

CME
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September 7, 2012

City of Ithaca
Department of Public Works
108 East Green Street
Ithaca, New York 14850-5690

Attn: Mr. Thomas West, Assistant City Engineer

Re: Subsurface Exploration and Foundation Report
Ithaca Commons Rehabilitation
Ithaca, New York
CME Report No.: 26677B-01-0912
Page 1 of 5

Dear Mr. West:

1.0 INTRODUCTION

A renovation of the existing Downtown Ithaca Pedestrian Mall, known as Ithaca Commons, is planned by the City of Ithaca (Client). CME Associates, Inc. (CME) has been retained by Client to provide subsurface exploration and geotechnical engineering services for the subject project. CME conducted a subsurface exploration consisting of Test Borings, Groundwater Observation Wells and laboratory soil testing, on selected soil samples. The scope of services and this report have been provided pursuant to the Contract for Professional Services for Commons Rehabilitation Project Geotechnical Investigation, dated 07/13/12, signed by Client and CME. Please refer to the attached Proposed Development Drawings for an overview of the proposed renovation.

This report presents the subsurface conditions identified in the Test Borings, and provides foundation recommendations for the proposed Pavilion, Gateway Structure and Digital Display Columns. All Test Boring Logs, Groundwater Observation Well Logs, Laboratory Test Reports, a Bird's Eye View Map and a Boring Location Sketch are attached to this report. Geotechnical recommendations for the proposed utility installation, required by the contract, will be presented under separate cover, after CME receives details (Civil Drawings with Cross Sections and Details) of the proposed/existing utilities, from Client.

2.0 PROPOSED RENOVATION

The proposed renovation will include removal and replacement of most existing surface elements (such as pavers, seating, lighting, tree planters, etc.). A new Pavilion, a Gateway Structure and Digital Display Columns are planned. Installation of new utility lines and rehabilitation of existing utility lines are also planned.

The Pavilion finish floor is planned to match existing grade, and is planned to be supported utilizing spread footing foundations. Details of the proposed utility installation were not available to CME at the time of report preparation.



3.0 EXPLORATION METHODS

3.1 Test Borings

A total of 13 Test Borings were advanced for this project. The Test Boring Locations were selected as close as practical to locations shown on a Plan, entitled "Ithaca Commons – Proposed Boring Locations", provided by Client with the RFP. The field layout of the borings was performed by CME and Client. Boring B-13 was selected near the proposed Pavilion. All other Borings were selected along the existing/proposed utility corridors. Please refer to the attached Boring Location Sketch, labeled BL-1, for as-drilled boring locations. Elevation at grade at each exploration location was determined by CME, using standard survey equipment, and referencing an on-site Benchmark being the top of pavement at the location shown on BL-1. This benchmark is designated elevation 412.82.

The Test Borings were advanced using a Central Mine Equipment Model 55, truck-mounted, rotary exploration drill rig, equipped with 3-1/4" I.D. hollow stem augers. Soil Sampling and Standard Penetration Testing (SPT) were conducted using a 140-pound automatic hammer dropping through a distance of 30 inches to drive a 2-inch O.D. split barrel sampler. This test method is described in ASTM Standard Practice D-1586.

The boring samples were logged and visually classified in the field by a Staff Geologist, and a portion of each sample was placed and sealed in a glass jar. The soil classifications were later reviewed by CME Senior Geologist, Mr. Douglas Hurlbut, in CME's AMRL¹ Accredited East Syracuse Laboratory. The visual soil classifications were made using the modified Burmister Classification System, as described in the attached document entitled "General Information & Key to The Test Boring Logs". Additionally, six boring samples were subjected to a Mechanical Analysis. Please refer the attached *Laboratory Test Summary*, for details.

3.2 Groundwater Observation Wells

Four Groundwater Observation Wells, labeled WB-3, WB-6, WB-9 and WB-12, were installed in boreholes B-3, B-6, B-9 and B-12, respectively, as requested by others. Please refer to the attached Groundwater Observation Well Reports, for well installation details.

3.3 Laboratory Testing

Laboratory testing performed for this project consists of 6 Mechanical Analyses (Sieve Analyses), 10 DIPRA (Ductile Iron Pipe Research Association) tests, 10 Natural Moisture Content tests and 10 Sulfate & Chloride Concentration tests. The Sieve Analyses and DIPRA tests were performed by CME in CME's AMRL Accredited East Syracuse Laboratory. All other tests were performed by CME's subcontractor, Upstate Laboratories, Inc. (ULI). Please refer to the attached Laboratory Test Summary Reports by CME and ULI, for test results.

¹ AMRL – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory. AMRL is a Federal Agency having jurisdiction to assess laboratory competence according to the Standards of the United States. CME East Syracuse accreditation includes tests of Portland Cement Concrete, Aggregate and Soil Materials. www.amrl.net

4.0 SUBSURFACE CONDITIONS

4.1 Surface Conditions and Subsurface Profile

The subject project site is located in a highly urbanized part of the City of Ithaca. The Test Borings were advanced in or near the existing utility corridors, which were covered with roads, sidewalks and various pavement materials.

The Test Borings identified surfacings consisting of Concrete Pavement, Brick & Mortar Pavement, and Concrete & Brick Pavement. Below surfacings, all Borings identified Fill (or Miscellaneous Fill) or native soils, consisting of Silty Sand and Gravel. The Fill was noted in several Borings to about 2 to 8 feet below grade. It is difficult to differentiate the Fill from Virgin Soils at this site, from the Test Boring samples, due to the similar make-up of Fill and Virgin Soils, as noted in the Borings. Test Pits are more appropriate to better differentiate Fill from Native Soils, however, excavating Test Pits is not feasible due to the high traffic area.

Below surfacings and Fill, the explorations identified a soil profile consisting of Silt, underlain by Sand and Gravel, underlain by Sand and Silt. A brief description of each Stratum is given below:

Silt Stratum: Below Fill, a relatively thin layer (about 1 to 3 feet) of Silt containing lesser amounts of Sand was penetrated in Borings B-5, B-7 and B-8. The soils in this Stratum are non-plastic and are sensitive to moisture and vibration. Based on SPT, this Stratum has a consistency of medium stiff to stiff.

Sand and Gravel: Below surfacings, Fill or Silt, all Borings penetrated Sand and Gravel containing lesser amounts of Silt. Based on SPT, this Stratum has a relative density of very loose to compact. This Stratum was penetrated to boring termination depth (20 feet) in all Borings, except Borings B-1, B-3 and B-11. In Borings B-1, B-3 and B-11, this Stratum was penetrated to 14, 8 and 18 feet below grade, respectively, where the Sand and Silt Stratum was encountered.

Sand and Silt: Below Sand and Gravel in Borings B-1, B-3 and B-11, Silty Sand or Sandy Silt was penetrated to Boring termination depth (20 feet). Based on SPT, the Silty Sand has a relative density of very loose to loose and the Sandy Silt is medium stiff to hard in consistency.

4.2 Groundwater Observations

Groundwater level observations and measurements are made by the CME Drillers when groundwater accumulates in the borehole. The CME Drillers note water levels inside the boreholes during advancement and following casing removal. If the hole caves-in after casing removal, the depth of cave-in is noted on the CME borings logs. The drillers also note whether samples retrieved are dry, moist, wet or saturated. The conditions and times of groundwater level observations are noted on the individual Test Boring logs.

Groundwater was observed in Boring B-1 and B-2 at 18.0 and 17.7 feet below existing grade, corresponding to about elevation 392 to 391. Groundwater was not observed in the other borings during the short exploration period, within the exploration depths.

All Groundwater Observation Wells were dry when installed. Groundwater was measured again on 08/21/12, and all wells, except WB-3, remained dry. Groundwater level in WB-3 was measured at elevation 392.6.

Groundwater fluctuations should be expected to occur at this site depending on several factors such as rainfall, seasonal changes, prevailing climate, ambient weather conditions, and adjacent construction operations, among other factors.

5.0 FOUNDATION RECOMMENDATIONS

The Pavilion and Gateway Structures and the Digital Display Columns may be supported on spread footing foundations designed using the information presented herein. The foundation excavations will likely expose Man-placed Fill or disturbed indigenous soils, resulting from past construction activities. Therefore, CME recommends that all footing foundations be designed to bear on a minimum one foot thick Granular Fill Pad. The Granular Fill Pad shall consist of Run-of-Bank Gravel (DOT Type 4 subbase course), placed in not more than 12" thick lifts, with each lift compacted to a minimum of 98% of Maximum Dry Density, as determined by ASTM D1557. One passing in-place density test per lift per spread footing shall be achieved. The Granular Fill Pad shall be at least 6" wider than the footing on all four sides, and shall be placed over inorganic Sand and Gravel soil, compacted and approved by the CME Professional Geotechnical Engineer (PGE). Additionally, compaction of undercut grades shall be achieved by a plate tamper with a minimum operational weight of 5,000 lbs, making at least 3 passes.

Footing foundations bearing on satisfactorily placed, compacted and tested Granular Fill Pad, placed over compacted inorganic Sand and Gravel grade, approved by the CME PGE, may be designed using a Presumptive Soil Bearing Pressure of 3,000 psf. Foundations subject to moment shall be sized such that the resultant of axial force and bending moment acts within the middle one third of the footing, and using a maximum edge bearing pressure, q_{max} of 4,000 psf.

All footings for this project shall be designed to bear at least 4'-6" below adjacent finish grade, for frost protection.

Footing foundations designed and installed as recommended in this report are predicted to settle less than about one inch (1"), with differential foundation settlement, predicted to be less than about three quarters of an inch ($\frac{3}{4}$ ").

6.0 IMPORTANT OTHER CONSIDERATIONS

We present the information in this section to those using our reports, so they may acquire a better understanding of geotechnical engineering professional practice and the limitations associated with its application to this and other projects.

6.1 Standard of Care and Warranty

We have endeavored to conduct these services in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical engineering profession practicing contemporaneously under similar conditions in the locality of the project. No other representation, express or implied is made. Under no circumstances is any warranty, express or implied, made in connection with the providing of geotechnical engineering services.

6.2 Construction Phase Geotechnical Services

The analysis and recommendations contained in this report are preliminary and are based on the specific data obtained from the referenced subsurface explorations. The explorations indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. The validity of the recommendations is based in part on CME's assumptions about the stratigraphy, as well as information about the planned construction provided by others. CME's assumptions may be confirmed only during earthwork.



It is very important to point out that CME's engineering recommendations given in this Report are premised upon CME being retained to provide Construction Phase Geotechnical Services as they relate to site and building earthwork, filling and backfilling, and foundation installations. If others are retained to provide these construction phase services, a complete understanding, interpretation or execution of CME's reported recommendations may not occur. CME will not assume responsibility for the performance of the structures, slabs and pavements when CME is not providing the construction phase services. CME will not be responsible for claims, disputes, costs or schedule delays associated with any of the constructions or earthwork addressed in this Report when CME is not providing construction phase services.

6.3 Closing Comments

Please do not hesitate to contact our office if you have any questions regarding this report, its conclusions, its recommendations, or its application to actual field conditions revealed during construction.

A handwritten signature in dark ink, appearing to read "Anas", written over a horizontal line.

[Anas] Navaratnam Ananthas, P.E.

A handwritten signature in dark ink, appearing to read "Christopher R. Paolini", written over a horizontal line.

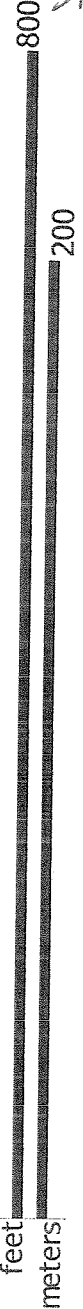
Christopher R. Paolini, P.E.

Attachment Listing:

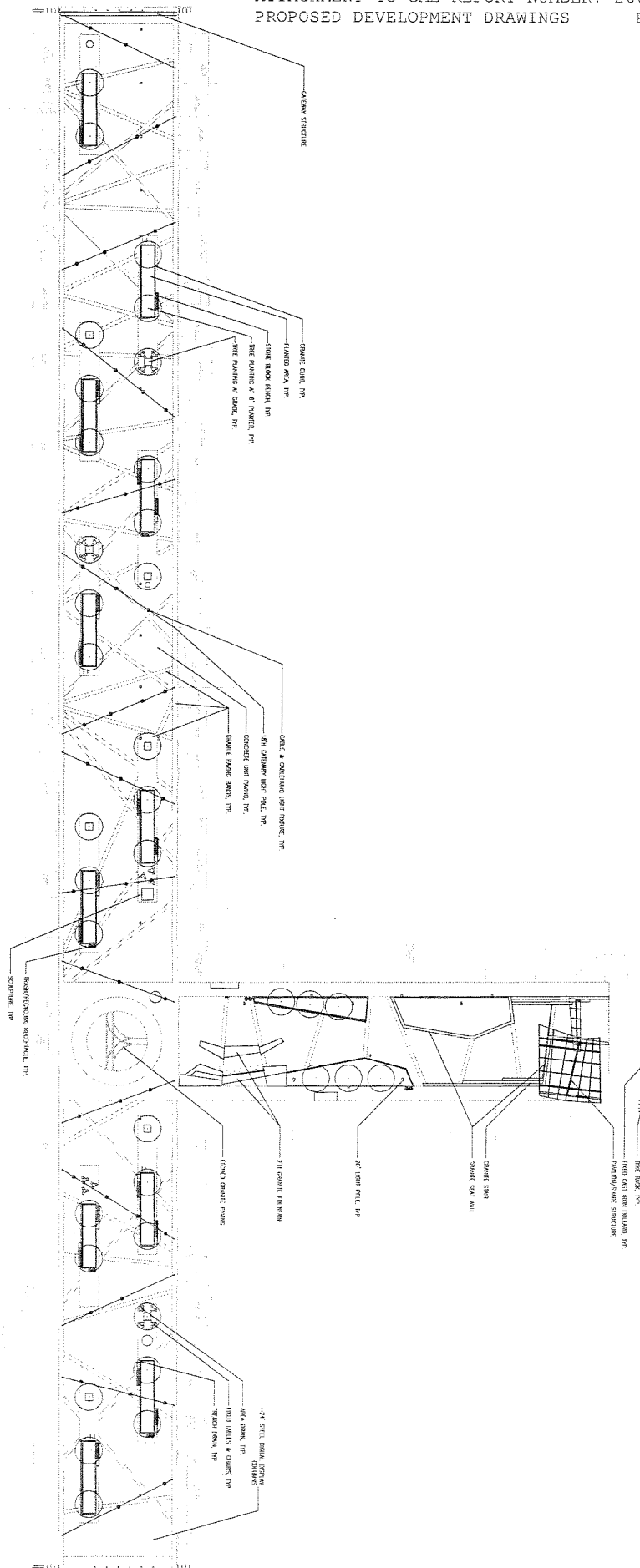
- Bird's Eye View Map (1 of 1)*
- Proposed Development Drawings (8 of 8)*
- Boring Location Sketch, BL-1 (1 of 1)*
- CME Subsurface Exploration-Test Boring Logs, B-1 through B-13 (13 of 13)*
- Groundwater Observation Well Reports, WB-3, WB-6, WB-9 and WB-12 (4 of 4)*
- CME Laboratory Test Summary Report (5 of 5)*
- ULI Laboratory Test Summary Report (8 of 8)*
- General Information & Key to the Test Boring Logs (4 of 4)*

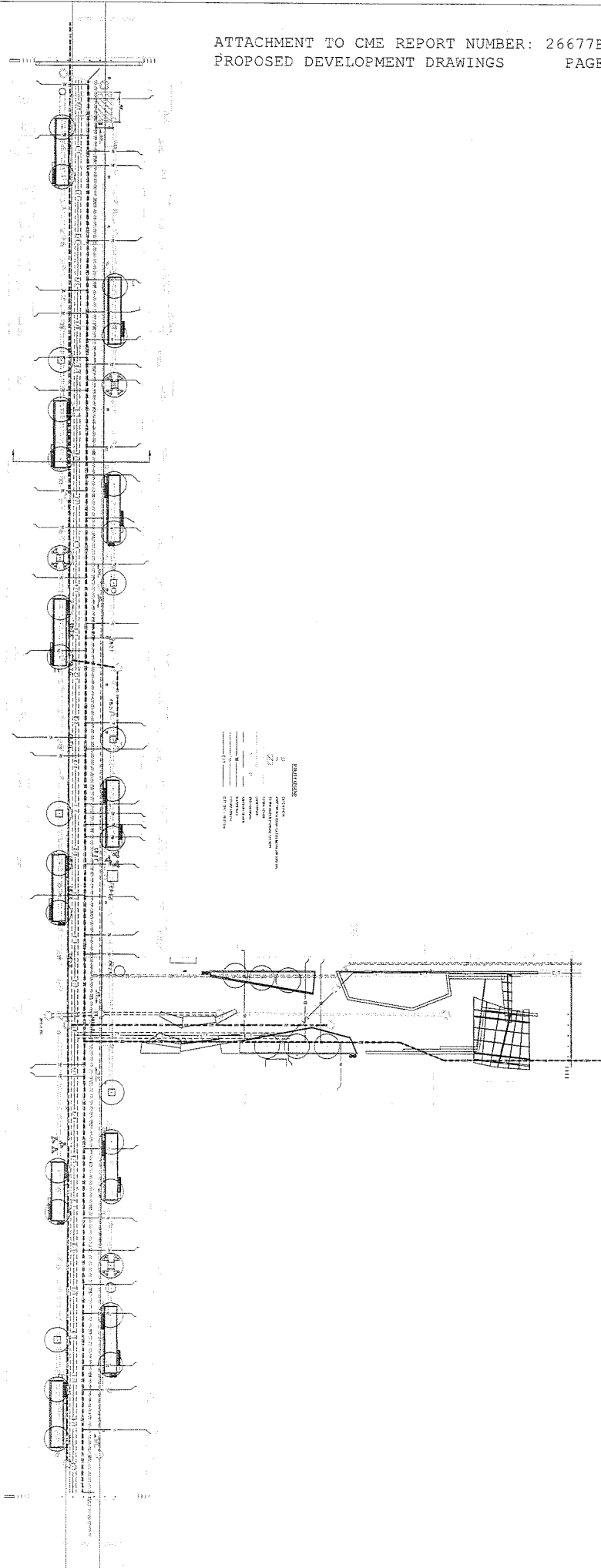


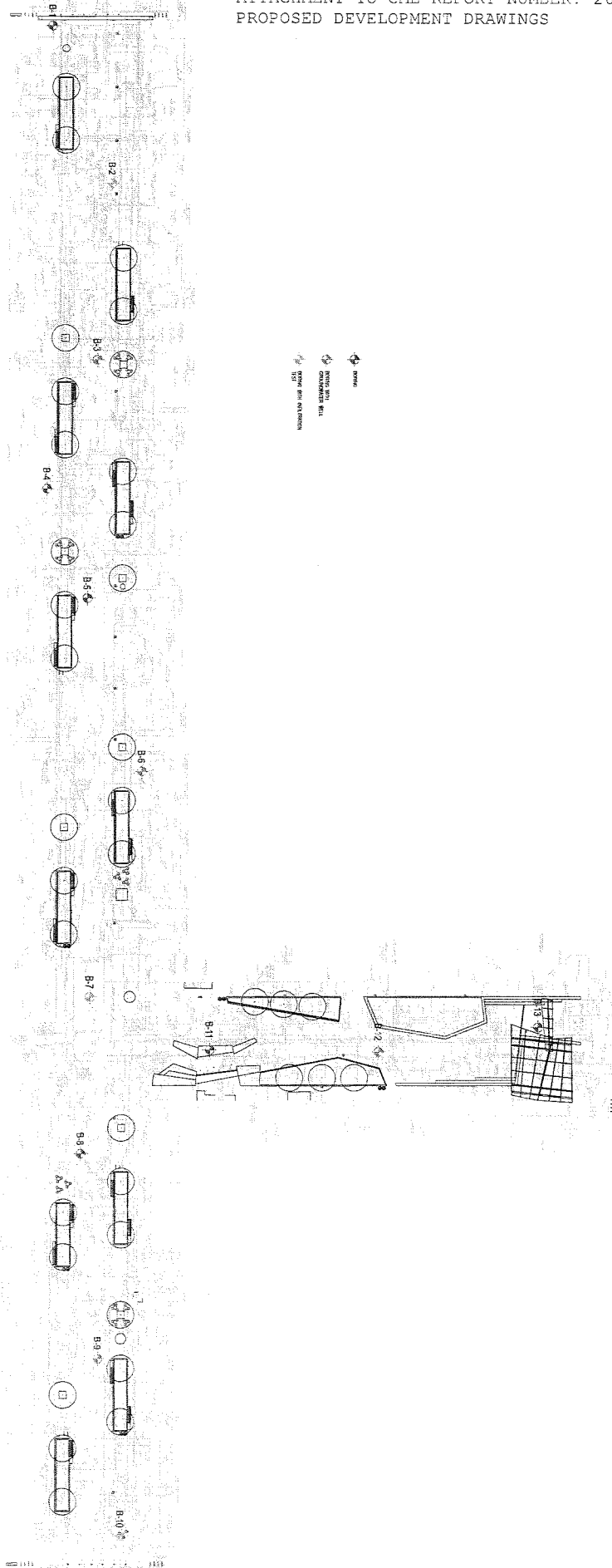
PROTECT
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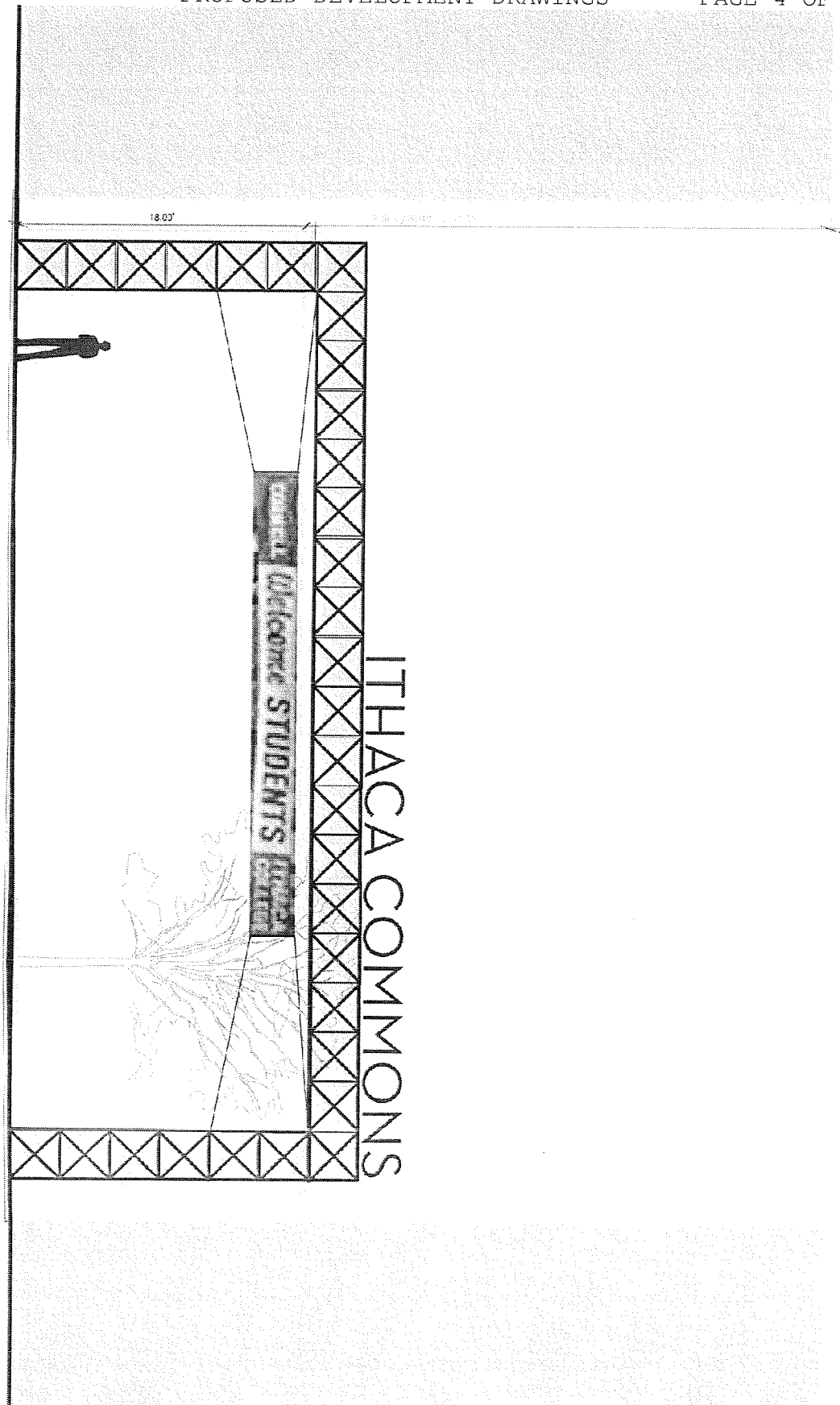
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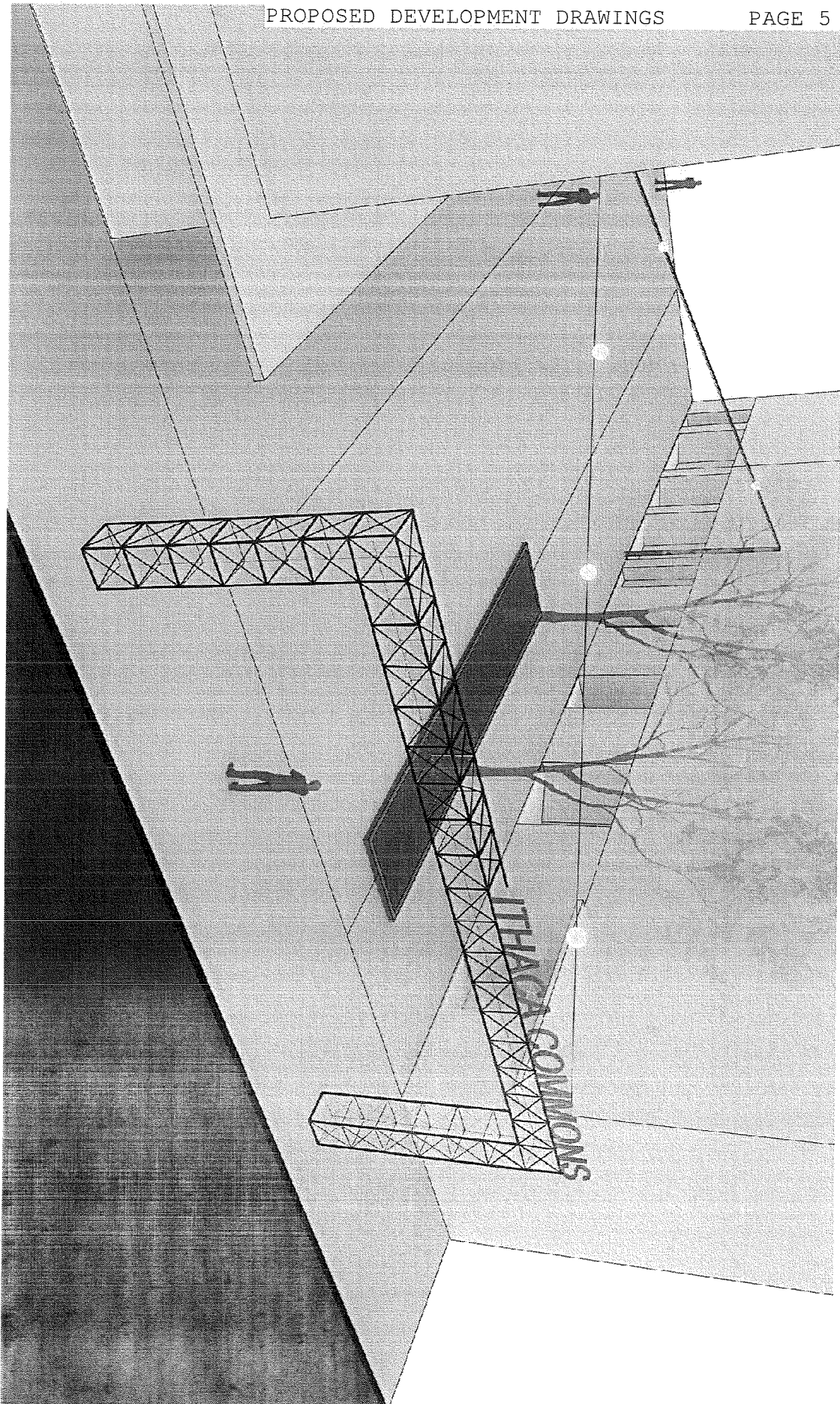




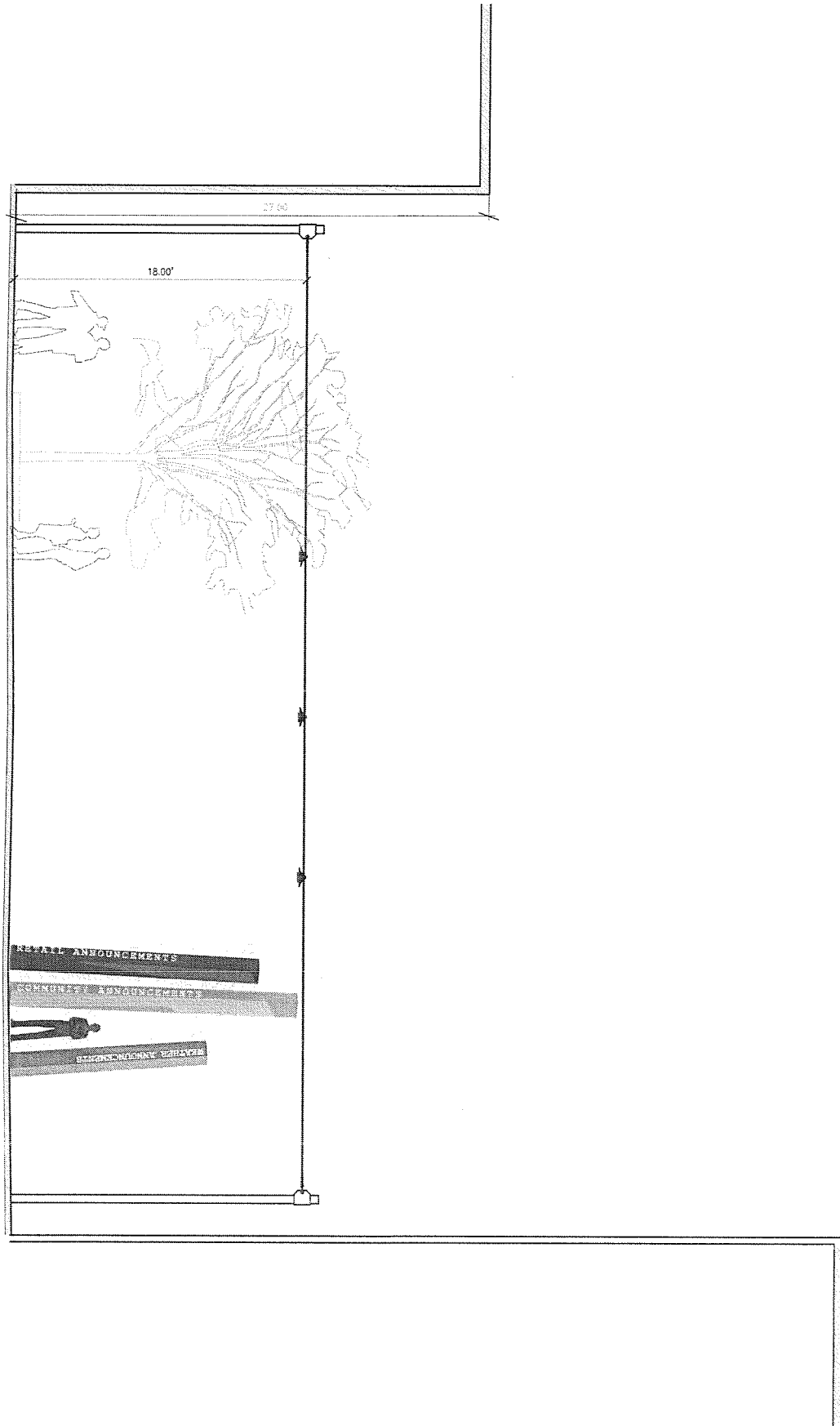
ITHACA COMMONS - PROPOSED BORING LOCATIONS



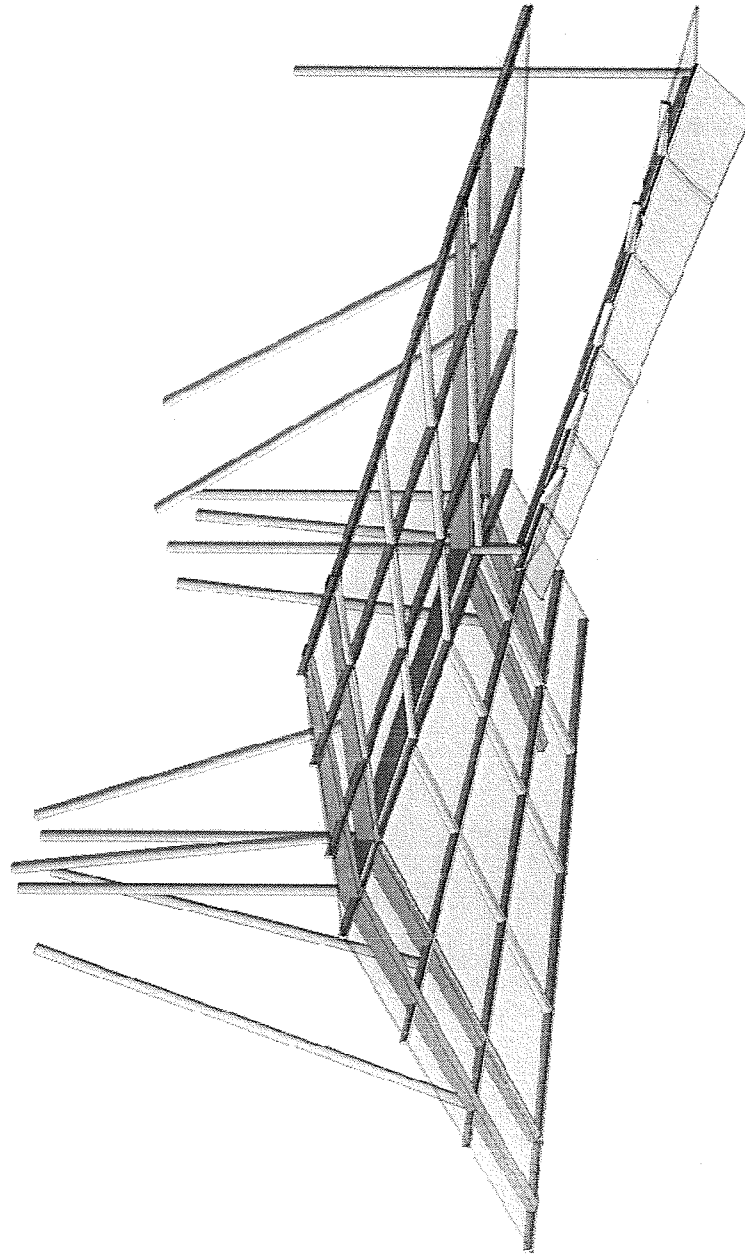
ITHACA COMMONS - PROPOSED
GATEWAY STRUCTURE



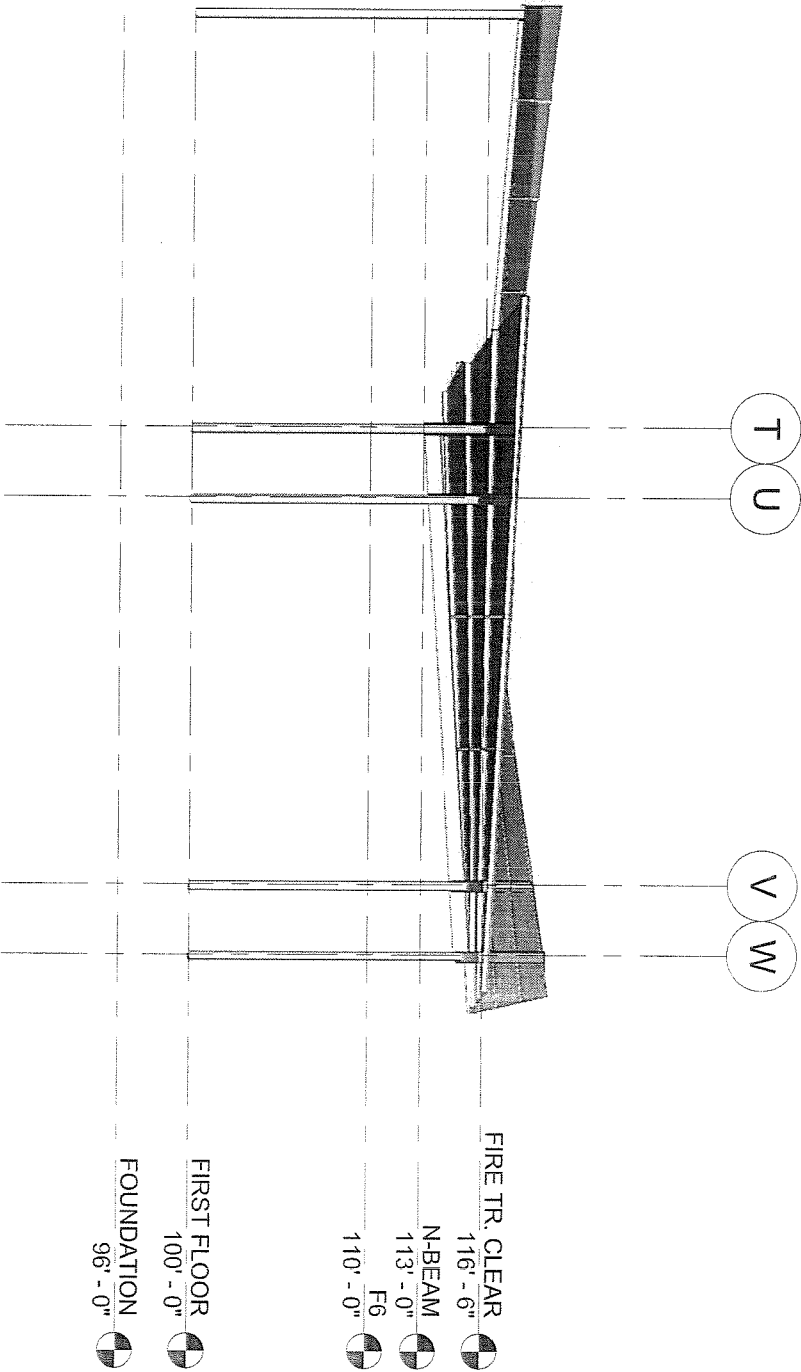
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GATEWAY STRUCTURE



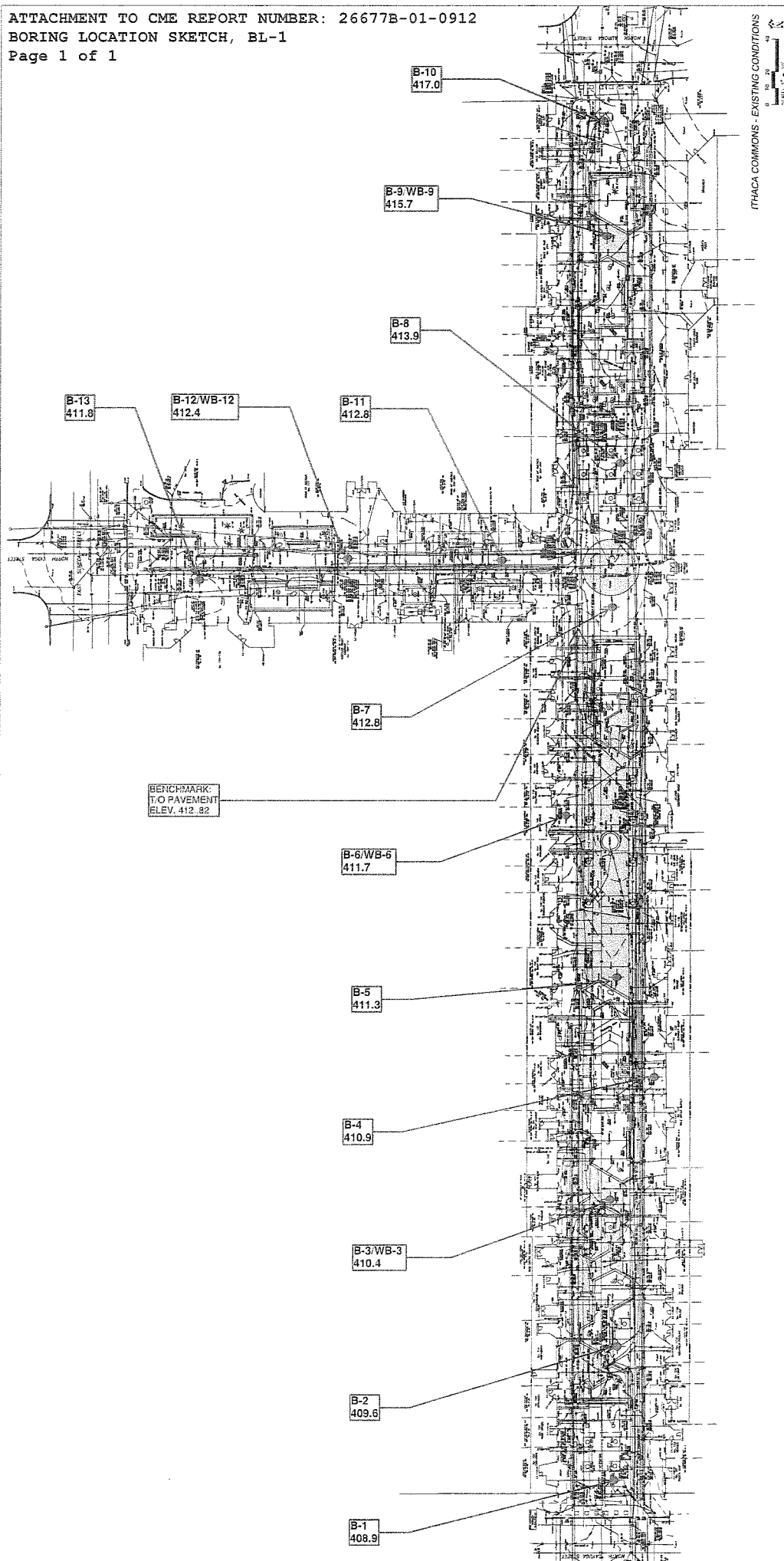
ITHACA COMMONS - PROPOSED
STEEL DIGITAL DISPLAY COLUMNS



ITHACA COMMONS - PROPOSED PAVILION



ITHACA COMMONS - PROPOSED PAVILION



SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 08/08/12 **Finished:** 08/08/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 408.9'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS****Casing:** 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher**Casing Hammer:** **Driller:** Bryan Howe**Other:** **Inspector:** Doug Hurlbut**Soil Sampler:** 2" OD Split Barrel **Rod Size:** AWJ**Sampler Hammer:** Wt. 140 lbs./Auto **Fall:** 30 in.**Make & Model of Drill Rig:** CME 45c Truck Mounted

Date	Time	Depth	Casing At
08/08/12	While drilling	None Noted	
08/08/12	Before casing removed	18.0'	18.5'
08/08/12	After casing removed	None Noted	out
08/08/12	After casing removed	caved @ 15.7'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.4	5" Concrete Pavement	
	H	1	0.5	2.0	SS/4	6-7-7		Brown cmf GRAVEL and cmf SAND, little SILT (moist, medium compact)	14
	O	2	2.0	4.0	SS/12	8-5-7-6		Similar Soil (moist, medium compact)	12
	L								
	L	3	4.0	6.0	SS/10	10-7-5-5		Similar Soil (moist, medium compact)	12
5	O								
	W	4	6.0	8.0	SS/5	6-8-15-17		Similar Soil (moist, medium compact)	23
								<i>Hard augering</i>	
		5	8.0	10.0	SS/15	26-22-17-8		Brown cmf GRAVEL, some cmf SAND, little SILT (moist, compact)	39
	S								
10	T								
	E								
	M								
		6a	13.5	14.0	SS/20	4-1-1-1	14.0	Similar Soil (moist)	
		6b	14.0	15.5				Grey/Brown fine SAND and SILT, trace decayed WOOD (saturated, very loose)	2
15	A								
	U								
	G								
	E	7	18.5	20.0	SS/4	4-4-4		Grey/Brown cmf SAND, little SILT (saturated, loose)	8
	R								
20	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 07/27/12 **Finished:** 07/27/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 409.6'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Christine Linguanti
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

Date	Time	Depth	Casing At
07/27/12	While drilling	17.7'	18.5'
07/27/12	Before casing removed	17.7'	18.5'
07/27/12	After casing removed	None Noted	out
07/27/12	After casing removed	caved @ 14.8'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine	and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To						
0	XXX						0.2	2" Brick and Mortar Pavement		
	H						0.7	6" Concrete		
	O	1	0.7	2.0	SS/14	3-6-6		Brown cmf SAND, some SILT, little mf GRAVEL, (moist, medium compact)		12
	L	2	2.0	4.0	SS/6	3-7-7-2		Brown cmf SAND, some cmf GRAVEL, trace SILT (moist, loose)		14
	L	3	4.0	6.0	SS/	1-1-5-4		Brown cmf SAND, little GRAVEL, trace SILT (moist, loose)		6
5	O							~Possible Fill~		
	W		6.0	8.0	SS/0	2-2-3-5		No Recovery		5
		4	8.0	10.0	SS/6	4-7-9-6		Brown cmf GRAVEL and cmf SAND, little SILT (moist, medium compact)		16
10	S									
	T									
	E									
	M									
			13.5	15.0	SS/0	5-5-5		No Recovery		10
15	A									
	U									
	G									
	E	5	18.5	20.0	SS/2	12-8-5		Brown cmf GRAVEL and cmf SAND, little SILT (saturated, medium compact)		13
20	R									
	XXX							Bottom of Boring @ 20.0'		

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 08/13/12**Finished:** 08/13/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 410.4'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS****Casing:** 3-1/4" ID H. Stem Auger**Driller:** Beau Fletcher**Casing Hammer:****Driller:** Bryan Howe**Other:****Inspector:****Soil Sampler:** 2" OD Split Barrel**Rod Size:** AWJ**Sampler Hammer:** Wt. 140 lbs./Auto**Fall:** 30 in.**Make & Model of Drill Rig:** CME 45c Truck Mounted

Date	Time	Depth	Casing At
08/13/12	While drilling	None Noted	
08/13/12	Before casing removed	None Noted	20.1'

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

CLASSIFICATION OF MATERIAL										
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine	and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To						
0	XXX						0.2	2" Brick and Mortar Pavement		12
	H						0.7	6" Concrete		
	O	1	0.7	2.0	SS/8	4-13-12		Grey cmf SAND, some mf GRAVEL, little SILT (moist, medium compact) ~Possible Fill~		
	L	2	2.0	4.0	SS/16	12-10-12-8		Brown cmf SAND, some mf GRAVEL, little SILT (moist, medium compact)		22
	L	3	4.0	6.0	SS/16	10-8-5-10		Similar Soil (moist, medium compact)		13
5	O									
	W	4	6.0	8.0	SS/12	11-5-6-4		Similar Soil (moist, medium compact)		11
		5	8.0	10.0	SS/15	10-2-2-2	8.0	Brown SILT, some fine SAND (wet, medium stiff)		4
10	S									
	T									
	E									
	M									
		6	13.5	15.0	SS/0	3-2-2		No Recovery		4
15	A									
	U									
	G									
	E	7	18.5	20.0	SS/5	3-4-5		Similar Soil (wet, stiff) Augered to 20.1' to set Well		9
20	R									
	XXX							Bottom of Boring @ 20.1'		

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG

Project: Ithaca Commons Rehabilitation Project, Ithaca, New York
Client: City of Ithaca Department of Public Works
Location of Boring: See Boring Location Sketch

Report No.: 26677B-01-0912
Date Started: 08/10/12 **Finished:** 08/10/12
Elevation of Surface of Boring: 410.9'

METHODS OF INVESTIGATION

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:**
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
08/10/12	While drilling	None Noted	
08/10/12	Before casing removed	None Noted	20.0'
08/10/12	After casing removed	None Noted	out
08/10/12	After casing removed	caved @ 16.4'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.4	4.5" Concrete Pavement	
	H	1	0.4	2.0	SS/6	6-8-4		Grey/Brown cmf SAND, some mf GRAVEL, trace SILT (moist, medium compact) ~Possible Fill~	12
	O	2	2.0	4.0	SS/12	3-4-5-8		Brown cmf SAND, some mf GRAVEL, little SILT (moist, loose)	9
	L	3	4.0	6.0	SS/4	8-8-8-7		Brown cmf SAND, some mf GRAVEL, trace SILT (moist, medium compact)	16
5	O	4	6.0	8.0	SS/10	10-3-8-6		Similar Soil (moist, medium compact)	11
	W	5	8.0	10.0	SS/6	14-6-4-6		Hard augering Similar Soil (moist, medium compact)	10
	S								
10	T								
	E								
	M	6	13.5	15.0	SS/0	6-2-1		No Recovery	3
15	A								
	U								
	G	7	18.5	20.0	SS/5	12-4-8		Similar Soil (wet, medium compact)	12
	E								
	R								
20	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 08/08/12 **Finished:** 08/08/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 411.3'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS****Casing:** 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher**Casing Hammer:** **Driller:** Bryan Howe**Other:** **Inspector:** Doug Hurlbut**Soil Sampler:** 2" OD Split Barrel **Rod Size:** AWJ**Sampler Hammer: Wt.** 140 lbs./Auto **Fall:** 30 in.**Make & Model of Drill Rig:** CME 45c Truck Mounted

Date	Time	Depth	Casing At
08/08/12	While drilling	None Noted	
08/08/12	Before casing removed	None Noted	18.5'
08/08/12	After casing removed	None Noted	out
08/08/12	After casing removed	caved @ 13.0'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.25	3" Concrete & Brick Pavement	
	H						0.5	Stone Dust	
	O	1	0.5	2.0	SS/18	14-15-16		Brown cmf GRAVEL, some cmf SAND, little SILT, trace BRICK (moist) ~Miscellaneous Fill~ Similar Soil (moist)	31
	L	2a	2.0	3.0	SS/12	12-9-4-4	3.0		
		2b	3.0	4.0				Brown SILT, trace fine SAND (moist, stiff)	13
	L	3	4.0	6.0	SS/0	5-5-5-6		No Recovery	10
5	O						6.0		
	W	4	6.0	8.0	SS/8	7-6-8-6		Brown cmf GRAVEL and cmf SAND, some SILT (moist, medium compact)	14
		5	8.0	10.0	SS/12	10-31-10-9		Similar Soil (wet, compact)	41
10	S								
	T								
	E								
	M	6	13.5	15.0	SS/10	3-6-5-8		Similar Soil (moist, medium compact)	11
15	A								
	U								
	G								
	E	7	18.5	20.0	SS/6	10-6-8		Brown cmf GRAVEL and cmf SAND, trace SILT (saturated, medium compact)	14
20	R								
	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG

Project: Ithaca Commons Rehabilitation Project, Ithaca, New York
Client: City of Ithaca Department of Public Works
Location of Boring: See Boring Location Sketch

Report No.: 26677B-01-0912
Date Started: 08/09/12 **Finished:** 08/09/12
Elevation of Surface of Boring: 411.7'

METHODS OF INVESTIGATION

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Doug Hurlbut
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
08/09/12	While drilling	None Noted	
08/09/12	Before casing removed	None Noted	20.0'
08/09/12	After casing removed	None Noted	out
08/09/12	After casing removed	caved @	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.6	7" Concrete Pavement	
	H	1	0.6	2.0	SS/7	4-3-6		Grey cmf SAND, some mf GRAVEL, trace SILT (wet, loose)	9
	O	2	2.0	4.0	SS/5	6-8-9-10		Similar Soil (moist, medium compact)	17
	L							~Possible Fill~	
	L	3	4.0	6.0	SS/18	13-8-9-11		Brown cmf GRAVEL, some cmf SAND, little SILT (moist, medium compact)	17
5	O								
	W	4	6.0	8.0	SS/13	9-10-7-9		Similar Soil (moist, medium compact)	17
		5	8.0	10.0	SS/14	25-17-8-9		Grey/Brown cmf GRAVEL, some cmf SAND, some SILT (moist, medium compact)	25
	S								
10	T								
	E								
	M								
		6	13.5	15.0	SS/11	8-9-6-3		Similar Soil (moist, medium compact)	15
15	A								
	U								
	G								
	E	7	18.5	20.0	SS/7	2-6-7		Similar Soil (moist, medium compact)	13
	R								
20	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 07/25/12 **Finished:** 07/25/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 412.8'**METHODS OF INVESTIGATION**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Christine Linguanti
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
07/25/12	While drilling	None Noted	
07/25/12	Before casing removed	None Noted	18.5'
07/25/12	After casing removed	None Noted	out
07/25/12	After casing removed	caved @ 14.6'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX								
	H	1	0.6	2.0	SS/10	8-8-8	0.6	7" Concrete Pavement	
	O	2	2.0	4.0	SS/12	4-2-4-7	2.0	Brown cmf SAND, some cmf GRAVEL, some SILT (moist, medium compact) ~Fill~	16
	L	3	4.0	6.0	SS/11	3-19-22-22	4.0	Brown SILT, some cmf SAND (wet, medium stiff)	6
5	O	4	6.0	8.0	SS/8	6-8-10-10		Brown cmf GRAVEL and cmf SAND, little SILT (moist, compact)	41
	W	5	8.0	10.0	SS/10	21-16-20-17		Brown cmf GRAVEL and cmf SAND, little SILT (moist, medium compact)	18
10	S	6	13.5	15.0	SS/2	26-16-20		Brown cmf GRAVEL and cmf SAND, little SILT (moist, compact)	36
	T	7	18.5	20.0	SS/4	16-11-35		Brown cmf SAND and SILT, little mf GRAVEL (wet, compact)	36
	E								
15	M								
	A								
	U								
	G								
	E								
20	R								
	XXX								
								Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION - TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 07/25/12 **Finished:** 07/25/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 413.9'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Christine Linguanti
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

Date	Time	Depth	Casing At
07/25/12	While drilling	None Noted	
07/25/12	Before casing removed	None Noted	18.5'
07/25/12	After casing removed	None Noted	out
07/25/12	After casing removed	caved @ 11.3'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

DESCRIPTION OF MATERIAL										
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine	and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT “N” or RQD
			From	To						
0	XXX						0.75	9" Concrete Pavement		
	H	1	0.75	2.0	SS/8	18-24-23		Brown cmf GRAVEL and cmf SAND, little SILT (dry, compact) ~Possible Fill~		47
	O	2a	2.0	3.0	SS/14	25-12-7-9		Brown cmf GRAVEL and cmf SAND (dry, medium compact)		19
	L	2b	3.0	4.0			3.0	Brown SILT, some mf SAND, trace ROOTS		
	L	3	4.0	6.0	SS/12	8-12-13-15	4.0			
5	O							Brown cmf GRAVEL and cmf SAND, little SILT, trace ROOTS (moist, medium compact)		25
10	W	4	6.0	8.0	SS/8	15-13-14-17		Similar Soil (moist, medium compact)		27
		5	8.0	10.0	SS/7	15-11-13-11		Similar Soil (moist, medium compact)		24
	S									
15	T									
	E									
	M	6	13.5	15.0	SS/5	22-14-18		Similar Soil (moist, compact)		32
20	A									
	U									
	G	7	18.5	20.0	SS/6	40-26-21		Similar Soil (moist, compact)		47
	E									
	R									
20	XXX							Bottom of Boring @ 20.0'		

*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 08/10/12 **Finished:** 08/10/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 415.7'**METHODS OF INVESTIGATION**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Doug Hurlbut
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
08/10/12	While drilling	None Noted	
08/10/12	Before casing removed	None Noted	20.3'
08/10/12	After casing removed	None Noted	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.2	2" Brick and Mortar Pavement	
	H						0.5	4" Concrete	
	O	1	0.5	2.0	SS/9	4-12-7		Brown cmf SAND, some cmf GRAVEL, little SILT (wet, medium compact)	19
	L	2	2.0	4.0	SS/5	5-4-3-5		Similar Soil (moist, loose) ~Possible Fill~	7
	L	3	4.0	6.0	SS/1	12-21-21-17		Brown cmf SAND, some cmf GRAVEL, little SILT (wet, compact)	42
5	O								
	W	4	6.0	8.0	SS/0	20-18-12-18		No Recovery	30
		5	8.0	10.0	SS/14	16-8-10-15		Similar Soil (moist, medium compact)	18
	S								
10	T								
	E							Hard augering from 11.0' to 13.0'	
	M								
		6	13.5	15.0	SS/1	14-8-9		Similar Soil (moist, medium compact)	17
15	A								
	U								
	G								
	E	7	18.5	20.0	SS/1	5-6-10		Similar Soil (wet, medium compact) Augered to 20.3' to set Well	16
	R								
20	XXX							Bottom of Boring @ 20.3'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 08/09/12 **Finished:** 08/09/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 417.0'**METHODS OF INVESTIGATION**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Doug Hurlbut
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
08/09/12	While drilling	None Noted	
08/09/12	Before casing removed	None Noted	20.3'
08/09/12	After casing removed	None Noted	out
08/09/12	After casing removed	caved @ 16.0'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.5	5.5" Concrete Pavement	
	H	1	0.5	2.0	SS/7	3-3-5		Grey/Brown cmf SAND, some mf GRAVEL, little SILT (moist, loose)	8
	O	2	2.0	4.0	SS/15	5-4-3-2		~Possible Fill~ Similar Soil (moist, loose)	7
	L	3	4.0	6.0	SS/6	6-3-5-4		Brown cmf SAND, little mf GRAVEL, little SILT (wet, loose)	8
5	O	4	6.0	8.0	SS/5	2-3-3-6		Similar Soil (wet, loose)	6
		5	8.0	10.0	SS/2	4-4-5-6		Similar Soil (wet, loose)	9
	S								
10	T								
	E								
	M	6	13.5	15.0	SS/6	3-6-9		Similar Soil (wet, medium compact)	15
15	A								
	U								
	G	7	18.5	20.0	SS/6	11-5-8		Similar Soil (wet, medium compact)	13
	E								
20	R								
	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG

Project: Ithaca Commons Rehabilitation Project, Ithaca, New York
Client: City of Ithaca Department of Public Works
Location of Boring: See Boring Location Sketch

Report No.: 26677B-01-0912
Date Started: 07/25/12 **Finished:** 07/25/12
Elevation of Surface of Boring: 412.8'

METHODS OF INVESTIGATION

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Christine Linguanti
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

GROUND WATER OBSERVATIONS

Date	Time	Depth	Casing At
07/25/12	While drilling	None Noted	
07/25/12	Before casing removed	None Noted	18.5'
07/25/12	After casing removed	None Noted	out
07/25/12	After casing removed	caved @ 15.0'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.6	Concrete Pavement	
	H	1	0.6	2.0	SS/4	9-10-9		Brown cmf GRAVEL and cmf SAND, some SILT (moist, medium compact)	19
	O	2	2.0	4.0	SS/3	6-7-6-9		Brown cmf GRAVEL and cmf SAND, little SILT (moist, medium compact)	13
	L								
	L	3	4.0	6.0	SS/2	5-4-4-5		Similar Soil (moist, loose)	8
5	O								
	W	4	6.0	8.0	SS/8	6-8-15-15		Similar Soil (moist, medium compact)	23
		5	8.0	10.0	SS/10	15-9-15-7		Similar Soil (moist, medium compact)	24
	S								
10	T								
	E								
	M								
			13.5	15.0	SS/0	5-7-6		No Recovery (2 attempts)	13
15	A								
	U						18.0		
	G	6	18.5	20.0	SS/2	15-20-17		Brown SILT, some cmf SAND, little mf GRAVEL (moist, hard)	37
	E								
	R								
20	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG

Project: Ithaca Commons Rehabilitation Project, Ithaca, New York

Report No.: 26677B-01-0912

Client: City of Ithaca Department of Public Works

Date Started: 08/13/12 Finished: 08/13/12

Location of Boring: See Boring Location Sketch

Elevation of Surface of Boring: 412.4'

METHODS OF INVESTIGATION**GROUND WATER OBSERVATIONS**

Casing: 3-1/4" ID H. Stem Auger Driller: Beau Fletcher
 Casing Hammer: Driller: Bryan Howe
 Other: Inspector: Doug Hurlbut
 Soil Sampler: 2" OD Split Barrel Rod Size: AWJ
 Sampler Hammer: Wt. 140 lbs./Auto Fall: 30 in.
 Make & Model of Drill Rig: CME 45c Truck Mounted

Date	Time	Depth	Casing At
08/13/12	While drilling	None Noted	
08/13/12	Before casing removed	None Noted	20.0'
08/13/12	After casing removed	None Noted	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.4	5" Concrete Pavement	
	H	1	0.4	2.0	SS/12	9-12-12		Brown cmf SAND, some mf GRAVEL, trace SILT (wet, medium compact)	24
	O	2	2.0	4.0	SS/10	7-8-6-3		Similar Soil (moist, medium compact)	14
	L	3	4.0	6.0	SS/11	11-13-18-18		Similar Soil (moist, compact)	31
5	O								
	W	4	6.0	8.0	SS/18	16-14-24-59		Similar Soil (moist, compact)	38
		5	8.0	10.0	SS/16	15-11-13-13		Similar Soil (moist, medium compact)	24
	S								
10	T								
	E								
	M	6	13.5	15.0	SS/6	13-12-14		Similar Soil (moist, medium compact)	26
15	A								
	U								
	G	7	18.5	20.0	SS/4	32-17-11		Similar Soil (wet, medium compact) Augered to 20.1' to set Well	28
	E								
20	R								
	XXX							Bottom of Boring @ 20.1'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:

SUBSURFACE EXPLORATION – TEST BORING LOG**Project:** Ithaca Commons Rehabilitation Project, Ithaca, New York**Report No.:** 26677B-01-0912**Client:** City of Ithaca Department of Public Works**Date Started:** 07/24/12 **Finished:** 07/24/12**Location of Boring:** See Boring Location Sketch**Elevation of Surface of Boring:** 411.8'**METHODS OF INVESTIGATION****GROUND WATER OBSERVATIONS**

Casing: 3-1/4" ID H. Stem Auger **Driller:** Beau Fletcher
Casing Hammer: **Driller:** Bryan Howe
Other: **Inspector:** Christine Linguanti
Soil Sampler: 2" OD Split Barrel **Rod Size:** AWJ
Sampler Hammer: Wt. 140 lbs./Auto **Fall:** 30 in.
Make & Model of Drill Rig: CME 45c Truck Mounted

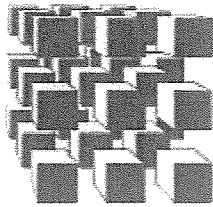
Date	Time	Depth	Casing At
07/24/12	While drilling	None Noted	
07/24/12	Before casing removed	None Noted	18.5'
07/24/12	After casing removed	None Noted	out
07/24/12	After casing removed	caved @ 15.2'	out

LOG OF BORING SAMPLES**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c – coarse m – medium f – fine and – 35 to 50 % some – 20 to 35 % little – 10 to 20 % trace – 0 to 10 %	SPT "N" or RQD
			From	To					
0	XXX						0.5	5½" Concrete Pavement	
	H	1	0.5	2.0	SS/8	14-18-19		Brown cmf GRAVEL and cmf SAND, little SILT, trace BRICK (moist)	37
	O	2	2.0	4.0	SS/12	10-5-4-7		~Miscellaneous Fill~ Brown SILT and mf SAND (moist)	9
	L	3	4.0	6.0	SS/10	7-9-9-5	4.0	Brown cmf GRAVEL and cmf SAND, little SILT (moist, medium compact)	18
5	O								
	W	4	6.0	8.0	SS/8	14-19-14-15		Brown cmf GRAVEL and cmf SAND, trace SILT (moist, compact)	33
		5	8.0	10.0	SS/12	20-20-41-21		Similar Soil (moist, very compact)	61
	S								
10	T								
	E								
	M								
		6	13.5	15.0	SS/3	3-4-6		Brown cmf SAND, some SILT, little mf GRAVEL (wet, medium compact)	10
15	A								
	U								
	G								
	E	7	18.5	20.0	SS/6	22-25-14		Brown cmf SAND and SILT, trace fine GRAVEL (wet, compact)	39
	R								
20	XXX							Bottom of Boring @ 20.0'	

*SS – Split Spoon, U – Undisturbed Tube, C – Core, WH – Weight of Hammer & Rods

Remarks:



CME
Associates, Inc.

6035 Corporate Drive
East Syracuse, New York, 13057
(315) 701-0522
(315) 701-0526 (Fax)

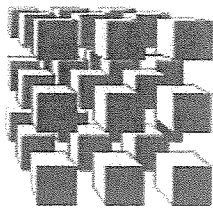
www.cmeassociates.com

GROUNDWATER OBSERVATION WELL REPORT

Project	Ithaca Commons Rehabilitation Project	Report No.	26677B-01-0812
	Ithaca, New York	Boring No.	B-3
Client	City of Ithaca Department of Public Works	Well No.	WB-3
Contractor	CME Associates, Inc.	Location	See Boring Location Plan
Driller	J. Wood	Driller	D. Hurlbut
Installation Date	08/13/12	Surface Elevation	410.4'
		Sheet	1 of 1

<i>Summarize Soil Conditions (not to scale)</i>	Please refer to Boring Log B-3		Elevation/Depth of riser pipe Below ground surface.	410.0' / -0.4'
			Thickness & Type of surface seal	24" HD50 Grout
			Diameter of PVC	1"
			Type of backfill around riser	Auger Cuttings
			Diameter of Borehole	7 "
			Thickness & Type of seal Bentonite	3" Granular
			Depth to top of filter pack	8.0'
			Depth of bottom of riser	10.4'
			Screen gauge or size of openings	0.010"
			Type of backfill/filter pack around point	#1 Silica Sand
			Depth of bottom of point	20.4'
			Depth & Type of Backfill to bottom of point	#1 Silica Sand to 20.4'
			Depth of bottom of borehole	20.4'

Notes: 5" bolt-down protective curb box installed to closely match existing grade for well protection.



CME
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(315) 701-0522
(315) 701-0526 (Fax)

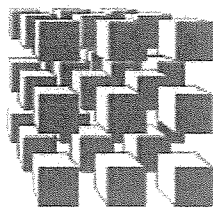
www.cmeassociates.com

GROUNDWATER OBSERVATION WELL REPORT

Project	Ithaca Commons Rehabilitation Project		Report No.	26677B-01-0812		
	Ithaca, New York		Boring No.	B-6		
Client	City of Ithaca Department of Public Works		Well No.	WB-6		
Contractor	CME Associates, Inc.		Location	See Boring Location Plan		
Driller	J. Wood	Driller	D. Hurlbut	Surface Elevation	411.7'	
Installation Date	08/09/12		Sheet	1	of	1

Summarize Soil Conditions (not to scale)	Please refer to Boring Log B-6		Elevation/Depth of riser pipe below ground surface.	411.5' / -0.2'
			Thickness & Type of surface seal	24" HD50 Grout with Sakrete
			Diameter of PVC	1.0 "
			Type of backfill around riser	Auger Cuttings
			Diameter of Borehole	7.0"
			Thickness & Type of seal	3" Granular Bentonite
			Depth to top of filter pack	8.0'
			Depth of bottom of riser	10.2'
			Screen gauge or size of openings	0.010"
			Type of backfill/filter pack around point	#1 Silica Sand
			Depth of bottom of point	20.2'
			Depth & Type of Backfill to bottom of point	#1 Silica Sand to 20.2'
			Depth of bottom of borehole	20.2'

Notes: 5" bolt-down protective curb box installed to closely match existing grade for well protection.



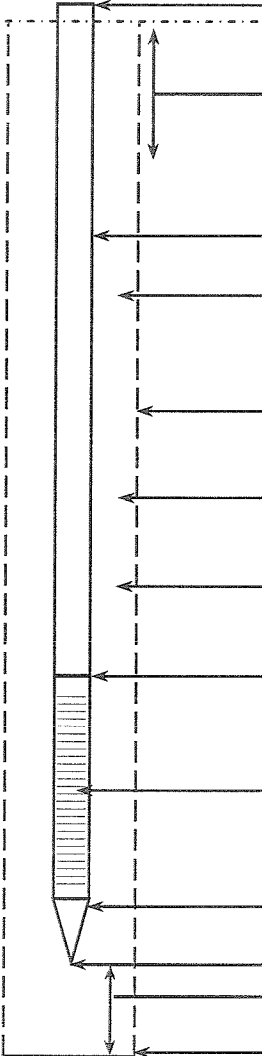
CME
Associates, Inc.

6035 Corporate Drive
East Syracuse, New York, 13057
(315) 701-0522
(315) 701-0526 (Fax)

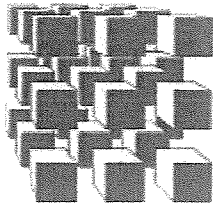
www.cmeassociates.com

GROUNDWATER OBSERVATION WELL REPORT

Project	Ithaca Commons Rehabilitation Project	Report No.	26677B-01-0812
	Ithaca, New York	Boring No.	B-9
Client	City of Ithaca Department of Public Works	Well No.	WB-9
Contractor	CME Associates, Inc.	Location	See Boring Location Plan
Driller	J. Wood	Driller	D. Hurlbut
Installation Date	08/10/12	Surface Elevation	415.7'
		Sheet	1 of 1

Summarize Soil Conditions (not to scale)	Please refer to Boring Log B-9		Elevation/depth of riser pipe below ground surface.	415.6' / -0.1'
			Thickness & Type of surface seal	24" HD50 Grout
			Diameter of PVC	1.0"
			Type of backfill around riser	Auger Cuttings
			Diameter of Borehole	7.0"
			Thickness & Type of seal	3" Granular Bentonite
			Depth to top of filter pack	8.0"
			Depth of bottom of riser	10.1'
			Screen gauge or size of openings	0.010"
			Type of backfill/filter pack around point	#1 Silica Sand
			Depth of bottom of point	20.1"
			Depth & Type of Backfill to bottom of point	#1 Silica Sand to 20.1'
			Depth of bottom of borehole	20.1'

Notes: 5" bolt-down protective curb box installed to closely match existing grade for well protection.



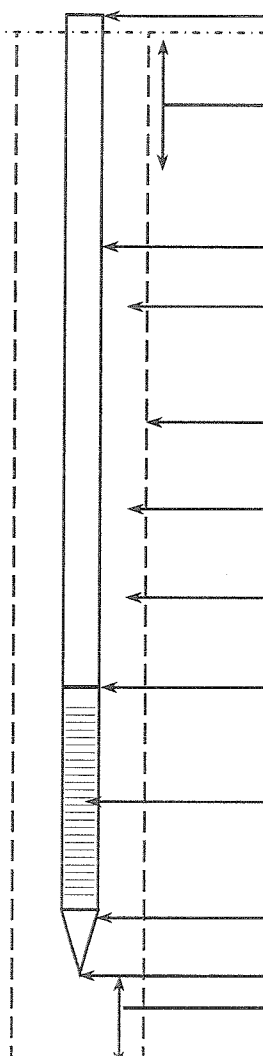
CME
Associates, Inc.

6035 Corporate Drive
East Syracuse, New York, 13057
(315) 701-0522
(315) 701-0526 (Fax)

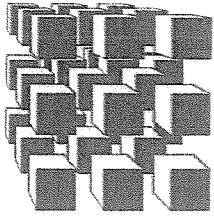
www.cmeassociates.com

GROUNDWATER OBSERVATION WELL REPORT

Project	Ithaca Commons Rehabilitation Project	Report No.	26677B-01-0812
	Ithaca, New York	Boring No.	B-12
Client	City of Ithaca Department of Public Works	Well No.	WB-12
Contractor	CME Associates, Inc.	Location	See Boring Location Plan
Driller	J. Wood	Driller	D. Hurlbut
Installation Date	08/13/12	Surface Elevation	412.4'
		Sheet	1 of 1

<i>Summarize Soil Conditions (not to scale)</i>	Please refer to Boring Log B-12		Elevation/depth of riser pipe below ground surface.	415.6' / -0.3'
			Thickness & Type of surface seal	24" HD50 Grout with sakrete
			Diameter of PVC	1.0"
			Type of backfill around riser	Auger Cuttings
			Diameter of Borehole	7.0"
			Thickness & Type of seal	3" Granular Bentonite
			Depth to top of filter pack	8.0'
			Depth of bottom of riser	10.3'
			Screen gauge or size of openings	0.010"
			Type of backfill/filter pack around point	#1 Silica Sand
			Depth of bottom of point	20.3'
			Depth & Type of Backfill to bottom of point	#1 Silica Sand to 20.3'
			Depth of bottom of borehole	20.3'

Notes: 5" bolt-down protective curb box installed to closely match existing grade for well protection.



LABORATORY TEST SUMMARY
Ithaca Commons Rehabilitation Project, Ithaca, New York
CME Report No.: 26677L-01-0912
September 4, 2012
Page 1 of 5

CME Representatives obtained soil samples from Test Borings advanced as part of the Subsurface Exploration Program conducted for the subject project. Selected samples were delivered to CME's East Syracuse facility, an AASTHO AMRL¹ accredited laboratory for various laboratory testing. The results are presented below:

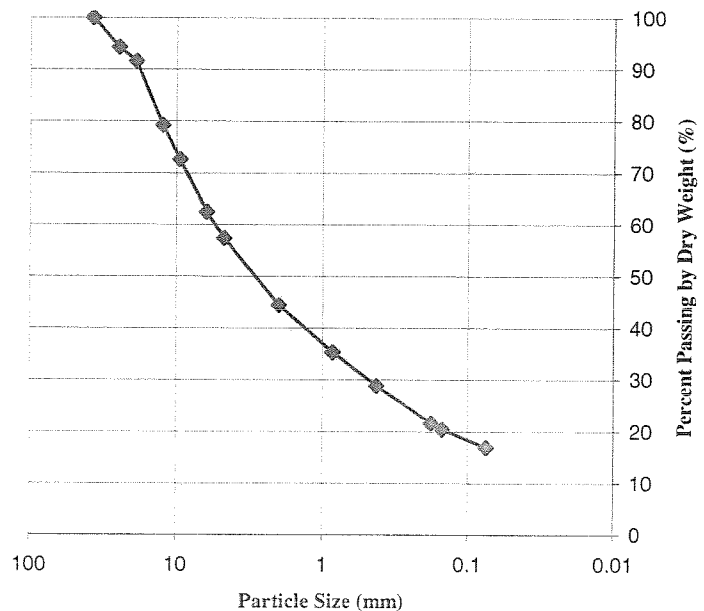
Sample ID Notations: B - Test Boring, S - Sample

I. Mechanical Analysis (ASTM D422)

Sample ID: B-1, 0.5'-4.0'

Burmister Classification: Brown cmf GRAVEL and cmf SAND, little SILT

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
1 1/2"	37.5	100
1"	25.0	94
3/4"	19.0	92
1/2"	12.5	79
3/8"	9.50	73
1/4"	6.25	62
No. 4	4.75	57
No. 10	2.00	44
No. 20	0.850	35
No. 40	0.425	29
No. 80	0.180	22
No. 100	0.150	20
No. 200	0.075	17

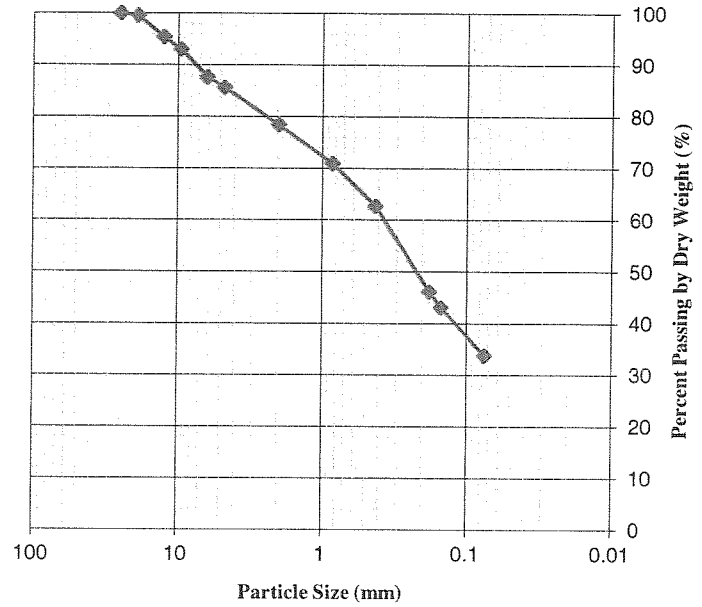


¹ AMRL – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory. AMRL is a Federal Agency having jurisdiction to assess laboratory competence according to the standards of the United States. CME East Syracuse accreditation includes tests of Portland Cement Concrete, Aggregate and Soil Materials. www.amrl.net

Sample ID: B-2, S-1

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
1"	25.0	100
3/4"	19.0	99
1/2"	12.5	95
3/8"	9.50	93
1/4"	6.25	88
No. 4	4.75	86
No. 10	2.00	78
No. 20	0.850	71
No. 40	0.425	63
No. 80	0.180	46
No. 100	0.150	43
No. 200	0.075	34

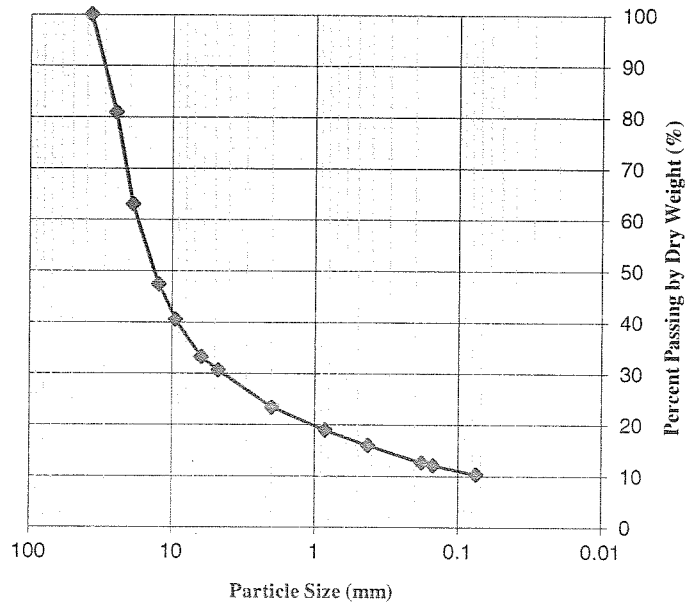
Burmister Classification: Brown cmf SAND, some SILT,
little mf GRAVEL



Sample ID: B-5, 0.5'-3.0'

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
1 1/2"	37.5	100
1"	25.0	81
3/4"	19.0	63
1/2"	12.5	47
3/8"	9.50	40
1/4"	6.25	33
No. 4	4.75	31
No. 10	2.00	23
No. 20	0.850	19
No. 40	0.425	16
No. 80	0.180	13
No. 100	0.150	12
No. 200	0.075	10

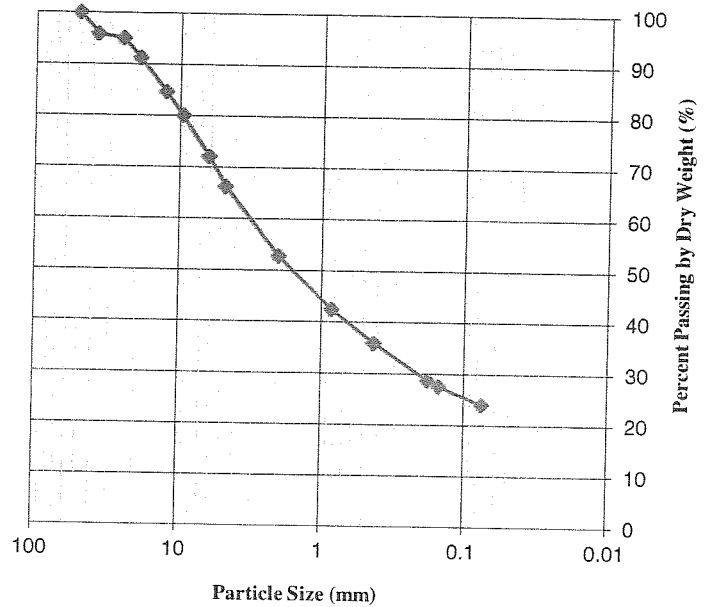
Burmister Classification: Brown cmf GRAVEL, some cmf
SAND, little SILT



Sample ID: B-7, S-1

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
2"	50.0	100
1 1/2"	37.5	96
1"	25.0	95
3/4"	19.0	91
1/2"	12.5	85
3/8"	9.50	80
1/4"	6.25	72
No. 4	4.75	66
No. 10	2.00	53
No. 20	0.850	42
No. 40	0.425	36
No. 80	0.180	29
No. 100	0.150	28
No. 200	0.075	24

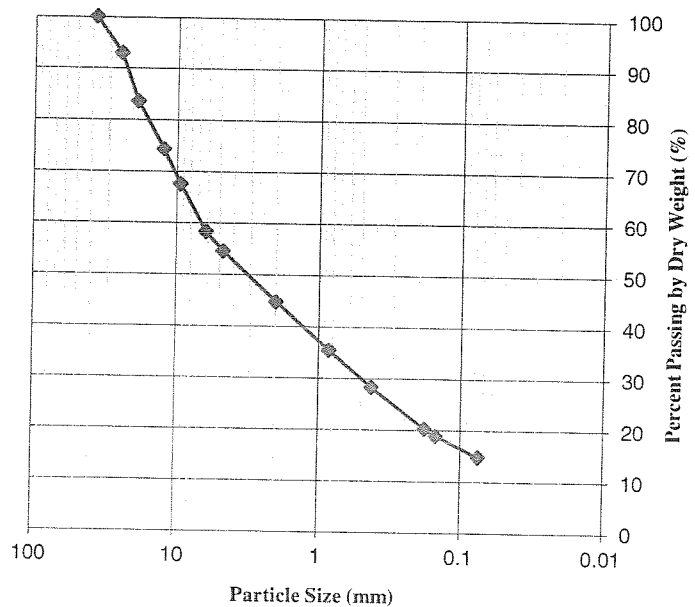
Burmister Classification: Brown cmf SAND, some cmf GRAVEL, some SILT



Sample ID: B-8, S-1

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
1 1/2"	37.5	100
1"	25.0	93
3/4"	19.0	84
1/2"	12.5	74
3/8"	9.50	68
1/4"	6.25	58
No. 4	4.75	55
No. 10	2.00	45
No. 20	0.850	35
No. 40	0.425	28
No. 80	0.180	20
No. 100	0.150	19
No. 200	0.075	15

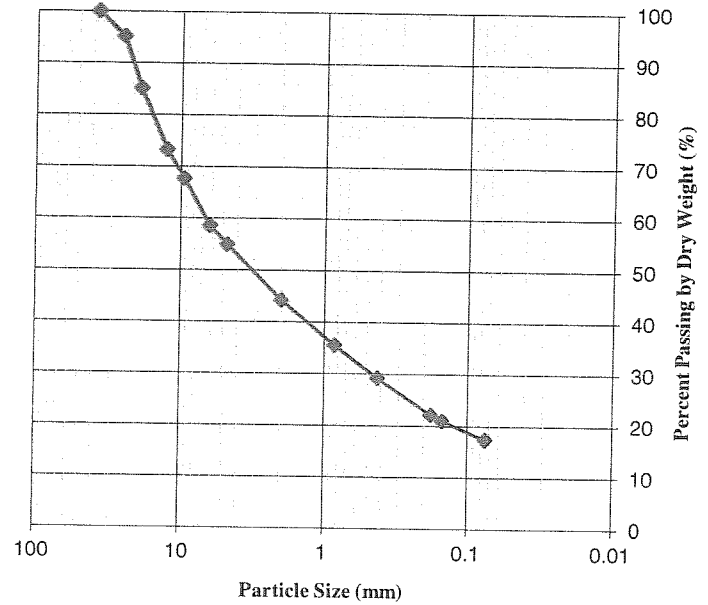
Burmister Classification: Brown cmf GRAVEL and cmf SAND, little SILT



Sample ID: B-13, S-1

Burmister Classification: Brown cmf GRAVEL and cmf SAND, little SILT

<u>Sieve Designation</u>	<u>Particle Size (mm)</u>	<u>Percent Passing</u>
1 1/2"	37.5	100
1"	25.0	95
3/4"	19.0	85
1/2"	12.5	73
3/8"	9.50	68
1/4"	6.25	59
No. 4	4.75	55
No. 10	2.00	44
No. 20	0.850	36
No. 40	0.425	29
No. 80	0.180	22
No. 100	0.150	21
No. 200	0.075	17

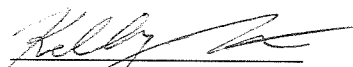


II. Ductile Iron Pipe Research Association (DIPRA) Test

<u>Sample ID</u>	<u>Sample Depth (ft.)</u>	<u>Material Description</u>
B-1, S-3	4' to 6'	Brown cmf GRAVEL and cmf SAND, little SILT
B-2, S-4	8' to 10'	Brown cmf GRAVEL and cmf SAND, trace SILT
B-3, S-3	4' to 6'	Brown cmf SAND, some mf GRAVEL, little SILT
B-4, S-4	6' to 8'	Brown cmf SAND, some mf GRAVEL, trace SILT
B-7, S-4	6' to 8'	Brown cmf SAND and cmf GRAVEL, little SILT
B-8, S-4	6' to 8'	Brown cmf GRAVEL and cmf SAND, trace SILT, trace ROOTS
B-9, S-3	4' to 6'	Brown cmf SAND, some cmf GRAVEL, little SILT
B-11, S-4	6' to 8'	Brown cmf GRAVEL and cmf SAND, trace SILT
B-12, S-3	4' to 6'	Brown cmf GRAVEL and cmf SAND, little SILT
B-13, S-4	6' to 8'	Brown cmf GRAVEL and cmf SAND, trace SILT

TABLE 1- DIPRA TEST RESULTS						
Sample ID	Resistivity ohm-cm.	Redox Potential (mv)	pH	Sulfides	Moisture	DIPRA Points
B-1, S-3	4720	173	9.8	Negative	Good	3
B-2, S-4	1438	117	8.1	Negative	Good	10
B-3	1962	191	10.6	Negative	Fair	9
B-4, S-4	3500	170	11.7	Negative	Fair	4
B-7, S-4	3370	107	8.0	Negative	Good	0
B-8, S-4	1404	115	7.8	Negative	Good	10
B-9, S-3	843	171	11.3	Negative	Poor	15
B-11, S-4	2450	122	7.9	Negative	Good	2
B-12, S-3	1977	144	12.7	Negative	Fair	9
B-13, S-4	2740	112	8.6	Negative	Good	1

If you have any questions regarding this report please contact our office.


Kelly Teeter
Laboratory Supervisor

Upstate Laboratories, Inc.

Shipping: 6034 Corporate Dr. * E. Syracuse, NY 13057-1017 * (315) 437-0255 * Fax (315) 437-1209

Mailing: Box 169 * Syracuse, NY 13206

Albany (518) 459-3134 * Binghamton (607) 239-4413 * Buffalo (716) 972-0371

Rochester (866) 437-0255 * New Jersey (908) 581-4285

Doug Hurlbut
CME Associates, Inc.
6035 Corporate Drive
East Syracuse, NY 13057
(315) 952-1425

Friday, August 31, 2012

RE: Analytical Report:
Ithaca Commons/26677

Order No.: U1208458

Dear Doug Hurlbut:

Upstate Laboratories, Inc. received 10 sample(s) on 8/16/2012 for the analyses presented in the following report.

All analytical results relate to the samples as received by the laboratory.

All analytical data conforms with standard approved methodologies and quality control. Our quality control narrative will be included should any anomalies occur.

We have included the Chain of Custody Record as part of your report. The NYS DOH requires that all samples received by the laboratory must have a Collection Date and Time, and a Relinquished By signature. You may need to reference this form for a more detailed explanation of your samples. Samples will be disposed of approximately one month from final report date.

Should you have any questions regarding these tests, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

AJS (PFF)

Anthony J. Scala

President/CEO

Confidentiality Statement: This report is meant for the use of the intended recipient. It may contain confidential information, which is legally privileged or otherwise protected by law. If you have received this report in error, you are strictly prohibited from reviewing, using, disseminating, distributing or copying the information.

Upstate Laboratories, Inc.**Analytical Report**

Date: 31-Aug-12

CLIENT: CME Associates, Inc.
Project: Ithaca Commons/26677

Lab Order: U1208458

Lab ID: U1208458-001

Collection Date: 8/8/2012

Client Sample ID: B-1,S-4,6ft-8ft

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	121	22.7		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	11.9	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	113		mg/Kg-dry	1	8/28/2012

Lab ID: U1208458-002

Collection Date: 7/27/2012

Client Sample ID: B-2,S-3,4ft-6ft

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	169	23.5		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	14.9	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	118		mg/Kg-dry	1	8/17/2012

Approved By: **PFF**

Date: **8-31-12**

Page 1 of 5

Qualifiers: # Accreditation not offered by NYS DOH for this parameter
 ** Value exceeds Maximum Contaminant Value
 E Value above quantitation range
 J Analyte detected below quantitation limits
 Q Outlying QC recoveries were associated with this parameter

* Low Level
 B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits

Upstate Laboratories, Inc.**Analytical Report**

Date: 31-Aug-12

CLIENT: CME Associates, Inc.
Project: Ithaca Commons/26677

Lab Order: U1208458

Lab ID: U1208458-003

Collection Date: 8/13/2012

Client Sample ID: B-3,S-4,6ft-8ft

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	232	22.3		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	10.3	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	111		mg/Kg-dry	1	8/28/2012

Lab ID: U1208458-004

Collection Date: 8/10/2012

Client Sample ID: B-4,S-4,6ft-8ft

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	76.5	21.4		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	6.40	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	107		mg/Kg-dry	1	8/28/2012

Approved By: PFF

Date: 8-31-12

Page 2 of 5

Qualifiers: # Accreditation not offered by NYS DOI for this parameter
 ** Value exceeds Maximum Contaminant Value
 E Value above quantitation range
 J Analyte detected below quantitation limits
 Q Outlying QC recoveries were associated with this parameter

* Low Level
 B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits

Upstate Laboratories, Inc.**Analytical Report**

Date: 31-Aug-12

CLIENT: CME Associates, Inc.
Project: Ithaca Commons/26677

Lab Order: U1208458

Lab ID: U1208458-005

Collection Date: 8/9/2012

Client Sample ID: B-6,S-4,6ft-8ft

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	47.3	22.1		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	9.45	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	110		mg/Kg-dry	1	8/28/2012

Lab ID: U1208458-006
Client Sample ID: B-7,S-3,4ft-6ft

Collection Date: 7/25/2012

Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO	Analyst: CAS	
Chloride	227	21.4		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST	Analyst: NKA	
Percent Moisture	6.43	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S	Analyst: CAG	
Sulfate	ND	107		mg/Kg-dry	1	8/17/2012

Approved By: PFF

Date: 8-31-12

Page 3 of 5

Qualifiers: # Accreditation not offered by NYS DOH for this parameter
 ** Value exceeds Maximum Contaminant Value
 E Value above quantitation range
 J Analyte detected below quantitation limits
 Q Outlying QC recoveries were associated with this parameter

* Low Level
 B Analyte detected in the associated Method Blank
 II Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits

Upstate Laboratories, Inc.**Analytical Report**

Date: 31-Aug-12

CLIENT: CME Associates, Inc.
Project: Ithaca Commons/26677

Lab Order: U1208458

Lab ID: U1208458-007
Client Sample ID: B-8,S-3,4ft-6ft

Collection Date: 7/25/2012
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO		Analyst: CAS
Chloride	467	21.0		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST		Analyst: NKA
Percent Moisture	4.98	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S		Analyst: CAG
Sulfate	ND	105		mg/Kg-dry	1	8/17/2012

Lab ID: U1208458-008
Client Sample ID: B-10,S-4,6ft-8ft

Collection Date: 8/9/2012
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO		Analyst: CAS
Chloride	340	22.4		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST		Analyst: NKA
Percent Moisture	10.6	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S		Analyst: CAG
Sulfate	ND	112		mg/Kg-dry	1	8/28/2012

Approved By: PFF

Date: 8-31-12

Page 4 of 5

Qualifiers: # Accreditation not offered by NYS DOH for this parameter
 ** Value exceeds Maximum Contaminant Value
 E Value above quantitation range
 J Analyte detected below quantitation limits
 Q Outlying QC recoveries were associated with this parameter

* Low Level
 B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits

Upstate Laboratories, Inc.**Analytical Report**

Date: 31-Aug-12

CLIENT: CME Associates, Inc.
Project: Ithaca Commons/26677

Lab Order: U1208458

Lab ID: U1208458-009
Client Sample ID: B-12,S-4,6ft-8ft

Collection Date: 8/13/2012**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO		Analyst: CAS
Chloride	241	21.3		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST		Analyst: NKA
Percent Moisture	6.14	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S		Analyst: CAG
Sulfate	ND	107		mg/Kg-dry	1	8/28/2012

Lab ID: U1208458-010
Client Sample ID: B-13,S-3,4ft-6ft

Collection Date: 7/24/2012**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE SOILS BY EPA METHOD 9251				Lab Code: CL_S_AUTO		Analyst: CAS
Chloride	106	21.1		mg/Kg-dry	1	8/21/2012
PERCENT MOISTURE BY ASTM D2216				Lab Code: PMOIST		Analyst: NKA
Percent Moisture	5.28	0.0100		wt%	1	8/17/2012
SULFATE IN SOLIDS BY EPA METHOD 9038				Lab Code: SULFATE_S		Analyst: CAG
Sulfate	ND	106		mg/Kg-dry	1	8/17/2012

Approved By: PFF**Date:** 8-31-12

Page 5 of 5

Qualifiers: # Accreditation not offered by NYS DOH for this parameter
 ** Value exceeds Maximum Contaminant Value
 E Value above quantitation range
 J Analyte detected below quantitation limits
 Q Outlying QC recoveries were associated with this parameter

* Low Level
 B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit
 S Spike Recovery outside accepted recovery limits

Chain of Custody Record

Client		Client Project # / Project Name		Client Contact		Phone #		Site Location (city/state)		Sample Location:		Date		Time		Matrix		Grab or Comp.		ULI Internal Use Only		No. of Containers		Special Turnaround Time (Lab Notification required)	
CME Associates, Inc.		Ithaca Commons/26677		Doug Hurbit		853-1425		Ithaca New York																	
B-1, S-4, 6'-8'						8/8				Soil		Grab		1		2		1		1		1		Please return unused portion of sample to client in the same jars supplied to lab	
B-2, S-3, 4'-6'						7/27								2		3		1		1		1			
B-3, S-4, 6'-8'						8/13								3		4		1		1		1			
B-4, S-4, 6'-8'						8/10								4		5		1		1		1			
B-6, S-4, 6'-8'						8/9								5		6		1		1		1			
B-7, S-3, 4'-6'						7/25								6		7		1		1		1			
B-8, S-3, 4'-6'						7/25								7		8		1		1		1			
B-10, S-4, 6'-8'						8/9								8		9		1		1		1			
B-12, S-4, 6'-8'						8/13								9		10		1		1		1			
B-13, S-3, 4'-6'						7/24				V		V		10		1		1		1		1			
parameter and method		sample bottle:		type		size		pres.																	
				(803)																					
				K&L																					
				Company:																					
				CME Associates, Inc.																					
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Upstate Laboratories, Inc.**Sample Receipt Checklist**Client Name **CME ASSOCIATES CICERO**

Date and Time Receive

8/16/2012Work Order Number **U1208458**Received by: **BLM**

Checklist completed by

Signature KChump Date 8-16-12

Reviewed by

Initials PFFDate 8-16-12

Matrix:

Carrier name: Client

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Ice present in cooler <u>15.3</u>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Ice Melted <input type="checkbox"/> N/A or Unknown <input type="checkbox"/>
Water - VOA vials have zero headspace?	No VOA vials submitted <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Adjusted?		Checked by	

Any No and/or NA (not applicable) response must be detailed in the comments section below

Client contacted DOUG HURLBUT Date contacted: 8-21-12 Person contacted CME ASSOCIATESContacted by: PETE FRICANO Regarding: SAMPLE RECEIPT TEMPERATUREComments: Client notified at window of out of range temp -
OK to run 8-16-12 (KC)

Corrective Action

GENERAL INFORMATION & KEY TO TEST BORING LOGS

The **Subsurface Exploration - Test Boring Logs** produced by CME Associates, Inc. present the observations and mechanical data collected by the driller while at the site, supplemented, at times, by classification of the materials removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Exploration Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often, analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of CME's report and the recovered samples must be performed by Licensed Professionals having experience in Soil Mechanics and Foundation Engineering. The information presented in this Key defines some of the procedures and terms used on the CME Exploration Logs to describe the conditions encountered. Refer to the Log on page 3 for key number.

<u>Key No.</u>	<u>Description</u>
----------------	--------------------

- | | |
|----|---|
| 1. | The figures in the DEPTH SCALE column define the vertical scale of the Boring Log. |
| 2. | CASING BLOWS/FOOT - shows the number of blows required to advance the casing a distance of 12 inches. The casing size, the hammer weight and the length of drop are noted under the Methods of Investigation . If the casing is advanced by means other than driving, the method of advancement will be indicated under Methods of Investigation at the top of the Log. If Hollow Stem Augers or Coring is used, it will be so noted in this column. |
| 3. | The SAMPLE I.D. is used for identification on the sample containers and in the Laboratory Test Report or Summary. |
| 4. | The DEPTH OF SAMPLE column gives the exact depth range from which a sample was recovered. |
| 5. | The SAMPLE TYPE/RECOVERY column is used to signify the various type of sample attempt. "SS" is Split Spoon, "P" is piston tube, "U" is Undisturbed tube. For soil samples, the recovered length of the sample is also indicated, in inches. If a rock core sample is taken, the core bit size designation is given here. |
| 6. | BLOWS ON SAMPLER - shows the results of the "Standard Penetration Test (SPT) ASTM D1586", recording the number of blows required to drive a split spoon sampler into the soil beneath the casing. The number of blows required for each six inches of penetration is recorded. The total number of blows required for the 6 inch to 18 inch interval is summarized in the SPT "N" column and represents the "Standard Penetration Number". The outside diameter of the sampler, the hammer weight and the length of drop are noted in the Methods of Investigation portion of the log. A "WH" or "WR" in this column indicates that the sample spoon advanced the 6 inch interval under Weight of Hammer or Weight of Rods, respectively. |
| 7. | The DEPTH OF CHANGE column designates the depth (in feet) that the driller noted a compactness or stratum change. In soft materials or soil strata exhibiting a consistent relative density, it is difficult for the driller to determine the exact change from one stratum to the next. In addition, a grading or gradual change may exist. In such cases the depth noted is approximate or estimated only and may be represented by a dashed line. |
| 8. | CLASSIFICATION OF MATERIAL - Soil materials encountered and sampled are described by the driller on the original log. Notes of driller observations are also placed in this column. Recovered samples may also be visually classified by a Soil Technician upon receipt in the Laboratory. Visual sample classification is by Burmister System and strata may be classified additionally by the Unified System . The Burmister System is a type of visual-manual textural classification estimated by the Driller or Technician on the basis of weight-fraction of the recovered soil. See Table 1 " Classification of Materials ". The description of the relative soil compactness or consistency is based upon the standard penetration number as defined in Table 2. The description of the soil moisture condition is described as dry, moist, wet, or saturated. Water used to advance the boring may have affected the in-situ moisture content of the sample. Special terms are used as required to describe materials in greater detail, such terms are listed in ASTM D653. When sampling gravelly soils with a standard two-inch O.D. Split Spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders, cobbles, and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller. |

TABLE 2 - DESCRIPTION OF SOIL COMPACTNESS OR CONSISTENCY based on SPT "N"*

Primary Soil Type	Descriptive Term of Compactness	Range of Standard Penetration Resistance (N)
COARSE GRAINED SOILS	Very loose	less than 4 blows per foot
(More than half of Material is larger than No. 200 sieve size.)	Loose	4 to 10
	Medium compact	10 to 30
	Compact	30 to 50
	Very compact	Greater than 50
FINE GRAINED SOILS	Descriptive Term of Consistency	Range of Standard Penetration Resistance (N)
(More than half of material is smaller than No. 200 sieve size.)	Very soft	less than 2 blows per foot
	Soft	2 to 4
	Medium stiff	4 to 8
	Stiff	8 to 15
	Very stiff	15 to 30
	Hard	Greater than 30

*The number of blows of 140 pound weight falling 30 inches to drive 2 inch O.D., 1-3/8 inch I.D. sampler 12 inches is defined as the Standard Penetration Resistance designated "N".

TABLE 3 - ROCK CLASSIFICATION TERMS

Rock Classification Terms		Field Test or Meaning of Term
Hardness	Soft	Scratched by fingernail
	Medium Hard	Scratched easily by penknife
	Hard	Scratched with difficulty by penknife
	Very Hard	Cannot be scratched by penknife
Weathering	Very Weathered Weathered Sound	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
Bedding (Natural Breaks in Rock Layers)	Laminated Thinly bedded Bedded Thickly bedded Massive	less than 1 inch 1 inch to 4 inches 4 inches to 12 inches 12 inches to 36 inches greater than 36 inches