

**GEOTECHNICAL ENGINEERING SERVICES
PROPOSED PROP FAMILY HOUSING PROJECT
GRANT AND MELLEN STREETS
PORTLAND, MAINE**

02-0121 JANUARY 7,2004

PREPARED FOR:

TFH Architects

PREPARED BY:



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S.W. COLE
ENGINEERING, INC.

• Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

02-0121

January 23, 2004

VAN 2/10

TFH Architects, P.A.
Attention: Dave Merrill
100 Commercial Street
Portland, Maine 04101

Subject: Building "A" Over-excavation
Proposed Parkside Neighborhood Center
Grant and Mellen Streets
Portland, Maine

Dear Dave:

As requested, we are providing an estimated quantity of over-excavation for the east portion of Building "A" for the proposed Parkside Neighborhood Center Project in Portland, Maine.

As stated in section 4.2.2 of our geotechnical report dated January 7, 2004, the east portion of the Building, which is slab-on-grade construction, is underlain by 18 feet of loose miscellaneous fill. The miscellaneous fill needs to be removed from the area. Based on an average depth of 17.5 feet of fill, removing the fill at a 1/2H to 1V plane projecting from the outside edge of the bottom of footings downward and outward, maintaining a 1 1/2H to 1V excavation sideslope and having a braced excavation along Grant Street, we estimate an in-place over-excavation quantity of approximately 3800 cubic yards. We understand that this quantity will be used by the contractor as a bid item and additional over-excavation (if needed) will have a unit cost per cubic yard.

We trust this letter meets your current needs. If you need additional information, please call us.

Sincerely,

S. W. COLE ENGINEERING, INC.

Robert E. Chaput, Jr., P.E.
Senior Geotechnical Engineer

REC:kml

P:ASWC-2002\02-0121\02-0121 Overexcavation letter.doc

AUGUSTA, ME OFFICE

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02-0121

January 7, 2004

TFH Architects
Attention: Scott Teas
100 Commercial Street
Portland, Maine 04401

Subject: Geotechnical Engineering Services
Proposed PROP Family Housing Project
Grant and Mellen Streets
Portland, Maine

Dear Scott:

In accordance with our Agreement dated February 26, 2002, Addendum No. 1 dated April 23, 2002 and Addendum No. 2 dated September 16, 2003, we have made a subsurface investigation at the site of the proposed Peoples Regional Opportunity Program (PROP) Housing Project at the corner of Grant and Mellen Streets in Portland, Maine. This report summarizes our findings and recommendations and its contents are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope of Work

The purpose of the investigation was to explore subsurface conditions at the site in order to provide geotechnical recommendations relative to foundation design and earthwork associated with the proposed construction. The investigation has included the making of six test borings, fifteen test pits, laboratory testing, several design team meetings and a geotechnical evaluation of the findings as they relate to the proposed construction.

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1.2 Proposed Construction

We understand the proposed construction at this time is to include a 4,111 square foot, three-story, building (Building A) located on the southwest corner of the site. The structure will be used as a neighborhood center and eight family housing units. Further, construction will include a 3,738 square foot, three-story wood framed building (Building B) located in the southeast corner of the site. The structure will be used as eight family housing units. Each of the structures will have finish first floor elevations at about 38.5 feet and full basements at elevation 29.0 feet. Paved parking areas are proposed on the north sides of the structures.

2.0 EXPLORATION AND TESTING

2.1 Exploration

Six test borings were made at the site on March 4, 2002 by Northern Test Boring, Inc. of Casco, Maine. Fifteen test pits were made at the site on March 4, 2002 and April 26, 2002, by Shaw Brothers Construction, Inc. of Gorham, Maine. The exploration locations were selected and established by S.W. COLE ENGINEERING, INC. based on a conceptual plan provided by TFH Architects. Explorations were located in the field using taped measurements from existing site features. The approximate exploration locations are shown on Sheet 1. Logs of the explorations, based on our field notes and observations and laboratory testing of samples, are attached as Sheets 2 through 16. A key to the notes and symbols used on the logs is attached as Sheet 17.

2 Laboratory Testing

Soil samples were taken from the explorations and visually inspected and classified in accordance with the Unified Soil Classification System. Moisture content testing was performed on selected samples. The results are noted on the logs. Three grain size analyses were performed and the results are presented on Sheets 18 through 20.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The site is located on the northeast corner of the intersection of Grant and Mellen Streets in Portland, Maine. The general site is relatively level at about elevation 38 feet (project datum). The most northwest portion of the site slopes steeply downward from south to north from elevation 38 to 31 feet, respectively. The site is currently open and occupied by a bituminous concrete paved parking area. An existing concrete retaining wall is located along the northeast boundary line of the site.

3.2 Subsurface Conditions

Below a surficial layer of glacial till, explorations encountered soil and fill soils of various types. The fill soils were underlain by glacial till underlain by bedrock. Not all explorations encountered each of the strata listed below; refer to the attached logs for more detailed descriptions of the subsurface conditions at the exploration location.

Fill: The fills were generally found to be loose consisting of varying amounts of silt, sand, gravel, brick, concrete and ash. The fills range from about 6.5 to 27 feet in overall thickness. The fill appeared thickest in the central and western portions of the site.

A refusal surface was encountered within the fill layer at test pits TP-103, TP-103A and TP-103B, at depths of 18 inches. The refusal surface was interpreted as a concrete slab of a building that once occupied the site.

Glaciomarine Sediments: Below the fill, exist strata of loose to medium-dense sand and sandy silt layered with medium-stiff gray silty clay ranging from 10 to 20 feet in thickness where encountered. The upper layer of glaciomarine sediments contains organics indicative of bottom deposits of marine origin.

Glacial Till: The glacial till soils were found to be medium-dense to dense consisting of gray to brown silty sand with varying amounts of gravel. The glacial till was encountered at depths ranging from 18 to 32 feet. Where encountered, the till stratum ranged from about 7 to 10 feet in thickness.

Bedrock: A refusal surface (probable bedrock) was encountered at a depth of 40.4 feet at boring B-4.

3.3 Groundwater

Water level measurements were taken in the boreholes during the exploration program. Groundwater was observed to be at depths of 19.0 to 31.0 feet below the ground surface within the boreholes. Groundwater was not observed within the test pit sidewalls. The site soils have poor drainage characteristics and observations made during the relatively short period of time the boreholes and excavations were open may not be indicative of actual groundwater conditions. Groundwater will fluctuate seasonally and during periods of precipitation.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the findings at the exploration locations, it is our opinion the proposed construction appears feasible from a geotechnical standpoint; however, due to the presence of deep uncontrolled fills beneath the site, the east portion of the proposed neighborhood center building will require overexcavation and removal of loose fill and replacement with compacted fill.

Building B is planned to have a basement that is anticipated to bear on stable native soils or compacted backfill placed on native soils. The fill soils at the site containing ash have high lead contents. Therefore, these fill soils will need to remain on site during excavation for the two structures. Please refer to S. W. COLE ENGINEERING, INC.'S environmental report submitted under separate cover that addresses the environmental considerations for the existing fill soils.

Excavations may encounter demolition debris, relic foundations and slabs. Excavations should not undermine existing rights-of-way. We understand braced shoring will be utilized along portions of Grant and Mellen Streets.

These and other considerations will need to be considered in the design and construction of the proposed buildings and site improvements.

4.2 Site Preparation

4.2.1 General

An erosion control system should be instituted prior to any construction activity at the site to help protect adjacent drainageways. Based on the findings at the exploration locations and our understanding of the project, it is our opinion that the site is suitable for the proposed construction from a soil mechanics standpoint.

Site preparation should include the removal of all topsoil and pavement from within the structures footprints and new paved areas. The site is underlain by loose miscellaneous fill, which will either need to be removed and re-compacted or remain in place and be proof-rolled. The west portion of Building A and entire footprint of Building B have full basements at elevation 29 feet, therefore a majority of the existing fill will be removed in order to attain footing subgrade. If fill is encountered at footing subgrade, it should be removed and replaced with compacted Select Fill.

Proof-rolling should be performed in paved areas and **be** accomplished by a minimum of **4** passes of a vibratory drum compactor having a static weight of at least 10 tons and a dynamic impact of at least 25 tons. Proof-rolling may be performed statically (i.e. without vibration) if vibration is found to be detrimental to the subgrade or integrity of existing structures. Should the subgrade become yielding or difficult to work, the soils should be over-excavated and backfilled with compacted Select Fill. S. W. COLE **EN-**GINEERING, INC. should be on-site during excavation work and proof-rolling of the subgrade in order to observe subgrades.

4.2.2 East Portion Building A

The east portion of Building A is slab-on-grade construction and underlain by about 18 feet of loose miscellaneous fill. We recommend that the miscellaneous fill be removed from this area at a 1/2H to 1V plane projecting from the outside edge of the bottom of footings downward and outward. The miscellaneous fill should be remixed and stockpiled on-site for re-use. Once the over-excavation is complete and observed by S. W. COLE ENGINEERING, INC., the stockpiled fill can be placed in the excavation in 12 inch compacted lifts. The fill should be compacted to 95 percent of its maximum dry density in accordance with ASTM D-1557. We understand that braced excavation consisting of soldier piles and wood lagging will be used along Grant Street for the above over-excavation work. The remaining three sides of the excavation will be made with open cuts. These sidewalls will need to be sloped back to a 1 1/2H to 1V or flatter from the bottom of the excavation, therefore, the top of slope will be about 35 feet beyond the face of the proposed foundation walls. Approximate location of the over-excavated area is shown on Sheet 1.

4.3 Spread Footings

The design freezing index for the Portland, Oregon area is approximately 1,250 Fahrenheit degree-days, which corresponds to a frost penetration on the order of 4.5 feet. Foundations should be placed upon undisturbed native soils or compacted granular fill or crushed stone placed upon the native soils.

We recommend the following geotechnical parameters for design of spread footings, where applicable:

Design Frost Depth for Portland, Maine	4.5 feet
Net Allowable Soil Bearing Capacity	3.0 ksf
Seismic Site Coefficient, S_1	1.0 (BOCA 1999)
Soil Backfill Unit Weight	130 pcf (clean, compacted granular fill)
Active Soil Pressure Coefficient (Unrestrained retaining walls)	0.30 (clean, compacted granular fill) backfill
At Rest Soil Pressure Coefficient (Basement walls)	0.50 (clean, compacted granular fill) backfill
Passive Soil Pressure Coefficient	3.3 (clean, compacted granular fill) backfill
Estimated Post Construction Settlement	Less than 1/2"
Resistance to Sliding (friction factor)	0.35 Mass concrete on native silty clay

Wall footings should be at least 18 inches in width. Retaining walls that are restrained from rotation (such as basement walls) should be designed considering the at-rest pressure coefficient.

4.4 Slab-On-Grade and Basement Floor Slabs

Concrete slab-on-grade floors and basement floor slabs in heated spaces placed over properly prepared subgrades may be designed using a subgrade reaction modulus of 230 pci, provided that the slab is underlain by at least 8 inches of compacted Select Fill or Crushed Stone, respectively. The Crushed Stone should be placed upon a non-woven geotextile fabric which is placed upon native soils.

A 15-mil plastic vapor retarder, such as Stegowrap, should be installed directly below the slab concrete to limit the upward migration of moisture and ground vapors into inhabited spaces. The vapor retarder should have a permeance that is less than the floor covering being applied on the slab. A 2-inch layer of stone dust or sand should be placed between the vapor retarder and a geotextile fabric placed over the crushed stone in order for the vapor retarder to withstand puncture during construction. The vapor retarder should be installed according to the manufacturers recommendations including all taping of joint and sealing of edges and penetrations. Flooring suppliers

should be consulted relative to selection and installation of acceptable vapor retarder systems for use with their products.

Floor slabs should be wet-cured for a period of at least 7 days after casting to reduce the potential for curling of the concrete and excessive drying/shrinkage. Additionally, we recommend that control joints be installed within floor slabs to accommodate shrinkage in the concrete as it cures. Contraction joints are typically installed at 10 to 15 foot spacing, but should be determined by the structural engineer with consideration to slab thickness

4.5 Drainage in

We recommend that a perimeter drainage system be provided at footing grade for all walls. The wall should have a 4" diameter pipe placed near the footing, spaced at 10 feet on center to permit the flow of water to the exterior. The underdrain pipe should consist of rigid, 4" diameter PVC with perforations of 1/4" to 1/2" diameter with at least 6 inches of crushed stone drainage aggregate that is wrapped in a woven geotextile filter fabric having an apparent opening size of at least 70, such as Mirafi 140N. The underdrain must have a positive gravity or pumped outlet. Further, we recommend that basement walls be finished and that a layer of insulation be applied against the exterior side of basement walls. Details of the recommended foundation drainage system, damp-proofing and wall insulation are presented on the attached Sheet 21.

4.6 Excavation Work

Excavation work will encounter miscellaneous fills with ash, brick and concrete. These on-site soils are not suitable for reuse directly below slabs or as backfill against foundations. Excavations should not undermine existing adjacent sidewalks/right-of-ways. We understand braced shoring will be provided for support of sidewalks/right-of-ways.

Groundwater and wet soil conditions may be encountered in the basement foundation excavations. In our opinion, ditching with sump and pump dewatering techniques should be adequate to control groundwater. We recommend placing a layer of crushed stone at the base of foundation excavations to act as a drainage media from which to sump and pump.

Excavations must be properly shored and/or sloped in accordance with OSHA trenching regulations to prevent sloughing and caving of the sidewalls during construction. Temporary, unsupported soil excavations should be sloped back to 1 1/2H to 1V or flatter. Braced excavations will be required along Grant Street and a portion of Mellen Street, which we understand will be soldier pile and wood lagging.

4.7 Braced Excavation

Braced excavations will be needed along Grant Street and a portion of Mellen Street and will retain up to 18 feet of soil. We recommend that the braced excavation be designed using the following soil design parameters:

Retaining soil unit weight:	125 pcf
Active soil pressure coefficient	0.35
Passive soil pressure coefficient	2.8
Surcharge soil pressure coefficient	0.55
Traffic surcharge	250 psf (min)

The braced excavation system must account for construction surcharge loads, traffic loads and future live load conditions. The braced excavation should be designed by a structural engineer.

4.8 Backfill and Compaction

We recommend that compacted granular backfill placed against foundations, below floor slabs and against basement/retaining walls meet the gradation requirements for Select Fill as given below. Compacted crushed stone placed below footings, around underdrains and below basement slabs should meet the gradation requirements of MDOT 703.22 Type "C" Underdrain Stone.

Sieve Size	Percent Finer by Weight
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 5

Fill should be placed in horizontal **lifts** and be compacted. Lift thickness should be such that desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. We recommend that all fill that is placed below the building area be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed stone beneath the basement slab should be compacted to 100 percent of its dry rodded unit weights as determined by ASTM C-29. We recommend that backfill against basement / retaining walls be compacted to between 92 and 95 percent of its maximum dry density as determined by ASTM D-1557. We recommend that hand operated compaction equipment be utilized within 5 feet (horizontal measure) of the walls. Heavy equipment should not operate adjacent to the basement walls unless accounted for in wall design. This is to help control compaction behind the walls and reduce the risk of over compaction, which could result in excessive lateral pressure on the walls.

4.9 Entrances and Sidewalks

The existing site soils are susceptible to frost heaving. Entrances and sidewalks should be designed to reduce the effects of frost action. We recommend that 4.5 feet of clean granular soil meeting the Select Fill gradation specification be provided below the building entrance slabs and sidewalks adjacent to the buildings. Gradual transition (3 horizontal to 1 vertical) of the Select Fill thickness should be provided from the 4.5 foot depth to the gravel base thickness at sidewalk and parking lot structures away from the buildings. This transition will reduce the potential for detrimental differential movement due to frost action. The 4.5 foot depth of select fill should be provided below the

entire width of all exterior areas adjacent to the buildings where frost heaving could be detrimental. Details regarding entrances and sidewalks are shown on the attached Sheet 19.

4.10 Weather Considerations

The native silty clay and fill materials are sensitive to moisture and frost. As such, the native site soils lose strength and become disturbed during wet and freezing conditions. Construction activity should be limited during wet and cold weather and the site soils may require drying and thawing before activities may continue. The contractor should anticipate the need for moisture condition fills to facilitate compaction during dry weather.

If foundation construction takes place during cold/freezing weather conditions, sub-grades, foundations and floor slabs must be protected from freezing conditions. Concrete must not be placed on frozen soil and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.11 Design Review and Construction Testing

The Geotechnical Engineer should be retained to review the sitework and foundation design drawings to determine that our interpretation of the subsurface conditions and geotechnical recommendations have been appropriately interpreted and implemented.

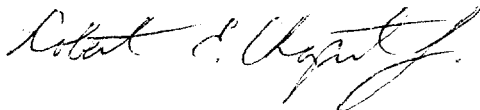
Further, the Geotechnical Engineer should be retained to provide soils engineering and testing services during the excavation and foundation phases of the work. This is to observe compliance with the design concepts, specifications, design recommendations and to allow design changes in the event that subsurface conditions are found to differ from those anticipated prior to the start of construction. S.W. COLE ENGINEERING, INC. is available to provide testing of soil, concrete, masonry, steel, spray-applied fire-proofing and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. If you have any questions or if we may be of further assistance, please do not hesitate to contact us.

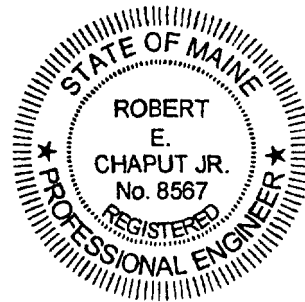
Very truly yours,

S. W. COLE ENGINEERING, INC.



Robert E. Chaput, Jr., P.E.
Senior Geotechnical Engineer

REC:kml



ATTACHMENT A LIMITATIONS

This report has been prepared for the exclusive use of TFH Architects for specific application to the proposed PROP Family Housing Project on the northeast corner of Grant and Mellen Streets in Portland, Maine. S. W. COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

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

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

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

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

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



BORING LOG

BORING NO B-1
 SHEET 1 OF 1
 PROJECT NO 02-0121
 DATE START 3/4/2002
 DATE FINISH 3/4/2002
 ELEVATION 38 0'+
 SWC REP MTT
 WATER LEVEL INFORMATION
 WATER AT 19 0'
 CAVED AT 22 0'

PROJECT / CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO. : NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

CASING: TYPE HSA SIZE I.D. 4 1/4" HAMMER WT 140lbs HAMMER FALL 30"
 SAMPLER: SS 13/8" 140lbs 30"
 CORE BARREL: _____

CASING BLOW: PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH @ BO	0-6	6-12	12-18	18-24		
										ASH, SILT AND SAND WITH TRACE GRAVEL (FILL) -LOOSE-
	S-1	24"	8"	7.0'	2	2	2	2	7.0'	MIXED FILL WITH SOME BRICK (FILL) -LOOSE-
	S-2	24"	8"	12.0'	4	2	2	2		
	S-3	24"	8"	17.0'	2	2	1	1	18.0'	BROWN GRAVELLY SILTY SAND (TILL) w = 14.0% -MEDIUM DENSE-
	S-4	24"	12"	22.0'	5	4	6	1	22.0'	BROWN SILTY SAND WITH TRACE GRAVEL (TILL) -MEDIUM DENSE-
	S-5	24"	16"	27.0'	14	10	11	10		
	S-6	24"	10"	32.0'	11	8	7	11	32.0'	BOTTOM OF EXPLORATION AT 32.0'

SAMPLES: SOIL CLASSIFIED BY: EMARKS.

S = SPLIT SPOON DRILLER -VISUALLY
 C = 3" SHELBY TUBE SOIL TECH. -VISUALLY
 U = 3.5" SHELBY TUBE LABORATORY TEST

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

2

BORING NO.: **B-1**

BORING LOG

BORING NO.: B-2
 SHEET: 1 OF 1
 PROJECT NO.: 02-0121
 DATE START: 3/4/2002
 DATE FINISH: 3/4/2002
 ELEVATION: 37.5'±
 SWC REP.: MTT

PROJECT / CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO: NORTHERNTEST BORING, INC DRILLER: MIKE NADEAU

CASING: TYPE HSA SIZE I D 4 1/4"
 SAMPLER: SS 1 3/8" HAMMER WT 140 lbs HAMMER FALL 3 0
 CORE BARREL: _____

WATER LEVEL INFORMATION
 WATER AT 31 0' CAVED AT 120'
 SOILS SATURATED AT 150'

CASING BLOW: PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH @ BOT	0-6	6-12	12-18	18-24		
										BROWN SILTY SAND AND ASH WITH SOME GRAVEL (FILL)
	S-1	24"	8"	7.0'	1	2	2	2		-LOOSE-
	S-2	24"	4"	12.0'	5	5	2	2		
	S-3	24"	3"	17.0'	1	1	3	2		
	S-4	24"	22"	22.0'	3	5	9	8	22.0'	BROWN SILTY FINE SAND -MEDIUM DENSE- w = 25.9%
	S-5	24"	16"	27.0'	3	3	1	1	26.0'	
	S-6	24"	16"	32.0'	14	6	11	14	32.0'	GRAY SILTY SAND WITH SOME GRAVEL (TILL) -MEDIUM DENSE-
										BOTTOM OF EXPLORATION AT 32 0'

SAMPLES: S = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY: <input type="checkbox"/> DRILLER - VISUALLY <input checked="" type="checkbox"/> SOIL TECH. - VISUALLY <input checked="" type="checkbox"/> LABORATORY TEST	EMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">3</div>
		BORING NO.: B-2	



BORING LOG

BORING NO.: **B-3**
 SHEET: 1 OF 2
 PROJECT NO.: 02-0121
 DATE START: 3/4/2002
 DATE FINISH: 3/4/2002
 ELEVATION: 37.0'
 SWC REP.: MTT

PROJECT / CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO. NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

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

WATER LEVEL INFORMATION
 WATER AT 21.0'
 CAVED AT 23.0'

CASING BLOW PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH @ BOT	0-6	6-12	12-18	18-24		
										BROWN CLAYEY SILT WITH SOME GRAVEL, ASH (FILL) -VERY LOOSE-
	S-1	24"	10"	7.0'	1	1	1	1	7.0'	BROWN SILTY CLAY -VERY STIFF- qp = 7.5 ksf w = 26.4%
	S-2	24"	18"	12.0'	4	6	8	1	12.0'	BROWN SILTY CLAY WITH FINE SAND LENSES -STIFF- qp = 2.5 ksf w = 32.5%
	S-3	24"	22"	17.0'	4	4	9	5	17.0'	GRAY SILTY CLAY -MEDIUM- w = 34.4%
	S-4	24"	24"	22.0'	1	1	1	1	22.0'	BROWN SILTY FINE SAND -MEDIUM DENSE- w = 28.2%
	S-5	24"	16"	27.0'	4	9	10	12	27.0'	GRAY SILTY SAND WITH SOME GRAVEL (TILL) -MEDIUM DENSE-
	S-6	24"	12"	32.0'	5	9	9	9		
	S-7	24"	12"	37.0'	38	25	9	12		

SAMPLES: S = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5 SHELBY TUBE	SOIL CLASSIFIED BY: <input type="checkbox"/> DRILLER - VISUALLY <input checked="" type="checkbox"/> SOIL TECH - VISUALLY <input checked="" type="checkbox"/> LABORATORY TEST	REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">4</div>
		BORING NO.: B-3	



BORING LOG

BORING NO B-3
 SHEET 2 OF 2
 PROJECT NO 02-0121
 DATE START 3/4/2002
 DATE FINISH 3/4/2002
 ELEVATION 37 0'±
 SWC REP.: MTT
 WATER LEVEL INFORMATION
 WATER AT 21.0'
 CAVED AT 23.0'

PROJECT / CLIENT PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO NORTHERN TEST BORING, INC DRILLER MIKE NADEAU

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

CASI BLO PEI FOC	SAMPLE				SAMPLER BLOWS PER 6'				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH @ BO'	0-6	6-12	12-18	18-2		
	S-8	3"	3"	40.4	60/3"				40.4'	REFUSAL AT 40.4' (PROBABLE BEDROCK)

SAMPLES SOIL CLASSIFIED BY. REMARKS
 S = SPLIT SPOON DRILLER - VISUALLY
 C = 3" SHELBY TUBE SOIL TECH - VISUALLY
 T = 3.5" SHELBY TUBE LABORATORY TEST
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL
 BORING NO. B-3



BORING LOG

BORING NO.: **B-3A**
 SHEET: **1 OF 1**
 PROJECT NO: **02-0121**
 DATE START: **3/4/2002**
 DATE FINISH: **3/4/2002**
 ELEVATION: **37.0'±**
 SWC REP.: **MTT**

PROJECT / CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO. : NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

CASING: TYPE HSA SIZE ID. 4 1 1/4" HAMMER WT 140 lbs HAMMER FALL 3 0
 SAMPLER: TYPE SS SIZE ID. 1 3/8" HAMMER WT 140 lbs HAMMER FALL 3 0
 CORE BARREL: _____

WATER LEVEL INFORMATION
 NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6'				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH AT BO	0-6	6-12	12-18	18-2		
										AUGERED TO 19.0 NO SAMPLING
	S-1	24"		21.0'	WOM				19.0'	BROWN SANDY SILT
	S-2	24"	24"	23.0'	WOM				21.2'	GRAY SILTY CLAY w = 31.2%
									22.8'	BROWN SILTY FINE SAND
									23.0'	BOTTOM OF EXPLORATION AT 23.0'

SAMPLES: SOIL CLASSIFIED BY: EMARKS: **B-3A OFFSET 5' EAST OF B-3**

S = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

DRILLER - VISUALLY
 SOIL TECH. - VISUALLY
 LABORATORY TEST

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

BORING NO.: **B-3A**



BORING LOG

BORING NO.: B-4
 SHEET: 1 OF 1
 PROJECT NO.: 02-0121
 DATE START: 3/4/2002
 DATE FINISH: 3/4/2002
 ELEVATION: 37.5'±
 SWC REP: MTT

PROJECT / CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO: NORTHERN TEST BORING, INC DRILLER: MIKE NADEAU

CASING: TYPE HSA SIZE I.D. 4 1/4" HAMMER WT. 140 Ibs HAMMER FALL 3 0
 SAMPLER: SS 1 3/8" 140 Ibs 3 0
 CORE BARREL: _____

WATER LEVEL INFORMATION
 WATER AT 20.5' CAVED AT 18.0'
 SOILS SATURATED BELOW 15.0'

CASIN BLOW PER FOOT	SAMPLE				SAMPLER BLOWS PER 6'				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH AT BOT	0-6	6-12	12-18	18-2		
										BROWN SILTY SAND WITH SOME GRAVEL, ASH (FILL) -LOOSE-
	S-1	24"	8"	7 0'	6	5	5	6		
	S-2	24"	1"	12 0'	4	3	4	1	12 0'	BLACK MIXED FILL AND ASH (FILL) -LOOSE-
	S-3	24"	8"	17 0'	1	1	1	1		
	S-4	24"	10"	22 0'	3	3	3	5	22 0'	GRAY CLAYEY SILT WITH ORGANICS, SAND AND BRICK FRAGMENTS (FILL) -LOOSE-
	S-5	24"	14"	27 0'	5	4	4	4	27 0'	LAYERED FINE SAND WITH SOME SILTY SAND AND CLAY SEAMS -LOOSE-
	S-6	24"	16"	32 0'	WOR-12		1	1	32 0'	GRAY SILTY SAND WITH TRACE CLAY AND GRAVEL (TILL) -MEDIUM DENSE-
	S-7	24"	18"	37 0'	6	10	12	14	37 0'	BOTTOM OF EXPLORATION AT 37.0'

SAMPLES' SOIL CLASSIFIED BY:
 S = SPLIT SPOON DRILLER - VISUALLY
 C = 3" SHELBY TUBE SOIL TECH - VISUALLY
 U = 3.5" SHELBY TUBE LABORATORY TEST

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

7

BORING NO.: B-4



BORING LOG

BORING NO: B-5
 SHEET: 1 OF 1
 PROJECT NO.: 02-0121
 DATE START: 3/4/2002
 DATE FINISH: 3/4/2002
 ELEVATION: 38.0'±
 SWC REP.: MTT
 WATER LEVEL INFORMATION
CAVED AT 9.0'

PROJECT/CLIENT: PROPOSED PROP PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS / PORTLAND, MAINE
 DRILLING CO: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

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

CASING BLOW PER FOOT	SAMPLE				SAMPLER BLOWS PER 6'				DEPTH	STRATA AND TEST DATA
	NO	PEN	REC	DEPTH AT BO	0-6	6-12	12-18	18-2		
										AUGERED TO 5' THROUGH GRANULAR FILL
	S-1	24"	0"	7.0'	38	34	22	18	7.0'	-DENSE-
	S-2	24"	16"	12.0'	11	16	17	23		BROWN SILTY CLAY qp = 7-9.0 ksf
	S-3	24"	18"	17.0'	7	7	8	9		-VERY STIFF TO HARD- qp = 5.5 ksf
	S-4	24"	18"	22.0'	7	10	12	11	20.4'	BROWN SILTY SAND -MEDIUM DENSE-
	S-5	24"	20"	27.0'	4	10	11	13	26.0'	BROWN SILTY SAND WITH SOME GRAVEL (TILL) -MEDIUM DENSE-
	S-6	24"	20"	32.0'	5	4	6	8	32.0'	GRAY SILTY SAND SOME CLAY AND GRAVEL (TILL) -MEDIUM DENSE-
										BOTTOM OF EXPLORATION AT 32.0'

(SAMPLES:

SOIL CLASSIFIED BY:

REMARKS:

S = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5 SHELBY TUBE



DRILLER - VISUALLY
 SOIL TECH. - VISUALLY
 LABORATORY TEST

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

8

BORING NO.: **B-5**



S.W. COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION INTERSECTION OF MELLEN AND GRANT STREETS / PORTLAND, MAINE
 EXCAVATOR FIRM SHAW BROTHERS OPERATOR _____

PROJECT NO 02-0121
 SWCREP MTT

TEST PIT TP-1			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>37.5'+</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	2" PAVEMENT	
		FOUNDATION WALL AND FOOTING	
	5.0'		
		FILL MATERIAL, CONCRETE, GLASS, ASH METAL PIPES (DEBRIS FILL)	
	14.0'		
		BOTTOM OF EXPLORATION AT 4 0'	
COMPLETION DEPTH: <u>14.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	

TEST PIT TP-2			
DATE <u>2/27/2001</u>		SURFACE ELEVATION <u>37.5'+</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	2" PAVEMENT	
		FILL MATERIAL, CONCRETE, BLACK AND WHITE ASH METAL AND PLASTIC PIPES, GLASS, BRICK FRACTURED SLATE (DEBRIS FILL)	
	14.0'		
		BOTTOM OF EXPLORATION AT 14 0'	
COMPLETION DEPTH: <u>14.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	



S.W. COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION: INTERSECTION OF MELLEEN AND GRANT STREETS / PORTLAND, MAINE
 BACKHOE FIRM: SHAW BROTHERS OPERATOR: _____

PROJECT NO: 02-0121
 SWC REP: MTT

TESTPIT <u>TP-3</u>			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>38.0'+</u>	
		LOCATION: <u>SEE SHEET 1</u>	
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	<u>0.2'</u>	2" PAVEMENT	
		DEBRIS	
	<u>4.5'</u>	BROWN LAYERED SILTY CLAY AND SANDY SILT	
	<u>13.0'</u>	REFUSAL AT 13.0	
COMPLETION DEPTH: <u>13.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	

TESTPIT <u>TP-4</u>			
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	<u>0.2'</u>	2" PAVEMENT	
	<u>1.5'</u>	BROWN SILTY GRAVELLY SAND (FILL)	
	<u>4.5'</u>	BRICK AND CONCRETE FOUNDATION	
		DEBRIS	
	<u>14.5'</u>	BOTTOM OF EXPLORATION AT 14.5'	
COMPLETION DEPTH: <u>14.5'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	



TEST PIT LOGS

PROJECT/CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT ITFH ARCHITECTS
 LOCATION: INTERSECTION OF MELLEEN AND GRANT STREETS / PORTLAND, MAINE
 BACKHOE FIRM: SHAW BROTHERS OPERATOR: _____

PROJECT NO. 02-0121
 SWCREP.: MTT

TEST PIT <u>TP-5</u>			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>37.5'±</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	2" PAVEMENT	
	2.0'	BROWN SILTY GRAVELLY SAND (FILL)	
	13.5'	DEBRIS FILL	
		BOTTOM OF EXPLORATION AT 13.5'	
COMPLETION DEPTH: <u>13.5'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	

TEST PIT <u>TP-6</u>			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>37.5'±</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	4.5'	DEBRIS	
	13.5'	BROWN SILTY CLAY SOME SANDY SILT LAYERS	
		BOTTOM OF EXPLORATION AT 13.5'	
COMPLETION DEPTH: <u>13.5'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	



TEST PIT LOGS

PROJECT/CLIENT PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION INTERSECTON OF MELLE AND GRANT STREETS / PORTLAND, MAINE
 BACKHOE FIRM SHAW BROTHERS OPERATOR. _____

PROJECT NO.: 02-0121
 SWC REP.: MTT

TEST PIT TP-7			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>37.5'±</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
COMPLETION DEPTH: _____		DEPTH TO WATER: _____	

TEST PIT TP-8			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: <u>38.0'±</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
COMPLETION DEPTH: _____		DEPTH TO WATER: _____	



S.W. COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION INTERSECTON OF MELLEEN AND GRANT STREETS / PORTLAND, MAINE
 BACKHOE FIRM SHAW BROTHERS OPERATOR: 0

PROJECT NO 02-0121
 SW CREP' MTT

TESTPIT <u>9</u>			
DATE: <u>2/27/2001</u>		SURFACE ELEVATION: _____	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH	STRATUM DESCRIPTION	TEST RESULTS
1	(FT)		
COMPLETION DEPTH. _____		DEPTH TO WATER: _____	
SAMPLE NO	DEPTH	STRATUM DESCRIPTION	TEST RESULTS
1 1 1	(FT)		
_____		_____	



TEST PIT LOGS

PROJECT/CLIENT PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION MELLEN AND GRANT STREETS PORTLAND, MAINE
 BACKHOE FIRM SHAW BROTHERS OPERATOR _____

PROJECT NO 02-0121
 SWCREP REC

TEST PIT <u>TP-100</u>			
			SEE SHEET 1
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0 1'	PAVEMENT	
	5.5'	BROWN SILTY SAND WITH SOME GRAVEL, BRICK, SOME ASH (FILL) RELIC ROCK FOUNDATION WALL	
	11 0'	BROWN SILTY SAND WITH SOME GRAVEL. BRICK, POCKETS OF ASH COPPER PIPE (FILL)	
	12 0'	BROWN SILTY SAND (NATIVE)	
		BOTTOM OF EXPLORATION AT 12 0'	
COMPLETION DEPTH		<u>12 0</u>	DEPTH TO WATER <u>NO FREE WATER OBSERVED</u>

TEST PIT <u>TP-101</u>			
DATE: <u>4/26/2002</u>		SURFACE ELEVATION: <u>38.0'+</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	PAVEMENT	
	5.0'	BROWN SILTY SAND WITH SOME GRAVEL, BRICK (FILL)	
	6.5'	BLACK SANDY SILT WITH TRACE GRAVEL, ASH (FILL)	
	8.0'	BROWN CLAYEY SILT (NATIVE)	
		BOTTOM OF EXPLORATION AT 8.0'	
COMPLETION DEPTH:		<u>8.0'</u>	DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>



TEST PIT LOGS

PROJECT/CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS PORTLAND, MAINE
 BACKHOE FIRM: SHAW BROTHERS OPERATOR: _____

PROJECT NO.: 02-0121
 SWCREP.: REC

TEST PIT TP-102

SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.1'	PAVEMENT	
	1.0'	BROWN FINE SAND WITH SOME SILT (FILL)	
	3.5'	BLACK AND RUST BROWN MOTTLED ASH, GLASS (FILL)	
	5.0'	BROWN FINE SAND WITH SOME SILT (FILL)	
	6.5'	DARK BROWN SILTY SAND WITH SOME GRAVEL, BRICK, ASH (FILL) CONCRETE FOUNDATION AT 6.5'	
		REFUSAL AT 6.5' (RELIC FOUNDATION)	

COMPLETION DEPTH: 6.5' DEPTH TO WATER: NO FREE WATER OBSERVED

TEST PIT TP-103

DATE: 4/26/2002 SURFACE ELEVATION: 38.0'+ LOCATION: SEE SHEET 1

SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	.2'	PAVEMENT	
	1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL)	
	1.5'	RELIC CONCRETE SLAB	
	7.0'	ASH WITH SOME BRICK (FILL)	
	9.0'	BROWN CLAYEY SILT WITH SAND, GRAVEL (FILL)	
	10.0'	BROWN CLAYEY SILT (NATIVE)	

COMPLETION DEPTH: 10.0' DEPTH TO WATER: NO FREE WATER OBSERVED



TEST PIT LOGS

PROJECT CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS PORTLAND, MAINE
 BACKHOE FIRM: SHAW BROTHERS OPERATOR: _____

PROJECT NO.: 02-0121
 SWCREP.: REC

TEST PIT TP-103A			
DATE: <u>4/26/2002</u>		SURFACE ELEVATION: <u>38.0'+</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	PAVFMFNT	
	1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL)	
		REFUSAL AT 1.0' (CONCRETE SLAB)	
COMPLETION DEPTH: <u>1.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	

TEST PIT TP-103B			
DATE: <u>4/26/2002</u>		SURFACE ELEVATION: <u>38.0'+</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2'	PAVEMENT	
	1.5'	BROWN GRAVELLY SAND WITH SOME SILT (FILL)	
		REFUSAL AT 1.0' (CONCRETE SLAB)	
COMPLETION DEPTH: <u>1.5'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	



S.W. COLE ENGINEERING, INC.

TEST PIT LOGS

PROJECT/CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION MELLEN AND GRANT STREETS PORTLAND MAINE
 BACKHOE FIRM SHAW BROTHERS OPERATOR _____

PROJECT NO 02-0121
 SWCREP REC

TEST PIT TP-104			
DATE <u>4/26/2002</u>		SURFACE ELEVATION: <u>37.5'±</u>	LOCATION <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	6.0'	BROWN FINE SAND SOME SILT LARGE CONCRETE FOUNDATION PIECE (FILL)	
	18.0'	BROWN ASH (FILL)	
		BOTTOM OF EXPLORATION AT 18.0'	
COMPLETION DEPTH: <u>18.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	

TEST PIT TP-105			
DATE <u>4/26/2002</u>		SURFACE ELEVATION: <u>37.5'±</u>	LOCATION <u>SEE SHEET 1</u>
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	4.0'	BROWN FINE SAND	
	15.0'	BROWN ASH (FILL)	
		BOTTOM OF EXPLORATION AT 15.0'	
COMPLETION DEPTH: <u>15.0'</u>		DEPTH TO WATER: <u>NO FREE WATER OBSERVED</u>	



TEST PIT LOGS

PROJECT/CLIENT: PROPOSED PROP FAMILY HOUSING PROJECT / TFH ARCHITECTS
 LOCATION: MELLEN AND GRANT STREETS, PORTLAND, MAINE
 BACKHOE FIRM: SHAW BROTHERS OPERATOR: _____

PROJECT NO. 02-0121
 SWCREP.. REC

TEST PIT <u>TP-106</u>			
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
		BROWN FINE SAND WITH SOME SILT AND POCKETS OF ASH LARGE CONCRETE FOUNDATION PIECES (FILL)	
	7.5'		
	8.5'	RUST BROWN SILTY SAND	
	10.5'	BROWN CLAYEY SILT	
		BOTTOM OF EXPLORATION AT 10.5'	

COMPLETION DEPTH: 10.5' DEPTH TO WATER: NO FREE WATER OBSERVED

TEST PIT _____			
SAMPLE NO	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS

COMPLETION DEPTH _____ DEPTH TO WATER _____



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

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

Key to Symbols Used:

- w - water content, percent (dry weight basis)
- q_u - unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
- S_v - field vane shear strength, kips/sq. ft.
- L_v - lab vane shear strength, kips/sq. ft.
- q_p - unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
- O - organic content, percent (dry weight basis)
- W_L - liquid limit - Atterberg test
- W_P - plastic limit - Atterberg test
- WOH - advance by weight of hammer
- WOM - advance by weight of man
- WOR - advance by weight of rods
- HYD - advance by force of hydraulic piston on drill
- RQD - Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
- γ_T - total soil weight
- γ_B - buoyant soil weight

Description of Proportions:

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

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

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

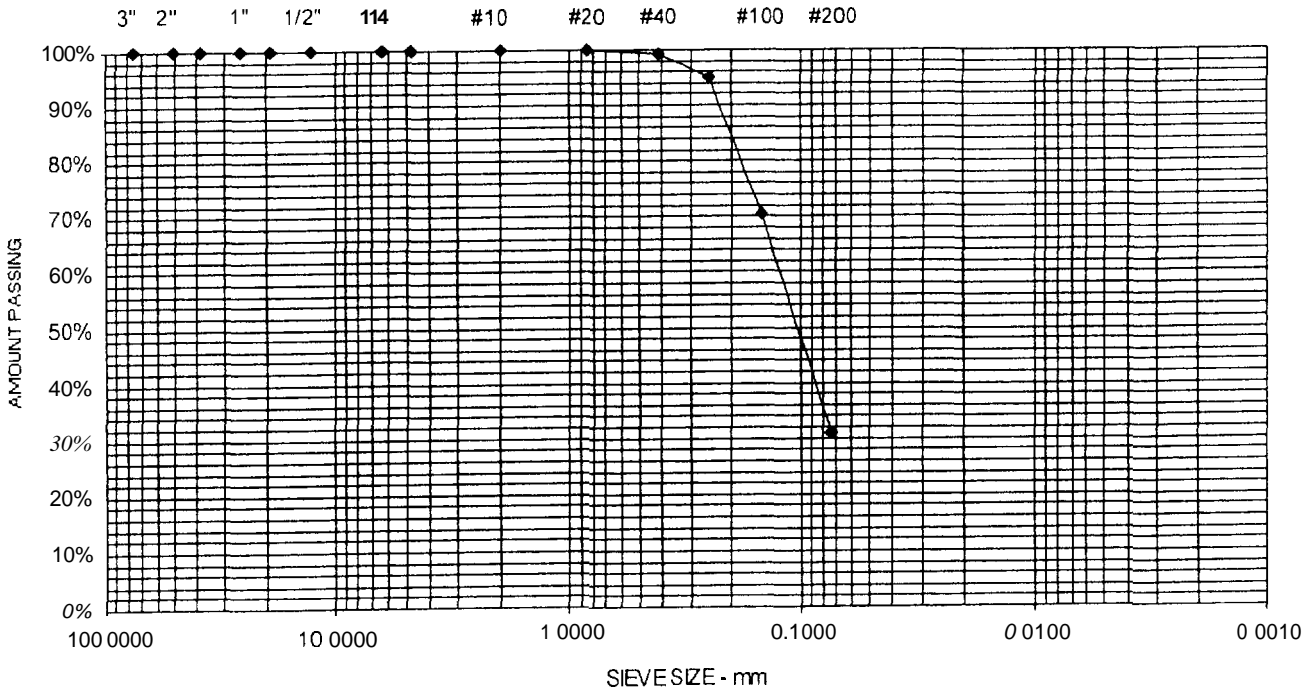
Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through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

Project Name PORTLAND - MELLEN GRANT COMMUNITY CENTER & APARTMENTS
 Client TFH ARCHITECTS, P.A.
 Exploration B-3,5D,25'-27'
 Material Source

Project Number 02-0121
 Lab ID 865A
 Date Received 12/18/2003
 Date Completed 12/18/2003
 Tested By RYAN BRAGG

SIEVE OPENING (mm)	SIEVE SIZE	AMOUNT PASSING (%)	
152.4	6"	100	
127	5"	100	
101.6	4"	100	
76.1	3"	100	
50.8	2"	100	
38.1	1-1/2"	100	
25.7	1"	100	
19	3/4"	100	
12.7	1/2"	100	
6.35	1/4"	100	
4.76	No. 4	100	0% Gravel
2	No. 10	100	
0.841	No. 20	100	
0.42	No. 40	99	69.1% Sand
0.25	No. 60	95	
0.149	No. 100	71	
0.074	No. 200	30.9	30.9% Fines

SILTY FINE SAND

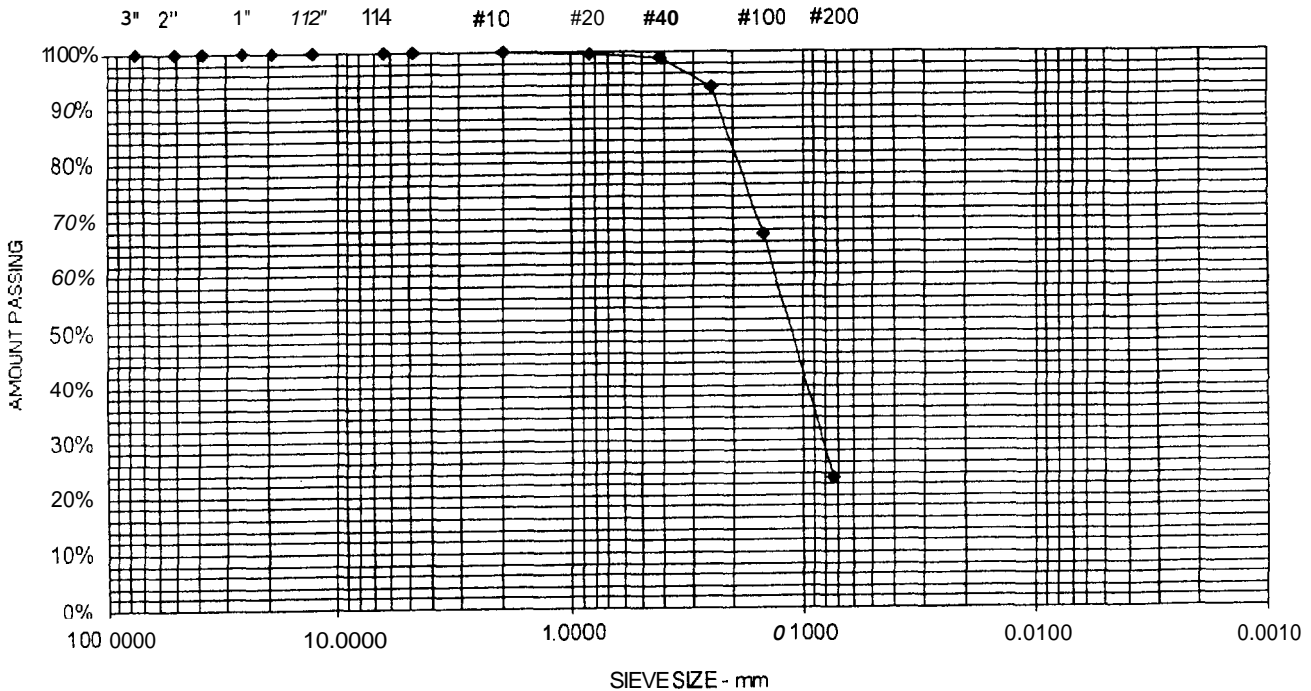


Project Name PORTLAND- MELLENGRANT COMMUNITY CENTER &
APARTMENTS
Client TFH ARCHITECTS, P.A.
Exploration **B-2,4D,20'-22'**
Material Source

Project Number 02-0121
Lab ID 866A
Date Received 12/18/2003
Date Completed 12/18/2003
Tested By RYAN BRAGG

SIEVE OPENING (mm)	SIEVE SIZE	AMOUNT PASSING (%)	
152.4	6"	100	
127	5"	100	
101.6	4"	100	
76.1	3"	100	
50.8	2"	100	
38.1	1-1/2"	100	
25.7	1"	100	
19	3/4"	100	
12.7	1/2"	100	
6.35	1/4"	100	
4.76	No. 4	100	0% Gravel
2	No. 10	100	
0.841	No. 20	100	
0.42	No. 40	99	76.8% Sand
0.25	No. 60	94	
0.149	No. 100	67	
0.074	No. 200	23.2	23.2% Fines

SILTY FINE SAND

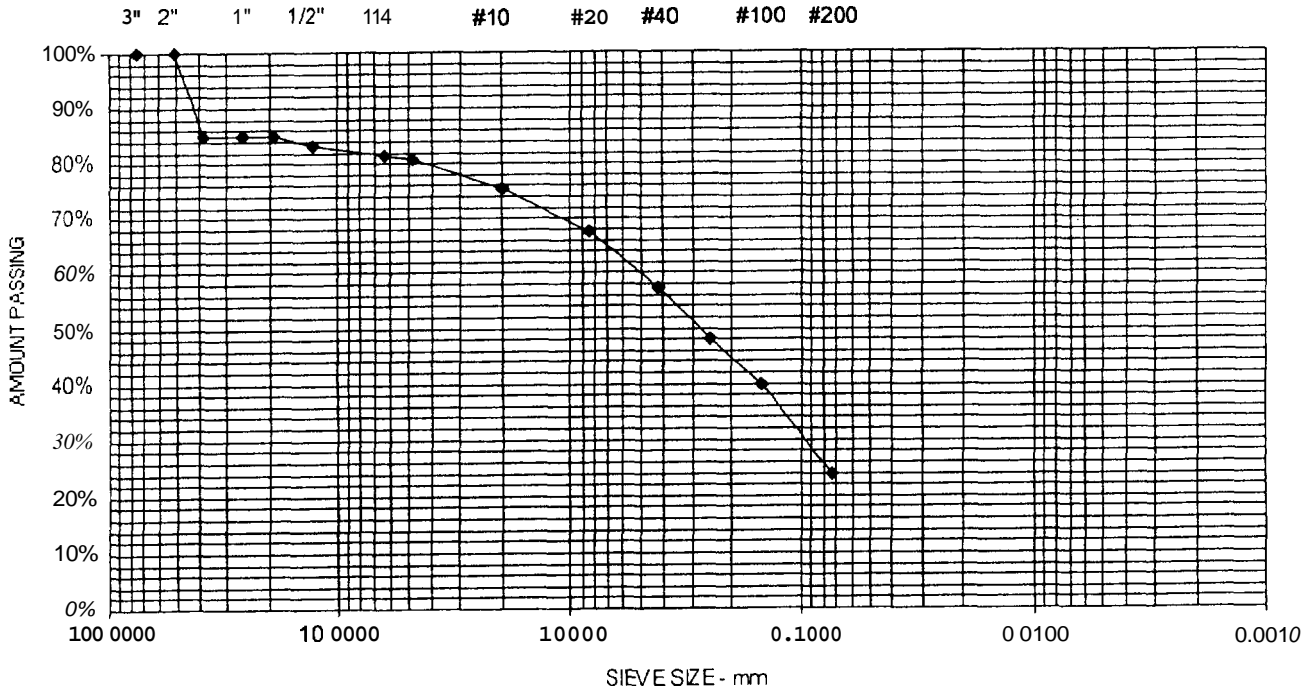


Project Name PORTLAND - MELLEN GRANT COMMUNITY CENTER & APARTMENTS
 Client TFH ARCHITECTS, P.A.
 Exploration **B-1,4D,20'-22'**
 Material Source

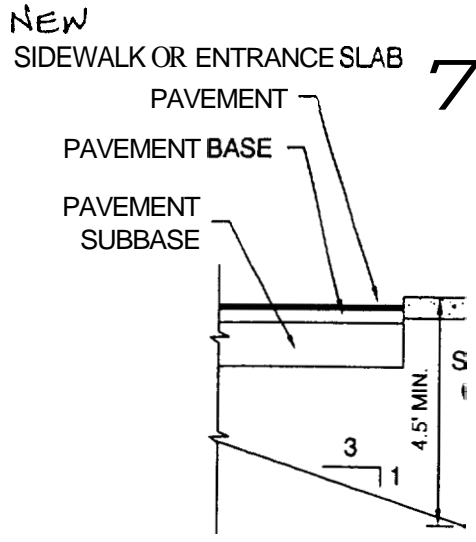
Project Number 02-0121
 Lab ID 867A
 Date Received ~~12~~11/18/2003
 Date Completed 12/18/2003
 Tested By RYAN BRAGG

SIEVE OPENING (mm)	SIEVE SIZE	AMOUNT PASSING (%)	
152.4	6"	100	
127	5"	100	
101.6	4"	100	
76.1	3"	100	
50.8	2"	100	
38.1	1-1 1/2"	a5	
25.7	1"	85	
19	3/4"	85	
12.7	1/2"	83	
6.35	1/4"	82	
4.76	No. 4	81	19.3% Gravel
2	No. 10	75	
0.841	No. 20	67	
0.42	No. 40	57	56.8% Sand
0.25	No. 60	48	
0.149	No. 100	40	
0.074	No. 200	23.9	23.9% Fines

GRAVELLY SILTY SAND

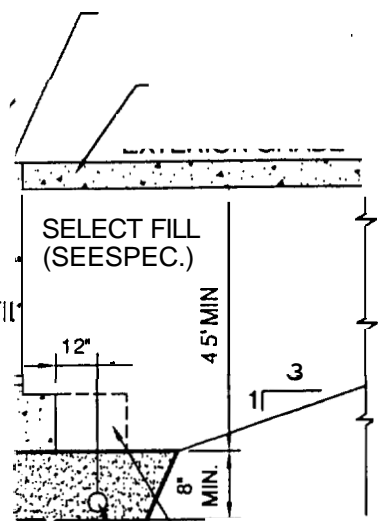


T:\SWC-2002-CAD\02-0121\Revised 12_22_03\02-0121 S-21.dwg, 1/21/2004 12:42:15 PM, C.E.M. S.W. Cole Engineering, Inc.



6" STONE ABOVE &
6" STONE BELOW

PLACED ON COMPACTED FILL



EXTERIOR COLUMN FOOTING (TYP)

PERFORATED UNDERDRAIN PIPE
BEDDED IN 12" OF 3/4" CRUSHED
STONE SURROUNDED IN
GEOTEXTILE FILTER FABRIC
6" STONE ABOVE &
6" STONE BELOW

NOTES :

1. UNDERDRAIN INSTALLATION
SELECT FILL SPECIFICATION:
THIS REPORT.

W. COLE
ENGINEERING, INC.

TFH ARCHITECTS
UNDERDRAIN DETAIL

PROP FAMILY HOUSING
MELLEN AND GRANT STREETS
PORTLAND, MAINE

02-0121
01/21/03

Scale
Sheet

Not to Scale
21

