Sebago Technics
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Report on Subsurface and Foundation Investigation

Proposed Accessory Building
Portland, Maine

for

PropSys, Inc.
P.O. Box 660
Lewiston, ME 04243-0660

March 5, 2010

One Chabot Street, P.O. Box 1339, Westbrook, Maine 04098-1339 ▪ Ph. 207-856-0277 ▪ Fax 856-2206

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March 5, 2010
09492

Chris Thompson
PropSys, Inc.
P.O. Box 660
Lewiston, ME 04243-0660

Report on Subsurface and Foundation Investigation
Proposed Accessory Building, Portland, Maine

Dear Chris:

This report presents the results of our subsurface and foundation investigation for the proposed accessory building at 501 Danforth Street in Portland, Maine. These services were completed in accordance with our proposal dated December 30, 2009.

In summary, it is our opinion that the building may be supported on spread and continuous footings bearing on undisturbed, naturally deposited sand and clay or on compacted structural fill placed after removal of unsuitable soils. In addition, an earth-supported slab-on-grade may be used for the lowest floor. Specific recommendations regarding foundation design and construction considerations are presented below.

Introduction

The site is located at 501 Danforth Street in Portland. It presently consists of a paved parking lot. We understand the proposed building will have plan dimensions of 60 feet by 100 feet, located within a portion of the paved parking lot. Ground surface elevations within the building limits vary from approximately El. 42.0 to El. 45.0. The building will have the lowest floor level at approximately El. 45.0 with a mezzanine in one corner. It will have a steel braced frame with steel roof joists. Column loads will vary from approximately 10 kips at the corners to 56 kips in the interior.

Subsurface Explorations

On February 15, 2010 Maine Test Borings, Inc. (MTB) drilled four borings, B1 to B4, at the site at locations shown on Sheet 1, Boring Plan. MTB drilled the borings to depths below ground surface varying from 8.5 feet to 17.4 feet. Sebago Technics, Inc. monitored the borings and prepared the logs included in Appendix A. Table I summarizes the results of borings. MTB backfilled the borings with the drilled material and placed a bituminous concrete patch at the surface.

Borings were drilled using 3.0-inch diameter solid stem augers. Samples were generally recovered at five feet intervals. Standard penetration resistance (N) was measured at each sample in accordance with ASTM procedures. Borings were drilled to refusal judged to be bedrock.

Sebago Technics determined the locations of borings by pacing from existing site features.

The boring logs and related information depict the subsurface conditions and water levels encountered at the locations and during the times indicated on the logs. Subsurface conditions at other locations may differ from those encountered in the borings. The passage of time may result in a change in groundwater conditions at the borings.

Subsurface Conditions

The borings disclosed five principal soil units below bituminous concrete at the site: fill, clay, sand, glacial till and weathered bedrock. Encountered thickness and generalized descriptions of the strata encountered are presented below in order of increasing depth below ground surface.

Fill – Fill consists of medium dense; gray brown well-graded GRAVEL (GW); to poorly-graded SAND (SP). Encountered thickness varies from 1.3 feet to 3.8 feet.

Marine Clay – Marine clay consists of stiff to soft, gray brown to gray lean CLAY (CL). Boring B2 encountered 12.0 feet of clay.

Marine Sand – Marine sand consists of loose to medium dense, brown to gray poorly-graded SAND (SP); to silty SAND (SM). Encountered thickness varies from 6.0 feet to 9.0 feet.

Glacial Till – Glacial till consists of loose to medium dense, gray silty SAND with gravel (SM). Encountered thickness varies from 0.5 foot to 5.7 feet.

Weathered Bedrock – Weathered bedrock consists of bedrock that has been weathered to sand, gravel and cobble size pieces of rock fragments. Encountered thickness varies from 0.1 foot to 0.4 foot.

All borings terminated in refusal on what is judged to be bedrock.

Groundwater was encountered in B2 at a depth of 8.6 feet below ground surface. Groundwater was not encountered in the other borings. However, observations of groundwater were made over a relatively short period of time and may not reflect the stabilized groundwater level. In addition, water levels at the site will vary with season, precipitation, temperature and construction activity in the area. Therefore, water levels during and following construction will vary from those observed in the borings.

Strength and Compressibility Characteristics of Clay Stratum

We estimated the stress history of the clay deposit by correlations with strength ratio, the ratio of shear strength to overburden stress, of similar clays in the area. The undrained shear strength of the clay stratum was estimated by correlations with the N value. Estimated shear strength varies from 1,500 pounds per square foot (psf) at 6 feet to 500 psf at 11 feet below ground surface. The stress history of the deposit was estimated by comparing the strength ratio with correlations of strength ratio and stress history of clay from other projects with similar conditions.

The stress-strain or compressibility characteristics (settlement) of clays are highly dependent upon their stress history. If clay is stressed within the limits of the maximum previous stress, σ_{vm}, the strain (settlement) will be a function of the recompression ratio (RR) of the clay. If the applied stress exceeds the maximum previous stress, the strain will be proportional to both the recompression ratio and the virgin compression ratio (CR). The compression ratio is typically 10 to 15 times the recompression ratio.

The stress history and appropriate compression ratios were estimated for the clay deposit as discussed above. The correlations indicate that the deposit is moderately overconsolidated, that is, the existing overburden stress is at least 1,000 psf less than the maximum previous. The deposit likely became overconsolidated due to desiccation (drying) resulting from a lowering of the groundwater level for an extended period at some time in the geologic past which created a stiff upper crust and also increased the effective overburden stress throughout the stratum.

Recommendations for Foundation Design

Recommended Foundation Type and Design Criteria

The bituminous concrete and fill are not considered suitable for support of the building. All bituminous concrete and existing fill should be removed from within the foundation limits. In our opinion, the building may be supported on spread and continuous footings bearing on undisturbed, naturally-deposited clay or sand or on compacted structural fill placed after removal of unsuitable soil or for raises-in-grade.

Footings may be proportioned for an allowable bearing stress in pounds per square foot (psf) equal to 800 multiplied by the least lateral dimension of the footing in feet up to a maximum of 2,500 psf. All footings should be a minimum of 1.5 feet wide.

Exterior footings should be founded at least 4.5 feet below the lowest adjacent ground surface exposed to freezing. Interior footings should be founded a minimum of 1.5 feet below the ground floor slab.

Compacted structural fill supporting footings should extend laterally from the footings to at least the limits defined by 1 horizontal to 1 vertical lines sloped outward and downward from points located at least 1 foot horizontally beyond the bottom edges of the footings.

In order to consider foundations in the northwest corner bearing above the clay stratum we estimated the settlement of the clay resulting from the increased stress from the column load, ground floor slab and raise-in-grade. Loading information was provided by Structural Design Consulting. We estimate that the total settlement in the northwest corner will be on the order of 0.5 inch or less with differential settlement on the order of 0.4 inch in 40 feet. We estimate that this settlement will occur within 5 years of completion of construction. We anticipate that settlement of this magnitude is acceptable. However, Structural Design Consulting should determine final acceptability of settlement.

Ground Floor Slab

We recommend that the lowest level floor slab be designed as an earth-supported slab-on-grade bearing on a minimum of 6 inches of compacted structural fill. All bituminous concrete and fill containing organics or debris should be removed from within the building limits prior to placing fill. All fill placed below the floor slab for raise-in-grade should consist of compacted structural fill. Normal dampproofing and vapor barriers should be provided for the slab.

In general, the existing fill consists of gravel subbase and poorly-graded sand. In our opinion, the existing fill is suitable to remain in-place following proofrolling. The subgrade should be proofrolled using fully-loaded ten-wheel dump trucks or equivalent equipment. Any soft or yielding soil should be excavated and replaced with compacted structural fill prior to placing fill for raise-in-grade.

We recommend that the lowest level floor slab be designed with a modulus of subgrade reaction of 200 pounds per cubic inch.

Seismic Design Considerations

We understand that the City of Portland requires design using the 2003 edition of the International Building Code (IBC). We recommend that the building be designed in accordance with the seismic requirements of the 2003 edition of the IBC. The site classification is Class D based on a calculation of the weighted average of overburden strength in the top 100 feet of the site; the site response coefficient F_a is 1.5 for a short period spectral response acceleration S_s of 0.375g; the site response coefficient F_v is 2.4 for the 1-second period spectral response acceleration S_1 of 0.10g. The subgrade soils are not considered liquefaction susceptible.

Lateral Foundation Loads

We recommend that lateral loads be resisted by bottom friction on footings and that a coefficient of friction equal to 0.35 be used for footings. If this does not provide sufficient lateral resistance, we will consider the problem in more detail to take into account other factors.

Backfill Materials

Structural fill used below foundations and floor slabs and for backfill adjacent to walls should consist of sandy gravel to gravelly sand. It should be free of organic material, loam, trash, snow, ice, frozen soil and other objectionable material, and should conform to the following gradation:

Sieve Size	Percent Finer by Weight
6 inches	100
No. 4	30 to 90
No. 40	10 to 50
No. 200	0 to 8

Compacted structural fill should be placed in layers not exceeding eight inches in loose measure and compacted by self propelled vibratory equipment at the approximate optimum moisture content to a dry density of at least 95 percent of the maximum dry density, as determined in accordance with ASTM Test Designation D1557. In confined areas, the maximum particle size should be reduced to 3 inches and the loose layer thickness should be reduced to 6 inches and compaction performed by hand-guided vibratory equipment.

Compacted structural fill on the exterior of the foundation walls should extend laterally a minimum of 2 feet from the wall. Backfill beyond this limit on the exterior of the building may consist of common fill. The top 12 inches of fill on the exterior of the building should consist of low permeability material to minimize water infiltration next to the building. Grading should provide for runoff away from the building.

Common fill may consist of inorganic mineral soil that can be placed in layers and compacted. Common fill should be placed and spread in layers not exceeding 12 inches in thickness and compacted at the approximate optimum moisture content to a dry density of at least 92 percent of the maximum dry density, as determined in accordance with ASTM Test Designation D1557.

Pavement Section

We recommend the following pavement section for roadway and parking areas:

Roadway and Automobile Parking Areas

3 inches bituminous concrete, placed in two layers
3 inches screened or crushed gravel base course
15 inches sand or gravel subbase course

Base and subbase course materials should conform to the following gradations:

Base Course

Screened or Crushed Gravel (Maine DOT Standard Specification, Highways and Bridges; Section 703.06a, Type A)

Sieve Size	Percent Finer by Weight
2 inches	100
1/2 inch	45 to 70
1/4 inch	30 to 55
No. 40	0 to 20
No. 200	0 to 5

Subbase Course

Sand or Gravel (Maine DOT, Section 703.06b, Type D)

Sieve Size	Percent Finer by Weight
4 inches	100
1/4 inch	25 to 70
No. 40	0 to 30
No. 200	0 to 7

(Note: Type D aggregate should be modified to a maximum 4 inch size. Compacted structural fill may be substituted for gravel subbase course).

All fill containing debris should be removed from within the limits of pavement.

Subbase course material should be placed in maximum 8-inch thick loose lifts and compacted at approximately optimum moisture content to a dry density of at least 95 percent of maximum dry density, as determined in accordance with ASTM Test Designation D1557. Base course material should be placed in one lift and compacted with a minimum of two coverages with self-propelled vibratory compaction equipment.

Fill below the pavement section for raises-in-grade may consist of common fill. Common fill may consist of inorganic mineral soil that can be placed in layers and compacted. Common fill should be placed and spread in layers not exceeding 12 inches in thickness and compacted at the approximate optimum moisture content to a dry density of at least 92 percent of the maximum dry density, as determined in accordance with ASTM Test Designation D1557. In our opinion, the existing clay is not suitable for common fill.

It should be noted that the subgrade soils may be frost-susceptible. Therefore, pavement roughness due to non-uniform frost movement may occur. To eliminate such non-uniform frost movement would require approximately 4.5 feet of structural fill subbase. However, it is common practice to tolerate seasonal movement to avoid the high cost of the added thickness of subbase.

Construction Considerations

General

The primary purpose of this section of the report is to comment on items related to excavation, earthwork and related geotechnical aspects of proposed construction. It is written primarily for the engineer having responsibility for preparation of plans and specifications. Since it identifies potential construction problems related to foundations and earthwork, it will also aid personnel who monitor the construction activity. The contractor must evaluate the construction problems on the basis of their own knowledge and experience in the Portland, Maine area, and on the basis of similar projects in other localities, taking into account their proposed construction methods, procedures, equipment and personnel.

Excavation, Lateral Support and Control of Water

We anticipate that foundation excavation can be accomplished with sloped open excavation through the overburden soils provided safe side slopes can be maintained. Some sloughing and raveling should be anticipated in temporary slopes. Temporary excavations should be made in accordance with all OSHA and other applicable regulatory agency requirements.

Groundwater may be encountered at footing excavations. We anticipate that groundwater and water from other sources can be controlled by sumps and open pumping. In general, the contractor should control groundwater and water from runoff and other sources by methods which prevent disturbance of bearing surfaces or adjacent soils and allow construction in-the-dry.

Subgrade Preparation

The subgrade soil is susceptible to disturbance from construction traffic. Equipment and personnel should not be permitted to travel across exposed footing bearing surfaces or exposed slab subgrades. Any subgrade areas that are disturbed should be recompacted or excavated and replaced with compacted structural fill or fabric and crushed stone prior to placing concrete. Subgrades should be protected against freezing temperatures if exposed during construction. Final excavation to subgrade should be performed using equipment with smooth-edge buckets.

Construction Monitoring

The foundation recommendations contained herein are based on the known and predictable behavior of a properly engineered and constructed foundation. Monitoring of the foundation construction is required to enable the geotechnical engineer to keep in contact with procedures and techniques used in construction. Therefore, we recommend that a person qualified by training and experience be present to provide monitoring at the site during excavation, preparation of foundation bearing surfaces, and placement of compacted structural fill.

Limitations of Recommendations

This report has been prepared for specific application to the subject project in accordance with generally accepted geotechnical engineering practices. In the event that any changes in the nature, design or location of the building is planned, the conclusions and recommendations contained in this report should not be considered valid, unless the changes are reviewed and the conclusions of this report modified or verified in writing.

The recommendations presented herein are based in part on the data obtained from the referenced borings. The nature and extent of variations between the borings may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

We request that we be provided the opportunity for a general review of final design and specifications in order to determine that our earthwork and foundation recommendations have been interpreted and implemented in the design and specifications as they were intended.

It has been a pleasure to work with you on this project. Please do not hesitate to contact us if you have any questions or need additional information.

Sincerely,

SEBAGO TECHNICS, INC.

Kenneth L. Recker, P.E.
Geotechnical Engineering Manager

KLR:klr/dlf

Enclosures:

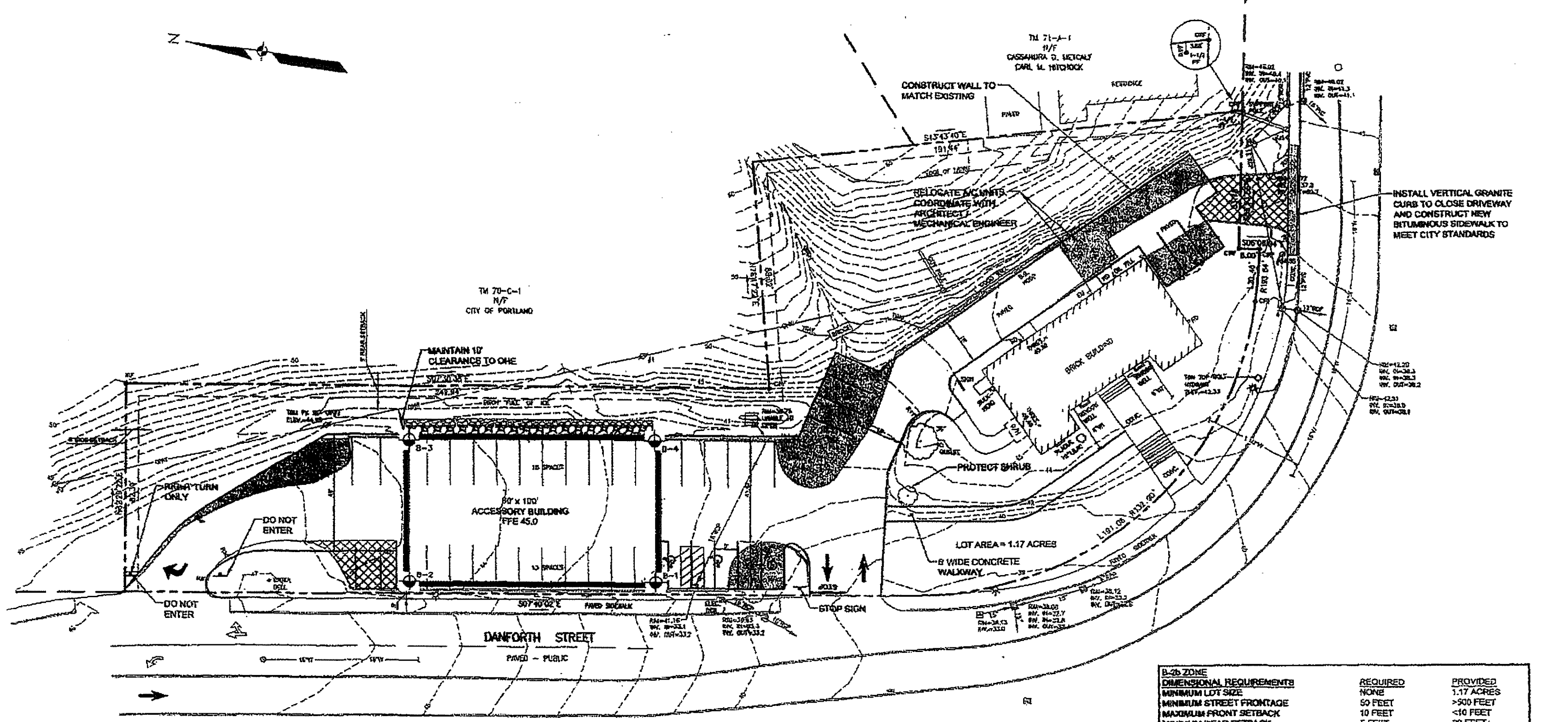
Table I	- Summary of Borings
Sheet 1	- Boring Plan
Appendix A	- Logs of Borings

TABLE I
SUMMARY OF BORINGS
PROPOSED ACCESSORY BUILDING
501 DANFORTH STREET
PORTLAND, MAINE

Boring Number	Depth (Ft)	Depth to Water (Ft)	Strata Thickness (Ft)						
			Bituminous	Fill	Clay	Sand	Glacial Till	Weathered Rock	Bedrock
B1	12.6	NE	0.2	1.8	--	8.5	1.8	0.3	0.0*
B2	17.4	8.6	0.2	3.8	12.0	--	1.0	0.4	0.0*
B3	16.3	NE	0.2	1.3	--	9.0	5.7	0.1	0.0*
B4	8.5	NE	0.2	1.8	--	6.0	0.5	--	0.0*

NOTES:

1. NE INDICATES GROUNDWATER NOT ENCOUNTERED WITHIN DEPTH OF BORING.
2. -- INDICATES STRATUM NOT ENCOUNTERED WITHIN DEPTH OF BORING.
3. * INDICATES DEPTH OF PENETRATION INTO STRATUM.



B-2b ZONE DIMENSIONAL REQUIREMENTS	REQUIRED	PROVIDED
MINIMUM LOT SIZE	NONE	1.17 ACRES
MINIMUM STREET FRONTAGE	50 FEET	>500 FEET
MAXIMUM FRONT SETBACK	10 FEET	<10 FEET
MINIMUM REAR SETBACK	5 FEET	20 FEET±
MINIMUM SIDE SETBACK	5 FEET	<45 FEET
MAXIMUM STRUCTURE HEIGHT	45 FEET	<90%
MAXIMUM IMPERVIOUS SURFACE RATIO	90%	
FRONT YARD PARKING	SEE NOTE	

NOTE: THERE SHALL BE NO PARKING IN THE FRONT YARD BETWEEN THE STREET LINE AND THE REQUIRED MAXIMUM SETBACK LINE.

LEGEND
NEW PAVEMENT
PAVEMENT TO BE REMOVED
PROPOSED BUILDING

PLAN REFERENCE
1. BOUNDARY & TOPOGRAPHIC SURVEY BY OWEN HASKELL, INC. DATED JANUARY 6, 2010

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

LEGEND
B-1 NUMBER AND APPROXIMATE LOCATION OF BORINGS DRILLED BY MAINE TEST BORINGS, INC. ON FEBRUARY 15, 2010

NOTES:
1. BASE PLAN PREPARED FROM ELECTRONIC COPY OF SITE LAYOUT PLAN PREPARED BY DELUCA-HOFFMAN ASSOCIATES, INC. PROVIDED BY ARCHETYPE, PA.
2. BORINGS MONITORED BY SEBAGO TECHNICS, INC
3. LOCATIONS OF BORINGS DETERMINED BY SEBAGO TECHNICS, INC., BY PACING FROM EXISTING SITE FEATURES.

REV.	BY.	DATE	STATUS
A	KR	03-03-10	ISSUED TO CLIENT

Sebago Technics

PROJECT NO.	FIELD BOOK	DESIGN	CHKD	DRAWN
09182			KR	BJV

BORING PLAN
OF
PROPOSED ACCESSORY BUILDING
501 DANFORTH STREET
PORTLAND, MAINE
FOR:
PROPSYS, INC.
451 LISBON STREET, SUITE 2400
LEWISTON, MAINE 04240

DATE	SCALE
03-03-10	1"=20'

SHEET 1 OF 1

Appendix A

Logs of Borings

SEBAGO TECHNICS, INC.	TEST BORING REPORT	BORING NO. B1
		Page 1 of 1

PROJECT	PROPOSED ACCESSORY BUILDING	STI JOB NO.	09492
LOCATION	501 DANFORTH STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	PROPSYS, INC.	FIELD REP.	K. B. STEPHENSON
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	2/15/2010
DRILLER	R. LEONARD	DATE FINISHED	2/15/2010

Elevation ft. Datum | Boring Location See Plan

Item	Casing	Sampler	Core Barrel	Rig Make & Model		Mobile B53	Hammer Type	Drilling Mud	Casing Advance
Type	SSA	SS		☑ Truck	☐ Tripod	☑ Cat-Head	☑ Safety	☐ Bentonite	Type Method Depth
Inside Diameter (in.)	--	1.375		☐ ATV	☐ Geoprobe	☐ Winch	☐ Doughnut	☐ Polymer	SSA/SPIN/12.6
Hammer Weight (lb.)		140		☐ Track	☐ Air Track	☐ Roller Bit	☐ Automatic	☑ None	
Hammer Fall (in.)		30		☐ Skid	☐	☑ Cutting Head	Drilling Notes:		

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0					0.2		-BITUMINOUS CONCRETE-										
					1.0	GW	Note: gray gravel with sand and silt in auger cuttings -SUBBASE/FILL-										
	4	S1	1.0			SP	Medium dense, brown poorly-graded SAND (SP), mps = 0.5 in., damp		5		15	75	5				
	6				2.0		-FILL-										
	7					SP	Medium dense, gray poorly-graded SAND (SP), frequent clayey silt					60	40				
	7	16	3.0				seams, mps = 0.02 in., damp										
							-MARINE DEPOSITS-										
					4.5												
5	WOH	S2	5.0			SM	Loose, gray silty SAND (SM), frequent clay seams, one 0.75 in. gravel					60	40				
	WOH						fragment, wet										
	WOH																
	1	24	7.0				-MARINE DEPOSITS-										
							-MARINE DEPOSITS-										
10	1	S3	10.0		10.5	SM	Loose, gray silty SAND (SM), frequent clay seams, mps = 0.02 in., wet					60	40				
	3					SM	Medium dense, gray silty SAND with gravel (SM), mps = 1.0 in., wet	5	15	20	15	30	15				
	8																
	16	24	12.0				-GLACIAL TILL-										
					12.3												
					12.6		-Probable WEATHERED BEDROCK-										
							SSA refusal at 12.6 ft.										
							Bottom of exploration at 12.6 ft. below ground surface										
15																	
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
2/15/2010	1232	--	--	9.7	Dry

Sample ID

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe
- FV Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	12.3
Rock Cored (Linear ft.)	--
Number of Samples	3S
BORING NO.	B1

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

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.	TEST BORING REPORT	BORING NO. B2
		Page 1 of 1

PROJECT	PROPOSED ACCESSORY BUILDING	STI JOB NO.	09492
LOCATION	501 DANFORTH STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	PROPSYS, INC.	FIELD REP.	K. B. STEPHENSON
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	2/15/2010
DRILLER	R. LEONARD	DATE FINISHED	2/15/2010

Elevation [illegible] ft. Datum | Boring Location: See Plan

Item	Casing	Sampler	Core Barrel
Type	SSA	SS	
Inside Diameter (in.)	--	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53
- ☑ Truck ☐ ATV ☐ Track ☐ Skid
- ☐ Tripod ☐ Geoprobe ☐ Air Track ☐
- ☑ Cat-Head ☐ Winch ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance — Type Method Depth: SSA/SPIN/15.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					0.2		-BITUMINOUS CONCRETE-										
					1.0	GW	Note: gray gravel with sand and silt in auger cuttings -SUBBASE/FILL-										
	3	S1	1.0			SP	Medium dense, brown poorly-graded SAND (SP), mps = 1.0 in., damp	10			5	80	5				
	7				2.0		-FILL-										
	12					SP	Medium dense, brown poorly-graded SAND (SP), mps = 0.1 in., damp				10	85	5				
	21	20	3.0				Note: cobble fragments in tip of split-spoon										
							-FILL-										
					4.0												
5	3	S2	5.0			CL	Stiff, gray-brown lean CLAY (CL), frequent sand seams, mps = 0.02 in., damp					20	80	N	M	M	
	3																
	4																
	3	12	7.0				-MARINE DEPOSITS-										
10	WOH	S3	10.0		10.4	CL	Soft, gray-brown lean CLAY (CL), frequent sand seams, mps = 0.02 in.					20	80	N	M	M	
	WOH					CL	Soft, gray lean CLAY (CL), frequent sand seams, mps = 0.02 in., wet					20	80	N	M	M	
	WOH																
	2	24	12.0														
							-MARINE DEPOSITS-										
15	1	S4	15.0			CL	Soft, gray lean CLAY (CL), frequent sand seams, mps = 0.02 in., wet					20	80	N	M	M	
	2				16.0		-MARINE DEPOSITS-										
	5					SM	Loose, gray silty SAND with gravel (SM), mps = 0.75 in., wet		10	30	10	30	20				
	7	20	17.0		17.0		-GLACIAL TILL DEPOSITS-										
					17.4		Note: overdrove split-spoon to 17.4 ft. Spoon bouncing on probable bedrock at 17.4 ft. Weathered rock fragments in tip of split-spoon										
							-Probable WEATHERED BEDROCK-										
							Bottom of exploration at 17.4 ft. below ground surface										
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
2/15/2010	1510	--	--	14.6	8.6

Sample ID
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe
- FV Field Vane

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (Linear ft.) 17.0
- Rock Cored (Linear ft.) --
- Number of Samples 4S

BORING NO. B2

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

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.	TEST BORING REPORT	BORING NO. B3
		Page 1 of 1

PROJECT	PROPOSED ACCESSORY BUILDING	STI JOB NO.	09492
LOCATION	501 DANFORTH STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	PROPSYS, INC.	FIELD REP.	K. B. STEPHENSON
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	2/15/2010
DRILLER	R. LEONARD	DATE FINISHED	2/15/2010

Elevation	ft. Datum		Boring Location	See Plan			
Item	**Casing**	**Sampler**	**Core Barrel**	**Rig Make & Model** Mobile B53	**Hammer Type**	**Drilling Mud**	**Casing Advance**
Type	SSA	SS		☑ Truck ☐ Tripod ☑ Cat-Head	☑ Safety	☐ Bentonite	Type Method Depth
Inside Diameter (in.)	--	1.375		☐ ATV ☐ Geoprobe ☐ Winch	☐ Doughnut	☐ Polymer	SSA/SPIN/15.0
Hammer Weight (lb.)		140		☐ Track ☐ Air Track ☐ Roller Bit	☐ Automatic	☑ None	
Hammer Fall (in.)		30		☐ Skid ☐ ☑ Cutting Head	Drilling Notes:		

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0																	
					0.2		-BITUMINOUS CONCRETE-										
					1.0		Note: gray-brown silty sand with gravel on auger flights-SUBBASE/FILL-										
	4	S1	1.0		1.5	GW	*Medium dense, gray well-graded GRAVEL with sand (GW), mps = 1.25*	20	30	20	10	15	5				
	6						in., damp -FILL-										
	9					SP	Medium dense, brown poorly-graded SAND (SP), frequent rusty				10	85	5				
	12	18	3.0				discolorations, mps = 0.1 in., damp										
							-MARINE DEPOSITS-										
5																	
	4	S2	5.0		5.5	SP	Loose, brown poorly-graded SAND (SP), mps = 0.1 in. damp				10	85	5				
	3					SP	Loose, gray poorly-graded SAND (SP), frequent clay seams, mps = 0.1				5	55	40				
	3						in., wet										
	3	20	7.0				-MARINE DEPOSITS-										
							-MARINE DEPOSITS-										
10	WOH	S3	10.0		10.5	SP	Loose, gray poorly-graded SAND (SP), frequent clay seams, wet				5	55	40				
	5					SM	Loose, gray silty SAND with gravel (SM), mps = 0.75 in., wet		15	15	10	40	20				
	5																
	2	18	12.0				-GLACIAL TILL DEPOSITS-										
15																	
	2	S4	15.0			SM	Medium dense, gray silty SAND with gravel (SM), mps = 0.3 in., wet		10	20	10	40	20				
	3																
	17	12	16.3		16.2		-GLACIAL TILL DEPOSITS-										
					16.3		Gray weathered rock fragments -WEATHERED BEDROCK-										
							SSA refusal at 16.3 ft.										
							Bottom of exploration at 16.3 ft. below ground surface										
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
2/15/2010	1410	--	--	4.0	Dry

Sample ID

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe
FV Field Vane

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (Linear ft.) 16.2
Rock Cored (Linear ft.) --
Number of Samples 4S

BORING NO. B3

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

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. B4

PROJECT	PROPOSED ACCESSORY BUILDING	STI JOB NO.	09492
LOCATION	501 DANFORTH STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	PROPSYS, INC.	FIELD REP.	K. B. STEPHENSON
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	2/15/2010
DRILLER	R. LEONARD	DATE FINISHED	2/15/2010

Elevation ft. Datum | Boring Location: See Plan

Item	Casing	Sampler	Core Barrel
Type	SSA	SS	
Inside Diameter (in.)	--	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53 — ☑ Truck ☐ Tripod ☑ Cat-Head; ☐ ATV ☐ Geoprobe ☐ Winch; ☐ Track ☐ Air Track ☐ Roller Bit; ☐ Skid ☐ ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance (Type Method Depth): SSA/SPIN/8.5

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0					0.2		-BITUMINOUS CONCRETE-										
					1.0	GW	Note: gray gravel with sand and silt in auger cuttings -SUBBASE/FILL-										
	4	S1	1.0			SP	Medium dense, brown poorly-graded SAND (SP), mps = 1.0 in., damp	10			5	80	5				
	6				2.0		-FILL-										
	9					SP	Medium dense, brown poorly-graded SAND (SP), mps = 0.1 in., damp				10	85	5				
	11	18	3.0														
							-MARINE DEPOSITS-										
					4.0												
5	3	S2	5.0			SM	Loose, gray silty SAND (SM), frequent clay seams, mps = 0.1 in., wet				5	70	25				
	3																
	2																
	1	16	7.0				-MARINE DEPOSITS-										
					8.0												
					8.5		-Probable GLACIAL TILL-										
							SSA refusal at 8.5 ft.										
10							Bottom of exploration at 8.5 ft. below ground surface										
15																	
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
2/15/2010	1303	--	--	4.8	Dry

Sample ID: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon Sample; G Geoprobe; FV Field Vane

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (Linear ft.) 8.5; Rock Cored (Linear ft.) -; Number of Samples 2S

BORING NO. B4

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

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.