ADDENDUM NO. 2

2016 - Trout Brook Road Bridge Projects

Essex County, NY

December 12, 2016

TO ALL HOLDERS OF BIDDING DOCUMENTS:

This Addendum, issued to bid document holders of record, indicates clarifications to the bid documents for the *2016 - Trout Brook Road Bridge Projects* project. All clarifications described herein shall be incorporated into the Contractor's bid proposal. This Addendum is part of the Contract Documents. Adjustments required by each item shall be understood to apply to all document references affected by the clarifications described.

1. **General:** A Pre-Bid meeting was held for the project at the sites on December 8, 2016 at 9:30 AM. Minutes from the meeting are enclosed and are a part of this Addendum and the Contract Documents.

2. **General:** A copy of the Geotechnical Reports for each of the bridges is attached to this Addendum for reference only. Project A is labeled as *Trout Brook Road over Minerva Stream* and Project B is labeled as *Trout Brook Road over Trout Brook*. These reports are provided for informational purposes and shall not be considered to be part of the contract documents. If distributed to others by the bidder or contractor, they must be delivered in their entirety only.

   It is the bidder's responsibility to determine if the information contained in these geotechnical reports is adequate for bidding purposes. The bidders may make their own investigations, tests and analyses for use in bid preparation if additional information is required. Contractors will not be relieved of any of their obligations for performance of the work for the project, nor shall they be entitled to any additional compensation on the premise of differing subsurface conditions or soils types which may be encountered.

   Individual subsurface boring logs were prepared based upon the visual classifications and laboratory testing. The individual subsurface logs and keys explaining the terms used in their preparation are presented in the geotechnical reports and should be reviewed for a description of the conditions encountered at the specific test boring locations. It should be understood that conditions are only known at the specific depths and locations sampled. Conditions at other

depths and locations may differ. Determinations of earthwork quantities for bidding must not rely solely on the soil strata thicknesses measured at the discrete test boring locations completed for this investigation. The bidder should perform their own explorations as needed to obtain representative thicknesses of soil layers and strata as required to prepare their bids for the work.

END OF ADDENDUM NO. 2
(attachments)

Pre-Bid Meeting Minutes

SCHODER RIVERS ASSOCIATES
Consulting Engineers, P.C.

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Queensbury, NY 12804
Tel. (518) 761-0417
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PRE-BID MEETING MINUTES

Report Date: December 9, 2016

Project: Trout Brook Road Bridge Projects

Attending: Carl B. Schoder, PE - Schoder Rivers Assoc.
Robert Leveille - Essex Co. DPW
Tony Fernandez - Adirondak Concrete
William Patenaude - Alpine Construction
Chris Huchro - John W. Sheehan & Sons.
Rob Powers - Kubricky Construction
Dave Insogna - Harrison & Burrows
Matt Schmitt - Bette & Cring
Matt Tozzi - Rifenberg Construction
Jeff Dziarcak - Weinn Construction
Ted Luck - Luck Bros. Construction
Dick Kondrot - Harrison & Burrows
(Copy of attendance sheet is attached for information)

Distribution: Via posting on the Essex County Website as a part of Addendum No. 2 for access by all holders of bidding documents.

A scheduled pre-bid meeting was held for the above referenced project on December 8, 2016 at 9:30 AM at the project site. The following items were discussed:

1. Leveille noted that Addendum No. 1 has been issued for the project which extends the date for receipt of bids to January 13, 2017 at 2:00 PM.

2. Regarding Project B, portions of the former stone abutment structure on the east side of the stream upstream from the bridge may be removed to the extent required to construct the new concrete abutment structure.

3. Regarding Project B, the depth of the existing concrete pier below bottom of stream channel is unknown. The existing pier shall be removed at least to an elevation below the stream channel elevation for the final bridge installation.

4. Regarding Projects A and B, asphalt paving and pavement striping will be by the County and shall not be included in the bid.

5. Regarding Projects A and B, the removal of trees indicated as to be removed on the Drawings shall be by the County and shall not be included in the bid.

6. Regarding Projects A and B, no as-built drawings are available for either structure.

7. Regarding Projects A and B, no testing for the presence of lead, asbestos or other hazardous materials has been performed by the County. Such testing shall be performed by the Contractor as required to protect their workers. (Refer to Drawing N-1, Demolition and Removal Note 6.)

8. Leveille noted that a possible disposal site for concrete demolition waste materials is the O'neil Road

Gravel Pit owned by the Town of Minerva which is located approximately 6 miles from the project sites. Schoder noted that it is the contractor's responsibility to verify that all disposal sites have the appropriate regulatory agency permits for disposal of the construction waste or excess soil materials.

9. Schoder noted that the reconstruction of the stream channel below the bridges is intended to utilize excavated existing materials as required from behind the existing abutments and wingwalls.

10. The Geotechnical Reports including soil borings taken at both bridge sites will be provided for information only as a part of Addendum No. 2 for the project.

11. Schoder noted that the select structural fill for backfilling of the abutment stemwalls and wingwalls shall extend to a vertical plane located a minimum horizontal distance of three (3) feet behind the ends of the heels of the wall footings.

12. Regarding Projects A and B, all reinforcing in the abutments and wingwalls shall be epoxy coated. All reinforcing steel for the project (including the non-prestressed reinforcing steel in the NEXT-Beam units) shall be epoxy coated. (Refer to Drawing N-1, Concrete Note 6 and Bridge Superstructure Note 8.)

13. Leveille noted that none of the existing bridges on Trout Brook Road and Hoffman Road leading to the project sites from the south and east, respectively, are load posted.

14. Leveille noted that there are no WBE/MBE/DBE goals for this project.

15. Regarding Project A, the County is coordinating with the overhead utility companies for a temporary power shut-down while the precast concrete sections are installed. The County is also coordinating with the utility company for the permanent relocation of the existing utility pole at the northeast corner of the bridge installation.

16. Regarding Project A, the removal limits for bedrock are indicated on the Bridge Elevation on Drawing A/C-3. The contractor shall include rock removal to these limits in their bid in addition to an allowance for additional rock removal for each project as required by General Note 13 on Drawing N-1.

The meeting adjourned at 10:35 AM.

Respectfully submitted:

Carl B. Schoder

Carl B. Schoder, PE
Principal

/attachment

PREBID MEETING ATTENDANCE SHEET

Project: Trout Brook Road Bridge Projects **Date:** 12/8/16 **Job No.** 15-980.09 & .08

NAME	COMPANY	PHONE	EMAIL
Carl B. Schoder, PE	SRA	518 761-0417x10	carl@sraengineers.com
Tony Fernandez	ADK Concrete	518 546-9925	INFO@ADKConcrete.Com
William Patenaude	Alpine Construction	518 695-6739	WPATENAUDE@ALPINECONSTRUCTION.BIZ
Chris Huchro	Sheehan	963-4303	sheehansons@willex.com
Rob Powers	Kubricky Const.	518 300 0154	rpowers@dacollins.com
Dane Insogna	H&B	518-465-6254	dinsogna@hans-burners.com
Matt Schmidt	Better Awareness	518-213-1010	mschmidt@betterliving.com
MATT TOZZI	RIFENBURG CONSTRUCTION	518-279-3265	MTOZZI@RIFENBURG.COM
Jeff Dziarcak	Winn Construction	518-221-1416	jdziarcak@winncost.com
Ted Luck	Luck Bros	561 4321	tluck@luckbros.com
Dick Kondrat	H&B	530-2187	dkondrat@hanniganburrows.com

Geotechnical Report

Project A - Trout Brook Road over Minerva Stream

DENTE
ENGINEERING

ALBANY AREA
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Watervliet, NY 12189
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Fax 518-266-9238

BUFFALO AREA
PO Box 482
Orchard Park, NY 14127
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May 11, 2016

Mr. Jim Dougan
Essex County DPW
8053 Route 9
Elizabethtown, NY 12932

Re: Geotechnical Study
Trout Road Bridge Over Minerva Stream
Minerva, NY
Dente File No. FDE-16-34

Gentlemen;

At your request, we completed a subsurface investigation and have prepared this geotechnical evaluation report for the Trout Road Bridge Over Minerva Stream located in the town of Minerva, New York. Presented herein is a summary of the subsurface investigation results and our recommendations to assist in planning for its replacement.

PROJECT AND SITE DESCRIPTION

As we understand it the existing bridge will be replaced with a new 2 lane steel bridge spanning across the Minerva Stream about 60 or so feet. The location of the bridge is shown on the attached portion of the Topographic Map of the site supplied to us with the test boring locations added together with the current and 1898 USGS topographic quadrangles for the area. These maps are provided to assist the reader in locating the site and reviewing the topography of the general area within which it exists.

SUBSURFACE CONDITIONS

Two test borings were completed at the approximate locations shown on the attached plan. As the borings were advanced, soil samples were recovered in general accord with the Standard Procedure for Penetration Test and Split-Spoon Sampling of Soil, ASTM D1586. At the first location investigated, where bedrock was encountered, core sampling was performed in general accord with ASTM D2113 procedures. Representative portions of the recovered soil and rock samples were visually classified by a geotechnician who prepared the attached subsurface logs.

It should be understood that the boring logs present a description of the conditions encountered on the date, specific location investigated, and the depths sampled. Conditions at locations and depths other than those investigated may differ, and these differences may impact upon the geotechnical recommendations. It should also be understood that conditions can change with time. The subsurface logs should be reviewed for the specific conditions encountered at the investigated locations.

Fill was encountered beneath the surface at both locations investigated. The fill consisted of firm to loose, brown fine to coarse grained sand and gravel. The fills extended to depths beneath the grades of about 2 to 7 feet.

Below these fill materials were brown fine sand some silt which extended to depths of about 4.5 feet at location B-1 and fine to coarse sand and gravel which extended to depths of about 11.5 feet at B-2.

Bedrock was encountered beneath these native soils at both locations. The core sample was classified as a gray, hard gneiss. The core recovery was 88% with a measured Rock Quality Designation of 72%.

In our opinion, the groundwater level will generally be at or near the water level in the brook throughout the year.

GEOTECHNICAL RECOMMENDATIONS

In our opinion the planned bridge may be supported upon spread foundations seated upon the bedrock.

Based on the available subsurface information Seismic Site Class B should be used in the design.

Dependent upon brook levels during construction, the excavations planned will penetrate saturated soils and groundwater, which will coincide with the brook levels in the immediate project area. It may be necessary for the contractor to install sheet piles, plates, sand bags, or to grout the overburden soils or the interface of the soil and the plates/sheets to control groundwater infiltration into the foundation excavations. Dependent upon the success of these measures, common sump and pump techniques should be capable of control of the water table at this site. Alternatively, the foundations can be placed as a tremie pour.

The excavation design should meet the requirements of 29 CFR Part 1926 Occupational Safety and Health Standards - Excavations for Type C Soils.

The structural fill used to backfill the abutment walls above the water table should consist of NYSDOT Section 304 Type 4 Processed Sand and Gravel material. The fill should be placed in loose layers no more than one (1) foot thick, and each layer be compacted to no less than 95 percent of the material's maximum dry density determined through the procedures of ASTM D-1557, the Modified Proctor Compaction test.

The following parameters are recommended for use in the design of the bridge foundations, abutments, and wing walls;

Soil Parameters

1. Overburden Unit Weight (Total) = 125 lbs/Cu. Ft.
2. Friction Angle of Soil = 30 Degrees
3. Coefficient of Active Earth pressure = 0.33
4. Coefficient of At-Rest Earth pressure = 0.5
5. Coefficient of Passive Earth pressure = 3.0
6. LRFD Resistance Factor for Passive Resistance = 0.50

The foundations should be designed to bear upon the bedrock surface, however, it may prove difficult to install a cofferdam and dewater the soils above the bedrock as the rock is hard and sheetpiles will not create a good seal with the irregular rock surface. It may be necessary to perform cement or silicate grouting about the sheet piles to seal the interface and allow dewatering to proceed effectively. Alternatively, the foundations may be constructed through tremie placements.

The rock bearing foundation may be designed for a nominal rock bearing resistance of 30 tons per square foot (tsf) and an LRFD resistance factor of 0.60. The unfactored coefficient of friction between the concrete and bedrock may be assumed equal to 0.70. Settlement of the foundations should be negligible.

Uplift and overturning loads may be resisted by the weight of the foundation and if necessary, rock anchors. The rock anchors may be designed on the basis of an allowable bond stress between the bedrock and annulus grout equal to 100 pounds per square inch (psi). The anchors should be post-tensioned, double corrosion protected and designed and installed in general accord with the "Post Tensioning Institute Recommendations on Rock and Soil Anchors." A unit weight of 160 pcf can be assumed for the bedrock within the zone of influence of the anchor(s).

At least one anchor should be performance tested to verify the suitability of the design parameters and enable modifications to be made prior to installation of the remaining anchors. The performance tests should be made by loading the anchor and measuring its elongation to the nearest 0.001 inch per the recommendations from Section 3.7.1 of the Post Tensioning Institute publication. After the performance test has been evaluated and any modifications in anchor design made, the remaining anchor installations can proceed. All anchors should be proof-tested per Section 3.7.2 of the Post Tensioning Institute publication.

CLOSURE

This report was prepared for specific application to the project site and the construction planned. It was prepared on the basis of a limited number of investigated locations at the site. Subsurface conditions at other than the investigated locations may be different. We should be allowed the opportunity to review appropriate plans and specifications prior to their release for bidding. The Geotechnical Engineer should be retained to observe and test earthwork and bearing grades during construction. This

report was prepared using methods and practices common to Geotechnical Engineering in the area at the time, no other warranties, expressed or implied, are made.

A sheet entitled "Important Information about your Geotechnical Engineering Report" prepared by the Association of Engineering Firms Practicing in the Geosciences is attached to this report. This sheet should never be separated from this report and be carefully reviewed as it sets the only context within which this report should be used.

We appreciate the opportunity to be of service. Should questions arise or if we may be of any other service, please contact us at your convenience.

Yours truly,
Dente Engineering, P.C.

Fred A. Dente, P.E.
President

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.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of 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.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

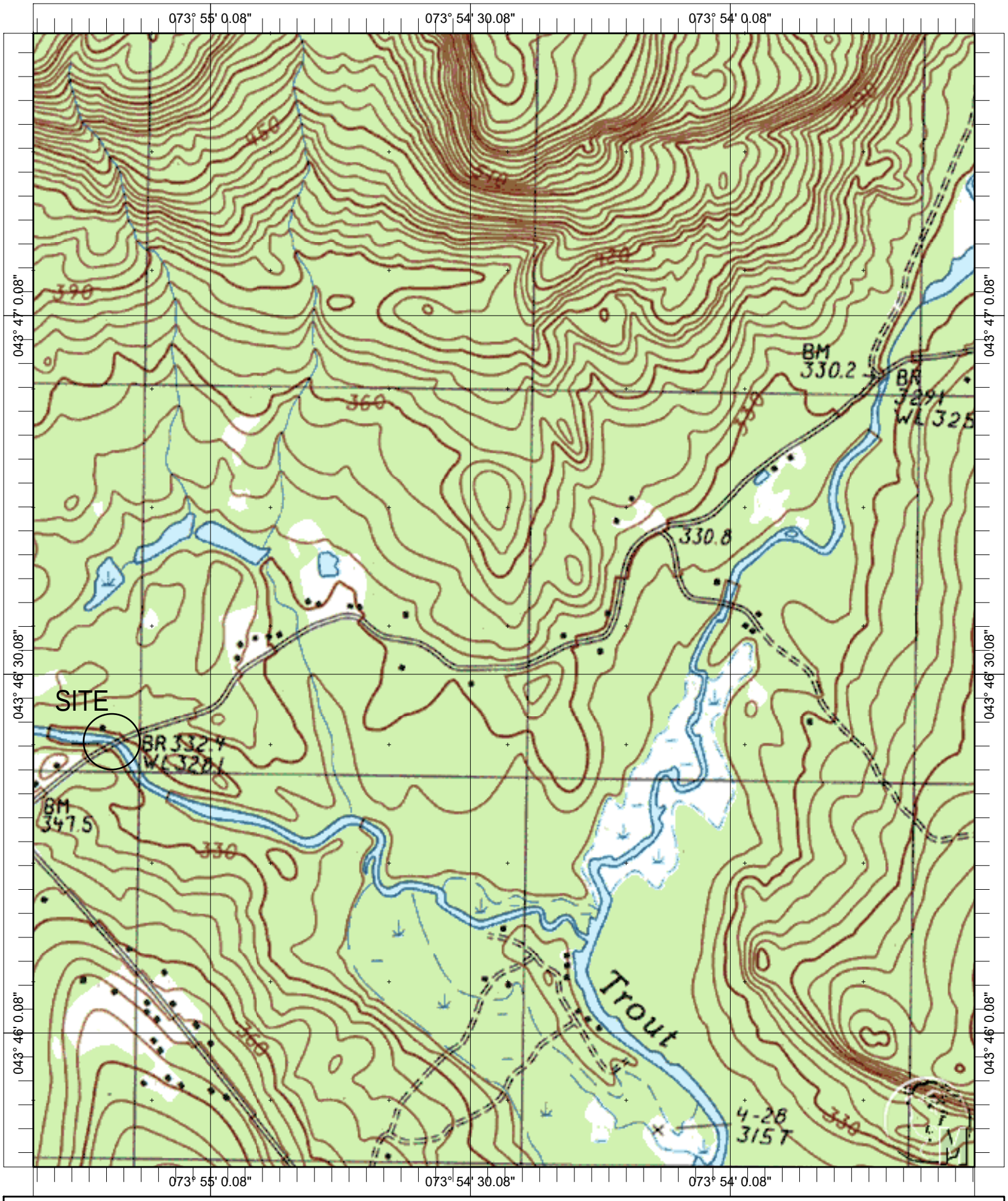
Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

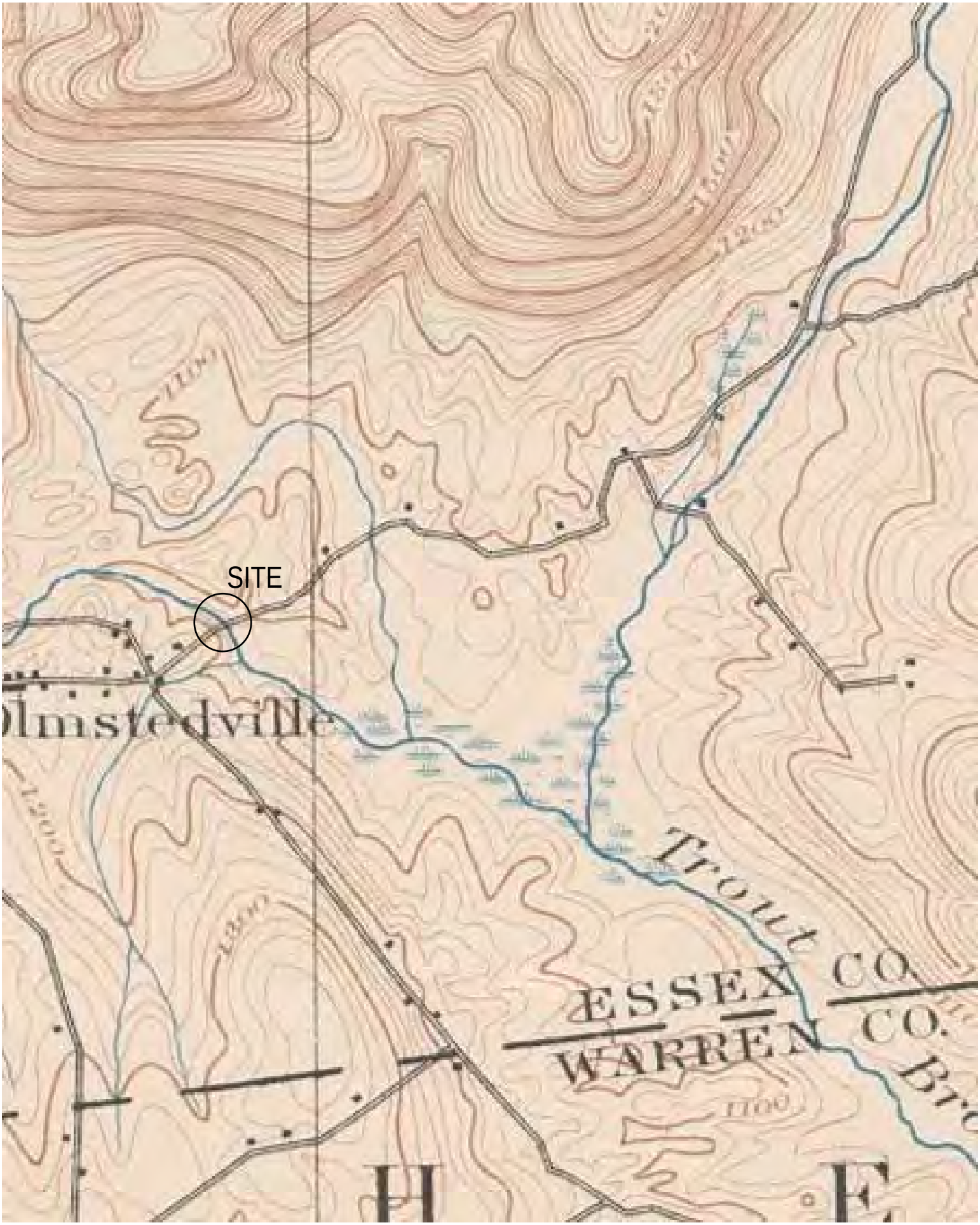
GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

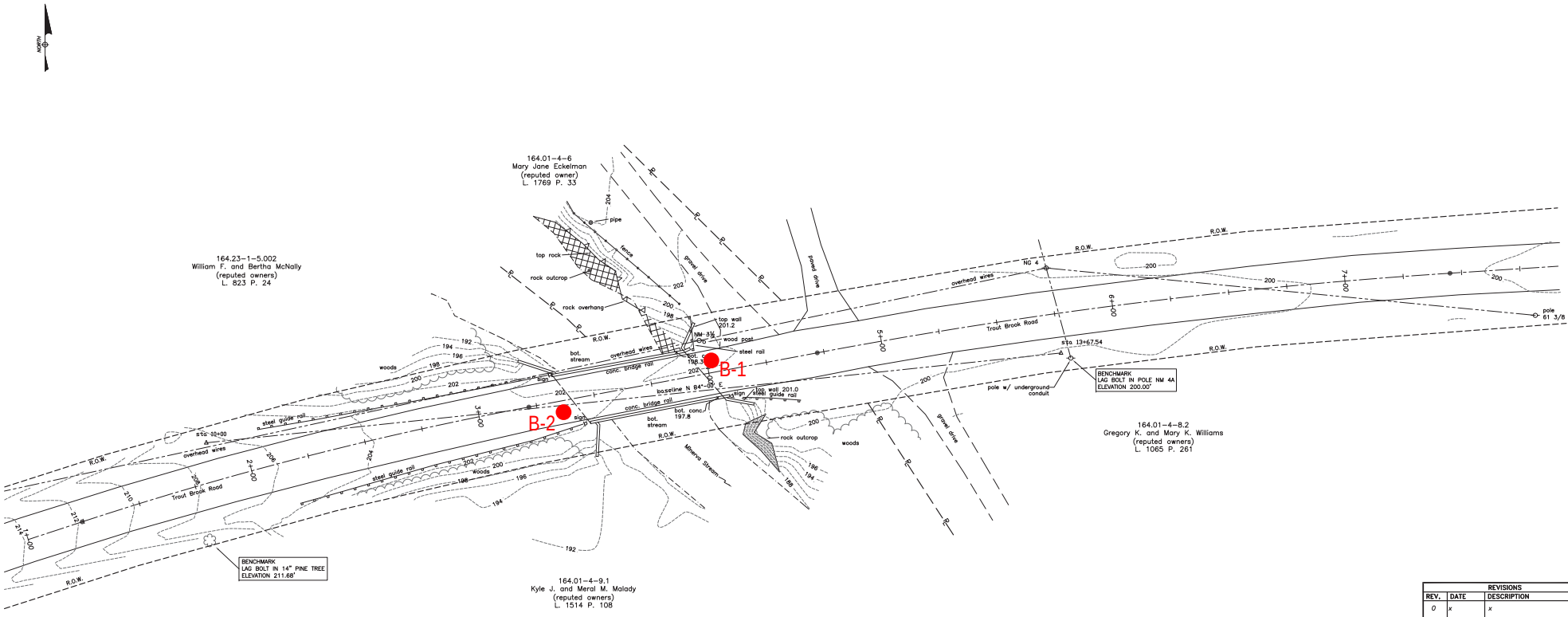


Name: SCHROON LAKE
Date: 5/10/116
Scale: 1 inch equals 1000 feet

Location: 043° 46' 36.3" N 073° 54' 26.2" W
Caption: TROUT BROOK ROAD
OLMSTEDVILLE, NY
FDE-16-34



Trout Brook Road Bridge over the Minerva Stream, Olmstedville, New York 1897



EXISTING SITE PLAN
1"=20'-0"

● Approximate Soil Boring Locations

REVISIONS		
REV.	DATE	DESCRIPTION
0	x	x

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SCALE:	AS SHOWN	DRAWN BY:	SRA
DATE:	5/9/16	ENG. BY:	JGL
PROJ. NO:	15-880.08	CHK'D BY:	CBS

CLIENT NAME
ESSEX COUNTY DEPARTMENT OF PUBLIC WORKS
ELIZABETHTOWN, N.Y.

DRAWING TITLE
TROUT BROOK RD
OVER MINERVA CREEK
BRIDGE REPLACEMENT

EXISTING PLAN

DRAWING NO. EXIST. | SHT. 1 OF 1 | REV. -

SURVEYED BY
DAVID F. BARRASS
LAND SURVEYOR
5 MAPLE STREET
CORINTH, NEW YORK

INTERPRETATION OF SUBSURFACE LOGS

The Subsurface Logs present observations and the results of tests performed in the field by the Driller, Technicians, Geologists and Geotechnical Engineers as noted. Soil/Rock Classifications are made visually, unless otherwise noted, on a portion of the materials recovered through the sampling process and may not necessarily be representative of the materials between sampling intervals or locations.

The following defines some of the terms utilized in the preparation of the Subsurface Logs.

SOIL CLASSIFICATIONS

Soil Classifications are visual descriptions on the basis of the Unified Soil Classification ASTM D-2487 and USBR, 1973 with additional comments by weight of constituents by BUHRMASTER. The soil density or consistency is based on the penetration resistance determined by ASTM METHOD D1586. Soil Moisture of the recovered materials is described as DRY, MOIST, WET or SATURATED.

SIZE DESCRIPTION		RELATIVE DENSITY/CONSISTENCY (basis ASTM D1586)			
SOIL TYPE	PARTICLE SIZE	GRANULAR SOIL		COHESIVE SOIL	
BOULDER	> 12	DENSITY	BLOWS/FT.	CONSISTENCY	BLOWS/FT.
COBBLE	3" - 12"	LOOSE	< 10	VERY SOFT	< 3
GRAVEL-COARSE	3" - 3/4"	FIRM	11 - 30	SOFT	4 - 5
GRAVEL - FINE	3/4" - #4	COMPACT	31 - 50	MEDIUM	6 - 15
SAND - COARSE	#4 - #10	VERY COMPACT	50 +	STIFF	16 - 25
SAND - MEDIUM	#10 - #40			HARD	25 +
SAND - FINE	#40 - #200				
SILT/NONPLASTIC	< #200				
CLAY/PLASTIC	< #200				

SOIL STRUCTURE		RELATIVE PROPORTION OF SOIL TYPES	
STRUCTURE	DESCRIPTION	DESCRIPTION	% OF SAMPLE BY WEIGHT
LAYER	6" THICK OR GREATER	AND	35 - 50
SEAM	6" THICK OR LESS	SOME	20 - 35
PARTING	LESS THAN 1/4" THICK	LITTLE	10 - 20
VARVED	UNIFORM HORIZONTAL PARTINGS OR SEAMS	TRACE	LESS THAN 10

Note that the classification of soils or soil like materials is subject to the limitations imposed by the size of the sampler, the size of the sample and its degree of disturbance and moisture.

ROCK CLASSIFICATIONS

Rock Classifications are visual descriptions on the basis of the Driller's, Technician's, Geologist's or Geotechnical Engineer's observations of the coring activity and the recovered samples applying the following classifications.

CLASSIFICATION TERM	DESCRIPTION
VERY HARD	NOT SCRATCHED BY KNIFE
HARD	SCRATCHED WITH DIFFICULTY
MEDIUM HARD	SCRATCHED EASILY
SOFT	SCRATCHED WITH FINGERNAIL
VERY WEATHERED	DISINTEGRATED WITH NUMEROUS SOIL SEAM
WEATHERED	SLIGHT DISINTEGRATION, STAINING, NO SEAMS
SOUND	NO EVIDENCE OF ABOVE
MASSIVE	ROCK LAYER GREATER THAN 36" THICK
THICK BEDDED	ROCK LAYER 12" - 36"
BEDDED	ROCK LAYER 4" - 12"
THIN BEDDED	ROCK LAYER 1" - 4"
LAMINATED	ROCK LAYER LESS THAN 1"
FRACTURES	NATURAL BREAKS AT SOME ANGLE TO BEDS

Core sample recovery is expressed as percent recovered of total sampled. The ROCK QUALITY DESIGNATION (RQD) is the total length of core sample pieces exceeding 4" length divided by the total core sample length for N size cored.

GENERAL

- Soil and Rock classifications are made visually on samples recovered. The presence of Gravel, Cobbles and Boulders will influence sample recovery classification density/consistency determination.
- Groundwater, if encountered, was measured and its depth recorded at the time and under the conditions as noted.
- Topsoil or pavements, if present, were measured and recorded at the time and under the conditions as noted.
- Stratification Lines are approximate boundaries between soil types. These transitions may be gradual or distinct and are approximated.

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-1

PROJECT: Trout Brook Bridge @ Minerva Stream	**DATE**	START : 5/8/16	FINISH: 5/8/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-34	**SURFACE ELEVATION:** +/- 202.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 5" Asphalt, +/- 2" Base
	1	10	11				**FILL**: Brown/Gray Mottled F-M SAND, Little
				5	5	16	Coarse Sand and Gravel **(MOIST, FIRM)**
	2	12	12				Brown/Gray Mottled Fine SAND, Some Silt,
	3			50/.4'	50/0	62+	Little Gravel **(MOIST, VERY COMPACT)**
5'							
		Core Run #1 4.5'-9.5' REC=88% RQD=72%					White/Black, Very Hard GNEISS
10'							End of boring 9.5' depth.
15'							
20'							
25'							
30'							

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-2

PROJECT: Trout Brook Bridge @ Minerva Stream	**DATE**	START : 5/8/16	FINISH: 5/8/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-34	**SURFACE ELEVATION:** +/- 202.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	+/- 5" Asphalt, +/- 3" Base
	1	5	3				**FILL**: Brown F-M SAND, Little Silt, Coarse
				2	2	5	Sand, and Gravel, trace gray mottling
	2	12	8				Grades Some Coarse Sand and Gravel
				3	4	11	
5'	3	1	1				Similar with rootlets noted
				16	7	17	**(MOIST, LOOSE TO FIRM)**
	4	21	3				Brown F-C SAND and GRAVEL, Little Silt
				28	8	31	
	5	12	12				
10'				20	7	32	**(MOIST, COMPACT TO V. COMPACT)**
	6	50/.4'				50+	
							End of boring 11.5' depth with auger refusal.
							Split spoon refusal occurred at 11.4' depth.
15'							
20'							
25'							
30'							

View west across the bridge

View east across the bridge

Geotechnical Report

Project B - Trout Brook Road over Trout Brook

DENTE ENGINEERING

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Watervliet, NY 12189
Voice 518-266-0310
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BUFFALO AREA
PO Box 482
Orchard Park, NY 14127
Voice 716-649-9474
Fax 716-648-3521

May 11, 2016

Mr. Jim Dougan
Essex County DPW
8053 Route 9
Elizabethtown, NY 12932

Re: Geotechnical Study
Trout Brook Road over Trout Brook
Minerva, NY
Project Number No. FDE-16-35

Gentlemen;

In accord with your authorization, we have completed a subsurface investigation and prepared this geotechnical evaluation report for the planned replacement of an existing bridge carrying Trout Brook Road over Trout Brook in the town of Minerva.

This report presents the results of the subsurface investigation completed at the site on April 26 and 27, a summary of the conditions disclosed, and our recommendations for the design and construction of the geotechnical aspects of the project.

Subsurface Conditions

The Subsurface Investigation completed at the site consisted of two (2) exploratory test borings, one at each side of the existing bridge. The borings were performed where accessible and without utility conflicts in the general vicinity of the locations shown on the attached Subsurface Investigation Plan. The bores were advanced using a rotary drill rig mounted on a trailer, and overburden soils were sampled in general accord with the procedures of ASTM D-1586. Subsurface Logs were prepared and are attached to this report, together with sheets that explain the terms used in their preparation. It should be understood that boring logs present a description of the conditions encountered on the date, specific locations investigated, and to the depths sampled. Conditions at locations and depths other than those investigated may differ. It should also be understood that conditions can change with time.

The Subsurface Logs should be reviewed for the specific conditions encountered at each investigated location. The borings were advanced from the roadway grades at the site and, as such, penetrated soil fill, which is believed to have been placed to establish the grades for the approach roads to the existing bridge crossing.

The fill soils were composed of a mixture of sand, silt, and gravel with lesser amounts of cobbles and possibly boulders. These fills were moist grading to wet and judged to be of a loose to firm relative density. The fills extended to estimated depths of between about 6 and 7 feet. Underlying the fill soils are glacial outwash soils composed of alternating strata of fine sand and silt and fine to coarse textured sand with some silt and gravel, cobbles, and boulders. These soils were of a generally very compact relative density and extended through the depths explored, about 51 feet.

Groundwater was measured within the test borings advanced at the site as stated on the logs. In our opinion, these measurements may not be representative of the true saturated ground level at the time of the study. Groundwater should be expected to coincide with the stream level at the site throughout the seasons.

Geotechnical Recommendations

In our opinion the planned bridge may be supported upon spread foundations within sheet piles installed for scour protection, if required. It should be understood that if the spread foundation option is selected, all fills and any organic materials contained within or beneath these fill soils must be removed from beneath the foundations.

Based on the available subsurface information Seismic Site Class C should be used. The soils, during the design seismic event, should not liquify.

Steel sheet piles may be used to form a cofferdam or an abutment wall, both designed as a cantilever or tied back system. If steel sheetpiling is used, it will be necessary to remove obstructions as the fills and native soils contain cobbles and boulders in areas.

Excavation to establish bearing for foundations should proceed through the fill and any buried organic soils, or at least one (1) foot beneath these grades, whichever is deeper. Structural fill required to establish the design bearing grade should extend beyond the edge of the foundations a distance at least equal to half the depth of the structural fill placed beneath the foundations. The bearing grade excavation should be backfilled with a run of crusher-run stone similar in gradation and quality to a NYSDOT Section 304 Type 2 Material. The material should be placed in a single lift and be compacted to at least 95 percent of its maximum dry density established through the procedures of ASTM D-1557, the Modified Proctor Test. If the grades are established at or within a foot of the stream/groundwater levels, we recommend the foundation grade be prepared by placing a layer of synthetic fabric such as Mirafi 500X upon the approved bearing grade, followed by at least 12 inches of a 50/50 blend of NYSDOT number 1 and 2 sized aggregate to create a working surface that can also be dewatered with ordinary sumps and pumps set within it.

Dependent upon stream levels during construction, the excavations planned may penetrate saturated soils and groundwater, which will coincide with the stream levels in the immediate project area. Common sump and pump techniques from within cofferdam sheets and behind sheetpile walls should be capable of limited depression and control of the water table at this site. The dewatering system must be designed and operated to assure that the system does not fail and allow groundwater to rise, possibly creating "quick" conditions at the bearing grades within the cofferdam or buoyant forces upon partially completed structures.

Sheet pile cantilever walls or enclosed cofferdams should be designed to achieve stability for varying water elevations that might occur during the construction process. The Contractor's dewatering plan, as well as any construction sheeting and shoring, should be designed by a Licensed Professional Engineer. The design should meet the requirements of 29 CFR Part 1926 Occupational Safety and Health Standards - Excavations for Type C Soils.

The structural fill used to backfill the abutment walls above the water table should consist of NYSDOT Section 304 Type 4 Processed Sand and Gravel material. The fill should be placed in loose layers no more than one (1) foot thick and each layer be compacted to no less than 95 percent of the material's maximum dry density determined through the procedures of ASTM D-1557, the Modified Proctor Compaction test.

The following parameters are recommended for use in the design of the bridge foundations, abutments, and wing walls;

Fill Parameters

1.	Overburden Unit Weight (Total)	=	125 lbs/Cu. Ft.
2.	Friction Angle of Soil	=	30 Degrees
3.	Coefficient of Active Earth pressure	=	0.33
4.	Coefficient of At-Rest Earth pressure	=	0.5
5.	Coefficient of Passive Earth pressure	=	3.0
6.	Coefficient of Sliding Friction	=	0.58
7.	Resistance Factor for Passive Resistance	=	0.50
8.	Resistance Factor for Shear Resistance	=	0.80

Sand/Gravel/Silt Overburden Parameters

1.	Factored Bearing Resistance	=	5,000 PSF
2.	Nominal Bearing Resistance	=	15,000 PSF
3.	Overburden Unit Weight (Total)	=	135 lbs/Cu. Ft.
4.	Friction Angle of Soil	=	32 Degrees
5.	Coefficient of Active Earth pressure	=	0.31
6.	Coefficient of At-Rest Earth pressure	=	0.47
7.	Coefficient of Passive Earth pressure	=	3.25
8.	Coefficient of Sliding Friction	=	0.58
9.	Resistance Factor for Passive Resistance	=	0.50

10. Resistance Factor for Shear Resistance = 0.80

Abutment and sheet pile abutment walls should be designed to restrain lateral earth pressures calculated for the At-Rest Condition. Wing and temporary cofferdams may be designed to resist Active Lateral Earth Pressures.

Settlement of the bridge's spread foundations should occur in a semi-elastic manner as loads are actually applied and cease with each incremental loading of the foundations. We believe that the foundations will settle in total and differentially less than about one-half (½) inch, provided our recommendations concerning bearing grade preparation are followed. It should be understood that actual settlements will be dependent in great part upon the care exercised during bearing grade preparation.

Summary

This report was prepared for specific application to the project site and the construction planned. It was prepared on the basis of a limited number of investigated locations at the site. Subsurface conditions at other than the investigated locations may be different. We should be allowed the opportunity to review appropriate plans and specifications prior to their release for bidding. The Geotechnical Engineer should be retained to observe and test earthwork and bearing grades during construction. This report was prepared using methods and practices common to Geotechnical Engineering in the area at the time. No other warranties, expressed or implied, are made.

A sheet entitled "Important Information about your Geotechnical Engineering Report" prepared by the Association of Engineering Firms Practicing in the Geosciences is attached to this report. This sheet should never be separated from this report and be carefully reviewed as it sets the only context within which this report should be used.

We appreciate the opportunity to be of service. Should questions arise or if we may be of any other service, please contact us at your convenience.

Yours truly,
Dente Engineering, P.C.

Fred A. Dente, P.E.
President

Enclosures;

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.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of 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.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

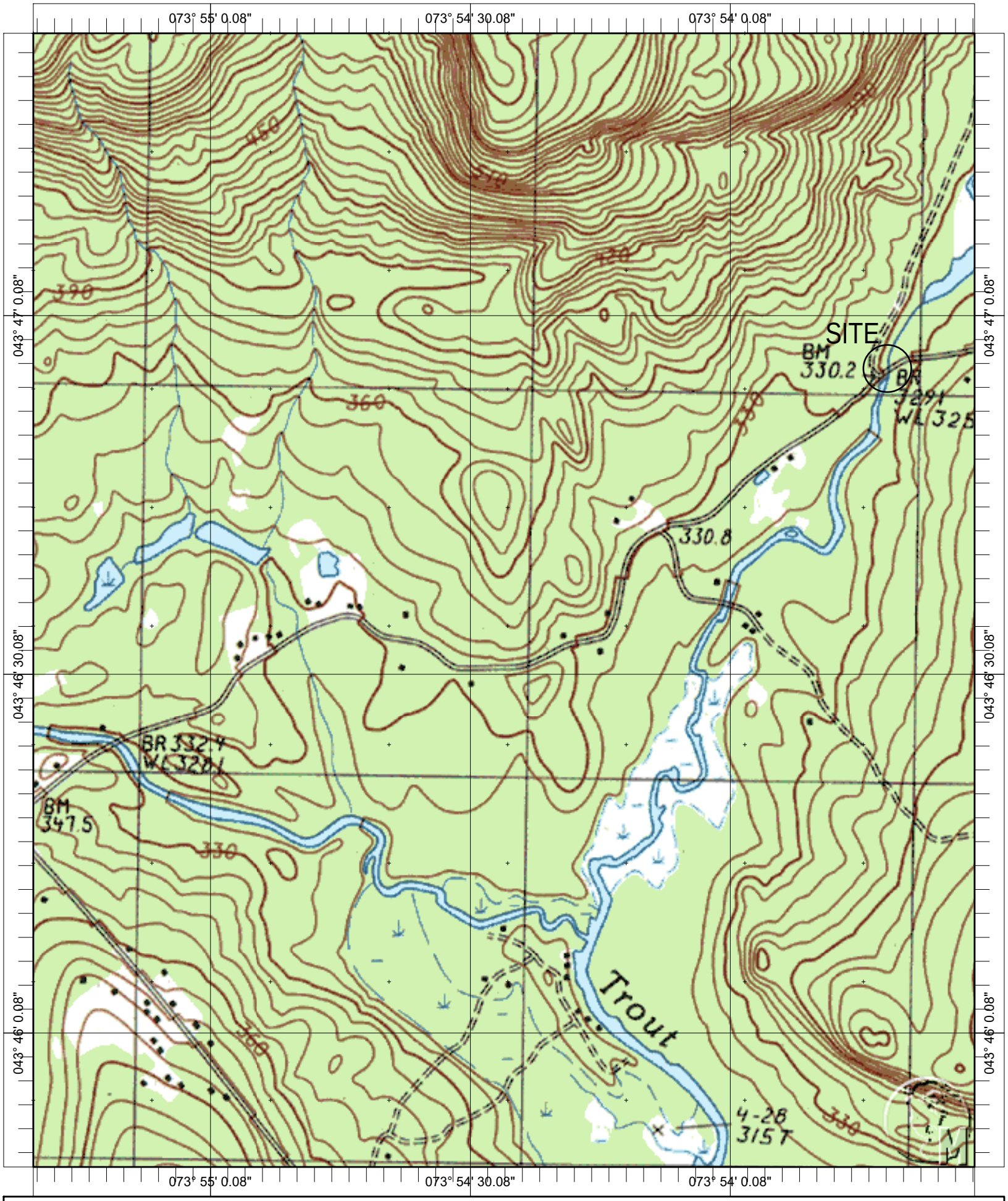
Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

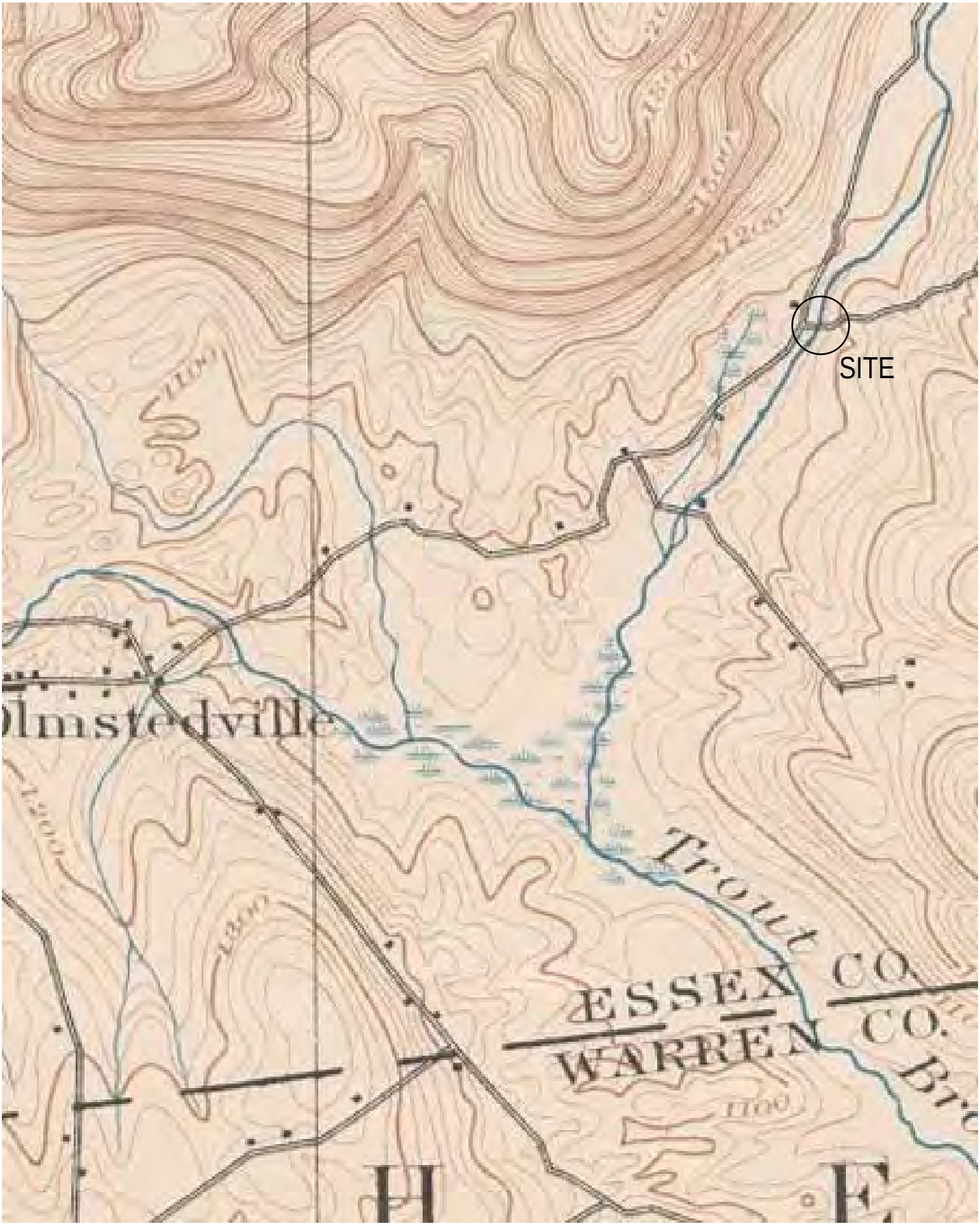
GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

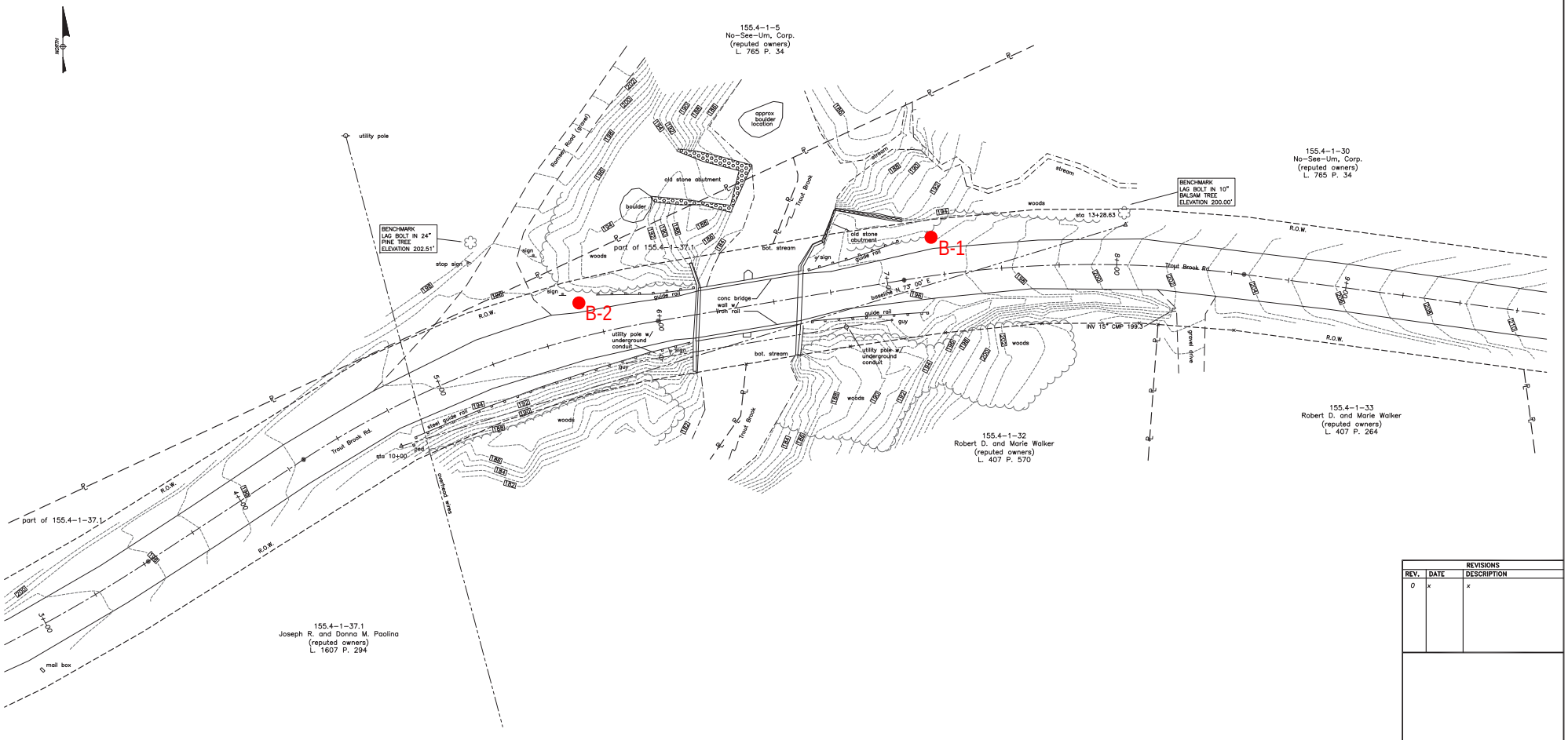


Name: SCHROON LAKE
Date: 5/10/116
Scale: 1 inch equals 1000 feet

Location: 043° 46' 36.3" N 073° 54' 26.2" W
Caption: TROUT BROOK ROAD
OLMSTEDVILLE, NY
FDE-16-35



Trout Brook Road Bridge over the Trout Brook, Olmstedville, New York 1897



EXISTING SITE PLAN

1"=20'-0"

● Approximate Soil Boring Locations

SURVEYED BY
DAVID F. BARRASS
LAND SURVEYOR
5 MAPLE STREET
CORINTH, NEW YORK

REVISIONS		
REV.	DATE	DESCRIPTION
0	x	x

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SCHODER RIVERS ASSOCIATES
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Evergreen Professional Park
453 Dixon Road, Suite 7, Bldg. 3
Queensbury, New York 12804
(518) 761-0417, FAX: (518) 761-0513

SCALE:	AS SHOWN	DRAWN BY:	SRA
DATE:	5/9/16	ENG. BY:	JGL
PROJ. NO:	15-880.09	CHK'D BY:	CBS

CLIENT NAME
ESSEX COUNTY DEPARTMENT
OF PUBLIC WORKS
ELIZABETHTOWN, N.Y.

DRAWING TITLE
TROUT BROOK ROAD
OVER TROUT BROOK
BRIDGE REPLACEMENT

EXISTING PLAN

DRAWING NO. EXIST. | SHT. 1 OF 1 | REV. -

INTERPRETATION OF SUBSURFACE LOGS

The Subsurface Logs present observations and the results of tests performed in the field by the Driller, Technicians, Geologists and Geotechnical Engineers as noted. Soil/Rock Classifications are made visually, unless otherwise noted, on a portion of the materials recovered through the sampling process and may not necessarily be representative of the materials between sampling intervals or locations.

The following defines some of the terms utilized in the preparation of the Subsurface Logs.

SOIL CLASSIFICATIONS

Soil Classifications are visual descriptions on the basis of the Unified Soil Classification ASTM D-2487 and USBR, 1973 with additional comments by weight of constituents by BUHRMASTER. The soil density or consistency is based on the penetration resistance determined by ASTM METHOD D1586. Soil Moisture of the recovered materials is described as DRY, MOIST, WET or SATURATED.

SIZE DESCRIPTION		RELATIVE DENSITY/CONSISTENCY (basis ASTM D1586)			
SOIL TYPE	PARTICLE SIZE	GRANULAR SOIL		COHESIVE SOIL	
BOULDER	> 12	DENSITY	BLOWS/FT.	CONSISTENCY	BLOWS/FT.
COBBLE	3" - 12"	LOOSE	< 10	VERY SOFT	< 3
GRAVEL-COARSE	3" - 3/4"	FIRM	11 - 30	SOFT	4 - 5
GRAVEL - FINE	3/4" - #4	COMPACT	31 - 50	MEDIUM	6 - 15
SAND - COARSE	#4 - #10	VERY COMPACT	50 +	STIFF	16 - 25
SAND - MEDIUM	#10 - #40			HARD	25 +
SAND - FINE	#40 - #200				
SILT/NONPLASTIC	< #200				
CLAY/PLASTIC	< #200				

SOIL STRUCTURE		RELATIVE PROPORTION OF SOIL TYPES	
STRUCTURE	DESCRIPTION	DESCRIPTION	% OF SAMPLE BY WEIGHT
LAYER	6" THICK OR GREATER	AND	35 - 50
SEAM	6" THICK OR LESS	SOME	20 - 35
PARTING	LESS THAN 1/4" THICK	LITTLE	10 - 20
VARVED	UNIFORM HORIZONTAL PARTINGS OR SEAMS	TRACE	LESS THAN 10

Note that the classification of soils or soil like materials is subject to the limitations imposed by the size of the sampler, the size of the sample and its degree of disturbance and moisture.

ROCK CLASSIFICATIONS

Rock Classifications are visual descriptions on the basis of the Driller's, Technician's, Geologist's or Geotechnical Engineer's observations of the coring activity and the recovered samples applying the following classifications.

CLASSIFICATION TERM	DESCRIPTION
VERY HARD	NOT SCRATCHED BY KNIFE
HARD	SCRATCHED WITH DIFFICULTY
MEDIUM HARD	SCRATCHED EASILY
SOFT	SCRATCHED WITH FINGERNAIL
VERY WEATHERED	DISINTEGRATED WITH NUMEROUS SOIL SEAM
WEATHERED	SLIGHT DISINTEGRATION, STAINING, NO SEAMS
SOUND	NO EVIDENCE OF ABOVE
MASSIVE	ROCK LAYER GREATER THAN 36" THICK
THICK BEDDED	ROCK LAYER 12" - 36"
BEDDED	ROCK LAYER 4" - 12"
THIN BEDDED	ROCK LAYER 1" - 4"
LAMINATED	ROCK LAYER LESS THAN 1"
FRACTURES	NATURAL BREAKS AT SOME ANGLE TO BEDS

Core sample recovery is expressed as percent recovered of total sampled. The ROCK QUALITY DESIGNATION (RQD) is the total length of core sample pieces exceeding 4" length divided by the total core sample length for N size cored.

GENERAL

- Soil and Rock classifications are made visually on samples recovered. The presence of Gravel, Cobbles and Boulders will influence sample recovery classification density/consistency determination.
- Groundwater, if encountered, was measured and its depth recorded at the time and under the conditions as noted.
- Topsoil or pavements, if present, were measured and recorded at the time and under the conditions as noted.
- Stratification Lines are approximate boundaries between soil types. These transitions may be gradual or distinct and are approximated.

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-1

PROJECT: Trout Brook Rd. Bridge @ Trout Brook	**DATE**	START: 4/26/16	FINISH: 4/26/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-35	**SURFACE ELEVATION:** +/- 196.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	1	2	4				**FILL**: Brown F-C SAND and GRAVEL, trace
				4	4	8	silt (MOIST), Grades Little Silt
	2	2	2				**(MOIST, LOOSE TO FIRM)**
				11	4	13	
	3	3	2				Dark Brown SILT, roots noted
5'				1/12	-	3	NO RECOVERY, cobble noted
	4	1	8				Grades Some F-C Sand and Gravel (WET)
				6	18	14	**(MOIST TO WET, LOOSE AND FIRM)**
	5	8	9				Brown F-C SAND and GRAVEL, Little Silt
				25	33	34	(MOIST), Grades to (WET), cobbles noted
10'	6	26	38				
				42	47	80	
15'	7	50/.3'				50+	
20'	8	50/.3'				50+	NO RECOVERY, cobble noted
							(MOIST TO WET, COMPACT TO V. COMPACT)
25'	9	53	44				Brown Fine SAND and SILT with Occasional
				50/.4'		94+	Silt Seams and F-M Sand Partings
30'							

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-1 contin.

PROJECT: Trout Brook Rd. Bridge @ Trout Brook	**DATE**	START: 4/26/16	FINISH: 4/26/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-35	**SURFACE ELEVATION:** +/- 196.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	10	48	37				Brown Fine SAND and SILT
				50/.4'		87+	
35'	11	28	38				
				50/.4'		88+	
40'	12	21	50/.4'			50+	**(WET, VERY COMPACT)**
							Brown F-C SAND and GRAVEL, Little Silt, cobbles noted
45'	13	39	50/.4'			50+	Grades trace silt, cobbles noted
							Grades Little Silt
50'	14	32	50/.4'			50+	**(WET, VERY COMPACT)**
							End of boring 50.9' depth with split spoon refusal.
55'							Groundwater measured at 16.6' depth within auger casings after Sample #8
60'							

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-2

PROJECT: Trout Brook Rd. Bridge @ Trout Brook	**DATE**	START: 4/27/16	FINISH: 4/27/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-35	**SURFACE ELEVATION:** +/- 194.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	1	2	2				**FILL**: Brown F-C SAND, Some Gravel, trace silt (MOIST)
				2	3	4	
	2	1	2				Grades Little Dark Brown Mottling, rootlets noted
				2	3	4	
	3	4	9				Similar with Little Roots and Organics
5'				9	11	18	**(MOIST, LOOSE TO FIRM)**
	4	24	44				Brown F-C SAND and GRAVEL, trace silt, cobbles noted
				50/.2'		94+	
							(MOIST, VERY COMPACT)
10'							
	5	41	27				Brown Fine SAND, Some Silt
				30	33	57	
15'							
	6	25	31				Grades (WET)
				46	50/.4'	77	
							(MOIST TO WET, VERY COMPACT)
20'							
	7	30	50/.4'			50+	Brown Fine SAND and SILT
25'							
	8	30	47				
				50/.3'		97+	
30'							

DENTE ENGINEERING, P.C.	SUBSURFACE LOG B-2 contin.

PROJECT: Trout Brook Rd. Bridge @ Trout Brook	**DATE**	START: 4/27/16	FINISH: 4/27/16

LOCATION: Olmstedville, New York	**METHODS:** 3 1/4" Hollow Stem Augers, ASTM
CLIENT: Essex County DPW	D1586 Drilling Methods with Auto Hammer
JOB NUMBER: FDE-16-35	**SURFACE ELEVATION:** +/- 194.0'
DRILL TYPE: CME 45C	**CLASSIFICATION:** O.Burns

SAMPLE		BLOWS ON SAMPLER					CLASSIFICATION / OBSERVATIONS
DEPTH	#	6"	12"	18"	24"	N	
	9	39	50/.3'			50+	Brown Fine SAND and SILT
35'	10	37	50				
				50/.2'		100+	
40'							**(WET, VERY COMPACT)**
	11	36	50/.2'			50+	
45'							Brown F-C SAND and GRAVEL, trace silt
	12	50/.4'				50+	
							Grades Some Silt
50'							**(WET, VERY COMPACT)**
	13	50/.4'				50+	
55'							End of boring 50.4' depth with split spoon refusal. Groundwater measured at 17.8' depth within auger casings after Sample #7.
60'							

View west/southwest toward the area of B-2

View east across the bridge toward the area of B-1