

PREPARED FOR: CHESTNUT HILL REALTY

---

## **GEOTECHNICAL DATA REPORT**

**HANCOCK VILLAGE**  
BOSTON/BROOKLINE, MASSACHUSETTS

PREPARED BY:

PARE CORPORATION  
10 LINCOLN ROAD, SUITE 103  
FOXBORO, MASSACHUSETTS 02035

PARE PROJECT NUMBER 08193.00

OCTOBER 2008

---

**HANCOCK VILLAGE - GEOTECHNICAL DATA REPORT**
**TABLE OF CONTENTS**

<u>SECTION</u>	<u>PAGE</u>
1.0 BACKGROUND/SITE LOCATION .....	1
1.1 Purpose and Scope .....	1
1.2 Background .....	1
2.0 SUBSURFACE EXPLORATIONS .....	3
2.1 Current Exploration Program .....	3
3.0 SUBSURFACE CONDITIONS .....	5
3.1 Subsurface Profiles .....	5
3.1.A Group A .....	5
3.1.B Group B .....	7
3.1.C Group C .....	9
3.1.D Group D .....	12
4.0 LABORATORY TESTING .....	16
4.1 Grain Size Analysis .....	16
5.0 IMPLICATIONS OF SUBSURFACE CONDITIONS .....	17
5.1 Group A Recommendations .....	17
5.2 Group B Recommendations .....	18
5.3 Group C Recommendations .....	19
5.4 Group D Recommendations .....	20
5.5 Pavement Design Recommendations .....	22
6.0 CONSTRUCTION CONSIDERATIONS .....	24
6.1 Potential Reuse of Onsite Soils .....	24
6.2 Recommend Imported Fill .....	24
6.3 Site Preparation .....	25

**FIGURES**

Figure 1: Locus Plan

Figure 2: Boring Location Plan

**APPENDICES**

Appendix A: Geotechnical Limitations

Appendix B: Boring Logs

Appendix C: Laboratory Testing Data



## 1.0 BACKGROUND/SITE LOCATION

This report presents the results of a geotechnical investigation and evaluation undertaken in support of proposed work at the Hancock Village along Independence Drive in Chestnut Hill, Massachusetts. The scope of this investigation is to provide generalized subsurface conditions to further evaluate the entire project site for potential development. The project site location is depicted on Figure 1, Locus Plan. This report has been prepared in general accordance with our proposal and is subject to the geotechnical limitations presented in Appendix A.

### 1.1 Purpose and Scope

The primary purpose of this study was to collect subsurface and geotechnical data at the site and provide general recommendations pertaining to the design and materials to be used in the repair of the embankment. The scope of work included:

- Drilling seventy-six (76) borings at locations provided by Stantec.
- Sampling and performing Standard Penetration Testing (SPT).
- Logging of drilling information and classifying soil samples in accordance to USDA classification procedures.
- Performing laboratory tests on selected soil samples.
- Preparing a geotechnical data report summarizing the exploration findings, data evaluations, general foundation and pavement recommendations, and determining presumptive soil bearing capacities.

*The scope of this evaluation did not include an evaluation of the site for the presence of contamination or other environmental concerns, as those tasks are outside of PARE's proposed scope of services.*

### 1.2 Background

The project was completed to provide general subsurface data to support the further evaluation of the site for potential future developments. The type, extents, or other information pertaining to actual planned development was not provided in support of the completion of the current exploration program, as such discussions contained herein are general with regards to the various areas of the site.

The existing site consists of an approximately 75-acre townhouse development with numerous landscaped areas, parking lots, roadways, and other features spread throughout the site. The site is located along the Boston/Brookline corporate boundary, with approximately 70 percent of the site located to the north of the boundary within the Town of Brookline and the remainder of the site south of the boundary within the West Roxbury neighborhood of the City of Boston. Access to the site is via Independence Drive, which runs through the center of the site in a northeasterly to southwesterly direction. Residential roadways with parking along both sides are present through the development, including Gerry Road and Sherman Road to the northwest of Independence Drive and Thorton Road and Asheville Road to the southeast.

The existing topography is generally irregular with numerous areas of steep terrain and exposed bedrock outcrops. The highest point of the site is located immediately north of a traffic circle

along Asheville Road, with the apex in this area primarily bedrock outcropping. The terrain slopes steeply to the south of this high point towards the southern edge of the property at the V.F.W Parkway. To the north and west of this location, the topography slopes moderately towards Independence Drive.

A second high point of the site is located near the western property line near the intersection of Gerry and Sherman Roads. Topography surrounding this high point slope steeply to the south towards areas of wetlands to the southwest of the development and more gradually to the north and east of the highpoint. The high point consists primarily of an area of bedrock outcrops.



## 2.0 SUBSURFACE EXPLORATIONS

A subsurface exploration program was undertaken to determine soil conditions at the site to provide geotechnical guidelines for the development of general site recommendations and determining presumptive bearing capacities for the existing soil profile. Logs of the soil borings are included in Appendix B and their locations are shown on Figure 2: Boring Location Plan.

In general, the locations of the soil borings were laid out in the field based upon relative distances to existing site features shown on the boring location plan as provided by Stantec. However, due to interference with existing utilities, Borings A20 and B6 were adjusted in the field as necessary to avoid damaging the utility. Locations should be considered accurate only to the degree implied by the method utilized.

### 2.1 Current Exploration Program

The subsurface exploration program, performed by PARE as part of this study, included a total of seventy-six (76) soil borings performed across the site. The locations of the borings were provided by Stantec and were generally divided into four distinct groupings as described below:

- Group A: A total of 20 borings, identified as B-A1 through B-A20, located primarily within the open space in the rear of the buildings along the south side of Gerry Road and along the north side of Sherman Road. This group also includes borings completed in parking lots.
- Group B: A total of 15 borings, identified as B-B1 through B-B15, located in the rear of the buildings along the north side of Gerry Road.
- Group C: A total of 30 borings, identified as B-C1 through B-C30, primarily located within Hancock Village property in the rear of private residences along Russett Road east of Independence Drive. This group also includes borings completed in parking lots and along Asheville Road and borings in the front of buildings located in the area of the other explorations. Group C also included two isolated borings located approximately 150 feet east of Independence Drive in the rear of 202-210 Independence Drive.
- Group D: A total of 11 borings, identified as B-D1 through B-D11 located in the area of and surrounding parking lots in the southwestern portion of the property in the area of the existing facilities maintenance garage. The group also includes a boring located in the front of 92-104 Sherman Road.

Explorations were performed as close to the locations indicated on the plan provided by Stantec as existing conditions and method of layout permitted. In general, borings were to be advanced to a maximum depth of 15-feet or to bedrock, whichever was encountered first. Supplemental probes were completed at each location at which explorations encountering refusal at depths shallower than 5 feet below the existing surface to confirm the presence of bedrock. Completion of rock cores was beyond the scope of the proposed services. Section 3.0, Subsurface Conditions, summarizes the findings of the subsurface explorations.

The boring investigation program was performed by Drilex Environmental of West Boylston, Massachusetts and observed by PARE personnel between September 8, 2008 and September 16, 2008. During the investigation, soil borings were advanced to depths ranging from 20 to 36 feet below the existing ground surface from an ATV mounted drill rig utilizing 4¼-inch hollow stem

augers and a Geoprobe rig with geotechnical tooling. Split spoon samples were obtained in accordance with ASTM D-1586, the Standard Penetration Test (SPT), to obtain an indication of the characteristics, relative density and consistency of the underlying soils. The test consists of driving a 1-3/8-inch inside diameter standard split spoon sampler at least 18 inches with a 140-pound hammer dropping from a height of 30 inches. The standard penetration value used in analysis is the number of blows (N) required to drive the sampler from 6 to 18 inches of penetration.

PARE provided field observation and coordination for the subsurface exploration program. Field personnel observed the drilling conditions and visually identified the SPT soil samples during the advancement and at the end of the exploration.

### 3.0 SUBSURFACE CONDITIONS

This section describes the generalized soil and groundwater conditions encountered in the area of the explorations during the subsurface exploration program.

#### 3.1 Subsurface Profiles

##### 3.1.A Group A

The surface of the site generally consists of areas of grass and landscape materials with areas of paved parking lots at the east end of the grouping in the areas of A3 and A6. The existing parking lot areas consist of 3 inches of asphalt overlying a layer of SAND with granular FILL. The grass and landscape areas include a layer of TOPSOIL and SUBSOIL. Below the FILL or TOPSOIL and SUBSOIL, the natural soil consists of a layer of SAND with varying amounts of GRAVEL and SILT; a layer of SAND varying amounts of SILT; a layer of ELASTIC SILT; a layer of SANDY TILL; underlain by WEATHERED ROCK. Probable BEDROCK was also encountered in each of the soil borings. Table 3-1, Group A Exploration Summary, summarizes the findings of the subsurface explorations. The soil boring locations are shown on Figure 2. For more detailed descriptions of the conditions encountered, refer to the logs of the soil borings in Appendix B.

TABLE 3-1: GROUP A EXPLORATION SUMMARY

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
A1	159.4	11.4	Spoon Refusal	6.0	153.4
A2	160.7	9.0	Casing Refusal	6.0	154.7
A3	162.9	10.0	Spoon Refusal	10.0	152.9
A4	161.2	10.4	Spoon Refusal	8.0	153.2
A5	161.2	5.3	Spoon Refusal	-	-
A6	166	3.5	Auger Refusal	-	-
A7	166	12.0	Auger Refusal	9.0	157
A8	169	3.0	Auger Refusal	-	-
A9	166.5	9.5	Auger Refusal	-	-
A10	175.5	1.2	Spoon Refusal	-	-
A11	169	3.6	Spoon Refusal	-	-
A12	171	1.2	Spoon Refusal	-	-
A13	172.3	4.2	Spoon Refusal	-	-
A14	173	3.5	Casing Refusal	-	-
A15	175	3.6	Spoon Refusal	-	-
A16	166	2.6	Spoon Refusal	-	-
A17	162.5	3.8	Spoon Refusal	-	-
A18	163	3.0	Spoon Refusal	2.5	160.5
A19	163.7	0.3	Spoon Refusal		163.7
A20	162	4.0	Casing Refusal	3.5	158.5



**3.1.A.1 Stratum 1: TOPSOIL and SUBSOIL**

The TOPSOIL and SUBSOIL consists of fine to medium sand with varying amounts of gravel and organic silt. The amounts of gravel and silt varied in each sample. The bottom of Stratum No. 1 ranges from approximately 3 inches to 4 feet below the ground surface, with the deepest deposit encountered in soil boring A9. The relative density of this stratum was “very loose” to “dense”, as determined by SPT values. *The TOPSOIL and SUBSOIL is not considered an acceptable bearing stratum for foundations or site features.*

**3.1.A.2 Stratum 2: FILL**

FILL consists of fine to medium sand with “trace”<sup>1</sup> to “and”<sup>2</sup> amounts of gravel and “trace” to “some”<sup>3</sup> amounts of silt. This stratum was encountered only in soil borings A2, A3, A6 and A16. The bottom of Stratum No. 2 ranges from approximately 2 to 5 feet below the ground surface, with the deepest deposit encountered in soil boring A3. The relative density of this stratum was “loose” to “very dense”, as determined by SPT values. *FILL is not considered an acceptable bearing stratum for foundations or other structures, in its current state.*

**3.1.A.3 Stratum 3: SAND with SILT and GRAVEL/SANDY SILT with GRAVEL**

This stratum consists of fine to coarse sand with varying amounts of gravel and silt. The amounts of gravel and silt varied in each sample. This stratum was encountered only in soil borings A4, A5, A7, A15 and A17. Stratum No. 3 is approximately 1.5 to 8 feet thick and extends to a depth of about 3.6 to 10 feet from the ground surface, with the deepest deposit encountered in soil boring A7. The relative density of this stratum was “very loose” to “very dense”, as determined by SPT values.

**3.1.A.4 Stratum 4: SANDY SILT/ SILTY SAND**

This stratum consists of fine to medium sand and silt. The amounts of sand and silt range from “some” to “and” and varied in each sample. This stratum was encountered only in soil borings A7, A18, and A20. Stratum No. 4 is approximately 1 to 2 feet thick and extends to a depth of about 3 to 12 feet from the ground surface, with the deepest deposit encountered in soil borings A7 and A20. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values.

**3.1.A.5 Stratum 5: ELASTIC SILT**

The ELASTIC SILT was encountered only in soil borings A1 and A2 underlying the Fill or Topsoil and Subsoil layer consisting of gray elastic silt with “some” amounts of fine sand and “trace” amounts of clay. Stratum No. 5 is approximately 4 feet to 8.5 feet thick and extends to a depth of about 6 to 10 feet from the ground surface, with the deepest deposit encountered in soil

---

<sup>1</sup> “Trace” indicates 0 to 10% by weight

<sup>2</sup> “And” indicates 35 to 50% by weight.

<sup>3</sup> “Some” indicates 20 to 35% by weight.



boring A1. The relative density of this stratum was “medium dense”, as determined by SPT values.

### **3.1.A.6 Stratum 6: SANDY TILL**

The SANDY TILL was encountered only in soil borings A1, A2, A4, and A7 underlying the natural and fill stratum consisting of gray, fine to coarse sand with “some” angular gravel, “little”<sup>4</sup> silt and “trace” amounts of clay. This Stratum No. 6 is approximately 7 inches to 3.4 feet thick and extends to a depth of about 2.6 to 11.5 feet from the ground surface with the deepest deposit encountered in soil boring A4. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values.

### **3.1.A.7 Stratum 7: WEATHERED ROCK /BEDROCK**

All soil borings were advanced to refusal on apparent competent BEDROCK. This stratum was encountered at depths varying from 3 inches to 12 feet below the ground surface as summarized in Table 3.1. Based upon observations noted during the advancement of the borings and from the confirmatory probes, it is anticipated that the refusal depths indicated were upon bedrock.

A layer of WEATHERED ROCK was encountered in soil borings A3, A9, A11, and A13 underlying the fill and natural soils stratum. The layer of weathered rock varied from approximately 0.2-inches to 5-feet thick with the deepest deposit encountered in soil boring A3. Weathered rock consists of deteriorated bedrock broken down into a tan, fine to coarse sand with “little” to “some” gravel, and “trace” to “little” amounts of silt. The relative density of this stratum was “very dense”, as determined by SPT values.

### **3.1.A.8 Groundwater**

Based on visual observations of soil samples and field readings, the groundwater was encountered at approximately 2.5 to 10 feet below the existing ground surface with the groundwater surface appearing to drop in a north to a northwesterly direction. Refer to Table 3-1; Exploration Summary, and the boring logs attached in Appendix B for additional groundwater information.

It should be noted that groundwater levels may fluctuate over time due to variations in rainfall and other factors different from those prevailing at the time the explorations were performed.

### **3.1.B Group B**

The surface of the site generally consists of areas of grass and landscape materials. The grass and landscape areas are supported by a layer of TOPSOIL and SUBSOIL. Below the TOPSOIL and SUBSOIL, the natural soil consists of a layer of SAND with GRAVEL varying amounts of SILT; a layer of SANDY SILT; a layer of ELASTIC SILT; underlain by SANDY TILL. Probable BEDROCK was also encountered in each of the soil borings Table 3-2, Group B

---

<sup>4</sup> “Little” indicates 10 to 20% by weight.

Exploration Summary, summarizes the findings of the subsurface explorations. The soil boring locations are shown on Figure 2. For more detailed descriptions of the conditions encountered, refer to the logs of the soil borings in Appendix B.

TABLE 3-2: GROUP B EXPLORATION SUMMARY

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
B1	162	9.0	Auger Refusal	6.0	156
B2	162.6	14.0	Auger Refusal	8.0	154.6
B3	162	14.0	Auger Refusal	6.0	156
B4	159.5	16.3	Spoon Refusal	5.0	154.5
B5	160	10.0	Auger Refusal	6.0	-
B6	161.7	14.5	Auger Refusal	-	-
B7	162.7	13.0	Auger Refusal	7.5	155.2
B8	160.5	12.5	Auger Refusal	7.0	153.5
B9	163.5	11.0	Spoon Refusal	-	-
B10	174	2.0	Auger Refusal	-	-
B11	169	1.0	Spoon Refusal	-	-
B12	172	4.5	Auger Refusal	-	-
B13	167	5.0	Auger Refusal	-	-
B14	168	8.0	Auger Refusal	-	-
B15	169.2	4.5	Auger Refusal	-	-

### 3.1.B.1 Stratum 1: TOPSOIL and SUBSOIL

The TOPSOIL and SUBSOIL consists of fine to medium sand with varying amounts of gravel and organic silt. The amounts of gravel and silt varied in each sample. The bottom of Stratum No. 1 ranges from approximately 1 to 6 feet below the ground surface, with the deepest deposit encountered in soil boring B2. The relative density of this stratum was “loose” to “medium dense”, as determined by SPT values. *The TOPSOIL and SUBSOIL is not considered an acceptable bearing stratum for foundations or site features.*

### 3.1.B.2 Stratum 2: SAND with SILT and GRAVEL/SILTY SAND with GRAVEL

This stratum consists of fine to coarse sand with “little” amounts of gravel and “trace” to “and” amounts of silt. The amounts of silt varied in each sample. This stratum was encountered only in soil borings B3, B6, B9, and B14. Stratum No. 2 is approximately 3 to 6-feet thick and extends to a depth of about 5 to 11 feet from the ground surface, with the deepest deposit encountered in soil boring B9. The relative density of this stratum was “loose” to “medium dense”, as determined by SPT values.



**3.1.B.3 Stratum 3: SANDY SILT**

This stratum consists of gray silt with “some” amounts of fine sand. This stratum was encountered only in soil borings B5 and B8. Stratum No. 3 is approximately 4 feet thick and extends to a depth of about 5 feet from the ground surface. The relative density of this stratum was “medium dense” as determined by SPT values.

**3.1.B.4 Stratum 4: ELASTIC SILT/ELASTIC SILT WITH SAND**

This stratum consists of gray elastic silt with “trace” to “and” fine sand and “trace” to “little” amounts of clay. This stratum was encountered only in soil borings B1, B2, B3, B4, B5, B6, B7, and B8. The fine sand encountered in these borings becomes coarse at soil boring B7 with “little” amounts of gravel. Stratum No. 4 is approximately 4 feet to 8.5 feet thick and extends to a depth of about 9 to 10 feet from the ground surface, with the deepest deposit encountered in soil boring B7. The relative density of this stratum was “medium dense”, as determined by SPT values.

**3.1.B.5 Stratum 5: SANDY TILL**

The SANDY TILL was encountered only in soil borings B2, B3, B4, B6, B7, and B8 consisting of fine to coarse sand with “trace” to “and” angular gravel and “little” amounts of silt. Stratum No. 5 is approximately 2 to 6 feet thick and extends to a depth of about 12.5 to 16 feet from the ground surface with the deepest deposit encountered in soil boring B4. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values.

**3.1.B.6 Stratum 6: BEDROCK**

All soil borings were advanced to refusal on BEDROCK. Refusal was encountered at depths varying between 1 and 16.3 feet from the ground surface in soil borings B11 and B4 respectively. Based upon observations noted during the refusal and from the supplemental probes, it is anticipated that this refusal was upon bedrock.

**3.1.B.7 Groundwater**

Based on visual observations of soil samples and field readings, the groundwater was encountered at approximately 5 to 8 feet below the existing ground surface. Refer to Table 3-2; Exploration Summary, and the boring logs attached in Appendix B for additional groundwater information.

It should be noted that groundwater levels may fluctuate over time due to variations in rainfall and other factors different from those prevailing at the time the explorations were performed.

**3.1.C Group C**

The surface of the site generally consists of areas of grass, landscape materials, parking lots, and asphalt along Asheville Road. The existing parking lot areas and roads consist of 3 inches of asphalt overlying a layer of Sandy FILL. The grass and landscape areas are supported



by a layer of TOPSOIL and SUBSOIL. Below the FILL or TOPSOIL and SUBSOIL, the natural soil consists of a layer of SANDY SILT with GRAVEL; a layer of SILTY SAND with GRAVEL; and a layer of WEATHERED ROCK. Probable BEDROCK was also encountered in each of the soil borings Table 3- 3, Group C Exploration Summary, summarizes the findings of the subsurface explorations. The soil boring locations are shown on Figure 2. For more detailed descriptions of the conditions encountered, refer to the logs of the soil borings in Appendix B.

---

TABLE 3-3: GROUP C EXPLORATION SUMMARY

---

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
C1	167	5.0	Auger Refusal	-	-
C2	164.6	4.0	Auger Refusal	-	-
C3	167	4.0	Auger Refusal	-	-
C4	159.2	6.6	Spoon Refusal	-	-
C5	157.5	7.3	Spoon Refusal	6.5	-
C6	157.8	4.0	Spoon Refusal	-	-
C7	164.2	4.0	Casing Refusal	-	-
C8	170.5	3.9	Spoon Refusal	-	-
C9	169	6.0	Spoon Refusal	-	-
C10	174	11.0	Auger Refusal	-	-
C11	187.09	6.0	Auger Refusal	8.0	179.1
C12	186	4.0	Auger Refusal	-	-
C13	178	3.5	Spoon Refusal	-	-
C14	180.5	2.0	Auger Refusal	-	-
C15	180.7	3.8	Spoon Refusal	-	-
C16	196	1.0	Spoon Refusal	-	-
C17	191	1.0	Spoon Refusal	-	-
C18	185.3	4.0	Spoon Refusal	-	-
C19	174	3.0	Spoon Refusal	-	-
C20	168.7	2.0	Spoon Refusal	-	-
C21	162.5	3.7	Spoon Refusal	-	-
C22	165.3	6.6	Spoon Refusal	-	-
C23	174	3.8	Spoon Refusal	-	-
C24	177.2	4.0	Spoon Refusal	-	-
C25	182.5	4.5	Auger Refusal	-	-
C26	187	2.0	Casing Refusal	-	-
C27	187	2.0	Spoon Refusal	-	-
C28	186	2.8	Spoon Refusal	-	-

---



TABLE 3-3: GROUP C EXPLORATION SUMMARY

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
C29	169.6	3.7	Spoon Refusal	-	-
C30	160	5.8	Spoon Refusal	-	-

### 3.1.C.1 Stratum 1: TOPSOIL and SUBSOIL

The TOPSOIL and SUBSOIL consists of fine to medium sand with varying amounts of gravel and organic silt. The amounts of gravel and silt varied in each sample. The bottom of Stratum No. 1 ranges from approximately 3 inches to 3 feet below the ground surface, with the deepest deposit encountered in soil boring C7 and C18. The relative density of this stratum was “very loose” to “medium dense”, as determined by SPT values. *The TOPSOIL and SUBSOIL is not considered an acceptable bearing stratum for foundations or site features.*

### 3.1.C.2 Stratum 2: FILL

FILL consists of fine to medium sand with “trace” to “and” amounts of gravel and “trace” to “little” amounts of silt. This stratum was encountered only in soil borings C2, C3, C9, C10, C11, C12, and C30. The bottom of Stratum No. 2 ranges from approximately 4 to 6 feet below the ground surface, with the deepest deposit encountered in soil borings C9 and C11. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values. *The FILL is not considered an acceptable bearing stratum for foundations or site features, in its current state.*

### 3.1.C.3 Stratum 3: SANDY SILT with GRAVEL

This stratum consists of fine to coarse sand with “some” to “and” gravel and “trace” to “little” amounts of silt. The amounts of gravel and silt varied in each sample. This stratum was encountered only in soil borings C4, C5, C6, C7, C8, C10, C21 and C25. Stratum No. 3 is approximately 1 to 6 feet thick and extends to a depth of about 2 to 11 feet below the ground surface, with the deepest deposit encountered in soil boring C10. The relative density of this stratum was “loose” to “very dense”, as determined by SPT values.

### 3.1.C.4 Stratum 4: SILTY SAND with GRAVEL

This stratum consists of fine to coarse sand with “little” to “some” silt and “little” amounts of gravel. This stratum was encountered only in soil borings C22, C23, and C24. Stratum No. 4 is approximately 3 to 6.1 feet thick and extends to a depth of about 3.8 to 6.6 feet from the ground surface, with the deepest deposit encountered in soil boring C22. The relative density of this stratum was “very dense”, as determined by SPT values.

### 3.1.C.5 Stratum 5: WEATHERED ROCK/BEDROCK

All soil borings were advanced to refusal on apparently competent BEDROCK. Refusal was encountered at depths varying between 1-foot in soil borings C16 and C17 and 11 feet in soil



boring C10 from the ground surface. Based upon observations noted during the refusal and from the supplemental probes, it is anticipated that this refusal was upon bedrock.

A layer of WEATHERED BEDROCK was encountered in soil borings C5, C8, C13, C15, C18, C19, C29, and C30. The layer of weathered rock varied from approximately 10-inches to 1.9-feet thick with the deepest deposit encountered in soil borings C8 and C15. Weathered rock consists of deteriorated bedrock broken down into a tan, fine to coarse sand with “little” to “some” gravel, and “trace” to “little” amounts of silt. The relative density of this stratum was “dense” to “very dense”, as determined by SPT values

### 3.1.C.6 Groundwater

Based on visual observations of soil samples and field readings, the groundwater was encountered at approximately 6.5 to 8.0 feet below the existing ground. Refer to Table 3-3; Exploration Summary, and the boring logs attached in Appendix B for additional groundwater information.

It should be noted that groundwater levels may fluctuate over time due to variations in rainfall and other factors different from those prevailing at the time the explorations were performed.

### 3.1.D Group D

The surface of the site generally consists of areas of grass and landscape materials and parking lots. The existing parking lot areas consist of 3 inches of asphalt overlying a layer of SAND with granular FILL. The grass and landscape areas are supported by a layer of TOPSOIL and SUBSOIL. Below the FILL or TOPSOIL and SUBSOIL, the natural soil consists of a layer of SANDY SILT with GRAVEL; a layer of SAND with GRAVEL; a layer of SILTY SAND; a layer of ELASTIC SILT; a layer of PEAT; a layer of CLAY; and a layer of SANDY TILL. Probable BEDROCK was also encountered in each of the soil borings Table 3- 4, Group D Exploration Summary, summarizes the findings of the subsurface explorations. The soil boring locations are shown on Figure 2. For more detailed descriptions of the conditions encountered, refer to the logs of the soil borings in Appendix B.

TABLE 3-4: GROUP D EXPLORATION SUMMARY

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
D1	146.3	16.0	Spoon Refusal	7.0	139.3
D2	146	13.0	Auger Refusal	8.0	138
D3	144.5	10.3	Spoon Refusal	4.0	140.5
D4	143.6	17.0	Auger Refusal	2.0	141.6
D5	148	3.2	Spoon Refusal	-	-
D6	149.8	10.7	Spoon Refusal	9.0	140.8
D7	149	13.0	Auger Refusal	8.0	141

TABLE 3-4: GROUP D EXPLORATION SUMMARY

Boring ID	Approximate Ground Surface Elevation (ft)	Depth of Exploration (ft)	End of Exploration type	Depth to Water (ft)	Water Elevation (ft)
D8	147.2	15.0	Auger Refusal	9.0	138.2
D9	149.5	7.0	Auger Refusal	-	-
D10	147	7.5	Auger Refusal	6.0	141.0
D11	167.7	3.7	Spoon Refusal	-	-

### 3.1.D.1 Stratum 1: TOPSOIL and SUBSOIL

The TOPSOIL and SUBSOIL consists of fine to medium sand with varying amounts of gravel and organic silt. The amounts of gravel and silt varied in each sample. The bottom of Stratum No. 1 ranges from approximately 1 to 4 feet below the ground surface, with the deepest deposit encountered in soil boring D10. The relative density of this stratum was “very loose” to “medium dense”, as determined by SPT values. *The TOPSOIL and SUBSOIL is not considered an acceptable bearing stratum for foundations or site features.*

### 3.1.D.2 Stratum 2: FILL

FILL consists of fine to coarse sand with “little” to “and” amounts of gravel and “trace” to “little” amounts of silt. This stratum was encountered only in soil borings D1, D2, D3, D4, and D8. The bottom of Stratum No. 2 ranges from approximately 5 to 11 feet below the ground surface, with the deepest deposit encountered in soil boring D4. The relative density of this stratum was “loose” to “medium dense”, as determined by SPT values. *The FILL is not considered an acceptable bearing stratum for foundations or site features, in its current state.*

### 3.1.D.3 Stratum 3: SANDY SILT with GRAVEL

This stratum consists of silt with “and” fine to medium sand and “little” amounts of gravel. The amounts of silt and sand varied in each sample. This stratum was encountered only in soil borings D5, D6, and D7. Stratum No. 3 is approximately 2 to 5 feet thick and extends to a depth of about 3 to 13 feet from the ground surface, with the deepest deposit encountered in soil boring D6. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values

### 3.1.D.4 Stratum 4: SAND with GRAVEL

This stratum consists of fine to coarse sand with “little” gravel and “trace” to “little” amounts of silt. This stratum was encountered only in soil borings D7 and D9. Stratum No. 4 is approximately 6 feet thick and extends to a depth of about 7 to 10 feet from the ground surface. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values.

**3.1.D.5 Stratum 5: SILTY SAND**

This stratum consists of gray fine to medium sand with “some” silt and “trace” amounts of gravel. This stratum was encountered only in soil boring D3. Stratum No. 5 is approximately 2.3 feet thick and extends to a depth of about 10.3 feet from the ground surface. The relative density of this stratum was “very dense” as determined by SPT values.

**3.1.D.6 Stratum 6: ELASTIC SILT**

The ELASTIC SILT was encountered only in soil boring D8 consisting of gray elastic silt with “and” fine sand and “trace” amounts of clay. Stratum No. 6 is approximately 3.5 feet thick and extends to a depth of about 10 feet from the ground surface. The relative density of this stratum was “dense”, as determined by SPT values.

**3.1.D.7 Stratum 7: PEAT**

The PEAT was encountered only in soil borings D3 and D4, and consists of organic silt with some fibrous organic material. Stratum No. 7 is approximately 3 to 4.5 feet thick and extends to a depth of about 8 to 15.5 feet from the ground surface, with the deepest deposit encountered in soil boring D4. The relative density of this stratum was “very loose” to “loose”, as determined by SPT values.

**3.1.D.8 Stratum 8: CLAY**

A layer of CLAY was encountered in boring D4 underlying the Peat stratum from a depth of approximately 15.5 feet to 17 feet below the ground surface. This clay stratum consisted of a “soft” (as determined by SPT values) clay with “some” amounts of organic Silt.

**3.1.D.9 Stratum 9: SANDY TILL**

The SANDY TILL was encountered only in soil borings D1, D2, D6, D8, and D10, and consists of fine to coarse sand with “little” to “and” angular gravel and “trace” to “some” amounts of silt. This Stratum is approximately 2.5 to 11 feet thick and extends to a depth of about 7.5 to 16 feet from the ground surface with the deepest deposit encountered in soil boring D1. The relative density of this stratum was “medium dense” to “very dense”, as determined by SPT values.

**3.1.D.10 Stratum 10: BEDROCK**

All soil borings were advanced to refusal on apparent competent BEDROCK. Bedrock was encountered at depths varying between 3.2 and 17 feet below the ground surface in soil borings D5 and D4 respectively. Based upon observations noted during the refusal and from the supplemental probes, it is anticipated that this refusal was upon bedrock.

**3.1.D.11 Groundwater**

Based on visual observations of soil samples and field readings, the groundwater was encountered at approximately 2 to 9 feet below the existing ground surface. Refer to Table 3-4; Exploration Summary, and the boring logs attached in Appendix B for additional groundwater information.

It should be noted that groundwater levels may fluctuate over time due to variations in rainfall and other factors different from those prevailing at the time the explorations were performed.



## 4.0 LABORATORY TESTING

The laboratory testing program included mechanical grain size determinations upon samples from the SAND and/or GRAVEL, SANDY SILT/SILTY SAND with GRAVEL, and ELASTIC SILT material strata encountered during the investigation. The results of the laboratory testing are summarized below. The testing data is included in Appendix C.

### 4.1 Grain Size Analysis

Six (6) grain size analyses were performed on materials recovered during the subsurface investigation with descriptions and results presented as follows:

#### SAND and/or GRAVEL

Three (3) analyses were performed on the SAND and/or GRAVEL (sample S-2 extracted from a depth of 5 to 7 feet at soil boring A7), (sample S-2 extracted from a depth of 5 to 7 feet at soil boring C11) and (sample S-2 extracted from a depth of 5 to 6.3 feet at soil boring D7).

The results of the grain size analyses indicated the gradation of sample S-2 at A7 to be fine to coarse SAND with “some” fine Gravel, and trace amounts of Silt, sample S-2 at C11 to be GRAVEL and SAND with “trace” amounts of Silt, and sample S-2 at D7 to be fine to coarse SAND with “little” fine Gravel and “trace” amounts of Silt.

#### SANDY SILT/SILTY SAND with GRAVEL

Two (2) analyses were performed on the SANDY SILT/SILTY SAND with GRAVEL (sample S-2 extracted from a depth of 5 to 7 feet at soil boring A4) and (sample S-2 extracted from a depth of 5 to 7 feet at soil boring B9).

The results of the grain size analyses indicated the gradation of sample S-2 at A4 to be SILT with “some” sand, and “little” amounts of fine gravel, and sample S-2 at B9 to be fine to coarse SAND and SILT with “little” fine Gravel and “trace” amounts of Silt.

#### ELASTIC SILT

One (1) analysis was performed on the ELASTIC SILT (sample S-2 extracted from a depth of 5 to 7 feet at soil boring B5).

The results of the grain size analyses indicated the gradation of sample S-2 at B5 to be SILT with “trace” amounts of fine sand.



## 5.0 IMPLICATIONS OF SUBSURFACE CONDITIONS

Based on the subsurface investigation program and observations made during the fieldwork, the following are the geotechnical issues identified that could potentially impact the development of the site as proposed. As design of site development is advanced, it is recommended that the data collected as part of the current investigations be reviewed and additional subsurface explorations and evaluations be completed as deemed necessary to support final design for specific structures.

### 5.1 Group A Recommendations

Borings within Group A generally indicated a soil profile of shallow bedrock (<10 feet +/-) overlain by stratum of variable sandy and silty soils.

Shallow foundations, such as individual footings or structural mats, would be feasible for supporting potential development in this area. If shallow foundations were used, rock excavation would likely be required dependant upon final proposed grades. In areas of rock excavation, over excavation of rock to 1-foot beyond the final footing grade is recommended with a 1-foot thick cushion of sand-gravel fill installed underlying the footings. ***For foundations to be found on the observed bedrock, a presumptive bearing capacity of 5,000 psf may be utilized for design.*** Rock excavation may also be required to support utility installation. Additional subsurface explorations to quantify the quality of the rock and required effort and method of rock excavation would be required as the completion of rock cores was beyond the current scope of work.

In areas of deeper bedrock, Stratum No. 3, No. 4, and No. 6 would provide suitable bearing stratum for shallow foundations. ***In these areas, a presumptive bearing capacity of 3,000 psf may be utilized for design for granular stratum.*** Dependant upon final elevations, this bearing capacity may need to be reduced to account for differential settlement between foundations founded upon these materials and those upon bedrock.

Areas of apparent fill were observed in some explorations. Geotechnically, uncontrolled fills are not recommended for support of structures based on experience, literature and the Massachusetts State Building code 780 CMR. However, some reuse of sand and gravel observed in Stratum No. 2 as structural backfill is likely. Areas of topsoil and subsoil (Stratum No. 1) and pavement are also not recommended for support of structures and are recommended to be removed prior to undertaking site development.

In the area of A1 and A2, a layer of elastic silt (Stratum No. 5) was encountered. This silt stratum presents the potential for high total settlements that could cause excessive differential settlements across and between shallow foundations due to variations in the rock elevation. However, dependant upon design loads and type of structure to be found upon this stratum it may be feasible to “float” shallow foundations within this stratum utilizing a presumptive bearing capacity of 2,000 psf. Given the depth of the stratum in which the anticipated settlements will occur, over-excavation to remove and replace these layers is not considered economically feasible for most of the structures, compared to alternative foundation systems. In these areas, final design may considered the use of mini piles, stone piers, ground improvements or other alternative foundation approaches to transfer anticipated loads to suitable subsurface bearing strata such as the observed underlying bedrock.

Given the observed high (>10%+/-) silt contents in Stratums No. 3 and No. 4, limited reuse of this material as structural backfill is anticipated. When saturated from high groundwater or rainfall events, this material will be easily disturbed by construction equipment making traversing the site difficult. While reuse of the silty materials may be feasible as common borrow in areas, this material will likely be difficult to compact if allowed to become saturated by ground water or rainfall events.

Groundwater was generally observed at depths between 2.5 to 10 feet below the existing ground surface. Dewatering and control of water into excavations may be necessary during the preparation of subgrade for foundations or utility installation dependant upon design elevations and grades.

## 5.2 Group B Recommendations

Borings within Group B generally indicated a soil profile of bedrock at depths between 10 and 15 feet with shallower bedrock encountered in the westernmost explorations (B10 through BB15). Overlying soils stratums were generally similar to those observed in Group A.

Shallow foundations, such as individual footings or structural mats, would be feasible for supporting potential development in this area. If shallow foundations were used, rock excavation would likely be required dependant upon final proposed grades. In areas of rock excavation, over excavation of rock to 1-foot beyond the final footing grade is recommended with a 1-foot thick cushion of sand-gravel fill installed underlying the footings. ***For foundations to be found on the observe bedrock, a presumptive bearing capacity of 5,000 psf may be utilized for design.*** Rock excavation may also be required to support utility installation. Additional subsurface explorations to quantify the quality of the rock and required effort and method of rock excavation would be required as the completion of rock cores was beyond the current scope of work.

In areas of deeper bedrock, Stratums No. 2 and No. 5 would provide suitable bearing stratums for shallow foundations. ***In these areas, a presumptive bearing capacity of 3,000 psf may be utilized for design of foundations bearing on granular stratums.*** Dependant upon final elevations, this bearing capacity may need to be reduced to account for differential settlement between foundations founded upon these materials and those upon bedrock. The potential for reuse of sand and gravel observed in Stratum No. 2 is likely; however, additional laboratory testing would be required to determine the extents of reuse which is possible.

Areas of topsoil and subsoil (Stratum No. 1) were observed in each of the explorations. These stratums are not recommended for support of structures based on experience, literature and the Massachusetts State Building code 780 CMR. Stripping and removal of this stratum is recommended prior to undertaking site development.

In the area of borings B1 through B8, stratums of sandy silt (Stratum No. 3) and elastic silts (Stratum No. 4) were encountered. These stratums present the potential for high total settlements that could cause excessive differential settlements across and between shallow foundations due to variations in the rock elevation. However, dependant upon design loads and type of structure to be found upon this stratum it may be feasible to “float” shallow foundations within this stratum utilizing a presumptive bearing capacity of 2,000 psf. Given the depth of the

stratums in which the anticipated settlements will occur, over-excavation to remove and replace these layers is not considered economically feasible for most of the structures, compared to alternative foundation systems. In these areas, final design may consider the use of mini piles, stone piers, ground improvements or other alternative foundation approaches to transfer anticipated loads to suitable subsurface bearing strata such as the observed underlying bedrock.

Given the observed high (>10%+/-) silt contents in Stratums No. 3 and No. 4, limited reuse of this material as structural backfill is anticipated. When saturated from high groundwater or rainfall events, this material will be easily disturbed by construction equipment making traversing the site difficult. While reuse of the silty materials may be feasible as common borrow in areas, this material will likely be difficult to compact if allowed to become saturated by ground water or rainfall events.

Groundwater was generally observed at below a depth of 5 feet below the existing ground surface. Dewatering and control of water into excavations may be necessary during the preparation of subgrade for foundations or utility installation dependant upon design elevations and grades.

### 5.3 Group C Recommendations

Borings within Group C generally indicated a soil profile of shallow bedrock generally less than 7.5 feet below the ground surface.

Shallow foundations, such as individual footings or structural mats, appear to be the most effective foundation alternative for supporting potential development in this area. If shallow foundations were used, rock excavation would likely be required dependant upon final proposed grades. In areas of rock excavation, over excavation of rock to 1-foot beyond the final footing grade is recommended with a 1-foot thick cushion of sand-gravel fill installed underlying the footings. ***For foundations to be found on the observed bedrock, a presumptive bearing capacity of 5,000 psf may be utilized for design.*** Rock excavation may also be required to support utility installation. Additional subsurface explorations to quantify the quality of the rock and required effort and method of rock excavation would be required as the completion of rock cores was beyond the current scope of work.

In areas of deeper bedrock, Stratum No. 4 would provide suitable bearing stratums for shallow foundations. ***In these areas, a presumptive bearing capacity of 3,000 psf may be utilized for design of foundations on this granular stratum.*** Dependant upon final elevations, this bearing capacity may need to be reduced to account for differential settlement between foundations founded upon these materials and those upon bedrock.

Areas of topsoil and subsoil (Stratum No. 1) and fill (Stratum No. 2) were observed in each of the explorations. These stratums are not recommended for support of structures based on experience, literature and the Massachusetts State Building code 780 CMR. Stripping and removal of these stratums is recommended prior to undertaking site development. Material excavated from Stratum No. 1 is not considered suitable for reuse except for areas of proposed landscaping. Material excavated from Stratum No. 2 may be reused as structural fill in areas; however, further evaluation and testing of these soils are recommended to further classify the type of soil and extent of permissible reuse.

In the area of borings C4 through C8, C10, C21, and C25, a stratum of sandy silt (Stratum No. 3) was encountered with some areas around C8 indicating loose conditions. This stratum presents the potential for high total settlements that could cause excessive differential settlements across and between shallow foundations due to variations in the rock elevation. However, dependant upon design loads and type of structure to be found upon this stratum it may be feasible to “float” shallow foundations within this stratum utilizing a presumptive bearing capacity of 2,000 psf. Given the depth of the stratum in which the anticipated settlements will occur, over-excavation to remove and replace these layers is not considered economically feasible for most of the structures, compared to alternative foundation systems. In these areas, final design may considered the use of mini piles, stone piers, ground improvements or other alternative foundation approaches to transfer anticipated loads to suitable subsurface bearing strata such as the observed underlying bedrock.

Given the observed high (>10%+/-) silt contents in Stratum No. 3, limited reuse of this material as structural backfill is anticipated. When saturated from high groundwater or rainfall events, this material will be easily disturbed by construction equipment making traversing the site difficult. While reuse of the silty materials may be feasible as common borrow in areas, this material will likely be difficult to compact if allowed to become saturated by ground water or rainfall events.

Explorations in this area were generally dry with the exception of C5 and C11 in which groundwater was observed at depths of 6.5 and 8.0 feet, respectively. Limited dewatering and control of water into excavations is anticipated. However, actual extent of control of water may vary dependant upon final design and seasonal groundwater levels.

#### **5.4 Group D Recommendations**

Borings within Group D generally indicated a soil profile 7.5 feet to 17.0 feet of overburden overlying bedrock with the exception of D11, which was completed in a landscaped area on top of the hillside on the south side of Sherman Road. Shallow bedrock was encountered at 3.7 feet in this exploration.

Shallow foundations, such as individual footings or structural mats, would be feasible for supporting potential development in most of this area with the exception of in the areas of D3 and D4. If shallow foundations were used, rock excavation may only be required in the area of D11, dependant upon actual final grades. In areas of rock excavation, over excavation of rock to 1-foot beyond the final footing grade is recommended with a 1-foot thick cushion of sand-gravel fill installed underlying the footings. ***For foundations to be founded on the observe bedrock, a presumptive bearing capacity of 5,000 psf may be utilized for design.*** Rock excavation may also be required to support utility installation. Additional subsurface explorations to quantify the quality of the rock and required effort and method of rock excavation would be required as the completion of rock cores was beyond the current scope of work.

In areas of deeper bedrock, Stratum No. 3, No. 4, and No. 5 would provide suitable bearing stratum for shallow foundations. ***In these areas, a presumptive bearing capacity of 3,000 psf may be utilized for design of foundations on these granular deposits.*** Dependant upon final elevations, this bearing capacity may need to be reduced to account for differential

settlement between foundations founded upon these materials and those upon bedrock. Soils from Stratum No. 3, No. 4, and No. 5 may be suitable for reuse onsite; however, the extent of reuse would need to be confirmed through the completion of additional laboratory testing during the construction process.

Areas of apparent fill (Stratum No. 2) were observed in some explorations. Geotechnically, uncontrolled fills are not recommended for support of structures based on experience, literature and the Massachusetts State Building code 780 CMR. However, some reuse of sand and gravel observed in Stratum No. 2 as structural backfill is likely. Areas of topsoil and subsoil (Stratum No. 1) and pavement are also not recommended for support of structures and are recommended to be removed prior to undertaking site development.

In the area of D8, a layer of elastic silt (Stratum No. 6) was encountered. This silt stratum presents the potential for high total settlements that could cause excessive differential settlements across and between shallow foundations due to variations in the rock elevation. However, dependant upon design loads and type of structure to be found upon this stratum it may be feasible to “float” shallow foundations within this stratum utilizing a presumptive bearing capacity of 2,000 psf. Given the depth of the stratum in which the anticipated settlements will occur, over-excavation to remove and replace this layer is not considered economically feasible for most of the structures, compared to alternative foundation systems. In these areas, final design may consider the use of mini piles, stone piers, ground improvement or other alternative foundation approaches to transfer anticipated loads to suitable subsurface bearing strata such as the observed underlying bedrock.

Given the observed high (>10%+/-) silt contents in Stratum No. 3 and No. 5, limited reuse of this material as structural backfill is anticipated. When saturated from high groundwater or rainfall events, this material will be easily disturbed by construction equipment making traversing the site difficult. While reuse of the silty materials may be feasible as common borrow in areas, this material will likely be difficult to compact if allowed to become saturated by ground water or rainfall events.

The peat stratum (Stratum No. 7) does not provide a suitable foundation material for founding structures. As such, alternative foundation approaches will be required in this area which may include excavation and replacement or installation of minipiles, stone piers, or other foundation system. It should be noted that excavation and replacement of this stratum would require substantial control of water measures. During design, long term settlement of this stratum should also be considered and the potential impact of the settlement upon any utilities or pavement in this area.

A layer of clay (Stratum No. 8) was observed in D4. This stratum will be susceptible to settlements resulting from foundation loading. Further testing to determine soil properties of this stratum will be required to determine design soil parameters and the extents of this stratum should construction be proposed in this area. Installation of minipiles, stone piers, or other alternative foundation methods may also be considered.

Groundwater was generally observed at depths of more than 6 feet, with the exception of D3 and D4. Dewatering and control of water into excavations may be necessary in these areas

during the preparation of subgrade for foundations or utility installation dependant upon design elevations and grades.

### 5.5 Pavement Design Recommendations

Table 5.1 presents recommended pavement layer thicknesses based upon standard AASHTO design procedures for both "Standard Duty" and "Heavy Duty" pavement. "Standard Duty" pavement is applicable for up to 50,000 Equivalent 18-kip Axle Loads (EAL's) while "Heavy Duty" pavement is applicable up to 350,000 EAL's. The recommended base and subbase courses for both "Standard Duty" and "Heavy Duty" areas, are as listed below:

TABLE 5-1: RECOMMENDED STANDARD AND HEAVY DUTY PAVEMENT FLEXIBLE LAYER THICKNESS

Pavement Section	STD. DUTY	HEAVY DUTY
Finish Course	1-1/2 inches	1-1/2 inches
Binder Course	1-1/2 inches	2-inches
Base Course	6-inches	6-inches
Subbase Course	8-inches	12-inches

Should the actual loading conditions be greater than those assumed, the pavement sections will need to be reanalyzed for the actual conditions. This may result in a thicker pavement section being required.

In areas where concrete and asphalt paving meet, it would be advantageous to provide a strip of free draining soil below the concrete and bituminous interface. The free draining strip should consist of "Sand Gravel Fill" extending a minimum of 3 feet laterally below the concrete apron and vertically through the full frost depth. This should control any minor frost heaving that may occur if water enters the subgrade through this joint.

Base and Subbase course materials should meet the criteria for "Sand Gravel Fill" and "Granular Fill", respectively, as listed below. Subbase and base courses shall be compacted in 1-foot (maximum) lifts to 95% of the maximum dry density as determined in accordance with ASTM D1557 (modified Proctor test). Fill below the subbase shall be compacted to at least 92% of the maximum dry density as determined in accordance with ASTM D1557 (modified Proctor test). Heave of silty material identified during the subsurface investigation is a possibility unless all silty material is removed from within the footprint for the full recommended frost depth.

For areas to be paved with Portland cement-based concrete, a six-inch thick slab on grade is recommended. The concrete should have a minimum unconfined compressive strength of 4,000 pounds per square inch, with air entrainment of 4 to 6 percent. The thickness is based upon the AASHTO Low Volume Road Design procedure and a modulus of subgrade reaction of 150 pounds per cubic inch. Welded wire fabric reinforcement (6x6W2.0xW2.0) is recommended to minimize crack opening.

The concrete paving should be graded to induce runoff. All joints and cracks should be sealed and/or filled on a regular basis as part of a routine maintenance item. If the joints and cracks are not kept sealed, significant frost heaving can be expected during the winter months.

Concrete pavement should have expansion joints at a spacing of 80 feet with a joint filler thickness based on the thermal expansion. All expansion joints should be sealed with an AASHTO-approved elastomeric joint sealer. Contraction (crack control) joints should be constructed at a spacing of 15 feet. Load transfer between slabs should be provided by epoxy coated #6 dowels, 18-inches long at a spacing of 12-inches. Concrete pavement base and subbase courses should consist of 6-inches of "Sand Gravel Fill".



## 6.0 CONSTRUCTION CONSIDERATIONS

### 6.1 Potential Reuse of Onsite Soils

The partial reuse of onsite fill material as backfill is anticipated as “Onsite Granular Fill” below the frost depth. However, due to the variability of the material on site, care should be taken to separate material not conforming to the requirements of fill material from reusable material. The reuse of the onsite inorganic silt material should be limited to landscaped areas outside of any building footprints or paving limits. Table 6-1 provides a summary of potential reuse of material encountered during the subsurface exploration program during construction activities. It is recommended that additional laboratory testing be completed during construction activities to verify suitability of soils encountered for reuse.

TABLE 6-1: POTENTIAL SOIL REUSE

Soil Description	Sand Gravel Fill	Granular Fill	Common Borrow	Other Potential Reuses
Topsoil	No	No	No	Yes
Subsoil	No	No	No	Yes
Sandy Fill	Potentially	Potentially	Yes	Yes
Sandy Silt	No	No	Yes	Yes
Sand with Gravel	Potentially	Yes	Yes	Yes
Silty Sand	No	Potentially	Yes	Yes
Elastic Silt	No	No	No	Yes
Peat	No	No	No	No
Clay	No	No	No	No
Sandy Till	No	Potentially	Yes	Yes
Bedrock/Weathered	Unlikely	Potentially	Potentially	Yes
Rock <sup>1</sup>	Unlikely	Potentially	Potentially	Yes

<sup>1</sup> Assumes proper crushing and processing

From a geotechnical perspective, asphalt material stripped from the site, crushed to a maximum ¾-inch size, and blended with clean sands and gravels, may be reused as "Granular Fill" material below pavement subbase. The material should be placed in lifts with a maximum thickness of 12-inches and be compacted to required densities by vibratory equipment. State regulatory requirements should be investigated, however, to determine if the material is environmentally acceptable for use on this site.

### 6.2 Recommend Imported Fill

Fill materials should be friable soil, free from trash, ice, snow, tree stumps, roots, and other organic matter and deleterious materials. PARE recommends the following soil gradations for imported fill:

TABLE 6-2: RECOMMENDED IMPORTED FILL SOIL GRADATIONS

Sieve Size	Sand Gravel Fill	Granular Fill	1-1/2 inch Crushed Stone
*	100	60-100	*
1-1/2-inch	-	-	85-100
¾-inch	-	-	10-40
½-inch	50-85	50-85	0-8
⅜-inch	-	45-80	
No. 4	40-75	40-75	-
No. 10	30-60	-	-
No. 40	10-35	0-45	-
No. 100	5-20**	-	-
No. 200	0-8	0-10	<1

\*The maximum recommended stone size is three inches where placed as base course below slabs and pavement; elsewhere, maximum stone size shall be 2/3 of the loose lift thickness.

\*\*The amount passing the No. 100 sieve should be between 40 and 70 percent of that amount passing the number 40 sieve.

### 6.3 Site Preparation

The recommended minimum compaction requirements are as follows:

TABLE 6.2: RECOMMENDED MINIMUM COMPACTION REQUIREMENTS

Location	Percent of Maximum Dry Density <sup>1</sup>
Backfill below footings, pile caps, within the building area and below slabs <sup>2</sup>	95
Backfill within pavement base and sub base layers	95
Backfill below pavement sub base layers	92
Around and above utilities within the building area	95
Around and above utilities in paved areas	95
Backfill behind retaining walls	95 <sup>3</sup>
Backfill within landscaped areas	85

<sup>1</sup>Maximum dry density as determined by the Modified Proctor test (ASTM D 1557)

<sup>2</sup>Building area is described as an area extending downward and outward from the outside edge of the footing at a 1H:2V slope.

<sup>3</sup>During compaction of fill placed behind retaining walls, care shall be taken so as to maintain uniform elevation along both sides within the embedded areas, and to not overstress the wall by applying too much compactive energy at the top of the wall.

The compaction criteria for the various imported materials should be developed and included in the specifications. Field density testing should be performed by the Contractor (Quality Control) and engineer (Quality Assurance), using a nuclear density gauge to confirm that adequate compaction is being achieved. During construction, representative samples of all materials to be used as backfill should also be tested for conformance with the specified material properties.

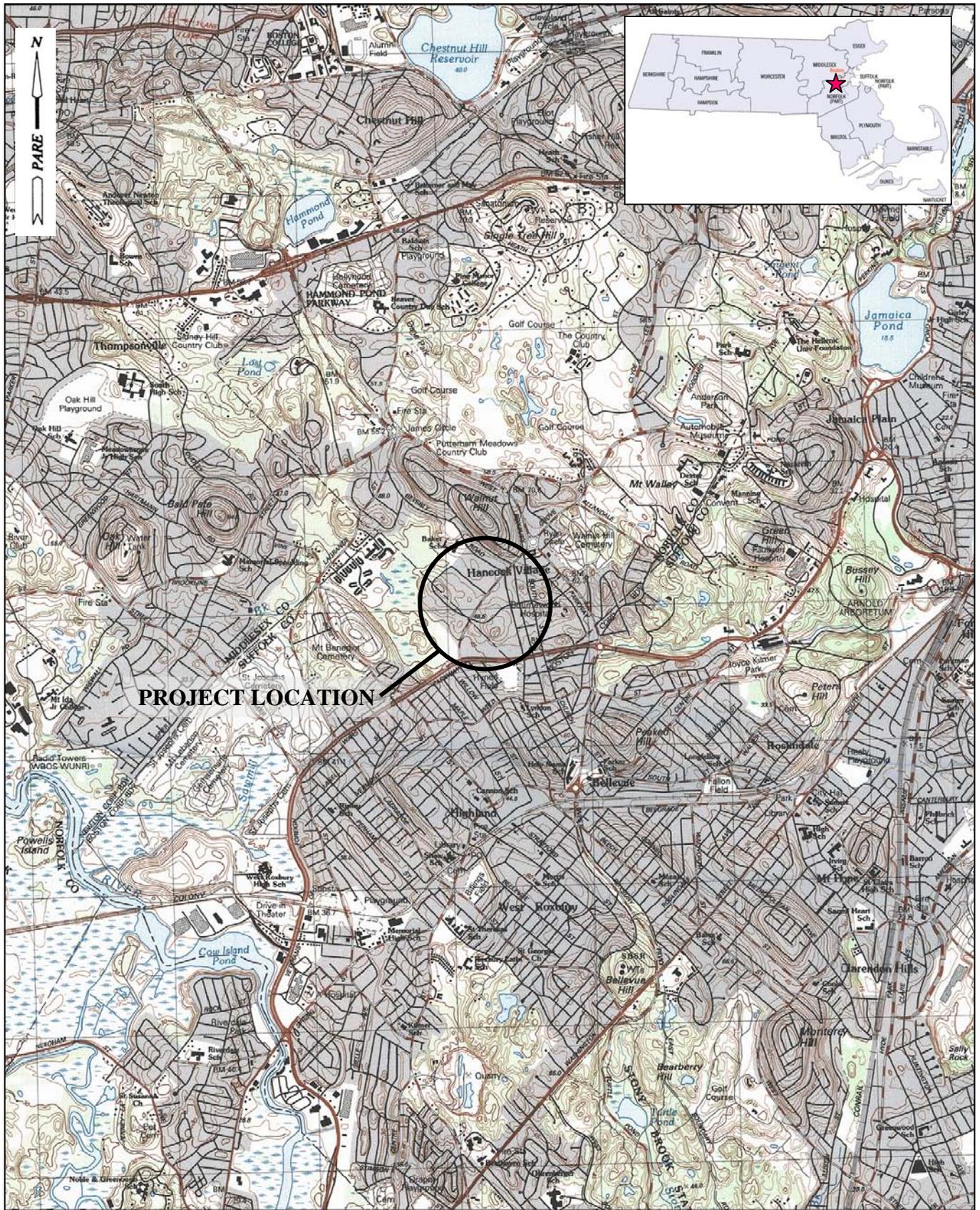
Site preparation in areas to be paved shall include stripping of all topsoil, asphalt, and other deleterious material. The exposed subgrade should be heavily compacted with a vibratory drum roller with a static weight of no less than 10,000 lbs. Should any soft or unstable areas be



encountered, the areas should be over excavated to stable material and backfilled with appropriate fill material compacted to the requirements as stated above.

PARE recommends full time onsite construction observation be provided throughout the duration of any earthwork associated with construction activities both during excavation processes to verify the extents of suitable and unsuitable soils during the excavation process and the proper placement of suitable fills during any backfill or site grading operations.

## **FIGURES**



**PROJECT LOCATION**

**HANCOCK VILLAGE  
 GEOTECHNICAL EVALUATION  
 BOSTON/BROOKLINE, MASSACHUSETTS**

**LOCUS PLAN**



CHESTNUT HILL REALTY

SEPT 2008

FIGURE 1



**APPENDIX A:**  
Geotechnical Limitations

---

## GEOTECHNICAL LIMITATIONS

### Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, Pare Corporation (PARE) should be asked to reevaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in the 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.
3. Water level readings have been made in the drill holes at the times and under the conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time the measurements were made.

### Review

4. In the event that any changes in the nature or location of the proposed construction are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified in writing by PARE.

### Construction

5. PARE should be retained to provide soil engineering services during construction of the excavation and foundation phases of work in order to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those indicated prior to the start of construction.

### Use of Report

6. This report has been prepared for the geotechnical investigation for the property referred to as Hancock Village located on Independence Drive in Brookline and Boston, Massachusetts, in accordance with generally accepted engineering practices as an aid to the design and construction of the project. This report was not intended to characterize environmental site conditions. No other warranty, expressed or implied, is made.
7. This engineering report has been prepared for this project by PARE. This report is for design purposes only and is not necessarily sufficient to prepare an accurate bid. Contractors wishing a copy of this report may secure it with the understanding that its scope is limited to design considerations only.

**APPENDIX B:**  
Boring Logs

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilix Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 159.4' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	10:00	6.0'	Out	E.O.B.

DEPTH (ft)	CASING (bl/ft)	SAMPLE				TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>	SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION	
		NO.	PEN. (in./REC.)	DEPTH (FT)	BLOWS/6"					
		S-1	24/24	0-2	1 1 2 4		Top: Moist, very loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, very loose, gray, SILT, little fine sand, trace clay. (SILT)	1.	TOPSOIL	
5		S-2	24/24	5-7	6 12 11 14			Wet, medium dense, gray, SILT, some fine SAND, trace clay. (SILT)	2.	ELASTIC SILT
10		S-3	17/17	10-11'5"	18 18 120/5"			Wet, medium dense, gray, fine to coarse SAND, some angular gravel, little silt, trace clay. (VERY GRAVELLY SAND)	3.	SANDY TILL
							REFUSAL @ 11'5". PROBABLE BEDROCK.			
15										
20										
25										
30										

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.5'. 2.. Encountered cobbles @ 7.0'. 3. Spoon refusal @ 11'5".	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:** a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A10**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 175.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	14/2	0-1'2"	13 29		Moist, medium dense, brown, fine to medium SAND and SILT, trace roots. (SANDY LOAM)	1.	TOPSOIL
					100/2"				
							REFUSAL @ 1'2". PROBABLE BEDROCK		
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 1'2". 2. Probe @ 8.0' away. Refusal @ 1.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A10**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **A12**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 171' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	14/12	0-12"	2 3	Dry, very loose, tan, organic SILT, some fine sand, trace gravel. (SILT LOAM)	1.	6" TOPSOIL	
					120/2"			SANDY SILT (SUBSOIL)	
						REFUSAL @ 1'2". PROBABLE BEDROCK			
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 1'2". 2. Probe @ 10' away, refusal @ 2.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A12**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A13**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 172.3' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	12:20	-	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/24	0-2	1 2	Top: Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, loose, tan, organic SILT, some fine sand. (SILT LOAM)	1.	TOPSOIL	
					4 9			SANDY SILT (SUBSOIL)	
		S-2	2/2	4-4'2"	120/2"	Dry, gray, very dense, fine to coarse SAND, little silt, trace weathered rock.	2.	WEATHERED ROCK	
5									
						REFUSAL @ 4'2". PROBABLE BEDROCK			
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.0'. 2. Spoon refusal @ 4'2'. 3. Probe 10' away. Refusal @ 3.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A13**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A15**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 175' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	1 5		Moist, medium dense, brown, fine to medium SAND and SILT, trace roots.		TOPSOIL
					8 28				
		S-2	19/19	2-3'7"	39 57		Dry, very dense, gray, fine to coarse SAND, some gravel, little silt. (GRAVELLY SAND)	1.	SAND WITH SILT AND GRAVEL
					80 120/1"				
5							REFUSAL @ 3'7". PROBABLE BEDROCK		
10							REFUSAL @ 3'7". PROBABLE BEDROCK		
15							REFUSAL @ 3'7". PROBABLE BEDROCK		
20							REFUSAL @ 3'7". PROBABLE BEDROCK		
25							REFUSAL @ 3'7". PROBABLE BEDROCK		
30							REFUSAL @ 3'7". PROBABLE BEDROCK		

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 3'7". 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A16**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 166' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/8	0-2	1 2	Top: Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, loose, tan,*	1.	TOPSOIL	
					2 2			SANDY SILT (FILL)	
		S-2	7/7	2-2'7"	57 120/1	Dry, very dense, gray, fine to coarse SAND and angular** REFUSAL @ 2'7". PROBABLE BEDROCK	2.	SANDY TILL	
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.0'. 2. Spoon refusal @ 2'7". 3. Probe 5.0' away. Refusal @ 4.0'.  *fine to medium SAND, some silt, trace gravel. (LOAMY SAND) **gravel. (VERY GRAVELLY SAND)	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A16**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A18**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 163' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	1:20	2.5'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/24	0-2	1 5	Moist, medium dense, brown, SILT and fine to medium SAND, trace roots. (SANDY LOAM)		TOPSOIL	
					7 9				
		S-2	13/13	2-3'1"	18 27	Wet, medium dense, gray/rust, SILT, some fine sand, trace gravel and clay. (SILT LOAM)	1.	SANDY SILT	
					120/1"				
5						REFUSAL @ 3'1". PROBABLE BEDROCK			
10						REFUSAL @ 3'1". PROBABLE BEDROCK			
15						REFUSAL @ 3'1". PROBABLE BEDROCK			
20						REFUSAL @ 3'1". PROBABLE BEDROCK			
25						REFUSAL @ 3'1". PROBABLE BEDROCK			
30						REFUSAL @ 3'1". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 3'1". 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A18**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A19**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 163.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	2:15	-	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	3/2"	0-3"	120/3"	Moist, very dense, brown, fine to medium SAND and SILT*		TOPSOIL	
						REFUSAL @ 3".			
						PROBABLE BEDROCK			
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 3". 2. Bedrock visible at ground surface in area of boring. *trace roots. (SANDY LOAM)	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A19**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A2**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 160.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	9:17	6.0'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/24	0-2	1 1	Top: Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, loose, brown, fine to medium SAND, some gravel, trace silt. (VERY GRAVELLY SAND)	1.	6" TOPSOIL	
					4 14			SAND AND GRAVEL (FILL)	
								ELASTIC SILT	
5		S-2	24/24	5-7	4 12			Top: Wet, medium dense, gray, SILT, some fine to medium sand (SILT). Bottom: Wet, medium dense, gray, fine to coarse SAND, some angular gravel, little silt (VERY GRAVELLY SAND).	2.
					14 18				
10						REFUSAL @ 9.0'. PROBABLE BEDROCK	3.	SANDY TILL	
15						REFUSAL @ 9.0'. PROBABLE BEDROCK	4.		
20						REFUSAL @ 9.0'. PROBABLE BEDROCK			
25						REFUSAL @ 9.0'. PROBABLE BEDROCK			
30						REFUSAL @ 9.0'. PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Cobbles encountered @ 2'. Stratum changing to silt. 2. Changing stratum @ 6.0'. 3. Cobbles encountered @ 6.5' and 7.0'. 4. Casing refusal @ 9.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A2**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A3**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 162.9' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	9:20	10.0'	Out	E.O.B.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/14	0-2	22 27	Dry, very dense, brown, fine to medium SAND and GRAVEL, little silt. (GRAVELLY SAND)			
					34 21				
5		S-2	24/12	5-7	25 38	Dry, very dense, tan, fine to medium SAND, some weathered rock, little silt. (VERY GRAVELLY SAND)	1.		
					77 100				
10						REFUSAL @ 10.0'. PROBABLE BEDROCK	2.		
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 6' and 7'. 2. Spoon refusal @ 10.0'.	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A3**







**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A7**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 166' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/8/08	13:10	9.0'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/12	0-2	6 14 18 7	Moist, dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)		TOPSOIL	
5		S-2	24/24	5-7	22 97 78 55	Dry, very dense, tan, fine to coarse SAND and GRAVEL, little silt, trace cobbles. (VERY GRAVELLY SAND)	1.	SAND WITH SILT AND GRAVEL	
10		S-3	10/8	10-10'10"	65 100/4"	Wet, very dense, brown/rust, fine to medium SAND and SILT, trace weathered rock.	2.	SANDY SILT	
						REFUSAL @ 12.0'. PROBABLE BEDROCK	3.		
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 6.0' and 6.5'. 2. Spoon refusal @ 10'9'. 3. Auger refusal @ 12.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A7**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **A9**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 166.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/8/08 DATE END 9/8/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	5 8	Moist, medium dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)		TOPSOIL	
					13 11				
5		S-2	7/6	5-5'7"	52 100/1"	Dry, very dense, tan, fine to medium SAND, little weathered rock, trace silt. (VERY GRAVELLY SAND)		WEATHERED ROCK	
10						REFUSAL @ 9.5'. PROBABLE BEDROCK	1.		
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 9.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

- NOTES:**
- a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.
  - b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.
  - c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.
  - d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.
  - e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **A9**











**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **B14**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 168' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/15/08 DATE END 9/15/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE				TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>	SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"				
		S-1	24/24	0-2	5 5	Moist, medium dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)		TOPSOIL	
					6 6				
5		S-2	24/20	5-7	27 33	Moist, very dense, gray/rust, fine to medium SAND, some silt, little gravel. (GRAVELLY LOAMY SAND)	1.	SILTY SAND WITH GRAVEL	
					45 48				
10						REFUSAL @ 8.0'. PROBABLE BEDROCK	2.		
15						REFUSAL @ 8.0'. PROBABLE BEDROCK	2.		
20						REFUSAL @ 8.0'. PROBABLE BEDROCK	2.		
25						REFUSAL @ 8.0'. PROBABLE BEDROCK	2.		
30						REFUSAL @ 8.0'. PROBABLE BEDROCK	2.		

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 6.0' and 7.0'. 2. Auger refusal @ 8.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **B2**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 162.6' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/9/08	9:00	8.0'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE				TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>	SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"				
		S-1	24/12	0-2	4 5 9 7		Moist, medium dense, brown, fine to medium SAND and SILT, trace gravel. (SANDY LOAM)		TOPSOIL
5		S-2	24/20	5-7	7 9 9 12		Moist, medium dense, gray SILT, little fine sand, trace clay (SILT).	1.	ELASTIC SILT
10		S-3	24/12	10-12	10 11 22 31		Wet, dense, gray/rust, fine to coarse SAND, little silt, trace angular gravel. (GRAVELLY LOAMY SAND)	2.	SANDY TILL
15							REFUSAL @ 14.0'. PROBABLE BEDROCK		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Stratum change @ 6.0'. 2. Auger refusal @ 14.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **B2**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **B4**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 159.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/16/08 DATE END 9/16/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/16/08	12:00	5.0	Out	E.O. B.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	7 8	Top: Moist, medium dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, medium dense, gray, organic SILT and fine SAND. (SILT LOAM)	1.	TOPSOIL	
					7 16			SANDY SILT (SUBSOIL)	
5		S-2	24/12	5-7	4 5	Wet, medium dense, gray, SILT, little fine sand, trace clay. (SILT)		ELASTIC SILT	
					9 13				
10		S-3	24/12	10-12	8 14	Wet, dense, gray, fine to coarse SAND, little silt, trace angular gravel. (GRAVELLY LOAMY SAND)		SANDY TILL	
					25 27				
15		S-4	15/0	15-16'3"	5 11	No Recovery	2.		
					100/3"				
						REFUSAL @ 16'3". PROBABLE BEDROCK			
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS: 1. Changing @ 1.0'. 2. Spoon refusal @ 16'3".	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		TRACE	0 - 10%
0 - 4	V. LOOSE	<2	V.SOFT		LITTLE	10 - 20%
4 - 10	LOOSE	2 - 4	SOFT		SOME	20 - 35%
10 - 30	M.DENSE	4 - 8	FIRM		AND	35 - 50%
30 - 50	DENSE	8 - 15	STIFF		PERCENT BY WEIGHT	
>50	V.DENSE	15 - 30	V.STIFF			
		>30	HARD			

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **B4**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **B6**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 161.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	4 5	Top: Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Dry, loose, brown, fine to coarse SAND, little gravel, trace organic silt. (GRAVELLY SAND)	1.	TOPSOIL	
					5 6			SAND WITH SILT AND GRAVEL	
5		S-2	24/20	5-7	5 8	Wet, loose, gray, fine SAND and SILT, trace clay. (SILT)		ELASTIC SILT	
					9 8				
10		S-3	24/12	10-12	11 15	Wet, medium dense, tan, fine to medium SAND and angular GRAVEL, trace silt. (VERY GRAVELLY SAND)	2.	SANDY TILL	
					17 20				
15						REFUSAL @ 14.5'. PROBABLE BEDROCK			
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.0'. 2. Auger refusal @ 14.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **B6**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **B7**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 162.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/12/08	2:00	7.5'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/18	0-2	5 10 13 18	Dry, medium dense, brown, fine to medium SAND, little gravel and silt. (GRAVELLY LOAMY SAND)	1.	TOPSOIL	
5		S-2	24/21	5-7	12 13 13 21			ELASTIC SILT WITH SAND	
10		S-3	24/14	10-12	14 12 16 20			Wet, medium dense, tan, fine to medium SAND and angular GRAVEL, trace silt. (VERY GRAVELLY SAND)	SANDY TILL
15						REFUSAL @ 13.0'. PROBABLE BEDROCK	2.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS: 1. Changing stratum @ 1.5'. 2. Auger refusal @ 13'.	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		TRACE	0 - 10%
0 - 4	V. LOOSE	<2	V.SOFT		LITTLE	10 - 20%
4 - 10	LOOSE	2 - 4	SOFT		SOME	20 - 35%
10 - 30	M.DENSE	4 - 8	FIRM		AND	35 - 50%
30 - 50	DENSE	8 - 15	STIFF		PERCENT BY WEIGHT	
>50	V.DENSE	15 - 30	V.STIFF			
		>30	HARD			

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **B7**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **B9**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 163.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/16/08 DATE END 9/16/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	6 3	Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)		TOPSOIL	
					5 5				
5		S-2	24/20	5-7	12 13	Moist, medium dense, gray, fine to coarse SAND and SILT, little fine gravel. (GRAVELLY SANDY LOAM)	1.	SILTY SAND WITH GRAVEL	
					15 19				
10		S-3	13/0	10-11'1"	12 46	No Recovery	2.		
					100/1"				
						REFUSAL @ 11'1". PROBABLE BEDROCK			
15						REFUSAL @ 11'1". PROBABLE BEDROCK			
20						REFUSAL @ 11'1". PROBABLE BEDROCK			
25						REFUSAL @ 11'1". PROBABLE BEDROCK			
30						REFUSAL @ 11'1". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 7.0'. 2. Spoon refusal @ 11'1".	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **B9**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C1**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 167' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/10/08 DATE END 9/10/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	5 5	Moist, medium dense, brown, fine to medium SAND and SILT. (SANDY LOAM)	1.	TOPSOIL	
					6 4				
5						REFUSAL @ 5.0'. PROBABLE BEDROCK			
10						REFUSAL @ 5.0'. PROBABLE BEDROCK			
15						REFUSAL @ 5.0'. PROBABLE BEDROCK			
20						REFUSAL @ 5.0'. PROBABLE BEDROCK			
25						REFUSAL @ 5.0'. PROBABLE BEDROCK			
30						REFUSAL @ 5.0'. PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 5.0'. 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C1**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C10**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 174' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	7 8		Top: Moist, medium dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Moist, medium dense, tan, fine to medium SAND, litte gravel, trace silt. (GRAVELLY SAND)	3" TOPSOIL	
					7 8			SAND WITH GRAVEL (FILL)	
5		S-2	15/13	5-7	37 63			Dry, very dense, tan, fine SAND and SILT, little fine gravel. (SILT LOAM)	SANDY SILT WITH GRAVEL
					100/3"		Dry, very dense, tan, fine SAND and SILT, little fine gravel, trace cobbles. (SILT LOAM)	1.	
10		S-3	5/5	10-10'5"	100/5"				
							REFUSAL @ 11.0'. PROBABLE BEDROCK		
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	FIRM
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:  
 1. Auger refusal @ 11.0'.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C11**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 187.09' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/9/08	9:00	8:00	Out	E.O.B.

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/18	0-2	12 14	Dry, dense, tan, fine to coarse SAND, little gravel, trace silt. (GRAVELLY SAND)		3" ASPHALT	
					26 28				
5		S-2	8/6	5-5'8"	31 100/2"	Dry, dense, tan, fine to coarse SAND and GRAVEL, trace silt. (VERY GRAVELLY SAND)	1.	SAND AND GRAVEL (FILL)	
						REFUSAL @ 6.0'. PROBABLE BEDROCK			
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 6.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C11**





**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C14**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 180.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/22	0-2	2 3	Dry, loose, tan, fine to medium SAND, some silt, little gravel. (GRAVELLY SANDY LOAM)	1.	TOPSOIL	
					7 23				
						REFUSAL @ 2.0'. PROBABLE BEDROCK			
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 2.0'. 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C14**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C15**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 180.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	2 4	Top: Moist, loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM) Bottom: Dry, loose, tan, *	1.	TOPSOIL	
					5 18			SANDY SILT (SUBSOIL)	
		S-2	24/24	2-3'10"	30 38	Dry, very dense, gray, fine to medium SAND, little silt and weathered rock. (GRAVELLY SAND)	2.	WEATHERED ROCK	
					57 120/4"				
5						REFUSAL @ 3'10". PROBABLE BEDROCK			
10						REFUSAL @ 3'10". PROBABLE BEDROCK			
15						REFUSAL @ 3'10". PROBABLE BEDROCK			
20						REFUSAL @ 3'10". PROBABLE BEDROCK			
25						REFUSAL @ 3'10". PROBABLE BEDROCK			
30						REFUSAL @ 3'10". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.5'. 2. Spoon refusal @ 3'10". 3. Bedrock visible at ground surface in area of boring.  *SILT and fine to medium SAND. (SILT LOAM)	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C15**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **C17**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 191' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	12/12	0-1	1 120	Moist, very loose, brown, fine to medium SAND and SILT*	1.	TOPSOIL	
						REFUSAL @ 1.0'. PROBABLE BEDROCK			
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 1.0'. 2. Bedrock visible at ground surface in area of boring. *trace roots (SANDY LOAM)	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C17**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C19**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 174' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/24	0-2	1 4	Dry, loose, tan, fine to medium SAND, some silt, trace gravel. (SANDY LOAM)		TOPSOIL	
					6 19				
		S-2	12/10	2-3	32 120	Dry, very dense, tan, fine to medium SAND, some* REFUSAL @ 3.0'. PROBABLE BEDROCK	1.	WEATHERED ROCK	
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 3.0'. 2. Bedrock visible at ground surface in area of boring.  *weathered rock, trace silt. (VERY GRAVELLY SAND)	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C19**



**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C20**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 168.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	1 4		Moist, medium dense, brown, fine to medium SAND and SILT, trace roots. (SANDY LOAM)	1.	TOPSOIL
					17 120				
							REFUSAL @ 2.0'. PROBABLE BEDROCK		
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 2.0'. 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C20**









**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C25**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 182.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	1 1	Moist, very loose, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)		TOPSOIL	
					2 3				
		S-2	24/24	2-4	4 10	Dry, medium dense, tan, fine to medium SAND and SILT, little gravel. (GRAVELLY LOAMY SAND)	1.	SANDY SILT WITH GRAVEL	
					19 46				
5						REFUSAL @ 4'5". PROBABLE BEDROCK			
10						REFUSAL @ 4'5". PROBABLE BEDROCK			
15						REFUSAL @ 4'5". PROBABLE BEDROCK			
20						REFUSAL @ 4'5". PROBABLE BEDROCK			
25						REFUSAL @ 4'5". PROBABLE BEDROCK			
30						REFUSAL @ 4'5". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 4'5". 2. Bedrock visible at ground surface in area of boring.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>





**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C28**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 186' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/9/08 DATE END 9/9/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/8	0-2	2 4	Dry, medium dense, tan, fine to medium SAND and SILT, trace roots. (SANDY LOAM)	1.	TOPSOIL	
					9 12				
		S-2	9/9	2-2'9"	47 120/3"	Dry, very dense, tan, fine to medium SAND and SILT,* REFUSAL @ 2'9". PROBABLE BEDROCK	2.		
5									
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 1.0'. 2. Spoon refusal @ 2'9". 3. Bedrock visible at ground surface in area of boring.  *trace roots. (SANDY LOAM)	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C28**











**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **C5**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 157.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/12/08	10:15	6.5'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/6	0-2	2 3	Moist, loose, brown, fine to medium SAND, some silt, trace roots and fine gravel. (SANDY LOAM)		TOPSOIL	
					3 5				
		S-2	24/24	2-4	12 12	Moist, dense, gray/rust SILT and fine to medium SAND, little gravel. (GRAVELLY SILT LOAM)		SANDY SILT WITH GRAVEL	
					23 27				
5		S-3	24/12	4-6	3 20	Moist, very dense, gray/rust SILT, some fine sand, little gravel. (VERY GRAVELLY SILT LOAM)		WEATHERED ROCK	
					33 35				
		s-4	21/20	6-7'3"	19 19	Wet, dense, gray/rust, fine to coarse SAND, some silt and weathered rock. (VERY GRAVELLY SAND)	1.		
					27 100/3"				
10						REFUSAL @ 7'3". PROBABLE BEDROCK			
15						REFUSAL @ 7'3". PROBABLE BEDROCK			
20						REFUSAL @ 7'3". PROBABLE BEDROCK			
25						REFUSAL @ 7'3". PROBABLE BEDROCK			
30						REFUSAL @ 7'3". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @7'3". 2. Probe @ 6.0' away. Refusal @ 6.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **C5**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **C6**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 157.8' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION	
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>				
		S-1	24/6	0-2	1 2		Moist, loose, brown, fine to medium SAND and SILT, trace roots. (SANDY LOAM)	1.	TOPSOIL	
					3 5				SANDY SILT WITH GRAVEL	
		S-2	22/20	2-3'10"	3 19		Moist, very dense, gray/rust, SILT and fine to coarse SAND, little gravel. (GRAVELLY SILT LOAM)			
					56 120/4					
5							REFUSAL @ 4.0'. PROBABLE BEDROCK			
10							REFUSAL @ 4.0'. PROBABLE BEDROCK			
15							REFUSAL @ 4.0'. PROBABLE BEDROCK			
20							REFUSAL @ 4.0'. PROBABLE BEDROCK			
25							REFUSAL @ 4.0'. PROBABLE BEDROCK			
30							REFUSAL @ 4.0'. PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 4.0'. 2. Probe @ 6.0' away. Refusal @ 3.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>







**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D1**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilix Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 146.3' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/11/08 DATE END 9/11/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/11/08	11:50	7.0'	Out	E.O.B.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

DEPTH (ft)	CASING (blift)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/8	0-2	7 8	Dry, medium dense, tan, fine to coarse SAND, little gravel, trace silt. (GRAVELLY SAND)	1.	3" ASPHALT	
					11 10				2.
5		S-2	24/12	5-7	8 7	Moist, medium dense, gray, fine to coarse SAND, little gravel, trace silt. (GRAVELLY SAND)	3.		
					7 8				4.
10		S-3	24/12	10-12	22 33	Wet, very dense, gray, fine to medium SAND and angular GRAVEL, some silt. (GRAVELLY LOAMY SAND)	5.		
					34 39				
15		S-4	13/4	15-16'1"	22 43	Wet, very dense, gray, fine to medium SAND and angular GRAVEL, some silt. (GRAVELLY LOAMY SAND)			
					100/1"				
						REFUSAL @ 16'1". PROBABLE BEDROCK			
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 1.0'. 2. Auger refusal @ 3.0' +/- boulders. 3. Changing stratum @ 7.0'. 4. Encountered cobbles @ 11.0'. 5. Spoon refusla @ 16'1".	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D1**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D10**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 147' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/11/08 DATE END 9/11/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/11/08	2:40	6.00'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/4	0-2	11 10	Moist, medium dense, brown, fine SAND and SILT, trace roots. (SANDY LOAM)		TOPSOIL	
					10 9				
5		S-2	24/9	5-7	13 27	Wet, very dense, tan, fine to medium SAND, some silt, little angular gravel. (GRAVELLY LOAMY SAND)	1.	SANDY TILL	
					30 43				
						REFUSAL @ 7.5'. PROBABLE BEDROCK			
10									
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 7.5'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D10**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **D11**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 167.7' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	1 1	Moist, very loose, tan, SILT, some fine sand, trace gravel and roots. (SILT LOAM)	1.	TOPSOIL	
					2 4				
		S-2	20/20	2-3'8"	4 19	Moist, very dense, tan, SILT, some fine sand, trace gravel and roots. (SILT LOAM)	2.	SANDY SILT (SUBSOIL)	
					44 120/2"				
5						REFUSAL @ 3'8". PROBABLE BEDROCK			
10						REFUSAL @ 3'8". PROBABLE BEDROCK			
15						REFUSAL @ 3'8". PROBABLE BEDROCK			
20						REFUSAL @ 3'8". PROBABLE BEDROCK			
25						REFUSAL @ 3'8". PROBABLE BEDROCK			
30						REFUSAL @ 3'8". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.5'. 2. Spoon refusal @ 3'8". 3. Probe 5.0' away. Refusal @ 4.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:** a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D11**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D2**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 146' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/11/08 DATE END 9/11/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/11/08	1:00	8.00'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	12 10	Dry, medium dense, brown, fine to medium SAND, little silt, trace gravel and glass. (SAND)		3" ASPHALT	
					10 6			SAND WITH SILT (FILL)	
5		S-2	24/10	5-7	14 14	Moist, medium dense, gray, fine to medium SAND and angular GRAVEL, some silt. (GRAVELLY LOAMY SAND)		SANDY TILL	
					15 17				
10		S-3	24/10	10-12	30 40	Wet, very dense, gray, fine to coarse SAND and angular GRAVEL, some silt. (GRAVELLY LOAMY SAND)			
					43 60				
15						REFUSAL @ 13.0'. PROBABLE BEDROCK	1.		
20						REFUSAL @ 13.0'. PROBABLE BEDROCK			
25						REFUSAL @ 13.0'. PROBABLE BEDROCK			
30						REFUSAL @ 13.0'. PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Auger refusal @ 13.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D2**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **D3**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 144.5' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/11/08 DATE END 9/11/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/11/08	9:30	4.00'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/6	0-2	6 4	Moist, loose, tan, fine to coarse SAND, some gravel, little silt. (GRAVELLY SAND)			
					3 2				
5		S-2	24/20	5-7	1 1	Wet, very loose, brown, organic SILT, some organic material. (SILT)			
					1 2				
10		S-3	3/3	10-10'3"	100/3"	Wet, very dense, gray, fine to medium SAND, some silt, trace gravel. (LOAMY SAND)	1. 2.		
						REFUSAL @ 10'3". PROBABLE BEDROCK			
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 8.0'. 2. Spoon refusal @ 10'3".	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D3**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **D4**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 143.6' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/11/08 DATE END 9/11/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/11/08	7:15	2.0'	Out	E.O.B.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/12	0-2	5 6 11 16		Wet, medium dense, gray, fine to coarse SAND, some gravel, trace silt. (SAND)	1.	3" ASPHALT
5		S-2	24/12	5-7	10 10 9 9		Wet, loose, gray, fine to coarse SAND and GRAVEL, trace silt. (VERY GRAVELLY SAND)		SAND WITH GRAVEL (FILL)
10		S-3	24/12	10-12	3 3 3 4		Wet, loose, brown, organic SILT, some organic material. (SILT)	2.	
15		S-4	24/20	15-17	1 2 2 2		Wet, soft, brown, CLAY, some organic silt. (CLAY)	3.	PEAT
								4.	CLAY
20							REFUSAL @ 17.0'. PROBABLE BEDROCK		
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 2.0'. 2. Changing stratum @ 11.0'. 3. Changing stratum @ 15.5'. 4. Auger refusal @ 17.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:** a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D4**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D5**

SHEET  1  OF  1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 148' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/12/08 DATE END 9/12/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 3 1/4 OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	1 1	Top: Moist, medium dense, brown, fine to medium SAND, some silt, trace roots. (SANDY LOAM)Bottom: Dry,*	1.	TOPSOIL	
					10 18				
		S-2	14/12	2-3'2"	27 48	Dry, very dense, tan, fine to medium SAND and SILT, little gravel. (GRAVELLY SANDY LOAM)	2.	SANDY SILT WITH GRAVEL	
					120/2"				
5						REFUSAL @ 3'2". PROBABLE BEDROCK	3.		
10						REFUSAL @ 3'2". PROBABLE BEDROCK			
15						REFUSAL @ 3'2". PROBABLE BEDROCK			
20						REFUSAL @ 3'2". PROBABLE BEDROCK			
25						REFUSAL @ 3'2". PROBABLE BEDROCK			
30						REFUSAL @ 3'2". PROBABLE BEDROCK			

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 1.0'. 2. Enounered cobbles @ 2.5'. 3. Spoon refusal @ 3'2'. 4. Probe 5.0' away. Refusal @ 4.5'. *medium dense, tan, SILT and fine SAND, little fine gravel, trace roots. (SILT LOAM)	TRACE	0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE	10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME	20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND	35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT	
		>30	HARD			

**NOTES:** a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D5**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
**ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS**

BORING NO. **D6**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 149.8' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/10/08 DATE END 9/10/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/10/08	10:12	9.00'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/15	0-2	9 10 10 11	Moist, medium dense, brown, SAND and SILT, trace roots. (SANDY LOAM)		TOPSOIL	
5		S-2	24/20	5-7	33 36 25 29	Moist, very dense, gray, SAND and SILT, little gravel. (GRAVELLY SILT LOAM)		SANDY SILT WITH GRAVEL	
10		S-3	8/8	10-10'8"	53 100/2"	Wet, very dense, gray, fine to coarse SAND, some silt, little angular gravel. (GRAVELLY LOAMY SAND)	1.	SANDY TILL	
						REFUSAL @ 10'8". PROBABLE BEDROCK			
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Spoon refusal @ 10'8".	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D6**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D7**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 149' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/10/08 DATE END 9/10/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.  
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.  
 CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/10/08	1:36	8.0'	Out	E.O.B.

DEPTH (ft)	CASING (blft)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/20	0-2	9 10 33 49	Moist, dense, brown, fine to medium SAND and SILT, trace roots. (SANDY LOAM)		TOPSOIL	
5		S-2	16/12	5-6'4"	33 72 100/4"	Dry, very dense, tan, fine to coarse SAND, little gravel, trace silt. (GRAVELLY SAND)	1.	SAND WITH GRAVEL	
10		S-3	19/15	10-11'7"	23 41 91 100/1"	Wet, very dense, gray/rust, fine SAND and SILT, little gravel. (GRAVELLY LOAMY SAND)	2.	SANDY SILT WITH GRAVEL	
15						REFUSAL @ 13.0'. PROBABLE BEDROCK			
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Encountered cobbles @ 6'4". 2. Auger refusal @ 13.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

NOTES: a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.  
 b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.  
 c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.  
 d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.  
 e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D7**

**PARE CORPORATION**

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS  
 ENGINEERS \*\*\* PLANNERS \*\*\* CONSULTANTS

BORING NO. **D8**

SHEET 1 OF 1

PROJECT Hancock Village Geotechnical Evaluation PROJECT NO. 08193.00  
Chestnut Hill, Massachusetts CHKD. BY \_\_\_\_\_

BORING CO. Drilex Environmental BORING LOCATION SEE EXPLORATION LOCATION PLAN  
 FOREMAN \_\_\_\_\_ GROUND SURFACE ELEVATION 147.2' +/- DATUM NGVD 29  
 ENGINEER V. Arauco Vera DATE START 9/10/08 DATE END 9/10/08

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 LB. HAMMER FALLING 30 IN.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 LB. HAMMER FALLING 24 IN.

CASING SIZE: 4 1/4 HSA OTHER: \_\_\_\_\_

**GROUNDWATER READINGS**

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/10/08	11:45	9.0'	Out	E.O.B.

DEPTH (ft)	CASING (bit)	SAMPLE					SAMPLE DESCRIPTION	REMARKS	STRATUM DESCRIPTION
		NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT <sup>2</sup> OR KG/CM <sup>2</sup>			
		S-1	24/10	0-2	5 8	Dry, medium dense, tan, SAND, little gravel, trace silt. (SAND)			
					11 14				
5		S-2	24/10	5-7	19 20	Moist, dense, gray, fine SAND and SILT, trace clay. (SILT)	1.		
					23 25				
						Wet, very dense, gray, fine to medium SAND, some angular gravel, trace silt. (VERY GRAVELLY SAND)	2.		
10		S-3	24/18	10-12	19 29				
					34 43				
						REFUSAL @ 15.0'. PROBABLE BEDROCK	3.		
15									
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS		REMARKS:	BURMISTER CLASSIFICATION
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
0 - 4	V. LOOSE	<2	V.SOFT	1. Changing stratum @ 6.5'. 2. Changing stratum @ 10.0'. 3. Auger refusal @ 15.0'.	TRACE 0 - 10%
4 - 10	LOOSE	2 - 4	SOFT		LITTLE 10 - 20%
10 - 30	M.DENSE	4 - 8	FIRM		SOME 20 - 35%
30 - 50	DENSE	8 - 15	STIFF		AND 35 - 50%
>50	V.DENSE	15 - 30	V.STIFF		PERCENT BY WEIGHT
		>30	HARD		

**NOTES:**

a) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. SOLID LINES INDICATE AN OBSERVED SOIL CHANGE. DASHED LINES INDICATE AN APPROXIMATED SOIL BOUNDARY.

b) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

c) STANDARD PENETRATION RESISTANCE, N-VALUE, IS THE NUMBER OF BLOWS REQUIRED TO DRIVE THE SAMPLER FROM 6-18 INCHES OF PENETRATION.

d) UNCONFINED COMPRESSION STRENGTH, Qu, WAS DETERMINED FROM THE SPLIT SPOON SAMPLE UTILIZING A POCKET PENETROMETER.

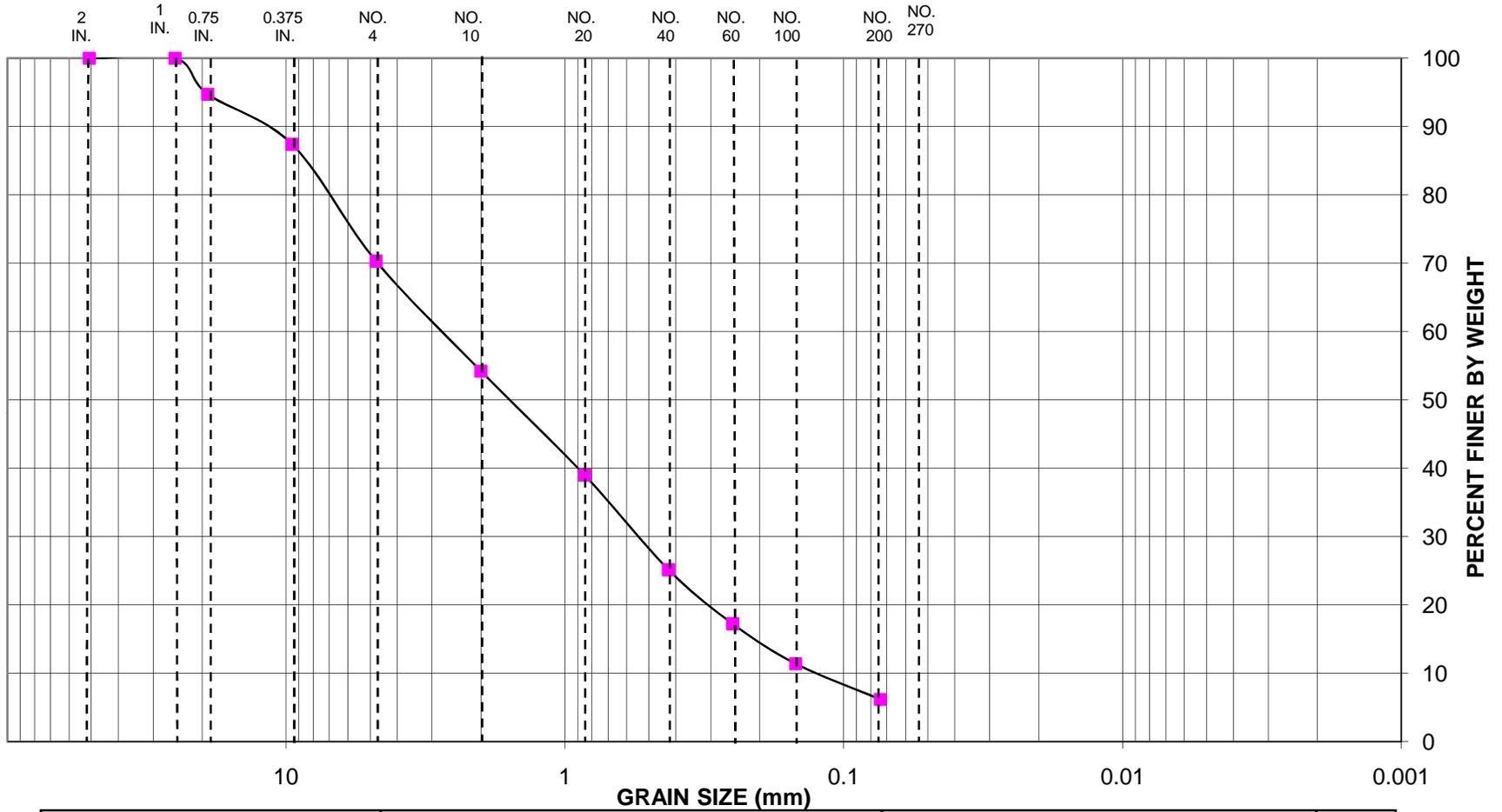
e) TO CONVERT FEET TO METERS MULTIPLY BY 3.048X10<sup>-1</sup>

BORING NO. **D8**



**APPENDIX C:**  
Laboratory Testing Data

### U.S. STANDARD SIEVE SIZE



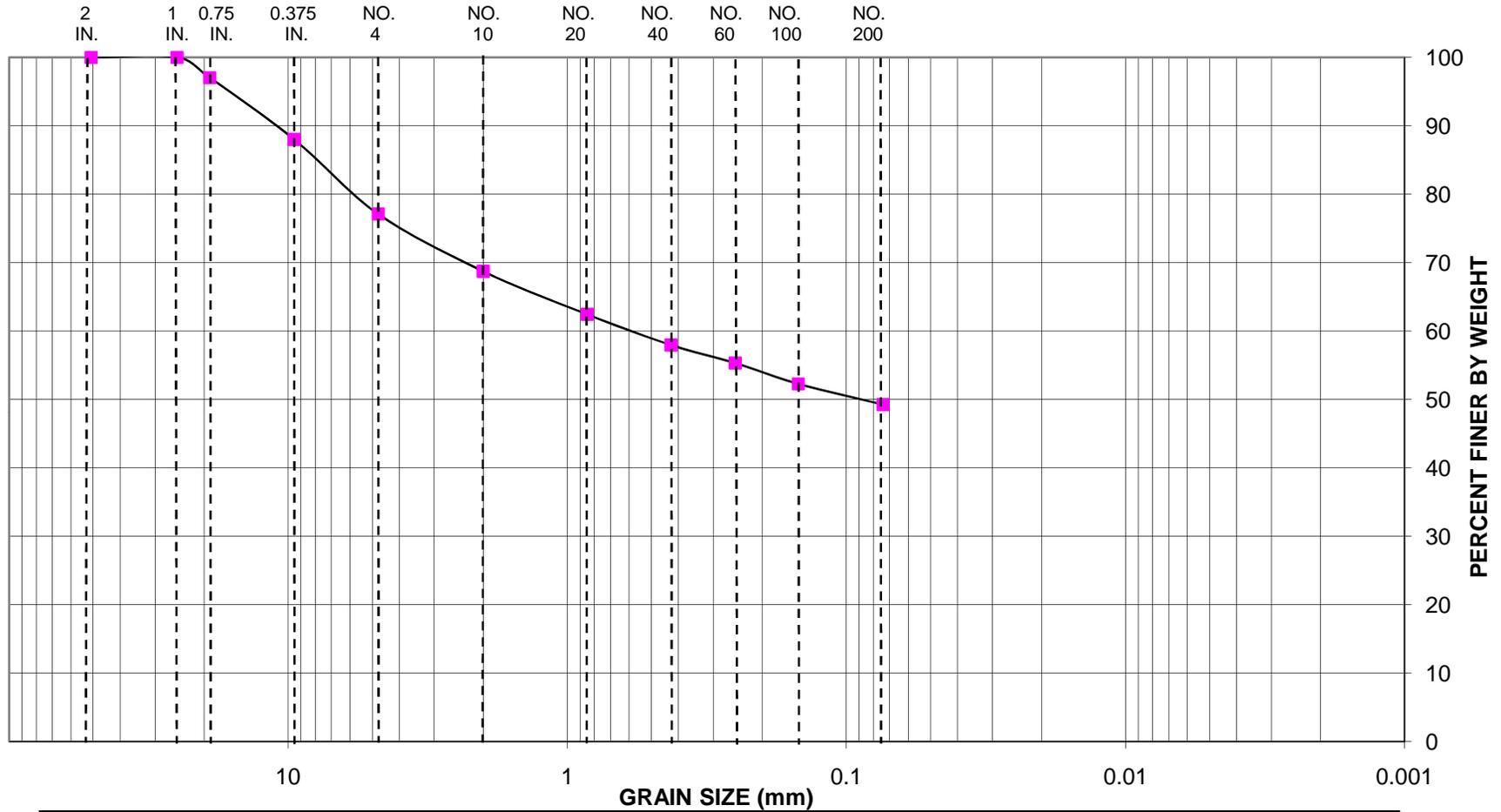
GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
1	Hancock Village A-7, S-2 5' - 7'	Burmister - (Tan fine to coarse SAND, some fine Gravel, trace silt) Unified Soil Classification System - (SP-SM-Tan Well graded SAND with silt and fine gravel) Soil Textural Triangle - Very gravelly SAND



# U.S. STANDARD SIEVE SIZE

TESTED BY: VAV DATE: 9/19/08 CHECK BY: ARO DATE: 9/22/08



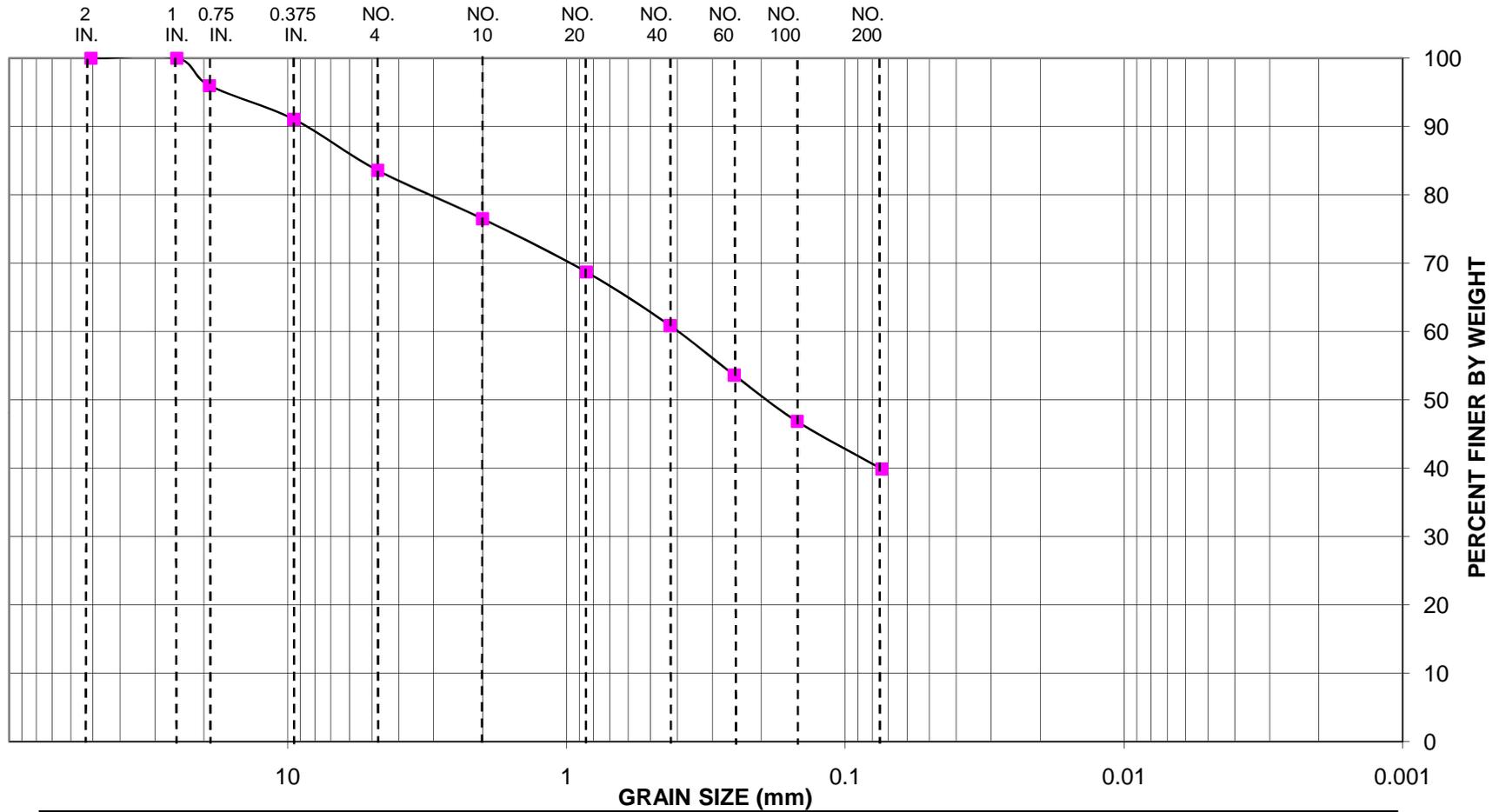
GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
2	Hancock Village A-4 S-2 5' - 7'	Burmister - (Gray SILT, some sand, little fine Gravel) Unified Soil Classification System - (ML Gray Sandy SILT with fine gravel) Soil Textural Triangle - Silt LOAM



# U.S. STANDARD SIEVE SIZE

TESTED BY: VAV DATE: 9/19/08 CHECK BY: ARO DATE: 9/22/08



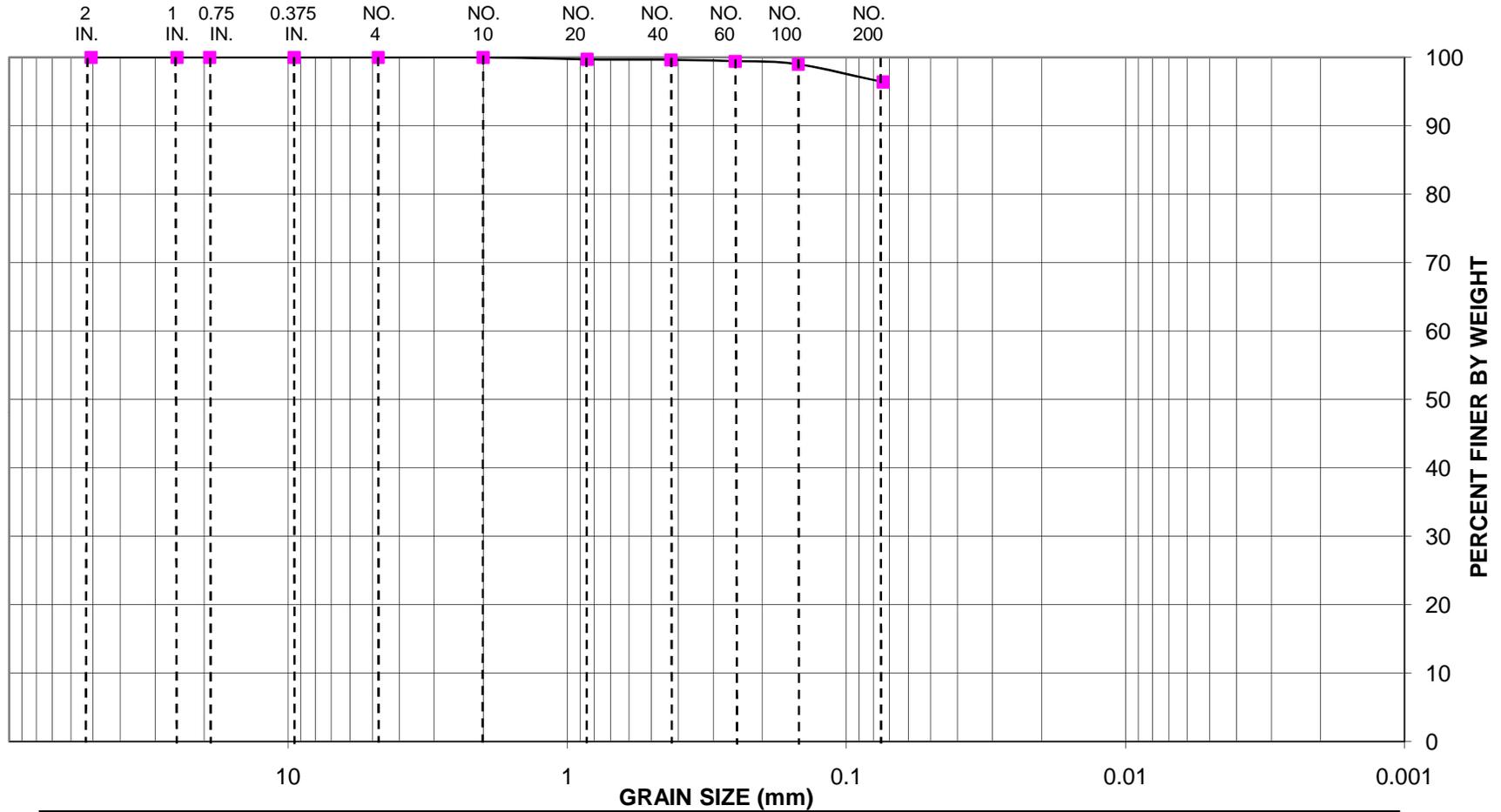
GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
<b>3</b>	Hancock Village B-9 S-2 5' - 7'	Burmister - (Gray fine to medium SAND and SILT, little fine Gravel) Unified Soil Classification System - (SM-Gray Silty SAND with fine gravel) Soil Textural Triangle - Gravelly Sandy LOAM



# U.S. STANDARD SIEVE SIZE

TESTED BY: VAV DATE: 9/19/08 CHECK BY: ARO DATE: 9/22/08

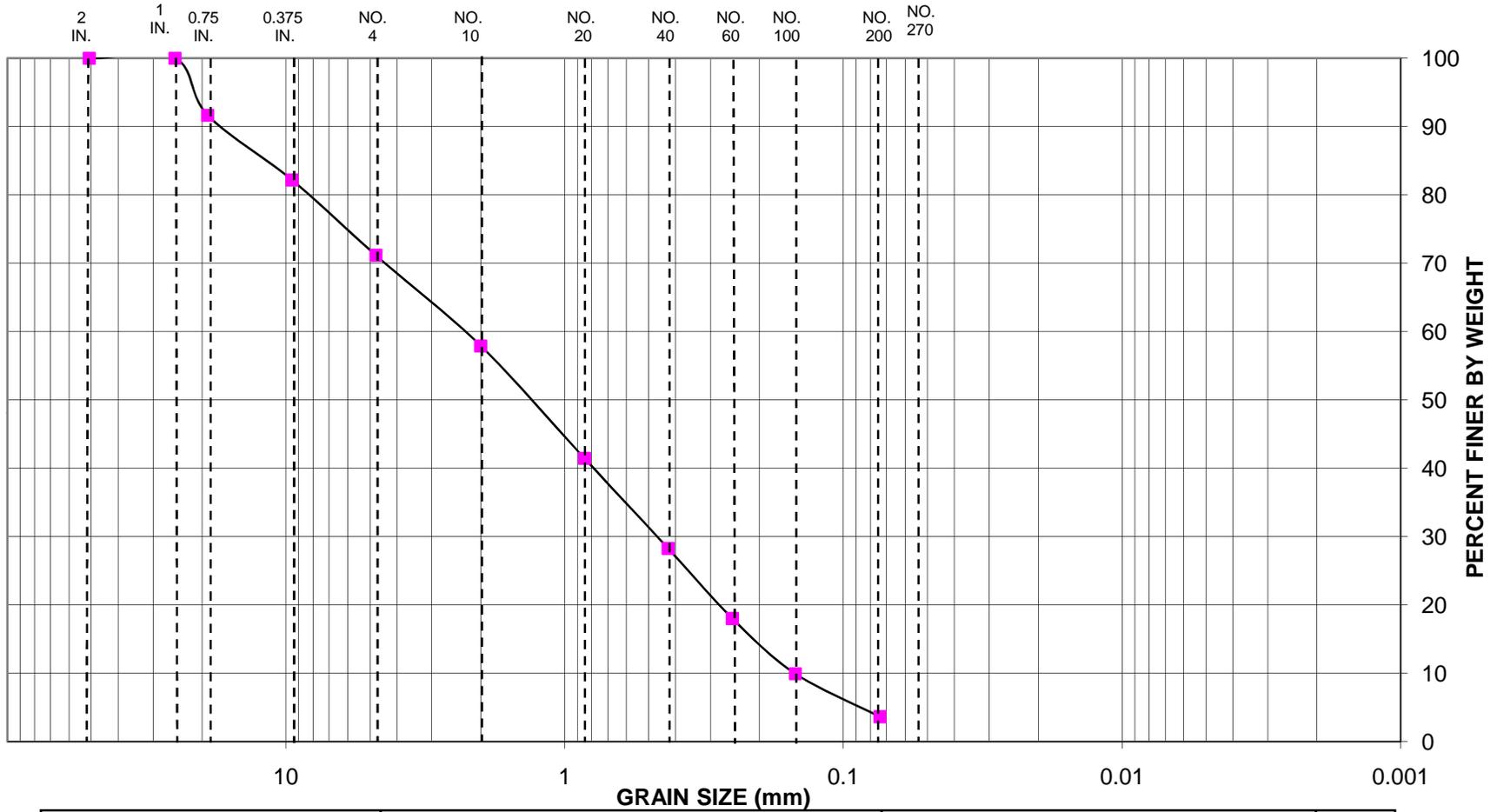


GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
<b>4</b>	Hancock Village B-5 S-2 5' - 7'	Burmister - (Gray SILT, trace fine sand) Unified Soil Classification System - (MH-Gray Elastic SILT) Soil Textural Triangle - SILT



### U.S. STANDARD SIEVE SIZE

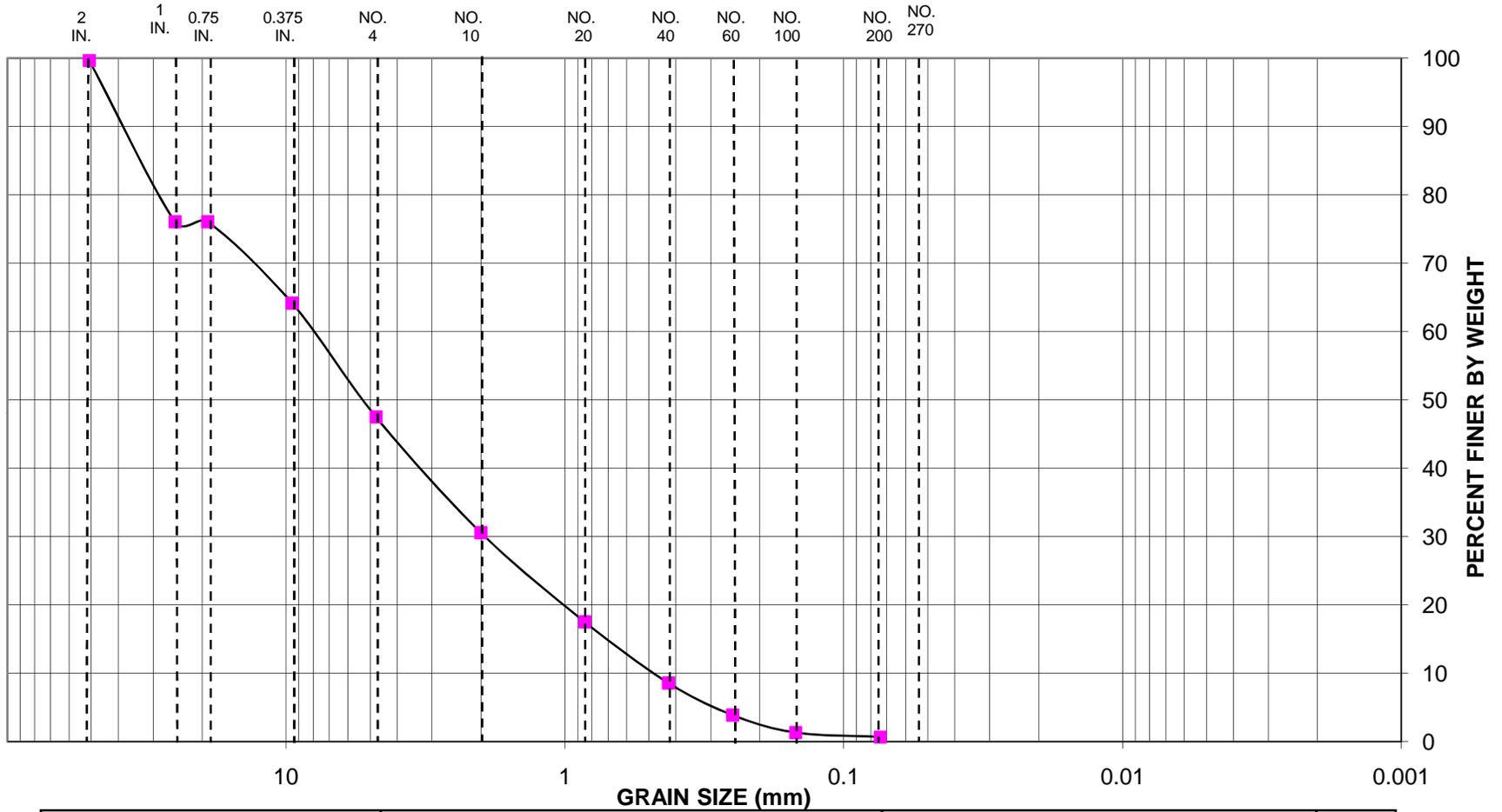


GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
5	Hancock Village D-7, S-2 5' - 6'4"	Burmister - (Tan fine to coarse SAND, little fine Gravel, trace silt) Unified Soil Classification System - (SW Tan Well graded SAND with gravel) Soil Textural Triangle - Gravelly SAND



### U.S. STANDARD SIEVE SIZE



GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST NO.	MATERIAL SOURCE	REMARKS
6	Hancock Village C-11, S-2 5' - 7'	Burmister - (Tan GRAVEL and SAND, trace silt) Unified Soil Classification System - (GP-Tan Poorly graded GRAVEL with sand) Soil Textural Triangle - Very gravelly SAND

