PASSERO
engineering architecture

242 West Main Street, Suite 100
Rochester, NY 14614
585.325.1000 | passero.com

April 15, 2024

New York State Canal Corp
Attn: Brendan Simon
4950 Genesee St. Suite 190
Cheektowaga, NY 14225

Re: Burgundy Basin Inn - Comments from the NYSCC (Canal Corporation)

Dear Mr. Simon:

This letter is responding to the comments we received for the above-mentioned project. The comments are in the order received and our responses are in bold italics.

- The purpose of the canal embankments is to impound and contain Canal waters above the surrounding land elevation. The NYS Canal Corporation generally believes it is an excessively risky idea to construct multi-unit residential dwellings within the footprint of a high-hazard consequence Canal embankment. The Canal embankments were originally constructed prior to modern requirements for soil type, gradation, and compaction as well as inclination to ensure their soundness under a variety of loading conditions. Previous inspections have noted the presence of burrowing animals, seepage, and unsuitable vegetation cover in the immediate vicinity of the proposed work.
  Response: The Great Embankment is a high hazard embankment classification. This means embankment failure may result in serious damage to homes, highways and other infrastructure. Extreme care is to be taken performing any work within the canal embankment. For this reason the proposed project will not be constructing any multi-unit residential buildings within the failure plane of the canal embankment. We want to avoid this risk at all costs. See attached geotechnical analysis.

- Rehabilitation of this embankment, to include flattening of the slope that would push the toe of slope further north away from the canal, has been recommended by a third-party engineer following a routine inspection.
  Response: We are proposing to fill along the toe of slope in the area of the proposed buildings to provide additional embankment support. The proposed buildings will also not have a basement on the canal side (see sections). This further reduces the impact on the embankment. We have also eliminated the basement on the portion of the building facing the canal. See attached sections.

- The concept plan submission does not include topographic survey lines which could be utilized to confirm the toe of slope location and set back limit. Refer to Monroe County for LiDAR data that may be available for this location. The Canal Right of Way (ROW) does not coincide with the embankment toe of slope along the Canal alignment.
  Response: Based on field survey it appears the original embankment slope was 1 on 2 (1' vertical over 2' horizontal). The NYS Canal Corporation Embankment inspection &

maintenance guide book specifies a 1 on 2 inboard slope for the canal but references the outboard slope as varies. We analyzed a 1 on 2 slope and a 1 on 2.5 slope from the top of bank to confirm our buildings and excavations are outside this slope grade line.

- At a minimum, the building footprint should be located outside of the critical failure plane of the embankment as confirmed by stability analyses performed by a licensed professional engineer OR construction must include reinforcement to improve the structural stability of the Canal embankment to achieve required minimum factors of safety for stability under normal pool, maximum (flood) pool, rapid drawdown, and seismic loading conditions and in accordance with applicable state and local codes. Stability analysis should be completed for final proposed building construction various phases of construction including the worst-case loading/support case, commonly "Open excavation, Canal full".
  Response: See attached geotechnical analysis on the critical failure plane. The proposed development is outside this limit.

- Seepage occurs routinely from the embankments. A seepage collection system would be needed between the canal and the buildings to intercept flow and divert it before hydrostatic pressure develops and it enters the building and/or reduces foundation friction below critical levels for stability.
  Response: Buildings will have a drainage system around the building to intercept any groundwater and convey it to the storm sewer system to prevent hydrostatic pressure from developing.

- The NYS Canal Corporation anticipates concerns related to seepage and stability during construction with open excavations, construction equipment surcharge loading on an excavated slope, instrumentation, and monitoring during construction. We recommend making the Developer responsible for funding an inspection/monitoring engineer hired independently by Canals to oversee the construction work and it's impacts on the Canal embankments and other structures, including performance of post-construction monitoring during Canal filling for a period including construction and extending 12-months beyond completion of the work.
  Response: The proposed project is not proposing any excavation within the 1 on 2 slope plane or the critical failure plane.

- The Canal embankment failed near Bushnell's Basin in 1972 while the Canal was fully watered in partly due to poor construction execution/oversight related to directional drilling/boring near the Canal. The NYS Canal Corporation recommends all excavation work within proximity of the embankment (within circular failure plane) be completed with the Canal empty/drained.
  Response: The proposed project is not proposing any excavation within the 1 on 2 slope. No proposed excavation within the circular failure plane is proposed. See attached circular failure plane analysis.

- A failure of any embankment and/or any structure founded on the embankment would imperil the residents and public in the downstream vicinity and is anticipated to rapidly inundate the downstream area in canal water, mud, and debris.
  Response: We agree and because of that we are designing the project to not impact the canal embankment.

- If this project matures to detailed design the NYS Canal Corporation would consider hiring a Consulting engineer to review the detailed design plan and report submissions from the developer.
  Response: Understood.

- The developer should be held responsible for all costs associated with temporary trail impacts, engineering review, oversight and monitoring to ensure the work is completed without deleterious effects on Canal infrastructure and public safety.
  Response: We are not proposing any impact to the existing canal path except for creating a new path connection to it.

- Additional design detail will be required to review any proposed permanent features that will affect the integrity of the embankment structure including decks, trails, and other structures.
  Response: The proposed full design plans will be forwarded to the Canal Corps for review upon completion. We are still months away from this stage.

- Even though the current plans are showing a 50' offset from the NYSCC ROW, constructing the eastern 3.5 story apartment building appears to require significant excavation (western 4 Story apartment building possibly not so much – existing topo displayed below) into a water impounding embankment that stretches onto private land. More details are needed regarding the final grading between the eastern 3.5 story apartment building and the NYSCC ROW in order to determine possible negative effects on the remaining portion of the NYSCC water impounding embankment.
  Response: See attached concept plan with topo shown as well as cross sections of the project.

- Given that it is very common for leakage/seepage to occur along the outboard slope and/or toe of water impounding embankments of the canal, it should be considered/expected that this will happen along/around the southern sides of the two proposed 60-unit apartment buildings. If these leaks/seeps do occur, it should be expected that they start upon "filling" of the canal around May 1st of every year and continuing until we "dewater" the canal around December 15th of every year. How does the contractor proposed to deal with the possible leakage/seepage of water onto the property once the water impounding earthen embankments are altered in order to construct the apartment buildings?
  Response: The proposed project does not propose to impact the 1 on 2 embankment slope. The proposed buildings along the canal will have a drainage system around the perimeter to intercept any seepage or leakage and convey it to the storm sewer system.

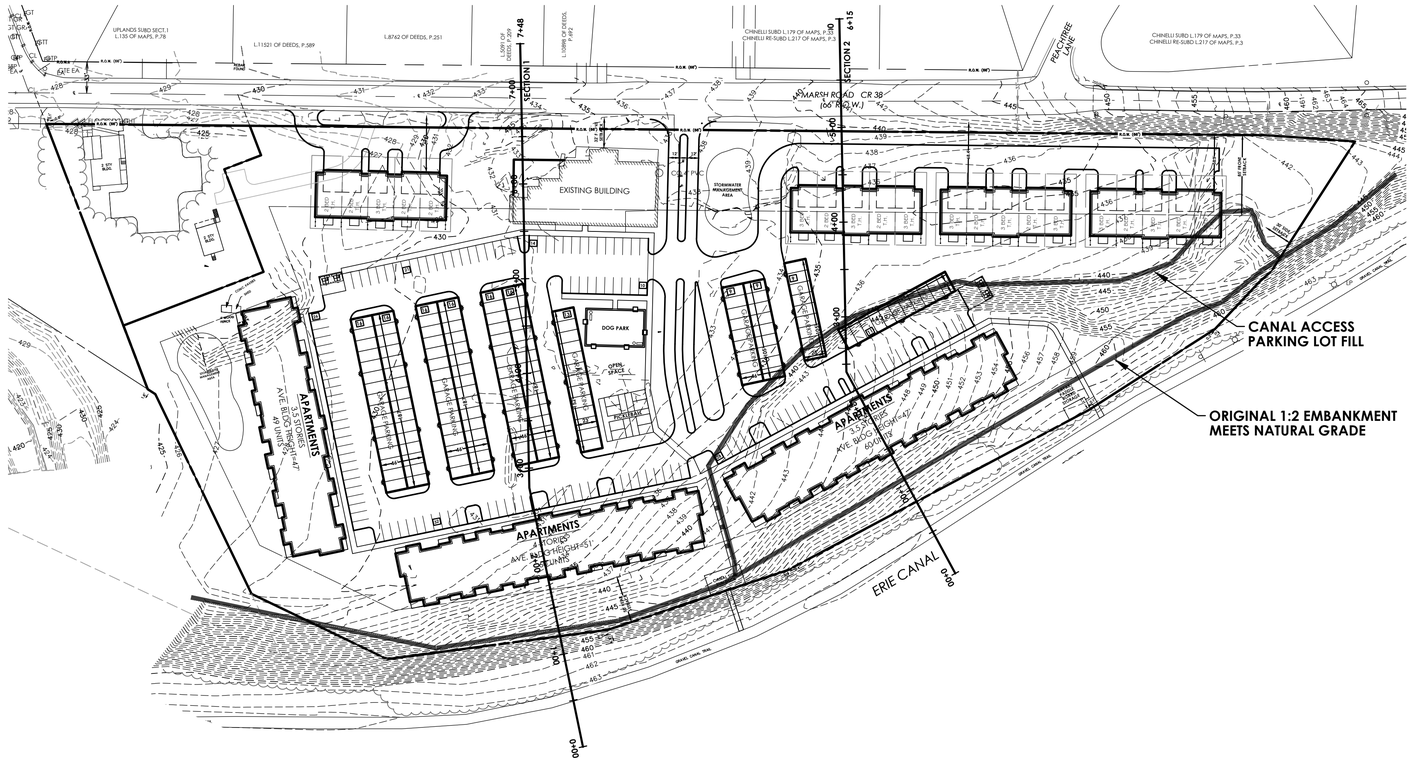
Sincerely,

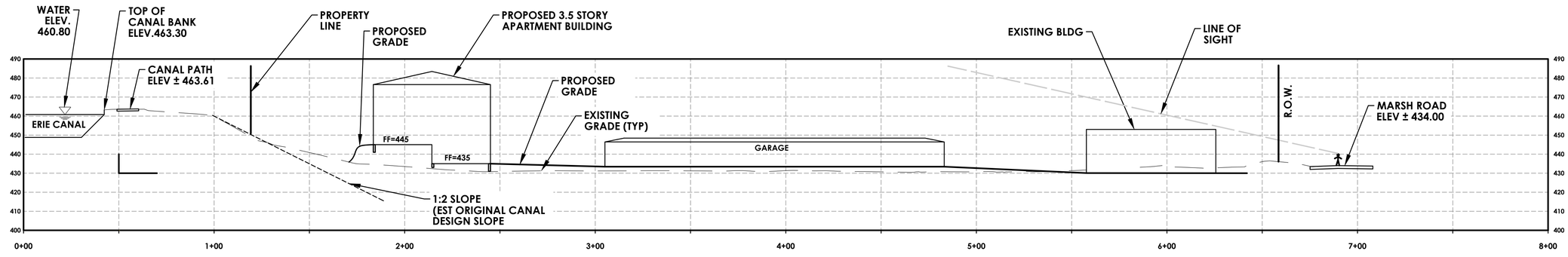
David L. Cox, PE MBA
Senior Associate|Civil Department Manager

DLC:paf

CC: File
M. Clarcq
Taylor the Builder

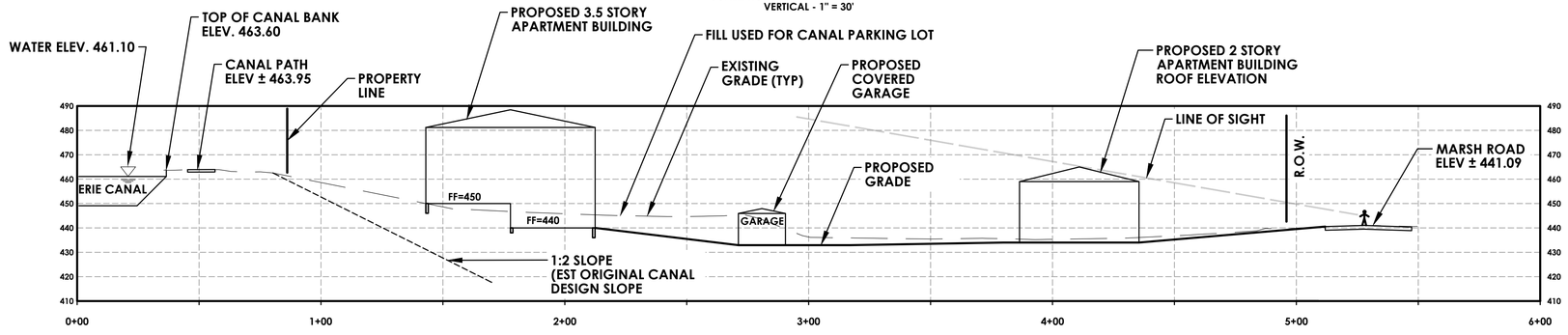
PASSERO





SECTION 1

SCALE: HORIZONTAL - 1" = 30'
VERTICAL - 1" = 30'



SECTION 2

SCALE: HORIZONTAL - 1" = 30'
VERTICAL - 1" = 30'

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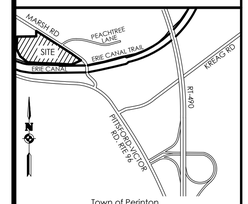
engineering architecture



Town of Perinton
LOCATION SKETCH
N.T.S.

Client:

TAYLOR THE BUILDERS
2580 BAIRD ROAD
PENFIELD, NY 14526

PASSERO ASSOCIATES
242 West Main Street Suite 100
Rochester, New York 14614
(585) 325-1000
Fax: (585) 325-1691

Principal-in-Charge	Jess Sudol, PE
Project Manager	David Cox, PE.
Designed by	Carole Harvey

STATE OF NEW YORK
JESS DANIEL SUDOL
PE
095235
PROFESSIONAL ENGINEER

Revisions

No.	Date	By	Description
1			

SECTIONS

BURGUNDY BASIN INN
1361 MARSH ROAD

Town/City: PERINTON
County: MONROE State: NEW YORK

Project No.
20182652.0002

Drawing No.

Sheet No.

Scale:
AS SHOWN

Date
MARCH 2023

NOT FOR CONSTRUCTION

Chris Mueller

From: Kevin Kerins <[redacted]>
Sent: Monday, May 13, 2024 7:24 AM
To: David Cox
Cc: David Boshart; Murney-Karsten, Joell; Shawn Dailey; Brendan Simon; James Dickson; Jaime DeLuca; Brummer, Henry
Subject: Canal Permit Application attached - NYS Canal Corp Comments 2 - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn
Attachments: Canal Permit Application.pdf; Trail Work Sign Plan.pdf; Instructions Enviro Bores & Monitoring Wells (002).doc

EXTERNAL

David,

Please utilize the attached Canal Permit Application, instructions, and Work Sign Plan to initiate a Canal Work Permit that is required for your contractor to work on NYS Canal Corporation lands.
Please contact me with any questions.

Best,

Kevin

Kevin T. Kerins
Western Regional Permit Engineer
Buffalo Office

NYS Canal Corporation
4950 Genesee Street – Suite 190
Cheektowaga, NY 14225

Work (716) 686-4403 - Cell [redacted]
[redacted]

From: Brummer, Henry <[redacted]>
Sent: Friday, May 10, 2024 3:16 PM
To: [redacted]>
Cc: Kevin Kerins <[redacted]>; David Boshart <[redacted]>; Murney-Karsten, Joell <[redacted]> Shawn Dailey <[redacted]> Brendan Simon <[redacted]>; James Dickson <[redacted]> me DeLuca

<[redacted]>
Subject: NYS Canal Corp Comments 2 - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

David,

New York State Canal Corporation (NYSCC) has reviewed the enclosed conceptual drawing and Terracon's *Geotechnical Engineering Memorandum Burgundy Basin Redevelopment* report dated July 26, 2021 and submitted to NYSCC on April 17, 2024. We offer the following comments on the geotechnical report:

Pg 24/80, Geotechnical Overview. While groundwater was not encountered in the immediate vicinity of the excavation/foundation design, we recommend establishing monitoring wells in the embankment to aid in embankment structural health monitoring as well as providing risk management and oversight during construction activities. We also recommend establishing groundwater elevation thresholds that may be considered 'critical' if encountered during construction. We also recommend the installation of a toe drain at the base of the slope that could be constructed by Developer to reduce seepage risks to the embankment and reduce potential settlement risks to buildings/structures. We also recommend the proposed building drainage system include some sort of filter fabric.

Out of an abundance of caution, and in the interest of public safety, NYSCC recommends that an optimal minimum separation distance of at least 25 ft be observed for all buildings/excavations from the current existing toe of slope. Keeping the entirety of the building off the embankment structure would help maintain the embankment unencumbered. This offset would enable future work on this embankment, should it be required. The proposed building placement may make that difficult, if not impossible.

Please keep NYSCC apprised and updated on any additional geotechnical testing performed. Please also provide any updated drawings, grading plans and sections as they relate to the geotechnical evaluation, and any additional investigations/reports to us for our continued review as this project is of high interest to NYSCC.

Respectfully,

Hank J. Brummer, P.E. (NY, OH, & NC)
Deputy Western Regional Canal Engineer

New York State Canal Corporation
4950 Genesee St, Suite 190, Cheektowaga, NY 14225
(O) (716) 686-4400 | (M) [redacted]
NEW YORK STATE OF OPPORTUNITY | Canal Corporation
www.canals.ny.gov

From: David Cox <[redacted]
Sent: Wednesday, May 1, 2024 9:49 AM
To: Brendan Simon <[redacted]
Cc: Kevin Kerins <[redacted]>; David Boshart <[redacted] Murney-Karsten, Joell <[redacted]>; [redacted] Shauncy Maloy <[redacted]>; Allen, Wanda <[redacted] Shawn Dailey <[redacted] Brummer, Henry [redacted]; Fiorillo, Michele A <[redacted]

Subject: [EXTERNAL]RE: [EXTERNAL]RE: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

Brendan,

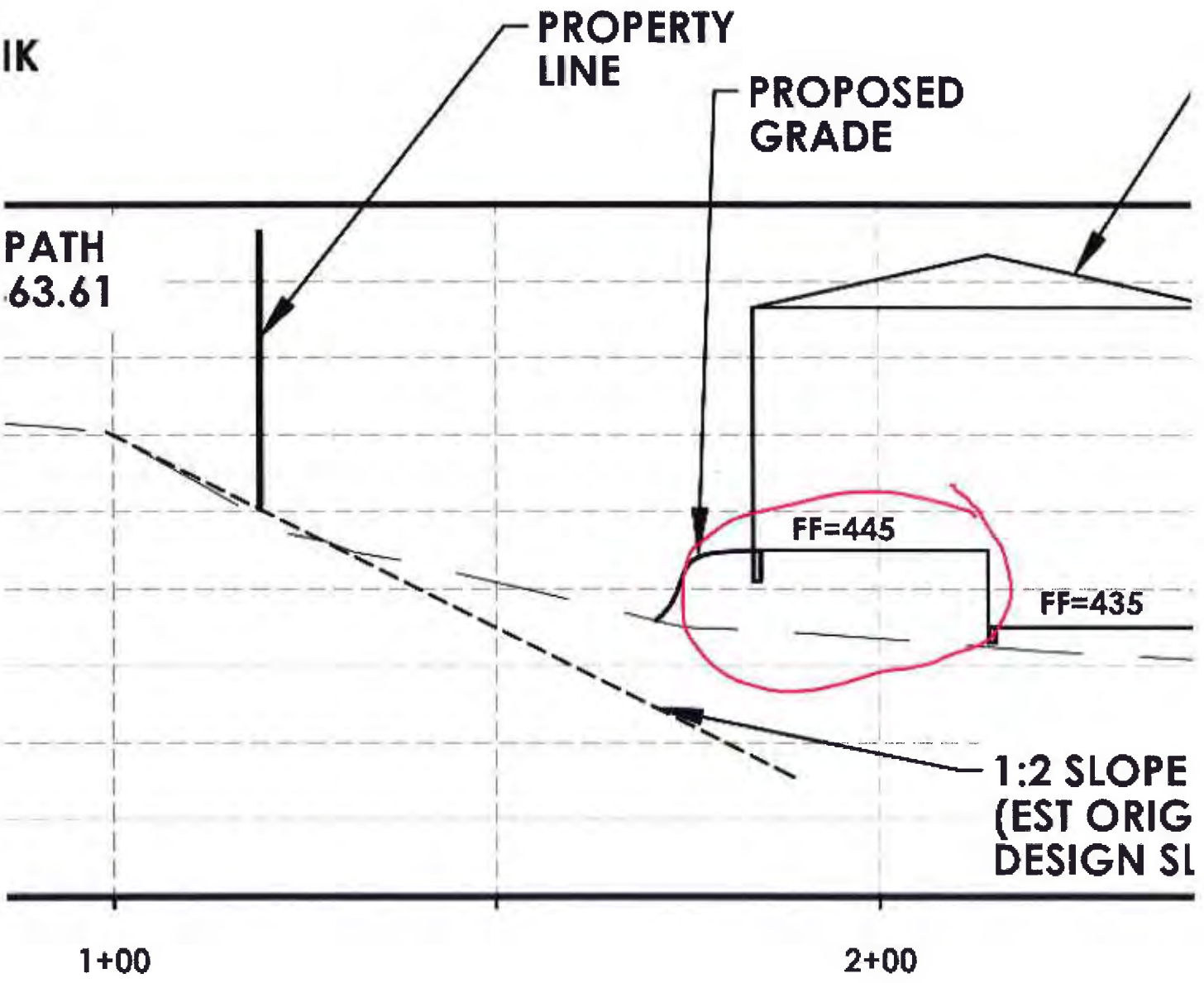
Any update on your review of the submitted materials?

Sincerely,
David Cox, PE, MBA
Vice President|Civil Dept Manager
Direct: [redacted]

From: David Cox
Sent: Monday, April 15, 2024 10:48 AM
To: Brendan Simon <[redacted]
Cc: Kevin Kerins <[redacted]>; David Boshart <[redacted]>; Murney-Karsten, Joell <[redacted]>; Karl Schuler [redacted]<[redacted]>; Shauncy Maloy [redacted]; Allen, Wanda [redacted]>; Shawn Dailey [redacted] Brummer, Henry <Henry.Brummer@canals.ny.gov>; Fiorillo, Michele A <Michele.Fiorillo@terracon.com>
Subject: RE: [EXTERNAL]RE: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

Brendan,

I'm leaving for vacation so I wanted to send you what I have. The Geotech will send the critical failure plane analysis under a separate email. I have reviewed the draft analysis and it all looks good. They have been copied on this email. We have also modified the building design to not have a basement on the portion of the building facing the canal. This further reduces any impact on the canal embankment. See below. I believe with the modifications below and the critical failure plane analysis reveals the impact to the embankment is very minimal. If you need anything while I'm gone please reach out to Shauncy Maloy cc'd on this email. If we could possibly have a response back by May 6th that would be very helpful. We have a meeting with the town that having feedback from the Canal Corps would be very helpful. Thanks



Sincerely,
David Cox, PE, MBA
Vice President|Civil Dept Manager
Direct: [redacted]
[redacted]

From: Brendan Simon <[redacted]
Sent: Monday, March 18, 2024 7:29 AM
To: David Cox [redacted]

Cc: Kevin Kerins [redacted]; David Boshart [redacted] Murney-Karsten, Joell [redacted] Shawn Dailey <[redacted] Brummer, Henry [redacted]

Subject: RE: [EXTERNAL]RE: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

EXTERNAL

Thanks David.

+ Shawn and Hank

Brendan J. Simon, P.E.
Western Regional Canal Engineer

New York State Canal Corporation
4950 Genesee St, Suite 190, Cheektowaga, NY 14225
(O) (716) 686-4400 | (M) [redacted]
NEW YORK STATE OF OPPORTUNITY. Canal Corporation

From: David Cox <[redacted]
Sent: Friday, March 15, 2024 2:09 PM
To: Brendan Simon <[redacted]
Cc: Kevin Kerins <[redacted]>; David Boshart [redacted] Murney-Karsten, Joell <[redacted]
Subject: [EXTERNAL]RE: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

Canal Corps,

Thanks so much for meeting with me Wednesday. See attached geotech report. They did quite a few borings. Pretty much everyone is sand, hence the no storm sewer.

As soon as the geotech finishes up the critical failure plane and circular failure plane analysis I will be able to formally respond.

Please send over the original cross sections once you track them down. Thanks

Sincerely,
David Cox, PE, MBA
Senior Associate|Civil Dept Manager
Direct: [redacted]

From: Brendan Simon [redacted]
Sent: Tuesday, March 12, 2024 7:16 AM
To: David Cox <[redacted]>
Cc: Kevin Kerins <[redacted]; David Boshart <[redacted]; Murney-Karsten, Joell <[redacted]
Subject: RE: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

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EXTERNAL

Yes, that will work fine. I will see you then.

Thank you,
Brendan J. Simon, P.E.
Western Regional Canal Engineer

New York State Canal Corporation
4950 Genesee St, Suite 190, Cheektowaga, NY 14225
(O) (716) 686-4400 | (M) [redacted]

From: David Cox <[redacted]
Sent: Monday, March 11, 2024 4:02 PM
To: Brendan Simon <[redacted]
Cc: Kevin Kerins <[redacted]; David Boshart <[redacted]; Murney-Karsten, Joell <[redacted]
Subject: [EXTERNAL]RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

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I could do Wednesday at 3pm. Does that work?

Sincerely,
David Cox, PE, MBA
Senior Associate|Civil Dept Manager
Direct: [redacted]

From: Brendan Simon <[redacted]>
Sent: Sunday, March 10, 2024 4:59 PM
To: David Cox <[redacted]
Cc: Kevin Kerins <[redacted]; David Boshart <[redacted]; Murney-Karsten, Joell <[redacted]
Subject: RE: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

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EXTERNAL

Good afternoon David,

I would be best to speak to regarding our collective comments. I have availability on Wednesday afternoon at the below address. If this works for you I will send a meeting appointment.

Sincerely,
Brendan J. Simon, P.E.
Western Regional Canal Engineer

New York State Canal Corporation
4950 Genesee St, Suite 190, Cheektowaga, NY 14225
(O) (716) 686-4400 | (M) [redacted]
NEW YORK STATE OF OPPORTUNITY. Canal Corporation

From: David Cox <[redacted]
Sent: Wednesday, March 6, 2024 11:32 AM
To: Murney-Karsten, Joell <[redacted]
Cc: Brendan Simon <[redacted] Kevin Kerins <[redacted]; David Boshart <[redacted]
Subject: [EXTERNAL]FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

Joell,

Not sure who the right person to reach out to is. I received the attached comment letter for the Burgundy Basin project. I would like to set up a time to come meet with the individuals who assembled the comment letter to discuss this further. I feel a face to face is most productive. I can meet wherever the Canal Corps would like. Is there a time next week that looks good? My availability is below.

Monday 12pm-330pm
Tuesday 1pm-330pm
Wednesday 8am-12pm or 1:30-3pm

Sincerely,
David Cox, PE, MBA
Senior Associate|Civil Dept Manager
Direct: [redacted]

From: Lori Stid <lStid@perinton.org>
Sent: Wednesday, March 6, 2024 11:23 AM
To: David Cox <[redacted]
Cc: Janelle Reed <[redacted]>; Lori Stid <lStid@perinton.org>; Chris Mueller <cmueller@perinton.org>
Subject: FW: NYS Canal Corp comments - 1361 Marsh Road - proposed TB - SUP development- former Burgundy Basin Inn

EXTERNAL

David,

Please see e-mail chain.

Regards,

Lori Stid

Lori Stid
Director of Volunteer Boards
Liaison Conservation Board & Sustainability Advisory Board
Assistant to Town Attorney
Town of Perinton
1350 Turk Hill Road
Fairport, NY 14450
tel – 585-223-0770 & fax 585-223-3629
lstid@perinton.org

Pending Requests - Properties Under Review
Overall Board Meeting Schedule – Applications before Boards
Fee Schedule
Volunteer Board Information
Government Information
Town Code
https://perinton.org/about/
https://finditinfairport.com/
Perinton Alert Services System – sign up
https://perinton.org/newsletters/ - sign up

From: Murney-Karsten, Joell <[redacted]
Sent: Wednesday, February 21, 2024 6:05 PM
To: Mike Doser <[redacted]
Cc: Brendan Simon <[redacted]>; Kevin Kerins <[redacted]
Subject: 1361 Marsh Road (Burgundy Basin) comments

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Good evening, Mike.

Attached are NYPA/Canals' comments on the proposed Burgundy Basin special use project.

We will submit comments separately for the Canal Overlay District proposal.

Thank you,

Joell

Joell Murney-Karsten
Manager, Government and Community Relations

New York State Canal Corporation
149 Northern Concourse, Suite 400
Syracuse, NY 13212
(c) [redacted] | (o) 315-423-2087
[redacted]
www.canals.ny.gov/

From: Kevin Kerins <[redacted]
Sent: Wednesday, January 17, 2024 9:31 AM
To: Mike Doser <[redacted] David Boshart <[redacted] Brendan Simon [redacted]
Subject: RE: [EXTERNAL]Perinton/Canal Overlay District & 1361 Marsh Road (Burgundy Basin) decisions tentatively sched. 2/28

Looping in appropriate parties Mike.

From: Mike Doser <[redacted]
Sent: Wednesday, January 17, 2024 9:14 AM
To: Kevin Kerins <[redacted]>
Subject: [EXTERNAL]Perinton/Canal Overlay District & 1361 Marsh Road (Burgundy Basin) decisions tentatively sched. 2/28

Kevin:

The Perinton Town Board expects to make a decision on the Erie Canal Overlay District code and the Special Use Permit for 1361 Marsh Road (Burgundy Basin site) on Feb. 28. We are anticipating comments from the Canal Corporation for each. Please let us know if there are any questions.

Regards,

Mike

Michael S. Doser, MPA, AICP
Director of Planning
Town of Perinton
(585) 223-5115

See our Comprehensive Plan.

From: Mike Doser
Sent: Thursday, November 9, 2023 9:56 AM
To: Kevin Kerins <[redacted]
Subject: RE: Town of Perinton SEQR Lead Agency Letters

You got it. Thanks.

Mike

Michael S. Doser, MPA, AICP
Director of Planning
Town of Perinton
(585) 223-5115

See our Comprehensive Plan.

From: Kevin Kerins <[redacted]
Sent: Thursday, November 9, 2023 9:52 AM
To: Mike Doser <[redacted]
Cc: David Boshart <[redacted] James Candiloro <[redacted]; Murney-Karsten, Joell <[redacted] Brendan Simon <[redacted]
Subject: Town of Perinton SEQR Lead Agency Letters

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Mike,

Thank you for the SEQR Lead Agency letters regarding 347 Ayrault Rd and the Basin Landing projects. I forwarded them to review staff at Canal HQ and will provide feedback if any is received.

Kevin

Kevin T. Kerins
Western Regional Permit Engineer
Buffalo Office

NYS Canal Corporation
4950 Genesee Street – Suite 190
Cheektowaga, NY 14225

Work (716) 686-4403 - Cell [redacted]

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70 Vantage Point Drive, Suite 1
Rochester, NY 14624
P (585) 247-3471
Terracon.com

April 16, 2024

Taylor, The Builders
2570 Baird Road
Penfield, New York 12203

Attn: Mr. Karl Schuler
Phone: 585-248-6000
Email: karl@buildtaylor.com

RE: Geotechnical Engineering Memorandum
Burgundy Basin Redevelopment
1361 Marsh Road
Pittsford, New York
Terracon Project No. J5245090

Dear Mr. Schuler,

This technical memorandum is prepared by Terracon Consultants-NY, Inc. (Terracon) at the request of Taylor, The Builders (Taylor) to summarize the results of a geotechnical engineering evaluation of the slope stability analysis of the existing Erie Canal embankment located within the southern portion of the site development at 1361 Marsh Roads, Pittsford, Monroe County, New York.

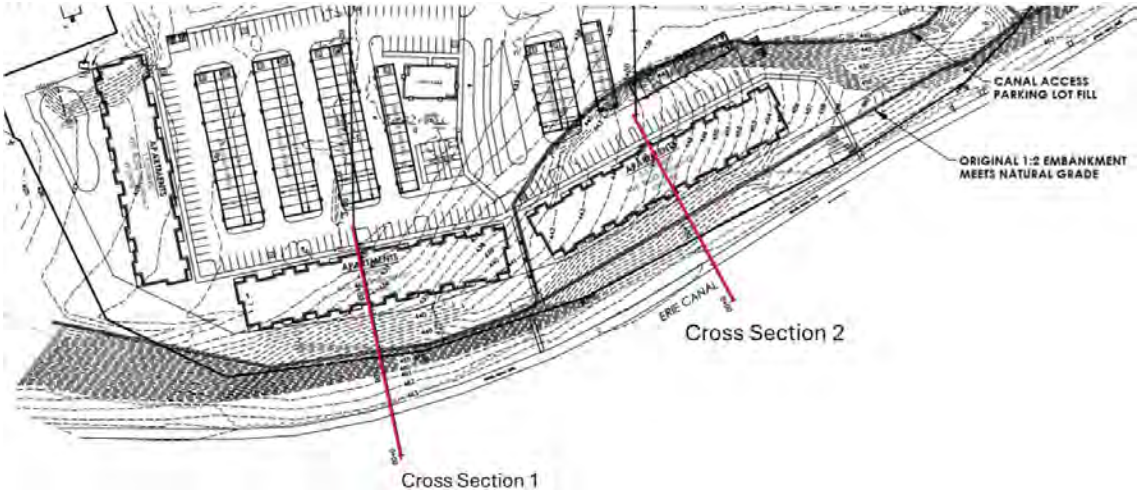
Project Information and Background

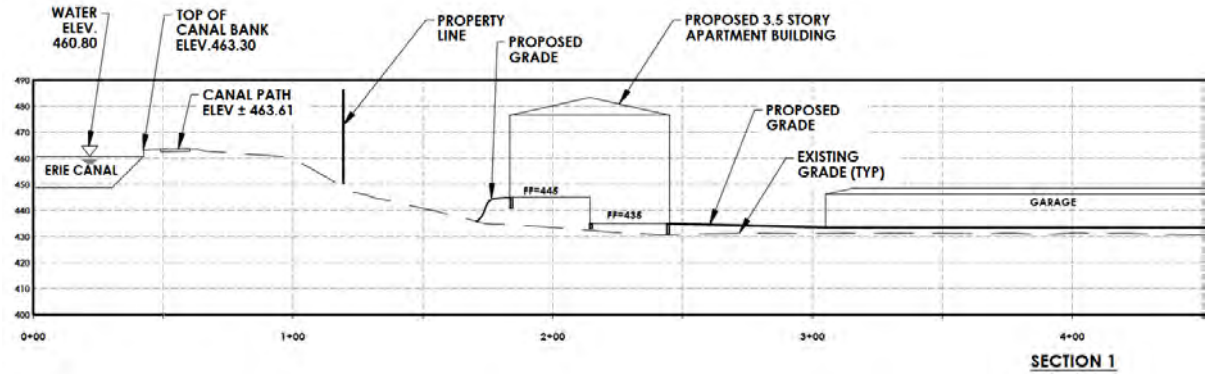
Terracon was requested to perform slope stability evaluations of the proposed cut slopes planned for the project along the southern portions of the site adjacent to the existing Erie Canal. The following documents were used for slope stability evaluations:

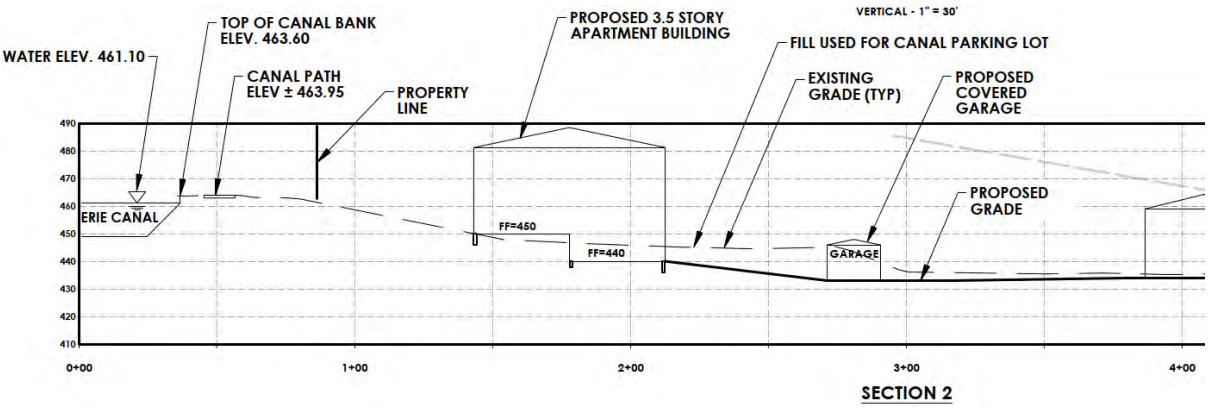
- Draft Preliminary Site Plans for Taylor the Builders, 2580 Baird Road Penfield, NY, 14526 prepared by Passero Associates (Project No. 20182652.0002), dated March 2023.
- Geotechnical engineering report titled Geotechnical Evaluation, Burgundy Basin Redevelopment, Pittsford, Monroe County, New York (Terracon Project No. J5195239, report dated July 26, 2021).

Based on the information provided, we understand the project will include a new three-half-story apartment building, planned to be constructed on the southern portion of the site adjacent to the existing Canal embankment. The Erie Canal is located at the top of the slope, and the existing slope is heavily vegetated. Other site improvements will include additional apartment buildings further to the north of the site and parking and drive areas.

Based on the information provided and the received cross-sections, we understand the construction of the new buildings may require some excavation to accommodate the construction of the proposed buildings. The following images extracted from the plans show the existing and proposed grades in proximity to the proposed buildings:







As previously mentioned, Terracon prepared a Geotechnical engineering report (titled Geotechnical Evaluation, Burgundy Basin Redevelopment, Pittsford, Monroe County, New York, Terracon Project No. J5195239, report dated July 26, 2021). Eleven test borings and 11 test pits were completed for the proposed development. Several borings and test pits were located in proximity to the toe of the existing Canal Embankment (borings B-5, B-6,

B-7, and B-8, and test pits TP-1, TP-2, TP-3, and TP-11). A copy of the geotechnical report is included in Attachment B of this report. Photos of the test pits indicate the sidewalls of the excavation during the test pit excavation to be stable and no caving was observed. Also, groundwater was not encountered during the excavation of the test pits. In general, groundwater was encountered in the borings below a depth of 18 feet, or below El. 420 feet.

Slope Stability Evaluation

The engineering analyses completed for this evaluation were based on procedures that are commonly used by geotechnical engineers in slope stability evaluations where the forces and moments that resist potential failures or movement are compared against the forces and moments tending to cause failure or movement. The ratio of this comparison is termed the factor of safety (FS) and indicates the stability of the failure surface. The Slope stability analyses for the proposed slopes were performed using the computer program Slide (version 9.031) developed by Rocscience. Two methods, Spencer and Morgenstern-Price were used for the evaluation. Both methods utilize force and moment equilibrium to determine a factor of safety against instability. These analyses are based on limit-equilibrium, comparing resisting forces against those causing failure. This ratio, known as the factor of safety (FS), indicates the stability or instability of the postulated failure surface. A factor of safety of less than 1.0 indicates the resisting forces are less than the forces causing failure, resulting in failure or instability.

The plans provided included 2 cross-sections (designated as Section 1 and Section 2) of the existing slopes, which were used to develop the geometry in the model of the slope stability evaluations.

To account for the worst-case scenario, we modeled cross-section 2 to include a temporary excavation at the bottom of the existing slope to allow for the construction of the foundations of the proposed building. We assumed the ratio of the excavation cut to be 1H:1V, and it starts at a distance of 5 ft from the edge of the foundation. We also assumed in our model that there would be full water in the Erie Canal for the static and seismic conditions, and a rapid drawdown scenario for both of the modeled sections. The existing slopes across these cross-sections generally range from approximately 3H:1V to 4.5H:1V and continue near the proposed building area.

The stability of the existing conditions in the case of cross-section 1 and the temporary construction cut in the case of section 2 (as the worst-case scenario) was evaluated under both static and seismic conditions. The material properties of the soil profile for the slope stability evaluation were selected based on:

- the selected data from the geotechnical engineering report for the project;
- our experience with similar materials; and engineering judgment.
- Since groundwater was encountered in the borings completed in proximity to the toe of the slope at a depth of about 18 ft below the ground surface, a groundwater

table was also assumed in the analysis and hydrostatic forces were incorporated into the slope stability analysis.

Based on these items, the strength parameters used for the slope stability analyses are summarized as follows:

Depth Below Existing Grade (ft)	Soil Description	Unit Weight (pcf)	Internal Angle of Friction (degrees)	Cohesion (psf)
0 – 20	Mixtures of silt and sand with trace clay	120	32	50

The 2 cross-sections were analyzed under static and seismic conditions. The evaluations involve the Slide software performing iterations through the slope within anticipated failure zones to identify the critical failure surface with the lowest factor of safety for each of the models. The lowest factor of safety obtained from potential failure surfaces within each cross-section indicates the safety of the slope against instability. As previously mentioned, a factor of safety of less than 1.0 indicates failure or instability.

Graphical results of the slope stability evaluations for each of the two cross-sections (for both the critical surface and all failure surfaces) are shown in Attachment A of this report. The green lines in the attachment files indicate the location of the critical failure surface or the failure surface with the minimum factor of safety. The results of the slope stability evaluations show stable slope conditions for each of the two cross-sections at the proposed location of the building. The results of the stability analyses and the corresponding minimum calculated factors of safety for each case are summarized as follows:

Cross Section	Calculated Minimum Factor of Safety (FS)		
	Existing Slope Geometry		
	Static	Seismic	Rapid Drawdown
1	1.8	1.6	1.8
2	2.1	1.8	2.1

General Comments

Our analysis and opinions are based on our understanding of the project, the geotechnical conditions in the area, the project information provided, and the understanding from discussing the project with the client.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Closure

We appreciate the opportunity to provide this slope stability evaluation report for the proposed development at the project site. Please contact us if there are any questions or if anything else is needed.

Sincerely,
Terracon Consultants-NY, Inc.

Arash Hosseini

Arash Hosseini, Ph.D., P.E.
Project Engineer

Michele A. Fiorillo, P.E.
Geotechnical Department Manager

Attachments:

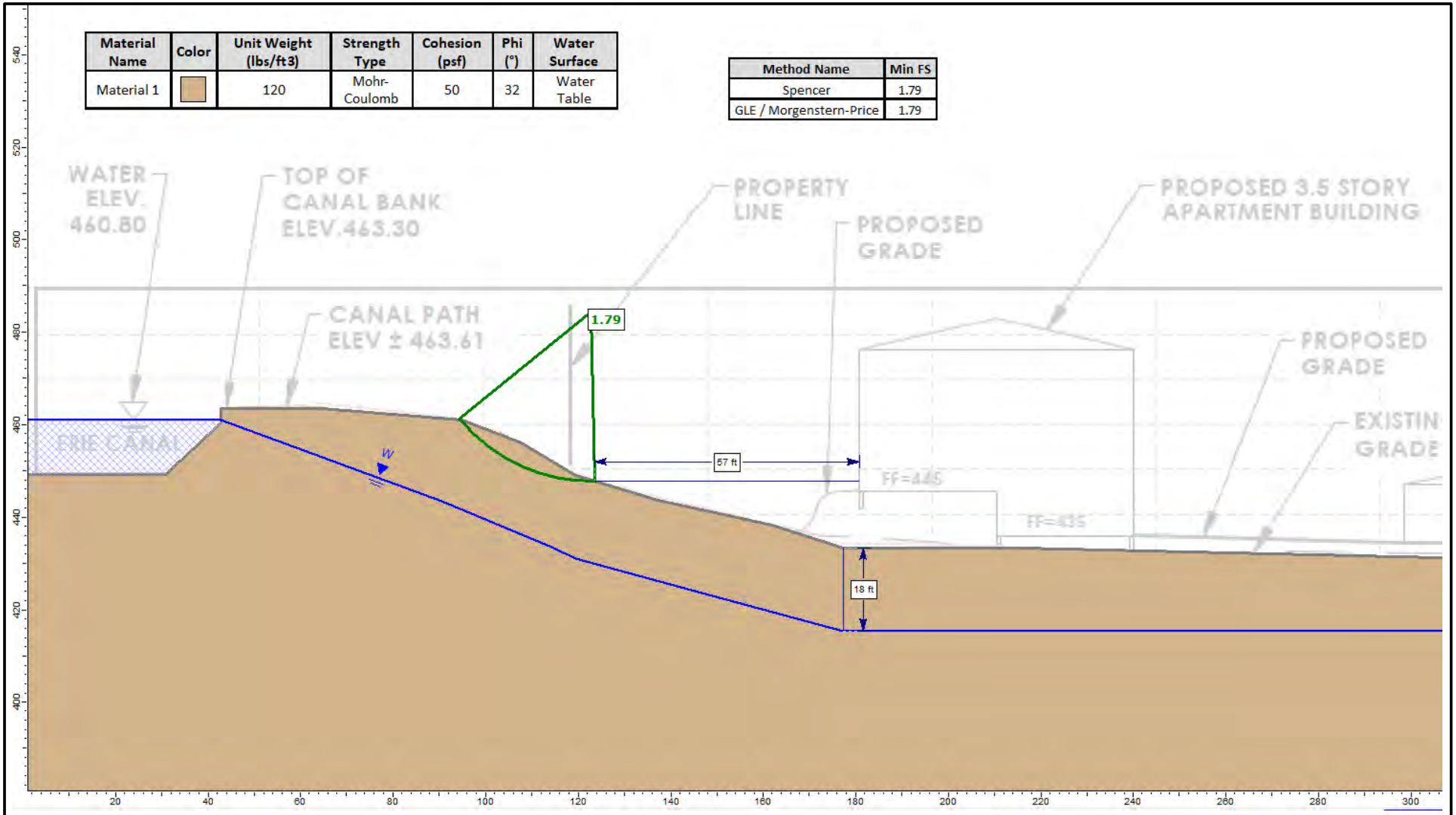
Attachment A: Slope Stability Analysis Results

Attachment B: Geotechnical Report prepared by Terracon

Attachment A - Slope Stability Analysis Results

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface
Material 1		120	Mohr-Coulomb	50	32	Water Table

Method Name	Min FS
Spencer	1.79
GLE / Morgenstern-Price	1.79



Notes:
1. Image generated using SLIDE2
2. Diagram is for general location only and is not intended for construction purposes.

Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 1
Date:	4/11/2024

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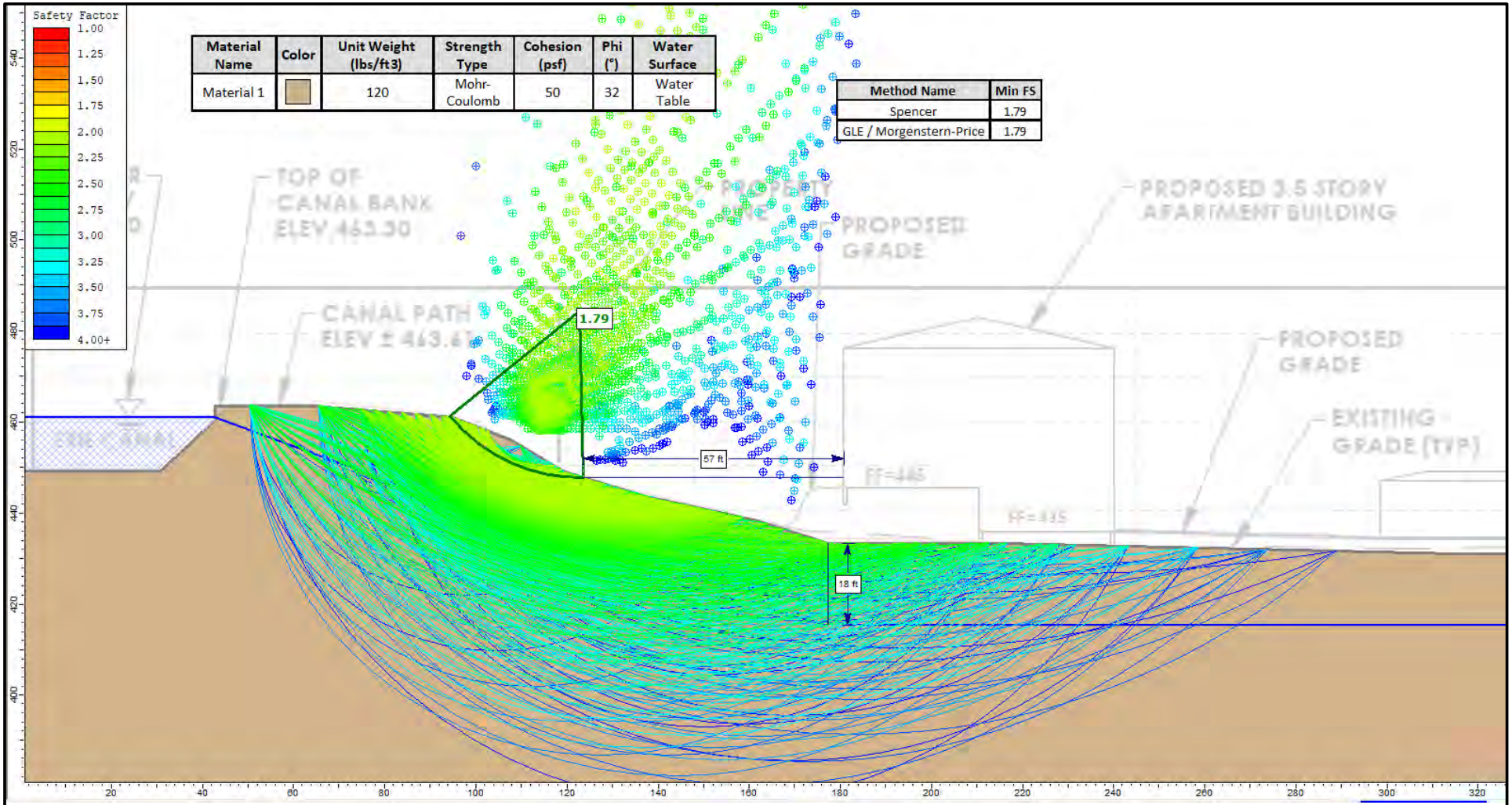
Rochester, NY 14624

GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 1
Critical Failure Surface – Static Condition

Exhibit



Notes:

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Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 1
Date:	4/11/2024

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Rochester, NY 14624

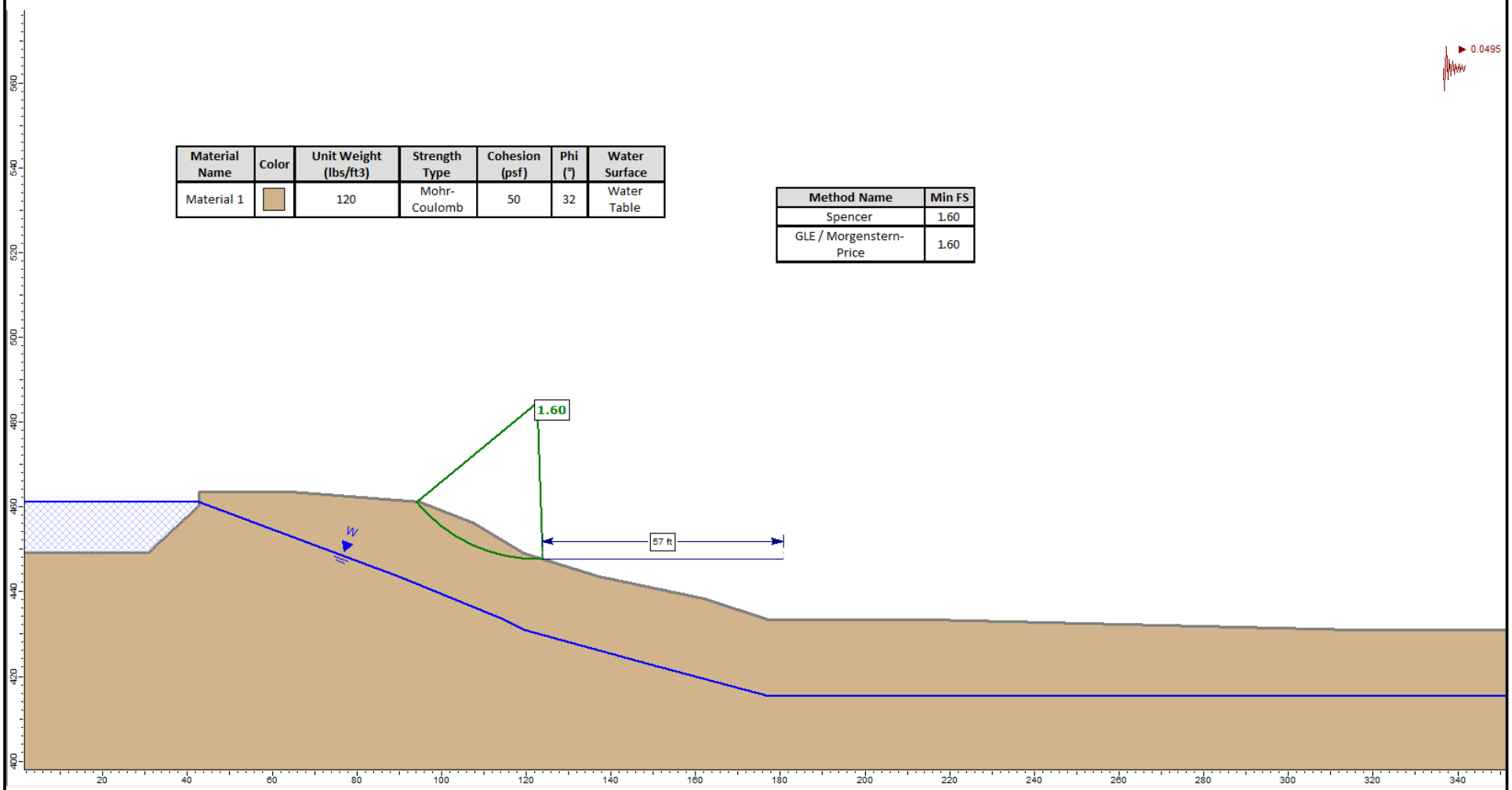
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 1
All Failure Surfaces – Static Condition

Exhibit

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface
Material 1		120	Mohr-Coulomb	50	32	Water Table

Method Name	Min FS
Spencer	1.60
GLE / Morgenstern-Price	1.60



Notes:
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Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 1
Date:	4/11/2024

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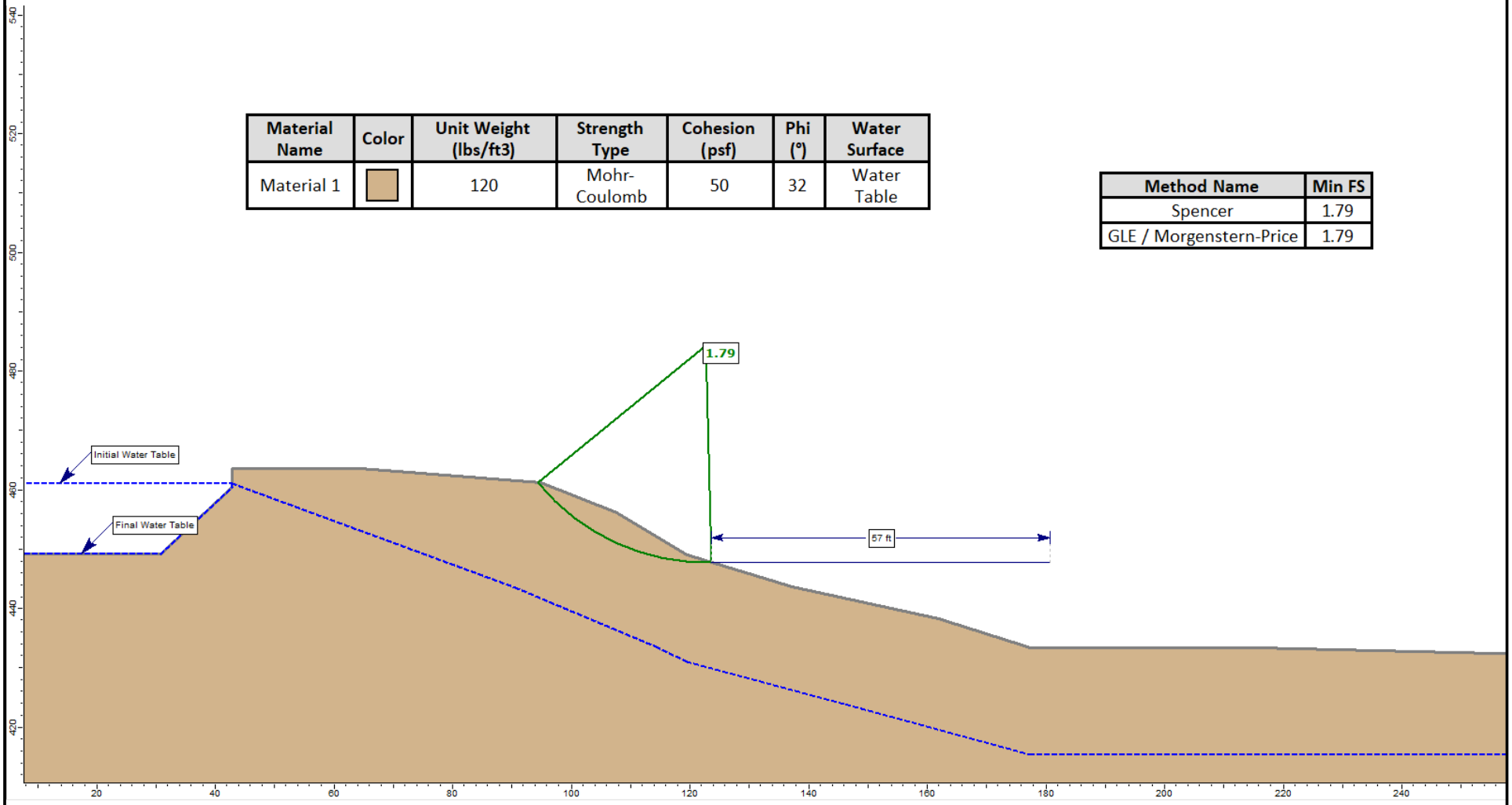
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 1
Critical Failure Surface – Seismic Condition

Exhibit

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface
Material 1		120	Mohr-Coulomb	50	32	Water Table

Method Name	Min FS
Spencer	1.79
GLE / Morgenstern-Price	1.79



Notes:
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2. Diagram is for general location only and is not intended for construction purposes.

Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 1
Date:	4/11/2024

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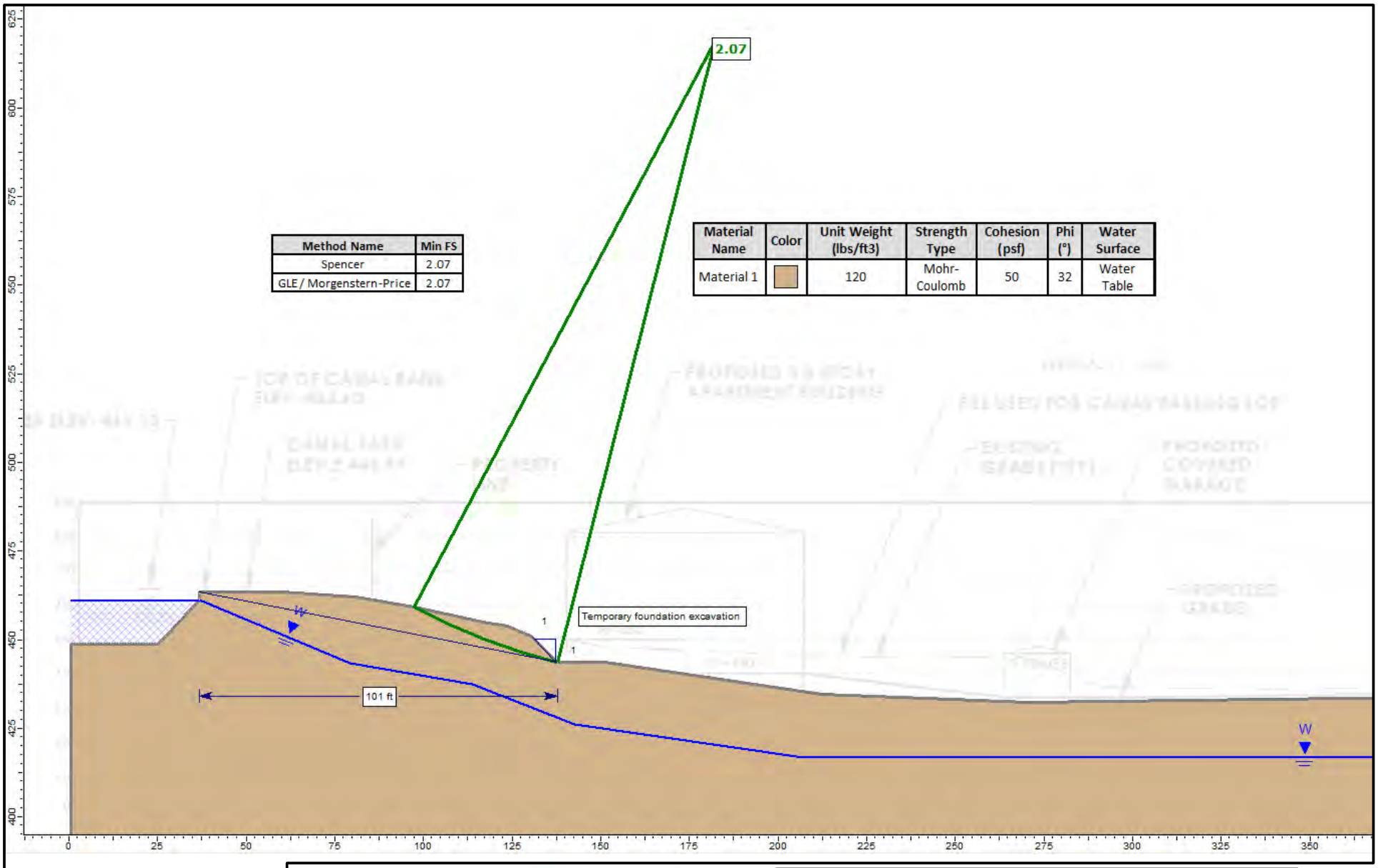
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 1
Critical Failure Surface – Rapid Drawdown Condition

Exhibit



Notes:

1. Image generated using SLIDE2
2. Diagram is for general location only and is not intended for construction purposes.

Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 2
Date:	4/11/2024

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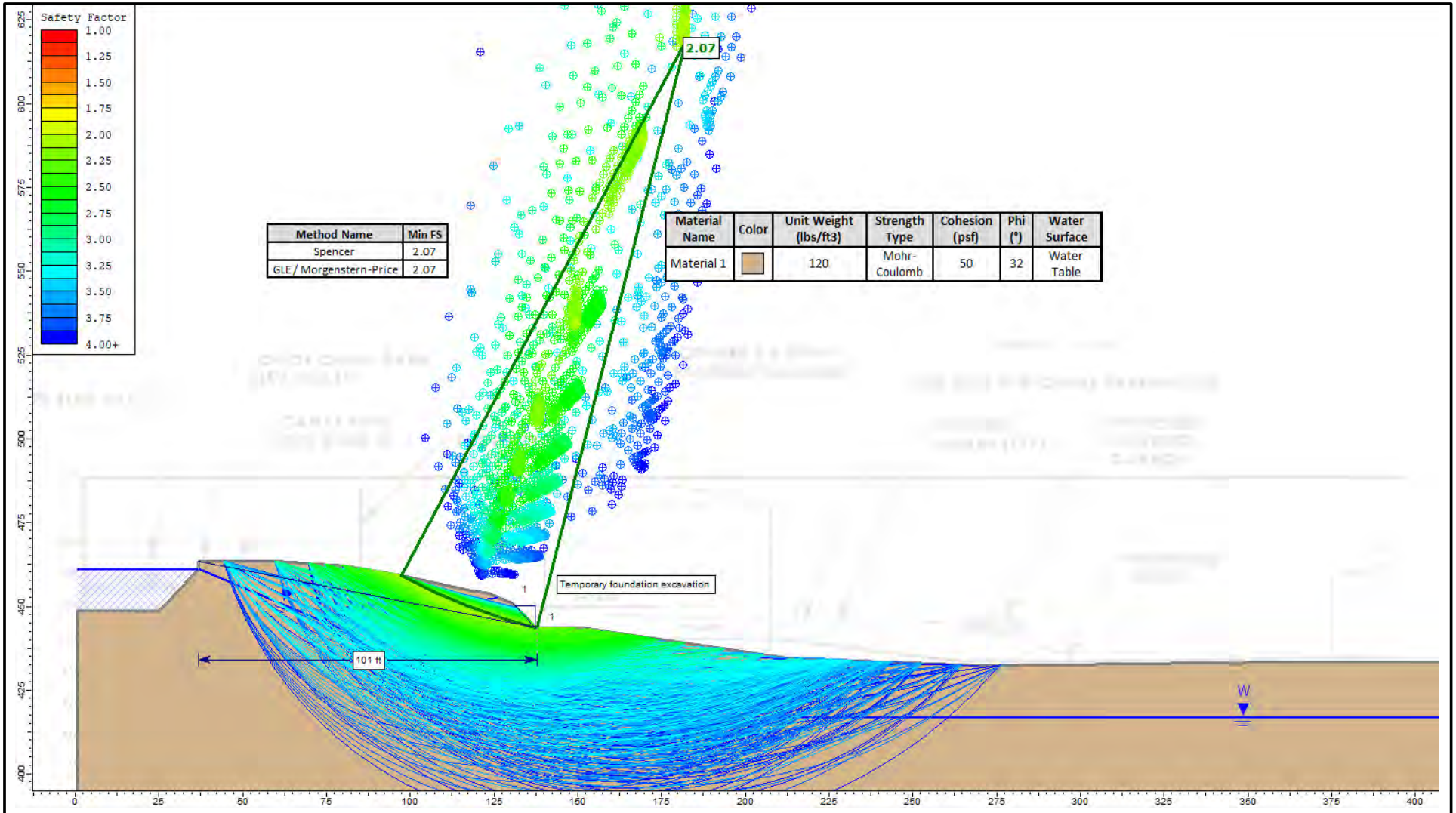
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 2
Critical Failure Surface – Static Condition

Exhibit



Notes:

1. Image generated using SLIDE2
2. Diagram is for general location only and is not intended for construction purposes.

Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 2
Date:	4/11/2024

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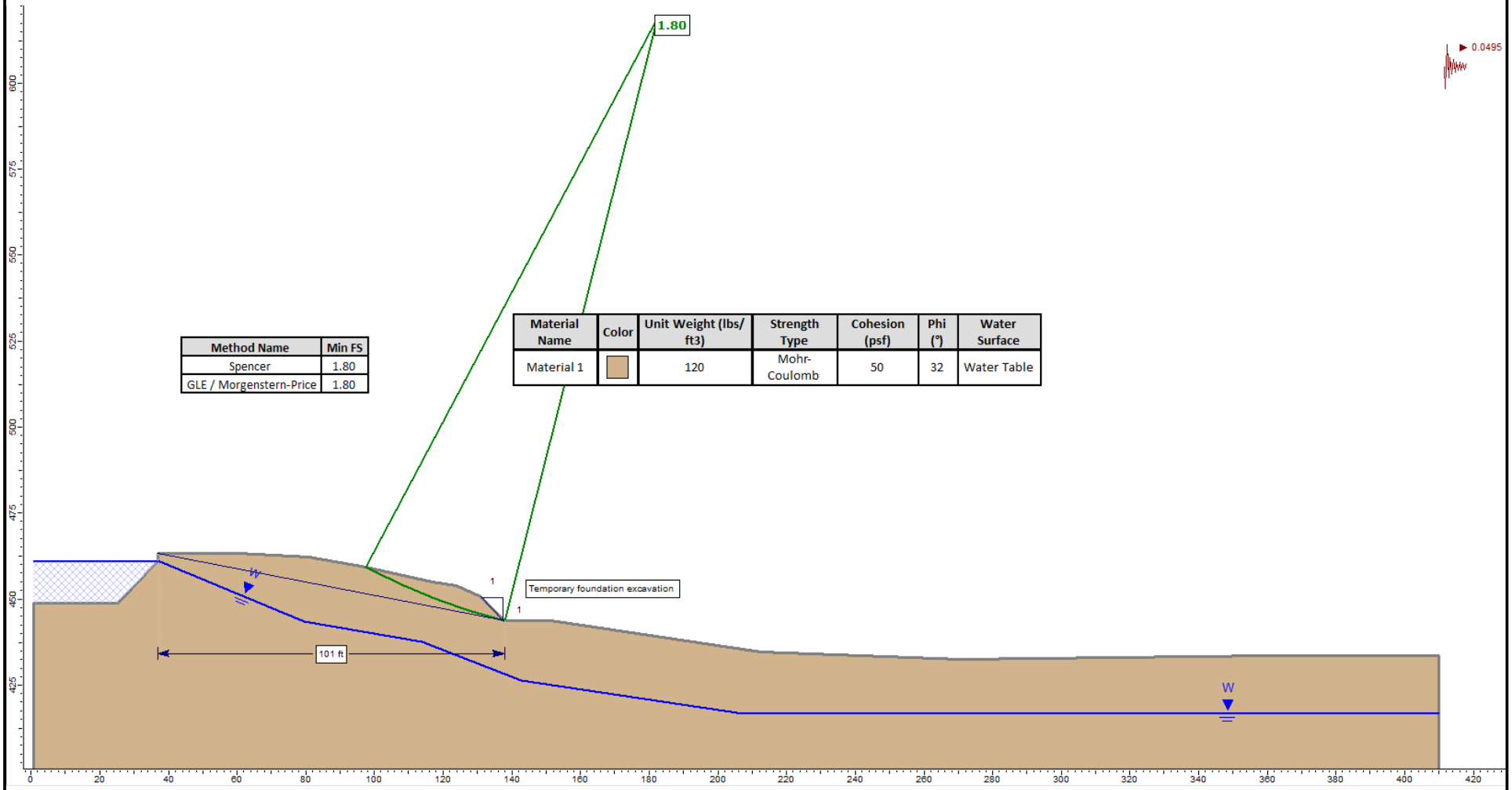
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 2
Critical Failure Surface – Static Condition

Exhibit



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Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF

Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 2
Date:	4/11/2024

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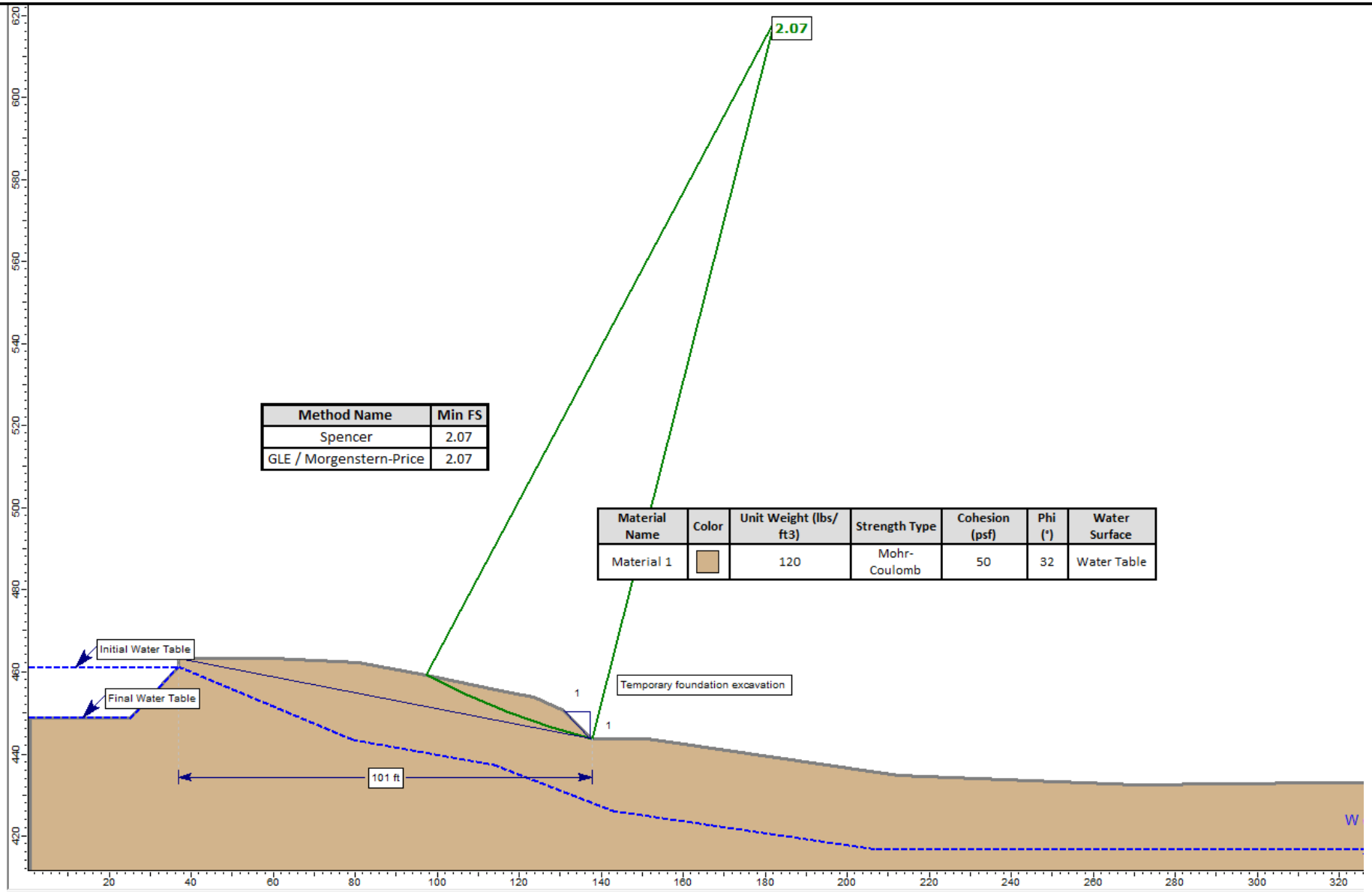
GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 2
Critical Failure Surface – Seismic Condition

Exhibit



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Project Manager:	MF
Drawn by:	AH
Checked by:	MF
Approved by:	MF
Project No.	J5245090
Scale:	Not to Scale
File Name:	Section 2
Date:	4/11/2024

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GLOBAL STABILITY EVALUATION

Slope Stability Evaluation
Burgundy Basin Inn
Section 2
Critical Failure Surface – Rapid Drawdown Condition

Exhibit

Attachment B: Geotechnical Report Prepared by Terracon

Geotechnical Engineering Report

Burgundy Basin Redevelopment
Pittsford, Monroe County, New York
July 26, 2021
Terracon Project No. J5195239

Prepared for:
Taylor, The Builders
Penfield, NY

Prepared by:
Terracon Consultants-NY, Inc.
Buffalo, New York

July 26, 2021

Taylor, The Builders
2570 Baird Road
Penfield, NY 14526

Attn: Mr. Karl Schuler - President
P: (585) 248-6000
E: karl@buildtaylor.com

Re: Geotechnical Engineering Report
Burgundy Basin Redevelopment
1361 Marsh Road
Pittsford, Monroe County, New York
Terracon Project No. J5195239

Dear Mr. Schuler:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PJ5195239 dated December 19, 2019. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants-NY, Inc.

Blake J. Pilarski, E.I.T.
Staff Engineer

Michele A. Fiorillo, P.E.
Geotechnical Department Manager

REPORT TOPICS

INTRODUCTION 1
SITE CONDITIONS 2
PROJECT DESCRIPTION 3
GEOTECHNICAL CHARACTERIZATION 3
GEOTECHNICAL OVERVIEW 5
EARTHWORK 6
SHALLOW FOUNDATIONS 11
SEISMIC CONSIDERATIONS 14
FLOOR SLABS 14
PAVEMENTS 15
FROST CONSIDERATIONS 18
GENERAL COMMENTS 19
FIGURES 20

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Burgundy Basin Redevelopment

1361 Marsh Road

Pittsford, Monroe County, New York

Terracon Project No. J5195239

July 26, 2021

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed development to be located near 1361 Marsh Road in Pittsford, Monroe County, New York. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

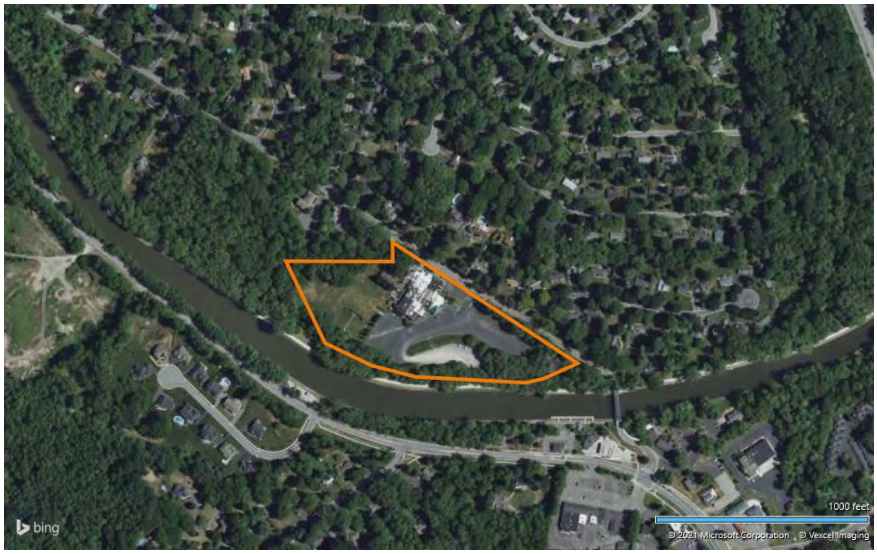
- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Dewatering considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC
- Frost considerations
- Pavement design and construction

The geotechnical engineering field Scope of Services for this project included the advancement of 11 test borings within the proposed buildings and pavement areas (B-1 through B-11) to depths ranging from approximately 6 to 35 feet below existing site grades. In addition, we have also observed the excavation and logged soils at 11 test pits (TP-1 through TP-11). The test pits were excavated by Others and were completed at depths ranging from approximately 6 to 7 feet below existing grades.

Maps showing the site and exploration locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The exploration logs and laboratory testing are included in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 1361 Marsh Road in Pittsford, Monroe County, New York. The center of the site is located at approximately Latitude 43.0638° N and Longitude 77.4810° W. The orange line in the aerial image below shows the limits of the project site.  See also **Site Location**
Existing Improvements	Existing buildings, parking and drive areas, sidewalks and grass areas.
Current Ground Cover	Trees and grass areas, asphalt paved parking lot, gravel lot
Existing Topography (from plan dated September 16, 2020)	The ground generally slopes down toward the west with ground surface elevations (EL.) ranging from about El. 428 feet in proximity to the southwestern corner of the site to about El. 464 feet within the eastern portion of the site.
Geology[1]	The project is located within the Ontario Lowlands physiographic province. Geological maps indicate surficial soils at the project site to consist of kame moraine deposits (mixtures of sand and gravel with cobbles and boulders) underlain by sedimentary shale bedrock of the Vernon Formation) or limestone bedrock of the Lockport Group.

1. References: Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1: 250,000.

PROJECT DESCRIPTION

Our understanding of the project conditions is as follows:

Item	Description
Information Provided	The following information was provided to our office: ■ RFP emailed to Terracon on December 11, 2019. ■ Site Plan dated September 16, 2020.
Project Description	The project includes: ■ Two, 3-story apartment buildings with between 63 and 69 units each ■ Five, single story townhouse buildings with 4 units in each structure ■ One Retail/Clubhouse building
Proposed Structure	■ Each of the 3-story building has a footprint of about 28,000 to 30,000 square feet (sq.ft.) ■ Each of the townhome buildings has a footprint of about 10,800 sq.ft. ■ The Clubhouse has a footprint of about 5,200 sq.ft. ■ All buildings will be slab-on-grade (non-basement)
Building Construction	■ Wood frame ■ Reinforced concrete foundation ■ Slab-on-grade
Finished Floor Elevation (FFE)	Finished floor elevations varies between the buildings and generally range from about EL. 435 to 454 feet.
Maximum Loads[1] (provided by Passero)	■ Columns: 150 kips ■ Continuous Load-Bearing Walls: 10 kips per linear foot (klf) ■ Max. Uniform Slabs: less than 150 pounds per square foot (psf) (assumed)
Grading/Slopes	Significant earthwork cut and fill operations will be required across the site in order to attain proposed grades. We anticipate from approximately none to about 17 feet of earthwork cut and from none to about 15 feet of earthwork fill may be required to attain proposed grades.
Pavements (assumed)	Assumed traffic is as follows: ■ Car Parking: 1.54 equivalent Single Axle Loads (ESALs) per day ■ Drive Areas: 4.20 ESALs per day

1. Please contact our office if structural loads are significantly higher than the loads reported above.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, geologic setting and our understanding of the project. This

characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name[1]	General Description
1	Surface	Topsoil or Asphalt
2	Fill	Mixtures of Silt, Sand and Gravel; trace concrete; trace organics; brown, gray, reddish brown
3	Native Soil	Mixtures of Sand, Silt and Gravel (SP, SM, SW); trace clay; reddish brown, brown, brown gray; very loose to medium dense

1. Fill was encountered in two borings (B-5 and B-8) and two test pits (TP-5 and TP-8) to depths ranging from 0.6 to 6 feet below existing site grades

The dimensions of the sampling equipment may preclude sampling particles larger than 2-inch in any dimension.

Groundwater Conditions

The boreholes completed for the current investigation were observed while drilling and after completion for the presence and level of groundwater. The water levels observed in the boreholes can be found on the boring logs in **Exploration Results**. Groundwater was observed in all borings and are presented in the table below:

WATER LEVEL OBSERVATIONS		
Boring No.	While Drilling (feet)	
	Depth	Elevation
B-1	18	412
B-2	18	412
B-3	18	412
B-4	18	411
B-5	23	406
B-6	23	410
B-7	23	415
B-8	Not Encountered	
B-9	Not Encountered	

WATER LEVEL OBSERVATIONS		
Boring No.	**While Drilling (feet)**	
	Depth	**Elevation**
B-10	Not Encountered	
B-11	Not Encountered	
Please note that borings B-8 to B-11 terminated at elevations ranging from about 419 to 432 feet.		

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project. Additionally, grade adjustments on and around the site may affect the water table, as may drainage improvements on the site and surrounding properties.

GEOTECHNICAL OVERVIEW

The project site is considered suitable for support of the proposed structures using conventional shallow spread foundations and slab-on-grade design. Based on the conditions disclosed by our investigation, we present the following general conclusions.

- New foundations may be supported on properly compacted Structural Fill placed in mass fill operations and/or stable native soils. Structural Fill within the building footprints should be placed over stable and proofrolled soils after any remains of former structures or otherwise unsuitable materials which may be found are removed.
- In general, groundwater is expected to be encountered below El. 420 feet. Foundation excavation is not expected to extend to this elevation. Therefore, groundwater should not be a significant factor in planning for design and construction of the building. However, groundwater in perched conditions over low permeability soils, such as stiffer and/or denser soils, should be anticipated in areas of the site that will have significant earthwork cuts. Groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans. Dewatering is a means and methods consideration for the contractor.
- Significant earthwork cut and fill are anticipated across the site to attain proposed finished grade elevations. Up to 15 feet of fill may be required across the site, with the deeper fills anticipate within the northern and eastern portions of the site. We recommend that fill placement up to rough grading elevations of the entire site be performed as early as

possible in the construction schedule (4 to 6 weeks or more in advance of final grading or building construction) so as to limit post construction settlements, which may be induced by the weight of the new fill over the underlying in-situ soil layers.

- To reduce potential subgrade stabilization issues, effective site drainage should be completed early in the construction sequence. These features may include perimeter swales and sloped subgrade surfaces. Also, if possible, the earthwork operations should be performed during the warmer and drier times of the year. Performing the earthwork operations during the area's wet spring and winter months will increase the risk of development of unstable subgrade conditions and the need for remediation.

- Consideration may be given to the reuse of excavated site soils for general grade increases, once cleansed of any oversize particles, unsuitable debris or organics, and subject to the approval of the Geotechnical Engineer based upon the conditions encountered at the time of construction. If construction is performed during the wet season, it is possible the moisture content of the excavated soils is in excess of the optimum moisture content required to achieve proper compaction, and that proper compaction of the on-site soils may be very difficult to achieve. Saturated soils which cannot achieve compaction should be removed or used in non-structural areas where significant post construction settlement is acceptable. The contractor is ultimately responsible for moisture conditioning of fill/backfill materials to achieve proper compaction. Project plans and budgeting should include an imported granular material for this purpose.

- Any permanent cuts or embankment fills should be sloped no steeper than one vertical on three horizontal (1V:3H). Steeper slopes may be considered subject to review on a case-by-case basis. The allowable configuration of steeper slopes will be dependent on location specific conditions, overall slope height and other factors. All slopes should be vegetated and protected against erosion. Cut slopes may require stone slope protection in places if chronic seepage is encountered.

The following sections of this report provide more detailed recommendations to assist in planning for the geotechnical aspects of the project. We should be provided with the opportunity to review plans and specifications prior to their release for bidding to confirm that our recommendations were properly understood and implemented, and to allow us to refine our recommendations, if warranted, based upon the final design. The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include clearing and grubbing, stabilization of subgrade surfaces as necessary, foundation excavation and associated site fill and backfill. The following sections provide recommendations for use in the preparation of specifications for the work.

Recommendations include critical quality criteria, as necessary, to render the site in the state considered suitable in our geotechnical engineering evaluation for foundations, floor slabs and pavements.

Construction site safety is the sole responsibility of the contractor, who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities. Such responsibility is neither implied nor shall it be inferred.

Site Preparation

Site preparation should begin with stripping of existing topsoil, asphalt, surficial organic matter and unsuitable soil as applicable from the building and pavement areas. Bulk cuts and fills necessary to establish proposed grades should be completed under the guidelines provided below.

Prior to placing fills to raise site grades and/or after cuts are made to the plan subgrade elevations, the subgrades (as feasible) should be proof-rolled using a steel drum roller with a static weight of at least 10 tons. The roller should operate in its static (non-vibratory) mode, unless requested otherwise by the Geotechnical Engineer observing the work, and travel at a speed not exceeding three feet per second (two miles per hour). The roller should complete at least two passes over all subgrade surfaces. The method of proof-rolling may be modified by the Geotechnical Engineer based upon the conditions disclosed at the time of construction.

Soft areas identified by the proof-rolling should be investigated to determine the cause and stabilized accordingly. These investigations may include the excavation of test pits. If existing fills are found and determined by to be unsuitable by the Geotechnical Engineer, they should be removed and replaced as deemed necessary.

Bulk Cut and Fill Considerations

Significant earthwork cut and fill are anticipated across the site to attain proposed finished grade elevations. Up to 15 feet of fill may be required across the site, with the deeper fills anticipate within the northern and western portions of the site. We recommend that fill placement up to rough final grading elevations of the entire site be performed as early as possible in the construction schedule (4 to 6 weeks or more in advance of final grading or building construction) so as to limit post construction settlements.

Topsoil, vegetation and other surface materials should be stripped from all cut/fill areas prior to earth moving operations. The subgrade fill should be firm and stable as it is placed and compacted, and should not “pump”, “weave” or otherwise exhibit instability during construction. Soils should be undercut and replaced where unsatisfactory. The fill subgrades should also be

properly graded, drained, sealed and/or protected from moisture and frost as necessary. Placement of fill over wet, soft, snow covered, or frozen subgrades should not be permitted. All bulk fill placement and compaction should be monitored and tested by a representative of the Geotechnical Engineer on a full-time basis.

Swales should be provided along the toe of all excavated slopes to collect and dispose of runoff waters. All slopes should be vegetated or otherwise protected from erosion, with runoff diverted away from their faces. A crest swale should be incorporated to assist in diverting surface waters from running over and down the slope face.

Fill Material Types

Structural Fill should be used as fill/backfill within the proposed building and pavement areas. The fill should consist of imported sand and gravel which meets the limits of gradation given below. Any imported materials should be free of recycled concrete, asphalt, bricks, glass, and pyritic shale rock.

IMPORTED STRUCTURAL FILL

Sieve Size	Percent Finer
3”	100
¼”	30 to 75
No. 40	5 to 40
No. 200	0 to 10

As previously noted, the reuse of excavated native soils as subgrade fill may be considered if approved by the Geotechnical Engineer and pending the conditions encountered at the time of construction. Any reuse of the existing fill would require that all organic matter, oversized particles and unsuitable foreign matter found therein be separated and wasted off-site. As stated earlier, it is critical that proper placement and monitoring be performed when reusing the onsite soils, particularly within the building footprints and pavement areas.

We recommend that at the time of construction the Geotechnical Engineer be consulted for approval of the excavated soils as fill material. We anticipate that additional testing consisting of grain-size distributions, Atterberg limits, organic content, and Proctor testing obtained from bulk samples representative of the on-site excavated material may be required to confirm the suitability of excavated material as Structural Fill.

If construction is performed during the wet season, it is possible the moisture content of the excavated soils is in excess of the optimum moisture content required to achieve proper compaction, and that proper compaction of the on-site soils may be very difficult to achieve. Saturated soils which cannot achieve compaction should be removed or used in non-structural

areas where significant post construction settlement is acceptable. The contractor is ultimately responsible for moisture conditioning of fill/backfill materials to achieve proper compaction.

Fill Compaction Requirements

New fills beneath the building pads and pavements should be placed in uniform loose layers no more than about one-foot thick where heavy vibratory compaction equipment is used. Smaller lifts should be used where hand operated equipment is required for compaction. Each lift should be compacted to no less than 95 percent of its maximum dry density as determined by the Modified Proctor Compaction Test, ASTM D1557. In landscape areas, the compaction requirement may be relaxed to 90 percent of maximum dry density.

On-site soil used for subgrade fill should have a moisture content within +/-3 percent of its optimum moisture content when it is placed and compacted.

Along fill slopes, the subgrade fill should be placed and compacted horizontally about two to three feet beyond the final slope surface, and then trimmed back to establish the final slope surface to ensure that adequate compaction is achieved.

Utility Trench Backfill

Trench excavations should be wide enough to permit construction including backfill placement and compaction. Trenches should be backfilled with material that approximately matches the permeability characteristics of the surrounding soil to reduce the infiltration and preferential conveyance of surface water through the trench backfill. Fill placed as backfill for utilities located below the slab should consist of compacted Structural Fill or suitable bedding material.

Utility trenches are a common source of water infiltration and migration. All utility trenches that penetrate beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench backfill should incorporate an effective trench plug that extends at least 5 feet out from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for Structural Fill stated previously in this report.

Grading and Drainage

Grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation settlements, cracked slabs and

walls, and roof leaks. The roof should have gutters/drains with downspouts discharging onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5 percent away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After buildings construction and landscaping, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary as part of the structure's maintenance program. Where paving or flatwork abuts the structure a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structures should be feasible with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of foundations and floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted, prior to floor slab construction.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. It should be anticipated the groundwater table could rise and affect earthwork. The contractor should select a dewatering method to lower groundwater as necessary to minimize bearing surface disturbance during construction of footings and utilities.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed OSHA guidelines. OSHA guidelines are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties.

The contractor must evaluate soil conditions during excavations since variations in the soil can occur across the site. We recommend that the excavations be monitored continuously for signs of deterioration such as seepage of water or sloughing of soil into the excavation. Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information and recommendations provided herein be interpreted to mean Terracon is assuming responsibility for

construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of unsuitable soils, proofrolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

Significant earthwork cut and fill are anticipated across the site to attain proposed finished grade elevations. Up to 15 feet of fill may be required across the site, with the deeper fills anticipate within the northern and eastern portions of the site. We recommend that fill placement and rough grading of the entire site be performed as early as possible in the construction schedule (4 to 6 weeks or more in advance of final grading or building construction) so as to limit post construction settlements. If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

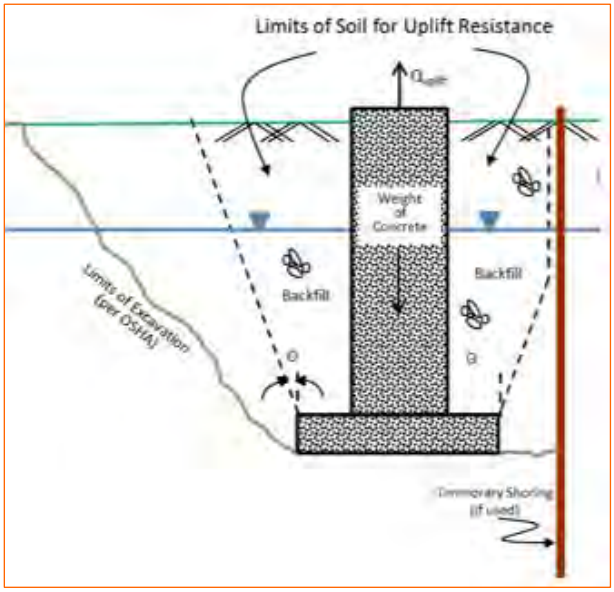
Item	Description
Maximum Net Allowable Bearing Pressure [1, 2]	2,500 psf
Required Bearing Stratum [3]	Stable native soils and/or compacted Structural Fill placed upon stable native soil.

Item	Description
Minimum Foundation Dimensions	Columns: 30 inches Continuous: 18 inches
Ultimate Passive Resistance [4] **(equivalent fluid pressures)**	390 pcf (compacted Structural Fill)
Ultimate Coefficient of Sliding Friction [5]	0.45 (Footing on compacted Structural Fill)
Minimum Embedment below Finished Grade [6]	Exterior footings in unheated areas: 48 inches Exterior footings in heated areas: 48 inches Interior footings in heated areas: 18 inches
Estimated Total Settlement from Structural Loads [2]	Less than about 1 inch
Estimated Differential Settlement [2, 7]	About 2/3 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. These bearing pressures can be increased by 1/3 for transient loads unless those loads have been factored to account for transient conditions. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**. The settlements should occur relatively quickly as construction is completed and each load increment is applied.
3. The bearing grades should be prepared per the recommendations presented below in the **Foundation Construction Considerations**. If groundwater seepage occurs, a minimum six-inch thick base of clean crushed stone placed over a geotextile fabric should be provided to establish a more uniform and stable base for construction and to assist in dewatering. The stone should be an ASTM C33 Blend 57 aggregate.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted Structural Fill be placed against the vertical footing face. The Structural Fill must extend out and up from the base of the foundation at an angle of at least 60 degrees from vertical for the passive case.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure. Interior footings in heated areas may be seated at the 24-inch depth if allowed by local building codes..
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 110 pcf should be used for the backfill. This unit weight should be reduced to 50 pcf for portions of the backfill or natural soils below the groundwater elevation.



Foundation Construction Considerations

The foundations may be seated on imported structural fill placed over the native soils after removal of all unsuitable materials that may be found. Any large cobbles and/or boulders encountered beneath the proposed foundations at the bearing grade elevation should be removed from the bearing surface, as necessary to prevent hard points, and then backfilled with properly compacted Structural Fill. If over-excavation is required beneath the foundations to remove unsuitable material, the excavation should extend horizontally beyond each side of the foundation a distance equal to at least one-half the depth of the undercut below the final bearing grade elevation. Replacement material should meet the specification and compaction guidelines for structural fill as outlined herein.

Excavation to foundation bearing grades should be performed with a smooth blade bucket. If groundwater seepage occurs, a minimum six-inch thick base of clean crushed stone placed over a geotextile fabric should be provided to establish a more uniform and stable base for construction and to assist in dewatering. The stone should be an ASTM C33 Blend 57 aggregate.

All final bearing grades should be relatively firm, stable, and free of loose soil, mud, water and frost. The Geotechnical Engineer should approve the condition of the foundation bearing grades immediately prior to placement of reinforcing steel and concrete.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Seismic site class is required to determine the Seismic Design Category for a structure, in accordance with Section 1613 Earthquake Loads of the 2020 Building Code of New York State, which refer to Chapter 20 of ASCE 7.

Based on the properties of subsurface materials encountered at the site, it is our opinion that the **Seismic Site Classification** for the site is **E**. Subsurface explorations at the site were extended to a maximum depth of 35 feet. The properties of materials below the bottom of the deepest boring at the site to a depth of 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. If a more precise seismic site classification is desired, additional deeper borings or geophysical testing may be performed to confirm the conditions below the deepest current boring depth.

FLOOR SLABS

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Special attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 12 inches of Aggregate Base material compacted to at least 95% of Modified Proctor (ASTM D 1557) placed directly upon proofrolled stable on-site subgrade soils.
Estimated Modulus of Subgrade Reaction [2]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Floor Slab Construction Considerations

Finished subgrade within and for at least 10 feet beyond the floor slab should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and Structural Fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs, noted in this section, must be applied to the site, which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Pavement designs were based on *AASHTO Guide for Design of Pavement Structures (1993)* and our experience with similar projects. The thickness of each course is a function of subgrade strength, traffic, design life, serviceability factors, and frost susceptibility.

A subgrade CBR of 3 was used for the AC pavement designs, and a modulus of subgrade reaction of 100 pci was use for the PCC pavement designs. The values were empirically derived based

upon our experience with the on-site soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**.

Pavement Section Thicknesses

Frost susceptibility is a major factor in the overall pavement section thickness. The total pavement structural sections presented in this report are based also upon the expected depth of freeze, which for the project site is anticipated at 48 inches.

The following tables provide options for Asphaltic Concrete and for Portland Cement Sections:

Asphaltic Concrete Design		
Layer	**Thickness (inches)**	
	Light Duty [1]	**Heavy Duty** [1]
Asphalt Top Course [2]	1.5	1.5
Asphalt Binder Course [2]	2.5	3.5
Aggregate Base Course [2]	9.0	9.0

1. See **Project Description** for more specifics regarding pavement type.
2. All materials should meet the current NYSDOT Department of Transportation (NYSDOT) Standard Specifications.
   - Asphalt Top Course – NYSDOT Standard Specification Section 402 for Type 12.5 mm
   - Asphalt Binder Course – NYSDOT Standard Specifications for Type 19 mm Binder Course
   - Aggregate Base Course – NYSDOT Standard Specifications for Type 2 Subbase Course, Item No. 304.12

Portland Cement Concrete Design		
Layer	**Thickness (inches)**	
	Light Duty [2,3]	**Heavy Duty** [2,3,4]
PCC [1]	6.0	8.0
Aggregate Base [1]	9.0	9.0

1. All materials should meet the current State, County, and City Department of Transportation (NYSDOT) Standard Specifications for Highway and Bridge Construction.
   - The concrete should be air entrained and have a minimum compressive strength of 4,000 psi after 28 days of laboratory curing per ASTM C-31. Refer to NYSDOT Section 501 – Portland Cement Concrete for material specifications.
   - Aggregate Base Course, NYSDOT Section 304 for Type 2 Subbase Course, Item No. 304.12
2. Proper joint spacing will be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer.

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [2,3]	Heavy Duty [2,3,4]

3. Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.
4. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

The estimated pavement sections provided in this report are minimums for the assumed design criteria, and as such, periodic maintenance should be expected. Areas for parking of heavy vehicles, concentrated turn areas, and start/stop maneuvers could require thicker pavement sections. Edge restraints (i.e. concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles. A maintenance program that includes surface sealing, joint cleaning and sealing, and timely repair of cracks and deteriorated areas will increase the pavement's service life. As an option, thicker sections could be constructed to decrease future maintenance.

Temporary Construction Access Roadways

The recommended pavement sections are not designed to support heavy construction traffic which may require thicker sections. The contractor should construct temporary haul routes and construction roadways onsite as appropriate for the weather conditions and the equipment in use, with consideration to the soil conditions encountered in specific areas.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase. Subdrains (if any) should be sloped to provide positive gravity drainage to reliable discharge points. Periodic maintenance of subdrains is required for long-term proper performance.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. This is especially applicable for islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils. The civil design for the pavements with these conditions should include features to

restrict or to collect and discharge excess water from the islands. Examples of features are edge drains connected to the storm water collection system, longitudinal subdrains, or other suitable outlet and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Maintenance

All pavements require periodic care, and preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Settlement of pavements due to consolidation of the existing fills may also occur and require periodic maintenance.

FROST CONSIDERATIONS

Frost may penetrate beneath sidewalks and pavements and cause them to heave, and resulting displacements may be differential, particularly where sidewalks and pavements meet building doorways and along curbs. To limit heave and the creation of such uneven joints to generally tolerable magnitudes for most winters, a 16-inch thick base of ASTM C33 Blend 57 crushed stone should be placed beneath sensitive sidewalk or pavement areas, along with an underdrain to relieve any collected waters.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

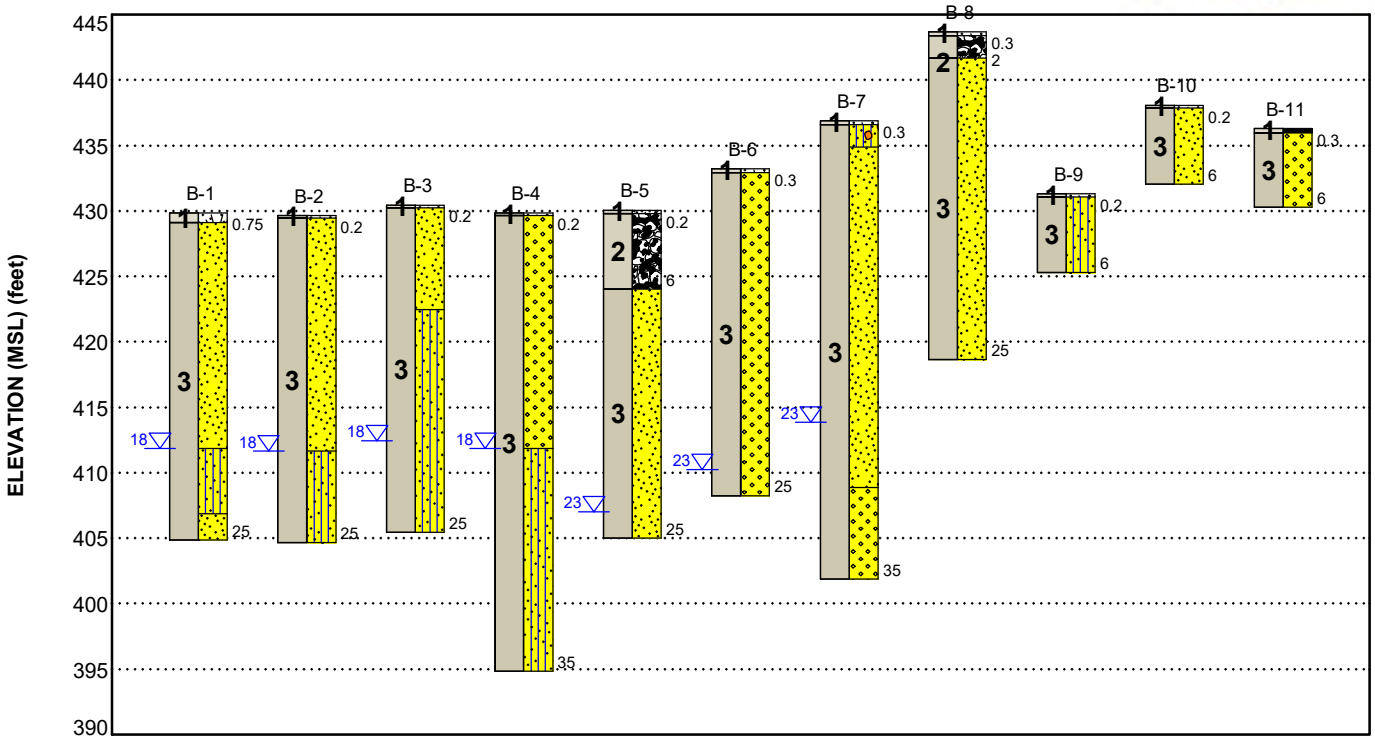
FIGURES

Contents:

GeoModel (2 pages)

GEOMODEL

Marsh Rd Townhouses ■ Pittsford, NY
Terracon Project No. J5195239



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surface	Topsoil or Asphalt
2	Fill	Mixutres of Silt, Sand and Gravel; trace concrete; trace organics; brown, gray, reddish brown
3	Native Soil	Mixtures of Sand, Silt and Gravel (SP, SM, SW); trace clay; reddish brown, brown, brown gray; very loose to medium dense

LEGEND

- Topsoil
- Well-graded Sand
- Asphalt
- Poorly-graded Sand
- Fill
- Silty Sand
- Silty Sand with Gravel

▽ First Water Observation

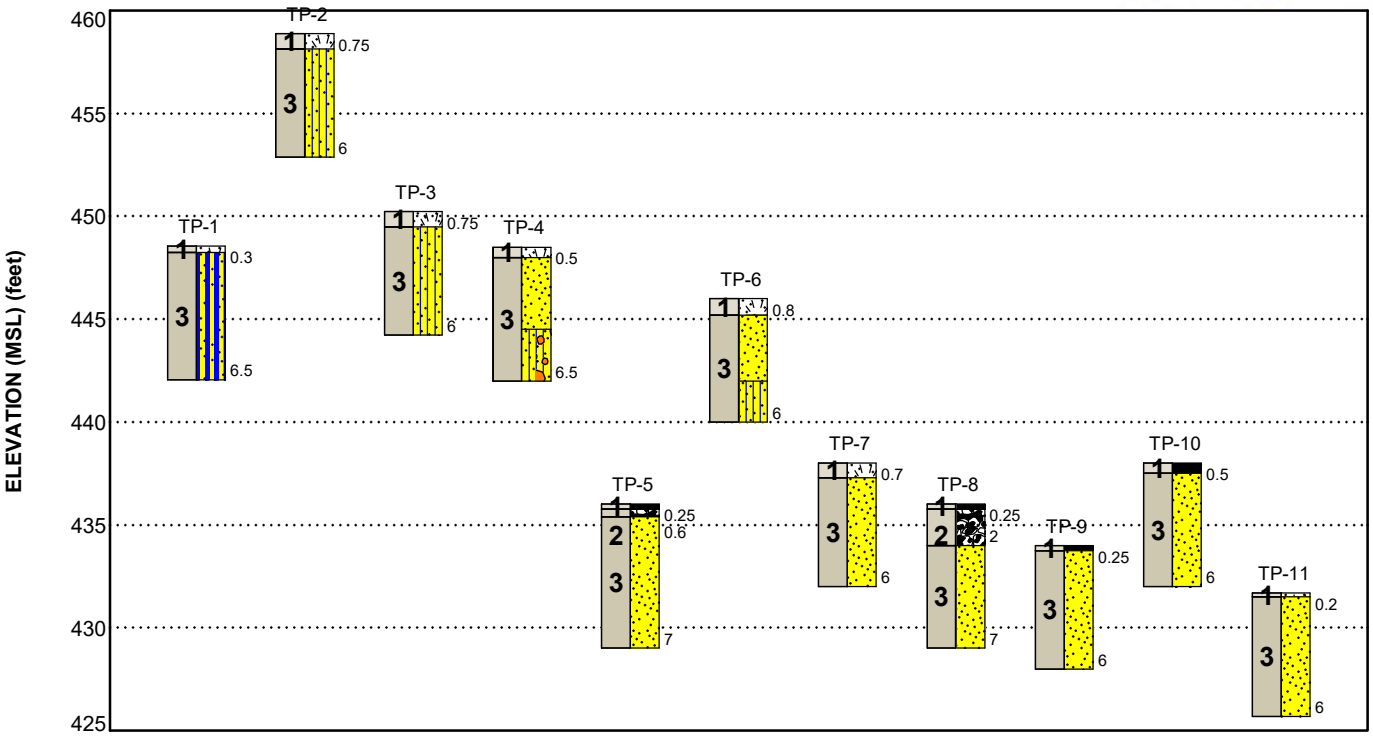
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL

Marsh Rd Townhouses ■ Pittsford, NY
Terracon Project No. J5195239

Terracon GeoReport



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3	**Native Soil**	Mixtures of Sand, Silt and Gravel (SP, SM, SW); trace clay; reddish brown, brown, brown gray; very loose to medium dense

LEGEND

- Topsoil
- Sandy Silt
- Silty Sand
- Poorly-graded Sand
- Silty Sand with Gravel
- Asphalt
- Fill

▽ First Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
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NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

The following borings where completed for the current geotechnical investigation.

Number of Borings	Boring Depth (feet)	Location
8 (B-1 through B-8)	25 to 35	3-story building areas
3 (B-9 through B-11)	6	Pavement areas
7 (TP-2, TP-4 through TP-9)	6 to 7	Townhouse areas
1 (TP-1)	6.5	Pavement area
1 (TP-3)	6	Walking path to the canal
1 (TP-10)	6	Clubhouse area
1 (TP-11)	6	3-story building area

Boring Layout and Elevations: Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±15 feet) and boring elevations were provided from Others. Test pits elevations were estimated from the Site Plan dated September 16, 2020. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted rotary drill rig using continuous hollow stem flight augers. Split-spoon samples were obtained at depths as shown in the boring logs. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field exploration logs. Representative samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with

the Unified Soil Classification System. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Test pits were excavated by Others using a small excavator with a bucket width of about 24 inches. An engineer from Terracon observed the excavation of the test pits and logged subsurface conditions at each test pit location. At completion the test pits were backfilled with the excavated soils.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils

The laboratory testing program included visual identification of soil samples by an engineer or geologist. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location
Exploration Plan with Aerial Image
Exploration Plan with Project Overlay

Note: All attachments are one page unless noted above.

SITE LOCATION

Burgundy Basin Redevelopment ■ Pittsford, Monroe County, New York
July 26, 2021 ■ Terracon Project No. J5195239

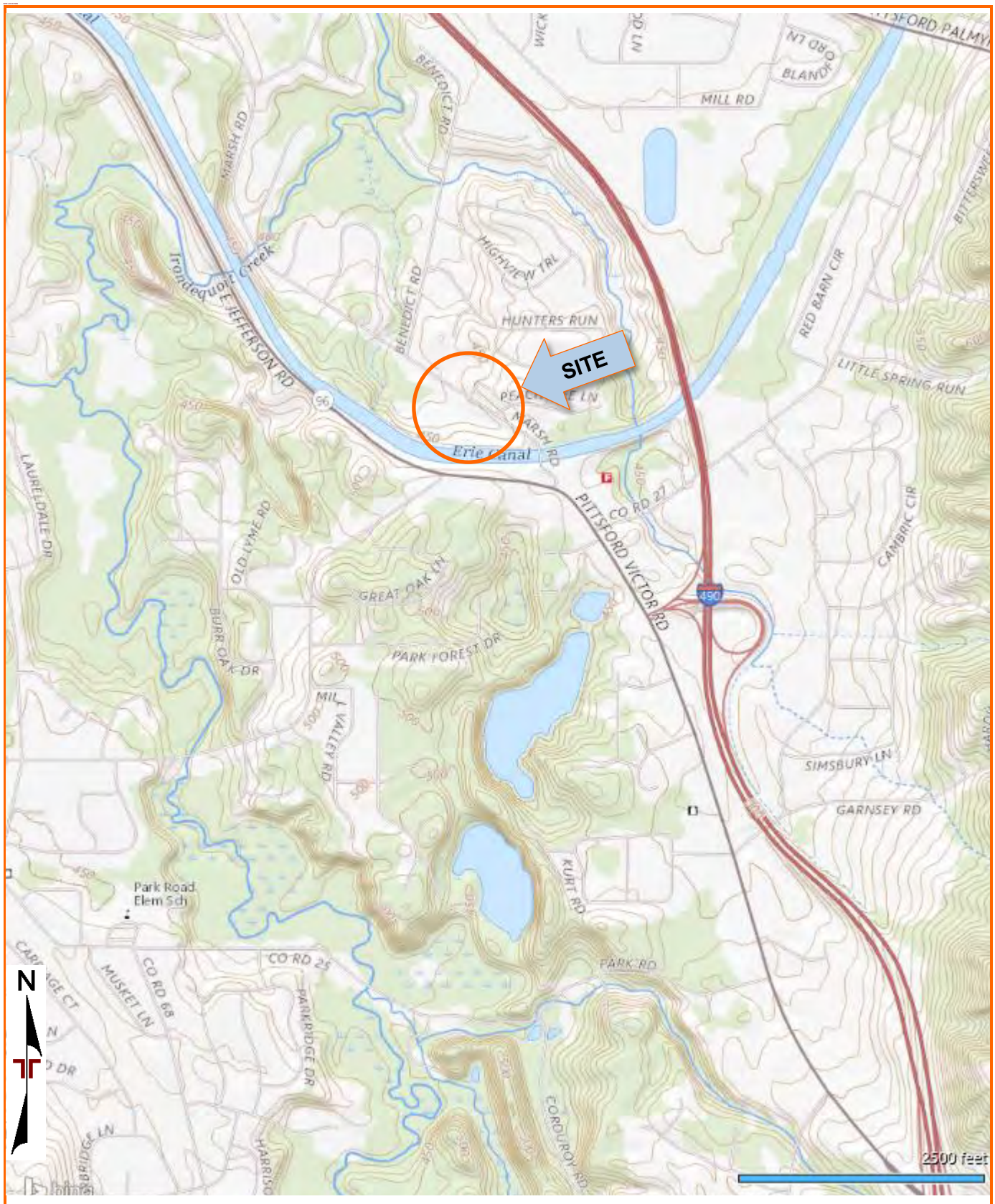


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY USGS

EXPLORATION PLAN WITH AERIAL IMAGE

Burgundy Basin Redevelopment ■ Pittsford, Monroe County, New York
July 26, 2021 ■ Terracon Project No. J5195239

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN WITH PROJECT OVERLAY

Burgundy Basin Redevelopment ■ Pittsford, Monroe County, New York
July 26, 2021 ■ Terracon Project No. J5195239

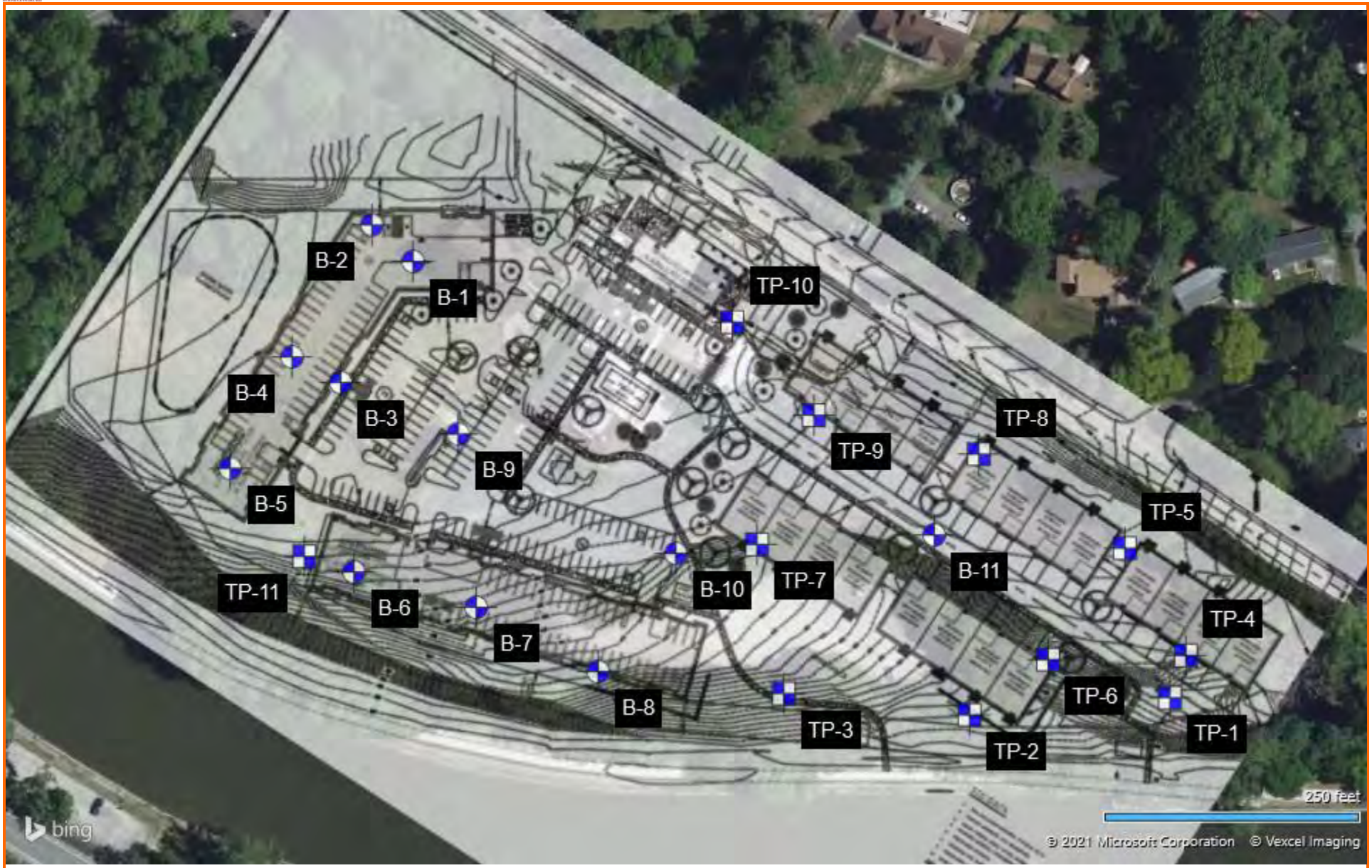


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY PASSERO ASSOCIATES

EXPLORATION RESULTS

Contents:

Boring Logs (11 pages)
Test Pit Logs (11 pages)
Test Pit Photo Log (3 pages)
Grain-size Distribution

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0643° Longitude: -77.4819°

Surface Elev.: 429.85 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.8	429					
		TOPSOIL						
3		**POORLY GRADED SAND (SP)**, trace silt, brown, loose					16	3-4-5-4 N=9
							18	4-4-2-3 N=6
				5			16	2-3-2-2 N=5
							18	2-3-3-3 N=6
							18	2-3-3-3 N=6
				10			20	4-4-4-4 N=8
							22	3-2-2-3 N=4
				15				
		18.0	412		▽			
		SILTY SAND (SM), dark brown, medium dense					22	4-5-5-6 N=10
				20				
		23.0	407					
		POORLY GRADED SAND (SP), dark brown, medium dense					24	1-5-8-10 N=13
		25.0	405	25				
		Boring Terminated at 25 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-04-2021 | Boring Completed: 06-04-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-2

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0644° Longitude: -77.4820°

Surface Elev.: 429.67 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	429.5					
		TOPSOIL						
3		**POORLY GRADED SAND (SP)**, reddish brown, very loose to loose					20	2-2-2-3 N=4
							12	2-2-1-2 N=3
				5			18	2-2-2-3 N=4
							16	3-3-4-4 N=7
							20	2-3-4-3 N=7
				10			18	4-4-4-7 N=8
							16	5-10-9-11 N=19
				15	▽			
		18.0	411.5					
		SILTY SAND (SM), reddish brown, medium dense					16	2-7-9-10 N=16
				20				
							24	7-8-9-8 N=17
		25.0	404.5	25				
		Boring Terminated at 25 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-03-2021 | Boring Completed: 06-03-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-3

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0640° Longitude: -77.4822°

Surface Elev.: 430.45 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	430.5					
		TOPSOIL						
		POORLY GRADED SAND (SP), reddish brown, very loose to medium dense					20	1-4-5-4 N=9
							18	5-4-6-4 N=10
				5			20	2-3-4-3 N=7
							15	2-1-1-2 N=2
		8.0	422.5					
3		**SILTY SAND (SM)**, trace clay, reddish brown, very loose to loose					18	2-1-2-4 N=3
				10			18	4-4-5-4 N=9
							20	2-3-4-4 N=7
				15				
					▽		15	1-1-4-4 N=5
				20				
							15	1-2-3-4 N=5
		25.0	405.5	25				
		Boring Terminated at 25 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-03-2021 | Boring Completed: 06-03-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-4

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0641° Longitude: -77.4823°

Surface Elev.: 429.86 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	429.5					
		TOPSOIL						
		WELL GRADED SAND (SW), trace silt, reddish brown, very loose to medium dense					18	1-3-5-5 N=8
							20	5-4-6-4 N=10
				5			18	2-4-5-5 N=9
							20	3-1-3-2 N=4
							15	2-1-1-1 N=2
				10			18	2-2-3-3 N=5
3							20	3-5-5-5 N=10
		18.0	412	15	▽			
		SILTY SAND (SM), reddish brown, loose to medium dense					15	3-5-7-5 N=12
				20				
							18	4-5-6-7 N=11
				25				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-03-2021 | Boring Completed: 06-03-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-4

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0641° Longitude: -77.4823°

Surface Elev.: 429.86 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
3		**SILTY SAND (SM)**, reddish brown, loose to medium dense *(continued)*		30			12	1-1-3-5 N=4
		35.0	395	35			20	1-1-3-4 N=4
		Boring Terminated at 35 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-03-2021 Boring Completed: 06-03-2021

Drill Rig: CME-55 Driller:

Project No.: J5195239

BORING LOG NO. B-5

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0638° Longitude: -77.4826°

Surface Elev.: 430.02 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	430	**TOPSOIL**					
2				**FILL - SILTY SAND**, reddish brown, contains pieces of concrete				20	1-2-1-2 N=3
								6	1-8-7-7 N=15
					5			20	3-6-5-4 N=11
		6.0	424					15	3-2-2-2 N=4
3				**POORLY GRADED SAND (SP)**, trace silt, reddish brown, loose to medium dense				24	3-2-1-1 N=3
					10			18	4-4-4-4 N=8
								15	2-3-2-2 N=5
					15				
								24	2-3-4-3 N=7
					20	▽			
		25.0	405					12	1-1-1-3 N=2
				Boring Terminated at 25 Feet	25				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *23' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-03-2021 | Boring Completed: 06-03-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-6

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0635° Longitude: -77.4821°

Surface Elev.: 433.24 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.3	433					
		TOPSOIL						
3		**WELL GRADED SAND (SW)**, reddish brown, loose to medium dense					13	7-5-5-6 N=10
							14	8-3-4-4 N=7
				5			16	3-3-3-3 N=6
							20	3-4-4-3 N=8
							19	3-3-3-3 N=6
				10			18	2-3-4-4 N=7
							18	2-3-3-5 N=6
				15				
							20	6-6-7-7 N=13
				20				
					▽		16	4-4-6-8 N=10
		25.0	408	25				
		Boring Terminated at 25 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *23' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 | Boring Completed: 06-02-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-7

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0634° Longitude: -77.4817°

Surface Elev.: 436.88 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.3	436.5					
		TOPSOIL						
		SILTY SAND WITH GRAVEL (SM), reddish brown, loose					16	3-4-4-5 N=8
		2.0	435					
		POORLY GRADED SAND (SP), reddish brown, loose to medium dense					20	5-7-7-7 N=14
				5			5	3-5-6-6 N=11
							16	6-6-5-5 N=11
							14	2-4-3-4 N=7
				10			16	4-4-4-4 N=8
3							18	4-8-10-14 N=18
				15				
							19	8-10-11-12 N=21
				20	▽			
							17	4-8-8-8 N=16
				25				
		28.0	409					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *23' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 | Boring Completed: 06-02-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-7

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0634° Longitude: -77.4817°

Surface Elev.: 436.88 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
3		**WELL GRADED SAND (SW)**, reddish brown, medium dense		30			18	5-8-6-8 N=14
							20	4-6-8-10 N=14
		35.0	402	35				
		Boring Terminated at 35 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *23' BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 Boring Completed: 06-02-2021

Drill Rig: CME-55 Driller:

Project No.: J5195239

BORING LOG NO. B-8

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0632° Longitude: -77.4812°

Surface Elev.: 443.67 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.3	443.5	**TOPSOIL**					
2		2.0	441.5	**FILL - WELL GRADED GRAVEL** , trace silt, dark brown, contains organic matter				4	6-12-9-6 N=21
3				**POORLY GRADED SAND (SP)**, trace silt, reddish brown, loose to medium dense				2	7-3-3-2 N=6
					5			13	5-4-3-3 N=7
								20	5-4-4-3 N=8
								19	4-4-4-3 N=8
					10			22	4-4-4-4 N=8
								20	4-4-4-4 N=8
					15				
								18	5-11-9-6 N=20
					20				
								20	3-3-4-4 N=7
		25.0	418.5		25				
				Boring Terminated at 25 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-04-2021 | Boring Completed: 06-04-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-9

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0638° Longitude: -77.4817°

Surface Elev.: 431.29 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	431					
		TOPSOIL						
3		**SILTY SAND (SM)**, light brown, loose to medium dense					20	3-3-4-5 N=7
							20	5-6-6-8 N=12
				5			18	6-6-8-9 N=14
		6.0	425.5					
		Boring Terminated at 6 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 | Boring Completed: 06-02-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

BORING LOG NO. B-10

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0635° Longitude: -77.4809°

Surface Elev.: 438.05 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.2	438					
		TOPSOIL						
3		**POORLY GRADED SAND (SP)**, trace silt, reddish brown, loose					16	1-4-4-5 N=8
							14	4-5-4-5 N=9
				5			18	3-4-3-3 N=7
		6.0	432					
		Boring Terminated at 6 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 Boring Completed: 06-02-2021

Drill Rig: CME-55 Driller:

Project No.: J5195239

BORING LOG NO. B-11

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0636° Longitude: -77.4800°

Surface Elev.: 436.28 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
1		0.3	436					
		ASPHALT						
3		**WELL GRADED SAND (SW)**, trace gravel, red brown, loose to medium dense					14	10-8-7-7 N=15
							14	6-4-3-3 N=7
				5			20	4-4-6-4 N=10
		6.0	430.5					
		Boring Terminated at 6 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem augers and 2 inch OD split barrel sample

Abandonment Method:
Boring backfilled with Auger Cuttings

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-02-2021 | Boring Completed: 06-02-2021

Drill Rig: CME-55 | Driller:

Project No.: J5195239

TEST PIT LOG NO. TP-1

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0631° Longitude: -77.4791°

Surface Elev.: 448.55 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		0.3	448.5			
		TOPSOIL				
3		**SANDY SILT (ML)**, trace gravel, brown		1 2 3 4 5 6		
		6.5	442			
		Test Pit Terminated at 6.5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021	Test Pit Completed: 06-04-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-2

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0631° Longitude: -77.4799°

Surface Elev.: 458.87 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		**TOPSOIL** 0.8	458			
3		**SILTY SAND (SM)**, trace gravel, gray brown 6.0	453	1 2 3 4 5 6		
		Test Pit Terminated at 6 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-03-2021	Test Pit Completed: 06-03-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-3

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0631° Longitude: -77.4805°

Surface Elev.: 450.22 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		**TOPSOIL**				
		0.8	449.5			
3		**SILTY SAND (SM)**, gray brown		1 2 3 4 5		
		6.0	444	6		
		Test Pit Terminated at 6 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-03-2021	Test Pit Completed: 06-03-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-4

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0633° Longitude: -77.4791°

Approximate Surface Elev.: 448.5 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION
1		0.5	448+/-	**TOPSOIL**
3		4.0	444.5+/-	**POORLY GRADED SAND (SP)**, trace gravel, brown
		6.5	442+/-	**SILTY SAND WITH GRAVEL (SM)**, brown gray
				Test Pit Terminated at 6.5 Feet

DEPTH (Ft.): 1, 2, 3, 4, 5, 6

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021

Test Pit Completed: 06-04-2021

Excavator:

Operator:

Project No.: J5195239

TEST PIT LOG NO. TP-5

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0635° Longitude: -77.4793°

Approximate Surface Elev.: 436 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		0.3	**ASPHALT**	436+/-			
2		0.6	**FILL - SILTY SAND WITH GRAVEL** , trace silt, gray	435.5+/-			
3			**POORLY GRADED SAND (SP)**, trace gravel, brown		1 2 3 4 5 6		
		7.0		429+/-	7		
			Test Pit Terminated at 7 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021	Test Pit Completed: 06-04-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-6

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0632° Longitude: -77.4796°

Approximate Surface Elev.: 446 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		**TOPSOIL** 0.8	445+/-			
3		**POORLY GRADED SAND (SP)**, brown 4.0	442+/-	1, 2, 3, 4		
		SILTY SAND (SM), brown gray 6.0	440+/-	5, 6		
		Test Pit Terminated at 6 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021	Test Pit Completed: 06-04-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-7

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0635° Longitude: -77.4806°

Approximate Surface Elev.: 438 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION
1		0.7	437.5+/-	**TOPSOIL**
3		6.0	432+/-	**POORLY GRADED SAND (SP)**, brown gray
				Test Pit Terminated at 6 Feet

DEPTH (Ft.): 1, 2, 3, 4, 5, 6

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021

Test Pit Completed: 06-04-2021

Excavator:

Operator:

Project No.: J5195239

TEST PIT LOG NO. TP-8

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0638° Longitude: -77.4798°

Approximate Surface Elev.: 436 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		0.3	**ASPHALT**	436+/-			
2			**FILL - SILTY SAND WITH GRAVEL** , brown		1		
		2.0		434+/-	2		
3			**POORLY GRADED SAND (SP)**, brown		3		
					4		
					5		
					6		
		7.0		429+/-	7		
			Test Pit Terminated at 7 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-04-2021	Test Pit Completed: 06-04-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-9

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0639° Longitude: -77.4804°

Approximate Surface Elev.: 434 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)
1		0.3	**ASPHALT**	434+/-
3			**POORLY GRADED SAND (SP)**, brown	
		6.0		428+/-
			Test Pit Terminated at 6 Feet	

DEPTH (Ft.): 1, 2, 3, 4, 5, 6

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-03-2021

Test Pit Completed: 06-03-2021

Excavator:

Operator:

Project No.: J5195239

TEST PIT LOG NO. TP-10

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0641° Longitude: -77.4807°

Approximate Surface Elev.: 438 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
1		0.5	437.5+/-	**ASPHALT**			
3		6.0	432+/-	**POORLY GRADED SAND (SP)**, trace gravel, brown	1 2 3 4 5 6		
				Test Pit Terminated at 6 Feet			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-03-2021	Test Pit Completed: 06-03-2021
Excavator:	Operator:
Project No.: J5195239	

TEST PIT LOG NO. TP-11

PROJECT: Marsh Road Townhouses

CLIENT: Taylor, The Builders
Penfield, NY

SITE: Marsh Road
Pittsford, New York

LOCATION See Exploration Plan

Latitude: 43.0635° Longitude: -77.4823°

Surface Elev.: 431.7 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH		ELEVATION (Ft.)
1		0.2	**TOPSOIL**	431.5
3			**POORLY GRADED SAND (SP)**, brown	
		6.0		425.5
			Test Pit Terminated at 6 Feet	

DEPTH (Ft.): 1, 2, 3, 4, 5, 6

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
24" Excavator Bucket

Abandonment Method:
Test Pit backfilled with excavation soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 06-03-2021	Test Pit Completed: 06-03-2021
Excavator:	Operator:
Project No.: J5195239	

Marsh Rd Townhouses ☐ Pittsford, NY
Terracon Project No. J5195239

PHOTOGRAPHY LOG

Photo 1: Test Pit - 10

Photo 2: Test Pit - 9

Photo 3: Test Pit – 11

Photo 4: Test Pit - 3

TEST PIT PHOTO LOGS

Marsh Rd Townhouses ☐ Pittsford, NY
Terracon Project No. J5195239

Photo 5: Test Pit - 2

Photo 6: Test Pit - 6

Photo 7: Test Pit – 4

Photo 8: Test Pit - 7

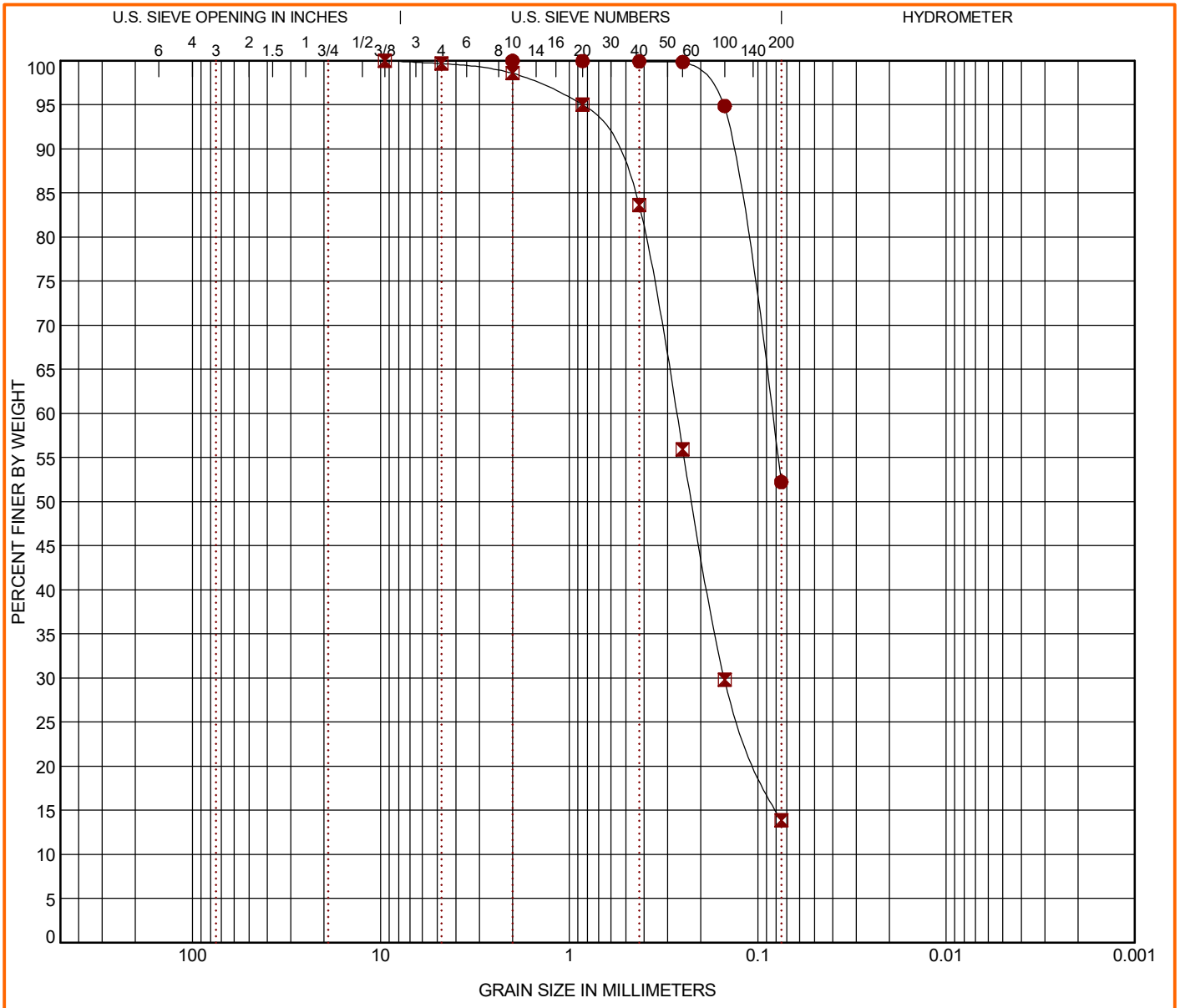
Photo 9: Test Pit - 5

Photo 10: Test Pit - 8

Photo 11: Test Pit – 1

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	TP-1	4-6	SANDY SILT (ML)	34.9	NP	NP	NP		
⊠	TP-2	4-6	SILTY SAND (SM)	6.7	NP	NP	NP		

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	TP-1	4-6	2	0.085			0.0	0.0	47.8		52.2	
⊠	TP-2	4-6	9.5	0.27	0.151		0.0	0.3	85.8		13.9	

PROJECT: Marsh Rd Townhouses

PROJECT NUMBER: J5195239

SITE: Marsh Road
Pittsford, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

CLIENT: Taylor, The Builders
Penfield, NY

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 J5195239 MARSH RD TOWNHOUS.GPJ TERRACON_DATATEMPLATE.GDT 7/9/21

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

Marsh Rd Townhouses ■ Pittsford, NY

Terracon Project No. J5195239

SAMPLING	WATER LEVEL	FIELD TESTS
Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Terracon GeoReport

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K, L, M, N] / Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K, L, M, P] / Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.