City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, **Fax:** (207) 874-8716

Permit No:	Issue Date:	CBL:
04-1179		425 I004001

Location of Construction:	Owner Name:	Owner Address:	Phone:
142 Presumpscot St	142 Presumpscot Limited	142 Presumpscot St	775 1100
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	SME Corporation	1112 Litchfield Rd Bowdoin	2077751100
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		Foundation Only/Commercial	
Past Use:	**Proposed Use:**	**Permit Fee:**	**Cost of Work:** / **CEO District:**
Warehouse	Warehouse Addition		$0.00 / 4

FIRE DEPT: ☐ Approved ☐ Denied

Signature:

INSPECTION: Use Group: S1 Type: 2C

Signature:

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)

Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied

Signature Date

Proposed Project Description:

FOUNDATION **ONLY** for a 9865 sq.ft. Addition

Permit Taken By:	Date Applied For:
min	08/17/2004

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six *(6)* months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☐ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
late:	late:	)ate:

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit **for** work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT ADDRESS DATE PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK. TITLE DATE PHONE

9-3-04
Checked set backs
and footing forms
& rebar mw

9/6/04
Checked footing rebar
& walls rebar starting to
set up rebar for walls &
mw forms

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, **Fax:** (207) 874-8716

Permit No:	Date Applied For:	CBL:
04-0866	06/24/2004	425 I004001

Location of Construction:	Owner Name:	Owner Address:	Phone:
142 Presumpscot St	142 Presumpscot Limited	142 Presumpscot St	( ) 775-1100
Business Name!	**Contractor Name:**	**Contractor Address:**	**Phone**
	SME Corporation	1112 Litchfield Rd Bowdoin	(207) 775-1100
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Additions - Commercial	

'roposed Use:	Proposed Project Description:
warehouse with 9865 sq ft addition	build 9865 sq ft addition to warehouse. Metal roof & walls, fencing, landscaping

Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 08/05/2004

Note: 8/5/04 received the lastest site plan revisions **Ok to Issue:** ☑

1) Your plans are now showing only one loading dock in the rear of the building. That loading dock shall be no less than 14' x 50'. This area shall only accommodate one truck at any time. Any additional loading dock shall meet the same dimensional requirements as outlined under section 14-353. Please note that this office recognizes the delivery door off Grafton Street not to meet the definition of a loading bay. This door shall not be altered to allow tractor trailers or a permanent loading dock without further review by this office.
2) Please note that there shall be verification of the side setback line on the south-east comer. The Code Enforcement Office shall require a verification by a surveyor as to wall placement prior to the final wall placement.
3) Separate permits shall be required for any new signage.
4) This permit is being approved on the basis of plans submitted on 8/5/04. Any deviations shall require a separate approval before starting that work.

Dept: Building **Status:** Pending **Reviewer:** Mike Nugent **Approval Date:**

Note: **Ok to Issue:** ☐

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Lt. MacDougal **Approval Date:** 08/09/2004

Note: **Ok to Issue:** ☐

1) the sprinkler system shall be installed in accordance with NFPA 13 standards

Dept: Engineering **Status:** Approved **Reviewer:** Tony **Approval Date:** 02/11/2004

Note: PUBLIC WORKS ENGINEERING REVIEW...7/03/03 **Ok to Issue:** ☐

I have reviewed the submittal dated 5/27/03 and offer the following comments:
1.Public Works is requesting the applicant install granite curbing and building a 5 feet wide paved sidewalk along the site frontage on Grafton Street.
2. The plans must identify the proposed trench excavation limits within Grafton Street.
3. The applicant is advised to contact Carol Merrit, at Public Works, regarding the permits and fees associated with this development.
4. The abutting residential properties on Providence Street, currently experience significant rear yard flooding problems. Therefore, we are requesting the applicant divert all rear site runoff to a site drainage collection system that is piped to Grafton Street. The existing site catch basin will need to be connected to the proposed catch basin , proposed at the westerly side of the new building. In addition, the outlet to Providence Street, within the existing catch basin, must be sealed permanently.

PUBLIC WORKS ENGINEERING REVIEW...2/11/04

The submittal dated 1/27/04 has addressed all of Public Works issues.

Location of Construction:	Owner Name:	Owner Address:	Phone:
142 Presumpscot St	142 Presumpscot Limited	142 Presumpscot St	( ) 775-1100
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	SME Corporation	1112 Litchfield Rd Bowdoin	(207) 775-1100
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Additions - Commercial	

Dept: Fire **Status:** Approved **Reviewer:** Lt. MacDougal **Approval Date:** 06/11/2003

Note: **Ok to Issue:** ☑

Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 041179

PERMIT ISSUED
AUG 17 2004
CITY OF PORTLAND

This is to certify that 142 Presumpscot Limited/SI Corporation

has permission to FOUNDATION ONLY for 865 sq.f

AT 142 Presumpscot St 425 I004001

provided that the person or persons firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification for inspection must be given and when permission procured before this building or part thereof is occupied or otherwise enclosed-in 24 HOUR NOTICE REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. _____

Health Dept. _____

Appeal Board _____

Other _____
Department Name

8/17/04
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit
389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Date Applied For:	CBL:
04-1179	08/17/2004	425 I004001

Location of Construction:	Owner Name:	Owner Address:	Phone:
142 Presumpscot St	142 Presumpscot Limited	142 Presumpscot St	775 1100
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	SME Comoration	1112 Litchfield Rd Bowdoin	(207) 775-1100
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Foundation Only/Commercial	

Proposed Use:	Proposed Project Description:
Warehouse Addition	FOUNDATION **ONLY** for a 9865 sq.ft. Addition

Dept: Building **Status:** Approved with Conditions **Reviewer:** Mike Nugent **Approval Date:** 08/17/2004
Note: **Ok to Issue:** ☑

2) This building must be protected with an automatic fire supression in accordance with Section 906.2..1 unless the fire areas bewteen the existing building and proposed addtion can be separated in to separate fire areas in accordance with section 707 and rated as required **by** Table **602.**

Comments:
08/17/2004-mjn: Fire and Zoning Sign offs are on Permit #040866

SUMMIT
GEOENGINEERING SERVICES

Geotechnical Report

Proposed Costal Equipment Building Expansion
Presumpscot Street
Portland, Maine

Prepared for:

Costal Equipment Corp.

Prepared by:

Summit Geoengineering Services
Project #7808
May 2004

640 MAIN STREET ▲ LEWISTON, MAINE 04240 ▲ TEL: *(207) 795-6009* ▲ FAX: *(207) 795-6128*
8 HARLOW STREET. SUITE 4A ▲ BANGOR, MAINE 04401 ▲ TEL *(207) 262-9040* ▲ FAX: *(207) 262-9080*
PO BOX 4698 A AUGUSTA, MAINE 04330 ▲ TEL: *(207) 621-8334* ▲ FAX: *(207) 626-9094*

SUMMIT
GEOENGINEERING SERVICES

May 3,2004
Summit #7808

Mark Goldstein
Coastal Equipment Corp
P.O. Box 1118
Portland, Maine 04104

Reference: Geotechnical Services
Building Addition, Presumpscot Street, Portland, Maine

Dear **Mark:**

We have completed the geotechnical investigation in connection with the design and construction of a 10,000 square foot addition to your facility at 142 Presumpscot Street. Our scope of services included performing **3 brings** at the proposed site and preparing this letter summarizing our findings and geotechnical recommendations.

Our work, in general, consisted **of** drilling **3** brings in the vicinity of the proposed building expansion. The borings were all drilled to depths of refusal encountered at 41 to **44** feet. At B-3a through B-3d, foundatiodconstruction debris was encountered at a depth of 2 to 2.5 feet within the fill layer along the western portion of the proposed building with.

In general, the soil at the site consisted of topsoil, fill, glacial marine, and glacial till soils. Bedrock was encountered in all three borings. Moisture changes from damp to wet conditions indicate that the groundwater level ranges from a depth of **14** feet to **18** feet. Perched surface water was also present at the site.

With proper preparation, the soils at the site are suitable for support of the proposed building on conventional spread footing foundation. Specific foundation and earthwork design and construction recommendations are contained in this report.

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

STATE OF MAINE
WILLIAM M. PETERLEIN
No. 5787
REGISTERED PROFESSIONAL ENGINEER

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

640 MAIN STREET ▲ LEWISTON, MAINE 04240 ▲ TEL: (207) 795-6009 ▲ FAX: (207) 795-6128
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SECTION 1
INTRODUCTION

1.1 Introduction

Costal Equipment is planning to construct a new 10,000 square foot addition to their existing facility at 142 Presumpscot Street in Portland, Maine. As part of this planning, Summit Geoengineering Services (Summit) was asked to perform a geotechnical investigation and prepare this report with foundation design and recommendations. This work was completed in accordance with our proposal dated April 4,2004.

1.2 Scope of Services

Our scope of services for the proposed expansion building, in general, was to consist of drilling 3 soil borings in the vicinity of the proposed building, perform laboratory testing (as required), perform analyses, and prepare a geotechnical report. All work was performed in its entirety as proposed.

SECTION 2
PROJECT AND SITE DESCRIPTION

The project consists of the construction of a 10,000 square foot warehouse-type building, attached to the existing building. We understand that the floor of the new addition will be 4 feet above the existing ground surface with a finish floor elevation at 32.13 feet. Construction of the slab on grade will require up to 4 feet of fill.

The site is generally flat grading upward from elevations 28 feet at the northeast comer of the existing building to 30 feet at the western edge of the site. The eastern portion of the site adjacent to the existing building is currently cleared with a gravel surface enclosed by a chain-linked fence. The western portion is lightly wooded with small Poplar trees. Currently water and muddy conditions were observed after a recent rain event.

SECTION 3
EXPLORATION AND LABORATORY TESTING

3.1 Exploration

The subsurface conditions at the proposed site were explored by drilling 3 borings. Northeast Diamond Drilling drilled borings B-1 through B-3, on April 16,2004 under contract to Summit. The borings were drilled to refusal encountered at depths of 41 to 44 feet using 4 inch casing with rotary wash. Standard 24-inch long split spoon samples were obtained at 5-foot intervals. Seven field vane shear tests were conducted and *two* undisturbed shelby tube samples were taken for soft underlying glacial marine deposits encountered at the site. Pocket penetrometer tests were also conducted for cohesive split spoon samples. Summit was on site to coordinate and

observe the exploration. The location of the borings is shown on Figure 1 in Appendix **A.** Logs of the borings are included in Appendix B.

3.2 Laboratory Testing

Five samples #7808-1 through #7808-5 from borings B-1 to **B-3** were collected and tested for Moisture Contents in accordance with ASTM D2216 for the soft glacial marine deposits at depths ranging from 14.5 to 26.5 feet. Atterberg **Limits** were also conducted for samples #7808-2, #7808-4, and #7808-5 in accordance with ASTM **D43** 18 at depths ranging from 15 to 22 feet. The lab results are attached at the end of this report in Appendix **C.** Below is a table summarizing the tests results for each sample:

LABORATORY RESULTS SUMMARY TABLE				
Sample Number	**Sample Location**	**Liquid Limit**	**Plastic Index**	**Moisture Content**
7808-1	B-1, 14.5' to 16.5'	**NA**	**NA**	**40.8%**
7808-2	B-1, 19.5' to 21.5'	**44**	**23**	**41.0%**
7808-3	B-1, 24.5' to 26.5'	**NA**	**NA**	33.3%
7808-4	B-2, 15.0' to 17.0'	**44**	22	43.3%
7808-5	B-3, 20.0' to 22.0'	**43**	22	43.8%

Moisture contents for the four samples #7808-1, #7808-2, #7808-4, and #7808-5 collected at depths ranging from 14.5 to 22.0 feet ranged fiom 40.8 to **43.8** percent. Sample #7808-3 collected at a depth of 24.5 to 26.5 feet contained moisture content of 33.3 percent. Atterberg limit tests performed contained a plastic index range of 22 to 23 and a liquid limit range of **43** to 44. The moisture contents indicate that the soil is saturated.

Two undisturbed 30-inch Shelby tube samples were collected from boring €32 at depths of 20.0 and 25.0 feet. Further testing of the Shelby tube samples were not performed due to sufficient test data collected from field and laboratory test results obtained fiom split spoon samples.

SECTION 4
SUBSURFACE CONDITIONS

4.1 Soil

The soil at the site consists of approximately 2 to 2.5 feet of ***fill*** overlying ***glacial murine deposits,*** overlying dense ***glacial till,*** overlying ***bedrock.*** At boring B-3a, approximately ***6*** inches of ***topsoil*** overlying a 2.5-foot layer of granular fill with old building foundatioddebris was encountered. Additional refusals were encountered at depths of 2 to 2.5 feet at locations B-3b B-3c, and B-3d. B-3e was eventually continued approximately 5 feet north of the proposed expansion building where foundation/debris refusal was no longer encountered.

The ***topsoil*** consisted of dark brown silt with organics and/or rootlets. The topsoil is classified as a ML soil in accordance with the Unified Soil Classification System (USCS).

The ***fill*** encountered at the site generally consisted of dark brown to brown sand with some to little gravel, and some to little silt and classifies as an **SP** soil in accordance to the **USCS.** SPT N-values for the fill ranged from 5 blows per foot (bpf) to 8 bpf and averaged 7 bpf which indicate loose soil conditions. At brings B-3a through B-3d, along the western portion of the proposed building as shown on Figure 1 in Appendix **A,** difficult advancement on potential foundation/construction debris occured at depths of 2 to 4 feet within the fill layer.

The ***glacial marine deposit*** consists of two subunits. The upper glacial marine subunit generally consisted of approximately 9.5 to 13.5 feet of olive brown to gray and slightly mottled silty clay with a trace of fine sand. The silty clay is classified as a CL soil in accordance with the USCS. SPT N-values for the upper glacial **marine** deposits ranged from 7 blows per foot (bpf) to 21 bpf and averaged 12 bpf, which indicate stiff soil conditions. Pocket Penetrometer readings were also recorded for split spoon samples taken with results greater than 9000 pounds per square foot (psf) near depths of 5 feet to 7 feet and approximately 4000 psf near depths of 10 feet to 12 feet.

The lower glacial marine subunit generally consists of 16 feet to 28.5 feet of gray silty clay. Atterberg limits performed for the lower glacial marine deposits indicate the soil is classified as a CL (lean clay) soil in accordance with the **USCS.** SPT-N values ranged from 3 bpf to weight of probe sampler. Field vane shear tests were also conducted at depths of 22, and 30.5 feet in boring B-1, at depths of 17.5 feet, 23.5 feet, 28.5 feet, and 35.5 feet in boring B-2, and at a depth of 26 feet in boring B-3. Resulting shear strengths ranged from 650 psf to **1890** psf, which indicate firm to very soft soil conditions.

The ***glacial till*** was observed during rotary wash starting at depths of 34 feet to 42.5 feet. The glacial till is dense.

4.2 Bedrock

Bedrock was encountered in all of the **borings** at depths of 41 feet to **44** feet. Rotary wash advancement indicates that weathered **bedrock** maybe present above more competent bedrock in borings B-1 and **B-3** with a thickness of approximately 2.5 feet and 1 foot, respectively.

4.3 Groundwater

Moisture changes from damp to wet conditions in **SPT** split spoon samples indicate that the groundwater level ranges from a depth of **14** feet to **18** feet, elevations **14.5** feet to 11.5 feet. Perched water conditions above the cohesive glacial marine deposits from previous rain were also present at the site.

SECTION 5
FOUNDATION RECOMMENDATIONS

5.1 General

Based on the proposed finish floor elevation and the anticipated footing depth, a majority of the footings will be constructed on upper glacial marine and existing fill soils. **Up** to **4** feet of fill will also be required at the site. With proper preparation, soils at this site will be suitable to construct the proposed building using conventional spread footing and slab on grade foundations.

Based on **our** exploration, it is possible that old foundation or construction debris may be present within the building footprint. In the event that any foundation debris is found it should be removed from within the building footprint **and** disposed of in accordance with local ordinances, and state and federal regulations.

5.2 Allowable Bearing Pressure

We recommend that the footings constructed for the proposed building be proportioned using an allowable bearing pressure of 2,000 psf. Total settlements for this allowable bearing pressure is computed to be less then 1 inch. The proposed building addition and fill will be subjected to both immediate and consolidation settlement. The majority of the settlement will be due to consolidation settlement of the lower soft clay glacial marine subunit from the loading placed by the fill.

The ***immediate*** settlement will occur within 1 to 2 weeks after the load is applied. Practically speaking, the immediate settlement from the fill and building will occur during construction and should be complete before the foundation is constructed. Additional immediate settlement that occurs as the live Ioads are realized will be negligible.

The ***consolidation*** settlement will occur over a longer period of months to years with the rate of settlement decreasing with time. Consolidation settlement for the site is estimated to less then 1 inch based on the following assumptions:

- The base of the exterior footings will be a minimum 4 feet below the proposed exterior grade, will be proportioned using an allowable bearing pressure of 2,000 psf, and will not exceed a width of 7 feet.

- The fill required beneath the building consist of compacted Granular Borrow, Structural Fill, and/or Foundation Backfill having a maximum dry density less then 130 pcf.

- Thickness of the fill will not exceed 4 feet.

- All soil with potential old foundation or construction debris (as encountered in B3) is removed from beneath the proposed footings and replaced with Granular Borrow, Structural Fill, or Foundation Backfill.

We also recommend that the native glacial marine or existing fill soils within the building footprint are proof-rolled prior to constructing footings or prior to placing fill. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a large (5 ton at drum static weight) vibratory roller.

5.3 Frost Protection

Based on the required frost protection depth, the frost walls for the building should be constructed at a minimum depth of 4 feet. This frost penetration depth is based on a design air-freezing index of 1,250 degree days for the Portland area. We recommend that the exterior of the foundation walls be backfilled with soil meeting the following gradation specification:

FOUNDATION BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
No. 40	0 to 70
No. 200	0 to 7

The Foundation Backfill should be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D 1557.

5.4 Building Slab

We recommend that soil required beneath the slab consist of Foundation Backfill. The maximum particle size should be limited to 6 inches. 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.

Existing fill or glacial marine soils should be proofrolled prior to placing Foundation Backfill. Proofrolling should consist of a minimum of three passes in one direction and three passes in a perpendicular direction using a ride on vibratory roller.

For the conditions described above, the slab can be designed using a subgrade modulus of 225 pci.

We recommend that control joints be placed at a maximum spacing of 2 to 3 times the thickness of the slab in feet (joints in a 6 inch slab would be spaced at a maximum of 18 feet).

5.5 Groundwater Control

Based on the proposed footing elevations, groundwater is expected to be below the base of the footings. Based on this, perimeter foundation underdrains are not strictly necessary. Exterior grades should slope away from the building to reduce runoff water from infiltrating the foundation backfill. Due to the potential for surface runoff ponding in excavations and due to potential changes in local and regional hydrogeology it may be desirable to install a perimeter foundation drain.

If selected, the perimeter underdrain should consist of 4 inch rigid perforated PVC 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. We recommend that the ground surface slope away fiom the building

5.6 Seismic Design

The soils at the site are categorized as site classification E in accordance with the 2003 International Building Code.

SECTION 6
EARTHWORK CONSIDERATIONS

Excavation into the existing soil at the site will be relatively easy. Surface water during wet periods could potentially become ponded above native glacial marine subgrade soils. We recommend that surface water be directed away from excavations to prevent potential softening of native marine soils from ponding water.

All existing fill or glacial marine soil within the building expansion areas should be proofrolled prior to placing Backfill soils. Existing soil reused onsite should be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D 1557.

Subgrade disturbance due to hydrostatic pumping from vibratory proof rolling for glacial marine subgrade soils could occur if the soil is wet fiom prolonged *rainy* periods. An alternative to proof rolling is to place a 12-inch thick layer of crushed stone overlying geotextile filter fabric beneath foundation footings to provide stable subgrade conditions. The base of the excavation should also be smooth prior to placing the geotextile to avoid rips and tears in the fabric. High or low spots can be filled with crushed stone.

Excavations below 4 feet and above any groundwater should be sloped no greater than 1H to 1V. These slopes are based on the current OSHA Excavation Guidelines.

SECTION 8
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.

APPENDIX A
EXPLORATION LOCATION PLAN

APPENDIX B
BORINGS 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: Building Expansion Costal Equipment Portland, ME	Boring #: B-1 Project #: 7808 Sheet: 1 of 2 Prep by: CWC

Drilling Co:	Northeast Diamond Drilling	Ground Elevation:	28.5 ft.
Foreman:	Chris Palmer	Reference:	Estimated from Site Plan by RTB Enterprises
Summit:	Craig Coolidge, E.I.T.	Date started:	4/16/2004 Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: Mobile B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	comments
4/16/2004	15 ft.	13.5 ft.	Moisture change in SPT samples

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/3	0 - 2	3	Loose, brown Gravelly SAND, little to	FILL
1				5	trace Silt, wet to damp, SP	
				3	occasional cobble	
2				2		
3						2.5
						GLACIAL MARINE
4						
5	S-2	24/24	4.5 - 6.5	6	Very stiff, olive brown and slightly mottled	PP > 9000 psf
				10	Silty CLAY. trace fine Sand, moist, CL	
6				11		
				14		
7						
8						
9						
10	S-3	24/24	9.5 - 11.5	4	Firm, olive brown and gray Silty CLAY.	PP = 4000 psf
				3	moist to damp, CL	
11				4		
				4		
12						
					Change to softer gray Clay during wash	2.0'
13						
14						
15	S-4	24/24	14.5 - 16.5	1	Soft, gray Silty CLAY, damp to wet, CL	PP = 500 psf
				1		wc = 40.8%
16				2		
				2		
17						
18						
19						
20	S-5	24/24	19.5 - 21.5	WOH	Very soft. Silty CLAY, wet. CL	PP < 500 psf
				WOH		wc = 41.0%
21				WOH		LL = 44
				WOH		PI = 23

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project: Building Expansion
Costal Equipment
Portland, ME

Boring #: **B-1**
Project #: 7808
Sheet: 2 of 2
Prep by: CWC

Drilling Co: Northeast Diamond Drilling
Foreman: Chris Palmer
Summit: Craig Coolidge, E.I.T.

Ground Elevation: 28.5 ft.
Reference: Estimated from Site Plan by RTB Enterprises
Date started: 4/16/2004 Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: Mobile B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/16/2004	15 ft.	13.5 ft.	Moisture change in SPT samples

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
22					Very soft, Silty CLAY, wet, CL	GLACIAL MARINE
23					Sv = 1180 psf	
24						
25	S-6	24/24	24.5 -26.5	WOH	Very soft, Silty CLAY, wet, CL	PP < 500 psf
				WOH		wc = 33.3%
26				WOH		
27				WOH		
28						
29						
30						
31					Sv = 1480 psf	
		ROTARY WASH				
32						
33						
34						
35						
36					Possible *small* Sand seam at 35'	
37						
38					Much denser drilling from 37' to 40' in probable Glacial Till	37.0' GLACIAL TILL
39						
40						
41					Harder drilling in possible weathered bedrock	40.0' WEATHERED BEDROCK
42						
					End of Probe Exploration at 42.5'	BEDROCK

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project:	Building Expansion Costal Equipment Portland, ME	Boring #:	**B-2**
		Project #:	7808
		Sheet:	1 of 2
		Prep by:	CWC

Drilling Co:	Northeast Diamond Drilling	Ground Elevation:	28.5 ft.
Foreman:	Chris Palmer	Reference:	Estimated from Site Plan by RTB Enterprises
Summit:	Craig Coolidge, E.I.T.	Date started:	4/16/2004 Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: Mobile B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/16/2004	14 ft.	14.5 ft.	Moisture change in SPT sample:

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/10	0 - 2	4	Loose, dark brown and brown fine SAND,	FILL
1				4	some to little Silt, little Gravel, wet, SP	
				3		
2				3		
						2.0'
3						GLACIAL MARINE
4						
5						
	S-2	24/24	5 - 7	6	Stiff, olive brown to gray and slightly mottled	PP > 9000 psf
6				6	Silty CLAY, trace fine Sand, moist, CL	
				9		
7				10		
8						
9						
10						
	S-3	24/24	10 - 12	3	Stiff, olive brown and gray Silty CLAY,	PP = 4000 psf
11				4	damp to wet, CL	
				5		
12				4		
13						
14						
					Change to softer gray Clay during wash	14.0'
15						
	S-4	24/24	15 - 17	WOH	Very soft, gray Silty CLAY, wet to very	PP < 500 psf
16				WOH	wet, CL	wc = 43.3%
				WOH		LL = 44
17				WOH		PI = 22
18					Sv = 810 psf	
19						
20						
	UT-1	30/22	20 - 22.5	HYD	Very soft, gray Silty CLAY, wet to very	
21				PUSH	wet, CL	

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	SOIL BORING LOG Project: Building Expansion Costal Equipment Portland, ME	Boring #: B-2 Project #: 7808 Sheet: 2 of 2 Prep by: CWC

Drilling Co:	Northeast Diamond Drilling	Ground Elevation:	28.5 ft.
Foreman:	Chris Palmer	Reference:	Estimated from Site Plan by RTB Enterprises
Summit:	Craig Coolidge, E.I.T.	Date started: 4/16/2004	Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: Mobile B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH			
Date	Depth	Elevation	comments
4/16/2004	14 A.	14.5 A.	Moisture change in SPT sample:

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
22					Very soft, gray Silty CLAY, wet to very wet, CL	GLACIAL MARINE
23						
24					Sv = 730 psf	
25						
26	UT-2	30/19.5	25 - 27.5	HYD PUSH	Very soft, Silty CLAY, wet to very wet, CL	
27						
28						
29					Sv = 650 psf	
30						
31						
32					Possible small Sand seam at 32'	
33						
34						
35						
36					Sv = 1890 psf	
37		ROTARY WASH				
42						
43					Much denser drilling from 42.5' to 44' in probable Glacial Till	2.5' GLACIAL TILL
44					End of exploration at 44.0'	4.0' BEDROCK
45						

SUMMIT
GEOENGINEERING SERVICES
640 Main Street
Lewiston, Maine 04240

SOIL BORING LOG

Project: Building Expansion
Costal Equipment
Portland, ME

Boring #: **B-3a-e**
Project #: 7808
Sheet: 1 of 2
Prep by: CWC

Drilling Co: Northeast Diamond Drilling
Foreman: Chris Palmer
Summit: Craig Coolidge, E.I.T.

Ground Elevation: 29.5 ft.
Reference: Estimated from Site Plan by RTB Enterprises
Date started: 4/16/2004 Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: **Mobile** B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	comments
4/16/2004	18 ft.	11.5 ft.	Moisture change in SPT samples

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
	S-1	24/5	0 - 2	2	Soft, dark brown Silt, organics, wet, ML	TOPSOIL
1				3	Loose, dark brown grading to brown fine	0-2.5'
				2	SAND, some to little Silt, wet to damp, SP	FILL/MARINE
2				3		**Location** / Refusal
					Building foundatioddebriswas found at 2'	B-3a 2.5'
3					2.5' for brings B-3a through B-34	B-3b 2.0'
					offset approximately 35' northeast	B-3c 2.0'
4					to perform B-3e fiom 4.5' to refusal	B-3d 2.0'
5					Very stiff to stiff, olive brown Silty CLAY,	4.5'
					trace fine Sand, moist, CL	GLACIAL MARINE
6						
7						
8						
9						
10						
	S-2	24/24	10 - 12	4	Stiff, olive brown and gray Silty CLAY,	
11				5	damp to wet, CL	
				4		
12				6		
13						
14						
15						
16						
17						
18						
					Change to softer gray Clay during wash	10'
19						
20						
	S-3	24/24	20 - 22	WOH	Very soft, gray Silty CLAY, wet to very	PP < 500 psf
21				WOH	wet, CL	wc = 43.8%
				WOH		LL = 43
				WOH		PI = 22

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SOIL BORING LOG

Project:	Building Expansion Costal Equipment Portland, ME	Boring #:	B-3e
		Project #:	7808
		Sheet:	2 of 2
		Prep by:	CWC

Drilling Co:	Northeast Diamond Drilling
Foreman:	Chris Palmer
Summit:	Craig Coolidge, E.I.T.

Ground Elevation:	29.5 ft.
Reference:	Estimated from Site Plan by RTB Enterprises
Date started:	4/16/2004 Date Comp: 4/16/2004

DRILLING METHOD	SAMPLER
Vehicle: Skidder Mount	Type: 24" SS
Model: Mobile B-50	Hammer: 140 LB
Method: Rotary Wash	Fall: 30"

GROUND WATER DEPTH

Date	Depth	Elevation	Comments
4/16/2004	18 ft.	11.5 ft.	Moisture change in SPT samples

Depth (ft.)	SAMPLE DATA No.	Pen/Rec (in.)	Depth (ft)	Blows	ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION
22					Very soft, gray Silty *CLAY*, wet to very wet, CL	GLACIAL MARINE
23						
24						
25						
26						
27		ROTARY WASH			Sv = 820 psf	
28						
29						
30						
31						
32						
33						
34						
35					Much denser drilling from 34' to 40' in probable Glacial Till	34.0' GLACIAL TILL
36						
37						
38						
39						
40						
41					Harder drilling in possible weathered bedrock	40.0' WEATHERED BEDROCK
42					End of exploration at 41.0'	41.0' BEDROCK

APPENDIX *C*
LABORATORY RESULTS

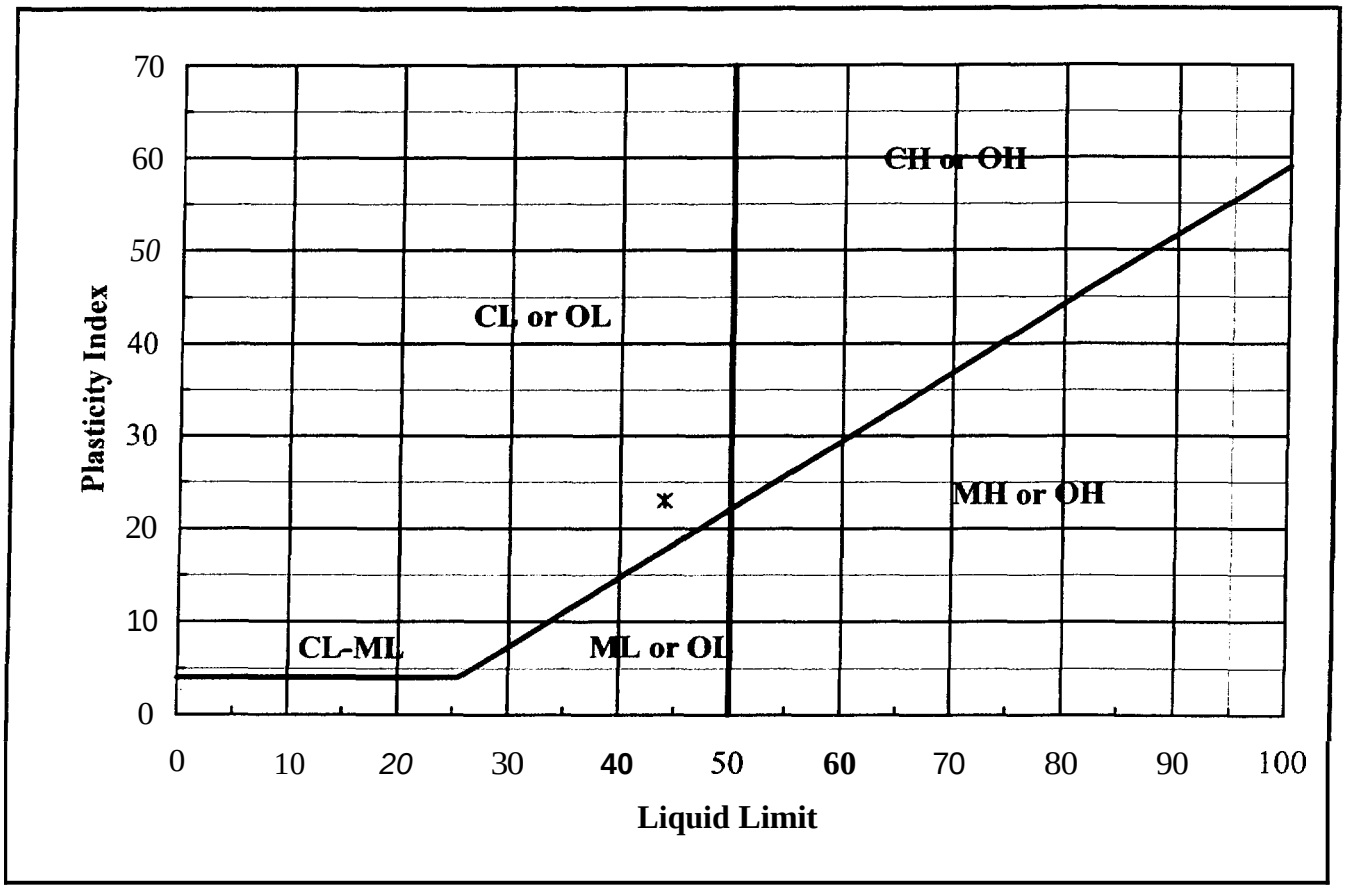
SUMMIT GEOENGINEERING SERVICES
P.O. Box 4698 Augusta, Maine 04330-4698
Phone: (207) 621-8334 **Fax:** (207) 626-9094

ATTERBERG LIMIT TEST - ASTM D4318

PROJECT **NAME:**	Costal **Equipment - Portland, ME**	**PROJECT #:**	**7808**
CLIENT:	Costal **Equipment**	**SAMPLE #:**	**7808-2**
INTENDED USE:	**Soil Investigation**	**DATE:**	**5/5/04**

DATA

	SAMPLE DATA				
SYMBOL	**Source**	**Depth**	**LL**	**PI**	**CLASSIFICATION**
7808-2	Boring 1	19.5'-21.5'	44.	23	CL Lean Clay



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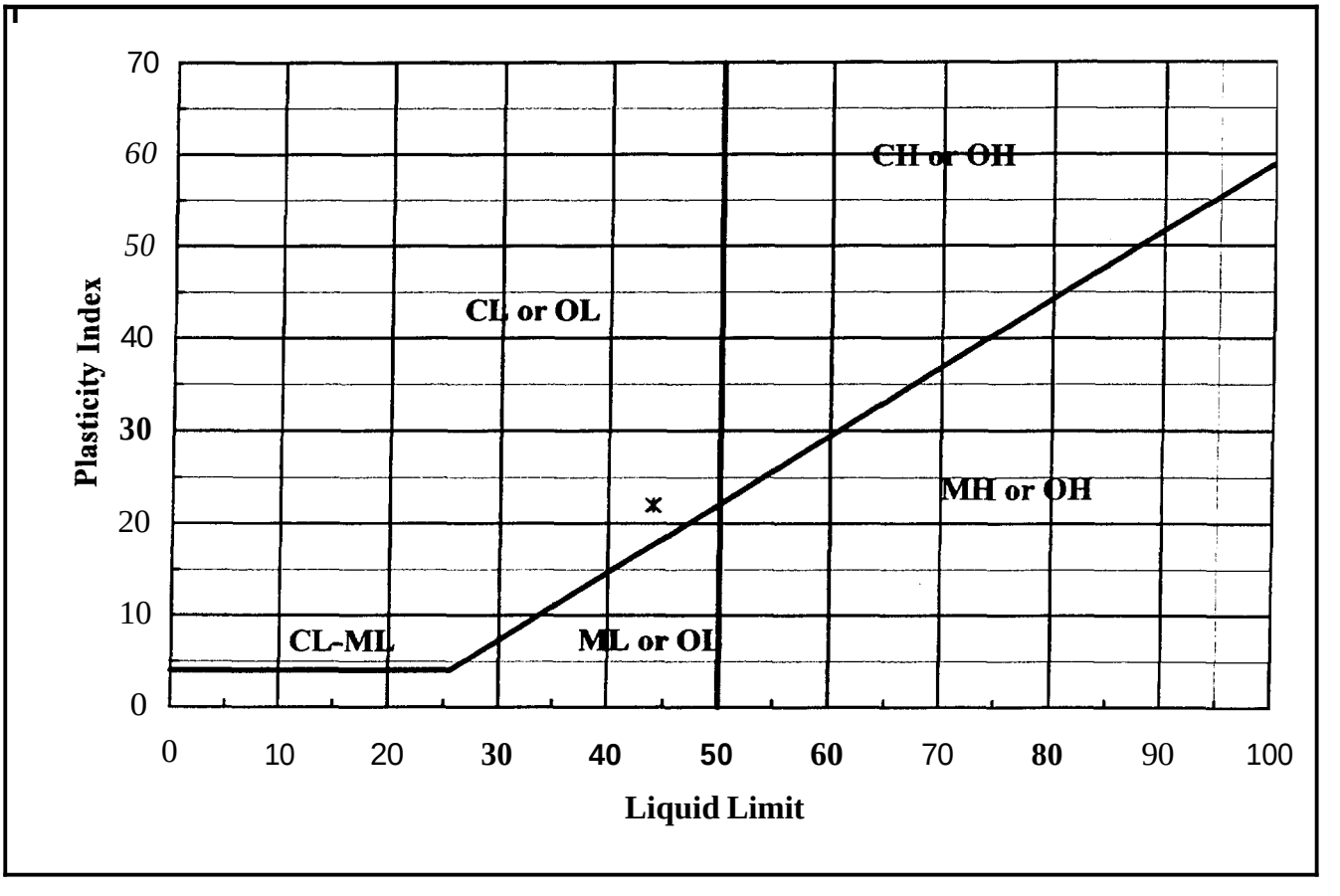
Phone: (207) 621-8334 Fax: (207) 626-9094

ATTERBERG LIMIT TEST - ASTM D4318

PROJECT NAME:	**Costal Equipment - Portland, ME**	**PROJECT #:**	**7808**
CLIENT:	**Costal Equipment**	**SAMPLE #:**	**7808-4**
INTENDED **USE:**	**Soil Investigation**	**DATE:**	**5/5/04**

DATA

SYMBOL	SAMPLE DATA		LL	PI	CLASSIFICATION
	Source	Depth			
7808-4	Boring 2	15'-17'	44	22	CL Lean Clay



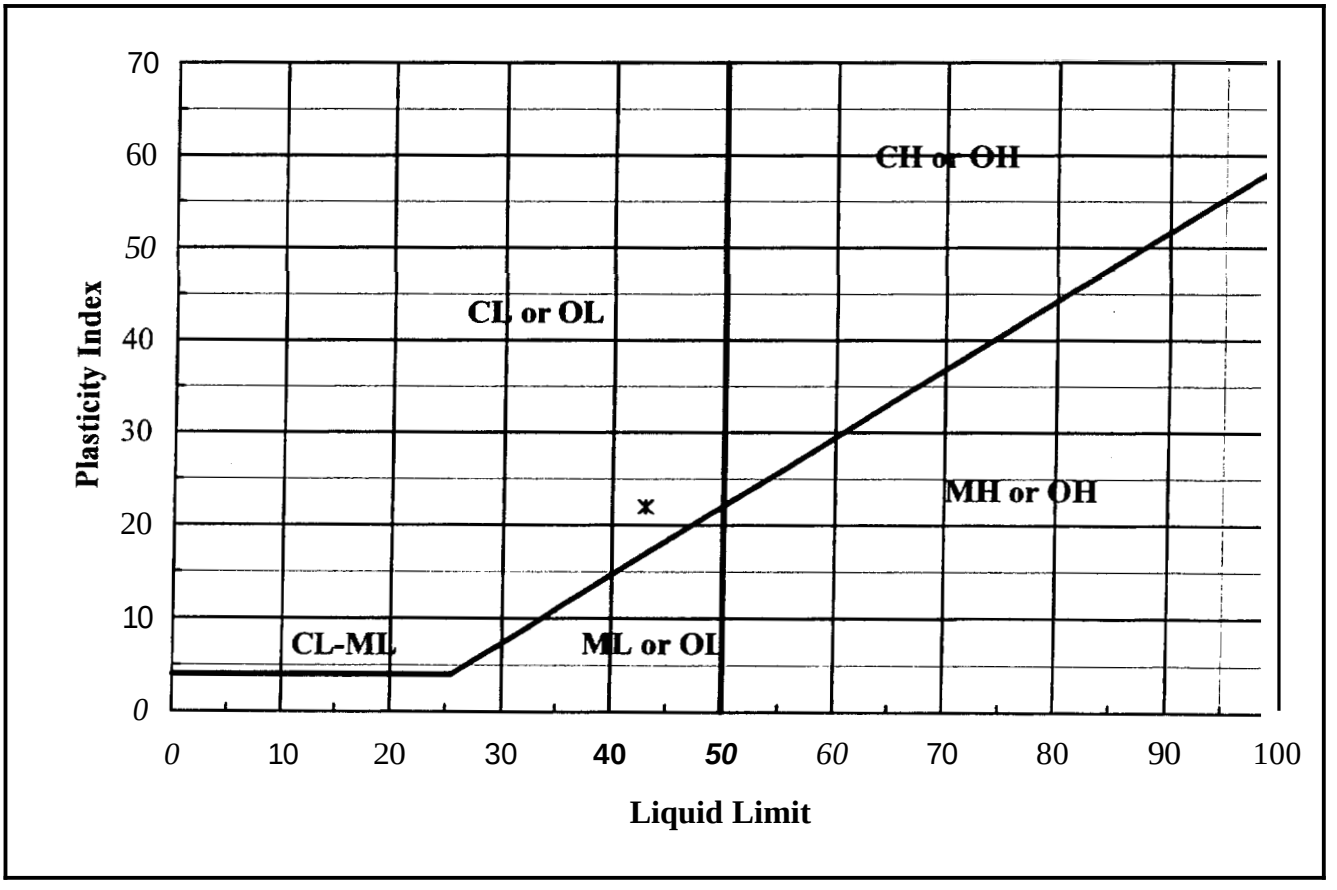
SUMMIT GEOENGINEEFUNG SERVICES
P.O.Box *4698* **Augusta. Maine** 04330-4698
Phone: *(207)***621-8334 Fax: (207)626-9094**

ATTERBERG LIMIT TEST - ASTM D4318

PROJECT NAME:	Costal Equipment - Portland, ME	**PROJECT#:**	**7808**
CLIENT:	Costal Equipment	SAMPLE#:	**7808-5**
INTENDED USE:	Soil Investigation	DATE:	**5/5/04**

DATA

SYMBOL	SAMPLE DATA		LL	PI	CLASSIFICATION
	Source	Depth			
7808-5	Boring 3	20'-22'	43	22	CL Lean Clay



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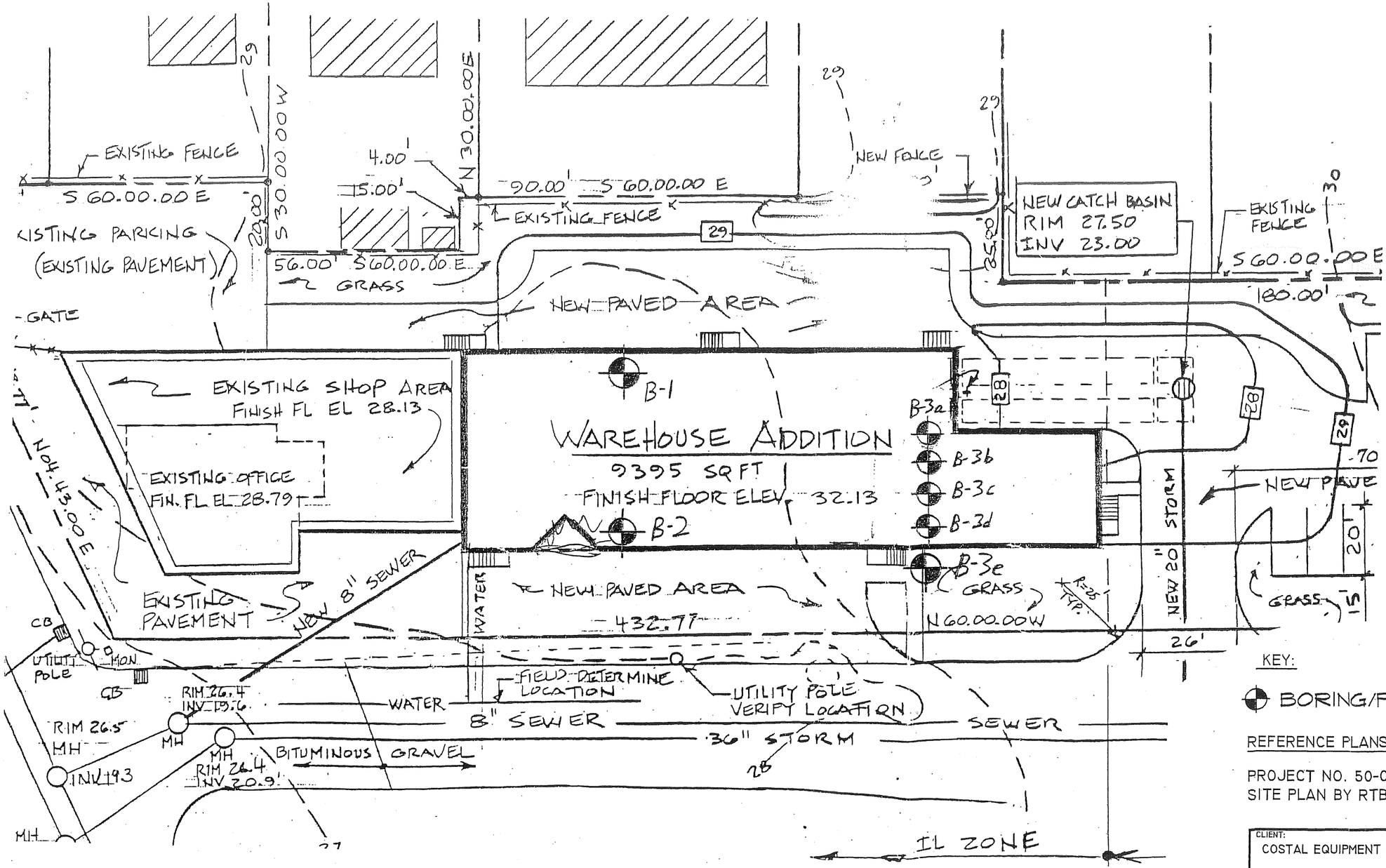
Phone: (207) 621-8334 Fax: (207) 626-9094

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

PROJECT NAME:	Costal Equipment - Portland, Maine	PROJECT #:	7808
CLIENT:	Costal Equipment	SAMPLE #:	7808 - 1 to 5
SOIL DESCRIP:	Silty Clay	DATE:	23-Apr
INTENDED USE:	Soil Investigation	SOURCE:	Boring B1, B-2, and B-3
		TECH:	Craig Coolidge

Sample Number	Sample Source	Percent Moisture
7808-1	B1, 14.5' to 16.5'	40.8
7808-2	B1, 19.5' to 21.5'	41.0
7808-3	B1, 24.5' to 26.5'	33.3
7808-4	B2, 15.0' to 17.0'	43.3
7808-5	B-3, 20.0' to 22.0'	43.8



KEY:

BORING/PROBE

REFERENCE PLANS:

PROJECT NO. 50-02, C-1, JUNE 19, 2002
SITE PLAN BY RTB ENTERPRISES

CLIENT: COSTAL EQUIPMENT CORP.	PROJECT: BUILDING EXPANSION PORTLAND, MAINE
SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240	TITLE: BORING LOCATION PLAN
PROJECT NO.:	DRAWN: C.W.C. / SCALE: 1" = 30'
	DESIGN: --- / DATE: 5/7/04 / FIGURE: 1
	APPROVED: W.M.P. / FILE NO.: 7808