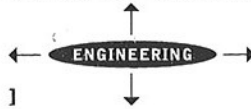


Environmental Safety Health Geotechnical

O'Reilly, Talbot & Okun

[A S S O C I A T E S]



293 Bridge Street

Suite 500

Springfield, MA 01103

Tel 413 788 6222

Fax 413 788 8830

www.oto-env.com

J709-35-01

August 9, 2006

Mr. Ken Motyl
Reinhardt Associates, Inc.
430 Main Street
Agawam, Massachusetts 01001

Re: Geotechnical Recommendations
Accessibility Renovations & Additions
Elihu Thompson Administration Building
22 Monument Avenue
Swampscott, Massachusetts

Dear Mr. Motyl:

We are pleased to provide this letter report summarizing our geotechnical engineering recommendations for the proposed addition to the Elihu Thompson Administration Building located at 22 Monument Avenue in Swampscott, Massachusetts. A Site Locus is provided as Figure 1. This report is subject to the attached limitations.

PROJECT DESCRIPTION

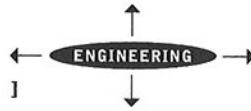
Project plans call for a two-story connector addition to be constructed between the two site buildings. The existing one story connector will be demolished as part of the proposed construction. Additionally, a design alternative includes deepening the existing connector crawl space (basement) into a full basement. The new basement level would be at the same level as the basements for the two existing buildings. Therefore, we assume that the new basement can be constructed without the need for underpinning the existing structures. A Site Plan is provided as Figure 2.

GEOTECHNICAL ISSUES

Based upon the information collected, the principal geotechnical issues for the project include foundation type and capacity and construction related issues. The following recommendations are provided for the assumed construction described above.

SUBSURFACE EXPLORATIONS

Subsurface explorations consisted of five soil borings (B-1 through B-5) performed by New Hampshire Boring of Londonderry, New Hampshire on July 28, 2006. Borings were performed using a truck mounted rig, with hollow stem augers. The borings were observed by an O'Reilly, Talbot & Okun Associates, Inc. (OTO) geologist. Boring locations are shown on Figure 2. Boring logs are attached.



Soil samples were collected using a 2-inch diameter split spoon sampler driven 24-inches with a 140 pound hammer falling 30 inches (standard penetration test or SPT). The number of blows required to drive the sampler each 6 inches was recorded. The standard penetration resistance is the number of blows required to drive the sampler the middle 12 inches. Soil properties, such as strength and density, are related to the SPT blow count.

SUBSURFACE CONDITIONS

Subsurface conditions were interpreted based upon soil borings. The ground surface was covered by 1 to 4 inches of pavement (borings B-1 and B-2) or approximately 12 inches of topsoil (borings B-3 through B-5). Approximately 18 to 24 inches of fill (sand and gravel with trace amounts of brick) was encountered beneath the asphalt layer in borings B-1 and B-2. In each of five borings, the surficial layers were underlain by medium dense to very dense, sand with varying amounts of gravel. In borings B-1, B-2 and B-5, the sand and gravel layer extended to a depth of approximately 15 feet and was underlain by dense to very dense, fine sand and silt with some to trace clay. In boring B-3, the sand and gravel layer extended to the bottom of the boring. In boring B-4, a layer of medium dense, sand and silt layer was encountered between depths of 4 and 11 feet below ground surface. Medium dense to very dense, sand and gravel was encountered above and below this layer.

The borings were performed to a depth of between 27 and 32 feet below ground surface. Borings B-3 through B-5 were terminated due to sands "blowing" into the augers.

During drilling, groundwater was encountered in each of the borings at a depth of between 20 and 27 feet below ground surface. Therefore, groundwater is not expected to be encountered during construction.

DESIGN RECOMMENDATIONS

The subsurface conditions appear favorable for the proposed construction. The following recommendations are provided for the assumed construction.

Foundations

The proposed building can be founded on normal spread footing foundations. Footings should bear the medium dense to dense, natural granular soils. We recommend that footings bearing on soil be designed using a maximum allowable bearing pressure of 4,000 pounds per square foot.

We recommend that exterior footings be embedded a minimum of 48 inches below the lowest adjacent grade for frost protection. Footings shall be at least 18 inches wide for continuous footings and at least 24 inches wide for isolated footings. All other applicable requirements of the Massachusetts State Building Code should be followed.

We anticipate that settlements of footings and slabs bearing on bedrock or on densified native soil or compacted fill should be small and largely elastic in nature. We anticipate that

maximum settlements should be 1/2 inch or less and should occur relatively quickly after load application (during construction).

If winter construction occurs, footings should not be placed on frozen soils. Footing excavations should be free of loose or disturbed materials. Any boulders or cobbles larger than 4 inches diameter should be removed from within one foot of the bottom of the footings and replaced with granular fill. If loose materials are present in the excavations, they shall be recompacted to form a firm dense bearing surface. Footing excavations in soils should be proof compacted by 2 to 3 passes with a hand operated vibrating plate compactor prior to concrete placement.

Earthquake Considerations

Earthquake loadings must be considered under requirements in Section 1612 and 1805 of the Sixth Edition (February 1997) of the Massachusetts Building code. Section 1612.4.2 covers lateral forces imposed on structures from earthquake shaking and Section 1805.3 relates to the liquefaction potential of the underlying soils.

The medium dense to dense granular soils present would be considered a Class S2 soil under Table 1612.4.1. Therefore, an "S" factor of 1.2 should be used to compute lateral forces. The liquefaction potential of the saturated granular soils present below a depth of 20 feet was considered. Based upon density, these soils would not be considered susceptible to liquefaction.

Concrete Slabs

We recommend that concrete floor slabs bear on at least 12 inches of compacted sand and gravel, to provide uniform support and a capillary moisture break. The subgrade should also be free of large boulders. The sand and gravel fill beneath the concrete slabs should meet the grain size distribution characteristics for sand and gravel outlined in Table 2. The natural subgrade beneath slabs should be densified to treat any loose area present. Fill supporting slabs should be placed in accordance with the recommendations for gradation and compaction provided below.

Earthwork Recommendations

We anticipate that earthwork for this project will include excavations for footings and fills for the building pad.

Two fill types are recommended; Sand and Gravel for use within 12 inches beneath slabs and footings, and Granular Fill for use at depths greater than 12 inches beneath floor slabs and footings and as miscellaneous fill. Grain size distribution requirements are presented in Table 1.

Table 1
Grain Size Distribution Requirements

Size	Sand and Gravel	Granular Fill
	Percent Finer by Weight	
4 inch	100	100
3/4 inch	---	---
1/2 inch	50-85	---
3/8 inch	---	---
No. 4	40-75	---
No. 10	---	30-90
No. 40	10-35	10-70
No. 100	---	---
No. 200	0-8	0-15

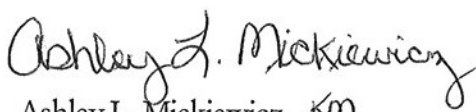
The granular soils present in the borings indicate that site soils may be suitable for use as fill. If on site soils are to be used as fill, we recommend that grain size distribution testing be performed on excavated materials to confirm that fill requirements are met.


Any vegetation and organic soils should be stripped from beneath the proposed structures. Fill, debris, topsoil or organic soils stripped from the excavation should not be reused as fill beneath structures. To avoid point loads, any cobbles or boulders larger than 4 inch diameter encountered at the subgrade for footings and slabs on grade should be removed and replaced with compacted sand and gravel fill. Compaction should achieve at least 95% of the Modified Proctor dry density as defined in ASTM D1557, Method C.

Fill placed beneath footings, floorslabs and pavements should be densified to at least 95% of the Modified Proctor dry density as defined in ASTM D1557, Method C. Fill should be placed in lifts of no more than 12-inches and compacted with at least four passes with a vibrating drum roller (minimum of 3,000 pound weight). To facilitate compaction, the moisture content should be maintained at or near the optimum moisture content.

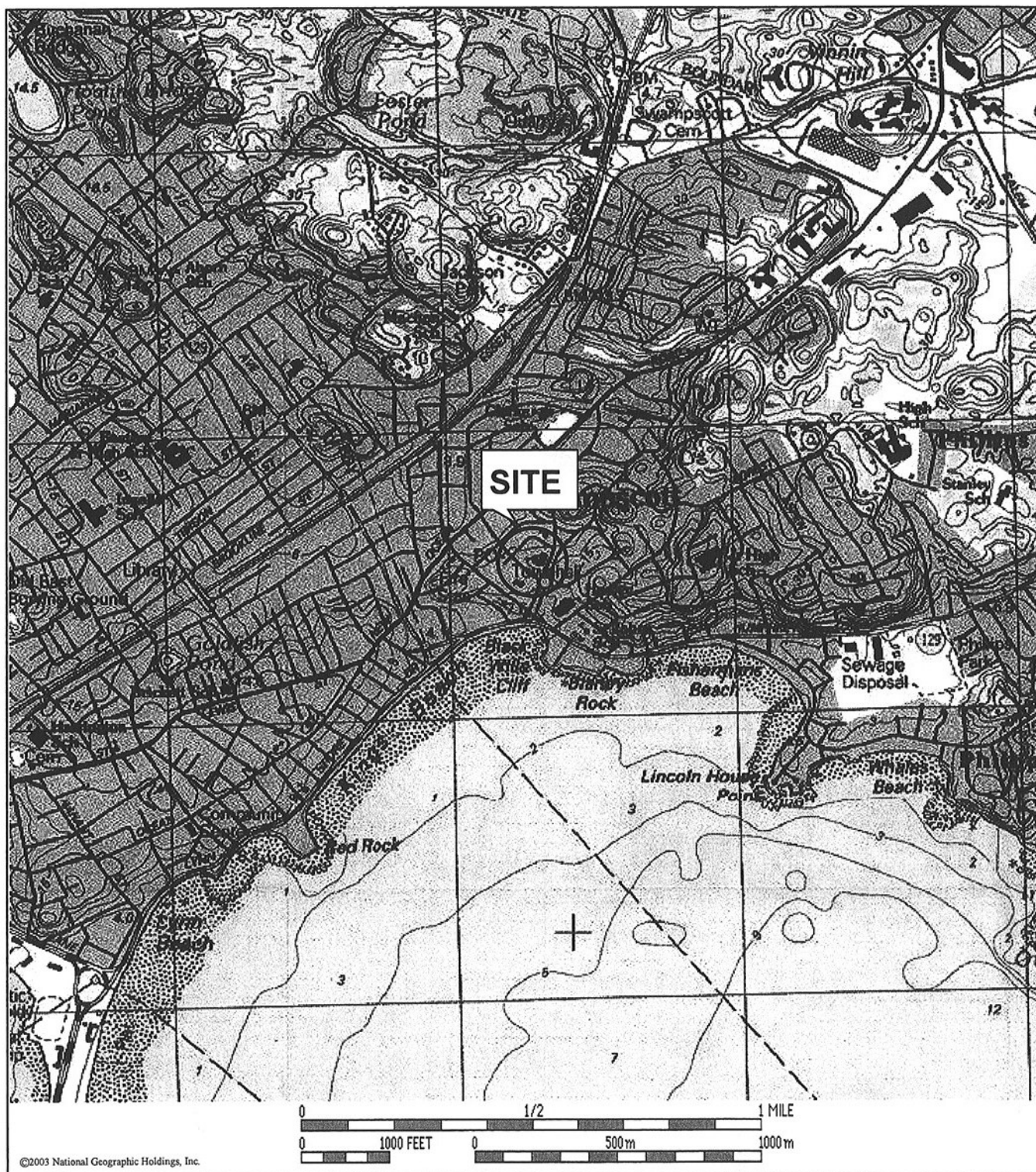
If you have any questions, please do not hesitate to contact the undersigned. We appreciated the opportunity to be of service on this project. If you have any questions, please call the undersigned.

Sincerely yours,
O'Reilly, Talbot & Okun Associates, Inc.


Ashley L. Mickiewicz
Project Engineer

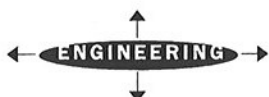

Michael J. Talbot, P. E.
Principal

Attachments: Site Locus, Site Plan, Limitations, Boring Logs



O'Reilly, Talbot & Okun

[A S S O C I A T E S]

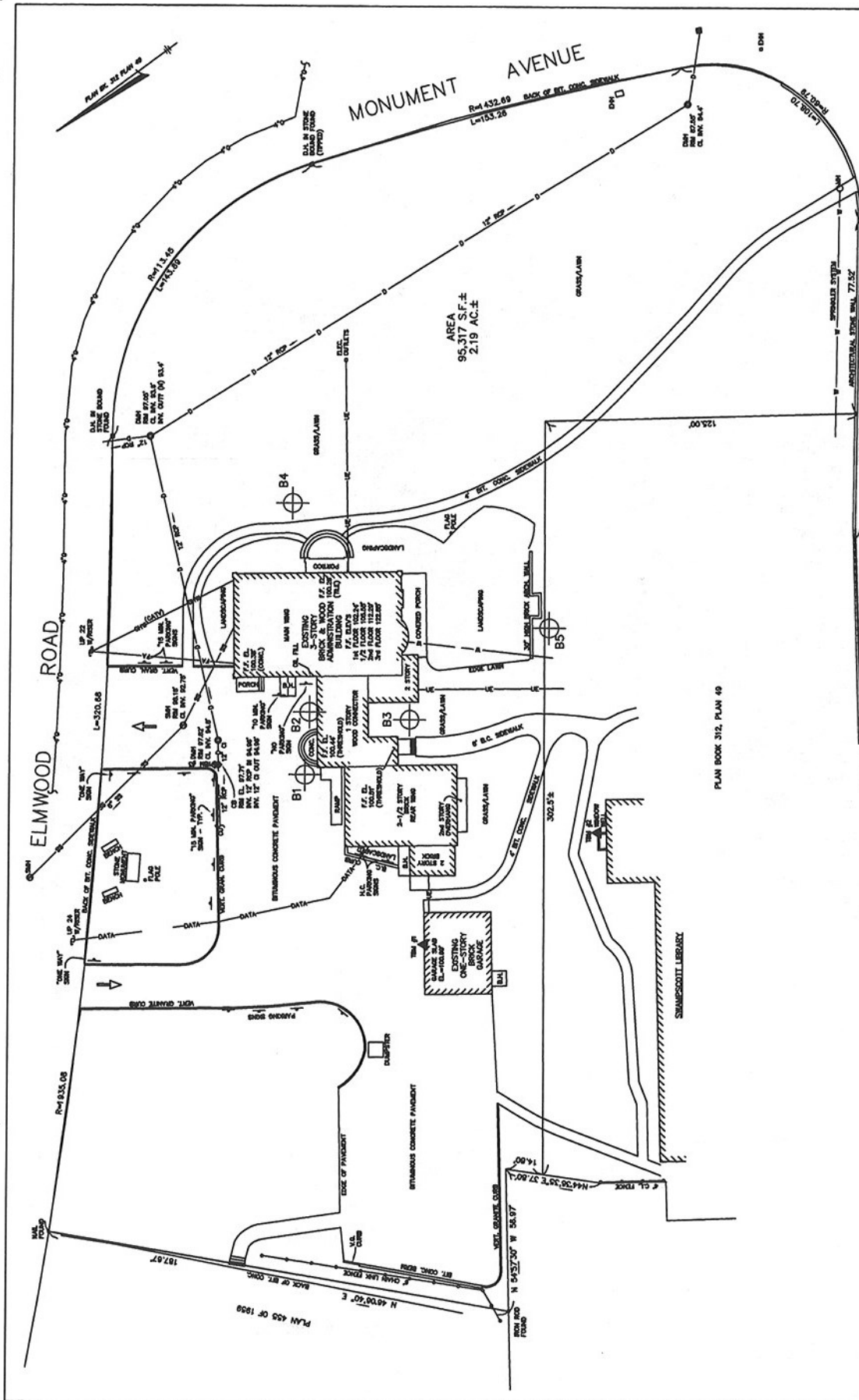


Elihu Administration Building
Swampscott, Massachusetts

SITE LOCUS

August 2006

Figure 1



LEGEND:



SOIL BORING LOCATION PERFORMED BY
NEW HAMPSHIRE BORING ON JULY 25, 2006

BURRILL STREET

ELIHU ADMINISTRATION BUILDING

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM REINHARDT ASSOCIATES. PLAN ENTITLED "EXISTING CONDITIONS PLAN OF LAND" DATED 07/31/06.
2. SAMPLE LOCATIONS ARE SHOWN BASED ON TAPED MEASUREMENTS TAKEN FROM EXISTING SITE FEATURES. ALL DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD(S) USED.

DATE: AUGUST 3, 2006

**O'REILLY, TALBOT & OKUN
ASSOCIATES, INC.**

SCALE
1" = 60'



ELIHU ADMINISTRATION BUILDING
22 MONUMENT AVENUE - SWAMPSCOTT, MASSACHUSETTS

SITE PLAN

JOB NUMBER:
J0709-35-01

FIGURE NO:
2

LIMITATIONS

1. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the Statement of Terms and Conditions attached to our proposal.
2. The analysis and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it may be necessary to reevaluate the recommendations of this report.
3. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.
4. In the event that any changes in the nature, design or location of the proposed structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by O'Reilly, Talbot & Okun Associates Inc. It is recommended that we be retained to provide a general review of final plans and specifications.
5. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners.

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING B-1

Page 1 OF 2

PROJECT Elihu Thompson Administration Building				LOCATION Swampscot, MA		PROJECT NO. J0709 35 01	
DRILLING CONTRACTOR New Hampshire Boring			FOREMAN Peter Bossiere	DATE STARTED 07/28/2006		DATE FINISHED 07/28/2006	
DRILLING EQUIPMENT Mobile 53 Bombardier				COMPLETION DEPTH 32'		GROUND SURFACE ELEV. (ft.)	
TYPE BIT Conical with Plug				SIZE & TYPE OF CORE BARREL		DUM	
CASING 4 1/4" ID Hollow Stem Auger				No. Sample 7		UNDIST.	
CASING HAMM. WEIGHT DROP				TIME		FIRST	COMPL.
SAMPLER 2" O.D. Split Spoon Rod A (1 5/8" O.D.)				WATER LEVEL (FT.)		24'	26.4
SAMPLER HAMMER Safety				BORING			
WEIGHT 140				DROP 30" (wire line)		LOCATION Northwest corner of existing connector	
ENGINEER/GEOLOGIST Andy Rolinger							



SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
X		7/4/3/3	14/24	S-1 (0'-2')	1" ASPHALT, no topsoil observed Loose, brown, fine to coarse SAND, little fine gravel, trace silt (fill), trace brick fragments	1" ASPHALT FILL	
X	5	8/11/11/16	17/24	S-2 (5'-7')	Medium dense, brown, fine to coarse SAND, trace silt (native)	2' Fine to coarse SAND	
X	10	9/12/12/14	20/24	S-3 (10'-12')	Medium dense, brown, fine to medium SAND, little coarse sand, trace silt, trace gravel, moist		
X	15	9/29/18/16	18/24	S-4 (15'-17')	Top 9": Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt, moist Bottom 9": Dense, light brown, fine SAND, little silt, moist	16' Fine SAND and SILT	
X	20	14/17/22/30	22/24	S-5 (20'-22')	Dense, brown, fine SAND and SILT, moist		
X	25	18/23/24/20	19/24	S-6 (25'-27')	Dense, brown, fine SAND and SILT, wet		

Remarks:

- Approximately 18-24" fill at this locations

LOG OF BORING B-1Sheet 2 of 2

Project No. J0709 35 01

SAMPLES	DEPTH FT.	PENETR. RESIST. BL/6IN.	REC. IN.	TYPE/ NO.	DESCRIPTION	SOIL DESCRIPTION	REMARKS
	30	8/18/20/36	24/24	S-7 (30'-32')	Dense, light brown, fine SAND and clayey SILT, wet	SAND and SILT 	
	32				End of exploration at 32'		
	35						
	40						
	45						
	50						
	55						

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING B-2

Page 1 OF 2

PROJECT Elihu Thompson Administration Building		LOCATION Swampscot, MA		PROJECT NO. J0709 35 01	
DRILLING CONTRACTOR New Hampshire Boring		FOREMAN Peter Bossiere	DATE STARTED 07/28/2006		DATE FINISHED 07/28/2006
DRILLING EQUIPMENT Mobile 53 Bombardier		COMPLETION DEPTH 32'		GROUND SURFACE ELEV. (ft.)	
TYPE BIT Conical with Plug		SIZE & TYPE OF CORE BARREL		DUM	
CASING 4 1/4" ID Hollow Stem Auger		No. Sample 8		UNDIST.	
CASING HAMM. WEIGHT DROP		TIME		FIRST	COMPL.
SAMPLER 2" O.D. Split Spoon Rod A (1 5/8" O.D.)		WATER LEVEL (FT.)		~22'-23'	27.3
SAMPLER HAMMER Safety		BORING LOCATION		Near northeast corner of existing connector	
		ENGINEER/GEOLOGIST		Adny Rolinger	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
		2/2/2/1	16/24	S-1 (0'-2')	4" ASPHALT, no topsoil observed Loose, brown, fine to coarse SAND and fine GRAVEL (fill)	1" ASPHALT FILL	
		1/2/2/3	4/24	S-2 (2'-4')	Loose, brown, fine SAND and SILT, little gravel	2' SAND and SILT	
	5	7/9/17/21	13/24	S-3 (4'-6')	Medium dense, brown, fine to coarse SAND and fine GRAVEL, trace silt	4' Fine to coarse SAND and GRAVEL	
	10	9/22/20/25	15/24	S-4 (10'-12')	Dense, light brown, fine to coarse SAND and fine coarse GRAVEL, trace silt		
	15	13/21/19/31	20/24	S-5 (15'-17')	Dense, light brown, fine to medium SAND and SILT, moist	15' SAND and SILT	
	20	15/30/40/46	20/24	S-6 (20'-22')	Top 10": Very dense, light brown, fine to medium SAND and SILT, moist Bottom 10": Very dense, brown-dark brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt, moist	21' SAND and GRAVEL	
	25	12/20/27/28	17/24	S-7 (25'-27')	Dense, grayish-brown, fine SAND and clayey SILT, wet	25' Fine SAND and clayey SILT	


Remarks:

- Approximately 18-24" fill at this locations

LOG OF BORING B-2

Sheet 2 of 2

Project No.	J0709	35	01
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SAMPLES	DEPTH FT.	PENETR. RESIST. BL/6IN.	REC. IN.	TYPE/ NO.	DESCRIPTION	SOIL DESCRIPTION	REMARKS
	30	14/18/48/53	24/24	S-7 (28'-30')	Very dense, grayish brown, fine SAND and clayey SILT, wet	SAND and SILT ↓	
					End of exploration at 30'		
	35						
	40						
	45						
	50						
	55						

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING B-3

Page 1 OF 1

PROJECT Elihu Thompson Administration Building				LOCATION Swampscot, MA		PROJECT NO. J0709 35 01	
DRILLING CONTRACTOR New Hampshire Boring			FOREMAN Peter Bossiere	DATE STARTED 07/28/2006		DATE FINISHED 07/28/2006	
DRILLING EQUIPMENT Mobile 53 Bombardier				COMPLETION DEPTH 27'		GROUND SURFACE ELEV. (ft.) NA	
TYPE BIT Conical with Plug		SIZE & TYPE OF CORE BARREL		No. Sample 6		UNDIST.	
CASING 4 1/4" ID Hollow Stem Auger					TIME		FIRST
CASING HAMM. WEIGHT			DROP		WATER LEVEL (FT.)		COMPL. HR.
SAMPLER 2" O.D. Split Spoon Rod A (1 5/8" O.D.)					~23'		24 1
SAMPLER HAMMER Safety			WEIGHT 140 DROP 30" (wire line)		BORING LOCATION South of existing connector		
					ENGINEER/GEOLOGIST Adny Rolinger		

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
X	5	1/2/7/17	12/24	S-1 (0'-2')	Top 10": Loose, TOPSOIL Bottom 2": Loose, fine to coarse SAND and fine GRAVEL, trace silt	ASPHALT 12" SAND and GRAVEL	1.
X	10	2/2/4/9	8/24	S-2 (5'-7')	Loose, brown, fine to coarse SAND and fine GRAVEL, trace silt	SAND	
X	15	15/16/16/30	19/24	S-3 (10'-12')	Medium dense, light brown, fine to medium SAND, some coarse sand, little fine coarse gravel, trace silt		
X	20	17/18/19/100 for 1/2"	20/24	S-4 (15'-17')	Medium dense to very dense, brown, fine to coarse SAND and fine gravel, trace silt		
X	25	10/16/17/22	16/24	S-5 (20'-22')	Dense, brown-light brown, fine to coarse SAND and fine GRAVEL, trace silt		
X	25	100 for 0"	0/24	S-6 (25'-27')	No RECOVERY		2.

Remarks:

1. Rocky zone at 2' difficult to auger, could not get a sample from 2'-4'
2. Could not advance below 25', sands blowing into auger

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING B-4

Page 1 OF 1

PROJECT Elihu Thompson Administration Building				LOCATION Swampscot, MA		PROJECT NO. J0709 35 01																																																																	
DRILLING CONTRACTOR New Hampshire Boring			FOREMAN Peter Bossiere		DATE STARTED 07/28/2006		DATE FINISHED 07/28/2006																																																																
DRILLING EQUIPMENT Mobile 53 Bombardier				COMPLETION DEPTH 27'		GROUND SURFACE ELEV. (ft.) DATUM NA																																																																	
TYPE BIT Conical with Plug		SIZE & TYPE OF CORE BARREL		No. Sample 7		UNDIST.																																																																	
CASING 4 1/4" ID Hollow Stem Auger			WEIGHT DROP		TIME		FIRST COMPL. HR.																																																																
CASING HAMM. 2" O.D. Split Spoon Rod A (1 5/8" O.D.)			WEIGHT 140		WATER LEVEL (FT.) ~21'		22.2 1																																																																
SAMPLER HAMMER Safety				BORING LOCATION East of existing building		ENGINEER/GEOLOGIST Adny Rolinger																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">SAMPLES</th> <th rowspan="2">DEPTH FT.</th> <th colspan="3">SAMPLES</th> <th rowspan="2">DESCRIPTION</th> <th rowspan="2">SOIL DESCRIPTION</th> <th rowspan="2">REMARKS</th> </tr> <tr> <th>PENETR. RESIST. BL/6 IN.</th> <th>REC. IN.</th> <th>TYPE/ NO.</th> </tr> </thead> <tbody> <tr> <td rowspan="2"></td> <td rowspan="2"></td> <td>3/7/4/5</td> <td>5/24</td> <td>S-1 (0'-2')</td> <td>Medium dense, TOPSOIL</td> <td>1" TOPSOIL</td> <td rowspan="2"></td> </tr> <tr> <td>4/2/9/13</td> <td>8/24</td> <td>S-2 (2'-4')</td> <td>Medium dense, brown, fine to medium SAND, some coarse sand, some fine to coarse gravel, trace silt</td> <td>12" FILL SAND and GRAVEL ↓</td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">5</td> <td>10/8/9/13</td> <td>10/24</td> <td>S-3 (5'-7')</td> <td>Medium dense, brown, fine to medium SAND and SILT</td> <td>4' SAND and SILT ↓</td> <td rowspan="2"></td> </tr> <tr> <td>9/23/42/48</td> <td>19/24</td> <td>S-4 (10'-12')</td> <td>Top 12": Very dense, brown, fine to medium SAND and SILT Bottom 8": Very dense, brown, fine to coarse SAND and fine GRAVEL, trace silt</td> <td>11' SAND and GRAVEL ↓</td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">10</td> <td>10/23/35/50</td> <td>18/24</td> <td>S-5 (15'-17')</td> <td>Very dense, light brown, fine to medium SAND, little coarse sand, little fine gravel, trace silt</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>15/25/23/22</td> <td>18/24</td> <td>S-6 (20'-22')</td> <td>Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt, wet</td> <td></td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">20</td> <td>10/17/18/18</td> <td>14/24</td> <td>S-6 (25'-27')</td> <td>Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td colspan="5">End of exploration at 27'</td> <td></td> </tr> </tbody> </table>								SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS	PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			3/7/4/5	5/24	S-1 (0'-2')	Medium dense, TOPSOIL	1" TOPSOIL		4/2/9/13	8/24	S-2 (2'-4')	Medium dense, brown, fine to medium SAND, some coarse sand, some fine to coarse gravel, trace silt	12" FILL SAND and GRAVEL ↓		5	10/8/9/13	10/24	S-3 (5'-7')	Medium dense, brown, fine to medium SAND and SILT	4' SAND and SILT ↓		9/23/42/48	19/24	S-4 (10'-12')	Top 12": Very dense, brown, fine to medium SAND and SILT Bottom 8": Very dense, brown, fine to coarse SAND and fine GRAVEL, trace silt	11' SAND and GRAVEL ↓		10	10/23/35/50	18/24	S-5 (15'-17')	Very dense, light brown, fine to medium SAND, little coarse sand, little fine gravel, trace silt			15/25/23/22	18/24	S-6 (20'-22')	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt, wet			20	10/17/18/18	14/24	S-6 (25'-27')	Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt			End of exploration at 27'					
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		End of exploration at 27'																																																																					

Remarks:

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING B-5

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PROJECT Elihu Thompson Administration Building			LOCATION Swampscot, MA		PROJECT NO. J0709 35 01	
DRILLING CONTRACTOR New Hampshire Boring			FOREMAN Peter Bossiere		DATE STARTED 07/28/2006	
DRILLING EQUIPMENT Mobile 53 Bombardier					DATE FINISHED 07/28/2006	
TYPE BIT Conical with Plug			SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 27'	
CASING 4 1/4" ID Hollow Stem Auger					GROUND SURFACE ELEV. (ft.) DATUM	
CASING HAMM. WEIGHT			DROP		No. Sample 7	
SAMPLER 2" O.D. Split Spoon Rod A (1 5/8" O.D.)					TIME	
SAMPLER HAMMER Safety			WEIGHT 140		WATER LEVEL (FT.)	
			DROP 30" (wire line)		FIRST ~20.5' COMPL. 24.3 HR. 1	
					UNDIST.	
					BORING Approximately 50' of south of existing connector	
					LOCATION	
					ENGINEER/GEOLOGIST Andy Rolinger	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
X		1/2/2/1	4/24	S-1 (0'-2')	Loose, TOPSOIL	TOPSOIL 12'	
X		4/9/12/13	15/24	S-2 (2'-4')	Medium dense, brown, fine to coarse SAND, trace fine gravel, trace silt	Fine to coarse SAND and GRAVEL	
X	5	14/12/21/16	20/24	S-3 (5'-7')	Dense, brown, fine to coarse SAND and GRAVEL, trace silt	7'	
X	10	10/15/12/25	24/24	S-4 (10'-12')	Dense, brown, fine to coarse SAND, little fine gravel, trace silt	Fine to coarse SAND	
X	15	8/20/23/30	24/24	S-5 (15'-17')	Dense, brown, alternating layers (approximately 1/2" - 1" thick) of fine SAND and fine sand/silt	15'	
X	20	10/20/17/16	24/24	S-6 (20'-22')	Dense, brown, fine SAND and SILT, wet	20'	
X	25	9/19/19/36	24/24	S-6 (25'-27')	Dense, brown, fine to medium SAND, some coarse sand, trace silt	25'	
					End of exploration at 27'	SAND	

Remarks: