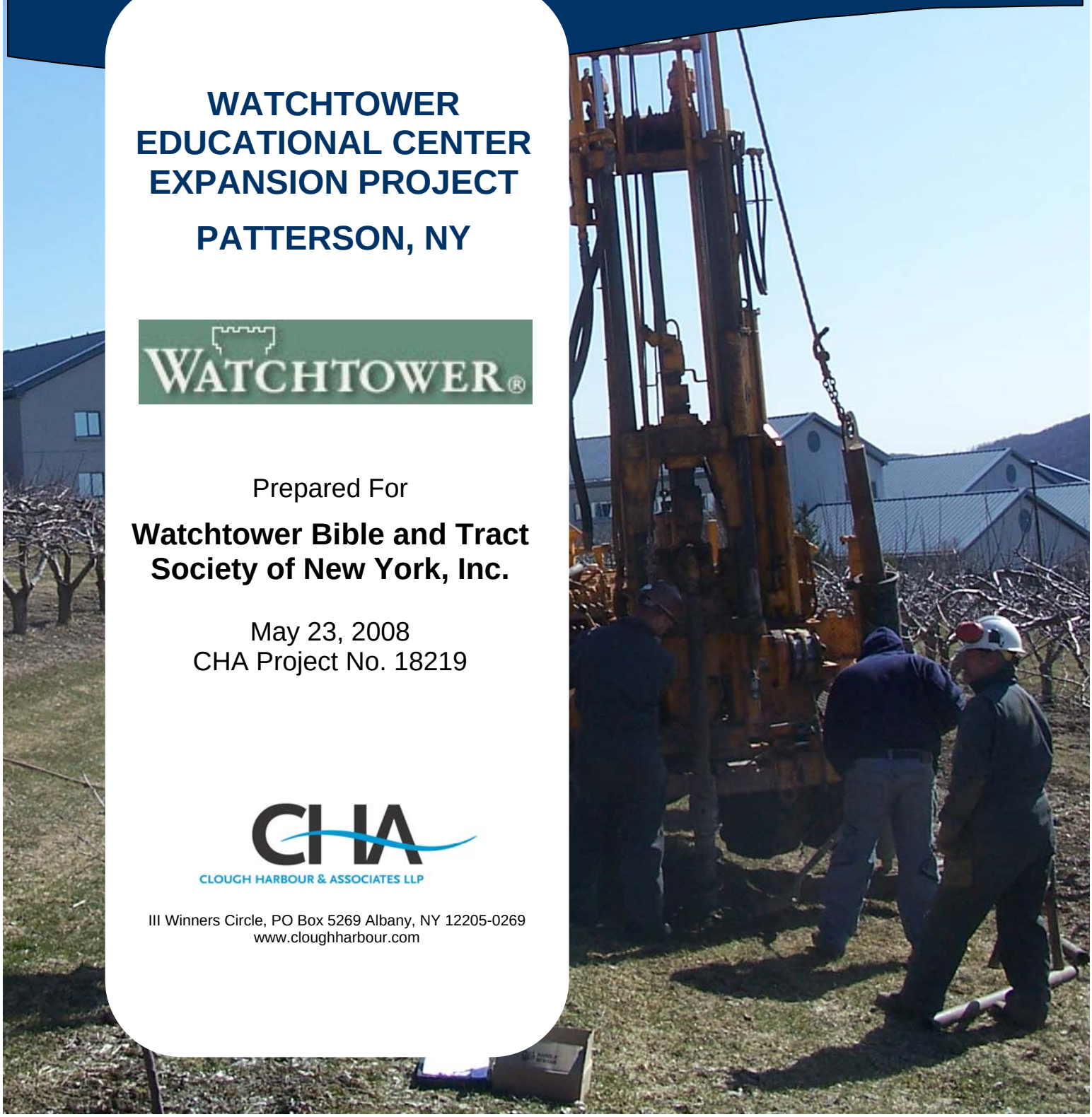
Preliminary Geotechnical Engineering

WATCHTOWER EDUCATIONAL CENTER EXPANSION PROJECT

PATTERSON, NY



Prepared For

Watchtower Bible and Tract Society of New York, Inc.

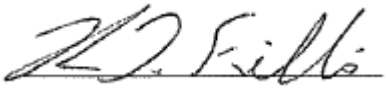
May 23, 2008
CHA Project No. 18219

CLOUGH HARBOUR & ASSOCIATES LLP

III Winners Circle, PO Box 5269 Albany, NY 12205-0269
www.cloughharbour.com

This report has been prepared and reviewed by the following qualified engineers employed by Clough Harbour & Associates LLP.

Report Prepared By:



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Report Reviewed By:

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1.0 INTRODUCTION

This report summarizes the results of the preliminary geotechnical investigation performed by Clough Harbour & Associates LLP (CHA) for the Watchtower Bible and Tract Society of New York, Inc. for the proposed Watchtower Educational Center Expansion Project located in Patterson, New York. The project area is shown on the Project Location Map (Figure 1), included in Appendix A.

The primary objectives of this investigation were to evaluate subsurface conditions at the prospective areas for the proposed improvements and provide preliminary recommendations for foundation design and construction.

2.0 PROJECT AND SITE DESCRIPTION

The proposed improvements cover three areas on the Watchtower Educational Center campus in Patterson, New York. The northernmost area, area 1, is located in the vicinity of an existing apple and peach orchard. The site at the orchard slopes from the east downward to the west at an approximate slope of 4H: 1V. The middle area, area 2, is located directly to the west of the main office building in an existing cow pasture. The crescent shaped pasture slopes downward from the east at an approximate slope of 7H: 1V.The southernmost area, area 3, is located on a vacant gravel parking lot in between the south parking garage and the vehicle maintenance building. In this area the site slopes from the east downward to the west at an approximate slope of 4H:1V (horizontal : vertical). The three areas are outlined on the boring location plan, Figure 2-1, included in Appendix A.

We understand that the proposed campus improvements consist of constructing a new residence building, an office building, a maintenance and warehouse building with below grade parking, additions to the existing audio/visual building, and an enlarged parking area. In addition we understand that associated sidewalks and access roadways are also included as part of the proposed improvements.

2.1 Review of Existing Information

The following information was available for review in preparation of this report:

- CHA *Geotechnical Report for the Proposed Watchtower Educational Center,* dated June 1990 – the report provided a summary of a geotechnical investigation done by CHA between March 27 and April 16, 1990, and geotechnical recommendations for the existing buildings on campus. That previous investigation encountered subsurface conditions generally consisting of glacial till underlain by bedrock at depths up to 45 feet below the ground surface.

3.0 SUBSURFACE INVESTIGATION

Twenty-five borings were advanced for this preliminary investigation between March 12 and 25, 2008. These borings were drilled at selected locations in the three areas where the proposed improvements may be constructed as staked by Watchtower. Borings B-1 through B-11, and borings B-17 through B-25 were advanced within Area 1, borings B-12 through B-15 were advanced in Area 2, and boring B-16 was advanced within Area 3. The approximate boring locations are shown on the Boring Location Plans, Figures 2-1 through 2-3, included in Appendix A. The ground surface elevations of the borings as indicated on the logs were provided by Watchtower based on as-drilled survey locations. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used to determine them.

CHA retained SoilTesting Inc. of Oxford, Connecticut to advance the borings. A CHA geotechnical engineer observed the field investigation to ensure that proper drilling and sampling methods were used for this investigation, classify soil samples, and prepare field logs documenting subsurface conditions.

Borings were advanced with both truck and track mounted drill rigs using hollow stem augers with an inside diameter of 3.75 inches. Split-spoon sampling and standard penetration tests were conducted in the borings continuously to the depth of 12 feet and at standard 5 foot intervals to boring termination or auger refusal thereafter. The split-spoon sampler was driven with a 140(±) pound hammer free falling 30(±) inches, in general accordance with American Society for Testing and Materials (ASTM) guidelines (D-1586). "Blow counts" are recorded on the boring logs and indicate the penetration resistance for a six-inch advancement of the split-spoon sampler. Initially, the sampler is driven six inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches is taken as the standard penetration resistance or "N" value. This value is indicative of the soil's in-place compactness or consistency. The final six-inch increment that the spoon is driven is not included in the determination of “N”. Refusal is defined as a resistance of greater than 50 blows per six inches of penetration.

An NX size core barrel was used to collect five (5)-foot bedrock samples from borings B-2, B-3, B-5 to B-7, B-10 to B-12, and B-17 to B-25. The Rock Quality Designation (RQD) values were then determined in the field for the bedrock core samples. RQD is defined as the sum of the length of core pieces 4 inches and longer, divided by the length of the core run, expressed as a percentage. The RQD values provide an indication of the relative degree of jointing or fracturing of the bedrock.

4.0 SUBSURFACE CONDITIONS

4.2 Regional Geology

According to the *Surficial Geologic Map of New York, Lower Hudson Sheet* (Cadwell, D.H., (1989)) the site deposition consists of glacial till of variable texture and thickness with bedrock within 3 feet to 10 feet of the ground surface.

According to the *Geologic Map of New York, Lower Hudson Sheet* (Fisher, D.W., Isachsen, Y.W. and Rickard, L.V; (1970)), the bedrock within the project area is classified as Manhattan Formation consisting of sillimanite, garnet, muscovite, biotite, plagioclase, quartz gneiss, and a discontinuous unit of amphibolite.

4.3 Subsurface Stratigraphy

Subsurface conditions encountered in the borings are detailed and described on the boring logs included in Appendix B of this preliminary report. General subsurface conditions are described below in order of increasing depth.

Topsoil – Approximately to 2.0 feet of topsoil was encountered in boring B-5 which was located at the edge of a wooded area on the site that has not been disturbed.

Fill – Fill, from farming or past disturbances, comprised of varying amounts of fine to coarse sand, fine to coarse gravel, and clayey silt/silty clay was encountered in all of the borings at the ground surface except in boring B-5. The fill varied in thickness across the site from 1.0 to 7.0 feet thick. The fill was visually described as brown, orange, and/or white, and moist to wet. Standard Penetration Test values (N-values), ranging from 2 to 41 are indicative of very loose to very compact conditions in the fill. There are no records available indicating that this fill was placed with proper compaction, therefore it is considered uncontrolled fill.

Sand – Brown and orange, fine to coarse sand with little to trace fine to coarse gravel and little to trace clayey silt was encountered in all of the borings, except B-5, below the fill to depths raging

from approximately 2.0 to 31.0 feet below ground surface. N-values in this material varied from 4 to 55 generally reflecting very loose to medium compact conditions. This soil was visually classified as moist to wet.

Silty Clay/clayey Silt – Silty clay/clayey silt with little to trace amounts of fine to course gravel and fine to course sand was encountered interbedded in the sand and glacial till layers in boring B-3 from approximately18 feet to 23 feet below the ground surface, and boring B-13 from approximately 9.2 feet to 10.0 feet below the ground surface. The silty clay/clayey silt was visually classified as brown, dark brown, tan, gold, and gray, and moist to wet. The N-values in this material were 2 and 41, generally reflecting soft and hard conditions.

Glacial Till – Glacial till was encountered beneath the sand layer in all of the borings extending to the top of bedrock or to boring termination at depths ranging from 16.0 to 47.0 feet below the ground surface. The glacial till consisted of varying amounts fine to coarse gravel, fine to course sand, and clayey silt/silty clay. The glacial till was brown, tan, orange, and/or gray in color and was visually classified as moist to wet. Based on the N-values in this material the glacial till was determined to be hard or very compact. Cobbles and boulders are likely to be scattered throughout the glacial till based on rig action observations during drilling.

Completely Weathered Bedrock – Completely weathered bedrock was encountered in borings B-2, B-5 to B-7, B-9, B-12, B-14 to B-20, B-24, and B-25 below the sand and glacial till at depths ranging from 3.0 to 8.0 feet at the northern corner of area 1, and generally becomes deeper, up to depths of 40.0 feet below ground surface, as the site slopes downward toward the south and west across the site. It was typically gray to brown and was visually classified as moist to wet. Based on N-values, the consistency of the weathered bedrock was very compact.

Bedrock - Gneiss bedrock was encountered beneath the completely weathered bedrock in borings B-2, B-3, B-5 to B-7, B-10, B-12, and B-17 to B-25 extending to boring termination. The gneiss

bedrock was gray/black/white/red/orange/gold, medium hard, freshly weathered, with close fracture spacing. RQD values were fair to excellent.

4.4 Groundwater

Groundwater level observations were made during and after drilling operations were completed. The following table summarizes these groundwater observations:

TABLE 1
Groundwater Level Measurements (ft.)

Soil Boring Number	Boring Elevation	Depth During Drilling	Depth 24hrs After Drilling	Piezometer Readings 4/23/08	Estimated Groundwater elevation
B-1	740.6	9.0	--	--	731.6
B-2	724.5	None	--	--	--
B-3	727.2	4.0	--	--	723.2
B-4	734.3	--	26.1	27.4	706.9
B-5	741.8	None	--	--	--
B-6	721.5	10.0	--	--	711.5
B-7	709.7	9.0	--	--	700.7
B-8	702.7	4.0	--	--	698.7
B-9	671.0	15.0	14.9	25.0	656.0
B-10	701.9	7.5	--	--	694.4
B-11	680.1	None	--	--	--
B-12	586.1	None	--	--	--
B-13	604.3	8.0	--	--	596.3
B-14	590.2	--	11.0	--	579.2
B-15	582.4	--	20.0	--	562.4
B-16	627.3	8.0	--	--	619.3
B-17	715.5	10.0	--	--	705.5
B-18	710.6	None	--	--	--
B-19	699.1	9.0	--	--	690.1
B-20	691.1	14.0	--	--	677.1
B-21	684.9	8.0	--	--	676.9
B-22	691.4	None	--	--	--
B-23	678.1	None	--	--	--
B-24	662.3	None	--	--	--
B-25	741.3	None	--	--	--

The boreholes were generally only open for a short time period during the drilling and clean-up activities, and water was used as a drilling fluid. Also the soils at the site are fine grained and

produce water slowly. Therefore, groundwater level observations during drilling operations may not represent static conditions. A water level measurement was taken 24 hours after drilling in borings B-14 and B-15, as well as 24 hrs after a piezometer was installed, and again about 4 weeks after the piezometers were installed in borings B-4 and B-9 as indicated in Table 1. This measurement is considered fairly indicative of the ground water level on the day it was taken. Seasonal factors such as temperature and precipitation also affect groundwater levels. For this reason, long-term groundwater levels may differ from those described in this report.

Groundwater levels vary with elevation across the site. A groundwater level equal to 7.0 feet below the finished surface grades is recommended for preliminary design purposes. Once the final locations of the proposed structures are determined the recommended groundwater level should be re-evaluated as part of a final geotechnical investigation.

5.0 RECOMMENDATIONS

5.1 Shallow Spread Foundations

Based upon the subsurface conditions encountered during this preliminary investigation the natural sand and glacial till layers are suitable to support the proposed structures on shallow spread foundations. We recommend a net allowable bearing pressure of 3.0 ksf for the preliminary design of shallow spread foundations. If the proposed structures require a higher allowable bearing pressure, a higher allowable bearing pressure may be achieved depending upon the final proposed locations of the structures. The thickness of the subgrade layers and the depth to bedrock vary across the site, therefore more specific recommendations will be needed when the ultimate location of the proposed structures has been determined, including possible differential settlement if soil thickness below adjacent columns is significantly different.

Exterior footings should be founded at a minimum depth of 4.0 feet below finished grade to provide frost protection. Interior footings in heated areas may be founded at a minimum of 2.0 feet below the bottom of the floor slab. We recommend that isolated footings be a minimum of 36 inches in least dimension and continuous footings be a minimum of 18 inches wide.

A detailed settlement analysis was beyond the scope of this preliminary study. However, based on the information obtained during this preliminary study and the general recommendations outlined in this preliminary report as well as more specific recommendations when the final locations of the structures are chosen, we anticipate that conditions can be achieved to keep total settlement of proposed footings to less than 1 inch, with differential settlements across individual column lines of about ½ inch or less. These estimates are based on the assumption that proper site preparation and construction monitoring is performed and that foundations are constructed on properly compacted natural undisturbed existing soils or structural fill as recommended in this report.

5.2 Floor Slabs

Floor slabs may be supported on the existing natural sand or glacial till, or on properly compacted structural fill. The use of the existing fill soils may also be considered based on a final geotechnical investigation once the locations of the proposed structures has been determined. A preliminary subgrade modulus of 110 pounds per cubic inch should be used for design of concrete floor slabs on the existing site soils or compacted structural fill.

5.3 Foundation and Site Wall Earth Pressures

Walls that retain earth and are restrained against lateral movement, such as the proposed basement walls should be designed to resist "at rest" earth pressures.

Structural backfill should extend a distance behind each wall at least half the wall height. The structural backfill should be capped with a layer of relatively impervious material to minimize percolation of surface water behind the walls. Drainage structures should be installed as outlined in section *5.7 Control of Water*. Walls can then be designed based on the following engineering properties of the structural backfill:

- Total unit weight: 125 pcf
- Angle of internal friction: 32 degrees
- Coefficient of at rest earth pressure (level backfill) (K_o): 0.47
- Friction factor, concrete footing on site material 0.45

5.4 Seismic Site Classification and Design Parameters

In accordance with the Building Code of New York State, Section 1615, Earthquake Loads the following mapped seismic design site coefficients were determined based on site class B:

- Mapped Spectral Response Acceleration for Short Periods (S_S) 0.283g

- Mapped Spectral Response Acceleration for 1.0-Second Period (S_1) 0.067g

Based upon the subsurface conditions encountered in the borings and in accordance with the Building Code of New York State, Section 1615 Earthquake Loads, the site class for the proposed development is defined as C with the following site coefficients:

- Site Coefficient F_a 1.20
- Site coefficient F_v 1.70

Appropriate seismic use group and occupancy factors should be assigned in accordance with the Building Code of New York State for the seismic design of the proposed structure.

5.5 Site Preparation and Construction

Once the locations of the proposed structures are determined, areas within the proposed structures footprints should be stripped of vegetation and topsoil, and uncontrolled fill. The subgrade soil beneath proposed structures should be proof rolled using a smooth drum vibratory roller with a static weight of at least 10 tons. When proof rolling the roller should operate in its vibratory mode and complete at least 6 passes at a speed not exceeding 3 feet per second. Areas that tend to "pump" or "weave" under the passing roller should be undercut by at least 12 inches and stabilized with structural fill or crushed stone wrapped in filter fabric. If the vibratory roller tends to "bring up" moisture, the subgrade should be proof rolled with the roller operating in the static mode. Turning of the equipment on the subgrade shall be kept to a minimum. Structural fill used for stabilization purposes should meet the gradation requirements and be compacted as indicated in *Section 5.6 Structural Fill*.

5.5.1 Footing Construction

Spread footings should be constructed as soon as possible after excavation or fill placement to minimize the risk of disturbance of the bearing surface by exposure to precipitation, freezing, or other adverse conditions. Existing soils may also become disturbed or softened by foot

traffic when placing forms and reinforcement. Any softened, disturbed, or frozen subgrade soil shall be removed and replaced with structural fill or the bottom of the footings should be lowered as required. If it is anticipated that footing subgrades will be exposed for some time or if adverse weather conditions are anticipated, we recommend a working mat such as 6 inches of crushed stone wrapped in filter fabric or 3 inches of lean concrete be placed on the prepared subgrade immediately after the geotechnical engineer has observed the subgrade condition for consistency with the design. The working mat will provide a firm and stable working platform during foundation construction and will protect the sensitive bearing surface soils.

If the working mat is to be constructed using crushed stone and filter fabric it will need to conform to the following requirements:

- The crushed stone shall be a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone.
- The geotextile shall be a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70 such as Mirafi 160N or equal.

5.5.2 Floor Slab Construction

The following general features are recommended as part of the floor slab construction:

- Any deleterious material found below the floor slab area should be removed and replaced with compacted structural fill as described in section *5.6 Structural Fill*.

- A minimum of 6 inches of clean, compacted crushed stone should be placed beneath the slab to enhance support and provide a working base above the soil sub-grade. The actual thickness of the stone layer should be based on design requirements. The crushed stone should be a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone. The stone should be underlain by a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size

of 70 such as a Mirafi 160N or a geotextile of similar qualities. This will provide separation between the stone and underlying sand or structural fill soils.

- The crushed stone should be kept moist, but not wet, immediately prior to the slab concrete placement.

- A polyethylene vapor barrier should be used between the crushed stone and the concrete slab in areas where the slab will be covered with floor tile, carpeting, or other material which may be adversely affected by moisture.

- If a polyethylene vapor barrier is used, adequate curing procedures should be specified to prevent slab curling due to excessive moisture loss in the slab surface.

A geotechnical engineer should be retained to observe proof rolling of the subgrade and review subgrade conditions prior to slab construction and make recommendations for any unsuitable conditions encountered.

5.6 Structural Fill

Structural fill shall be used for backfilling footing excavations, undercuts, and backfilling behind basement walls. Material suitable for structural fill should consist of sound, durable, sand and gravel, free of stumps, roots, other organics and any frozen or deleterious materials.

Structural fill shall conform to the following gradation:

TABLE 2

Gradation Requirements for Structural Fill

Sieve Size	Percent Passing by Weight
4 inch	100
No. 40	0 to 70
No. 200	0 to 10

The on-site sand **does not** meet the requirements for structural fill based upon the laboratory results included in Appendix C.

Structural fill should be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D-1557). Actual lift thickness shall depend upon the type of compaction equipment used during construction. Structural fill around footings should be thoroughly compacted to provide uniform slab support.

5.7 Control of Water

It is anticipated that groundwater may be encountered during site construction depending upon the ultimate location of the proposed structures. Project specifications shall require that the contractor maintain groundwater at a minimum depth of 2 feet below excavation bottom at all times to maintain stable conditions. It should be the responsibility of the contractor to maintain dry conditions so that foundation construction may be completed in the dry. Dewatering methods suitable for this site include the use of sumps and pumps, diversion and drainage ditches, toe drains and other similar methods. Pumps should be of sufficient capacity to control the groundwater, and operated in a manner which will limit the withdrawal of fines from the soil. It is recommended that pumps be installed in sumps lined with a filter

fabric and crushed stone. The crushed stone should be a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone. The filter fabric should be a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70 such as a Mirafi 160N or a geotextile of similar qualities.

The subgrade beneath the proposed structures and backfill behind their foundations and backfill behind basement walls need to be maintained in dry conditions at all times, in accordance with section *1807.4 Subsoil Drainage System* of the Building Code of New York State, since water build up could result in wet slabs, cracking, and heaving. We generally recommend that drain tile with crushed stone or gravel backfill be placed adjacent to exterior footings at an elevation below floor slabs. The crushed stone or gravel (50:50 mix of NYSDOT #1 and #2 size crushed stone) backfill shall extend a minimum of 12 inches around the drain tile. The upper one foot of backfill should be fairly impervious and the ground surface should be graded so that surface water runoff is directed away from the building. Drain tile should also be placed beneath floor slabs in the crushed stone subbase. All drain tiles shall be connected to a storm sewer, day lighted at a lower elevation, or lead to a sump equipped with duplex pumps.

Surface runoff should be diverted away from excavations during construction.

6.0 EXCAVATIONS

Excavations shall be done using a smooth blade bucket. Should excavation be difficult with a smooth blade bucket due to soil density, a toothed or ripping bucket maybe used provided any loose material is removed or recompacted to the same density as the bearing surface. All excavations should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards and applicable state and local codes. In areas where sufficient sloping of excavation cuts is not possible, the excavation should be shored, sheeted and braced.

7.0 OBSERVATION DURING CONSTRUCTION

A qualified geotechnical engineer should be onsite during excavation for foundations to ensure that all existing fill soils are removed beneath planned footings. The geotechnical engineer should carefully inspect the final excavation surface for foundations and floor slabs to ascertain that the subgrade has been properly prepared and is consistent with the design recommendations. The inspection of subgrade should include probing at select locations, specifically to verify the bearing capacity of the supporting soils and where load bearing soils may have been disturbed.

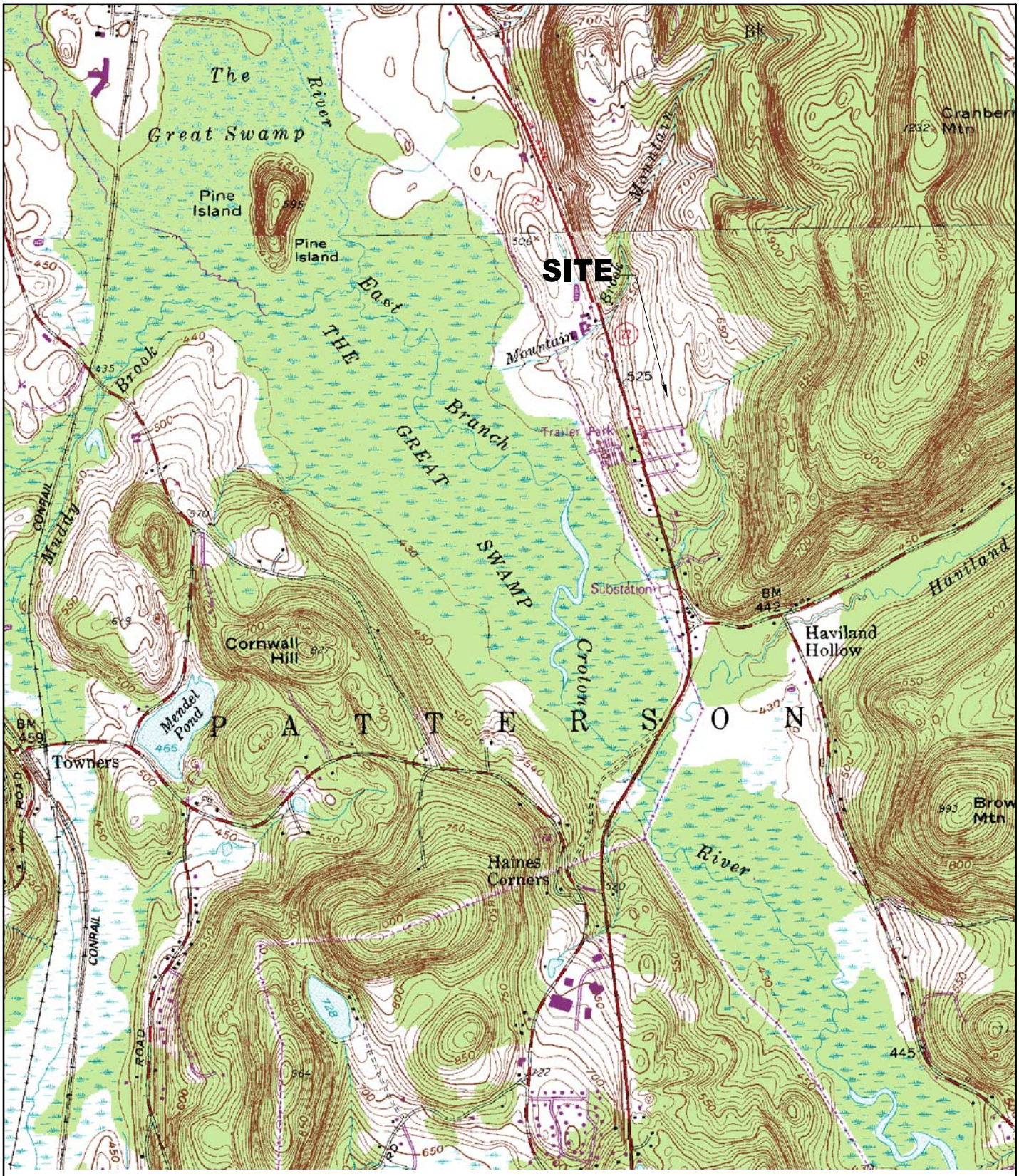
Materials used as fill, including those used beneath footings, floor slabs and pavement should be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

8.0 CLOSURE

The general geotechnical recommendations presented in this preliminary report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted foundation engineering practices. Once final locations have been selected for the proposed structures a final geotechnical investigation and report should be done to provide more specific geotechnical recommendations.. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur from the locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the recommendations presented in this report.

APPENDIX A

FIGURES



SOURCE: USGS PATTERSON (NY) QUADRANGLE, 7.5 MIN SERIES

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PROJECT LOCATION MAP

GEOTECHNICAL SUBSURFACE INVESTIGATION
WATCHTOWER EDUCATIONAL CENTER EXPANSION
PATTERSON, NEW YORK

PROJECT NO. 18219

DATE: 4/21/08

FIGURE 1

File: O:\18219\REPORTS\FINAL\FIGURES 5-22-08\18219 LOCATION MAP.DWG Saved: 5/22/2008 8:04:46 AM PLotted: 5/23/2008 11:27:42 AM User: Gorman, Jason

File: O:\18219\REPORTS\FINAL\FIGURES 5-22-08\18219 BLP.DWG Saved: 5/21/2008 1:12:19 PM Plotted: 5/23/2008 11:30:45 AM User: Gorman, Jason

LEGEND

B-1
740.649
100
APPROXIMATE BORING LOCATION (TYPICAL)

0 100 200
Scale in feet

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BORING LOCATION PLAN

GEOTECHNICAL SUBSURFACE INVESTIGATION
WATCHTOWER EDUCATIONAL CENTER EXPANSION
PATTERSON, NEW YORK

PROJECT NO. 18219

DATE: APRIL 2008

FIGURE 2-1

B-5
741.846
104

B-25
741.257
103

B-1
740.649
100

B-6
721.481
107

B-4
734.333
105

B-18
710.588
108

B-17
715.471
106

B-10
701.868
110

B-19
699.122
109

B-22
691.378
111

B-2
724.501
101

B-7
709.689
118

B-21
684.899
113

B-11
680.085
112

B-20
691.132
117

B-23
678.061
114

B-3
727.232
120

B-9
671.028
115

B-24
662.268
116

B-8
702.661
119

WATER SOFTENING FACILITY

POWER HOUSE BUILDING

OFFICE

750.0

730.0

710.0

690.0

670.0

660.0

LEGEND

B-1
740.649
100
APPROXIMATE BORING LOCATION (TYPICAL)

0 100 200
Scale in feet

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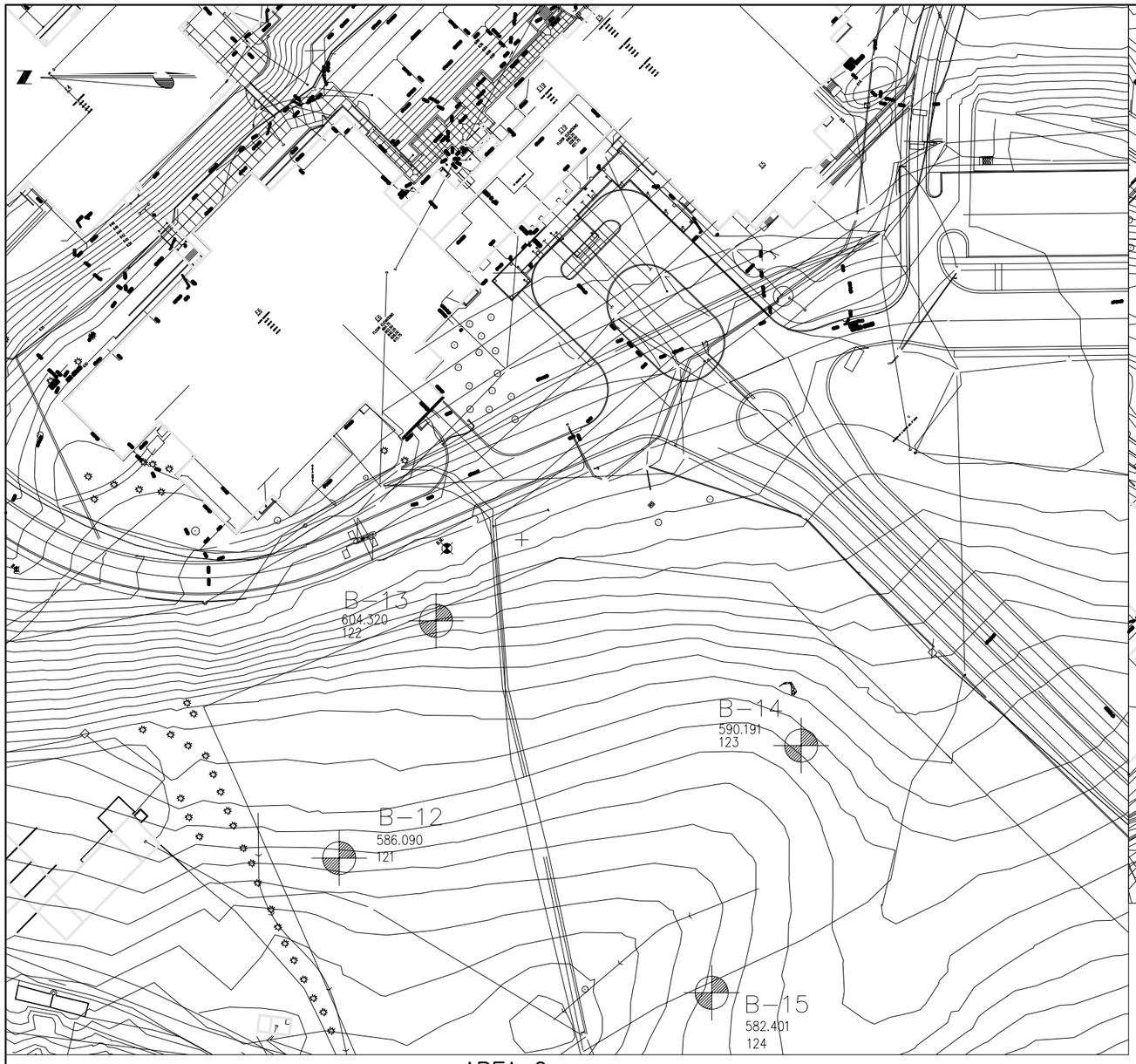
AREA 1–BORING LOCATION PLAN

GEOTECHNICAL SUBSURFACE INVESTIGATION
WATCHTOWER EDUCATIONAL CENTER EXPANSION
PATTERSON, NEW YORK

PROJECT NO. 18219

DATE: APRIL 2008

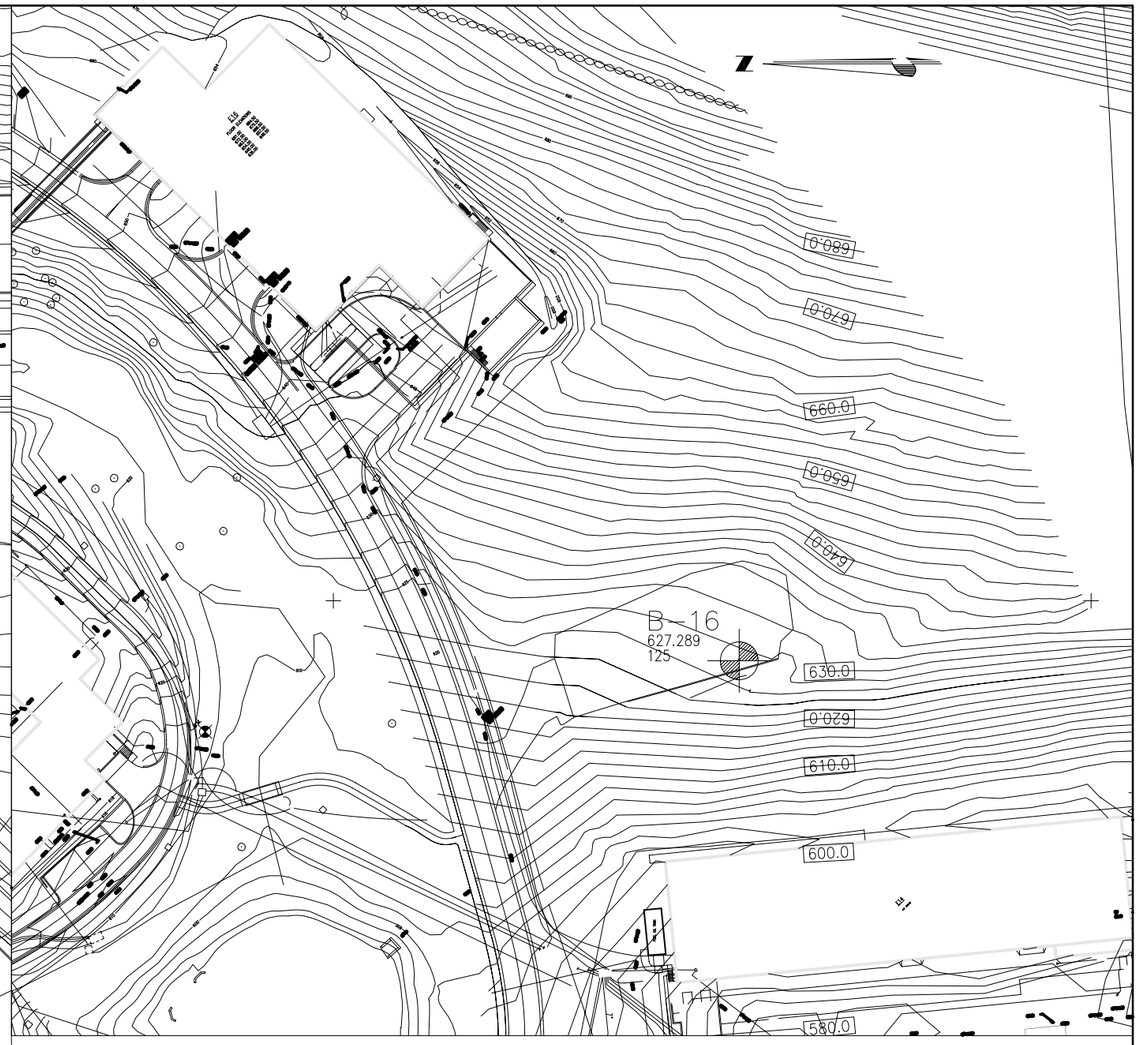
FIGURE 2-2



AREA 2

0 100 200

Scale in feet



AREA 3

0 100 200

Scale in feet

LEGEND

B-1
740.649
100
APPROXIMATE BORING LOCATION (TYPICAL)

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AREAS 2&3–BORING LOCATION PLAN

GEOTECHNICAL SUBSURFACE INVESTIGATION
WATCHTOWER EDUCATIONAL CENTER EXPANSION
PATTERSON, NEW YORK

PROJECT NO. 18219

DATE: APRIL 2008

FIGURE 2-3

B-1
740.649
100
APPROXIMATE BORING LOCATION (TYPICAL)

A A' GEOLOGIC SECTION CUT LINE (TYPICAL)

0 200 400
Scale in feet

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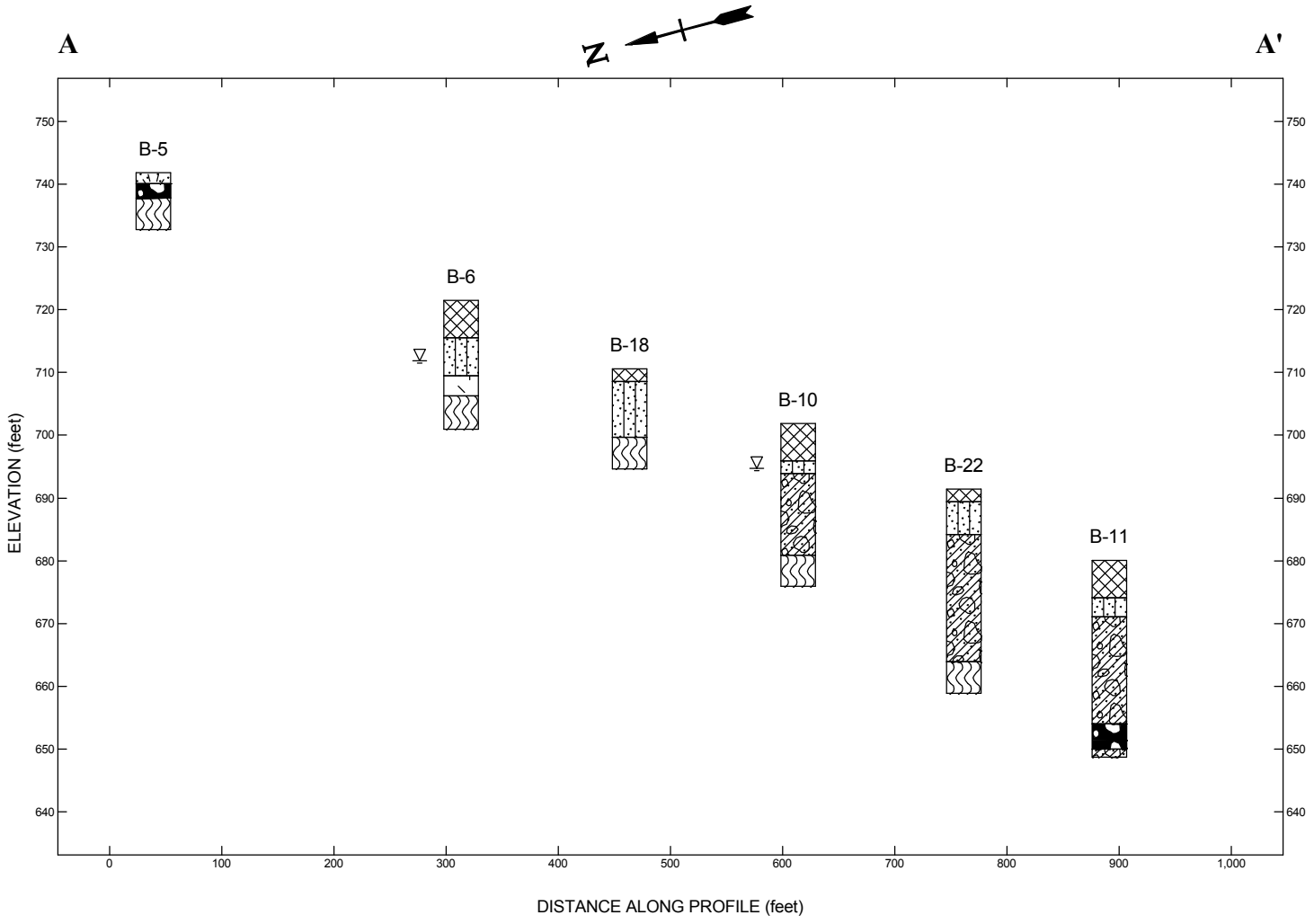
GEOLOGIC SECTION CUTS PLAN
GEOTECHNICAL SUBSURFACE INVESTIGATION
WATCHTOWER EDUCATIONAL CENTER
EXPANSION
PATTERSON, NEW YORK

PROJECT NO.
18219

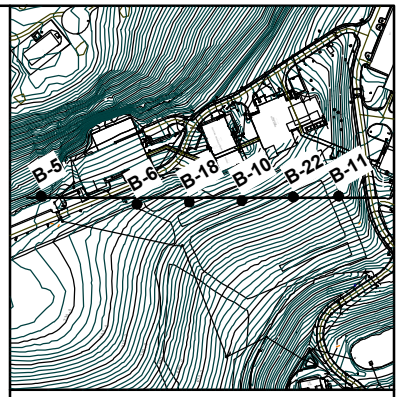
DATE: MAY 2008

FIGURE 3-1



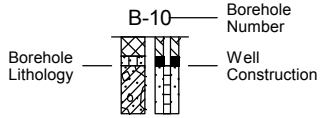
Lithology Graphics

- Fill (made ground)
- Gneiss
- Completely Weathered Bedrock
- USCS Silty Sand
- Boulders and cobbles
- Glacial Till
- Topsoil



Site Map Scale 1 inch equals 550 feet

Explanation



Water Level Reading at time of drilling.

Water Level Reading after drilling.

Vertical Exaggeration: 5.5x

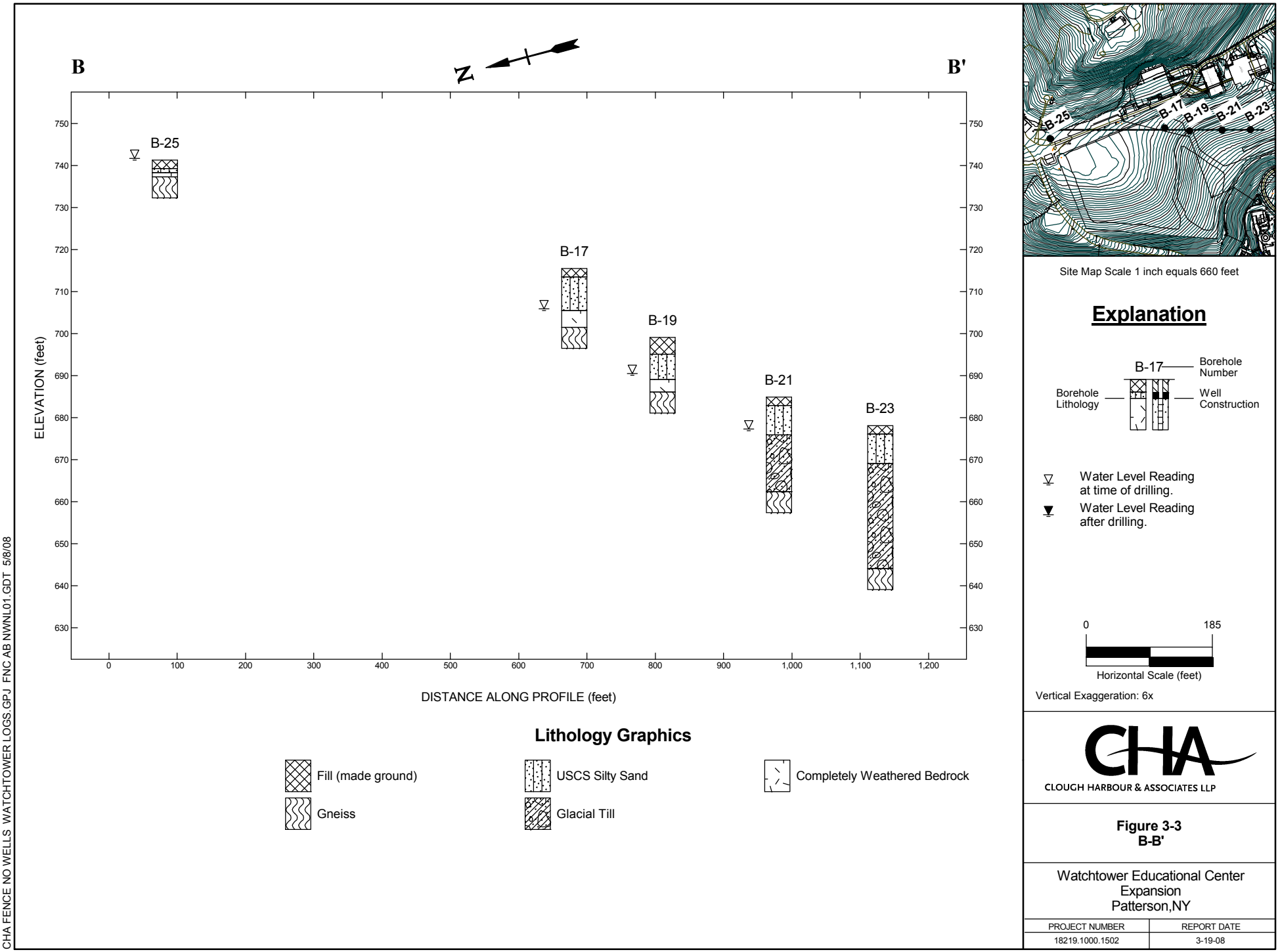
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-2
A-A'

Watchtower Educational Center
Expansion
Patterson,NY

PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



Site Map Scale 1 inch equals 660 feet

Explanation

Water Level Reading at time of drilling.

Water Level Reading after drilling.

0 185

Horizontal Scale (feet)

Vertical Exaggeration: 6x

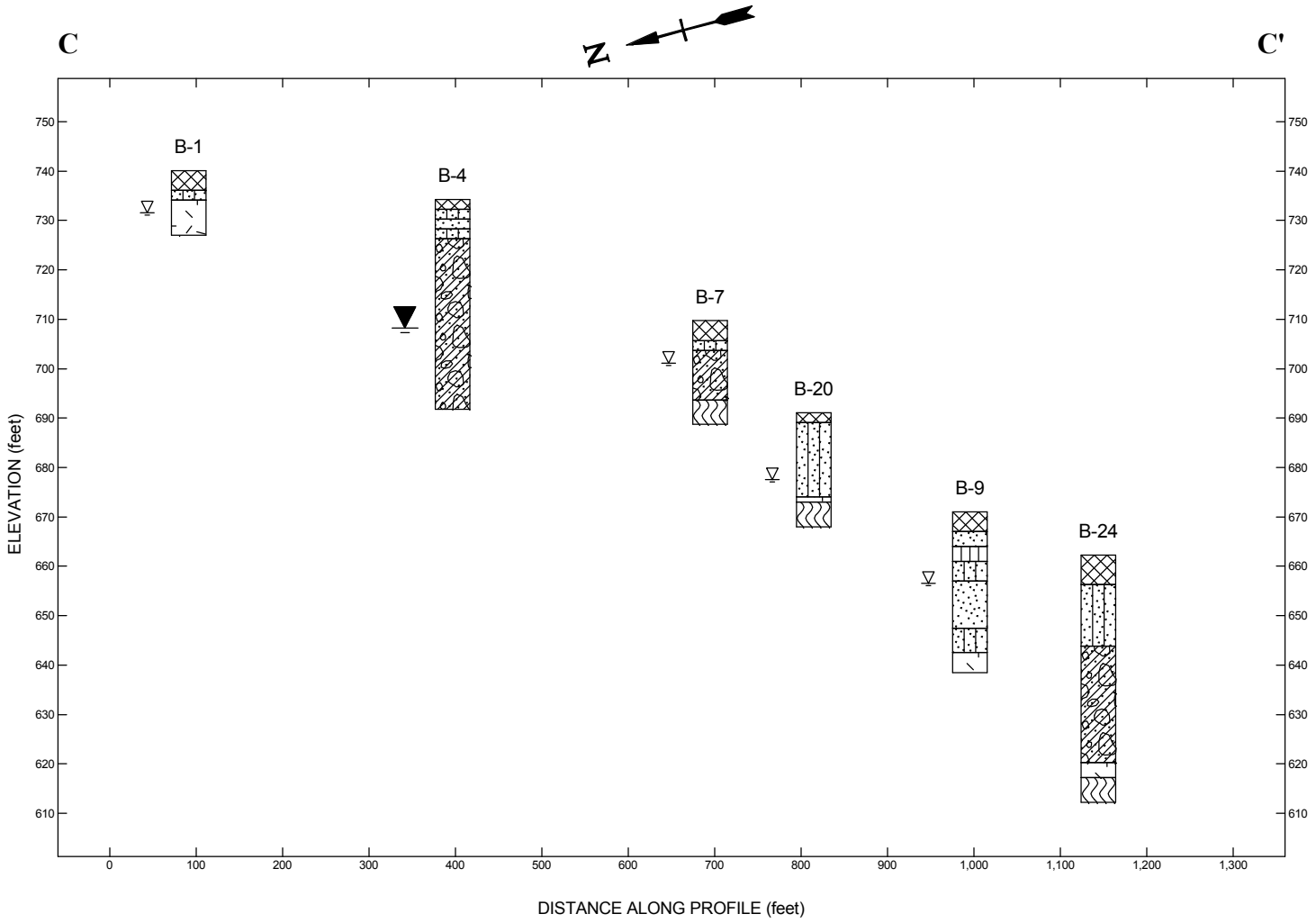
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-3
B-B'

Watchtower Educational Center
Expansion
Patterson,NY

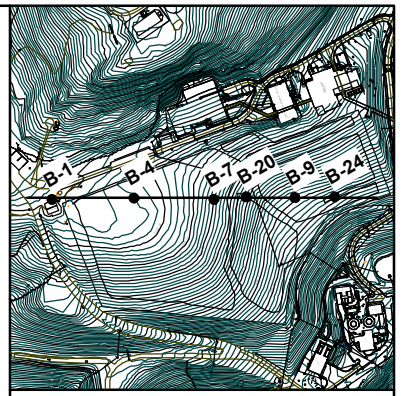
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



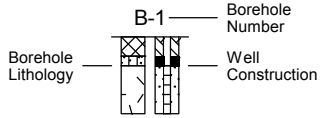
Lithology Graphics

- Fill (made ground)
- Gneiss
- USCS Silt
- USCS Silty Sand
- Glacial Till
- Completely Weathered Bedrock
- USCS Poorly-graded Sand



Site Map Scale 1 inch equals 715 feet

Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.

Vertical Exaggeration: 5.5x

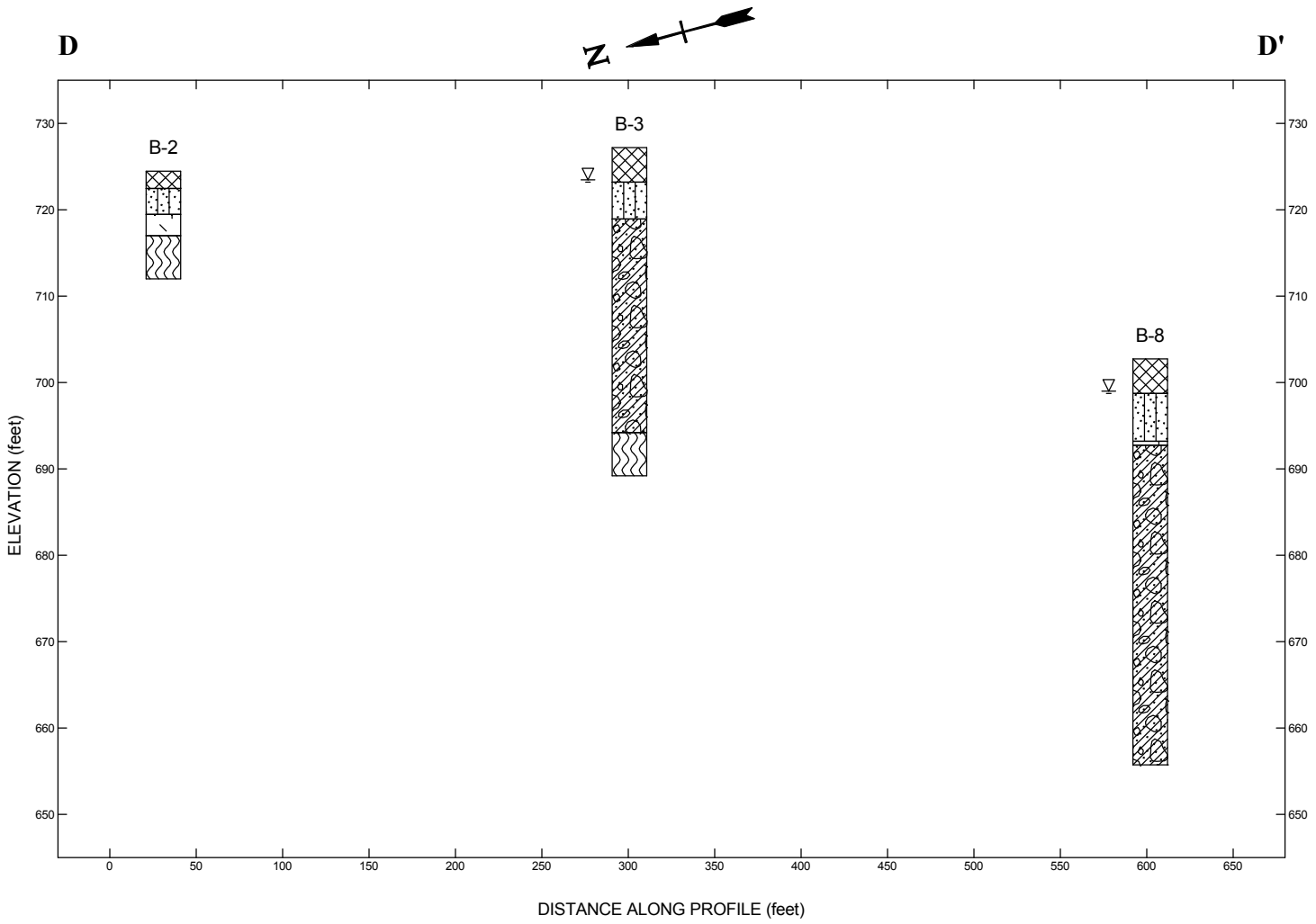
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-4
C-C'

Watchtower Educational Center
Expansion
Patterson,NY

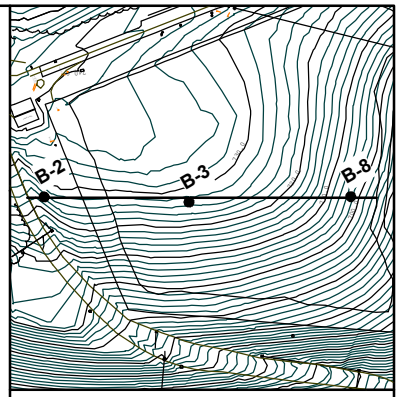
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



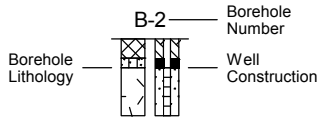
Lithology Graphics

- Fill (made ground)
- Gneiss
- USCS Silty Sand
- Glacial Till
- Completely Weathered Bedrock

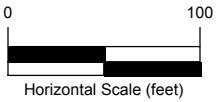


Site Map Scale 1 inch equals 360 feet

Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.



Vertical Exaggeration: 5x

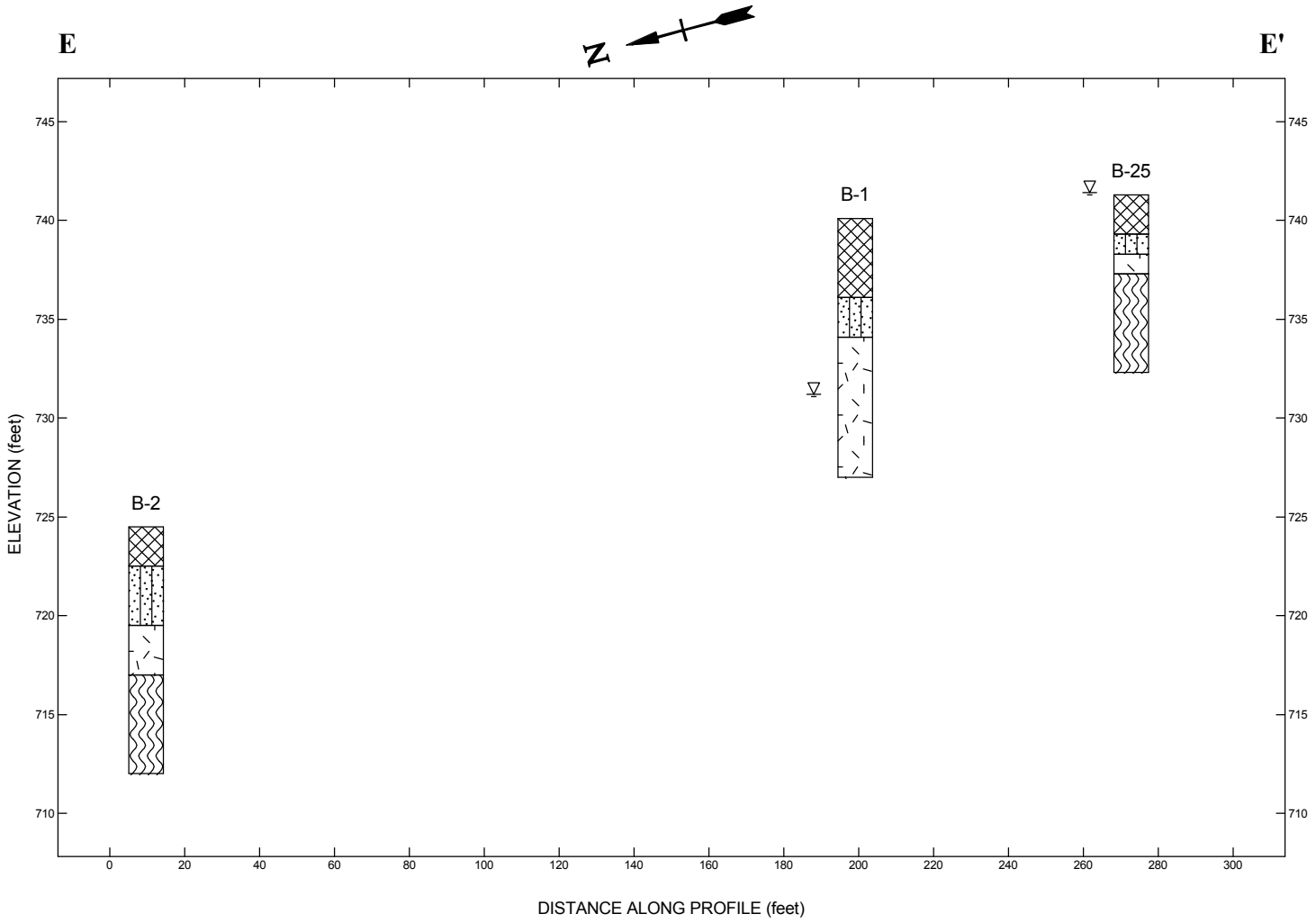
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-5
D-D'

Watchtower Educational Center
Expansion
Patterson,NY

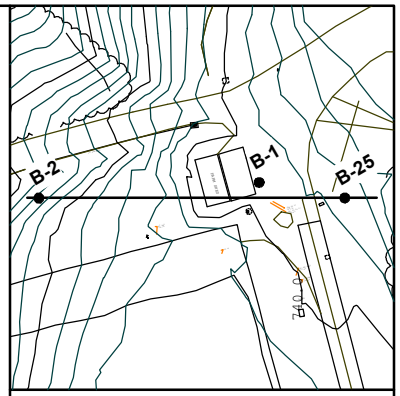
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



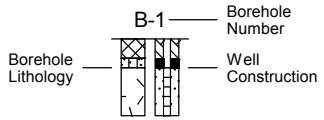
Lithology Graphics

- Fill (made ground)
- USCS Silty Sand
- Completely Weathered Bedrock
- Gneiss



Site Map Scale 1 inch equals 165 feet

Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.

Vertical Exaggeration: 5.5x

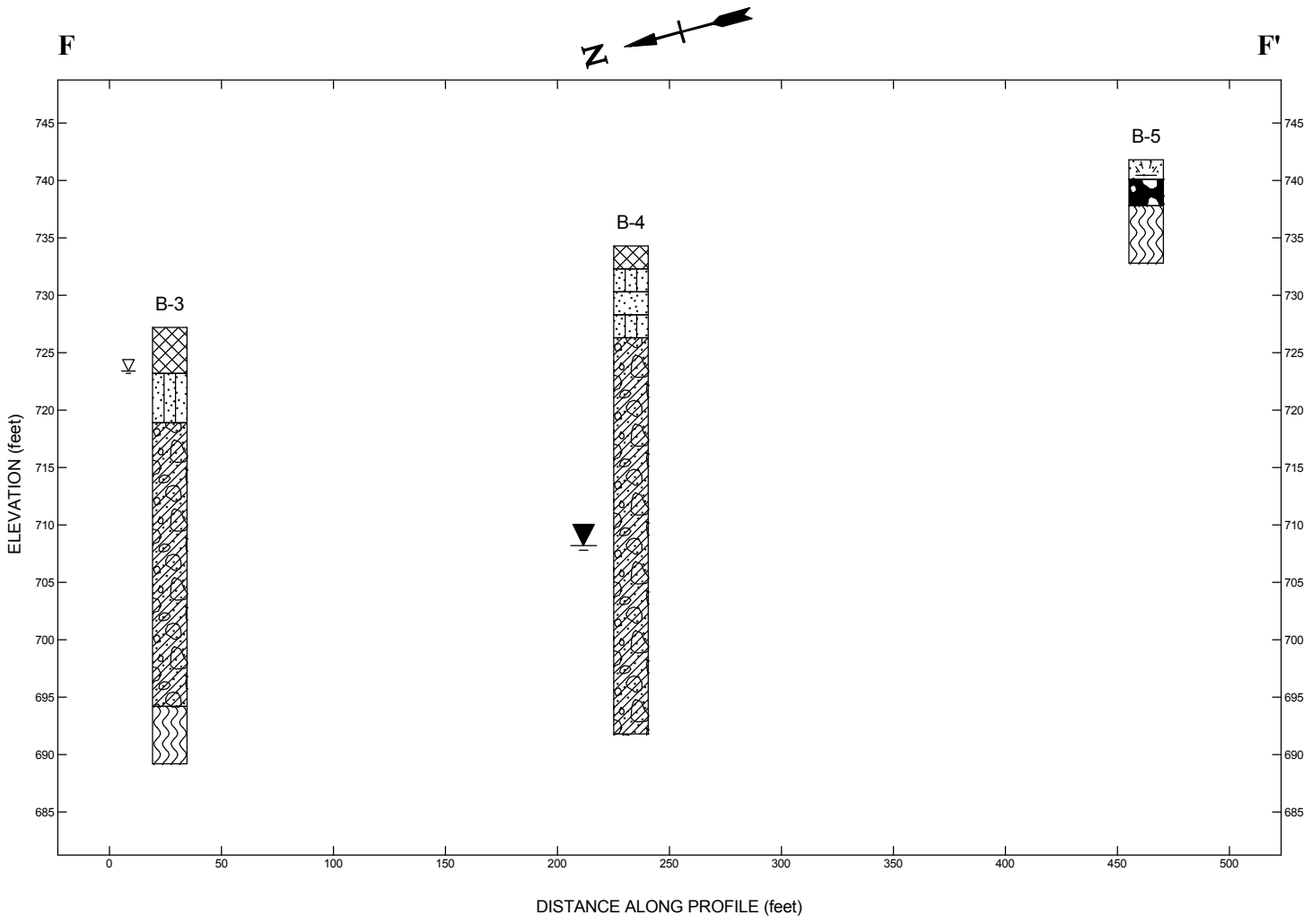
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-6
E-E'

Watchtower Educational Center
Expansion
Patterson,NY

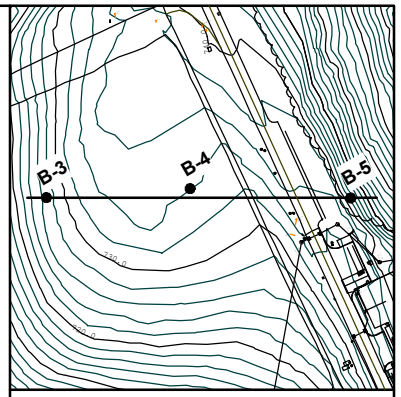
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



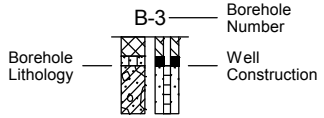
Lithology Graphics

- Fill (made ground)
- Gneiss
- Boulders and cobbles
- USCS Silty Sand
- USCS Poorly-graded Sand
- Glacial Till
- Topsoil



Site Map Scale 1 inch equals 275 feet

Explanation



Water Level Reading at time of drilling.

Water Level Reading after drilling.

Horizontal Scale (feet)

Vertical Exaggeration: 5x

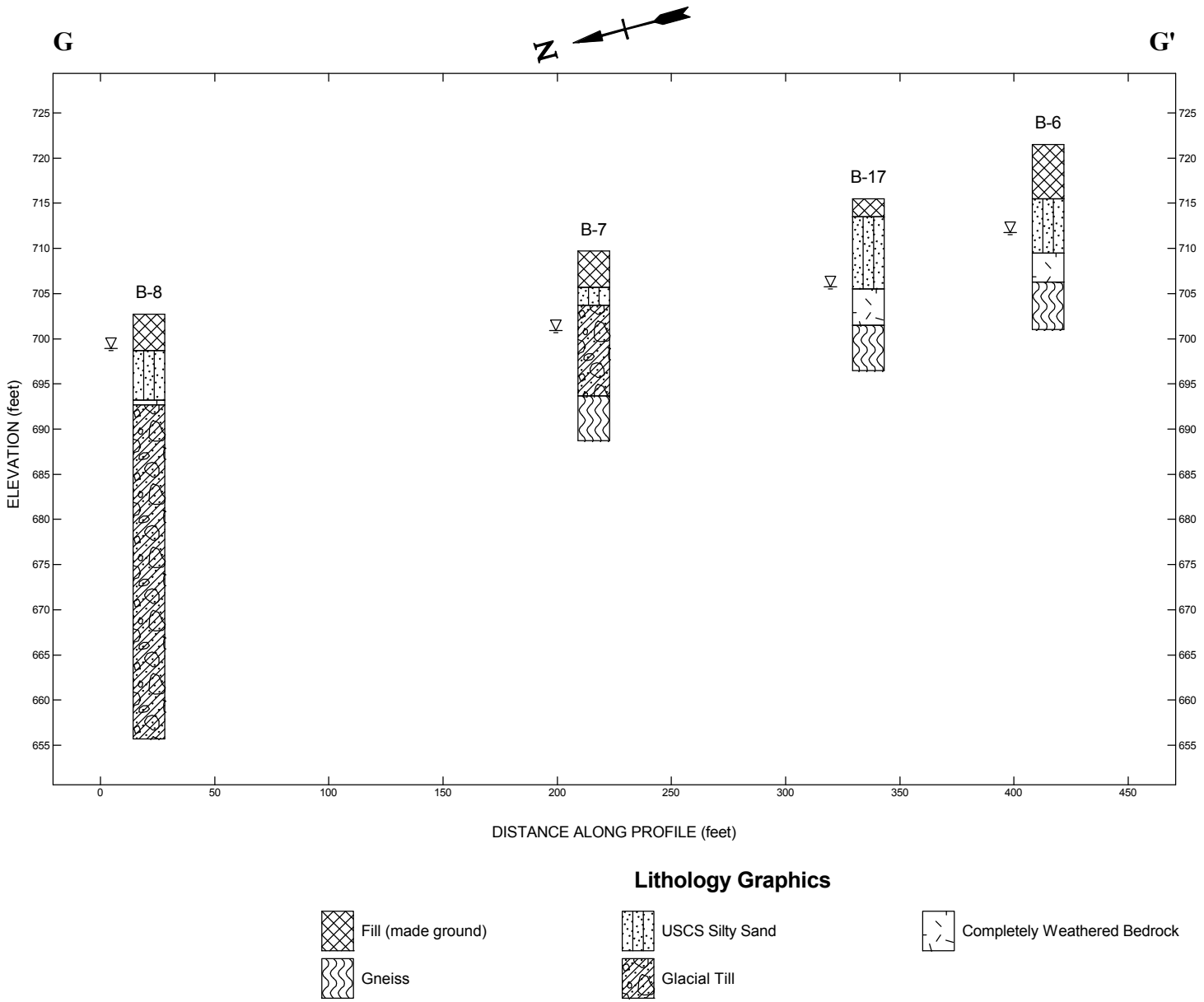
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-7
F-F'

Watchtower Educational Center
Expansion
Patterson,NY

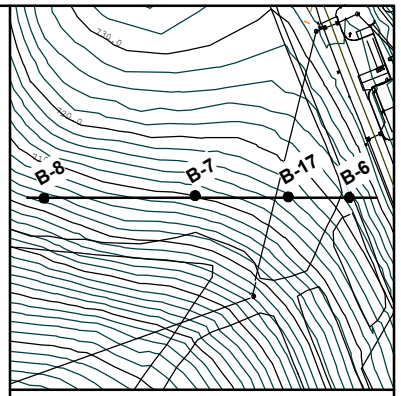
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



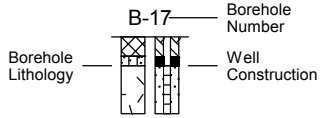
Lithology Graphics

- Fill (made ground)
- USCS Silty Sand
- Completely Weathered Bedrock
- Gneiss
- Glacial Till

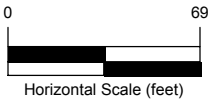


Site Map Scale 1 inch equals 250 feet

Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.



Vertical Exaggeration: 4x

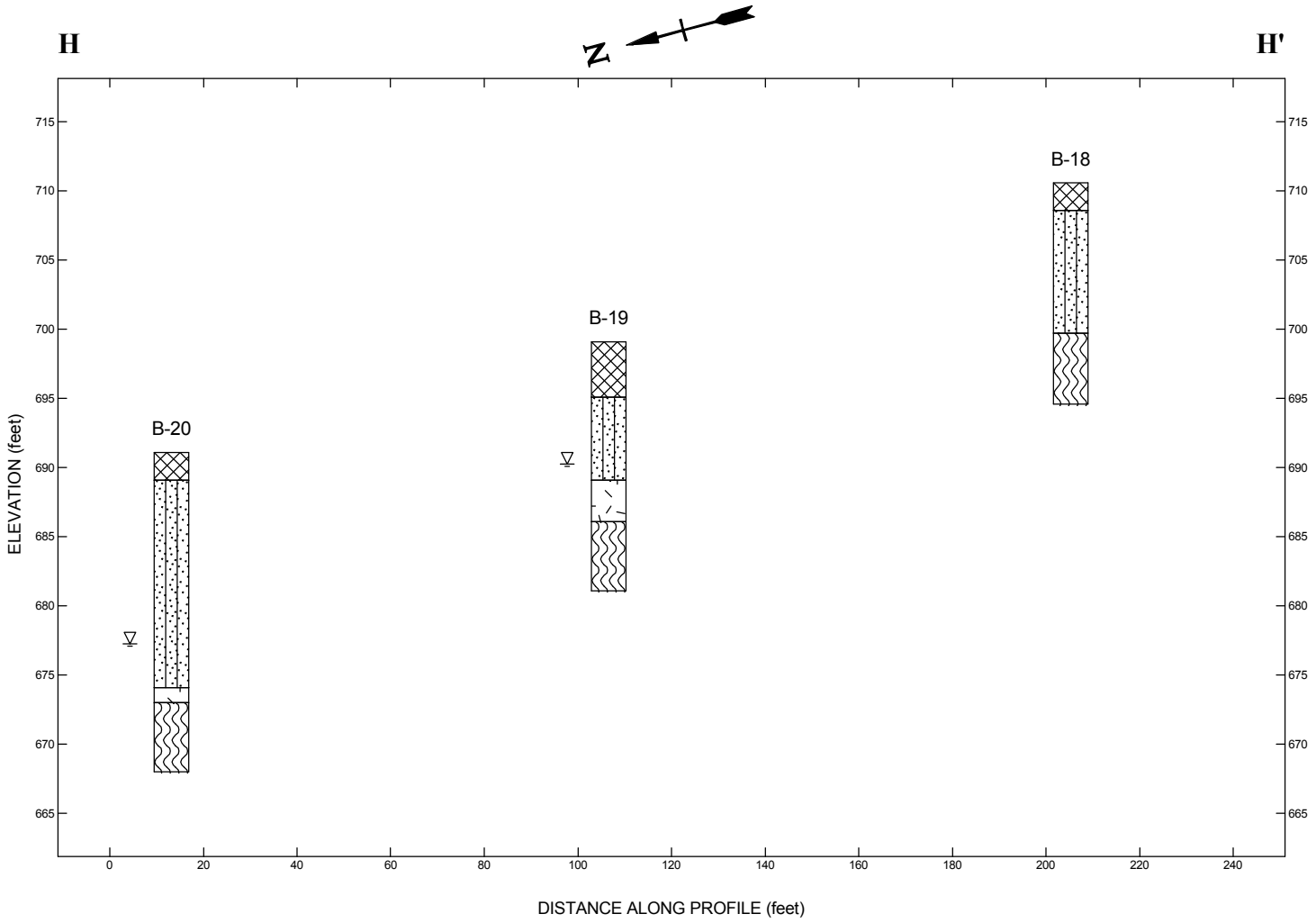
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-8
G-G'

Watchtower Educational Center
Expansion
Patterson,NY

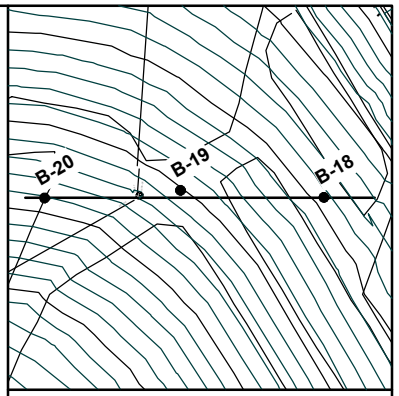
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



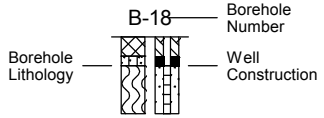
Lithology Graphics

- Fill (made ground)
- USCS Silty Sand
- Gneiss
- Completely Weathered Bedrock

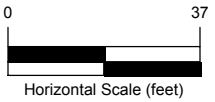


Site Map Scale 1 inch equals 130 feet

Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.



Vertical Exaggeration: 3x

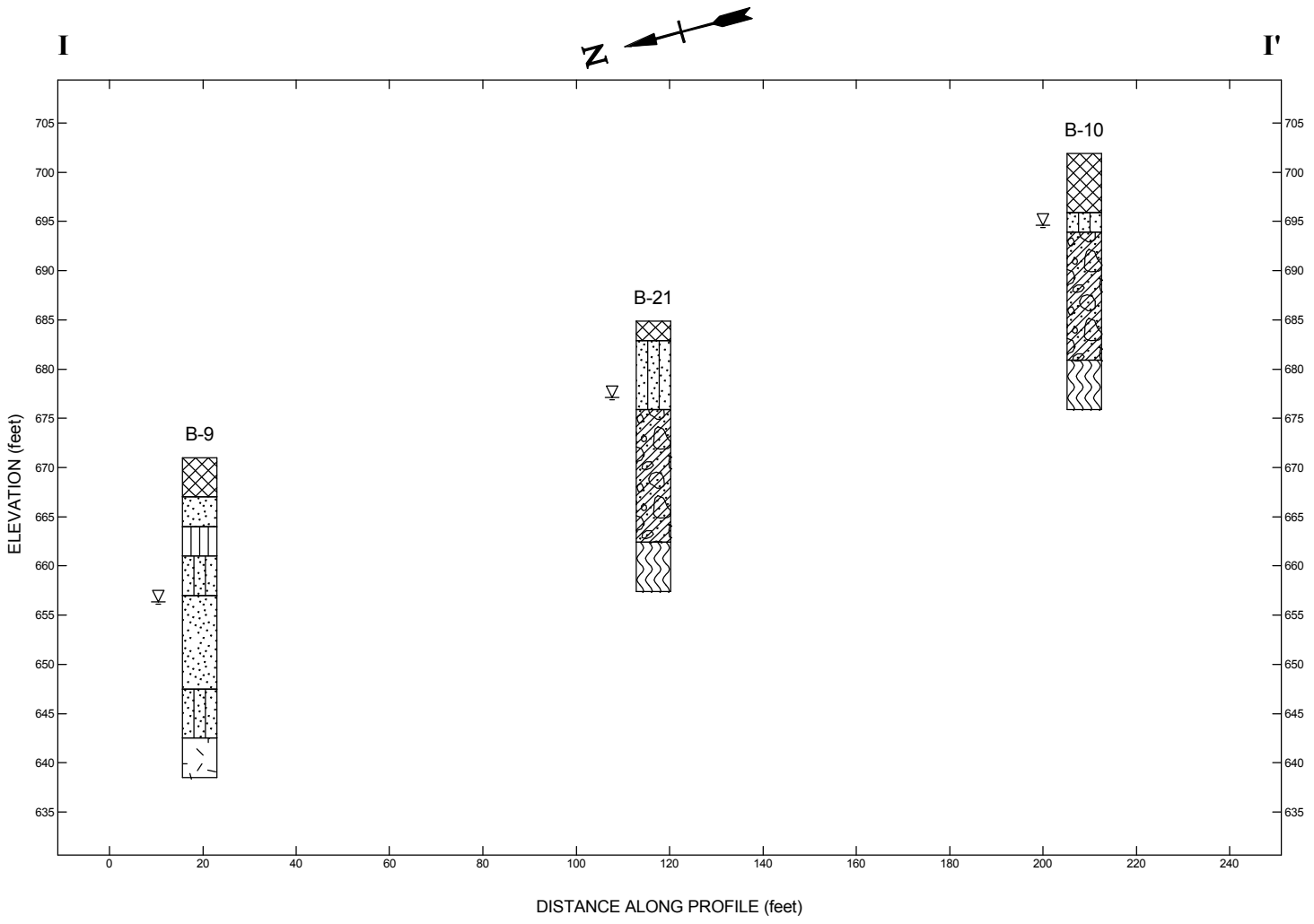
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-9
H-H'

Watchtower Educational Center
Expansion
Patterson,NY

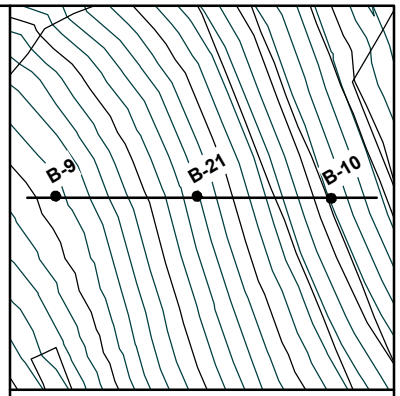
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



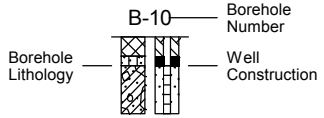
Lithology Graphics

- Fill (made ground)
- Gneiss
- Completely Weathered Bedrock
- USCS Silty Sand
- USCS Poorly-graded Sand
- Glacial Till
- USCS Silt



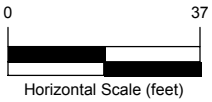
Site Map Scale 1 inch equals 130 feet

Explanation



Water Level Reading at time of drilling.

Water Level Reading after drilling.



Vertical Exaggeration: 2x

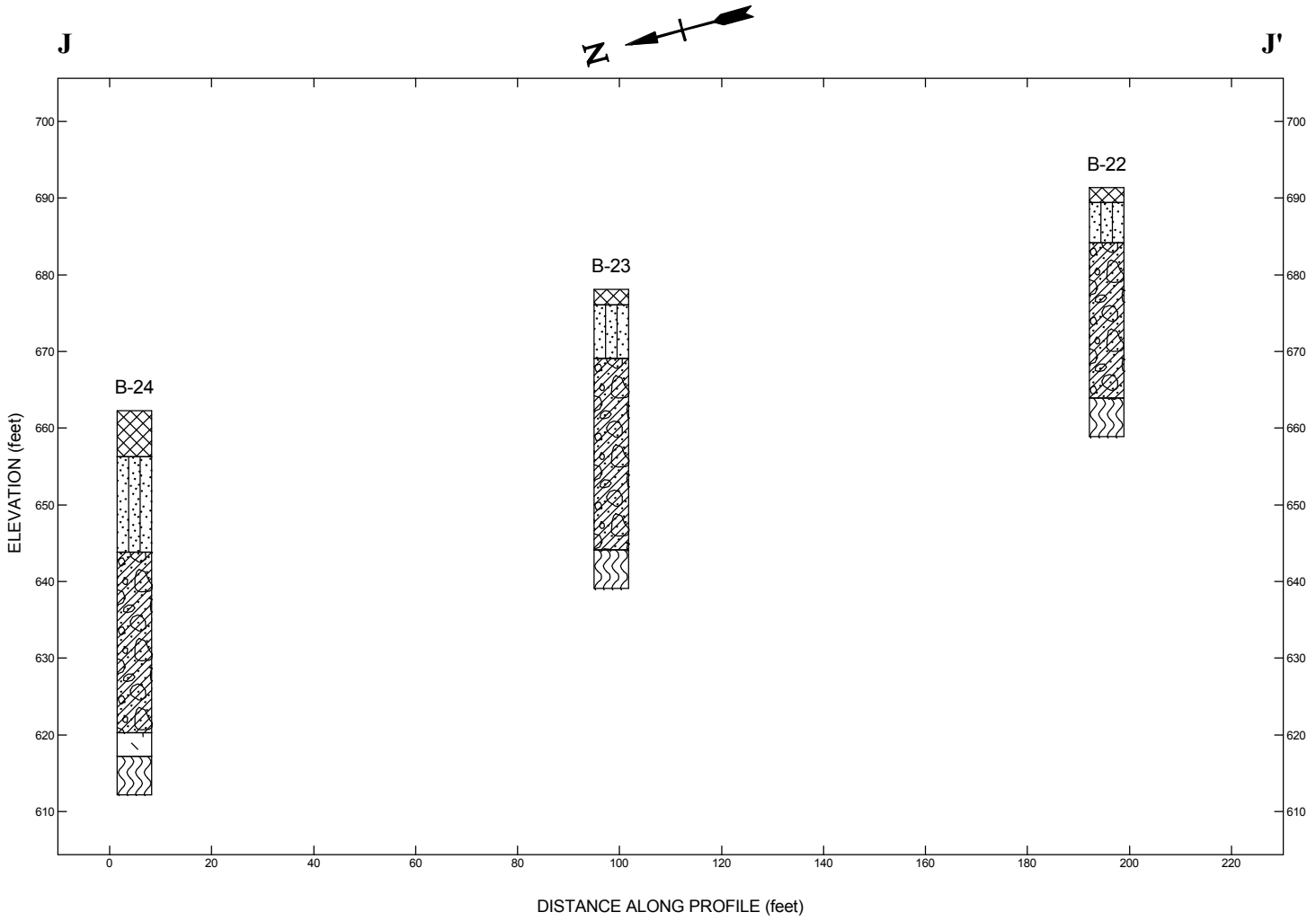
CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-10
I-I'

Watchtower Educational Center
Expansion
Patterson,NY

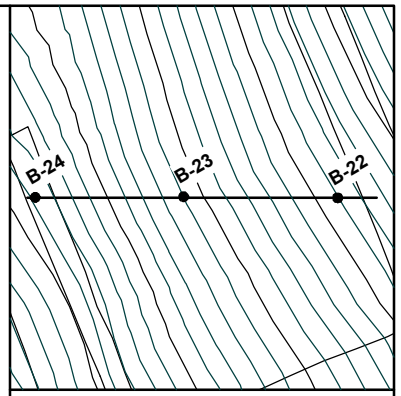
PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08



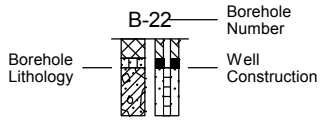
Lithology Graphics

- Fill (made ground)
- USCS Silty Sand
- Glacial Till
- Gneiss
- Completely Weathered Bedrock



Site Map Scale 1 inch equals 120 feet

Explanation



Water Level Reading at time of drilling.

Water Level Reading after drilling.

Vertical Exaggeration: 1.5x

CLOUGH HARBOUR & ASSOCIATES LLP

Figure 3-11
J-J'

Watchtower Educational Center
Expansion
Patterson,NY

PROJECT NUMBER	REPORT DATE
18219.1000.1502	3-19-08

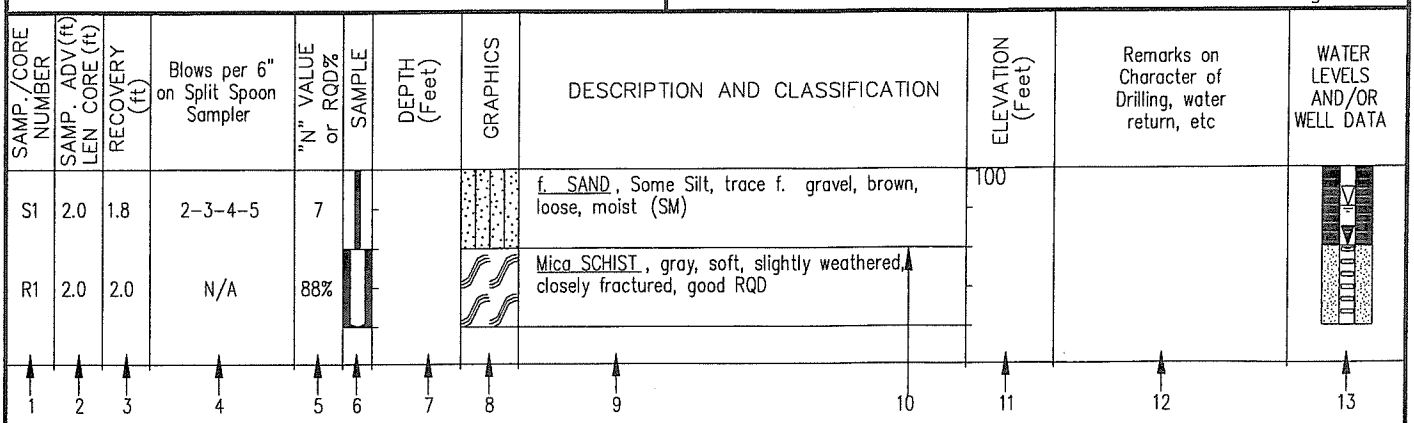
CHA FENCE NO WELLS WATCHTOWER LOGS.GPJ FNC AB NWNL01.GDT 5/8/08

APPENDIX B

BORING LOGS

CLOUGH HARBOUR & ASSOCIATES LLP

LEGEND TO SUBSURFACE LOGS



Subsurface Logs present material classifications, test data, and observations from subsurface investigations at the subject site as reported by the inspecting geologist or engineer. In some cases, the classifications may be made based on laboratory test data when available. It should be noted that the investigation procedures only recover a small portion of the subsurface materials at the site. Therefore, actual conditions between borings and sampled intervals may differ from those presented on the Subsurface Logs. The information presented on the logs provide a basis for an evaluation of the subsurface conditions and may indicate the need for additional exploration. Any evaluation of the conditions reported on the logs must be performed by Professional Engineers or Geologists.

1. SAMP./CORE NUMBER – Samples are numbered for identification on containers, laboratory reports or in text reports.

2. SAMP.ADV/LEN.CORE – Length of sampler advance or length of coring run measured in feet.

3. RECOVERY – Amount of sample actually recovered after withdrawing sampler or core barrel from bore hole measured in feet.

4. SAMPLE BLOWS/6" – Unless otherwise noted, blow counts represent values obtained by driving a 2.0" (O.D.), 1–3/8" (I.D.) split spoon sampler into the subsurface strata with a 140 pound weight falling 30" as per ASTM D 1586. After an initial penetration of 6" to seat the sampler into undisturbed material, the sampler is then driven an additional 2 or 3 six inch increments.

5. "N" Value or RQD % – "N" VALUE – The sum of the second and third sample blow increments is generally termed the Standard Penetration Test (SPT) "N" value. CORE RQD – Core Rock Quality Designation, RQD, is defined as the summed length of all pieces of core equal to or longer than 4 inches divided by the total length of the coring run. Fresh, irregular breaks distinguishable as being caused by drilling or recovery operations are ignored and the pieces are counted as intact lengths. RQD values are valid only for cores obtained with NX size core barrels.

6. SAMPLE – Graphical presentation of sample type and advance or core run length. See Table 1.

7. DEPTH – Depth as measured from the ground surface in feet.

8. GRAPHICS – Graphical presentation of subsurface materials. See Table 4. Dual soil classification and rock graphics may vary and are not shown on Table 4.

9. DESCRIPTION AND CLASSIFICATION – SOIL – Recovered samples are visually classified in the field by the supervising geologist or engineer unless otherwise noted. Particle size and plasticity classification is based on field observations, and using the Unified Soil Classification System (USCS). See Table 4. USCS symbols are presented in parentheses following the soil description. Where necessary, dual symbols may be used for combinations of soil types. Relative proportions, by weight and/or plasticity, are described in general accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Publication 479, 6–1970. See Table 2. Soil density or consistency description is based on the penetration resistance. See Table 3. Soil moisture description is based on the observed wetness of the soil recovered being dry, moist, wet, or saturated. Water introduced into the boring during drilling may affect the moisture content of the materials. Other geologic terms may also be used to further describe the subsurface materials. ROCK – Rock core descriptions are based on the inspector's observations and may be examined and described in greater detail by the project engineer or geologist. Terms used in the description of rock core are presented in Table 5.

10. DIVISION LINES – Division lines between deposits are based on field observations and changes in recovered material. Solid lines depict contacts between two deposits of different geologic depositional environment of known elevation. Dashed lines represent estimated elevation of contacts between two deposits of different geologic depositional environment. Dotted lines depict transitions of deposits within the same depositional environment, such as grain size or density.

11. ELEVATION – Elevation of strata changes in feet.

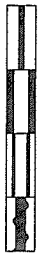
12. REMARKS – Miscellaneous observations.

13. WATER LEVELS & WELL DATA – Hollow water level symbol, if present, represents level at which first saturated sample or water level was encountered. Solid water level symbol, if present, depicts the most probable static water elevation at the time of drilling or as measured in an installed observation well at a later date. Subsurface water conditions are influenced by factors such as precipitation, stratigraphic composition, and drilling/coring methods. Conditions at other times may differ from those described on the logs. For graphical presentation of observation/monitoring well construction, see Table 6. Elevations of changes in construction are noted at the bottom of each section.

CLOUGH HARBOUR & ASSOCIATES LLP

LEGEND TO SUBSURFACE LOGS

TABLE 1
TYPICAL SAMPLE TYPES



- SPLIT SPOON (1 3/8" I.D.)
- NX SIZE ROCK CORE
- SHELBY TUBE "UNDISTURBED"
- AUGER SAMPLE

TABLE 2
SAMPLE MATERIAL PROPORTIONS

ADJECTIVE	PERCENTAGE OF SAMPLE
"and"	35% – 50%
"some"	20% – 35%
"little"	10% – 20%
"trace"	< 10%

Standard split spoon samples may not recover particles with any dimension larger than 1 3/8". Therefore, reported gravel percentages may not reflect actual conditions.

TABLE 3
DENSITY/CONSISTENCY

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
< 5	Very Loose	< 2	Very Soft
5–10	Loose	2–4	Soft
11–30	Med. Compact	5–8	Med. Stiff
31–50	Compact	9–15	Stiff
> 50	Very Compact	16–30	Very Stiff
		> 30	Hard

TABLE 4
USCS CLASSIFICATION, PARTICLE SIZE, & GRAPHICS

	MAJOR PARTICLE SIZE DIVISION	USCS SYMBOL	GRAPHIC SYMBOL	GENERAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL Coarse: 3"–3/4" Fine: 3/4"–#4 Classification based on > 50% being gravel	GW		Well graded gravels, gravel & sand mix.
		GP		Poorly graded gravels, gravel & sand mix.
		GM		Gravel, sand and silt mix.
		GC		Gravel, sand and clay mix.
	SAND Coarse: #4–#10 Med.: #10–#40 Fine: #40–#200 Classification based on > 50% being sand	SW		Well graded sand, sand & gravel mix.
		SP		Poorly graded sand, sand & gravel mix.
		SM		Sand and silt mix.
		SC		Sand and clay mix.
FINE GRAINED SOILS	SILT & CLAY Classification based on > 50% passing #200 sieve.	ML		Inorganic silt, low plasticity.
		CL		Inorganic clay, low plasticity.
		OL		Organic silt/clay, low plasticity.
		MH		Inorganic silt, high plasticity.
		CH		Inorganic clay, high plasticity.
		OH		Organic silt/clay, high plasticity.
	ORGANIC SOILS	Pt		Peat and other highly organic soils.
	FILL	Fill		Miscellaneous fill materials.

TABLE 5
ROCK CLASSIFICATION TERMS

HARDNESS:

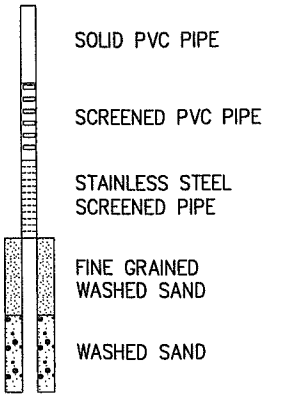
Very Soft	Carves
Soft	Grooves with knife
Med. Hard	Scratched easily with knife
Hard	Scatched with difficulty
Very Hard	Cannot be scratched with knife

WEATHERING:

Fresh	Slight or no staining of fractures, little or no discoloration, few fractures.
Slightly	Fractures stained, discoloration may extend into rock 1", some soil in fractures.
Moderately	Significant portions of rock stained and discolored, soil in fractures, loss of strength.
Highly	Entire rock discolored and dull except quartz grains, severe loss of strength.
Complete	Weathered to a residual soil.

BEDDING:		FRACTURE SPACING:		RQD:	
Massive	> 40"	Massive/V. Wide	> 6'	Excellent	> 90%
Thick	12' – 40"	Thick/Wide	2' – 6'	Good	76% – 90%
Medium	4" – 12"	Med./Med.	8" – 24"	Fair	51% – 75%
Thin	< 4"	Thin/Close	2 1/2" – 8"	Poor	25% – 50%
		V. Thin/V. Close	< 2 1/2"	V. Poor	< 25%

TABLE 6
WELL CONSTRUCTION



- SOLID PVC PIPE
- SCREENED PVC PIPE
- STAINLESS STEEL SCREENED PIPE
- FINE GRAINED WASHED SAND
- WASHED SAND
- BENTONITE PLUG
- AIR ENTRAINED CEMENT
- NATURAL SOIL/ ROCK FILL
- BENTONITE/ CEMENT GROUT

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-1

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/14/2008 9:40:00 AM

FINISH DATE and TIME: 3/14/2008 10:45:00 AM

SURFACE ELEV: 740.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-14-08	10:00 AM	During Drilling	10	10	12
	3-14-08	10:45 AM	Casing Pulled	9	-	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.6	6-8-7-10	15				**f.c. GRAVEL**, little f.m.c. sand, trace silt, brown/ orange/ white/ gray, medium compact, moist **(FILL)**			
S-2	2	0.1	23-20-9-9	29				No Recovery		Piece of c. gravel lodged in shoe.	
S-3	2	0.4	4-4-6-4	10		5		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/ orange, loose, moist **(SM)**	735		
S-4	2	1.2	8-14-10-17	24				**f.m.c. SAND**, trace clayey silt, trace f.c. gravel, brown/ black/ orange/ gold, medium compact, moist **(Completely Weathered Bedrock)**		Sample S-4 contained mica.	
S-5	2	1.3	10-14-17-18	31				**f.m.c. SAND**, little f.c. gravel, trace clayey silt, black/ gray/ brown/ white/ orange/ gold, compact, moist **(Completely Weathered Bedrock)**		Sample S-5 contained mica.	▽
S-6	1.8	1.2	12-25-27 -100/0.3'	52		10		**f.c. GRAVEL**, little f.m.c. sand, trace clayey silt, brown/ gray/ black/ tan/ orange/ gold, very compact, wet **(Completely Weathered Bedrock)**	730	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Soil becomes wet at 10'.	
S-7	0.1	0.1	100/0.1'	R				**f.c. GRAVEL**, trace f.m.c. sand, trace clayey silt, brown/ gray, very compact, wet **(Completely Weathered Bedrock)**		Auger Refusal at 13.1'	
						15		End of Boring at 13.1 ft	725		
						20			720		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-2

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/14/2008 11:50:00 AM

FINISH DATE and TIME: 3/14/2008 12:30:00 PM

SURFACE ELEV: 724.50 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 7.5' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-14-08	12:15 PM	During Drilling	None	7.5	7.5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.9	2-11-19-3	30		**f.m.c. SAND**, Some clayey Silt, trace roots, dark brown/ brown, compact, moist/ wet **(FILL)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
S-2	2	1.5	2-7-6-6	13		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, medium compact, moist **(SM)**			
S-3	2	1.2	3-5-18-62	23	5	**Similar Soil (SM)**	720		
S-4	0.4	0	100/0.4'	R		**f.c. GRAVEL**, little f.m.c. sand, trace clayey silt, brown/ black/ gray/ orange/ gold, medium compact, moist **(Completely Weathered Bedrock)** No Recovery			
R-1	5	4.9		75%	10	**GNEISS**, gray/ black/ white/ orange/ gold, medium hard, slightly weathered, closely fractured, fair RQD	715	Auger refusal @ 7.5'.	
					15	End of Boring at 12.5 ft	710		
					20		705		
							700		

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-3

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/19/2008 8:00:00 AM

FINISH DATE and TIME: 3/19/2008 11:30:00 AM

SURFACE ELEV: 727.20 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 33' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-19-08	8:45 AM	During Drilling	4	4	6

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.5	2-3-3-4	6		**f.m.c. SAND**, little clayey silt, trace roots, brown/dark brown, loose, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.7	4-5-5-3	10		**f.m.c. SAND**, little clayey silt trace f. gravel, brown, loose, moist **(FILL)**	725		
S-3	2	1.6	5-2-2-2	4	5	**f.m.c. SAND**, Some Clayey silt, trace f. gravel, brown/tan/gold, very loose, wet **(SM)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	▽
S-4	2	1.8	2-4-6-6	10		**f.m.c. SAND**, Some Clayey silt, trace f.c. gravel, brown/tan/orange/gold, loose, wet **(SM)**	720		
S-5	2	1.7	8-17-20-20	37		**Similar Soil (SM)** **f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/gray/tan/orange, compact, moist **(SM-TILL)**			
S-6	2	1.5	20-20-23-22	43	10	**Similar Soil (SM-TILL)**		Cobbles & Boulders likely throughout the glacial till layer.	
S-7	2	1.5	28-56-78-93	R	15	becomes very compact **(SM-TILL)**	715		
							710	Driller notes easier drilling at 18'. Interpreted as change in strata.	
S-8	2	1.5	22-23-18-19	41	20	**Clayey SILT**, little f. gravel, trace m.c. sand, brown/gray, compact, moist **(ML-TILL)**	705	Driller notes hard drilling at 23'. Interpreted as change in strata.	

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-3

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.8	32-33-56-68	89				**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/brown, very compact, moist **(SM-TILL)**	700		
S-10	2	1.7	18-52-58-63	R		30		**f.m.c. SAND**, little clayey silt, little f. gravel, gray/brown/tan/white, very compact, moist **(SM-TILL)**	695		
R-1	5	4.7		60%		35		**GNEISS**, gray/black/white, medium hard, freshly weathered, closely fractured, fair RQD	690	Auger refusal at 33'.	
								End of Boring at 38 ft			
						40			685		
						45			680		
						50			675		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-4

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/14/2008 12:45:00 PM

FINISH DATE and TIME: 3/14/2008 3:30:00 PM

SURFACE ELEV: 734.30 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-18-08	12:00 PM	Static	26.1	None	28
	4-23-08	12:00 AM	Static	27.4		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.
S-1	2	1.2	2-3-6-8	9	**f.m.c. SAND**, little clayey silt, trace organics, dark brown/ brown, loose, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.
S-2	2	1.6	7-7-8-10	15	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, medium compact, moist **(SM)**		
S-3	2	2	3-6-6-12	12	**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/ gray/ orange/ tan/ gold, medium compact, moist **(SP)**	730	Sample S-3 contained mica.
S-4	0.9	0.7	14-100/0.4'	R	**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/ gray/ tan/ orange/ white/ gold, very compact, moist **(SM)**		Sample S-4 contained mica. Driller notes boulder 6.5'-8.0'.
S-5	2	2	18-87-34-37	R	**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, brown/ gray, very compact, moist **(SM-TILL)**	725	Cobbles/boulders encountered throughout glacial till layer.
S-6	2	1.5	12-16-30-25	46	**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, brown/ gray/ orange/ tan, compact, moist **(SM-TILL)**		sample S-6 lab results: 36.4% passing No. 200 sieve, LL=21, PL=15, PI=6, Moisture Content 6.8%
S-7	2	1.3	17-91-26-34	R	**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, gray/ brown, very compact, moist **(SM-TILL)**	720	
S-8	2	1.8	11-14-18-21	32	**f.m.c. SAND**, little silty clay, little f.c. gravel, gray/ brown, compact, moist **(SM-TILL)**	715	
						710	

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-4

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.2	9-14-17-22	31				**Similar Soil (SM-TILL)**			
						30			705		
S-10	2	2	8-11-16-15	27				**f.m.c. SAND**, little silty clay, trace f.c. gravel, gray/brown, medium compact, moist/wet **(SM-TILL)**			
						35			700		
S-11	2	1.8	11-12-14-17	26				**Similar Soil (SM-TILL)**			
						40			695		
S-12	1.2	0.8	97-100-100/0.2'	R				**f.m.c. SAND**, And f.c. Gravel, little clayey silt, gray/brown/black, very compact, wet **(SM-TILL)**			
								End of Boring at 42.5 ft		Auger refusal at 42.5'.	
						45			690		
						50			685		
						55			680		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-5

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/18/2008 8:30:00 AM

FINISH DATE and TIME: 3/14/2008 9:30:00 AM

SURFACE ELEV: 741.80 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 4' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-14-08	9:30 AM	Casing Pulled	None	None	4

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	1.7	0.4	22-42-100/0.2'	R				**TOPSOIL**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Auger throgh cobbles and boulders to refusal at 4'.	
									740		
								GNEISS, gray/black/white/orange, medium hard, moderately weathered, very closely fractured, poor RQD			
R-1	5	4.8		35%		5			735		
								End of Boring at 9 ft			
						10			730		
						15			725		
						20			720		

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-6

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/17/2008 8:15:00 AM

FINISH DATE and TIME: 3/14/2008 9:45:00 AM

SURFACE ELEV: 721.50 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @15.5' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-17-08	9:00 AM	During Drilling	10	10	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	6-6-6-4	12		**f.m.c. SAND**, little clayey silt, trace f. gravel, trace roots, dark brown, medium compact, moist **(FILL)**	720	Fill soils appear to be related to adjacent utility line.	
S-2	2	1	3-1-1-4	2		**f.m.c. SAND**, little clayey silt, trace f. gravel, brown, very loose, moist **(FILL)**			
S-3	2	1.2	5-5-5-12	10	5	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, loose, moist **(FILL)**			
S-4	2	1.5	9-8-7-8	15		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gray/orange/gold, medium compact, moist **(SM)**	715		
S-5	2	1.8	7-7-8-7	15		becomes brown/gray/tan/orange/gold **(SM)**			
S-6	2	1.2	2-2-2-3	4	10	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/orange/gold, medium compact, wet **(SM)**	710	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	▽
S-7	2	1.8	7-16-34-18	50		**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/black/gray/orange/tan/gold, very compact, moist **(Completely Weathered Bedrock)**			
S-7	0.2	0.2	100/0.2	R	15	**f.c. GRAVEL**, little f.m.c. sand, trace clayey silt, gray/brown, very compact, moist **(Completely Weathered Bedrock)**		Auger Refusal at 15.2'	
R-1	5	5		88%		**GNEISS**, gray/black/white, medium hard, freshly weathered, medium fracture spacing, good RQD	705		
					20	End of Boring at 20.5 ft	700		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-7

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/18/2007 10:15:00 AM

FINISH DATE and TIME: 3/18/2008 12:30:00 PM

SURFACE ELEV: 709.70 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 16' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-18-08	11:00 AM	During Drilling	9	8	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.6	1-3-6-5	9				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, trace roots, brown, loose, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
S-2	2	0.3	6-9-4-4	13				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, medium compact, moist **(FILL)**			
S-3	2	0.8	3-4-3-4	7		5		**f.m.c. SAND**, little clayey silt, trace f. gravel, brown/tan/orange, loose, moist/wet **(SM)**	705		
S-4	2	1.2	22-31-44-32	75				**f.m.c. SAND**, trace silt, light brown/orange, very compact, moist **(SM-TILL)**			
								Similar Soil (SM-TILL)			
S-5	2	1.5	12-14-26-44	40		10		**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, brown/gray/yellow/tan/gold, compact, moist **(SM-TILL)**	700	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	▽
S-6	2	1.5	15-36-37-42	73				**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, brown/gray/yellow/tan/gold, compact, moist **(SM-TILL)**		trace mica in samples S-5 & S-6 Cobbles & Boulders likely throughout the glacial till layer.	
S-7	0.3	0	100/0.3'	R		15		No Recovery	695		
								GNEISS, gray/black/white/gold, medium hard, freshly weathered, closely fractured, fair RQD		Auger refusal at 16'.	
R-1	5	5		67%		20			690		
								End of Boring at 21 ft	685		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-8

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/18/2008 1:00:00 PM

FINISH DATE and TIME: 3/18/2008 4:30:00 PM

SURFACE ELEV: 702.70 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-18-08	1:30 PM	During Drilling	4	4	6

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	3-7-12-6	19				**f.m.c. SAND**, little clayey, silt, trace f. gravel, trace roots, brown, medium compact, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.2	8-6-5-5	11				**f.m.c. SAND**, little clayey silt, trace f. gravel, brown, medium compact, moist **(FILL)**	700		
S-3	2	1.3	2-3-2-3	5		5		**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/tan/orange, loose, moist **(SM)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
S-4	2	1.5	2-3-3-5	6				**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/tan/orange, loose, moist **(SM)**	695		
S-5	2	1.6	8-12-16-25	28				becomes medium compact **(SM)**			
S-6	2	1.8	21-17-27-32	44		10		**f.m.c. SAND**, trace clayey silt, brown/yellow/tan/orange, moist **(SM)**		Cobbles/boulders encountered throughout glacial till layer.	
								f.m.c. SAND, little clayey silt, little f.c. gravel, brown/tan/white/gray, compact, moist **(SM-TILL)**	690		
S-7	2	1.6	21-27-52-48	79		15		becomes brown/gray/white, very compact **(SM-TILL)**	685		
S-8	2	2	21-25-24-24	49		20		**f.m.c. SAND**, little silty clay, little f.c. gravel, gray/brown/white/orange/gold, compact, moist **(SM-TILL)**		Sample S-8 contained mica.	
									680		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-8

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.4	15-23-39-43	62				**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/white/brown, very compact, moist **(SM-TILL)**			
									675		
						30		**Similar Soil (SM-TILL)**			
S-10	2	1.8	23-45-46-50	91							
									670		
						35		**Similar Soil (SM-TILL)**			
S-11	2	1.8	35-46-63-60	R							
									665		
						40		**Similar Soil (SM-TILL)**			
S-12	2	1.8	32-43-57-61	R							
									660		
						45		**Similar Soil (SM-TILL)**			
S-13	2	2	30-33-43-52	76							
								End of Boring at 47 ft		Boring terminated in glacial till.	
									655		
						50					
									650		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-9

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/17/2008 10:00:00 AM

FINISH DATE and TIME: 3/17/2008 12:30:00 PM

SURFACE ELEV: 671.00 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-17-08	11:00 AM	During Drilling	15	20	20
	3-18-08	12:00 PM	24 Hours	14.9	None	28
	4-23-08	12:00 AM	Static	25		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.4	3-4-3-4	7				**f.m.c. SAND**, little clayey silt, little organics, dark brown/brown, loose, moist/wet **(FILL)**	670	Fill soils appear to be soils disturbed for farming use.	
S-2	2	2	8-12-10-8	22				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, trace wood, brown/gray/dark brown, medium compact, moist **(FILL)**			
S-3	2	1.8	10-23-18-24	41		5		**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/gray/orange/gold, compact, moist **(SP)**			
								Similar Soil (SP)	665		
S-4	2	1.7	23-18-10-11	28				**Clayey SILT**, Some f.m.c. Sand, trace f.c. gravel, brown/dark brown/tan, medium compact, moist **(ML)**			
S-5	2	1.5	9-8-8-8	16				**Similar Soil (ML)**		sample S-5 lab results: 58.1% passing No. 200 sieve, LL=22, PL=11 PI=10, Moisture Content 14.9%	
S-6	2	1	3-5-5-5	10		10		**f.m.c. SAND**, little clayey silt, trace f. gravel, brown, medium compact, moist **(SM)**	660		
S-7	2	1	2-3-4-4	7				becomes loose **(SM)**			
S-8	2	1	5-8-10-10	18		15		**f.m.c. SAND**, trace clayey silt, trace f. gravel, brown/gray/tan, medium compact, wet **(SP)**	655		
						20		**Similar Soil (SP)**			
S-9	2	0.1	9-10-6-12	16					650		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-9

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-10	2	1.3	8-7-9-15	16				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/tan/gray, medium compact, wet **(SM)**	645		
S-11	1.8	1.5	44-17-29 -100/0.3'	46		30		**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/tan/gray, compact, wet **(Completely Weathered Bedrock)**	640		
								End of Boring at 32.5 ft		Auger refusal at 32.5'.	
						35			635		
						40			630		
						45			625		
						50			620		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-10

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/17/2008 4:15:00 PM

FINISH DATE and TIME: 3/15/2008 10:00:00 AM

SURFACE ELEV: 701.90 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 21' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-18-08	8:00 AM	During Drilling	7.5	21	21

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	2-3-4-4	7				**f.m.c. SAND**, little clayey silt, trace f. gravel, trace roots, loose, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
									700		
								Similar Soil (FILL)			
S-2	2	1.3	3-3-4-4	7							
								f.m.c. SAND, little clayey silt, brown/tan, medium compact, moist **(FILL)**			
S-3	2	1.7	3-8-5-4	13		5					
								f.m.c. SAND, little clayey silt, brown/dark brown, very loose, wet **(SM)**			
S-4	2	1	2-1-1-2	2					695		▽
								f.m.c. SAND, little f.c. gravel, little clayey silt, brown/tan/gray, medium compact, moist **(SM-TILL)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
S-5	2	1.5	2-4-15-23	19							
						10		**f.m.c. SAND**, little f.c. gravel, little clayey silt, brown/gray/orange/tan/white, compact, moist **(SM-TILL)**		Cobbles/boulders encountered throughout glacial till layer. Cobbles & Boulders likely throughout the glacial till layer. Driller notes cobbles and boulders 12'-14'.	
S-6	2	1.2	8-13-24-26	37					690		
								becomes very compact **(SM-TILL)**			
S-7	2	1.3	33-54-47-79	R		15					
									685		
S-8	0.7	0.3	46-100/0.2'	R		20		**Similar Soil (SM-TILL)**			
								GNEISS, gray/white/black/gold, medium hard, freshly weathered, closely fractured, good RQD		Auger refusal at 21'.	
									680		
R-1	5	4.5		80%							

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								GNEISS, gray/white/black/gold, medium hard, freshly weathered, closely fractured, good RQD *(continued)*			
								End of Boring at 26 ft	675		
						30			670		
						35			665		
						40			660		
						45			655		
						50			650		
						55					

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-11

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/17/2008 1:00:00 PM

FINISH DATE and TIME: 3/17/2008 4:00:00 PM

SURFACE ELEV: 680.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 26' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-17-08	3:00 PM	During Drilling	None	26.1	26.1

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.6	1-3-3-4	6				**f.m.c. SAND**, little clayey silt, trace roots, brown, loose, moist **(FILL)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.8	4-5-5-5	10				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, loose, moist **(FILL)**			
S-3	2	1.2	4-2-4-2	6		5		**Similar Soil (FILL)**	675		
S-4	2	1	4-6-7-13	13				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gray/dark brown, medium compact, moist **(SM)**			
S-5	2	1.7	15-20-35-33	55				**Similar Soil (SM)**			
S-6	2	1.8	11-14-15-22	29		10		**f.m.c. SAND**, Some f. c. Gravel, trace clayey silt, brown/gray tan, very compact, moist **(SP-TILL)** **f.m.c. SAND**, littel f.c. gravel, trace clayey silt, brown/gray/tan/white, very compact, moist **(SP-TILL)**	670	Cobbles/boulders encountered throughout glacial till layer.	
S-7	0.6	0.1	87-100/0.1	R		15		**c. GRAVEL**, Some clayey Silt, gray/white/black/brown, very compact, miost **(GP-TILL)**	665	Driller notes cobbles and boulders 14'-17'. Piece of c. gravel lodged in shoe of S-7.	
S-8	2	0.4	19-45-58-100	R		20		**f.c. GRAVEL**, Some clayey Silt, gray/brown, very compact, moist **(GP-TILL)**	660		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-11

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	1.1	1	71-26-100/0.1'	R				**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray, very compact, moist **(TILL)**			
								boulders & cobbles		Auger refusal at 26.1'. Cored and encountered cobbles/boulders.	
R-1	5	3									
						30			650		
S-10	1.3	1	58-134-100/0.3'	R				**f.m.c. SAND**, little clayey silt, little f. gravel, gray, very compact, wet **(TILL)**		Drove spoon below boulder through core hole. Could not auger past boulders and cobbles. Auger refusal at 26.4'. Boring terminated at 31.4 feet on spoon refusal.	
								End of Boring at 31.4 ft			
						35			645		
						40			640		
						45			635		
						50			630		
						55			625		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-12

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/13/2008 11:15:00 AM

FINISH DATE and TIME: 3/13/2008 2:30:00 PM

SURFACE ELEV: 586.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 41' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-13-08	1:30 PM	During Drilling	None	41	41

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.5	2-2-5-6	7		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, trace roots, dark brown/brown/gray, loose, moist/wet **(FILL)**	585	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils probably related to adjacent road.	
S-2	2	1	6-5-5-5	10		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/orange/gold, loose, moist **(FILL)**			
S-3	2	1.6	3-3-4-6	7	5	**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/gray/orange/gold, loose, moist **(SM)**		sample S-3 lab results: 46.5% passing No. 200 sieve, LL=23, PL=19, PI=4, Moisture Content15.2%	
S-4	2	1.3	6-3-3-6	6		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/orange/gold/gray, loose, moist **(SM)**	580	Soil becomes stratified in S-3. Interpreted as change in strata. Sample contained mica. Sample S-4 contained mica.	
S-5	2	1	6-11-12-16	23		**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/gray, medium compact, moist/wet **(SM-TILL)**		Cobbles/boulders encountered throughout glacial till layer.	
S-6	2	2	9-12-22-20	34	10	**f.c. GRAVEL**, Some Clayey Silt, gray/brown/orange/tan/gold, compact, moist **(GM-TILL)**	575	Sample S-6 contained mica.	
S-7	2	1.3	15-26-30-38	56	15	**f.m.c. SAND**, Some f.c. Gravel, brown/gray/tan/orange/gold, very compact, moist **(SP-TILL)**	570	Sample S-7 contained mica.	
S-8	2	1.2	28-34-30-31	64	20	**Similar Soil (SP-TILL)**	565	Driller notes boulder 19'-20'.	

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	0.4	0.2	100/0.4'	R				**f.m.c. SAND**, little f.c. gravel, trace clayey silt, gray/brown/black/gold, very compact, moist **(Completely Weathered Bedrock)**	560		
S-10	0.2	0.1	100/0.2'	R		30		**Similar Soil (Completely Weathered Bedrock)**	555		
S-11	0.2	0.1	100/0.2'	R		35		**Similar Soil (Completely Weathered Bedrock)**	550		
S-12	0.3	0.2	100/0.3'	R		40		**Similar Soil (Completely Weathered Bedrock)**	545	Auger refusal at 41'.	
R-1	5	5		63%		45		**GNEISS**, gray/black/white/orange/gold, meduim hard, slightly weathered, closely fractured, fair RQD	540		
						50		End of Boring at 41 ft	535		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-13

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/12/2008 4:00:00 PM

FINISH DATE and TIME: 3/13/2008 10:45:00 AM

SURFACE ELEV: 604.30 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-13-08	8:20 AM	Start of Day	8	15	15

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.5	2-2-4-6	6		**f.m.c. SAND**, little clayey silt, trace organics, brown, loose, moist/wet **(FILL)**			
S-2	2	2	4-5-5-6	10		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gold, loose, wet **(FILL)**		Sample S-2 contained mica.	
S-3	2	1.6	3-5-7-7	12	5	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/tan/gray/orange/gold, medium compact, moist/wet **(SM)**	600	Sample S-3 contained mica.	
S-4	2	1.2	3-5-14-11	19		**Similar Soil (SM)**			
S-5	2	1.5	4-4-8-8	12		**f.m.c. SAND**, little f. gravel, trace clayey silt, trace c. gravel, brown, wet **(SP)**		Sample S-5 contained mica.	▽
S-6	2	1.5	9-13-15-18	28	10	**Clayey SILT**, Some f.m.c. Sand, trace f.c. gravel, brown/gray/tan/orange/gold, medium compact, moist **(ML)**	595	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
						f.m.c. SAND, little clayey silt, trace f.c. gravel, brown/tan/orange/gray/gold, medium compact, moist **(SM)**		Sample S-6 contained mica.	
S-7	2	1	21-33-55-56	88	15	**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/gray/gold/tan/orange, very compact, moist/wet **(SM-TILL)**	590	Driller notes boulder 13.5'-14.5'. Cobbles/boulders encountered throughout glacial till layer. Sample S-7 contained mica.	
S-8	2	1.6	21-30-40-38	70	20	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/tan/orange/gold, very compact, moist **(SM-TILL)**	585	Sample S-8 contained mica.	
							580		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-13

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	2	21-28-32-38	60				**Similar Soil (SM-TILL)**			
									575		
						30		**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/brown, very compact, moist **(SM-TILL)**			
S-10	2	1.8	12-27-50-58	77							
									570		
						35		**f.c. GRAVEL**, little f.m.c. sand, trace clayey silt, gray/brown, very compact, moist **(SM-TILL)**			
S-11	1.2	0.5	62-62-100/0.2'	R							
									565		
						40		**f.m.c. SAND**, Some f.c. Gravel, little clayey silt, gray/brown, very compact, moist **(SM-TILL)**			
S-12	2	1.2	17-26-28-30	54							
									560		
						45		**Similar Soil (SM-TILL)**			
S-13	2	2	17-25-35-38	60							
								End of Boring at 47 ft		Boring terminated in glacial till.	
									555		
						50					
									550		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-14

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/12/2008 1:15:00 PM

FINISH DATE and TIME: 3/12/2008 3:45:00 PM

SURFACE ELEV: 590.20 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-13-08	8:15 AM	24 Hours	11	None	15.2

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.5	2-3-4-4	7		**f.m.c. SAND**, little f.c. gravel, little clayey silt, trace organics, brown, loose, moist **(FILL)**	590		
S-2	2	1.2	4-6-11-7	17		becomes medium compact **(FILL)**			
S-3	2	0	9-6-6-5	12	5	Insufficient Recovery	585	Spoon S-3 returns only slough.	
S-4	2	1.2	5-8-10-14	18		**Similar Soil (FILL)**			
S-5	2	1.5	14-15-15-15	30		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gray/orange/tan, medium compact, moist **(SM)** **f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/tan/orange/gold, compact, moist **(SM)**		Sample S-5 contained mica.	
S-6	2	1.4	9-11-8-6	19	10	**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, brown/white/tan/orange, medium compact, miost **(SP)** **f.m.c. SAND**, Some Clayey Silt, trace f. gravel, brown/gray/tan/orange, medium compact, moist **(SM)**	580	Sample S-6 contained mica.	▽
S-7	2	1.5	6-8-10-13	18	15	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gray/medium compact, moist **(SM)**	575		
S-8	2	1.6	7-10-18-21	28	20	**Silty CLAY**, little f.m.c. sand, trace f.c. gravel, brown/gray, medium compact, moist **(CL-TILL)**	570	Cobbles/boulders encountered throughout glacial till layer. sample S-8 lab results: 66.6% passing No. 200 sieve, LL=34, PL=20, PI=14, Moisture Content 16.4%	

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-14

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.5	6-10-15-18	25				**Similar Soil (CL-TILL)**	565	Augers pulled, hole collapses to 25'.	
S-10	2	0.5	15-24-27-30	51		30		**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/tan, very compact, moist **(SM-TILL)**	560		
S-11	2	1.7	10-17-17-17	34		35		**f.m.c. SAND**, Some Clayey Silt, little f.c. gravel, brown/gray/orange/gold, compact, moist **(SM-TILL)**	555	Sample S-11 contained mica.	
S-12	2	1.4	12-28-22-23	50		40		**f.m.c. SAND**, little f.c. gravel, little clayey silt, brown/gray/tan/oragne, very compact, moist **(SM-TILL)**	550	Sample S-12 contained mica.	
S-13	1.4	1.3	15-51-100/0.4'	R		45		**Similar Soil (SM-TILL)**	545	Sample S-13 contained mica.	
								f.c. GRAVEL, Some f.m.c. Sand, little mica, trace silt, gray, moist **(Completely Weathered Bedrock)**		Auger Refusal at 46.4'	
								End of Boring at 46.4 ft			
						50			540		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-15

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/12/2008 9:45:00 AM

FINISH DATE and TIME: 3/12/2008 12:30:00 PM

SURFACE ELEV: 582.40 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-13-08	8:10 AM	24 Hours	20	None	20.5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.7	2-4-5-6	9		**f.m.c. SAND**, little f.c. gravel, trace clayey silt, trace wood, brown/black, loose, moist/wet **(FILL)**			
S-2	2	1.5	11-9-6-5	15		**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown, medium compact, moist **(FILL)**	580		
S-3	2	1.1	4-5-5-6	10	5	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, loose, moist **(SM)**		Sample S-3 contained mica.	
S-4	2	0.5	4-5-5-5	10		**Similar Soil (SM)**	575		
S-5	2	0.9	4-4-5-5	9		**f.m.c. SAND**, little clayey silt, trace f. gravel, trace organics, brown/gray, loose, wet **(SM)**			
S-6	2	2	4-9-13-13	22	10	**Similar Soil (SM)**		Sample S-6 contained mica.	
						f.m.c. SAND, Some f.c. Gravel, trace clayey silt, brown/tan/gray/gold, medium compact, moist **(SP)**	570		
S-7	2	1.3	6-9-9-10	18	15	**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/tan/orange/gray, medium compact, moist **(SP)**		Sample S-7 contained mica.	
							565		
S-8	2	1	7-14-12-14	26	20	**f.m.c. SAND**, trace clayey silt, trace f.c. gravel, brown/orange/tan/fray/gold, medium compact, moist **(SP)**		Sample S-8 contained mica. Augers pulled at termination of boring, hole collapses at 21'.	▽
							560		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-15

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1	33-17-8-11	25				**f.m.c. SAND**, little f.c. grael, trace clayey silt, brown/gray/tan/gold/orange, medium compact, wet **(SP)**		Sample S-9 contained mica.	
									555		
						30		**Similar Soil (SP)**			
S-10	2	1.4	21-30-91-63	R				**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/tan/gray/orange/gold, very compact, moist **(SP-TILL)**		Cobbles/boulders encountered throughout glacial till layer. Sample S-10 contained mica.	
									550		
S-11	0.7	0.3	12-100/0.2'	R		35		**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, brown/tan/gray/orange/gold, very compact, moist **(SP-TILL)**		Sample S-11 contained mica.	
									545		
S-12	0.1	0	100/0.1'	R		40		No Recovery		Interpreted to be completely weathered bedrock.	
									540		
S-13	0.2	0.1	100/0.2'	R		45		**f.m.c. SAND**, little f.c. gravel, trace silt, gray, very compact, moist **(Completely Weathered Bedrock)**		Auger Refusal at 45.2'	
								End of Boring at 45.2 ft	535		
						50			530		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-16

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/13/2008 2:45:00 PM

FINISH DATE and TIME: 3/14/2008 5:15:00 PM

SURFACE ELEV: 627.30 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: None DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-13-08	5:00 PM	Casing Pulled	8	None	10.5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.2	5-8-9-11	17	**f.m.c. SAND**, Some f.c. Gravel, trace silt, while/gray, medium compact, moist **(FILL)**			
					f.m.c. SAND, little clayey silt, trace f.c. gravel, trace roots, dark brown, medium compact, moist **(FILL)**			
					Similar Soil (FILL)	625		
S-2	2	1.4	8-7-12-14	19	**f.m.c. SAND**, little clayey silt, brown/orange/gold, medium compact, moist **(SM)**			
S-3	2	1.5	4-8-14-13	22	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, medium compact, moist **(SM)**			
					5			
					Similar Soil (SM)			
S-4	2	1.5	9-9-8-8	17		620		
S-5	2	1.5	5-4-4-4	8	**f.m.c. SAND**, Some Silty Clay, trace f.c. gravel, brown/gray/tan/orange, loose, moist/wet **(SC)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	▽
					10			
					Similar Soil (SC)			
S-6	2	1.4	2-3-6-9	9				
S-7	2	1.3	24-12-14-14	26	**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/gray/tan/orange, medium compact, wet **(SM-TILL)**	615	Cobbles/boulders encountered throughout glacial till layer.	
					15			
S-8	2	1.2	9-19-18-18	37	**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, brown/gray/orange/tan, compact, moist/wet **(SM-TILL)**	610		
					20			
S-9	2	1	33-46-60-71	R	**f.c. GRAVEL**, little f.m.c. sand, little clayey silt, gray/brown/white/tan/orange, very compact, moist **(GM-TILL)**	605		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-16

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-10	2	0.9	19-26-38-42	64				**f.m.c. SAND**, Some f.c. Gravel, little clayey silt, gray/brown/white/tan/orange, very compact, moist **(SM-TILL)**	600		
S-11	0.1	0	100/0.1'	R				No Recovery End of Boring at 28.2 ft		Driller notes more difficult drilling at 27.5', interpreted to be completely weathered bedrock. Auger Refusal at 28.2'	
						30			595		
						35			590		
						40			585		
						45			580		
						50			575		
						55					

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-17

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/24/2008 8:40:00 AM

FINISH DATE and TIME: 3/24/2008 10:00:00 AM

SURFACE ELEV: 715.50 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 14' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-24-08	9:15 AM	During Drilling	10	10	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.3	2-5-6-6	11		**Clayey SILT**, Some f.m.c. Sand, trace roots, brown/dark brown, medium compact, moist **(FILL)**	715	Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.1	6-11-11-11	22		**f. SAND**, little clayey silt, trace f. gravel, trace m.c. sand, brown/orange/dark brown/gold, medium compact, moist **(SM)**			
S-3	2	1.3	3-5-6-9	11	5	**f.m.c. SAND**, little clayey silt, brown/orang/gold, medium compact, moist **(SM)**	710		
S-4	2	1.8	8-10-12-13	22		**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/gray/tan/orange/gold, medium compact, moist **(SM)**			
S-5	2	1.7	12-12-11-13	23		**Similar Soil (SM)**			▽
S-6	2	1	9-10-6-9	16	10	**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/gray/tan/orange/gold, medium compact, wet **(Completely Weathered Bedrock)**	705	Completely weathered bedrock contained mica. The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
R-1	5	4.1		10%	15	**GNEISS**, medium hard, moderately weathered, very closely fractured, very poor RQD	700	Auger refusal at 14 feet.	
					20	End of Boring at 19 ft	695		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-18

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/24/2008 2:00:00 PM

FINISH DATE and TIME: 3/24/2008 3:20:00 PM

SURFACE ELEV: 710.60 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 11' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-24-08	3:20 PM	Completion	None	10	10.9

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.6	2-2-3-5	5	**f.m.c. SAND**, little clayey silt, trace roots, brown/dark brown, loose, moist **(FILL)**	710	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.4	5-6-6-5	12	**f.m.c. SAND**, little clayey silt, trace f. gravel, brown/tan/orange/gold, medium compact, moist **(SM)**			
S-3	2	0	3-3-3-3	6	Insufficient Recovery	705		
S-4	2	0.4	3-4-4-4	8	**f. SAND**, Some clayey Silt, little m.c. sand, trace f. gravel, brown/orange/gold, loose, moist **(SM)**			
S-5	1.8	0.3	3-4-19-100/0.3	23	**f. SAND**, Some silty Clay, trace f.c. gravel, trace m.c. sand, brown/orange, medium compact, moist **(SM)**			
S-6	0.9	0.6	11-100/0.4	R	**f. SAND**, little clayey silt, little m.c. sand, brown/dark brown/gold/orange, very compact, moist **(SM)**	700	Completely weathered bedrock contained mica. Auger Refusal at 11.0'	
R-1	5	5		100%	**GNEISS**, black/gray/white/gold, hard, freshly weathered, medium fracture spacing, excellent RQD	695		
					End of Boring at 16 ft	690		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-19

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/24/2008 12:30:00 PM

FINISH DATE and TIME: 3/24/2008 1:45:00 PM

SURFACE ELEV: 699.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 13' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-24-08	1:00 PM	During Drilling	9	8	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.2	3-6-7-6	13				**f.m.c. SAND**, little f.c. gravel, trace clayey silt, brown/gray/gold, medium compact, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.2	5-7-8-7	15				**Similar Soil (FILL)**			
S-3	2	1.4	4-5-5-4	10		5		**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/tan/orange/gold, loose, moist **(SM)**	695		
S-4	2	1.4	5-4-7-7	11				becomes medium compact, wet **(SM)**			
S-5	2	1.5	11-19-7-10	26				**Similar Soil (SM)**			▽
S-6	0.3	0.1	100/0.3	R		10		**f.m.c. SAND**, Some clayey Silt, brown/orange, medium compact, wet **(SM)**	690	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
								f.m.c. SAND, little clayey silt, little f.c. gravel, brown/gray/orange/gold, medium compact, wet **(SM)**			
								f.c. GRAVEL, little clayey silt, little f.m.c. sand, gray/brown, very compact, moist **(Completely Weathered Bedrock)**			
R-1	5	4.6		87%		15		**GNEISS**, gray/black/white, medium hard, freshly weathered, closely fractured spacing, good RQD	685	Auger refusal at 13 feet.	
								End of Boring at 18 ft			
						20			680		
									675		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-20

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/24/2008 10:15:00 AM

FINISH DATE and TIME: 3/24/2008 12:15:00 PM

SURFACE ELEV: 691.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 18' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-24-08	10:00 AM	During Drilling	14	15	17

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.6	3-5-7-6	12				**f.m.c. SAND**, little clayey silt, trace roots, brown/dark brown/gold, medium compact, moist **(FILL)**	690	Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.5	8-8-10-8	18				**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, brown/tan/gray/orange/gold, medium compact, moist **(SM)**			
S-3	2	1.2	8-10-14-11	24		5		**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/tan/orange/gold, medium compact, moist **(SM)**			
								No Recovery	685		
S-4	2	0	7-6-6-7	12							
S-5	2	0.5	4-4-2-6	6				**f.m.c. SAND**, Some Clayey Silt, trace f. gravel, brown/gold, loose, wet **(SM)**			
S-6	2	1.5	4-6-5-6	11		10		**f. SAND**, little m.c. sand, little clayey silt, trace f. gravel, brown/gray/tan/orange/gold, medium compact, moist **(SM)**	680		
S-7	2	0.5	2-2-2-3	4		15		**f.m.c. SAND**, little clayey silt, trace f. gravel, brown/orange/tan/gray/gold, very loose, wet **(SM)**	675	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	▽
S-8	0.1	1	100/0.1	R				No Recovery		Driller notes augering into weathered rock at 17 feet. Auger refusal at 18 feet.	
R-1	5	5		75%		20		**GNEISS**, black/gray/orang, hard, freshly weathered, closely fractured spacing, fair RQD	670		
								End of Boring at 23 ft			

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-21

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/24/2008 3:30:00 PM

FINISH DATE and TIME: 3/25/2008 9:00:00 AM

SURFACE ELEV: 684.90 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 22.5' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-24-08	4:00 PM	During Drilling	8	6	8
	3-25-08	8:00 AM	During Drilling	9.5	22.5	22.5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.4	2-3-4-3	7		**f.m.c. SAND**, little clayey silt, trace roots, brown/dark brown, loose, moist **(FILL)**		Fill soils appear to be soils disturbed for farming use.	
S-2	2	1.7	2-4-3-4	7		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/dark brown/orange, loose, moist **(SM)**			
S-3	2	2	2-2-3-3	5	5	**f.m.c. SAND**, little clayey silt, trace f. gravel, brown/orange, loose, moist **(SM)**	680		
S-4	2	1	3-4-4-4	8		becomes brown/orange/tan/gray **(SM)**			
S-5	2	1.4	5-8-12-20	20		becomes medium compact, wet **(SM)**			
S-6	2	1.6	14-22-58-33	80	10	**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/gray/orange/tan, medium compact, wet **(SM-TILL)** **f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/gray/orange/tan, very compact, moist **(SM-TILL)**	675	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Weathered boulder in sample S-6. Cobbles/boulders encountered throughout glacier till layer.	
S-7	2	1.7	29-50-54-69	R	15	**f.m.c. SAND**, Some f.c. Gravel, trace clayey silt, brown/tan/gray, very compact, moist **(SP-TILL)**	670		
S-8	1.8	1.5	25-42-37-100/0.3	79	20	**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/white/brown, very compact, moist **(SM-TILL)**	665		
						GNEISS, black/gray/white, medium hard, moderately weathered, closely fractured spacing, fair RQD		Auger refusal at depth 22.5 feet.	

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-21

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-1	5	3.5		50%				**GNEISS**, black/gray/white, medium hard, moderately weathered, closely fractured spacing, fair RQD *(continued)*			
								End of Boring at 27.5 ft			
						30			655		
						35			650		
						40			645		
						45			640		
						50			635		
						55			630		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-22

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/25/2008 9:15:00 AM

FINISH DATE and TIME: 3/25/2008 11:15:00 AM

SURFACE ELEV: 691.40 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 27.5' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-25-08	9:15 AM	Completion	None	25	27

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.2	2-3-3-6	6				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, trace roots, brown/dark brown, loose, moist **(FILL)**	690	The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils appear to be soils disturbed for farming use. Sample S-2 contained mica.	
S-2	2	1.2	6-4-5-4	9				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/dark brown/orange, loose, moist **(SM)**			
S-3	2	1.5	3-3-3-4	6		5		**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/dark brown/loose, wet **(SM)**			
S-4	2	1.5	4-6-16-21	22				becomes medium compact **(SM)**	685		
S-5	2	1.4	19-23-30-27	53		10		**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/brown/white, medium compact, moist **(SM-TILL)** **f.m.c. SAND**, little f.c. gravel, little clayey silt, gray/brown/white, very compact, moist **(SM-TILL)** becomes brown/white **(SM-TILL)**		Cobbles/boulders encountered throughout glacial till layer.	
S-6	2	1.5	18-34-41-36	75					680		
S-7	2	1.2	25-31-36-38	67		15		**Similar Soil (SM-TILL)**	675		
S-8	2	1.8	21-36-39-42	75		20		**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/brown/white/tan, very compact, moist **(SM-TILL)**	670		

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-22

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.8	30-44-43-119	87				becomes gray/tan/brown **(SM-TILL)**	665	Auger refusal at depth 27.5 feet.	
								GNEISS, gray/black/white, medium hard, freshly weathered, wide fracture spacing, fair RQD			
R-1	5	4.5		75%		30			660		
								End of Boring at 32.5 ft			
						35			655		
						40			650		
						45			645		
						50			640		
						55					

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PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-23

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/25/2008 12:00:00 PM

FINISH DATE and TIME: 3/25/2008 2:30:00 PM

SURFACE ELEV: 678.10 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 34' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-25-08	2:30 PM	Completion	None	30	32

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.2	3-6-6-5	12		**f.m.c. SAND**, little roots, trace m.c. sand, dark brown/brown, medium compact, moist **(FILL)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils appear to be soils disturbed for farming use.	
						No Recovery			
S-2	2	0	8-7-6-5	13			675		
S-3	2	1.2	4-4-3-4	7	5	**f. SAND**, Some clayey Silt, little m.c. sand, trace f. gravel, brown/dark brown/orange, loose, wet **(SM)**			
S-4	2	1.4	4-6-10-5	16		**f. SAND**, Some clayey Silt, trace f. gravel, trace m.c. sand, brown/tan/orange, medium compact, wet **(SM)**			
						Similar Soil (SM)	670		
S-5	2	1.5	11-11-20-19	31		**f.m.c. SAND**, little clayey silt, little f. gravel, brown/dark brown/tan/orange, compact, moist **(SM-TILL)**		Cobbles/boulders encountered throughout glacial till layer.	
S-6	2	1.1	22-23-28-38	51	10	**f.m.c. SAND**, little clayey silt, little f.c. gravel, brown/dark brown/gray/tan/orange, very compact, moist **(SM-TILL)**			
								Driller notes auger past cobbles/boulders 12 feet - 13 feet.	
							665		
					15	**Similar Soil (SM-TILL)**			
S-7	2	1.4	23-25-55-25	80				Driller notes auger past boulder 17.5 feet - 18 feet.	
							660		
					20	grades to Some clayey Silt **(SM-TILL)**			
S-8	2	1.8	26-33-39-42	72					
							655		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-23

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.7	28-56-35-36	91				**f.m.c. SAND**, little clayey silt, little f.c. gravel, gray/brown/orange/tan/white, very compact, moist **(SM-TILL)**			
									650		
						30					
S-10	2	1.4	21-32-34-31	66				**f.m.c. SAND**, Some f.c. Gravel, little clayey silt, gray/brown, very compact, moist **(SM-TILL)**			
									645		
								GNEISS, gray/black/white/orange, medium hard, slightly weathered, closely fractured spacing, fair RQD		Auger Refusal at 34.0'	
R-1	5	4.9		67%		35					
									640		
								End of Boring at 39 ft			
						40					
									635		
						45					
									630		
						50					
									625		
						55					

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PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-24

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/25/2008 2:50:00 PM

FINISH DATE and TIME: 3/25/2008 6:15:00 PM

SURFACE ELEV: 662.30 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 45' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-25-08	2:50 PM	Completion	None	45	45.1

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.2	2-4-3-3	7				**f.m.c. SAND**, little clayey silt, trace organics, dark brown, loose, moist **(FILL)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions. Fill soils appear to be soils disturbed for farming use.	
S-2	2	1	5-11-12-7	23				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown, medium compact, moist **(FILL)**	660		
S-3	2	0.3	10-7-7-4	14		5		**f.c. GRAVEL**, little clayey silt, trace f.m.c. sand, gray/brown, moist/wet **(FILL)**			
S-4	2	1.1	5-4-3-5	7				**f.m.c. SAND**, Some clayey Silt, trace f.c. gravel, brown/tan/white, loose, moist **(SM)**	655		
S-5	2	1.5	7-13-9-6	22				**f.m.c. SAND**, Some clayey Silt, trace f. gravel, brown/orange/tan, medium compact, moist **(SM)**			
S-6	2	0.8	4-3-5-3	8		10		**f.m.c. SAND**, Some clayey Silt, trace f. gravel, brown/orange, loose, moist **(SM)**	650		
S-7	2	1.4	30-28-29-57	57		15		**f.m.c. SAND**, little silt, trace f. gravel, brown/tan/orange/white, very compact, moist **(SM)**	645		
S-8	2	1.5	15-15-19-23	34		20		**f.m.c. SAND and Clayey SILT**, little f.c. gravel, gray/brown/orange, compact, moist **(SM-TILL)**	640	Cobbles/boulders encountered throughout glacial till layer.	

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 18219.1000.1502 3-19-08

Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-24

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-9	2	1.5	12-16-15-23	31				**Silty CLAY**, Some f.m.c. Sand, trace f.c. gravel, gray/white/brown, compact, moist **(CL-TILL)**			
									635		
						30		becomes moist **(CL-TILL)**			
S-10	2	2	18-26-49-115	75				**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, gray/brown/dark brown/gold/tan/orange/white, very compact, moist **(SM-TILL)**			
									630		
						35		**f.m.c. SAND**, Some clayey Silt, little f.c. gravel, gray/brown/tan/white, very compact, moist **(SM-TILL)**			
S-11	2	1.9	22-33-50-55	83							
									625		
						40		**Similar Soil (SM-TILL)**			
S-12	2	1.2	27-27-44-58	71							
									620		
S-13	0.1	0.1	100/0.1	R		45		**f.c. GRAVEL**, little f.m.c. sand, trace silt, gray/brown, very compact, moist **(Completely Weathered Rock)**		Auger Refusal at 45.1'	
								GNEISS, gray/white/orange/black, medium hard, slightly weathered, closely fractured spacing, fair RQD			
R-1	5	5		55%					615		
						50		End of Boring at 50.1 ft			
									610		
						55					

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Watchtower Educational Center Expansion
SUBSURFACE LOG
HOLE NUMBER B-25

PROJECT NUMBER: 18219.1000.1502 3-19-08

LOCATION: Patterson, NY

CLIENT: Watchtower Bible & Tract Society NY

CONTRACTOR: Soil Testing, Inc.

DRILLER: P. DeAngelis INSPECTOR: K. Armstrong

START DATE and TIME: 3/19/2008 12:00:00 PM

FINISH DATE and TIME: 3/19/2008 12:45:00 PM

SURFACE ELEV: 741.30 (ft; Estimated) CHECKED BY: W. Harris

DRILL FLUID: Water @ 4' DRILLING METHOD: 3.75 HSA

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	3-19-08	12:15 PM	During Drilling	0	0	2
	3-19-08	12:20 PM	Estimated	3	0	4

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	2-4-7-6	11				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, trace roots, dark brown/brown/white, medium compact, wet **(FILL)**	740	Fill soils appear to be soils disturbed for farming use.	
S-2	1.7	1.3	3-7-100/0.2'	R				**f.m.c. SAND**, little clayey silt, trace f.c. gravel, brown/tan/white, very compact, moist/wet **(SM)**			▽
								f.m.c. SAND, little f.c. gravel, trace clayey silt, brown/white/orange/dark brown/gray, very compact, moist **(Completely Weathered Bedrock)**		The bore hole was only open a short time therefore groundwater conditions observed during drilling operations may not represent static conditions.	
						5		**GNEISS**, black/gray/white/red, medium hard, freshly weathered, closely fractrued, good RQD		Auger refusal at 4'.	
R-1	5	5		80%					735		
								End of Boring at 9 ft			
						10			730		
						15			725		
						20			720		

SUBSURFACE LOG 18219 BORING LOGS (RLF 5-1).GPJ UPDATEDCHA.GDT 5/2/08

APPENDIX C

LABORATORY TEST

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April 14, 2008

ATTERBERG LIMITS TEST (ASTM D 4318) AND MOISTURE ANALYSIS (ASTM D 2216)

Project Name: Watchtower Educational Expansion
Location:
Client Name:
Project #: 18219
Report #: 1

TEST RESULTS

Sample #	**B-4, S-5/6**
Location:	B-4, 10-12’
Description:	Light Brown Silty Clayey Sand with Gravel
Liquid Limit:	21
Plastic Limit:	15
Plasticity Index:	6
Moisture Content:	6.8%

Sample #	**B-9, S-4/5**
Location:	B-9, 6-10’
Description:	Light Brown Clayey Silty Sand with Gravel
Liquid Limit:	22
Plastic Limit:	17
Plasticity Index:	5
Moisture Content:	14.9%

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Sample #	**B-12, S-3/4**
Location:	B-12, 4-8’
Description:	Light Brown Clayey Silty Sand with Gravel
Liquid Limit:	23
Plastic Limit:	19
Plasticity Index:	4
Moisture Content:	15.2%

Sample #	**B-14, S-8/9**
Location:	B-14, 20-22’ & 25-27’
Description:	Light Brown Silty Sandy Clay with Gravel
Liquid Limit:	34
Plastic Limit:	20
Plasticity Index:	14
Moisture Content:	16.4%

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PARTICLE SIZE DISTRIBUTION OF SOILS
USING SIEVE ANALYSIS
ASTM D6913

Client:		Date Sampled:	
Project Name:	Watchtower Educational Expansion	Date of Test:	4/7/08
Project #:	18219	Report Date:	4/14/08
Sample Location:	B-12, 4-8', S-3/4	Report #:	3
Material:	Light Brown Clayey Silty Sand with Gravel	Technician:	SM/RG

Pan Wt: 6.66 Pan & Wet Sample Wt: 455.87 Wet Sample Wt: 449.21

Pan Wt: 6.66 Pan & Dry Sample Wt: 396.76 Dry Sample Wt: 390.10 Moisture %: 15.2

Sieve Size		Pan & Sample Wt	Sample Wt. (Cumulative)	Cumulative % Retained	Cumulative %Passing
3/4"	19.0mm	18.50	11.84	3.0	97.0
3/8"	9.50mm	25.10	18.44	4.7	95.3
N0. 4	4.75mm	38.90	32.24	8.3	91.7
No. 8	2.36mm	58.60	51.94	13.3	86.7
No. 16	1.18mm	86.20	79.54	20.4	79.6
No. 30	.600mm	112.80	106.14	27.2	72.8
No. 40	.425mm	129.20	122.54	31.4	68.6
No. 100	.150mm	198.50	191.84	49.2	50.8
No. 200	.075mm	215.40	208.74	53.5	46.5

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PARTICLE SIZE DISTRIBUTION OF SOILS
USING SIEVE ANALYSIS
ASTM D6913

Client:		Date Sampled:	
Project Name:	Watchtower Educational Expansion	Date of Test:	4/7/08
Project #:	18219	Report Date:	4/14/08
Sample Location:	B-9, 6-10', S-4/5	Report #:	2
Material:	Light Brown Clayey Silty Sand with Gravel	Technician:	SM/RG

Pan Wt: 6.75 Pan & Wet Sample Wt: 408.87 Wet Sample Wt: 402.12

Pan Wt: 6.75 Pan & Dry Sample Wt: 356.82 Dry Sample Wt: 350.07 Moisture %: 14.9

Sieve Size		Pan & Sample Wt	Sample Wt. (Cumulative)	Cumulative % Retained	Cumulative %Passing
3/4"	19.0mm	6.75	0.00	0.0	100.0
3/8"	9.50mm	18.70	11.95	3.4	96.6
N0. 4	4.75mm	29.10	22.35	6.4	93.6
No. 8	2.36mm	41.90	35.15	10.0	90.0
No. 16	1.18mm	57.60	50.85	14.5	85.5
No. 30	.600mm	73.80	67.05	19.2	80.8
No. 40	.425mm	83.60	76.85	22.0	78.0
No. 100	.150mm	133.10	126.35	36.1	63.9
No. 200	.075mm	153.40	146.65	41.9	58.1

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PARTICLE SIZE DISTRIBUTION OF SOILS
USING SIEVE ANALYSIS
ASTM D6913

Client:		Date Sampled:	
Project Name:	Watchtower Educational Expansion	Date of Test:	4/7/08
Project #:	18219	Report Date:	4/14/08
Sample Location:	B-4, 10-12', S-5/6	Report #:	1
Material:	Light Brown Clayey Silty Sand with Gravel	Technician:	SM/RG

Pan Wt: 6.78 Pan & Wet Sample Wt: 426.69 Wet Sample Wt: 419.91

Pan Wt: 6.78 Pan & Dry Sample Wt: 399.92 Dry Sample Wt: 393.14 Moisture %: 6.8

Sieve Size		Pan & Sample Wt	Sample Wt. (Cumulative)	Cumulative % Retained	Cumulative %Passing
3/4"	19.0mm	68.40	61.62	15.7	84.3
3/8"	9.50mm	116.30	109.52	27.9	72.1
N0. 4	4.75mm	138.10	131.32	33.4	66.6
No. 8	2.36mm	155.40	148.62	37.8	62.2
No. 16	1.18mm	169.50	162.72	41.4	58.6
No. 30	.600mm	183.10	176.32	44.8	55.2
No. 40	.425mm	192.80	186.02	47.3	52.7
No. 100	.150mm	237.30	230.52	58.6	41.4
No. 200	.075mm	256.80	250.02	63.6	36.4

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PARTICLE SIZE DISTRIBUTION OF SOILS
USING SIEVE ANALYSIS
ASTM D6913

Client:		Date Sampled:	
Project Name:	Watchtower Educational Expansion	Date of Test:	4/7/08
Project #:	18219	Report Date:	4/14/08
Sample Location:	B-14, 20-22' & 25-27', S-8/9	Report #:	4
Material:	Light Brown Silty Sandy Clay with Gravel	Technician:	SM/RG

Pan Wt: 6.69 Pan & Wet Sample Wt: 432.51 Wet Sample Wt: 425.82

Pan Wt: 6.69 Pan & Dry Sample Wt: 372.42 Dry Sample Wt: 365.73 Moisture %: 16.4

Sieve Size		Pan & Sample Wt	Sample Wt. (Cumulative)	Cumulative % Retained	Cumulative %Passing
3/4"	19.0mm	24.10	17.41	4.8	95.2
3/8"	9.50mm	25.60	18.91	5.2	94.8
N0. 4	4.75mm	32.10	25.41	6.9	93.1
No. 8	2.36mm	43.70	37.01	10.1	89.9
No. 16	1.18mm	53.80	47.11	12.9	87.1
No. 30	.600mm	64.40	57.71	15.8	84.2
No. 40	.425mm	72.60	65.91	18.0	82.0
No. 100	.150mm	115.60	108.91	29.8	70.2
No. 200	.075mm	128.70	122.01	33.4	66.6

AKRF Engineering, P.C.
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www.akrf.com

Project: Watchtower Bible Tract of New York

Location: Rt 22, Patterson, NY

Date: 5/28/08

AKRF Staff: David Heintz

NYCDEP Staff: Mariyam Zacharia & John Drake

Deep Test Hole No.	
Depth	Description

Deept Test Hol No. 28	
Depth	Soil Description
0-9"	Top Soil
9"-33"	Medium Brown Sandy Loam
33"-45"	Silty Loam
45"-BP	Fine Sandy Loam w/ Some gravel & rock
14'3"	Total Depth

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Deep Test Hole No. 29

Depth	Description
0 - 15	TOPSOIL
15 - 63	COMPACTED fine SANDY LOAM
63 - 75	DK BROWN SILTY LOAM
75 - BTP	FINE SANDY LOAM w/ SOME GRAVEL & ROCK
12'	TOTAL Depth

Deept Test Hol No. 30

Depth	Soil Description
0 - 15"	Top Soil
15 - 36 - 40"	fine Sandy loam
36-BTP	Silty Loam
9'	GW Seep
11'	GW Top
12.7'	Total Depth

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Date: 5/28/08

AKRF Staff: David H.

NYCDEP Staff: Maryam Z. & John D.

Deep Test Hole No. 22	
Depth	Description
0-6"	Top Soil
6"-36"	Fill, Sandy loamy
	Dilomposed Rock
	Pockets w/ Soil
10'	TOTAL Depth

Deept Test Hol No. 15	
Depth	Soil Description
0-6"	Top Soil
6"-64"	Fine Sandy Loam
	more compacted than below
64" BTP	Fine Sandy w/ pieces of Decomp Rock + Gravel
9'	Seep, GW
11'	Top of GW
13'	Total Depth

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Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: David H.

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Deep Test Hole No. 19	
Depth	Description
0 - 6	TOPSOIL
6 - 30"	FINE SANDY LOAM
30 - BTP	COMPACTED SANDY LOAM
	w/ some gravel
	& ROCK
13'8"	Total Depth

Deept Test Hol No. 20	
Depth	Soil Description
0-6"	Top Soil
6-30"	~~Comp.~~ Fine Sandy Loam
30" →	Compacted Fine Sandy Loam
	w/ some gravel
84"	Seep, not GW
150"	Bottom of Test pit
	→ Total Depth

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Project: Watchtower Bible Tract of New York

Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: David Heintz

NYCDEP Staff: Mariya m Zachariah + John Drake

Deep Test Hole No. 17

Depth	Description
0-6"	Top Soil
6"-BTP	Fine Sandy Loam
4'->	> gravel + Compacted
10'6"	*Seepage
13'6"	Total Depth

Deept Test Hol No. 18

Depth	Soil Description
0-6"	Top Soil
6-81"	Medium Sandy Loam
81"-BTP	Silty Loam
81"	Seep
12½'7'	Top of Water
13'2"	Total Depth
6"	Water Accum. Bottom

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AKRF Staff: David H.

NYCDEP Staff: Maryam Z. & John D.

Deep Test Hole No. 16	
Depth	Description
0-6"	Top Soil
6"-8'3"	Sandy Loam Silt
7'-BTP	Silty Loam
	w/ more gravel
8'3"	Seep
11'	Top / Depth

Deept Test Hol No. 03	
Depth	Soil Description
	No Top Soil
0'-9'	Sandy, Gravely, Silty
	Mix Loam
7'	Seep
9'	Standing Water

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Project: Watchtower Bible Tract of New York

Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: David H.

NYCDEP Staff: Marijoan L. + John D.

Deep Test Hole No. 24	
Depth	Description
	in driveway
	No Top Soil
	item #4 w/ RCA
0-12"	" "
12"-40"	Silty fill Material Compacted
40"-72"	Sandy Loam
72"-BTP	Sandy Loam, more compacted, more gravel

Deept Test Hol No. 33	
Depth	Soil Description
0-12"	Top Soil
12"-24"	Sandy Loam
24"-36"	Fine Sandy Loam
36"	Bedrock @ 3'
4'	Total Depth

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Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: David H.

NYCDEP Staff: Maryam Z. & John D.

Deep Test Hole No. 32	
Depth	Description
0-12"	Top Soil
12"-24"	Sandy Loam, Brown
24"-	Sandy Loam, no roots
3'6"	BTP - Bedrock

Deept Test Hol No. 31	
Depth	Soil Description
0-18"	Top Soil
	Sandy Loam on
	Bedrock
18"	BTP - Bedrock

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Project: Watchtower Bible Tract of New York

Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: DAVID HEINTZ

NYCDEP Staff: Maryam Z + John D (NYCDEP)

↓ - Furthest East of all Test Pits

Deep Test Hole No. #1	
Depth	Description
0-12"	Top Soil
12"-36"	Brown Sandy Loam
3'-3'6"	Bedrock
3'6"	Total Depth

Deept Test Hol No. 25	
Depth	Soil Description
0-6"	Top Soil
6"-48"	Compacted fine Sandy loam
48"-104"	Sandy Medium dk Brn.
104"-BTP	Silty Loam
12'	Total Depth

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Project: Watchtower Bible Tract of New York

Location: Rt 22 Patterson, NY

Date: 5/28/08

AKRF Staff: David Hantz

NYCDEP Staff: Maryam Zacharias & John Drake

Deep Test Hole No. 27	
Depth	Description
0-6"	Top Soil
6"-46"	"Fill" Sandy loam w/ gravel
B&	
46"-89"	Sandy Loam "Fill?"
89-BTP	mix fine Sandy w/ pockets of Silt and Sand
124"	Seep
14'	Total Depth

Deept Test Hol No.	
Depth	Soil Description

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Project: Watchtower Bible Tract of New York

Location: Orchard

Date: 6/25/08

AKRF Staff: D Hentz

NYCDEP Staff:

Percolation Test No. TP 17

Run No.	Start Time (min)	End Time (min)	Total Run Time (min)	Start Depth (in)	End Depth (in)	Total Drop (in)	Percolation Rate (minutes per inch)
1237	Standing Water ⇒ 6 3/4" in bottom						
	@ 1600 6/23/08 Top Stick to water 18 5/8"						
	@ 1237 was 21" "						
	Test Pit	2½'	1st Bench				
		6½'	2nd Bench → Top of Perc Pit.				

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Project: Watchtower Bible Tract of New York

Location: West of Visitor Parking Lot

Date: 6/25/08

AKRF Staff: David Heintz

NYCDEP Staff: Mariam Zachariah

Percolation Test No. #29

Run No.	Start Time (min)	End Time (min)	Total Run Time (min)	Start Depth (in)	End Depth (in)	Total Drop (in)	Percolation Rate (minutes per inch)
	0930	Standing Water in hole.					
		hole → 31" deep					
		7" standing water					
		water added @ 1630 → 23" top of stick to water					
		Grade to bottom bench = 7'					
	1510	23½" top of stick to water					
		→ ½" drop in 6hrs					

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Project: Watchtower Bible Tract of New York

Location: West of Visitor Parking

Date: 6/25/08

AKRF Staff: David Herzig

NYCDEP Staff: Marian Zachariah

Percolation Test No. #28

Run No.	Start Time (min)	End Time (min)	Total Run Time (min)	Start Depth (in)	End Depth (in)	Total Drop (in)	Percolation Rate (minutes per inch)
	0940	Standing Water in hole,					
		water added @ 1645, 6/24/08					
		Bottom of Bench 5' from grade.					
	all holes 30" deep, as per Dave Durand, w/ 4" of gravel						
		18½" Top of Stick to water					
	1505	19½" Top of Stick to water					

Hart Depth → Top of Stick → Top of Water

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Project: Watchtower Bible Tract of New York

Location: West of Batch Plant

Date: 4/25/08

AKRF Staff: David Heintz

NYCDEP Staff: Maryam Zacharah

Depth: Grade to Bottom Bench 6"

Percolation Test No. PT #24

26" to Top of Block

Run No.	Start Time (min)	End Time (min)	Total Run Time (min)	Start Depth (in)	End Depth (in)	Total Drop (in)	Percolation Rate (minutes per inch)
1	1007	1107	60 min	20 5/8"	22 3/4"	2 1/8"	28.24 min/in
		1114	1hr 7 min	20 5/8"	23"	—	
2	1118	1218	60 min	20"	22"	2"	30 min/in
3	1219	1320	61 min	20"	22 3/8"	2 3/8"	25.68 min/in
4	1339	1439	60 min	20"	21 3/4"	1 3/4"	34.29 min/in

@8 min 21"
→ 23 min 1" drop
@ 1/2 hr 22"
26 1/2"

1/8" = 0.125
3/8 = 0.375

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Project: Watchtower Bible Tract of New York

Location: SW of Batch Plant

Date: 6/25/08

AKRF Staff:

NYCDEP Staff: David Hewitt

Top Stick → Top Water

Top Stick → Top Rock

28 1/2" Top Stick → Top Rock

Percolation Test No. PT #25

Run No.	Start Time (min)	End Time (min)	Total Run Time (min)	Start Depth (in)	End Depth (in)	Total Drop (in)	Percolation Rate (minutes per inch)
1	1054	1122	48min 21sec	22"	25"	3"	16.12min/in 3/4" 5 mins
2	1135	1220	53min	22"	25"	3"	17.67min/in 13mm 28 1/4 → 1 1/4"
3	1220	1315	53min	22"	25"	3"	17.67min/in #2 15min → 1" 30min → 2"
4	1343	1441	58min	21 3/4"	24 3/4"	3"	19.33min/in 45min → 2 3/4"
							25min → 23" 1 1/4"

WEC Amended Site Plan Cut/Fill Volumes Summary

Base Surface	Proposed Surface	Description of Area	Cut (yd3)	Fill (yd3)	NET (yd3)
1_Existing Elevations	2_Master Corridor Proposed Grades - (2)7	New Loop Road and driveways	9,729	25,230	15,501
1_Existing Elevations	Auto Corridor - (1)2	Visitor parking	130	7,980	7,850
1_Existing Elevations	Office Shops Surface 701.75'-4' (1)	building outline	0	958	958
1_Existing Elevations	Office Shops Surface 701.75'-4'	building outline	74	331	257
1_Existing Elevations	Sidewalk Addition	At existing loop road	31	161	130
1_Existing Elevations	Bus Corridor - (1)1	Bus Parking	363	273	(90)
1_Existing Elevations	Office Shops Surface 689.5'-4'	building outline	181	14	(167)
1_Existing Elevations	AVS Tunnel Suface 703'-4' (inc tunnel to office)	tunnel outline	2,945	0	(2,945)
1_Existing Elevations	Road Widening	Special event parking	3,717	132	(3,585)
1_Existing Elevations	H Bldg N Surface 721'-4' (1)	building outline	4,005	0	(4,005)
1_Existing Elevations	AV West 717'-4'	building outline	5,869	0	(5,869)
1_Existing Elevations	G & H Residence Courtyard 731'	berm with in courtyard	7,532	112	(7,419)
1_Existing Elevations	AV North Surface 733'-4'	building outline	7,963	0	(7,963)
1_Existing Elevations	H Bldg W Surface 721'-4'	building outline	11,117	0	(11,117)
1_Existing Elevations	Office Shops Surface 664'-4'	building outline	12,767	0	(12,767)
1_Existing Elevations	G Bldg Surface 721'-4'	building outline	12,997	0	(12,997)
1_Existing Elevations	Cart Path		0	0	0
1_Existing Elevations	Loop Retention Pond	Pond & Berm	17,364	9,202	(8,162)
1_Existing Elevations	Entrance Retention Pond	Pond, Berm & spoil area	13,878	42,690	28,812
1_Existing Elevations	Office Shops Surface 644'-4'	building outline	85,395	0	(85,395)
1_Existing Elevations	WWTP Path/Sidewalk	from Loop connecting to existin	31	4	(27)
1_Existing Elevations	Loop Road Retaining Walls	fill in between terraced walls	0	23,477	23,477
	Net Volume		**196,088**	**110,564**	**(85,524)**

GNEISS Surface1	G & H Residence Courtyard 731'		0		0
GNEISS Surface1	H Bldg W Surface 721'-4'		0		0
GNEISS Surface1	G Bldg Surface 721'-4'	bedrock (6' bldg outline offset)	1,889		(1,889)
GNEISS Surface1	H Bldg N Surface 721'-4' (1)	bedrock (6' bldg outline offset)	164		(164)
1_Existing Elevations	AV North Surface 733'-4'	bedrock (6' bldg outline offset)	10,056		(10,056)
GNEISS Surface1	AV West 717'-4'	bedrock (6' bldg outline offset)	1,449		(1,449)
GNEISS Surface1	AVS Tunnel Suface 703'-4' (inc tunnel to Office)	bedrock (4' tunnel outline offset	1,665		(1,665)
GNEISS Surface1	Office Shops Surface 664'-4'	bedrock (6' bldg outline offset)	7,356		(7,356)
GNEISS Surface1	Office Shops Surface 644'-4'	bedrock (6' bldg outline offset)	20,331		(20,331)
	Total Gneiss Removal		**42,910**		**(42,910)**

Conclusion: The estimate is of 85,524 CY of FILL of which 42,910 CY is estimated to be GNEISS.
The Volumes do NOT take into consideration the thickness of base, curb and concrete roadway. The roadway volumes would need to be subtracted from the total volume.