SECTION 02 10 00

SELECTIVE DEMOLITION, REMOVALS AND SALVAGE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes procedures and requirements for demolition, removal and salvage of existing construction.

B. The **General Contractor** shall perform all perform all selective demolition, cutting, removal and salvage of existing construction as required for ALL TRADES. Work shall include:
   1. Removal, modification and reinstallation of architectural woodwork, wood doors, windows, wood flooring, roofing and related sheet metal flashing where indicated on drawings.
   2. Removal of plaster and lath.
   3. Drilling through structural wood components for systems installation.
   4. Removal and repair of masonry construction.
   5. Core-drilling through concrete construction.

D. Related Sections
   1. Section 04 90 00 – Masonry Restoration
   2. Section 06 40 00 - Architectural Woodwork
   Section 08 60 00 – Wood Window Restoration
   5. Section 09 20 00 – Plaster
   6. Section 09 24 00 - Stucco
   7. Section 09 64 20 – Wood Floor Restoration

1.02 DEFINITIONS

A. "Selective Demolition": Carefully demolish selected portions of existing construction, where indicated or as directed, and legally dispose of materials off site.

B. "Remove": Disconnect items from existing construction and legally dispose of materials off site.

C. "Remove and Salvage": Detach items, including associated hardware, from existing construction without damaging either component. Tag each item and turn over to Parks personnel for storage.

D. "Salvage and Reinstall": Carefully disassemble items, recording their original location and orientation, and store in a secure and protected location until ready for reinstallation. Accurately reinstall salvaged items as soon as construction operations permit.

E. "Existing to Remain": Existing items of construction, including finishes, that are not to be demolished or removed and that are not otherwise indicated to be removed and salvaged, or salvaged and reinstalled.

1.03 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished and removed materials shall become Contractor's property and shall be removed from the Project site.

B. Historic items, relics, and other items of interest or value to Owner that may be encountered during selective demolition, removal, and salvage operations remain Owner's property. Promptly notify Director's Representative when encountering such items and seek direction before proceeding with work in that location.
   1. Existing historic windows, doors and standing and running architectural woodwork removed for new or altered openings shall be turned over to Parks.
   2. Salvaged masonry units for new and altered openings in historic walls shall be turned over to Parks.

1.04 QUALITY ASSURANCE

A. References: Comply with the applicable provisions of the following standards.
   1. NFPA 241: "Standard for Safeguarding Construction, Alteration, and Demolition Operations".
      a. Refer to Sections 01350 and 01560 for additional requirements.
   2. ANSI A10.6: "Safety Requirements for Demolition Operations".

B. Mechanics Qualifications: Utilize only skilled mechanics that have successfully performed selective demolition, removal and salvage operations similar to those required for this Project.

1.05 PROJECT CONDITIONS

A. Existing Construction: Do not disturb existing construction, materials, equipment or finishes unless required by the Contract.
   1. Promptly notify Director's Representative of any damage to existing construction and wait for instructions.

B. Keep building entrances, stairways or corridors clear of any obstructions except as permitted. Coordinate temporary closure of entrances in advance with the Director's Representative.

PART 2 PRODUCTS

2.01 MATERIALS FOR TEMPORARY WEATHERPROOF ENCLOSURES

A. General: Provide materials suitable for intended use and as approved.

B. Plywood: APA rated, Grade CD, exterior exposure, minimum 1/2-inch thick.

C. Framing Lumber: Southern Pine or Spruce-Pine-Fir, Standard grade (No. 3) or better.

D. Fasteners: Galvanized steel screws and carriage bolts; length and diameter as needed to suit application. Tamper-proof screws shall be used when securing exterior openings.

E. Refer to Section 01 50 00 Temporary Construction Facilities and Controls for materials for temporary protection.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect work areas and notify Director's Representative of any existing equipment, materials or furnishings that interfere with or are at risk of damage from selective demolition, removal and salvage operations. Do not proceed with selective demolition and removal operations within such areas until said conditions are corrected or as otherwise directed.

B. Prior to cutting, drilling or removal, investigate both sides of the surface involved. Determine the exact location of structural members.
   1. Do not cut, drill or remove structural members such as joists, beams or columns supporting construction that is to remain unless expressly required by the Contract Documents.
   2. Determination of the location and direction of structural members, and type of lath present shall require the drilling of pilot holes and/or minor removals of plaster “windows” (cleanly cut and removed rectangular areas of plaster, of the smallest area practical) within the proposed routes of systems piping or electrical wiring.

3.02 POLLUTION CONTROLS

A. Dust Control: Use temporary enclosures and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
   1. Do not use water to control dust where it may damage existing construction or create hazardous or objectionable conditions, such as ice, mud, or flooding.

B. Disposal: Remove and transport debris in suitable containers and in a manner that will prevent spillage or spread of dust and dirt to adjacent surfaces and areas.
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent surfaces and areas of dust, dirt, and debris caused by selective demolition, removal, and salvage operations. Return areas to condition existing prior to starting the Work of this Section.

1. Sweep exterior surfaces and vacuum interior surfaces to eliminate dust, dirt and debris.

3.03 SELECTIVE DEMOLITION AND REMOVAL

A. Conduct selective demolition and removal operations systematically, in reverse order of installation.

B. Perform cutting, drilling, and removals in a manner that will prevent damage to construction which is to remain.
   1. Use hand or small power tools designed for sawing or grinding, not hammering or chopping.
   2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

C. New openings in masonry:
   1. Masonry disassembly: Remove whole masonry units intact. Do not hammer, saw or chip masonry units. Remove mortar surrounding masonry units so the units can be taken out without damage.
   2. Salvage and label whole masonry units that were exposed as finish surfaces, indicating location and orientation.
   3. Store salvaged masonry units on a wooden pallet, placed in the Manor Hall basement as directed by Director's Representative.

D. Removal of Architectural Woodwork, Wood Doors and Windows:
   1. Disassemble architectural woodwork where required. Do not mar exposed surfaces. Work slowly and methodically to avoid damage.
   2. Minor paint removal may be required to expose nails.
   3. Retain hand-wrought iron nails for salvage and reinstallation.
   4. Tag all removed elements

E. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Director's Representative before proceeding with the Work.

F. Dispose of demolished and removed items and materials that are not to be salvaged promptly.

3.04 CUTTING AND REMOVAL OF PLASTER FOR MECHANICAL, ELECTRICAL AND COMMUNICATIONS SYSTEMS

A. Layout: Use chalk or pencil lines, or painter's tape to layout location of pipes, wiring, etc. Carefully map out areas to be cut and removed.

B. Determine location, direction and spacing of structural members using pilot holes and selective removals as necessary.

C. Neatly score cuts in finish plaster. Using rotary blades (e.g. grout cutting blades) score and cut through plaster to be removed. Carefully remove plaster. Avoid damage to plaster to remain.

D. Remove wood lath only as necessary for systems installation.
   1. Carefully cut, remove and tag *split* wood lath for reinstallation.
   2. Cut, remove and discard wire lath and sawn wood lath.
   3. Remove lath from center of joist to center of joist where systems are installed in joist bays.
   4. Remove lath perpendicular joists to create the narrowest opening practical for systems installation.

3.05 REMOVAL AND SALVAGE FOR RE-INSTALLTION

A. Tag items for salvage using door and window numbers as indicated on the Drawings or as directed.
   1. Place small items, such as hardware, in heavy-duty re-sealable plastic bags.
   2. Tag split wood lath for re-installation by Room Number.
   3. Tag removed wood baseboards and architectural woodwork, indicating room, location and/or orientation for proper reinstallation.

C. Provide secure and weatherproof storage for salvaged items.

3.06 DRILLING AND CUTTING FOR SYSTEMS INSTALLATION

A. Drill or core-drill through wood or timber framing using the least destructive means possible.
   1. Use drill or core bits of the smallest diameter needed to provide a path for pipes and fittings, conduits, wires or cables.
   2. Penetrations shall be located within the middle one-third of the depth of any structural member.
   3. Where multiple pipes, conduits, cables or wires pass through a structural member, use horizontally elongated holes in horizontal members (vertically elongated in a post or stud). Do not increase the *diameter* of the hole for multiple pipes, cables, etc.

B. Remove whole masonry units in fieldstone or brick construction where necessary to create an opening for system installation. Do not saw-cut or core-drill through unit masonry construction.
   1. Where necessary, create openings of the smallest size practical for systems installation.
   2. Re-set adjacent masonry units that have dislodged or loosened during selective removals. Use only Natural Hydraulic Lime (NHL) or Lime mortar mix(es) approved by the Director's Representative and as specified in Section 04 90 00 Masonry Restoration for re-setting or stabilization of masonry.

C. Drill or core-drill through concrete construction using the least destructive means possible to create openings for systems installation.

D. Use oscillating flush-cut saws (e.g. Dremel Multi-Max Oscillating Tool) to cut holes for electrical and communications devices where installed in

standing and running wood trim and wood floors. Cut rectangular holes squarely and neatly. **Do not overcut**.

3.07 DISPOSAL OF DEMOLISHED AND REMOVED MATERIALS

A. Promptly dispose of materials and equipment resulting from demolition and removal operations. Do not allow such materials and equipment to accumulate on site.

B. Do not burn materials or equipment on site.

C. Transport demolished materials off Owner's property and legally dispose of them. Pay any and all fees associated with disposal of such materials.

END OF SECTION

SECTION 02 22 10
EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Excavating, Backfilling and Compacting, as shown on the Plans and specified.

B. Excavation, in open cut, includes the loosening, removing, transporting, storage and disposal of all materials necessary to be removed for the construction and completion of all work under the Contract. Excavations shall be made to the widths and depths shown on the Plans and specified.

C. The Contractor shall be responsible for maintaining the stability of any excavations and for any damage or injury to any persons property or structures as a result.

D. Where rock is encountered, the excavations shall be done in accordance with the applicable provisions hereof.

1.02 REFERENCES:

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications. Reference to standard Specifications is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.

1.03 DEFINITIONS

A. The term "excavation" and the term "trenching" where used, shall be deemed and understood to cover the following described work, and the price bid for any and all items including "excavation", or "trenching" shall be deemed to include and cover all of the several following detailed operations:
   1. The loosening, removing, transporting, storage and rehandling of all materials;
   2. All sheeting, bracing and shoring, and the placing, cutting off and removing of the same;
   3. All ditching, pumping, bailing, dewatering and draining or otherwise disposing of water (surface and subsurface);
   4. The refilling of trenches, excavations and pits, and the furnishing and placing of material over trenches, excavations and pits to the original surface of the ground or to other grades as may be shown or directed;

5. The compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required;
6. The removing and disposing of all surplus materials from all excavations in the manner specified;
7. The maintenance, accommodation and protection of travel;
8. All temporary bridging, fencing and barricades and the removing of same.
9. The removing and clearing away of all construction rubbish, refuse, unused materials, plant and tools from the site;
10. The dressing, topsoiling, sodding and/or seeding of all unpaved areas disturbed by the Contractor within and outside the limits of the Contract as may be necessary to leave the surface in as good condition as it was previous to the commencement of the work.

B. "Earth" includes all materials, such as sand, gravel, clay loam, pavements, ashes, cinders, muck, roots, or pieces of timber, soft or disintegrated rock, not requiring barring or wedging from their original beds, and specifically excludes all ledge or bed rock, and individual boulders or masonry larger than one-half cubic yard in volume.

C. "Backfill" includes selected materials for the backfilling or refilling of all excavations and trenches up to the original surface of the ground or to other grades as may be shown or directed.

D. "Lining" includes selected materials utilized for the embedment of underground piping for the purpose of structural support and/or protection of the piping installed.

E. "Spoil" includes surplus excavated materials not required or not suitable for backfills or embankments.

F. "Embankments" include fills constructed of selected materials above the original surface of the ground.

G. “Rock" includes ledge or bedrock requiring barring or wedging from their original beds and individual boulders or masonry larger than one-half cubic yard in volume.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS/COMMON FILL

A. Where used for general site fill or suitable backfill, soil material shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen, deleterious, or objectionable materials.

2.02 CONTROLLED FILL

A. Controlled fill material shall be granular fill as specified in Section 02222, “Granular Fill.”

2.03 LINING

A. Lining material, where specified, for the embedment of piping shall be clean sand or pea stone.

2.04 PEA STONE

A. Where specified as backfill, pea stone shall consist of clean sound screened gravel with a minimum quality of 20 percent maximum loss weight at 4 cycles as tested by the magnesium sulfate soundness test. Gradation shall be as follows:

% Passing	Sieve
100	½”
20-100	¼”
0-15	No. 10
0-5	No. 20

PART 3 - EXECUTION

3.01 EXCAVATION FOR STRUCTURES

A. Excavation shall be of sufficient size, and only of sufficient size, to give suitable room for the proper construction of structures and appurtenances, including allowances for sheeting, dewatering, and other similar work necessary for completion of the Contract.

B. Excavations for structures shall be made only to the lines and grades shown on the Plans, specified or directed.

C. In no case will under cutting excavation faces be permitted.

D. Subgrade for all footings and foundations shall be undisturbed original earth, thoroughly compacted where noted on drawings. Keep all excavations free from water. Excavate soil disturbed or weakened by Contractor's operations and soils softened or made unsuitable for subsequent construction due to exposure to weather.

1. Where excavation below subgrade is ordered, it shall be thoroughly compacted and consolidated granular fill as directed and as specified in Section 31 05 16. It shall be sufficiently stable to remain firm and intact during the surfacing of subgrade, laying reinforcing steel and placing concrete thereon.

3.02 BACKFILLING AROUND STRUCTURES

A. Backfilling around structures shall not be commenced until all lumber, refuse, rubbish and other similar materials are removed from the excavated area. Backfill around structures may be placed by machine, provided the work shall be

done carefully to prevent damage to the structure. In no case shall backfill materials be allowed to fall directly on a structure, until at least twelve (12) inches of hand-placed material has been placed thereon and compacted.

B. Backfill around structures shall be deposited in horizontal layers not more than eight (8) inches in thickness and shall be thoroughly compacted. Compaction shall be by a vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557). Compact adjacent areas, beyond five (5) feet of a slab or structure, to ninety (90) percent of ASTM D1557.

C. Backfilling shall be done immediately after work has been inspected and approved. No frozen material shall be used, nor shall backfilling be placed on or against frozen earth, debris or other deleterious matter not conducive to proper compaction.

D. Contractor shall take every necessary precaution during compaction of fill adjacent to foundations, walls, etc., that such items are not displaced from their proper location or damaged by compacting equipment. In the event damage or displacement occurs during or resulting from compaction of fill as specified above, the Contractor shall be responsible for correcting the same, to approval of the Engineer and at no expense to the Owner.

E. Controlled fill within building lines, under concrete slabs and aprons shall be granular fill as specified in Section 31 05 16. Areas of completed fill which are to receive slabs, pavements and structures, etc., shall be kept free of standing water or otherwise protected from any loss of compaction density.

3.03 TRENCHING

A. The alignment, depth and pipe subgrades of all pipe trenches shall be determined by electrical laser beam or other grade control devices, installed and maintained by the Contractor.

B. Width and Depth of Trenches: The trenches in which pipelines are to be constructed, shall be excavated in all cases in such manner and to such depths and widths as will give suitable room for the pipelines which the trenches are to contain, for stability, sheeting, pumping, dewatering, and draining of water, and for removing the material not suitable for pipe subgrade.

C. Unless otherwise specified, trenches for pipes shall be not less than six (6) inches wider and deeper than the hubs of the pipe on each side and below, when measured from the hubs of the pipe.

3.04 EARTH SUBGRADE PREPARATION FOR PIPES

A. Unless otherwise permitted by the Engineer, the trench shall have a flat bottom conforming to the grade to which the pipe is to be laid.

B. Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. The trench bottom shall be accurately graded by means of hand tools in such a manner that a uniform and continuous bearing and support on solid and undisturbed ground is provided for each pipe for its entire length.

C. All trenches shall be so graded that the pipe will be accurately centered when laid, without raising the pipe off the trench bottom. Regrading of a trench bottom which is too high will be permitted. Correction of a subgrade that is too low shall be done only by placing and compacting granular fill over the entire width of the trench and regrading.

3.05 PIPE LINING

A. All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in the specified pipe lining material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe lining shall be placed so as to insure adequate lateral and vertical stability of the installed pipe during embedment operations. The amount of the specified pipe lining material to hold the pipe in alignment shall extend not less than 6 inches in any direction from the pipe and shall be uniformly deposited on each pipe laid.

B. Pipe lining materials placed at any point below an elevation six (6) inches above the top of pipe, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactions shall be done simultaneously and uniformly on both sides of the pipe. Compaction shall be by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test. All such materials shall be placed in the trench with hand tools in such a manner that they will be scattered alongside the pipe and not dropped into the trench in compact masses.

3.06 BACKFILL ABOVE PIPE LINING

A. The portion of pipe trenches between the top of the pipe lining and the upper limit of backfill shall be refilled with suitable materials as shown or indicated on drawings, or as specified herein.

B. Where trenches are within structures or the ditch-to-ditch or edge of pavement limits of any road, driveway or other recognized traveled vehicular way, or within other limits that may be specifically shown or specified for this purpose, the backfill materials shall be deposited in the trench in horizontal layers not more than six (6) inches in thickness, and each layer shall be compacted by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557).

3.07 REMOVAL OF WATER

A. The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures, or other work.

B. Removal of water includes the construction and removal of sheeting and bracing, the furnishing of materials, equipment and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways and the furnishing and operation of pumps, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

C. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.

D. Unless otherwise specified, all excavations which extend down to below the groundwater elevation at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structures or pipe thereon.

E. Where an upward pressure or flow of water in combination with a fine-grained subsurface material causes a quick condition, the Contractor shall install wellpoints to stabilize the subgrade. Where wellpoints are used, the groundwater table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade. Unless otherwise permitted by the Engineer, the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade until completion of the backfilling to an elevation at least twelve (12) inches above natural groundwater level. Wellpoint headers, points, and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

F. In areas where groundwater enters the excavation but does not cause a quick condition, the groundwater may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with construction operations.

G. The groundwater control requirements specified for wellpointing operations apply to other dewatering methods.

H. Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

I. Water pumped or drained from excavations, or drains, or water courses encountered in the work, shall be disposed of in a suitable and environmental manner without injury to adjacent property, the work under construction, or to pavements, roads, and drives. No water shall be discharged to sanitary sewers. If petroleum contaminated groundwater is encountered, the Contractor shall notify the Engineer immediately.

J. Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

3.08 SHEETING & BRACING

A. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, injure the pipe, sewers, masonry, or other work; diminish the width necessary; otherwise damage or delay the work; or endanger existing structures, pipes or pavements; cause the excavation limits to exceed the right-of-way limits; or to occasion a hazard to persons engaged on the project or to the general public.

B. In no case will bracing be permitted against pipes or structures in trenches or other excavations.

C. The Contractor shall be solely responsible for the safety and adequacy of all sheeting and bracing. He shall make good any damage resulting from failure of supports with no additional cost to Owner.

D. Removal of Sheeting & Bracing:

1. In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe or structure shall be withdrawn, unless directed, before more than six (6) inches of earth is placed above the top of the pipe or structure and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose, or otherwise as may be approved.
2. The Engineer may order the Contractor to delay the removal of sheeting and bracing, if in his judgment the installed work has not attained the necessary strength to permit placing of backfill.

3.09 STORAGE OF MATERIAL

A. All excavation materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed. All stockpiled fill material shall be stored only in those fill areas as approved by the Owner.

3.10 ADDITIONAL EXCAVATION

A. In case the materials encountered at the locations and grades shown on the Plans or specified are not suitable, or in case it is found desirable or necessary to excavate additional materials to secure good support for the structure or pipeline, the excavation shall be carried to such additional limits as the Engineer may direct. The Contractor shall refill such additional excavated space with either granular fill, Class "D" or "E" concrete or other material, as the Engineer may direct. Additional excavation, backfill material, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

3.11 UNAUTHORIZED EXCAVATION

A. Whenever excavations are carried beyond or below the lines and grades shown on the Plans, or as given or directed by the Engineer, all such excavated space shall be refilled with granular fill, concrete or other materials as directed by the Engineer. All refilling of unauthorized excavations shall be at the Contractor's own expense.

B. All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever shall be removed and disposed of at the Contractor's own expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.12 DISPOSAL OF MATERIALS

A. All clean spoil shall be transported and placed on-site at a location approved by Owner. No environmental sensitive areas shall be used for spoil areas.

B. The surface of all spoil placed on the Site shall be graded and dressed, and no unsightly mounds or heaps shall be left on completion of the work.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.03 SUBMITTALS

A. See Administrative Requirements, for submittal procedures.

B. Site Plan Showing:
   1. Areas for temporary construction and field offices.
   2. Areas for temporary and permanent placement of removed materials.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.04 PROJECT CONDITIONS

A. Minimize production of dust due to demolition operations; do not use water if it will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

B. Comply with the regulations of New York Department of Environmental Conservation.

C. Comply with other requirements specified in the Division 0 and Division 1 of this document.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. See Contract Drawings for extent of removals.

B. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permit.
   6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Director's Representative.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

E. If hazardous materials are discovered during removal operations, stop work and notify Director's Representative; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without prior written notification to Director's Representative.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Director's Representative.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Director's Representative before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

C. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 82 00
REMOVAL AND DISPOSAL OF ASBESTOS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the removal and disposal of asbestos-containing materials (ACM), and asbestos-contaminated materials to accommodate the building renovation project at Philipse Manor Hall and Cottage located in Yonkers, New York.

1.02 WORK INCLUDED

A. The Contractor shall furnish all labor, materials, supervision, construction tools, and equipment necessary to perform the following work:
   1. Provide continuous on-site supervision by personnel knowledgeable in all aspects of asbestos removal and disposal.
   2. Provide and maintain environmental protective measures, equipment, and procedures at the work site.
   3. Provide and maintain personnel protective measures, equipment, and procedures at the work site.
   4. Provide and maintain personnel and waste decontamination facilities as required. Coordinate location of these facilities with Owner's Representative or personnel.
   5. Package, transport, and dispose of all asbestos in accordance with all applicable Federal, State and local regulations.
   6. Contractor and his employees and subcontractors shall cooperate with the Owner's Representative site specific policies and procedures. Additionally, Contractor shall fully cooperate with designated representatives with regard to air monitoring and observation of procedures.
   7. Remove all ACM illustrated on drawing AR100 of the contract documents. Removals include, but are not limited to, linoleum flooring, vinyl floor tile, tile mastic, window caulk, pipe insulation, pipe fittings and foundation vapor barrier. The pre-renovation asbestos survey for the site has been included in Attachment A of this Section.
   8. Contractor must satisfy himself as to quantities and conditions, and base his bid accordingly. Coordination of all removals with other trades, if necessary, shall be the responsibility of the Contractor.

1.03 RELATED WORK

A. Coordinate all removals with Owner's Representative and other trades as applicable.

PART 2 - SUBMITTALS

2.01 BIDDING:

A. At the time of bidding, the Contractor shall provide evidence of the following:
   1. Contractor's NYSDOL Asbestos License.
   2. The Contractor shall submit a **notarized statement**, signed by an officer of the company, containing the following information:
      a. A record of any citations, penalties, orders to comply, notices of deficiency, or notices of violations issued by Federal, State, or local regulatory agencies relating to asbestos abatement activity. Include projects, dates and resolutions.
      b. Situations in which an asbestos related contract has been terminated including projects, dates and reasons for terminations.
      c. A listing of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participate in this project) have participated or are currently involved. Include descriptions of role, issue and resolution to date.

2.02 PRIOR TO CONSTRUCTION

A. Prior to commencement of work, the Contractor shall submit the following:
   1. Abatement work plan, including the following:
      a. Phase, area, sequencing and timetable.
      b. Size, length and number of work shifts per day/per week.
      c. Mobilization Schedule.
      d. Use of applicable variances or approved specific variances obtained by the Contractor.
      e. Work plan shall additionally identify detailed aspects of how the Contractor will handle, containerize, transport, and dispose of materials.
         1) Satisfactory proof that written notification has been provided to the EPA regional office with jurisdiction over the project area in accordance with Title 40 CFR Part 61 Sub-parts A & M, National Emission Standards for Hazardous Air Pollutants, U.S. EPA, and the New York State Department of Labor in accordance with Part 56, Title 12 of the New York Code of Rules and Regulations.
      f. A written description and plan of an emergency alarm system which would alert workers in the work area to fire or other emergency situation.
      g. Documentation certifying that all employees have received appropriate medical examinations and have successfully passed a fit test for the respirator to be worn. As a minimum, medical exams must be consistent with requirements in OSHA Regulation 1926.1101.
      h. Provide copies of valid Asbestos Handling Certificates for all personnel demonstrating compliance with Code Rule Part 56, Title

12 of the New York State Department of Labor. Provide evidence of each employee's most recent training in accordance with Federal regulations. All employees, including independent air sampling technician, must have completed initial or refresher training within one year of the dates of this work.

i. Written approval and/or permits, as necessary, from the local sanitary district office for the discharging of wastewater into the sanitary sewer system. Documentation must be submitted if permits are not required.

j. A written Hazard Communication Program that complies with the OSHA Regulation 29 CFR 1910.1200. Material Safety Data Sheets (OSHA Form 174 or equivalent) for all chemicals used during work performed under this Section.

k. A written description of plans for providing temporary power.

l. Manufacturers' certification that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to HEPA filtration requirements.

m. Manufacturers' certification for all materials used in the abatement project meet the requirements of these Specifications (as applicable).

n. A copy of the form(s) used by the Contractor for maintenance of waste shipment records in compliance with EPA NESHAPS regulations.

PART 3 - EXECUTION

3.01 REMOVAL OF ASBESTOS-CONTAINING MATERIALS:

A. All asbestos abatement work to be conducted under this Contract shall be in compliance with but not limited to all Federal Regulations and Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (cited as 12 NYCRR Part 56), and Title 40 CFR Part 61 Sub-parts A & M, National Emission Standards for Hazardous Air Pollutants, and local laws and regulations.

B. No site specific removal variance has been obtained for this project. The contractor shall be required to obtain any necessary NYS DOL site specific variances required for the controlled demolition ACM work.

C. The Contractor is responsible for obtaining any variance not issued to date that he feels may be applicable to the policies/procedures as set forth in Code Rule 12 NYCRR Part 56 to complete this work in an efficient and timely manner. Any variance obtained by the Contractor shall be reviewed and approved by the Owner's Representative prior to use.

D. It is the responsibility of the Contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these regulations, all

appropriate U.S. Department of Transportation, EPA and Federal, State and local entities' regulations and all other current legal requirements.

3.02 AIR MONITORING REQUIREMENTS

A. The Owner's Representative shall contract the services of an Independent Air Monitoring firm to conduct all air monitoring as required by NYSDOL Industrial Code Rule (ICR) 56.

B. Air Monitoring Tests: The Owner's Representative shall contract the services of an independent testing laboratory to perform air sample laboratory analysis. The laboratory shall use the methods described in standards referenced in ICR 56.

C. The Contractor shall be responsible to conduct all personal air sampling and analysis as required by the OSHA Construction Standard. All costs associated with these samples and analyses shall be assumed by the Contractor.

3.03 PROJECT MONITORING

A. The Owner's Representative reserves the right to hire an independent project monitor to advise the Owner's Representative in matters pertaining to the work performed in accordance with these and related specifications and requirements.

B. The project monitor is authorized by the Owner's Representative to have free access to all asbestos and related work areas, to assist in interpretation of procedures, and to advise on provisions of the Contract Documents pertaining to the control of asbestos and related work.

C. The project monitor may stop the Abatement Contractor's work if in the course of performing their monitoring duties, they observe an instance of non-conformance with the Contract Documents and/or a situation presenting a health hazard to workers or Owner's Representative employees. Work shall not resume until corrective measures have been carried out.

D. Any stop work orders issued by the Owner's Representative or the project monitor pursuant to the above provisions will not be grounds for claims to be made by the Contractor for damages caused by the associated delay nor will it extend the Contract completion date.

E. The project monitor will act as the Owner's Representative liaison in technical matters involving the work.

F. The project monitor's role in advising the Owner's Representative on environmental health matters does not relieve the Contractor's obligation to comply with all applicable health and safety regulations promulgated by the Federal, State, and local governments.

G. When visual inspections are required, the Contractor shall notify the Owner's Representative and the project monitor 24 hours, excluding weekends and holidays, in advance of the day and time when the Contractor will be ready for such inspections.

3.04 PROJECT CLOSEOUT:

A. Prior to the final payment, and before the issuance of a final certificate for payment in accordance with the provisions of the Contract Documents, Contractor shall comply with the requirements set forth herein.

B. The work under this Section shall include but is not limited to the execution of the following principal items as they apply to Prime Contractors for Project Closeout:
   1. Submittal of all waste shipment record forms signed by the Contractor, transporter, and landfill operator for each shipment of asbestos waste.
   2. Assurance, satisfactory to the Owner's Representative, that unsettled claims will be settled and that work not actually be completed and accepted will be completed without any undue delay.
   3. Guarantees, Warrantees and Bonds required by the General Conditions and any other extended guaranties or warranties stated in the Specifications.
   4. Temporary facilities, services, surplus materials, rubbish and similar appurtenances have been removed and/or restored.

END OF SECTION

Attachment A

Pre-Renovation Asbestos Survey

Barton & Loguidice

April 13, 2021

Christopher T. Smith, RA, LEED® AP
Saratoga Associates
Four Congress Park Centre, 21 Congress St
Saratoga Springs, New York 12866

Re: Hazardous Materials Assessment
Philips Manor Hall

File: 1299.029.001

Dear Chris:

This letter and attachments represent Barton & Loguidice, D.P.C.'s (B&L's) report for the above-referenced project.

Introduction

B&L was retained by Saratoga Associates to conduct a supplemental pre-demolition asbestos survey and lead-based paint characterization at Philipse Manor Hall and the adjacent Cottage located at 29 Warburton Ave, Yonkers, New York. The Philipse Manor Hall is a historical building being utilized as an educational museum and conference center and is scheduled for renovation. Prior to any renovation activities, all asbestos containing materials (ACMs) must be removed by a NYS licensed asbestos abatement contractor.

The supplemental survey was conducted by Sebastian Reeves representing B&L on March 3 and April 5, 2021. Mr. Reeves is a New York State Department of Labor (DOL) certified asbestos inspector. A copy of his inspector's certifications and B&L's company license are provided in Appendix A.

Discussion and Results

Asbestos Sampling

Supplemental representative sampling was conducted throughout accessible areas of the buildings that are scheduled for renovation, including the roof. Friable samples were collected in triplicate and submitted for analysis by polarized light microscopy (PLM) with dispersion staining. Friable samples were analyzed utilizing serial analysis. Non-friable organically bound (NOB) materials were analyzed in accordance with New York State Department of Health requirements. NOBs are first subjected to an ashing and acid washing procedure to properly break down the material. The sample is then analyzed by PLM for asbestos content. If asbestos is found, the analysis is complete. However, a negative result must be confirmed by using transmission electron microscopy (TEM). All samples were analyzed by AmeriSci of New York, Inc. located in New York, New York.

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The experience to listen
The power to solve

The supplemental survey of Philipse Manor Hall included the collection of an additional 9 NOB duplicate sample sets. Laboratory reports, sample chain-of-custody forms, and laboratory certifications are included in Appendix B. Material sample results are summarized in the table below. Potentially impacted materials (representative wall plaster, floor sheeting and blown-in insulation) identified in the previous 2009 asbestos survey are also summarized in the tables below.

Philipse Manor Hall – Asbestos Sample Results

Sample No.	Material Description	Lab Results (% Asbestos)	Material Quantities	Material Location
Glaze-1-1,2	Exterior window glazing, white	Anthophyllite Trace	<1 SF	Second floor windows above exterior addition
Caulk-2-1,2	Exterior window caulking, off-white	NAD	<1 SF	Second floor windows above exterior addition
Flashing-3-1,2	Flashing caulk, white	Anthophyllite Trace	6 SF	Roofing on exterior addition
RoofPatch-4-1,2	Patching on roof curb, black	NAD	45 SF	Roofing on exterior addition
RFSeam-5-1,2	Rolled roofing seam sealant, black	NAD	<1 SF	Roofing on exterior addition
Felt-6-1,2	Foam backing on ISO insulation, brown	NAD	150 SF	Roofing on exterior addition
WLPL-5-1,2,3	Wall plaster	NAD	NA	Throughout first, second and third floors. Identified in the 2009 survey for previous abatement project.
FLVCS-6-1,2	Tan stone sheeting	NAD	NA	3rd Floor Storage. Identified in the 2009 survey for previous abatement project.
FLVCS-7-1,2	Black and tan square sheeting	NAD	NA	3rd Floor Storage. Identified in the 2009 survey for previous abatement project.
INSL-8-1,2,3	Blown-in insulation	NAD	NA	3rd Floor Storage. Identified in the 2009 survey for previous abatement project.
VB-9-1,2	**Asphalt vapor barrier, black**	**2.6 Chrysotile**	**6 SF**	**Vapor barrier between concrete ramp and first floor addition – exterior entrance.**

NAD – No Asbestos Detected
N/A – Not Applicable
Trace – Less than 1% asbestos, considered non-asbestos containing material

Historical surveys of the Philipse Manor Cottage previously conducted include "*Barton & Loguidice, DPC - Philips Manor Hall Asbestos Survey Report*" dated December 2009, "*Paradigm - Cottage-Interior Philips Manor Hall State Historic Site 29 Warburton Avenue Yonkers, New York 10701*", dated January 16, 2020, and "*Envirologic of New York, Inc. – Caretaker's Cottage Exterior BR19000300 Philipse Manor Hall State Historic Site*", dated January 14, 2019. These survey reports included the sampling of suspect materials

within the renovation area of the Philipse Manor Cottage. The complete reports are included in Appendix D. A summary of ACMs identified within the renovation area are summarized in the table below:

Phillipse Manor Cottage – Previous Survey Asbestos Sample Results

Sample No.	Material Description	Lab Results (% Asbestos)	Material Quantities	Material Location
RR-1-1,2	Asphalt shingle roof	NAD	100 SF	Cottage shed roof
FLTL-2-1,2	12"x 12" Vinyl floor tile with black mastic	Chrysotile <0.25	144 SF	SW office floor
AD-CLTL-3-1,2,3 0478 0479	2'x 4' Natural fissure and pinhole ceiling tiles	NAD	NA	1st floor ceiling areas. Identified in the 2009 and 2020 surveys for previous abatement projects.
AD-FLUE-4-1,2 0476 0477	Flue Cement / Boiler Exhaust Breeching - Gray	NAD	NA	Basement at chimney flue. Identified in the 2009 and 2020 surveys for previous abatement projects.
AD-WLPL-5-1,2,3 0480, 0481, 0482, 0483, 0492, 0493, 0498, 0499, 0500, and 0501	Wall/ Ceiling Plaster – Skim Coat and Base Coat – White/Gray	NAD	NA	Various locations throughout entire structure. Identified in the 2009 and 2020 surveys for previous abatement projects.
AD-FLVCS-6-1,2 0488 0489	**12"x 12" Gold Stone Sheeting – Black and Tan**	**14% Chrysotile**	**120 SF**	**1st Floor Hallway. Identified in the 2009 and 2020 surveys.**
AD-FLVCT-7-1,2 0484 0485	**12"x 12" Gray mottled floor tile**	**2.0% Chrysotile**	**110 SF**	**1st Floor – Unisex Bathroom. Identified in the 2009 and 2020 surveys.**
AD-VAP-8-1,2	Black vapor Barrier	NAD	NA	Unver FLVCT-7. Identified in the 2009 and 2020 surveys.
AD-GROUT-9-1,2,3	Ceramic tile grout	NAD	NA	1st floor – unisex bathroom. Identified in the 2009 survey for previous abatement project.
AD-FLCVT-10-1,2 0490 0491	**12"x 12" Yellow Floor Tile**	**6.4% Chrysotile**	**80 SF**	**1st Floor Kitchen floor, counter and wall. Identified in the 2009 and 2020 surveys for previous abatement projects.**
AD-FLVCS-11-1,2	Red brick sheeting (Removed)	NAD	NA	1st Floor. Identified in the 2009 survey and removed during a previous renovation project.
AD-FLVCT-12-1,2	Brown floor tile (Removed)	NAD	NA	1st Floor. Identified in the 2009 survey and removed during a previous renovation project.
AD-FLVCT-13-1,2	Blue floor tile (Removed)	NAD	NA	1st Floor. Identified in the 2009 survey and removed during a previous renovation project.

Phillipse Manor Cottage – Previous Survey Asbestos Sample Results				
Sample No.	**Material Description**	**Lab Results (% Asbestos)**	**Material Quantities**	**Material Location**
AD-WLSH-14-1,2,3 0496 0497	Wall sheetrock	NAD	NA	1st and 2nd floors. Identified in the 2009 and 2020 surveys for previous abatement projects.
AD-FLVCT-155-1,2	**Brown floor tile**	**7.6% Chrysotile**	**25 SF**	**2nd floor hallway. Identified in the 2009 survey for previous abatement project.**
0496 0497	1st Floor SE office – Ceiling Tile – White/Gray	NAD	NA	Office ceiling tile. Identified in the 2019 survey report.
52506 52507	Roof Shingle	NAD	NA	Roof Shingles. Identified in the 2019 Envirologic survey report.
52508 52509	**Gutter Tar**	**8.2% Chrysotile**	**<10 SF**	**Gutter tar. Identified in the 2019 Envirologic survey report.**
52510 52511	**Vent Tar**	**6.6% Chrysotile**	**2 SF**	**Vent Tar. Identified in the 2019 Envirologic survey report.**
AD-GLAZE-16-1,2 52512 52513	Window glaze	NAD	<1 SF	Exterior window glaze, first and second floors. Identified in the 2009 survey and in the 2019 survey.
ADCAULK-17-1,2 52514 52515	**Window caulk**	**Anthophyllite/ Tremolite 7.1%**	**17 SF**	**Exterior window frame caulk, first and second floors. Identified in the 2009 survey and in the 2019 survey.**
52516 52517	**Door caulk**	**Actinolite/ Tremolite 5.7%**	**<10 SF**	**Exterior door caulk. Identified in the 2019 Envirologic survey report.**

NAD – No Asbestos Detected
N/A – Not Applicable
Trace – Less than 1% asbestos, considered non-asbestos containing material

In accordance with NYSDOL Industrial Code Rule 56, all material determined to be asbestos-containing must be removed by a licensed asbestos abatement contractor prior to demolition activities affecting them. This regulation also requires that a copy of this report be provided on site for all contractors to review during the work. A copy must also be sent to the local NYSDOL asbestos control bureau office, the government entity charged with issuing demolition permits or, if no such permit is required, to the town or city clerk where the building is located. Should unidentified materials be discovered during the demolition work, the owner and contractor will be liable to follow the procedures identified in ICR56.

Of the materials sampled for asbestos, one was found to contain asbestos. However, after reviewing past sampling reports, eight ACM building materials were identified in areas scheduled for renovation.

Lead-Based-Paint Sampling

The lead-based paint characterization of Philipse Manor Hall included the collection of 7 paint chip samples and was intended to screen the painted surfaces which were accessible at the time of the investigation. The lead-based paint laboratory report is included in Appendix C and the paint sample results are summarized in the table below:

Philipse Manor Hall – Lead-Based Paint Sample Results

Sample Number	Painted Component	Component Substrate	Color	Paint Condition	Location	Result (% Lead)
Black-1	Exterior Fire Escape	Metal	Black	Poor	NW fire escape stairs	0.0406
White-2	**Exterior wood siding**	**Wood**	**White**	**Fair**	**Siding on west side**	**3.7**
Green-3	**Window sill – interior**	**Wood**	**Green**	**Good**	**Interior window sill at landing**	**17**
Gray-4	**Window sill – interior**	**Wood**	**Gray**	**Good**	**Interior window sill at landing**	**8.4**
White-5	**Ceiling plaster paint**	**Plaster**	**White**	**Good**	**Interior – under stairwell**	**9.7**
Stairs-6	Stairwell and floor	Wood	Brown	Good	Interior stair tread and floor	0.265
Gray-1	Tool shed siding	Wood	Gray	Poor	Exterior shed – Adjacent to Cottage	0.0397

Historical assessments of the Philipse Manor Cottage previously conducted include "*Paradigm – Philipse Manor Hall State Historic Site - Cottage-Interior 29 Warburton Avenue Yonkers, New York 10701*", dated January 7, 2020. This survey report included the sampling of suspect lead-based paint within the renovation area of the Philipse Manor Cottage. The complete reports are included in Appendix D. A summary of lead-based paints identified within the renovation area are summarized in the table below:

Philipse Manor Cottage – Previous Lead-Based Paint Sample Results

Sample Number	Painted Component	Component Substrate	Color	Paint Condition	Location	Result (% Lead)
1	**Window Casing – Exterior**	**Wood**	**White**	**Fair**	**Exterior Window Casing**	**2.18**
2	**Window Sash – Exterior**	**Wood**	**White**	**Poor**	**Exterior Window Sash**	**0.893**
3	**Upper Trim – Exterior Soffit**	**Wood**	**White**	**Fair**	**Exterior Soffit**	**6.34**
4	Basement – Column	Steel	Black	Fair	Basement Column	0.0485
5	Basement – Wall	Stone	White	Fair	Basement Wall	0.00753
6	**Basement – Stored Wall**	**Stone**	**Tan**	**Fair**	**Basement Stored Wall**	**7.95**
7	SW Office – Window Sill	Wood	Tan	Fair	Window Sill	0.0841
8	1st Floor Bathroom – Window Sash	Wood	White	Fair	Window Sash	0.143
9	**Kitchen Wall**	**Plaster**	**Tan**	**Fair**	**Wall Above Ceiling**	**5.61**

Philipse Manor Cottage – Previous Lead-Based Paint Sample Results						
Sample Number	**Painted Component**	**Component Substrate**	**Color**	**Paint Condition**	**Location**	**Result (% Lead)**
10	Kitchen Door Trim	Wood	White	Fair	Kitchen Door Trim	0.160
11	2nd Floor Window Frame	Wood	White	Fair	2nd Floor North Closet Window Frame	2.46

In the tables above, the samples collected have been listed along with the location, component, substrate, color, condition, and laboratory result. Of the samples collected, ten are considered lead-based paint by the U.S. Environmental Protection Agency (EPA – HUD) definition (greater than 0.5 % by weight). The Occupational Safety & Health Administration (OSHA) considers paint with any concentration of lead to fall under the OSHA Construction Standard for lead. Contractors disturbing lead-based or lead-containing paint must comply with this Standard cited in 29 CFR 1926.62.

If you have any questions, please call me at (518) 218-1801. It was a pleasure working with you on this project and I hope we can be of service in the future.

Sincerely,

BARTON & LOGUIDICE, D.P.C.

Sebastian L. Reeves
Project Industrial Hygienist

John E. Rigge
Vice President

SLR/JER/tmj
Attachments

SECTION 02 83 00
HANDLING AND DISPOSAL OF LEAD

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Demolition activities for the completion of work at Philipse Manor Hall will disturb surfaces containing lead, creating the potential for lead exposure to workers. The contractor shall comply with the conditions specified herein. The Occupational Safety and Health Administration (OSHA) regulates occupational exposure to lead under 29 CFR 1926.62, the Lead in Construction Standard. Any contractor disturbing painted surfaces shall comply with all the requirements of 29 CFR 1926.62 and this specification. The intent is for the contractor to protect his workers from exposure to lead during demolition activities that disturb lead. Contractors must also comply with the provisions of the US EPA Lead Renovation, Repair, and Painting, as applicable.

B. The Contractor shall provide labor, materials, tools, equipment and services necessary to protect workers and building occupants from lead exposure.

C. New York State Department of Environmental Conservation (NYSDEC) requires that lead containing loose and peeling paint, be disposed of as either industrial or hazardous waste, based on results of a Toxicity Characteristic Leaching Procedure (TCLP) Test. Loose and peeling paint cannot be treated as construction and demolition debris.

D. Contractor shall assume that all paint requiring removal is a hazardous waste and base his bid accordingly. The contractor is responsible for all laboratory analyses and costs required for waste characterization and disposal.

E. Work disturbing LBP shall be completed ancillary to work performed by others and is to be coordinated with the owner’s representative.

F. Exact quantities of paint to be impacted shall be determined by the contractor at the time of bidding, as paint conditions are subject to change. Contractor must satisfy himself as to the quantity of waste requiring removal and disposal and base his bid accordingly.

G. All work shall be performed in accordance with this specification and federal and state regulations. Sweeping of debris will not be permitted. Debris must be picked up using a self-contained vacuum system designed to evacuate wet or dry materials in an enclosed, controlled environment.

H. Waste material shall be contained, transported and disposed of in accordance with federal, state, and local regulations.

1.02 APPLICABLE REGULATIONS

A. The Contractor shall conduct work in a manner to ensure compliance with all applicable codes, rules, and regulations including but not limited to:

Worker Protection / Building Occupant Protection

Occupational Safety and Health Administration

29 CFR 1926.59, Hazard Communication

29CFR 1910.134, Respiratory Protection Standard

29 CFR 1926.20, General Safety and Health Provisions

29CFR 1926.62, Lead Exposure in Construction

29CFR 1910.94 and 1926.57, Ventilation

Department of Housing and Urban Development

24 CFR Parts 35, 36, 37- HUD Lead-Based Paint Regulations

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

Ambient Air Quality

Environmental Protection Agency

40 CFR 50.6 National Primary and Secondary Ambient Air Quality Standards for Particulate Matter

Water Quality

40 CFR 122, Administered Permit Programs; The National Pollutant Discharge Elimination System

Waste Disposal

40 CFR 261, Identification and Listing of Hazardous Waste

40 CFR 262, Standards Applicable to Generators of Hazardous Waste

40 CFR 263, Standards Application to Transporters of Hazardous Waste

New York State Department of Environmental Conservation (NYSDEC), Title 6, Part 360-7, 364, and 370-374.

B. In addition to the requirements listed in this specification, the abatement contractor shall, at his own cost and expense, comply with all laws, ordinances, rules, and regulations of federal, state, regional and local authorities regarding handling and storing of lead waste material.

C. Contractor shall be familiar with the documents referenced below and conform to their guidelines and all other applicable guidelines and requirements of the project.
   1. U.S. Department of Labor, Occupational Safety and Health Administration
   2. PUB 3126 - Working with Lead in the Construction Industry
   3. U.S. Department of Housing and Urban Development- Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June 1995.

D. The Contractor shall possess the following license and licensed personnel, as applicable, for work considered lead abatement according to 40 CFR 745.
   1. Environmental Protection Agency (EPA) Firm Certification to Conduct Lead-Based Paint Activities.
   2. Personnel possessing EPA Certifications in Lead-Based Paint Abatement Supervisor and Lead-Based Paint Abatement Worker, as applicable.

E. EPA Lead Renovation, Repair, and Painting - This regulation applies to child (less than 6 years of age) occupied facilities constructed before 1978. Affected painted surfaces must contain **1.0 mg/cm^2 or greater** lead content to be covered by this regulation. Additionally, disturbances of less than 6 sq. ft per room interior and 20 sq. ft. exterior are excluded.

1.03 LEAD HAZARD

A. Specific work practices may release lead in the form of dust, fumes or mists into the air or onto surrounding surfaces. Only the contractor can reduce the potential for exposure.

B. Lead is a toxic substance which may enter the body by breathing or swallowing lead dusts, fumes or mists. If food, cigarettes, or your hands have lead on them, lead may be ingested or inhaled. Once in the body, lead enters the bloodstream and may be carried to all parts of the body. The body can eliminate some of this lead, but if there is continued lead exposure, the body absorbs and stores more lead than it can eliminate. This stored lead may cause irreversible damage to cells, organs and whole body systems. After exposure stops, it takes months or even years for all lead to be removed from the body.

C. Exposure to lead may affect each person differently. Even before symptoms appear, lead may cause unseen injury to the body. During early stages of lead poisoning, mild symptoms may be overlooked as everyday medical complaints, including:

Loss of appetite	Joint and muscle aches
Trouble sleeping	Metallic taste
Irritability	Decreased sex drive
Fatigue	Lack of concentration
Headache	Moodiness

D. Brief intense exposure or prolonged overexposure may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some noticeable medical problems include:

Stomach pains	Tremors
Weakness of Extremities	Convulsions or seizures
High blood pressure	Anemia
Nausea	Constipation or diarrhea

E. Contractor's supervisor should be cognizant of all these symptoms. If a worker develops such symptoms he shall not be allowed in the removal areas until a physician performs blood lead sampling and determines that the worker is not suffering from lead exposure.

1.04 GENERAL REQUIREMENTS

A. The following general requirements apply for the project and include, but are not necessarily limited to the following:

1. Respiratory and Personnel Protection
2. Medical Examinations
3. One Temporary Shower/Washroom Facility with storage area for personnel belongings
4. Provisions of hot and cold running water for shower
5. Use of engineering controls as necessary
6. Collection and disposal of all loose and peeling paint as hazardous waste

PART 2 - SUBMITTALS

2.01 PRECONSTRUCTION

A. Prior to the start of construction, the contractor shall submit the following should his work require the disturbance and/or abatement of identified LBP materials.

B. WORKPLAN: Contractor shall submit a work plan for the lead work commensurate with the requirements of the OSHA Construction Standard and EPA, if applicable. Work plan shall additionally identify detailed aspects of how the contractor will handle, containerize, transport, and dispose of materials.

C. EQUIPMENT: Submit manufacturer certifications and information for all equipment to be used on this project.

D. EMPLOYEES: Submit documentation that all employees performing abatement of lead materials have received appropriate medical examinations and have successfully passed a fit test for the respirator to be worn. Submit documentation that contractor and employees comply with Article 1.2, Item D. of this Section.

E. DISPOSAL: Submit documentation that all required permits, disposal site locations, and arrangements for transportation and disposal of lead-contaminated waste have been obtained. Submit a written description and blank log forms for contractor's waste manifest system. Submit the name and credentials for the independent laboratory performing TCLP testing on waste generated.

F. SIGNAGE: Submit samples of signs to be used at building entrances to comply with specifications and applicable regulations.

PART 3 - EXECUTION

3.01 BUILDING ISOLATION AND SIGNAGE

A. Only the Contractor, Owner's Representative and maintenance staff will be allowed in the areas where lead removal is occurring. Anyone entering the work area will don appropriate respiratory protection and disposable coveralls.

B. Warning signs shall comply with 29 CFR 1926.62 and applicable regulations.

3.02 REMOVAL OF LEAD

A. Contractor will be required to remove all loose and peeling paint from surfaces impacted by the demolition/renovation activities that have been identified as LBP. The contractor shall investigate conditions and satisfy himself as to the extent of work required prior to bidding.

B. Contractor shall ensure that the paint that remains on the affected component shall be sufficiently adhered to the substrate.

3.03 HANDLING AND DISPOSAL OF LEAD

A. Hazardous Waste
1. Contractor shall follow all Federal and State regulations for waste handling, containerizing, transporting, and disposing of hazardous waste.
2. Contractor shall remove paint waste from the building following specification requirements. Waste shall be deposited directly into waste receptacles that will be used to transport the waste.
3. Contractor is responsible for providing all waste receptacles required for disposal. All waste temporarily stored on site shall be secured to prevent against unauthorized entry and vandalism. Contractor is responsible for all TCLP testing to properly classify the waste.
4. The Contractor shall establish a manifest system that meets Federal and State Regulations and accounts for all waste at all times.
5. The transporter must possess an approved EPA identification number. The appropriate NYS Hazardous waste manifest must be completed by the contractor.
6. The Contractor shall provide the Owner with copies of the EPA ID number of the transporter, NYSDEC manifest form and written acknowledgement

from the landfill that they are authorized by the EPA and the State where they are located, to accept and dispose of hazardous waste.

7. Final manifest and receipts must be provided to the Owner's representative within fourteen (14) days of the removal of waste from the site.

3.04 PROJECT CLOSEOUT

A. Prior to final payment, and before the issuance of a final certificate for payment in accordance with the provisions of the contract documents, Contractor shall comply with the following.

1. Contractor shall provide Building Owner with a written statement that loose and peeling paint has been removed from the required areas.
2. Provide copies of a physician's statement that workers pre-abatement and post-abatement medical tests have been performed. Also provide copies of *all* laboratory reports for air sampling and TCLP analyses.
3. Final disposal receipts for all waste.
4. Contractor shall have removed all equipment and materials applicable to the work from the site.

END OF SECTION

Attachment B

Geo-technical Report

F I N A L R E P O R T

GEOTECHNICAL INVESTIGATION AND FOUNDATION RECOMMENDATIONS

PHILIPSE MANOR HALL
29 WARBURTON AVENUE
YONKERS, NY

Prepared for:

Mr. Christopher T. Smith, RA, LEED AP
Senior Associate
Saratoga Associates
21 Congress Street, Suite 201
Saratoga Springs, NY 12866

March 12, 2021

Prepared By:

Geotechnical Engineering Services, P.C.
6 Bayberry Road
Elmsford, New York 10523

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SECTION ONE INTRODUCTION

1.1 GENERAL

As described by our geotechnical proposal, dated February 25, 2021, this report presents the results of a subsurface investigation and geotechnical recommendations for the proposed construction at Philipse Manor Hall, in Yonkers, New York. The objectives for this investigation were to determine the in-situ subsurface conditions at the site, as well as provide foundation design and construction-related recommendations for the proposed work at the above-mentioned address.

1.2 PROJECT LOCATION, DESCRIPTION, GEOLOGY AND SITE HISTORY

We understand that the project site is located on the grounds of the Philipse Manor Hall State Historic Site at 29 Warburton Avenue, in Yonkers, New York. The grounds are bordered to the east by Warburton Avenue, to the south by Dock Street, to the west by Woodworth Avenue, and to the north by a multi-story parking garage at 45 Warburton Avenue. No New York City Transit Authority (TA) Metro-North Rail Road rail structures are located within 200 feet of the site. We understand that the existing 2.5-story manor building and 1.5-story brick house on the grounds, each with one (1) basement level, were constructed in or around 1682. The grounds are also surrounded by other historic artifacts, statues, and structures, along with lawns, and a perimeter retaining wall.

Based on our recent discussions and subsequent information provided to us, we understand the proposed work has not yet been finalized, but will include a two-story addition with one (1) basement level onto the northwestern portion of the existing manor building, and other unknown improvements to the northern end of the property. We request to be informed of the final scope of the project, in order to confirm that our geotechnical recommendations will be appropriate for what will be constructed.

Geotechnical Engineering Services, P.C. (GES) did not perform any surveying and solely relied on information as measured in the field, as well as May 8, 1975 Topographic Survey by Konski Engineers, P.C. The elevations in this survey and this geotechnical report refer to the City of Yonkers Standard Datum, for which el. 0.0 in Yonkers Datum is equivalent to el. 3.24 in the National Geodetic Vertical Datum of 1929. Site grades generally range from about el. ±26 to ±37, from southwest to northeast corners of the property. Ground surface elevation at the proposed location of the addition ranges from about el. ±32 to ±33, and from about el. ±30 to ±36 along the northern property line. All depths in the borings in this report are from surrounding grade, as measured at the borings, and as shown on the Boring Location Plan, attached to this report.

Site History and Geology

Based on a review of historic maps, aerial photographs, and geologic maps for this area, it appears that the building was first constructed in 1682 and likely original to the property, which does not appear to have been occupied by any other structures, prior to the current layout. The site is located north of the terminal moraine, and therefore was subject to several advances and retreats of glacial ice across the area. According to the 1970 Geologic Map of New York – Lower Hudson Sheet, the site maps as being within Fordham Gneiss. However, none of the borings extended to bedrock during this investigation.

1.3 OBJECTIVES AND SCOPE OF SERVICES

The objectives of this investigation were to evaluate the subsurface conditions at the property, and to provide geotechnical and construction-related recommendations. The following scope of services was performed:

1. Performed geotechnical borings at four (4) locations, approximately where shown on the Boring Location Plan on Drawing No. B-100.00 in Figure 1.
2. Provided full-time controlled inspection of the drilling and sampling.
3. Prepared this report that includes the following:
   a) Description of the methodology of drilling and sampling;
   b) A Boring Location Plan showing the as-drilled locations of the borings;
   c) Results of engineering evaluations and recommendations regarding the foundation design including:
      - Foundation type and estimated allowable bearing pressure, based on potential construction at the site;
      - Geotechnical earthquake engineering considerations including Site Class and liquefaction evaluation;
      - Permanent and temporary groundwater control measures;
      - Support of excavation, underpinning, and lateral earth pressure considerations;
      - Basement slab-on-grade or mat foundation and new footing subgrade preparation;
      - Compaction control, excavation, and backfilling;
      - Construction monitoring considerations including optical and vibration monitoring, including protection of the on-site buildings and utilities.
   d) List of Figures, which includes the Boring Location Plan and a plot of ambient groundwater levels at the site.
   e) Appendices A and B, which include geotechnical boring logs and rock core photographic logs of the boulders encountered.

2.1 GENERAL

Our subsurface investigation consisted of field locating and drilling geotechnical borings at four (4) locations, as shown on our attached Boring Location Plan. A plot of groundwater levels is attached as Figure 2. Typed boring logs are attached to this report as Appendix A. Rock core photographic logs are attached as Appendix B. The details of the subsurface investigation program and the generalized subsurface conditions, are described below.

2.2 GEOTECHNICAL BORINGS

Geotechnical borings were performed at four (4) locations, denoted as B-1 through B-4, by Municipal Testing Laboratory, Inc. (MTL) of Hauppauge, New York, using a small Fordia Track-Mounted Drill Rig and GeoProbe Truck-Mounted Drill Rig, on March 3, 4, 8, 9, and 10, 2021. The borings were continuously inspected by Messrs. Aflaaz Saleem, Ahmed Obidat, and Michael Torino, P.E., all of GES.

As further discussed in Section 2.3 below, obstructions were occasionally encountered, which necessitated backfilling the boreholes with soil cuttings, and offsetting to new locations. Measurements of the offset locations from the original locations were made, and MTL drilled to the depth reached on the original boring, without soil sampling. The offset borings were denoted with an "A" after the boring number, as is shown in the Boring Location Plan and the typed boring logs. Borings that were offset include Borings B-2A, B-2B, and B-4A. Borings shown with a "W" after the boring number denote the location of a groundwater monitoring well, as is further discussed in Section 2.4 below.

The borings were drilled utilizing the mud-rotary drilling technique with a 3-7/8-inch or 2-15/16-inch diameter tri-cone roller bit and 4-inch or 3-inch diameter steel casing to stabilize each boring. Smaller casing became required, due to the presence of cobbles and boulders throughout drilling. Soil samples were obtained using techniques and equipment in general accordance with the American Society for Testing and Materials (ASTM) Standard Specification D1586-Standard Penetration Test (SPT). The SPT consists of driving a 2-inch O.D. split-spoon sampler typically to 24 inches of penetration, using repeated blows of a 140-lb hammer, free-falling a height of 30-inches. The standard penetration value, or N-Value, is determined as the number of blows required to advance the sampler the sum of the second and third 6-inch intervals of a typical 24-inch penetration.

The hammer used was an automatic trip hammer. This hammer operates with an efficiency of about 90% whereas the manual (cathead and rope) hammer operates at an efficiency of about 60%. This means that the blow counts reported on the boring logs where the automatic hammer was used, are about 2/3 of the values that would be reported if a conventional donut-type hammer had been used. A correction factor of 1.3 is generally used to convert the N-Values from the automatic hammer to the normalized N-Value (N_{60}).

Where the split-spoon sampler could not be advanced through a cobble or boulder, the sampler was driven for 50 blows, and distance of actual penetration less than 6 inches was recorded. Soil samples were placed in jars following completion of sampler advance and brought to MTL's Office for storage. Boring logs showing N-Values and stratigraphy are attached as Appendix A. The recovered split-spoon soil samples were labeled with the project name, boring number, sample number, depth of sample, SPT blow counts and length of recovery.

When the borings encountered a cobble or boulder that could not be drilled through, core drilling was performed using an NX-size core barrel with a diamond bit. Boulders were cored at Borings B-1, B-2, B-2A, B-3W, and B-4A. The length of recovery and Rock Quality Designation (RQD) was measured and calculated for each rock core run, and denoted as a percent recovery and percent RQD, respectively. RQD refers to the sum of the lengths of bedrock core pieces four inches or longer, neglecting mechanical breaks, expressed as a percentage of the total length of the core run. RQD does not apply to lengths of rock core collected of cobbles and boulders. Percentage recovery and RQD, and sample descriptions are included on the boring logs, attached as Appendix A.

All borings were drilled approximately where shown on the proposed boring location plan provided to us before the project began. SPT split-spoon soil sampling was generally performed continuously to 12 feet, except where boulders were encountered, then on five-foot centers to the completion depth of the borings. As shown below in additional details for each boring, ground surface elevations are noted where applicable:

- Boring B-1 (el. ±31) was drilled just northeast of the existing 1.5-story brick house at the northwestern corner of the property, to a depth of 37 feet below grade (el. -6±).
- Boring B-2 (el. ±35) was drilled within the lawn, the north central portion of the property, to a depth of 6.5 feet (el. ±28.5). Boring B-2 was offset to B-2A due to cobbles and boulders, then drilled to a depth of 12.5 feet (el. ±22.5). Boring B-2A was offset to B-2B due to cobbles and boulders, then drilled to a depth of 32 feet (el. ±3).
- Boring B-3W (el. ±36) was drilled near the northeast corner of the property, to a depth of 25 feet (el. ±25), where the borehole collapsed and was terminated. A 20-foot-deep PVC groundwater monitoring well was installed within Boring B-3W.
- Boring B-4 (el. ±33) was drilled near the northwest corner of the existing manor building, to a depth of 2 feet (el. ±31), where the boring was terminated due to cobbles and boulders. Boring B-4 was offset to B-4A, then drilled to a depth of 32 feet (el. ±1).

2.3 GENERALIZED SUBSURFACE CONDITIONS

The following general descriptions of the subsurface strata are based on our interpretations of the results of the field investigation. All depths are relative to surrounding grass at grade. Elevations have been added where possible. N-Values were not corrected for the use of the automatic hammer:

Stratum 1: Fill – The Fill generally consists of dense to very dense brown, black, and gray gravelly coarse to fine Sand, with sporadic cobbles and boulders, and varying amounts of brick and concrete fragments, silt, asphalt fragments, roots, and tile fragments. The Fill is also characterized by several layers of gravel, cobbles, and boulders. Nearly half of all samples encountered refusal, before being driven the full 24 inches for each sample. SPT N-Values ranged from 3 to over 100 blows per foot (bpf), with an average of 18 bpf, not including the samples that reached refusal. Boulders were also cored on nine (9) separate core runs within the Fill, which had recoveries ranging from 0 to 100 percent, with an average of 47 percent. Borings B-2, B-2A, and B-4 were terminated in Fill, after extending 6.5, 12.5, and 2 feet, respectively. Fill thickness ranges from 10.5 to 16 feet, with the bottom of Fill extending to between el. ±17.5 and ±25.5.

Stratum 2: Dense to Very Dense Sand and Gravel – Encountered below Stratum 1 in all borings, this stratum consists of dense to very dense brown and gray coarse to fine Sand and Gravel with

sporadic cobbles and boulders, varying amounts of silt. Stratum 2 was found in Borings B-1, B-2B, B-3W, and B-4A, and measured to range in thickness from 2 to 14.5 feet. This stratum was found to extend to depths ranging from 12.5 to 30 feet below grade, or to about el. ±3 to ±23.5. Stratum 2 was not sampled in Boring B-3W, as Stratum 3 was found at the bottom of a core run in Boring B-3W. Based on the progress of that boring, a 2-foot-thick layer of Stratum 2 was presumed in Boring B-3W. A quarter of all SPT split-spoon samples taken within Stratum 2 encountered refusal. SPT N-Values ranged from 24 to over 100 bpf, with an average of 64 bpf, neglecting the samples encountering refusal. Boulders were also cored twice, with recoveries of 0 and 92 percent.

Stratum 3: Sand with Silt – Encountered below Stratum 2 in Borings B-1, B-2B, B-3W, and B-4A, Stratum 3 generally consists of red brown and brown medium dense to dense, coarse to fine Sand, with varying amounts of clayey silt, silt, and gravel, which extended to the completion depth of the above-mentioned borings. The top of Stratum 3 was measured to range from 12.5 to 30 feet below grade, with the top elevations ranging from ±3 to ±23.5. Borings B-1, B-2B, B-3W, and B-4A extended between 2 and 14 feet into Stratum 3, where the borings were terminated. SPT N-Values within Stratum 3 ranged from 12 to 42 bpf, with an average of about 23 bpf, with none of the SPT split-spoons being driven to refusal within Stratum 3.

2.4 GROUNDWATER CONDITIONS

Following completion of Boring B-3W, MTL installed a 20-foot-deep groundwater observation well on March 3, 2021 in the completed borehole, consisting of ten (10) feet of PVC slotted screen and ten (10) feet of riser surrounded by filter sand. Groundwater readings were taken manually on March 8 and 9, 2021 using an electronic water level indicator. An electronic piezometer was also installed to take hourly readings of the water levels from March 3, 2021 to March 10, 2021.

As shown in the attached plot of Groundwater levels in Figure 2, and based on the manual and electronic readings, the groundwater level dropped over the brief duration readings were taken, from about 7 to 13.5 feet below grade (or from about el. ±29 to ±22.5), from March 3 to 10, 2021, indicative that groundwater levels may be actually be deeper than 13.5 feet below grade, or about el. ±19.5. It must also be noted that no rain was received throughout the period of groundwater monitoring. Due to the urgent nature of providing this report, only one (1) week of readings could be taken. However, GES could return at a later date and take a manual groundwater reading to confirm the data collected, upon your request.

Therefore, with consideration of the data collected, and our analysis of the results, we therefore recommend a design groundwater level of about el. ±23. We would also recommend that a new property line survey be performed, and manual readings be re-taken in a few weeks, so that this design groundwater elevation can be refined, and to ensure the accuracy of our recommendation.

Please note that changes in groundwater levels may occur due to variations in seasonal influences, precipitation amounts, local pumping, utility leakage, and other factors different from those existing at the time the observations were made.

According to the FEMA flood hazard data for this area, the site is not located within a potential flood zone. It should be noted that changes in groundwater levels will occur between locations and over time, due to variations in seasonal influences, precipitation amounts, local pumping, utility leakage, and other factors different from those existing at the time the observations were made.

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SECTION THREE ENGINEERING EVALUATION AND RECOMMENDATIONS

3.1 GENERAL

This section of the report presents seismic considerations, our recommendations for feasible foundation and floor slab systems, lateral earth pressures, and permanent control of groundwater. Our evaluation and recommendations are based on the subsurface conditions encountered at the boring locations, our understanding of the site geology, foundation loading information, requirements of the NYSBC, and construction considerations.

3.2 SEISMIC CONSIDERATIONS

The subsurface conditions at this site below the groundwater level generally consists of dense to very dense Fill (Stratum 1) over dense to very dense sand and gravel (Stratum 2), over medium dense to dense sand with silt (Stratum 3). Due to the highly dense nature of soil below groundwater, liquefaction is not a concern at this site. We recommend the site be classified as Site Class "D" from the International Building Code (IBC). The Mapped Spectral Accelerations were determined to be $S_1 = 0.3$, $S_s = 0.06$ with corresponding site coefficients of $F_a = 1.6$ and $F_v = 2.4$.

3.3 FOUNDATION RECOMMENDATIONS

Based on our recent discussions, and information provided to date, we understand your client plans to construct a small addition onto the northwest corner of the existing manor building, approximately where Boring B-4 and B-4A were performed, which would consist of bathrooms and an elevator pit. We understand that this elevator would extend to the basement level, though we are not yet aware of how deep the excavation would extend. Additionally, we are not yet aware of the proposed construction in the area of Borings B-1, B-2, and B-3W, along the northern property line.

Therefore, due to the lack of information at this stage in the project, our recommendations will remain somewhat general at this time. Should additional information regarding the proposed construction be provided, which may impact our recommendations discussed herein, we reserve the right to revise our foundation and construction-related recommendations.

Therefore, presuming one (1) basement level for the two-story addition, we recommend that the foundation be designed to be shallow footings or a mat foundation, with a recommended maximum allowable bearing pressure of 1 ton per square foot (tsf), bearing on Stratum 1 – Fill or Stratum 2 – Dense to Very Dense Sand and Gravel. We also recommend that the new foundation be designed to bear at the same level as the existing foundation for the manor building, if a below grade level is constructed. We highly recommend the performance of exploratory test pits against the foundation of the existing building, to determine the depth of the basement level. Matching or stepping away from the bottom of the existing foundation would prevent the need to underpin the existing manor building. Additionally, as is further discussed in Section 4.3, a line of influence below existing structures of 1.5H:1V for excavation and foundation construction, must be maintained, as to not undermine existing foundations.

We recommend that the subgrade for any new footings/mat is proof-rolled with a minimum of six (6) overlapping passes of a vibratory plate tamper, or as otherwise approved by the Engineer. We highly recommend that preparation of subgrade for new footings/mat and/or slabs-on-grade be inspected by a special inspector. We also recommend that any vibrations used to compact or proof-

roll soil be kept to a minimum, as to not induce excess vibrations or movement of existing structures, as is further discussed in Section 4.7 below.

If Fill is used as the foundation bearing material, it must be free of voids, and extensive inclusions of mud and organic materials, such as paper, wood, garbage, cans, or metallic objects and debris. It is anticipated that settlement under the building loads would be expected to be on the order of ½ inch, though most of the settlement is expected to occur during construction. A minimum of 6 inches of ¾-inch crushed stone should be placed under the footings/mat and/or slab-on-grade and compacted. The recommended bearing pressure is also dependent on GES being retained to provide controlled inspection of the subgrade.

Prior to construction of the footings/mat, the subgrade shall be inspected by a NYS-licensed geotechnical engineer, familiar with the soil conditions. The recommended bearing pressure is also contingent upon GES providing subgrade inspection. Should the soil at the design subgrade elevation be found to be unsuitable, softer and wetter areas may need to be removed and replaced by ¾-inch clean crushed stone and compacted in maximum 12-inch-thick lifts.

3.4 LATERAL EARTH PRESSURES

The design lateral pressures for permanent below grade foundation elements consist of static pressures that are influenced by the thickness and type of overburden material. For design purposes, we recommend that the below grade foundation elements above the design groundwater level be designed for a static lateral soil pressure of 45 pcf, and that the walls below the design groundwater level be designed for a static lateral soil pressure of 85 pcf.

The New York State Building Code also requires that the below grade foundation elements be designed to resist seismic loads. We recommend using a seismic lateral soil force of $6H^2$ (lb/ft of foundation element), where H is the total vertical height in feet. This force is in addition to the static force, applied at a distance of H/3 from the top of the foundation element (pressure is an inverted triangle).

The recommended lateral pressure does not include any surcharge loads adjacent to the walls or at the ground surface. We recommend adding a uniform (i.e., rectangular) lateral pressure distribution of 0.40 times the surcharge to the lateral soil pressure distribution. The structural engineer should determine the magnitude of the surcharge loads (i.e., live loads), based on the final design of the surrounding area.

3.5 PERMANENT GROUNDWATER CONTROL

Our groundwater monitoring well in Boring B-3W showed that groundwater dropped from about 7 to 13.5 feet below grade (or from about el. ±29 to ±22.5), while reading the well over the course of a week. We recommended above in Section 2.4, that this groundwater level be re-checked at a later date, upon your request, to confirm the accuracy of our recommendations. Therefore, at this time, the recommended design groundwater level is el. ±23, or about 10 feet below grade where the addition would be constructed.

Based on our findings and contingent upon a subsequent visit to confirm the groundwater level, it is our professional opinion that groundwater would not likely be encountered. However, we recommend that a vapor barrier be placed below any subsurface foundation element to prevent intrusion of moisture into the concrete. The material used for the vapor barrier should be submitted

to the geotechnical engineer for review and approval. We recommend that the vapor barrier be inspected by a controlled inspector, or installed by a certified installer. We also recommend that the bottom of foundation for the new addition be designed to be above the design groundwater level, once it is confirmed by another visit to the site to re-check the water level, if requested by the Owner to do so.

4.1 GENERAL

The following sections provide recommendations regarding temporary surface water control during foundation construction, temporary support of excavation, preparation of the subgrade for shallow footings / mat foundation / slab-on-grade, excavation considerations, backfill and compaction control, pre- and post-construction surveys of existing buildings or utilities, construction monitoring, and geotechnical engineer inspection requirements.

4.2 TEMPORARY GROUNDWATER CONTROL

Our groundwater monitoring well in Boring B-3W showed that groundwater dropped from about 7 to 13.5 feet below grade (or from about el. ±29 to ±22.5), while reading the well over the course of a week. It is not known if the water levels change dramatically due to storm events at this site, or the higher end of the readings are due to the fact the boring had just been completed. In either case, based on the scope of the proposed construction, it does not appear that a significant dewatering program would be required for this project.

Since the bottom of the new foundation would likely be constructed above where groundwater was encountered, we recommend that any surface water from rain events, or other reasons be disposed of by the use of sump pumps. All foundation subgrades, which include mat foundations, footings, or slabs-on-grade should be protected from rain events before the placement of concrete. All concrete placement should be performed in the dry and maintain dry working conditions during foundation construction.

4.3 TEMPORARY SUPPORT OF EXCAVATION AND UNDERPINNING

As has been discussed above, we understand that the new addition will have one (1) basement level, which will be constructed close to the existing manor building, which also has one (1) basement level. Determination of bottom of foundation for the manor building was not part of the scope for this investigation. As further discussed in Section 3.3 above, we highly recommend the performance of two (2) exploratory test pits against the existing manor building, in order to determine the condition, depth, and plan dimensions of the existing foundation.

Due to the age of the manor building, it is highly likely that the foundation is very fragile and must not be disturbed or undermined in any way, while constructing the new addition. We recommend that after performance of the test pits that the support of excavation recommendations be provided. However, at this time, we recommend that the excavation for the new addition be sloped on a 1H:1V slope, in order to minimize the exposure of the foundation. We recommend that a structural engineer assess the structural integrity of the manor building's foundation. If it is determined that a sloped excavation is not possible, due to the age and fragility of the building foundation, we recommend that the excavation for the new addition be accomplished through the use of drilled soldier piles with timber lagging for soil retention between the piles. Absolutely no external flush of water shall be allowed. Additionally, we strongly recommend against the use of air as a flushing medium for installing soldier piles.

As stated above, we recommend the foundation be designed such that underpinning is avoided by either matching the foundation depth of the existing foundation, or stepping away from the existing foundation on a 1.5H:1V slope, below the existing foundation. This line of influence below all adjacent foundations must be maintained at all times. The depth of foundations must also be

selected as to not bear above existing foundations and induce lateral pressure on existing foundations. The Contractor must perform their work such that no adverse impacts are imposed on the existing foundation at any time.

We recommend that the excavation for any new utilities can be supported by using timber sheeted pits, with wood lagging and bracing. Deeper utilities could require the design and installation of a support of excavation system, which can be addressed once the final design requirements for utilities have been determined. The design of any temporary excavation support system is the responsibility of a highly experienced, licensed New York State Professional Engineer. All excavations of temporary support systems should conform to pertinent OSHA and local safety regulations. The soil parameters used in the design of the temporary support system should be reviewed by the geotechnical engineer prior to construction of the support structures. Excavations and bracing are subject to controlled inspection.

An alternative to sheeted pits for utilities, is the use of sloping or benching excavations to the design subgrade level. We recommend that any slopes be carefully graded using a flat-plated excavator bucket to a slope no steeper than 1H:1V, and shall not undermine existing foundations. Benching of excavations should also be performed using a flat-plated bucket, with a maximum step height of two feet, and minimum bench width of three feet.

4.4 SUBGRADE PREPARATION

In order to limit differential settlement of the basement slab-on-grade and footings or mat foundation, we recommend that the soil subgrade be proof-rolled with a minimum of six (6) passes of a vibratory plate tamper, or other approved equipment having similar energy. Any unstable areas encountered which cannot be stabilized by additional compaction should be excavated to competent material and the area backfilled with compacted select or structural backfill. The proof-rolling should not be performed when the subgrade is wet, muddy, or frozen. If the footings/mat foundation/slab-on-grade are constructed in the winter, the subgrade should be protected from frost action to limit possible subgrade deterioration resulting from freezing and thawing cycles. Subgrade preparation and inspection are subject to controlled inspection.

4.5 EXCAVATION CONSIDERATIONS

Due to the age and fragility of the existing building, we highly recommend that excavation be performed with smaller sized equipment as to not impose undue vibrations on the existing manor house. We recommend that excavation and final cut for new slabs and footings be performed using a flat-plated excavator bucket or through the use of hand tools, i.e., shovels. This would also include sloping of any excavations, which must not be steeper than 1H:1V. Any over-excavated areas for foundation subgrade disturbed by construction or excavation activities must be completely removed and replaced with select backfill or crushed stone and compacted. We recommend that excavation and grading be performed under the continuous inspection of a geotechnical engineer.

Temporary support of excavation systems must follow recommendations as outlined in Section 4.3 above. The design of such system is the responsibility of the contractor and must adhere to all relevant codes and acceptable industry standards and practices.

4.6 BACKFILL AND COMPACTION REQUIREMENTS

Where needed, select backfill or structural backfill should be granular material only, free of cinder, brick, asphalt, ash, silt/clay, and other unsuitable materials. We recommend that structural backfill or select backfill beneath slabs-on-grade be compacted to a minimum of 95% of the maximum dry density, as determined by ASTM D1557, Method C. All backfill should be placed in lifts not exceeding 8 inches in loose thickness. All crushed stone should be placed in lifts not exceeding 12 inches in loose thickness. The subgrade underneath the backfill should be satisfactorily proof-rolled prior to placement of backfill and should also meet the same density requirements as the backfill to be placed above the subgrade. All fill placement shall be subject to special inspection.

4.7 PRE-CONSTRUCTION SURVEY AND MONITORING

A pre-construction survey should be performed for any structure/utility within 25 feet of excavation for this project. This includes the existing 2.5-story manor building and 1.5-story brick house at the northwest corner of the property, at a minimum. We recommend a monitoring plan be assembled by an experienced Professional Engineer. At a minimum, the plan should include the existing buildings and the surveyed locations and elevations of any nearby utilities within 25 feet of the site, to ensure they are protected and supported throughout construction. We recommend these utilities be monitored on a routine basis, as determined by the geotechnical engineer assembling the plan, to ensure no settlement/movement occurs.

At this time, we recommend that the maximum peak particle velocity (PPV) readings be kept below 0.5 in/sec for the buildings and 1 in/sec for any nearby utility, as measured by seismographs. Additionally, we recommend that the maximum permissible vertical and horizontal movement of the buildings be limited to ¼-inch, and ½-inch for utilities, as measured by optical prism points on the existing building and settlement monitoring points on utilities. These levels may be further lowered depending on the condition of the buildings/utilities, and based on the pre-construction survey. We also recommend that all portions of the building within 25 feet of the site be monitored for cracks or damage on a routine basis, to ensure no damage occurs to the existing buildings.

4.8 CONSTRUCTION INSPECTION

Our recommendations are contingent upon the proper review and observation during excavation and foundation construction operations by a geotechnical engineer familiar with the subsurface conditions and foundation design criteria. The geotechnical engineer's role should include the following:

- Review and approval of contractor submittals related to foundation construction;
- Observation and documentation of all phases of excavation and foundation construction;
- Controlled inspection of support of excavation, and subgrade preparation;
- Monitoring of subgrade preparation and structural fill placement and compaction.

SECTION FIVE CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and summary of recommendations are as follows:

1. Considering the dense nature of the soils below the water table, liquefaction is not a concern at this site. A Site Class of "D" is recommended for this site.
2. We understand your client plans to construct a small addition onto the northwestern corner of the existing manor building, with one (1) basement level, to connect to the existing building. We are not yet aware of the proposed construction in the area of Borings B-1, B-2, and B-3W, which line the northern property line. Therefore, based on the information we have, we recommend that the foundation for the new two-story addition, we recommend that the foundation be designed to be shallow footings or a mat foundation, with a recommended maximum allowable bearing pressure of 1 tsf, bearing on Stratum 1 or 2. Prior to construction of the footings, the subgrade of the spread footings/mat foundation shall be inspected by a NYS-licensed geotechnical engineer, familiar with the soil conditions.
3. Our groundwater monitoring well in Boring B-3W showed that groundwater dropped from about 7 to 13.5 feet below grade (or from about el. ±29 to ±22.5), while reading the well over the course of a week. We recommend a design groundwater level of about el. ±23. We recommend that a new survey be performed, and manual readings be re-taken in a few weeks, to confirm our recommendation.
4. We recommend that a vapor barrier be placed below any new footing or slab, to prevent intrusion of moisture into the concrete, for permanent groundwater control. We recommend that any surface water from rain events, or other reasons be pumped out by using sump pumps during construction. The subgrade for any new footing or slab must also be protected from rainwater or runoff, to prevent undermining the approved subgrade.
5. We recommend that the excavation for the new addition be supported using sloped excavations on a 1H:1V slope, pending an assessment of the existing manor building's structural integrity by the structural engineer. Drilled soldier piles with timber lagging should be used as an alternate, if sloped excavations are not recommended, pending the structural analysis. Excavations for trenches or utilities should be supported by using timber sheeted pits, with wood lagging and bracing or sloped excavations on a 1H:1V slope.The design of any temporary excavation support system should be the responsibility of a highly experienced and licensed NYS-P.E. We recommend that sloping/benching be performed using a flat-plated excavator bucket.
6. Where needed, select backfill or structural backfill should be granular material only, free of cinder, brick, asphalt, ash, silt/clay, and other unsuitable materials, compacted to minimum 95% of maximum dry density, and not exceeding 8 inches in loose thickness. All crushed stone should be placed in lifts not exceeding 12 inches in loose thickness. All fill placement shall be subject to special inspection by a special inspector.
7. Final cut for the subgrade for new footings/mat foundation/slabs-on-grade must either be performed by hand, i.e., shovels, or using the flat-plated bucket attached to an excavator. Any over-excavated areas or footing subgrade disturbed by construction or excavation activities must be completely removed and replaced with select backfill or crushed stone and compacted.
8. A pre-construction survey should be performed for any structure or utility within 25 feet of the construction site. A monitoring plan should be assembled by a NYS-licensed Professional

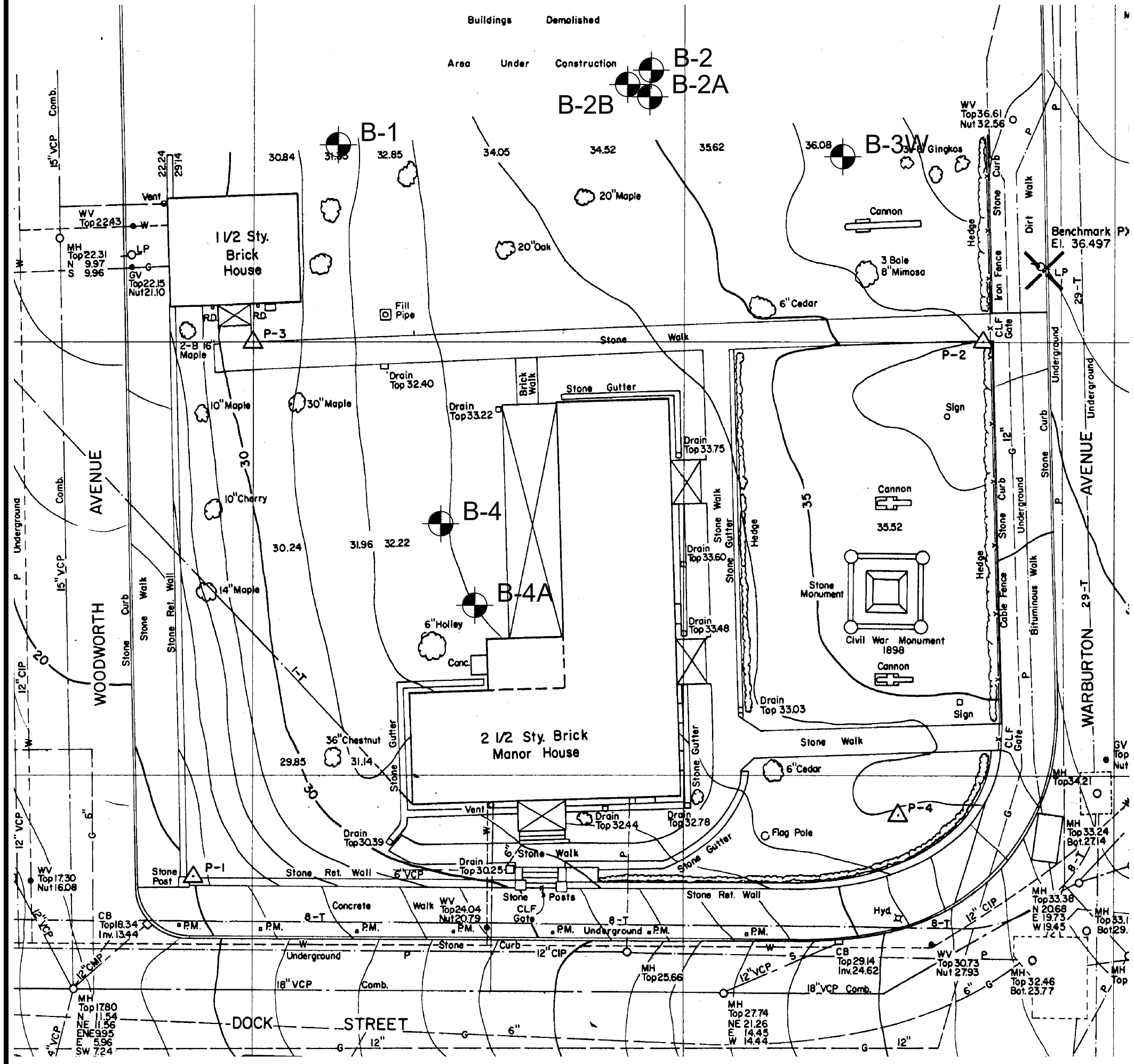
Engineer. We recommend that the maximum movement of the buildings be limited to ¼-inch, and ½-inch for utilities, as measured by optical prisms or settlement monitoring points.

9. Our recommendations are contingent upon GES being retained for controlled inspections as stated above.

Professional judgments were necessary in relation to determining stratigraphy and soil properties from the subsurface investigations. Such judgments were based partly on the evaluation of the technical information gathered, and partly on our experience with similar projects. If further investigation reveals differences in the subsurface conditions and/or groundwater level, or if the proposed building design is different from indicated herein, or is changed, it is recommended that we be given the opportunity to review the new information and modify our recommendations, if deemed appropriate.

The results presented in this report are applicable only to the present study, and should not be used for any other purpose without our review and consent. This study has been conducted in accordance with the standard of care commonly used as state-of-the-practice in the profession. No other warranties are either expressed or implied.

FIGURES



N

LEGEND

BORING # — GES BORING

(A : BORING OFF SET)

(B : BORING OFF SET)

(W : MONITORING WELL)

No.	DESCRIPTION	DATE	BY

GES

GEOTECHNICAL ENGINEERING SERVICES, P.C.

6 BAYBERRY ROAD
ELMSFORD, NEW YORK 10523
PHONE:914-592-4616 FAX:914-592-0416

PHILIPSE MANOR HALL
YONKERS, NY

BLOCK: LOT: ZONE: MAP:

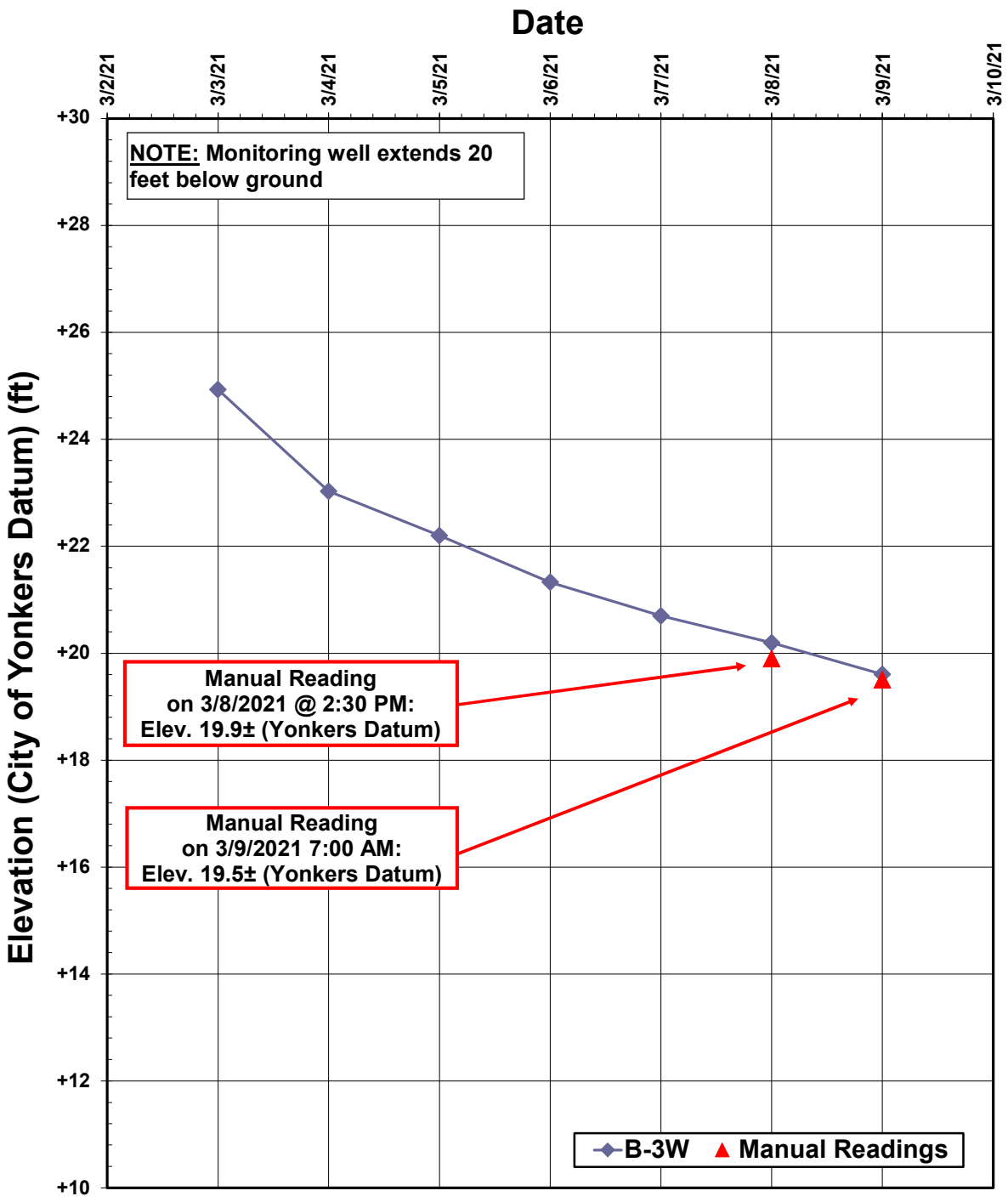
BORING
LOCATION PLAN

UNAUTHORIZED ALTERATION OR ADDITION TO THIS PLAN IS A VIOLATION OF SECTION 7209 OF THE NYS EDUCATION LAW. COPIES OF THIS PLAN NOT BEARING THE PROFESSIONAL ENGINEER'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.

PROJECT #:	2021020
SCALE:	NTS
DATE:	03/09/2021
DRAWING NO:	B-100.00
SHEET NO:	1 OF 1

PROFESSIONAL ENGINEER

Philipse Manor Hall
Groundwater Levels



Water Level Readings **Boring B-3W** **Philipse Manor Hall** **Yonkers, NY 10701**		
GES, P.C. **Elmsford, New York**		
DRAWN BY: MT	**SCALE:** AS SHOWN	**PROJ NO:** 2021020
CHECKED BY: ZHM	**DATE:** 3/9/21	**FIGURE NO:** 2

APPENDIX A

Log of Boring B-1

Project: Philipse Manor Hall			**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY			
Date(s) Drilled: **3/9/21 - 3/10/21**	Inspector: **Ahmed Obidat**		Coordinates: **North:** **East:**
Drilling Agency: **Municipal Testing Laboratory (MTL)**	Foreman: **Dave Johnson**		Approximate Surface Elevation (feet): **± 31**
Drilling Equipment: **Geoprobe Truck Rig**	Drilling Method: **Mud Rotary**		Completion Depth (feet): **37.0** Rock Depth (feet): **NA**
Casing Size/Type: **4" Steel**	Size/Type of Bit: **3-7/8" Roller Bit**		Sampler Type(s): **2" Split Spoon**
Groundwater Level and Date Measured: **NA** **NA**	Hammer Wt/Drop: **140/30" (Auto)**	Casing Hammer Wt/Drop: **140/30" (Auto)**	Size/Type of Core Barrel: **3" HQ**
Boring Location: **See Boring Location Plan (Figure 1)**			No. of Samples **Dist.: 9** **Undist.: 0** **Core (ft): 7**

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont. (%)	% Fines	REMARKS
0	S-1a	0.3	27					Topsoil: Dark brown medium to fine Sand, some Silt, Roots					S-1: Dry
	S-1b	0.2	50/2"					FILL: Brown, reddish brown, and white coarse to fine Sand, some Gravel trace Silt					Hard drilling from 0.5 to 5 ft S-1 through S-4: Spoons driven to refusal Cased to 3.5 ft
5	S-2	0.3	50/5"					FILL: Gray Gravel, some coarse to fine Sand, trace Silt					S-2: Moist
				C-1	45	0		Gray Cobbles and Boulder fragments					Loss of water from 5.5 to 11 ft
				C-2	40	0		Gray Cobbles and Boulder fragments					
10				C-3	0	0		No Recovery. Presumed to be Cobbles or Boulder					
	S-3	0.5	50/6"					FILL: Gray Gravel and coarse to fine Sand, trace Silt					
	S-4	0.2	50/5"					FILL: Gray Gravel					Hard drilling from 12.5 to 15 ft Cased to 12 ft
15	S-5	0.3	15 16 26 38					NATURAL: Grayish brown and black coarse to fine Sand, some Gravel, trace Silt (SP)					Cased to 18 ft
20				C-4	0	0		No Recovery. Presumed Cobbles					

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Log of Boring B-1

Project: Philipse Manor Hall | **Project Number: 2021020**

Location: 29 Warburton Avenue, Yonkers, NY

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
20	S-6	0.5	32 20 16 17					Brown and black coarse to fine Sand, some Gravel, trace Silt (SP)					Loss of circulation from 19 to 25 ft S-6: Moist
													Cased to 24 ft Losing water from 24 to 30 ft
25	S-7	0.2	22 50/5"					Gravel stuck in tip of spoon. Presumed Same as Above (SP)					S-7: Wet, Spoon driven to refusal at 25.9 ft
													Reddish brown wash at 28 ft
30	S-8	0.0	20 19 16 15					Reddish brown Clayey Silt (ML)					S-8: Moist. 3" Spoon used
35	S-9a	0.3	12					Reddish brown Silt, trace Clay, fine Sand (ML)					S-9: Moist
	S-9b	0.3	11					Brown Silty Clay (CL)					
	S-9c	1.0	8 10					Reddish brown coarse to fine Sand, trace Silt (SP)					
40								Boring Completed to 37 ft below ground. Boring backfilled with cuttings upon completion					

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Log of Boring B-2

Project: Philipse Manor Hall			**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY			
Date(s) Drilled: **3/3/21 - 3/4/21**	Inspector: **Aflaaz Saleem**		Coordinates: **North: East:**
Drilling Agency: **Municipal Testing Laboratory (MTL)**	Foreman: **Karthrik Gopidi**		Approximate Surface Elevation (feet): **± 35**
Drilling Equipment: **Fordia Track Rig**	Drilling Method: **Mud Rotary**		Completion Depth (feet): **6.5** / Rock Depth (feet): **NA**
Casing Size/Type: **4" Steel**	Size/Type of Bit: **3-7/8" Roller Bit**		Sampler Type(s): **2" Split Spoon**
Groundwater Level and Date Measured: **NA / NA**	Hammer Wt/Drop: **140/30" (Auto)**	Casing Hammer Wt/Drop: **140/30" (Auto)**	Size/Type of Core Barrel: **3" HQ**
Boring Location: **See Boring Location Plan (Figure 1)**			No. of Samples: **Dist.: 3 Undist.: 0 Core (ft): 1**

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0	S-1	1.4	13 6 9 9					FILL: Black and brown medium to fine Silty Sand, some Gravel, Asphalt fragments, trace Mica					S-1: Moist
	S-2	1.8	6 10 17 17					FILL: Black and brown medium to fine Sand, some Gravel, Wood and Brick fragments [7]					S-2: Moist
5	S-3	1.5	15 13 21 50/0"					FILL: Black and brown medium to fine Sand, some Gravel, Brick and Asphalt fragments [7]					S-3: Moist
				C-1	50	0		Gray Cobbles and Boulder fragments					Spoon refusal at 5.5 ft
								Boring Completed to 6.5 feet below ground due to obstructions. Boring backfilled with cuttings and offset 6 ft south. See log for B-2A.					
10													
15													
20													

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Log of Boring B-2A

Sheet 1 of 1

Project: Philipse Manor Hall	**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY	

Date(s) Drilled	**3/4/21 - 3/4/21**	Inspector	**Aflaaz Saleem**	Coordinates	**North:** **East:**
Drilling Agency	**Municipal Testing Laboratory (MTL)**	Foreman	**Karthrik Gopidi**	Approximate Surface Elevation (feet)	**± 35**
Drilling Equipment	**Fordia Track Rig**	Drilling Method	**Mud Rotary**	Completion Depth (feet) **12.5** / Rock Depth (feet)	**NA**
Casing Size/Type	**4" Steel**	Size/Type of Bit	**3-7/8" Roller Bit**	Sampler Type(s)	**2" Split Spoon**
Groundwater Level and Date Measured	**NA** **NA**	Hammer Wt/Drop **140/30" (Auto)** / Casing Hammer Wt/Drop **140/30" (Auto)**		Size/Type of Core Barrel	**4" and 3 HQ"**
Boring Location **See Boring Location Plan (Figure 1)**				No. of Samples **Dist.: 3** **Undist.: 0** **Core (ft): 3**	

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0								Drilled with 4" casing directly to 5 ft					
				C-1	100	0		Gray Boulder					Cored with 4" casing from 2.5 to 3.7 ft
5	S-1	0.8	2 2 3 2					FILL: Tan coarse to fine Sand, some Gravel, trace Silt					S-1: Moist Cased to 5 ft Cased to 7 ft
	S-2	0.9	7 57 50/0"					FILL: Brown Silty coarse to fine Sand, some Gravel, Brick fragments					S-2: Moist, Spoon refusal at 8 ft Cased to 9 ft
10	S-3	0.1	12 62 50/0"					FILL: Gray Gravel					S-3: Moist, Spoon refusal at 10 ft
				C-2	100	0		Gray Boulder					Cored with 3" HQ core barrel from 11 to 12.5 ft. Loss of water while coring
15								Boring Completed to 12.5 feet below ground due to obstructions. Boring backfilled with cuttings and offset to Northwest. See log for B-2B.					
20													

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Log of Boring B-2B

Project: Philipse Manor Hall				**Project Number: 2021020**	
Location: 29 Warburton Avenue, Yonkers, NY					
Date(s) Drilled	**3/8/21 - 3/8/21**	Inspector	**Ahmed Obidat / Mike Torino, P.E.**	Coordinates	**North: East:**
Drilling Agency	**Municipal Testing Laboratory (MTL)**	Foreman	**Dave Johnson**	Approximate Surface Elevation (feet)	**± 35**
Drilling Equipment	**Geoprobe Truck Rig**	Drilling Method	**Mud Rotary**	Completion Depth (feet) **32.0** / Rock Depth (feet)	**NA**
Casing Size/Type	**4" Steel**	Size/Type of Bit	**3-7/8" Roller Bit**	Sampler Type(s)	**2" Split Spoon**
Groundwater Level and Date Measured	**NA** **NA**	Hammer Wt/Drop **140/30" (Auto)** / Casing Hammer Wt/Drop **140/30" (Auto)**		Size/Type of Core Barrel	**NA**
Boring Location **See Boring Location Plan (Figure 1)**				No. of Samples **Dist.: 6** **Undist.: 0** **Core (ft): 0**	

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0								Drilled directly to 12 ft without sampling. See Boring Log B-2A for soil from 0 to 12 ft					Cased to 12 ft
5													
10													Void from 9 to 10 ft Loss of circulation at 9.5 ft
	S-1	1.1	6 17 30 35					FILL: Brown coarse to fine Sand, some Gravel, trace Silt					S-1: Moist Cased to 13.5 ft
	S-2	0.0	50/3"					FILL: No Recovery. Presumed Same as Above					Spoon refusal at 14.3 ft
15								Cobbles and boulders					Hard drilling from 14.5 to 16 ft
	S-3	1.0	11 30 37 52					NATURAL: Brown coarse to fine Sand, some Gravel, trace Silt (SP)					S-3: Moist Cased to 14.5 ft
20													

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Log of Boring B-2B

Project: Philipse Manor Hall | **Project Number: 2021020**

Location: 29 Warburton Avenue, Yonkers, NY

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
20	S-4a	0.9	15 25					Brown coarse to fine Sand, some Gravel, trace Silt (SP)					S-4: Moist
	S-4b	0.4	60 77					White Gravel, some coarse to fine Sand (GP)					Cased to 19 ft
													Hard drilling from 22 to 25 ft
25	S-5	0.2	17 11 13 17					No Recovery. Presumed same as above (GP)					Hard drilling and loss of circulation from 25 to 30 ft
30	S-6	0.0	11 12 16 18					Reddish brown Clayey Silt (ML)					S-6: Moist. No Recovery with 2" Spoon, 3" Spoon used
								Boring completed to 32 ft below ground. Boring backfilled with cuttings upon completion.					
35													
40													

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Log of Boring B-3

Project: Philipse Manor Hall			**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY			
Date(s) Drilled: **3/3/21 - 3/3/21**	Inspector: **Aflaaz Saleem**		Coordinates: **North: East:**
Drilling Agency: **Municipal Testing Laboratory (MTL)**	Foreman: **Karthrik Gopidi**		Approximate Surface Elevation (feet): **± 36**
Drilling Equipment: **Fordia Track Rig**	Drilling Method: **Mud Rotary**		Completion Depth (feet): **25.0** Rock Depth (feet): **NA**
Casing Size/Type: **4" Steel**	Size/Type of Bit: **3-7/8" Roller Bit**		Sampler Type(s): **2" Split Spoon**
Groundwater Level and Date Measured: **16.5 ft 3/9/21**	Hammer Wt/Drop: **140/30" (Auto)**	Casing Hammer Wt/Drop: **140/30" (Auto)**	Size/Type of Core Barrel: **2" NX**
Boring Location: **See Boring Location Plan (Figure 1)**			No. of Samples: **Dist.: 9 Undist.: 0 Core (ft): 4**

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0	S-1	1.2	3, 5, 8, 10					FILL: Brown Clayey medium to fine Sand, some Gravel, trace Root and Brick fragments					S-1: Moist
	S-2	1.8	10, 12, 9, 8					FILL: Brown Silty medium to fine Sand, some Gravel					S-2: Moist
5	S-3	1.1	6, 9, 12, 9					FILL: Brown Silty coarse to fine Sand, some Gravel, Brick fragments					S-3: Moist Cased to 5 ft
	S-4	0.2	11, 4, 4, 4					FILL: Same as Above					S-4: Moist Cased to 7 ft
	S-5	0.1	22, 50/0"					FILL: Gray Gravel and Concrete Fragments					Cased to 8.5 ft
10				C-1	25	0		Gray Cobbles and Boulder fragments					Spoon refusal at 8.5 ft Cored from 8.5 to 12.5 ft with 2" NX barrel
	S-6	0.8	9, 7, 5, 6					NATURAL: Reddish brown coarse to fine Sand, trace Silt and Gravel (SP-SM)					S-6: Wet
15	S-7	0.7	4, 6, 7, 7					Reddish brown coarse to fine Sand, trace Silt, Gravel (SP-SM)					S-7: Wet
	S-8	0.9	10, 9, 6, 8					Same as Above (SP-SM)					S-8: Wet
20	S-9	0.1	15, 16					Brown coarse to fine Sand, some Gravel (SP)					S-9: Wet

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Log of Boring B-3

Project: Philipse Manor Hall | **Project Number: 2021020**

Location: 29 Warburton Avenue, Yonkers, NY

Depth, feet	Soil Samples: Type, Number	Soil Samples: Recov. (ft)	Soil Samples: Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Rock Coring: Recov. (%)	Rock Coring: RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
20			26 24										Hole collapsed while drilling to 25 ft
25								Boring completed to 25 ft below ground. 20 ft PVC groundwater monitoring well installed upon completion Electronic Piezometer installed on March 3, 2021 and removed on March 10, 2021					
30													
35													
40													

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Log of Boring B-4

Project: Philipse Manor Hall			**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY			
Date(s) Drilled: **3/4/21 - 3/4/21**	Inspector: **Aflaaz Saleem**		Coordinates: **North: East:**
Drilling Agency: **Municipal Testing Laboratory (MTL)**	Foreman: **Karthrik Gopidi**		Approximate Surface Elevation (feet): **± 33**
Drilling Equipment: **Fordia Track Rig**	Drilling Method: **Mud Rotary**		Completion Depth (feet): **2.0** / Rock Depth (feet): **NA**
Casing Size/Type: **4" Steel**	Size/Type of Bit: **3-7/8" Roller Bit**		Sampler Type(s): **2" Split Spoon**
Groundwater Level and Date Measured: **NA / NA**	Hammer Wt/Drop: **140/30" (Auto)**	Casing Hammer Wt/Drop: **140/30" (Auto)**	Size/Type of Core Barrel: **NA**
Boring Location: **See Boring Location Plan (Figure 1)**			No. of Samples: **Dist.: 1 Undist.: 0 Core (ft): 0**

Depth, feet	Soil Samples: Type, Number	Soil Samples: Recov. (ft)	Soil Samples: Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Rock Coring: Recov. (%)	Rock Coring: RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0	S-1	0.8	2 1 2 1					FILL: Black Silty medium to fine Sand, some Brick and Root fragments					S-1: Moist
								Boring completed to 2 ft below ground. Boring moved to be within proposed construction. See log for Boring B-4A for continuation					
5													
10													
15													
20													

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Log of Boring B-4A

Project: Philipse Manor Hall			**Project Number: 2021020**
Location: 29 Warburton Avenue, Yonkers, NY			
Date(s) Drilled: **3/8/21 - 3/9/21**	Inspector: **Ahmed Obidat / Mike Torino, P.E.**		Coordinates: **North: East:**
Drilling Agency: **Municipal Testing Laboratory (MTL)**	Foreman: **Dave Johnson**		Approximate Surface Elevation (feet): **± 33**
Drilling Equipment: **Geoprobe Truck Rig**	Drilling Method: **Mud Rotary**		Completion Depth (feet): **32.0** / Rock Depth (feet): **NA**
Casing Size/Type: **4" Steel**	Size/Type of Bit: **3-7/8" Roller Bit**		Sampler Type(s): **2" Split Spoon**
Groundwater Level and Date Measured: **NA / NA**	Hammer Wt/Drop: **140/30" (Auto)**	Casing Hammer Wt/Drop: **140/30" (Auto)**	Size/Type of Core Barrel: **3" HQ**
Boring Location: **See Boring Location Plan (Figure 1)**			No. of Samples: **Dist.: 10 Undist.: 0 Core (ft): 2**

Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
0	S-1a	0.6	1 1					Topsoil: Dark brown medium to fine Sand, some Silt					S-1: Dry
	S-1b	0.8	2 3					FILL: Dark brown medium to fine Sand, trace Silt, Gravel, Brick fragments					
	S-2	1.1	5 5 3 5					FILL: Dark brown and brown medium to fine Sand, trace Silt, Gravel, Brick and tile fragments					S-2: Dry Cased to 4 ft
5	S-3	0.8	10 47 50/5"					FILL: Brown coarse to fine Sand and Gravel, trace Silt, Brick fragments					S-3: Moist
				C-1	54	0		Gray Cobbles					
	S-4	0.2	15 50/4"					FILL: Brown medium to fine Sand, trace Silt, Brick fragments					S-4: Moist, refusal at 6.8 ft
				C-2	0	0		No Recovery. Presumed Cobbles					Cored from 7 to 8 ft
	S-5	0.8	11 15 18 37					FILL: Brown medium to fine Sand, some Gravel, trace Silt, Brick fragments					S-5: Moist Cased to 8 ft Hard drilling from 8 to 10 ft
10	S-6	0.3	18 81 48 50/1"					NATURAL: Brown medium to fine Sand, some Silt (SM)					S-6: Moist, refusal at 11.6 ft
				C-3	92	0		Gray Cobble					
													Hard drilling from 11.5 to 15 ft
15	S-7	0.3	9 50/5"					Gray Gravel, trace Silt and coarse to fine Sand (GP)					S-7: Possible wash, Spoon refusal at 15.9 ft
20													

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Log of Boring B-4A

Project: Philipse Manor Hall | **Project Number: 2021020**

Location: 29 Warburton Avenue, Yonkers, NY

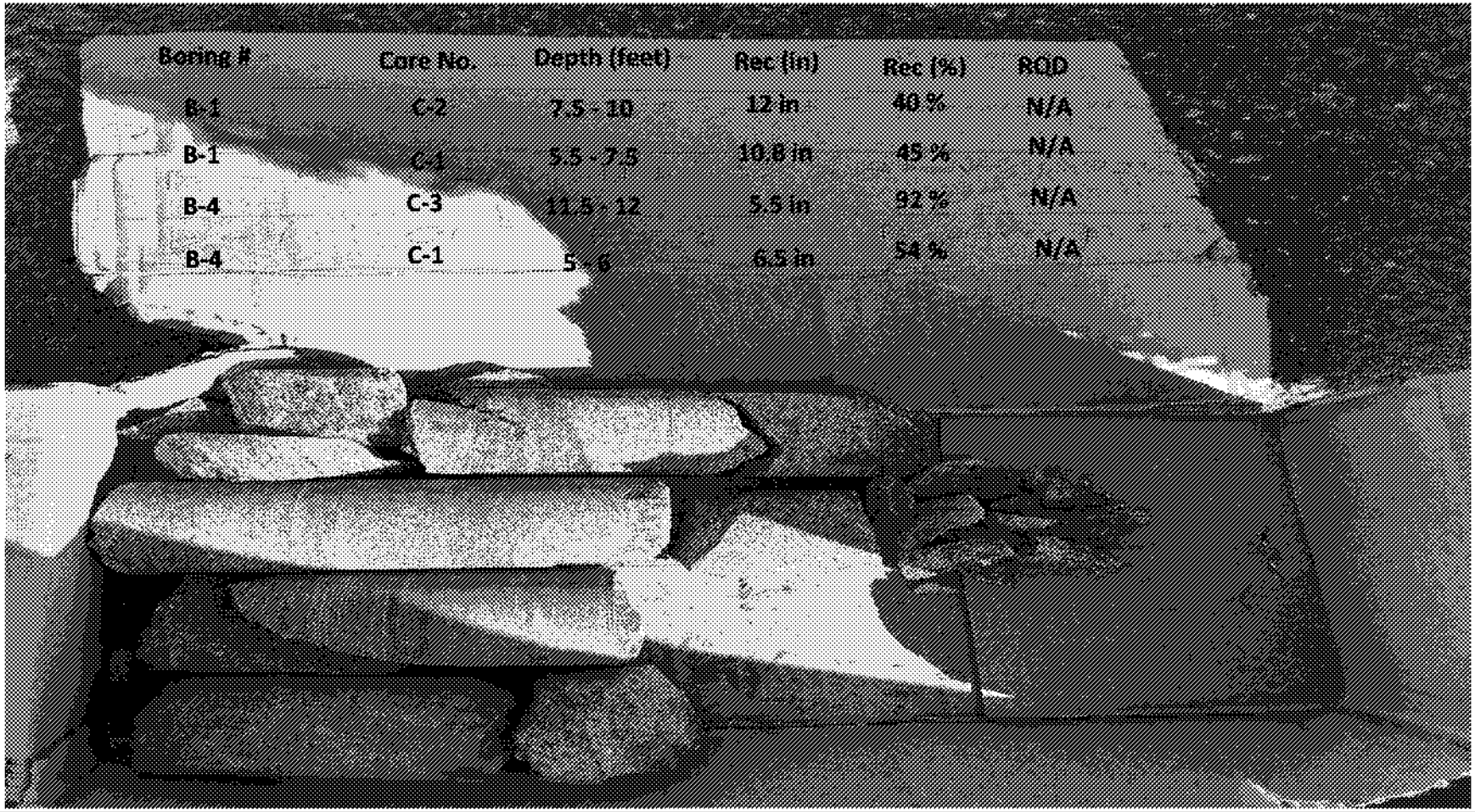
Depth, feet	Soil Samples: Type, Number	Recov. (ft)	Pen. Resist. (blows/6 in)	Rock Coring: Run Number	Recov. (%)	RQD (%)	Graphic Log	DESCRIPTION	Liquid Limit	Plastic Limit	Water Cont.(%)	% Fines	REMARKS
20	S-8	0.6	11 12 17 18					Reddish brown coarse to fine Sand, trace Silt (SP)					S-8: Moist
25	S-9	0.8	7 8 10 16					Same as Above (SP)					S-9: Moist
30	S-10	1.0	9 11 17 20					Same as Above (SP)					S-10: Moist
								Boring completed to 32 ft below ground. Boring backfilled with cuttings upon completion.					
35													
40													

Template: GENERAL GES LOGO Proj ID: PHILLIPSE MANOR HALL.GPJ

GES P.C.

Printed: 3/11/21

APPENDIX B



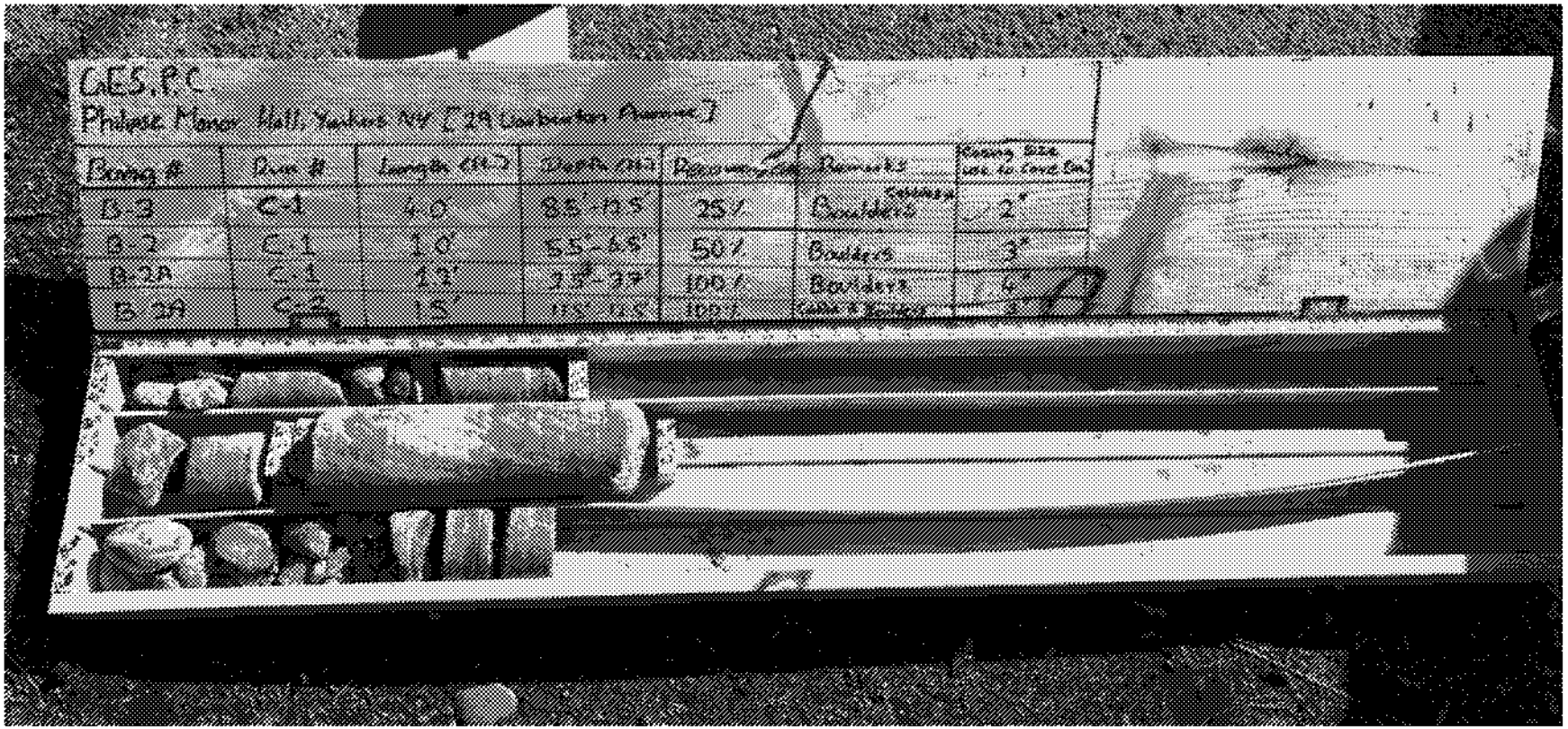
GES

GEOTECHNICAL ENGINEERING SERVICES, P.C.
6 Bayberry Road
Elmsford, NY 10523

ROCK CORE PHOTOGRAPHIC PLATE

Boring No.	Core No.	Depth (ft)	Rec %	RQD %
B-1	C-2	7.5 - 10	40	N/A
B-1	C-1	5.5 - 7.5	45	N/A
B-4	C-3	11.5 - 12	92	N/A
B-4	C-1	5-6	54	N/A

Project Name:	Philipse Manor Hall		
Project Location:	Yonkers, NY		
Dwg No.	Appendix B, Plate 1		
Drawn By:	AO	**Project No:**	2021020
Ch'ked By:	ZM	**Date:**	3/11/2021



	ROCK CORE PHOTOGRAPHIC PLATE					Project Name:	Philipse Manor Hall	
	Boring No.	Core No.	Depth (ft)	Rec %	RQD %	Project Location:	Yonkers, NY	
	B-3	C-1	8.5 - 12.5	25	N/A			
GEOTECHNICAL ENGINEERING SERVICES, P.C.	B-2	C-1	5.5 - 6.5	50	N/A	Dwg No.	Appendix B, Plate 2	
	B-2A	C-1	2.5 - 3.7	100	N/A	Drawn By:	AO	Project No: 2021020
6 Bayberry Road	B-2A	C-2	11.5 - 12.5	100	N/A			
Elmsford, NY 10523						Ch'ked By:	ZM	Date: 3/11/2021