2002-0182

LeLe-D-1
349 Park Ave.
Blow Bottle Project
Scott Sawyer

on Spreadsheet

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2002-0122
Application I. D. Number

Scott Sawyer
Applicant

05/14/2002
Application Date

349 Park Avenue, Portland, ME 04102
Applicant's Mailing Address

Blow Bottle Project
Project Name/Description

Consultant/Agent

349 - 349 Park Ave, Portland, Maine
Address of Proposed Site

Agent Ph: Agent Fax:
Applicant or Agent Daytime Telephone, Fax

066 D001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail
☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☑ Other (specify) Production of Plastic Bottles

500 sq. Ft. | | IM
Proposed Building square Feet or # of Units | Acreage of Site | Zoning

Check Review Required:

☑ Site Plan (major/minor)
☐ Subdivision # of lots
☐ PAD Review
☐ 14-403 Streets Review
☐ Flood Hazard
☐ Shoreland
☐ HistoricPreservation
☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB)
☐ Zoning Variance
☐ Other

Fees Paid: Site Plan $400.00 Subdivision Engineer Review $300.00 Date 05/23/2002

Planning Approval Status:

Reviewer Sarah Hopkins

☑ Approved
☐ Approved w/Conditions See Attached
☐ Denied

Approval Date 05/21/2002 Approval Expiration 05/21/2003 Extension to ☐ Additional Sheets Attached

☑ OK to Issue Building Permit — Sarah Hopkins (signature) — 05/23/2002 (date)

Performance Guarantee ☐ **Required*** ☑ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☐ Performance Guarantee Accepted	date	amount	expiration date
☐ Inspection Fee Paid	date	amount	
☐ Building Permit Issue	date		
☐ Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate of Occupancy	date	☐ Conditions (See Attached)	expiration date
☐ Final Inspection	date	signature	
☐ Certificate Of Occupancy	date		
☐ Performance Guarantee Released	date	signature	
☐ Defect Guarantee Submitted	submitted date	amount	expiration date
☐ Defect Guarantee Released	date	signature	

GEOTECHNICAL ENGINEERING SERVICES
PROPOSED BUILDING ADDITION AND
ABOVE GROUND STORAGE TANK
H. P. HOOD FACILITY
349 PARK AVENUE
PORTLAND, MAINE

02-0153 S APRIL 18, 2002

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S.W.COLE ENGINEERING, INC. • Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

02-0153 S

April 18, 2002

Centerline Construction
Attention: Mr. Richard Miller
P.O. Box 1264
Portland, ME 04104

Subject: Geotechnical Engineering Services-Proposed Blow Bottle Plant
Proposed Building Addition and Above Ground Storage Tank
H. P. Hood Facility
349 Park Avenue
Portland, Maine

1.0 INTRODUCTION

1.1 Scope of Work

In accordance with our Agreement dated March 13, 2002, we have made a subsurface investigation at the site. The purpose of the investigation was to explore the subsurface conditions at the site of the proposed above ground storage tank, truck dock addition and overhead conveyor support in order to evaluate suitable foundation types and to provide geotechnical recommendations relative to the proposed foundation construction. The investigation has included the making of five test borings, one test pit, laboratory testing, and a geotechnical evaluation of the findings as they relate to the proposed construction. The contents of this report are subject to the limitations set forth in Attachment A.

1.2 Proposed Construction

We understand that the existing Carvel Building, located in the southwesterly corner of the H. P. Hood facility, will be retrofitted for use as a blow bottle plant. The existing building consists of a three level masonry structure at the southerly end (1/2 story below existing grade) with an attached one level, high bay, steel-framed, metal-sided warehouse on the northerly side. Based on our discussions, we understand that a one-story steel-framed truck dock addition is proposed for the northwesterly corner of the existing warehouse portion of the Carvel Building structure. The addition will be on the

order of 30 feet by 12 feet in plan dimensions with a floor elevation matching the existing structure, which is at truck dock level. The existing warehouse portion has an elevated structural slab with crawl space approximately 4 feet above the ground surface. We anticipate that the addition will also have an elevated structural slab with crawl space.

We also understand that an above ground resin tank is proposed on the westerly side of the existing Carvel Building. The tank will be on the order of 12 feet in diameter, 40 feet in height and weigh on the order of 160 kips. We understand that an alternate location for the tank would be on the easterly side of the Carvel Building. Both potential locations were investigated.

An overhead conveyor bridge is also proposed spanning approximately 120 linear feet from the Carvel Building to the main Dairy Building located to the east. We understand that the conveyor will likely utilize existing framing at the northeasterly corner of the east end (main dairy building) and will likely have a new foundation for the west end support to be located at the northeasterly corner of the Carvel Building.

2.0 EXPLORATION AND TESTING

2.1 Exploration

Great Works Test Boring, Inc. of Rollinsford, New Hampshire made five test boring explorations on March 14, 2002. White Brothers Construction, Inc. made the test pit on the same day. The exploration locations were selected by Becker Structural Engineers, Inc. (BSE, Inc.-project structural engineers) and S. W. COLE ENGINEERING, INC. based on discussions held at an on-site meeting prior to exploration work. The approximate exploration locations are shown on Sheet 1, which is a copy of a plan provided by BSE, Inc. Logs of the explorations are attached as Sheet 2 through 7. Sheet 8 is a key to the notes and symbols used on the log sheets.

2.2 Laboratory Work

Each sample recovered during drilling was visually examined and classified in our laboratory.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The site is located on the northerly side of Park Avenue adjacent to the existing Carvel Building within the H. P. Hood facility. The southerly end of the Carvel Building is a three level, masonry structure with ½ level below grade. The northerly portion is a one level, high bay steel-framed warehouse with a truck dock high, precast plank floor. The elevated precast plank floor is supported on foundation walls situated in an east-west orientation. A 3± foot crawlspace exists beneath the floor.

Paved area exists on the southerly, easterly and northerly sides of the Carvel Building, which is relatively flat at about elevation 13 to 14 feet (project datum). Lawn and landscaped area exists on the westerly side at about elevation 18 feet sloping downward to the east to the lower paved area at about elevation 13 feet. We understand that several underground utilities exist beneath the paved area as shown on Sheet 1. The main H. P. Hood facility exists about 120 feet east of the Carvel Building.

3.2 Subsurface Conditions

In general, the explorations encountered 10 to 15 feet of loose, mixed fill overlying soft clayey silt with organics (relic marsh soils) overlying clayey silt or silty clay. Refusal surfaces (possible bedrock) were encountered at depths of 30 and 29 feet at Borings B-1 and B-2, respectively.

Borings B-1 and B-3, made on the easterly side of the Carvel Building encountered about 3 inches of pavement overlying about 2.5 feet of medium dense gray silty sand with some gravel (pavement base fill) overlying loose mixed fill consisting of clayey silty sand with some gravel, pieces of brick and organics. A 2 to 12 foot thick layer of relic organic marsh soil was encountered at depths of 15.0 and 10.0 feet below the existing ground surface at these borings, respectively. Below the relic marsh soils, Boring B-1 encountered soft gray silty clay to a depth of 22.0 feet. A rod probe was used to advance the boring to a refusal surface (possible bedrock) at a depth of 30.0 feet. Based on the rod probe information, it appears that the gray silty clay extends to about 23.0 feet and a granular soil likely exists from 23.0 to 30.0 feet. Boring B-3 was terminated in the relic marsh soils at a depth of 22.0 feet. Borings B-2, B-4 and B-5 were made on the northwesterly side of the Carvel Building.

Below the topsoil layer, these borings encountered 4 to 8 feet of loose to medium dense brown silty sand with some gravel and organics (mixed fill) overlying either loose gray clayey silty sand with organics (fill) or loose mixed fill extending to depths varying from 11 to 14 feet below the existing ground surface. Soft gray silty clay and relic marsh soils were encountered below the fill. The marsh soils were found to be 6 to 7 feet in thickness. Boring B-2 encountered loose gray clayey silt below the marsh soils to a depth of 22.0 feet. A rod probe was advanced to a refusal surface (possible bedrock) at a depth of 29.0 feet. Based on the rod probe information, it appears that granular soils exist below about 23.0 feet. Borings B-4 and B-5 were terminated in very stiff silty clay at depths of 22.0 feet.

Test Pit TP-1 was made on the easterly side of the Carvel Building adjacent to a column pier and precast plank foundation wall support. The top of the pier was about 3 feet above existing pavement grade and the bottom of footing was observed to be about 4.3 feet below pavement grade. The footing appeared to be about 6 feet in width. The foundation was backfilled with mixed fill and appeared to be supported on the mixed fill.

See the attached log sheets for a more detailed description of the subsurface findings.

3.3 Groundwater

Due to the short time the explorations remained open, accurate groundwater depths could not be determined. However, based on observations made during drilling and test pit work, the soils were generally moist becoming wet with depth within the top 5± feet. Below about 5 feet the soils appeared saturated. Water levels likely fluctuate somewhat seasonally and during periods of heavy precipitation and snowmelt.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

The explorations encountered 10 to 14 feet of loose mixed fills overlying relic marsh soils high in organic content. It is our opinion that these soils are not suitable for support of the proposed tank and westerly conveyor support foundations. We recommend the tank and conveyor support foundations be supported on driven piles. It appears that the northerly end of the existing Carvel Building is supported on wide spaced spread footings supported directly on the mixed fills. Based on limited site

observation of the visible portions of the existing foundation for the Carvel Building and discussions during a site meeting, it appears that the existing structure has performed satisfactorily from a geotechnical standpoint. We recommend that the structural engineer and client discuss the risks of supporting the proposed truck dock addition on a similar foundation system as the existing warehouse portion of the Carvel Building, which includes a crawl space (no sub-slab fill). Settlement may affect the performance of the addition and future maintenance such as shimming of slabs and framing may be needed. It should be expected that some settlement will occur over time due to the loose nature of the fills and high organic content of the underlying relic marsh soils. Alternatively, to avoid the risk of settlement, the truck dock addition could be supported on driven piles.

Based on our recent discussions with BSE, Inc., we understand the truck dock addition will likely be founded on a spread footing foundation system similar to the existing structure and that the tank and conveyor support will be supported on driven piles. Thus, the following recommendations discuss these two foundation systems.

4.2 Foundation Design

The design freezing index for the Portland, Maine area is approximately 1250-Fahrenheit-degree days, which corresponds to a frost penetration on the order of 4.0 feet.

For the truck dock addition, we recommend that footings be oversized and designed for an allowable bearing contact pressure of 1.0 ksf or less. Footings should be placed at a depth of 3.0 feet below finish grade placed upon a 12-inch thickness of compacted crushed stone. A layer of woven geotextile fabric such as Mirafi 500X (or similar) should be placed beneath the crushed stone.

For the proposed tank and conveyor bridge foundations, we recommend the foundations be supported on piles driven to end bearing on the underlining bedrock surface. As discussed with BSE, Inc., steel H-pile or timber piling could be utilized. Based on our conversations, we understand that steel H-piling will likely be utilized. We anticipate the reinforced concrete pile caps will be designed with sufficient size to resist uplift and overturning forces.

If additional resistance is needed, the use of rock anchors or battered piles are viable alternatives. Pile caps should extend at least 3 feet below finish grade and be placed on a 12-inch thick layer of compacted crushed stone.

Our estimates of pile capacities are based on a working stress not exceeding one third the yield stress in the steel piling and a reduction in cross sectional area by 1/16-inch on the exposed steel pile surface due to corrosion.

We offer the following capacities for your consideration.

Pile Type	Net Allowable Compressive Capacity (kips)
Steel H-Pile ASTM 572 Grade 50	
HP 12x74	280
HP 12x53	180
HP 10x57	210
HP 8x36	125
Timber Pile ASTM 025 Pressure Treated	
12 Inch Tip Diameter	40
10 Inch Tip Diameter	34
8 Inch Tip Diameter	26

Post construction settlement of piles driven to practical refusal should not exceed about ½ inch. Settlement due to elastic shortening of the pile must be accounted for in design. Piles should be spaced a minimum center-to-center distance of at least 3 pile diameters, but no less than 30 inches

Considering available test boring data, we anticipate that pile lengths will be on the order of 30 feet from existing grades. It should be noted that the depth to bedrock likely varies across the site and that pile lengths will also vary. We recommend that at least one test pile be driven to assess pile lengths prior to ordering production piles.

Lateral (base shear) loads can be resisted by passive earth pressures against the pile caps. For a pile cap backfilled with compacted MDOT 703.06 Type B Gravel, we recommend a passive lateral earth pressure coefficient of 3.0, a total soil backfill unit

weight of 125 pcf (63 pcf buoyant weight) and an internal friction angle of 30 degrees be considered in evaluating available lateral resistance.

We recommend that the proposed foundations be provided with underdrains. If, however, underdrains cannot be installed, foundation design will need to consider buoyant soil and concrete conditions. If additional lateral resistance is required, some piling could be battered.

We recommend that piles be driven to practical refusal in bedrock or dense soils with cast steel driving shoes for tip protection. The piling contractor should submit information on the pile driving equipment and proposed "set" or stop driving criteria to S. W. COLE ENGINEERING, INC. prior to the start of pile driving.

Vibrations from pile driving activities can adversely affect adjacent structures. We recommend that an owner coordinated survey of adjacent structures be undertaken to document existing conditions and to install crack monitors as needed prior to pile driving and that vibrations from pile driving be monitored to assess potential damage to adjacent structures. The structural engineer should be consulted to determine a reasonable threshold limit for vibrations, which may cause damage.

The BOCA National Building Code (1999) requires that pile load tests be performed on driven piles with design capacities over 40 tons (80 kips). The piling contractor should submit information relative to the pile load test program and pile driving equipment for geotechnical review prior to beginning driving. We recommend that S. W. COLE ENGINEERING be on-site during the pile load test program (if needed) and driving of production piles. S. W. COLE ENGINEERING would monitor vibrations from pile driving, maintain pile-driving records and modify the set criteria, if necessary, based on actual site driving conditions.

4.3 Subgrade Preparation

We recommend that the excavation for the pile caps and footings for the truck dock addition be over-excavated by 1 foot and be brought back to subgrade with 12 inches of compacted ¾ inch crushed stone. A woven geotextile such as Mirafi 400X (or similar) should be placed on the subgrade prior to placing the crushed stone.

This would serve to stabilize the excavation bottom, provide a drainage blanket from which to control groundwater during construction and provide a suitable working mat. We recommend that the backfill for the pile caps and truck dock foundation walls be a clean granular soil meeting the requirements for MDOT Standard Specification 703.06 Type B Gravel:

MDOT 703.06 Type B Gravel	
Sieve Size	**Percent Finer By Weight**
4 inch	100
½ inch	35 to 75
¼ inch	25 to 60
#40	0 to 25
#200	0 to 5

The backfill should be placed in horizontal lifts and compacted. We recommend that the foundation backfill be compacted to at least 95 percent of maximum dry density determined by ASTM D-1557. The crushed stone should be compacted to 100 percent of its dry rodded unit weight according to ASTM C-109.

4.4 Design Review and Construction Testing

It is strongly recommended that the geotechnical engineer be provided the opportunity to review the site work and foundation design drawings to confirm that our interpretation of the subsurface conditions and recommendations have been appropriately interpreted and implemented. S. W. COLE ENGINEERING, INC. is available to conduct pile monitoring, concrete and soil testing as well as steel inspection.

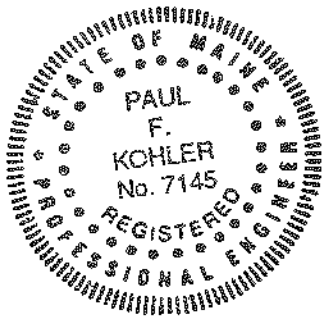
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you as the design progresses and during the construction phase.

Very truly yours,

S. W. COLE ENGINEERING, INC.

Paul F. Kohler, P. E.
Vice President



PFK/cah

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Attachment A
Limitations

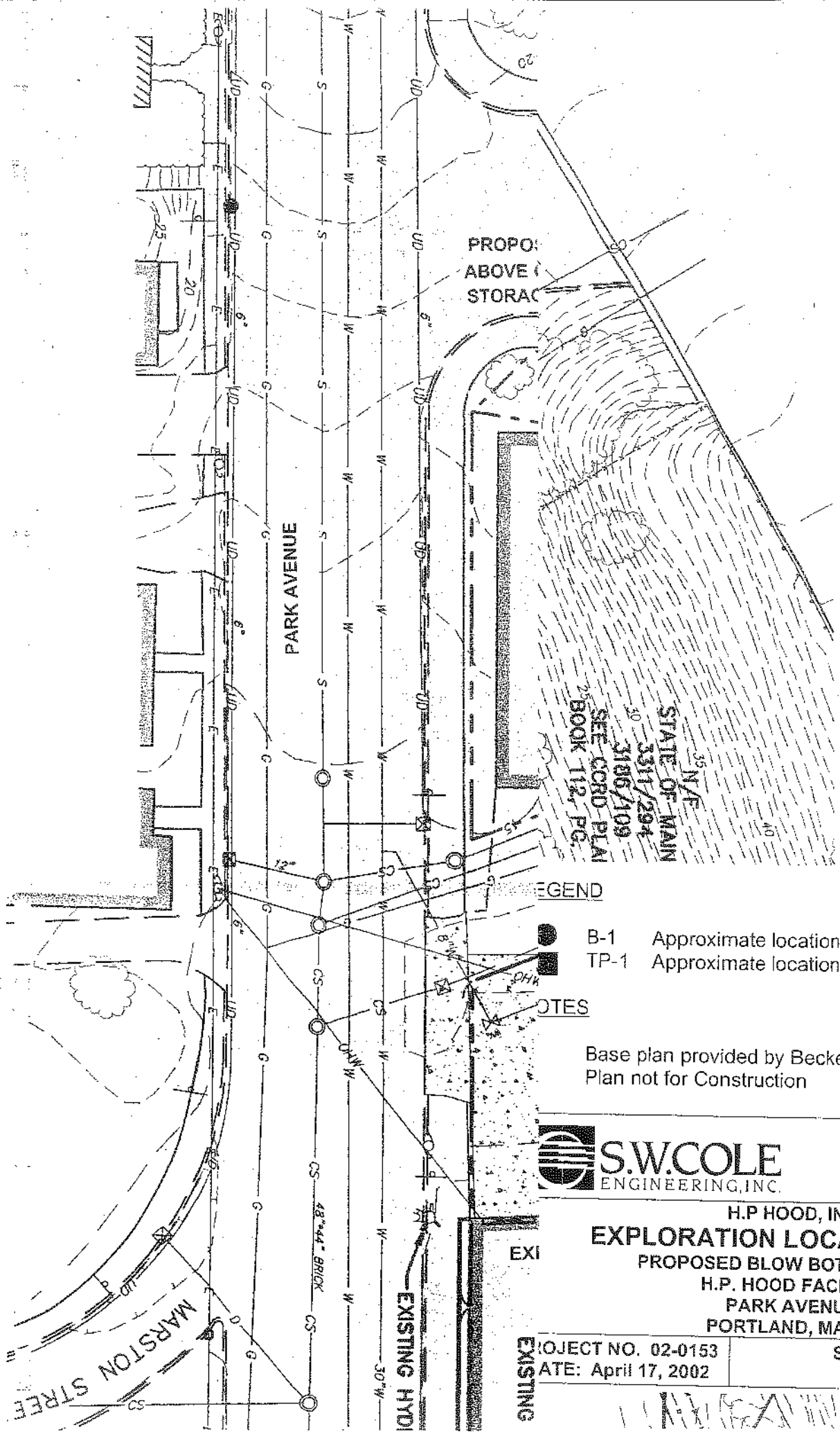
This report has been prepared for the exclusive use of Centerline Construction for specific application to the proposed Building Addition and Above Ground Storage Tank at the H. P. Hood facility at 349 Park Avenue in Portland, Maine. S. W. COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

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

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

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

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



S.W.COLE ENGINEERING, INC.

H.P HOOD, INC

EXPLORATION LOCATION PLAN

PROPOSED BLOW BOTTLE PLANT
H.P. HOOD FACILITY
PARK AVENUE
PORTLAND, MAINE

PROJECT NO. 02-0153	SCALE: 1"= 30'
DATE: April 17, 2002	SHEET: 1

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-1
SHEET: 1 OF 1
PROJECT NO.: 02-0153 S
DATE START: 3/14/2002
DATE FINISH: 3/14/2002
ELEVATION: 13'+/-
SWC REP.: RED

PROJECT / CLIENT: PROPOSED BLOW BOTTLE PLANT / CENTERLINE CONSTRUCTION
LOCATION: H. P. HOOD FACILITY 349 PARK AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING DRILLER: DONNIE

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

WATER LEVEL INFORMATION
SOIL GENERALLY WET
SOIL SATURATED BELOW 5'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	ASPHALT PAVEMENT
	S-1	24"	6"	2.0'	12	18	33	32	3.0'	GRAY SILTY SAND WITH GRAVEL (FILL) ~ MEDIUM DENSE ~
									6.0'	BROWN SILTY SAND WITH SOME GRAVEL CLAY, BRICK, GLASS, WOOD, CONCRETE (MIXED FILL) ~ LOOSE ~
	S-2	24"	10"	7.0'	2	2	4	3		
	S-3	24"	3"	12.0'	5	4	3	2	15.0'	GRAY CLAYEY SILTY SAND WITH SOME GRAVEL WITH SOME PIECES OF BRICK (FILL) ~ MEDIUM DENSE ~
	S-4	24"	24"	17.0'	1	1	2	2	17.0'	GRAYISH BROWN CLAYEY SILT WITH ROOTS AND ORGANICS ~SOFT~ (PROBABLE MARSH SOILS)
	S-5	24"	24"	22.0'	2	1	1	2	22.0'	GRAY SILTY CLAY WITH SOME SAND ~ SOFT ~
									30.0'	ROD PROBE 22.0' TO 31.0' - NO SAMPLING

DEPTH	BLOWS/FOOT	DEPTH	BLOWS/ FOOT
22.0'-23.0'	WO2M	27.0'-28.0'	5
23.0'-24.0'	9	28.0'-29.0'	9
24.0'-25.0'	10	29.0'-30.0'	11
25.0'-26.0'	7	30.0'	8/0"
26.0'-27.0'	6		

BOTTOM OF EXPLORATION
REFUSAL
(POSSIBLE BEDROCK)

SAMPLES:
= SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

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

BORING NO.: B-1

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-2
SHEET: 1 OF 1
PROJECT NO.: 02-0153 S
DATE START: 3/14/2002
DATE FINISH: 3/14/2002
ELEVATION: 13'+/-
SWC REP.: RED

PROJECT / CLIENT: PROPOSED BLOW BOTTLE PLANT / CENTERLINE CONSTRUCTION
LOCATION: H. P. HOOD FACILITY 349 PARK AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING DRILLER: DONNIE

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

WATER LEVEL INFORMATION
SOIL GENERALLY WET
SOIL SATURATED BELOW 5'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										BROWN SILTY SAND WITH SOME ORGANICS (FILL)
									4.0'	~ MEDIUM DENSE ~
	S-1	24"	18"	7.0'	1	2	2	2		BROWNISH GRAY CLAYEY SILTY SAND WITH SOME ORGANICS (FILL)
										~ LOOSE ~
									11.0'	
	S-2	24"	24"	12.0'	1	1	1	2		qp = 0.5 ksf
										GRAY SILTY CLAY WITH SOME ORGANICS
										~ SOFT ~
									16.0'	
	S-3	24"	18'	17.0'	4	4	7	7		qp = 4 ksf
										GRAY CLAYEY SILT WITH ROOTLETS
										~ MEDIUM ~ (PROBABLE MARSH SOILS)
									20.0'	
										GRAY CLAYEY SANDY SILT
	S-4	24"	22"	22.0'	1	2	1	2	22.0'	~ LOOSE ~ qp = 1.0 ksf
										ROD PROBE 22.0' TO 29.5' - NO SAMPLING
										DEPTH BLOWS/FOOT DEPTH BLOWS/ FOOT
										22.0'-23.0' WO2M 26.0'-27.0' 6
										23.0'-24.0' 8 27.0'-28.0' 5
										24.0'-25.0' 10 28.0'-29.0' 9
									29.0'	25.0'-26.0' 7 29.0' 10/0"
										BOTTOM OF EXPLORATION
										REFUSAL
										(POSSIBLE BEDROCK)

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

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

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

BORING NO.: B-2

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-3
SHEET: 1 OF 1
PROJECT NO.: 02-0153 S
DATE START: 3/14/2002
DATE FINISH: 3/14/2002
ELEVATION: 13'+/-
SWC REP.: RED

PROJECT / CLIENT: PROPOSED BLOW BOTTLE PLANT / CENTERLINE CONSTRUCTION
LOCATION: H. P. HOOD FACILITY 349 PARK AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING DRILLER: DONNIE

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

WATER LEVEL INFORMATION
SOIL GENERALLY WET
SOIL SATURATED BELOW 5'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	ASPHALT PAVEMENT
									3.0'	GRAY SILTY SAND WITH SOME GRAVEL (FILL) ~ MEDIUM DENSE ~
	S-1	24"	18"	7.0'	1	1	2	2	10.0'	GRAY SILTY SAND WITH TRACE OF GRAVEL AND CLAY AND SOME ORGANICS (MIXED FILL) ~ LOOSE ~
	S-2	24"	20"	12.0'	1	1	1	1	15.0'	GRAYISH BROWN CLAYEY SILT WITH ORGANICS, ROOTS (PROBABLE MARSH SOILS) ~ SOFT ~
	S-3	24"	24"	17.0'	1	1	1	1		GRAY ORGANIC SILT WITH SOME CLAY, ROOTS, AND PIECES OF WOOD (PROBABLE MARSH SOILS) ~ SOFT ~
	S-4	24"	24"	22.0'	2	2	2	3	22.0'	BOTTOM OF EXPLORATION NOT REFUSAL

SAMPLES:
= SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

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

BORING NO.: B-3

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-4
SHEET: 1 OF 1
PROJECT NO.: 02-0153 S
DATE START: 3/14/2002
DATE FINISH: 3/14/2002
ELEVATION: 18'+/-
SWC REP.: RED

PROJECT / CLIENT: PROPOSED BLOW BOTTLE PLANT / CENTERLINE CONSTRUCTION
LOCATION: H. P. HOOD FACILITY 349 PARK AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING DRILLER: DONNIE

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

WATER LEVEL INFORMATION
SOIL GENERALLY WET
SOIL SATURATED BELOW 6'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									6"+/-	DARK BROWN TOPSOIL WITH ORGANICS
	S-1	24"	3"	7.0'	19	23	11	7	8.0'	BROWN SILTY SAND WITH SOME GRAVEL (FILL) ~ LOOSE ~
	S-2	24"	6"	12.0'	1	1	3	9	14.0'	GRAYISH BROWN SILTY SAND WITH SOME GRAVEL, BRICK AND TRACE OF ASH (MIXED FILL) ~ LOOSE ~
	S-3	24"	10"	17.0'	1	1	2	3	20.5'	BROWN ORGANIC SILT WITH ROOTS (PROBABLE MARSH SOILS) ~ SOFT ~
	S-4	24"	24"	22.0'	4	9	14	17	22.0'	BROWNISH GRAY SILTY CLAY ~ VERY STIFF ~ qp = 7.0 ksf
										BOTTOM OF EXPLORATION NOT REFUSAL

SAMPLES:
) = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

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

BORING NO.: B-4

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-5
SHEET: 1 OF 1
PROJECT NO.: 02-0153 S
DATE START: 3/14/2002
DATE FINISH: 3/14/2002
ELEVATION: 17'+/-
SWC REP.: RED

PROJECT / CLIENT: PROPOSED BLOW BOTTLE PLANT / CENTERLINE CONSTRUCTION
LOCATION: H. P. HOOD FACILITY 349 PARK AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING DRILLER: DONNIE

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

WATER LEVEL INFORMATION
SOIL GENERALLY WET
SOIL SATURATED BELOW 7'+/-

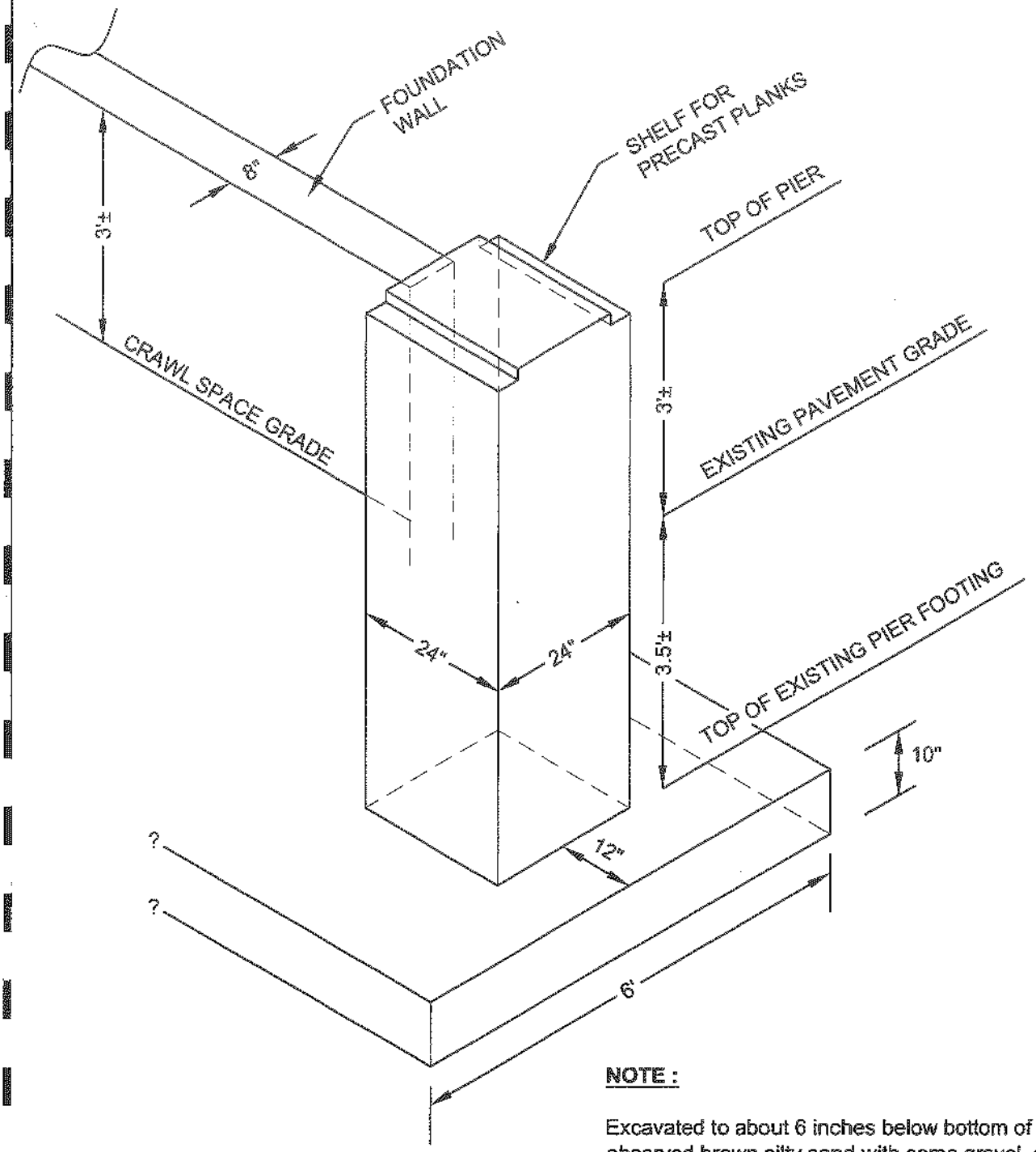
CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									6"+/-	DARK BROWN TOPSOIL WITH ORGANICS
	S-1	24"	6"	7.0'	11	18	19	17	7.0'	DARK BROWN AND BROWN SILTY SAND WITH SOME GRAVEL (FILL) ~ MEDIUM DENSE ~
	S-2	24"	8"	12.0'	1	1	1	1	14.0'	BROWNISH GRAY CLAYEY SILTY SAND WITH ASH (MIXED FILL) ~ LOOSE ~
	S-3	24"	20"	17.0'	1	2	2	2	19.0'	BROWN ORGANIC SILT WITH ROOTS (PROBABLE MARSH SOILS) ~ SOFT ~
	S-4	24"	16"	22.0'	1	2	8	12	21.0'	GRAY CLAYEY SILT WITH SOME ORGANICS, ROOTS (PROBABLE MARSH SOILS) ~ SOFT ~ qp = 0.5 ksf
									22.0'	GRAY SILTY CLAY WITH SOME SAND ~ VERY STIFF ~ qp = 6 to 7 ksf
										BOTTOM OF EXPLORATION NOT REFUSAL

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

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

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

BORING NO.: B-5



NOTE :

Excavated to about 6 inches below bottom of footing; observed brown silty sand with some gravel, clay, brick, glass, wood and concrete (mixed fill).

Date : 03/14/02

SWC Rep : RED

Excavator : White Brothers

Ground Elevation : 13'±

S.W.COLE ENGINEERING, INC.

CENTERLINE CONSTRUCTION

TEST PIT TP-1

Proposed Blow Bottle Plant
349 Park Avenue
Portland, Maine

Job No. 02-0153 S
Date : 03/19/02

Scale As Shown
Sheet 7

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

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

Key to Symbols Used:

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

Description of Proportions:

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

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

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

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