READING PUBLIC SCHOOLS

ADMINISTRATION OFFICES

Patrick A. Schettini, Jr.
Superintendent

82 Oakland Road, Post Office Box 180
Reading, Massachusetts 01867-0280
Telephone 781-944-5800
Fax 781-942-9149

Dennis A. Richards
Associate Superintendent

TO: John Russo

FROM: Pat Schettini Pat

DATE: October 6, 2003

TOPIC: Test Borings – RMHS

Please find attached, as you requested, a copy of the latest test boring data for the Reading Memorial High School Building Project.

If you have any questions, please contact me.

CC: Reading School Committee

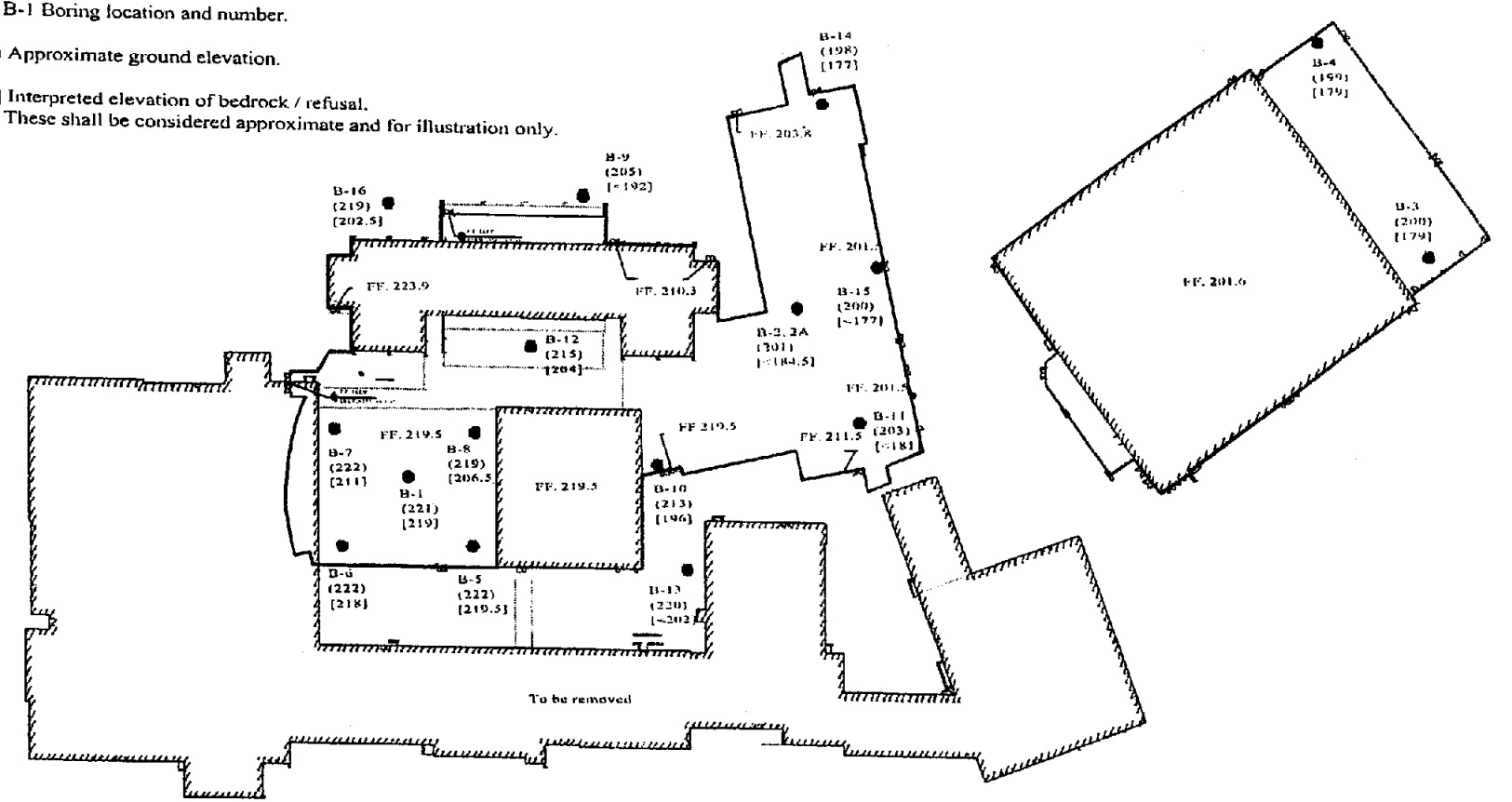
Notes:
1. Explorations by Soil Exploration Corp from 8/22/03 to 8/25/03 and 12/19/02.
2. Base plan provided by The Design Partnership of Cambridge.
3. Exploration locations by tape and are approximate.
4. Ground surface elevations based on interpolation from topographic plan and are approximate.

Legend:

● B-1 Boring location and number.

(201) Approximate ground elevation.

[199] Interpreted elevation of bedrock / refusal.
These shall be considered approximate and for illustration only.



Weber Engineering Associates, LLC
Geotechnical Engineers
Holliston, Massachusetts

September 2003

Exploration Location Plan
Reading Memorial High School
Reading, Massachusetts

Weber Engineering Associates, LLC

September 9, 2003

Mr. Keith Hoffses
The Design Partnership of Cambridge, Inc
500 Rutherford Ave
Charlestown, MA 02129

Re: Geotechnical Engineering Report
Proposed RMHS Addition
Reading, Massachusetts
Project 03546

Dear Mr. Hoffses:

We are pleased to submit this letter summarizing the results of the geotechnical engineering studies undertaken regarding the referenced site. This work was conducted in accordance with our proposal dated August 20, 2003. The objective of the work summarized herein was to provide geotechnical recommendations to the structural engineer and other members of the design team for use on this project.

BACKGROUND

We understand that the Town of Reading plans to renovate the existing high school and construct an addition to the school and field house. To accomplish this goal, part of the existing high school will be demolished. Similar to the existing building, the ground floor of the proposed new construction will be multi-level with ground floor grades ranging from El. 219.5 to El. 201.6. It appears that the site of the existing building is controlled by bedrock where the grade lies around El 221, which probably accounts for the change in floor grades. At present the site slopes from approximately El. 225 to El. 199 from the highest grades at the site to the lowest grades, which occur in the vicinity of the existing field house.

The proposed grades of the additions are shown on the attached Exploration Location Plan. We expect that there will no below ground sections, similar to the existing structure. The section of the existing building to be demolished as well as the section of building to remain is shown on the Exploration Location Plan.

SUBSURFACE EXPLORATIONS

A preliminary subsurface exploration program was conducted on December 19, 2002 by Soil Exploration Corporation to provide limited information within two sections of the site. From August

Phone (508) 429-4573 Fax (888) 808-2384 92 Bluecliff Lane Holliston MA 01746

22, 2003 to August 25, 2003, Soil Exploration Corporation returned to the site to undertake a program of explorations for design purposes. The preliminary exploration program consisted of borings B-1 and B-2. The final design exploration program consisted of borings B-3 to B-16. The approximate location of each of the explorations is shown on the attached Exploration Location Plan. The boreholes were advanced to the depths shown on the logs, which ranged from 7.5-ft up to 22-ft below ground surface or to refusal, whichever occurred first. Because of the consistent shallow depth to refusal within the courtyard area defined by borings B-1 and B-5 to B-8, a single rock core was taken in borings B-5 to verify the presence of bedrock. Thereafter, except within boring B-2 and B-2A, refusal material has been interpreted as bedrock or large boulders that would be classified as bedrock for excavating purposes.

Samples of soil were retrieved at the ground surface and at 5-ft intervals to provide material for the visual classification of the soil, which is shown on the logs. The samples were retrieved using a standard split spoon sampler driven with a 140-pound weight falling 30-inches at each sampling depth. The sampler was driven a distance of 24-inches or as otherwise shown on the logs. The number of hammer blows required to drive the sampler into the soil in 6-inch increments is recorded on the logs. The sum of the hammer blows for the 6-inch to 12-inch and 12-inch to 18-inch interval provides the Standard Penetration Resistance (N) of the soil and is a measure of soil density in granular soils. The N-value in granular soil has been correlated with the soil friction value to provide soil strength information.

It should be noted that the classification of soil strata shown on the logs is based upon our interpretation of the subsurface conditions. It is possible that there might be thin layers of material lying between the sampling intervals that are not described on the logs and which might not become known until construction. Likewise, the depth to each soil stratum is considered to be approximate and may be more gradual or different in the field. Logs of the borings were prepared by Weber Engineering Associates, LLC and are attached to this report for reference.

SUBSURFACE CONDITIONS

The general subsurface conditions described herein are based upon our interpretation of the materials observed in the exploration program. Refer to the logs for details. You should be aware that soil conditions can vary between borehole locations and the actual conditions encountered during construction could be different from those indicated by the logs.

Soil

The site of the proposed building additions is characterized by two different subsurface conditions. First, the site where the higher grades are located as depicted by borings B-1, B-5 to B-13 consists of glacial till underlain by bedrock. The lower section of the site depicted by borings B-3, B-4, B-14 and B-15 consist of fill underlain by a thin layer of organic silt (except B-3) and thereafter a variable thickness of sand before encountering glacial till and bedrock.

Within the higher area of the site, the glacial till consists of predominately very dense fine to medium sand some silt little to some gravel with cobbles and occasional boulder. A 3-ft thick layer of granular fill probably used for grading purposes was encountered in boring B-12. Thus, the soil

conditions lying within this area of the site are expected to consist of very dense glacial till with areas of shallow, granular fill that was used for grading purpose.

Bedrock was encountered within this area at a depth of 3-ft to 4-ft below grade in borings B-1, B-5 and B-6, which corresponds to approximately El. 217 to El. 218. The material was cored in boring B-5 to verify the presence of bedrock. In the remainder of the borings, the apparent bedrock surface lies deeper at approximately El. 211 to El. 206 in borings B-7 and B-8 respectively, which were taken in the same courtyard area as borings B-1, B-5 and B-6. Although the borings depict that the rock surface lies 3-ft to 4-ft below ground surface, it is possible for the bedrock surface to be higher within intermediate areas between the boreholes. Boulders can also be encountered although the quantity of boulder material is unknown.

Within the lower area of the site depicted by borings B-3, B4, B-14 and B-15, the surface material consists of approximately 3-ft to 5-ft of fill. In borings B-4, B-15 and B-15, a thin layer (approximately 1-ft to 2-ft thick) of black organic silt was encountered below the fill. In boring B-3, the organic silt is either too thin to detect or is not present. The organic silt could be evidence of a former wetland area that had been filled.

Material underlying the organic silt or fill consists of medium dense fine sand to as much as 50% silt (or silt as depicted in boring B-4) where it is then underlain by dense to very dense glacial till or very dense gravelly sand. The gravelly sand and glacial till was encountered at a depth ranging from 7-ft to 17-ft below ground surface. Refusal was encountered in borings B-3, B-4 and B-14 at a grade ranging from El. 176 to El. 179 where the borings were terminated.

Groundwater

The depth to groundwater varies on site. Within the higher grades of the site, the groundwater is perched along the soil / bedrock interface. During the wet season of the year, we expect that groundwater will be encountered at the rock interface. During the dry season of the year however, groundwater might not be present. Within the lower areas of the site, groundwater is located approximately 4-ft to 7-ft below the ground surface. This corresponds to approximately El. 193 to El. 195.

The groundwater conditions stated on the logs are applicable to the time when the readings were made. The level of groundwater below the ground surface fluctuates based on conditions such as season, temperature and amount of precipitation that may be different from the time when the observations were made. Therefore, the groundwater levels may be higher or lower during construction and during the life of the structure. This fact should be taken into consideration when preparing foundation design and developing earthwork procedures.

RECOMMENDATIONS

The recommendations presented herein relate to the building and reflect our opinions based upon engineering studies conducted using the available subsurface information as stated herein along with our understanding of the building configuration and grades. This report does not address site issues unrelated to the building. If other information becomes available, or if conditions change we must be notified. The recommendations will be reviewed in context with the new information and we

reserve the right to modify our recommendations as necessary. The studies and recommendations summarized herein are based upon generally accepted geotechnical engineering practices. No other warranty, expressed or implied is made.

Foundations

Subsurface conditions at the site are characterized by two different soil profiles as described above. Based upon our interpretation of the existing subsurface conditions, most of the school addition will be supported on glacial till or bedrock while a portion of the new addition located in the lowest area of the site along with the field house addition will be supported on sand or silt. Depending upon grades, it is also possible for parts of the structure to be supported on compacted granular fill. Within the field house area for instance, over-excavated material will be replaced with compacted granular fill.

We recommend that the site within the footprint be stripped to expose firm natural glacial till, bedrock or sand. This requires removing topsoil, pavement, shallow fill and organic silt where encountered. The proposed footings can be placed directly on the firm undisturbed glacial till, sand, silt, bedrock or compacted structural fill depending upon the location of the site and grade of the footings. Where rock is encountered at footing grade, we recommend that it be removed to a depth of 12-inches below the footing and the material replaced with graded ¾inch crushed stone.

We recommend that the footings be designed to bear at an allowable pressure of 2-tsf provided the footings are at least 3-ft wide. For footings less than 3-ft wide, such as wall footings, reduce the allowable pressure by a factor of B/3 where B is the actual footing width. Individual footings should be no less than 24-inches wide and wall footings should be no less than 18-inches wide. Although footings supported on glacial till or bedrock can be designed for a higher bearing pressure, we recommend that 2-tsf be adopted for use throughout the entire site for all planned additions. Thus the footings will be designed to bear on the weaker existing material.

Footings designed in accordance with these recommendations are expected to have a total settlement less than approximately 3/4-inches. Differential settlement between adjacent footings is expected to be less. Since the foundation soil is granular, we expect that the settlement will occur during construction and shortly thereafter as load is applied to the foundations.

As described above, it is possible for footings to bear on different materials. The glacial till bearing material and the sand can weaken in the presence of water. Therefore, we recommend that all foundations be constructed on a 4-inch thick layer of ¾inch graded crushed stone to provide a suitable working surface or drainage layer for groundwater control. We recommend that a geotextile fabric be placed between the stone and bearing surface to reduce the possibility of fines migrating into the voids between the stone. Where the excavations terminate on silt or silty sand such as at the field house, we recommend that the stone thickness be increased to 12-inches and the stone layer be encased in fabric.

We recommend that this detail be shown on the drawings and provided in the contract lump sum price. Should conditions change such that the stone is not warranted, the Owner should receive a credit for the stone and geotextile fabric.

Moisture

The Massachusetts State Building Code (MBC) requires that below ground walls be dampproofed unless subject to groundwater in which case the walls must be waterproofed. As a practical minimum, we recommend that all walls and slab on grade must be treated with a suitable vapor retarder to reduce the possibility of migration of moisture into the building, which could result in development of mold. You should also be aware that subdrains around and below the structure will not prevent moisture vapor that can cause mold growth. This issue must also be coordinated with other design team professionals who can provide measures to handle moisture that might invade building space.

In order to reduce potential percolation of surface water around the below ground area, all drainage must be directed away from the structure as required in the MBC. Additionally, the ground surface around the below ground walls must be paved with bituminous pavement or install 18-inches of relatively impervious soil within the upper 1.5-ft of backfill placed adjacent to the wall to reduce the potential of water percolating down adjacent to the below ground basement or foundation walls.

Slab

The subsurface conditions at this site are suitable for supporting a slab on grade provided that the existing topsoil, fill, pavement and organic material is removed and replaced with compacted granular fill. The slab must be constructed on at least an 8-inch thick layer of freely draining gravel borrow or at least a 4-inch thick layer of gravel or crushed stone as required in the MBC. The relatively high groundwater level within the lower section of the site and the presence of glacial till within the higher grades of the site present a condition for moisture to develop and become trapped below the slab. Therefore a suitable vapor retarder must be installed below the slab as well as along the below ground walls to present lateral movement of moisture into the base course layer from exterior locations.

Foundation Drains

We are not aware of any below ground space such as basements. However, foundation drains are recommended at the footing grade where there might be a grade change resulting in fill placed adjacent to an exterior side of a wall. We recommend that the drains be designed to discharge by gravity.

The recommended foundation drain consists of a 6-inch diameter perforated pipe encased in at least 6-inches of ¾inch crushed stone wrapped in geotextile fabric such as Mirafi 140N or equivalent. The invert of the pipe should be no higher than the bottom of the 12-inch thick base course layer. Since the groundwater will be kept at a level lower than the slab, the basement walls need not be waterproofed, just dampproofed. Cleanouts generally spaced at 90-degree bends or 150-ft runs should be provided.

Lateral Earth Pressure

Building walls supporting fill walls and exterior retaining walls should be designed to resist both the superimposed effect of the total static lateral earth pressure and the earthquake force shown below. The earthquake force should be applied as an inverse triangle and as required by the Massachusetts

State Building Code. The pressure cause by temporary surcharges can be ignored. In addition, we believe that there will be no significant permanent surcharges applied to the walls. The height of the wall (H) for earthquake force calculations is the height measured from the top of the horizontal backfill surface to the finish grade or floor in front of the wall. The height of wall for static earth pressure calculations is the height of wall measured from the top of the backfill to the bottom of the foundation. If there are other conventional retaining walls on site for landscaping, then they should be designed based on the "active" lateral earth pressure. The recommended design values are shown below.

Total Soil Unit Weight (γ) pcf	125 pcf
Lateral Earth Pressure Coefficient (K_0) – Horizontal backfill surface	0.5 At Rest Condition
Equivalent Fluid Pressure (γ_e) pcf / ft depth (at rest condition)	$K_0\gamma = 62.5$ pcf/ft
Lateral Earth Pressure Coefficient (Ka) – Horizontal backfill surface	0.33 Active Condition
Equivalent Fluid Pressure (γ_e) pcf / ft depth (active conditions)	$K_a\gamma = 42$ pcf/ft
Earthquake Force	$0.045\gamma H^2$
Groundwater Pressure	No - drained

Basement walls backfilled after the floors have been constructed will be restrained from lateral movement and should be designed using the "at rest" pressure. Walls that are free to move laterally at the top, such as a conventional cantilever retaining wall, should be designed using the "active" pressure.

Surcharge Pressure

Where a restrained below ground wall retains fill and a floor above such, as the grade separation between two floors, we recommend including a surcharge load in addition to the static and seismic force. The recommended lateral surcharge pressure is a uniform load of 0.5q psf applied to the rear of the below ground wall. For retaining walls resisting active pressure and a surcharge such as a retaining wall supporting a parking area at a higher grade behind it, we recommend including a lateral uniform surcharge pressure of 0.33q psf applied to the rear of the wall.

We recommend using the following values of surcharge pressure (q):

Condition	Surcharge q (psf)
Floor load behind below ground wall	100
Light vehicular traffic / parking	100

Seismic Considerations

Except for a thin zone of medium dense granular soil, the subsurface conditions consist of very dense glacial till or bedrock. Therefore, based on Table 1612.4.1 of the Massachusetts State Building Code, Sixth Edition it is our opinion that the higher grade on site has an S_1 site profile while the lower section of the site has an S_2 site profile. Accordingly the recommended seismic coefficient (S) for design is 1 for the S_1 profile and 1.2 for the S_2 profile. The materials on site are not susceptible to liquefaction.

Earthwork

In the preceding sections we have outlined several recommendations for earthwork. Below, we provide additional recommendations, which should be incorporated into the structural design and Contract Documents.

1. The excavated soil on site within the proposed addition footprint is expected to consist of glacial till or granular soil (sand) within the areas described previously. Glacial till is not suitable for reuse as fill below structures or within the building footprint. It can be reused as ordinary borrow however, provided that it has been processed to remove oversize material. If the contractor elects to reuse this material, then the cost of all processing shall be included in the contract lump sum price. Although the sand is expected to be suitable for reuse as granular fill, gradation tests of the excavated material are required to verify this condition. If the material is considered not suitable for granular fill, then it can be reused on site as ordinary borrow. We expect that more glacial till will be excavated than sand. However, neither material shall be reused if the material is too wet or dry to achieve the required degree of compaction.

2. The contractor must also be responsible for disposing or processing all boulders as part of the contract lump sum price. This is an indefinite quantity.

3. Rock excavation should be expected within the area roughly defined by borings B-1, B-5 and B-6. Here, bedrock is expected to be located from approximately 2.5-ft to 4-ft below ground surface. Depending upon grades, footings and / or utility trenches might require rock removal. If rock is closer to the ground surface then rock removal below the slab will also be required. Rock shall be removed to a depth of 12-inches below footings, 6-inches or equal to the thickness of the base course layer (whichever is thicker) and to the depth required for utilities, which should be not less than 6-inches or as otherwise required by the designer.

4. The volume of rock excavation is indefinite. We recommend that the construction budget carry an allowance for rock removal and that the contractor be paid based on the actual volume of rock authorized and removed within the project payment limits. Additional rock removed for the contractor's convenience shall not be included for payment purposes. The contractor's registered engineer or land surveyor shall make the volume measurements at no increase in the contract cost.

5. Fill underlain by organic silt is present within the lower area of the site. Therefore, over-excavation within the building footprint defined approximately by B-3, B-4, B-14 and B-15 shall be expected. This will result in an excavation of approximately 5-ft below ground surface to remove existing fill and the underlying organic silt. The specific lateral extent will not be known until construction. Therefore, we recommend establishing an allowance of 4600-CY to be included in the contract lump sum price for over-excavation within the building footprint and to

a distance of 5-ft beyond the building perimeter in the area affected. The Owner must be advised that this allowance is not intended to be an absolute number and the actual volume might be more or less than stated herein. Backfill with granular fill is required.

6. The contractor must be advised that careful work where silt or silty sand is encountered below the field house addition is required in order to preserve the integrity of the foundation soil. The silty sand material and silt material is especially prone to disturbance especially in the presence of water or when worked upon. The contractor must modify construction procedures to maintain the integrity of the foundation soil. This includes using smooth-faced buckets for excavation, using small equipment or working outside the excavation, using hand-operated or other smaller compaction equipment to compact the soil and lowering the groundwater to at least 2-ft below the bottom of the excavation. In order to achieve this, vacuum well points might be required.

7. Within the field house area where silt or silty sand is expected below the bottom of the excavation, the first 12-inches of fill must be freely draining gravel borrow.

8. The contractor must be advised that no excavation below payment limits will be allowed unless authorized. This is particularly true within the area of planned over-excavation and within other areas where unsuitable soil might be encountered. We strongly advise that the consultants determine the depth to which over excavation is required in order to avoid unnecessary additional excavation.

9. Within the higher grades of the site, we do not expect that groundwater will be difficult to control. The contractor however, must control groundwater wherever encountered in order to maintain the integrity of the foundation soil and allow construction in the dry. Within the lower area of the site where over-excavation is required, groundwater control can become more difficult to achieve especially if groundwater is located above the depth of the required excavation. The groundwater level will fluctuate and can be higher than the depth shown on the logs. Thus the contractor must be prepared to provided adequate dewatering to lower the groundwater below the depth of the excavation in order to verify that the fill and organic material is removed and to maintain a dry excavation for placement of the fill and constructing the footings. This requires a continuous dewatering effort (24-hours per day, 7-days per week). The contractor must be require to include sufficient dewatering in the contract lump sum price including deep wells if necessary, the cost of consultants to provide a dewatering plan, dewatering specialty contractor's if required by actual conditions to provide dewatering and modification of excavation procedures to accommodate groundwater conditions.

10. All fill placed within and below the structure should be compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D1557.

11. All excavations shall be stabilized by cutting back the side slopes or using shoring and bracing as required by 29 CFR 1926 Subpart P, Excavations. Plans and specifications should make reference to this requirement so that Contractors are aware of their responsibility.

12. Drainage must not be directed onto adjacent property either during construction or as part of the design grading especially if this would affect groundwater and / or moisture conditions on the adjacent parcel.

Materials

We recommend that the following material gradations and names be used be used for consistency on the drawings and in the earthwork specifications. All material must be well graded between the limits shown herein and be capable of being compacted to the required degree of density. The material shall have sufficient fines so that it does not shove and remains stable. We also recommend that the specifications not allow the use of recycled material such as reprocessed building demolition material.

Common Borrow

Friable natural soil containing no gravel greater than 2/3 loose lift thickness and free of trash, snow, ice, organics, roots, tree stumps and no more than 35 percent passing the No. 200 sieve. Common borrow can be used as general backfill provided it can be compacted and stabilized for the intended purpose.

Granular Fill

Pavement subbase material and structural fills within the building footprint below the building slab base course layer and below footings:

Sieve Size	Percent Finer
3-inches	100
No. 10	30-95
No. 40	10-70
No. 200	0-15[1]

Where this material is used for backfill against basement walls for drainage, the amount passing the No. 200 sieve shall be no more than 10 percent. As an alternative, a synthetic drainage product consisting of geotextile fabric and a drainage medium can be used adjacent to the basement walls for drainage.

Crushed Stone

The crushed stone shall meet the requirements for material M2.01.4 (3/4-inch gradation) stated in the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

Geotextile Fabric

The geotextile fabric shall meet or exceed the requirements for material M9.50.0 Type II stated in the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

Gravel Borrow:

Base course material for slabs, pavement, and walkways:

Sieve Size	Percent Finer
3-inch	100
1/2-inch	50-85
No. 4	40-75
No. 10	30-60
No. 40	10-35
No. 100	5-20
No. 200	2-8

Underpinning

We are not aware of any underpinning requirements at this time.

REVIEW OF PLANS AND SPECIFICATIONS

We recommend that we be allowed the opportunity to review the plans and specifications for geotechnical issues prior to completing the Contract Documents. The purpose of this is to verify that the intent of our recommendations have been correctly interpreted and included.

We are pleased to have this opportunity to assist. If you have any questions regarding this report, please do not hesitate to call.

Very truly yours,

WEBER ENGINEERING ASSOCIATES, LLC

Richard P. Weber, P.E., Manager

Attachments:
Exploration Location Plan
Soil Test Boring Logs

Phone (508) 425-4477 Fax (508) 906-7384 92 Briarcliff Lane, Holliston MA 01746

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-1 DATE: 12/19/02

Ground Elevation: 221
Date Started: 12/19/02
Date Finished: 12/19/02
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
12/19	Dry		At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	1	24/18	0-2	11-7-12-18	Ss	Fill _3' to 4.5'_	6" topsoil to brown fine to medium SAND little Silt little Gravel Auger grinding at 4' depth. Auger refusal at 4.5'. Move 5' and continue B-1A Grinding at 3' depth. Auger refusal at 4'. Angular gravel in spoils. Move 10' and continue B-1B Grinding at 2' depth. Auger refusal at 3'. Possible bedrock or boulders.	

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-2 DATE: 12/19/02

Ground Elevation: El. 201
Date Started: 12/19/02
Date Finished: 12/19/02
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
12/19	5	5'	During sampling

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/18	0-2	7-16-21-26	Ss	Fill	4" topsoil to tan fine to medium SAND some Silt, 2" topsoil	
2						__2'__		
3								
4						Glacial Till		
5	2	4/2	5-5.3	100/4"	SS	__5'__	Wet brown / gray fine SAND and SILT trace Gravel	
6							Auger refusal at 5'. Possible boulder	
7								
8							Moved boring 5' and continued	
9								
10								
11								
12								
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35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-2A DATE: 12/19/02

Ground Elevation: 201
Date Started: 12/19/02
Date Finished: 12/19/02
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
12/19	5	In	During sampling

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1							Auger to 5'	
2								
3								
4								
5								
6	1	18/6	5-6.5	24-48-43	Ss		Wet brown fine SAND little Silt some angular Gravel	
7								
8								
9						Glacial Till		
10								
11	2	18/0	10-11.5	20-30-38	Ss		No recovery	
12								
13								
14								
15								
16	3	18/18	15-16.5	39-39-30	Ss	_16.5'__	Brown fine SAND some Silt little angular Gravel	
17								
18							Bottom of boring	
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-3 DATE: 8/26/03

Ground Elevation: El. 200
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	7	Out	At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	2-3-7-12	Ss		9" topsoil to tan fine to medium SAND little Silt, clumps topsoil	
2						Fill		
3								
4								
5						__5'__		
6	2	24/12	5-7	15-12-12-45	Ss		Gray fine SAND and SILT trace Gravel	
7								
8						Silty Sand		
9						__9'__		
10								
11	3	24/18	10-12	17-15-18-18	Ss		Gray fine to coarse SAND little Silt some Gravel	
12								
13						Sandy Glacial Till		
14								
15								
16	4	24/18	15-17	17-30-30-32	Ss		Gray fine to coarse SAND little Silt some Gravel	
17								
18								
19								
20	5	3/3	20-20.3	100/3"	Ss		Gray fine to medium SAND some Silt trace Gravel	
21						__21'__		
22							Auger refusal	
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-4 DATE: 8/26/03

Ground Elevation: El. 199
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	5	Out	At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/15	0-2	12-14-17-21	Ss	Fill	3" pav3ement to tan fine to coarse SAND trace Silt trace Gravel	
2						__3'__		
3						Organic Silt		
4							(Off augers)	
5						__4'__		
6	2	24/14	5-7	7-9-10-10	Ss		Gray fine SAND and SILT	
7								
8								
9								
10						Silt		
11	3	24/12	10-12	3-4-7-17	Ss		Gray SILT	
12								
13						__13'__		
14								
15								
16	4	9/9	15-15.9	50-60/3"	Ss	Sand and Gravel	Gray fine to coarse SAND some Silt trace angular Gravel, cobbles	
17								
18								
19						__20'__		
20	5	3/3	20-20.3	80/3"	ss	*	Angular ROCK fragments, some fine SAND little Silt	
21						__20.3'__		
22							Sampler refusal	
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-5 DATE: 8/26/03

Ground Elevation: El. 222
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	Dry		

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/18	0-2	8-17-24-31	Ss	Sandy Glacial Till	6" topsoil to tan fine to medium SAND some Silt trace Gravel	
2								
3						2.5'		
4								
5		60/60	2.5-7.5		C	Granite	Fractured Granite (RQD = 32%)	
6								
7							10 minutes per inch	
8						7.5'		
9							Bottom of boring	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-6 DATE: 8/26/03

Ground Elevation: El. 222
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	Dry		

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	10/4	0-0.9	8-55/4"	Ss	Sandy Glacial Till	2" topsoil to tan fine to medium SAND some Silt trace Gravel, cobbles	
2								
3								
4					A		Tan fine to medium SAND some Silt some Gravel (Off Auger)	
5						__4'__		
6							_____	
7							Auger refusal	
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-7 DATE: 8/26/03

Ground Elevation: El. 222
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	11	Out	At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	4-9-13-13	Ss		6" topsoil to tan fine to medium SAND some Silt trace Gravel	
2								
3								
4						Sandy Glacial Till		
5								
6	2	24/18	5-7	30-33-33-17	Ss		Tan fine to medium SAND little Silt some Gravel, cobbles	
7								
8								
9								
10	3	7/6	10-10.6	21-50/1"	Ss		Tan fine to medium SAND and Clayey Silt trace gravel, cobbles	
11						11'		
12							Auger refusal	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC **Geotechnical Engineers** **Holliston, Massachusetts**	Reading High School Reading, Massachusetts	**BORING NO. B-8** **DATE: 8/26/03**

Ground Elevation: El. 219
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	4-10-32-30	Ss	Sandy Glacial Till	6" topsoil to tan fine to medium SAND some Silt little Gravel	
2								
3								
4								
5								
6	2	24/9	5-7	31-38-44-59	Ss		Tan fine to medium SAND some Silt little gravel. Cobbles	
7								
8								
9								
10								
11	3	24/12	10-12	28-18-57-21	Ss		Tan fine to medium SAND some Silt little Gravel	
12								
13						12.5'		
14							Auger refusal	
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-9 DATE: 8/26/03

Ground Elevation: El. 204
Date Started: 8/25/03
Date Finished: 8/25/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/25	5.5	5'	During exploration

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/18	0-2	2-7-13-18	Ss		8" topsoil to tan fine to medium SAND some Silt trace Gravel	
2								
3								
4						Sandy Glacial Till	(Boulder at 3')	
5								
6	2	24/12	5-7	7-14-16-22	Ss		Tan / gray fine to medium SAND some Silt little Gravel, cobles	
7								
8								
9							Possible boulder at 7'	
10								
11	3	24/6	10-12	14-6-8-8	Ss		Gray fine to medium SAND some Silt little Gravel	
12						12'		
13							Bottom of boring	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-10 DATE: 8/26/03

Ground Elevation: El. 213
Date Started: 8/25/03
Date Finished: 8/25/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/25	12	Out	At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1							8" topsoil (hand dug 0-18" to avoid utility)	
2	1	24/12	1.5-3.5	6-2-2-2	Ss	Fill	Tan / brown fine SAND some Silt	
3								
4						__4'__		
5								
6	2	24/12	5-7	14-25-37-34	Ss		Tan fine SAND some Silt some Gravel, boulder, cobbles	
7								
8						Sandy Glacial Till		
9								
10								
11	3	24/12	10-12	21-32-43-39	Ss			
12							Tan / gray fine SAND some Silt some Gravel, cobbles	
13								
14							(Boulder 13' to 15')	
15								
16	4	24/18	15-17	56-22-27-50/5"	Ss		Tan fine SAND some Silt, fractured rock in tip of sampler	
17						__17'__		
18								
19							Auger refusal 17'	
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-11 DATE: 8/26/03

Ground Elevation: El. 203
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
822	9	Out	At comp letion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	3-6-7-8	Ss	Topsoil	Topsoil	
2						__2'__		
3								
4								
5								
6	2	24/18	5-7	10-21-25-24	Ss		Tan fine to medium SAND some Silt trace Gravel	
7								
8						Sandy Glacial Till		
9								
10								
11	3	24/20	10-12	10-12-12-14	Ss		Tan fine to medium SAND some Silt little Gravel	
12								
13								
14								
15								
16	4	24/12	15-17	16-22-32-21	Ss		Tan fine to medium SAND some Silt little gravel, cobbles	
17								
18							(Possible boulders 17' – 20')	
19								
20								
21	5	24/12	20-22	17-20-35-27	Ss		Tan fine to medium SAND some Silt little gravel, cobbles	
22						__22'__		
23							Bottom of boring	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-12 DATE: 8/26/03

Ground Elevation: El. 215
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22			

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	11-12-20-21	Ss	Fill	2" pavement to tan fine to medium SAND little Silt	
2								
3						3'		
4								
5								
6	2	24/12	5-7	22-31-27-22	Ss	Sandy Glacial Till	Tan fine to medium SAND some Silt little Gravel	
7								
8								
9								
10	3	24/18	9-11	31-35-46-31	Ss		Tan / gray fine SAND some Silt little Gravel cobbles	
11						11'		
12							Auger refusal	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-13 DATE: 8/26/03

Ground Elevation: El. 219
Date Started: 8/25/03
Date Finished: 8/25/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/25	Dry		

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/12	0-2	3-4-9-9	Ss		9" topsoil to tan fine to medium SAND some Silt trace Gravel	
2								
3								
4								
5								
6	2	24/18	5-7	2-9-17-20	Ss	Sandy Glacial Till	Tan fine to coarse SAND some Silt little Gravel	
7								
8								
9								
10								
11	3	24/20	10-12	25-42-29-32	Ss		Tan fine to coarse SAND some Silt little Gravel	
12								
13								
14								
15								
16	4	24/18	15-17	6-16-20-16	Ss		Tan/gray fine to medium SAND some Silt little Gravel	
17						17'		
18							Bottom of boring	
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-14 DATE: 8/26/03

Ground Elevation: El. 198
Date Started: 8/25/03
Date Finished: 8/25/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/25	4	5'	During exploration

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/18	0-2	3-4-10-6	Ss	Fill	9" topsoil to tan fine to medium SAND little Silt	
2								
3						__4'__		
4						Organic Silt	(Off augers)	
5								
6	2	24/12	5-7	4-6-5-6	Ss	__5'__	Tan / gray fine to medium SAND trace Silt	
7								
8								
9								
10								
11	3	24/18	10-12	6-6-6-8	Ss	Sand	Tan fine SAND some Silt	
12								
13								
14								
15								
16	4	24/12	15-17	20-22-22-27	Ss		Tan fine to medium SAND trace Silt	
17						__17'__		
18						Sandy Glacial Till		
19								
20	5	9/6	20-20.9	57-100/3"	Ss	__20.9'__	Gray fine to medium SAND some Silt little Gravel	
21								
22							Sampler refusal	
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-15 DATE: 8/26/03

Ground Elevation: El. 199
Date Started: 8/22/03
Date Finished: 8/22/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/22	6	Out	At completion

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/18	0-2	5-6-9-13	Ss	Fill	Tan fine to medium SAND little Silt	
2								
3						3'		
4						Organic Silt		
5							(Off augers)	
6	2	24/18	5-7	7-10-10-9	Ss	5'	Gray fine SAND little Silt trace root fibers	
7								
8								
9								
10								
11	3	24/6	10-12	12-13-13-13	Ss		Tan fine SAND some Silt	
12								
13								
14						Sand		
15								
16			15-17				(No sample – running sand)	
17						17'		
18								
19						Sandy Glacial Till		
20								
21	4	24/12	20-22	15-18-27-31	Ss		Tan fine to coarse SAND little Silt little Gravel	
22						22'		
23							Bottom of boring	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	

TEST BORING LOG

Sheet 1

Weber Engineering Associates, LLC Geotechnical Engineers Holliston, Massachusetts	Reading High School Reading, Massachusetts	BORING NO. B-16 DATE: 8/26/03

Ground Elevation: El. 219
Date Started: 8/25/03
Date Finished: 8/25/03
Driller: Soil Exploration Corp

Groundwater Observations

Date	Depth (ft)	Casing	Stabilization Time
8/25	Dry		

Depth (ft)	Sample No.	Sample Pen / Rec.	Sample Depth	Sample Blows / 6"	Type	Strata	Visual Description	Note
0								
1	1	24/0	0-2	4-7-10-10	A		Topsoil to tan fine to medium SAND some Silt little Gravel	
2								
3								
4								
5						Sandy Glacial Till		
6	2	24/20	5-7	16-15-15-22	Ss		Tan fine to medium SAND some Silt little Gravel	
7								
8								
9								
10								
11	3	24/9	10-12	13-29-28-28	Ss		Tan / gray fine to medium SAND some Silt some angular Gravel, cobbles (moist)	
12								
13								
14								
15								
16	4	18/8	15-16.5	14-44-100/5"	Ss		Gray fractured Rock	
17						16.5'		
18							Sampler refusal	
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Notes:

Sample Type / Field Test
ss = split spoon
A = Auger
U = Undisturbed
Tv = Pocket Torvane
Pp = Pocket Penetrometer

Proportioned Used
Trace 0 – 10%
Little 10 – 20 %
Some 20 – 35%
And 35-50%

	Casing	Sampler	Core
Type	HSA	ss	
ID	4	1-3/8"	
Hammer		140 lbs.	