SEA
SAILORS ENGINEERING ASSOCIATES, INC.
1675 SPECTRUM DRIVE • LAWRENCEVILLE, GEORGIA 30043 • TEL (770) 962-5922 • FAX 962-7964

GEOTECHNICAL INVESTIGATION
MEMORIAL DRIVE PROPERTY
MEMORIAL DRIVE AT BEREAN AVENUE
ATLANTA, FULTON COUNTY, GEORGIA

SEA Job #031-017

SEA

SAILORS ENGINEERING ASSOCIATES, INC.

1675 SPECTRUM DRIVE • LAWRENCEVILLE, GEORGIA 30043 • TEL (770) 962-5922 • FAX 962-7964

March 19, 2003

Eric Welch
P.O. Box 550405
Atlanta, Georgia 30355

RE: Geotechnical Investigation
Memorial Drive Property
Memorial Drive at Berean Avenue
Atlanta, Fulton County, Georgia
SEA Job #031-017

Mr. Welch:

In accordance with your written authorization, Sailors Engineering Associates, Inc. has completed the geotechnical investigation for the subject project and is pleased to submit this report with our conclusions and recommendations.

GENERAL

The site under investigation is located at the southeast corner of Memorial Drive and Berean Avenue in Atlanta, Georgia. The property is bordered on the south by residential property and on the east by a truck and equipment spare parts sales shop. Several utilities were observed along the adjacent roadways, however, none were observed within the interior of the site.

Site topography consists of gentle to moderate slopes descending from the southern property boundary to the north toward Memorial Drive. Site vegetation consists of light to moderate underbrush. No structures were observed on the property.

It is our understanding that an apartment building approximately 45 feet by 70 feet in plan dimension and possibly as tall as 10 stories is proposed for the site. Final plans for development of the site have not been completed, however, a four to six story structure is anticipated. Due to the flatness of the site, finish grades should be at or near existing grades.

The purpose of our investigation was to determine the presence of unsuitable soil conditions, near surface ground water or rock that would adversely affect construction costs, and to provide recommendations for site preparation and foundation design.

AREA GEOLOGY

Fulton County, Georgia is located in the physiographic province known as the Piedmont which extends from the Hudson River at the north to Alabama at the south. The Piedmont is the least mountainous part of the Appalachian Highlands. The surface of the Piedmont can be described as a broadly undulating or rolling topography with low knobs or ridges, and valleys 30 to 300 feet thick. The underlying crystalline rocks of the Piedmont are metamorphic schists, gneisses, quartzites and slates, and igneous granites and gabbros. In the Atlanta area the base rock consists of mica schist, gneiss and amphibolite.

FIELD INVESTIGATION

The field investigation consisted of four soil test borings performed at the locations shown on the attached Boring Plan. The test borings were extended through soils by mechanical drilling procedures using continuous spiral hollow auger flights with a steel fingered Hawthorne bit as the cutting device. The consistencies of the underlying soils were determined by Standard Penetration Testing in accordance with ASTM Specification D1586. Samples were obtained with a standard 1.4 inch I.D., 2.0 inch O.D., split tube sampler as illustrated in the Appendix. The sampler was first seated 6.0 inches to penetrate any loose cuttings; then it was driven an additional foot with blows of a 140 pound hammer falling 30.0 inches. The number of hammer blows required to drive the sampler each 6.0 inch increment is recorded in the Boring Logs. The number of blows required to drive the sampler the final foot is the standard penetration resistance, an indicator of soil strength.

Water level observations were made during the drilling operations. The elevation of the water table fluctuates during the year and is directly related to the amount of rainfall in the months prior to observation.

SUBSURFACE CONDITIONS

The subsurface conditions encountered on site, as determined by our drilling program, were as follows:

> Topsoil: A layer of topsoil ranging in thickness from 1.0 to 2.0 inches and consisting of brown sand with a little silt and organics was encountered at all of the test boring locations.

Fill materials: Encountered at the surface and extending to depths of 3.0 feet to 4.0 feet at boring locations B-2, B-3 and B-4 were brown sands with a little silt, some with trace amounts of rock fragments and organics. These were fill materials that appear to have been placed with a moderate compactive effort. Standard penetration resistances in these materials were indicative of medium consistency.

Residual materials and saprolites: Beneath the topsoil and fill and extending to penetration depth of all borings were brown and greyish brown sands with varying amounts of silt. These were residual materials and saprolites weathered in place from the parent rock. Standard penetration and drilling resistances in these materials were indicative of medium to hard consistency.

Ground water, hard drilling materials and auger refusal were encountered as noted on the individual Logs of Boring and in the Conclusions and Recommendations section of this report.

CONCLUSIONS AND RECOMMENDATIONS

1. All areas to receive pavement, structures or fill material should be stripped of organic material and topsoil prior to the commencement of construction. The topsoil should be stockpiled on-site for future use in landscaped areas (if approved by the owner), disposed of in a designated area on-site or wasted off-site. Topsoil should not be used as structural fill.

2. All areas to remain at grade or to receive fill should be proof-rolled with a loaded tandem-axle dump truck in the presence of a representative of the Geotechnical Engineer. Cut areas should be proof-rolled once rough subgrade has been reached. Any soft soils encountered during proof-rolling should be stabilized by compaction or undercut and replaced with suitable compacted materials.

3. Any fill material to be utilized on the project should be free of organic or otherwise deleterious materials and compacted to minimum dry densities corresponding to 95% of maximum dry density, and at moisture contents within +/- 3% of optimum moisture content, as obtained by Standard Proctor, ASTM D698. The top 2.0 feet of all areas to receive pavement or structures should be compacted to 98% of its standard proctor value.

   Fill should be placed in lifts not to exceed 6.0 inches in compacted fill thickness in mass fill areas, and as needed to obtain the required compaction in ditch lines and foundation wall backfill.

   All soils encountered on site, with the exception of the topsoil, will be suitable for use as structural fill if they are at +/- 3% of their optimum moisture content and free of organic or otherwise deleterious materials.

4. All fill operations should be monitored by a representative of the Geotechnical Engineer. He should perform sufficient density tests to verify that specified compaction is obtained.

5. Once the above site preparation items have been accomplished, the site will be suitable to receive the proposed building founded on spread and strip footings designed for a maximum net allowable soil bearing pressure of 3000 pounds per square foot. To achieve an allowable soil bearing pressure of 5000 pounds per square foot the footing excavations can be extended approximately 5.0 feet beneath the existing ground surface to reach through in-place fill materials and into stiff underlying residual soils.

   Footings widths should be in accordance with the structural engineer's design but should be no less than 18.0 inches for continuous footings and 24.0 inches for individual footings.

   The prevailing building code for the subject site is the 2000 edition of the International Building Code with the Georgia Amendments. This code requires a minimum embedment depth of 12.0 inches for perimeter foundations. The frost penetration depth for this area is less than 6.0 inches. The site class as per Table 1615.1.1 of this code is best described as a "C".

6. The base of all footings should be inspected by a representative of the Geotechnical Engineer immediately prior to the placement of reinforcing steel or concrete. He should verify that soil capable of supporting the design bearing pressure has been obtained in each case.

7. All areas to receive pavement should be proof-rolled in the presence of a representative of the Geotechnical Engineer immediately prior to the placement of base course. Soft areas encountered during proof-rolling should be stabilized by compaction or undercut and replaced with suitable compacted fill.

8. Ground water was measured at boring location B-1 and B-2 at depths of 36.8 feet and 38.5 feet, respectively. The ground water encountered is well below anticipated final grades and should not be of consequence during site grading.

9. Hard drilling materials, weathered rock and auger refusal were encountered at each of the test borings performed on the site. The following table lists locations, depths of hard consistency soils and auger refusal depths for each location. The table should be reviewed by the grading and utility contractor, the site design engineer and the foundation design engineer.

Boring No.	Hard Consistency Soil or Weathered Rock	Auger Refusal
B-1	25.0	45.5
B-2	18.0	42.5
B-3	14.5	33.5
B-4	8.0	31.0

Rock removal is not anticipated for this project, however, trench excavations below hard drilling depths will be difficult and may require blasting. Excavations below auger refusal depth will require blasting.

If we can be of further service to you on this project, please contact us at your convenience.

Respectfully submitted,

SAILORS ENGINEERING ASSOCIATES, INC.

Leland H. Schuman, P.E.
Project Engineer

Jim D. Sailors, P.E.
Principal Engineer

APPENDIX

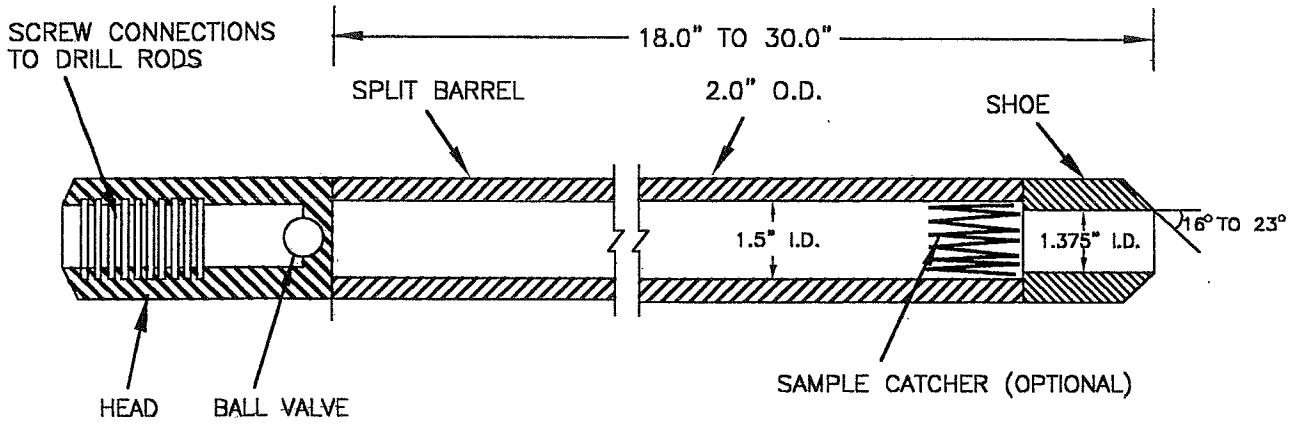
SAMPLING PROCEDURES

Soil Sampling & Penetration Testing is performed in accordance with ASTM D1586-84.

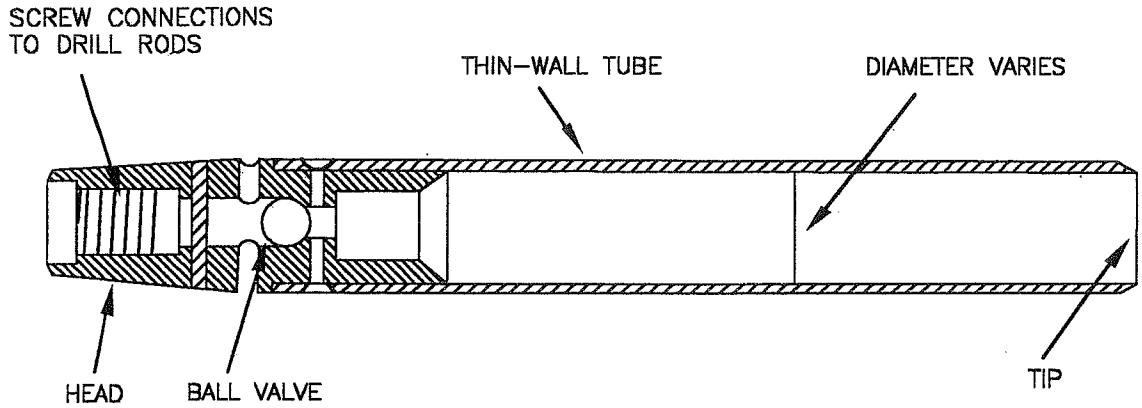
The Standard Penetration Resistance is the number of blows of a 140 pound hammer falling 30 inches to drive a 2.0 inch O.D., 1.375 inch I.D. split barrel sampler one foot.

The Undisturbed Sampling Procedure is performed in accordance with ASTM Specification D1587-83.

SPLIT–BARREL SAMPLER
(FOR RECOVERY OF BOTTLE SAMPLES)



TUBE SAMPLER
(FOR RECOVERY OF UNDISTURBED SAMPLES)



SOIL CONSISTENCY DESIGNATIONS

(Based on results of Standard Penetration Tests performed according to ASTM Specification D-1586-84)

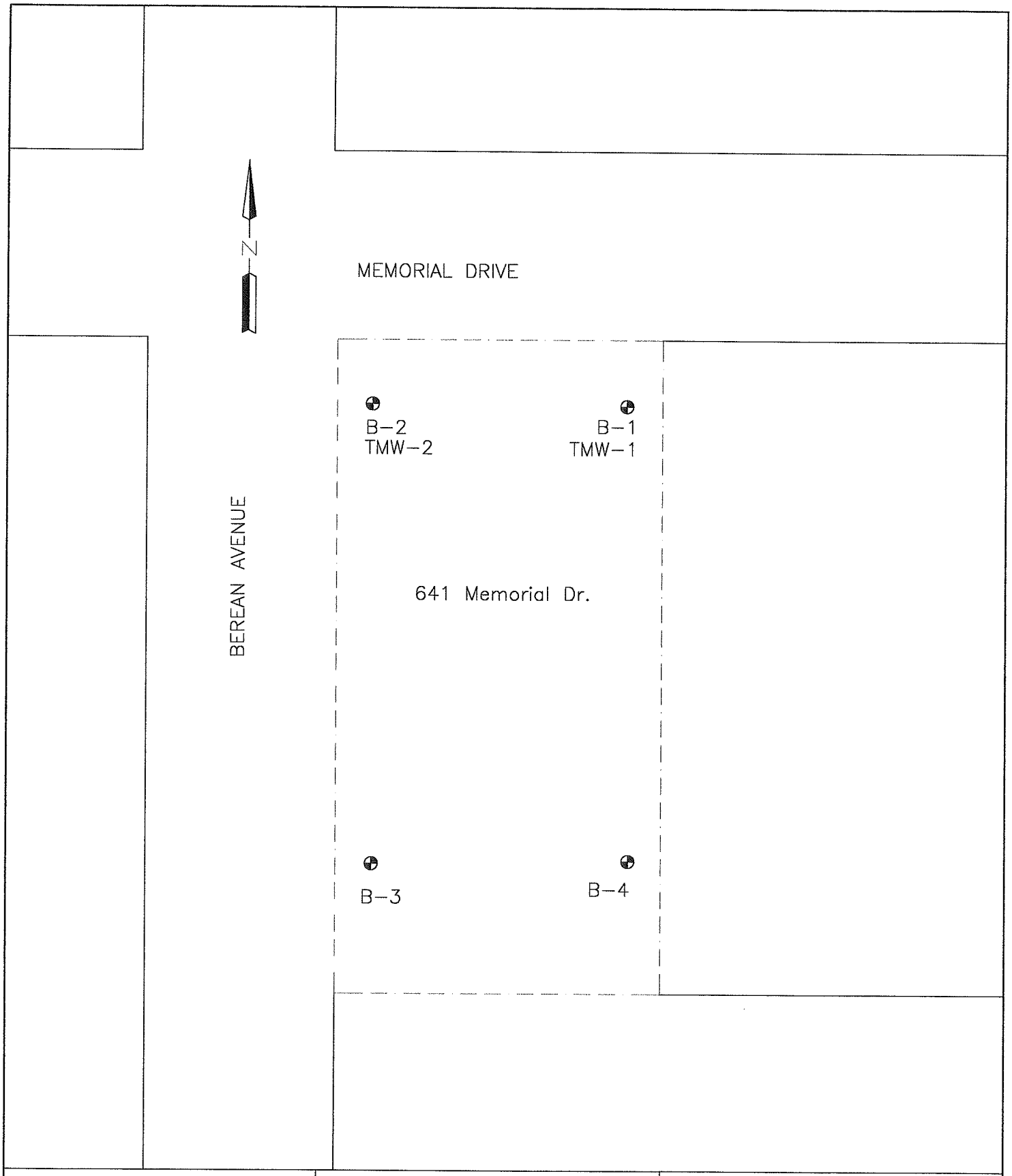
NUMBER OF BLOWS ("N"): Shall be defined as the number of blows of a 140 pound hammer falling free a distance of 30 inches required to drive a standard split spoon sampler (2" O.D. and 1.4" I.D.) 1 foot.

When the sample is primarily cohesionless, use the following consistency table:

NUMBER OF BLOWS (N)	CONSISTENCY DESIGNATION
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium
31 - 50	Dense
51 or more	Very Dense

When the sample is primarily cohesive, use the following consistency table:

NUMBER OF BLOWS (N)	CONSISTENCY DESIGNATION
0 - 2	Very Soft
3 - 4	Soft
5 - 8	Medium
9 - 15	Stiff
16 - 30	Very Stiff
31 or more	Hard



B – Boring Location

Scale: 1" = 20'

BORING PLAN

MEMORIAL DRIVE PROPERTY

641 Memorial Drive
Atlanta, Georgia

Job No: 031-017

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LOG OF BORING

BORING NO. B-1

CONTRACTED WITH: ERIC WELCH

JOB NO. 031-017 | DATE: 01/27/03

PROJECT NAME: Memorial Drive Property

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	TYPE	BLOWS/6"	NOTES
	Topsoil - 1.0" brown sand with a little silt and organics					
	Brown sand with a little silt (residual)	1	1	SS	5-4-4	Drilling medium
		2				
		3	2	SS	4-5-6	
		4				
		5				
		6	3	SS	5-6-8	
		7				
		8				Drilling firm
	Greyish brown sand with a trace of silt (saprolite)	9	4	SS	18-13-15	
		10				
		11				
		12				Drilling medium
		13				
		14	5	SS	8-4-5	
		15				
		16				
		17				
		18				Drilling firm
		19	6	SS	10-11-11	
		20				
		21				
		22				
		23				
		24	7	SS	41-19-43	
		25				Drilling hard
		26				
		27				
		28				
		29	8	SS	50/5.5"	
		30				
		31				
		32				
		33				
		34	9	SS	50/0"	
		35				
		36				
		37 ▽				Water table at 24 hrs
		38				
		39	10	SS	50/0"	
		40				

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LOG OF BORING

CONTRACTED WITH: ERIC WELCH — BORING NO. B-1

PROJECT NAME: Memorial Drive Property — JOB NO. 031-017 — DATE: 01/27/03

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	SAMPLES TYPE	SAMPLES BLOWS/6"	NOTES
	Greyish brown sand with a trace of silt (saprolite)	41 42 43 44 45				Drilling hard
			11	SS	50/0"	
	Auger refusal at 45.5 feet	46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80				Note: temporary monitoring well set at this boring location

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LOG OF BORING

SHEET 1 OF 2

CONTRACTED WITH: ERIC WELCH — BORING NO. B-2

PROJECT NAME: Memorial Drive Property — JOB NO. 031-017 — DATE: 01/28/03

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	TYPE	BLOWS/6"	NOTES
	Topsoil - 2.0" brown sand with a little silt and organics					
	Brown sand with a little silt and a trace of rock fragments and organics (fill)	1	1	SS	5-5-5	Drilling medium
		2				
		3	2	SS	28-31-29	Drilling firm
		4				
	Brown sand with a little silt (residual)	5				
		6	3	SS	14-19-11	
		7				
	Greyish brown sand with a little silt (saprolite)	8				
		9	4	SS	11-12-13	
		10				
		11				
		12				
		13				
		14	5	SS	19-10-15	
		15				
		16				
		17				
		18				Drilling hard
	Greyish brown sand with a trace of silt (saprolite)	19	6	SS	50/6"	
		20				
		21				
		22				
		23				
		24	7	SS	50/5"	
		25				
		26				
		27				Drilling firm
		28				
		29	8	SS	21-22-20	
		30				
		31				
		32				Drilling hard
		33				
		34	9	SS	50/5"	
		35				
		36				
		37				
		38 ▽				
		39 ⚡	10	SS	50/2"	Water table at 0 hrs
		40				

SEA

LOG OF BORING

BORING NO. B-2

CONTRACTED WITH: ERIC WELCH

PROJECT NAME: Memorial Drive Property

JOB NO. 031-017

DATE: 01/28/03

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	SAMPLES TYPE	SAMPLES BLOWS/6"	NOTES
	Greyish brown sand with a trace of silt (saprolite)	41				Drilling hard
		42				
	Auger refusal at 42.5 feet	43				
		44				
		45				
		46				Note: temporary monitoring well set at this boring location
		47				
		48				
		49				
		50				
		51				
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SEA

LOG OF BORING

SHEET 1 OF 1
BORING NO. B-3

CONTRACTED WITH: ERIC WELCH

PROJECT NAME: Memorial Drive Property
JOB NO. 031-017
DATE: 01/22/03

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	TYPE	BLOWS/6"	NOTES
	Topsoil - 1.0" brown sand with a little silt and organics					
	Brown sand with a little silt (fill)	1	1	SS	2-3-7	Drilling medium
		2				
	Brown sand with a little silt (residual)	3	2	SS	12-9-11	Drilling firm
		4				
		5				
		6	3	SS	7-16-23	
		7				
		8				
		9	4	SS	13-13-15	
		10				
		11				
		12				
	Greyish brown sand with a little silt (saprolite)	13				
		14	5	SS	11-29-50/5.5"	Drilling hard
		15				
		16				
		17				Drilling firm
		18				
		19	6	SS	19-21-23	
		20				
		21				
		22				
		23				
		24	7	SS	15-16-23	
		25				
		26				
		27				Drilling hard
		28				
		29	8	SS	50/5"	
		30				
		31				
		32				
		33				
	Auger refusal at 33.5 feet	34				
		35				Note: no ground water encountered during drilling
		36				
		37				
		38				
		39				
		40				

SEA

LOG OF BORING

SHEET 1 OF 1
BORING NO. B-4

CONTRACTED WITH: ERIC WELCH

PROJECT NAME: Memorial Drive Property | JOB NO. 031-017 | DATE: 01/27/03

LOCATION: 641 Memorial Drive - Atlanta, Georgia

ELEV. (ft)	DESCRIPTION	DEPTH IN FEET	SAMPLES No.	TYPE	BLOWS/6"	NOTES
	Topsoil - 1.0" brown sand with a little silt and organics					
	Brown sand with a little silt and a trace of rock fragments and organics (fill)	1	1	SS	9-5-5	Drilling medium
		2				
		3	2	SS	6-6-9	
		4				
	Greyish brown sand with a little silt (saprolite)	5				
		6	3	SS	9-11-13	Drilling firm
		7				
		8				Drilling hard
		9	4	SS	50/3"	
		10				
		11				
		12				Drilling firm
		13				
		14	5	SS	6-14-11	
		15				
		16				
		17				
		18				Drilling hard
		19	6	SS	50/4"	
		20				
		21				
		22				
		23				
		24	7	SS	50/5"	
		25				
		26				
		27				
		28				
		29	8	SS	50/5"	
		30				
	Auger refusal at 31.0 feet	31				
		32				
		33				
		34				
		35				Note: no ground water encountered during drilling
		36				
		37				
		38				
		39				
		40				

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