Foundation Design, P.C.
SOIL • BEDROCK • GROUNDWATER

January 14, 2022

Village of Perry
46 N. Main St.
Perry, NY 14530

Attention: Samantha Pierce

Reference: Pedestrian Bridge and Trail Project - Perry
½ South Main Street, Perry, New York
Geotechnical Evaluation, E5108.0

Dear Ms. Pierce:

This letter report outlines our Geotechnical Evaluation for the referenced project. We understand that the Village of Perry is designing a pedestrian bridge and walkway along the Silver Lake Outlet between ½ Mainstreet and Borden Avenue in Perry, New York. The trail includes a bridge located west of the warehouse to connect to the existing trail and a boardwalk along the south bank of the creek/outlet that connects to Borden Avenue. We base this report on the data collected as part of our geotechnical exploration and consultation with your design team. We intend this report is to be used exclusively on this project and point out that our assumptions about the design concept are subject to confirmation.

The south bank of the outlet rises a total height of about 40 feet, with portions steeper than 1 H on 1 V. Shale bedrock is exposed in this area. The Borden Avenue Bridge abutment is about 30 feet above the adjacent grade on the south bank. Woods and residential homes are to the east and south of the intended construction. Attached is a *General Location Plan* on 2019 U.S.G.S. topographic mapping.

Target Drilling provided a truck mounted CME-75 drill rig with an auto hammer on January 6, 2022 to drill the boring B-1 and a hand held core machine to core the existing Borden Avenue abutment. The boring was drilled down to auger refusal at 10.0 below grade, then a five-foot rock core was taken. Five hand holes, B-2 through B-6 were also conducted. Our staff logged the soil profiles and collected representative soil samples obtained with the split spoon sampler. Upon completion, the boring and hand holes were backfilled with spoils and re-leveled. SWBR selected the boring/hand hole locations. Surface elevations were provided by the project surveyor. A *Boring and Hand Hole Location Plan* and the boring logs are attached.

The following interpretations of the soil, bedrock, and groundwater conditions are based on widely spaced test borings and hand holes, and our site observations. Variations from the inferred profile are possible. Call us immediately if such variations are found during construction so we may evaluate the impact on our recommendations, the design plans, and the specifications.

The existing concrete bridge abutment at B-7 was cored with a 4 inch core barrel. The core penetrated 14 inches into the wall, not all the way through it. No rebar was encountered during the drilling or visually observed upon inspection. The core had multiple coarse aggregate of 4.5-inches in diameter, making the diameter of the core too small to properly test for compressive strength. Using a Swiss hammer at ten locations along the wall, an estimated concrete compressive strength of the wall was determined to be 3800 psi.

The soil profile consists of topsoil or fills, then silt and sand down to weathered shale. Topsoil thicknesses are measured at 2 to 12 inches, where found. Fill soils were found at B-1, were two feet deep, and consisted of reworked native material. Below the fill and topsoil, loose to firm silt

and sand was found down to termination. At B-1, organics were found in the soil between four and six feet below grade, most likely from the outlet location meandering in the past.

Bedrock was encountered at all locations between 1.0 and 8.1 (elevation 1301 to 1319.5) below grade during exploration. A five foot NXT rock core was taken at B-1 from 10.0 to 15.0 feet below grade. The recovery was 90.0 percent with an RQD of 21.7 percent and consisted of horizontally bedded shale. Geologic mapping of the area indicates that bedrock consists of West Hill and Gardeau Formations of the West Falls Group, a shale and siltstone formation. Bedrock was exposed in the banks along the outlet. Below is a table showing the approximate bedrock depths and elevations.

Table 1 - Bedrock Depths and Elevations

Test Hole	Surface Elevation	Bedrock Depth (feet)	Bedrock Elevation
B-1	1315.8	8.1	1307.7
B-2	1320.3	4.0	1316.3
B-3	1321.1	1.5	1319.6
B-4	1310.9	1.0	1309.9
B-5	1315.1	3.2	1311.9
B-6	1302.3	1.2	1301.1

Actual bedrock elevations will vary significantly given the steep gradients and historic erosive action

Groundwater was not found during exploration. We expect the water table will be near the outlet elevation. Water levels will fluctuate seasonally and may seasonally perch on/near the surface on the exposed bedrock.

We conclude that the pedestrian bridge and walkway can be supported on a spread footing/pier foundation system bearing directly on the competent bedrock. Given the variable shale conditions we suggest detailing the documents to allow for flexibility in terms of footing bearing depth as well as how the lateral uplift load is resisted.

Based on this background, we offer the following specific recommendations:

1. While it will be limited in quantity, on site soil free of organic material and debris can be used as structural backfill around abutment walls and foundations. With this soil being limited, budget to use an imported granular material, similar in gradation to N.Y.S.D.O.T. Items 304.12 (crusher-run stone) or 304.14 (Item 4 gravel). Submit other materials to the geotechnical engineer for review and approval on a case-by-case basis

   We define structural fill as the new fill placed under and around footings and abutments. Place and moisture condition structural fill until the moisture content is within two percent of optimum moisture content. Compact structural fill to at least 95 percent of the maximum dry density as determined by the Modified Proctor (ASTM D-1557). A new proctor will be needed for each material or change in material. Compact other fill as otherwise determined by the site engineer. Place fill in lifts not-to-exceed 12-inches in loose thickness.

2. Support the new bridge embankments and piers on spread footings bearing on new structural fill or directly on the bedrock, after the loose native soils have been removed. Design the footings based on a net new bearing pressure of 5,000 psf bearing directly on the intact bedrock. Design footings to bear at least four feet below exterior grade for frost protection. All footings shall be at least two feet wide or square. Excavate the footings using a bucket equipped with rock teeth to remove any weathered bedrock. We estimate the total settlement under these pressures, widths, and depths at or less than one inch. Verify that this is tolerable with your structural engineer.

3. The NYS Building Code identifies various seismic design criteria for this project. We identify the site as having a Site Classification of A (Hard Rock). Based on the ASCE 7-16, 2016 Building Code guidelines, we recommend using the following seismic design parameters:

Table No. 2 – Seismic Design Parameters ASCE 7-16					
Spectral Response Acceleration		Soil Factors		Design Spectral Response Acceleration	
S_S	S_1	S_{MS}	S_{M1}	S_{DS}	S_{D1}
0.171g	0.047g	0.137g	0.037g	0.091g	0.025g

ASCE has recently released ASCE 7-22 guidelines, which we also include:

Table No. 3 – Seismic Design Parameters ASCE 7-22					
Spectral Response Acceleration		Soil Factors		Design Spectral Response Acceleration	
S_S	S_1	S_{MS}	S_{M1}	S_{DS}	S_{D1}
0.180	0.042	0.140	0.041	0.095	0.027

4. Design permanent and temporary retaining walls (abutment walls) based on active, passive and at-rest earth pressures tabulated below.

Table No. 4 – Lateral Earth Pressures								
Backfill Material	Unit Weight	Internal Friction	K_a	K_p	K_o	Active Pressure	Passive Pressure	At Rest Pressure
Sandy Silt	120 pcf	28	0.36	2.77	0.53	43	332	64
Weathered Shale	140 pcf	34	0.28	3.54	0.44	40	495	62
Competent Shale	150 pcf	36	0.26	3.85	0.41	39	578	62
NYSDOT Item 304.12	145 pcf	34	0.28	3.54	0.44	41	513	64

We expect that the elevated walkways will have to be designed to resist lateral or uplift loads. We offer two suggestions. The first would be to anchor the footings into the competent shale using #8 bar. Use an estimated grout bond strength of 100 psi for the anchors in the shale after ignoring the upper 18-inches due to weathering. Alternatively, oversize the foundations to increase the resisting loads/via associated weight.

5. Perform trenching and excavation work in accordance with the Occupational Safety and Health Administration (OSHA) requirements and New York State Building Code Standards. The contractor is responsible for determining measures required to meet these standards. Cut all unsupported temporary excavations to a stable slope, but in no case steeper than 1 horizontal on 1 vertical. With the shallow bedrock, hoe-ramming or the use of rock-teeth may be required to reach the competent shale.

6. Construction phase consulting should consist of spot-checking the foundation installation. Forward the near-final plans for our review and schedule us as appropriate.

Attached to the end of this report is a Geoprofessional Business Association paper entitled *Important Information about This Geotechnical Engineering Report*. It describes how we intend this report to be used. We will continue to work cooperatively with you and other project principals and interested parties to achieve win/win solutions that benefit all.

This concludes our formal evaluation. Forward a copy of the near final plans and specifications for our review and comment. It has been a pleasure working with you on this project and we look forward to hearing from you again as the project proceeds toward construction.

Very truly yours,

FOUNDATION DESIGN, P.C.

James M. Baker, P.E.
President
Enc.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are <u>Not</u> Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will <u>not</u> of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are <u>not</u> building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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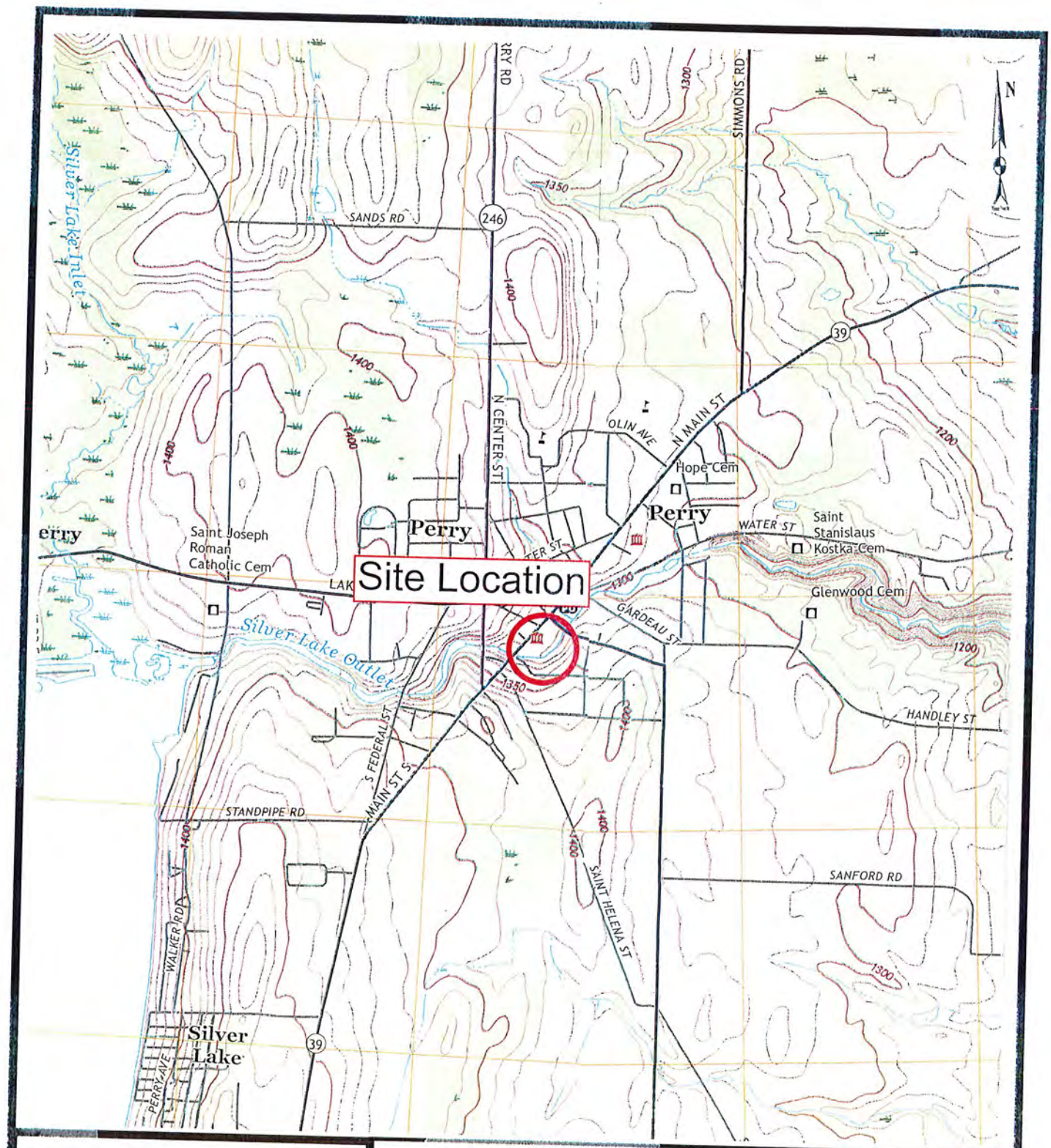
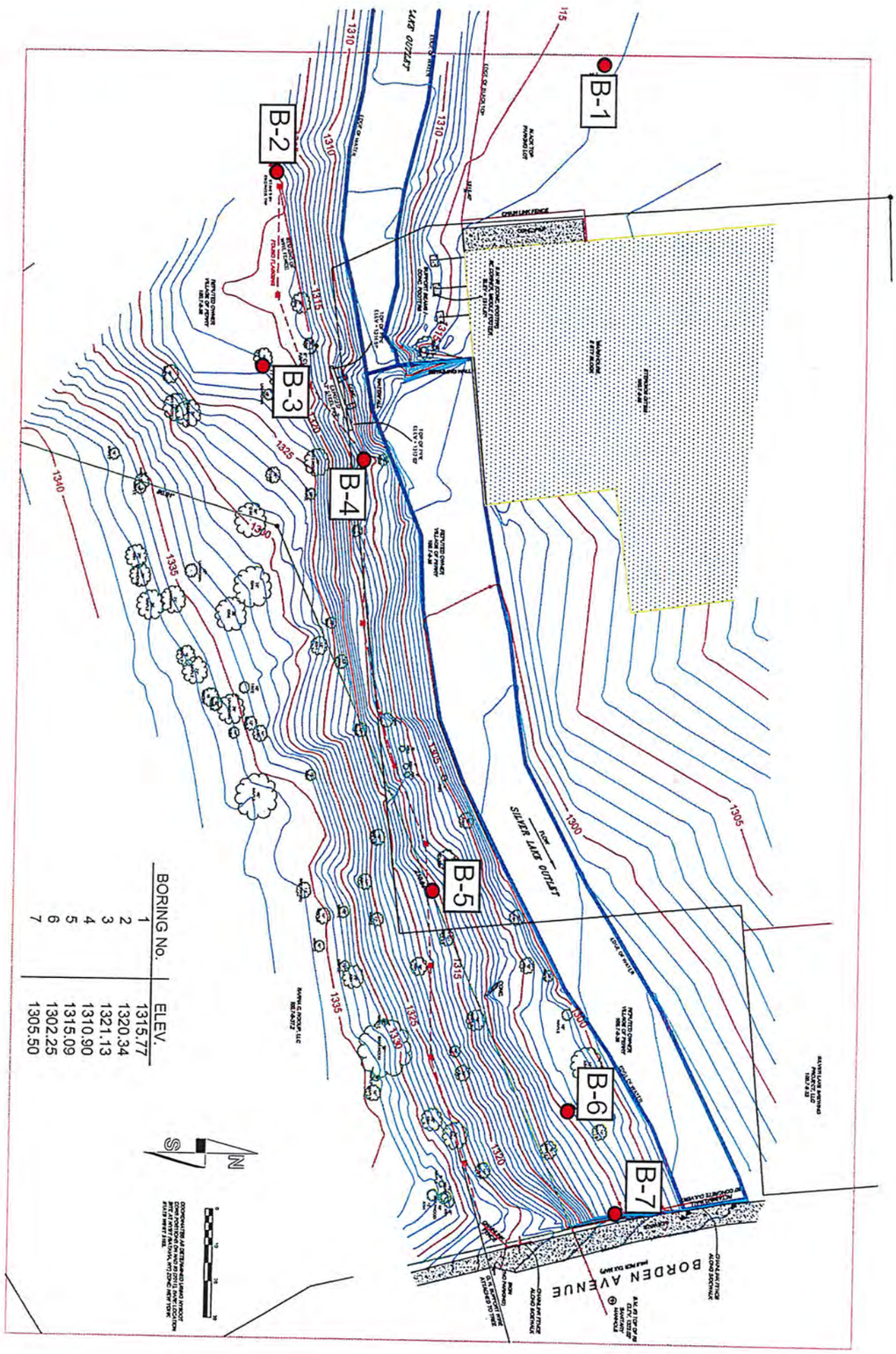


Foundation Design, P.C.

46A Sager Drive
Rochester, New York 14607
Phone (585) 458-0824
FAX (585) 458-3323

Perry Pedestrian Bridge
½ South Main Street, Perry, New York
General Location Plan
Adapted from: Castile Quadrangle

CHECKED BY: JMB
DRAWN BY: ZEW
Scale 1"= 2000'
DATE: 1-5-22
JOB NO.:5108.0



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46A Sager Drive
Rochester, New York 14607
Phone (585) 458-0824
FAX (585) 458-3323

Perry Pedestrian Bridge and Trail
½ South Main Street, Perry, New York
Boring and Hand Hole Location Plan
Adapted from: NYSDOT CORS Positions on NAD 2011

CHECKED BY: JMB
DRAWN BY: ZEW
Scale: Not to Scale
DATE: 1-14-22
JOB NO.: 5108.0

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SOIL DESCRIPTIONS

COHESIVE SOIL

Very fine grained soils. Plastic soils that can be rolled into a thin thread if moist. Clays and silty clays show cohesion.

DESCRIPTION	STP –BLOWS/FOOT
Very Soft	0-2
Soft	3-5
Medium	6-15
Stiff	16-25
Hard	26 or more

NON-COHESIVE SOIL

Soils composed of silt, sand and gravel, showing no cohesion or very slight cohesion

DESCRIPTION	STP –BLOWS/FOOT
Loose	0-10
Firm	11-25
Compact	26-40
Dense	41-50
Very Dense	51 or more

SOIL COMPOSITION

DESCRIPTION	ESTIMATED PERCENTAGE
and	50
some	30-49
little	11-29
trace	0-10

MOISTURE CONDITIONS Dry, Damp, Moist, Wet, Saturated
Groundwater measured in the boring or test pit may not have reached equilibrium

SOIL STRATA:

TERM	DESCRIPTION
layer	Soil deposit more than 6" thick
seam	Soil deposit less than 6" thick
parting	Soil deposit less than 1/8" thick
varved	Horizontal uniform layers or seams of soil

GRAIN SIZE

MATERIAL	SIEVE SIZE
Boulder	Larger than 12 inches
Cobble	3 inches to 12 inches
Gravel - coarse	1 inch to 3 inches
- medium	3/8 inch to 1 inch
- fine	No. 4 to 3/8 inch
Sand - coarse	No. 10 to No. 4
- medium	No. 40 to No. 10
- fine	No. 200 to No. 40
Silt and Clay	Less than No. 200

Standard Penetration Test: The number of blows required to drive a split spoon sampler into the soil with a 140 pound hammer dropped 30 inches. The number of blows required for each 6-inches of penetration is recorded. The total number of blows required for the second and third 6-inches of penetration is termed the penetration resistance, or the "N" value.

Split Spoon Sampler: Typically a 2-foot long, 2-inch diameter hollow steel tube that breaks apart or splits in two down the tube length.

Refusal: Depth in the boring where more than 100 blows per 5-inches are needed to advance the sample spoon.

Core Recovery (%): The total length of rock core recovered divided by the total core run.

RQD (%): Rock Quality Designation – the total length of all the pieces of the rock core longer than 4-inches divided by the total length of the rock core run.

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Boring Log

Project No.	5108.0	**Page** 1 **of** 1		**Test Boring No.**	B-1
Project Name	Pedestrian Bridge and Trail Project-Perry, ½ Main St., Perry, NY				
Client	Village of Perry, 46 N. Main St., Perry, NY				
Elevation	1315.8	**Weather**	Sunny 20	**Engineer**	J. Goggin
Date Started	1-6-2022	**Completed**	1-6-2022	**Driller**	J. Loomis
Drilling Company:	Target Drilling			**Drilling Equipment:**	CME 75

Ft.	Blows Per Six Inches 0"/6"	6"/12"	12"/18"	18"/24"	N Value	Sample No.	Depth	Visual Soil and Rock Classifications / Remarks
	2	5						Fill: Brown moist SILT, little sand, little gravel
			13	8	18	1	0-2'	
	5	6						2'0"
			6	13	12	2	2'-4'	Firm tan-brown moist SILT, little sand, little gravel
5	1	2						4'0"
			WH	WH	2	3	4'-6'	Loose tan-brown moist SILT, trace sand, trace gravel, trace organic
	1	2						
			2	3	4	4	6'-8'	Loose dark brown moist
	50/1				50+	5	8'-8'1"	Loose saturated 8'1"
10								Spoon refusal 8'1"
								10'0"
								Auger refusal 10'0"
								Rock core 10'-15'
								Recovery 54", 90%
								RQD 21.7
								Core block at 1'6"
15								
20								
25								
30								

Notes:
1. Dry upon completion.
2. Advanced hole using hollow stem augers.
3. Bore hole backfilled using auger spoils.
4. Elevation provided by SWBR

N=No. of blows to Drive 2" Spoon 12" with 140 lb. Wt. 30" Ea. Blow Hammer: Safety Size Rod: 2"

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Cone Penetrometer Log

Project No. 5108.0 **Page** 1 **of** 1 **Test No.** B-2
Project Name Perry Pedestrian Bridge and Trail Project, ½ South Main Street, Perry, New York
Client Village of Perry, 46 North Main Street, Perry, New York
Elevation 1320.3 **Weather** Sunny 40s **Inspector** J. Baker
Date Started 12/31/2021 **Completed** 12/31/2021 **Operator** T. Baker

Depth Below Surface	Blows per 4 in. 0.0/4.0	4.0/8.0	8.0/12.0	Avg. q_d per ft.	Cone to N factor	N Values	Soil and Rock Classifications / Remarks
	-						TOPSOIL
		-			1.27		
1.0 ft.			-				1'0"
	-						SILT/SAND and broken shale (gravel sized)
		-			1.27		1'6"
2.0 ft.			5				Sampling terminated at 1'6"
	12						
		14			1.27	14	
3.0 ft.			8				
	12						
		WH			1.10	13	
4.0 ft.			24				
	20/0"					25+	
					1.10		
5.0 ft.							
					1.10		
6.0 ft.							
					1.10		
7.0 ft.							
					0.98		
8.0 ft.							
					0.98		
9.0 ft.							
					0.98		
10.0 ft.							
					0.98		
11.0 ft.							
					0.88		

Notes:
1. Refusal likely on cobble sized piece of shale.
2. Creek bank below B-2 is about 15 feet tall of exposed soil/shale fragments.
3. SPT-N-values are approximations.

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Cone Penetrometer Log

Project No. 5108.0 **Page** 1 **of** 1 **Test No.** B-3
Project Name Perry Pedestrian Bridge and Trail Project, ½ South Main Street, Perry, New York
Client Village of Perry, 46 North Main Street, Perry, New York
Elevation 1321.1 **Weather** Sunny 40s **Inspector** J. Baker
Date Started 12/31/2021 **Completed** 12/31/2021 **Operator** T. Baker

Depth Below Surface	Blows per 4 in. 0.0/ 4.0	4.0/ 8.0	8.0/ 12.0	Avg. q_d per ft.	Cone to N factor	N Values	Soil and Rock Classifications / Remarks
							TOPSOIL 0'3"
					1.27		2" to 6" SHALE pieces with interbedded silt
1.0 ft.							
							1'6"
					1.27		Sampling terminated at 1'6"
2.0 ft.							
					1.27		
3.0 ft.							
					1.10		
4.0 ft.							
					1.10		
5.0 ft.							
					1.10		
6.0 ft.							
					1.10		
7.0 ft.							
					0.98		
8.0 ft.							
					0.98		
9.0 ft.							
					0.98		
10.0 ft.							
					0.98		
11.0 ft.							
					0.88		

Notes:
1. Intact shale in creek embankment at 18" below grade, 18 feet away.

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Cone Penetrometer Log

Project No. 5108.0 **Page** 1 **of** 1 **Test No.** B-4
Project Name Perry Pedestrian Bridge and Trail Project, ½ South Main Street, Perry, New York
Client Village of Perry, 46 North Main Street, Perry, New York
Elevation 1310.9 **Weather** Sunny 40s **Inspector** J. Baker
Date Started 12/31/2021 **Completed** 12/31/2021 **Operator** T. Baker

Depth Below Surface	Blows per 4 in. 0.0/ 4.0	4.0/ 8.0	8.0/ 12.0	Avg. q_d per ft.	Cone to N factor	N Values	Soil and Rock Classifications / Remarks
							SHALE and SILT, no topsoil/organics
					1.27		
1.0 ft.							1'0"
							Sampling terminated at 1'0"
					1.27		
2.0 ft.							
					1.27		
3.0 ft.							
					1.10		
4.0 ft.							
					1.10		
5.0 ft.							
					1.10		
6.0 ft.							
					1.10		
7.0 ft.							
					0.98		
8.0 ft.							
					0.98		
9.0 ft.							
					0.98		
10.0 ft.							
					0.98		
11.0 ft.							
					0.88		

Notes:
1. Intact shale 15" below and 12" above.
2. Shale below is 1½' +/- layer of thickly bedded shale then 2 ½' fine shale/thinly bedded over intact shale (creek bottom/channel).

Foundation Design, P.C.
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Cone Penetrometer Log

Project No.	5108.0	**Page** 1 **of** 1		**Test No.**	B-5
Project Name	Perry Pedestrian Bridge and Trail Project, ½ South Main Street, Perry, New York				
Client	Village of Perry, 46 North Main Street, Perry, New York				
Elevation	1315.1	**Weather**	Sunny 40s	**Inspector**	J. Baker
Date Started	12/31/2021	**Completed**	12/31/2021	**Operator**	T. Baker

Depth Below Surface	Blows per 4 in. 0.0/4.0	4.0/8.0	8.0/12.0	Avg. q_d per ft.	Cone to N factor	N Values	Soil and Rock Classifications / Remarks
	-						TOPSOIL/ROOTMAT 0'2"
		-			1.27		SILT/CLAY and broken shale
1.0 ft.			-				
	-						1'6"
		-			1.27		Sampling terminated at 1'6"
2.0 ft.			4				
	8					8	
		4			1.27		
3.0 ft.			20			25+	
	50/2"						
					1.10		
4.0 ft.							
					1.10		
5.0 ft.							
					1.10		
6.0 ft.							
					1.10		
7.0 ft.							
					0.98		
8.0 ft.							
					0.98		
9.0 ft.							
					0.98		
10.0 ft.							
					0.98		
11.0 ft.							
					0.88		

Notes:
1. Rod/drive point bouncing and pinging on large shale piece or intact shale.
2. Shale outcrop exposed in creek bank 25' west at this elevation and along creek at roughly 15' below this elevation.
3. SPT-N-values are approximate.

Foundation Design, P.C.
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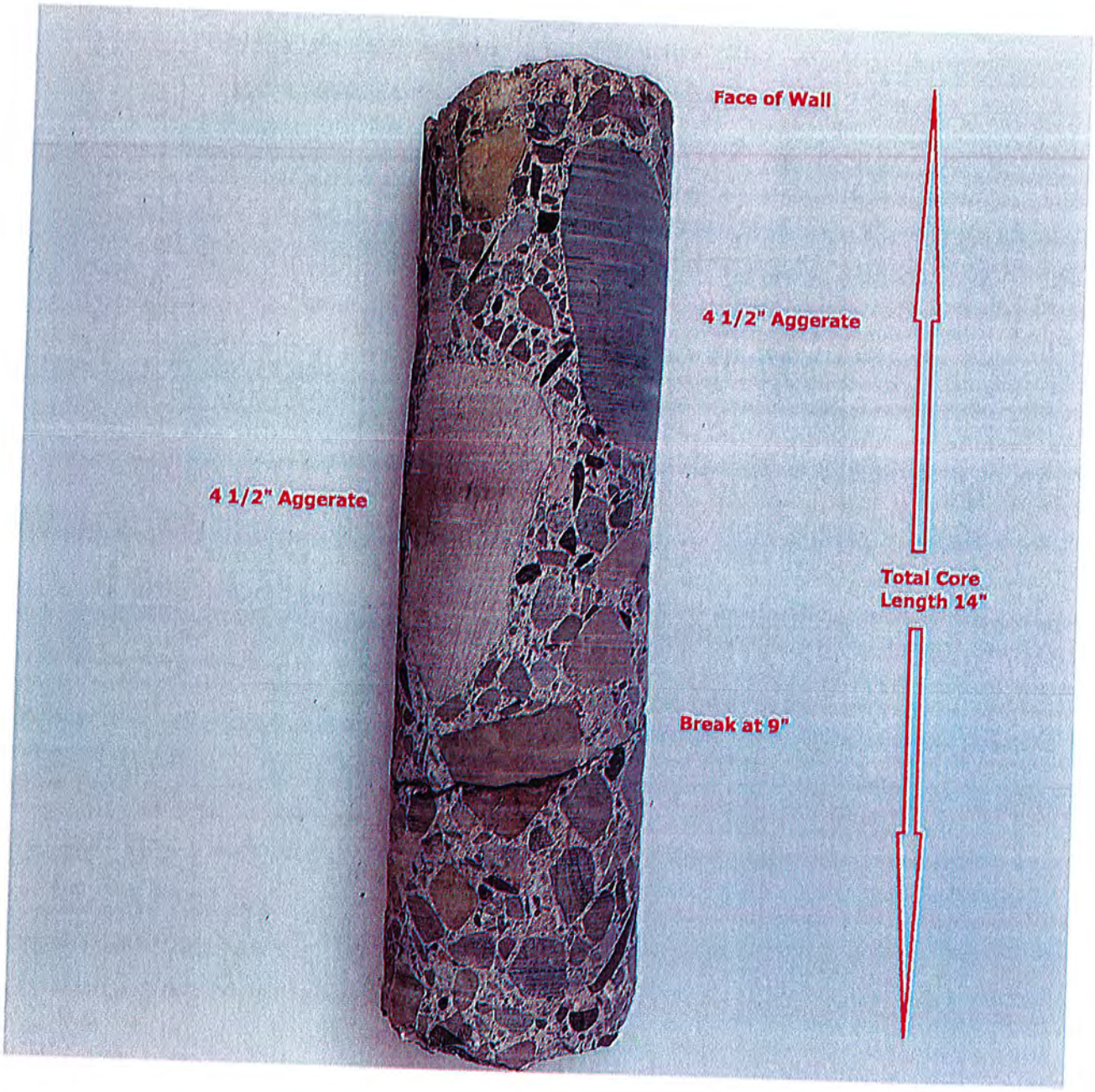
Cone Penetrometer Log

Project No.	5108.0	**Page** 1 **of** 1		**Test No.**	B-6
Project Name	Perry Pedestrian Bridge and Trail Project, ½ South Main Street, Perry, New York				
Client	Village of Perry, 46 North Main Street, Perry, New York				
Elevation	1302.25	**Weather**	Sunny 40s	**Inspector**	J. Baker
Date Started	12/31/2021	**Completed**	12/31/2021	**Operator**	T. Baker

Depth Below Surface	Blows per 4 in. 0.0/ 4.0	4.0/ 8.0	8.0/ 12.0	Avg. q_d per ft.	Cone to N factor	N Values	Soil and Rock Classifications / Remarks
							SHALE and TOPSOIL pieces to 6"-18" then shale and silt
					1.27		
1.0 ft.							
							1'3"
					1.27		Sampling terminated at 1'3"
2.0 ft.							
					1.27		
3.0 ft.							
					1.10		
4.0 ft.							
					1.10		
5.0 ft.							
					1.10		
6.0 ft.							
					1.10		
7.0 ft.							
					0.98		
8.0 ft.							
					0.98		
9.0 ft.							
					0.98		
10.0 ft.							
					0.98		
11.0 ft.							
					0.88		

Notes:
1. Intact shale in embankment above this elevation (south) and to west along creek (roughly 1-2' lower).
2. Anticipate intact shale within 5' of surface.



Core from location B-7

Bridge embankment is thicker than the core length, core did not penetrate through it

Bridge embankment has an overlay layer that is partially weathered away. Surface is fairly intact and the coring showed 'intact' concrete within ½ inch of the surface.

No rebar noted, nor with magnetometer

Swiss Hammer readings indicate an approximate compressive strength of 3,800 psi.