REPORT

September 18, 2015
15-0668 S

Geotechnical Engineering Services

Proposed Community Building
1342 Congress Street
Portland, Maine

PREPARED FOR:
Jewish Community Alliance
Attention: Steve Brinn
57 Ashmont Street
Portland, Maine 04101

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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15-0668 S

September 18, 2015

Jewish Community Alliance
Attention: Steve Brinn
57 Ashmont Street
Portland, Maine 04101

Subject: Geotechnical Engineering Services
Proposed Community Building
1342 Congress Street
Portland, Maine

Dear Steve:

In accordance with our Proposal, dated July 14, 2015, we have performed subsurface explorations for the subject project. This report summarizes 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 services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations, earthwork and pavement associated with the proposed construction. Our scope of services included a review of historical subsurface data, nine test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is located at 1342 Congress Street in Portland, Maine and is currently occupied by a vacant church building with basement and associated paved and landscape areas. We understand redevelopment plans call for razing the existing church facility and construction of a new community building.

Based on information provided by Harriman (project architect/engineer), we understand the proposed community building will be an L-shaped, single-story structure with a slab-on-grade floor. The proposed building will occupy about 19,300 square feet in plan footprint situated partially over the demolished church building. The proposed building will have a finish floor elevation of 106 feet requiring tapered fills approaching 4 feet thick in the southerly end of the building and tapered cuts approaching 2 feet thick in the central to northerly end of the building. We understand column loads will approach a maximum of 72 kips (total load).

Paved entrances will be provided off of Congress Street and off of the adjacent retail lot. Paved parking will be provided in the southerly portion of the site which will require tapered fills approaching 3 feet thick. A subsurface stormwater system will be constructed on the westerly side of the site and an underdrained stormwater soil filter will be constructed in the southerly end of the site.

Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Nine test borings (B-101 through B-108 and B-104A) were made at the site on August 20 and 21, 2015. The explorations were made by S. W. Cole Explorations, LLC of Augusta, Maine working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected by Harriman and established in the field by S.W.COLE using 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 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.

A portion of the plan set showing 1962 test boring information for the existing church building was provided by Harriman. This historic subsurface data is attached as Appendix A.

2.2 Testing

The test borings were drilled using a combination of hollow-stem auger and cased wash-boring techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. Pocket Penetrometer Testing (PPT) was performed where stiffer clays were encountered. Vane Shear Testing (VST) and Shelby tube sampling was performed in softer clays at borings B-104A and B-106. SPT blow counts and PPT and VST results are shown on the logs.

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Laboratory testing included Atterberg Limits, moisture content and one-dimensional consolidation testing. Atterberg Limits and moisture content test results are noted on the logs. The results of two, one-dimensional laboratory consolidation tests are attached as Sheets 12 and 13.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial

Based on observations made at the site and information shown on plans of the existing church building, we understand the basement floor is at the same elevation beneath the main church building and in the boiler room, but steps up about 2.5 area beneath the rectory area. Historical elevations do not coincide with the present survey; however it appears the top of basement slab beneath the church/boiler room area is at about elevation 97 feet and top of basement slab beneath the rectory is at about elevation 99 feet in terms of the current project datum. Thus, it appears the church/boiler room basement slab is on the order of 5 to 10 feet below current exterior grades while the basement slab beneath the rectory is on the order of 3 to 7 feet below existing exterior grades. Based on historical plans, it appears that the basement slab is up to approximately 2.5 feet thick in some areas of the building. A concrete sump pit with standing water was observed in the existing boiler room area of the basement.

Existing grades around the church building generally slope down to the south, from approximate elevation 105 feet adjacent to Congress Street to approximate elevation 98 feet on the southerly side of the building. Existing site features are shown on Sheet 1.

3.2 Soil and Bedrock

The borings encountered a subsurface profile generally consisting of topsoil and uncontrolled fill, overlying glaciomarine clays, overlying glacial till and refusal surfaces. The principal soils encountered at the explorations are summarized below; refer to the attached boring logs for more detailed descriptions of the subsurface findings. Historical logs from explorations made in 1962 by others for the original church construction are attached as Appendix A for informational purposes.

Uncontrolled Fill: Borings B-101 through B-106, performed for the proposed building, encountered a layer of uncontrolled fill and/or disturbed soils extending to depths varying from about 5 to 8 feet. The uncontrolled fill consists of loose to medium dense silty clay and/or silty sand with varying portions of gravel, organics and debris such as asphalt, brick and ash. Boring B-107, performed for the proposed subsurface stormwater system, encountered clayey silt fill soils to a depth of about 1 foot. The uncontrolled fill appears to be thicker adjacent to the existing church building and in the northerly portion of the site, approaching Congress Street.

Glaciomarine Clay: Underlying the uncontrolled fill, the borings encountered glaciomarine silty clay generally consisting of an upper layer of hard to stiff brown silty clay extending to depths varying from about 13 to 16.5 feet below the ground surface, transitioning to softer gray silty clay with varying frequency of sand seams and layers. Borings B-107 and B-108 were terminated in the stiffer brown silty clay at a depth of 12 feet. Where penetrated, the softer gray silty clay extended to depths varying from about 18 to 24 feet below the ground surface.

Vane Shear Testing in the gray silty clay indicate undrained shear strengths generally greater than 890 psf. Laboratory consolidation testing performed on samples of the gray silty clay indicate the soils are overconsolidated by approximately 2 ksf.

Glacial Till: Underlying the glaciomarine clay, most of the borings encountered glacial till consisting of medium dense gray silty sand with varying portions of gravel. The till was

encountered at depths varying from about 18 to 24 feet below the ground surface. Boring B-104 was terminated in the glacial till at depth of 27 feet.

Refusal Surfaces: Underlying the glaciomarine clay and/or glacial till, borings B-101 through B-103 and B-105 encountered refusal surfaces (probable bedrock) at depths varying from 22.0 to 26.3 below the ground surface.

3.3 Groundwater

The soils encountered at the test borings were generally damp to moist below 5 to 10 feet. Saturated soils were encountered at depths varying from about 11 to 16 feet. Groundwater likely becomes perched on the relatively impervious silty clay and within the uncontrolled fill soils encountered at the test borings. Long term groundwater information is not available. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

It should be noted that a sump containing free water was observed in the boiler room of the existing church building. The free water is indicative of groundwater perched on the silty clay soils at the site.

3.4 Seismic and Frost

The 100-year Air Freezing Index for the Portland, Maine area is about 1,407-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the subsurface findings, we interpret the site soils to correspond to Seismic Soil Site Class D according to 2009 IBC.

3.5 Subsurface Stormwater and Soil Filter Systems

As requested, borings B-107 and B-108 were made for the subsurface stormwater and soil filter systems. These borings generally encountered topsoil and organics overlying very stiff to stiff brown silty clay with some fine sand. These borings were terminated at the depths of 12 feet below the ground surface. Refer to the attached boring logs for more detailed descriptions of the subsurface findings.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations are:

- The explorations encountered a layer of uncontrolled fill and disturbed soils up to approximately 8 feet thick. The fills and disturbed soils are unsuitable for support of the proposed building and must be removed and backfilled with compacted Granular Borrow. In paved areas, we recommend proof-rolling the existing fills and repairing soft areas prior to placing compacted fills or pavement gravels.

- We anticipate the existing basement slabs and lower footings bear on sensitive, wet silty clay. We recommend leaving the existing lowest level basement slab and basement level footings (beneath church and boiler room areas) in place to help reduce potential clay subgrade disturbance. All other existing structures which will influence new construction (existing entrance areas and stairways, rectory basement and garage slab and footings and all foundation walls) should be completely removed and backfilled with compacted Granular Borrow.

- We understand current planning includes razing the existing site building in a demolition phase separate from new construction. We recommend including overexcavation and backfill of unsuitable materials below the proposed building as part of the demolition phase. In any case, demolition and removal of unsuitable soil must be done in a careful, controlled manner to minimize disturbance of bearing soils. S.W.COLE should be engaged to observe demolition of basement walls, foundations, overexcavation of unsuitable soils and backfilling.

- The building site is underlain by glaciomarine clays that will compress under the weight of new fills and building loads. To help reduce post-construction building settlement, all site fills needed to raise grades in building and paved areas should be placed to subgrade elevation prior to excavating for building foundations.

- Conventional spread footing foundations and on-grade floor slabs bearing on properly prepared subgrades appear suitable for the proposed building.

Geotextile fabric wrapped Crushed Stone should be provided below perimeter footings to protect subgrade soils during construction and to provide a drainage blanket for short and long-term underdrainage. Interior footings are anticipated to be founded on compacted Granular Borrow.

- Subgrades across the site will consist of sensitive clay, silt and silty sand. Earthwork and grading activities should occur during drier Summer and Fall seasons. Rubber tired construction equipment should not operate directly on foundation bearing surfaces. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

- Imported Granular Borrow, Structural Fill, and Crushed Stone will be needed for construction. The existing fill and native soils are unsuitable for reuse below building or paved areas, but may be suitable for reuse in landscape areas.

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. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance. All forest duff, topsoil, and organics should be completely removed from areas of proposed construction. Uncontrolled fills must be removed from beneath the proposed building area. Final cuts to subgrade elevation should be made with a smooth-edge bucket to lessen subgrade disturbance. We offer the following recommendations for site and subgrade preparation in building and paved areas.

4.2.1 Building Area

We understand site preparation will begin with demolition of the existing building. Demolition must be performed in a careful, controlled manner to minimize disturbance to bearing soils. We recommend leaving the existing lowest level basement slabs and basement level footings (beneath church and boiler room areas) in place to preclude disturbing the underlying sensitive clay.

As discussed, uncontrolled fill on the order of to 5 to 8 feet was encountered at the test borings performed in the proposed building area. It appears that the uncontrolled fill is thickest within the backfill zone of the existing church basement area and in the northerly portion of the site, approaching Congress Street. All uncontrolled fill and disturbed soil

must be removed from beneath the proposed building footprint. Overexcavation of existing fill should extend 1-foot horizontally outward from edge of perimeter footings for every 1-foot of vertical depth below footing subgrade elevation (1H:1V bearing splay). We recommend that consideration be given to including removal of uncontrolled fills below the proposed building and backfilling with compacted Granular Borrow during the demolition phase of work. S.W.COLE should be engaged to observe demolition, overexcavation, subgrade preparation, backfilling and preparation of the building pad.

In order to reduce post-construction settlement, we recommend that all new fills needed to raise grade in the building area be placed prior to excavating for building foundations.

4.2.2 Paved Areas

We recommend proof-rolling and densifying existing uncontrolled fill in proposed paved areas with 3 to 5 passes of a 10 ton roller compactor. Areas that become soft or yielding after proof-rolling and areas of subgrade which contain organics should be overexcavated and replaced with Structural Fill. Construction documents should contain unit rate provisions for overexcavation and replacement of unsuitable soils in paved areas. We recommend that woven geotextile, such as Mirafi 600X or equivalent, be provided over pavement subgrades which consist of native silty clay.

4.3 Excavation and Dewatering

Excavation work will generally encounter uncontrolled fills and glaciomarine clays. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier Summer and Fall seasons. Rubber tired construction equipment should not operate directly on the native clays. Final cuts to subgrade in clayey soils should be performed with a smooth-edged bucket to help reduce soil disturbance.

Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to about one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA trenching regulations to prevent sloughing and caving of the sidewalls during construction. Excavations must not undermine adjacent utilities, structures, and paved areas, including the overexcavations approaching Congress Street. The design and planning of excavations, excavation support systems, and dewatering are the responsibility of the contractor.

4.4 Foundations

We recommend the proposed buildings be supported on spread footings founded on properly prepared subgrades. We recommend perimeter footings be founded on at least 6-inches of Crushed Stone fully wrapped in non-woven geotextile fabric; the subgrade elevation below perimeter footings should be constant for positive drainage to the underdrain pipe which will result in varying depth of Crushed Stone of 6 or more inches. Interior footings are anticipated to be founded on compacted Granular Borrow.

For spread footings bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Walls	
Design Frost Depth	4.5 feet
Net Allowable Soil Bearing Pressure	2.5 ksf or less
Base Friction Factor	0.35
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	D (IBC 2009)

Based on our understanding of the proposed construction and the subsurface findings, we estimate that post-construction settlement may approach ¾ inch total and ¾ inch differential between the south side of the proposed building requiring tapered fills and north side requiring tapered cuts. These estimates assume that all fill needed to raise site grades in building and paved areas will be placed prior to excavating for foundations.

4.5 Foundation Drainage

We recommend an underdrain system be installed on the outside edge of the geotextile fabric wrapped Crushed Stone layer recommended below perimeter footings. The subgrade elevation below perimeter footings should be constant for positive drainage to the underdrain pipe which will result in a varying depth of crushed stone of 6 or more inches. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe with a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive drainage. General underdrain details are illustrated on Sheet 14.

4.6 Slab-On-Grade

On-grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12-inches of compacted Structural Fill placed over properly prepared subgrades. 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 should 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.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to the building must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible 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 slab and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are attached as Sheet 14.

4.8 Backfill and Compaction

The on-site soils are unsuitable for reuse in building and paved areas, but may be reused in landscape areas. For building and paved areas, we recommend the following fill and backfill materials:

Granular Borrow: Sand or silty sand meeting the requirements of MaineDOT Standard Specification 703.19 Granular Borrow. Granular Borrow is recommended for use as:

- Fill to raise grades over dry subgrades and during non-freezing conditions
- Backfill of overexcavations and for backfilling the existing basement area in dry and non-freezing conditions
- Backfill of interior footings not exposed to freezing

Structural Fill: 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

Structural Fill is recommended for use as:

- Fill and to raise grades over wet subgrades and during cold weather conditions
- Backfill for overexcavations and for backfilling the existing basement area in wet or cold weather conditions
- Backfill against foundations exposed to freezing
- Backfill within frost transition zones below entrances and sidewalks

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

Reuse of Site Soils: The existing uncontrolled fills consist of clays, silts, and sands with varying portions of gravel and organics. The native site soils consist of glaciomarine silty clays. These existing site soils are unsuitable for reuse below new building and pavement, but may be reused in landscape areas.

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 and paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 600 pounds.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. 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.

4.10 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic. Considering the site soils and proposed usage, we offer the following pavement section for consideration. Materials are based on Maine Department of Transportation Standard Specifications.

Flexible Pavement Section	
Layer	**Thickness**
9.5 mm Hot Mix Asphalt (50 Gyration Design)	1 ¼ inches
19.0 mm Hot Mix Asphalt (50 Gyration Design)	2 ¼ inches
MaineDOT 703.06 Type A, Crushed Aggregate Base	3 inches
Maine DOT 703.06 Type D, Crushed Aggregate Subbase	15 inches
Woven Geotextile Fabric, Mirafi 600X on Native Clay Subgrades	

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. In the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated. To help mitigate frost related damage, we recommend pavement gravels be daylighted to sideslopes and foundation wall backfill for positive drainage relief.

4.11 Design Review and Construction Testing

S.W.COLE should be retained to review the civil and foundation construction documents to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

S.W.COLE should be on-site during demolition of the existing basement and foundations and during overexcavation and backfill of existing uncontrolled fills.

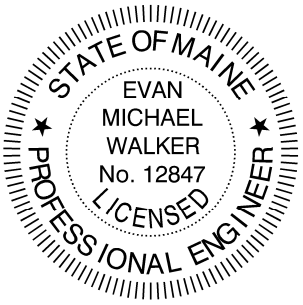
A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide subgrade observations for foundations as well as testing services for soils, concrete, asphalt, steel and spray-applied 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

EMW:pfk/tjb

C: James Fortin, P.E. - Harriman

Attachment A
Limitations

This report has been prepared for the exclusive use of Jewish Community Alliance for specific application to the proposed Community Building at 1342 Congress Street in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

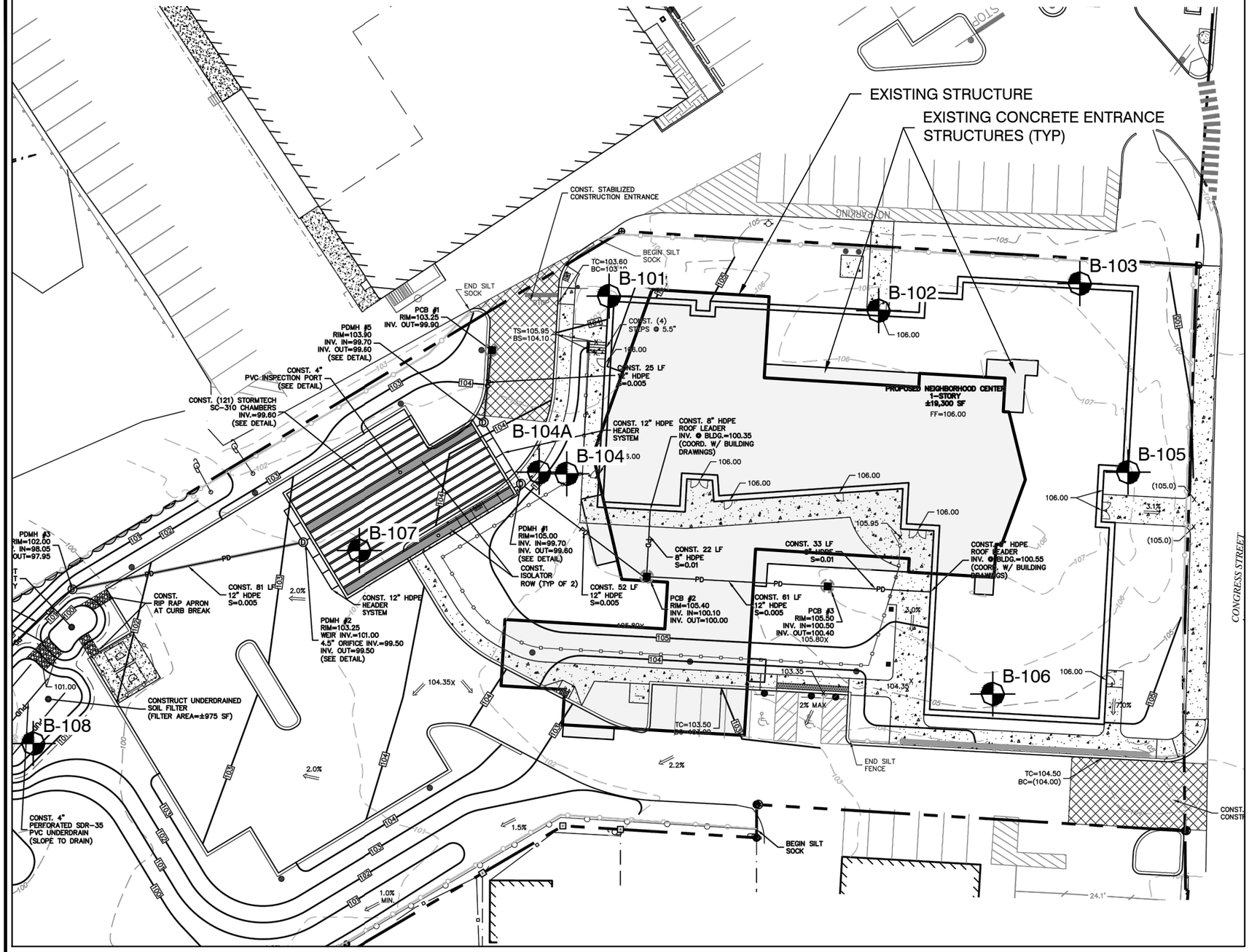
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

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'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 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.



LEGEND:

APPROXIMATE BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE ENTITLED "GRADING, DRAINAGE, AND EROSION CONTROL PLAN," PREPARED BY TIGHE & BOND CONSULTING ENGINEERS, DATED APRIL 03, 2015, REVISED JUNE 23, 2015 AND PROVIDED AS A PORTABLE DOCUMENT FORMAT (PDF) FILE.
2. EXISTING STRUCTURE INFORMATION TAKEN FROM A 1"=20' SCALE PLAN OF THE SITE ENTITLED "EXISTING CONDITIONS AND DEMOLITION PLAN," PREPARED BY TIGHE & BOND CONSULTING ENGINEERS, DATED APRIL 3, 2015, REVISED JUNE 23, 2015 AND PROVIDED AS A PORTABLE DOCUMENT FORMAT (PDF) FILE.
3. THE BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. 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 40 80 Feet

S.W.COLE ENGINEERING, INC.

JEWISH COMMUNITY ALLIANCE

EXPLORATION LOCATION PLAN

PROPOSED COMMUNITY BUILDING
1342 CONGRESS STREET
PORTLAND, MAINE

Job No.:	15-0668	Scale:	1" = 40'
Date :	09/18/2015	Sheet:	1

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S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-101**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 103' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 5', MOIST BELOW 10',
SATURATED BELOW 15' +/-

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
	1D	24"	20"	2.0'	3	7	8	8	5.0'	BROWN SILTY SAND, SOME GRAVEL WITH ORGANICS AND TRACE ASPHALT (FILL) ~ MEDIUM DENSE ~
	2D	24"	20"	7.0'	6	9	11	11		~ HARD TO VERY STIFF ~ q_p =8 - 9 KSF BROWN SILTY CLAY, SOME SAND WITH OCCASIONAL FINE SAND SEAMS
	3D	24"	22"	12.0'	3	4	4	5	13.0'	~ STIFF ~ q_p = 3 - 4 KSF
	4D	24"	24"	17.0'	2	1-12"		2		GRAY SILTY CLAY WITH FREQUENT FINE SAND SEAMS ~ MEDIUM ~
	5D	24"	24"	22.0'	WOH-12"		1	2	21.9'	
	6D	3"	3"	25.3'	50-3"				25.2'	GRAY SILTY GRAVEL AND SAND (GLACIAL TILL) ~ MEDIUM DENSE ~
										REFUSAL @ 25.2' PROBABLE BOULDER OR BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 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.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 106' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 2', MOIST BELOW 10',
SATURATED BELOW 13' +/-

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
									0.5'	VEGETATION / DARK BROWN CLAYEY SILT SAND WITH ORGANICS
	1D	24"	14"	2.0'	2	4	4	5		BROWN TO DARK GRAY-BROWN SANDY SILTY CLAY WITH TRACE BRICK, ASH, AND ORGANICS (FILL)
	2D	24"	22"	4.0'	5	8	8	7	5.0'	~ STIFF / MEDIUM DENSE ~
									5.5'	GRAY-BROWN MOTTLED SILTY CLAY, TRACE SAND (APPEARS DISTURBED)
	3D	24"	22"	7.0'	4	5	8	10		~ HARD ~ q_p =8 - 9 KSF BROWN SILTY CLAY WITH OCCASIONAL SAND SEAMS
	4D	24"	24"	12.0'	4	5	6	7	13.0'	~ VERY STIFF ~ q_p = 6 KSF
	5D	24"	24"	17.0'	1-12"		2	2		GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS ~ MEDIUM ~
	6D	24"	24"	22.0'	4	9	8	9	18.0'	GRAY GRAVELLY SILTY SAND (GLACIAL TILL) ~ MEDIUM DENSE ~
	7D	15"	10"	26.3'	4	5	50-3"		26.3'	SAMPLER REFUSAL @ 26.3' PROBABLE BOULDER OR BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 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-103**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 105.5' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS MOIST BELOW 10'
SOILS SATURATED BELOW 14' +/-

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
										VEGETATION / DARK BROWN SILTY SAND WITH ORGANICS
	1D	24"	18"	2.0'	2	3	6	7	2.0'	
	2D	24"	14"	4.0'	7	7	7	8		BROWN TO ORANGE-BROWN SILTY SAND, SOME GRAVEL,
									5.0'	WITH TRACE ORGANICS (FILL) ~ MEDIUM DENSE ~
	3D	24"	24"	7.0'	5	7	10	12		BROWN WITH ORANGE-BROWN MOTTLING q_p = 9 KSF
										SILTY CLAY, SOME FINE SAND…
										~ HARD ~
	4D	24"	24"	12.0'	4	5	7	6		…BECOMES BROWN SILTY CLAY
										q_p = 4 -5 KSF
										~ VERY STIFF ~
									14.0'	
	5D	24"	24"	17.0'	WOH	2	1	4		GRAY SILTY CLAY WITH FREQUENT FINE SAND SEAMS AND LAYERS
										~ MEDIUM ~
	6D	24"	24"	22.0'	WOH	1-12"		1		
									24.1'	
	7D	3"	3"	25.3'	50-3"				25.2'	GRAY GRAVELLY SILTY SAND (GLACIAL TILL)
									25.3'	WEATHERED BEDROCK
										SAMPLER REFUSAL @ 25.3'
										PROBABLE BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 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-103**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-104**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 101.5' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 2', WET BELOW 5',
SATURATED BELOW 11' +/-

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
									0.8'	VEGETATION / DARK BROWN CLAYEY SILTY SAND WITH ORGANICS (TOPSOIL)
	1D	24"	18"	2.0'	3	7	8	9		BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL, TRACE ORGANICS (FILL)
	2D	24"	16"	4.0'	8	11	14	11		~ LOOSE TO MEDIUM DENSE ~
	3D	24"	16"	7.0'	2	2	3	7	8' +/-	
	4D	24"	22"	12.0'	2	1	2	2	14.0'	~ STIFF ~ GRAY-BROWN SILTY CLAY WITH FREQUENT FINE SAND SEAMS w = 40.1% ~ MEDIUM ~ q_p = 0.5 - 1 KSF
	5D	24"	24"	17.0'	WOH - 18"			2		w = 41.7% GRAY SILTY CLAY WITH FREQUENT FINE SAND SEAMS ~ MEDIUM ~
	6D	24"	24"	22.0'	WOH - 12"		1	1	23.0'	w = 35.5%
	7D	24"	10"	27.0'	25	7	7	6	27.0'	GRAY SILTY GRAVEL AND SAND (GLACIAL TILL) ~ MEDIUM DENSE ~
										BOTTOM OF EXPLORATION @ 27.0'

SAMPLES:
D = SPLIT SPOON
C = 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-104A**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/21/2015
DATE FINISH: 8/21/2015
ELEVATION: 101.5' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	HYD. PUSH	
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION
SEE BORING B-104

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
										DRILL TO 15' - NO SAMPLING SEE BORING B-104 FOR APPROXIMATE STRATA
									15.0'	
										w = 41.2%, W_L = 38, W_P = 20
	1C	24"	24"	17.0'	HYDRAULIC PUSH					GRAY SILTY CLAY WITH OCCASIONAL FINE SAND SEAMS
	1V			17.8'	3 5/8" X 7" VANE					S_v = 0.89 KSF / 0.12 KSF ~ MEDIUM ~
	1V'			18.6'	3 5/8" X 7" VANE				18.6'	S_v > 1.24 KSF (NO ROTATION - PROBABLE SAND LAYER)
										BOTTOM OF EXPLORATION @ 18.6'

SAMPLES:
D = SPLIT SPOON
C = 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-104A**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-105**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 107' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS MOIST BELOW 6', WET BELOW 15'
SATURATED BELOW 16' +/-

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
									0.5'	VEGETATION / DARK BROWN SILTY SAND WITH ORGANICS
	1D	24"	18"	2.0'	4	4	6	5		BROWN SILTY SAND, SOME CLAY, SOME GRAVEL (FILL)
									3.0'	~ MEDIUM DENSE ~
	2D	18"	14"	3.5'	6	32	50			ORANGE-BROWN SAND AND GRAVEL, SOME SILT (FILL)
									5.0'	~ DENSE ~
	3D	24"	16"	7.0'	20	19	13	13		BROWN TO GRAY-BROWN GRAVELLY SILTY SAND, SOME CLAY (FILL)
									8.0'	~ DENSE ~
										BROWN SILTY CLAY
	4D	24"	24"	12.0'	5	7	7	9		~ VERY STIFF ~ q_p = 7-8 KSF
									15.0'	
										GRAY-BROWN SILTY CLAY WITH FREQUENT FINE SAND SEAMS AND LAYERS
	5D	24"	22"	17.0'	3	3	3	2	16.5'	~ MEDIUM ~ q_p = 0.5 - 1.5 KSF
										GRAY SILTY CLAY WITH FREQUENT FINE SAND SEAMS
	6D	24"	24"	22.0'	WOH - 12"		1	1		~ MEDIUM ~
									23.1'	
										GRAY GRAVELLY SILTY SAND (GLACIAL TILL)
	7D	3"	3"	25.3'	50-3"				25.3'	~ MEDIUM DENSE ~
										SAMPLER REFUSAL @ 25.3'
										PROBABLE BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 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.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 105' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	HYD. PUSH	
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 2', MOIST BELOW 10',
SATURATED BELOW 15' +/-

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
									0.5'	VEGETATION / DARK BROWN SILTY CLAYEY SAND WITH ORGANICS
	1D	24"	18"	2.0'	3	5	7	9		
										GRAY-BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL (FILL)
	2D	24"	18"	4.0'	7	9	11	12	3.5'	~ STIFF ~
										BROWN SILTY CLAY (DISTURBED / REWORKED)
									5.5'	~ STIFF ~
	3D	24"	16"	7.0'	5	6	10	10		w = 22.2% q_p = 9 KSF
										BROWN MOTTLED SILTY CLAY, SOME FINE SAND
										~ HARD TO VERY STIFF ~
									10.0'	
										w = 28.9%
	4D	24"	22"	12.0'	4	6	6	7		GRAY-BROWN SILTY CLAY q_p = 4.5 - 5.5 KSF
										~ VERY STIFF ~
										~ MEDIUM ~
	5D	24"	24"	17.0'	2	1	1	2	16.5'	w = 32.8%
										GRAY SILTY CLAY
										~ MEDIUM ~
	1C	24"	24"	21.0'	HYD. PUSH					w = 43.2%, W_L = 30, W_P = 17
	1V			21.8'	3 5/8" X 7" VANE				22.0'	S_v > 1.14 KSF (NO ROTATION -SAND LAYER / BOTTOM OF CLAY STRATUM)
										REFUSAL @ 22.0'
										PROBABLE BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 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 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 101' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
ALL SOILS MOIST

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
									0.4'	VEGETATION / DARK BROWN CLAYEY SILTY SAND WITH ORGANICS
	1D	24"	16"	2.0'	1	2	3	5	1.0'	BROWN CLAYEY SILT AND WITH ORGANICS (FILL)
	2D	24"	18"	4.0'	6	8	10	12		q_p = 6.5-7 KSF
										BROWN SILTY CLAY
	3D	24"	22"	7.0'	5	6	8	9		~ VERY STIFF ~ q_p = 6.5 KSF
	4D	24"	24"	12.0'	2	2	2	2	12.0'	~ STIFF ~ q_p = 2.5 KSF
										BOTTOM OF EXPLORATION @ 12.0'

SAMPLES:
D = SPLIT SPOON
C = 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**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-108**
SHEET: 1 OF 1
PROJECT NO.: 15-0668

PROJECT: PROPOSED COMMUNITY BUILDING
CLIENT : JEWISH COMMUNITY ALLIANCE
LOCATION: 1342 CONGRESS STREET, PORTLAND, MAINE
DRILLING FIRM: S.W. COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

DATE START: 8/20/2015
DATE FINISH: 8/20/2015
ELEVATION: 100' +/-
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS MOIST AT GROUND SURFACE
SOILS WET BELOW 5' +/-

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
									0.8'	VEGETATION / DARK BROWN CLAYEY SILTY SAND WITH ORGANICS
	1D	24"	18"	2.0'	2	1	3	5		q_p = 7 KSF
										BROWN SILTY CLAY, TRACE FINE SAND
	2D	24"	20"	7.0'	5	6	7	10		~ VERY STIFF ~ q_p = 7 KSF
									10.0'	
										GRAY-BROWN SILTY CLAY
	3D	24"	22"	12.0'	2	2	2	3	12.0'	~ STIFF ~ q_p = 3 - 3.5 KSF
										BOTTOM OF EXPLORATION @ 12.0'

SAMPLES:
D = SPLIT SPOON
C = 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-108**

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. - laboratory 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. – 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.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

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

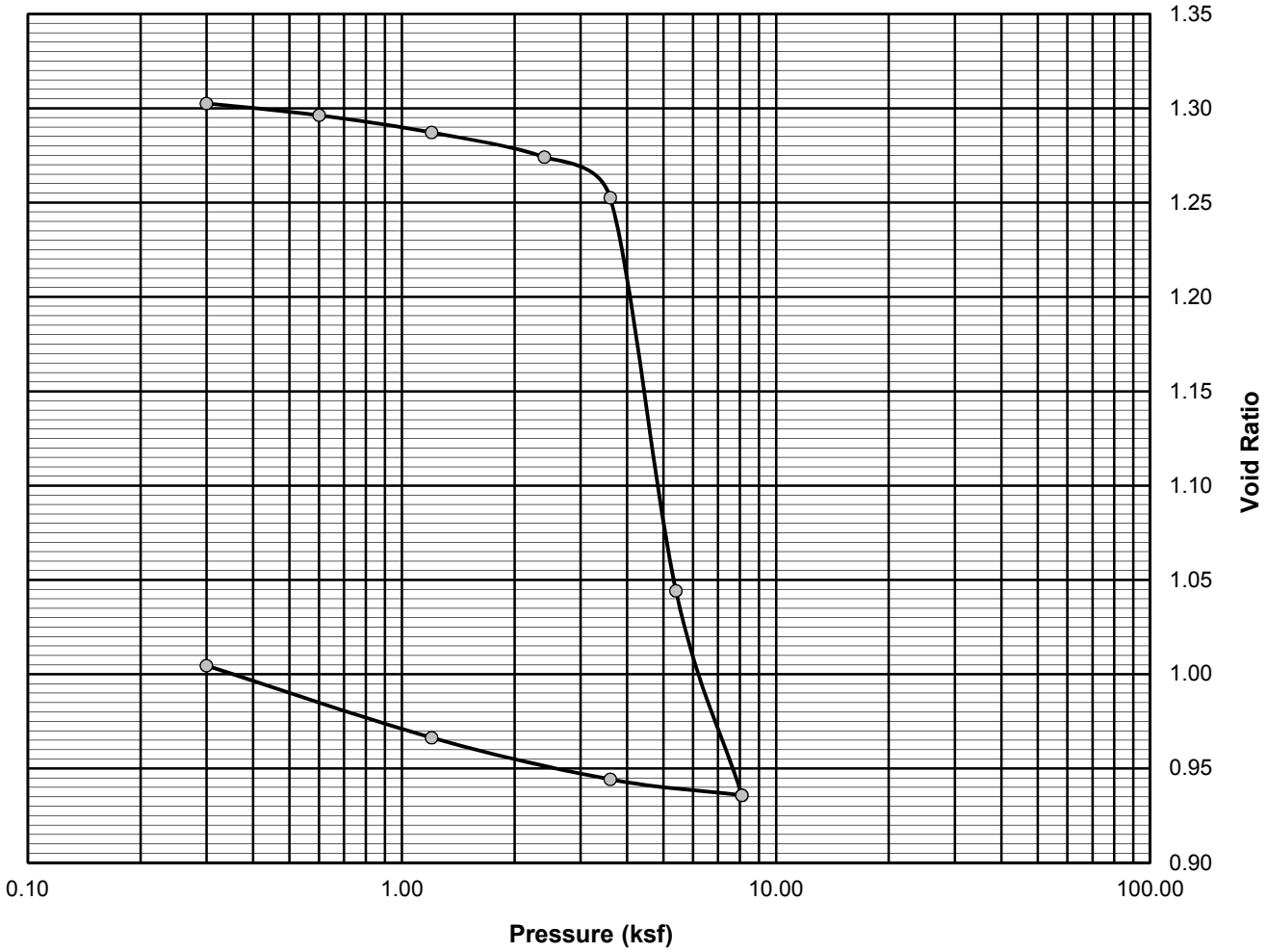
ASTM D-4767

Project Name: 1342 Congress Street Building
Client: The Jewish Community Alliance of Southern Maine

Project Number: 15-0668
Lab ID: 18818B
Date: 8/21/2015

Boring: B-104A
Sample: 1C
Depth: 15-17'

P_C =	3.6 KSF
C_C =	1.18
C_R =	0.03
w =	41.2%
W_L =	38
W_P =	20



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

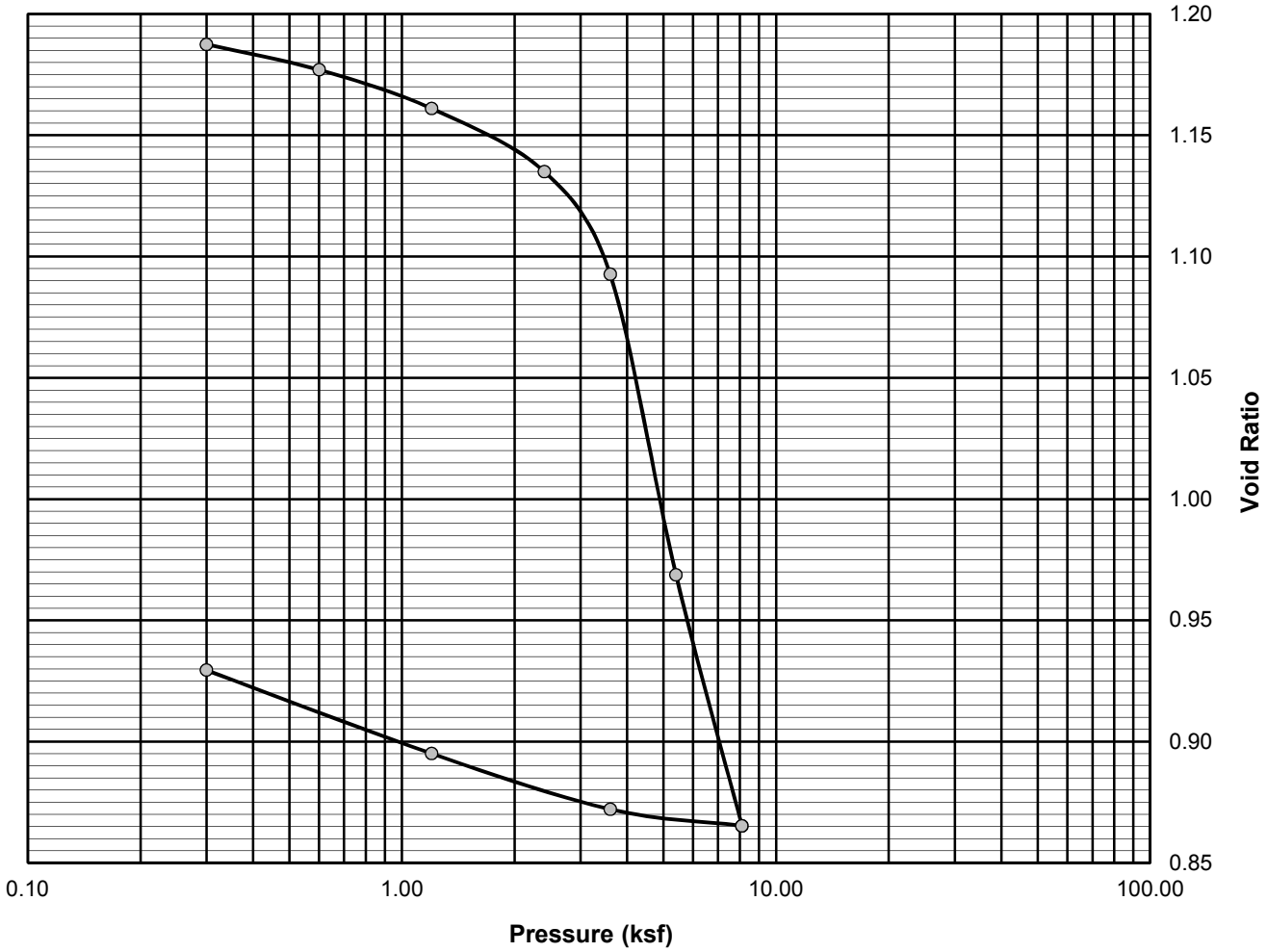
ASTM D-4767

Project Name: 1342 Congress Street Building
Client: The Jewish Community Alliance of Southern Maine

Project Number: 15-0668
Lab ID: 18819B
Date: 8/21/2015

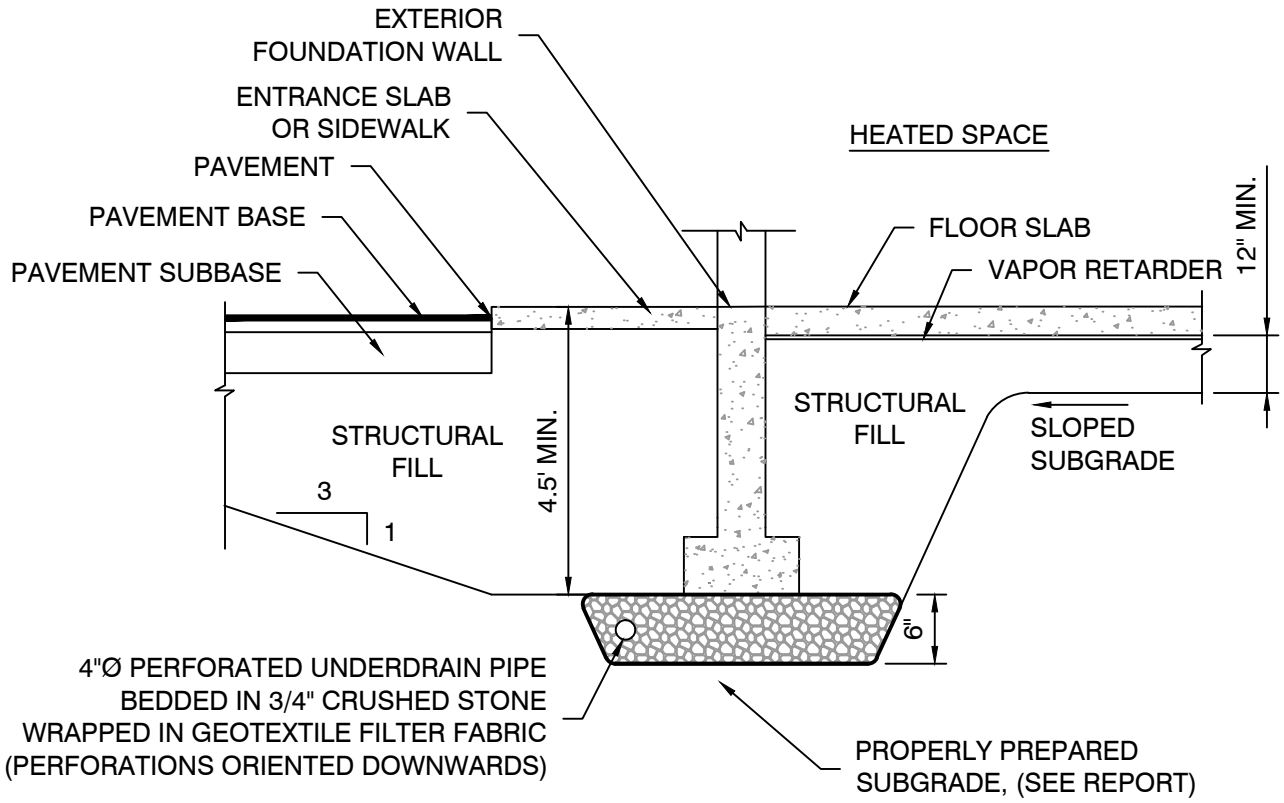
Boring: B-106
Sample: 1C
Depth: 19-21'

P_C =	3.6 KSF
C_C =	0.71
C_R =	0.03
w =	43.2%
W_L =	30
W_P =	17



Comments:

EMW
Reviewed By



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.

JEWISH COMMUNITY ALLIANCE

UNDERDRAIN DETAIL

PROPOSED COMMUNITY BUILDING
1342 CONGRESS STREET
PORTLAND, MAINE

Job No.:	15-0668	Scale:	Not to Scale
Date :	09/18/2015	Sheet:	14

APPENDIX A

HISTORICAL SUBSURFACE DATA

BORING #1

GROUND SURFACE ELEV. 48.33

0'0"	LOOSE LOAMY SAND	7
4'0"	VERY STIFF YELLOW CLAY	20
13'0"	SOFT BLUE CLAY & INORGANIC SILT	4
19'6"	SOFT BLUE CLAY, SOME FINE SAND	6
22'6"	FIRM FINE SAND & GRAVEL	28
24'6"	REFUSAL	

WATER LEVEL 4'0" BELOW GROUND SURFACE

DATE: 6-25-62

BORING #2

GROUND SURFACE ELEV. 48.51

0'0"	FIRM LOAMY SAND, SOME GRAVEL	14
6'0"	VERY STIFF YELLOW CLAY	24
13'0"	FINE SAND & CLAY	8
17'0"	FINE SAND & CLAY, SOME INORGANIC SILT	6
22'0"	FIRM FINE SAND & GRAVEL, SOME INORGANIC SILT	24
26'0"	REFUSAL	

WATER LEVEL 5'0" BELOW GROUND SURFACE

DATE: 6-20-62

BORING #3

GROUND SURFACE ELEV. 48.03

0'0"	FIRM LOAMY SAND	10
3'6"	VERY STIFF YELLOW CLAY	21
13'0"	SOFT BLUE CLAY & INORGANIC SILT	3
20'6"	MEDIUM BLUE CLAY, SOME FINE SAND	7
22'0"	HARD FINE SAND & GRAVEL	31
24'6"	REFUSAL	

WATER LEVEL 4'6" BELOW GROUND SURFACE

DATE: 6-26-62

BORING #4

GROUND SURFACE ELEV. 46.81

0'0"	LOOSE LOAMY SAND	7
2'6"	VERY STIFF YELLOW CLAY	19
12'6"	SOFT BLUE CLAY & INORGANIC SILT	4
15'0"	SOFT BLUE CLAY, SOME INORGANIC SILT	3
20'0"	FIRM FINE SAND & GRAVEL	25
23'0"	REFUSAL	

WATER LEVEL 5'0" BELOW GROUD SURFACE

DATE: 6-26-62

BORING #5

GROUND SURFACE ELEV. 46.26

0'0"	LOOSE LOAMY SAND	7
2'6"	VERY STIFF YELLOW CLAY	19
13'0"	SOFT BLUE CLAY, SOME FINE SAND, TRACE OF INORGANIC SILT	5
20'0"	FIRM FINE SAND & GRAVEL	26
21'6"	REFUSAL	

WATER LEVEL 5'6" BELOW GROUND SURFACE

DATE: 6-25-62

BORING #6

GROUND SURFACE ELEV. 45.87

0'0"	FIRM LOAMY SAND, SOME GRAVEL	9
3'0"	VERY STIFF YELLOW CLAY	22
9'0"	FIRM FINE SAND & CLAY	15
14'0"	MEDIUM BLUE CLAY, SOME FINE SAND	7
16'0"	SOFT BLUE CLAY, SOME FINE SAND & INORGANIC SILT	3
20'0"	HARD FINE SAND & GRAVEL	32
26'0"	REFUSAL	

WATER LEVEL 5'0" BELOW GROUND SURFACE

DATE: 6-20-62

BORING #7

GROUND SURFACE ELEV. 45.17

0'0"	LOOSE LOAMY SAND, SOME GRAVEL	8
2'6"	VERY STIFF YELLOW CLAY	16
13'0"	SOFT BLUE CLAY & INORGANIC SILT, TRACE OF FINE SAND	5
19'0"	SOFT BLUE CLAY	5
24'0"	FIRM FINE SAND & GRAVEL	28
29'0"		

WATER LEVEL 3'0" BELOW GROUND SURFACE

DATE: 6-21-62

BORING #13

GROUND SURFACE ELEV. 45.36

0'0"	FIRM LOAMY SAND	11
2'6"	VERY STIFF YELLOW CLAY	18
11'0"	SOFT BLUE CLAY & INORGANIC SILT, TRACE OF FINE SAND	4
25'0"	FIRM FINE SAND & GRAVEL	26
28'0"	REFUSAL	

WATER LEVEL 3'0" BELOW GROUND SURFACE

DATE: 6-22-62

BORING #14

GROUND SURFACE ELEV. 46.13

0'0"	LOOSE LOAMY SAND	7
2'6"	VERY STIFF YELLOW CLAY	18
10'0"	SOFT BLUE CLAY, SOME INORGANIC SILT	5
13'0"	SOFT BLUE CLAY, SOME INORGANIC SILT	3
22'6"	HARD FINE SAND & GRAVEL	34
26'6"	REFUSAL	

WATER LEVEL 2'6" BELOW GROUND SURFACE

DATE: 6-22-62

BORING #15

GROUND SURFACE ELEV. 47.63

0'0"	LOOSE LOAMY SAND	6
2'6"	VERY STIFF YELLOW CLAY	18
12'6"	SOFT BLUE CLAY, SOME INORGANIC SILT, TRACE OF FINE SAND	4
21'0"	FIRM FINE SAND & GRAVEL	22
25'0"	REFUSAL	

WATER LEVEL 3'0" BELOW GROUND SURFACE

DATE: 6-26-62

BORING #16

GROUND SURFACE ELEV. 47.68

0'0"	LOOSE LOAMY SAND	8
3'6"	VERY STIFF YELLOW CLAY	18
14'0"	SOFT BLUE CLAY, SOME INORGANIC SILT	3
19'0"	SOFT BLUE CLAY, SOME INORGANIC SILT, TRACE OF FINE SAND	4
21'0"	FIRM FINE SAND & GRAVEL	23
24'0"	REFUSAL	

WATER LEVEL 3'6" BELOW GROUND SURFACE

DATE: 6-25-62