12	7		Tan medium to coarse SAND, little to trace Silt, compact, moist, SP-SM	Water at 10.4'	
12				7				
13				7				
14				19		Olive brown SILT-CLAY, fine Silty SAND seams, little Gravel, very stiff, moist to wet, ML to CL		11.5'
15								
16	S-4	1/1	15 - 15.1	50/1"		Gray Silty CLAY, fine Silty SAND seams, stiff, wet, CL (Dark purple to black rock fragments in spoon tip)		
17						End of Exploration at 15.1', Spoon & Auger Refusal		15.1' BEDROCK
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-3**
 Project #: 14238
 Sheet: 1 of 1
 Chkd by: WMP

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Drilling Co: Summit Geoengineering Services Boring Elevation: 119 feet
 Driller: Craig Coolidge, P.E. Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I. Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/29/2014	7.5 ft	111.5 ft	Measured in augers
Method:	2-1/4" HSA	Hammer:	140 lb				
Hammer Style:	Auto	Method:	ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/18	0 - 2	1		Dark brown SILT, little Sand and rootlets, soft, damp, ML		TOPSOIL
2				2		Mottled brown SAND, trace Silt, loose damp, SP		1' MARINE FAN DEPOSIT
3				3				
4								
5						Tan medium grained SAND, trace Silt, compact, damp, SP	Water at 7.5'	
6	S-2	24/24	5 - 7	7				
7				10				
8				10				
9						Running Sands at 10', Unable to sample		
10								
11								
12								
13								
14						Tan medium to coarse grained SAND, trace Silt, compact, wet, SP		
15	S-3	24/24	15 - 17	7				
16				5				
17				3		Gray Silty fine SAND to Sandy SILT, trace Clay, loose/firm, wet, SM to ML		16.7'
18				2				
19								
20								
21						End of Exploration at 20', Auger Refusal		20' BEDROCK
22								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #:	B-4
Project #:	14238
Sheet:	1 of 2
Chkd by:	WMP

Drilling Co: Summit Geoengeering Services	Boring Elevation: 121 feet
Driller: Craig Coolidge, P.E.	Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I.	Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle:	Length:	Date	Depth	Elevation	Reference
Power Probe	24" SS	12/29/2014	11.4 ft	109.6 ft	Measured in augers
Model: AMS 9500	Diameter: 2"OD/1.5"ID	12/29/2014	Caved at 6 ft	N/A	Measured open hole
Method: 2-1/4" HSA	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/12	0 - 2	WOH		Dark brown SILT, little Sand and rootlets, soft, damp, ML		TOPSOIL
2				1		Brown SAND, little to trace Silt, loose, humid to damp, SP to SP-SM	0.7'	MARINE FAN DEPOSIT
3				2				
4				3				
5						Tan medium grained SAND, trace Silt, compact, damp, SP	Water at 11.4'	
6	S-2	24/18	5 - 7	5				
7				8				
8				11				
9				14		Tan medium grained SAND, little to trace Silt, compact to dense, wet SP to SP-SM	Water at 11.4'	
10								
11	S-3	24/18	10 - 12	6				
12				10				
13				15				
14				20		Running sands at 15', sample contained 'fluffed' sand from inside auger. Due to disturbance, blow counts are not representative of the soil.	16.7'	
15								
16	S-4	24/24	15 - 17	1				
17				WOH		Olive gray fine to medium grained Silty SAND, loose, wet, SM	16.7'	
18				1		Gray Silty CLAY, soft, wet, CL		
19						Gray Silty CLAY, trace Gravel, very soft, wet, CL	21'+/-	
20								
21	S-5	24/24	20 - 22	WOH				
22				WOH		Gray fine SAND-SILT, dense/stiff, wet, SM to ML		
				5				
				16				

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-4**
 Project #: 14238
 Sheet: 2 of 2
 Chkd by: WMP

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Drilling Co: Summit Geoengineering Services
 Driller: Craig Coolidge, P.E.
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I.

Boring Elevation: 121 feet
 Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/29/2014	11.4 ft	109.6 ft	Measured in augers
Method:	2-1/4" HSA	Hammer:	140 lb	12/29/2014	Caved at 6 ft	N/A	Measured open hole
Hammer Style:	Auto	Method:	ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
23								MARINE FAN DEPOSIT
24								
25								
26	S-6	1-Jan	25 - 25.1	50/1"		Gray fine to medium grained SAND, some Silt, trace Gravel, compact, wet, SM		
27						End of Exploration at 25.1', Auger Refusal		25.1'
28								BEDROCK
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index, NE = None Encountered <u>Bedrock Joints</u> WOH = Weight of Hammer, WOR = Weight of Rod Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft			
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #:	B-5
Project #:	14238
Sheet:	1 of 1
Chkd by:	WMP

Drilling Co: Summit Geoengineering Services	Boring Elevation: 115 feet
Driller: Craig Coolidge, P.E.	Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I.	Date started: 12/29/2014 Date Completed: 12/29/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle:	Length:	Date	Depth	Elevation	Reference
Power Probe	24" SS	12/29/2014	5.5 ft	109.5 ft	Measured in augers
Model: AMS 9500	Diameter: 2"OD/1.5"ID				
Method: 2-1/4" HSA	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/24	0 - 2	3		Dark brown SILT, little Sand and rootlets, firm, damp, ML		TOPSOIL
				7				
				11				
2				14		Brown SAND, some Gravel, little Silt, compact, damp, SM		0.9' MARINE FAN DEPOSIT
3								
4								
5								
6	S-2	24/20	5 - 7	6		Tan SAND coarse to fine grained w/depth, trace to little Silt, compact, wet, SP to SP-SM	Water at 5.5'	
				9				
				10				
7				10				
8								
9								
10								
11	S-3	24/24	10 - 12	6		Light brown medium to fine grained SAND, little Silt, loose to compact, wet, SP-SM		11'
				4				
				3				
12				3		Gray Silty CLAY, firm, wet, CL		
13								
14								
15								
16	S-4	24/24	15 - 17	WOH		Gray Silty CLAY, firm, wet, CL		15.5'
				4				
				19				
17				21		Gray Silty fine SAND to Sandy SILT, dense/hard, wet, SM to ML		
18								
19								
20								
21	S-5	24/24	20 - 22	8		Gray Silty fine SAND to Sandy SILT, very dense/hard, wet, SM to ML		
				29				
				70				
22				72				
						End of Exploration at 22', Spoon Refusal		22' PROBABLE BEDROCK

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-6**

Project:	McAuley Place	Project #:	14238
Location:	Stevens Avenue	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	115 feet
Driller:	Craig Coolidge, P.E.	Reference:	Estimated from Existing Conditions Plan provided by Titcomb Associates
Summit Staff:	Bill Peterlein, P.E., Erika Hawksley, E.I.	Date started:	12/30/2014
		Date Completed:	12/30/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle:	Length:	Date	Depth	Elevation	Reference
Power Probe	24" SS	12/30/2014	6.4 ft	108.6 ft	Measured in augers
Model: AMS 9500	Diameter: 2"OD/1.5"ID	3/23/2015	8.0 ft	107.0 ft	Measured in OW on 3/23/2015
Method: 2-1/4" HSA	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/24	0 - 2	4		Dark brown SILT, little Sand and rootlets, firm to stiff, damp to frozen, ML		TOPSOIL
				5				
				5				
2				8		Dark brown Silty SAND, little Gravel, compact, damp, SP	0.7'	FILL
3						Brown Sand, trace Silt and Gravel, compact, damp, SP	1.8'	MARINE FAN DEPOSIT
4								
5								
6	S-2	24/18	5 - 7	8		Light brown to tan medium grained SAND, trace Silt, compact, damp, SP	Water at 6.4'	1" PVC Well Screen 3.1' to 13.1'
				12				
				12				
7				10				
8								
9								
10								
11	S-3	24/24	10 - 12	2		Olive brown and mottled fine Sandy SILT to Silty CLAY, some fine Sand, firm, wet, ML to CL		
				2				
				2				
12				5				
13						End of Exploration at 13.1', Auger Refusal		13.1'
14								BEDROCK
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #:	B-7
Project #:	14238
Sheet:	1 of 1
Chkd by:	WMP

Drilling Co: Summit Geoengineering Services	Boring Elevation: 114 feet
Driller: Craig Coolidge, P.E.	Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I.	Date started: 12/30/2014 Date Completed: 12/30/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle:	Length:	Date	Depth	Elevation	Reference
Power Probe	24" SS	12/30/2014	5.4 ft	108.6 ft	Measured in augers
Model: AMS 9500	Diameter: 2"OD/1.5"ID				
Method: 2-1/4" HSA	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLE DESCRIPTION					Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀		
1	S-1	24/15	0 - 2	5			TOPSOIL
				6	Dark brown SILT, little Sand and rootlets, firm, damp to frozen, ML		
				9			
2				7	Brown SAND, little Silt and Gravel, compact, damp, SM	Water at 5.4'	0.7' FILL / REWORKED NATIVE
3							
4							
5							
6	S-2	24/18	5 - 7	3	Dark brown medium to fine grained SAND, some to little Silt, moist to wet, loose, SM	Water at 5.4'	6'+/- MARINE FAN DEPOSIT
				7	(Probable former topsoil and reworked native sand)		
				13			
7				15	Brown medium to fine grained SAND, little to trace Silt, compact, wet, SP to SP-SM		
8							
9	S-3	18/18	8.5 - 10	*	*Running Sands at 10'. Sampled 'fluffed' sand inside augers. Disturbed sample, no blow counts recorded.		
				*	Same as above, compact, wet, SP to SP-SM		
				*			
10							
11							
12							
13							
14							
15							
16	S-4	24/24	15 - 17	2	Light brown Silty fine SAND, trace Clay, occasional Silty CLAY seam, compact/stiff, wet, SM		
				7			
				9			
17				14			
18							
19					Denser drilling at 18'		
20							
21	S-5	24/24	20 - 22	7	Same as above, compact, wet, SM		
				9			
				6			
22				7			
					End of Exploration at 22', No Refusal		22'

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft			Dry: S = 0%
5-10	Loose	2-4	Soft	< 5% Trace		Humid: S = 1 to 25%
11-30	Compact	5-8	Firm	5-15% Little	Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees	Damp: S = 26 to 50%
31-50	Dense	9-15	Stiff	15-30% Some		Moist: S = 51 to 75%
>50	V. Dense	16-30	V. Stiff	> 30% With	Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Wet: S = 76 to 99%
		>30	Hard			Saturated: S = 100%



SOIL BORING LOG

Boring #: **B-8**

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Project #: 14238
 Sheet: 1 of 1
 Chkd by: WMP

Drilling Co: Summit Geoengineering Services Boring Elevation: 114 feet
 Driller: Craig Coolidge, P.E. Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I. Date started: 12/30/2014 Date Completed: 12/30/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/30/2014	6 ft +/-	108 ft +/-	Observed moisture content
Method:	2-1/4" HSA	Hammer:	140 lb	2/16/2015	6.1 ft	107.9 ft	Measured in OW on 2/16/2015
Hammer Style:	Auto	Method:	ASTM D1586	3/23/2015	6.1 ft	107.9 ft	Measured in OW on 3/23/2015

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/12	0 - 2	8		Dark brown SILT, some to little Sand and Gravel, rootlets, firm, damp to frozen, ML		TOPSOIL
				5				
				4				
2				5		Brown Gravelly SAND, little Silt, compact, damp, SM Cobbles at 1.5'		0.5' FILL / REWORKED NATIVE
3								
4								
5								
6	S-2	24/18	5 - 7	2		Dark brown medium to fine grained SAND, some to little Silt, moist to wet, loose, SM (Probable former topsoil and reworked native sand)		
				3				
				7				
7				14		Light brown medium to coarse SAND, trace Silt, compact to dense, wet, SP		6.5' MARINE FAN DEPOSIT
8								1" PVC Well Screen 4' to 9'
9								
10								
11	S-3	24/24	10 - 12	2		Light brown medium to coarse SAND, trace Silt and Gravel, loose, wet, SP		
				4				
				6				
12				8		Olive brown Silty CLAY, some fine Sand, stiff, wet, CL		11.7'
13						End of Exploration at 13.1', Auger Refusal		13.1' BEDROCK
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-9**

Project: McAuley Place
 Location: Stevens Avenue
 City, State: Portland, Maine

Project #: 14238
 Sheet: 1 of 1
 Chkd by: WMP

Drilling Co: Summit Geoengeering Services Boring Elevation: 114 feet
 Driller: Craig Coolidge, P.E. Reference: Estimated from Existing Conditions Plan provided by Titcomb Associates
 Summit Staff: Bill Peterlein, P.E., Erika Hawksley, E.I. Date started: 12/30/2014 Date Completed: 12/30/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle:	Power Probe	Length:	24" SS	Date	Depth	Elevation	Reference
Model:	AMS 9500	Diameter:	2"OD/1.5"ID	12/30/2014	9.4 ft	104.6 ft	Measured in augers
Method:	2-1/4" HSA	Hammer:	140 lb				
Hammer Style:	Auto	Method:	ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/18	0 - 2	3		Dark brown SILT, little Sand, Clay, and rootlets, firm to stiff, damp to frozen, ML		TOPSOIL
2				5		Brown SAND, some Gravel, little Silt, compact, damp, SW-SM Cobbles at 1.5'	1'	FILL / REWORKED NATIVE
3				9				
4				8				
5						Olive brown Clayey SILT to Silty CLAY, little Sand and Gravel, firm, damp to moist, ML to CL	Water at 9.4'	
6	S-2	24/24	5 - 7	2				
7				2				
8				3				
9				4		Dark brown medium to fine grained SAND, some Silt, rootlets and organics, wet, loose, SM (Probable former topsoil and reworked native sand)	11'	MARINE FAN DEPOSIT
10	S-3	24/20	10 - 12	3				
11				6				
12				13		Light brown and mottled SAND, little Silt, trace Gravel, compact, wet, SP-SM to SM	16'	
13				14				
14						Light brown and mottled coarse SAND, trace Silt, compact, wet, SP Olive brown to gray Silty CLAY, stiff, wet, CL		
15	S-4	24/24	15 - 17	5				
16				7				
17				6		Olive brown to gray Silty CLAY, some Sand and Gravel, firm, to stiff, wet, CL		
18				5				
19						Olive brown to gray Silty CLAY, some Sand and Gravel, firm, to stiff, wet, CL		
20	S-5	7/7	19.5 - 20.1	4				
21				50/1"				
22						End of Exploration at 20.1', Spoon & Auger Refusal	20.1'	BEDROCK

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little	Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			

APPENDIX C

LABORATORY TESTING RESULTS



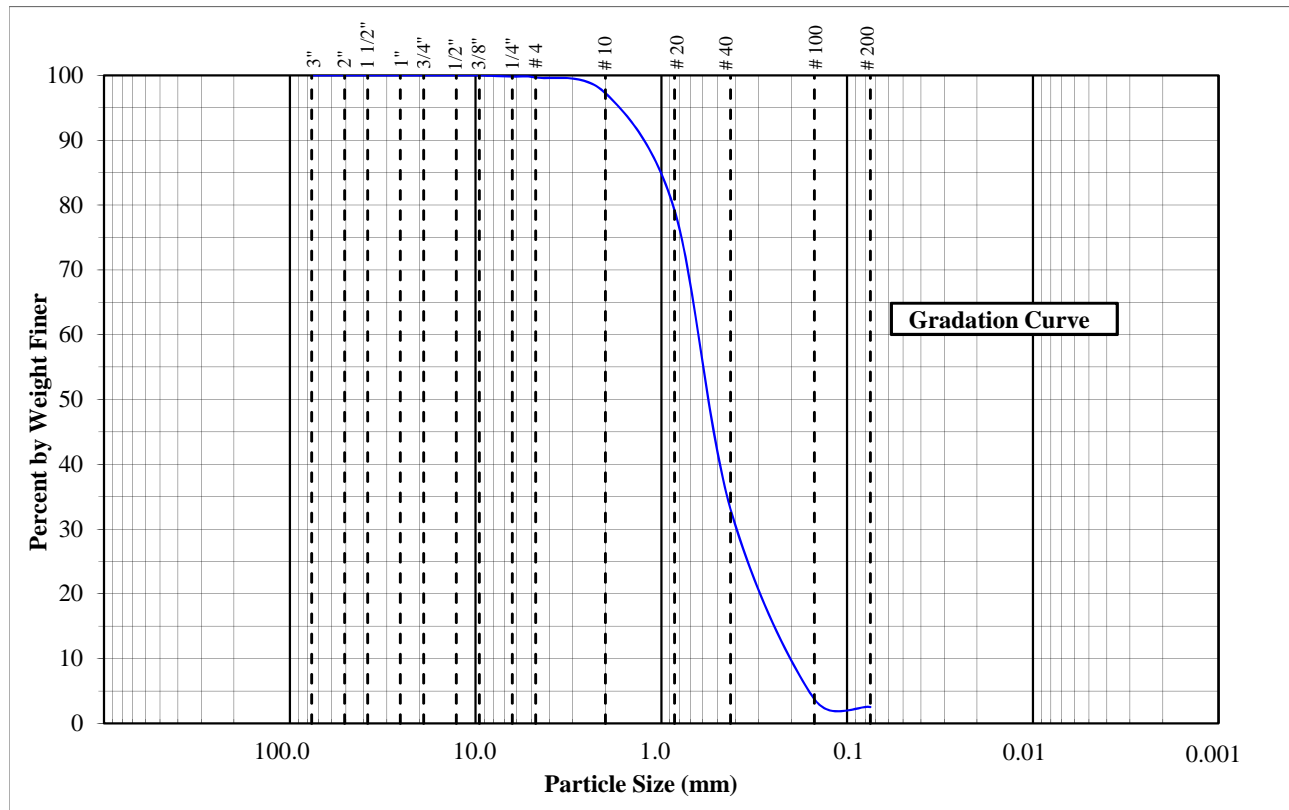
GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME: McAuley Place
CLIENT: Sea Coast Management Company
SOURCE: B-6, 5'-7'
DATE: 1/8/2015

PROJECT NUMBER: 14238
SAMPLE NUMBER: B-6, S-2
DESCRIPTION: Medium-fine SAND, trace Silt, SP
TECHNICIAN: Erika Hawksley, E.I.

DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	100.0
9.53	(3/8 in)	100.0
6.35	(1/4 in)	99.8
4.75	(No. 4)	99.7
2.00	(No. 10)	97.3
0.85	(No. 20)	79.2
0.43	(No. 40)	33.1
0.15	(No. 100)	3.8
0.075	(No. 200)	2.5



REMARKS: Moisture Content = 14.7%



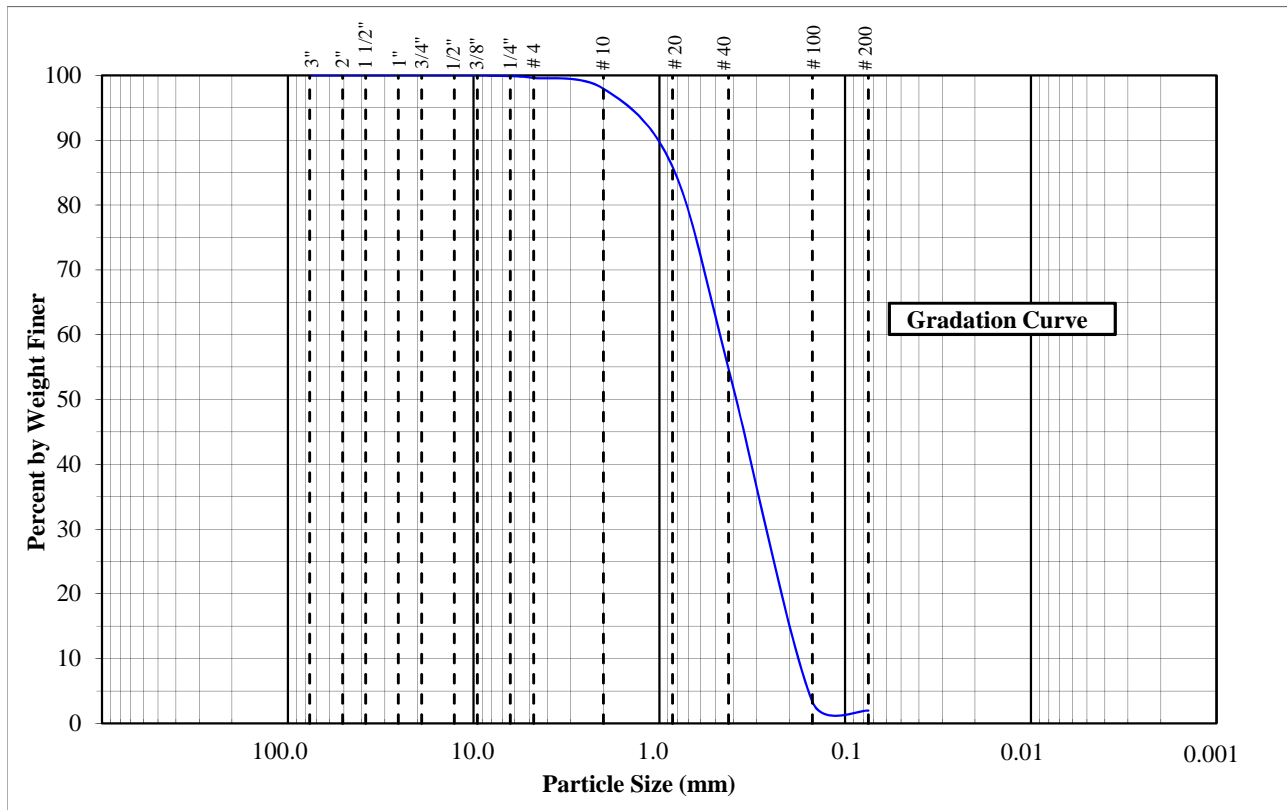
GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME: McAuley Place
CLIENT: Sea Coast Management Company
SOURCE: B-8, 10'-12'
DATE: 1/8/2015

PROJECT NUMBER: 14238
SAMPLE NUMBER: B-8, S-3
DESCRIPTION: Medium-fine SAND, trace Silt, SP
TECHNICIAN: Erika Hawksley, E.I.

DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	100.0
9.53	(3/8 in)	100.0
6.35	(1/4 in)	99.9
4.75	(No. 4)	99.6
2.00	(No. 10)	98.0
0.85	(No. 20)	85.9
0.43	(No. 40)	54.8
0.15	(No. 100)	3.3
0.075	(No. 200)	2.0



REMARKS: Moisture Content = 18%