November 9, 2005

Ms. Debbie Heimberger
Loudoun County Parks and Recreation
215 Depot Court, 3rd Floor
Leesburg, Virginia 20175

RE: Limited Geotechnical Investigation
Proposed Light Pole Installations
Edgar Tillet Park
Loudoun County, Virginia
TRIAD Project No. 05-05-0094

Dear Ms. Heimberger:

Triad Engineering, Inc. (TRIAD) has completed a limited geotechnical investigation for the light poles surrounding the four (4) existing ballfields at Edgar Tillet Park in Loudoun County, Virginia. This report includes the results of the field exploration and it presents our recommendations related to the geotechnical aspects of the project.

SITE AND PROJECT DESCRIPTION

The site is located on Belmont Ridge Road, approximately five (5) miles south of the Town of Leesburg, in Loudoun County, Virginia. More specifically, Edgar Tillet Park is located at the intersection of Belmont Ridge Road and Truro Parrish Road. The location of the site is shown on Plate A-1 in Appendix A. Four (4) ballfields consisting of two (2) large baseball fields and (2) smaller softball fields are present at Edgar Tillet Park. Six (6) light poles are proposed around the baseball fields and four (4) light poles are proposed around the softball fields. Large quantities of fill were placed throughout the site of the four (4) ballfields to create relatively large, benched areas for each ballfield. Reportedly, the fill placement occurred approximately two to three years ago. No compaction records were available for our review, and it is assumed that the fill was not observed or tested during placement. A moderate to steep (approximately 3(h):1(v)) fill slope exists along the south sides of the two (2) southernmost ballfields. The fill slope adjacent to the southeast baseball field shows signs of recent failure, with scarps as close as 2 feet from the existing bullpen along the third base line. An as-built grading plan is presented on Plates A-2 and A-3 in Appendix A.

FIELD EXPLORATION

The field exploration included drilling a test boring at each of the twenty light pole locations. The light pole locations were staked in the field by County personnel. The test boring for light pole A-5 was offset approximately 25 feet because of access issues. Elevations of the test borings were extrapolated from the topographic information provided by Urban Engineering and Associates, Inc..

Standard Penetration Tests (SPT) were performed at 2.5 feet intervals to a depth of 10 feet and 5.0 feet intervals thereafter until auger refusal was experienced. If it appeared that auger refusal was experienced on cobbles or large gravels within the fill, a rubber-tired backhoe was utilized to excavate through the fill until bedrock was encountered.

A geotechnical engineer from our office was present full time during the drilling operations to direct the drill crew and backhoe operator, log all recovered soil samples, and observe groundwater and rock conditions. Detailed descriptions of materials encountered in the test borings are presented on the boring logs in Appendix B. Plate B-1 contains a description of the classification system and terminology utilized.

SITE GEOLOGY

According to the Surface Geology Map for Loudoun County, Virginia published by the USGS, the surficial geology at this site consists of Diabase Dikes and Sheets of early Jurassic age and thermally metamorphosed rock of the Balls Bluff Siltstone, Fluvial and Deltaic Sandstone and Siltstone Member of late Triassic age. The sedimentary rock of the Balls Bluff Formation has been thermally metamorphosed from the diabase intrusions. In addition to the diabase rock, the metamorphosed sedimentary rock at this site primarily consists of hornfels, which is hard, brittle, fractured and unweathered. The sedimentary structure of the rock is commonly preserved.

SUBSURFACE CONDITIONS

The materials encountered in the borings are generally described below. Laboratory testing was not performed on the recovered samples, and it should be noted that the soils have been only visually classified. Stratification lines indicated on the boring logs represent the approximate boundaries between material types and the transitions may be gradual.

Fill: Artificial fill was encountered in all but one (1) of the test borings to depths of 1.0 to 25.0 feet below the existing ground surface. The fill consisted of silty clay with various amounts of sand and gravel. In several borings, organic matter or debris was encountered within the fill materials. Standard Penetration Test (SPT) N-values ranged from 3 to 28 blows per foot (bpf), indicating soft to very stiff consistencies.

Residual Soils: What appeared to be residual soils were encountered immediately below the fill materials in two (2) of the test borings. The residual soils consisted of clayey silt and silty clay. SPT N-values obtained in the residual soils ranged from 16 to 35 bpf, indicating very stiff to hard consistencies.

Bedrock: Bedrock consisting of diabase and hornfels (thermally metamorphosed siltstone and sandstone) was encountered in all of the test borings at depths ranging from the existing ground surface to 25.0 feet below the existing ground surface. Auger refusal was experienced in all of the test borings at depths of 2.5 to 25.0 feet below the existing grades. With the exception of Test Boring B-7, auger refusal was due to very hard bedrock. The auger refusal experienced in Test Boring B-7 was due to cobbles within the fill material. At that point, a rubber-tired backhoe was utilized to excavate through the fill. Bucket refusal was subsequently experienced with the backhoe at a depth of 10.0 feet in Test Boring B-7, due to very hard bedrock. The chart below outlines the depth to competent (unrippable) rock, i.e., where auger or bucket refusal was experienced due to very hard bedrock at each of the test boring locations.

TEST BORING NUMBER	DEPTH OF AUGER OR BUCKET REFUSAL
A-1	9.0
A-2	5.0
A-3	2.5
A-4	9.5
A-5	7.0
A-6	10.5
A-7	4.5
A-8	4.0
B-1	9.5
B-2	12.0
B-3	11.0
B-4	5.0
B-5	25.0
B-6	10.0

TEST BORING NUMBER	DEPTH OF AUGER OR BUCKET REFUSAL
B-7	10.0
B-8	12.5
C-1	10.0
C-2	2.5
C-3	9.0
C-4	5.5

RECOMMENDATIONS

Fill material was encountered in all but one (1) of the twenty test borings drilled during this investigation. No compaction records are available for the placement of the fill and therefore, it is considered uncontrolled. The fill material generally consisted of silty clay with sand and gravel. Some samples of the fill recovered contained organics and many of the fill samples were in a nearly saturated condition. Because of the uncontrolled placement and composition of the fill encountered at this site, it is our recommendation that the proposed light pole foundations consist of drilled shaft concrete piers which bear entirely on bedrock. A foundation system supporting the light poles which is designed to bear on the fill materials or residual soils should not be used at this site.

As stated earlier, the fill slope embankment along the south side of the southeast baseball field has failed along the entire length of the ballfield. The scarp is presently located approximately 2 feet from the bullpen fence line. It is imperative that the fill slope be repaired (reconstructed) prior to the installation of the light poles A-5 and B-5. The fill slope along the south side of the southwest ballfield has been constructed in a similar manner to the slope that has failed along the southeast ballfield. Although no tension cracks or scarps were observed, it is likely that the fill slope at this location will eventually fail. It is recommended that light pole B-3 not be installed until the slope at that location has been reconstructed properly. The remaining light poles can be installed at any time, although the installation of light poles B-8 and C-1 may induce minor damage to the adjacent fill slopes from the use of heavy equipment. Recommendations for the repair of the failed fill slope are outside the scope of this investigation and will be presented in a separate report to be presented at a later date.

LIMITATIONS

This geotechnical engineering report has been prepared by TRIAD for the exclusive use of Loudoun County Parks and Recreation and their design team for specific application to the proposed light pole installation project at Edgar Tillet Park in Loudoun County, Virginia. The work on the project has been carried out in accordance with reasonable and acceptable engineering practices. No other warranty, either written or implied, is applicable to this project.

Subsurface conditions may vary from those encountered at the boring locations. The boring logs are intended to only represent the conditions at each location when the sampling occurred. Classifications of the recovered soil samples are based on recognized standards. The soils encountered in the borings are generally described on the logs and stratification lines indicated on the logs represent the approximate boundaries between material types and the transitions may be gradual.

The interpretations and recommendations in this report are based solely on the information available at the time this report was prepared. In the event that the location or design of the new structure is altered, the conclusions and recommendations presented herein should not be considered valid unless we have been given the opportunity to review the changes.

Prepared By:

TRIAD ENGINEERING, INC.

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Mark E. Clippinger, P.E.
Senior Engineer

Appendix A

ILLUSTRATIONS

LOG OF BORING NO. A-1

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 337.0 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 Inches	Gravel %	Sand %	Silt and Clay %	Water Content, %	Liquid Limit	Plastic Limit
			Brown silty CLAY, low plasticity, soft, some sand, moist to very moist			1-2-2						
			- very stiff, gravels, moist			5-7-9						
			-FILL- 4.0									
5			Gray silty CLAY, low plasticity, medium stiff, little sand, moist			3-3-4						
			- very stiff			5-14-50/2"						
			-RESIDUAL- 8.5									
			Gray-orange DIABASE, very dense, slightly moist 9.0									
10			AUGER REFUSAL @ 9.0 FEET									
15												
20												
25												
30												

Completion Depth: 9.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

ERIAD Engineering, Inc.

LOG OF BORING NO. A-2

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 337.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION		Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Gray-brown, silty CLAY, low plasticity, some sand, stiff, moist				3-5-8						
			- FILL -	2.5									
			Red brown, silty CLAY, low plasticity, some gravels, stiff, slightly moist	3.5			5-8-50/2"						
			- RESIDUAL -										
			Gray HORNFELS, very dense, slightly moist	5.0									
5			AUGER REFUSAL @ 5.0 FEET										
10													
15													
20													
25													
30													

Completion Depth: 5.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/16/05

LOG OF BORING NO. A-3

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 334.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Gray - brown silty CLAY, low plasticity, stiff, some sand, moist			5-6-7						
			-FILL- 3.0			7-50/1"						
			AUGER REFUSAL @ 2.5 FEET									
5												
10												
15												
20												
25												
30												

Completion Depth: 2.5 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/14/05

LOG OF BORING NO. A-4

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County, Virginia

Location: See Plate A-2
Surface El.: 332.5 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown-gray-orange, silty, CLAY, low plasticity, medium stiff, little sand, some gravels, moist			1-3-2						
			-FILL- 2.0									
			Light brown, SAND, no plasticity, trace silt, moist			1-2-3						
5			-no recovery due to gravel, wet spoon			3-2-3						
			-FILL- 7.5									
			Fractured gray DIABASE, very dense, wet 8.5			27-50/6"						
			AUGER REFUSAL @ 9.5 FEET									
10												
15												
20												
25												
30												

Completion Depth: 9.5 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Groundwater during drilling at a depth of 6.0 feet.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK.GPJ 11/7/05

LOG OF BORING NO. A-5

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 338.5 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown silty CLAY, low plasticity, soft, some sand, moist			1-2-2						
			-gray-brown, medium stiff, organics, very wet			3-3-4						
5			-moist			3-4-4						
			-FILL- 7.0									
			AUGER REFUSAL @ 7.0 FEET									
10												
15												
20												
25												
30												

Completion Depth: 7.0 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

The stratification lines represent approximate strata boundaries; in situations, the transition may be gradual.

BORING TILLET PARK.GPJ 11/1/05

LOG OF BORING NO. A-6

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 337.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Red-brown-orange, silty, CLAY, low plasticity, very stiff, some sand, moist			2-7-12						
			-brown to gray, stiff, some gravel, moist			4-7-4						
5			-medium stiff, no gravels, very moist			2-4-4						
			-gravels			2-2-12						
10			-FILL- 10.5			21-50/2"						

AUGER REFUSAL @ 10.5 FEET

15
20
25
30

Completion Depth: 10.5 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/1/05

LOG OF BORING NO. A-7

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 352.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Weathered gray DIABASE, very dense, dry			No drives						
			>same									
			4.5									
5			AUGER REFUSAL @ 4.5 FEET									
10												
15												
20												
25												
30												

Completion Depth: 4.5 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/1/05

LOG OF BORING NO. A-8

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 352.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Weathered light brown to gray HORNFELS, very dense, dry			No drives.						
			same, sample of cuttings taken 4.0									
5			AUGER REFUSAL @ 4.0 FEET									
10												
15												
20												
25												
30												

Completion Depth: 4.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: **Boring dry during drilling and at completion.**

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/11/05

LOG OF BORING NO. A-7

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El: 352.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Weathered gray DIABASE, very dense, dry			No drives						
			-same-									
4.5			AUGER REFUSAL @ 4.5 FEET									
5												
10												
15												
20												
25												
30												

Completion Depth: 4.5 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

LOG OF BORING NO. B-1

triadeng.com

TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface Elv: 338.2 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Gray-brown silty CLAY, low plasticity, medium stiff, moist			2-2-3						
			-red-brown and gray, stiff, some sand, gravels			3-4-5						
5			-very stiff, slightly moist			8-10-13						
			-FILL- 7.0									
			Weathered gray DIABASE, very dense, dry			50/6"						
			9.5									
10			AUGER REFUSAL @ 9.5 FEET									
15												
20												
25												
30												

Completion Depth: 9.5 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries; In situations, the transition may be gradual.

BORING TILLET PARK.GPJ 11/15/05

LOG OF BORING NO. B-2

triadeng.com

TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 338.2 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Gray silty CLAY, low plasticity, stiff, moist			2-4-6						
			-FILL- 2.0									
			Gray-brown clayey SILT, little plasticity, hard, moist			11-16-17						
5			-light brown , some sand			11-13-22						
			-light brown-gray									
			-RESIDUAL- 8.5			6-14-42						
			Weathered gray HORNFELS, very dense, slightly moist									
10			-light-gray-brown, dry			34-50/6"						
			12.0									
			AUGER REFUSAL @ 12.0 FEET									
15												
20												
25												
30												

Completion Depth: 12.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLETT PARK CPJ 11/16/05

LOG OF BORING NO. B-3

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 331.5 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown-gray silty CLAY, low plasticity, stiff, some sand, moist			3-6-5						
			-gray, medium stiff			4-4-4						
5			-stiff			4-4-7						
			-organics, roots			2-11-50/2"						
			-FILL- 8.5									
			Gray DIABASE, very dense, dry									
10			11.0			50/6"						
			AUGER REFUSAL @ 11.0 FEET									
15												
20												
25												
30												

Completion Depth: 11.0 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: **Boring dry during drilling and at completion.**

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/14/05

LOG OF BORING NO. B-4

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 331.0 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION		Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown silty CLAY, low plasticity, very stiff, little sand, gravels, moist				4-10-13						
			-FILL-	3.5			4-6-21						
			Gray DIABASE, very dense, dry	5.0									
5			AUGER REFUSAL @ 5.0 FEET				50/1"						
10													
15													
20													
25													
30													

Completion Depth: 5.0 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/11/05

LOG OF BORING NO. B-5

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 336.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown silty CLAY, low plasticity, medium stiff, some sand, moist			2-3-3						
1			-gray/brown, soft, very moist			2-2-2						
5			-gray, medium plasticity, medium stiff, moist to very moist			2-2-6						
			-very moist to wet			4-3-4						
10			-organics, moist to very moist			4-4-4						
15			-gray, stiff, wood debris, moist			12-7-4						
20			-stiff, gravels, tree roots, moist to very moist			6-5-4						
25			-very moist, no roots			6-5-50/2"						
			-FILL- 25.0									
			AUGER REFUSAL @ 25.0 FEET									
30												

Completion Depth: 25.0 feet
Date Boring Started: 11/2/05
Date Boring Completed: 11/2/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: **Boring dry during drilling and at completion.**

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLETT PARK.GPJ 11/11/05

LOG OF BORING NO. B-6

Project Description: Tillet Park Light Poles
Loudon County Virginia

triadeng.com TRIAD

Location: See Plate A-2
Surface El.: 336.0 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 Inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Brown silty CLAY, low plasticity, stiff, some sand, slightly moist			7-6-8						
			-gravels			9-5-4						
5			-dry			6-4-6						
			-FILL- 8.5			16-17-50/4"						
			Gray fractured DIABASE, very dense, dry 10.0			50/3"						
10			AUGER REFUSAL @ 10.0 FEET									
15												
20												
25												
30												

Completion Depth: 10.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: **Boring dry during drilling and at completion.**

BORING TILLET PARK GPJ 11/7/05

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

LOG OF BORING NO. B-7

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 352.5 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Red-brown silty CLAY, low plasticity, very stiff, moist			3-9-7						
			-gray-red-brown, soft, very moist			2-2-2						
5			-red-brown, gravels			3-1-3						
			AUGER REFUSAL @ 8.5 FEET, DUE TO COBBLES 8.5									
10			Brown silty CLAY/ clayey SAND, low plasticity, some cobbles, gravels, moist 10.0 -FILL-									
			BUCKET REFUSAL @ 10.0 FEET									
15												
20												
25												
30												

Completion Depth: 10.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK.GPJ 11/1/05

LOG OF BORING NO. B-8

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 352.5 feet

Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Gray-orange-brown silty CLAY, low plasticity, stiff, moist			2-5-5						
			-medium stiff			2-3-3						
5			-gray-brown, very moist, gravels			4-2-4						
			-stiff			3-3-7						
10			-brown, very moist to wet			12-12-5						
			-FILL-									
			AUGER REFUSAL @ 12.5 FEET 12.5									
15												
20												
25												
30												

Completion Depth: 12.5 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Groundwater at depth of 10 feet during drilling.

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

BORING TILLET PARK GPJ 11/15/05

LOG OF BORING NO. C-1

triadeng.com TRIAD

Project Description: Tillet Park Light Poles
Loudon County Virginia

Location: See Plate A-2
Surface El.: 532.0 feet
Split Spoon
Shelby Tube
Rock Core

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Gravel %	Sand %	Silt and Clay %	Water Content %	Liquid Limit	Plastic Limit
			Light brown silty CLAY, low plasticity, medium stiff, organics, very moist			2-3-3						
			-gray brown, gravels			3-2-3						
5			-same			4-4-3						
			-soft, very moist			2-1-2						
			-FILL- 10.0									
10			AUGER REFUSAL @ 10.0 FEET			50/1"						
15												
20												
25												
30												

Completion Depth: 10.0 feet
Date Boring Started: 11/1/05
Date Boring Completed: 11/1/05
Engineer/Geologist: JJ
Project No.: 05-05-0094

Remarks: Boring dry during drilling and at completion.

BORING TILLETPARK.GPJ 11/1/05

TRIAD Engineering, Inc.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.