

APPENDIX 1



EXPERIENCE YOU CAN BUILD ON

**SUBSURFACE EXPLORATION & GEOTECHNICAL
ENGINEERING ASSESSMENT REPORT
FOR**

**East Brunswick Memorial Middle School
City of East Brunswick, Middlesex County, New Jersey**

Submitted to:

**Mr. Jeffrey D. Venezia, AIA
DESIGN IDEAS GROUP ARCHITECTURE + PLANNING, LLC.
15 Bethany Street
New Brunswick, New Jersey 08901**

February 9, 2010



1800 ROUTE 34, SUITE 101 • WALL, NEW JERSEY 07719 • O: 732.312.9800 F: 732.312.9801

VISIT US ONLINE: WWW.FPAENGINEERS.COM

FPA No. 2527.001



February 9, 2010

Mr. Jeffrey D. Venezia, AIA
Principal
DESIGN IDEAS GROUP ARCHITECTURE + PLANNING, LLC.
15 Bethany Street
New Brunswick, New Jersey 08901

Re: Report of Subsurface Exploration &
Geotechnical Engineering Assessment
East Brunswick Memorial Elementary School
City of East Brunswick, Middlesex County, New Jersey
FPA No. 2527.001R1

Dear Mr. Venezia:

INTRODUCTION

This report presents the results of a Subsurface Exploration and Geotechnical Engineering Evaluation performed in connection with the proposed Memorial Elementary School to be located in the City of East Brunswick, Middlesex County, New Jersey. The project site is located along Innes Road between Ryders Lane and Jensen Street and is designated as Block 8608, Lot 5.27 on the City of East Brunswick Tax Map. It is our understanding that the existing one-story masonry structure will be removed to accommodate the proposed improvements. A map indicating the regional location of the project site is presented on Drawing No. 1, "Regional Location Plan."

It is our understanding that the proposed Memorial Elementary School will be 2 stories high and will occupy a plan area of approximately 58,700 square feet. It is our further understanding that a portion of the Academic Wing will include a basement level. The existing site grades at the project site vary from approximately elevation +121 feet to +125 feet. The finished first floor elevation of the proposed building will be situated at approximately elevation +125 feet. We anticipate that minimal site re-grading will be required to attain the proposed site grades. Additional improvements shall include paved parking areas, a stormwater management system and associated utilities. The existing site layout is presented on Drawing No. 2, "Test Boring Location Plan."

The purpose for our participation on the project at this time was to explore the subsurface conditions in the vicinity of the proposed building and paved parking areas and to develop geotechnical engineering recommendations to facilitate the design and construction of the proposed improvements. Our scope of work included the subcontracting of 10 test borings, technical observation of the field work, engineering evaluation of the encountered subsurface conditions and the preparation of this

geotechnical report. This work has been performed in accordance with our revised proposal dated October 14th, 2009.

SUBSURFACE EXPLORATION

French & Parrello Associates, P.A. (FPA) observed the performance of 10 test borings on January 29th and February 1st, 2010 to characterize the subsurface soil and groundwater conditions in the vicinity of the proposed building and paved parking areas. The field work was performed by a test boring subcontractor while under the full-time technical observation by a representative of FPA. The approximate as-drilled test boring locations are presented on Drawing No. 2, "Test Boring Location Plan."

The test borings, designated as B-1 through B-10, were advanced to depths ranging from approximately 10 feet to 32 feet below the existing grade using hollow stem auger techniques. Soil samples were obtained from within the boreholes by advancing a standard 2-inch diameter split-spoon sampler in accordance with ASTM Test Method D-1586, The Standard Penetration Test. All soil samples were classified in the field using the Burmister Soil Classification System. The soil samples returned to our in-house soils laboratory will be stored for a period of 60 days from the date of this report.

The depth to groundwater was measured at the completion of the test borings. Details of the drilling procedures, soil classifications, groundwater depths and Standard Penetration Test results are presented on the boring logs in Appendix A.

SITE CONDITIONS

Regional Geology

Based on our review of the published geologic literature pertaining to the area, the subsurface conditions at the project site consist of stratified, alluvial materials deposited during the Quaternary period. The alluvial soils are composed primarily of stratified sand and silts intermixed with varying amounts of gravel. The depth to bedrock is usually greater than 10 feet.

Subsurface Conditions

The soils encountered within the test borings consisted of granular soils throughout the entire profile. The granular soils consisted of coarse to fine sand intermixed with varying amounts of medium to fine gravel as well as silt and clay. Based upon the results of the Standard Penetration Testing, the relative density of the granular soils varied from loose to medium-dense from the ground surface to a depth of approximately 12 feet and medium-dense to dense thereafter.

The static groundwater table was not encountered within any of the test borings. Seasonal fluctuations in the groundwater level, as well as the possible presence of perched groundwater, should be anticipated. For a more detailed description of the subsurface soil and groundwater conditions encountered, please refer to the test boring logs presented in Appendix A.

SEISMIC CONSIDERATION

We have reviewed the guidelines presented in the New Jersey Edition of the 2006 International Building Code (IBC) regarding seismic design. Based upon our review, we offer the following site characterization parameters:

Short Period Spectral Acceleration (S_s)	0.328g
Spectral Acceleration @ 1 Second (S_1).....	0.066g
Site Class.....	D

DISCUSSION & RECOMMENDATIONS

Based upon the results of our subsurface exploration program and our geotechnical engineering evaluation, it is our opinion that the proposed building may be founded on conventional shallow foundations. We do not anticipate that the static groundwater table will be encountered within foundation excavations. In the event that perched groundwater is encountered in foundation excavations, it is our opinion that the associated dewatering may be accomplished using in-trench sump pumps, placed within crushed stone. We recommend that any dewatering be specified on a performance basis.

Shallow Foundations

Shallow foundations bearing within the native soil deposits or on structural fills may be designed for a net allowable bearing pressure of 3,000 psf. We recommend that continuous wall footings and individual column footings be designed with minimum widths of 20 inches and 30 inches, respectively. In accordance with the IBC regulations for frost protection, we recommend that the bottom of all foundations exposed to outside ambient temperatures extend to a minimum depth of 36 inches below adjacent finished grades.

We estimate that footings loaded to the recommended net allowable static bearing pressure will undergo less than one inch of total settlement. We anticipate that post construction differential settlements will be less than ½ inch over a horizontal distance of 50 feet. Since the underlying soils consist predominantly of granular soils, we anticipate that the majority of the total settlements will occur within one month after the building loads are applied.

Floor Slabs

Provided that the required earthwork is accomplished in accordance with the recommendations contained in this report, we recommend that a modulus of subgrade reaction of 225 pci will be suitable for use in the structural design of the concrete slabs.

Foundation Excavation and Subgrade Preparation

We anticipate that the Contractor may utilize conventional earth excavating equipment for performing excavations within the in-situ soil deposits. We recommend that all excavations for foundations be hand trimmed, in a workmanlike manner, and that the footing and slab subgrades consisting of granular soil be compacted using a walk-behind, smooth-drum, vibratory roller to densify the subsoils and to delineate soft regions. Any areas exhibiting excessive yielding should be over-excavated and backfilled using approved, on-site soils that are readily compactable or imported Type "G" Fill. In the event that foundation excavations are conducted during inclement weather, or if the excavations are left open overnight, we recommend that the foundation subgrades be over-excavated to allow for the placement of a 6-inch thick layer of NJDOT No. 57 coarse graded aggregate. The coarse graded aggregate will serve as a work mat to mitigate disturbance of the subgrade due to construction and inclement weather and will facilitate in-trench dewatering, if necessary. The gradational requirements for NJDOT No. 57 coarse graded aggregate and Type "G" fill are presented in Appendix B.

Lateral Earth Pressures

To facilitate the design of the below-grade walls, we offer the following soil parameters:

In-Situ Soils

Total Unit Weight (γ).....	120 pcf
Cohesion (c).....	0 psf
Angle of Internal Friction (ϕ)	30°
Active Earth Pressure Coefficient (K_a).....	0.33
Passive Earth Pressure Coefficient (K_p).....	3.00
At-Rest Earth Pressure Coefficient (K_o).....	0.50
Coefficient of Base Friction (μ).....	0.45

The earth pressure coefficients presented above were calculated using the Rankine Method, assuming level backfill. In the event that concentrated loads are located in the vicinity of below grade walls, we recommend that the potential for additional lateral pressures on the walls be evaluated. The magnitude of any lateral stress increases may be calculated using published solutions based on elastic theory. We recommend that any walls located adjacent to roadways or parking areas be designed for

a uniform surcharge of 250 psf at the ground surface. The use of heavy compaction equipment within 5 feet of the walls is prohibited.

Earthwork

We recommend that the fills required under or in the vicinity of any proposed structures and paved areas consist of approved, readily compactable on-site soils or imported Type "G" fill. The gradational requirements for Type "G" Fill are presented in Appendix B. Fills in structural areas and beneath pavements should be placed in maximum 12-inch thick layers and compacted to a minimum of 95 percent of their maximum dry density as determined by ASTM Test Method D-1557, The Modified Proctor Test. Non-structural fills should be compacted to a minimum of 90 percent of their maximum dry density as determined by ASTM Test Method D-698, The Standard Proctor.

Pavement

The subsurface conditions encountered at the site consist of granular soils throughout the entire profile. The existing subsurface conditions will provide adequate support for pavement. Isolated remediation of the pavement subgrade may be required in areas where a yielding subgrade is encountered during construction. Provided the required earthwork is performed in accordance with the recommendations contained in this report, it is our opinion that a subgrade resilient modulus of 7,500 psi will be suitable for use in the design of the flexible pavement section.

CLOSING & LIMITATIONS

The recommendations contained herein are contingent upon subsurface conditions remaining consistent with those encountered during our subsurface exploration. They are also contingent upon the basis that all foundation related aspects of construction, including stripping, controlled fill operation, foundation excavation, and subgrade preparation, be observed by a representative of FPA. This is to observe compliance with the design concepts and specifications and to allow design changes in the event that subsurface conditions differ from those anticipated prior to construction.

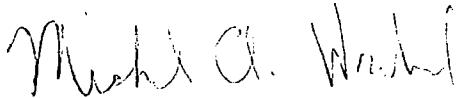
The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or biologically toxic materials in the soil, surface water, groundwater or air, on or below or around this site.

Services performed by FPA during this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty, guarantee, or fiduciary responsibility is included or intended in the services provided.

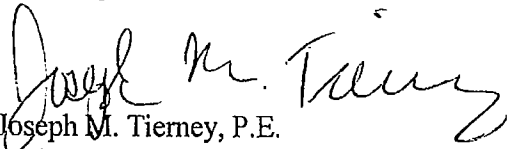
Should you have any questions, or if we can be of service to you in the future, please feel free to contact us.

Very truly yours,

FRENCH & PARRELLO ASSOCIATES, P.A.

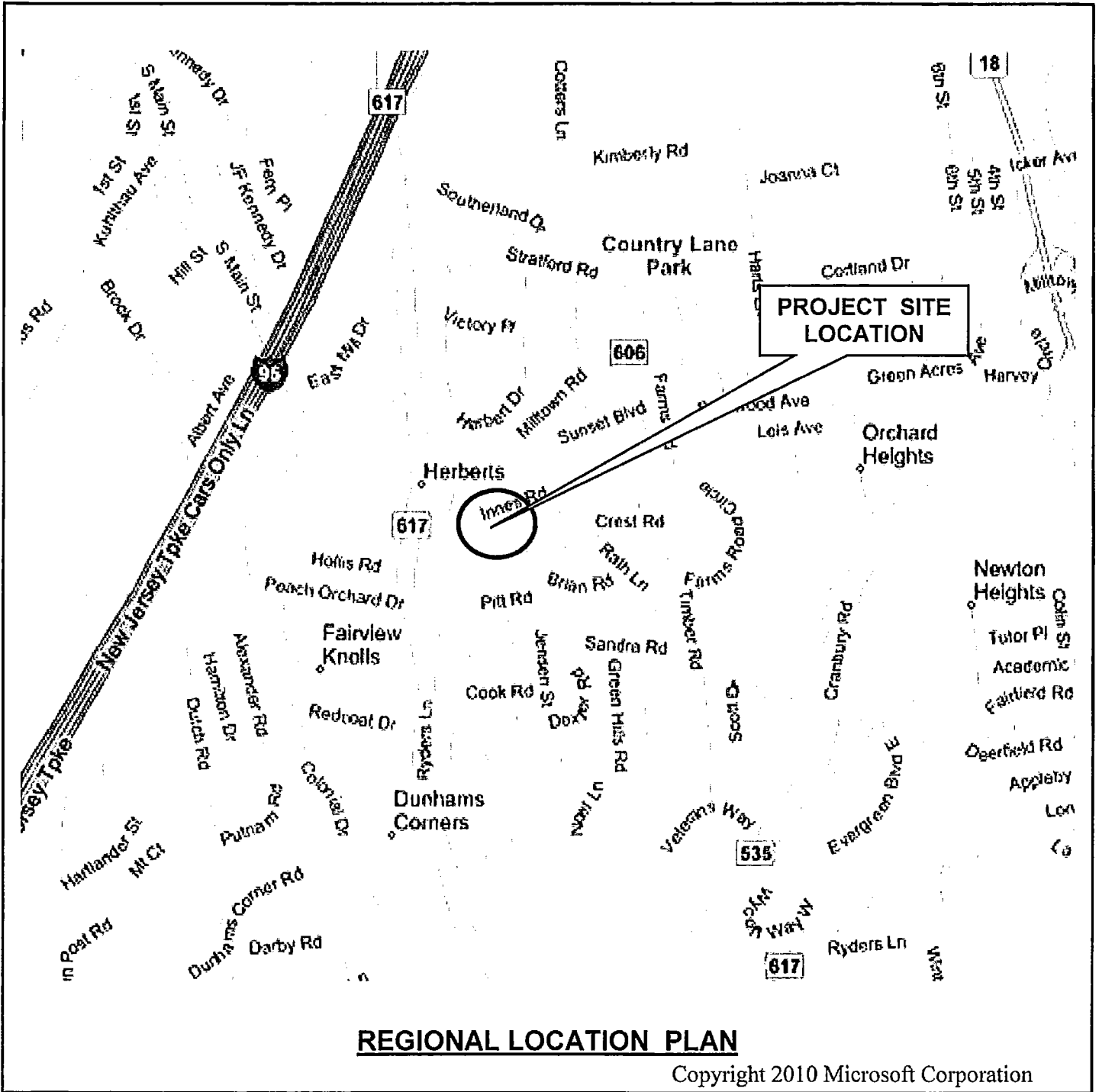


Michael A. Wrubel, E.I.T.
Staff Engineer, Geotechnical Services



Joseph M. Tierney, P.E.
Project Manager, Geotechnical Services

MAW/JMT/lc



**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
 CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NEW JERSEY**

SCALE: NTS	DATE: February 2010	JOB NO.: 2527.001	DRAWING NO.: 1
---------------	------------------------	----------------------	-------------------

**LARGE FORMAT
INSERT**

-

**TEST BORING
LOCATION PLAN**

APPENDIX A
TEST BORING LOGS

BURMISTER SOIL CLASSIFICATION SYSTEM

A. Cohesionless Soils: Particle Size Definitions

Soil	Fraction	U.S. Standard Sieve	Actual Sizes
Gravel	coarse	3 in. to 1 in.	76 mm to 25 mm
	medium	1 in. to 3/8 in.	25 mm to 9.5 mm
	fine	3/8 in. to No. 10	9.5 mm to 2.0 mm
Sand	coarse	No. 10 to No. 30	2.0 mm to 0.6 mm
	medium	No. 30 to No. 60	0.6 mm to 0.25 mm
	fine	No. 60 to No. 200	0.25 mm to 0.075 mm
Silt		< No. 200	< 0.075 mm

B. Terms Describing Gradation of Cohesionless Soils

Written Description	Symbol/Designation	Defining Proportions
coarse, medium to fine	cmf	all fractions > 10%
coarse to medium	cm	< 10% fine
medium to fine	mf	< 10% coarse
coarse	c	< 10% medium and fine
medium	m	< 10% coarse and fine
fine	f	< 10% coarse and medium

Note: Use (+) for upper limit and (-) for lower limit.

C. Cohesive Soils: Terms Describing Plasticity

Soil	Plasticity Index	Workability	Plasticity Description
SILT	0	--	Non-Plastic
Clayey SILT	1 to 5	1/4 in. thread	Slightly Plastic
SILT & CLAY	5 to 10	1/8 in. thread	Low Plasticity
CLAY & SILT	10 to 20	1/16 in. thread	Medium Plasticity
Silty CLAY	20 to 40	1/32 in. thread	High Plasticity
CLAY	>40	1/64 in. thread	Very High Plasticity

D. Terms Describing Overall Composition of Soil

Written Proportion	Proportion Symbol	Proportion Percent by Weight
and	a	35 to 50
some	s	20 to 35
little	l	10 to 20
trace	t	1 to 10

Note: Use (+) for upper limit and (-) for lower limit.



TEST BORING LOG

EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)

BORING NO.: B-1
SHEET 1 OF 1

DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10

DEPTH OF WATER: Dry
LOCATION: See Plan

GROUND ELEVATION: +123'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	3-3-5-7		S-1 Brown mf SAND, little ⁺ Silt.
	S-2 2-4'	7-7-8-9		S-2 Brown Clayey SILT, some mf Sand.
--- 5' ---	S-3 4-6'	10-13-17-18		S-3 Brown cmf SAND, some ⁻ mf Gravel, trace Silt.
	S-4 6-8'	19-13-7-8		S-4 TOP 12": Same as S-3. BOT 12": Orange-Brown cm ⁺ f SAND, little Silt, trace f Gravel.
--- 10' ---	S-5 8-10'	9-9-6-9		S-5 TOP 12": Same as S-4 BOT 12". BOT 12": Light Brown cm ⁺ f SAND, little Silt, trace f Gravel.
--- 15' ---				END OF BORING @ 10'
--- 20' ---				
--- 25' ---				
--- 30' ---				
--- 35' ---				
--- 40' ---				

SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)

BORING NO.: B-2
SHEET 1 OF 1

DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10

DEPTH OF WATER: Dry
LOCATION: See Plan

GROUND ELEVATION: +124'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	5-3-4-4		S-1 Brown f SAND, some Silt.
	S-2 2-4'	3-3-3-5		S-2 Orange-Brown mf SAND, little Silt, trace f Gravel.
---5'---	S-3 4-6'	7-14-10-7		S-3 Orange-Brown cmf SAND, little ⁺ mf Gravel, trace ⁻ Silt.
	S-4 6-8'	3-3-5-12		S-4 TOP 12": Same as S-3. BOT 12": Orange-Brown Clayey SILT, little ⁺ mf Sand, trace f Gravel.
---10'---	S-5 8-10'	10-9-8-10		S-5 TOP 12": Same as S-4 BOT 12": Orange-Brown cm ⁺ f SAND, trace ⁺ Silt.
				END OF BORING @ 10'
---15'---				
---20'---				
---25'---				
---30'---				
---35'---				
---40'---				

SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-3
SHEET 1 OF 1**

**DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +124'±
GROUND WATER ELEV.: N/A**

**DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop**

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	5-5-5-5		S-1 Light Brown mf SAND, little Silt.
	S-2 2-4'	3-4-6-4		S-2 Light Brown mf SAND, little Silt, trace f Gravel.
--- 5' ---	S-3 4-6'	3-3-7-8		S-3 Light Brown cm ⁺ f SAND, little mf Gravel, trace Silt.
	S-4 6-8'	5-4-6-6		S-4 Orange-Brown cm ⁺ f SAND, trace Silt.
--- 10' ---	S-5 8-10'	4-5-5-5		S-5 Orange-Brown cm ⁺ f SAND, little Silt.
				END OF BORING @ 10'
--- 15' ---				
--- 20' ---				
--- 25' ---				
--- 30' ---				
--- 35' ---				
--- 40' ---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-4
SHEET 1 OF 1**

**DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +124'±
GROUND WATER ELEV.: N/A**

**DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop**

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	5 - 3 - 4 - 3		S-1 Light Brown f SAND, little ⁺ Silt.
	S-2 2-4'	3 - 4 - 5 - 4		S-2 Same as S-1.
--- 5' ---	S-3 4-6'	4 - 7 - 10 - 8		S-3 TOP 18": Same as S-1. BOT 6": Orange-Brown cm ⁺ f SAND, trace f Gravel, trace Silt.
	S-4 6-8'	11 - 12 - 12 - 11		S-4 Orange-Brown cm ⁺ f SAND, trace ⁺ f Gravel, trace ⁻ Silt.
--- 10' ---	S-5 8-10'	10 - 9 - 10 - 12		S-5 Orange-Brown cm ⁺ f SAND, trace ⁺ Silt, trace ⁻ f Gravel.
				END OF BORING @ 10'
--- 15' ---				
--- 20' ---				
--- 25' ---				
--- 30' ---				
--- 35' ---				
--- 40' ---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-5
SHEET 1 OF 1**

**DATE STARTED: 1/29/10
DATE FINISHED: 1/29/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +124'±
GROUND WATER ELEV.: N/A**

**DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop**

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	4 - 3 - 6 - 5		S-1 Light Brown mf SAND, little ⁺ Silt.
--- 5' ---	S-2 2-4'	3 - 3 - 11 - 13		S-2 TOP 12": Same as S-1. BOT 12": Light Brown cmf SAND, little ⁻ Silt, trace ⁻ f Gravel.
	S-3 4-6'	16 - 7 - 7 - 11		S-3 TOP 6": Same as S-2 BOT 12". BOT 18": Light Brown cmf SAND, and ⁻ Clayey Silt, trace ⁺ f Gravel.
--- 10' ---	S-4 6-8'	19 - 15 - 18 - 15		S-4 Orange-Brown cmf SAND, trace ⁻ f Gravel, trace ⁻ Silt.
	S-5 8-10'	14 - 16 - 17 - 16		S-5 Orange-Brown cmf SAND, trace ⁺ f Gravel, trace ⁻ Silt.
	S-6 10-12'	18 - 17 - 18 - 15		S-6 Orange-Brown cmf SAND, some ⁺ mf Gravel, trace ⁻ Silt.
--- 15' ---	S-7 15-17'	8 - 8 - 11 - 12		S-7 Orange-Brown cmf SAND, trace ⁺ Silt.
--- 20' ---	S-8 20-22'	9 - 6 - 10 - 9		S-8 Same as S-7.
--- 25' ---	S-9 25-27'	9 - 8 - 9 - 8		S-9 Same as S-7.
--- 30' ---	S-10 30-32'	5 - 8 - 9 - 10		S-10 Orange-Brown cmf SAND, and ⁺ Clayey Silt, trace ⁻ f Gravel.
--- 35' ---				END OF BORING @ 32'
--- 40' ---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-6
SHEET 1 OF 1**

**DATE STARTED: 1/29/10
DATE FINISHED: 1/29/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +124'±
GROUND WATER ELEV.: N/A**

DRILLING TECHNIQUE: Hollow Stem Auger

HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	2-4-5-4		S-1 Brown mf SAND, and Silt, trace f Gravel.
	S-2 2-4'	3-3-4-3		S-2 Same as S-1.
---5'---	S-3 4-6'	4-4-11-9		S-3 TOP 6": Same as S-1. BOT 18": Orange-Brown cmf SAND, trace f Gravel, trace Silt.
	S-4 6-8'	17-15-14-15		S-4 Orange-Brown cmf SAND, little f Gravel, trace Silt.
---10'---	S-5 8-10'	16-13-10-11		S-5 Orange-Brown cmf SAND, trace f Gravel, trace Silt.
	S-6 10-12'	17-15-16-12		S-6 Orange-Brown cmf SAND, trace Silt.
---15'---	S-7 15-17'	19-19-20-17		S-7 Orange-Brown cm f SAND, trace Silt.
---20'---	S-8 20-22'	11-11-13-14		S-8 Same as S-7.
---25'---	S-9 25-27'	9-11-11-12		S-9 Orange-Brown cmf SAND, little Silt.
---30'---				END OF BORING @ 27'
---35'---				
---40'---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)

BORING NO.: B-7
SHEET 1 OF 1

DATE STARTED: 1/29/10
DATE FINISHED: 1/29/10

DEPTH OF WATER: Dry
LOCATION: See Plan

GROUND ELEVATION: +124.5'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop

<u>DEPTH FEET</u>	<u>SAMPLE DEPTH</u>	<u>SPT BLOW COUNTS (PER 6")</u>	<u>STRATA</u>	<u>DESCRIPTION OF SOIL</u>
---	S-1 0-2'	X - 12 - 11 - 12		S-1 TOP 3": Asphalt. BOT 21": Light Brown mf SAND, little Silt, trace mf Gravel..
	S-2 2-4'	9 - 12 - 11 - 12		S-2 Same as S-1 BOT 21".
--- 5'---	S-3 4-6'	12 - 12 - 14 - 22		S-3 Orange-Brown cmf SAND, little f Gravel, trace Silt.
	S-4 6-8'	26 - 20 - 15 - 12		S-4 Same as S-3.
--- 10'---	S-5 8-10'	9 - 7 - 8 - 5		S-5 Orange-Brown cmf SAND, little Silt.
	S-6 10-12'	8 - 6 - 8 - 7		S-6 Orange-Brown cm ⁺ f SAND, trace ⁺ Silt.
--- 15'---	S-7 15-17'	10 - 11 - 11 - 8		S-7 Orange-Brown cm ⁺ f SAND, trace Silt.
--- 20'---	S-8 20-22'	11 - 10 - 8 - 10		S-8 Same as S-7.
--- 25'---	S-9 25-27'	13 - 11 - 13 - 14		S-9 Same as S-7.
--- 30'---	S-10 30-32'	7 - 8 - 11 - 15		S-10 Same as S-7.
--- 35'---				END OF BORING @ 32'
--- 40'---				

SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)

BORING NO.: B-8
SHEET 1 OF 1

DATE STARTED: 1/29/10
DATE FINISHED: 1/29/10

DEPTH OF WATER: Dry
LOCATION: See Plan

GROUND ELEVATION: +124.5'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	12-6-6-7		S-1 Light Brown mf SAND, and Silt.
	S-2 2-4'	7-10-8-10		S-2 Same as S-1.
---5'---	S-3 4-6'	9-10-15-18		S-3 Orange-Brown cmf SAND, little mf Gravel, trace Silt.
	S-4 6-8'	17-10-10-7		S-4 Orange-Brown cmf SAND, trace f Gravel, trace Silt.
---10'---	S-5 8-10'	10-6-4-5		S-5 Orange-Brown cm+f SAND, trace+ f Gravel, trace Silt.
	S-6 10-12'	9-8-8-8		S-6 Orange-Brown cmf SAND, trace Silt.
---15'---	S-7 15-17'	9-6-8-8		S-7 Same as S-6.
---20'---	S-8 20-22'	9-7-9-9		S-8 Same as S-6.
---25'---	S-9 25-27'	12-15-11-11		S-9 Same as S-6.
---30'---				END OF BORING @ 27'
---35'---				
---40'---				

SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-9
SHEET 1 OF 1**

**DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +123'±
GROUND WATER ELEV.: N/A**

**DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop**

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	2-3-3-4		S-1 Light Brown SILT, some mf Sand.
	S-2 2-4'	4-5-8-8		S-2 Orange-Brown cm ⁺ f SAND, little Silt.
---5'---	S-3 4-6'	7-6-6-7		S-3 Same as S-2 BOT 6".
	S-4 6-8'	6-6-7-7		S-4 Same as S-2 BOT 6".
---10'---	S-5 8-10'	4-6-6-5		S-5 Orange-Brown cm ⁺ f SAND, trace Silt.
	S-6 10-12'	5-7-10-8		S-6 Same as S-5.
---15'---	S-7 15-17'	4-4-5-6		S-7 Orange-Brown cmf SAND, trace Silt.
---20'---	S-8 20-22'	9-10-12-11		S-8 Orange-Brown cm ⁺ f SAND, trace Silt.
---25'---	S-9 25-27'	9-13-14-14		S-9 Same as S-8.
---30'---				END OF BORING @ 27'
---35'---				
---40'---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

**EAST BRUNSWICK MEMORIAL ELEMENTARY SCHOOL
CITY OF EAST BRUNSWICK, MIDDLESEX COUNTY, NJ (FPA NO. 2527.001)**

**BORING NO.: B-10
SHEET 1 OF 1**

**DATE STARTED: 2/1/10
DATE FINISHED: 2/1/10**

**DEPTH OF WATER: Dry
LOCATION: See Plan**

**GROUND ELEVATION: +123.5'±
GROUND WATER ELEV.: N/A**

**DRILLING TECHNIQUE: Hollow Stem Auger
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30-inch Drop**

<u>DEPTH FEET</u>	<u>SAMPLE DEPTH</u>	<u>SPT BLOW COUNTS (PER 6")</u>	<u>STRATA</u>	<u>DESCRIPTION OF SOIL</u>
	S-1 0-2'	2 - 2 - 2 - 4		S-1 Brown Clayey SILT, some mf Sand.
	S-2 2-4'	4 - 4 - 6 - 6		S-2 Orange-Brown cmf SAND, some Clayey Silt.
--- 5' ---	S-3 4-6'	5 - 4 - 4 - 4		S-3 Orange-Brown cm ⁺ f SAND, little ⁺ Clayey Silt.
	S-4 6-8'	3 - 3 - 3 - 3		S-4 Orange-Brown cmf SAND, trace Silt.
--- 10' ---	S-5 8-10'	3 - 4 - 5 - 4		S-5 Same as S-4.
	S-6 10-12'	2 - 3 - 4 - 3		S-6 Same as S-4.
--- 15' ---	S-7 15-17'	8 - 6 - 7 - 8		S-7 Orange-Brown cmf SAND, trace Silt.
--- 20' ---	S-8 20-22'	5 - 9 - 8 - 9		S-8 Same as S-7.
--- 25' ---	S-9 25-27'	9 - 12 - 10 - 10		S-9 Same as S-7.
--- 30' ---	S-10 30-32'	13 - 10 - 12 - 14		S-10 Same as S-7.
--- 35' ---				END OF BORING @ 32'
--- 40' ---				

**SOILS ENGINEER: J. TIERNEY, P.E.
DRILLING INSPECTOR: M. WRUBEL**

**CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS**

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the projectsite. Interpretation of the subsurface data shall be at the discretion of the user.

APPENDIX B
GRADATIONAL REQUIREMENTS

Allowable Gradational Envelope

AASHTO M43

Standard Sizes of Course Aggregate No. 57

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer By Weight</u>
1 1/2"	100
1"	95 - 100
1/2"	25 - 60
No. 4	0 - 10
No. 8	0 - 5

Allowable Gradational Envelope

Type "G" Fill

GRANULAR FILL

<u>U.S. Standard Sieve Size</u>	<u>Percent Finer By Weight</u>
2"	100
1"	80 - 100
3/8"	70 - 100
No. 10	50 - 100
No. 30	30 - 85
No. 60	15 - 65
No. 200	5 - 15