

**MIDLANTIC ENGINEERING, INC.**  
120 COMMERCE ROAD  
PITTSTON TOWNSHIP, PA 18640-9552

**GEOTECHNICAL ENGINEERING REPORT**

HAWTHORNE MOUNT POCONO RESORT  
PARADISE TOWNSHIP, PA

(Project #22021.1)

PREPARED FOR:

JSPA REALTY  
% MR. JOEL SHTESL  
175 TILLMAN STREET  
STATEN ISLAND, NY 10314

JUNE 3, 2022

Applicants 21



June 3, 2022

JSPA Realty  
% Mr. Joel Shtesl  
175 Tillman Street  
Staten Island, NY 10314  
[shtesl@gmail.com](mailto:shtesl@gmail.com)

REFERENCE: GEOTECHNICAL ENGINEERING RFEPOR ( #22021.1)  
Hawthorne Mount Pocono Resort  
Paradise Township, PA

Mr. Shtesl:

Submitted herewith is our geotechnical engineering report for the above referenced project. Our services have been performed in accordance with our proposal/agreement of May 2, 2022 and your subsequent authorization to proceed.

The proposed development includes the development of a resort including cabins, restaurants, a banquet hall and communal facilities, a spa, a swimming pool, and associated infrastructure.

A preliminary geotechnical engineering study for these areas and developments was completed under our contract #22021 submitted April 8, 2022.

## **1. SCOPE OF SERVICES**

Services performed for this phase of the study have included site reconnaissance, review of site geologic data, review of preliminary study test pit logs, drilling and coring of six test borings, soil laboratory analysis, and preparation of our report. Our geotechnical engineering analysis and report includes the following:

- a. Our evaluation of the estimated subsurface conditions within the proposed building areas based on the test pit and test boring data. Estimated subsurface profiles are included to present our interpretation of the data.

- b. Recommended foundation requirements for support of the proposed buildings and floor slabs-on-grade.
- c. Recommendations regarding handling of groundwater in design and construction.
- d. Recommended lateral earth pressure design parameters for the building foundation walls or site retaining walls of the development.
- e. Recommended earthwork requirements for construction of structural fill and backfill including an assessment of on-site materials to be excavated for use as structural fill.
- f. Seismic design classifications of subgrade conditions per IBC 2009 table 1613.5.2.
- g. Comments regarding geotechnical construction methods that should be considered both in the design and in the development of construction plans and specifications.

Services with respect to environmental testing, wetlands investigations, erosion control, pavement designs, cost or quantity estimates, and construction observation and testing are not included in the scope of services under this phase of our contract.

The geotechnical engineering report is based on the initial design concept of the proposed project as furnished to our office during the preparation of this report. Any substantial changes in structural loads, building locations, or grading should be brought to our attention so that we may determine any effect on the recommendations of this report.

## **2. DESCRIPTION OF SITE AND PROPOSED CONSTRUCTION**

The development site is located in Paradise Township, Pennsylvania. The study area is bordered to the east by Trinity Hill Road, to the south by Wiscasset Road and residences, and to the north and west by wooded areas. The site is generally wooded. The property was once used as a resort and includes numerous abandoned residential type structures. Existing surface grades generally slope down from the north to the south and east from about El 1700 in the north to about El 1420 to El 1460 along Wiscasset Road in the south and to about El 1410 to El 1460 along Trinity Hill Road in the east.

The project vicinity is indicated on a 2019 USGS quadrangle map included as Figure No. 1-1 and on a 2016 aerial map included as Figure No 1-2 in Enclosure (1).

The project development will include a main building complex on the south side of the site which will include a lobby, restaurant, banquet and communal facilities; and a spa/pool area on the north side of the site. A water tank is proposed in the area of the spa complex. Cabins are scattered in clusters across the central and western parts of the resort with associated pathways and connector roads. Stormwater management facilities are planned throughout the development area.

The information listed above was provided to us by your office or was obtained during our own site visits.

### **3. SUBSURFACE CONDITIONS**

In order to evaluate subsurface conditions in the proposed development areas, a preliminary series of nineteen geotechnical test pit excavations were completed in the proposed building and development areas in March 2022. This phase of the geotechnical investigation and analyses included six test borings to depths of about 15 feet each. The test boring logs, previous test pit logs, water level observation data, and test location plans are included in Enclosure (4).

#### **3.1 Subsurface Stratification**

The test pits and test borings completed for these studies indicate the following generalized strata underlie the proposed development areas to the depths investigated:

<u>Stratum</u>	<u>Depths</u>	<u>Description</u>
Stratum F (fill)	below surface grades to depths of 1 foot to 3 feet	red/brown silty sand with gravel – FILL, and silty gravel with sand – FILL
Stratum A	below surface grades and fills of Stratum F	brown/red silty SAND with gravel (SM), silty GRAVEL with sand (GM), and poorly graded GRAVEL with silt and sand (GP-GM), occasional cobbles, rock fragments; firm to very firm
Stratum R	below Stratum A to maximum depths cored	gray moderately weathered SANDSTONE and SHALE, highly to moderately fractured (Rec=65% to 100%, RQD=0% to 42%)

Numbers after the description of the soil strata indicate the minimum and maximum penetration resistances, or N values, recorded in each stratum. The N values indicate the penetration resistance in blows per foot of a standard 2 inch O.D., 1 $\frac{3}{8}$  inch I.D. sampling spoon driven with a 140-pound hammer falling 30 inches per ASTM D-1586. The sampling spoon is driven an initial depth of 6 inches to assure the sampling spoon is in undisturbed material, and the number of blows required to drive the sampling spoon an additional 12 inches is taken as the N value.

The soil symbols indicated in the stratum descriptions and on the test logs represent the Unified Soil Classification (ASTM D-2488) group symbols based on visual observation of the specimens recovered. Criteria for visual classification of soil samples are given in Enclosure (4). The visual classifications may vary from classifications based on the results of laboratory testing.

Selected test borings were core drilled 10 feet into the rock with NX size core drilling equipment for identification and evaluation purposes. The percentages after the descriptions of rock stratum indicate the variation in core recovery, which is the length of rock core recovered expressed as a percent of the total core length drilled. The Rock Quality Designation (RQD) is also provided, which is defined as the total length of NX size rock core segments recovered greater than 4 inches in length, discounting drilling breaks, expressed as a percentage of the total core length. The visual classification of rock is based on the criteria for Engineering Description of Rocks, also included in Enclosure (4).

### 3.2 Geology

The fill materials of Stratum F are associated with previous site development and grading.

The natural sand and gravel soils of Stratum A represent glacial till deposits of the Pleistocene geologic epoch. These natural soils are moderately to highly over-consolidated. The SCS mapping of the study area is included as Figure No 2-1 in Enclosure (2).

The underlying bedrock in the project vicinity consists of fine- to coarse-grained sandstone and shale. This sedimentary rock belongs to the Long Run member of the Catskill formation of the Devonian geologic age. Bedrock was encountered at all of the test locations at depths of 1 foot to 11 feet. Geologic mapping of the study area is included as Figure No. 2-2 in Enclosure (2).

### 3.3 Groundwater Observations

Groundwater observations were performed during the excavation operations at each of the test locations. No groundwater was encountered at the test locations to the depths investigated. The results of the groundwater observations are shown on the test logs in Enclosure (4).

Water level readings at the test pit locations are considered to be a reliable indication of groundwater conditions at the times indicated. Fluctuations in groundwater levels, as well as perched water, may be expected with variations in precipitation, evaporation, adjacent construction activity, and similar factors.

### 3.4 Soil Laboratory Testing

Soil laboratory testing was previously performed on selected samples from the preliminary study for classification and assessment purposes. The natural moisture content was determined for selected soil samples per ASTM D-2216, and is shown on the test logs in Enclosure (4).

<u># of Samples</u>	<u>Stratum</u>	<u>Classification (D-2487)</u>	<u>%M (D-2216)</u>	<u>% &lt; No. 200 Sieve size (D-1140)</u>
2	A	silty SAND (SM) and silty SAND with gravel (SM)	11% to 12%	35% to 41%
7	A	silty GRAVEL with sand (GM) and poorly graded GRAVEL with silt and sand (GP-GM)	5% to 10%	5% to 26%

Estimated subsurface cross-sections have been developed to present our interpretation of the test boring data at the primary building areas of the site and are included as Figure Nos. 5-1 and 5-2 in Enclosure (5).

#### **4. GEOTECHNICAL ENGINEERING ANALYSES**

Our geotechnical engineering and foundation analyses are based upon review of site geologic data, site reconnaissance, test boring data, and the site and structural parameters furnished to us for this study.

The primary building is planned as a one- and two-story building with slab-on-grade at about El 1512±. Shallow excavations of less than 10 feet are expected to achieve building subgrade elevations.

##### **4.1 Initial Subgrade Preparations**

For preparation of the structural pad and infrastructure development areas, we recommend initial stripping of all topsoil, organics, surface debris and fill of Stratum F to an extent of 10 feet outside of the proposed building and pavement areas, prior to placement of any required new structural fill. The prepared structural fill subgrades should be compacted to non-movement with vibratory roller. Areas exhibiting excessive deflection will require further excavation and stabilization with coarse aggregate structural fill, similarly compacted to non-movement.

The construction areas may then be brought up to building subgrade levels with new compacted structural fill. The structural fill classification and compaction recommendations are included in the 'Construction Considerations' section of this report.

##### **4.2 Shallow Spread Footings**

Shallow spread footings for the main building and for the water tower site may generally be constructed to bear on rock subgrades of Stratum R. These materials are considered suitable for direct support of shallow spread footings. We recommend a maximum allowable net bearing pressure of 6 ksf for individual column footings and continuous wall footings founded on underlying rock subgrades.

The estimated subgrade elevations indicated on the boring logs are for design and construction planning. Final footing subgrades should be observed by a representative of the geotechnical engineer during construction. Any materials considered unsuitable for the recommended design bearing pressure should be undercut to sound bearing materials and replaced with PennDOT type C concrete or with similar structural concrete.

Shallow spread footings for amenity structures or the cabin areas of the site may generally be constructed to bear on the firm natural soils of Stratum A, or on newly placed and compacted structural fill. These materials are considered suitable for direct support of shallow spread footings. We recommend a maximum allowable net bearing pressure of 3 ksf for individual column footings and continuous wall footings founded on the undisturbed natural soils or on the new compacted structural fill. Any materials considered unsuitable for the recommended design bearing pressure should be undercut to sound bearing materials and replaced with compacted coarse aggregate structural fill.

#### 4.3 General Spread Footing Considerations

For shear considerations, the continuous wall footings should be constructed to minimum widths of 20 inches and individual column footing constructed to minimum widths of 30 inches.

All exterior footings should be placed a minimum of 3.5 feet below adjacent exterior grades for frost protection. Footings adjacent to areas where lowering is required should be stepped in increments not steeper than one horizontal to one vertical (1H:1V).

Settlements of spread footings for these recommended foundation systems are expected to be within tolerable limits, with total settlements for individual column load locations not expected to exceed ¾-inch. Differential settlements between adjacent support locations are not expected to exceed ½-inch.

The site conditions and construction recommendation as outline herein indicate a seismic design classification of a site class 'B', per IBC 2009 table 1613.5.2.

#### 4.4 Floor Slabs

The full extent of topsoil and debris, fill materials, and abandoned utility lines within the building areas are to be removed. We anticipate natural soil and rock subgrades, and areas of new compacted structural fill, for support of floor slabs-on-grade. These materials will be suitable for direct support of building floor slabs.

We recommend a maximum design modulus of subgrade reaction of  $k_s = 200$  pci for design of concrete floor slabs-on-grade.

Based on the groundwater observations at the test boring locations, and considering proposed finished floor grades, a subfloor drainage system is not considered necessary. The exterior surface grades should be designed to avoid ponding of runoff against the building walls.



Floor slabs-on-grade should be provided with damp-proofing consisting of a granular base course serving as a capillary break. The base course should consist of at least four inches (4") of coarse open-graded gravel or crushed stone that is well graded between ¾-inch and the No. 4 sieve size. PennDOT type OGS or 2A coarse aggregate, or an equivalent graded coarse aggregate material, is considered suitable for this purpose. Prior to placing the base course, the subgrade should be proofrolled and recompact on-grade to stabilize any areas that may have been disturbed by construction activities or exposure.

Areas of concrete floor slabs-on-grade where glued floor coverings are scheduled should be planned with a vapor barrier set on the prepared subgrade, below the subbase coarse aggregate. The vapor barrier should be properly installed and protected from damage and puncture. All seams, junctures at walls, and floor penetrations should be sealed to provide an impermeable barrier. The installation of the vapor barrier will not guarantee a specific rate of concrete vapor emissions, but will assist in reducing the vapor emissions from constructed floor slabs.

#### 4.5 Foundation Walls and Site Retaining Walls

For the design of site retaining walls and building foundation walls, we recommend the following applicable design parameters considering the use of site excavation material as structural fill and backfill, as recommended herein:

- |                                   |                       |
|-----------------------------------|-----------------------|
| - Angle of Internal Friction      | $f = 32^\circ$        |
| - Unit Weight                     | $g = 130 \text{ pcf}$ |
| - Cohesion                        | $c = 0 \text{ psf}$   |
| - Coefficient of Friction/Sliding | $f = 0.35$            |

For site retaining walls and building walls below grade, footing drains should be used to collect seepage into the backfill and relieve any hydrostatic pressure that may develop on the walls. The footing drains should generally consist of a four-inch diameter, slotted, corrugated polyethylene tubing, a six-inch filter material cover, and a permeable fabric wrap. Filter material may consist of PennDOT type A sand and the filter fabric should have an EOS not larger than the No. 40 U.S. sieve size. The perimeter drains should be connected to the site storm drain system or day-lighted beyond the extent of the wall areas.

Compaction equipment not exceeding 3,000 pounds in dead weight should be used within three feet of the wall to avoid overloading retaining walls.

## **5. PAVEMENT DESIGN CONSIDERATIONS**

The roadway and new pavement areas will be constructed around and through the development areas. The estimated pavement subgrades will generally be in the natural subgrades or in depths of new compacted structural fill. These materials indicate low swell potential and are expected to provide fair support for structural base course materials in flexible pavement areas.

Softening of the subgrade soils may be expected if exposed to adverse weather conditions. The fill and pavement subgrades should be prepared to prevent surface water from collecting on these soils.

Compacted fill in pavement areas should be placed and compacted as outlined in the 'Construction Considerations' section of this report. The prepared pavement subgrade areas should be proofrolled under the observation of the project geotechnical engineer prior to placement of the aggregate base course materials.

We recommend a maximum design CBR value of 8 for pavement subgrades on the prepared subgrades consisting of new compacted structural fill materials, or the natural sand and gravel soils of Stratum A.

The aggregate base course should be placed on the subgrades as soon as possible after preparations of the subgrades. PennDOT type 2A or OGS coarse aggregate is considered suitable as aggregate base course materials in pavement areas. Pavement grades and curbs should be constructed to prevent surface water from ponding on pavements and seeping into the base course and subgrades.

We recommend that concrete pavements be used where disposal containers will be picked up. The concrete pavements should have a 6-inch minimum crushed aggregate base course compacted to 100% of the maximum dry density per ASTM D-698.

## **6. CONSTRUCTION CONSIDERATIONS**

The following recommendations are provided for construction planning and for utilization of the engineering design recommendations detailed in this report.

### **6.1 Construction Dewatering**

The foundation subgrade levels for the building areas are not expected to extend below seasonal or perched groundwater levels. Control of surface runoff will still be required during construction. The building contractor should be prepared to provide dewatering during construction using local dewatering methods such as sumps and open trenches to keep the surface runoff water below the deepest construction excavations.

## 6.2 Excavation Areas

The footing elements for the building areas will require excavations to achieve subgrade levels at the footing excavation areas. The excavations will generally be through the soil of Stratum A and into the rock subgrades of Stratum R.

We estimate the disintegrated rock and uppermost rock of Stratum R can generally be excavated with conventional earthwork excavating equipment. Rock excavation methods may be necessary to excavate to the building grades at specific locations of the construction site. Mechanical ripping techniques or excavation by use of ram hoes and jackhammers is expected to be adequate for the materials and quantities to be excavated to shallow depths.

For blasting of rock excavations, considerations must be given to vibrations transmitted to nearby structures and utilities in determining the size of charges that may be detonated at one time. Blasting of rock shall be completed and monitored in accordance with all applicable state and OSHA regulations. Pre-blast surveys of nearby structures and utilities should be made in accordance with applicable standards and regulations prior to the start of construction to document existing conditions.

Drilling depths for rock blasting should generally be limited to within 2 vertical feet of proposed footing subgrade elevations. Vertical control of drilling and blasting is critical. All drilling and blasting grades within the building areas should be provided to the project engineer prior to final construction inspection of prepared subgrades.

The actual top of rock elevations encountered during excavation may vary from the estimates provided at the test boring locations. Sudden changes in hardness of the material to be excavated should be expected due to variable weathering of the bedrock. Variations in the amount of material that may be excavated by conventional and ripping methods should also be anticipated depending on the type and size of equipment used.

## 6.3 Foundation Construction

Foundation subgrades for the building areas will be in rock materials of Stratum R. Foundation subgrades should be observed by a representative of the project geotechnical engineer to verify that the structures are placed on suitable bearing materials as recommended herein. Subgrades should generally be prepared to the sizes indicated on the structural plans and poured in-place against the natural subgrade materials.

Care should be taken during the excavation for all footings to minimize disturbance of the bearing subgrades. All loose and disturbed materials should be removed prior to concrete placement. Any areas requiring over-excavation to reach suitable bearing subgrades should be replaced with PennDOT type C concrete or other approved structural concrete.

#### 6.4 Structural Fill and Backfill

Structural fill materials to be used in building floor slab areas and structural backfill materials shall consist of materials classified as SM, SC, SC-SM, GM, GC, GC-GM, GW, or GP per ASTM D-2487, and shall be free of any material designated as deleterious.

The structural fill materials should be placed in shallow horizontal layers of maximum 9 inches lift thickness and compacted with the necessary type of vibratory compaction equipment to attain at least 97 percent of the maximum dry density per ASTM D-698. Proposed fill soils should be at a moisture content that will facilitate adequate compaction, within 2% of optimum per ASTM D-698. Rock fragments and cobbles may be included in the structural fill materials but should not exceed 6 inches in the longest dimension.

The existing fill materials of Stratum F generally consist of various organics and debris and are not considered suitable for re-use as structural backfill. Careful site management of these excavated materials will be required to segregate and remove these materials from building areas.

The soil materials of Stratum A and the excavated granular materials of Stratum R are generally expected to be suitable for re-use as structural backfill. PennDOT type 2RC or 2A coarse aggregates are also considered suitable for structural backfill.

## **7. OBSERVATION REQUIREMENTS AND STUDY LIMITATIONS**

This report was prepared for use by your office and the design professionals to aid in the design of the subject project. The opinions and conclusions expressed in this report are those of the geotechnical engineer and represent interpretation of the subsurface conditions and the results of analyses and studies which have been conducted for design purposes. This report should be made available to contractors for their information to supply them with facts relative to the subsurface investigation.

This report is based on the design concept of the proposed project as furnished to our office during the preparation of this report. Any substantial changes in building loads, locations, or grading should be brought to our attention so that we may determine any effect on our recommendations given herein.

The analyses and recommendations submitted in this report are based upon the data obtained from the test pits and test borings at the specific locations indicated on the location plan. This report does not reflect any variations that may occur between the test locations. The nature and extent of variations may not become evident until the course of construction. It is recommended that on-site observation and testing of foundation installation be performed during the construction period to ascertain if re-evaluation of the recommendations of this report must be made.

Allowances should be established to account for possible additional costs that may be required for construction of foundations, and/or excavation as recommended in this report. Additional costs may be incurred for various reasons including variable topsoil depths, variable rock grades, water runoff, disturbances of subgrade, etc.

We recommend that the project specifications contain the following statement:

“A geotechnical engineering report has been prepared for this project by Midlantic Engineering and is included in the project manual to prospective bidders and/or contractors for informational purposes only. This report was prepared for design purposes and may not be sufficient to prepare an accurate bid. The accuracy or completeness of individual test logs is not guaranteed by the geotechnical consultant. Contractors desiring to conduct additional subsurface investigations prior to bidding should contact the owner for arrangements to enter the project site.”

We have prepared this report in accordance with generally accepted geotechnical engineering practices, and make no other warranties, either expressed or implied, as to the professional services provided under the terms of the agreement and included in this report.

We appreciate the opportunity to be of service to you for this project. Please do not hesitate to contact us for further clarifications of any aspect of this study.

Sincerely,

MIDLANTIC ENGINEERING, INC.



Timothy Burns, P.E.  
President

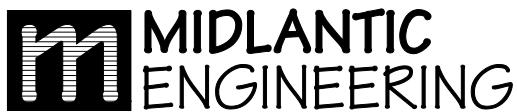
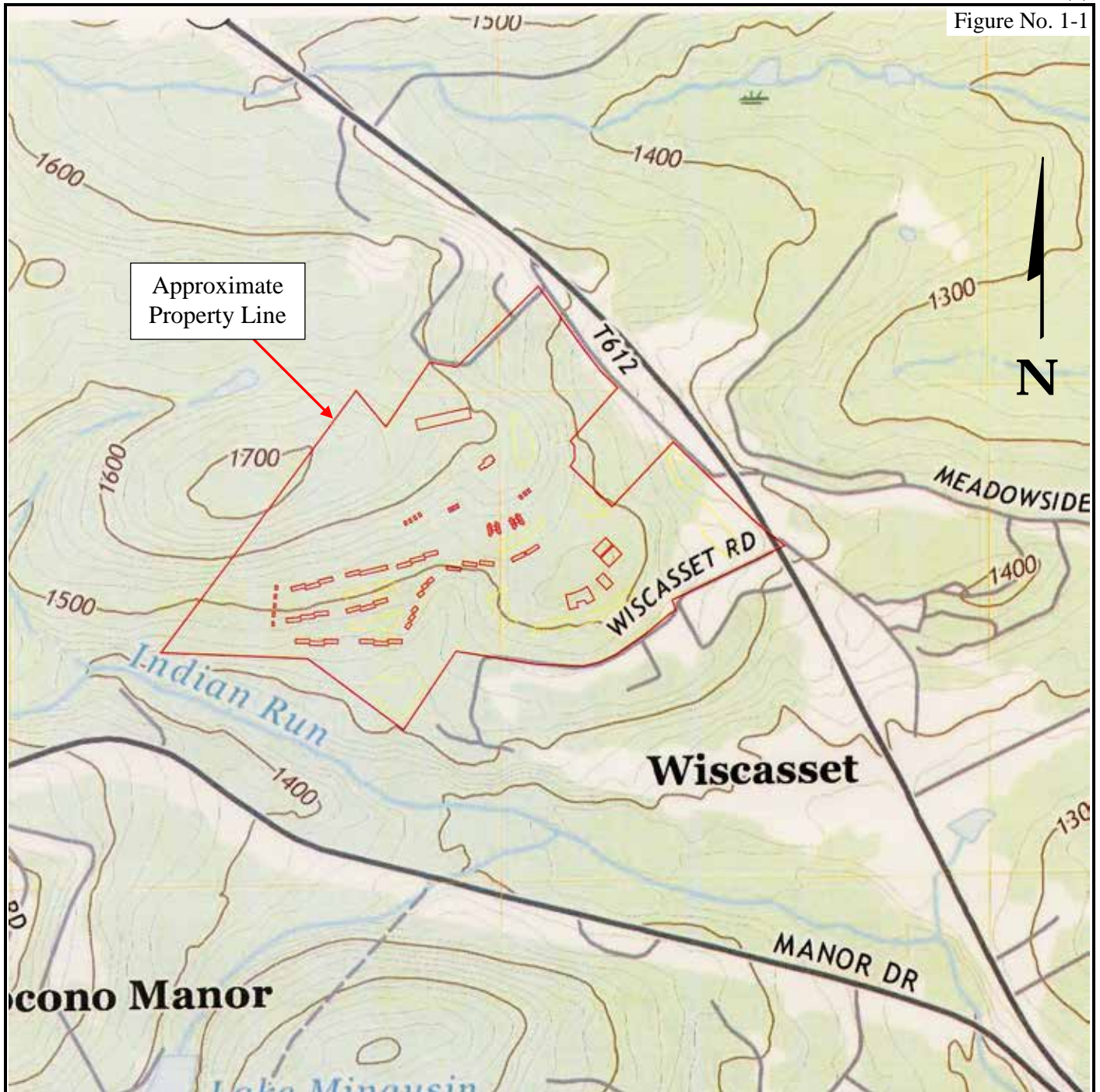
Encls:

- (1) Project Vicinity Plans
  - Project Vicinity Plan – USGS 2019, Figure No. 1-1
  - Project Vicinity Plan – Aerial 2016, Figure No. 1-2
- (2) Geologic Mapping,
  - SCS Mapping, Figure No. 2-1
  - Bedrock Geology Mapping, Figure No. 2-2
- (3) Laboratory Testing Data
  - Soil Classifications Summary
  - Gradation and Classifications (9 Sheets)
- (4) Subsurface Investigation Report
  - General Notes – Test Borings
  - Identification of Soils
  - Engineering Description of Rocks
  - Test Location Plans, Figure Nos. 4-1 through 4-3
  - Test Boring Logs (B-1 through B-6)
  - Test Boring Rock Core Photographs (4 Sheets)
  - General Notes – Test Pits
  - Test Pit Logs (MB-1 through MB-10, WT-1, SPA-1 to SPA-8; 19 test pit logs)
- (5) Estimated Subsurface Profiles, Figure Nos. 5-1 and 5-2

cc: Landmark Consulting Group  
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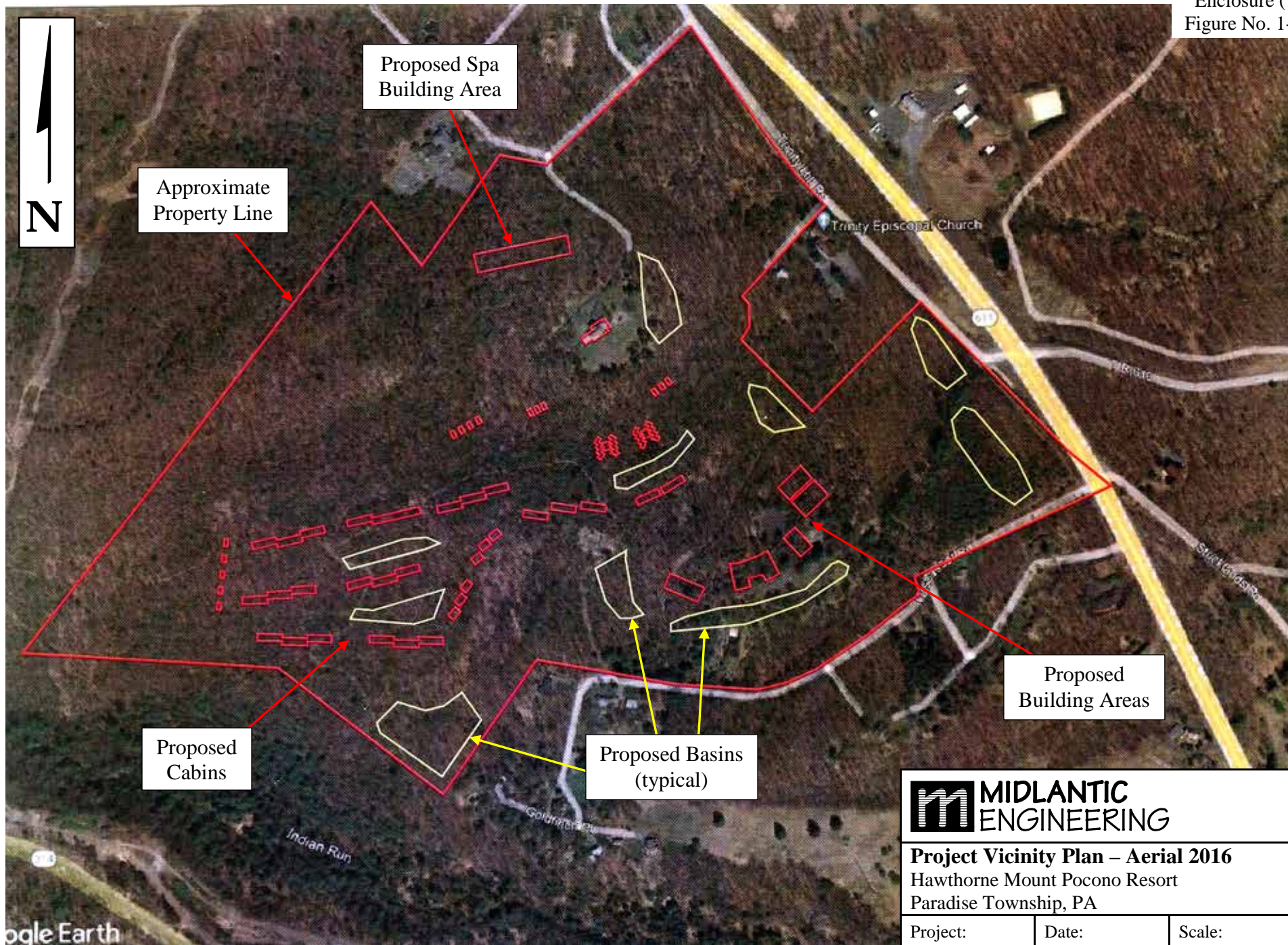



120 Commerce Road • Pittston Township, PA 18640-9552  
570/655-2200 (phone) • midlaneng@aol.com

Drawing Title:  
**Project Vicinity Plan – USGS 2019**  
Hawthorne Mount Pocono Resort  
Paradise Township, PA

Drawn By: LJ	Checked By: TB	Scale: 1" = 1,000'
Date: 06/03/22	Project No.: 22021.1	Sheet No. ---





 <b>MIDLANTIC ENGINEERING</b>		
<b>Project Vicinity Plan – Aerial 2016</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: 1" = 500'

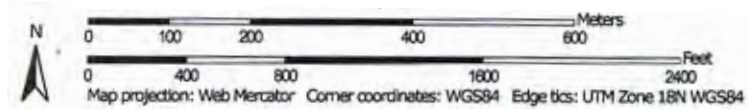




**Map Unit Legend**

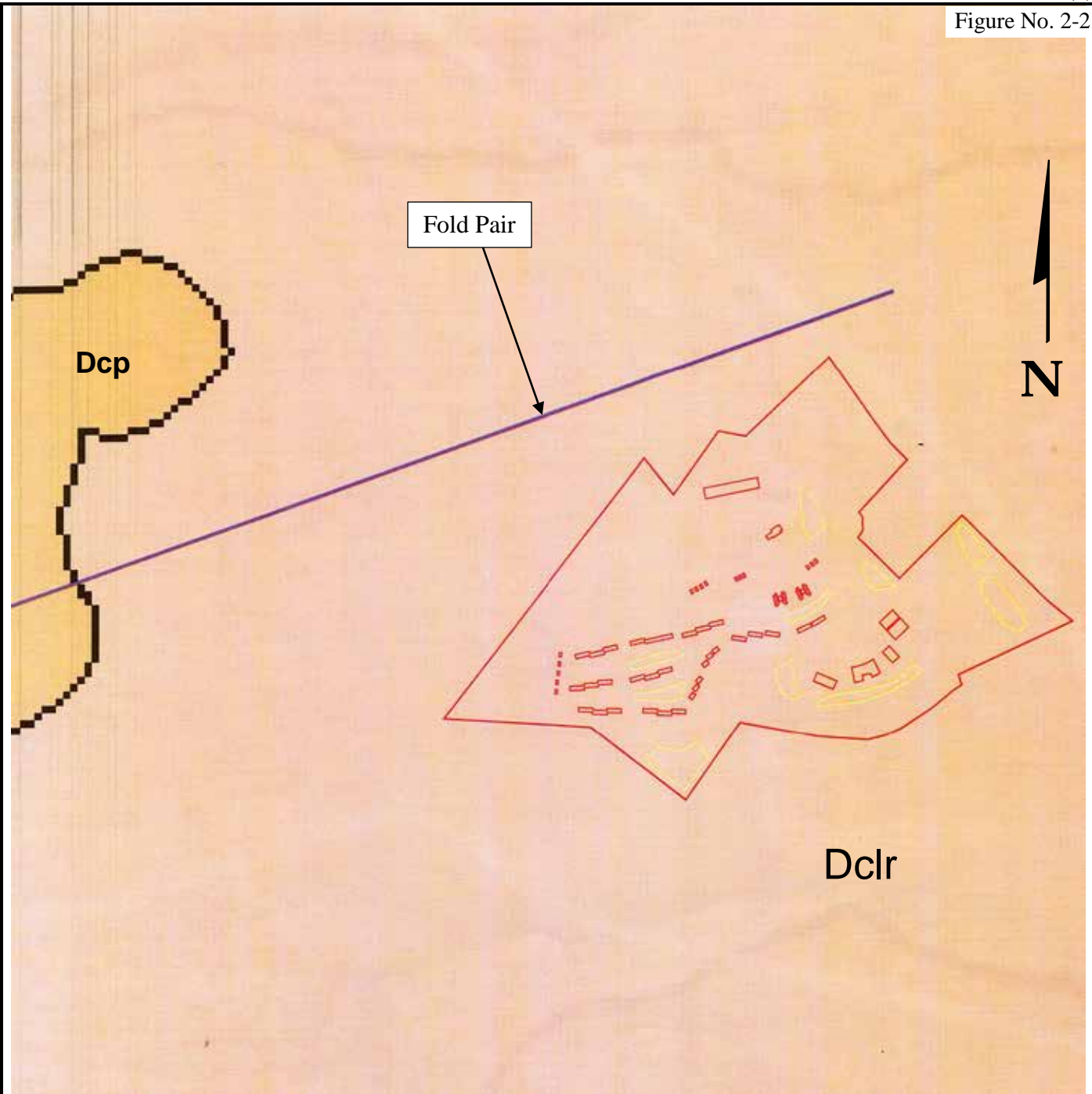
Series Designation	USCS Classifications	SCS Hydrologic Group	Estimated Permeability (in/hr.)
LaB, LaC, LbB, LbC – Lackawanna channery loam	ML, SM, GM	C	0.06 to 2.0 in/hr.
LbE – Lackawanna and Bath Soils	ML, SM, GM	C	0.06 to 2.0 in/hr.
LyE – Lordstown and Oquaga channery loam	ML, SM, GM	C	0.06 to 2.0 in/hr.
MoB – Morris channery silt loam	ML, SM, GM	C	0.06 to 2.0 in/hr.
OxB, OxC – Oquaga-Lackawanna Complex	ML, SM, GM	C	0.06 to 2.0 in/hr.
VaC – Very Stony Land and Rock	---	B/D	---
WpB, WpC – Wellsboro channery loam	ML, SM, GM	C	0.06 to 2.0 in/hr.
WyE – Wyoming gravelly sandy loam	SM, SW, SW-SM, GM, GW, GW-GM	A	6 to 20 in/hr.

**Scale:**



<b>SCS Mapping</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: as shown





**Legend:**

**Dclr** **Catskill Formation**  
 The Long Run Member of the Catskill Formation consists of typically cyclic, fine-to medium-grained, olive-gray sandstones.



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 570/655-2200 (phone) • midlaneng@aol.com

Drawing Title:  
**Bedrock Geology Mapping**  
 Hawthorne Mount Pocono Resort  
 Paradise Township, PA

Drawn By: LJ	Checked By: TB	Scale: 1" = 1,000'±
Date: 06/03/22	Project No.: 22021.1	Sheet No. ---



## **LABORATORY TEST DATA**

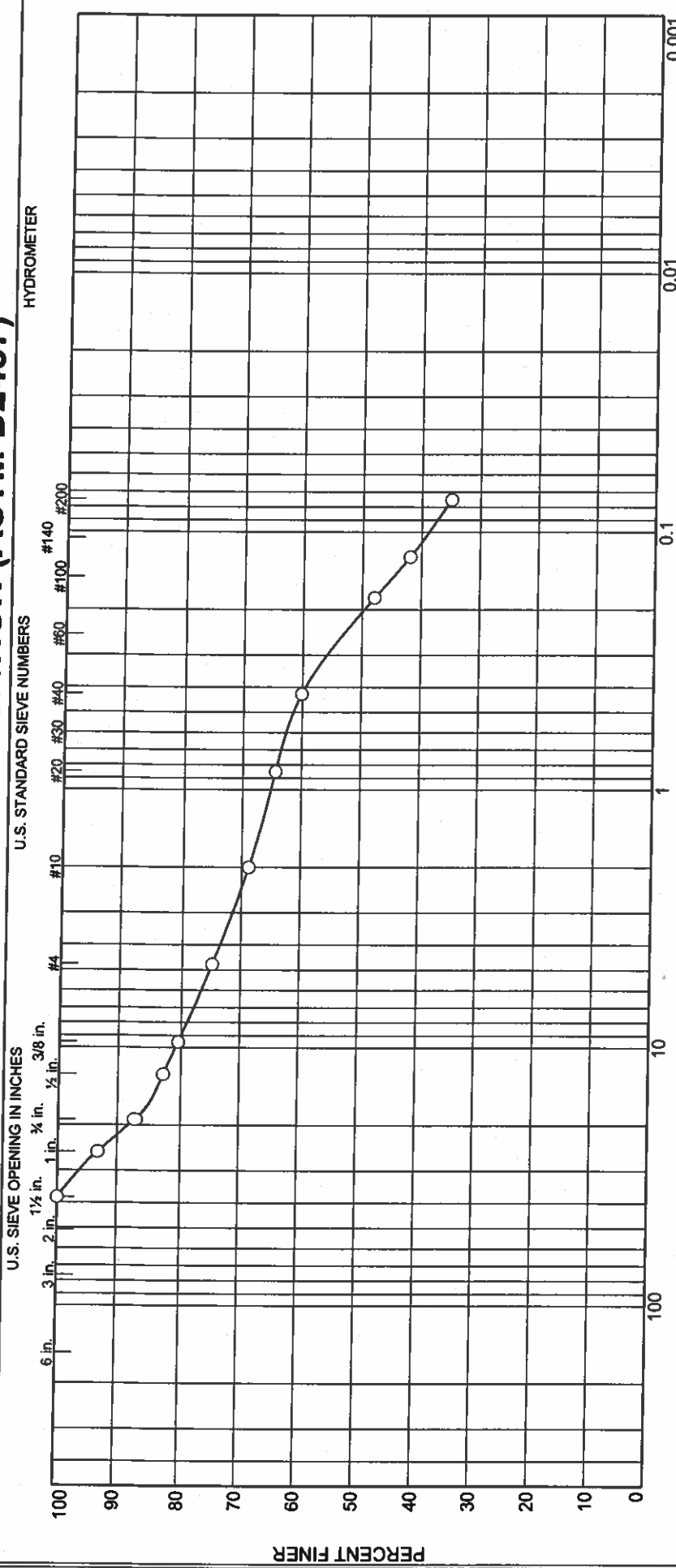
- Soil Classifications Summary
- Gradation and Classifications (9 Sheets)

### SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

<u># of</u> <u>Samples</u>	<u>Stratum</u>	<u>Classification (D-2487)</u>	<u>%M</u> <u>(D-2216)</u>	<u>% &lt; No. 200</u> <u>Sieve size</u> <u>(D-1140)</u>
2	A	silty SAND (SM) and silty SAND with gravel (SM)	11% to 12%	35% to 41%
7	A	silty GRAVEL with sand (GM) and poorly graded GRAVEL with silt and sand (GP-GM)	5% to 10%	5% to 26%

# GRADATION AND CLASSIFICATION (ASTM D2487)



U.S. Sieve	% Sand		% Gravel		Material Description
	Coarse	Fine	Coarse	Fine	
#20	8.7	25.2	12.8	12.3	brown silty SAND with gravel Stratum A
#60	6.1	6.1	6.1	6.1	
#200	0.0	0.0	0.0	0.0	
Total					34.9

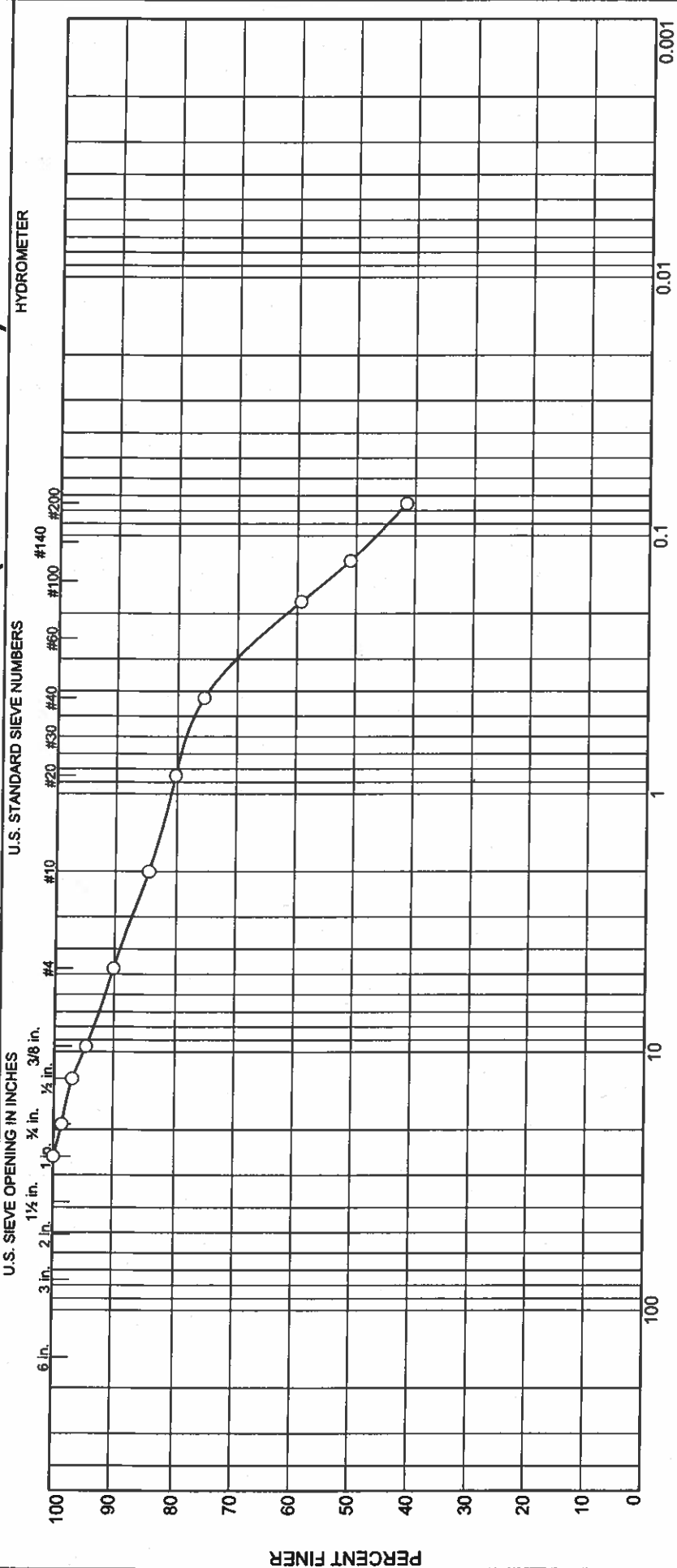
Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-MB1	S-1	2.0/1516.3	3/35/22	SM	brown silty SAND with gravel Stratum A	10.6	NV	NP

Client JSPA Realty c/o Mr. Joel Shtesl  
 Project Hawthorne Mount Pocono Resort  
 Paradise Twp., PA  
 Project No. 22021



Tested By: MJ      Checked By: DH


# GRADATION AND CLASSIFICATION (ASTM D2487)



	% Sand			% Gravel		% Fines
	Coarse	Medium	Fine	Coarse	Fine	
0.0	1.3	9.2	34.1	5.4	41.4	Clay

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-SPA6	S-1	2.0'/1608.5	3/28/22	SM	brown silty SAND Stratum A	12.0	NV	NP

Client JSPA Realty c/o Mr. Joel Shtresl  
 Project Hawthorne Mount Pocono Resort  
 Paradise Twp., PA  
 Project No. 22021

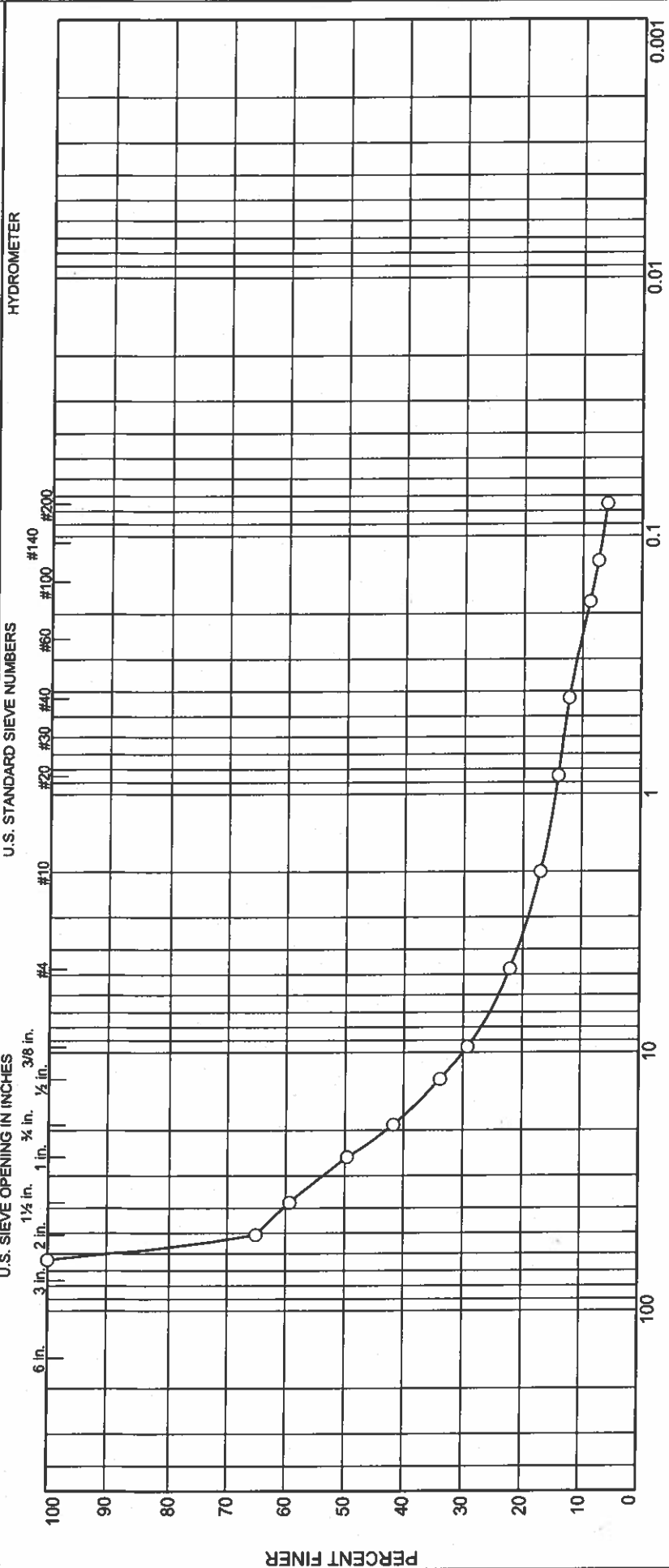


## MIDLANTIC ENGINEERING

Tested By: MJ  
 Checked By: DH



# GRADATION AND CLASSIFICATION (ASTM D2487)



% +3"		% Gravel				% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Coarse	Medium	Fine	Silt	Clay	
0.0	19.6	58.3	4.8	6.3	5.1	4.8	6.3	5.9		

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-MB7	S-3	6.0/1513.6	3/25/22	GP-GM	brown poorly graded GRAVEL with silt and sand Stratum A	4.7	NV	NP

Client JSPA Realty c/o Mr. Joel Shtesl  
 Project Hawthorne Mount Pocono Resort  
Paradise Twp., PA  
 Project No. 22021



## MIDLANTIC ENGINEERING

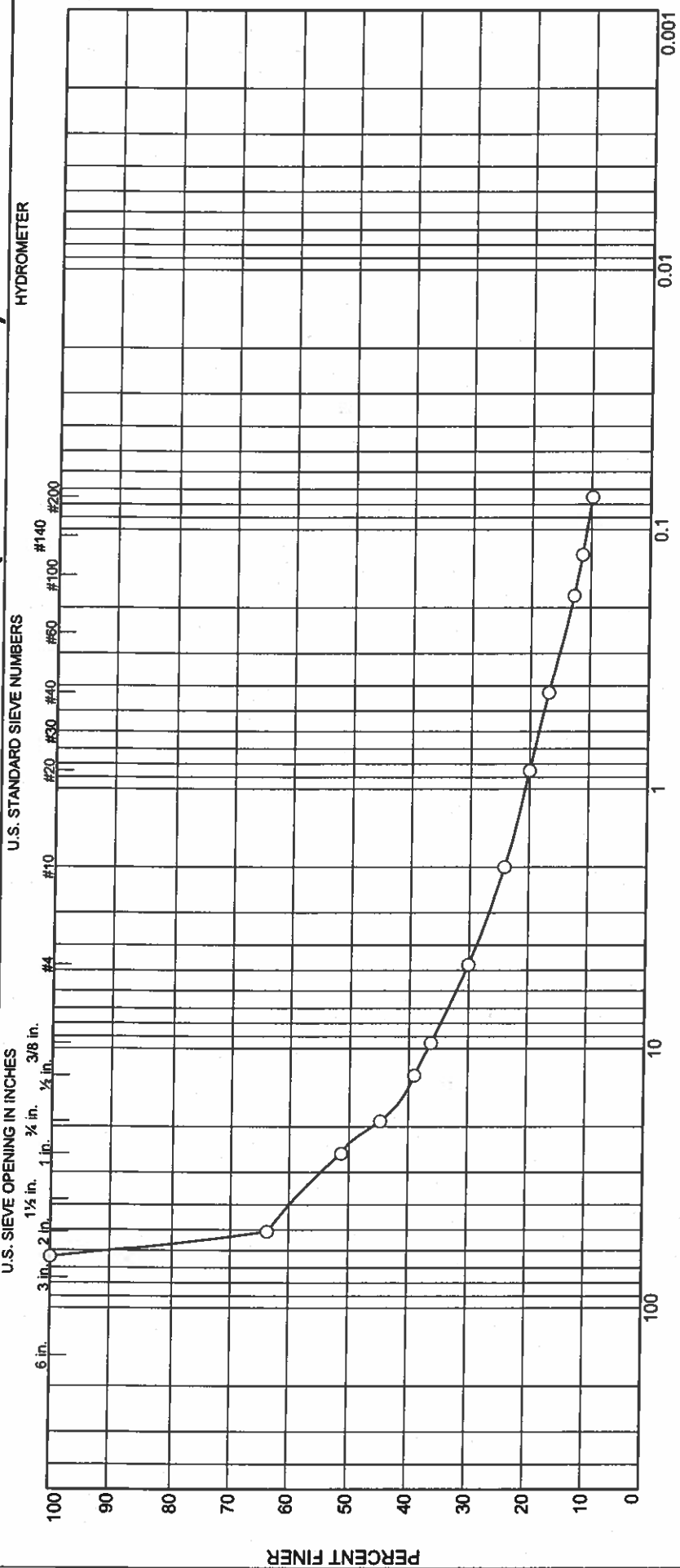
Tested By: MJ      Checked By: DH







# GRADATION AND CLASSIFICATION (ASTM D2487)



U.S. Sieve Opening (inches)	U.S. Standard Sieve Numbers			HYDROMETER
	#4	#10	#20	
3/8				
1/2				
3/4				
1				
1 1/2				
2				
3				
4				
10				
20				
40				
60				
80				
100				
140				
200				

GRAIN SIZE - mm.		% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0.075	0.001	55.3	7.0	9.9	
0.075	0.075	6.0	7.2		
0.075	0.425	14.6			

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-SPA1	S-2	4.0/1597.5	3/28/22	GP-GM	brown poorly graded GRAVEL with silt and sand	5.9	NV	NP
Stratum A								

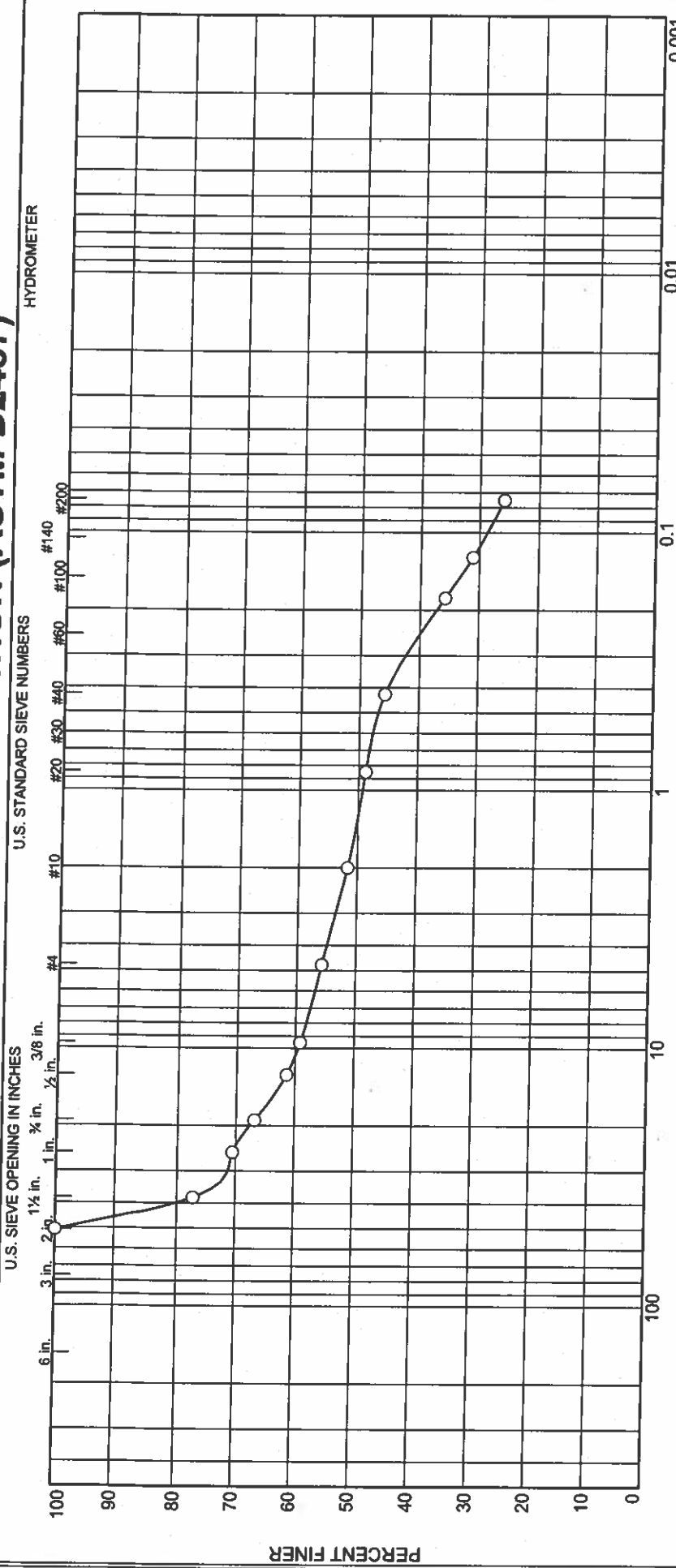


Client JSPA Realty c/o Mr. Joel Shtesl  
 Project Hawthorne Mount Pocono Resort  
 Paradise Twp., PA  
 Project No. 22021

Tested By: MJ      Checked By: DH



# GRADATION AND CLASSIFICATION (ASTM D2487)



		GRAIN SIZE - mm.				% Fines
		% Gravel		% Sand		
% +3"	Coarse	Fine	Coarse	Medium	Fine	Clay
0.0	33.2	11.0	4.1	6.0	19.9	25.8

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description
TP-SPA6	S-2	6.0'/1604.5	3/28/22	GM	brown silty GRAVEL with sand Stratum A

Client JSPA Realty c/o Mr. Joel Shtesl  
 Project Hawthorne Mount Pocono Resort  
 Paradise Twp., PA  
 Project No. 22021



Tested By: MJ  
 Checked By: DH

## **SUBSURFACE INVESTIGATION REPORT**

- General Notes – Test Borings
  - Identification of Soils
  - Engineering Description of Rocks
  - Test Location Plan, Figure No. 4-1
  - Test Boring Logs (B-1 through B-6)
- Test Boring Rock Core Photographs (4 Sheets)

### GENERAL NOTES – TEST BORINGS

1. The test boring surface elevations were estimated based on site grade data provided to us.
2. Numbers in the sampling data column indicate the number of blows required to drive a 2-inch O.D., 1 $\frac{3}{8}$ -inch I.D. sampling spoon through three 6-inch intervals, or as indicated, using a 140-pound hammer falling 30 inches, according to ASTM D-1586.
3. Soil strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System per ASTM D-2488. Rock strata descriptions are based on the Engineering Description of Rocks.
4. Key to abbreviations and symbols:

Ẏ = No sample recovery	NQ = Rock Core Size
M% = Moisture Content	Rec. = Rock Core Recovery
⊕ = Area of Sample	RQD = Rock Quality Designation
5. The boring logs and related information depict subsurface conditions at these specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and groundwater conditions at these boring locations.
6. The stratification lines represent the approximate boundary between soils and/or rock types as determined in the drilling and sampling operation. Some variation may be expected vertically between samples taken. The soil profile, water level observations and penetration resistances presented on these boring logs have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.
7. Estimated groundwater levels are indicated on the logs. These are only estimates from available data and may vary with precipitation, porosity of the soil, site topography, and similar factors.



## IDENTIFICATION OF SOILS

I. Definition of Soil Group Names – ASTM D-2487-11			Symbol	Group Name	
Coarse-Grained Soils More than 50% retained on No. 200 sieve	<b>Gravels</b> – More than 50% of coarse fraction retained on No. 4 sieve Coarse, ¾" to 3" Fine, No. 4 to ¾"	Clean Gravels Less than 5% fines	GW	well-graded gravel	
		Gravels with Fines More than 12% fines	GP	poorly graded gravel	
		<b>Sands</b> – 50% or more of coarse fraction passes No. 4 sieve Coarse: No. 10 to No. 4 Medium: No. 40 to No. 10 Fine: No. 200 to No. 40	Clean Sands Less than 5% fines	GM	silty gravel
			Gravels with Fines More than 12% fines	GC	clayey gravel
	<b>Sands</b> – 50% or more of coarse fraction passes No. 4 sieve Coarse: No. 10 to No. 4 Medium: No. 40 to No. 10 Fine: No. 200 to No. 40	Clean Sands Less than 5% fines	SW	well-graded sand	
		Sands with Fines More than 12% fines	SP	poorly graded sand	
			SM	silty sand	
			SC	clayey sand	
Fine-Grained Soils 50% or more passes the No. 200 sieve	<b>Silts and Clays</b> – Liquid Limit less than 50 Low to medium plasticity	Inorganic	CL	lean clay	
			ML	silt	
		Organic	OL	organic clay	
				organic silt	
	<b>Silts and Clays</b> – Liquid Limit 50 or more Medium to high plasticity	Inorganic	CH	fat clay	
			MH	elastic silt	
		Organic	OH	organic clay	
				organic silt	
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	peat	

II. Definition of Minor Component Proportions		Approximate Percentage of Fraction by Weight
<b>adjective form</b>	gravelly, sandy	30% or more coarse grained
<b>with</b>	sand, gravel	15% or more coarse grained
	silt, clay	5% to 12% fine grained
<b>trace</b>	sand, gravel	Less than 15% coarse grained
	silt, clay	Less than 5% fine grained

### III. Glossary of Miscellaneous Terms

- symbols** Unified Soil Classification Symbols are shown above as group symbols. Use a Line Chart for laboratory identification. Dual symbols are used for borderline classifications.
- boulders & cobbles** Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inch size.
- disintegrated rock** Very generally defined as residual rock material with a standard penetration resistance (SPT) of more than 50 blows per foot, and less than refusal. Refusal is defined as a SPT of 100 blows for 2" or less penetration.
- rock fragments** Angular pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in a soil matrix.
- quartz** A hard silica mineral often found in residual soils
- ironite** Iron oxide deposited within a soil layer forming cemented deposits
- cemented sand** Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate or other materials.
- mica** A soft plate of silica mineral found in many rocks, and in residual or transported soil derived therefrom.
- organic materials (excluding peat)** Topsoil: Surface soils that support plant life and which contain considerable amounts of organic matter;  
 Organic Matter: Soil containing organic colloids throughout its structure;  
 Lignite: Hard, brittle decomposed organic matter with low fixed carbon content (a low grade of coal).
- fill** Man made deposit containing soil, rock and often foreign matter
- probable fill** Soils which contain no visually detected foreign matter but which are suspect with regard to origin
- lenses** 0 to 2 inch seam of minor soil component
- layers** 2 to 12 inch seam of minor soil component
- pocket** Discontinuous body of minor soil component
- color shades** Light to dark to indicate substantial difference in color
- moisture conditions** Wet, moist, or dry to indicate visual appearance of specimen



## **ENGINEERING DESCRIPTION OF ROCKS**

Each rock description should be composed of the following elements: weathering, color, rock type, and fracturing.

### **WEATHERING:**

- Fresh:** Freshly broken surfaces appear bright and unweathered. Fractures may show slight brown staining or discoloration. Ringing sound when rock is struck with hammer.
- Slightly Weathered:** Rock generally fresh, but joints stained, and discoloration extends into rock up to 1 inch. Fractures may have slight soil filling. Rock rings if struck with hammer.
- Moderately Weathered:** Significant portions of rock show discoloration and weathering effects. Grains are dull and discolored; some look clayey. Rock has dull sound under hammer and show significant loss of strength as compared to fresh rock.
- Highly Weathered:** Entire rock except quartz grains discolored and dull. Core surfaces often appear pitted or partly washed away. Rock shows severe loss of strength. Dead sound when struck with hammer.

### **NAMES:** (common rock types)

**Metamorphic Rocks:** Classified by foliation and mineral composition

1. Gneiss: Medium to coarse grained, irregularly banded rock often with alternating light and dark layers.
2. Schist: Fine to medium grained, strongly banded rock, layers are thinner and more distinct than Gneiss. Has a definite "Layered look."

**Sedimentary Rocks:** Classified by grain size

1. Shale: Fine grained, compressed clay and/or silt.
2. Sandstone: Composed of sand size particles.

**Igneous Rocks:** Classified by mineral composition only.

1. Granite: Mixture of quartz, feldspar, and mica; does not have foliation.
2. Diorite: Contains at least 50% dark minerals.

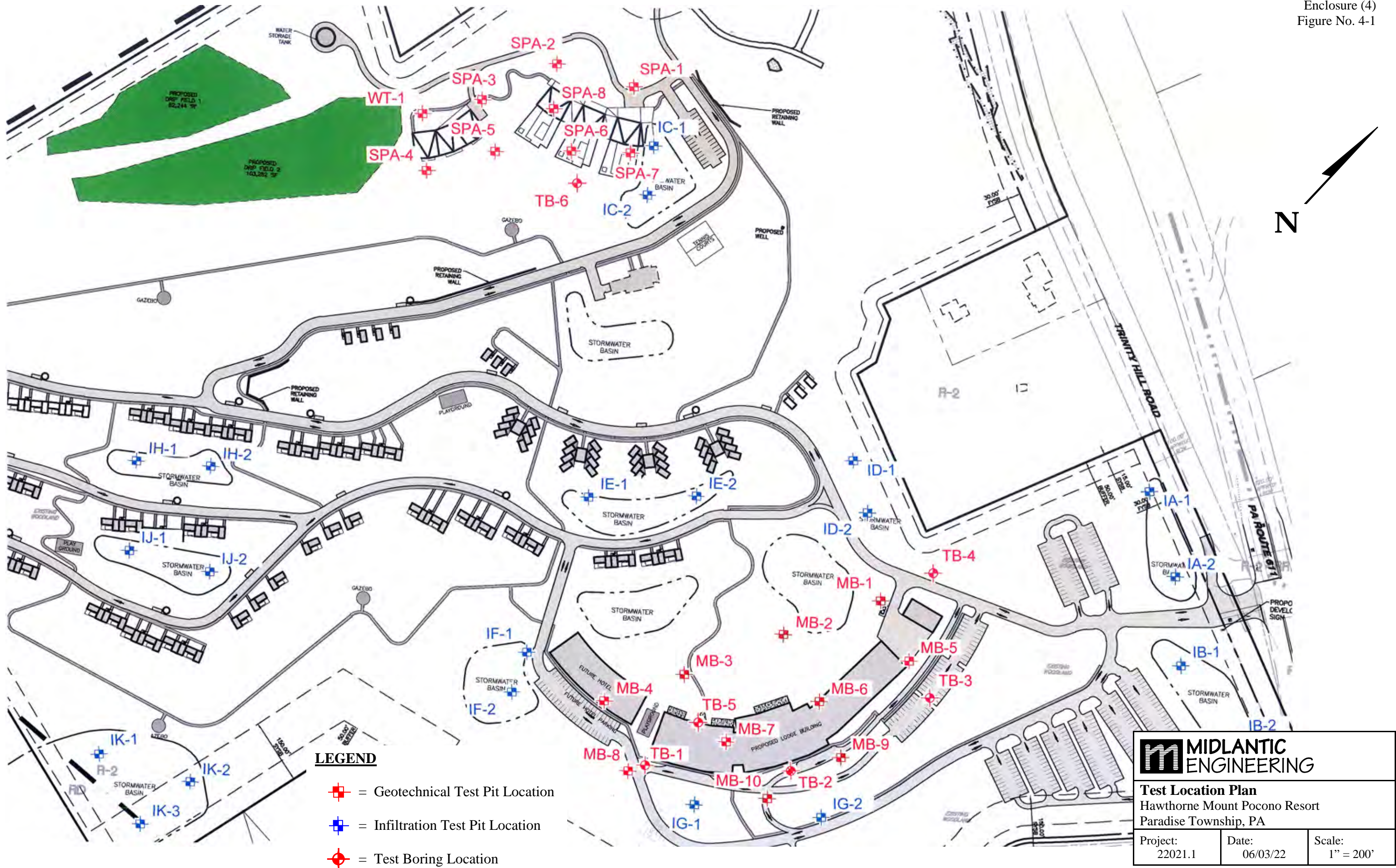
### **FRACTURING:** (natural fractures exclusive of drilling breaks)

<u>Spacing</u>	<u>Fracturing</u>
more than 3 feet	massive
1 foot – 3 feet	slightly fractured
2 inches – 1 foot	moderately fractured
less than 2 inches	highly fractured

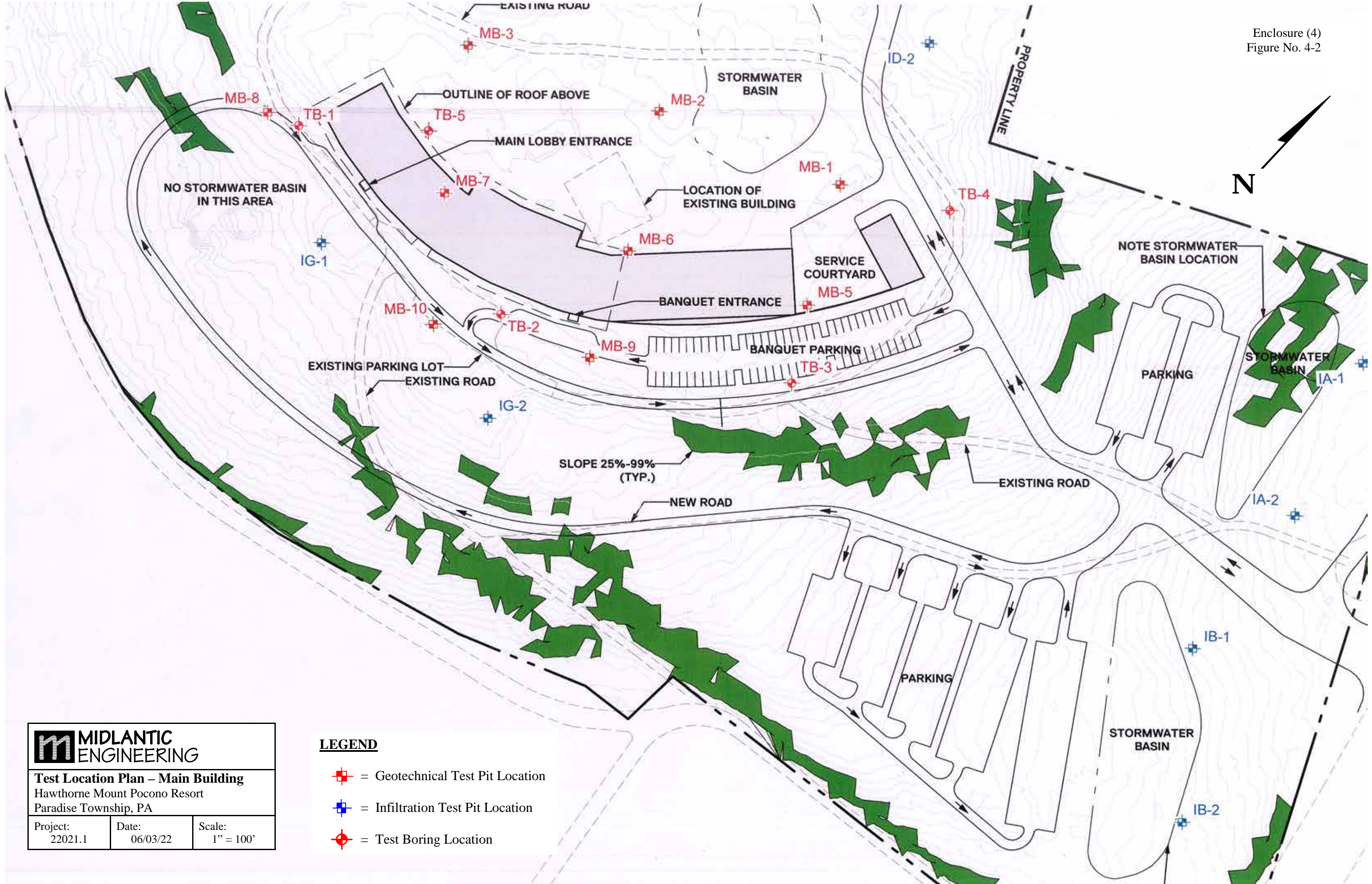
### **EXAMPLES:**


1. Slightly weathered, gray GNEISS rock, moderately fractured
2. Highly weathered, brown and gray SCHIST rock, highly fractured








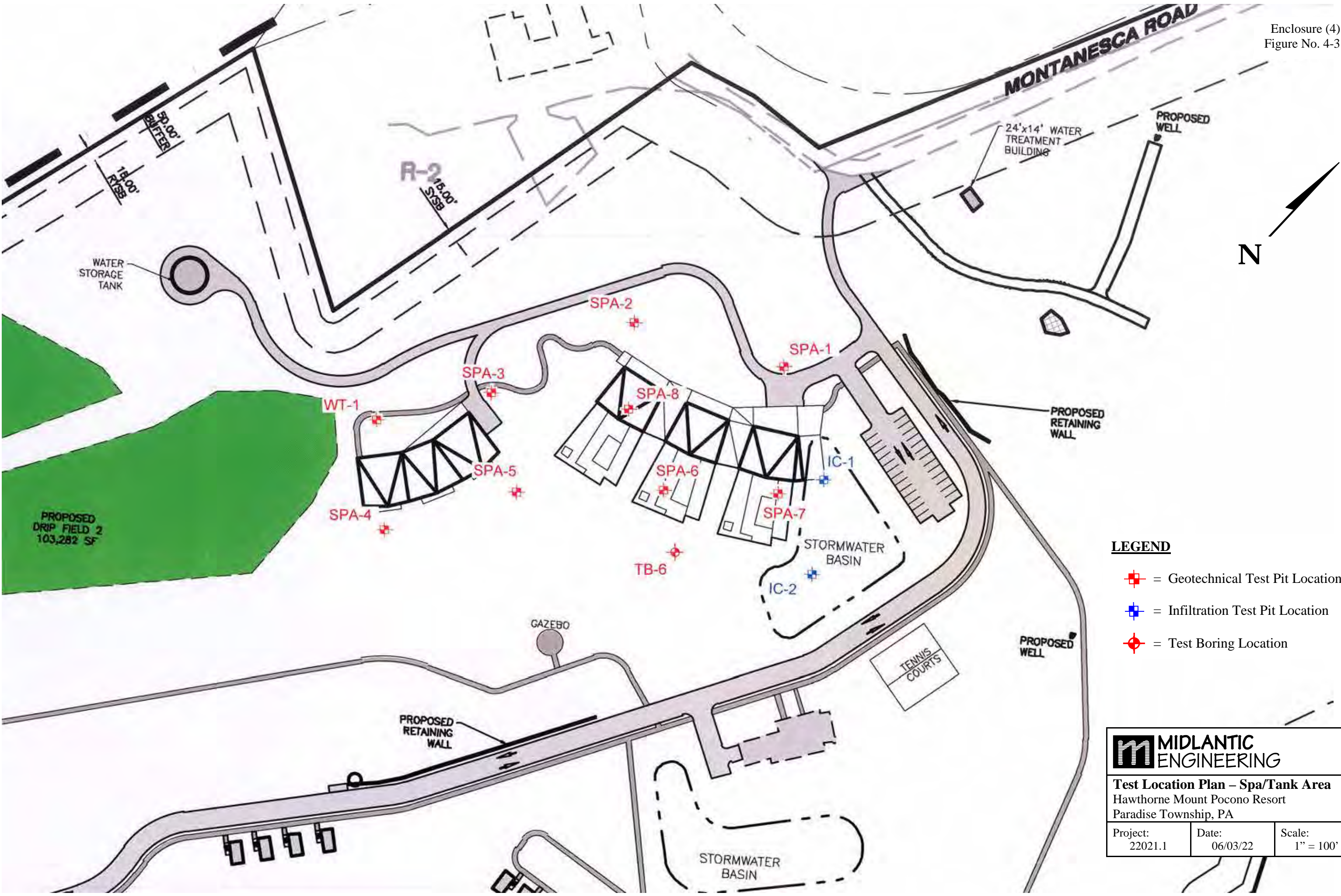







 <b>MIDLANTIC ENGINEERING</b>		
<b>Test Location Plan – Main Building</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: 1" = 100'

- LEGEND**
-  = Geotechnical Test Pit Location
  -  = Infiltration Test Pit Location
  -  = Test Boring Location





**LEGEND**

-  = Geotechnical Test Pit Location
-  = Infiltration Test Pit Location
-  = Test Boring Location

 <b>MIDLANTIC ENGINEERING</b>		
<b>Test Location Plan – Spa/Tank Area</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: 1" = 100'



# TEST BORING LOG

Project: Hawthorne Mount Pocono Resort Paradise Township, PA	Test Loc. No.: <b>B-1</b> Contract No.: <b>22021.1</b>															
ME, Inc. Rep.: JG/RH Date Drilled: 05/24/22 Equip. Used: Acker Surface Elev.: 1515.1	<table border="1"> <thead> <tr> <th colspan="3">Groundwater Observations</th> </tr> <tr> <th></th> <th>Date</th> <th>Time</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>Encountered:</td> <td>05/24/22</td> <td></td> <td>none</td> </tr> <tr> <td>Completion:</td> <td>05/24/22</td> <td></td> <td>dry</td> </tr> </tbody> </table>	Groundwater Observations				Date	Time	Depth	Encountered:	05/24/22		none	Completion:	05/24/22		dry
Groundwater Observations																
	Date	Time	Depth													
Encountered:	05/24/22		none													
Completion:	05/24/22		dry													

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	asphalt & pavement surface – subbase aggregate				1			
2	brown silty gravel with sand - FILL		F	1512.6	2	8+4+ 4+10		
3	brown, gray silty GRAVEL with sand	GM	A		3	50/3"		
4					4			
5				1510.1	5			
6	gray slightly weathered SANDSTONE, slightly fractured		R		6	Rec=90% RQD=35%		
7					7			
8					8			
9					9			
10					10			
11	gray moderately weathered SANDSTONE, highly fractured, pitted				11	Rec=90% RQD=0%		@ 11'3" to 12'4"; very broken
12					12			
13					13			
14					14			
15	Bottom of Boring at 15.0 feet			1500.1	15			
16					16			
17					17			
18					18			
19					19			
20					20			

Comments: Backfilled upon completion.





# TEST BORING LOG

Project: Hawthorne Mount Pocono Resort Paradise Township, PA	Test Loc. No.: <b>B-2</b> Contract No.: <b>22021.1</b>												
ME, Inc. Rep.: JG/RH Date Drilled: 05/23/22 Equip. Used: Acker Surface Elev.: 1509.8	<table border="1"> <thead> <tr> <th colspan="3">Groundwater Observations</th> </tr> <tr> <th>Date</th> <th>Time</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>Encountered: 05/23/22</td> <td></td> <td>none</td> </tr> <tr> <td>Completion: 05/23/22</td> <td></td> <td>dry</td> </tr> </tbody> </table>	Groundwater Observations			Date	Time	Depth	Encountered: 05/23/22		none	Completion: 05/23/22		dry
Groundwater Observations													
Date	Time	Depth											
Encountered: 05/23/22		none											
Completion: 05/23/22		dry											

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	asphalt & pavement surface – subbase aggregate				1			
2	brown silty gravel – FILL		F	1507.8	2	5+3+ 8+10		
3	brown poorly graded GRAVEL with silt and sand	GP- GM	A		3	39+50/1"		
4					4			
5	gray moderately weathered SANDSTONE, highly fractured		R	1504.8	5	Rec=68% RQD=0%		broken @ 5'8"
6					6			
7					7			
8					8			broken @ 8'
9					9			
10	gray slightly weathered SANDSTONE, moderately fractured				10	Rec=100% RQD=28%		broken @ 11'6"
11					11			
12					12			
13					13			
14					14			pitted and vugs @ 13'4" to 13'9" diagonal fractures @ 14'
15	Bottom of Boring at 15.0 feet			1494.8	15			
16					16			
17					17			
18					18			
19					19			
20					20			

Comments: Backfilled upon completion.



# TEST BORING LOG

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No.: **B-3**  
Contract No.: **22021.1**

ME, Inc. Rep.: JG/RH  
Date Drilled: 05/23/22  
Equip. Used: Acker  
Surface Elev.: 1505.3

Groundwater Observations			
Encountered:	Date	Time	Depth
	05/23/22		none
Completion:	05/23/22		dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	asphalt & pavement surface – subbase aggregate				1			
2	brown silty gravel – FILL		F	1503.3	2	5+3+ 7+10		
3	brown poorly graded GRAVEL with silt and sand	GP- GM	A		3			
4					4	27+40+ 50/2"		
5	gray slightly weathered SANDSTONE, highly to moderately fractured		R		5			broken @ 5'
6					6	Rec=100% RQD=0%		
7					7			vertical fracture @ 7'10"
8					8			broken @ 8'
9					9			
10					10			
11					11	Rec=100% RQD=15%		broken @ 11'
12	12			diagonal fracture @ 12'				
13	13							
14	gray moderately weathered SHALE, moderately fractured				14			
15					15		pitted and vugs @ 14' to 15'	
16	Bottom of Boring at 15.0 feet				16			
17					17			
18					18			
19					19			
20					20			

Comments: Backfilled upon completion.



# TEST BORING LOG

Project: Hawthorne Mount Pocono Resort Paradise Township, PA	Test Loc. No.: <b>B-4</b> Contract No.: <b>22021.1</b>												
ME, Inc. Rep.: JG/RH Date Drilled: 05/23/22 Equip. Used: Acker Surface Elev.: 1511.8	<table border="1"> <thead> <tr> <th colspan="3">Groundwater Observations</th> </tr> <tr> <th>Date</th> <th>Time</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>Encountered: 05/23/22</td> <td></td> <td>9.0'</td> </tr> <tr> <td>Completion: 05/23/22</td> <td></td> <td></td> </tr> </tbody> </table>	Groundwater Observations			Date	Time	Depth	Encountered: 05/23/22		9.0'	Completion: 05/23/22		
Groundwater Observations													
Date	Time	Depth											
Encountered: 05/23/22		9.0'											
Completion: 05/23/22													

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	asphalt pavement surface – subbase aggregate		F	1510.8	1			
2	brown silty GRAVEL with sand  @ 3'-4': with rock fragments	GM	A		2	8+5+ 4+10		
3					3	50/2"		
4					4			
5	gray slightly to moderately weathered SANDSTONE, moderately fractured		R	1506.8	5		Rec=88% RQD=22%	
6					6			
7					7			broken @ 6'10"
8					8			@ 8' to 9' highly weathered shale seams, pitted and vugs
9					9			
10					10			Rec=100% RQD=7%
11					11			
12					12			
13					13			shale lenses @ 12'8" to 13'5"
14					14			
15	Bottom of Boring at 15.0 feet			1496.8	15			
16					16			
17					17			
18					18			
19					19			
20					20			

Comments: Backfilled upon completion.



# TEST BORING LOG

Project: Hawthorne Mount Pocono Resort Paradise Township, PA	Test Loc. No.: <b>B-5</b> Contract No.: <b>22021.1</b>												
ME, Inc. Rep.: JG/RH Date Drilled: 05/24/22 Equip. Used: Acker Surface Elev.: 1524.1	Groundwater Observations <table border="1"> <tr> <td></td> <td>Date</td> <td>Time</td> <td>Depth</td> </tr> <tr> <td>Encountered:</td> <td>05/24/22</td> <td></td> <td>8.0'</td> </tr> <tr> <td>Completion:</td> <td>05/24/22</td> <td></td> <td></td> </tr> </table>		Date	Time	Depth	Encountered:	05/24/22		8.0'	Completion:	05/24/22		
	Date	Time	Depth										
Encountered:	05/24/22		8.0'										
Completion:	05/24/22												

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	brown silty gravel with sand - FILL		F	1823.1	1	6+6+ 23+50/1"		
2	brown poorly graded GRAVEL with silt and sand	GP-GM	A	1519.1	2			
3					3			
4					4			
5					5			
6	brown/gray moderately weathered SANDSTONE, moderately fractured		R	1509.1	6	Rec=100% RQD=8%		
7					7			
8					8			
9					9			
10					10			
11	brown/gray moderately weathered SANDSTONE, moderately fractured; few shale lenses			1509.1	11	Rec=100% RQD=13%		
12					12			
13					13			
14					14			
15	Bottom of Boring at 15.0 feet				15			
16					16			
17					17			
18					18			
19					19			
20					20			

Comments: Backfilled upon completion.



# TEST BORING LOG

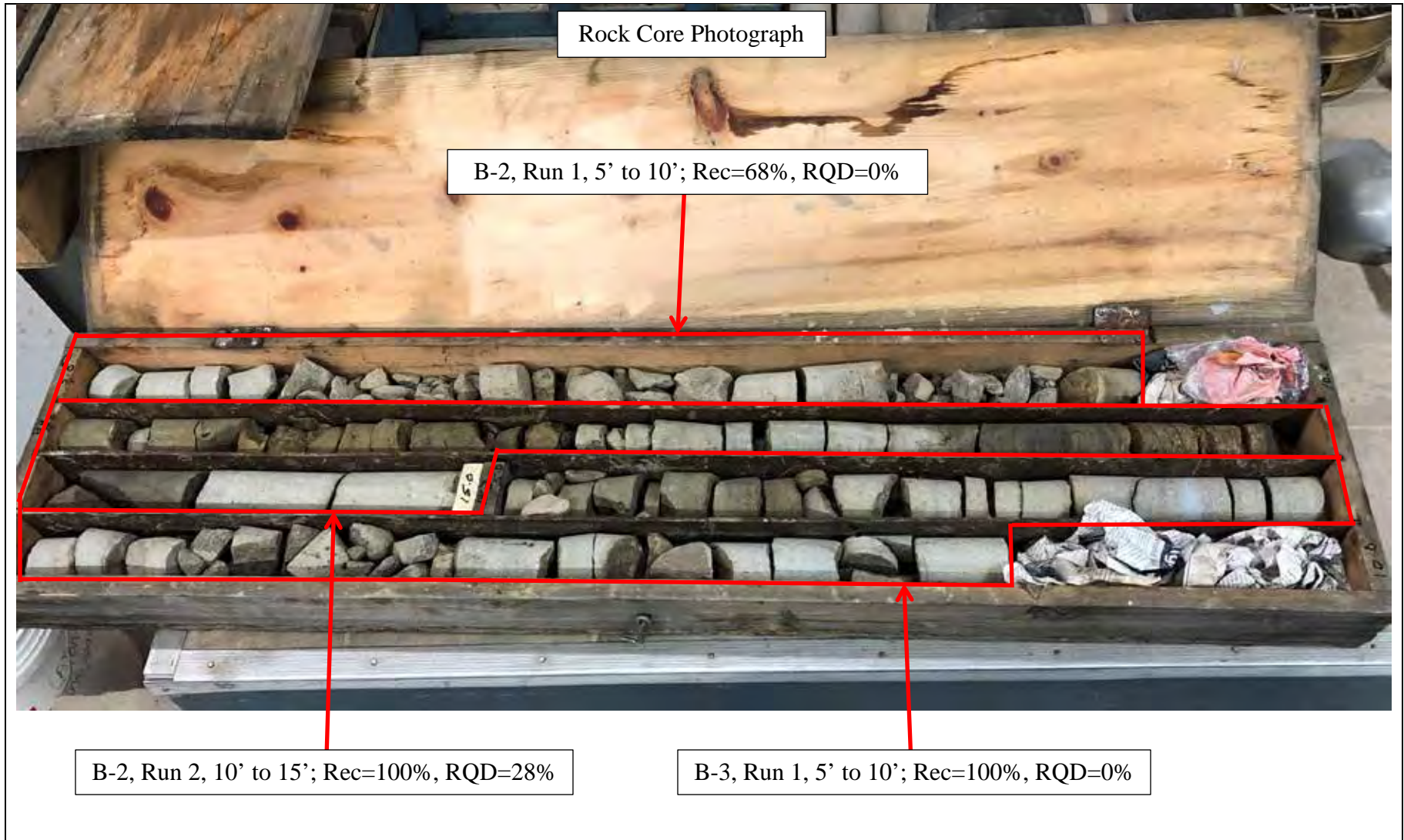
Project: Hawthorne Mount Pocono Resort Paradise Township, PA	Test Loc. No.: <b>B-6</b> Contract No.: <b>22021.1</b>															
ME, Inc. Rep.: JG/RH Date Drilled: 05/25/22 Equip. Used: Acker Surface Elev.: 1605.3	<table border="1"> <thead> <tr> <th colspan="3">Groundwater Observations</th> </tr> <tr> <th></th> <th>Date</th> <th>Time</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>Encountered:</td> <td>05/25/22</td> <td></td> <td>8.0'</td> </tr> <tr> <td>Completion:</td> <td>05/25/22</td> <td></td> <td></td> </tr> </tbody> </table>	Groundwater Observations				Date	Time	Depth	Encountered:	05/25/22		8.0'	Completion:	05/25/22		
Groundwater Observations																
	Date	Time	Depth													
Encountered:	05/25/22		8.0'													
Completion:	05/25/22															

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Test Data		
1	brown silty sand with gravel - FILL		F	1603.8	1	3+3+ 3+8		
2	brown, gray poorly graded GRAVEL with silt and sand	GP-GM	A	1600.3	2	11+50/1"		
3					3			
4					4			
5	gray slightly weathered SANDSTONE, moderately fractured		R	1590.3	5	Rec=65% RQD=12%		
6					6			
7					7			
8					8			
9					9			
10	red slightly weathered SHALE, moderately fractured			1590.3	10	Rec=90% RQD=42%		
11					11			
12					12			
13					13			
14					14			
15	Bottom of Boring at 15.0 feet				15			
16					16			
17					17			
18					18			
19					19			
20					20			

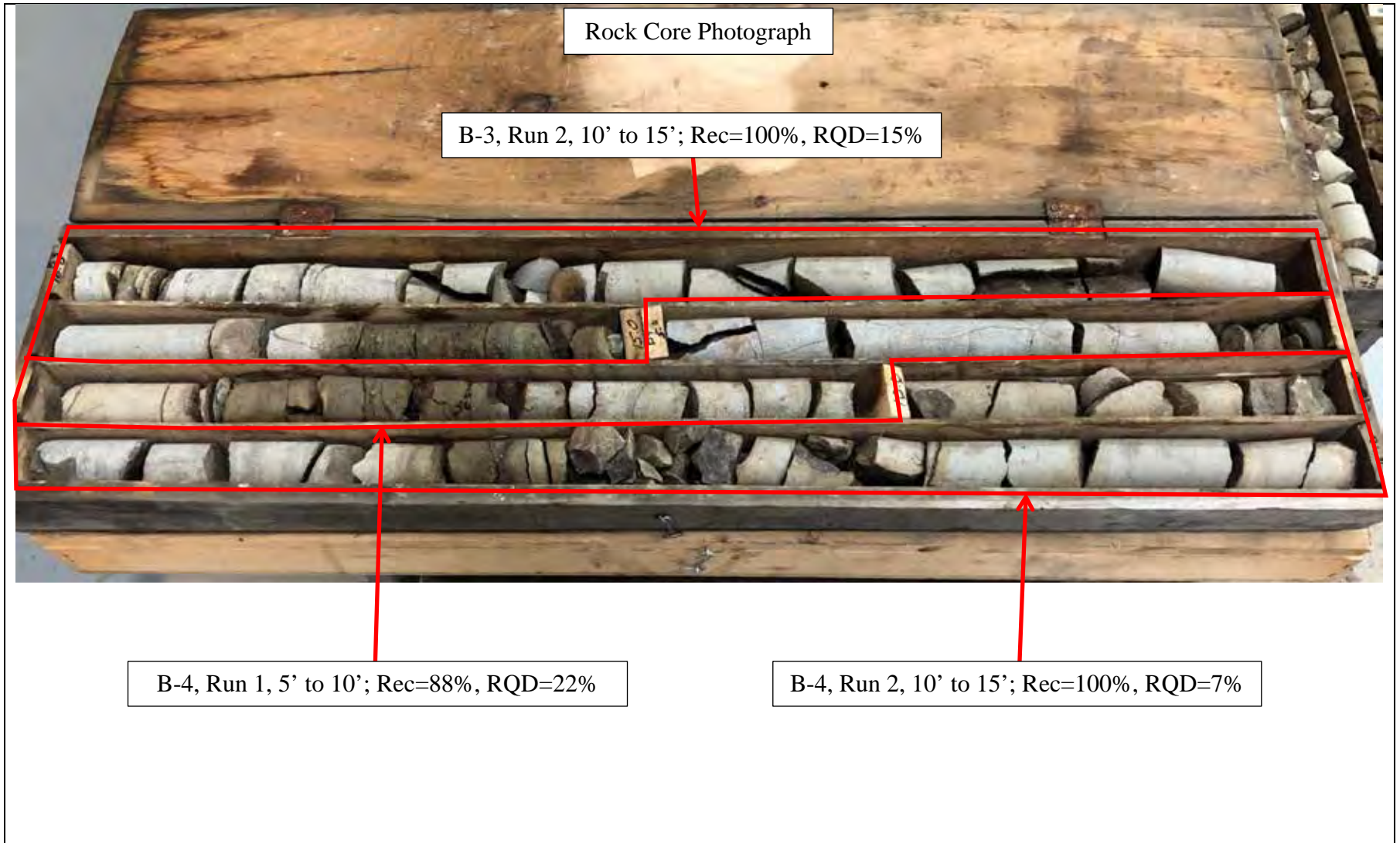
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#22021.1  
Hawthorne Mount Pocono Resort  
Paradise Township, PA

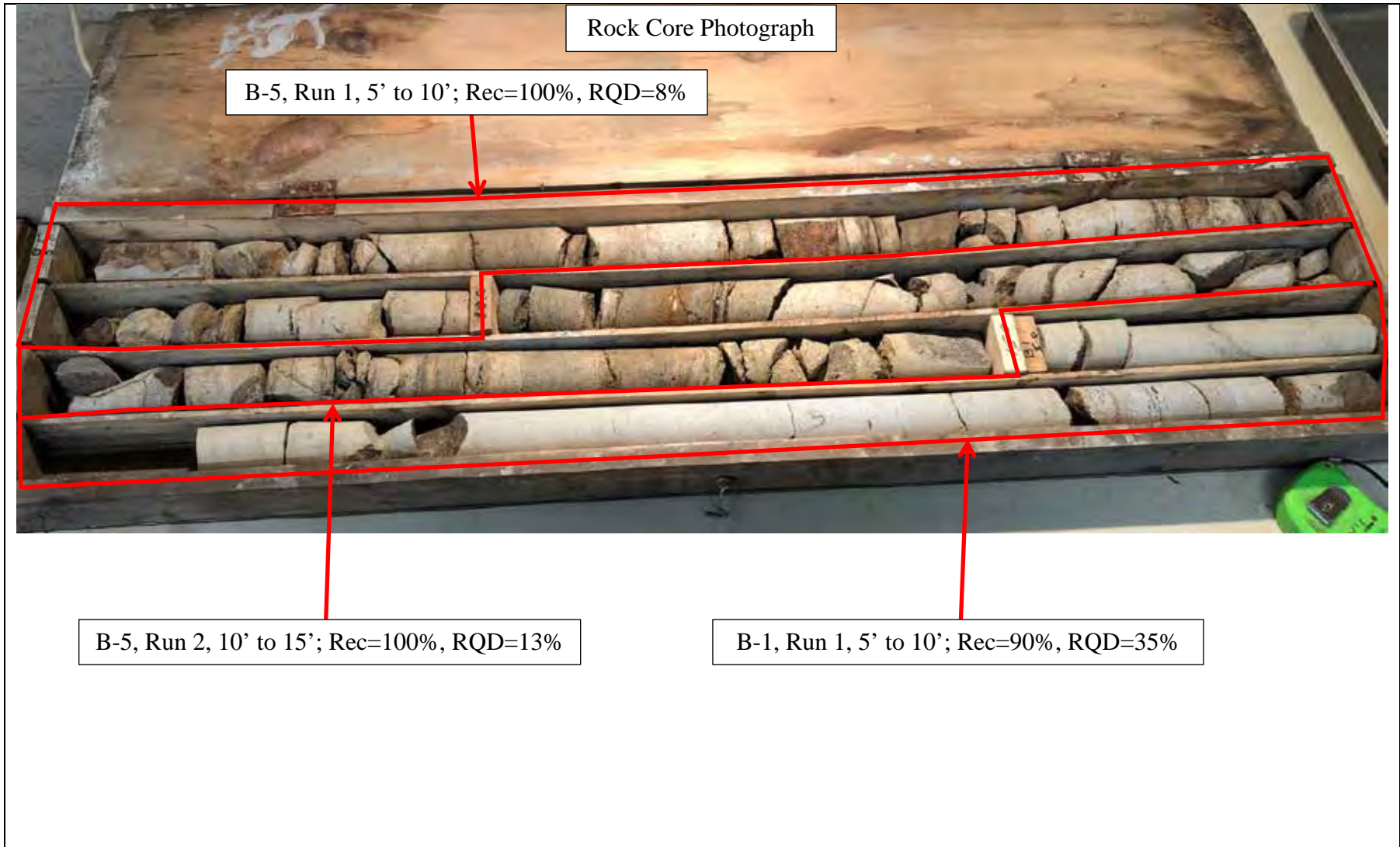


#22021.1  
Hawthorne Mount Pocono Resort  
Paradise Township, PA

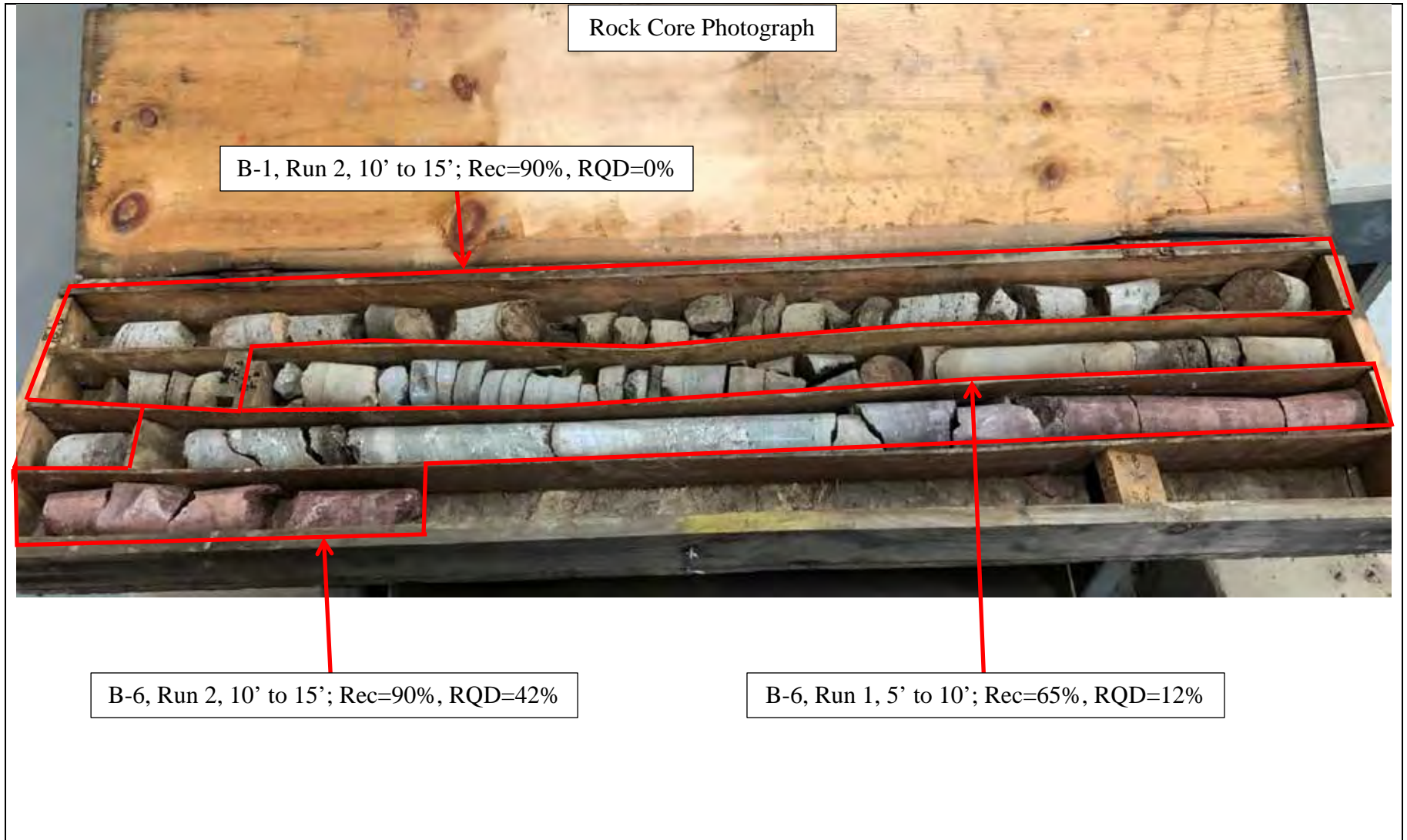




#22021.1  
Hawthorne Mount Pocono Resort  
Paradise Township, PA



#22021.1  
Hawthorne Mount Pocono Resort  
Paradise Township, PA



**SUBSURFACE INVESTIGATION REPORT - Previous Test Pit Logs**

- General Notes – Test Pits
- Test Pit Logs (MB-1 through MB-10, WT-1, SPA-1 to SPA-8; 19 test pit logs)

**GENERAL NOTES – TEST PITS**

1. Test pits are logged by engineering personnel to provide a record for geotechnical evaluation. The log itself includes a description of soil and rock materials encountered using visual classification in the field. Boundary lines between various strata are identified where possible and a graphical presentation is included based on the material excavated from the pit. Any significant features, such as fill conditions, underground structures, groundwater or water seepage conditions are recorded.
2. The test pit logs and related information depict subsurface conditions only at the specific location and at the particular time excavated. Soil conditions at other locations may differ from conditions occurring at these test pit locations. Also, the passage of time may result in a change in the subsurface soil and groundwater conditions at these locations.
3. The stratification lines represent the approximate boundary between soil and rock types as observed in the test pits. The profiles and water level observations presented have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.
4. Strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System, per ASTM D-2488.
5. The test pit locations and grades are based on information provided by others and should be considered as approximate only. The test pit observations and draft logs were prepared by Daniel Hartigan, P.E. of this office.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-1**  
 Contract No. **22021**  
 Date Excavated: 03/23/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1518.3


**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	4" topsoil							
1	brown silty SAND with gravel, firm	SM	A		1		10.6	
2					1/2"			
3	brown silty GRAVEL with sand; very firm	GM			3		14.1	
4					0"			
5								
6					0"			
6.5	Refusal at 6.5 feet Bottom of Test Pit at 6.5 feet		R	1511.8	7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.



Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-2**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1523.3



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	2" asphalt 6" gray crushed aggregate – FILL							
1	red silty sand with gravel – FILL; wet, loose to firm	SM	F					
2						1"	13.7	
3	red/brown silty SAND with gravel, firm	SM	A	1520.3				
4						¼"	8.5	
5	red poorly graded GRAVEL with silt and sand; very firm	GP- GM						
6						0"	9.1	
7								
8	Refusal at 8.0 feet Bottom of Test Pit at 8.0 feet		R	1515.3				
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-3**  
 Contract No. **22021**  
 Date Excavated: 03/23/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1524.9


**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
1	5" asphalt		F	1522.9				
	7" red crushed aggregate subbase – FILL							
	red/brown silty gravel with sand – FILL							
2	Refusal at 2.0 feet Bottom of Test Pit at 2.0 feet		R					
3								
4								
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-4**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1519.8



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	brown silty SAND with gravel; firm	SM	A	1516.3	1		15.4	
2					2	1/2"		
3					3			
4	Refusal at 3.5 feet Bottom of Test Pit at 3.5 feet		R		4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-5**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1517.0



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
	5" topsoil							
	brown silty gravel with sand – FILL		F	1516.0				pipe fragments @ 0.5'
1	Refusal at 1.0 foot Bottom of Test Pit at 1.0 foot		R		1			
2					2			
3					3			
4					4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-6**  
 Contract No. **22021**  
 Date Excavated: 03/23/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1522.9


**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	6" topsoil							
1	brown poorly graded GRAVEL with silt and sand; very firm	GP-GM	A	1518.6	1		11.4	
2					1/4"			
3								
4					0"			
4.3	Refusal at 4.3 feet Bottom of Test Pit at 4.3 feet		R					
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.



Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-7**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1519.6



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	brown silty GRAVEL with sand; very firm	GM	A					
2						1/4"	9.8	
3								
4						0"	8.9	
5	brown poorly graded GRAVEL with silt and sand; very firm	GP-GM						
6				1513.1		0"	4.7	
7	Refusal at 6.5 feet Bottom of Test Pit at 6.5 feet		R					
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-8**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1509.8



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	10" topsoil							
1	brown silty GRAVEL with sand; firm	GM	A		1		14.5	
2					1"			
3	brown poorly graded GRAVEL with silt and sand; very firm	GP-GM			3		9.0	
4					1/4"			
5	Refusal at 5.0 feet Bottom of Test Pit at 5.0 feet		R	1504.8	5			
6				6				
7				7				
8				8				
9				9				
10				10				

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-9**

Contract No. **22021**

Date Excavated: 03/23/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1511.7



**Groundwater Observations**

Encountered: 03/23/22	Depth: none
Completion: 03/23/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	brown silty gravel with sand – FILL; wet, loose to firm	GM	F	1508.7	1		17.8	
2								
3								
4	brown poorly graded GRAVEL with silt and sand, cobbles; very firm	GP-GM	A	1501.2	3		6.2	pipe fragments @3.0'
4					0"			
5								
6					0"			
7								
8	brown silty GRAVEL with sand	GM			8		10.4	
9	brown poorly graded GRAVEL with silt and sand	GP-GM		1501.2	9		13.5	
10								
	Refusal at 10.5 feet Bottom of Test Pit at 10.5 feet		R					

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **MB-10**

Contract No. **22021**

Date Excavated: 03/21/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1508.8



**Groundwater Observations**

Encountered: 03/21/22	Depth: none
Completion: 03/21/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	6" topsoil							
1	red/brown silty SAND; firm	SM	A					
2	red/brown poorly graded GRAVEL with silt and sand; very firm  @ 5.5'-6.5': with cobbles	GP-GM		1502.3			12.9	
3								
4								
5								
6								
7	Refusal at 6.5 feet Bottom of Test Pit at 6.5 feet		R					
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **WT-1**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1651.1



**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	red/brown silty SAND with gravel	SM	A				20.9	
2	Refusal at 1.8 feet Bottom of Test Pit at 1.8 feet		R	1649.3				
3								
4								
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.



Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-1**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1601.5



**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	yellow/brown silty GRAVEL with sand; very firm	GM	A		1			
2					2		8.9	
3	brown poorly graded GRAVEL with silt and sand, cobbles; very firm	GP-GM			3			
4					4		5.9	
5					5			
6					6		8.5	
7					7			
8					8			
9					9			
10					10		6.5	
11	Refusal at 11.0 feet Bottom of Test Pit at 11.0 feet		R	1590.5	11			

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-2**  
 Contract No. **22021**  
 Date Excavated: 03/28/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1621.9


**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	4" topsoil							
1	red/brown silty GRAVEL with sand; very firm	GM	A				18.2	
2								
3								
3.5				1618.4				
4	Refusal at 3.5 feet Bottom of Test Pit at 3.5 feet		R					
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-3**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1640.4



**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	4" topsoil							
1	red/brown silty GRAVEL with sand; very firm	GM	A				8.7	
2								
3								
3.5				1636.9				
4	Refusal at 3.5 feet Bottom of Test Pit at 3.5 feet		R					
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-4**  
 Contract No. **22021**  
 Date Excavated: 03/28/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1639.3


**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	red/brown silty GRAVEL with sand; very firm	GM	A	1635.8	1		16.0	
2					2			
3					3			
4	Refusal at 3.5 feet Bottom of Test Pit at 3.5 feet		R		4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-5**  
 Contract No. **22021**  
 Date Excavated: 03/28/22  
 ME, Inc. Rep.: DH  
 Equip. Used: Excavator  
 Surface Elev.: 1628.2


**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	orange/brown poorly graded GRAVEL with silt and sand; very firm	GP-GM	A				6.1	
2								
3								
4								
5	orange/brown poorly graded GRAVEL with silt; very firm	GP-GM						
6	@ 6' - with weathered rock		R	1621.9			5.0	
6.3	Refusal at 6.3 feet							
6.3	Bottom of Test Pit at 6.3 feet							
7								
8								
9								
10								

Comments: Backfilled upon completion.



Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-6**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1610.5



**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	4" topsoil							
1	orange/brown silty SAND; firm	SM	A				12.0	
2								
3								
4								
5	orange/brown silty GRAVEL with sand, cobbles; very firm	GM					7.3	
6								
7	Refusal at 7.0 feet Bottom of Test Pit at 7.0 feet		R	1603.5				
8								
9								
10								

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-7**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1603.2



**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	4" topsoil							
1	brown/orange silty SAND; firm	SM	A	1600.7	1		20.0	
2					2			
3	Refusal at 2.5 feet Bottom of Test Pit at 2.5 feet		R		3			
4					4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.

Project: Hawthorne Mount Pocono Resort  
Paradise Township, PA

Test Loc. No. **SPA-8**

Contract No. **22021**

Date Excavated: 03/28/22

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 1621.8



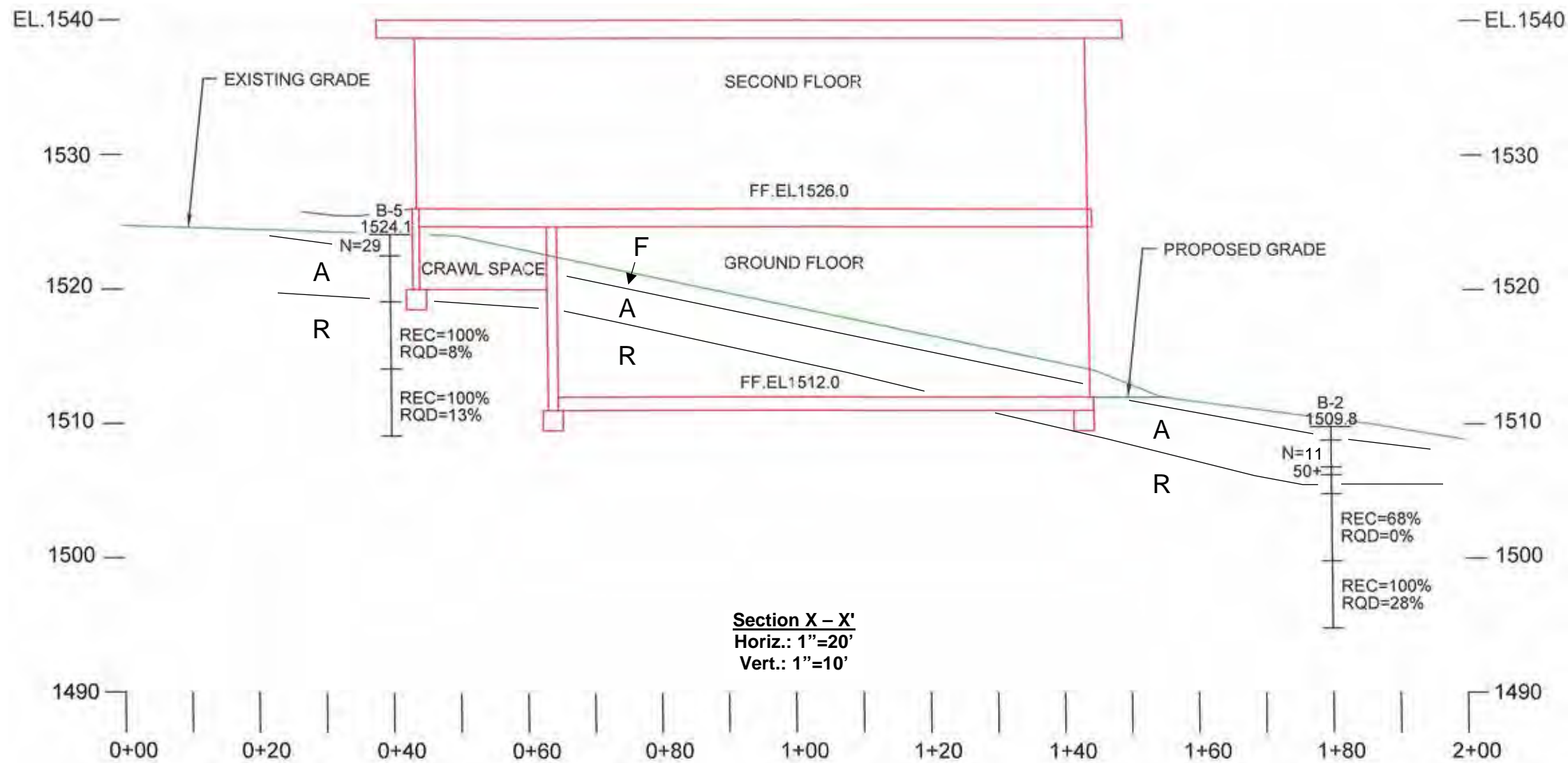
**Groundwater Observations**

Encountered: 03/28/22	Depth: none
Completion: 03/28/22	Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	3" topsoil							
1	orange/brown silty SAND with gravel; firm	SM	A				12.4	
3	Refusal at 3.0 feet Bottom of Test Pit at 3.0 feet		R	1618.8				
4								
5								
6								
7								
8								
9								
10								

Comments: Backfilled upon completion.





**GENERAL STRATA DESCRIPTIONS**

Stratum F (fill)	red/brown silty sand with gravel – FILL, and silty gravel with sand – FILL
Stratum A	brown/red silty SAND with gravel (SM), silty GRAVEL with sand (GM), and poorly graded GRAVEL with silt and sand (GP-GM), occasional cobbles, rock fragments; firm to very firm
Stratum R	gray moderately weathered SANDSTONE and SHALE, highly to moderately fractured (Rec=65% to 100%, RQD=0% to 42%)

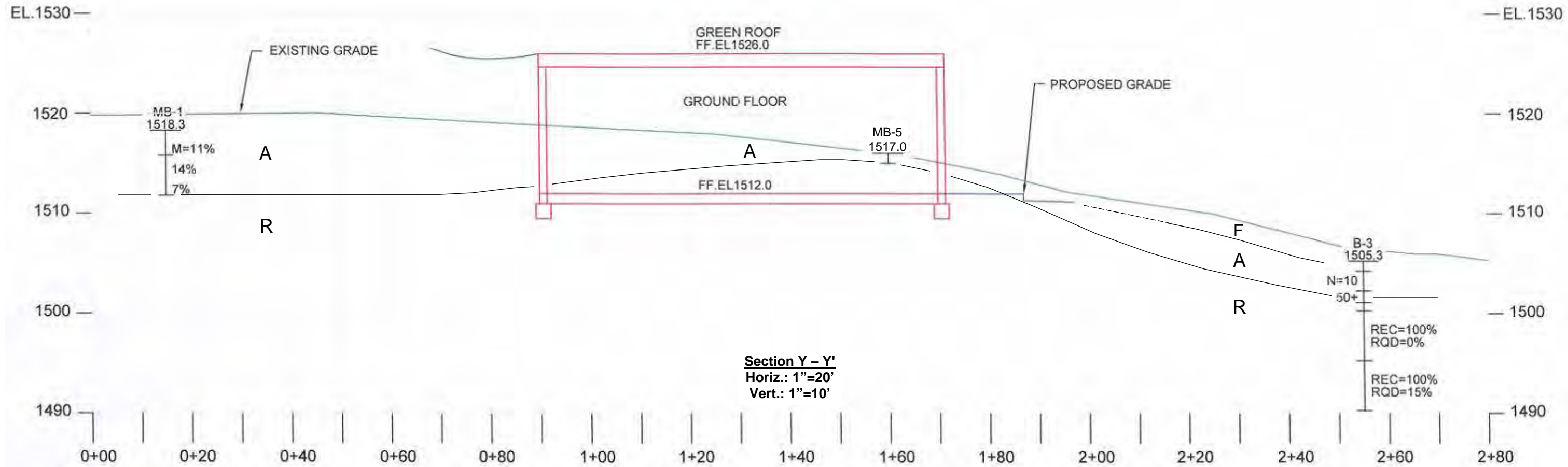
**GENERAL NOTES**

1. Numbers in the sampling data column indicate the number of blows required to drive a 2 inch O.D., 1-3/8 inch I.D. sampling spoon through two 6 inch intervals of soil, or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.
2. G.S. = Ground Surface      %M = Natural Moisture Content  
 REC = rock core recovery      RQD = rock quality designation  
 ▼ = estimated water level as observed during test boring
3. This drawing illustrates interpretations of test boring data and should not be used as part of the contract documents.
4. These profiles were developed by interpolation between widely spaced test borings. Only at the test boring locations should they be considered as an approximately accurate representation and then only to the degree implied by the test boring logs.

<b>MIDLANTIC ENGINEERING</b>		
<b>Estimated Subsurface Profile</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: as shown



**Subsurface Profile Plan**  
1" = 200'



**GENERAL STRATA DESCRIPTIONS**

Stratum F	red/brown silty sand with gravel – FILL, and silty gravel with sand – FILL
Stratum A	brown/red silty SAND with gravel (SM), silty GRAVEL with sand (GM), and poorly graded GRAVEL with silt and sand (GP-GM), occasional cobbles, rock fragments; firm to very firm
Stratum R	gray moderately weathered SANDSTONE and SHALE, highly to moderately fractured (Rec=65% to 100%, RQD=0% to 42%)



**Subsurface Profile Plan**  
 1" = 200'

**GENERAL NOTES**

- Numbers in the sampling data column indicate the number of blows required to drive a 2 inch O.D., 1-3/8 inch I.D. sampling spoon through two 6 inch intervals of soil, or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.
- G.S. = Ground Surface      %M = Natural Moisture Content  
 REC = rock core recovery      RQD = rock quality designation  
 ▼ = estimated water level as observed during test boring
- This drawing illustrates interpretations of test boring data and should not be used as part of the contract documents.
- These profiles were developed by interpolation between widely spaced test borings. Only at the test boring locations should they be considered as an approximately accurate representation and then only to the degree implied by the test boring logs.

<b>MIDLANTIC ENGINEERING</b>		
<b>Estimated Subsurface Profile</b> Hawthorne Mount Pocono Resort Paradise Township, PA		
Project: 22021.1	Date: 06/03/22	Scale: as shown