Addendum #2

Bid # 54-23 Portsmouth High School
Athletic Complex Tennis Court Construction Project

Bid questions submitted

1. Summary of Work section calls out a finish date of October 30, 2023 but the Invitation to Bid sections calls out a final completion date of April 1, 2024. Please clarify which is correct.

   Response: This was covered under addendum #1, completion of the work will be expected by April 1, 2024

2. Please clarify where the precast concrete curb is required.

   Response: The detail shown on the plans was held over from a previous design version and will not be required during construction.

3. Clarify whether the ADA Pathway from the parking is just being painted or shall existing paving be removed, repaved and painted.

   Response: The ADA Pathway from parking is scheduled to only be painted. No new asphalt is proposed in this area.

4. Where is the Stone Dust at Fountain detail shown on DN-02 required?

   Response: This detail is not required for this project. Disregard this detail.

5. Alternates 5, 6 & 7 are not written out on the bid forms.

   Response: Please see attached Revised Bid Form for additional items included.

6. Please provide specification sections, details and pattern design (for bidding purposes) for alternates 6 & 7.

   Response: Contractor to provide alternate pricing based on areas shown for specific paving types based on best practices for installation. Final pattern will be determined at a later point if alternate is exercised.

7. Is the fence on the southeast concrete pad part of the base bid or alternate?

   Response: The fence will be part of the base bid.

Addendum #2

Bid # 54-23 Portsmouth High School
Athletic Complex Tennis Court Construction Project

8. The concrete pad detail has a note stating to see details sheet for control joint detail and expansion joint detail but one is not provided. Please provide those details.

   Response: See attached SK-1 for additional details for expansion and control joints in concrete pads.

9. Please confirm only the fence divider locations are where the height changes from 10' to 3.5' high.

   Response: Yes, there will be one section at the 10' height, one transition section and two sections at the 3.5' height, only at the fence divider locations.

10. Please provide chain link fence and gate specifications section.

    Response: See attached Chain Link Fence Specification.

11. Site Clearing spec states to strip topsoil 12" but the Geotech only shows between 3" & 4" and an average of 3.5" of topsoil. Please clarify which shall be carried in the bid.

    Response: The contractor is required to remove all topsoil to a depth of 12". Some areas may only require 3-4" of removal while others require a greater amount.

12. Please provide the Geotech report called out in the earthmoving spec.

    Response: See attached Geotechnical Report.

13. Please provide basis of design of the metal roof foundation design for bidding purposes.

    Response: The basis of design was a Polygon - RAM12x22MR 12' x 22' Rectangular Hip Roof with Multi-Rib Metal Roof. Supplier is M.E. O'Brien and Sons, Inc. Phone: 508-359-4200.

14. How many of the existing highbush blueberry should we carry to transplant?
    Response: You should anticipate transplanting approximately 15 Highbush Blueberry.

Addendum #2

Bid # 54-23 Portsmouth High School
Athletic Complex Tennis Court Construction Project

15. Would additional plants noted on DM-01 be a change order to the contract?

Response: The contractor should plan to install the following plant material:
9- Clethra alnifolia (5 gal.)
3- Viburnum dentatum (7 gal.)
5- Cornus amomum (5 gal.)
7- Cornus sericea (5 gal.)
Any additional plants will be handled as a change order.

Bidder will acknowledge this addendum within your proposal. Failure to do so may subject bidder to disqualification.

End of Addendum 2

Revised Price Proposal Form

TOTAL FOR PROJECT AND BASIS OF AWARD

Total in Figures $_____

In Words $_____

Alternate #1 – One (1) 16’ x 24’ Rectangular Shade Structure (Footings and concrete pad to be part of base bid)

Total in Figures $_____

In Words $_____

Add Alternate #2 – Two (2) 12’ x 22’ Rectangular Players Shade Structure (Footings and concrete pad to be part of base bid)

Total in Figures $_____

In Words $_____

Add Alternate #3 – One (1) Privacy Screen between courts

Total in Figures $_____

In Words $_____

Add Alternate #4 – Two (2) 27’ Three Row Bleachers (Concrete pads part of base bid) & Three (3) 27’ Four Row Bleachers (footing and concrete pads to be part of base bid)

Total in Figures $_____

In Words $_____

Add Alternate #5 – Four (4) 21' All Aluminum Player Benches

Total in Figures $_____

In Words $ _____

Add Alternate #6 Replace Bituminous Pathway with Break Line with Pervious Bituminous Concrete

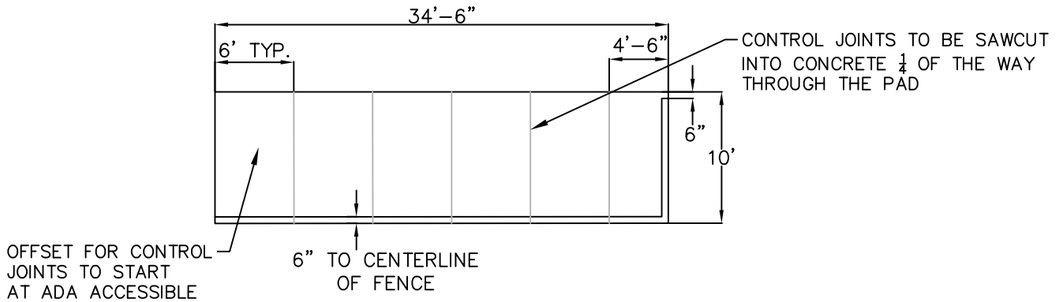
Total in Figures $_____

In Words $_____

Add Alternate #7 Replace Bituminous Pathway with Pervious Concrete Pavers Bricked Shape, Vehicular Rates and Grey in Tone, Pattern TBD.

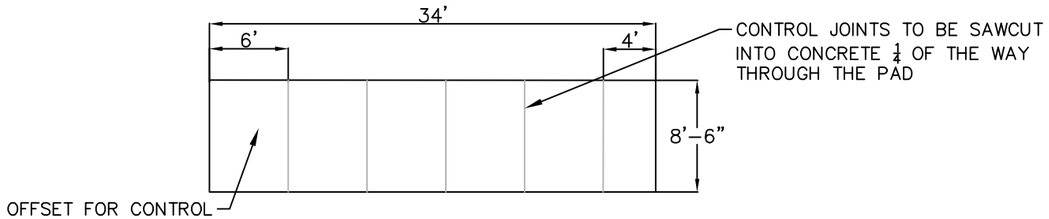
Total in Figures $_____

In Words $_____



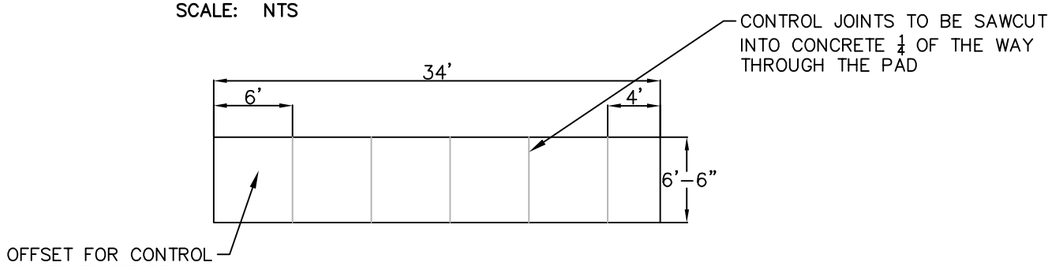
27' FOUR ROW BLEACHER ON CONCRETE PAD WITH FENCE

SCALE: NTS



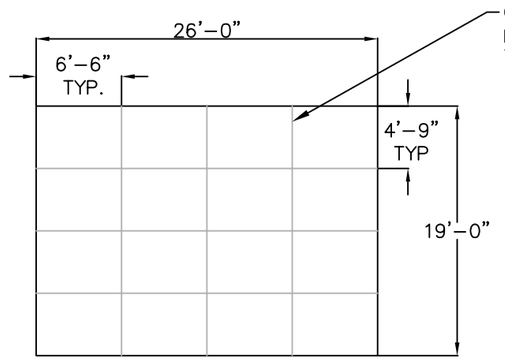
27' FOUR ROW BLEACHER ON CONCRETE PAD

SCALE: NTS



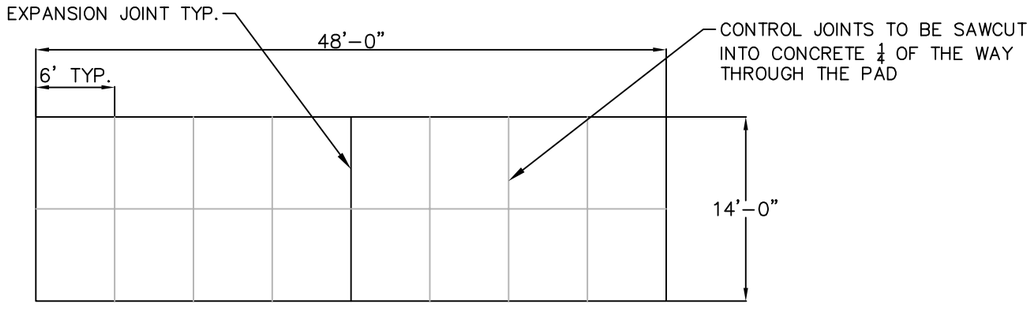
27' THREE ROW BLEACHER ON CONCRETE PAD

SCALE: NTS



CONCRETE PAD AT 16x24 RECTANGULAR HIP ROOF STRUCTURE

SCALE: NTS



CONCRETE PAD AT 2 - 12x22 RECTANGULAR HIP ROOF STRUCTURES

SCALE: NTS

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

355 Research Parkway
Meriden, CT 06450
(203) 630-1406
(203) 630-2615 Fax

SKETCH PLAN 1

PORTSMOUTH HIGH SCHOOL TENNIS COURTS
50 ANDREW JARVIS DRIVE
PORTSMOUTH, NEW HAMPSHIRE

Designed	JCW
Drawn	JCW
Reviewed	
Scale	NOT TO SCALE
Project No.	2101920
Date	08/03/2023
CAD File	

SK-1

Xref (s): ; BD2100875 ; XC210192001 ; XZ210192001

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Chain-link fences.
2. Gates: swing.

B. Related Sections:

1. Division 03 Section "Cast-in-Place Concrete" for cast-in-place concrete post footings.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:

1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 10 feet high, and post spacing not to exceed 8 feet.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.

1. Fence and gate posts, rails, and fittings.
2. Chain-link fabric, reinforcements, and attachments.
3. Gates and hardware.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.

C. Samples for Initial Selection: For components with factory-applied color finishes.

D. Samples for Verification: Prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

E. Delegated-Design Submittal: For chain-link fences and gate framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

F. Qualification Data: For qualified professional engineer.

G. Product Certificates: For each type of chain-link fence, operator**,** and gate, from manufacturer.

H. Product Test Reports: For framing strength according to ASTM F 1043.

I. Field quality-control reports.

J. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:

1. Polymer finishes.
2. Gate hardware.

K. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing fence grounding. Member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Mockups: Build mockups to set quality standards for fabrication and installation.

1. Include 10-foot length of fence and gate.

C. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.
2. Review sequence of operation for each type of gate operator.
3. Review coordination of interlocked equipment specified in this Section and elsewhere.
4. Review required testing, inspecting, and certifying procedures.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Faulty operation of gate operators and controls.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire Fabric: Wire with a diameter of No. 6 gauge, 0.148” or as indicated on Drawings.

   a. Mesh Size: 2 inches or as indicated on the plans.
   b. Polymer-Coated Fabric: ASTM F 668, Class 1 over zinc coated steel wire.

      1) Color: Black, complying with ASTM F 934.

   c. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.

3. Selvage: Knuckled at both selvages.

2.2 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:

1. Fence Height: As indicated on Drawings.

2. Heavy Industrial Strength: Material Group IC, round steel pipe, electric-resistance-welded pipe.

    a. Line Post: 2.875 inches or as indicated on Drawings.
    b. End, Corner and Pull Post: 4.0 inches or as indicated on Drawings.

3. Horizontal Framework Members: Top and bottom rails complying with ASTM F 1043.

    a. Top and Bottom Rail: 1-5/8 inches in diameter or as indicated on Drawings.

4. Polymer coating over metallic coating.

    a. Color: Match chain-link fabric, complying with ASTM F 934.

2.3 TENSION WIRE

A. Polymer-Coated Steel Wire: No. 7 gage, tension wire complying with ASTM F 1664, Class 1 over zinc-coated steel wire.

1. Color: Match chain-link fabric, complying with ASTM F 934.

2.4 SWING GATES

A. General: Comply with ASTM F 900 for gate posts and single and double swing gate types.

1. Gate Leaf Width: As indicated.
2. Gate Fabric Height: As indicated.

B. Pipe and Tubing:

1. Polymer-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing. Color: Match chain-link fabric, complying with ASTM F 934.
2. Gate Posts: Round tubular steel. Color: Match chain-link fabric, complying with ASTM F 934.
3. Gate Frames and Bracing: Round tubular steel. Color: Match chain-link fabric, complying with ASTM F 934.

C. Frame Corner Construction: Welded.

D. Hardware:

1. Hinges: 360-degree inward and outward swing.
2. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate and ADA U-shaped.
3. Color: Match chain-link fabric, complying with ASTM F 934.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Pressed-steel not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting bottom rails in the fence line-to-line posts.

E. Tension and Brace Bands: Pressed steel.

F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:

a. Hot-Dip Galvanized Steel: 0.148-inch diameter wire**;** galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.

a. Polymer coating over metallic coating. Color: Match chain-link fabric, complying with ASTM F 934.

2.6 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries**,** site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Engineer.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.

1. Install fencing on established boundary lines inside property line.

3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    a. Concealed Concrete: Top 2 inches below grade to allow covering with surface material.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts uniformly at 8 feet o.c.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at mid-height of fabric 72 inches or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:

1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Bottom Rails: Install and secure to posts with fittings.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach

other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.5 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.6 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 32 31 13

GEI Consultants

Consulting Engineers and Scientists

November 7, 2022
Project 2104563

Mr. Dominick J. Celtruda, PLA, ASLA
Lead Landscape Architect, Project Manager
BL Companies
100 Constitution Plaza, 10th Floor
Hartford, CT 06103

Dear Mr. Celtruda:

Re: **Results of Test Pits and Laboratory Testing**
New Tennis Courts
Portsmouth High School
Portsmouth, New Hampshire

This report presents the results of our subsurface exploration program and our geotechnical recommendations for the proposed tennis courts at the Portsmouth High School, in Portsmouth, New Hampshire.

Project Understanding

The site for the new tennis courts is located on the east side of the campus of Portsmouth High School, in Portsmouth, New Hampshire (Fig. 1).

The site is currently partially occupied by four paved tennis courts. The remainder of the site is wooded area adjacent to the existing tennis courts. The surface of the existing tennis courts is at about El. 27 which is about 2 to 8 feet above the surrounding area. The ground surface rises to about El. 35 to the northeast of the existing courts. There are numerous bedrock outcrops in the high ground in this area. There are wetlands with an intermittent stream running east to west, adjacent to the north corner of the existing tennis courts.

The project consists of demolishing the existing four tennis courts and constructing six new tennis courts (Fig. 2). We understand that the plan is to pulverize the pavement of the existing tennis courts in place and use it as subbase for the pavement for the new tennis courts. The new tennis courts will be constructed at about the same elevation as the existing tennis courts (El. 27).

The project will also include installing two new Musco Light towers. We understand that Musco will design the light tower foundations.

Scope of Work

Our scope of work consisted of the following:

- Performing two standard penetration test borings and ten pavement core borings to observe soil conditions and pavement subbase soils.
- Performing mechanical sieve analyses on three soil sample collected from the borings.

GEI Consultants, Inc.
400 Unicorn Park Drive, Woburn, MA 01801
781.721.4000

- Developed recommendations for subgrade preparation for paved tennis courts, driveways, and parking areas.
- Prepared this letter presenting the results of the explorations and our geotechnical recommendations for the proposed tennis courts.

Exploration Program

We engaged Northern Drill Service, Inc. of Northborough, Massachusetts to drill two Standard Penetration Test (SPT) borings (B-101 and B102) and 10 pavement core borings (PC-1 through PC-10). The work was completed between December 6 and December 7, 2021. The SPT borings were performed at or near locations of proposed light posts to collect information to support foundation design recommendations. The pavement core borings were performed within the existing tennis courts to document the thickness of the pavement and the pavement subbase soils.

The SPT borings were advanced using rotary wash techniques with driven casing. SPTs and split-spoon samples were collected continuously to top of rock. SPTs were performed with an automatic hammer. Bedrock was encountered at 5 feet below ground surface in B-101 (possibly weathered rock at a depth of 3.5 feet) and at 8 feet below grade in B-102. We cored about 10 feet of rock in B-101.

At each pavement core location, we collected a four-inch diameter core of the pavement followed by two consecutive split spoon samples of the subbase and subgrade soils.

The borings and pavement cores were backfilled with soil cuttings and gravel. The pavement cores were patched with asphalt cold patch.

A GEI engineer monitored the drilling and logged the explorations. Exploration locations are shown in Fig. 2. Exploration logs are provided in Appendix A.

2015 Borings by Weston & Sampson

Weston & Sampson (W&S) engaged New England Boring Contractors, Inc. from Derry, New Hampshire, to drill 15 borings at various locations around Portsmouth High School in 2015 to support the design of the light pole foundations. Two of the borings (B-5 and B-6) were drilled adjacent to the existing tennis courts. The boring locations are shown in Fig. 2. The boring logs are provided in Appendix B.

Laboratory Testing

We performed mechanical grain-size tests on one soil sample obtained from the SPT borings and two samples from the pavement core borings in general accordance with ASTM Standard D6913. The laboratory testing results have been incorporated to our boring logs descriptions and the grain-size distribution curves are presented in Appendix C.

Subsurface Conditions

The soil layers encountered in the borings are described below in order of increasing depth. The soil conditions are known only at the boring locations. Subsurface conditions between borings may differ significantly from those described below.

As discussed above, Standard Penetration Testing was performed using an automatic hammer. We corrected the Standard Penetration Test N-values for energy (N_{60}) based on energy measurements of similar automatic hammer systems collected from previous GEI projects.

Corrected N-values (N_{60}) are used in the discussion of subsurface conditions below. Field (uncorrected) SPT N-values are shown on the boring logs in Appendix A.

Asphalt: The thickness of the cores in the pavement borings was between 3 and 3.75 inches.

Topsoil: In the SPT borings, topsoil was between 3 and 4 inches thick.

Sub-Base: A five- to eight-inch layer granular sub-base was encountered below the asphalt in all the pavement core explorations. We performed one grain size distribution test in this layer. The sub-base generally consisted of narrowly graded sand with gravel and ~5% of nonplastic fines. A black geotextile separation layer was encountered in all the pavement core locations below the sub-base, at a depth ranging between 5 and 8 inches.

Granular Fill: Below the geotextile, a fill layer was encountered in the pavement core borings, typically between 5 to 12 inches thick. We performed one grain size distribution test in this layer. Based on our visual classifications and testing results, this layer generally consisted of narrowly graded sand, with varying amounts of gravel and small amounts of nonplastic fines.

Organic soil (Buried Topsoil): Organic soil was encountered in pavement cores PC-5 and PC-6 below the fill layer (along the south side of the existing tennis courts). The organic soil generally consisted of nonplastic to low plasticity fines with some sand and gravel. Wood and roots were observed in this layer. PC-5 and PC-6 were terminated in this layer. N_{60}-values in this layer were 5 and 17, indicating a loose to medium dense soil.

Glacial Till: Glacial till was encountered the SPT borings and in most pavement core borings, except for PC-5 and PC-6. In the borings, glacial till was encountered just below the topsoil. We performed one grain size distribution test on a sample in this layer. Based on our laboratory results, the glacial till layer consisted of mostly low plasticity clayey fines with varying amounts of sand and gravel. At greater depths, we encountered greater amount of gravel in the samples. N_{60}-values in the glacial till ranged from 15 blows per foot to refusal (greater than 100 blows per foot), indicating a medium dense to very dense soil.

Bedrock: Bedrock was encountered in B-101 at a depth of 5 feet (possibly weathered rock at 3.5 feet) and in B-102 at a depth of 5 feet (El, 23.5 and El, 17.5. respectively). Bedrock consisted of hard gray Phyllite with some greenish hue, dark brown and orange staining along joints, with oxidation and discoloration in the joints, and highly fractured. RQDs from the core run collected were 0% and 17%.

2015 Weston & Sampson Borings: The 2015 Weston & Sampson borings indicated similar soil conditions to those observed in our current borings. Both Weston and Sampson borings encountered the buried topsoil layer observed in PC-5 and PC-6.

Groundwater Levels

Water level was measured in B101 upon completion of drilling at depth of 2.2 feet (~El. 26). The water level was not measured in B102. Groundwater was not encountered in the pavement core borings. Conditions may not have equilibrated in the boring when the groundwater levels were measured; therefore, this measurement may not accurately reflect the true groundwater level.

There are wetlands and an intermittent stream located to north of the existing tennis courts. The water level in the intermittent stream was at about El. 24 to El. 25 at the time our borings were performed. It is likely that groundwater at the site is close to the elevation of the water level in the intermittent stream.

Subgrade preparation for Tennis Courts

We recommend that asphalt pavements for the tennis courts bear on a minimum 6 inches of subbase consisting of Crushed Stone Base Course, Fine Gradation (New Hampshire Department of Transportation Type 304.4) compacted to 95 percent maximum dry density (ASTM D1557). Before placing the subbase, all existing topsoil should be removed, and the subgrade should be proof compacted with at least four coverages using a vibratory roller imparting an impact load of at least 10 tons. Soft areas should be excavated and replaced with Ordinary Fill meeting the gradation and compaction criteria contained in Table 1. Other backfilling to raise the grade beneath the tennis courts should also use Ordinary Fill (Table 1).

Some bedrock excavation may be required to construct the new tennis courts to the north of the existing tennis courts. Bedrock, including any sharp protrusions, and protruding boulders should be excavated as needed to allow a minimum 6-inch-thick compacted Crushed Stone Base Course "cushion" to be placed below pavements.

A buried topsoil layer was encountered beneath the south side of the existing tennis courts in PC-5 and PC-6 at depths of about 2.5 to 3 feet. Given the current good performance of the tennis courts and with the understanding that new tennis courts will be constructed at about the same elevation as the existing tennis courts, it is acceptable to leave this layer in place. If grades will be lowered in this area or if future excavations in this area are planned, we recommend that the buried topsoil be removed and be replaced with compacted Ordinary Fill.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

Please call Steve Sarandis at 781-264-8905 if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.

Stephen J. Sarandis, P.E.(MA)
Geotechnical Engineer

Richard F. Tobin, P.E. (NH)
Senior Project Manager

SJS/RFT:jam
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Attachments:

Table 1 – Requirements for Ordinary Fill
Figure 1 – Site Location Map
Figure 2 – Exploration Location Plan
Appendix A – 2021 GEI Boring and Pavement Core Logs
Appendix B – Logs of Previous Borings
Appendix C – Grain Size Test Results

Table

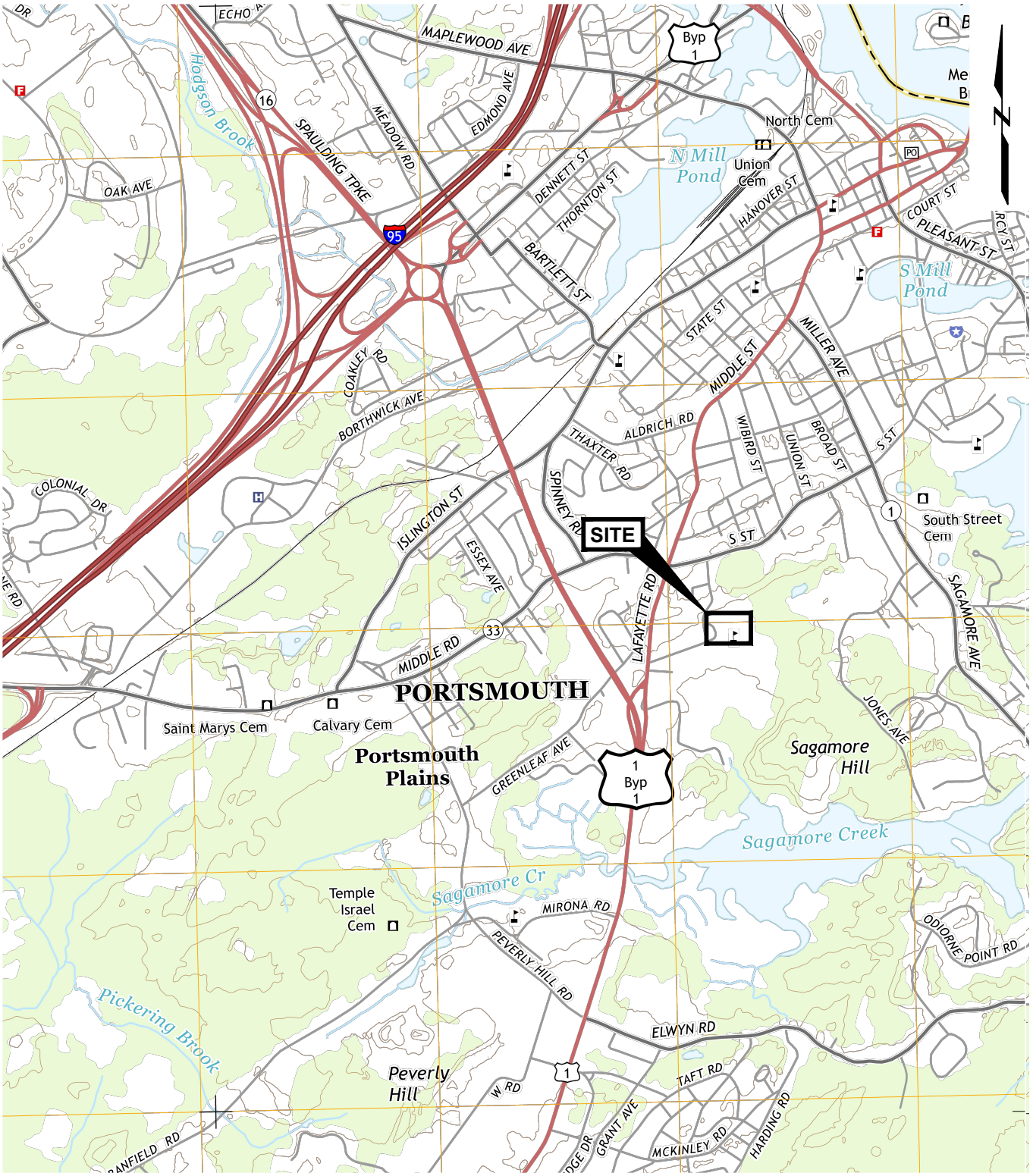
Table 1. Requirements for Ordinary Fill
New Tennis Courts
Portsmouth High School
Portsmouth, New Hampshire

Ordinary Fill shall consist of hard, durable sand and gravel, free of clay, organic matter, surface coatings, and other deleterious materials. Soil finer than the No. 200 sieve (the "fines") shall be nonplastic. Ordinary Fill shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
6 inches	100
3 inches	80 – 100
No. 4	20 – 100
No. 200 (fines)	0 - 20

Ordinary Fill shall be compacted in maximum 12-inch-thick, loose lifts to at least 92 percent of the maximum dry density determined in accordance with ASTM D1557 (Modified AASHTO Compaction).

Figures

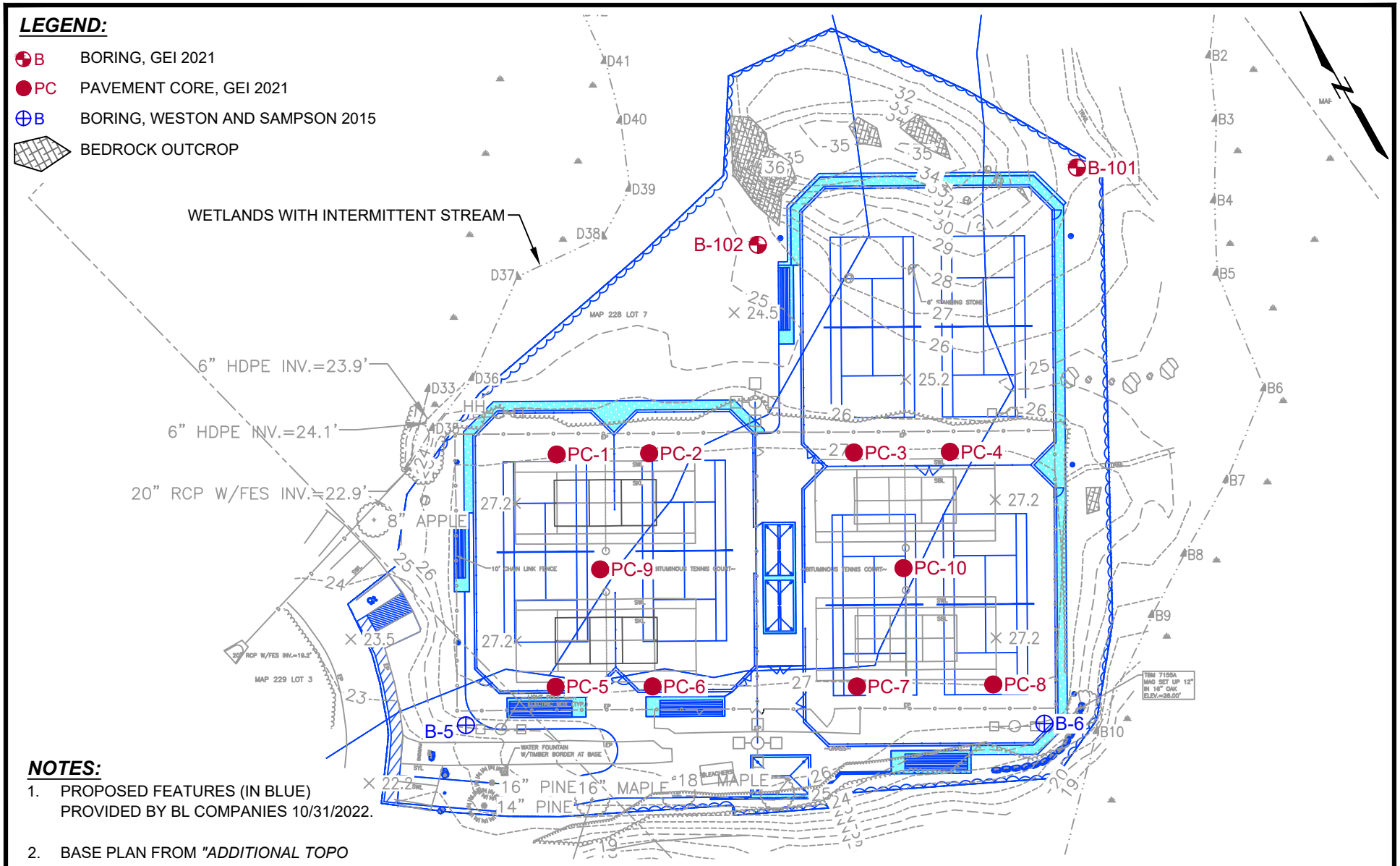


This image is from U.S.G.S Topographic 7.5 Minute Series
Portsmouth, NH Quadrangle, 2011.
Datum is North American Vertical Datum of 1988 (NAVD88).
Contour Interval is 20 feet.

NEW HAMPSHIRE
QUADRANGLE LOCATION

0 2000 4000
SCALE: 1" = 2000'

New Tennis Courts Portsmouth High School Portsmouth, New Hampshire	GEI Consultants	SITE LOCATION MAP
BL Companies Hartford, Connecticut	Project 2104563	November 2022 Fig. 1



NOTES:

1. PROPOSED FEATURES (IN BLUE) PROVIDED BY BL COMPANIES 10/31/2022.
2. BASE PLAN FROM *"ADDITIONAL TOPO AREA,"* PREPARED BY DOUCET SURVEY LLC, DATED 12/07/21.

0 60 120

SCALE: 1" = 60'

New Tennis Courts
Portsmouth High School
Portsmouth, New Hampshire

BL Companies
Hartford, Connecticut

GEI Consultants

EXPLORATION LOCATION PLAN

Project 2104563 | November 2022 | Fig. 2

CLINGEN, PAUL B:\Working\BL COMPANIES\2104563 Portsmouth High School\00_CAD\Figures\Gt\2104563-02.dwg - 10/31/2022

Appendix A

2021 GEI Boring and Pavement Core Logs

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 28.5 | **DATE START/END:** 12/7/2021 - 12/7/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 9.8 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING
B-101
PAGE 1 of 1

DRILLING INFORMATION

HAMMER TYPE: Automatic | **CASING I.D./O.D.:** 4 inch/ 4.5 inch | **CORE BARREL TYPE:** NX
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** 2 inch / NA
DRILLING METHOD: Driven casing and washed with rotary tooling.
WATER LEVEL DEPTHS (ft): ▼ 2.2 12/6/2021 11:35 am

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		S1	0 to 2	24/7	1-2-3-4		TILL	S1(0-3"): TOPSOIL. S1(3-7"): SILTY SAND (SM); ~65% fine to coarse sand, ~20% nonplastic fines, ~15% fine gravel, light brown.
		S2	2 to 4	24/4	5-17-100/4"		TILL	S2(0-2"): SILTY SAND (SM); ~50% fine to coarse sand, ~30% nonplastic fines, ~20% fine gravel, light gray, some orange. S2(2-4"): NARROWLY GRADED GRAVEL (GP); ~85% fine to medium gravel, ~10% fine to coarse sand, ~5% nonplastic fines, light gray.
						Drill chatter and hard drilling from ~3.5 ft to 5 ft.	WEATH. ROCK	
						Advanced 4-inch-ID casing to 4 ft.	WEATH. ROCK	
	5					Switch to NX core barrel	WEATH. ROCK	
		C1	5 to 7.3	28/28	0	Time (min)/ft: 4.5, 5.5, 2/4"	BEDROCK	C1: PHYLLITE; gray, greenish hue, dark brown and orange discoloration along joints, hard, fine grained, completely fractured, joints spaced less than 2", joints irregular, planar and moderately weathered with oxidation and discoloration, thin quartzite veins 16-24". KITTERY FORMATION.
						Barrel jammed	BEDROCK	
		C2	7.3 to 9.7	29/29	17	Time (min)/ft: 2.5/8", 3.5, 3.5/9"	BEDROCK	C2: PHYLLITE; Similar to C1, except joints spaced 0-5", quartzite veins throughout, weathering along veins 18-24". KITTERY FORMATION
	20					Barrel jammed	BEDROCK	
	10						BEDROCK	Bottom of boring at 9.75 ft. Casing broke at threads and driller was unable to remove. One 5-ft section left in-place,~1.5 ft stickup. Filled hole and casing with gravel.

NOTES: Drilled 6 ft East of staked location.

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants

GEI WOBURN STD 5-NORTH-EAST-LAYER NAME PORTSMOUTH HIGH SCHOOL LOGS.GPJ 11/2/22

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 25.5 | **DATE START/END:** 12/7/2021 - 12/7/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 9.5 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

B-102

DRILLING INFORMATION

HAMMER TYPE: Automatic | **CASING I.D./O.D.:** 4 inch/ 4.5 inch | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Driven casing and washed with rotary tooling.
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		S1	0 to 2	24/20	1-1-2-5		TILL	S1(0-4"): TOPSOIL. S1(4-20"): SILTY SAND (SM); ~70% fine to coarse sand, ~25% nonplastic fines, ~5% fine gravel, light brown, light gray, some orange.
		S2	2 to 4	24/16	6-9-9-10	Drill chatter from ~3.5 ft to 4 ft.		S2: LEAN CLAY WITH SAND (CL); 72.2% low plasticity fines, 20.9% mostly fine sand, 6.9% fine gravel, light brown and light gray. [GRAIN SIZE TEST PERFORMED].
	5	S3	4 to 6	24/0	11-12-26-31	Advanced 4-inch-ID casing to 4 ft. Re-drove S3 with 3-inch spoon in same interval. Re-drive rec.:17"		S3: NO RECOVERY. S3(Re-drive)(0-5"); Similar to S1(4-20"). S3(Re-drive)(5-17"): SILTY GRAVEL WITH SAND (GM); ~65% fine to medium gravel, ~20% fine to coarse sand, ~15% nonplastic fines, light brown, some orange and gray.
20		S4	6 to 7.8	22/15	29-28-30-100/4"			S4: SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~30% fine to medium gravel, ~20% nonplastic fines, light brown/yellow, some orange, gravel pieces in shoe of spoon.
						Very hard drilling and drill chatter from 8 ft to 9.5 ft.	BEDROCK	Roller bit without sampling into rock.
	10							Bottom of boring at 9.5 ft. Backfilled with soil cuttings and gravel.

NOTES: Drilled 22 ft east of staked location.

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 1.7 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-1

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	3/3		C1: Asphalt core		0-3": ASPHALT.
		S1	0.3 to 1.6	16/13	12-13-62/4"		FILL	S1(0-7"): WIDELY GRADED SAND (SW); ~80% fine to coarse sand, ~15% fine gravel, ~5% nonplastic fines, light brown, yellow, some gravel is black (possibly asphalt).
	1							Geotextile at 7".
								S1(7-10"): NARROWLY GRADED SAND (SP); ~85% fine to coarse sand, ~~10% fine gravel, ~5% nonplastic fines, yellow.
							TILL	S1(10-13): SILTY GRAVEL (GM); ~70% fine to medium gravel, ~15% nonplastic fines, ~15% fine to coarse sand,brownish gray.
		S2	1.6 to 1.7	1/1	50/1"	Stopped advancing spoon S1 because connection piece with rods got bent.		S2: WIDELY GRADED GRAVEL WITH SILT (GW-GM); ~70% fine to medium gravel, ~20% fine to coarse sand, ~10% nonplastic fines, light brown.
	2							Bottom of boring at 1.7 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-1
A Family Company
Une Entreprise Familiale
Ziploc

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 2.8 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-2

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	4/4		C1: Asphalt core		0-3.5": ASPHALT.
		S1	0.3 to 2.3	24/15	7-8-10-12		FILL	S1(0-6"): WIDELY GRADED SAND (SW); ~80% fine to coarse sand, ~10% fine gravel, ~5% nonplastic fines, tan, gray. Geotextile at 6". S1(6-11"): NARROWLY GRADED SAND (SP); ~95% fine to coarse sand, ~5% nonplastic fines, yellow.
	1							
							TILL	S1(11-15"): SILTY SAND (SM); ~60% fine to coarse sand, ~25% nonplastic fines, ~15% fine gravel, light gray and tan.
	2							
		S2	2.3 to 2.8	6/5	100/6"			S2: SILTY SAND WITH GRAVEL (SM); ~50%, fine to coarse sand, ~30% nonplastic fines, ~20% fine to medium gravel, light brown.
	3							Bottom of boring at 2.8 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.
	4							

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2109563
PC-2
Ziploc
PARA CONGELAR

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-3

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	4/4		C1: Asphalt core		0-3.5" ASPHALT.
	1	S1	0.3 to 2.3	24/15	9-9-11-14		FILL	S1(0-6"): WIDELY GRADED SAND (SW); ~75% fine to coarse sand ~20% fine to medium gravel, ~5% nonplastic fines, light brown, black 5-6". Geotextile at 6". S1(6-15"): NARROWLY GRADED SAND (SP); 82.1% fine to coarse sand, 13% fine to coarse gravel, 4.9% nonplastic fines, yellow.[GRAIN SIZE TEST PERFORMED].
	2							
	3	S2	2.3 to 4.3	24/12	16-7-8-8		TILL	S2(0-3"): NARROWLY GRADED GRAVEL WITH SILT (GP-GM); ~70% fine to medium gravel, ~20% fine to coarse sand, ~10% nonplastic fines, light gray and brown. S2(3-12"): SILTY SAND (SM); ~50% mostly fine sand, ~45% nonplastic fines, ~5% fine to medium gravel, light gray, some yellow.
	4							Bottom of boring at 4.3 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-3

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-4

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
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SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	4/4		C1: Asphalt core		0-3.75": ASPHALT.
	1	S1	0.3 to 2.3	24/12	9-12-19-19		FILL	S1(0-5"): WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~30% fine to medium gravel, light brown. Geotextile at 5". S1(5-10"): NARROWLY GRADED SAND (SP); ~80% fine to coarse sand, ~20% fine to medium gravel, yellow, white 7-9".
	2						TILL	S1(10-12"): SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~30% fine to medium gravel, ~20% nonplastic fines, gray.
	3	S2	2.3 to 4.3	24/12	32-59-27-31			S2: SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~30% fine to medium gravel, ~20% nonplastic fines, gray and orange, gravel 5-8".
	4							Bottom of boring at 4.3 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-4

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-5

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
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DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	3/3		C1: Asphalt core		
		S1	0.3 to 2.3	24/15	5-5-8-8		FILL	S1(0-7"): WIDELY GRADED SAND (SW); ~80% fine to coarse sand, ~15% fine to medium gravel, ~5% nonplastic fines, light brown. Geotextile at 7". S1(7-8"): NARROWLY GRADED SAND (SP); ~85% fine to coarse sand, ~10% fine gravel, ~5% nonplastic fines, yellow.
	1						SAND	S1(8-15): SILTY SAND (SM); ~60% fine to coarse sand, ~25% nonplastic fines, ~15% fine gravel, light brown 8-13", gray 13-15".
	2							
		S2	2.3 to 4.3	24/16	7-7-6-5		SILT AND CLAY	S2(0-9"): SANDY SILT (ML); ~55% nonplastic to low plasticity fines, ~30% mostly fine sand, ~15% fine gravel, gray, clay seam at 3", black at 1".
	3						ORGANICS	S2(9-16"): SANDY ORGANIC SILT (OL); ~65% nonplastic to low plasticity fines, ~30% mostly fine sand, ~5% fine gravel, black 9-10", dark brown 10-16", roots and wood throughout.
	4							
								Bottom of boring at 4.25 ft.Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-5

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-6

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	3/3		C1: Asphalt core		
		S1	0.3 to 2.3	24/10	10-9-10-10		FILL	S1(0-6"): WIDELY GRADED SAND (SW); ~80% fine to coarse sand, ~15% fine to medium gravel, ~5% nonplastic fines, light brown, some gravel is black (possibly asphalt). Geotextile at 6". S1(6-7"): NARROWLY GRADED SAND (SP); ~90% fine to coarse sand, ~10% fine gravel, yellow.
	1						SAND	S1(7-10"): SILTY SAND (SM); ~60% mostly fine sand, ~30% nonplastic fines, ~10% fine to medium gravel, light brown, one white gravel piece at 7".
	2							
		S2	2.3 to 4.3	24/8	8-3-1-2			S2(0-5"): SILTY SAND (SM); Similar to S1(7-10").
	3						ORGANICS	S2(5-8"): GRAVELLY ORGANIC SILT (OL); ~60% nonplastic to low plasticity organic fines, ~40% fine to medium gravel, black.
	4							
								Bottom of boring at 4.25 ft.Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-6

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-7

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	3/3		C1: Asphalt core		0-3": ASPHALT.
	1	S1	0.3 to 2.3	24/13	8-7-7-17		FILL	S1(0-6"): WIDELY GRADED SAND (SW); ~80% fine to coarse sand, ~20% fine to medium gravel, light brown, black 4-5" (possibly asphalt). Geotextile at 6". S1(6-10"): NARROWLY GRADED SAND (SP); ~90% fine to coarse sand, ~10% fine gravel, yellow and light brown.
	2						TILL	S1(10-13"): SILTY SAND (SM); ~55% mostly fine sand, ~30% nonplastic fines, ~15% fine gravel, light brown.
	3	S2	2.3 to 4.3	24/14	16-12-12-11			S2: SILTY SAND (SM); ~55% fine to coarse sand, ~25% nonplastic fines, ~20% fine to medium gravel, gray 0-3" and 10-14", light brown 3-10".
	4							Bottom of boring at 4.25 ft.Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-7

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-8

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	3/3		C1: Asphalt core		0-3": ASPHALT.
		S1	0.3 to 2.3	24/15	10-8-11-10		FILL	S1(0-8"): WIDELY GRADED SAND (SW): ~80% fine to coarse sand, ~15% fine to medium gravel, ~5% nonplastic fines, light brown, black at 5" (possibly asphalt). Geotextile at 8". S1(8-15"): NARROWLY GRADED SAND (SP); ~95% fine to coarse sand, ~5% fine gravel, yellow.
	1							
	2							
		S2	2.3 to 4.3	24/16	16-17-20-16		TILL	S2: SILTY SAND (SM); ~60% fine to coarse sand, ~20% fine to medium gravel, ~20% nonplastic fines, brownish gray, light brown at top.
	3							
	4							
								Bottom of boring at 4.25 ft.Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-8

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-9

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	4/4		C1: Asphalt core		0-3.5" ASPHALT.
		S1	0.3 to 2.3	24/16	12-15-15-19		FILL	S1(0-8"): NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); 58.4% fine to coarse sand, 36.5% fine gravel, 5.1% nonplastic fines, light brown, some black gravel (possibly asphalt).[GRAIN SIZE TEST PERFORMED].
	1							Geotextile at 8". S1(8-13"): NARROWLY GRADED SAND (SP); ~85% fine to coarse sand, ~15% fine gravel, ~5% nonplastic fines, yellow.
	2						TILL	S1(13-16"): SILTY GRAVEL (GM); ~65% fine to medium gravel, ~20% fine to coarse sand, ~15% nonplastic fines, light brown and gray.
		S2	2.3 to 4.3	24/10	15-11-11-19			S2: SILTY GRAVEL (GM); Similar to S1(13-16").
	3							
	4							Bottom of boring at 4.3 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PE-9

BORING INFORMATION

NORTHING (ft): | **EASTING (ft):**
GROUND SURFACE EL. (ft): 27 | **DATE START/END:** 12/6/2021 - 12/6/2021
VERT./HORIZ. DATUMS: / | **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.3 | **DRILLER NAME:** J. Raymond
LOGGED BY: M. H-Cabal | **RIG TYPE:** Diedrich D-25

BORING

PC-10

DRILLING INFORMATION

HAMMER TYPE: | **CASING I.D./O.D.:** NA/ NA | **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA | **DRILL ROD O.D.:** NM | **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Open Hole
WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D.= Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		C1	0 to 0.3	4/4		C1: Asphalt core		0-3.5" ASPHALT
	1	S1	0.3 to 2.3	24/14	10-13-14-14		FILL	S1(0-6.5"); WIDELY GRADED SAND (SW); ~75% fine to coarse sand, ~20% fine to medium gravel, ~5% nonplastic fines, light brown, some black (possibly asphalt). Geotextile at 6.5". S1(6.5-14"): NARROWLY GRADED SAND (SP); ~85% fine to coarse sand, ~15% fine to medium gravel, yellow.
	2							
	3	S2	2.3 to 4.3	24/10	19-18-10-16		TILL	S2: NARROWLY GRADED GRAVEL WITH SILT (GP-GM); ~70% fine to medium gravel, ~20% fine to coarse sand, ~10% nonplastic fines, gravel is light gray and white, sand is light brown and yellow.
	4							
								Bottom of boring at 4.3 ft. Backfilled with soil cuttings and gravel. Capped with asphalt cold patch.

NOTES:

PROJECT NAME: Portsmotuh High School
CITY/STATE: Portsmouth, New Hampshire
GEI PROJECT NUMBER: 2104563

GEI Consultants


2104563
PC-10

Appendix B

Logs of Previous Borings

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.

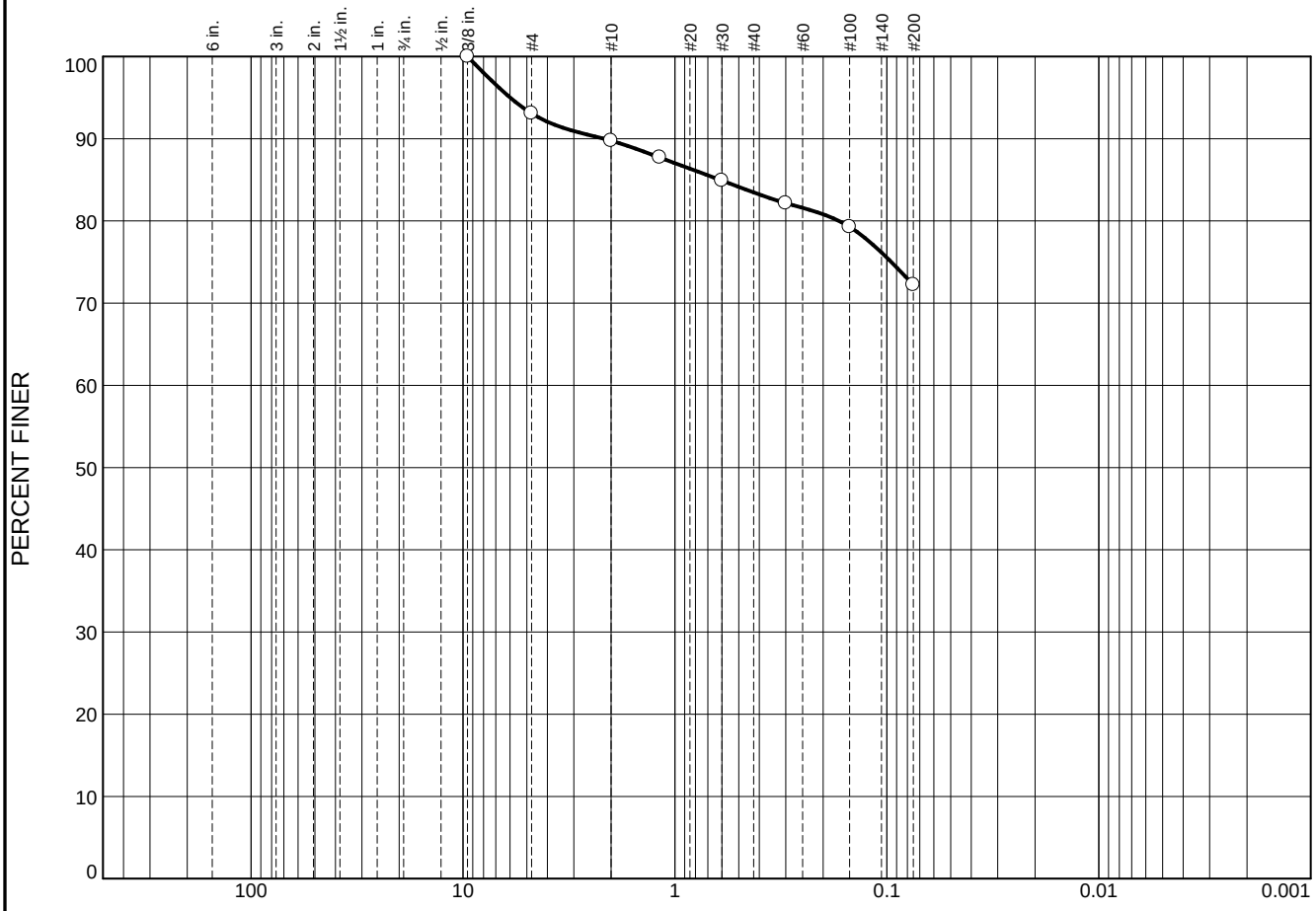
GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER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

BORING No. B6

Appendix C

Grain Size Test Results

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	6.9	3.3	6.3	11.3	72.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_u
○			0.6124							

Material Description	USCS	AASHTO
○ LEAN CLAY with Sand	CL	

Project No. 2104563 **Client:** BL Companies

Project: Portsmouth High School

○ **Source of Sample:** B-102 **Depth:** 2-4 ft **Sample Number:** S2

Remarks:

○Fines classified visually

As received WC=20.9%

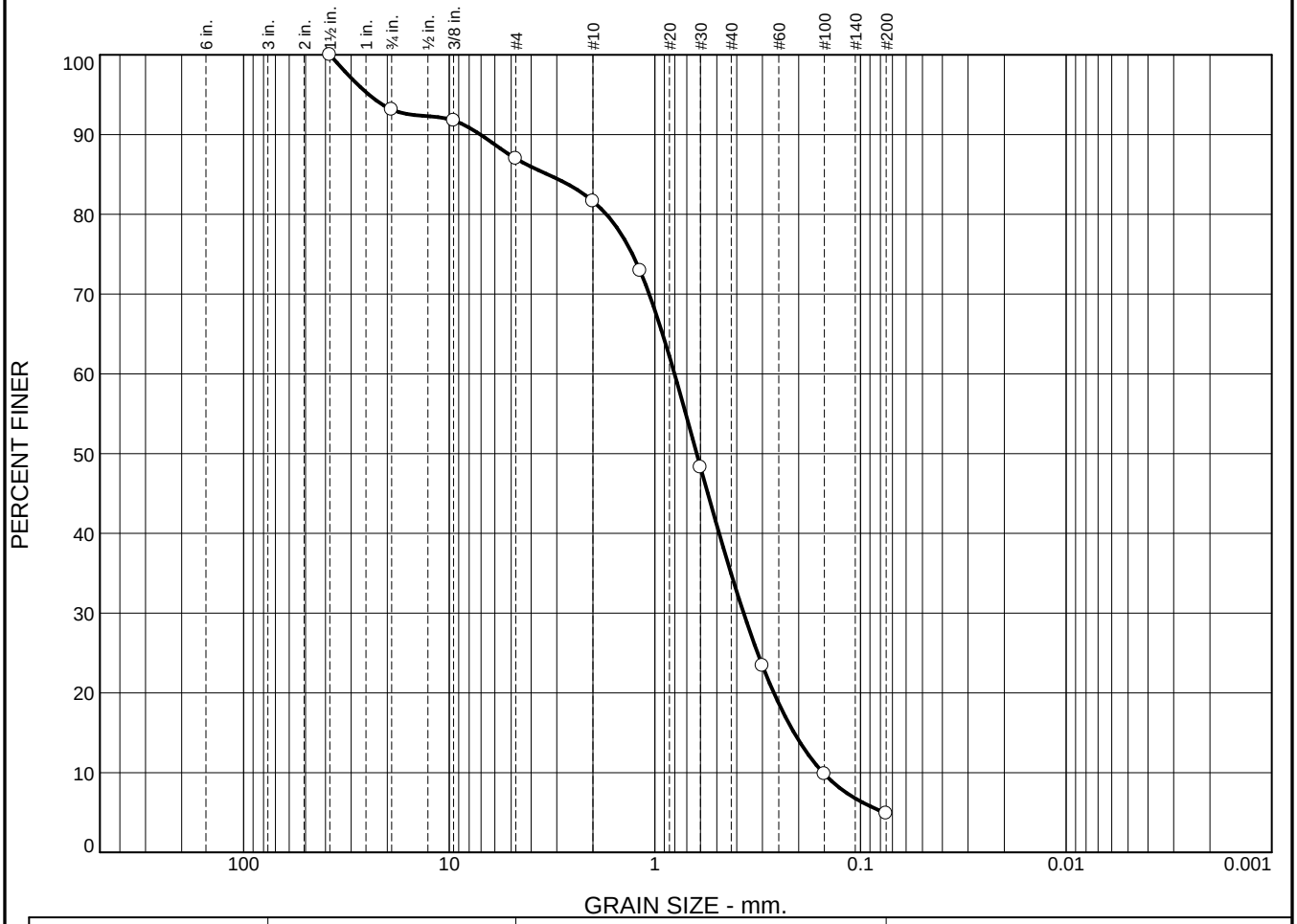
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

GEI Consultants

Figure

Tested By: CH **Checked By:** EF

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	6.9	6.1	5.4	46.7	30.0	4.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			3.3169	0.8028	0.6259	0.3701	0.2103	0.1521	1.12	5.28

Material Description	USCS	AASHTO
○ Narrowly Graded SAND	SP	

Project No. 2104563 **Client:** BL Companies

Project: Portsmouth High School

○ **Source:** PC-3 **Depth:** 0.3-2.3 ft **Sample No.:** S1 (6"-15")

GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

GEI Consultants

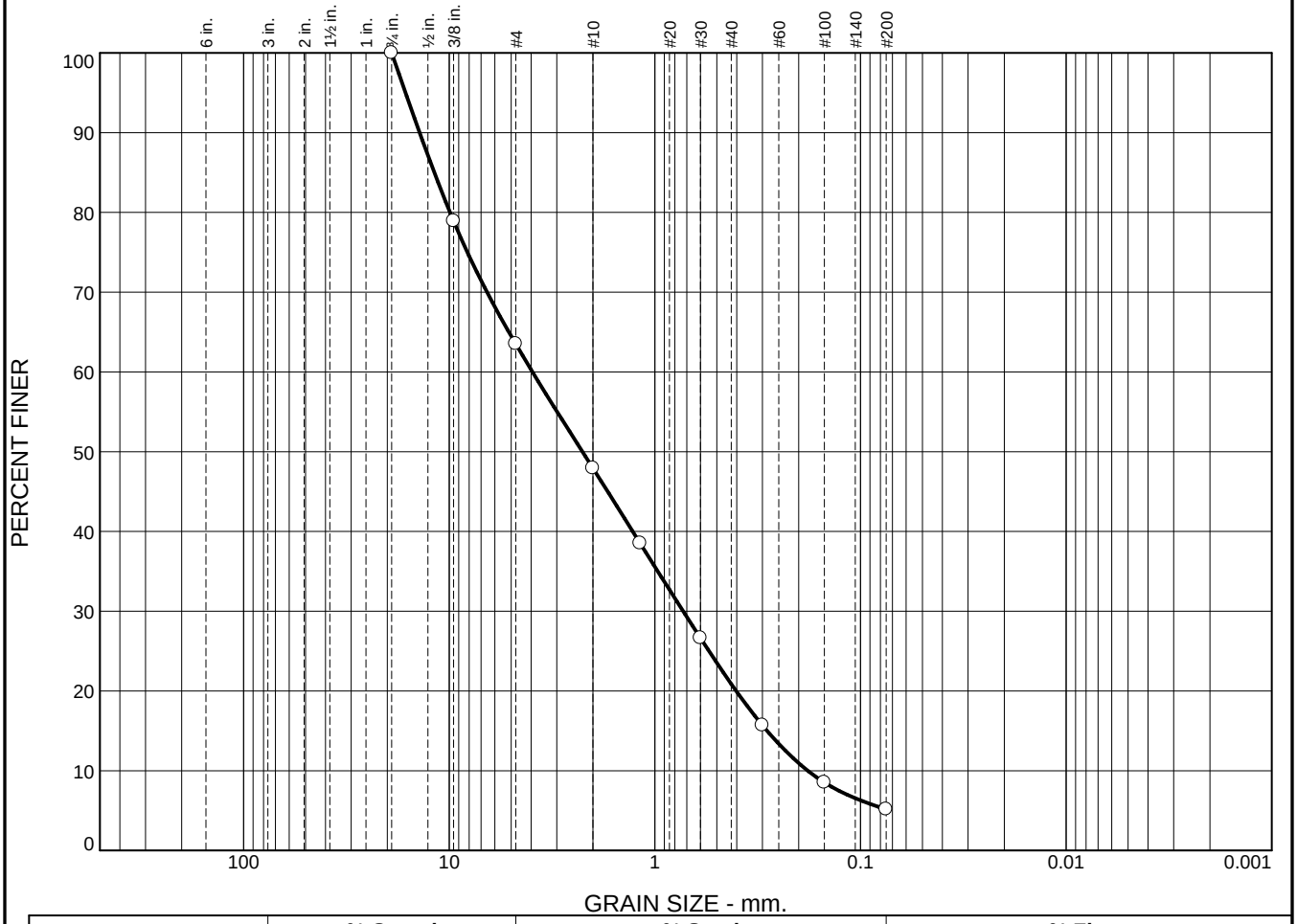
Remarks:

○As Received WC=6.9%

Figure

Tested By: CH **Checked By:** EF

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	36.5	15.6	27.0	15.8	5.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			11.8220	3.9391	2.2499	0.7287	0.2848	0.1804	0.75	21.84

Material Description	USCS	AASHTO
○ Narrowly Graded SAND with Silt and Gravel	SP-SM	

Project No. 2104563 **Client:** BL Companies

Project: Portsmouth High School

○ **Source of Sample:** PC-9 **Depth:** 0.3-2.3 ft **Sample Number:** S1(0-8")

Remarks:

○Fines classified visually

As receieved WC=8.9%

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Figure

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