SUMMIT

ENVIRONMENTAL CONSULTING • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING

Geotechnical Report

Proposed Addition
India Street
Portland, Maine

Prepared for:

Pearl Properties, LLC

Prepared by:

Summit Geoengineering Services
Project #17190
June 2007

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SUMMIT

ENVIRONMENTAL CONSULTING • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING

June 19, 2007
Summit #17190

Pearl Properties, LLC
Attn: Mr. Joe Reynolds
61 India Street
Portland, Maine 04103

Reference: Geotechnical Engineering Services
Building Addition, India Street, Portland, Maine

Dear Joe:

We have completed the geotechnical investigation for the construction of a proposed addition to an existing building located at 61 India Street in Portland, Maine. Our scope of services included performing 1 boring and 2 probes at the site and preparing this report summarizing our findings and geotechnical recommendations.

1.0 Project and Site

We understand the project consists of constructing an addition to an existing building structure located at 61 India Street in Portland, Maine. Currently, the existing building structure is a partially open and condemned structure having brick facing walls 2 to 3 stories in height. In general, the site within the proposed addition footprint is a relatively flat open gravel area with surround building structures. The building addition will be constructed to the west of the existing condemned building. The site is located east of India Street and south of Newbury Street. Photographs of the current site conditions are attached under Appendix D.

We understand the building addition footprint with a slab approximately 2000 square feet will consist of a lightly framed and three to four-stories constructed at or near the existing ground surface. Based on our conversation with Resurgence Engineering and Conservation Inc., the proposed building addition will have a maximum interior and exterior column loads in the range of 40 to 55 kips and an approximate column grid of 9 by 15 feet. Information regarding finish floor elevation and proposed site grading were not available for this report. In general the site is a relatively flat area with minimal fill being anticipated.

2.0 Exploration and Laboratory Testing

The subsurface conditions were explored by drilling 1 boring and 2 probes located within the proposed building addition footprint. The boring and probes were drilled to refusal ranging from 24.7 to 30 feet using a Diedrich D50 ATV provided and operated by Northern Test Boring under contract to Summit. Boring B-1 was advanced using 4-inch casing with rotary wash. Probes P-1 and P-2 were advanced using 2-¼ inch solid stem augers and rod push advancement. Standard 24-inch long split spoon samples were obtained at continuous and 5-foot intervals. Pocket penetrometer tests were conducted on cohesive split spoon samples. Field shear vane tests were conducted and an undisturbed shelby tube sample was collected in the soft silty clay stratum. Summit was on site to coordinate and observe the exploration. The boring and probe locations were taped and paced from existing site features by Summit. A boring and probe location plan is attached under Appendix A. Logs of the boring and probes are attached under Appendix B.

Five samples #17190-1 through #17190-5 were collected and tested for Moisture Contents in accordance with ASTM D2216 for the soft marine clay deposits at depths ranging from 3.5 to 18 feet. The moisture contents were found to range from 23.4 to 35.1 percent. Atterberg Limits in accordance with ASTM D4318 and grain size analysis in accordance with ASTM D422 were conducted for sample 17190-S4 collected at a depth of 9 to 10 feet. Copies of the lab results are attached at the end of this report in Appendix C. Results are summarized on the following table:

LABORATORY RESULTS SUMMARY TABLE						
Sample Location	**Gradation**			**Atterberg Limits**		**Moisture Contents**
	% Sand	**% Silt**	**%Clay**	**LL**	**PI**	**WC**
B-1, 9' to 10'	14.6%	46.2%	39.2%	30	13	33.9 to 35.1%

Note: Based on ASTM D422 test and Unified Soil Classification System particle distribution.

3.0 Subsurface Conditions

The soil at the site generally consisted of 3.5 feet of ***fill*** overlying silty clay grading to sandy ***glacial marine deposits*** overlying ***bedrock*** encountered at a depth range of 24.7 to 30 feet.

The ***fill*** encountered at the site consisted of dark brown to black silty fine sand and is visually classified as SM in accordance with the USCS. SPT-N values for the fill ranged from 4 to 7 blows per foot (bpf) and averaged 5 bpf, which indicate loose soil conditions. The fill was damp to moist.

The ***glacial marine deposits*** at the site consisted of and upper and lower substrata. The upper layer consisted of firm olive grading to soft gray silty clay and based on the Atterberg Limits is classified as CL soil in accordance with USCS. The upper firm portion is approximately 5.5 feet thick and contained SPT-N values ranging from 3 to 14 blows per foot (bpf) and averaging 8 bpf, indicating firm conditions. The lower soft portion is approximately 8.5 feet thick and contained SPT-N values ranging from weight of probe sampler to 3 bpf, indicating soft soil conditions. Pocket penetrometer readings (a rough measurement of the soil unconfined compressive strength) split spoon cohesive samples ranged from 6,000 to 500 psf. Field shear vane tests

results ranged from 650 to 350 psf. Moisture contents ranged from 23.4 to 35.1 percent indicating moist to wet soil conditions. These test results are shown on the borings logs and laboratory results.

The lower glacial marine despot encountered at a depth from approximately 17.5 feet to bedrock consisted of gray medium to fine sand, with little to trace silt and gravel and is visually classified as SM soil in accordance with the USCS. SPT-N values ranged from 1 to 10 bpf and averaged 6 bpf indicating loose conditions. The lower subunit was generally wet.

Bedrock was encountered at boring B-1 and probes P-1 and P-2 at a depth range 24.7, 30, and 27 feet, respectively. The Bedrock Geologic Map of Maine by the Maine Department of Conservation indicates that the bedrock at the site is part of Spring Point Formation (OZs). The Spring Point Formation consists of mafic to felsic volcanic rocks. Samples of the bedrock were not obtained for verification during this exploration.

Groundwater was encountered at boring B-1 at a depth of approximately 4.8 feet below the ground surface. In general, groundwater appears to be confined within the underlying glacial marine deposits. Moist soil conditions within the fill near the surface of the glacial marine deposits indicate seasonal runoff may become perched along the silty clay surface during wet periods.

4.0 Geotechnical Evaluation

Anticipated building design loads and the site grading were used to evaluate potential total and differential settlement. The majority of the settlement will be due to consolidation settlement of the lower soft clay glacial marine subunit from the combined loading placed by fill and building loads. For these conditions, three foundation options were considered for design including, a driven pile foundation, reinforced mat foundation, and conventional spread footing foundation.

A reinforced mat foundation would be suitable at the site provided the building finish floor elevation could be lowered sufficiently to create a "floating foundation" condition. This would require removal of existing site fill to create an unloading condition approximately equal to the building loads distributed uniformly over the reinforced mat foundation. Due to the required site grading for other building design considerations, and the additional material cost compared to a conventional spread footing design, this foundation type would only be recommend if building loading would exceed those allowed by a conventional spread footing foundation.

A driven pile foundation would consist of footings constructed on pile caps supported by driven piles to a depth of dense stratum or bedrock, sufficient for support of the building loads. The anticipated pile depth required would be up to 25 to 30 feet. In general, the cost associated with pile foundation construction is considerably higher than a reinforced mat foundation or conventional spread footing foundation.

A conventional spread footing foundation would be suitable at the site depending on building loads and site fill requirements. If high building loads are anticipated and/or thick fill sections are required, foundation damage due to excessive settlement could occur. Due to this, limitations to maximum building loads and site fill are associated with spread footings. In general, spread footing foundations are the most common and least expensive option.

Based on our analysis, and the above considerations, we recommend that the building be supported on a spread footing foundation. Successful support of the building on a spread footing foundation will require careful consideration of the following construction recommendations and design limitations.

5.0 Foundation Recommendations

A. General

Our geotechnical recommendations are based on our evaluation of the subsurface conditions encountered during our exploration and the anticipated building loads provided by Resurgence Engineering and Preservation, Inc. Based on the anticipated finish floor elevation and footing depths, the footings will be constructed within the existing fill and/or firm silty clay glacial marine deposits. With proper preparation, the existing subgrade soils will be suitable to construct the proposed building addition.

At this site, disturbance of the subgrade soil is the primary concern regarding the design and construction of the foundation footings. Design of foundation footings should be done assuming moist soil conditions.

B. Allowable Bearing Pressure

We recommend that the footings constructed for the proposed building addition be proportioned using an allowable bearing pressure of 3,000 psf. The factor of safety associated with this bearing pressure is greater then 3. Total settlements for this allowable bearing pressure are estimated to be less than 1/2 inch. Due to fairly uniform subgrade conditions, differential settlement will be minimal. This bearing pressure and associated settlement is based on the following conditions:

- The building addition is structurally isolated from the existing foundation.
- Footing trenches within glacial marine silty clay soils are excavated using a smooth edged bucked to minimize disturbance of the footing subgrade soil.
- If soft and or wet pockets become present in the footing excavation they are removed and replaced with crushed stone.

We recommend the building addition be structurally isolated from the existing foundation to prevent overstressing the existing foundation from additional building loads.

Seasonal groundwater or surface runoff may become present in footing excavations. We recommend that dewatering using a submersible pump be used to dewater footing excavations. If footing excavations become soft and unstable, we recommend that soft wet areas beneath footings be stabilized with 12 inches of crushed stone. Where possible, the crushed stone should be compacted with static compaction to lock the crushed stone together. Where inaccessible, the crushed stone at a minimum should be tamped together by excavation equipment.

Foundation Backfill parameters required for design of the foundation footings are presented below. We recommend that the soil properties listed in the table below be used in computing the resistance to compressive, uplift, and lateral loads.

PARAMETER	FOUNDATION BACKFILL
Allowable Bearing Pressure (q_a)	3,000 psf
Total Natural (moist) Unit Weight (γ_t)	130 pcf
Saturated (buoyant) Unit Weight (γ_s)	68 pcf
Base Friction Factor (Concrete/Native Soil)	0.3
Base Friction Factor (Concrete/Crushed Stone)	0.6
Active Earth Pressure Coefficient (K_a)	0.31
Passive Earth Pressure Coefficient (K_p)	3.25
Uplift Earth Pressure Coefficient (K_u)	1.4
Friction Angle (ϕ_c)	32^{0} [1]
Cohesion (c)	0

[1] Based on 95% compaction of Foundation Backfill by ASTM D1557, Modified Proctor Test Method

C. Frost Protection

Based on the required frost protection depth, exterior spread footings should be constructed at a minimum depth of 4 feet below the exterior finished grade. This frost penetration depth is based on a design air-freezing index of 1,250-degree days for the Portland area. Frost protection depth is not required for interior footings. We recommend that the footings be backfilled with Foundation Backfill meeting the following gradation specification:

FOUNDATION BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
No. 40	0 to 70
No. 200	0 to 5

The Foundation Backfill should be placed in 8 to 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557.

Where geotextile fabric and crushed stone are used the 4-foot frost depth can be reduced by the crushed stone thickness (frost depth of 3 feet for 1 foot of crushed stone beneath the footing).

D. Building Slab

We recommend the building addition slab be constructed on a minimum 12-inch thick layer of Structural Backfill. The maximum particle size should be limited to 6 inches and the portion passing the 3-inch sieve should meet the following gradation specifications:

STRUCTURAL BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
1/4 inch	0 to 70
No. 200	0 to 10

Reference: MDOT Specification 703.20, Gravel Borrow

The Structural Backfill should be placed in 8 to 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557.

For the conditions described above, the slab can be designed using a subgrade modulus of 150 pci.

E. Groundwater Control

Groundwater is anticipated to be below exterior footing depths for the proposed building addition. Based on this, perimeter underdrains are not strictly necessary. Surface water infiltration within the existing fill and Foundation Backfill may become present during rain events due to the surrounding topography. Based on this, perimeter underdrains are considered a good idea provided a positive outlet can be provided. At a minimum, we recommend that exterior grades slope away from the building to reduce runoff water from infiltrating the Foundation Backfill.

Perimeter underdrains, if used, should consist of 4 inch rigid perforated PVC placed adjacent to the exterior footings and surrounded by a minimum of 6 inches of crushed stone wrapped in filter fabric to prevent clogging from the migration of the fine soil particles in the Foundation Backfill soils. The underdrain pipe should be outlet to a location where it will be free flowing. Where exposed at the ground surface, the ends of pipes should be screened or otherwise protected from entry and nesting of wildlife, which could cause clogging.

F. Seismic Design

The soils at this site are classified as Site Class D in accordance with the 2006 IBC Code. The liquefaction potential is low for the soil profile at this site. Soils susceptible to liquefaction during seismic events were not encountered within the building addition footprint.

G. Elevator Pit

We understand that an elevator pit may be constructed as part of the new building addition. No final elevations or grades were provided for analysis. If the elevator pit extends below groundwater, it should be constructed on a minimum 12 inches of crushed stone. The elevator pit may extend down into the soft clay strata, and soft wet conditions are likely to be present. Any soft, wet areas should be removed and replaced with crushed stone.

H. Excavation Adjacent to Existing Building

In order to construct the expansion, a cut of up to approximately 4 to 5 feet may be required adjacent to the existing building. Depending on the final depth of excavation below the existing footings, the existing sandy fill and silty clay glacial marine are anticipated to have a maximum stable slope of 1.5H:1V. Slopes steeper than this may have the potential to collapse and undermine the existing footing.

The following alternatives are available for minimizing the potential for compromising the condition of the soil beneath the existing footings.

- Allow for a 1.5H:1V slope extending from the existing footing toward the addition.
- Provide temporary support of the existing footings using helical anchors or other underpinning techniques.
- Preserve the condition of the soil beneath the existing footing by installing sheeting or shoring at the edge of the footing, prior to excavating. The shoring should extend below the base of the footing excavation a sufficient distance to provide adequate support of the soil above the excavation level.
- Use a combination of the 1.5H:1V slope and shoring or sheeting. The advantage of this approach is that the new footing can be moved closer to the existing footing.

The least expensive of these options is to use the 1.5H:1V slope.

6.0 Earthwork Consideration

Based on our field observation, the existing granular fill encountered beneath the proposed building at the site contains too high of a fines content to be used as Foundation Backfill. Any additional fill placed beneath the building footprint should consist of Foundation Backfill placed in 6 to 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557.

Subgrade softening due to the presence of groundwater above the footing and slab subgrade elevations could occur. Areas that become disturbed within the addition footprint should be over excavated and replaced with crushed stone placed directly on the existing subgrade or on geotextile placed on the existing subgrade.

Excavations below 4 feet should be sloped no greater than 1H to 1V for firm silty clay. Excavations below groundwater should be sloped no greater than 1.5H to 1V. These slopes are based on the current OSHA Excavation Guidelines.

We recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction. Summit would welcome the opportunity to provide this service.

7.0 Closure

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

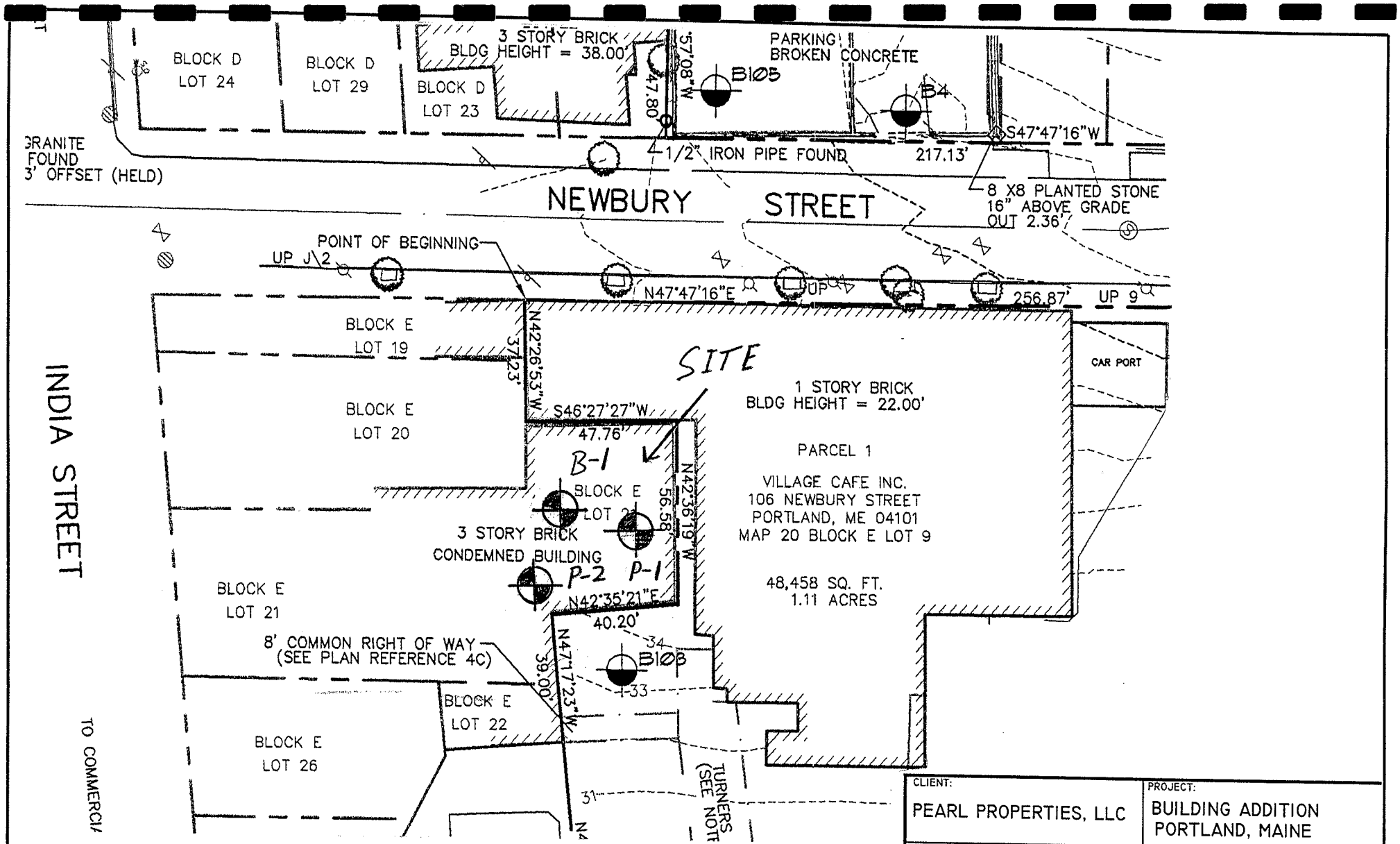
We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

Sincerely yours,
Summit Geoengineering Services,

Craig W. Coolidge, E.I.T.
Geotechnical Engineer

William M. Peterlein, P.E.
Principal Geotechnical Engineer

APPENDIX A
LOCATION PLAN



REFERENCE:
SITE PLAN PROVIDED BY RESURGENCE ENGINEERING & PRESERVATION, INC.

KEY
BORING/PROBE

CLIENT: PEARL PROPERTIES, LLC

PROJECT: BUILDING ADDITION PORTLAND, MAINE

TITLE: BORING/PROBE LOCATION PLAN

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

PROJECT NO.: 17190	DESIGN: ---	DRAWN: C.W.C.	SCALE: NOT TO SCALE
	APPROVED: W.M.P.	DATE: 6/18/07	FILE NO.:
			FIGURE: 1

APPENDIX B
EXPLORATION LOGS

EXPLORATION REPORT COVER SHEET

The exploration report has been prepared by the geotechnical engineer from both field and laboratory data. Differences between field logs and exploration reports may exist.

It is common practice in the soil and foundation engineering profession that field logs and laboratory data sheets not be included in engineering reports, because they do no represent the engineer's final opinion as to appropriate descriptions for conditions encountered in the exploration and testing work. The field logs will be retained in our office for review. Results of laboratory tests are generally shown on the borings logs or are described in the text of the report as appropriate.

Drilling and Sampling Symbols:

SS = Split Spoon
ST = Shelby Tube – 2" OD, disturbed
UT = Shelby Tube – 3" OD, undisturbed
HSA = Hollow Stem Auger
CS = Casing – size as noted
Sv = Vane Shear
PP = Pocket Penetrometer
RX = Rock Core – size as noted
Hyd = Hydraulic advance of probes
WOH = Weight of Hammer
WOR = Weight of Rod
GS = Grain Size Data
PI = Plasticity Index
LL = Liquid Limit
w = Natural Water Content
USCS = unified Soil Classification System

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations; additional evidence of groundwater elevations via observation or monitoring wells must be sought.

Gradation Description and Terminology:

Boulders:	Over 8 inches	Trace:	Less than 5%
Cobbles:	8 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 25%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 25%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	**Consistency**	**SPT N-value blows/ft**	**Relative Density**
0 to 2	Very Soft	0 to 3	Very Loose
3 to 4	Soft	4 to 9	Loose
5 to 8	Firm	10 to 29	Compact
9 to 16	Stiff	30 to 49	Dense
17 to 32	Very Stiff	50 to 80	Very Dense
>32	Hard		

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project: Pearl Properties, LLC
Building Addition
India Street, Portland

Boring #: **B-1**
Project #: 17190
Sheet: 1 of 2
Prep by: ARH

Drilling Co: Northern Test Boring
Foreman: Mike Nadeau
Summit: Craig W. Coolidge, E.I.T.

Ground Elevation: Not Available
Reference: Not Available
Date started: 4/20/2007 Date Comp: 4/20/2007

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: D-50	Hammer: 140 lb
Method: 4" Casing/RW	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/20/2007	4.8	N/A	Measurement in borehole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/15	0-2	2	Loose, dark brown/black Silty fine SAND, damp,	FILL
1				4	SM	
				3		
2				2		
	S-2	24/12	2-4	1	Loose, dark brown/black Silty fine SAND, moist,	
3				3	SM	
				3		
4				3		3.5' GLACIAL MARINE
	S-3	24/24	4-6	2	Firm, olive Silty CLAY, damp, CL	w = 23.4
5				3		Groundwater at 4.8'
				4		PP = 6,000psf
6				6		w = 27.9
	S-4	2424	6-8	5	Same as above, slightly moist	
7				6		PP = 5,000psf
				6		w = 28.3
8				8		
	S-5	24/24	8-10	1	Same as above, moist to wet	PP = 1,000psf
9				2		
				1		9'
10				2	Soft, gray Silty CLAY, wet, CL	PP = 500psf or less
						wc = 33.9 to 35.1
11						LL = 30, PI = 13
					Sv = 520 psf, 45 psf remold	Sand = 14.6%, Silt = 46.2%
12					Sv = 650, psf, 55 psf remold	Clay = 39.2%
	UT-1	24/18	12-14	Push		
13				Push	Very soft, gray Silty CLAY, wet, CL	
				Push		
14				Push		
15						
					Sv = 350 psf, 0 psf remold	
16					Sv = 350 psf, 0 psf remold	
	S-6	24/22	16-18	1		
17				WOH	Same as above, very wet	w=27.3
				2		
18				6	Gray, Fine SAND	17.8'
19						
20						
	S-7	24/10	20-22	3	Compact, gray medium-fine SAND, little to	
21				3	trace Silt and Gravel, wet, SM	
				7		
22				6		

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	SOIL BORING LOG Project: Pearl Properties, LLC Building Addition India Street, Portland	Boring #: B-1 Project #: 17190 Sheet: 2 of 2 Prep by: ARH

Drilling Co: Northern Test Boring	Ground Elevation: Not Available
Foreman: Mike Nadeau	Reference: Not Available
Summit: Craig W. Coolidge, E.I.T.	Date started: 4/20/2007 Date Comp: 4/20/2007

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: D-50	Hammer: 140 lb
Method: 4" Casing/RW	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/20/2007	4.8	N/A	Measurement in borehole

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
21						GLACIAL MARINE
22					Gravelly Drilling	
23						
24						
25						
	S-8	24/24	25-27	1	Very Loose, gray SAND, some to little Silt, little	
26				WOH	to trace Gravel, wet, SM	
				1		
27				WOH		
					End of boring at 27.0', drilling refusal	27.0' BEDROCK
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	SOIL BORING LOG Project: Pearl Properties, LLC Building Addition India Street, Portland	Boring #: P-1 Project #: 17190 Sheet: 1 of 1 Prep by: ARH

Drilling Co: Northern Test Boring	Ground Elevation: Not Available
Foreman: Mike Nadeau	Reference: Not Available
Summit: Craig W. Coolidge, E.I.T.	Date started: 4/20/2007 Date Comp: 4/20/2007

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: D-50	Hammer: 140 lb
Method: 2-1/4" SSA	Fall: 30"

GROUND WATER DEPTH			
Date	Depth	Elevation	Comments
4/20/2007	Not Available	Not Available	Not Available

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
2					Probe auger to 26', rod push to refusal at 30'	FILL grading to GLACIAL MARINE
18					Becomes Sandy	17.5'
28					Rod Push to 30'	
32					End Probe at 30', Rod push refusal	30.0' PROBABLE BEDROCK

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	SOIL BORING LOG Project: Pearl Properties, LLC Building Addition India Street, Portland	Boring #: P-2 Project #: 17190 Sheet: 1 of 1 Prep by: ARH

Drilling Co: Northern Test Boring	Ground Elevation: Not Available
Foreman: Mike Nadeau	Reference: Not Available
Summit: Craig W. Coolidge, E.I.T.	Date started: 4/20/2007 Date Comp: 4/20/2007

DRILLING METHOD	SAMPLER
Vehicle: ATV	Type: 24" SS
Model: D-50	Hammer: 140 lb
Method: 2-1/4" HSA	Fall: 30"

GROUND WATER DEPTH			
Date	Depth	Elevation	Comments
4/20/2007	Not Available	Not Available	Not Available

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
2					Probe auger to 24.7'	FILL grading to GLACIAL MARINE
18					Becomes Sandy	17.5'
26					End Probe at 24.7', auger refusal	24.7 PROBABLE BEDROCK

APPENDIX C
LABORATORY RESULTS

SUMMIT GEOENGINEERING SERVICES
P.O. Box 4698, Augusta, Maine
Phone: (207) 621-8334 Fax: (207) 626-9094

Laboratory Determination of Water (Moisture) Content of Soil ASTM D2216

PROJECT NAME: India Street, Portland
CLIENT: Pearl Properties, LLC
SOIL DESCRIP: Silty Clay
INTENDED USE: Engineering Investigation

PROJECT #: 17190
SAMPLE #: S-1 through S-5
DATE: 4/20/2007
SOURCE: Boring B-1
TECH: CWC

Sample Number	Sample Source	Percent Moisture
S-1	B-1, S-2, 2'-4'	23.4
S-2	B-1, S-3, 4'-6'	27.9
S-3	B-1, S-4, 6'-8'	28.3
S-4	B-1, S-5, 8'-10'	35.1
S-5	B-1, S-6, 16'-18'	27.4

REMARKS:

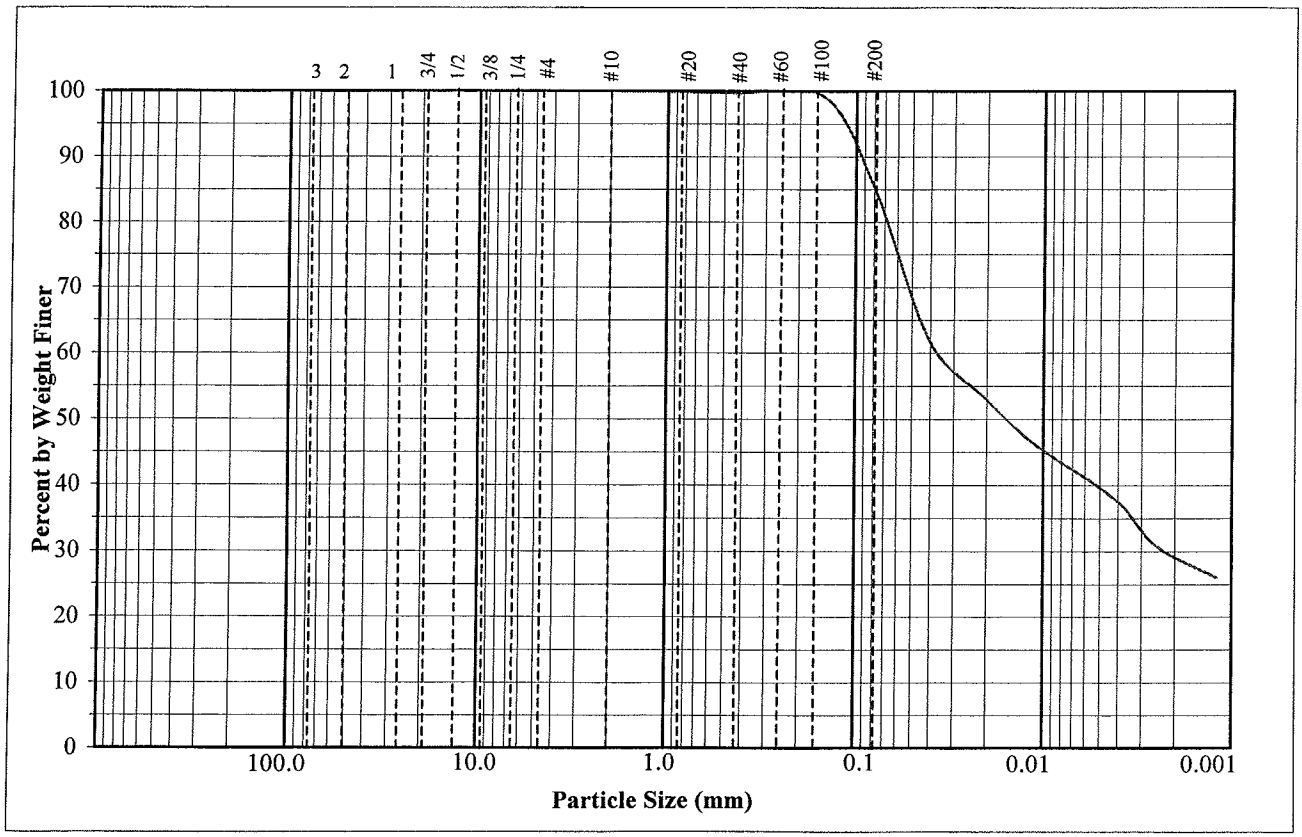
SUMMIT GEOENGINEERING SERVICES
434 Cony Road, Augusta, Maine 04330
Phone: (207) 621-8334 Fax: (207) 626-9094

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	India Street Addition - Portland	PROJECT #:	17190
CLIENT:	Pearl Properties, LLC	SAMPLE #:	S4
SOIL DESCRIP:	Silty Clay	DATE:	04/26/07
INTENDED USE:	Existing Subgrade	SOURCE:	B1, S5, 8'-10'

DATA

PARTICLE SIZE mm		% BY WT FINER
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	100.0
9.53	(3/8 in)	100.0
6.35	(1/4 in)	100.0
4.75	(No. 4)	100.0
2.00	(No. 10)	100.0
0.85	(No. 20)	99.8
0.43	(No. 40)	99.7
0.15	(No. 100)	99.2
0.08	(No. 200)	85.4
0.041		62.0
0.021		53.6
0.011		46.4
0.004		38.0
0.003		30.8
0.001		26.0



REMARKS: Moisture Content: 33.9%

Reveiwed: Darrell Gilman, CMT Manager
Sent: 4/30/07

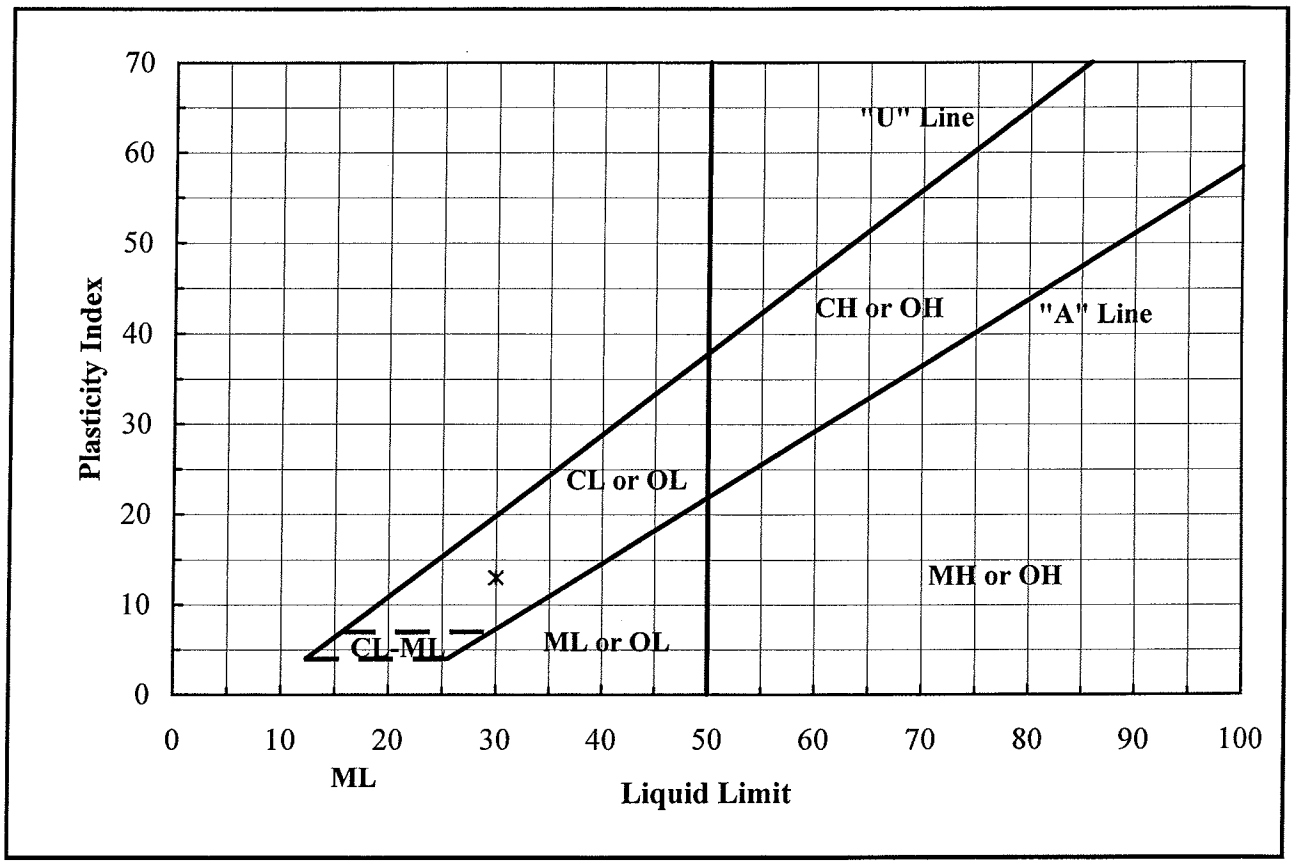
SUMMIT GEOENGINEERING SERVICES
434 Cony Road, Augusta, Maine 04330
Phone: (207) 621-8334 Fax: (207) 626-9094

ATTERBERG LIMIT TEST - ASTM D4318

PROJECT NAME:	India Street Addition - Portland	PROJECT #:	17190
CLIENT:	Pearl Properties, LLC	SAMPLE #:	S4
SOIL DESCRIPTION:	Existing Subgrade	DATE:	4/27/07
INTENDED USE:	Engineering Investigation	SOURCE:	B-1, S-5, 8' to 10'
		TECHNICIAN:	M. Sullivan

DATA

Source	Depth	LL	PL	PI	Classification
B-1, S-5	8'-10'	30	17	13	CL - Lean Clay



Notes:

Reviewed: Darrell A. Gilman, CMT Manager
Sent: 4/27/2007

APPENDIX D
PHOTOGRAPHS

***Photograph 1*:**

Front of site facing from India Street.

***Photograph 2*:**

Front entrance of site facing from India Street.

***Photograph 3*:**

Middle of site facing towards India Street.

***Photograph 4*:**

Middle of site facing towards India Street.

***Photograph 5*:**

Middle of site facing towards Newbury Street.