

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

**GEOTECHNICAL ENGINEERING REPORT**

VA HOSPITAL – STORAGE BUILDING  
WILKES-BARRE, PA

(Project #13114.1)

PREPARED FOR:

NORTHEAST INFRASTRUCTURE, LLC  
630 PARK STREET  
HONESDALE, PA 18431

OCTOBER 29, 2013



October 29, 2013

Northeast Infrastructure, LLC  
630 Park Street  
Honesdale, PA 18431

ATTENTION: Mr. Robert J. Suhosky, EA  
[bsuhoksy@neinfra.com](mailto:bsuhoksy@neinfra.com)

REFERENCE: GEOTECHNICAL ENGINEERING REPORT (#13114.1)  
VA Hospital – Storage Building  
Wilkes-Barre, PA

Mr. Suhosky:

Submitted herewith is our geotechnical engineering report for the above referenced project. Our services have been performed in accordance with our proposal/agreement dated October 17, 2013 and your subsequent authorization to proceed.

## **1. SCOPE OF SERVICES**

Services performed for this phase of the study included observation and testing of five test pits at the proposed building area, evaluation of geologic mapping data, soil laboratory testing, 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 area based on the test pit 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 earthwork requirements for construction of structural backfill including an assessment of on-site materials to be excavated for use as fill.

- e. Seismic design classifications of subgrade conditions per IBC 2009 table 1613.5.2.
- f. 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 considerations, wetlands investigations, erosion control, pavement design section, construction cost estimates and construction observation and testing are not included in the scope of services under this phase of our contract.

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

The project includes the construction of a metal storage building located on the grounds of the Veterans Hospital, at 111 East End Boulevard in Wilkes-Barre, Pennsylvania. The proposed building is located on the northeast end of the facility. The development area is currently being used for a temporary construction trailer and a fenced storage area. Existing surface grades of the development site slope down gently from east to west from about El 857 to El 850. The project area is indicated on the vicinity plan included as dwg. 13114.1-1 in Enclosure (3).

The new building spans about 50' by 80'. The building is planned for the slab on grade building with the finished floor set at El 856±. Shallow cuts and structural fills of up to 2 feet in depth will be required for the building pad.

The information listed above was provided to us by your office, derived from project development plans provided to us, or was obtained during our own site visits.

## **3. SUBSURFACE CONDITIONS**

In order to evaluate subsurface conditions in the proposed building area, five test pits were excavated under our supervision on October 24, 2013. The test pits were excavated and sampled to depths of 2.5 feet to 6.5 feet each. The results of the test pit observation and testing, the water level observation data, and test pit location plan are included in Enclosure (3).

### 3.1 Test Pit Data and Stratification

The test pits indicate the following generalized strata underlie the building area to the depths investigated:

<u>Stratum</u>	<u>Depths</u>	<u>Description</u>
Stratum F	from ground surface to a depth of about 0.6 feet to 1.5 feet	brown silty gravel with sand – FILL
Stratum B	below Stratum F to depths of 2.5 feet to 6.5 feet	brown sandy SILT with gravel (ML) and silty SAND with gravel (SM); compact to very compact
Stratum DR	below Strata F and B to depths of 2.5 feet to 4.5 feet	gray, brown DISINTEGRATED ROCK, with silty sand; very compact
Stratum R	below Stratum DR at depth of excavation refusal	gray, slightly weathered SHALE and SANDSTONE, bedrock

The soil symbols indicated in the stratum descriptions and on the test pit 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 (1). The visual classifications may vary from classifications based on the results of laboratory testing.

### 3.2 Geology

The shallow fill materials of Stratum F are associated with previous site grading and site usage. The fill materials may extend to greater depths in areas of former utility lines or former foundation excavation areas.

The natural sand and silt soil materials of Stratum B represent glacial till deposits. These materials are moderately over-consolidated.

The disintegrated rock materials of Stratum DR are residual materials derived from the in-place weathering of the parent bedrock. The underlying bedrock materials of Stratum R consist of interbedded sandstone and shale of the Lewellyn formation of the Pennsylvanian geologic age.

Mining maps were reviewed at the Department of the Interior's Office of Surface Mining to study the previous surface and subsurface mining activities in the project area. Numerous anthracite coal veins have been mined throughout the study region. The subsurface mining has been performed by room-and-pillar mining and generally indicates secondary mining has been completed. The sequence of mined coal measures below the development area is indicated in the following table:

<u>Item</u>	<u>Approx. Elevation</u>	<u>Comments</u>
ground surface	El 855+/-	
top of rock	El 853 to 848+/-	
Top Red Ash vein	El 670+/-	room-and-pillar mining
Bottom Red Ash vein	El 650+/-	room-and-pillar; secondary mining indicted

The surface map of the mining operations indicate there are no mining structures, shafts, slopes, etc., in the immediate area of the new storage building.

The uppermost subsurface mine through the site is the Top Red Ash vein. Based on the geologic mapping, we estimate 180 feet of sandstone and shale caprock above the workings of the Top Red Ash vein. The probability of mining related subsidence events affecting the development area is considered to be very remote. No mine level remediation is considered necessary for the proposed development.

### 3.3 Groundwater Observations

Groundwater observations were performed during the excavation operations at each of the test pit locations. No groundwater was encountered at the test pit locations to the depths investigated. The results of water readings are shown on the test pit logs in Enclosure (3).

Water level readings at the 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 performed on selected samples from the test pit locations for classification and assessment purposes. Results of testing are included as Enclosure (2) and are summarized below. The natural moisture content was also determined for selected soil samples per ASTM D-2216, as shown on the test pit logs in Enclosure (3).

#### Soil Classifications Summary

<u>Test Pit</u>	<u>Depth/ Elevation</u>	<u>Stratum</u>	<u>Classification (D-2487)</u>	<u>% M (D-2216)</u>	<u>% &lt; #200 Sieve Size (D-1140)</u>
TP-4	4.0' El 852.0	B	brown sandy SILT (ML)	22.3%	55%

## 4. **FOUNDATION ENGINEERING ANALYSIS**

Our foundation engineering analysis is based upon the subsurface information data as developed by our field investigation, review of site geologic data, and the site and structural data furnished to us. The proposed building is to be a metal structure with slab on grade. The finished floor is set at El 856±. Shallow cuts and structural fill will be required to achieve building subgrade levels.

### 4.1 Subgrade Preparations

We recommend all existing fill and surface debris materials be removed from the building construction areas, and to an extent of 6 feet outside the construction areas, prior to placement of new structural fill. The prepared subgrades will consist of compact sandy silt of Stratum B at TP-4 and disintegrated rock of Stratum DR at the remaining test pit locations. We estimate the average stripping depths will be about 0.5 to 1.5 feet.

After the excavation of the fill material, the subgrade areas of the site should be observed to determine the actual suitability of the material for support of new structural fill. Excessively soft or yielding areas should be further undercut to sound bearing and replaced with suitable structural fill. The structural fill classification and compaction recommendations are included in the 'Construction Considerations' section of this report.

#### 4.2 Shallow Spread Footings

The perimeter footing subgrades are estimated at El 852±. The test pits within the building area generally indicate compact sandy silt materials of Stratum B, the disintegrated rock of Stratum DR, or the rock of Stratum R at shallow spread footing depths. 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 subgrades of Stratum B, Stratum DR, and Stratum R.

The estimated subgrade elevations indicated herein are for design and construction planning. Final footing subgrades should be observed by a representative of the project geotechnical engineer during construction. Any materials considered unsuitable for the recommended design bearing pressure should be undercut to sound bearing natural materials and replaced with compacted structural fill. Lowering of footing subgrades below the design grades may be required in areas of previous excavation or disturbance.

For shear considerations, the continuous wall footings should be constructed to minimum widths of 24 inches and individual column footing constructed to minimum widths of 36 inches.

All exterior footings should be placed a minimum of 4.0 feet below adjacent exterior grades for frost protection. Adjacent footings in areas where lowering is required should be stepped in increments not steeper than one horizontal to one vertical (1H:1V).

Considering the recommendations provided herein, we anticipate the total settlement for footings will not exceed about ½ inch. Differential settlements between adjacent footings or bearing walls are also not expected to exceed about ½ inch. Settlements of this magnitude are anticipated to be within tolerable structural limits.

The site conditions and construction recommendations in this report indicate a seismic design classification of site class 'C' per IBC 2009 table 1613.5.2.

#### 4.3 Floor Slabs

We anticipate the firm natural silt and sand materials of Stratum B, the disintegrated rock materials of Stratum DR, or shallow depths of new structural fill for support of the floor slab on grade. These materials are suitable for direct support of building floor slabs. Structural backfill placed over utility lines, etc. should comply with the classification and compaction recommendations in the 'Construction Considerations' section of this report. 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 pit locations and considering proposed finished floor grades, a subfloor drainage system is not considered necessary. The exterior surface grades should be designated to avoid ponding of runoff against the building walls and perimeter foundation drains should be used at all building areas below grade.

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 six inches of coarse open-graded gravel or crushed stone that is well graded between the  $\frac{3}{4}$  inch and the No. 4 sieve size. PennDOT type OGS or 2A coarse aggregate is considered suitable for this purpose. Prior to placing the base course, the subgrade materials should be proofrolled and compacted on grade to densify and stabilize any areas that may have been disturbed by the preceding construction and 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.

## **5. CONSTRUCTION CONSIDERATIONS**

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

### **5.1 Rock Excavation**

Rock excavation methods may be necessary to excavate to the lowest foundation grades. This rock may consist of the shale and sandstone of Stratum R. Local ripping techniques or excavation by use of ram hoes and jackhammers are expected to be adequate for the materials and quantities to be excavated. Blasting will not be permitted on the hospital site.

The actual top of rock elevations encountered during excavation may vary from the estimates provided at the test pit location. 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 which may be excavated by conventional excavation and ripping methods should be anticipated depending on the type and size of equipment used.



## 5.2 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 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.

## 5.3 Foundation Construction

Foundation subgrades for the building areas will be in the compact sandy silt of Stratum B, the very compact disintegrated rock of Stratum DR, or the rock of Stratum R. Foundation subgrades should be observed by a representative of the project 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 concrete or with lifts of compacted coarse aggregate structural fill.

## 5.4 Structural Fill and Backfill

The full depth of fill materials within the building and infrastructure areas is to be removed. We estimate the average stripping depths within the building areas will be in the range of 0.5 to 1.5 feet.

After the excavation of the fill materials, the prepared fill subgrades should be observed to determine the actual suitability of the material for support of new structural fill. Excessively soft or yielding areas should be further undercut to sound bearing and replaced with crushed stone structural fill. We suggest that a budget be established for additional undercutting requirements during construction.

Soil fill and backfill materials shall consist of materials classified as sandy ML, SM, SP, SW, GP, GW, or GM per ASTM D-2487. Structural fill materials shall be free of any material designated as deleterious. The fill materials should be placed in shallow horizontal layers of maximum 9 inches loose lift thickness and compacted with the necessary type of compaction equipment to attain at least 95 percent of the maximum dry density per ASTM D-1557. Proposed fill soils should be at a moisture content that will facilitate adequate compaction.

The natural granular soils of Stratum B and the disintegrated rock materials of Stratum DR are generally considered suitable for re-use as structural fill and backfill. These natural soils are sensitive to moisture content variation and should be stockpiled and covered to maintain a moisture content adequate for compaction. Cobbles and boulder fragments may be used in the structural fill but should not exceed 8 inches in the largest dimension. Also, PennDOT type 2RC or 2A coarse aggregates are considered suitable as backfill in structural areas.

## **6. 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 test pits 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 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.

A handwritten signature in blue ink, appearing to read 'T. Burns', is positioned above the printed name.

Timothy Burns, P.E.  
President

Encls:

- (1) Identification of Soils
- (2) Soil Laboratory Testing
  - Gradation and Classification (1 Sheet)
- (3) Subsurface Investigation Report
  - General Notes
  - Test Pit Logs (TP-1 through TP-5)
  - Project Vicinity Plan, dwg. 13114.1-1
  - Test Pit Location Plan, dwg. 13114.1-2

cc: Reilly Associates  
Mr. Marty Musso  
[mmusso@reillyengineering.com](mailto:mmusso@reillyengineering.com)



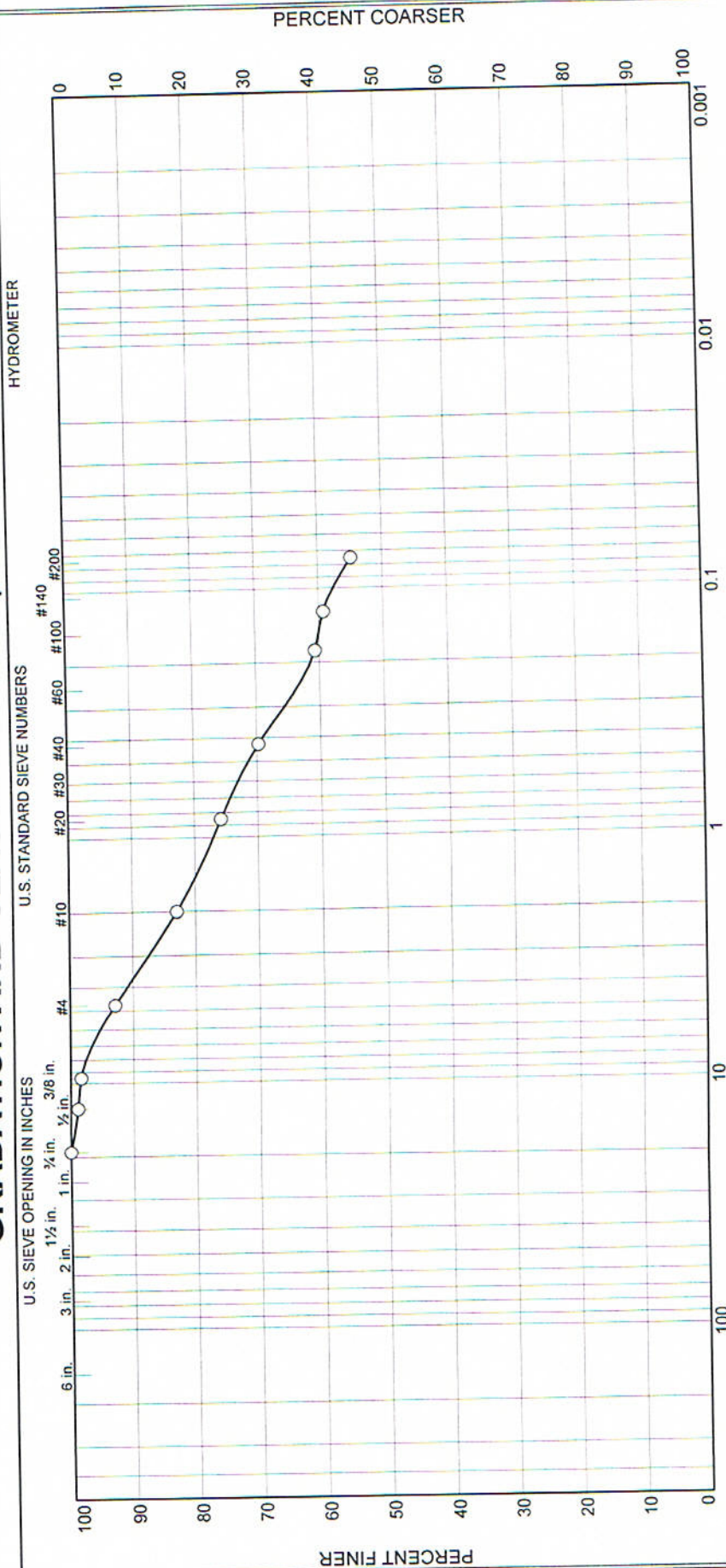
## IDENTIFICATION OF SOILS

I. Definition of Soil Group Names – ASTM D-2487-83			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
			GP	poorly graded gravel
		Gravels with Fines More than 12% fines	GM	silty 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		GC	clayey gravel
		Clean Sands Less than 5% fines	SW	well-graded sand
			SP	poorly graded sand
		Sands with Fines More than 12% fines	SM	silty 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
	<b>Silts and Clays</b> – Liquid Limit 50 or more Medium to high plasticity	Organic	OL	organic clay
				organic silt
		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

<b>symbols</b>	Unified Soil Classification Symbols are shown above as group symbols. Use a Line Chart for laboratory identification. Dual symbols are used for borderline classifications.
<b>boulders &amp; cobbles</b>	Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inch size.
<b>disintegrated rock</b>	Residual rock material with a standard penetration resistance (SPT) of more than 60 blows per foot, and less than refusal. Refusal is defined as a SPT of 100 blows for 2" or less penetration.
<b>rock fragments</b>	Angular pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in a soil matrix.
<b>quartz</b>	A hard silica mineral often found in residual soils
<b>ironite</b>	Iron oxide deposited within a soil layer forming cemented deposits
<b>cemented sand</b>	Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate or other materials.
<b>mica</b>	A soft plate of silica mineral found in many rocks, and in residual or transported soil derived therefrom.
<b>organic materials (excluding peat)</b>	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).
<b>fill</b>	Man made deposit containing soil, rock and often foreign matter
<b>probable fill</b>	Soils which contain no visually detected foreign matter but which are suspect with regard to origin
<b>lenses</b>	0 to 2 inch seam of minor soil component
<b>layers</b>	2 to 12 inch seam of minor soil component
<b>pocket</b>	Discontinuous body of minor soil component
<b>color shades</b>	Light to dark to indicate substantial difference in color
<b>moisture conditions</b>	Wet, moist, or dry to indicate visual appearance of specimen



GRAIN SIZE - mm.									
% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
0.0	0.0	7.1	10.0	13.2	14.9	54.8			

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-4	1	4.0'/852	10/23/13	ML	brown sandy SILT Stratum B	22.3	NV	NP

Client	Northeast Infrastructure, LLC	
Project	VA Hospital-Storage Building	
	Wilkes-Barre, PA	
Project No.	13114.1	

MIDLANTIC ENGINEERING Pittston Township, Pennsylvania	
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## **SUBSURFACE INVESTIGATION REPORT**

- General Notes (1 Sheet)
- Test Pit Logs (TP-1 through TP-5)
- Project Vicinity Plan, dwg. 13114.1-1
- Test Pit Location Plan, dwg. 13114.1-2

### GENERAL NOTES

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. Numbers in the in-situ test data column represent in-situ penetrometer test results. The depth of penetration is recorded for interpretation of the consistency of the soil subgrade materials.
6. 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 John Gunning, engineering technician, of this office.



# MIDLANTIC ENGINEERING

## TEST PIT LOG TP-1

Project: VA Hospital – Storage Building  
Wilkes-Barre, PA

Test Loc. No. **TP-1**

Contract No. **13114.1**

Date Excavated: 10/24/13

ME, Inc. Rep.: M. Standley

Equip. Used: Backhoe

Surface Elev.: 854.5+/-



### Groundwater Observations

Encountered: Depth: none

Completion: Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
	brown silty gravel with sand – FILL		F					
1				853.5	1			
	light brown silty SAND with gravel	SM	B					
2				852.0	2			
	gray DISINTEGRATED ROCK, (shale)		DR					
3				851.0	3			
	Refusal on Rock at 3.5 feet Bottom of Test Pit at 3.5 feet		R					
4					4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.



## TEST PIT LOG TP-2

Project: VA Hospital – Storage Building  
Wilkes-Barre, PA

Test Loc. No. **TP-2**

Contract No. **13114.1**

Date Excavated: 10/24/13

ME, Inc. Rep.: M. Standley

Equip. Used: Backhoe

Surface Elev.: 853.0+/-

### Groundwater Observations

Encountered: Depth: none

Completion: Depth: dry



Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
	brown silty gravel with sand – FILL		F	852.4				
1	gray, brown DISINTEGRATED ROCK		DR		1			
2	@ 2' – 2.5': gray sandstone			850.5	2			
3	Refusal on Rock 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.



## TEST PIT LOG TP-3

Project: VA Hospital – Storage Building  
Wilkes-Barre, PA

Test Loc. No. **TP-3**

Contract No. **13114.1**

Date Excavated: 10/24/13

ME, Inc. Rep.: M. Standley

Equip. Used: Backhoe

Surface Elev.: 854.5+/-

### Groundwater Observations

Encountered: Depth: none

Completion: Depth: dry



Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
	brown silty gravel with sand – FILL		F					
1	light brown sandy SILT with gravel, very compact	ML	B	853.5	1		21.7	
2	trace roots to 2.0'				2			
				852.0				
3	gray DISINTEGRATED ROCK, (shale)		DR		3			
4					4			
				850.0				
5	Bottom of Test Pit at 4.5 feet				5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.



# MIDLANTIC ENGINEERING

## TEST PIT LOG TP-4

Project: VA Hospital – Storage Building  
Wilkes-Barre, PA

Test Loc. No. **TP-4**

Contract No. **13114.1**

Date Excavated: 10/24/13

ME, Inc. Rep.: M. Standley

Equip. Used: Backhoe

Surface Elev.: 856.0+/-

### Groundwater Observations

Encountered: Depth: none

Completion: Depth: dry



Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
— 1 —	brown silty gravel with sand – FILL, with root matter		F		— 1 —			
— 2 — 3 — 4 —	light brown sandy SILT with gravel, very compact  trace roots to 4.0'	ML	B	854.5	— 2 — 3 — 4 —		22.3	
— 5 — 6 —	brown silty SAND with gravel	SM			— 5 — 6 —			
— 7 — 8 — 9 — 10	Bottom of Test Pit at 6.5 feet			849.5	— 7 — 8 — 9 — 10			

Comments: Backfilled upon completion.



# MIDLANTIC ENGINEERING

## TEST PIT LOG TP-5

Project: VA Hospital – Storage Building  
Wilkes-Barre, PA

Test Loc. No. **TP-5**

Contract No. **13114.1**

Date Excavated: 10/24/13

ME, Inc. Rep.: M. Standley

Equip. Used: Backhoe

Surface Elev.: 856.0+/-



### Groundwater Observations

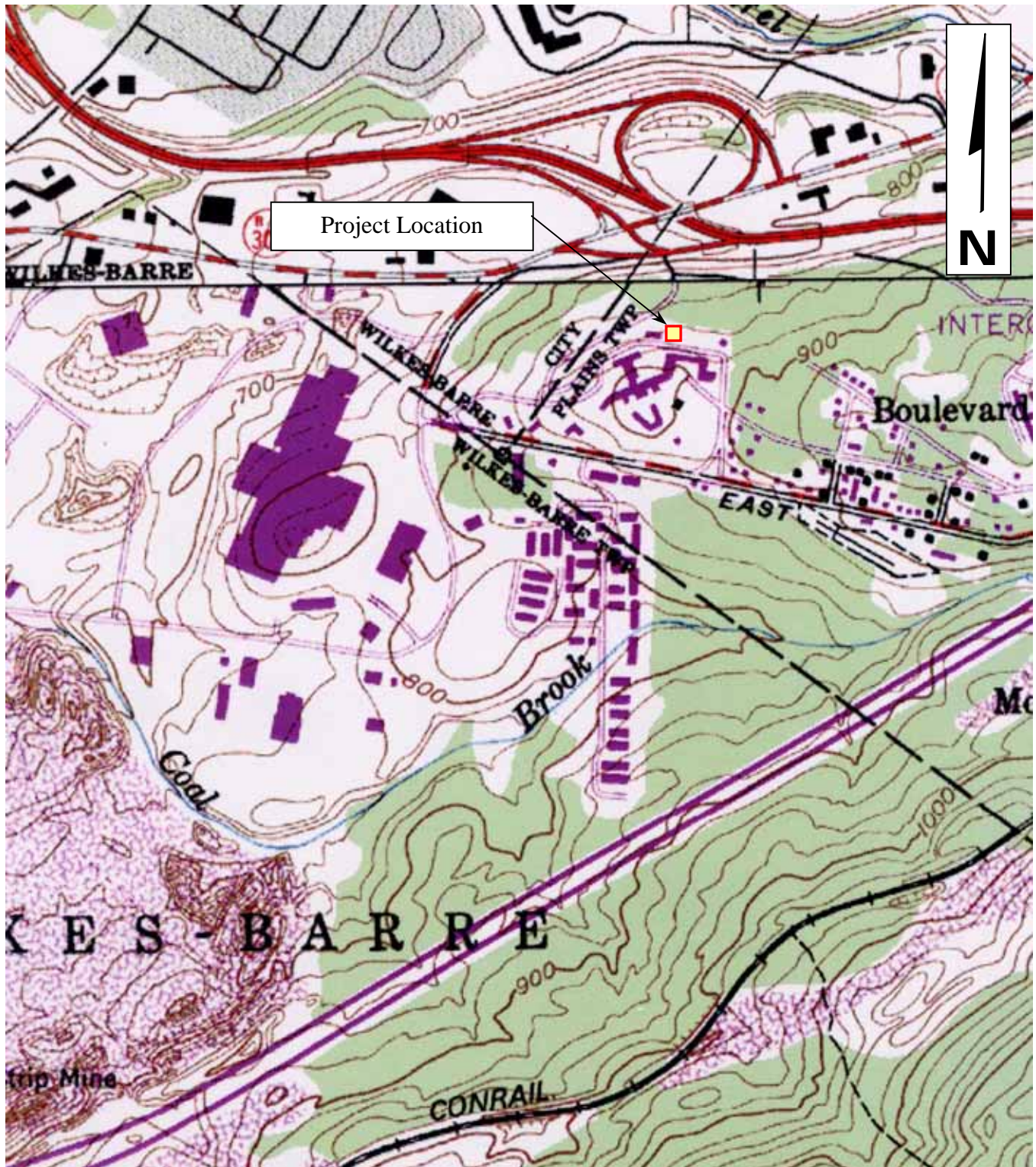
Encountered: Depth: none

Completion: Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
—	brown silty gravel with sand – FILL, with root matter		F	855.8	—			
1					1			
—	brown DISINTEGRATED ROCK, with silty sand		DR	853.0	—			
2					2			
—	Refusal on Rock at 3.0 feet Bottom of Test Pit at 3.0 feet		R		—			
3					3			
—					—			
4					4			
—					—			
5					5			
—					—			
6					6			
—					—			
7					7			
—					—			
8					8			
—					—			
9					9			
—					—			
10					10			

Comments: Backfilled upon completion.





120 Commerce Road • Pittston Township, PA 18640-9552  
570/655-2200 (phone) • 570/655-2212 (fax)

Drawing Title:

**Project Vicinity Plan**

VA Hospital – Storage Building  
Wilkes-Barre, PA

Drawn By:

MS

Checked By:

TB

Scale:

1" = 1000'

Date:

10/29/13

Project No.:

13114.1

Sheet No.

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