ADDENDUM NUMBER 3:
Bid#10-16
South Mill Pond Tennis Courts, Leary Ball Field Lighting and Portsmouth High School Lighting
Issued: January 11, 2015

This Addendum forms part of the original document marked: Bid#10-16 South Mill Pond Courts, Leary Field Lighting and Portsmouth High School Lighting.

General Bid Clarifications

1. One construction gate is to be located on the parking lot side of the project. Location will be determined in the field.
2. The callout on sheet L5.05, detail 3 is referring to the painted line striping for the location of the hockey goal crease. The hockey goal and net are not to be included in the bid.
3. On sheet L4.01 the spot grades along the block retaining wall in the southwest corner of the tennis courts were adjusted to the other side of the wall. See attachment SK-2.

The following questions have been asked and answered.

Question 1: I could not find a supplier or model number for the basketball standards or hockey nets. Could you please supply this information?

Answer: *The hockey nets and goals are not to be included in the bid. See number 2 above, under general bid clarifications. Please refer to the attached revised specification, section 02804 SITE IMPROVEMENTS for the basketball standards.*

Question 2: Please confirm the limits of the windscreen in alternate #2; is it just the outer North and East facing fence runs? A highlighted plan would be helpful.

Answer: *The windscreens will only be necessary on the outer North and East facing fence runs. The fencing on the South side and the West side of the courts, as well as the inner fencing will not require any windscreen.*

Question 3: Please provide specs and details for the removable volleyball posts and nets.

Answer: *Please refer to the attached additional specification section 02804 SITE IMPROVEMENTS for information on the volleyball posts and nets.*

Question 4: Is the precast concrete segmental block retaining wall in the southwest corner of the tennis courts in base bid or just if alternate #3 is constructed?

Answer: *The precast concrete segmental block retaining wall in the southwest corner will only be constructed if alternate #3 is accepted.*

Question 5: In base bid, does the bituminous concrete walkway wrap around the corner at the southwest corner? Please confirm the limits of the bituminous concrete walks.

Answer: *An SK drawing will be provided for this in addendum #4.*

Question 6: How many project signs will be required? 01580 is unclear, please confirm the quantity.

Answer: *There will be three (3) project signs required. One (1) sign will be located at the South Mill Pond tennis courts, one (1) sign will be located at Leary Ball Field and one (1) sign will be located at Portsmouth High School.*

Question 7: Please provide specifications and details for the (4) basketball goals or are we to reuse the (4) that the City is salvaging?

Answer: *The Salvaged basketball goals will not be used for this project. New basketball goals will be installed. Please refer to the attached additional specification, section 02804 SITE IMPROVEMENTS for the basketball standards.*

Question 8: Is the chain link fence fabric to be 6-gauge core- 2" mesh or 6-gauge core- 1 ¾" mesh? Specs and details differ.

Answer: *The chain link fabric shall be 6-gauge core- 1 ¾" as shown on sheet L5.03, detail 3. Please disregard the measurement given in the specifications.*

Question 9: There is no erosion control shown on sheet L2.02. Is it the intent to not use any at this field?

Answer: *There will be no erosion control needed at this field.*

Question 10: There is no construction fence on sheet L2.02. Is it the intent to use the field fencing as construction fence?

Answer: *Yes, the existing fence will serve as a construction fence during the installation the Leary Ball Field lighting.*

Question 11: On sheet L2.02, the construction fence is shown going through an existing utility pole. Are we removing this pole?

Answer: *We are not removing this utility pole. Please refer to the attached sheet SK -1 for the revisions.*

Question 12: On sheet L3.01 the fourth ADA landing is drawn at 2'-0" however it is dimensioned at 5'-0". Is it the intent to make the landing what ADA requires which is 5'?

Answer: *On sheet L3.01, the line set 2' from the beginning of the landing is representing the spillway, which is called out on sheet L4.01. From the spillway to the corner of the walk is at a 2% slope, meeting ADA standards. Refer to the attached sheet SK-2 for further clarification.*

Question 13: I want to double check that the grading on sheet L4.01 is correct in relation to this landing being drawn incorrectly.

Answer: *It is drawn correctly, the dimension is incorrect. Please refer to the attached sheet SK-2 for clarification.*

Question 14: Please clarify the limits of base bid curbing. If alternate 3 is not accepted then where does this curbing end?

Answer: *An SK will be provided for this in addendum #4.*

Specifications

1. Add Section 02804 SITE IMPROVEMENTS
2. Section 02300 EARTHWORK- Add MUSCO Lighting Foundation Design- Attached
3. Section 02300 EARTHWORK- Add Portsmouth High School Geotechnical Report- Attached

Plans

1. Sheet L2.01 provide revisions as indicated on sheet SK-1
2. Sheet L4.01 provide revisions as indicated on sheet SK-2

Attachments

1. Specification Section 02804 SITE IMPROVEMENTS
2. SK-1
3. SK-2
4. MUSCO Lighting Foundation Design
5. Portsmouth High School Geotechnical Report

All else remains unchanged.

Please acknowledge this addendum within your proposal. Failure to do so may subject a bidder to disqualification.

End of Addendum #3

SECTION 02804

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed in the Table of Contents, and applicable parts of Division 1, General Requirements shall be included in and made a part of this Section.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SCOPE OF WORK

A. The work of this Section consist of all site improvements and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to, the following:

1. Basketball Post, Backboard, Rim and Nets
2. Volleyball Posts, Nets, and Ground Sleeves

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Section 31 23 16 – Excavation, Borrow & Backfill
2. Section 03 35 00 – Cast-In-Place Concrete

1.04 EXAMINATION OF CONDITIONS

A. The Contractor shall fully inform himself of existing conditions of the site before submitting his bid, and shall be fully responsible for carrying out all site work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.

B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct to the best of the Landscape Architect's knowledge, but the Contractor shall have examined them for himself during the

bidding period, as no allowance will be made for any errors or inaccuracies that may be found therein.

1.05 SCHEDULING

A. The Contractor shall submit to the Landscape Architect, for approval by the Owner, a progress schedule for all work as specified herein.

1.06 QUALITY ASSURANCE

A. Materials and methods of construction shall comply with the following standards:

1. ASTM: American Society for Testing and Materials
2. ANSI: American National Standards Institute
3. FS: Federal Specifications
4. IMI: International Masonry Institute
5. PCA: Portland Cement Association

B. Qualifications of Workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are completely familiar with the specified requirements and methods needed for the proper performance of the work of this Section.

C. Layout: After staking out the work, and before beginning final construction, obtain the Landscape Architect's approval for layout. Contractor shall make adjustments as determined by the Landscape Architect. Landscape Architect may make adjustments to layout as is required to meet existing and proposed conditions without additional cost to the contract price.

D. The following standards including all current amendments form a part of these Specifications:

1. American Society for Testing and Materials (ASTM):

A36	Structural Steel
A53	Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
A120	Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses
A307	Carbon Steel Externally and Internally Threaded Standard Fasteners
A325	High Strength Bolts for Structural Steel Joints
A500	Cold Formed Welded and Seamless Carbon Steel Structural Tubing Rounds and Shapes

2. American Welding Society (AWS):

D1.1 Structural Welding Code

3. Steel Structures Painting Council (SSPC):

SSPC Surface Preparation Specifications

1.07 SUBMITTALS

A. Shop Drawings: Submit shop drawings in accordance with Division 1 requirements.

1. Basketball Post, Backboard, Rim, and Nets
2. Volleyball Posts, Nets, and Ground Sleeves

B. Product Information: Provide manufacturer's data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation, certifying that each material item complies with, or exceeds, specific requirements. Work includes but is not limited to:

1. Basketball Post, Backboard, Rim and Nets
2. Volleyball Posts, Nets, and Ground Sleeves

PART 2 - PRODUCTS

2.01 BASKETBALL POST, BACKBOARD, RIM AND NETS

A. Backboard shall be constructed with ½" thick clear polycarbonate, contain 1/2" perforated holes, and measure 72" x 42". Backboard shall be framed with "E" channeled aluminum extrusion and attached with stainless steel hardware. Official sized white target and shall be silk screened on the face of the backboard. Goal mounting holes (4) to be standard 5" (horizontal) x 4" (vertical) mounting centers.

B. Goal shall be Model # RB3000 front mount 18" single ring goal (5/8"), nylon net, powder coated finish.

C. Pole shall be Gooseneck Pole System, 5 ½" O.D. schedule 40 steel pipe with 6-layer galvanized finish.

D. Backboard, goal, and net shall be manufactured by True Bounce, Inc. 194 Riverside Avenue, New Bedford MA 02746, (866) 873-3715, or approved equal.

2.02 VOLLEYBALL POSTS, NETS, AND GROUND SLEEVES

A. The posts shall be 3” O.D. by 10 ½’ to 12' foot long, schedule 40 galvanized steel posts and include High strength moveable eye hooks and pulley with stainless steel set screws and nuts, single point adjustment, and top and bottom internal drive caps for poles.

B. The net shall be 32’ x 39” #42 knotted nylon outdoor netting. The net shall be framed with 22-oz. 4" tapes, top, bottom and sides made with Triple Ultra-Violet / Mildew Protected vinyl to prevent fading and weather damage. The stitching shall be ultra violet and mildew resistant for prolonged outdoor use. Nets shall include galvanized steel aircraft cable top and bottom with protective clear vinyl coating, 1-1/8" wooden dowels; triple re-enforced netting attachment to side tapes for extra durability.

C. The ground sleeves shall be PIP 3” hard surface economy floor socket with seamless anodized aluminum construction and powder coated aluminum cap. The socket shall be approximately 18” deep.

D. Volleyball posts, nets, and ground sleeves shall be manufactured by A United Volleyball Supply, LLC. 14615 NE 91st St. Building B, Redmond, WA 98052, 1(425)-576-8835, or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The installer shall examine previous work, related work, and conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means installer accepts substrates, subgrades, previous work, and conditions.

B. The Contractor shall be responsible for timing the delivery of all site improvement elements so as to minimize on-site storage time prior to installation. All stored materials must be protected from weather, careless handling and vandalism.

C. The contractor to install all elements for Basketball Post, Backboard, Rim and Nets, and Sports Bleachers per manufacturer’s instruction.

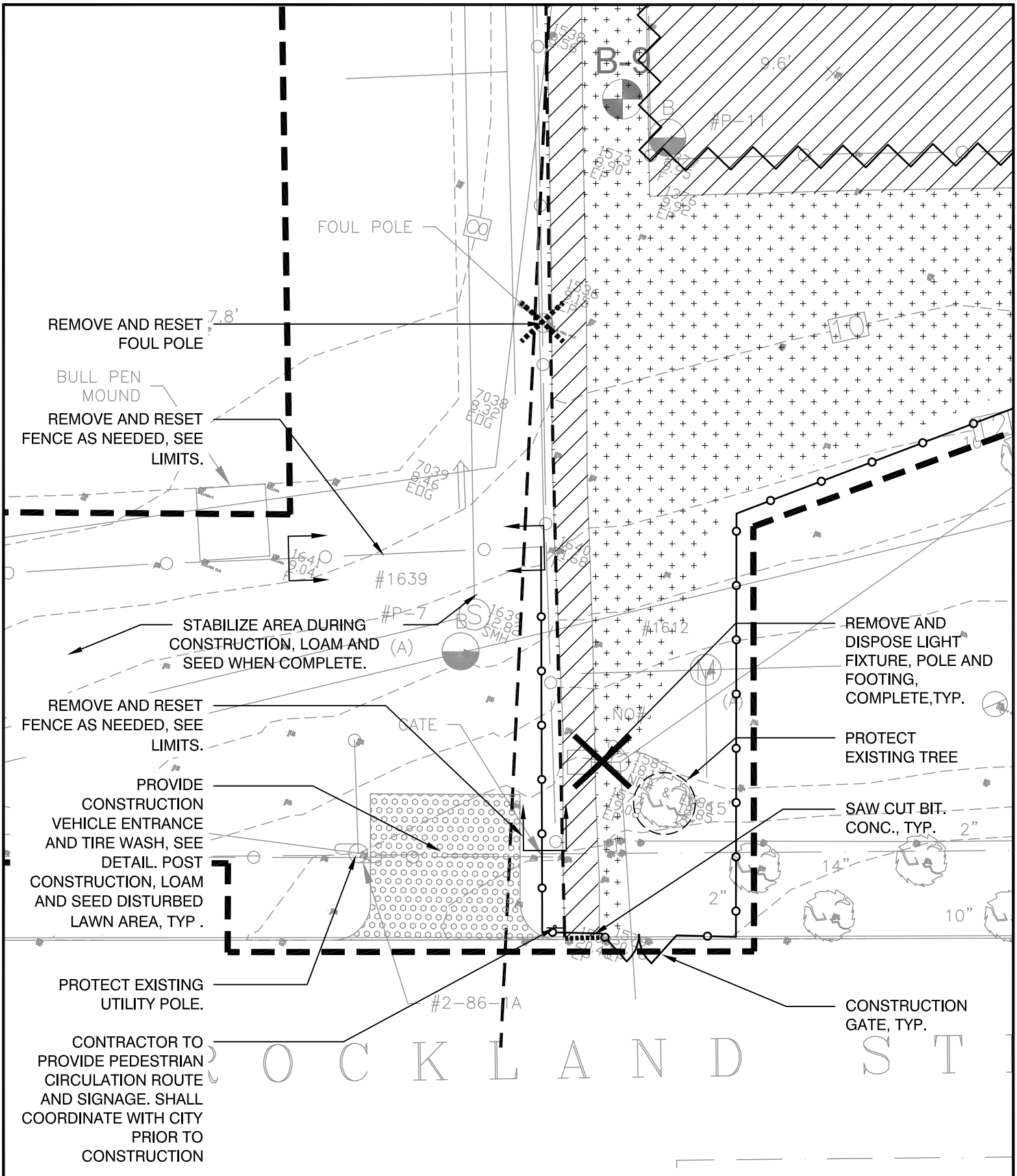
3.02 BASKETBALL POSTS

A. For new post installation, post shall be Gooseneck Pole system, 5 ½" O.D. schedule 40 steel pipe with 6-layer galvanized finish.

3.03 VOLLEYBALL POSTS, NETS, AND GROUND SLEEVES

A. The ground sleeves shall be installed per tennis post footing detail, refer to sheet L5.04 detail 2 in the plans.
B. Ground sleeve cap shall be color seal coated to match surrounding surface.

- END OF SECTION 02804 -



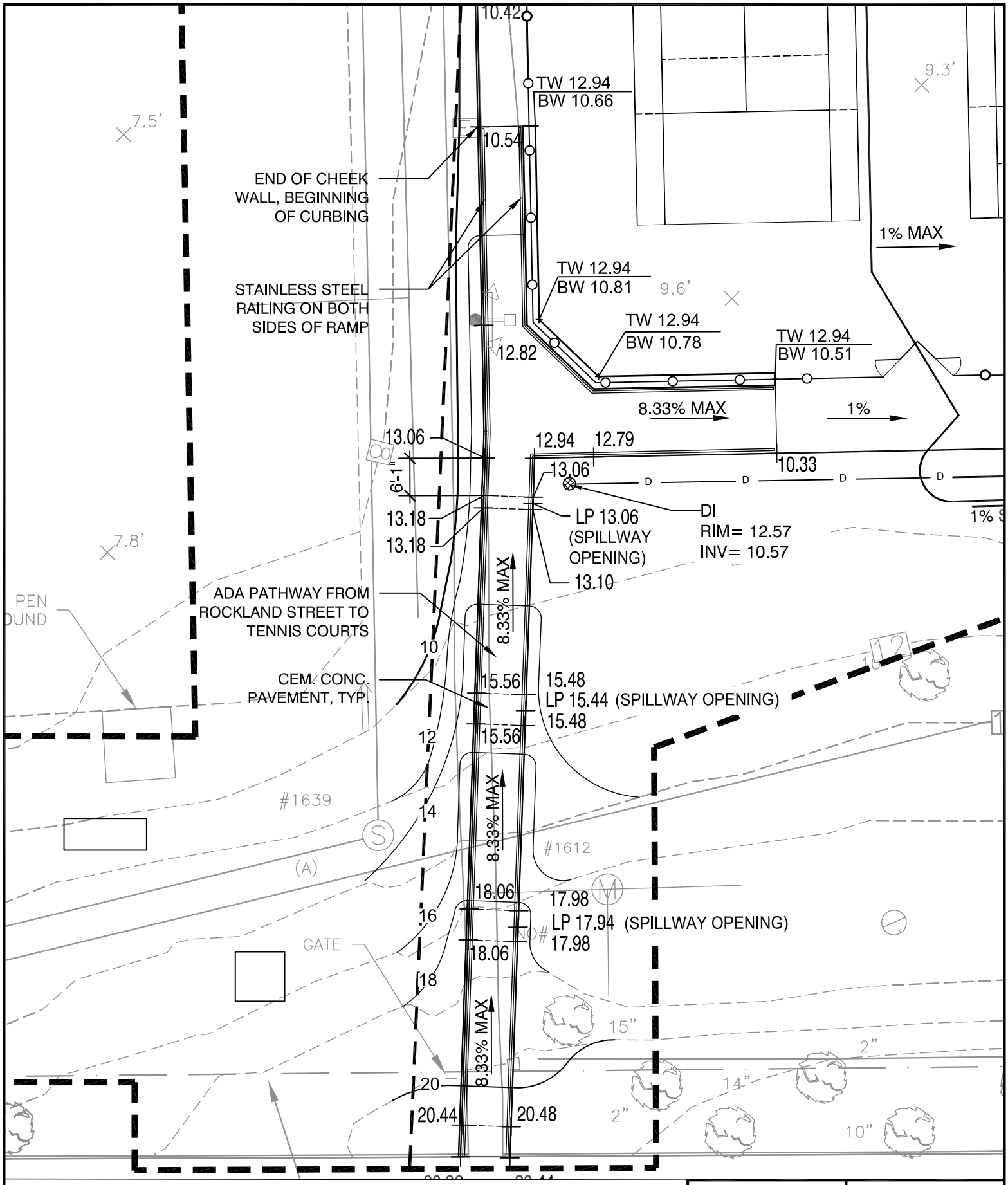
SOUTH MILL POND TENNIS COURTS, LEARY BALL FIELD LIGHTING, AND PORTSMOUTH HIGH SCHOOL LIGHTING

Rockland Street and Andrew Jarvis Drive, Portsmouth, NH

Weston&Sampson
427 Main Street, Suite 400
Worcester, MA 01608
(508) 762-1676

CONTRACT NO:	DRAWN BY:	SCALE:	DATE:
2140758	ACG	1"=20'-0"	1-08-2016

SHEET REFERENCE:	SKETCH TITLE:
L2.01	SK-1



SOUTH MILL POND TENNIS COURTS, LEARY BALL FIELD LIGHTING, AND PORTSMOUTH HIGH SCHOOL LIGHTING

Rockland Street and Andrew Jarvis Drive, Portsmouth, NH

Weston&Sampson
427 Main Street, Suite 400
Worcester, MA 01608
(508) 762-1676

CONTRACT NO:	DRAWN BY:	SCALE:	DATE:
2140758	ACG	1"=20'-0"	1-08-2016

SHEET REFERENCE: L4.01

SKETCH TITLE: SK-2

POLE IDENTIFICATION

POLE DESIGNATION	POLE TYPE	PRECAST BASE TYPE	FIXTURE CONFIGURATION (FIX. PER XARM)	FIXTURE AND ACCESSORIES EPA (FT^2)
A1-A4	LSS70C	4B	5 (5)	13.5
B2	LSS80B	5B	11 (6+5)	28.6
B3, B4	LSS80B	5B	10 (5+5)	26.0
C2	LSS80B	5B	13 (7+6)	28.6
C3	LSS80B	5B	7 (4+3)	17.5
C4	LSS80B	5B	8 (4+4)	20.0
F1, F2	LSS70D	5B	12 (6+6)	31.2
F3, F4	LSS80B	5B	12 (6+6)	31.2
P1, P2	LSS40A	1B	2 (2)	5.2
P3	LSS40A	1B	2 (2)	5.0
S1	LSS80B	5B	13 (7+6)	36.4
S2, S7	LSS80C	6B	18 (6+6+6)	39.6
S3, S6	LSS80B	5B	9 (5+4)	19.8
T1, T2, T5, T6	LSS40A	1B	2 (2)	4.4
T3, T4	LSS50AB	2B	4 (4)	8.4

PRECAST BASE IDENTIFICATION

PRECAST BASE TYPE	PRECAST BASE WEIGHT	PRECAST BASE LENGTH	PROJECTION ABOVE GRADE	STANDARD EMBEDMENT	OUTSIDE DIAMETER
1B	920 LBS	15'-2"	7'-2"	8'-0"	9.56"
2B	1,690 LBS	17'-3"	7'-3"	10'-0"	12.00"
4B	3,490 LBS	22'-0"	8'-0"	14'-0"	15.75"
5B	4,580 LBS	23'-11"	7'-11"	16'-0"	18.25"
6B	6,930 LBS	26'-1"	8'-1"	18'-0"	20.56"

CONCRETE/REINFORCEMENT NOTES

CONCRETE SHALL COMPLY WITH THE FOLLOWING ASTM STANDARDS:
MIXTURE WITH ASTM C-94, PORTLAND CEMENT WITH ASTM C-150 TYPE 1-A, AGGREGATES WITH ASTM C-33 AND BE IN CONFORMANCE WITH ACI 318.

CONCRETE SHALL BE AIR-ENTRAINED (COMPLY WITH ASTM C-260), HAVE A MAXIMUM WATER -CEMENT RATIO, w/cm = 0.43 AND HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.

DESIGN SLUMP LIMITS ARE 4" MINIMUM AND 6" MAXIMUM. THE JOB SITE SLUMP MAY BE INCREASED BY THE USE OF A WATER REDUCING AGENT MEETING ASTM C494-92.

CONCRETE REINFORCEMENT SHALL COMPLY WITH ASTM A615 GRADE 60, EXCEPT TIES CAN BE OF GRADE 40 AND BE IN CONFORMANCE WITH ACI 315 & 318.

CONCRETE DRILLED PIERS MUST ATTAIN 3,000 PSI STRENGTH PRIOR TO POLE INSTALLATION AND FIXTURE MOUNTING.

THE DEPTH EQUAL TO THE PRECAST BASE EMBEDMENT SHALL BE THOROUGHLY CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACEMENT.

DESIGN NOTES

DESIGN PARAMETERS:
WIND: 100 MPH (EXP. C, I = 1.0) PER IBC CODE, 2009 EDITION (ASCE 7-05).
DESIGN WIND PARAMETERS ARE AS NOTED. ACTUAL WIND SPEED AND EXPOSURE MUST BE VERIFIED FOR THE SITE BY THE PROPER GOVERNING OFFICIAL.

GEOTECHNICAL PARAMETERS:
ALLOWABLE END BEARING SOIL PRESSURE: 4,000 PSF
ALLOWABLE LATERAL SOIL BEARING PRESSURE: 0 PSF/FT (GRADE TO -2'-0");
AS PROVIDED ON PAGE 4 OF REFERENCED SOIL REPORT (BELOW -2'-0")
IN ACCORDANCE WITH THE 2009 EDITION OF THE INTERNATIONAL BUILDING CODE, CHAPTER 18.

OVER EXCAVATE 2'-0" BELOW THE BOTTOM OF THE SPREAD FOOTING TO A DEPTH OF -8'-6" BELOW GRADE. REPLACE THE OVER EXCAVATED AREA WITH COMPACTED STRUCTURAL FILL. THE STRUCTURAL FILL SHOULD BE IBC, TABLE 1806.2, CLASS 3 OR BETTER AND BE COMPACTED TO 98% OF STANDARD PROCTOR (ASTM D698). FOOTINGS MAY BEAR ON BEDROCK, OVER EXCAVATION OF BEDROCK IS NOT REQUIRED.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE GEOTECHNICAL ENGINEERING REPORT, PROJECT NO. 2140758.K, PREPARED BY WESTON & SAMPSON; PEABODY, MA.

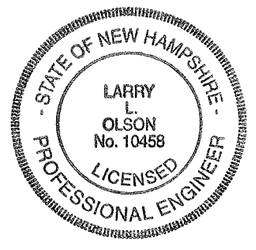
A GEOTECHNICAL ENGINEER OR REPRESENTATIVE OF IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE SOIL DESIGN PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.

ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A LICENSED ENGINEER.

ALL EXCAVATIONS MUST BE FREE OF LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE BACKFILL PLACEMENT. TEMPORARY CASINGS OR DRILLERS SLURRY MAY BE USED TO STABILIZE THE EXCAVATION DURING INSTALLATION. CASINGS MUST BE REMOVED DURING CONCRETE BACKFILL PLACEMENT. CONCRETE BACKFILL MUST BE PLACED WITH A TREMIE WHEN SLURRY OR WATER IS PRESENT WITHIN THE EXCAVATION OR WHEN THE FREE DROP EXCEEDS 6'-0".

CONTRACTOR MUST BE FAMILIAR WITH THE COMPLETE SOIL INVESTIGATION REPORT AND BORINGS, AND CONTACT THE GEOTECHNICAL FIRM (IF NECESSARY) TO UNDERSTAND THE SOIL CONDITIONS AND THE POSSIBILITY OF GROUND WATER PUMPING AND EXCAVATION STABILIZATION OR BRACING DURING PRECAST BASE INSTALLATION AND PLACEMENT OF CONCRETE BACKFILL.

GENERAL NOTES:
FIXTURES MUST BE LOCATED TO MAINTAIN 10'-0" MINIMUM HORIZONTAL CLEARANCE FROM ANY OBSTRUCTION. ENGINEER MUST BE NOTIFIED IF FOUNDATIONS ARE NEAR ANY RETAINING WALLS OR WITHIN / NEAR ANY SLOPES STEEPER THAN 3H : 1V. POLES, FIXTURES, PRECAST BASES, ELECTRICAL ITEMS AND INSTALLATION PER MUSCO LIGHTING.



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEW HAMPSHIRE.

Larry L. Olson 12-22-2015

LARRY L. OLSON - NO. 10458 DATE:
SEPC OF IOWA - 1427

LICENSE RENEWAL DATE: JULY 31, 2016
DRAWING NO. COVERED BY THIS SEAL: C1-C4

PORTSMOUTH HS
MULTI-FIELDS
LIGHTING
PORTSMOUTH, NH

musco Lighting
CORPORATE: 100 1st AVE WEST
OSKALOOSA, IA 52577
(800) 825-6020

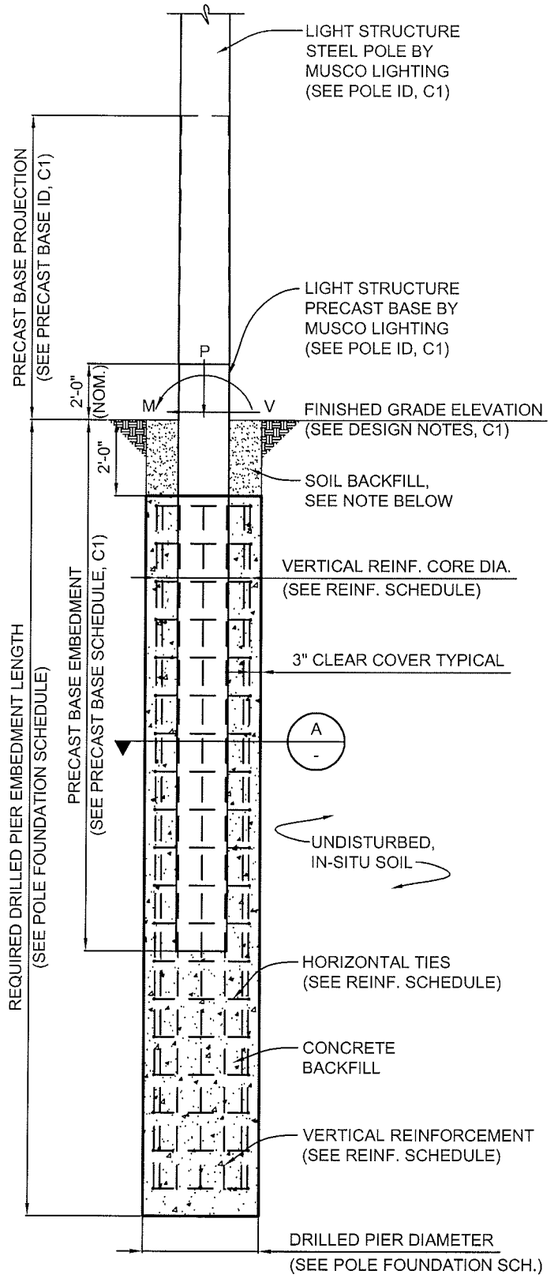
SEPC OF IOWA
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
EMAIL: MSL.INFO@SEPC.BIZ

DRAWING TITLE: POLE AND FOUNDATION
SCALE: SEE PLAN
NOTES: SCAN #156912D

PROJECT NUMBER
156912

DATE
22 DECEMBER 2015

DRAWING NUMBER
C1
OF FOUR



POLE FOUNDATION ELEVATION

SCALE: NOT TO SCALE

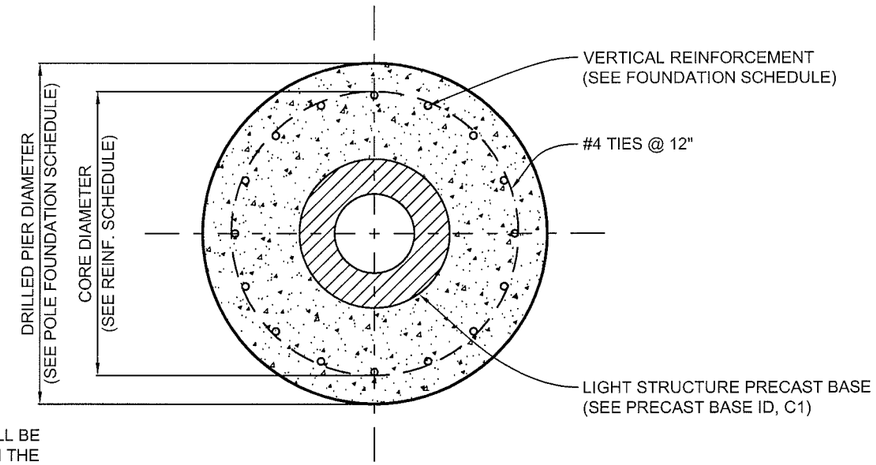
SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

POLE FOUNDATION SCHEDULE

POLE DESIGNATION	FORCES (1.)			DRILLED PIER			REINFORCING		
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS	DIAMETER INCHES	EMBEDMENT DEPTH (4.)	CONCRETE BACKFILL YD^3 (2.)	CORE DIAMETER INCH (3.)	VERTICAL REINFORCING	HORIZONTAL TIES
A2	72,121	1,635	2,007	36	21'-0"	4.4	29	12 - #6	#4 @ 12"
A3	72,121	1,635	2,007	36	34'-0"	7.8	29	12 - #6	#4 @ 12"
A4	72,121	1,635	2,007	36	40'-0"	9.4	29	12 - #6	#4 @ 12"
B2	140,716	2,596	3,482	42	22'-0"	6.2	35	16 - #7	#4 @ 12"
B3	133,156	2,504	3,392	42	34'-0"	10.5	35	16 - #7	#4 @ 12"
B4	133,156	2,504	3,392	42	40'-0"	12.6	35	16 - #7	#4 @ 12"
C2	142,413	2,620	3,662	42	22'-0"	6.2	35	16 - #7	#4 @ 12"
C3	109,706	2,209	3,122	42	46'-0"	14.8	35	16 - #7	#4 @ 12"
C4	116,532	2,296	3,212	42	22'-0"	6.2	35	16 - #7	#4 @ 12"
F1, F2	115,125	2,381	3,402	42	46'-0"	14.8	35	16 - #7	#4 @ 12"
S1	162,459	2,863	3,662	42	22'-0"	6.2	35	16 - #7	#4 @ 12"
S2	177,095	3,201	4,552	42	23'-0"	6.2	35	16 - #7	#4 @ 12"

1. ASD LOAD COMBINATION D+W.
   VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT).
2. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.
3. CORE DIAMETER EQUAL TO INSIDE DIAMETER OF TIES.
4. DRILLED PIERS MUST PENETRATE 2'-0" BEYOND SOFT CLAY INTO GLACIAL TILL.

INSTALLATION NOTE (SHEET C2 POLES ONLY):
CONCRETE TO BE PLACED IN A CONTINUOUS POUR OR A COLD JOINT WILL BE ACCEPTABLE AT THE BOTTOM OF THE PRECAST BASE. TWO POUR: WITH THE REINFORCEMENT IN PLACE, THE CONCRETE BELOW THE BOTTOM OF THE PRECAST BASE MAY BE POURED AND ALLOWED TO SET UP FOR APPROXIMATELY FOUR HOURS (CURE LONG ENOUGH TO SUPPORT WEIGHT OF PRECAST BASE). THEN THE PRECAST BASE MAY BE SET IN PLACE AND THE REST OF THE CONCRETE CONCRETE BACKFILL POURED.



A PIER DETAIL

SCALE: NOT TO SCALE

PORTSMOUTH HS
MULTI-FIELDS
LIGHTING
PORTSMOUTH, NH

musco Lighting
CORPORATE: 100 1st AVE WEST
OSKALOOSA, IA 52577
(800) 825-6020

SEPC OF IOWA
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
EMAIL: MSL.INFO@SEPC.BIZ

DRAWING TITLE:
POLE AND FOUNDATION

SCALE: SEE PLAN

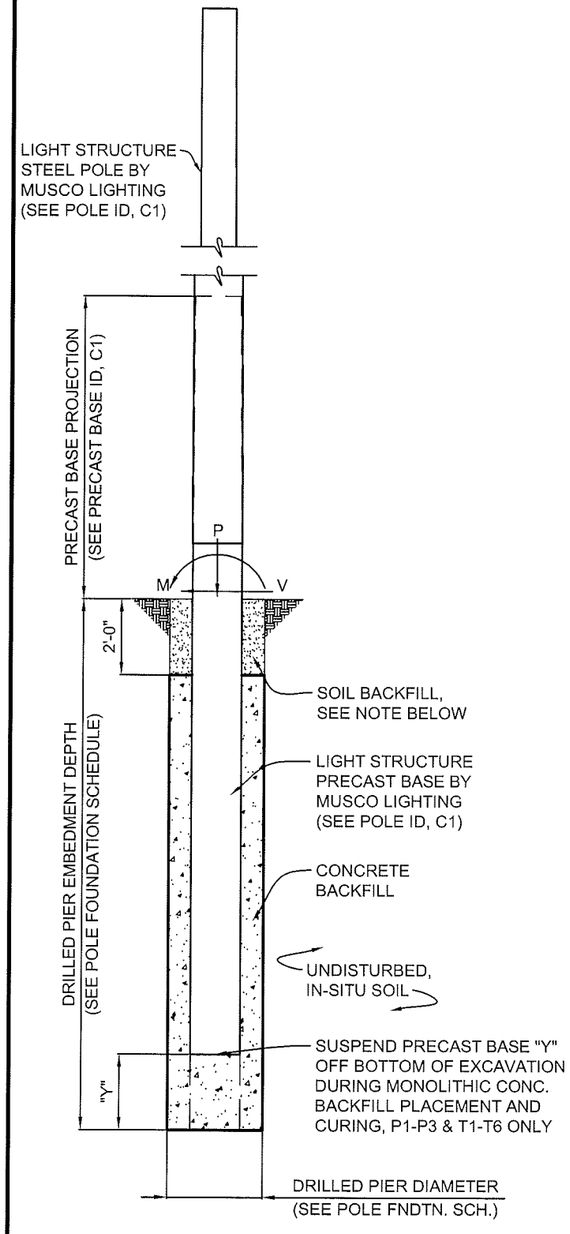
NOTES:
SCAN #156912D

PROJECT NUMBER
156912

DATE
22 DECEMBER 2015

DRAWING NUMBER
C2

OF FOUR



POLE FOUNDATION ELEVATION

SCALE: NOT TO SCALE

SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

POLE FOUNDATION SCHEDULE

POLE DESIGNATION	FORCES (1.)			DRILLED PIER			
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS	DIAMETER INCHES	EMBEDMENT DEPTH	SUSPENSION "Y" (2.)	CONCRETE BACKFILL YD^3 (3.)
A1	72,121	1,635	2,007	36	14'-0"	NA	2.6
F3, F4	148,077	2,689	3,572	42	16'-0"	NA	4.1
P1, P2	17,427	659	540	36	10'-0"	2'-0"	2.0
P3	17,200	653	540	36	9'-0"	1'-0"	1.8
S3, S6	116,914	2,302	3,302	36	16'-0"	NA	2.8
S7	177,095	3,201	4,552	36	18'-0"	NA	2.9
T1, T2, T5, T6	16,521	637	540	36	10'-0"	2'-0"	2.0
T3, T4	29,936	951	957	36	11'-0"	1'-0"	2.2

1. ASD LOAD COMBINATION D+W.
   VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT)
2. SUSPEND PRECAST BASE "Y" OFF THE BOTTOM OF THE EXCAVATION DURING MONOLITHIC CONCRETE BACKFILL PLACEMENT AND CURING. NA = NOT APPLICABLE, SUSPENSION NOT REQUIRED.
3. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.

PORTSMOUTH HS
MULTI-FIELDS
LIGHTING
PORTSMOUTH, NH

musco Lighting
CORPORATE: 100 1st AVE WEST
OSKALOOSA, IA 52577
(800) 825-6020

SEPC OF IOWA
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
EMAIL: MSL.INFO@SEPC.BIZ

DRAWING TITLE:
POLE AND FOUNDATION

SCALE: SEE PLAN

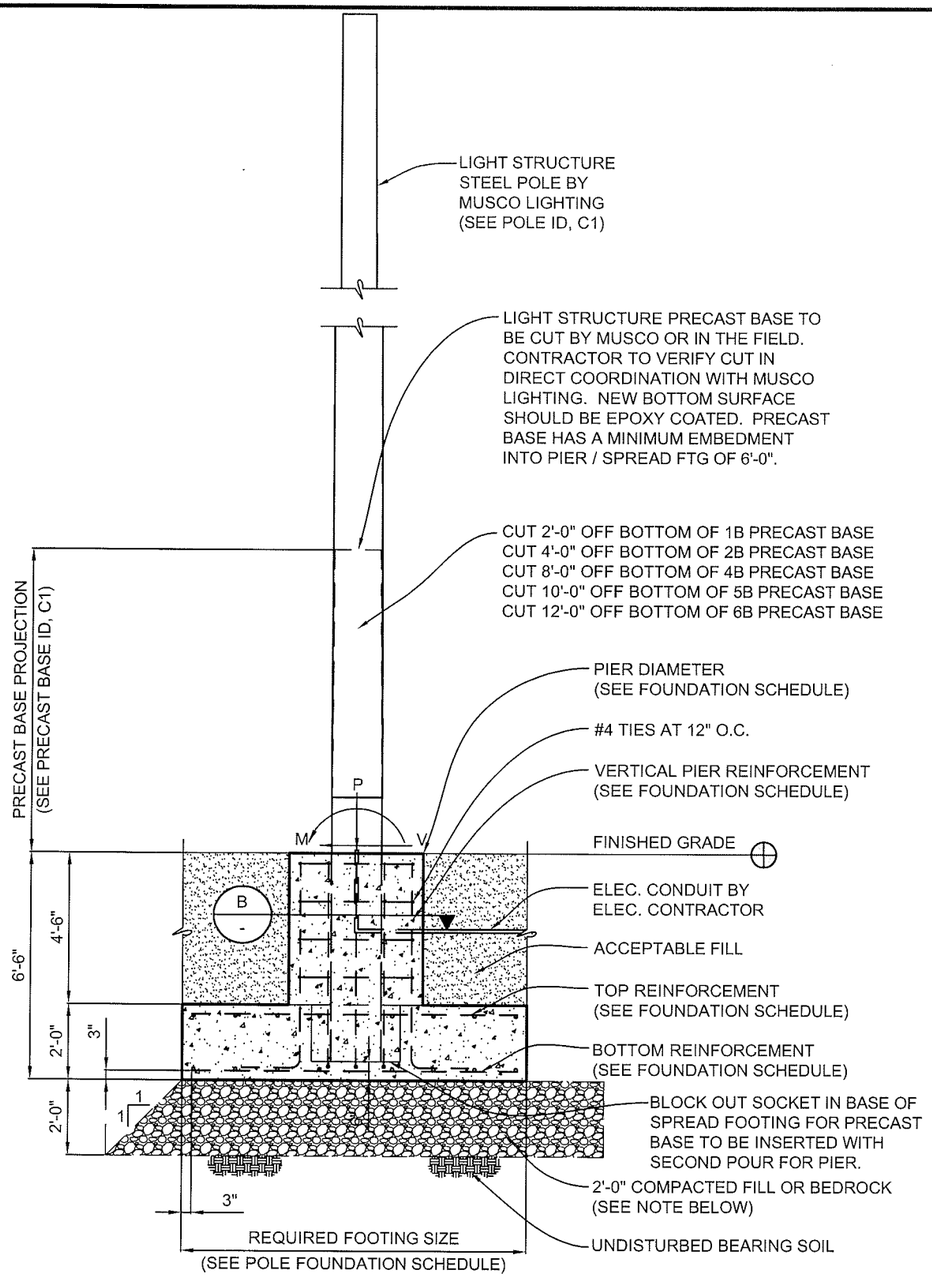
NOTES:
SCAN #156912D

PROJECT NUMBER
156912

DATE
22 DECEMBER 2015

DRAWING NUMBER
C3

OF FOUR



POLE FOUNDATION ELEVATION
SPREAD FOOTING OPTION

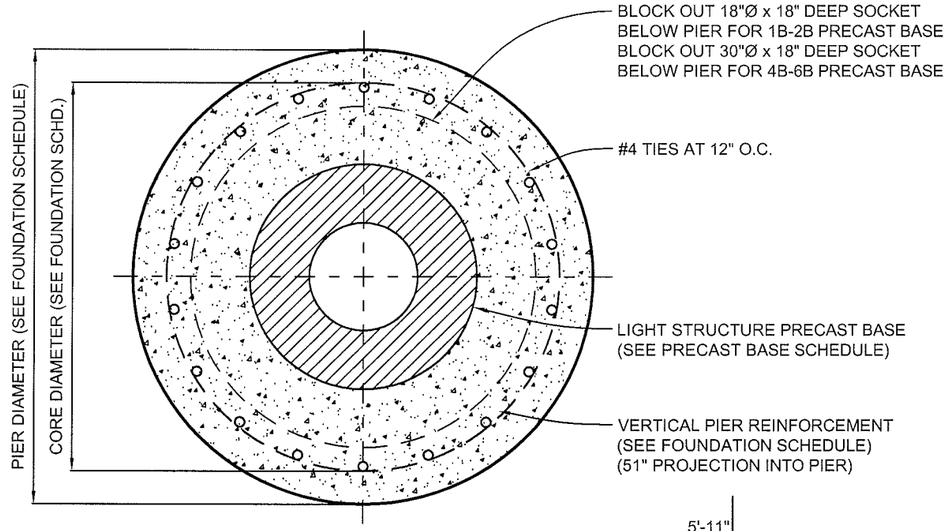
SCALE: NOT TO SCALE

NOTE:
OVER EXCAVATE ANY EXISTING FILL MATERIAL 2'-0" BELOW THE BOTTOM OF THE SPREAD FOOTING TO A DEPTH OF -8'-6" BELOW GRADE. REPLACE THE OVER EXCAVATED AREA WITH COMPACTED STRUCTURAL FILL. THE STRUCTURAL FILL SHOULD BE IBC, TABLE 1806.2, CLASS 3 OR BETTER AND BE COMPACTED TO 98% OF STANDARD PROCTOR. FOOTINGS MAY BEAR ON BEDROCK, OVER EXCAVATION OF BEDROCK IS NOT REQUIRED.

POLE FOUNDATION SCHEDULE - SPREAD FOOTING OPTION

POLE DESIGNATION	FOOTING			PIER		
	SIZE	THICKNESS	REINFORCEMENT TOP & BOTTOM (TOTAL) QUANTITY - SIZE	DIAMETER INCHES	CORE DIA. INCHES (1.)	VERTICAL REINFORCING
A1-A4	9'-0" x 9'-0"	2'-0"	(40) 10 - #7's EACH WAY	48	41	18 - #7
B2-B4	12'-0" x 12'-0"	2'-0"	(48) 12 - #7's EACH WAY	48	41	18 - #7
C2	12'-0" x 12'-0"	2'-0"	(48) 12 - #7's EACH WAY	48	41	18 - #7
C3, C4	10'-0" x 10'-0"	2'-0"	(40) 10 - #7's EACH WAY	48	41	18 - #7
F1, F2	10'-0" x 10'-0"	2'-0"	(40) 10 - #7's EACH WAY	48	41	18 - #7
F3, F4	12'-0" x 12'-0"	2'-0"	(48) 12 - #7's EACH WAY	48	41	18 - #7
P1-P3	6'-6" x 6'-6"	2'-0"	(32) 8 - #6's EACH WAY	36	29	12 - #6
S1, S2, S7	12'-0" x 12'-0"	2'-0"	(48) 12 - #7's EACH WAY	48	41	18 - #7
S3, S6	10'-0" x 10'-0"	2'-0"	(40) 10 - #7's EACH WAY	48	41	18 - #7
T1-T6	6'-6" x 6'-6"	2'-0"	(32) 8 - #6's EACH WAY	36	29	12 - #6

1. CORE DIAMETER EQUAL TO INSIDE DIAMETER OF TIES.



B PIER DETAIL

SCALE: NOT TO SCALE

PORTSMOUTH HS
MULTI-FIELDS
LIGHTING
PORTSMOUTH, NH

musco Lighting
CORPORATE: 100 1st AVE WEST
OSKALOOSA, IA 52577
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SEPC OF IOWA
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
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DRAWING TITLE: POLE AND FOUNDATION
SCALE: SEE PLAN
NOTES: SCAN #156912D

PROJECT NUMBER
156912

DATE
22 DECEMBER 2015

DRAWING NUMBER
C4
OF FOUR

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planning, permitting, design, construction, operation, maintenance

Weston&Sampson®

Portsmouth High School Light Poles
Weston & Sampson Project No. 2140758.K

December 22, 2015

City of Portsmouth, New Hampshire
c/o Michael Moonan
Weston & Sampson
427 Main Street, 4th Floor
Worcester, Massachusetts 01608

RE: Geotechnical Engineering Report
Proposed Light Poles at Portsmouth High School – Portsmouth, New Hampshire

INTRODUCTION

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to present our geotechnical engineering report for the proposed light poles at Portsmouth High School in Portsmouth, New Hampshire. Up to Twenty-eight new light poles are proposed at locations surrounding the existing Portsmouth High School athletic fields. Light poles and foundations currently exist at many of the proposed light pole locations. It is our understanding that new foundations will be required at twenty-three of the locations and existing foundations will be re-used at five locations. Borings were completed at nineteen of the proposed new foundation locations (including two alternative locations in the practice field area) as shown on the attached ***Soil Exploration Plans***. We understand that pole heights will range between 40 ft. and 90 ft. Light pole foundations typically consist of cylindrical precast concrete bases installed in drilled shafts and backfilled with structural concrete.

SITE CONDITIONS

Surface Conditions

The Portsmouth High School Athletic Fields consist of a shared baseball and soccer field, a football field, tennis courts, and a practice field. All fields are located to the south of the school, except for the practice field, which is located to the east of the school. Wetlands border the football and shared baseball and soccer fields to the south, the baseball field to the west, south, and east, the tennis courts on all sides, and the practice field to the south, east, and north.

Based on topographic information provided on Project Plans prepared by Weston & Sampson, surface elevations in the shared baseball and soccer fields slope upward from the south towards the north between approximately El. 11 ft. and 22 ft., are relatively level surface in the baseball field between approximately El. 12 ft. and 14 ft., and are relatively level in the tennis

courts and the practice field at between approximately El. 26 ft. and 28 ft. The elevation datum was not provided on the plans.

Subsurface Explorations
Subsurface conditions at proposed light pole foundation locations were explored by advancing twenty-one borings (B1 through B20 and B14A) to depths up to 46 ft. below the existing ground surface (BGS) at the approximate locations shown on the attached ***Soil Exploration Plans***. The borings were completed between November 2 and 4, 2015 and on December 11, 2015 by New England Boring Contractors of Derry, NH using an ATV-mounted drill rig and hollow stem auger and drive-and-wash casing drilling methods.

Standard penetration tests (SPT) were completed in each boring using a standard 24-in. long by 1⅜-in. inside diameter (2-in. outside diameter) split spoon sampler driven 24 in. by blows from a 140-lb. winch operated safety hammer falling 30-in. per blow. Sampling intervals generally ranged from continuous (every 2 ft.) in the fill and organic soils to every 5 ft. in the underlying native soils. SPT (sampler) refusal, where noted in the attached boring logs, is defined as more than 100 hammer blows for less than six inches of sampler penetration. Auger refusal is defined as no discernable advance of the augers over a period of approximately 5 minutes.

A Weston & Sampson representative observed drilling activities in the field. Subsurface conditions encountered in our explorations are described in the following sections and in the attached ***Boring Logs***.

Subsurface Conditions
Subsurface conditions in the approximately upper 7.5 feet was generally consistent in the borings and consisted of up to 7-inches of topsoil overlying undocumented (non-engineered) FILL to depths ranging between 2 and 7.5 ft. BGS. A layer of BURIED TOPSOIL (organics) was encountered below the fill to depths ranging between 4 and 6.5 ft. BGS in borings B4, B6, B9, and B13. Native, inorganic soil deposits below the fill and organics varied by location as discussed below.

Baseball Field – Borings B1 through B4 were performed at light pole foundation locations around the baseball field. Dense, SILTY SAND with little gravel and little clay and medium stiff to very stiff CLAYEY SILT were encountered below the fill and organics to depths ranging between approximately 7.5 and 12.5 ft. BGS. These deposits were underlain by very soft to medium stiff, moderately plastic CLAY to depths ranging between approximately 20 and 44 ft. BGS. Dense GLACIAL TILL, containing fine to coarse sand with varying amounts of gravel and silt, was encountered below the CLAY in borings B1, B2, and B4. Refusal was encountered directly below the CLAY at an approximate depth of 32 ft. BGS in boring B3.

Shared Baseball and Soccer Fields – Borings B7 through B12 and B18, B19, and B20 were performed at light pole foundation locations around the shared baseball and soccer fields. Borings B9, B11, B19, and B20 encountered similar subsurface conditions below the fill and organics as those encountered in borings around the baseball field. Borings B9, B11, and B19 encountered layers of very stiff, medium dense SAND with little gravel and trace silt, and stiff to very stiff SANDY SILTY to approximately 7.5 ft. BGS. Very soft to stiff, moderately plastic CLAY

was encountered below these layers to depths ranging between 15 and 38 ft. BGS. Dense to very dense glacial till was encountered directly below the clay. Boring B20 was advanced to 34 ft. BGS without sampling to attempt to estimate the top of the glacial till. Gray, gravelly CLAY was encountered at 33 ft. BGS based on a change in auger resistance during drilling and was terminated at 35.5 ft. BGS due to significant heave in the augers.

Borings B7, B8, B10, B12, and B18 encountered layers of dense SAND, very stiff to stiff SANDY SILT, very stiff to hard CLAYEY SILT, and medium dense to very dense GLACIAL TILL below the fill and organics. Boring B18 was advanced through overburden soils without sampling to estimate the top of glacial till. Borings B7, B8, B10, and B12 encountered either sampler or auger refusal at depths ranging between approximately 9.5 and 21.8 ft. BGS. Boring B18 was terminated in the glacial till at 16 ft. BGS.

Tennis Courts and Practice Field – Borings B5 and B6 were performed at light pole foundation locations around the tennis courts and borings B13, B14, B14A, B15, B16, and B17 were performed at light pole foundation locations around the practice field (including alternative light pole foundation areas). Layers of hard SANDY SILT and dense to very dense GLACIAL TILL were encountered below the fill and organics in these borings. Roller bit and sampler refusals were encountered at depths of approximately 13 and 19.1 ft. BGS in borings B5 and B6, respectively. Roller bit and auger refusals were encountered in borings B14, B14A, B15, B16, and B17 at depths ranging between approximately 4.3 and 12.3 ft. BGS. Boring B14A was performed approximately 4 ft. from B14.

It could not be confirmed if the refusals encountered in the borings were on boulders, obstructions, or bedrock. Rock core sampling was not performed at refusal depths to assess the nature of the refusals.

Groundwater

Groundwater was observed in all borings, except in B14, B14A, and B15 at depths ranging between approximately 2 and 6 ft. BGS based on wet samples encountered during drilling. It should be expected that groundwater levels will fluctuate with season, variations in precipitation, construction in the area, and other factors. Perched groundwater conditions could exist close to the ground surface, especially during and after extended periods of wet weather.

GEOTECHNICAL RECOMMENDATIONS

Based on the subsurface conditions encountered in our explorations and our engineering analyses, construction of the proposed light poles is feasible following the recommendations contained herein. The primary geotechnical considerations for the light pole foundations is the presence of very soft clay to depths ranging between approximately 15 ft. and 44 ft. BGS and the possibility of bedrock above precast concrete base support depths. As previously discussed, light pole foundations typically consist of cylindrical precast concrete bases installed in drilled shafts and backfilled with structural concrete. At locations where bedrock exists above precast concrete base support depths, construction of shallow spread footings for support of the light poles will be required. The light pole foundations should be designed in accordance with the provisions of the current

edition of the Massachusetts State Building Code and the Technical Specifications provided by the light pole manufacturer.

Precast Concrete Base Support

The proposed light poles can be supported by precast concrete bases installed in drilled shafts and backfilled with concrete provided bedrock does not exist above proposed support depths. The drilled shafts should extend through the fill, buried topsoil (organics), and clay soils and at least 2 feet into the underlying native medium dense (or denser) glacial till or on bedrock. Drilled shaft excavations will require use of temporary casing and/or drilling fluid to maintain open excavations and support the surrounding ground. All loose and disturbed materials should be removed from the base of the shaft prior to placement of the precast base. Backfill around the precast base should consist of Portland cement concrete with a minimum (28 day) compressive strength of 3,000 pounds per square inch. The concrete should be placed from the bottom of the shaft using a tremie pipe during extraction of the temporary casing.

An allowable bearing pressure of 4,000 psf can be used at the base of the shaft to resist axial loads provided all loose material and slough is removed from the bored hole prior to placement of the precast light pole base and concrete backfill. Skin friction along the shaft sidewall should be ignored when calculating resistance to axial loads.

Resistance to lateral loads can be calculated using the soil parameters in the following tables. Resistance in the top two feet of foundation embedment should be ignored. Groundwater at the ground surface should be assumed.

	SAND FILL	CLAYEY SILT FILL	SILTY SAND
Submerged Unit Weight, lb/ft^3	52.6	52.6	52.6
Soil Angle of Internal Friction, ϕ	30	-	28
Unconfined compressive strength, psf	-	1,500	-
Coefficient of Passive Earth Pressure, K_p (Rankine)	3	-	2.8

	SAND	CLAYEY SILT (Including Buried Topsoil)	CLAY	GLACIAL TILL
Submerged Unit Weight, lb/ft^3	57.6	52.6	42.6	72.6
Soil Angle of Internal Friction, ϕ	30	-	-	35
Unconfined compressive strength, psf	-	1500	100	-
Coefficient of Passive Earth Pressure, K_p (Rankine)	3	-	-	3.7

Shallow Spread Footing Support

Construction of shallow spread footings for support of the light poles could be required at locations where bedrock is above precast concrete base support depths. All fill and organic soils should be

removed from the entire zone-of-stress influence beneath footings to expose the native, inorganic soils or bedrock. The zone-of-influence is defined by planes extending horizontally away from the outside edges of the footings for 2 ft. and then down and away at a 1H:1V slope. Footing bases should be compacted with a 700-pound vibratory plate compactor, or equivalent effort, until firm and stable. Standing water should be removed from excavations prior to placing concrete or fill. In no case shall fill or concrete be installed on frozen soils or in standing water. Compacted 1-1/2-inch crushed stone fill should be used to elevate subgrades up to bottom of footing elevations as necessary.

Backfill around spread footings should consist of Gravel conforming to the requirements of Item 304.2 of the New Hampshire Department of Transportation (NHDOT) Standard Specifications for Road and Bridge Construction. This material should be placed in 10-inch maximum loose lifts, with each lift compacted to a minimum of 95 percent of the materials maximum dry density as determined by ASTM Specification D1557. Material excavated from the footing excavation could be re-used as Gravel provided the material is dry, inorganic, and free of deleterious materials, contains less than 20 percent by weight passing the No. 200 Sieve, and is approved by the geotechnical engineer. Excavated clayey silt, silty clay, and buried topsoil materials are not considered suitable for re-use.

Footings bearing on the materials discussed above should be designed using an allowable bearing pressure of 4,000 psf. The allowable bearing pressure can be increased to 6,000 psf to resist temporary wind and seismic loads provided the resultant load eccentricities remain within the middle third of the footing. Resistance to lateral loads can be obtained by passive pressure against the sides of the footings equivalent to the pressure due to a fluid with a unit weight of 350 pounds per cubic foot (pcf), assuming the top of the fluid is 12 inches below finished grade. Lateral resistance can also be provided by friction along the bottoms of the footings assuming a footing base friction coefficient of 0.45. Footings should be embedded at least 4 ft. below the nearest proposed adjacent ground surface exposed to freezing.

LIMITATIONS

We have prepared this report for use by the City of Portsmouth and the design and construction teams for the proposed light poles on this site, only. The information herein could be used for bidding or estimating purposes but should not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only to the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observation locations. We should be consulted to observe foundation installation. We should be consulted to review final design and specifications in order to see that our recommendations are suitably followed. If any changes are made to the proposed structures, foundation types, or configurations, our recommendations may not be applicable, and we should be consulted.

The preceding recommendations should be considered preliminary, as actual soil conditions may vary. In order for our recommendations to be final, we should be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

It has been a pleasure assisting you with this project and we look forward to our continued involvement. Please call if you have any questions.

Very truly yours,

WESTON & SAMPSON, INC.

Thomas J. Strike, PE
Project Engineer

Mark P. Mitsch, PE
Senior Associate

Attachments:

Soil Exploration Plans (2 pages)
Boring Logs (24 pages)

O:\Portsmouth NH\Portsmouth HS Light Poles\Report\Geotech Letter Report - Portsmouth HS Lightpoles_revised 12.22.15.doc

SOIL EXPLORATION LEGEND:

B-X

BORING 1-20 ON SITE

MATCHLINE

MATCHLINE

MATCHLINE

PHASE #3

PHASE #2

PHASE #3

PHASE #3

PHASE #2

PHASE #3

B-12

B-7

B-11

B-8

B-10

B-18

B-19

B-9

B-20

B-1

B-2

B-3

B-4

B-5

B-6

LOWER SOCCER 1

LOWER SOCCER 2

FOOTBALL FIELD/
TRACK

SOFTBALL FIELD

BASEBALL FIELD 2

TENNIS COURTS

HV1502
22.06

HV1503
13.29

50 100 150

Project:

PORTSMOUTH HIGH SCHOOL

50 ANDREW JACKSON DR.
PORTSMOUTH, NH.

Weston&Sampson

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978-532-1900 (800) Sampson
www.westonandsampson.com

Consultants:

North:

Revisions:

Rev	Date	Description

Seal:

PLANS FOR CONSTRUCTION

Date:	10.22.2015
Scale:	AS SHOWN
Drawn By:	EJA
Reviewed By:	MSM
Checked By:	MSM
Approved By:	

Drawing Title:

SOIL EXPLORATION
PLAN 1 OF 2

Sheet Number:

L0.00

SOIL EXPLORATION LEGEND:

B-X BORING 1-20 ON SITE

B-13 B-17 B-14/14A B-16 B-15 B-12 B-7 B-8 B-11 B-1 B-5 B-6

PHASE #2 PHASE #3

BAND PRACTICE FIELD

LOWER SOCCER 1

FOOTBALL FIELD/ TRACK

TENNIS COURTS

MATCHLINE MATCHLINE MATCHLINE

HV1501 25.83

HV1502 22.06

50 100 150

Project:

PORTSMOUTH HIGH SCHOOL

50 ANDREW JACKSON DR.
PORTSMOUTH, NH.

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Consultants:

North:

Revisions:

Rev	Date	Description

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PLANS FOR CONSTRUCTION

Date:	10.22.2015
Scale:	AS SHOWN
Drawn By:	EJA
Reviewed By:	MSM
Checked By:	MSM
Approved By:	

Drawing Title:

SOIL EXPLORATION
PLAN 2 OF 2

Sheet Number:

L0.01

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PROJECT	REPORT OF BORING No.	B1
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	14 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/3/15	DATE END	11/3/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/3/15	NA	2 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	14/24	0-2	6-15-6-10	Very stiff, gray, CLAYEY SILT FILL, some fine sand, trace gravel; moist.		6" TOPSOIL
		S-2	12/24	2-4	9-11-12-15	Very stiff, gray, CLAYEY SILT FILL, some fine sand, little gravel, trace organics (roots); wet.	1	CLAYEY SILT FILL
5		S-3	12/24	4-6	9-12-20-23	Dense, gray-brown, fine to medium SILTY SAND, little gravel, little clay; wet.		SILTY SAND
10		S-4	15/24	10-12	5-5-2-3	Loose, gray, fine to medium SAND, trace silt; wet. Bottom 3": gray, CLAY, trace fine sand; wet.		
15		S-5	24/24	15-17	WOH/12"-2-1	Very soft, gray, CLAY, trace fine sand; wet.	2	CLAY
							3	
20		S-6	24/24	20-22	4-6-15-16	Top 21": same as above with some fine sand. Medium dense, gray, fine to coarse sandy GRAVEL, little silt; wet.	4	GLACIAL TILL
						Boring terminated at 22 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. WOH = weight of the hammer.
3. Auger grinding below 18 ft.
4. 5 ft. heave in auger at 20 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B1

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PROJECT	REPORT OF BORING No.	B2
Portsmouth High School Light Poles	SHEET	1 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	13 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	3 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	15/24	0-2	5-6-9-11	Medium dense, brown, SILTY SAND FILL, little gravel, trace organics (roots); moist.		5" TOPSOIL
		S-2	0/24	2-4	19-19-21-26	No recovery.	1	SAND FILL
5		S-3	0/24	4-6	13-9-14-10	No recovery.	2	
		S-4	11/24	6-8	10-12-14-19	Very stiff, gray-brown mottled, CLAYEY SILT; wet.		CLAYEY SILT
10		S-5	24/24	9-11	4-4-6-5	Stiff, gray-brown mottled, CLAYEY SILT; wet.	3	
15		S-6	24/24	14-16	WOH/24"	Very soft, gray, CLAY, trace fine sand; wet.	4	CLAY
20		S-7	0/24	19-21	WOR/24"	No recovery.	5	
25		S-8	24/24	24-26	WOR/24"	Very soft, gray, CLAY, trace fine sand; wet.		
30		S-9	24/24	29-31	WOH/24"	Same as above.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level reading taken in hole after casing was removed.
2. Roller bit grinding between 3 and 5 ft.
3. Open hole drilling below 9 ft.
4. WOH = weight of the hammer.
5. WOR = weight of the rod.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B2

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B2
Portsmouth High School Light Poles	SHEET	2 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	13 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	3 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
35		S-10	24/24	34-36	WOH/12"-4-4	Soft, gray, CLAY, little fine sand, little silt; wet.		
40		S-11	10/24	39-41	WOR/18"-2	Very soft, gray, CLAY, trace fine sand; wet.		CLAY
45		S-12	8/24	44-46	16-14-19-36	Dense, gray, fine to coarse SAND, some silt, little gravel; wet.	6	GLACIAL TILL
						Boring terminated at 46 ft.		
50								
55								
60								
65								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

6. Rollerbit grinding at about 44 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B2

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B3
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	12 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/3/15	DATE END	11/3/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	3 ft. +/-	NA	24 hrs.

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	16/24	0-2	3-8-10-9	Medium dense, brown, fine to medium SAND FILL, some gravel, trace silt; moist.		6" TOPSOIL
		S-2	18/24	2-4	8-42-30-31	Very dense, brown, CLAYEY SILT FILL, little fine sand, trace gravel, roots; moist.	1	SAND and CLAYEY SILT FILL
5		S-3	0/24	4-6	80-45-23-21	No recovery.	2	
		S-4	4/24	6-8	34-31-14-8	Very dense, brown, sandy GRAVEL FILL, trace silt; wet.		
10		S-5	8/24	9-11	7-4-2-2	Medium stiff, gray-brown mottled, CLAYEY SILT; wet.	3	CLAYEY SILT
15		S-6	24/24	14-16	WOH/24"	Very soft, gray, CLAY, trace fine sand; wet.	4	CLAY
20		S-7	8/24	19-21	WOR/24"	Same as above.	5	
25		S-8	24/24	24-26	WOR/24"	Same as above.		
30		S-9	12/23	29-30.9	WOR/21"-100/2"	Same as above.		
						Roller bit refusal at 32 ft.	6	

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level reading taken in hole on 11/4/15.
2. Roller bit grinding between 3 and 5 ft.
3. Open hole drilling below 9 ft.
4. WOH = weight of the hammer.
5. WOR = weight of the rod.
6. Rollerbit refusal at 32 ft. (5 minutes grinding, 0" advance).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B3

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B4
Portsmouth High School Light Poles	SHEET	1 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	14 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/3/15	DATE END	11/3/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER: See note 4

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	2.5 ft. +/-	NA	24 hrs.

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	7/24	0-2	6-14-20-9	Hard, dark brown, SILTY SAND FILL, little sand, little gravel, trace organics (roots); moist.		3" TOPSOIL / SAND FILL
		S-2	7/24	2-4	6-7-17-23	Very stiff, dark brown, CLAYEY SILT, little sand, little gravel, trace organics (roots); wet.	1, 2	BURIED TOPSOIL
5		S-3	11/24	4-6	13-9-16-14	Same as above. Bottom 7": without organics.		CLAYEY SILT
10		S-4	1/24	10-12	WOH/24"	Very soft, gray, CLAY, trace fine sand; wet.	3	
15		S-5	23/24	15-17	WOH/18"-1	Same as above.		CLAY
20		S-6	24/24	20-22	WOH/18"-1	Same as above.		
25		S-7	24/24	25-27	1-1-1-1	Same as above.	4	
30		S-8	24/24	29-31	WOH/18"-8	Same as above. Bottom 12": with pockets of some fine sand, little gravel.		
		S-9	24/24	31-33	10-3-5-6	Medium stiff, gray, SANDY CLAY, little silt; wet.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Water level reading taken in hole on 11/4/15.
2. Auger grinding between 3-5 ft.
3. WOH = weight of the rod and hammer.
4. Switched to Drive and Wash method: Driven 4" casing using 300 lb. hammer falling 30 in. Moved location ~3 ft. north. Open hole drilling below 9 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B4

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B4
Portsmouth High School Light Poles	SHEET	2 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	14 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/3/15	DATE END	11/3/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER: See note 4

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	2.5 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
35		S-10	24/24	34-36	9-2-4-4	Top 12": gray, GRAVEL, some clay, little fine sand; wet. Medium stiff, gray, CLAY, little fine sand, trace gravel; wet.		CLAY
40		S-11	16/24	39-41	8-13-22-24	Dense, gray, sandy GRAVEL, some silt; wet.		GLACIAL TILL
						Boring terminated at 41 ft.		
45								
50								
55								
60								
65								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B4

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B5
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	3 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	6/24	0-2	5-19-23-10	Dense, brown, gravelly fine to coarse, SAND FILL, trace silt; moist.		2" TOPSOIL
		S-2	4/24	2-4	9-11-12-12	Medium dense, brown, gravelly, fine to coarse SAND FILL,little silt; moist.	1	SAND FILL
5		S-3	5/24	4-6	23-20-14-8	Hard, brown, SAND SILT, trace organics (roots), trace gravel; wet.	2	BURIED TOPSOIL
		S-4	13/24	6-8	18-24-22-30	Dense, brown-gray, fine to coarse SAND, some gravel, some silt, trace clay; wet.		GLACIAL TILL
10		S-5	11/11	9-9.9	40-100/5"	Very dense, brown, fine to coarse SAND, some gravel, some silt, trace clay; wet.	3 4	
						Roller bit refusal at 13 ft.	5	
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Roller bit grinding between 3 and 4 ft.
2. Water level based on observation of wet sample.
3. Open hole drilling below 9 ft.
4. Roller bit grinding below 9.5 ft.
5. Roller bit refusal (5 minutes grinding, 0" advance) and loss of wash circulation at 13 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B5

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B6
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	3 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	8/24	0-2	2-7-7-9	Medium dense, brown, fine to coarse, SAND FILL, little gravel, trace silt; moist.		3" TOPSOIL
		S-2	3/24	2-4	13-11-6-8	Medium dense, brown, gravelly, fine to coarse SAND FILL, trace to little silt; moist.	1	SAND FILL
5		S-3	7/24	4-6	33-6-5-4	Stiff, gray-brown, CLAYEY SILT, some fine sand, trace organics (roots); wet.	2	BURIED TOPSOIL
		S-4	24/24	6-8	10-17-29-35	Top 8": becomes hard with little organics. Dense, gray, fine to medium SAND, some silt, little gravel; wet.		
10		S-5	5/24	9-11	33-71-76-99	Very dense, brown, fine to coarse sandy GRAVEL, little to some silt; wet.	3	GLACIAL TILL
15		S-6	12/17	14-15.4	45-60-100/5"	Same as above.		
20		S-7	0/1	19-19.1	100/1"	No recovery.	4	
						Sampler refusal at 19.1 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Roller bit grinding between 3 and 4 ft.
2. Water level based on observation of wet sample.
3. Open hole drilling below 9 ft.
4. Roller bit grinding below 18 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B6

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B7
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	16 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	4 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	13/24	0-2	4-3-11-9	Medium dense, brown, fine to coarse SAND FILL, some gravel, some silt; moist.		6" TOPSOIL SAND FILL
		S-2	18/24	2-4	6-6-10-20	Very stiff, brown-gray mottled, SILTY CLAY FILL, some fine sand, trace gravel; moist.		SILTY CLAY FILL
5		S-3	12/24	4-6	19-15-15-20	Dense, brown, fine to coarse SAND, little gravel, little silt; wet.	1	SAND
10		S-4	24/24	10-12	1-5-19-15	Very stiff, gray, CLAYEY SILT, some fine sand; wet. Bottom 6": gray, fine to coarse sandy GRAVEL, little silt; wet.	2	CLAYEY SILT GLACIAL TILL
15		S-5	14/24	15-17	6-4-7-3	Medium dense, gray, fine to coarse SAND, some gravel, little silt; wet.		
20		S-6	17/22	20-21.8	3-11-14-100/4"	Medium dense, gray, fine to coarse SAND, some gravel, little silt; wet.		
						Sampler refusal at 21.8 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. Auger grinding between 12 and 15 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B7

planning, permitting, design, construction, operation, maintenance Weston&Sampson®

PROJECT	REPORT OF BORING No.	B8
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	15 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	4 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	3/24	0-2	9-9-6-11	Medium dense, brown, fine to medium SAND FILL, little gravel, little silt; moist.		3" TOPSOIL/MULCH
								SAND FILL
		S-2	13/24	2-4	11-14-21-24	Hard, brown, CLAYEY SILT, trace fine sand; moist.		
5		S-3	16/24	4-6	18-22-19-19	Hard, brown-gray mottled, CLAYEY SILT, trace fine sand; wet.	1	CLAYEY SILT
							2	
10						Auger refusal at 9.5 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. Auger grinding starting at 9 ft. Auger refusal at 9.5 ft. (5 minutes grinding, 0" advance).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B8

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B9
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	11 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	2 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	8/24	0-2	3-8-6-10	Medium dense, brown, fine to medium SAND FILL, some gravel, little silt; moist.		3" TOPSOIL / SAND FILL
		S-2	12/24	2-4	2-3-5-5	Medium, dark gray, CLAYEY SILT, little fine sand, trace gravel, roots; wet.	1	BURIED TOPSOIL
5		S-3	24/24	4-6	5-10-11-20	Top 4": same as above with little organics (roots). Very stiff, brown-gray mottled, CLAYEY SILT, little fine sand; wet.		CLAYEY SILT
10		S-4	24/24	10-12	1-1/12"-1	Very soft, gray, SILTY CLAY, trace fine sand, wet.		CLAY
15		S-5	24/24	15-17	WOH/24"	Very soft, gray, CLAY; wet.	2	
20		S-6	24/24	20-22	80-96-24-24	Very dense, brown, fine to coarse sandy GRAVEL, little silt; wet.		GLACIAL TILL
						Boring terminated at 22 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. WOH = weight of the hammer.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B9

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B10
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	12 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	4 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	12/24	0-2	2-6-7-7	Medium dense, brown, SILTY SAND, little gravel; moist.		7" TOPSOIL
								SILTY SAND
		S-2	0/24	2-4	4-6-9-11	No recovery.		
5		S-3	24/24	4-6	9-15-22-18	Hard, gray-brown mottled, CLAYEY SILT, little fine sand; wet.	1	CLAYEY SILT
10		S-4	15/15	10-11.3	7-1-100/3"	Top 8": hard, gray, CLAYEY SILT, some sand; wet. Very dense, gray, fine to coarse SAND, some gravel; wet.	2	GLACIAL TILL
						Auger refusal at 11.3 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. Auger refusal at 11.3 ft. (5 minutes grinding, 0" advance).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B10

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B11
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	18 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	2 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	16/24	0-2	3-5-11-16	Medium dense, brown-gray, fine to medium SAND, little gravel, little silt; moist.		6" TOPSOIL
		S-2	16/24	2-4	10-11-13-16	Medium dense, brown, fine to medium SAND, little gravel, trace silt; wet.	1	SAND
5		S-3	24/24	4-6	11-12-15-15	Same as above.		
10		S-4	18/24	10-12	WOH/18"-1	Very soft, gray, CLAY; wet.	2	CLAY
15		S-5	12/24	15-17	WOR/6"-9-8-2	Medium dense, gray, fine to medium SAND, little clay; wet.	3	GLACIAL TILL
20		S-6	6/24	20-22	33-23-20-19	Dense, gray, fine to coarse SAND, some gravel, little silt; wet.	4	
						Boring terminated at 22 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. WOH = weight of the hammer.
3. WOR = weight of the rod.
4. Auger grinding below 19 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B11

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B12
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	David Thompson	GROUND SURFACE ELEV.	22 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/2/15	DATE END	11/2/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/2/15	NA	6 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	11/24	0-2	3-8-9-10	Medium dense, brown, SILTY SAND FILL, trace gravel; moist.		3" TOPSOIL / SAND FILL
		S-2	19/24	2-4	5-9-11-14	Medium dense, brown, SILTY SAND, trace gravel, little clay; moist.		SILTY SAND
5		S-3	11/24	4-6	36-37-26-33	Very dense, brown, fine to coarse SAND, some gravel, little silt; moist.	1	GLACIAL TILL
10		S-4	12/18	10-11.5	15-9-65-100/0"	Very dense, brown, gravelly SAND, little silt; wet.	2	
						Auger refusal at 11.5 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level measured in hole after casing was removed.
2. Auger refusal at 11.5 ft. (5 minutes grinding, 0" advance).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B12

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B13
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
11/4/15	NA	4 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	13/24	0-2	3-7-7-7	Medium dense, dark brown, fine to medium SAND FILL, some silt, little gravel, trace organics; moist.		3" TOPSOIL / SAND FILL
		S-2	16/24	2-4	9-9-22-24	Top 8": Hard, dark brown sandy SILT, roots; moist. Dense, gray, fine to medium SAND, little gravel, little silt; moist.	1	BURIED TOPSOIL
5		S-3	12/24	4-6	29-29-19-34	Dense, brown-gray, SILTY SAND, some gravel; wet.	2 3	GLACIAL TILL
10		S-4	6/24	9-11	67-76-28-13	Very dense, brown, fine to coarse SAND, some gravel, little silt; wet.	4	
						Roller bit refusal at 12.3 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Water level based on observation of wet sample.
2. Open hole drilling below 4 ft.
3. Roller bit grinding below 6 ft.
4. Roller bit refusal at 12.3 ft. (5 minutes grinding, 4" advance)

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B13

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B14
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	11/24	0-2	5-8-6-8	Medium dense, brown, fine to medium SAND FILL, some silt, little gravel; moist.		3" TOPSOIL
								SAND FILL
		S-2	12/24	2-4	8-100/5"	Very dense, brown, fine to coarse SAND, some gravel, little silt; moist.	1, 2	GLACIAL TILL
		S-3	0/0	4-	100/0	No penetration.	3	
5						Roller bit refusal at 4.3 ft.		
10								
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Casing refusal at 3 ft.
2. Roller bit grinding below 3 ft.
3. Roller bit refusal at 4.3 ft. (10 minutes grinding, 4" advance).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B14

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B14A
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Ben Cross	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	11/4/15	DATE END	11/4/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. WINCH OPERATED SAFETY HAMMER.

CASING: DRIVEN 4" CASING USING A 300 LB. HAMMER FALLING 30 IN. AND THE DRIVE AND WASH TECHNIQUE

CASING SIZE: 4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0								
							1	
		S-1	0/1	4-4.1	100/1	No recovery.	2, 3	
5						Roller bit refusal at 4.5 ft.		
10								
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Casing refusal at 4 ft.
2. Roller bit refusal at 4.5 ft. (5 minutes grinding, 4" advance).
3. Boring advanced about 4 ft. west of B14.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B14A

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B15
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	29 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed. See note 5.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	14/24	0-2	3-13-28-57	Dense, brown, gravelly, fine to coarse SAND FILL, little to some silt; moist.	1	4" TOPSOIL / SAND FILL
		S-2	7/24	2-4	34-34-28-22	Very dense, brown, sandy, coarse GRAVEL, trace silt; moist.	2	GLACIAL TILL
5		S-3	10/15	4-5.3	26-68-100/3"	Very dense, brown, sandy, coarse GRAVEL, trace silt; moist.	3,4	
10						Auger refusal at 7.5 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Spoon tilted north while driving from 1 ft. to 5.3 ft.
2. Auger grinding from 3.5 to 7.5 ft.
3. Slight change in grinding from 6.5 ft. to 7.5 ft.
4. Auger refusal at 7.5 ft. (5 minutes grinding, less than 2" advance)

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B15

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B16
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	28 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		5.3 ft. +/-	5.8 ft.	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	20/24	0-2	2-6-12-12	Medium dense, brown, gravelly, fine to coarse SAND FILL, little to some silt; moist.		4" TOPSOIL
								SAND FILL
		S-2	19/24	2-4	23-32-30-45	Very dense, brown-orange mottled, gravelly, fine to coarse SAND, some silt; moist.		GLACIAL TILL
5		S-3	13/13	4-5.1	23-32-100/1"	Very dense, brown, gravelly, fine to coarse SAND, some silt; moist.	1	
						Auger refusal at 5.8 ft.	2,3,4	
10								
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Auger grinding below 4.8 ft.
2. Auger refusal at 5.8 ft. (5 minutes grinding, less than 2" advance)
3. Groundwater observed in hole after drilling.
4. Bedrock and/or boulders observed in wooded area south of boring.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B16

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B17
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	26 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		8 ft. +/-	8.5 ft.	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	17/24	0-2	4-8-9-6	Medium dense, brown, gravelly, fine to coarse SAND FILL, little to some silt; moist.		3" TOPSOIL
								SAND FILL
		S-2	14/24	2-4	6-6-7-10	Top 6": same as above. Medium dense, brown SILTY SAND, some organics (roots), trace gravel; moist.	1	SILTY SAND
5		S-3	15/24	4-6	12-14-13-16	Medium dense, gray-brown mottled, fine to medium SILTY SAND, little gravel, trace clay; moist.		
							2	GLACIAL TILL
		S-4	1/1	8.5-8.6	100/1"	Very dense, brown-gray, GRAVEL, some sand, some silt; wet.	3	
10						Auger refusal at 8.6 ft.		
15								
20								
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Bottom 6": becomes gray, without organics, trace clay.
2. Auger grinding below 7.5 ft. Auger leaning north west.
3. Groundwater observed in hole after drilling.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B17

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B18
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	15 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		5 ft. +/-	14 ft.	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0							1	6" TOPSOIL
5							2	SAND TO SILTY CLAY
10							3	
15		S-1	13/24	14-16	19-24-20-18	Dense, brown, gravelly, fine to coarse SAND, little to some silt; wet.	4	GLACIAL TILL
20						Boring terminated at 16 ft.		
25								
30								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Advance boring through overburden soils to estimate top of glacial till.
2. Groundwater reading taken after termination
3. Auger change observed at ~7 ft. (Blue-gray-orange SILTY CLAY cuttings observed).
4. Auger grinding below 12.5 ft.; estimated as top of glacial till.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B18

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B19
Portsmouth High School Light Poles	SHEET	1 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	13 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		2.5 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	14/24	0-2	3-7-7-5	Very dense, brown, fine to coarse SAND FILL, some gravel, some silt; moist.		7" TOPSOIL
								SAND FILL
		S-2	17/24	2-4	10-7-9-14	Stiff, dark gray, fine to medium SANDY SILT, some clay; most. Bottom 7": becomes orange-gray.		
5		S-3	16/24	4-6	11-14-9-14	Very stiff, orange-gray, SILTY CLAY, some fine to medium sand; wet.	1	SANDY SILT
10		S-4	24/24	9-11	1/12"-1-1	Very soft, gray, CLAY, some silt, trace fine to medium sand; wet.		
15		S-5	24/24	14-16	WOR/6"-WOH/18"	Very soft, gray, CLAY, little to some silt, trace fine to medium sand; wet.	2,3	
20		S-6	24/24	19-21	WOH/24"	Very soft, gray, CLAY, little silt, trace fine sand; wet.		CLAY
25		S-7	24/24	24-26	WOH/12"-2-1	Very soft, gray, CLAY, some silt, little fine to medium sand; wet.		
30		S-8	24/24	29-31	WOH/12"-8-5	Stiff, gray, CLAY, some silt, little fine to medium sand; wet. Bottom 4": loose, gray, fine to medium SAND, trace clay, trace silt; wet.	4	
		S-9	24/24	34-36	WOH/12"-3-1	Soft, gray, CLAY, little to some silt, trace fine to medium sand; wet.	5	

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Groundwater observed in hole prior to advancing augers
2. WOR - weight of rods
3. WOH = weight of hammer
4. Auger change at ~30 ft.
5. Open hole below 34 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B19

planning, permitting, design, construction, operation, maintenance **Weston&Sampson**®

PROJECT	REPORT OF BORING No.	B19
Portsmouth High School Light Poles	SHEET	2 OF 2
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	13 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		2.5 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
35								
		S-10	24/24	36-38	WOR/12"-5-12	Medium stiff, gray, CLAY, little to some silt, trace fine sand; wet. Bottom 6": gray, gravelly, fine to medium SAND, some clay, trace silt; wet.		CLAY
		S-11	12/12	38-39	13-23 (see note 6)	Gray, gravelly, fine to coarse SAND, little silt; wet.	6	GLACIAL TILL
40						Boring terminated at 39 ft.		
45								
50								
55								
60								
65								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

6. Due to lack of rods, spoon only driven 12 inches.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B19

planning, permitting, design, construction, operation, maintenance **Weston&Sampson®**

PROJECT	REPORT OF BORING No.	B20
Portsmouth High School Light Poles	SHEET	1 OF 1
Portsmouth, NH	Project No.	2140758.K
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Walter Hockele	GROUND SURFACE ELEV.	11 ft. +/-	DATUM	NA
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	12/11/15	DATE END	12/11/15

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED SAFETY HAMMER.

CASING: HOLLOW STEM AUGER

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
12/11/2015		3 ft. +/-	NA	NA

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0							1	
							2	
5							3	
10								
15								
20								CLAY
25								
30							4	
		S-1	18/18	34-35.5	16-13-15	Gray, gravelly CLAY, some sand, wet.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Advance boring through overburden soils to estimate top of till or load bearing soils.
2. Groundwater reading taken after termination.
3. Auger change observed at ~4 ft. (Blue-gray-orange SILTY CLAY cuttings observed)
4. Auger change at 33 ft. Approximately 10 ft. of heave in sample S1. Blow counts do not accurately represent density.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B20