the dewatering system adequately controlling slope seepage. Sheet piling should be designed according to OSHA sheeting and bracing requirements. We recommend a Florida registered Professional Engineer design any required sheeting/bracing system.

6. Within Right-of-Way driveways connecting to FDOT or county roads, the local county authority criteria and requirements for trench backfill and compaction should govern the testing procedures.

Based on the SPT test results and soils encountered with the borings along the evaluated roads, soil design parameters of angle of internal friction, earth pressure coefficient and unit weights were estimated and are presented in following Table 4 and Table 5:

Table 4
Estimated Soil Design Parameters- Proposed Force Main Structure

Typical Depth (Ft)		Effective Unit Weight (pcf)	Friction Angle (degrees)	Recommended Earth Pressure Coefficients		
From	To			At Rest K_O	Active K_A	Passive K_P
B-6 & B-7						
0	4	47*	30	0.5	0.3	3.0
4	13	63	35	0.5	0.27	3.7
13	15	53	32	0.5	0.3	3.25

Table 5
Estimated Soil Design Parameters- Proposed Force Main Structure

Depth (feet)	Saturated Unit Weight (pcf)	Buoyant Unit Weight (pcf)	Friction Angle (Phi)	Average SPT N-Value (ASTM D 1586)	Overburden Pressure (psf)	Cohesion (psf)
B-6& B-7						
4	110	47*	30	12	440	0
13	125	63	35	50	1,003	0
15	115	53	32	24	1,108	0

*We recommend the groundwater level be assumed at the ground surface for design purposes

4.2.2 Directional Drilling Discussion

The proposed construction may include the installation of a Force Main along the evaluated roadways by utilizing Horizontal Directional Drilling (HDD).

The HDD installation should be performed in accordance with FDOT Section 555, Directional Bore of the Florida Department of Transportation, and Standard Specifications for Road and Bridge Construction, 2007. Per the FDOT specification, the back reamer or pilot bit should be a maximum of the pipe outer diameter plus 6-inches. Further, the drilling fluid for stabilizing the borehole should be bentonite clay or approved equal mixed with potable water which has a minimum pH of 6.0. If water other than potable water is used, we recommend it to be tested for pH levels. The source of water should be identified prior to construction and any other sources such as lakes, ponds and streams may require a permit from local authorities. As outlined in

the FDOT specifications, the equipment used should be suitable for a boring length of up to 1,000 feet for 16 inch pipes and greater than 1,000 feet for 18 inch diameter. The equipment torque should be up to 1,900 to 9,999 ft-lbs for 16 inch pipes and greater than 10,000 ft-lbs for the 18 inch or greater diameter pipes. Also, the equipment trust should range between 20,000 to 69,999 lbs for 16 inch pipes and greater than 70,000 lbs for 18 inch or greater diameter pipes.

Successful HDD program depends much on the soils type, depth/cover of pipe, control of the drilling fluid pressures and contractor's operator experience. The fluid pressures should be limited to the overburden soil pressure with an appropriate safety factor to avoid heaving along the road alignment and pavements. Dense to very dense sands with shell material were encountered below a depth of 4 feet with N-values ranging from 48 to more than 50 blows per foot. This material may slow the drilling process or prove difficult drilling at the boring locations. It should be noted that the soil conditions between borings may vary in depth, consistency and relative density.

The HDD contractor bidding this project should provide written confirmation that the drilling equipment proposed for use and the anticipated drilling fluid pressures are suitable for the soil conditions and planned depths indicated.

4.6 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation and pavement subgrades by monitoring proof-rolling operations and performing quality assurance tests on the placement of compacted structural fill and pavement courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.

5.0 LIMITATIONS

This report has been prepared in order to aid the architect/engineer in the design of the proposed mast arms and force main structures. The scope of services provided was limited to the specific project and locations described herein. The description of the project's design parameters represents our understanding of significant aspects relevant to soil and foundation characteristics.

The recommendations submitted in this report are based upon the data obtained from the limited number of soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations which may occur between the boring locations or unexplored areas of the site. This report should not be used for estimating such items as cut and fill quantities.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not

recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within Appendix C "Important Information About Your Geotechnical Engineering Report" prepared by ASFE, an association of firms practicing in the geosciences.

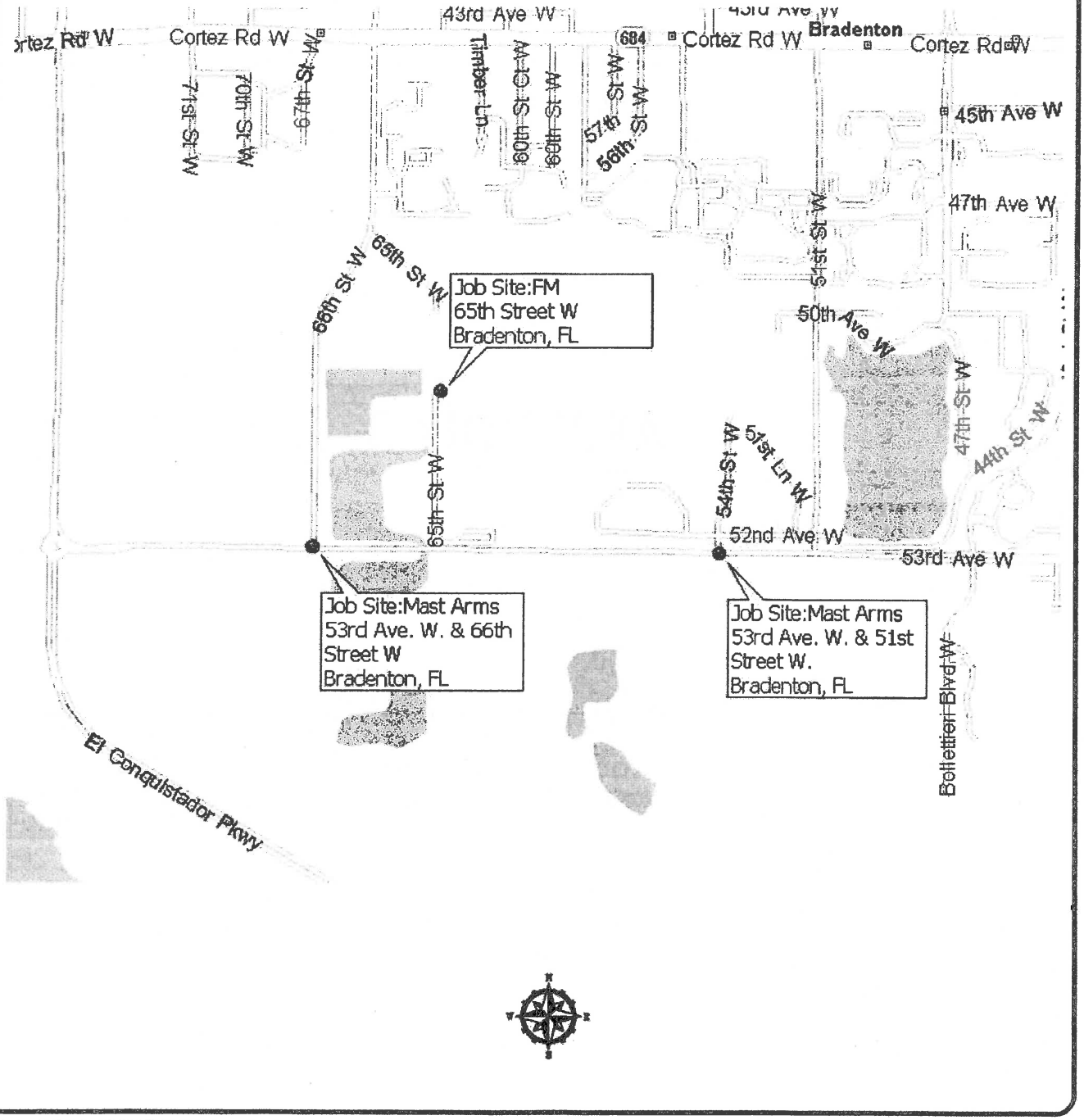
6.0 SUMMARY

In summary, we understand that you propose to construct mast arms and force main structures on this site. We have performed field and laboratory explorations to provide geotechnical engineering recommendations for groundwater control, foundation design and site preparation.

The soils encountered generally consist of loose to medium dense fine sand, and fine sand with silt and clay and shells from the surface to approximately 2 feet below grade; loose to very dense fine sand, and fine sand with silt and shells from 2 to 23 feet; and very loose to loose clayey silty sand and stiff clayey silt with limestone fragments and shells from 23 feet to the termination depth of the borings of 30 feet.

We hope this report meets your needs and discusses the problems associated with the proposed development. We would be pleased to meet with you and discuss any geotechnical engineering aspects of the project.

APPENDIX A



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PROPOSED MAST ARMS & FM STRUCTURE
53rd AVE. WEST AT 51st WEST.,& 66th STREET WEST
BRADENTON, MANATEE COUNTY, FLORIDA

SITE LOCATION PLAN

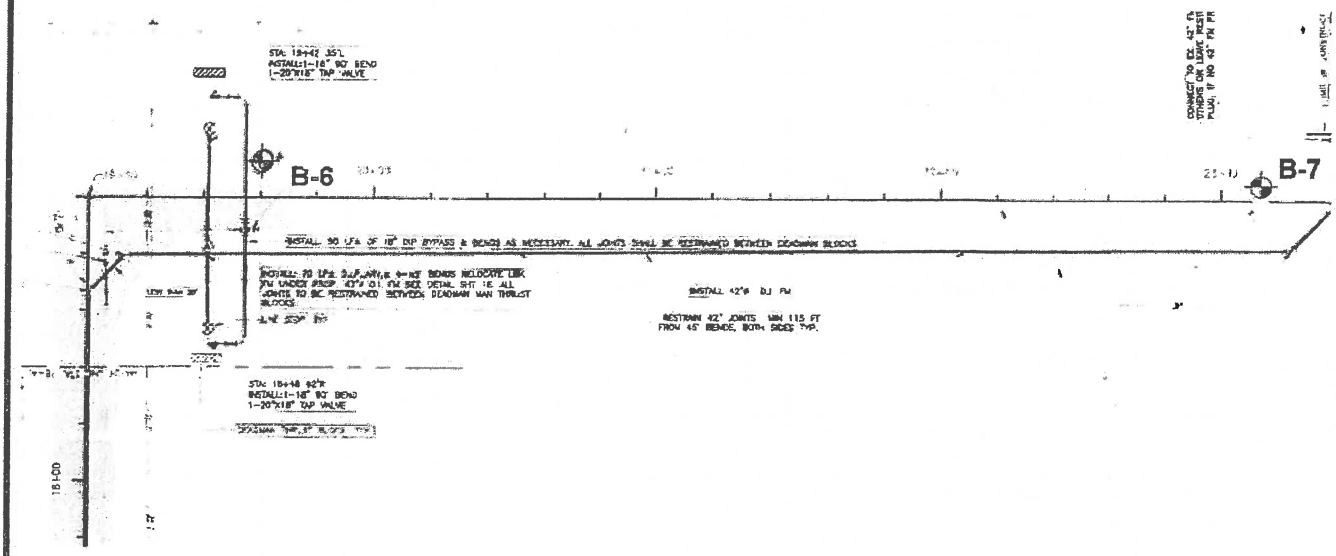
DRAWN BY:	Sandra.C	DATE:	MAY 2014	CHECKED BY:	Robert G.	DATE:	MAY 2014
SCALE:	NOT TO SCALE	PROJECT NO:	1130.1400053.0000	REPORT NO:	10524	APPENDIX:	

APPENDIX B

Boring Location:

B-6: Sta. 19+60, 10' LT

B-7: Sta.23+20, 2' LT



LEGEND	
APPROXIMATE LOCATION	
⊕	SPT BORING

UNIVERSAL
ENGINEERING SCIENCES

PROPOSED FM STRUCTURE
65th STREET WEST
BRADENTON, MANATEE COUNTY, FLORIDA

BORING LOCATION PLAN

DRAWN BY: S.C	DATE: MAY 2014	CHECKED BY: Robert G.	DATE: MAY 2014	
SCALE: NOT TO SCALE	PROJECT NO: 1130.1400053.0000	REPORT NO: 10524	APPENDIX:	

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Consultants In: Geotechnical Engineering
Environmental Sciences • Construction Material Testing
1748 Independence Blvd., Suite B-1 • Sarasota, FL 34234 • (941) 358-7410

SUMMARY OF LABORATORY RESULTS

Project: Proposed Mast Arm & FM Structures **Project No.:** 1130.1400053.0000

Client: Manatee County Public Work **Report No.:** 10524

Hand auger No.	Depth (Ft)	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	Org	USCS Classification	Sampling Method (ASTM)
B-02	1	Light brown fine sand with silt and trace shells (SP-SM)	6.0	9.7					SP-SM	ASTM 1586
B-02	4	Dark brown fine sand with trace silt and shell fragments (SP)	3.0	23.8					SP	ASTM 1586
B-03	3	Dark brown fine sand with (SP-SM)	6.3	25.5					SP-SM	ASTM 1586
B-03	8	Light gray silty sand with limestone fragments and shells (SM)	13.3	19.7					SM	ASTM 1586
B-04	2	Dark grayish brown fine sand (SP)	2.7	18.5					SP	ASTM 1586
B-05	4	Dark brown fine sand with trace silt and shell fragments (SP)	3.1	16.8					SP	ASTM 1586
B-06	2	Light brown fine sand with clay (SP-SC)	6.8	11.8					SP-SC	ASTM 1586
B-07	1	Dark brown clayey sand (SC)	16.5	68.3					SC	ASTM 1586
HA-1	5	Dark gray silty sand with silt, organics and roots (SM)	14.9	52.6					SM	ASTM 1452

Proposed Signalization Mast Arms
53rd Avenue West at 51st St. W. & 66th St. W.
Bradenton, Manatee County, FL
May 16, 2014

4.3.1-Table 3

Estimated Soil Design Parameters- Proposed Mast Arm Structures

Typical Depth (ft)		Effective Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (ksf)	Recommended Earth Pressure Coefficients			Allowable Bearing Pressure(ksf)
From	To				At Rest K_O	Active K_A	Passive K_P	
At 66th Street West								
B-1 & B-2								
0	2	47*	30	0	0.5	0.3	3.0	1.0
2	13	43	29	0	0.5	0.3	2.8	0.5
13	18	57	33	0	0.3	0.46	0.29	4.0
18	23	47	30	0	0.5	0.3	3.0	1.5
23	30	43	29	0	0.5	0.3	2.8	1.0
B-3								
0	2	47*	30	0	0.5	0.3	3.0	1.0
2	6	43	29	0	0.5	0.3	2.8	1.0
6	8	53	32	0	0.5	0.3	3.25	2.5
8	18	63	35	0	0.5	0.27	3.7	4.5
18	30	43	29	0	0.5	0.3	2.8	0.5
At 51st Street West								
B-4								
0	2	53*	32	0	0.5	0.3	3.25	2.5
2	4	63	34	0	0.4	0.3	3.5	4.0
4	13	53	32	0	0.5	0.3	3.25	2.5
13	18	63	34	0	0.4	0.3	3.5	4.0
18	23	57	33	0	0.3	0.46	0.29	3.5
23	30	43	29	0	0.5	0.3	2.8	1.0
B-5								
0	2	53*	32	0	0.5	0.3	3.25	2.5
2	13	43	29	0	0.5	0.3	2.8	1.0
13	23	47	30	0	0.5	0.3	3.0	2.0
23	30	43	29	0	0.5	0.3	2.8	1.0
HA-1								
0	7	43*	29	0	0.5	0.35	2.88	0.5

* We recommend the groundwater level be assumed at the ground surface for design purposes.

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BORING LOG

PROJECT NO.:	1130.1400053.0000
REPORT NO.:	10524
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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **B-01** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 66th Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.25
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense to loose brown fine sand with trace silt and shell fragments (SP)						
			12									
			9									
				▼		Loose dark brown fine sand with silt and shell fragments (SP-SM)						
5		2-2-3-5	5									
		4-3-3-3	6									
10		2-2-3-4	5									
						Dense light gray fine sand with trace shells (SP)						
15		11-18-22	40									
						Medium dense light gray fine sand with silt and shell fragments (SP-SM)						
20		6-9-5	14									
						Very loose to loose clayey silty sand (SM)						
25		2-2-2	4									
30		4-4-4	8			Boring terminated at 30 Feet.						

BORING LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **B-02** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 66th Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.6
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense light brown fine sand with silt and trace shells (SP-SM)						
			14				6.0	9.7				
			9	▼		Loose dark brown fine sand with trace silt and shell fragments (SP)						
						Loose dark brown fine sand with shells (SP)						
5		2-5-5-4	10									
						Loose dark brown fine sand with trace silt and shell fragments (SP)						
		2-3-7-8	10				3.0	23.8				
						Dense gray fine sand with silt and shell fragments (SP-SM)						
10		12-20-28-40	48									
						Dense light gray fine sand with trace shells (SP)						
15		13-20-21	41									
						Loose light gray fine sand with silt and shell fragments (SP-SM)						
20		5-4-3	7									
						Very loose clayey silty sand with shells (SM)						
25		2-2-2	4									
						Loose light gray fine sand with silt and shells (SP-SM)						
30		4-4-4	8			Boring terminated at 30 Feet.						

BORING_LOG_(10524) PROPOSED WORK ASSIGNMENT #38.GPJ_UNIENGSC.GDT_5/16/14

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REPORT NO.:	10524
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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Manatee County, Florida

BORING DESIGNATION: **B-03** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 66th Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.0
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M,B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						Medium dense yellowish brown fine sand with trace shells (SP)						
			11									
			8	▼		Loose light gray fine sand with shell fragments (SP)						
5						Loose dark brown fine sand with (SP-SM)						
		2-2-4-5	6				6.3	25.5				
		6-11-15-28	26			Medium dense to very dense light brown fine sand with shell fragments (SP)						
10		24-24-30-43	54									
15		16-25-25	50			Dense light gray fine sand (SP)						
20		4-3-2	5			Loose light gray fine sand with silt to silty sand and trace shell fragments (SP-SM/SM)						
25		2-2-2	4			Very loose to loose light gray silty sand with limestone fragments and shells (SM)	13.3	19.7				
30		5-5-5	10			Boring terminated at 30 Feet.						

BORING_LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **B-04** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 51 st Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.0
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		15-15-13-12	28			Medium dense dark brown fine sand with silt and shell fragments (SP-SM)						
				▼		Dense dark grayish brown fine sand (SP)						
		12-16-25-36	41				2.7	18.5				
5						Medium dense light brown fine sand with shell fragments (SP)						
		2-10-14-13	24									
		13-14-16-21	30									
10		20-32-43-48	25									
		18-24-19	43			Dense light brown fine sand with shell fragments (SP)						
15												
		5-12-19	31			Dense light gray fine sand with shell fragments (SP)						
20												
		3-3-3	6			Loose light gray fine sand with silt, limestone fragments and shells (SP-SM)						
25												
		2-6-4	10									
30						Boring terminated at 30 Feet.						

BORING_LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

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BORING LOG

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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **B-05** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 51 st Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.6
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		12-13-13-14	26	▼		Medium dense to loose dark brown fine sand with silt and shell fragments (SP-SM)						
		4-4-6-7	10									
5		2-3-4-3	7			Very loose dark brown fine sand with trace silt and shell fragments (SP)						
		2-1-1-1	2			Loose light brown fine sand with shell fragments (SP-SM)	3.1	16.8				
10		2-2-8-17	10									
						Medium dense light brown sandy shell						
15		6-10-8	18			Medium dense light brown fine sand with silt and shell fragments (SP-SM)						
20		10-10-6	16									
25		3-3-3	6			Stiff light gray clayey silt with limestone rock (ML)						
30		9-5-5	10									
						Boring terminated at 30 Feet.						

BORING_LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

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BORING LOG

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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **B-06** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: FM- Station No. 19+60, 10' LF

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.9
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
			12			Medium dense dark brown fine sand with trace silt (SP)						
			12	▼		Medium dense light brown fine sand with clay (SP-SC)	6.8	11.8				
5						Very dense light brown shelly fine sand (SP)						
		26-30-42-44	52			Dense to very dense light brown fine sand with shell fragments (SP)						
		29-26-22-18	48									
10		28-50/4"	50/4"									
						Medium dense light brown fine sand with shell fragments (SP)						
15		8-10-15	25			Boring terminated at 15 Feet.						
20												
25												
30												

BORING_LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

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REPORT NO.:	10524
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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Manatee County, Florida

BORING DESIGNATION: **B-07** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: FM- Station No. 23+20, 2' LF

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.75
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense dark brown clayey sand (SC)	16.5	68.3				
			12									
			12	▼		Light brown fine sand with silt (SP-SM)						
5		12-18-30-25	48			Dense light brown fine sand with silt and shell fragments (SP-SM)						
		27-30-36-39	66			Very dense light brown fine sand with shell fragments (SP)						
10		25-50/5"	50/5"									
		7-9-14	23			Medium dense light brown fine sand with shell fragments (SP)						
15						Boring terminated at 15 Feet.						
20												
25												
30												

BORING_LOG_(10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1400053.0000
REPORT NO.:	10524
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PROJECT: Proposed Mast Arms & FM Structures
53rd Ave West at 51st W., & 66th St. W
Bradenton, Mantee County, Florida

BORING DESIGNATION: **HA-1** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County Public Work

LOCATION: See Boring Location Plan

REMARKS: Mast Arms at 51 st Street West

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.1
DATE OF READING: 5-9-2014
EST. W.S.W.T. (ft):

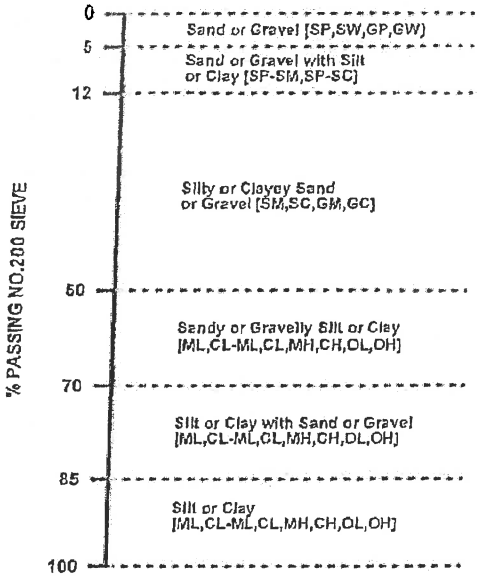
DATE STARTED: 5/9/14
DATE FINISHED: 5/9/14
DRILLED BY: M.B/D.D
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0			9	▼		Loose dark brown fine sand with silt (SP-SM)						
			5									
			6			Loose dark gray fine sna dwith silt (SP-SM)						
						Loose dark gray fine sand with trace silt and shell fragments (SP)						
5			5			Loose dark gray silty sand with silt, organics and roots (SM)	14.9	52.6				9.4
			4			Very loose dark brown fine sand with silt to silty sand and trace organics (SP-SM/SM)						
10												

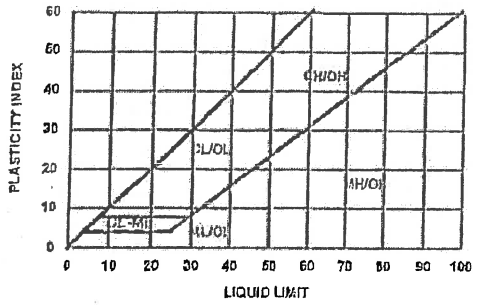
BORING LOG (10524) PROPOSED WORK ASSIGNMENT #38.GPJ UNIENGSC.GDT 5/16/14

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



UNIVERSAL ENGINEERING SCIENCES, INC.



PLASTICITY CHART

GROUP NAME AND SYMBOL

COARSE GRAINED SOILS

- WELL-GRADED SANDS [SW]
- WELL-GRADED GRAVELS [GW]
- POORLY-GRADED SANDS [SP]
- POORLY-GRADED GRAVELS [GP]
- POORLY-GRADED SANDS WITH SILT [SP-SM]
- POORLY-GRADED GRAVELS WITH SILT [GP-GM]
- POORLY-GRADED SANDS WITH CLAY [SP-SC]
- POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
- SILTY SANDS [SM]
- SILTY GRAVELS [GM]
- CLAYEY SANDS [SC]
- CLAYEY GRAVELS [GC]
- SILTY CLAYEY SANDS [SC-SM]

FINE GRAINED SOILS

- INORGANIC SILTS SLIGHT PLASTICITY [ML]
- INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
- INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
- INORGANIC SILTS HIGH PLASTICITY [MH]
- INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

- ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
- ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
- PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

RELATIVE DENSITY

(SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 5 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft
DENSE - 31 to 50 Blows/ft.
VERY DENSE - more than 50 Blows/ft.

CONSISTENCY

(SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX C

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGER030815.0MRP

CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after perfonming on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data related only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations. Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of drilling resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water level may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of investigation. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional review may be required.

Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. Th work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc's* agents, employees, professional staff, and subcontractors.

1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.

1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.

1.4 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.

2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.

2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.

3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.

4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.

4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.

5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.

5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.

6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.

6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.

6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the expres written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.

7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.

7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the

discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.

7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed $50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of $1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or $400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.

10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:

(a) the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and

(b) The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.

11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.

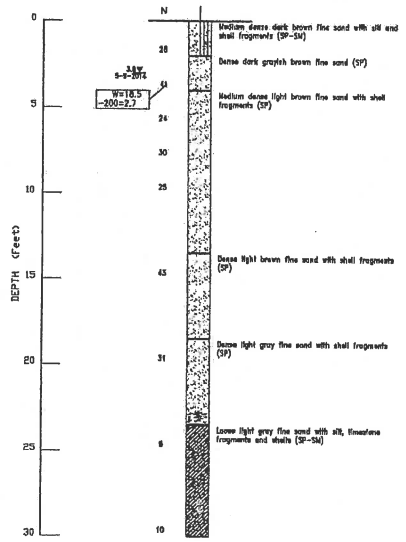
13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.

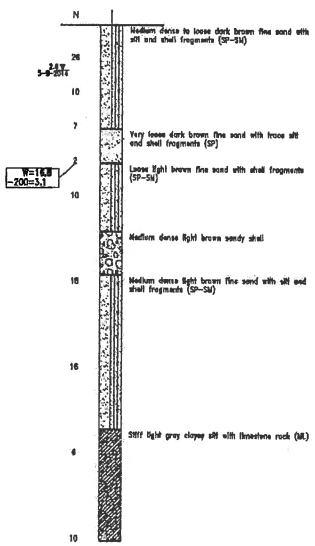
14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

B-4
See Boring Location Plan



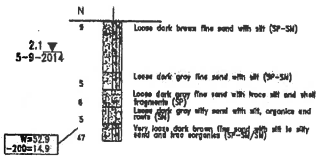
BORING TERMINATED AT 30 FT.

B-5
See Boring Location Plan

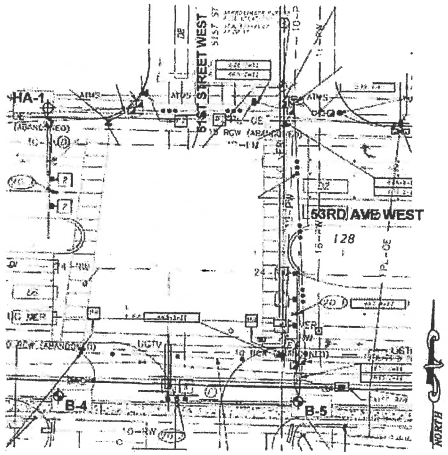


BORING TERMINATED AT 30 FT.

HA-7
See Boring Location Plan



HAND AUGER TERMINATED AT 7 FT.



KEY TO BORING LOGS

SHELL	CLAY	Sandy\Silty CLAY
LIMEROCK	SAND	Silty SAND
SAND with silt	SAND with clay	Clayey SAND

- N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT (18" SPOON – ASTM D 1586)
- (SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL BASED ON VISUAL OBSERVATION AND LABORATORY TESTS
- -200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
- W NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT
- PI PLASTICITY INDEX
- ▼ WATER TABLE DEPTH

NOTES

1. Subsurface variations between borings should be anticipated.
2. Boring locations are approximate (estimated from plans provided by client).

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

GRANULAR MATERIALS (SANDS & GRAVELS)		COHESIVE MATERIALS (SILTS & CLAYS)	
CONSISTENCY DESIGNATION	SPT N (BLOWS/FT.)	CONSISTENCY DESIGNATION	SPT N (BLOWS/FT.)
Very Loose	0–4	Very Soft	0–2
Loose	5–10	Soft	3–4
Medium Dense	11–30	Firm	5–8
Dense	31–50	Stiff	9–16
Very Dense	50+	Very Stiff	17–30
		Hard	30+

FOR: MANATEE COUNTY PUBLIC WORK

DRAWN BY: S.C | DATE: MAY, 2014

CHECKED BY: Robert G. | DATE: MAY, 2014

REPORT NO: | SCALE: NOT TO SCALE

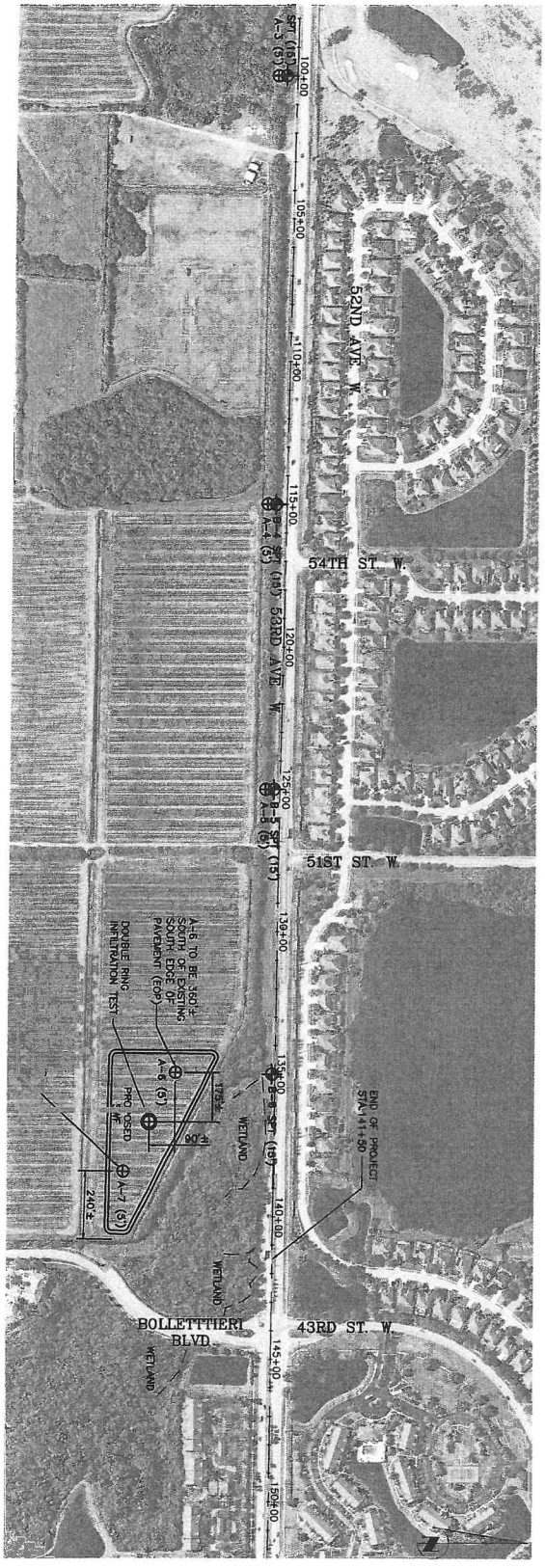
PROJECT NO: 1130.1400053.000

PROPOSED MAST ARM STRUCTURES
53rd AVE. WEST AT 51st W.
BRADENTON, MANATEE COUNTY FLORIDA

SOIL BORING PROFILE FOR INTERSECTION

UNIVERSAL ENGINEERING SCIENCES

APPENDIX: T–10



NO.	REVISION DESCRIPTION	BY	DATE

PROJECT # -----
SURVEY # -----
SEC./TWN./RGE. -----
SCALE ----- BY DATE
SURVEYED - - -
DESIGNED - - -
DRAWN - - -
CHECKED - - -

FLORIDA P.E. # -----

Signature & Date

53RD AVENUE WEST
43RD STREET WEST TO ROUNDABOUT
SOIL BORING LOCATION MAP

MANATEE COUNTY, FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East
Bradenton, FL 34208

UNIVERSAL ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION
53RD AVENUE WEST WIDENING
BRADENTON, FLORIDA
IFAS #W1200180

Project No.: 1130.1200045
Report No: 9833

Prepared For:
Manatee County Florida
Public Works Department
1022 26th Ave East
Bradenton, FL 34208

Prepared By:
Universal Engineering Sciences, Inc.
1748 Independence Boulevard, Suite B-1
Sarasota, FL 34234
941-358-7410

June 18, 2012

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June 18, 2012

Manatee County Government
Public Works Department
1022 26th Avenue East
Bradenton, FL 34208

Attention: Ms. Eyra Cash, P.E., Project Engineer II

Reference: **GEOTECHNICAL EXPLORATION**
53rd Avenue West Widening
Bradenton, Florida
UES Project No.: 1130.1200045.0000
UES Report No.: 9833

Dear Ms. Cash:

Universal Engineering Sciences, Inc. (UES) has completed the geotechnical exploration and engineering evaluation for the proposed 53rd Avenue West Widening project, from approximately Bollettieri Boulevard to 75th Street West in Bradenton, Florida.

In this report, we present the results of our field and laboratory explorations for the water main project, recommendations, and engineering evaluation of the subsurface conditions with respect to the proposed construction elements.

If you have any questions concerning this report or if we can be of any further assistance in the interim, please do not hesitate to contact this office.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization Number 549

Robert Gomez, P.E. #58348
Branch Manager

STATE OF FLORIDA

RG/bg

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1.0 INTRODUCTION

1.1 GENERAL

In this report, we present the results of the subsurface exploration for the proposed widening project on 53rd Avenue West in Bradenton, Florida. A general location plan of the project area appears in Appendix A: Site Location Plan. We have divided this report into the following sections.

1.0 Introduction - Defines what we did

2.0 Exploration Procedures - Describes how we did it

3.0 Findings - Describes what we encountered

4.0 Recommendations - Describes what we encourage you to do

5.0 Limitations - Describes the restrictions inherent in this report

Appendices - Presents support materials referenced in this report

1.2 PROJECT DESCRIPTION

An aerial site plan was provided by Manatee County for this report showing the test boring locations and station numbers. The project under consideration will involve the widening of an existing road and associated stormwater management pond in Bradenton, Florida. The project length is approximately 8,800 lf.

Our recommendations are based upon the above considerations and the results of our explorations. If any of this information is incorrect or if you anticipate any changes inform Universal Engineering Sciences so that we may review our recommendations.

1.3 PURPOSE AND SCOPE

The purposes of this exploration were:

- To explore the general subsurface conditions along the roadway.
- To interpret and review the subsurface conditions with respect to the proposed construction, and soil classification.
- To provide geotechnical recommendations for the proposed roadway widening.

This study was generally conducted according to the guidelines set forth in the Florida Department of Transportation Soil and Foundation Manual.

This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. The recovered soil samples were not examined, either

visually or analytically for chemical composition or environmental hazards.

2.0 EXPLORATION PROCEDURES

2.1 FIELD EXPLORATION

We explored the subsurface conditions along the south side of the existing roadway with seven (7) SPT soil test borings to a depth of 15 feet. We performed the Standard Penetration Test in each of the borings according to the procedures of ASTM D-1586. The basic procedure for the Standard Penetration Test is as follows: A standard split-barrel sampler is driven into the soil by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1-foot, after seating 6 inches, is designated the penetration resistance, or N-value; this value is an index to soil strength and consistency.

We also performed six (6) hand auger soil borings along the roadway shoulder and two (2) in the proposed retention pond area. These borings were performed according to the procedures of ASTM D 1452 by manually advancing a bucket auger into the soil to the required depth. We evaluated the soil type by visually inspecting the cutting recovered from the bucket auger as it periodically removed and emptied of soil.

Samples of the pavement materials were extracted from the existing sections of 53rd Avenue West using a 6 inch I.D. diamond impregnated core barrel. The asphaltic concrete and base materials were visually classified and thickness of the various components measured. The subgrade soil present below the pavement base was also visually examined.

One (1) Double Ring Infiltrometer (DRI) test was conducted in the field in the proposed stormwater retention pond area of the site. The DRI test is performed in general accordance with ASTM D 3385, "Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer". This test was performed to help establish soil infiltration values and drainage characteristics for your use in the stormwater retention and recovery design. The results of this test are presented in Appendix C. The DRI value is sometimes considered an unsaturated vertical permeability value and is sometimes estimated from relationships established by research conducted for various Florida Water Management Districts or from published USDA (NRCS) soil survey data. The unsaturated infiltration rate is applicable during the early stages of a storm event when waters are infiltrating vertically until soil saturation occurs, creating a mounding effect after which time horizontal flow dominates the infiltration process.

Jar samples of the soils encountered will be held in our laboratory for you inspection for 60 days unless we are notified otherwise.

The borings were field located by Universal Engineering Sciences, Inc. based on the project plans with stationing information, measured and estimated distances, and relationships to obvious landmarks.

2.2 LABORATORY INVESTIGATION

The soil samples recovered from the soil test borings were returned to our office and then a

geotechnical engineering staff member visually examined and reviewed the field descriptions. We selected representative soil samples for laboratory testing consisting of 68 Sieve Analysis 200-wash and 68 Moisture Content tests.

We also performed three (3) Limerock Bearing Ratio (LBR) test of soil samples, from the near subsurface subgrade soils.

We performed these tests to aid in classifying the soils and to help evaluate the general engineering characteristics of the site soils. The results of the laboratory investigation program completed are enclosed in Appendix B of this report.

3.0 FINDINGS

3.1 SURFACE CONDITIONS

A Universal Engineering Sciences representative performed a visual site observation of the property to gain a "hands-on" familiarity with the project area. Photos showing the existing pavement surfaces and grassed shoulder areas along the proposed alignment are included in Appendix C of this report.

The overall roadway alignment along the shoulders where the new widening will be constructed is relatively level along the road length and typically grassed shoulders. The south properties adjacent to the widening are typically undeveloped areas and existing lakes.

3.2 SOIL SURVEY INFORMATION

We examined the U.S.D.A. Soil Conservation Service (SCS) Soil Survey of Manatee County for relevant information about the roadway project. The Manatee County Soil Survey identifies five (5) soil types along the general roadway alignment, as further described in Table 1 (USDA Soil Conservation Service, 1983).

TABLE 1
USDA Soil Conservation Service Soil Classification

Name and Soil No.	Drainage Characteristics	Hydrologic Group	Predicted Seasonal High Water Table	Notable Feature(per soil survey) / Location
EauGallie fine sand (#20)	Poorly drained	B/D	0 – 1.0'	Pond Area
Felda-Wabasso Association (#24)	Poorly drained	B/D	0 – 1.0'	53rd Ave. Roadway
Canova (#7)	Very poorly drained	B/D	+2 – 0'	Muck / Organic Soil Sta. 53 to Sta. 58
Anclote (#7)	Very poorly drained	D	+2 – 0'	Muck / Organic Soil Sta. 53 to Sta. 58
Okeelanta (#7)	Very poorly drained	A/D	+2 – 0'	Muck / Organic Soil Sta. 53 to Sta. 58
Palmetto fine sand (#38)	Poorly drained	B/D	0 – 1.0	53rd Ave.
Broward Variant fine sand (# 6)	Poorly drained	B/D	0 – 1.0	Unweathered bedrock, 34 inches to 55 inches depth Sta. 123 to Sta. 127

As indicated in the above table, notable soils from the Manatee County Soil Survey (#6) consist of unweathered bedrock which may be encountered between depths of 34 inches to 55 inches below existing grade between Station 53+00 and Station 58+00. These soil types are considered very hard, very dense and may be difficult to excavate if encountered and may vary across the project site at different depths. In addition to this, another notable feature in the above table is Soil #7. The Manatee County Soil Survey indicates that these soils consist of muck / organics which may extend 8 inches to 20 inches across the site. These muck soils are unsuitable for road construction and if encountered will need to be removed.

3.3 SUBSURFACE CONDITIONS

The detailed subsurface conditions encountered during our field explorations are illustrated in Appendix C: Boring Logs. The location of borings has been identified by station number on the individual boring logs. The classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered soils samples and a limited number of laboratory tests.

Variations in the depth thickness, classification, and consistency of the subsurface soils occurred along the alignment at the individual test boring locations. The following generalized soil profile is intended to provide an overview of the soil conditions encountered. The individual Boring Logs should be consulted for specific soil and groundwater related information along the alignment.

Table 2: Generalized Soil Profile summarizes the soil strata encountered.

TABLE 2 Generalized Soil Profile	
Typical Depth (ft)	**Soil Descriptions**
0 – 2.5	Loose and medium dense brown fine sand with trace shell fragments [SP]
2.5 – 7	Loose, very loose and medium dense brown and gray fine sand with trace silt and fine sand with trace shell fragments [SP, SP-SM] – Rock encountered at 2.5 to 4 feet at B-5 , Sta. 125+00
7 – 13.5	Medium dense and dense fine sand and fine sand with varying amounts of silt and trace shell fragments [SP-SM, SP] – cemented sand at 2.5 to 15 feet at B-2, B-3, B-4, and B-5
13.5 – 15	Dense, loose and medium dense gray fine sand with trace of shell fragments [SP]
* **Termination of Deepest Boring** [ ] **Bracketed Text Indicates AASHTO Classification**	

We encountered groundwater at depths varying from 7 to 11 feet below existing grade at the boring locations at the time of our exploration. The water table can be expected to fluctuate with seasonal rainfall.

As noted earlier in this report, the Manatee County Soil Survey indicated that a portion of the 53rd Avenue West alignment is located within soils that consist of "unweathered bedrock" formations ranging between 34 inch and 55 inch depths. The approximate locations are from Sta.123+00 to Sta. 127+00. Boring B-5 at Sta. 125+00 was performed within these soil types and encountered medium dense silty sand with Rock at 2.5 feet to 4 feet. The "unweathered bedrock or limestone substratum" may be located sporadically along the road alignment during construction. The "unweathered bedrock or limestone" substratum would be difficult to excavated or drill through. Another notable feature based on the Manatee County Soil Survey, is the potential for "muck" soil between Sta. 53+00 and 58+00. In addition, borings B-2, B-3, B-4 and B-5 encountered very dense, cemented fine sands with trace shell fragments between 8.5 feet and 15 feet.

4.0 RECOMMENDATIONS

The following recommendations are based upon a review of the attached soil tests data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the roadway alignment or grading plans change from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

Additionally, if subsurface conditions are encountered during construction, which were not encountered in the borings, report those conditions immediately to us for observation and recommendations.

In this section of the report, we present our recommendations for:

- **Groundwater Control**
- **Roadway Embankment**
- **Pavement Evaluation**
- **Drainage Structure and Utility Considerations**
- **Retention Pond Considerations**

4.1 GROUNDWATER CONTROL

The groundwater table will fluctuate seasonally depending upon local rainfall. The normal seasonal high groundwater level typically occurs in the August-September period at the end of the rainy season. The seasonal high groundwater level is affected by a number of factors, such as drainage characteristics of the soils; land surface elevation, relief points (i.e. drainage ditches, lakes, rivers, swampy areas) and distance to relief points.

Several other factors influence the determination of the seasonal high water table (SHWT). When soils are subjected to alternating cycles of saturation and drying, discoloration or staining that is not part of the dominant soil color occurs. This is called mottling, and manifests itself in various shades of gray, brown, red or yellow. There are numerous processes that lead to this discoloration, including mineral accretions, oxidation, and bacteria growth within the soil. The presence of this discoloration indicates that groundwater has, at some point in time, reached that elevation and remained there long enough to cause any or all of these processes to occur. The SHWT elevation is assumed to be the highest point at which mottling is observed regardless of whether water is present at the time of observation. This estimate is independent of the actual location of the groundwater table.

Based on our visual inspection of the recovered soil samples, review of information obtained from the USDA soil survey of Manatee County, existing site conditions and our knowledge of local and regional hydrology, our best estimate is that the seasonal high groundwater level could be on the order of 1.5 to 3 feet below the existing grade at the testing boring locations, on average. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall.

It should be noted that the estimated seasonal high water levels do not provide any assurance that groundwater levels will not exceed these estimated levels during any given year in the future. Should the impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates. We recommend positive drainage be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project.

We recommend sufficient quantities of fill will be place in the pavement areas to mitigate the effect of groundwater on shallow excavations, such as foundations. Further, we recommend the bottom of the base course used in pavement construction be maintained at least 24 inches above the seasonal high water levels.

Temporary dewatering may be required during the site preparation, especially if construction proceeds during the wet season or periods of heavy rainfall. Temporary dewatering may also be required for deeper excavations, such as utility trenches, the backfilling of the drainfield area and other excavations. We recommend that the groundwater table be maintained at least 24 inches below all earthwork and compaction surfaces.

4.2 ROADWAY EMBANKMENT

We offer the following recommendations for site preparation and embankment construction for the roadway alignment.

4.2.1 Site Preparation

The following procedures should be followed to properly prepare the alignment area for roadway embankment construction.

1. If required, perform remedial dewatering prior to any earthwork operations.

2. Strip the proposed construction limits of all vegetation, roots, topsoil, existing improvements, debris and other deleterious materials within the limits of the pavement, shoulder, sidewalk, and other structural areas.

3. Proof-roll the subgrade with a heavily loaded, rubber-tired vehicle under the observation of a Universal Engineering Sciences' geotechnical engineer or his representative. Proof-rolling will help locate any zones of especially loose or soft soils not encountered in the soil test borings. Then undercut, or otherwise treat these zones as recommended by the engineer.

4. Proof-compact the subgrade from the surface by a vibratory roller until you obtain a minimum density of 100 percent of the standard Proctor maximum dry density (AASTHO T-99) to a depth of 1 foot below the existing site grade.

5. Test the subgrade for compaction at a frequency of not less than one test every 500 feet for each lane, shoulder, bike path, sidewall, curb or other structural area per foot of depth of improvement.

4.2.2 Embankment Materials and Construction

We recommend the construction of the roadway and associated embankments proceed according to F.D.O.T. Section 120 (FDOT Standard Specification for Roadway and Bridge Construction 2010). The fill material utilized should consist of a clean sand with less than 5 percent soil fines. Fill materials with soil fines between 5 and 12 percent may be used when above the water table, so long as strict moisture control is applied (within 2% of optimum moisture). The fill material should be placed in uniform 10 to 12 inch loose lifts and compacted to 100 percent of the standard Proctor maximum dry density (AASHTO T-99). Field density tests should be performed on each layer of fill material at a frequency of one test for every 500 linear feet of construction for each lane or associated area.

The surficial soils at the site would generally be suitable for use in embankment construction. However, fill from off-site borrow sources will generally be required above existing grades along the majority of the alignment. The borrow soil placed within the stabilized subgrade layer must meet an LBR of 40 or will need to be stabilized after placement to achieve the minimum LBR value.

4.3 PAVEMENT EVALUATION

4.3.1 General Design Considerations

The pavement design should be performed in accordance with standard F.D.O.T.'s Flexible Pavement Design Manual dated January 2000. Based on the LBR test performed from the soils sample of the existing subgrade embankment, we estimate the subgrade soils (which will likely be fill embankment), will exhibit an average LBR value of around 21 to 38 which corresponds to a Resilient Modulus (R_m) of 7,500 psi to plus 12,000 psi which can be used for the final pavement section design.

4.3.2 Existing Pavement Section

The core test results indicate the existing pavement section consisted of 3.72 to 10 inches of S-1 or S-3 asphaltic concrete and an average of 3 to 6 inches of shell base with a 3 to 4 inch sandy subgrade soil. In general, the pavement layers vary from core location. Based on the average layer thicknesses for asphalt, base measured and subbase and the structural coefficient for an existing asphalt structural course in fair condition outlined in F.D.O.T.'s Flexible Pavement Design Manual, Page 6.11.0, we estimate the existing pavement would have an average structural number of approximately 2.33 to 3.33.

4.3.3 New Pavement

We anticipate that the road widening will be constructed using the following materials; Type SP structural course, 150 lbs/sy & friction course FC-6, 160 lbs/sy; black base (F.D.O.T. ABC-3) or approved crushed concrete of limerock base, and F.D.O.T. type B stabilized subgrade.

4.3.3.1 Stabilized Subgrade

In accordance with FDOT Section 160, the stabilized subgrade materials should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557, AASHTO T-180) value. Further, beneath the base course, stabilize the subgrade materials to a minimum Limerock Bearing Ratio (LBR) of 40 percent as specified by Florida Department of Transportation (FDOT) requirements for Type B Stabilized Subgrade. The subgrade material should be "free-draining" and therefore a clay, marl or other impermeable stabilization material should not be used for mixing with the in-place sands.

The LBR test results indicate that some of the sandy material from the embankment area may be lower than 40 LBR which is required for a stabilized subgrade material. The stabilized subgrade can be a blend of on-site borrowed soil and imported stabilizing material such as limerock or shell. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions.

The primary function of stabilized subgrade beneath the base course is to provide a stable and firm subgrade so that the base can be properly and uniformly placed. Depending upon the soil type, fill material from an off-site source may have sufficient stability to provide the needed support without additional stabilizing material. Generally sands with shell or rock should have sufficient stability and may not require additional stabilizing material. Universal should observe the soils exposed on the finish grades from both on and off-site fill sources to evaluate whether or not additional stabilization will be required beneath the base course.

4.3.3.2 Base Course

We anticipate that the base course will be asphalt base (F.D.O.T ABC-3), approved graded crushed concrete or limerock and should comply with the requirements of F.D.O.T. Standard Specifications for Roadway and Bridge Construction.

Compliance testing should consist of performing in-place density tests and thickness measurements at the standard F.D.O.T. frequency.

4.3.3.3 Surface Binder Course

The asphaltic concrete courses should consist of Florida Department of Transportation (FDOT) Type S asphaltic concrete. Specific requirements for Type S asphaltic concrete are outlined in the current Florida Department of Transportation, Standard Specifications for Road and Bridge Construction. Typically, binder course consist of F.D.O.T. Type S-1 and the surface course of F.D.O.T. Type S-III.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and to perform laboratory densities. Cores should be obtained at standard F.D.O.T. frequencies.

4.4 DRAINAGE STRUCTURE AND UTILITY CONSIDERATIONS

We assume that proposed drainage utility improvements at the site may have invert elevations several feet below existing grades. In general, the soils at this approximate level are loose to medium dense and dense fine sands (A-3) and fine sands with silt (A-2). These soils should be suitable for support of the planned utility improvements and for reuse as backfill. The fine sand with silt type soils, when excavated from below the water table, may require spreading and drying prior to reuse to achieve a moisture content sufficient to obtain the recommended degree of compaction. Further, any clayey sand type soils will require extensive aeration and drying prior to reuse.

4.4.1 Trench Excavation and Backfill Recommendations

The following are our recommendations for construction of the proposed utility improvements.

1. If deemed necessary by the contractor, install a dewatering system capable of maintaining a groundwater level at least 2 feet below bottom of pipe level.

2. After excavation to design invert elevations, the in-situ bedding soils should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557) to a depth of 12 inches below the bedding level. Compaction in confined areas can probably be achieved using jumping jacks or light weight walk-behind vibratory sleds and/or rollers.

3. After constructing the utility lines, backfill with suitable sand fill placed in 6 to 8 inch loose lifts. Each lift should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557). Beneath pavement areas, the top 36 inches of backfill should be compacted to at least 98 percent. Additionally, when/where applicable local jurisdictional compaction requirements should be followed when stricter than the recommendations herein.

4. If difficult compaction operations are encountered beneath the utilities due to excessive fines and/or wet conditions, saturated soils could be over-excavated and replaced with FDOT No. 57 stone.

5. Excavation work will be required to meet OSHA Excavation Standard Subpart P regulations, Type C Soils. Either a trench box, braced sheet pile structure or an excavation with temporary side slopes cut back at 1.5 horizontal to 1.0 vertical can be implemented. The side slope of 1.5 horizontal to 1.0 vertical is contingent upon the dewatering system adequately controlling slope seepage. Sheet piling should be designed according to OSHA sheeting and bracing requirements. We recommend a Florida registered Professional Engineer design any required sheeting/bracing system.

6. Within Right-of-Way driveways connecting to FDOT or county roads, the local county authority criteria and requirements for trench backfill and compaction should govern the testing procedures.

Based on the SPT test results and soils encountered with the borings along 26th Street West, soil design parameters of angle of internal friction, earth pressure coefficient and unit weights were estimated and are presented in Table 3.

Table 3
Estimated Soil Design Parameters

Typical Depth (Ft		Effective Unit Weight	Friction Angel	Recommended Earth Pressure Coefficients		
From	To	(pcf)	(degrees)	At Rest K_O	Active K_A	Passive K_P
0	4	46	28	0.6	0.36	2.78
4	8	50	30	0.6	0.33	3.03
8	15	52	32	0.4	0.31	3.23

* We recommend the groundwater level be assumed at the ground surface for design purposes.

4.5 RETENTION POND CONSIDERATIONS

The soils encountered at the boring locations (HA-6 and HA-7) performed within the proposed

retention ponds area consisted mainly of fine sands and fine sands with varying amounts of silt to a depth of 3 feet, followed by fine sand to a depth of about 5 feet.

The groundwater at the location of the proposed pond was not encountered at the time the boring was performed. The Manatee County Soil Survey indicates that the predominant soil type at the proposed pond site are EauGallie fine sands (#20) with a seasonal high water of 1 foot below existing grade under natural conditions, and a permeability rate of 0.6 to 20 inches per hour. Based on the Double ring Infiltrometer Test performed within the retention pond area, a stabilized infiltration rate of 6 inches per hour was measured. Based upon our field data, our experience with nearby sites, and the Manatee County Soil Survey, our best estimate is the seasonal high groundwater table is most likely within 1.5 to 2 feet of the existing site grade at this location.

The soils encountered within the soil borings at the retention pond appears to be suitable for use as fill. We suggest the gradation of the excavated material be periodically checked to determine their suitability as fill. General mixing of the materials can be expected during excavations.

It should be noted that other excavation considerations, such as temporary and long term slope stability, erosion control, etc. were beyond the scope of this study.

5.0 LIMITATIONS

This report has been prepared in order to aid the architect/engineer in the design of the proposed pavement widening project. The scope of services provided was limited to the specific project and locations described herein. The description of the project's design parameters represents our understanding of significant aspects relevant to soil and foundation characteristics.

The recommendations submitted in this report are based upon the data obtained from the limited number of soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations which may occur between the boring locations or unexplored areas of the site. This report should not be used for estimating such items as cut and fill quantities.

Our field exploration did not find unsuitable or unexpected materials at the time of occurrence. However, borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by

Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within Appendix C "Important Information About Your Geotechnical Engineering Report" prepared by ASFE, an association of firms practicing in the geosciences.

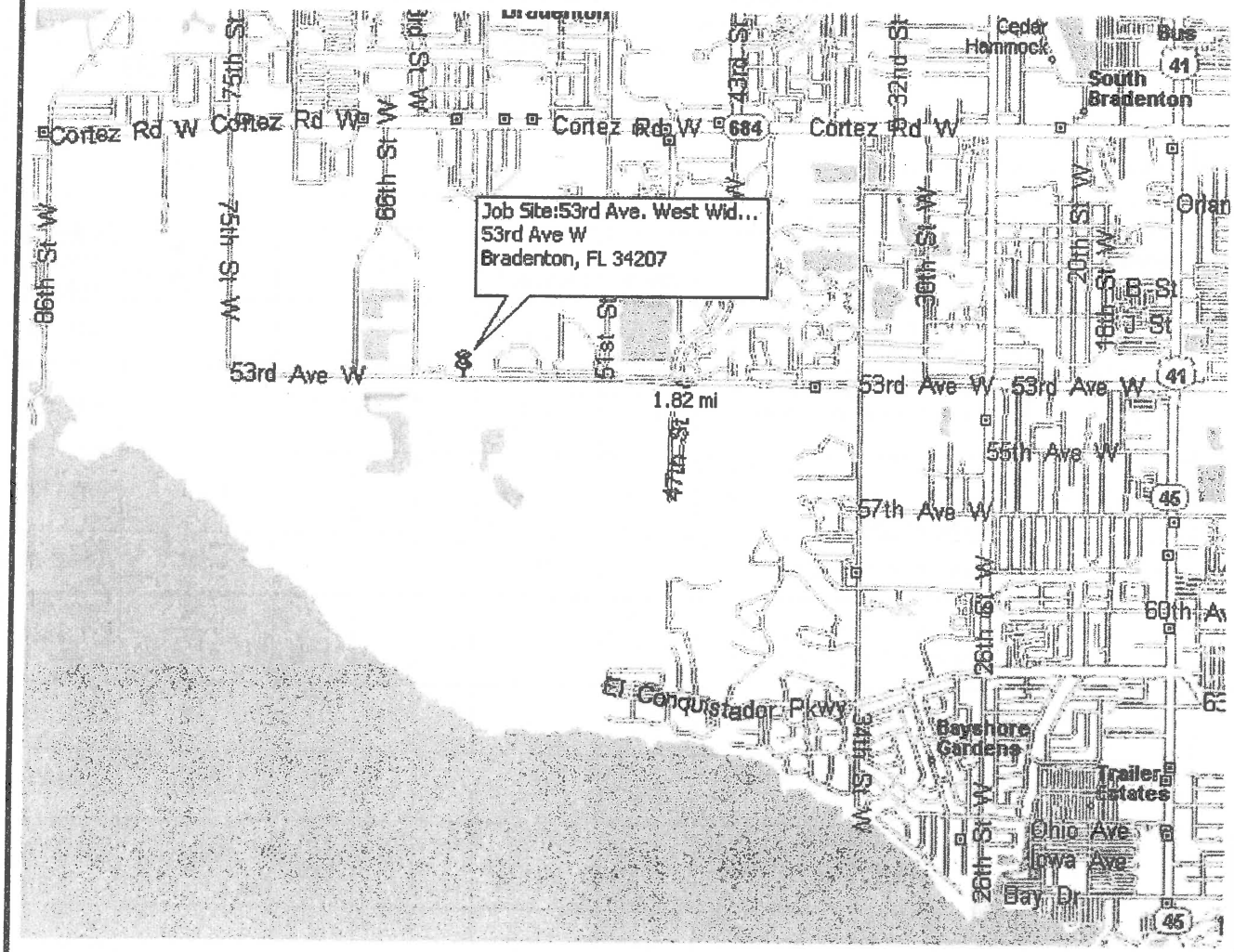
6.0 SUMMARY

In summary, we understand that you proposed to perform a road widening of 53rd Avenue West in Bradenton, Florida. We have performed field and laboratory exploration to provide geotechnical engineering recommendations for groundwater consideration and water main construction.

The soils encountered generall consist of loose, very loose and medium dense fine sand and fine sand with trace silt and trace shell fragments from existing grade to depth of 8.5 feet. Below and extending to 15 feet, medium dense and very dense, cemented fine sand was encountered. We encountered groundwater at a depth of 7 to 11 feet below existing grade at the time of our exploration.

Our best estimate is the seasonal high groundwater table would be 1.5 to 3 feet below the average existing site grades. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall.

We hope this report meets your needs and discusses the problems associated with the proposed development. We would be pleased to meet you and discuss any geotechnical engineering aspects of the project.



UNIVERSAL
ENGINEERING SCIENCES

WORK ASSIGNMENT # 19
53rd AVE. WEST WIDENING
BRADENTON, FLORIDA

SITE LOCATION PLAN

DRAWN BY: Sandra.C	DATE: MAY. 2012	CHECKED BY: Robert G.	DATE: MAY. 2012
SCALE: NOT TO SCALE	PROJECT NO: 1130.1200045.0000	REPORT NO: 9833	APPENDIX:

UNIVERSAL
ENGINEERING SCIENCES
Consultants in: Geotechnical Engineering • Environmental Sciences
Construction Materials Testing • Threshold Inspection • Private Provider Inspection
1748 Independence Blvd. Suite B1 • Sarasota, Fl 34234 • (941) 358-7410 • Fax (941) 358-7353

SUMMARY OF LABORATORY RESULTS

Project: Work Assignment # 19 53rd Ave. West Bradenton, Florida

Project No.: 1130.1200045.000

Client: Manatee County

Report No.: 9833

Boring No.	Sample No.	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	USCS Classification	Sampling Method (ASTM)
B-1	1	Brown fine sand with trace shell fragments (SP)	4.6	4.9				SP	ASTM 1586
B-1	2	Dark brown and light brown fine sand with trace shell fragments (SP)	2.8	6.4				SP	ASTM 1586
B-1	3	Light brown fine sand / dark brown fine sand with trace of silt, trace roots (SP/SP-SM)	11.5	11.5				SP-SM	ASTM 1586
B-1	4	Grayish brown silty sand (SM)	13.2	13.2				SM	ASTM 1586
B-1	5	Light yellowish brown fine sand with trace shell fragments (SP)	2.9	2.9				SP	ASTM 1586
B-1	6	Light gray fine sand with shell fragments (SP)	3.5	3.5				SP	ASTM 1586
B-1	7	Light gray fine sand with trace shell fragments (SP)	2.3	22.7				SP	ASTM 1586
B-2	1	Yellowish brown fine sand with trace of silt, shell fragments (SP-SM)	8.1	4.6				SP-SM	ASTM 1586
B-2	2	Light gray fine sand with trace shell fragments (SP)	0.5	16.4				SP	ASTM 1586
B-2	3	Light gray fine sand / dark brown fine sand (SP)	2.2	17.2				SP	ASTM 1586
B-2	4	Loose dark yellowish brown brown fine sand with trace roots (SP)	2.2	25.1				SP	ASTM 1586
B-2	5	Medium dense light gray fine sand with trace shell fragments (SP)	3.2	21.0				SP	ASTM 1586
B-2	6	Dense light gray fine sand with trace of silt and shell fragments (SP-SM)	6.0	18.3				SP-SM	ASTM 1586
B-2	7	Dense light gray fine sand with trace clayey sand, trace shell fragments (SP)	3.0	24.3				SP	ASTM 1586

SUMMARY OF LABORATORY RESULTS

Project: Work Assignment # 19 53rd Ave. West Bradenton, Florida

Project No.: 1130.1200045.000

Client: Manatee County

Report No.: 9833

Boring No.	Sample No.	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	USCS Classification	Sampling Method (ASTM)
B-3	1	Dark brown fine sand with trace of silt and trace gravel (SP-SM)	9.4	5.7				SP-SM	ASTM 1586
B-3	2	Dark gray fine sand (SP)	1.9	12.2				SP	ASTM 1586
B-3	3	Light gray fine sand with roots / dark yellowish brown fine sand with trace of silt (SP/SP-SM)	6.6	20.0				SP-SM	ASTM 1586
B-3	4	Dark yellowish brown fine sand with trace of silt (SP-SM)	10.2	18.0				SP-SM	ASTM 1586
B-3	5	Light gray fine sand with shell fragments (SP)	1.6	23.2				SP	ASTM 1586
B-3	6	Light gray fine sand with shell fragments (SP)	7.0	18.4				SP	ASTM 1586
B-3	7	Light gray fine sand with trace shell fragments (SP)	2.9	22.0				SP	ASTM 1586
B-4	1	Dark brown fine sand with trace shell fragments (SP)	3.1	13.4				SP	ASTM 1586
B-4	2	Dark gray fine sand (SP)	3.8	16.5				SP	ASTM 1586
B-4	3	Light yellowish brown fine sand with trace of silt, trace yellowish brown (SP-SM/SP)	6.2	16.7				SP-SM	ASTM 1586
B-4	4	Gray fine sand with shell fragments (SP)	1.9	23.7				SP	ASTM 1586
B-4	5	Light gray fine sand with shell fragments (SP)	2.5	22.0				SP	ASTM 1586
B-4	6	Light gray fine sand with trace of silt and shell fragments (SP-SM)	7.3	14.1				SP-SM	ASTM 1586
B-4	7	Light brown fine sand with trace shell fragments (SP)	3.1	19.6				SP	ASTM 1586
B-5	1	Dark brown fine sand (SP)	4.4	6.3				SP	ASTM 1586
B-5	2	Dark brown silty sand with trace light brownish gray fine sand with rock, shell fragmnets (SP / SM)	12.9	21.3				SM	ASTM 1586

SUMMARY OF LABORATORY RESULTS

Project:	Work Assignment # 19 53rd Ave. West Bradenton, Florida	**Project No.:**	1130.1200045.000
Client:	Manatee County	**Report No.:**	9833

Boring No.	Sample No.	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	USCS Classification	Sampling Method (ASTM)
B-5	3	Gray fine sand / dark gray fine sand (SP)	2.5	13.1				SP	ASTM 1586
B-5	4	Gray fine sand with shell fragments (SP)	2.6	24.0				SP	ASTM 1586
B-5	5	Light gray fine sand with shell fragments (SP)	2.5	19.1				SP	ASTM 1586
B-5	6	Light gray fine sand with shell fragments (SP)	5.0	15.2				SP	ASTM 1586
B-5	7	Light brown fine sand with trace shell fragments (SP)	3.5	17.2				SP	ASTM 1586
B-6	1	Light brown fine sand with trace shell fragments (SP)	3.2	9.9				SP	ASTM 1586
B-6	2	Grayish fine sand with trace shell fragments (SP)	3.2	19.6				SP	ASTM 1586
B-6	3	Grayish fine sand with shell fragments (SP)	4.8	18.4				SP	ASTM 1586
B-6	4	Dark yellowish brown fine sand with trace of silt (SP-SM)	11.1	18.5				SP-SM	ASTM 1586
B-6	5	Brown fine sand with trace of silt (SP-SM)	5.5	17.9				SP-SM	ASTM 1586
B-6	6	Light brown fine sand with trace of silt (SP-SM)	6.0	17.2				SP-SM	ASTM 1586
B-6	7	Light gray fine sand with shell fragments (SP)	1.0	24.6				SP	ASTM 1586
B-7	1	Light grayish brown fine sand (SP)	3.9	3.3				SP	ASTM 1586
B-7	2	Dark grayish brown fine sand (SP)	2.1	5.0				SP	ASTM 1586
B-7	3	Dark gray fine sand (SP)	2.3	10.8				SP	ASTM 1586
B-7	4	Light yellowish brown fine sand (SP)	3.3	17.8				SP	ASTM 1586
B-7	5	Dark yellowish brown fine sand with trace of silt (SP-SM)	7.9	16.9				SP-SM	ASTM 1586
B-7	6	Yellowish brown brown fine sand with trace of silt (SP-SM)	5.4	18.0				SP-SM	ASTM 1586

SUMMARY OF LABORATORY RESULTS

Project:	Work Assignment # 19 53rd Ave. West Bradenton, Florida	**Project No.:**	1130.1200045.000
Client:	Manatee County	**Report No.:**	9833

Boring No.	Sample No.	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	USCS Classification	Sampling Method (ASTM)
B-7	7	Light grayish brown fine sand with trace of silt (SP-SM)	5.4	17.5				SP-SM	ASTM 1586
A-1	1	Grayish brown fine sand (SP)	3.5	3.7				SP	ASTM 1452
A-1	2	Light brown fine sand (SP)	2.5	5.7				SP	ASTM 1452
A-1	3	Light brown fine sand (SP)	2.0	11.2				SP	ASTM 1452
A-1	4	Dark grayish brown fine sand with of silt (SP-SM)	6.0	19.9				SP-SM	ASTM 1452
A-1	5	Yellowish brown fine sand with of silt (SP-SM)	8.5	15.5				SP-SM	ASTM 1452
A-2	1	Light brown fine sand with trace of silt and trace shell fragments (SP-SM)	7.6	5.8				SP-SM	ASTM 1452
A-2	2	Light brown fine sand with trace shell fragments (SP)	4.4	7.6				SP	ASTM 1452
A-2	3	Light gray fine sand with trace shell fragments (SP)	0.6	18.1				SP	ASTM 1452
A-2	5	Brown clayey sand and silty sand with trace shell fragments (SC,SM)	15.6	31.0				SC	ASTM 1452
A-3	1	Grayish brown fine sand with trace of silt and trace gravel (SP-SM)	7.5	3.8				SP-SM	ASTM 1452
A-3	2	Light gray fine sand with trace of silt and rock fragments (SP-SM)	7.5	4.8				SP-SM	ASTM 1452
A-3	3	Light gray fine sand (SP)	1.2	15.2				SP	ASTM 1452
A-3	4	Grayish brown fine sand with trace silt and trace rock (SP-SM)	6.1	20.9				SP-SM	ASTM 1452
A-3	5	Yellowish brown silty sand (SM)	13.8	17.4				SM	ASTM 1452
A-4	1	Grayish brown fine sand with trace shell fragments (SP)	2.7	1.4				SP	ASTM 1452

SUMMARY OF LABORATORY RESULTS

Project: Work Assignment # 19 53rd Ave. West Bradenton, Florida

Project No.: 1130.1200045.000

Client: Manatee County

Report No.: 9833

Boring No.	Sample No.	Sample Description	No. 200, %	Water Content, %	LL	PL	PI	USCS Classification	Sampling Method (ASTM)
A-4	2	Dark brown / light brown fine sand with trace shell fragments (SP)	4.4	13.5				SP	ASTM 1452
A-4	3	Dark gray fine sand with trace shell fragmets (SP)	2.7	18.0				SP	ASTM 1452
A-4	4	Dark gray fine sand with trace shell fragmets (SP)	4.2	16.8				SP	ASTM 1452
A-4	5	Dark gray fine sand with trace silt and trace roots (SP-SM)	8.9	23.5				SP-SM	ASTM 1452
A-6	1	Dark grayish fine sand (SP)	3.0	3.0				SP	ASTM 1452
A-6	2	Light gray and trace dark brown fine sand (SP)	1.3	8.7				SP	ASTM 1452
A-6	3	Yellowish brown silty sand with trace shell fragments (SM)	13.5	17.3				SM	ASTM 1452
A-6	4	Light gray fine sand with shell fragments (SP)	0.6	22.9				SP	ASTM 1452
A-6	5	Light gray fine sand with shell fragments (SP)	1.5	20.8				SP	ASTM 1452
A-7	1	Very dark grayish fine sand (SP)	3.8	6.0				SP	ASTM 1452
A-7	2	Dark yellowish brown fine sand (SP)	3.1.	16.2				SP	ASTM 1452
A-7	3	Yellow fine sand (SP)	1.8	18.4				SP	ASTM 1452
A-7	4	Yellow silty sand (SM)	15.7	3.1				SM	ASTM 1452
A-7	5	Yellowish brown fine sand with trace of silt (SP)	2.1	20.1				SP	ASTM 1452

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LIMEROCK BEARING RATIO

Client: Manatee County Public Works
Project: WA #19 - 53rd Avenue West Widening
Project No.: 1130.1200045.0000

Report Date: 5/24/2012
Report No.:
Technician: J. King

TEST DATA

SAMPLE

Description: Dark gray sand with trace shell
Location: A-3
Source: Existing Ground
Passing #4: 94%

Date Sampled: 05/17/12

COMPACTION

Method: FM 5-515
Date: 05/22/12

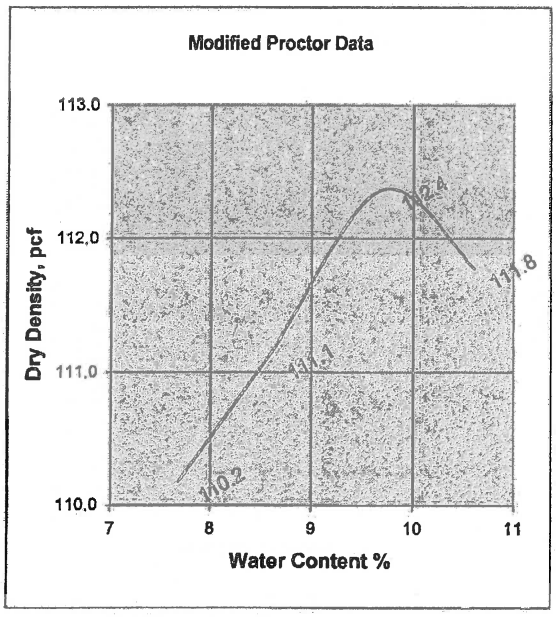
TESTING

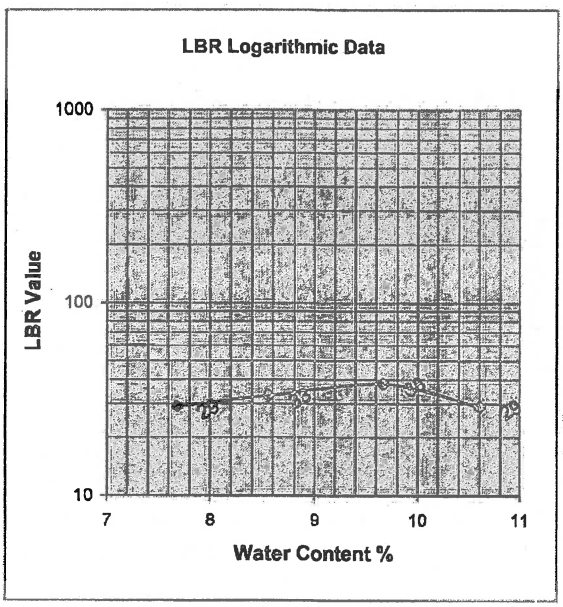
Surcharge: 15 lbs
Soak time: 48 +/- 4 hrs
Date: 05/24/12

REPORT DATA

Max. Dry Density:	112.4	%Passing
Optimum Water %:	9.7	#200 Sieve
		6.3%

Maximum LBR: 38





Results may exceed Project Specifications

Universal Engineering Sciences, Inc.
Reviewed By

Brewster Dombkowski
CSD Manager

Universal Engineering Sciences

Robert Gomez, P. E.
Florida Registration # 58348

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Consultants In: Geotechnical Engineering
Environmental Sciences • Construction Material Testing

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LIMEROCK BEARING RATIO

Client: Manatee County Public Works
Project: WA #19 - 53rd Avenue West Widening
Project No.: 1130.1200045.0000

Report Date: 5/24/2012
Report No.:
Technician: J. King

TEST DATA

SAMPLE

Description: Dark gray sand with trace shell
Location: A-4

Source: Existing Ground
Passing #4: 94%

Date Sampled: 05/17/12

COMPACTION

Method: FM 5-515

Date: 05/22/12

TESTING

Surcharge: 15 lbs Soak time: 48 +/- 4 hrs

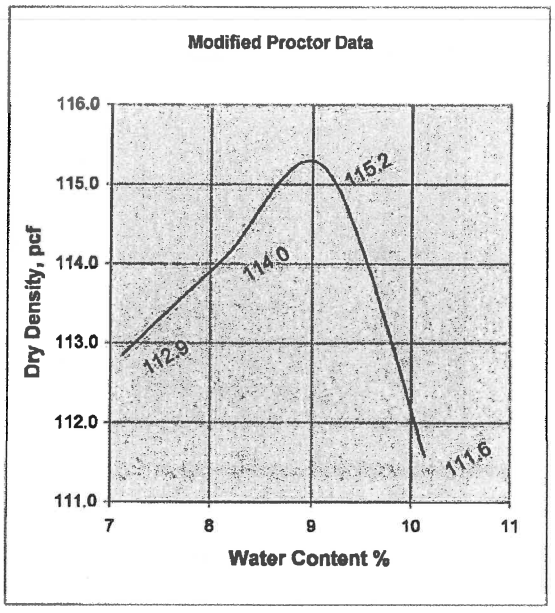
Date: 05/24/12

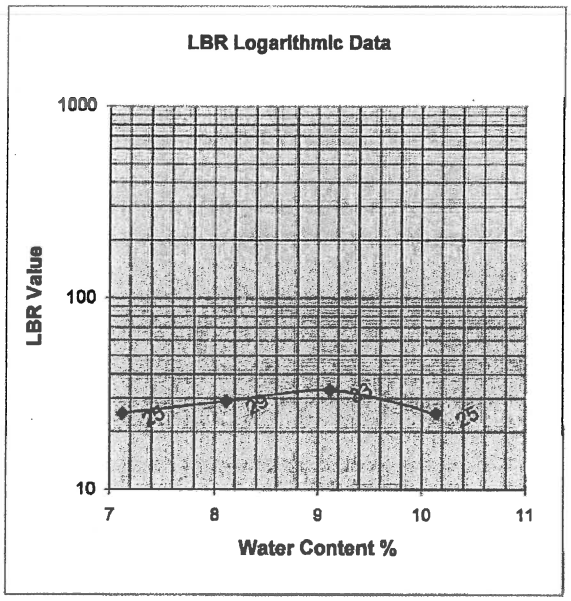
REPORT DATA

Max. Dry Density: 115.2
Optimum Water %: 9.0

%Passing #200 Sieve
3.3%

Maximum LBR: 33





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LIMEROCK BEARING RATIO

Client: Manatee County Public Works
Project: WA #19 - 53rd Avenue West Widening
Project No.: 1130.1200045.0000

Report Date: 5/24/2012
Report No.:
Technician: J. King

TEST DATA

SAMPLE

Description: Dark gray sand with trace shell
Location: A-8

Source: Existing Ground
Passing #4: 94%

Date Sampled: 05/17/12

COMPACTION

Method: FM 5-515

Date: 05/22/12

TESTING

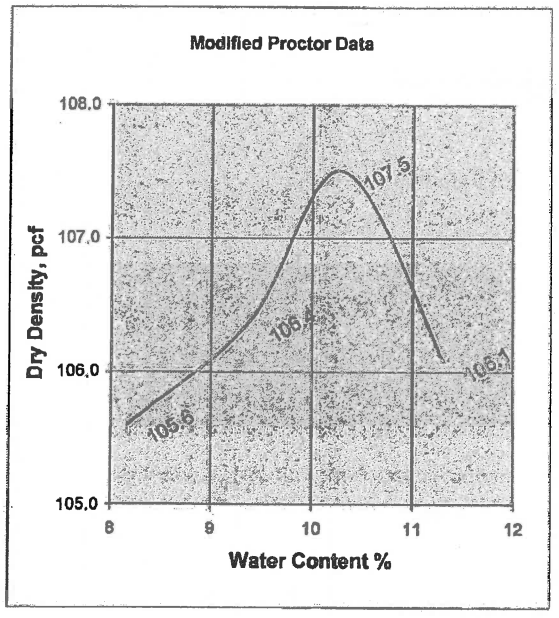
Surcharge: 15 lbs Soak time: 48 +/- 4 hrs

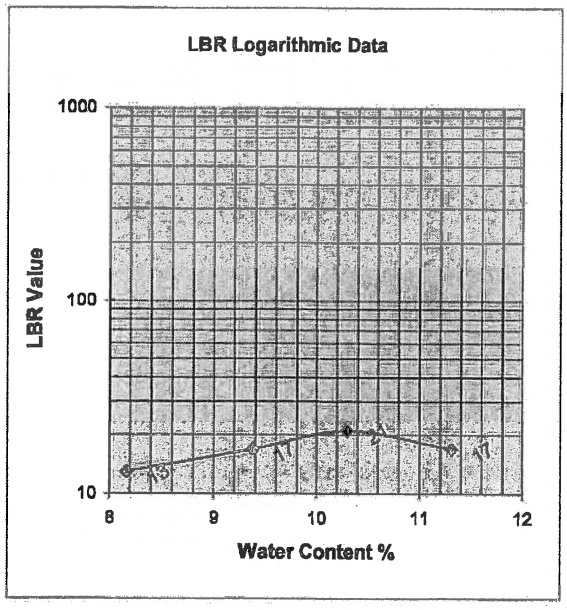
Date: 05/24/12

REPORT DATA

Max. Dry Density:	107.5	%Passing
Optimum Water %:	10.3	#200 Sieve
		7.2%

Maximum LBR: 21





Results may exceed Project Specifications

Universal Engineering Sciences, Inc.
Reviewed By

Brewster Dombkowski
CSD Manager

Universal Engineering Sciences

Robert Gomez, P. E.
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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	1

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 74 + 00

BORING DESIGNATION: **B-1** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 2.5

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Brown fine sand with trace shell fragments (SP) -Probe-Firm						
				▽			4.6	4.9				
						Dark brown and light brown fine sand with trace shell fragments (SP) -Probe-Firm	2.8	6.4				
						Light brown fine sand / dark brown fine sand with trace of silt, trace roots (SP/SP-SM)						
5							11.5	25.5				
						Medium dense grayish brown silty sand (SM)						
		12-8-12	21				13.2	17.5				
				▼		Medium dense light yellowish brown fine sand with trace shell fragments (SP)						
		8-6-7	13				2.9	25.8				
						Medium dense light gray fine sand with shell fragments (SP)						
10		4-5-12	17				3.5	22.2				
						Dense light gray fine sand with trace shell fragments (SP)						
15		18-16-21	37				2.3	22.7				
						Boring Termionated at 15 Feet.						
20												

BORING_LOG (9833)\WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	1

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 87 + 00

BORING DESIGNATION: **B-2** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 2.5

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Yellowish brown fine sand with trace of silt, shell fragments (SP-SM)						
						-Probe-Firm						
				▽			8.1	4.6				
						Light gray fine sand with trace shell fragments (SP)						
						-Probe-Firm	.5	16.4				
						Light gray fine sand / dark brown fine sand (SP)						
5												
							2.2	17.2				
						Loose dark yellowish brown brown fine sand with trace roots (SP)						
		2-16	7				2.2	25.1				
						Medium dense light gray fine sand with trace shell fragments (SP)						
				▼								
		6-7-14	21				3.2	21				
						Dense light gray fine sand with trace of silt and shell fragments (SP-SM)						
10		10-16-27	43				6.0	18.3				
						Dense light gray fine sand with trace clayey sand, trace shell fragments (SP)						
15		17-19-21	40				3.0	24.3				
						Boring Termionated at 15 Feet.						
20												

BORING_LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	1

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 100 + 00

BORING DESIGNATION: **B-3** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 3.0

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense dark brown fine sand with trace of silt and trace gravel (SP-SM)						
		3-7-6	13	▽		Medium dense dark gray fine sand (SP)	9.4	5.7				
		6-6-8	14			Light gray fine sand with roots / dark yellowish brown fine sand with trace of silt (SP/SP-SM)	1.9	12.2				
5		6-6-7	13			Medium dense dark yellowish brown fine sand with trace of silt (SP-SM)	6.6	20.0				
		5-4-7	11			Medium dense light gray fine sand with shell fragments (SP)	10.2	18.0				
		4-12-16	28	▼		Dense light gray fine sand with trace of sil and shell fragments (SP)	1.6	23.2				
10		18-23-24	47				7.0	18.4				
						Dense light gray fine sand with trace shell fragments (SP)						
15		12-22-26	48			Boring Termionated at 15 Feet.	2.9	22.0				
20												

BORING_LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/11/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	4

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 115 + 00

BORING DESIGNATION: **B-4** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 3.0

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						Loose dark brown fine sand with trace shell fragments (SP)						
		2-3-5	8	▽		Medium dense dark gray fine sand (SP)	3.1	13.4				
		7-6-6	12			Medium dense light yellowish brown fine sand with trace of silt, trace yellowish brown (SP-SM/SP)	3.8	16.5				
5		3-5-6	11			Medium dense gray fine sand with shell fragments (SP)	6.2	16.7				
		3-9-11	20	▼		Medium dense light gray fine sand with shell fragments (SP)	1.9	23.7				
		10-12-13	25			Very dense light gray fine sand with trace of silt and shell fragments (SP-SM)	2.4	22.0				
10		18-28-40	68				7.3	14.1				
						Dense light brown fine sand with trace shell fragments (SP)						
15		16-20-25	45				3.1	19.6				
						Boring Termionated at 15 Feet.						
20												

BORING LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	5

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

BORING DESIGNATION: **B-5** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County
LOCATION: See Boring Location Plan
REMARKS: Sta 125 + 00

G.S. ELEVATION (ft):
WATER TABLE (ft): 11.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense dark brown fine sand (SP)						
		3-6-8	14	▽			4.4	6.3				
						Medium dense dark brown silty sand with trace light brownish gray fine sand with rock, shell fragmnets (SP / SM)						
		7-5-7	12				12.9	21.3				
						Medium dense gray fine sand / dark gray fine sand (SP)						
5		5-7-7	14				2.5	13.1				
						Medium dense gray fine sand with shell fragments (SP)						
		5-10-16	26				2.6	24.0				
						Dense and very hard light gray fine sand with shell fragments (SP)						
		10-16-22	38				2.5	19.1				
10		19-24-28	52	▼			5.0	15.2				
						Very dense light brown fine sand with trace shell fragments (SP)						
15		18-23-28	51				3.5	17.2				
						Boring Terminated at 15 Feet.						
20												

BORING_LOG (9833)\WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
PAGE:	1

PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 135 + 00

BORING DESIGNATION: **B-6** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 2.5

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						Loose light brown fine sand with trace shell fragments (SP)						
		2-3-5	8	▽			3.2	9.9				
						Very loose grayish fine sand with trace shell fragments (SP)						
		3-2-2	4				3.2	19.2				
						Very loose grayish fine sand with shell fragments (SP)						
5												
		1-1-1	2				4.8	18.4				
						Very loose dark yellowish brown fine sand with trace of silt (SP-SM)						
		1-1-2	3				11.1	18.4				
				▼		Very loose brown fine sand with trace of silt (SP-SM)						
		2-2-2	4				5.5	17.9				
						Loose light brown fine sand with trace of silt (SP-SM)						
10		2-3-6	9				6.0	17.2				
						Loose light gray fine sand with shell fragments (SP)						
15		2-3-4	7				1.0	24.6				
						Boring Terminated at 15 Feet.						
20												

BORING_LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE W WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 63 + 00

BORING DESIGNATION: **B-7** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 5-11-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/11/12
DATE FINISHED: 5/11/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Medium dense light grayish brown fine sand (SP)						
		3-3-8	11	▽			3.9	3.3				
						Medium dense dark grayish brown fine sand (SP)						
		8-9-15	24				2.1	5.0				
						Dense dark gray fine sand (SP)						
5												
		16-17-24	41				2.3	10.8				
						Medium dense light yellowish brown fine sand (SP)						
		11-10-12	22				3.3	17.8				
						Medium dense dark yellowish brown fine sand with trace of silt (SP-SM)						
		6-6-15	21	▼			7.9	16.9				
						Dense yellowish brown brown fine sand with trace of silt (SP-SM)						
10		9-18-28	46				5.4	18.0				
						Medium dense light grayish brown fine sand with trace of silt (SP-SM)						
15		7-6-11	17				5.4	17.4				
						Boring Terminated at 15 Feet.						
20												

BORING_LOG (9833)\WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/11/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

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REPORT NO.:	9833
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

BORING DESIGNATION: **HA-1** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 74 + 00

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-10-2012
EST. W.S.W.T. (ft): 2.5

DATE STARTED: 5/10/12
DATE FINISHED: 5/10/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Grayish brown fine sand (SP)	3.5	3.7				
				▽		Light brown fine sand (SP)	2.5	5.7				
							2.0	11.2				
						Dark grayish brown fine sand with of silt (SP-SM)	6.0	19.9				
5						Yellowish brown fine sand with of silt (SP-SM)	8.5	15.5				
10												

BORING LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
REPORT NO.:	9833
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 67 + 00

BORING DESIGNATION: **HA-2** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.5

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Light brown fine sand with trace of silt and trace shell fragments (SP-SM)	7.6	5.8				
						Light brown fine sand with trace shell fragments (SP)	4.4	7.6				
				▽		Light gray fine sand with trace shell fragments (SP)	.6	18.1				
5						Brown clayey sand and silty sand with trace shell fragments (SC,SM)	15.6	31.0				
10												

BORING_LOG (9833)\WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/11/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

BORING DESIGNATION: **HA-3** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County
LOCATION: See Boring Location Plan
REMARKS: Sta 100 + 00

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Grayish brown fine sand with trace of silt and trace gravel (SP-SM)	7.5	3.8				
				▽		Light gray fine sand with trace of silt and rock fragments (SP-SM)	7.5	4.8				
						Light gray fine sand (SP)	1.2	15.2				
						Grayish brown fine sand with trace silt and trace rock (SP-SM)	6.1	20.9				
5						Yellowish brown silty sand (SM)	13.8	17.4				
10												

BORING_LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. V:\IDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

BORING DESIGNATION: **HA-4** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 115 + 00

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Grayish brown fine sand with trace shell fragments (SP)	2.7	1.4				
				▽		Dark brown / light brown fine sand with trace shell fragments (SP)	4.4	13.5				
						Dark gray fine sand with trace shell fragmets (SP)	2.7	18.0				
							4.2	16.8				
5						Dark gray fine sand with trace silt and trace roots (SP-SM)	8.9	23.6				
10												

BORING LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Sta 125 + 00

BORING DESIGNATION: **HA-5** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Brown fine sand with trace shell fragments (SP)						
				▽		Dark gray fine sand with trace of silt (SP-SM)						
5						Dark brown fine sand with trace silt and trace shell fragments (SP-SM)						
10												

BORING LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
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PROJECT NO.:	1130.1200045.0000
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Pond

BORING DESIGNATION: **HA-6** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY: J.K/J
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						Dark grayish fine sand (SP)	3.0	3.0				
						Light gray and trace dark brown fine sand (SP)	1.3	8.7				
				▽		Yellowish brown silty sand with trace shell fragments (SM)	13.5	17.3				
						Light gray fine sand with shell fragments (SP)	.6	22.9				
5							1.5	20.8				
10												

BORING LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

CLIENT: Manatee County

LOCATION: See Boring Location Plan

REMARKS: Pond

BORING DESIGNATION: **HA-7** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 1.5

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY:
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Very dark grayish fine sand (SP)	3.8	6.0				
				▽		Dark yellowish brown fine sand (SP)	3.1	16.2				
						Yellow fine sand (SP)	1.8	18.4				
						Yellow silty sand (SM)	15.7	3.1				
						Yellowish brown fine sand with trace of silt (SP)	2.1	20.1				
5												
10												

BORING_LOG (9833)\WORK ASSIGNMENT #19 FOR 53RD AVE W. WIDENING.GPJ UNIENGSC.GDT 6/19/12

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	1130.1200045.0000
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PROJECT: Work Assignment #19
53 Avenue West Widening (43rd to 75th Street)
Manatee County, Florida

BORING DESIGNATION: **HA-8** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: Manatee County
LOCATION: See Boring Location Plan
REMARKS: Sta 63 + 00

G.S. ELEVATION (ft):
WATER TABLE (ft): N.E
DATE OF READING: 5-14-2012
EST. W.S.W.T. (ft): 2.0

DATE STARTED: 5/14/12
DATE FINISHED: 5/14/12
DRILLED BY:
TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0						Brown fine sand (SP)						
				▽		Light brown fine with trace of silt / dark brown clayey sand (SP)						
						Light brown fine sand (SP)						
						Dark yellowish brown fine sand with trace of silt (SP)						
5												
10												

BORING_LOG (9833)WORK ASSIGNMENT #19 FOR 53RD AVE. W. WIDENING.GPJ UNIENGSC.GDT 6/7/12

UNIVERSAL
ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering
Environmental Sciences • Construction Material Testing
1748 Independence Blvd., Suite B-1 • Sarasota, FL 34234 • (941) 358-7410

REPORT ON ROADWAY CORING

Client:	Manatee County Public Works	Date:	June 11, 2012
Project:	WA #19 - 53rd Avenue West Widening	Sampled:	June 7, 2012
Project #:	1130.1200045.0000	Report #:	9833

Laboratory Test Results

Core #	Location	Asphalt Thickness (Lab Tested)	Base Thickness (Field Observation)	Subgrade Thickness (Field Observation)
C-1	Sta. 53+00 Eastbound	3.72 inches	6 inches	4 inches
C-2	Sta. 128+00 Eastbound	10.19 inches	3 inches	3 inches

Core #	Base Material	Subgrade Material
C-1	Gray-brown sand with shell	Dark brown sand with trace shell
C-2	Dark brown sand with trace shell	Dark brown sand with trace shell

Reviewed By:

Universal Engineering Sciences, Inc.
Reviewed By

Brewster Dombkowski
CSD Manager

Universal Engineering Sciences

Robert Gomez, P. E.
Florida Registration # 58348

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Consultants in: Geotechnical Engineering • Environmental Sciences
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1748 Independence Blvd. Suite B1 • Sarasota, Fl 34234 • (941) 358-7410 • Fax (941) 358-7353

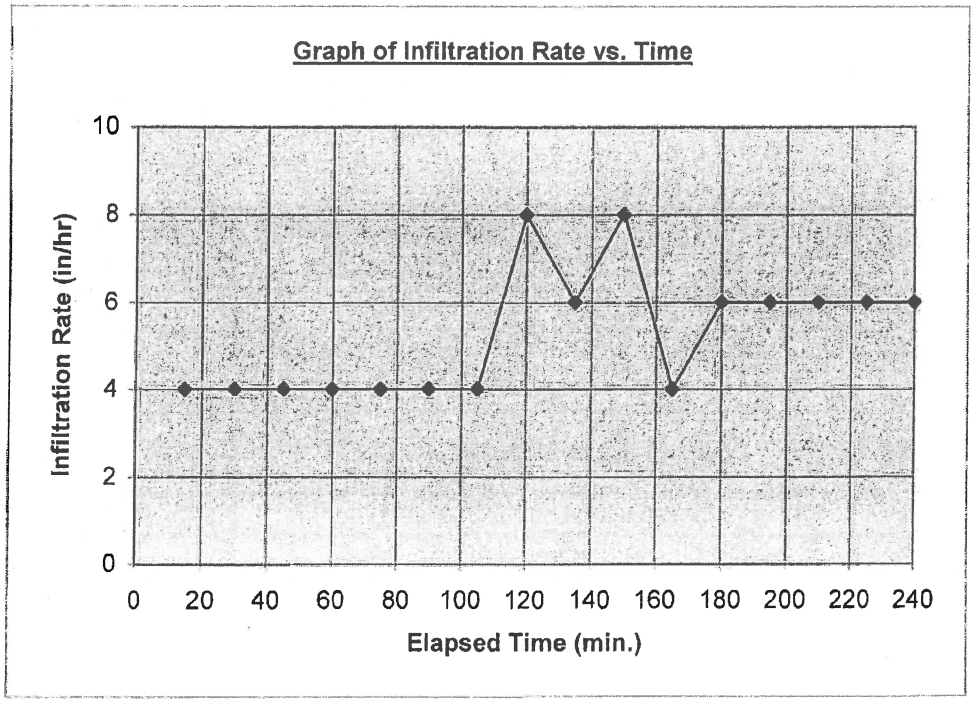
RESULTS OF DOUBLE-RING INFILTROMETER TEST

Project: Work Assignment #19
Client Mnatee County
Location: 53rd Ave. West
Test No.: DRI #1

Project No.: 1130.0900045.
Report No.: 9833
Date: 6/7/2012

TEST DATA

Elapsed Time (min.)	Infiltration Rate (in/hr)
15	4
30	4
45	4
60	4
75	4
90	4
105	4
120	8
135	6
150	8
165	4
180	6
195	6
210	6
225	6
240	6



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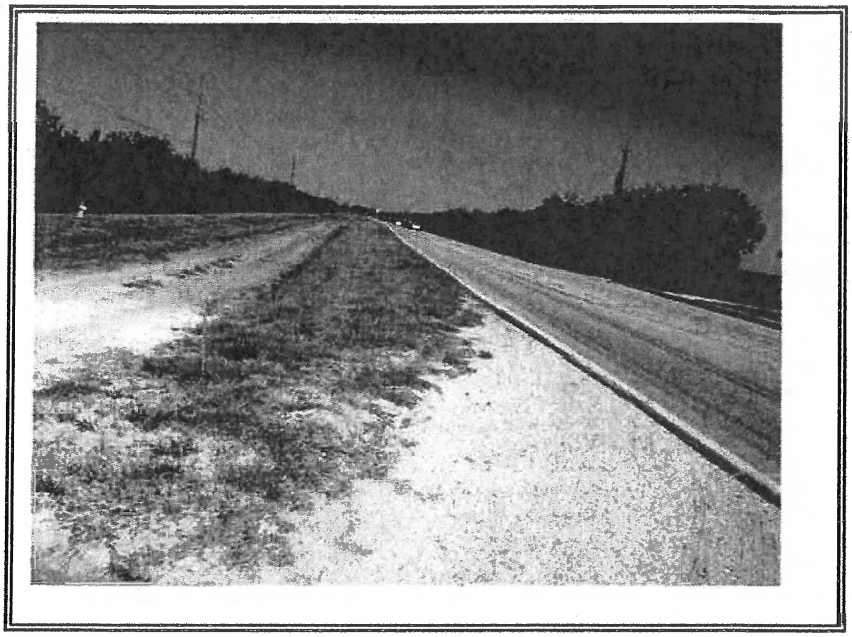

Photo No. 1 53rd Avenue West looking west

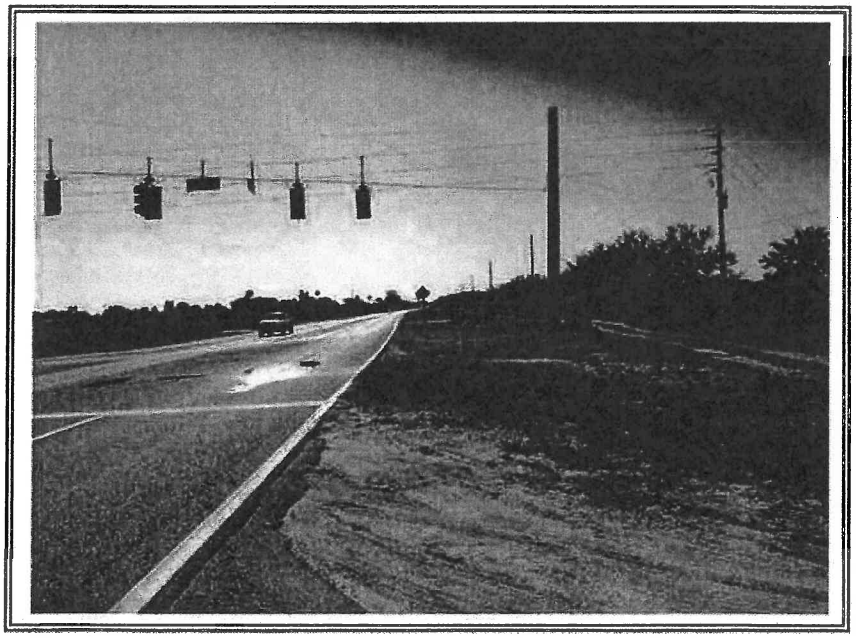

Photo No. 2 View of 53rd Avenue looking east.

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53rd Avenue Road Improvement
Bradenton, FL

PHOTOGRAPHS

Project No. 1130.1200045	Date: June 18, 2012
Report No. 9833	Page 1

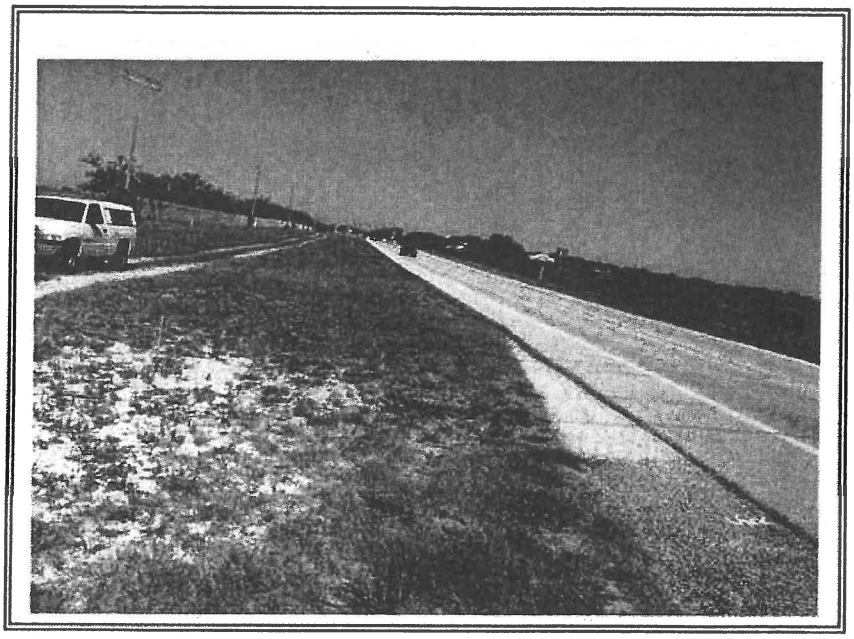

Photo No. 3 View 53rd Avenue West looking west

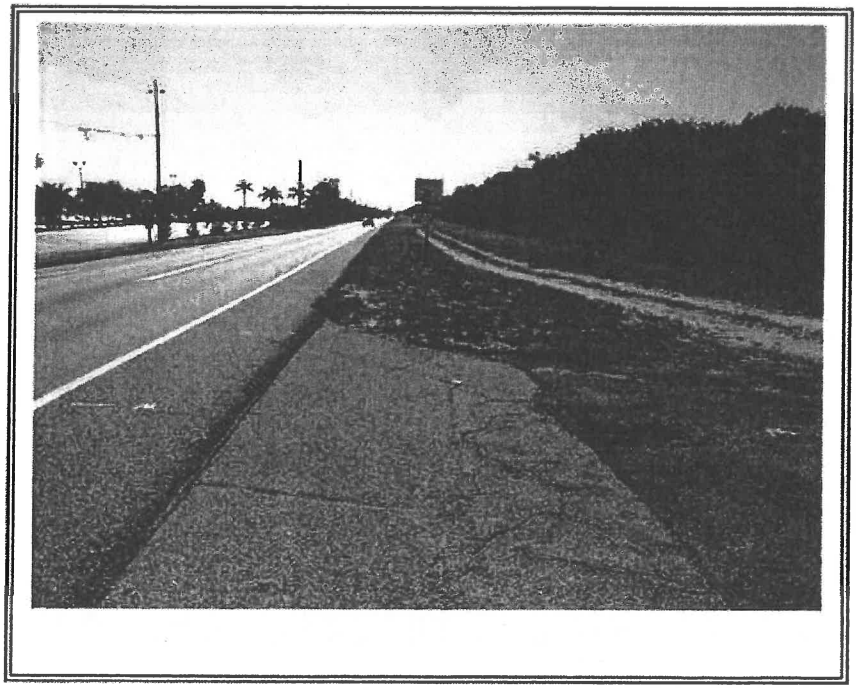

Photo No. 4 View 53rd Avenue West looking east

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53rd Avenue Road Improvement
Bradenton, FL

PHOTOGRAPHS

Project No. 1130.1200045	Date: June 2012

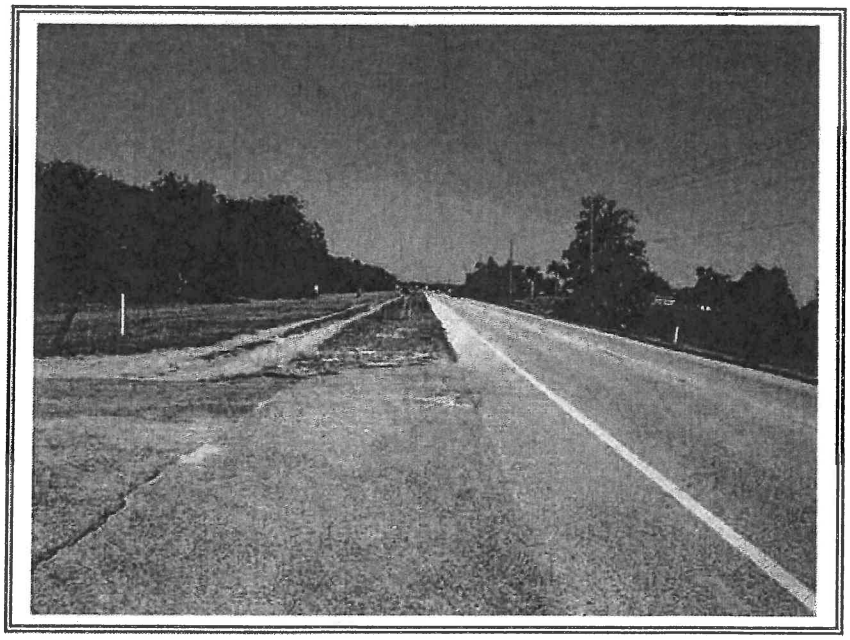


Photo No. 5: View of 53rd Avenue West looking west

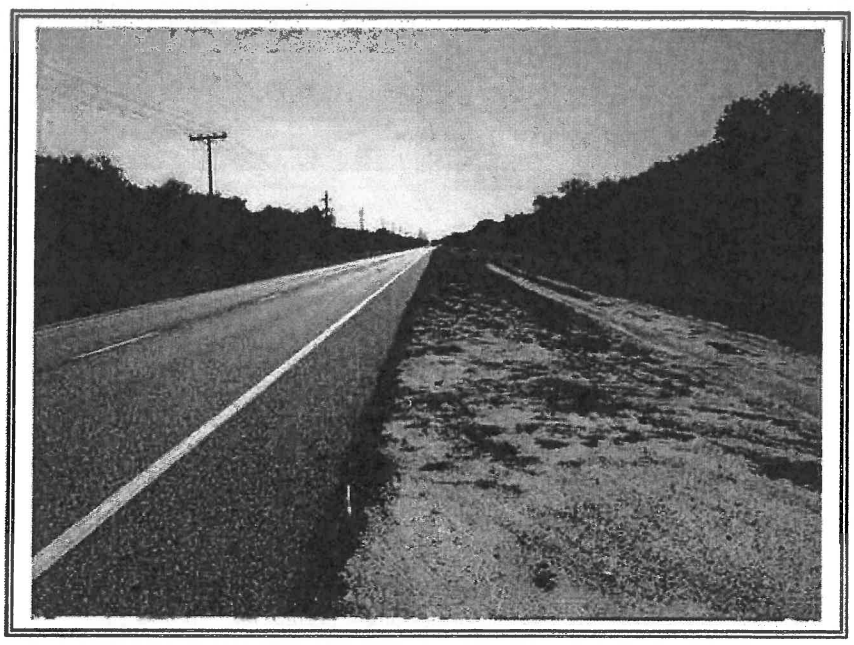


Photo No. 6: View of 53rd Avenue West looking east

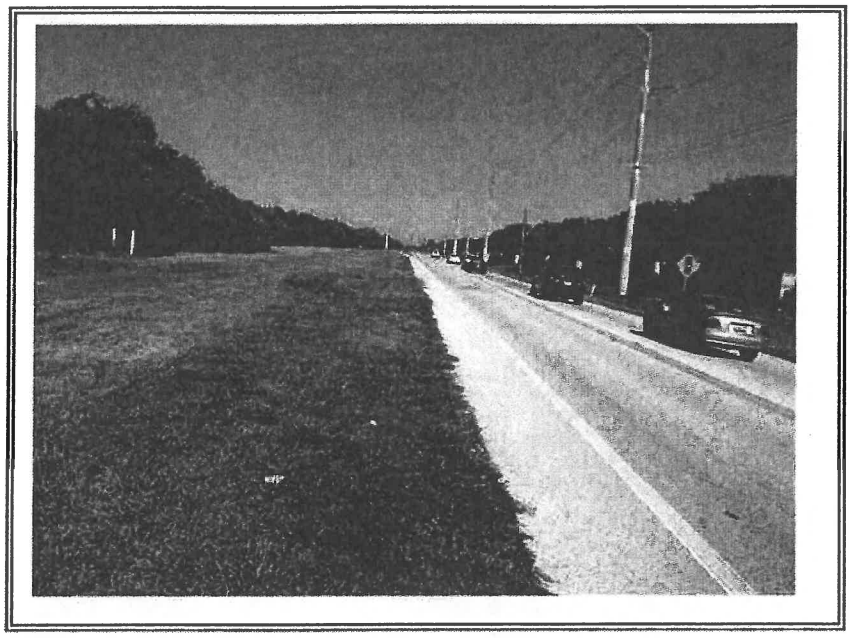


Photo No. 7: View of 53rd Avenue West looking west.

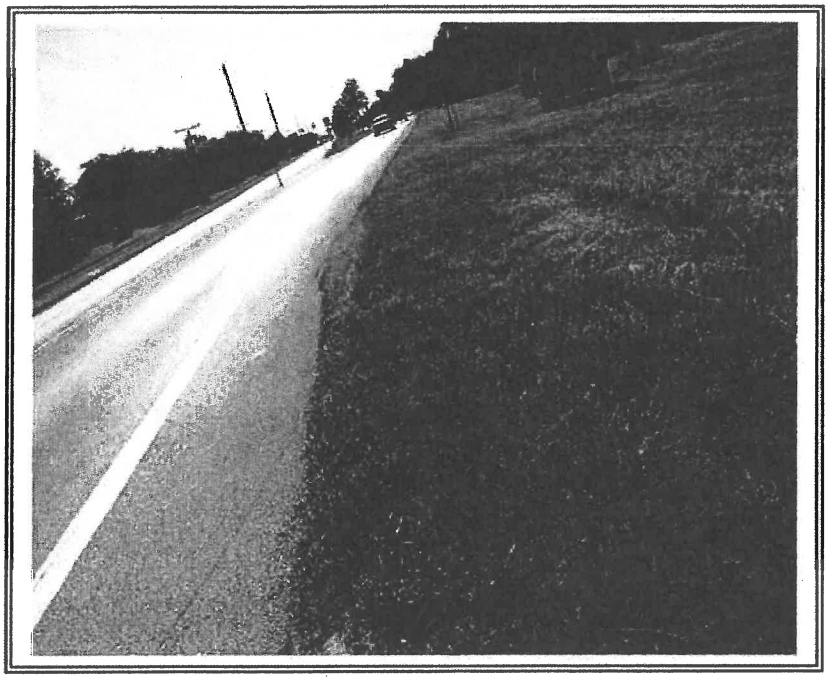
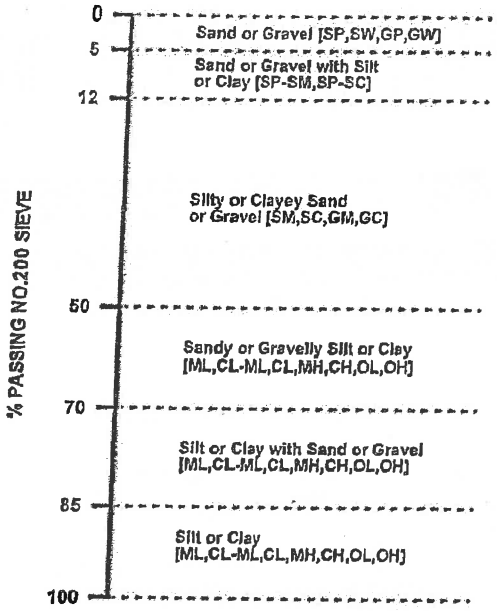


Photo No. 8: View of 53rd Avenue West looking east

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



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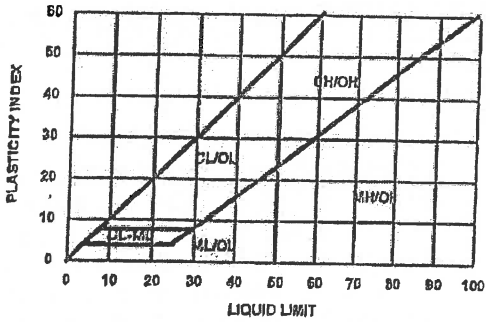


PLASTICITY CHART

GROUP NAME AND SYMBOL

COARSE GRAINED SOILS

- WELL-GRADED SANDS [SW]
- POORLY-GRADED SANDS [SP]
- POORLY-GRADED SANDS WITH SILT [SP-SM]
- POORLY-GRADED SANDS WITH CLAY [SP-SC]
- SILTY SANDS [SM]
- CLAYEY SANDS [SC]
- SILTY CLAYEY SANDS [SC-SM]
- WELL-GRADED GRAVELS [GW]
- POORLY-GRADED GRAVELS [GP]
- POORLY-GRADED GRAVELS WITH SILT [GP-GM]
- POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
- SILTY GRAVELS [GM]
- CLAYEY GRAVELS [GC]

FINE GRAINED SOILS

- INORGANIC SILTS SLIGHT PLASTICITY [ML]
- INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
- INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
- INORGANIC SILTS HIGH PLASTICITY [MH]
- INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

- ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
- ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
- PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

RELATIVE DENSITY

(SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 5 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft.
DENSE - 31 to 50 Blows/ft.
VERY DENSE - more than 50 Blows/ft.

CONSISTENCY

(SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IGER05045.01A

CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data related only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations. Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of drilling resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water level may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of investigation. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional review may be required.

Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

1.1 *Universal Engineering Sciences, Inc.*, heretofore referred to as the Consultant, has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "Consultant" as used herein includes all of *Universal Engineering Sciences, Inc's* agents, employees, professional staff, and subcontractors.

1.2 The Client or a duly authorized representative is responsible for providing the Consultant with a clear understanding of the project nature and scope. The Client shall supply the Consultant with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow the Consultant to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.

SECTION 2: STANDARD OF CARE

2.1 Services performed by the Consultant under this Agreement are expected by the Client to be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Consultant's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.

2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by the Consultant will be based solely on information available to the Consultant at the time of service. The Consultant is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for the Consultant to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted Consultant free access to the site. The Consultant will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.

3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. The Consultant will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against Consultant, and agrees to defend, indemnify, and hold Consultant harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate Consultant for any time spent or expenses incurred by Consultant in defense of any such claim with compensation to be based upon Consultant's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.

4.2 The Consultant will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.

4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

5.1 Consultant will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.

5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.

5.3 If the Consultant incurs any expenses to collect overdue billings on invoices, the sums paid by the Consultant for reasonable attorneys' fees, court costs, Consultant's time, Consultant's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP OF DOCUMENTS

6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by the Consultant, as instruments of service, shall remain the property of the Consultant.

6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.

6.3 The Consultant will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

7.1 Client warrants that a reasonable effort has been made to inform Consultant of known or suspected hazardous materials on or near the project site.

7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.

7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. Consultant and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. Consultant and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for Consultant to take immediate measures to protect health and safety. Client agrees to compensate Consultant for any equipment decontamination or other costs incident to the discovery of

unanticipated hazardous waste.

7.4 Consultant agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold Consultant harmless for any and all consequences of disclosures made by Consultant which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against Consultant, and to the maximum extent permitted by law, agrees to defend, indemnify, and save Consultant harmless from any claim, liability, and/or defense costs for injury or loss arising from Consultant's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by the Consultant which are found to be contaminated.

SECTION 8: RISK ALLOCATION *(Must select a or b below if neither is selected a shall prevail)*

☐ 8.1a Client agrees that Consultant's liability for any damage on account of any error, omission or other professional negligence will be limited to a sum not to exceed $50,000 or Consultant's fee, whichever is greater. Client agrees that the foregoing limits of liability extend to all of consultant's employees and professionals who perform any services for Client. If Client prefers to have higher limits on professional liability, Consultant agrees to increase the limits up to a maximum of $1,000,000.00 upon Clients' written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or $400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

☐ 8.1b Client agrees that Consultant's liability for any damage on account of any error, omission or other professional negligence will be limited to a sum not to exceed _____or Consultant's fee, whichever is greater. Client agrees that the foregoing limits of liability extend to all of consultant's employees and professionals who perform any services for Client.

SECTION 9: INSURANCE

9.1 The Consultant represents and warrants that it and its agents, staff and Consultants employed by it, is and are protected by worker's compensation insurance and that Consultant has such coverage under public liability and property damage insurance policies which the Consultant deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, Consultant agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by Consultant, its agents, staff, and consultants employed by it. The Consultant shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save Consultant harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other consultants employed by Client.

SECTION 10: DISPUTE RESOLUTION

10.1 All claims, disputes, and other matters in controversy between Consultant and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation and/or arbitration, before and as a condition precedent to other remedies provided by law.

10.2 If a dispute at law arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:

(a) the claim will be brought and tried in judicial jurisdiction of the court of the county where Consultant's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and

(b) The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, Consultant shall be paid for services performed to the termination notice date plus reasonable termination expenses.

11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, Consultant may complete such analyses and records as are necessary to complete his files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of Consultant in completing such analyses, records and reports.

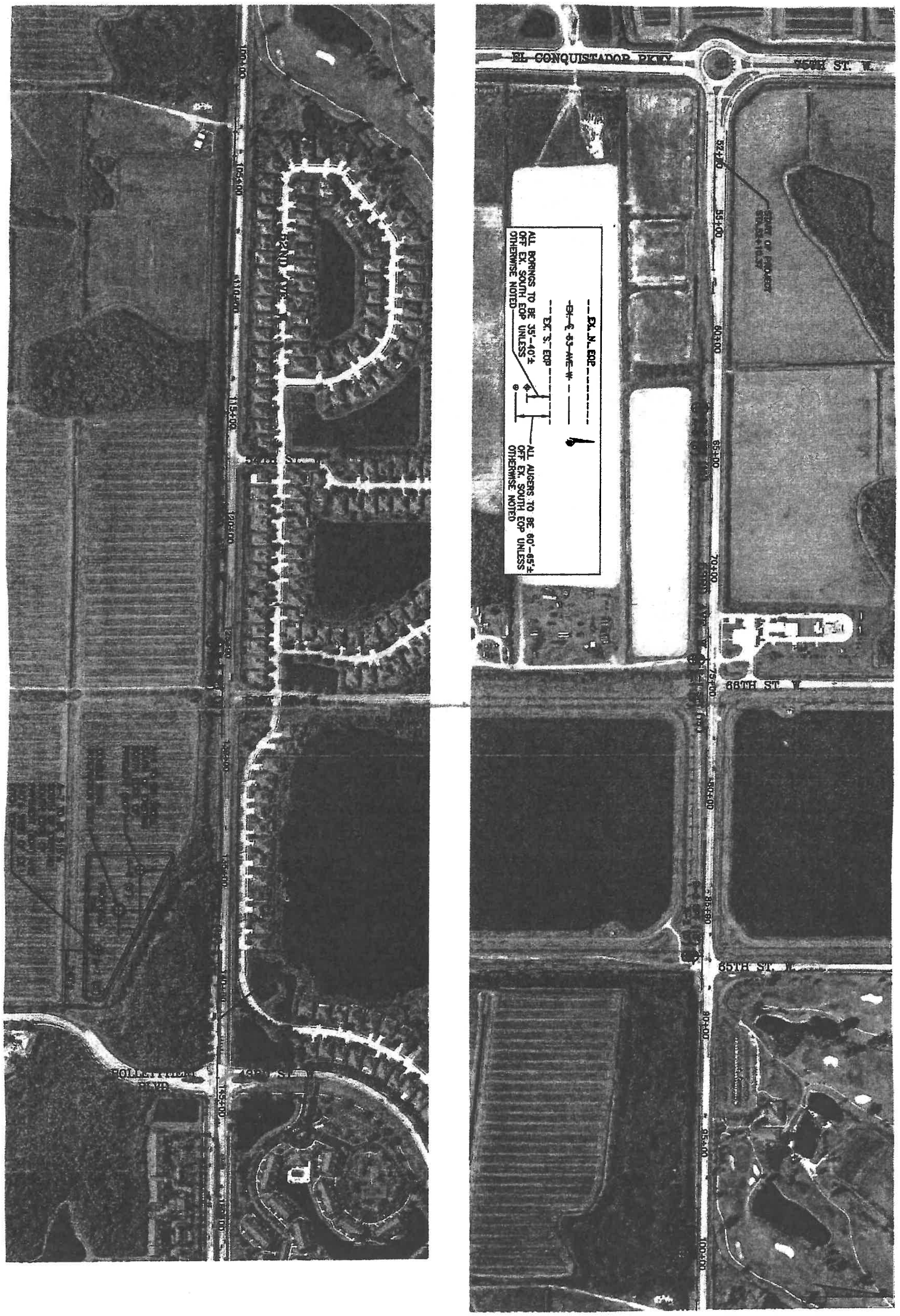
SECTION 12: ASSIGNS

12.1 Neither the Client nor the Consultant may delegate, assign, sublet or transfer his duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.

13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.



APPENDIX

UNIVERSAL ENGINEERING SCIENCES

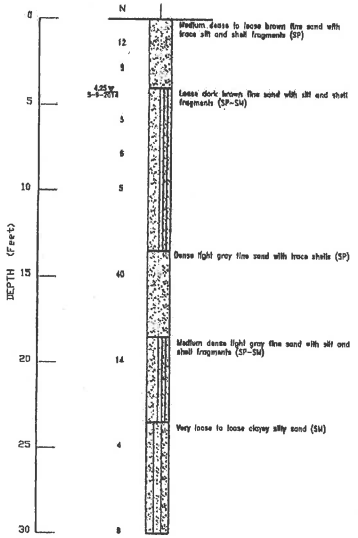
WORK ASSIGNMENT #19
53rd AVE. WEST WIDENING (43rd TO 75th STREET W.)
BRADENTON, FLORIDA

BORING LOCATION PLAN

FOR: S.M.E

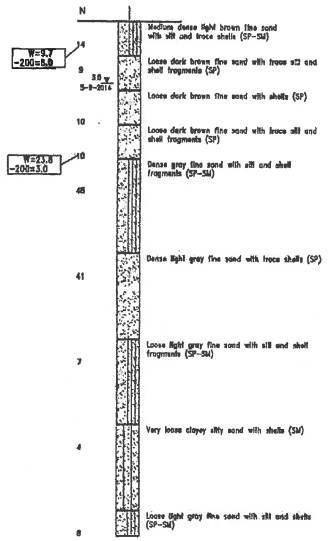
DRAWN BY:	S.C	DATE:	MAY, 2012
CHECKED BY:	R.G.	DATE:	MAY, 2012
REPORT NO:	9833	SCALE:	NOT TO SCALE
PROJECT NO:	1130.1200045.0000		

B-1
See Boring Location Plan



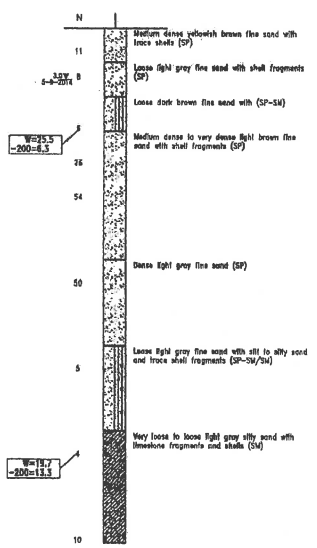
BORING TERMINATED AT 30 FT.

B-2
See Boring Location Plan

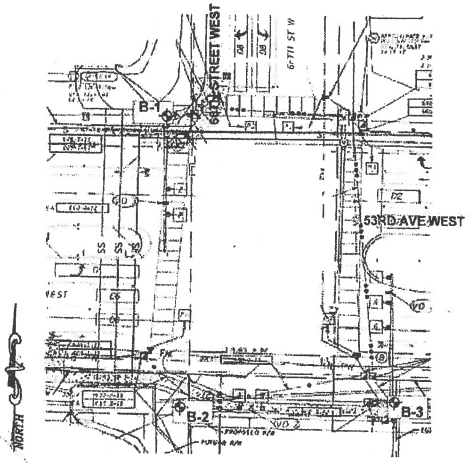


BORING TERMINATED AT 30 FT.

B-3
See Boring Location Plan



BORING TERMINATED AT 30 FT.



KEY TO BORING LOGS

SHELL	CLAY	Sandy\Silty CLAY
LIMEROCK	SAND	Silty SAND
SAND with silt	SAND with clay	Clayey SAND

N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT (18" SPOON – ASTM D 1588)

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL BASED ON VISUAL OBSERVATION AND LABORATORY TESTS

-200 PERCENT PASSING NO. 200 U.S. STANDARD SIEVE

W NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT

PI PLASTICITY INDEX

▼ WATER TABLE DEPTH

NOTES

1. Subsurface variations between borings should be anticipated.
2. Boring locations are approximate (estimated from plans provided by client).

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

GRANULAR MATERIALS (SANDS & GRAVELS)		COHESIVE MATERIALS (SILTS & CLAYS)	
CONSISTENCY DESIGNATION	SPT N (BLOWS/FT.)	CONSISTENCY DESIGNATION	SPT N (BLOWS/FT.)
Very Loose	0–4	Very Soft	0–2
Loose	5–10	Soft	3–4
Medium Dense	11–30	Firm	5–8
Dense	31–50	Stiff	9–16
Very Dense	50+	Very Stiff	17–30
		Hard	30+

FOR: MANATEE COUNTRY PUBLIC WORK

DRAWN BY: S.C | DATE: MAY, 2014

CHECKED BY: Robert G. | DATE: MAY, 2014

REPORT NO: | SCALE: NOT TO SCALE

PROJECT NO: 1130.1400053.000

PROPOSED MAST ARM STRUCTURES
53rd AVE. WEST 66th STREET W.
BRADENTON, MANATEE COUNTY FLORIDA

SOIL BORING PROFILE FOR INTERSECTION

UNIVERSAL ENGINEERING SCIENCES

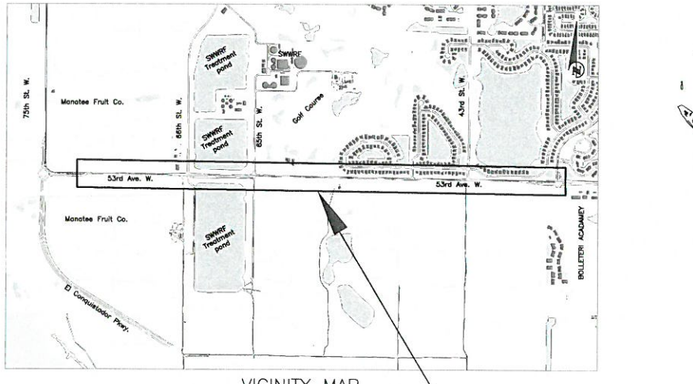
APPENDIX: T-10

811
KNOW WHAT'S BELOW
CALL BEFORE YOU DIG

MANATEE COUNTY, FLORIDA
53RD AVENUE WEST
43RD STREET WEST TO ROUNDABOUT
383-6082960

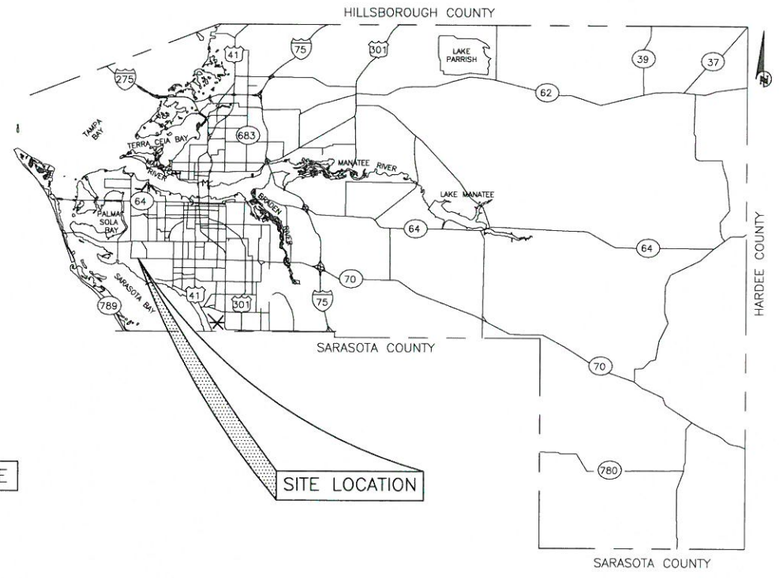
OCTOBER 2014

BID PLANS



VICINITY MAP
N.T.S.

PROJECT SITE



PROJECT DESCRIPTION

WIDENING THE EXISTING ROADWAY FROM TWO LANES UNDIVIDED TO FOUR LANES DIVIDED, AND ADDITION OF SIDEWALK.

NO.	INDEX OF ROADWAY PLANS
01	COVER SHEET
02	QUANTITY SHEET
03–04	GENERAL NOTES & SUE DATA
05	TYPICAL SECTIONS
06 TO 28	SURVEY CONTROL SHEETS
29 TO 45	ROAD PLAN & PROFILE/BMP
46 TO 60	ROAD CROSS SECTIONS
61	WET POND
62 TO 78	ROAD UTILITY ADJUSTMENT SHEETS
79 TO 83	CONSTRUCTION DETAILS
84	EROSION CONTROL DETAILS
85	MITIGATION PLAN

COMPONENETS OF BID PLAN SET

U01 TO U27	UTILITY PLANS (FORCEMAIN 27–A)
T01 TO T21	TRAFFIC SIGNAL PLANS
S01 TO S22	SIGNING & MARKING PLANS

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES

1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST
43RD ST. W. TO ROUNDABOUT
COVER SHEET

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	383–6082960
SURVEY #	3825
SEC./TWN./RGE	16,17,18/35/17
VERT. SCALE	N.T.S.
HORZ. SCALE	N.T.S.

	BY	DATE
SURVEYED	LSF/HYATT	2001/2012
DESIGNED	JP	2014
DRAWN	BLR	04/2014
CHECKED	CLM	08/2014

JOHN KENNEDY PARI, P.E.
FLORIDA P.E. # 58368

Signature & Date 10/29/14

SHEET 01 OF 85

LINE NO.	ITEM NO.	DESCRIPTION	EST. QTY	U/M
1.	101-1	Mobilization	1.00	LS
2.	102-1	Maintenance of Traffic	1.00	LS
3.	102-99	Portable Changeable Message Sign - Temporary	84.00	ED
4.	104-10-3	Staked Silt Fence (Type III)	12,192.00	LF
5.	104-11	Floating Turbidity Barrier	240.00	LF
6.	104-15	Soil Tracking Prevention Device	2.00	EA
7.	104-18	Inlet Protection System	18.00	EA
8.	110-1-MC	Clearing & Grubbing, incl. riprap, trees, pipes, structures, wells, & underdrain remov.	31.20	AC
9.	120-1	Regular Excavation	39,826.00	CY
10.	120-4	Excavation, Subsoil	5,300.00	CY
11.	120-5-MC	Channel Excavation	4,764.00	CY
12.	120-6	Embankment (Regular)	37,925.00	CY
13.	145-1	Geosynthetic Reinforced Soil Slope	3,250.00	SF
14.	160-4	12" Stabilized Sub-base (LBR 60)	34,000.00	SY
15.	285-704	Optional Base Group 4:	276.00	SY
16.	285-709	Optional Base Group 9:	32,777.00	SY
17.	327-70-1	Milling Exist. Asph. Pavement (1" Avg. Depth)	29,268.00	SY
18.	334-1-MC1	2" Type S-I Asphalt Concrete (Incl Tack Coat)	3,727.00	TN
19.	334-1-MC2	1" Type S-III Asphalt Concrete	3,587.00	TN
20.	400-1	Class I Concrete (Endwalls), Including Reinforcing Steel / Wingwalls	15.50	CY
21.	400-1	Class I Concrete (Weir Wall), Including Reinforcing Steel	6.40	CY
22.	400-1	Class I Concrete (Agricultural crossing at sta. 61+00), Incl. Reinforcing Steel	23.70	CY
23.	425-1-351	Inlets, Curb, Type P-5, <10'	1.00	EA
24.	425-1-549	Inlet (Dt Bot) (Type D Modified) (<10')	5.00	EA
25.	425-1-MC1	Grate Inlets w/ 4' Sump	4.00	EA
26.	425-1-MC2	Diversion Boxes	2.00	EA
27.	425-1-MC3	Concrete Block Box 4' x 4'	1.00	EA
28.	425-1-MC4	Adjust/Reconstruct Existing Inlet	2.00	EA
29.	430-174-112	Pipe Side Drain Culv (A2000,PVC)(12")	75.00	LF
30.	430-174-115	Pipe Side Drain Culv (A2000,PVC)(15")	22.00	LF
31.	430-174-136	Pipe Side Drain Culv (RCP)(36")	26.00	LF
32.	430-174-142	Pipe Side Drain Culv (RCP)(42")	73.00	LF
33.	430-175-115	Pipe Cross Drain Culv (A2000,PVC)(15")	167.00	LF
34.	430-175-115	Pipe Cross Drain Culv (ADS)(15")	19.00	LF
35.	430-175-118	Pipe Storm Sewer Culv (A2000)(18")	144.00	LF
36.	430-175-121	Pipe Storm Sewer Culv (A2000)(21")	324.00	LF
37.	430-175-124	Pipe Cross Drain Culv (RCP)(24")	10.00	LF
38.	430-175-124	Pipe Storm Sewer Culv (A2000)(24")	765.00	LF
39.	430-175-130	Pipe Storm Sewer Culv (A2000)(30")	719.00	LF
40.	430-175-142	Pipe Cross Drain Culv (RCP)(42")	19.00	LF
41.	430-175-215	Pipe Storm Drain Culv (ERCP) (12"x18")	443.00	LF
42.	430-175-224	Pipe Cross Drain Culv (ERCP) (19"x30")	120.00	LF
43.	430-175-230	Pipe Cross Drain Culv (ERCP)(24"x38")	190.00	LF
44.	430-830	Pipe Filling and Plugging - Place out of Service	10.90	CY
45.	430-982-123	MES (Cross Drain) 15"	3.00	EA
46.	430-982-129	MES (Cross Drain) 24"	2.00	EA
47.	430-982-140	MES (Cross Drain) 42"	1.00	EA
48.	430-982-633	MES (Cross Drain) 24"x38"	4.00	EA
49.	430-984-121	MES (Round) (12" SD)	5.00	EA
50.	430-984-123	MES (Round) (15" SD)	2.00	EA
51.	430-984-133	MES (Round) (30" SD)	1.00	EA
52.	430-984-138	MES (Round) (36" SD)	1.00	EA
53.	430-984-140	MES (Round) (42" SD)	6.00	EA
54.	430-984-623	MES (Conc Pipe Ellip) (12"x18") (SD)	7.00	EA
55.	440-1-MC	6" Underdrain	624.00	LF
56.	515-2-302	Pedestrian / Bicycle Railing, Aluminum, 54" Picket Railing	80.00	LF
57.	520-1-MC1	Type AB Curb & Gutter	171.00	LF
58.	520-1-10	Type F Curb & Gutter	294.00	LF
59.	520-2-1	Type A, Concrete Curb	16,082.00	LF
60.	520-5-MC	Emergency Crossing	70.00	LF
61.	522-1-MC	4" Concrete Sidewalk (Incl. Detectable Warning Truncated Dome)	5,007.00	SY
62.	522-2-MC	6" Concrete Sidewalk, Reinforced Driveway (Incl. 6" x 6" #10 Mesh)	711.00	SY
63.	530-3-4	Rip-Rap (Rubble)	275.00	TN
64.	550-10-910	Fencing, Special Type, 0.0-5.0', Standard	600.00	LF
65.	550-MC	Fence, Removal and Reloc. (Incl. Gates, All Types incl. hog wire, barbed wire & cha	3,055.00	LF
66.	570-1-2	Sodding (Performance Turf, Bahia) (Includes Mowing)	76,896.00	SY
67.	570-MC	Wetland creation, mitigation and enhancement at SW corner of 53rd Ave W & 43rd S	1.00	LS

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PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES

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53RD AVENUE WEST
43RD ST. W. TO ROUNDABOUT
QUANTITY SHEET

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	383-6082960
SURVEY #	3825
SEC./TWN./RGE	16,17,18/35/17
VERT. SCALE	N.T.S.
HORZ. SCALE	N.T.S.

	BY	DATE
SURVEYED	LSF	02/02/01
DESIGNED	JP	02/02/12
DRAWN	TMF	01/14/13
CHECKED	JP	01/14/13

JOHN KENNEDY PARI, P.E.
FLORIDA P.E. # 56368
10/20/14
Signature & Date

GENERAL

1. ALL CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH THE PROJECT MANAGEMENT DIVISION.
THE PROJECT MANAGER IS: BRENT MORRIS
AND CAN BE REACHED AT
(941) 708-7450;
EXT. 7338.

2. SITE VISITS ARE MANDATORY FOR ALL BIDDERS. THESE SITE VISITS CAN BE ARRANGED THROUGH THE PROJECT MANAGER.

3. ALL CONSTRUCTION ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF MANATEE COUNTY UTILITY AND TRANSPORTATION STANDARDS AND/OR FDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" UNLESS OTHERWISE INDICATED ON THE PLANS.

4. VERTICAL CONTROL FOR THIS PROJECT WAS ESTABLISHED BY A MINIMUM OF TWO REFERENCE BENCHMARKS DESCRIBED ON THE "THE NATIONAL GEODETIC VERTICAL DATUM OF 1929", (NGVD '29).

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS AND ALL GOVERNING FEDERAL, STATE, AND LOCAL AGENCIES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS THAT ARE NOT PROVIDED IN THE BID DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.

6. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATION THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.

7. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS ON THE PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.

8. AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA AT 1-800-432-4770 OR THE NATIONAL 811 ONE CALL NUMBER WHEN APPLICABLE FOR UTILITY LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITIES FOR THE POSSIBLE RELOCATION OR THE TEMPORARY MOVEMENT OF ANY EXISTING UTILITIES WITHIN THE RIGHTS-OF-WAY.

9. ALL STATIONS AND OFFSETS REFER TO BASELINE OF CONSTRUCTION, UNLESS OTHERWISE NOTED.

10. THE CONSTRUCTION LENGTHS IN THESE PLANS ARE APPROXIMATE. ACTUAL LIMITS MAY BE SET IN THE FIELD AS DIRECTED BY THE ENGINEER.

11. SEPARATE PAYMENT SHALL BE MADE ONLY FOR THE ITEMS OF WORK LISTED AND IDENTIFIED BY APPROPRIATE PAY ITEM ON THE BID FORM. THE COST OF ANY RELATED WORK NOT SPECIFICALLY IDENTIFIED, BUT WHICH IS REQUIRED FOR SATISFACTORY COMPLETION OF THE WORK, SHALL BE CONSIDERED TO BE INCLUDED IN THE CONTRACT PRICE FOR THE APPROPRIATE BID ITEM.

12. THE CONTRACTOR SHALL HAVE A FOREMAN, OR RESPONSIBLE PARTY, ON SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. ALL WORKERS ON THE JOB SITE WILL BE COURTEOUS TO THE PUBLIC AT ALL TIMES, AND SHALL REFER ANY QUESTIONS OR CONCERNS TO THE CONTRACTOR'S FOREMAN OR THE COUNTY INSPECTOR. THE FOREMAN SHALL SPEAK AND UNDERSTAND ENGLISH AND SHALL BE AVAILABLE AT ALL TIMES FOR TIMELY RESOLUTION OF PROJECT-RELATED ISSUES.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE COORDINATION OF CONSTRUCTION SCHEDULING BETWEEN CONTRACTOR AND ALL UTILITY AGENCIES.

NOTE:
THIS INCLUDES MEETING WITH UTILITY AGENCIES PRIOR TO THE PRE-CONSTRUCTION CONFERENCE TO ADJUST THEIR SCHEDULES TO COINCIDE WITH THE CONTRACTORS CONSTRUCTION SCHEDULE. (REFERENCE CONTRACT DOCUMENTS)

14. ANY DAMAGE TO STATE, COUNTY, OR LOCAL ROADS CAUSED BY THE CONTRACTOR'S HAULING OR EXCAVATION EQUIPMENT SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTORY OF THE COUNTY PROJECT MANAGER. PAYMENT SHALL NOT BE MADE FOR THIS WORK.

15. ALL CONSTRUCTION WITHIN FDOT RIGHT-OF-WAY IS TO BE IN ACCORDANCE WITH CURRENT FDOT STANDARD SPECIFICATIONS FOR ROADWAY CONSTRUCTION AND THE DESIGN STANDARDS.

16. ALL SIGNING, STRIPING AND RPM PLACEMENT WITHIN THE FDOT RIGHT-OF-WAY IS TO BE IN ACCORDANCE WITH FDOT STANDARD INDEX 17346.

SAFETY

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FLORIDA TRENCH SAFETY ACT, 90-96, LAWS OF FLORIDA EFFECTIVE OCTOBER 1, 1990 AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION EXCAVATION SAFETY STANDARDS, 29 CFR 1926.650, SUBPART P, AS AMENDED. THE CONTRACTOR SHALL INCLUDE IN THE TOTAL BID PRICE ALL COSTS FOR COMPLIANCE WITH THESE REGULATIONS.

18. THE CONTRACTOR SHALL USE SHEET PILING, SHEETING, BRACING, ETC., AS REQUIRED IN ALL EXCAVATION AREAS AND CONFORM TO ALL OSHA REQUIREMENTS.

19. THE CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND UTILITIES, POWER LINES, ETC.

20. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THIS EXCLUSION DOES NOT ALLEVIATE THE CONTRACTOR FOR PROVIDING A CONTINUOUS SAFE WORKSPACE.

ENVIRONMENTAL

21. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL SEDIMENT AND EROSION CONTROL (SEC) DEVICES (E.G., BARRIERS, SEDIMENT TRAPS/BASINS, VEGETATIVE BUFFERS, ETC.) AS SPECIFIED IN THE FINAL APPROVED PLANS FOR THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SEC DEVICES UTILIZED DURING THE PROJECT, AS WELL AS INSTALLATION & MAINTENANCE OF ANY ADDITIONAL MEASURES DEEMED NECESSARY DURING PROJECT IMPLEMENTATION, TO PREVENT EROSION AND OFF-SITE SEDIMENT MIGRATION. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF ALL SEC DEVICES UPON CONCLUSION OF THE PROJECT, AND UPON ADEQUATE STABILIZATION OF DISTURBED SOILS.

22. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY STORM WATER, EROSION, AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE FDEP "FLORIDA STORM WATER, EROSION AND SEDIMENTATION CONTROL INSPECTOR'S MANUAL". IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL AND PREVENT EROSION AND TRANSPORT OF SEDIMENT TO SURFACE DRAINS AND TO DITCHES DURING CONSTRUCTION.

23. STOCKPILES SHALL BE PROTECTED AT ALL TIMES BY ON-SITE DRAINAGE CONTROLS WHICH PREVENT EROSION OF THE STOCKPILED MATERIAL. CONTROL OF DUST FROM SUCH STOCKPILES IS REQUIRED, DEPENDING UPON THEIR LOCATION AND THE EXPECTED LENGTH OF TIME THE STOCKPILES WILL BE PRESENT. IN NO CASE SHALL ANY STOCKPILED MATERIAL REMAIN AFTER THIRTY (30) CALENDAR DAYS.

24. STORM WATER INLETS IN THE VICINITY OF THE PROJECT SHALL BE PROTECTED BY SEDIMENT TRAPS SUCH AS SECURED HAY BALES, SOD, STONE, ETC., WHICH SHALL BE MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS, AND WHICH MUST BE APPROVED BY THE ENGINEER BEFORE INSTALLATION. THIS WILL BE MAINTAINED TO PREVENT DEGRADATION OF THE WATERS OF THE COUNTY AND STATE.

25. SEDIMENT BASINS AND TRAPS, PERIMETER BERMS, SEDIMENT BARRIERS, VEGETATIVE BUFFERS, AND OTHER MEASURES INTENDED TO TRAP SEDIMENT AND/OR PREVENT THE TRANSPORT OF SEDIMENT ONTO ADJACENT PROPERTIES, OR INTO EXISTING BODIES OF WATER, MUST BE INSTALLED, CONSTRUCTED, OR IN THE CASE OF VEGETATIVE BUFFERS, PROTECTED FROM DISTURBANCE, AS A FIRST STEP IN THE LAND ALTERATION PROCESS. SUCH SYSTEMS SHALL BE FULLY OPERATIVE BEFORE ANY OTHER DISTURBANCE OF THE SITE BEGINS. EARTHEN STRUCTURES INCLUDING BUT NOT LIMITED TO BERMS, EARTH FILTERS, DAMS OR DIKES SHALL BE STABILIZED AND PROTECTED FROM DRAINAGE DAMAGE OR EROSION WITHIN ONE (1) WEEK OF INSTALLATION.

26. ALL SWALES, DITCHES, AND CHANNELS LEADING FROM THE SITE SHALL BE PROTECTED FROM SILTATION AND EROSION DURING CONSTRUCTION AND BE SODDED WITHIN THREE (3) DAYS OF EXCAVATION.

27. SOIL DISPLACED BY CONSTRUCTION WILL BE REMOVED. EROSION CONTROL SHALL BE IMPLEMENTED IN AREAS WHICH ARE CONSIDERED ENVIRONMENTALLY SENSITIVE. EROSION CONTROL SYSTEMS SHALL BE REQUIRED FOR ALL WORK WITHIN JURISDICTIONAL AREAS. THESE SYSTEMS MAY INCLUDE STAKED HAY BALES, SILT SCREENS, FILTER FABRIC, AND TURBIDITY SCREENS.

28. ALL EROSION AND POLLUTION CONTROL DEVICES SHALL BE CHECKED REGULARLY, ESPECIALLY AFTER EACH RAINFALL AND SHALL BE CLEANED OUT AND/OR REPAIRED AS REQUIRED.

29. THE CONTRACTOR SHALL NOT ENTER UPON OR IN ANY WAY ALTER WETLAND AREAS THAT MAY BE ON OR NEAR THE CONSTRUCTION SITE. ALL WORK IN THE VICINITY OF OPEN WATER AND/OR WETLANDS IS TO BE PERFORMED IN COMPLIANCE WITH THE ENVIRONMENTAL REGULATIONS AND/OR PERMITS FOR THE SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY FINES RESULTING FROM HIS VIOLATION OF ANY REGULATIONS OR PERMIT CONDITIONS.

30. FOR MORE INFORMATION, SEE THE EROSION CONTROL DETAIL SHEET INCLUDED IN THE PLANS.

RIGHT-OF-WAY

31. ALL CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO WITHIN THE MANATEE COUNTY/FDOT RIGHT-OF-WAY AND/OR EASEMENTS SHOWN ON THE DRAWINGS.

32. THE CONTRACTOR SHALL EMPLOY A LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA TO REFERENCE AND RESTORE PROPERTY CORNER MONUMENTS, PINS, AND LANDMARKS THAT MAY BE DISTURBED BY CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

33. THE CONTRACTOR, PRIOR TO CONSTRUCTION AND RESTRICTING ANY TRAFFIC, MUST OBTAIN A RIGHT-OF-WAY USE PERMIT AND A TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM OTHER GOVERNMENTAL AGENCIES HAVING RELEVANT JURISDICTION. ALL MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE CURRENT MUTCD & FDOT MANUALS. A TRAFFIC CONTROL PLAN SHALL BE SUPPLIED BY THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.

34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL DAMAGED STORM WATER STRUCTURES, PIPING, ENTRANCE PIPE AND HEADWALLS, THAT ARE TO REMAIN, WHETHER SHOWN ON THE PLANS OR NOT.

35. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH IN THE FIELD THE RIGHT-OF-WAY LINES, BASE LINES, BENCH MARKS (ELEV.), CENTER LINES, AND STATIONING AS REQUIRED TO CONSTRUCT THIS PROJECT. ROADWAY PLANS AND PROPOSED DESIGN ARE BASED ON TOPOGRAPHIC SURVEYS PROVIDED BY MANATEE COUNTY PROJECT MANAGEMENT AND HYATT SURVEY SERVICES UNDER COUNTY PROJECT NO383-6082960. REFER TO THE ORIGINAL SIGNED AND SEALED SURVEY CONTROL SHEETS IN THE PROJECT FILE.

36. THE CONTRACTOR SHALL COORDINATE THE CUTTING OF DRIVEWAYS WITH THE PROPERTY OWNER PRIOR TO CUT. ALL DRIVEWAYS WILL BE IN PASSABLE CONDITION AT THE END OF THE WORK DAY AND FULLY RESTORED PER PLAN. THE CONTRACTOR SHALL COORDINATE WITH THE AFFECTED UTILITY COMPANY FOR THE ADJUSTMENT OF ANY EXISTING UTILITIES AND STRUCTURES IN ORDER TO MATCH THE PROPOSED ELEVATIONS AND ALIGNMENTS.

37. A RIGHT OF ENTRY AGREEMENT SHALL BE OBTAINED BY THE PROPERTY MANAGMENT FROM THE PROPERTY OWNER BEFORE ANY DRIVEWAY CONSTRUCTION WORK IS DONE OUTSIDE OF THE RIGHT-OF-WAY OR EASEMENT.

UTILITIES

38. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA AND WHICH HAVE NOT BEEN LOCATED OR IDENTIFIED, MAY NOT BE IN THE EXACT LOCATION SHOWN OR RELOCATED SINCE THE PREPARATION OF THESE PLANS. THE CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES STRUCTURES AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE PLANS) THAT MAY AFFECT HIS WORK. ALL EXISTING UTILITIES TO BE EXTENDED, CROSSED OR CONNECTION POINTS SHALL BE EXPOSED PRIOR TO CONSTRUCTION TO VERIFY LOCATION AND ELEVATION. ANY DISCREPANCIES OR CONFLICTS FOUND SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR RESOLUTION. UTILITIES DESIGNATED W, VH, AND WH ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE VERIFIED LOCATIONS/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN THESE POINTS HAVE NOT BEEN VERIFIED. EXTREME CAUTION SHALL BE EXERCISED WHEN WORKING NEAR THE GAS LINE AND 18" POTABLE WATERLINE.

39. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, SIGNS, MAIL BOXES, FENCES, TREES, LANDSCAPING, AND ANY OTHER IMPROVEMENT OR FACILITY IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEM DUE TO HIS CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

40. THE CONTRACTOR SHALL USE APPROPRIATE TECHNIQUES, AS APPROVED, RECOMMENDED OR OFFERED BY FLORIDA POWER AND LIGHT TO PREVENT UNDERMINING OF POWER POLES DURING CONSTRUCTION. IF HOLDING OF POWER POLES IS RECOMMENDED OR REQUIRED BY THE UTILITY, THE CONTRACTOR SHALL COORDINATE THIS ACTIVITY WITH THE UTILITY AND BEAR ALL RELATED COSTS.

41. EXCEPT WHERE THE PLANS AND SPECIFICATIONS PROVIDE THAT SUCH WORK SHALL BE PERFORMED UNDER THE CONTRACT FOR THIS PROJECT, ALL UTILITIES INTERFERING WITH CONSTRUCTION SHALL BE REMOVED, RELOCATED OR ADJUSTED BY THEIR OWNERS, AT THEIR EXPENSE. THE CONTRACTOR SHALL ARRANGE HIS SCHEDULE TO ALLOW UTILITY OWNERS TIME FOR THE NECESSARY RELOCATION AND ADJUSTMENT OF UTILITIES AND RELATED STRUCTURES.

42. A FLORIDA POWER AND LIGHT SPECIAL PROVISION IS THAT THE TYPE OF EQUIPMENT USED IN THE INSTALLATION OF MAST ARMS/ FOUNDATIONS, OVERHEAD/CANTILEVER SIGNS/ROUNDATIONS, AND THE MOVEMENT/INSTALLATION OF STRAIN POLES SHALL MEET THE FOLLOWING REQUIREMENTS: 1) OVERHEAD LINES SHALL STAY IN PLACE BOTH VERTICALLY AND HORIZONTALLY 2) CONTRACTOR SHALL MEET ALL APPLICABLE OSHA REQUIREMENTS (SEPARATION SHALL FOLLOW FPL GUIDELINES). ANY COST ASSOCIATED WITH THIS TYPE OF EQUIPMENT REQUIRED FOR THIS INSTALLATION IS INCLUDED IN THE RELATED PAY ITEMS. PLEASE REFER TO THE SPECIAL CONDITIONS IN THE UTILITY WORK SCHEDULE AND UTILITY COORDINATION.

43. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES FOR THE RELOCATION AND ADJUSTMENT OF ALL UTILITIES, INCLUDING, ANY EXISTING POWER POLES AND/OR UTILITY CONDUITS WITHIN RIGHT-OF-WAY.

44. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE APPROPRIATE PARTIES TO DETERMINE THE COUNTY'S FIBER COMMUNICATION NETWORK, KNOWN AS ATMS (COUNTY ISD, SCHOOL BOARD, AND TRAFFIC MANAGEMENT CENTER) IN THE AREA TO ACCOMMODATE ANY POTENTIAL CONFLICTS. AS-BUILT INFORMATION FOR EXISTING COMMUNICATION CONDUIT AND FIBER IS AVAILABLE FROM OLGA ROSIER, WITH UTILITY RECORDS (941-792-8811 EXT. 5059). CONSTRUCTION PLAN INFORMATION FOR PROJECTS UNDER CONSTRUCTION WITH THE COUNTY'S TRAFFIC MANAGEMENT CENTER ARE AVAILABLE AT WWW.MANATEEATMS.COM AND WWW.MANATEEATMS2.COM.

DRAINAGE AND GRADING

45. ALL CONSTRUCTION IS TO BE STAKED IN THE FIELD BY OR UNDER THE SUPERVISION OF A FLORIDA REGISTERED LAND SURVEYOR.

46. THE CONTRACTOR IS TO PROVIDE THE ENGINEER OF RECORD WITH REPRODUCIBLE RECORD DRAWINGS SHOWING ALL IMPROVEMENT LOCATIONS AND ELEVATIONS IN ACCORDANCE WITH LATEST MANATEE COUNTY TRANSPORTATION DEPARTMENT STANDARDS AND SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD) STANDARDS. THE CONTRACTOR SHALL ALSO PROVIDE FIVE SETS OF PRINTS, SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR, OF THE RECORD DRAWINGS TO THE ENGINEER OF RECORD. THESE RECORD DRAWINGS SHALL BE CERTIFIED TO THE OWNER, APPROPRIATE GOVERNMENTAL AGENCIES. RECORD DRAWINGS SHALL SPECIFICALLY INCLUDE STORMWATER FACILITY LOCATIONS, INCLUDING TOP OF BANK, UNDERDRAIN AND CONTROL STRUCTURES, SHALL BE PERFORMED BY A REGISTERED LAND SURVEYOR AND REVIEWED BY THE ENGINEER OF RECORD PRIOR TO ACCEPTANCE AND PAYMENT. BENCH MARKS WITH THE ELEVATION CLEARLY AND PERMANENTLY MARKED ARE TO BE PLACED ON THE TOP OF ALL PROPOSED OUTFALL CONTROL STRUCTURES. RECORD DRAWINGS OF ALL MITIGATION AREAS INCLUDING ELEVATIONS, ZONES AND LIMITS SHALL BE PERFORMED BY A REGISTERED LAND SURVEYOR AND REVIEWED BY THE ENGINEER OF RECORD PRIOR TO ACCEPTANCE AND PAYMENT. THE RECORD DRAWINGS SHALL SPECIFICALLY INCLUDE THE SURFACE AREA OF STORMWATER FACILITY AREAS AT NORMAL WATER, TOP OF BANK AND MITIGATION AREAS.

47. TO PREVENT SEDIMENTARY RUNOFF DURING CONSTRUCTION, STAKED HAY BALES, STAKED SILT SCREENS OR INLET DEBRIS CONTROL SCREENS ARE TO BE PLACED AT STORM INLETS, OUTFALL LOCATIONS AND ADJACENT PROPERTY LINES AS REQUIRED PRIOR TO ANY CONSTRUCTION ACTIVITIES. SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSTALLED AND THEN VERIFIED/INSPECTED BY MANATEE COUNTY INFRASTRUCTURE INSPECTIONS RESOURCES DIVISION (708-7450) PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE SEDIMENTATION BARRIERS IN A WORKING MANNER FOR THE DURATION OF CONSTRUCTION AND SHOULD BE CHECKED DAILY. SILTATION ACCUMULATIONS GREATER THAN THE LESSER OF 12 INCHES OR ONE-HALF OF THE DEPTH OF THE SEDIMENTATION BARRIER SHALL BE IMMEDIATELY REMOVED AND REPLACED IN UPLAND AREAS. IN ADDITION TO SPECIFIED EROSION CONTROL LOCATIONS, THE CONTRACTOR SHALL PERFORM DAILY SITE INSPECTIONS FOR POTENTIAL EROSION PROBLEMS. IF PROBLEMS OCCUR, THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING APPROPRIATE EROSION CONTROL IMMEDIATELY. AN INSPECTION LOG SHALL BE MAINTAINED AND AVAILABLE ONSITE AT ALL TIMES. STORMWATER TREATMENT FACILITIES INCLUDING OUTFALL PER DETAIL ARE TO BE CONSTRUCTED EARLY IN SITE DEVELOPMENT, WITH NO OFF- SITE UNTREATED RUN-OFF OCCURRING DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING TEMPORARY EROSION CONTROL DEVICES FOLLOWING COMPLETION OF ALL CONSTRUCTION AND FINAL STABILIZATION.

48. ALL PIPE LENGTHS SHOWN ON PLAN VIEW ARE TO THE END OF THE MITERED END SECTION. REFER TO MITERED END SECTION DETAIL FOR LENGTH OF PIPE TO BE INCLUDED IN PRICE FOR MITERED END SECTION.

49. TOPOGRAPHIC AND PROPERTY SURVEYS GIVING LOT SIZE, GROUND ELEVATIONS, OBSTRUCTIONS ON SITE, LOCATIONS AND DEPTHS OF SEWERS, CONDUITS, PIPES, EXISTING STRUCTURES, CURBS, PAVEMENTS, TRACTS, AND SOIL BORING DATA GIVING THE NATURE OF GROUND AND SUBSURFACE CONDITIONS HAVE BEEN OBTAINED FROM RELIABLE SOURCES. THE ACCURACY OF THIS DATA IS NOT GUARANTEED, AND IS FURNISHED SOLELY AS AN ACCOMMODATION TO THE CONTRACTOR. USE OF THIS DATA SHALL BE MADE AT THE CONTRACTOR'S DISCRETION. NO ADDITIONAL COMPENSATION WILL BE GRANTED DUE TO THE CONTRACTOR'S LACK OF KNOWLEDGE OF SITE CONDITIONS. PRIOR TO BID SUBMISSION, THE CONTRACTOR SHALL CONDUCT ANY ADDITIONAL SURVEYS AND SOILS TESTS HE MAY DEEM NECESSARY TO VERIFY THE ACCURACY OF THE INFORMATION PROVIDED.

50. THE CONTRACTOR SHALL VERIFY TOPOGRAPHY AND SATISFY HIMSELF AS TO THE EXTENT OF FILL NECESSARY TO ACHIEVE FINISHED GRADE PRIOR TO AWARD OF CONTRACT. THERE SHALL BE NO CLAIM FOR EXTRAS NOTWITHSTANDING SITE PLAN REVISIONS PROMULGATED SUBSEQUENT TO AWARD OF CONTRACT.

51. ROADSIDE UNDERDRAIN SHOWN ON PLAN IS MINIMUM AND EXTENSION SHALL BE REQUIRED AS DETERMINED NECESSARY BY THE ENGINEER OF RECORD AND/OR MCPWD INSPECTION DEPARTMENT DURING THE COURSE OF CONSTRUCTION.

52. SUITABLE FILL MATERIAL FROM EXCAVATION SHALL BE UTILIZED FOR PROJECT FILL PER GRADING SPECIFICATIONS. UNSUITABLE MATERIAL SHALL BE PLACED IN OPEN AREAS ONLY AS DIRECTED BY THE PROJECT ENGINEER AND SOILS ENGINEER IN ACCORDANCE WITH FDOT INDEX 505.

53. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL STRUCTURES PRIOR TO INSTALLATIONS.

54. REFER TO FDOT FOR COMPACTION REQUIREMENTS, GRASSING/SODDING REQUIREMENTS, AND PAVING CONSTRUCTION MATERIAL SPECIFICATIONS.

55. ALL FILL AREAS ARE TO BE CONSTRUCTED IN 12" MAXIMUM LIFTS.

56. THE CONTRACTOR SHALL REVIEW SOILS TESTS AS PERFORMED BY THE SOIL CONSULTANT AND IS ENCOURAGED TO CONDUCT ON-SITE TESTING TO SATISFY HIMSELF AS TO ACTUAL LIMITS OF REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIALS PRIOR TO BIDDING. INSPECTION AND RECORDING FOR TESTING FOR DRILLED SHAFTS FOR SIGNAL POLES SHALL BE INCLUDED IN PRICE FOR SIGNAL POLES.

57. ON SLOPES GREATER THAN 3:1 PEGGING OR PINNING OF SOD MAY BE REQUIRED.

58. STATION LOCATIONS AND OFFSETS FOR STORM DRAIN INLETS AND MANHOLES REFERENCE THE CENTER OF THE SPECIFIED STRUCTURE BOTTOM. STATION LOCATION IS CENTER OF STRUCTURE BOTTOM FOR JUNCTION BOXES, CENTER OF RISER FOR CURB INLETS. FOR PIPES WITH MITERED END SECTIONS, THE PROPOSED LENGTHS SHOWN ON THE PLANS INCLUDE THE LENGTH OF THE MITERED END SECTION. PAYMENT FOR PIPE SHALL NOT INCLUDE THE LENGTH OF THE MITERED END SECTION. AS SPECIFIED BY DIMENSION "F" AS SHOWN IN FDOT INDEX 272 AND 273. PAYMENT SHALL BE FROM INSIDE STRUCTURE WALL TO INSIDE STRUCTURE WALL. ANY EXTRA PIPE LENGTH LISTED SHALL BE CONSIDERED CONTINGENT.

59. ALL CURB INLET AND JUNCTION BOX STORMWATER STRUCTURES SHALL HAVE HEAVY DUTY RING AND COVER MANHOLE ACCESS. ALL STORMWATER BOXES SHALL BE 6" WALLS MIN.

60. DURING DEWATERING OPERATIONS, THE CONTRACTOR SHALL NOT DISCHARGE DIRECTLY TO RECEIVING WATERS, EXISTING CONVEYANCES TO RECEIVING WATERS, OR WETLAND SYSTEMS. TEMPORARY SEDIMENT BASINS, TRAPS, OR SILTATION REDUCTION DEVICES SHALL BE UTILIZED TO COLLECT THE DISCHARGE FROM DEWATERING ACTIVITIES TO ELIMINATE THE POTENTIAL FOR OFFSITE SEDIMENT TRANSPORT AND TO ENSURE THAT DIRECT DISCHARGE DOES NOT OCCUR.

61. HEAVY CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE OR STORED IN ANY DRY RETENTION POND/SWALE AREA.

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST
43RD ST. W. TO ROUNDABOUT
GENERAL NOTES

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	383-6082960
SURVEY #	3825
SEC./TWN./RGE	16,17,18/35/17
VERT. SCALE	N.T.S.
HORZ. SCALE	N.T.S.

	BY	DATE
SURVEYED	LSF	02/02/01
DESIGNED	JP	02/02/12
DRAWN	TMF	01/14/13
CHECKED	JP	01/14/13

JOHN KENNEDY PARI, P.E.
FLORIDA P.E. # 56368
10/20/14
Signature & Date

MITIGATION NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ENHANCED/ CREATED WETLANDS UNTIL PROJECT DRAINAGE AND GRADING IS COMPLETED AND ACCEPTED BY THE OWNER.

2. MAINTENANCE SHALL BE IN ACCORDANCE WITH PERMIT CONDITIONS. WETLAND BOUNDARY AND BUFFER AREAS SHALL BE CLEARLY DELINEATED ON SITE PRIOR TO INITIAL CLEARING AND GRUBBING ACTIVITIES. THE DELINEATION SHALL ENDURE THROUGHOUT THE CONSTRUCTION PERIOD, AND BE READILY DISCERNIBLE TO CONSTRUCTION PERSONNEL. THE WETLAND (JURISDICTIONAL) AND BUFFER AREAS ARE TO BE IDENTIFIED IN THE FIELD WITH STAKES AND FLAGGED STRING LINES (STRING LINE 5' ABOVE GRADE WITH FLAGGING AT 10' INTERVALS) PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING. THE STRING LINE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL STAY OUT OF THE EXISTING WETLAND AND BUFFER AREAS, EXCEPT WHERE PLANS CALL OUT SPECIFIC WORK TO BE PERFORMED.

RESTORATION

3. ALL RESTORATION WORK PERFORMED THROUGHOUT THE PROJECT SHALL CONFORM TO EXISTING LINES AND GRADES UNLESS SHOWN OTHERWISE.

4. ALL DISTURBED GRASSED AREAS SHALL BE SODDED. THE TYPE OF SOD USED TO REPLACE OWNER MAINTAINED AREAS IN RIGHT-OF-WAY SHALL BE COORDINATED WITH THE PROPERTY OWNER. ALL EXISTING SHRUBS, TREES, PLANTINGS AND OTHER VEGETATION, OUTSIDE OF RIGHT-OF-WAY DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH EQUIVALENT MATERIAL BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

5. CONCRETE DRIVEWAYS OR SIDEWALKS THAT ARE CUT SHALL BE RESTORED TO MATCH EXISTING ACCORDING TO THE CURRENT EDITIONS OF THE F.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE DESIGN, SECTION 522, AND SECTION 310 OF THE F.D.O.T. DESIGN STANDARDS LATEST REVISION.

6. WHENEVER A PERMANENT ROADWAY SURFACE IS NOT PLACED IMMEDIATELY AFTER BACKFILLING AND COMPACTION OF THE NEWLY INSTALLED PIPE LINE IN AREAS WHERE TRAFFIC MUST PASS, THE CONTRACTOR SHALL INSTALL A TEMPORARY SURFACE CONSISTING OF NINE INCHES OF COMPACTED LIME ROCK BASE AND A COAT OF ASPHALT EMULSION. PERMANENT ROADWAY REPAIR SHALL BE PERFORMED A MAXIMUM OF TWENTY-ONE CALENDAR DAYS AFTER THE INITIAL OPEN CUTTING.

7. RESTORATION OF CURBS, DRIVEWAYS, SIDEWALKS, AND PLACEMENT OF SOD SHALL BE COMPLETED WITHIN FORTY-FIVE CALENDAR DAYS OF INITIAL DISTURBANCE, OR TWENTY-ONE CALENDAR DAYS OF SUBSTANTIAL COMPLETION, WHICHEVER OCCURS FIRST.

CONSTRUCTION

8. THE EXHAUST SYSTEM OF ALL GASOLINE AND DIESEL ENGINES SHALL BE EQUIPPED WITH MUFFLERS THAT MEET THE EQUIPMENT MANUFACTURER'S REQUIREMENTS FOR NOISE SUPPRESSION. THE CONTRACTOR SHALL INSTALL NOISE ABATEMENT BAFFELS POSITIONED TO BREAK LINE-OF-SITE FROM THE NOISE SOURCE TO AFFECTED RESIDENCES, AS APPROVED BY THE ENGINEER.

9. NO MATERIAL SHALL BE STOCKPILED IN ROADWAYS. ALL DIRT AND DEBRIS SHALL BE REMOVED FROM THE JOB SITE DAILY. ROADS SHALL BE SWEPT DAILY AS PART OF DAILY CLEAN UP.

10. THE CONTRACTOR IS TO CONTROL ALL FUGITIVE DUST ORIGINATING ON THIS PROJECT BY WATERING OR OTHER METHODS AS REQUIRED.

11. INGRESS AND EGRESS TO ALL THE PROPERTIES IN THE CONSTRUCTION AREA SHALL BE MAINTAINED AT ALL TIMES.

12. PRIOR APPROVAL WILL BE REQUIRED FOR REMOVAL OF ANY TREE WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED ON THE PLANS.

13. THE CONTRACTOR SHALL PROVIDE ALL DEWATERING EQUIPMENT NECESSARY TO KEEP ALL EXCAVATIONS DRY. DEWATERING IS REQUIRED TO 18" BELOW TRENCH BOTTOM. THE CONTRACTOR SHALL SUBMIT DEWATERING PLAN TO THE SWFWMD FOR APPROVAL PRIOR TO CONSTRUCTION.

14. ALL PIPING AND FITTINGS USED ON THIS PROJECT SHALL BE AS NOTED ON THE PLANS AND IN THE CONTRACT DOCUMENTS AND SHALL BE INSTALLED TO THE LINES AND GRADES SHOWN ON THE PLANS AND PROFILES.

15. ALL PIPE LENGTHS ARE PLUS OR MINUS AND MAY BE ADJUSTED IN THE FIELD AS REQUIRED. PIPE MEASUREMENTS AND STATION OFFSETS ARE TO CENTER OF STRUCTURES OR FITTINGS. REFER TO DETAIL SHEET FOR ALL REFERENCE POINTS.

16. ALL ROCKS OR STONES LARGER THAN SIX INCH DIAMETER SHALL BE REMOVED FROM THE BACKFILL MATERIAL. BACKFILL MATERIAL PLACED WITHIN ONE FOOT OF PIPING AND APPURTENANCES SHALL NOT CONTAIN ANY STONES LARGER THAN TWO INCH DIAMETER.

17. ALL PENETRATION OF EXISTING STRUCTURES SHALL BE BY THE MECHANICAL ROTARY CORE BORING METHOD.

18. ALL CONCRETE AND REBAR PENETRATED OR DISTURBED SHALL BE COATED WITH TWO COATS OF EPOXY.

19. CONTRACTOR IS RESPONSIBLE FOR ALL UNSUITABLE MATERIAL REMOVAL WITHIN PROJECT LIMITS. EXCAVATION, EMBANKMENT, INCLUDING UTILIZATION, AND UNSUITABLE MATERIAL REMOVAL SHALL BE IN ACCORDANCE WITH FDOT DESIGN STANDARDS, LATEST VERSION.

20. WHERE EXCAVATION IS REQUIRED FOR CONSTRUCTION OF SIDEWALK, ALL STUMPS, ROOTS, ETC. SHALL BE REMOVED COMPLETELY FROM THE SIDEWALK AREA. ALL STUMPS WITHIN THE PROJECT LIMITS SHALL BE REMOVED COMPLETELY AND REPLACED WITH COMPACTED BACKFILL BEFORE THE AREA IS FILLED. TREE ROOTS IN AREA OF PROPOSED SIDEWALK, RAMP, OR DRIVEWAY REPLACEMENT SHALL BE GROUND OUT TO A DEPTH OF 6" BELOW BOTTOM OF NEW SIDEWALK OR DRIVEWAY. ALL PRUNED ROOT DEBRIS SHALL BE REMOVED FROM THE SUB-BASE MATERIAL PRIOR TO POURING CONCRETE, ASPHALT, OR APPLICATION OF OTHER SPECIFIED MATERIALS. THIS WORK SHALL BE INCLUDED IN AND PAID FOR UNDER THE PAY ITEM FOR CLEARING AND GRUBBING.

21. ALL STUMPS, ROOTS, AND OTHER DEBRIS PROJECTING THROUGH OR APPEARING ON THE SURFACE OF THE GROUND SHALL BE REMOVED TO A DEPTH OF 1-FOOT BELOW THE COMPLETED SURFACE. THIS WORK SHALL BE INCLUDED IN AND PAID FOR UNDER THE PAY ITEM FOR CLEARING AND GRUBBING.

22. ALL MATERIALS NOT CLAIMED BY THE COUNTY SHALL BECOME PROPERTY OF THE CONTRACTOR, AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN AREAS PROVIDED BY THE CONTRACTOR. THIS WORK SHALL BE INCLUDED IN AND PAID UNDER THE PAY ITEM CLEARING AND GRUBBING.

23. THE CONTRACTOR SHALL PROVIDE ALL SHEETING, SHORING, AND BRACING REQUIRED TO PROTECT ADJACENT STRUCTURES OR TO MINIMIZE TRENCH WIDTH. WHERE A SEPARATE PAY ITEM IS NOT PROVIDED, THE COST OF ALL SHEETING, SHORING, AND BRACING REQUIRED SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE ITEM OF WORK FOR WHICH SHEETING, SHORING, AND BRACING IS REQUIRED.

24. THE CONTRACTOR SHALL DISTURB NO MORE GROUND THAN WHAT IS NECESSARY FOR CONSTRUCTION. NO OPEN EXCAVATED TRENCH, OR OTHER UNSAFE CONDITION WILL BE LEFT OVERNIGHT. ALL WORK SITES WILL BE COMPLETELY RESTORED WITHIN SEVEN (7) CALENDAR DAYS OF THE CONCRETE POUR FOR SIDEWALK.THE INTENT OF THIS PROVISION IS TO "SAFE-UP" THE PROJECT SITE AS WORK PROGRESSES, AND SHALL INCLUDE REMOVING FORMS, FILLING HOLES, GRADING, AND REMOVAL OF DEBRIS.

25. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL REMAIN UNLESS OTHERWISE NOTED IN THE PLANS, OR AS DIRECTED BY THE ENGINEER.

26. ANY EXISTING SIGN TO REMAIN THAT IS DISTURBED OR RELOCATED DURING CONSTRUCTION SHALL BE RESET TO CURRENT STANDARDS FOR HEIGHT, OFFSET, AND METHOD OF INSTALLATION AT NO ADDITIONAL COST TO THE COUNTY.

27. ALL EXISTING SWALES NOT DESIGNATED FOR RECONSTRUCTION SHALL BE REGRADED TO PROMOTE POSITIVE DRAINAGE AND MATCH PROPOSED CENTERLINE SWALE ELEVATION AND ALIGNMENT.

28. ALL STORM DRAINS AND STRUCTURES TO REMAIN SHALL BE CLEANED OF DEBRIS, DIRT, VEGETATION AND OTHER MATERIAL. STORM SEWER INLETS SHALL BE MODIFIED (RAISED/LOWERED) TO MATCH PROPOSED FINISHED GRADE.

29. ALL EXISTING FENCES DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AND REINSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST. (EXISTING FENCES WITHIN R/W TAKING LIMITS SHALL BE RECONSTRUCTED TO 1' OUTSIDE THE NEW R/W LINE AND ARE TO BE REIMBURSED UNDER THE FENCE REMOVAL & RELOCATION LINE ITEM).

30. ALL EXISTING TREES LOCATED WITHIN R/W & EASEMENTS LIMITS SHALL REMAIN UNLESS OTHERWISE NOTED.

31. ALL EXISTING STORM DRAINAGE STRUCTURES/PIPES SHALL REMAIN UNLESS OTHERWISE NOTED. EXAMPLE SHEET 29: EXSTING 42" RCP IS NOT LABLED OR REMAIN OR TO BE REMOVED.

32. ALL EXISTING BUILDINGS SHALL REMAIN UNLESS OTHERWISE NOTED.

33. REMOVE AND REPLACE BASE AND SUB-BASE ACCORDING TO FDOT STANDARDS, LATEST VERSION

34. PAYMENT FOR ALL WORK NECESSARY TO REMOVE AND RELOCATE HOG WIRE/CHAIN LINK FENCE SHALL BE INCLUDED IN CLEARING AND GRUBBING.

SUE DATA VH (SEE UTILITY ADJUSTMENT SHEETS)

Point #	VH #	Elevation	Northing	Easting	Pipe Size	Material	Utility Type	Field Date
1	1	10.340	1132498.0400	453513.1800	24	DIP	RCW	7/2/2013
2	2	7.470	1132454.3500	453517.3100	18	DIP	WATER	7/2/2013
3	3	8.230	1132460.1500	453472.6300	6	PE	GAS	7/2/2013
4	4	10.500	1132469.2640	453467.6991	24	PVC	RCW	7/2/2013
5	6	7.620	1132500.2200	453585.6500	24	DIP	RCW	7/2/2013
6	7	11.290	1132471.8300	453504.8600	30	DIP	RCW	7/2/2013
7	8	11.250	1132500.1200	453594.6200	24	DIP	RCW	7/2/2013
8	9	12.070	1134107.2800	453606.3000	6	DIP	WATER	7/2/2013
9	10	12.450	1134107.9600	453993.8700	6	PVC	WATER	7/2/2013
10	11	11.990	1132477.0000	453523.2900	4x4	PVC	BT VZ	7/2/2013
11	12	8.190	1132477.5300	453594.1600	4x4	PVC	BT VZ	7/2/2013
12	29	13.370	1132385.5550	457979.8217	18	DIP	WATER	1/10/2013
13	28	13.910	1132386.0710	457779.8057	18	DIP	WATER	1/10/2013
14	27	12.690	1132387.3170	457586.3105	18	DIP	WATER	1/10/2013
15	25	12.250	1132398.9470	457191.2842	6	PE	GAS	1/10/2013
16	17	11.680	1132442.1270	457521.6710	12	DIP	WATER	1/10/2013
17	19	8.510	1132441.3930	457566.3166	10	DIP	WATER	1/10/2013
18	18	13.360	1132441.3480	457580.4141	16	HDPE	WATER	1/10/2013
19	26	12.850	1132391.3560	457384.5939	18	DIP	WATER	1/10/2013
20	15	12.790	1132457.6780	456524.6250	8	HDPE	RCW	1/10/2013
21	11	11.970	1132487.0640	454868.5363	16	DIP	WATER	1/10/2013
22	22A	9.430	1132457.1380	453497.3383	20	DIP	RCW	1/10/2013
23	22	11.750	1132454.1480	453499.0803	18	DIP	WATER	1/10/2013
24	3	10.880	1132469.7100	453521.6118	24	DIP	RCW	1/10/2013

SUE DATA VH (SEE UTILITY ADJUSTMENT SHEETS)

Point #	VH #	Elevation	Northing	Easting	Pipe Size	Material	Utility Type	Field Date
25	2	7.910	1132499.3560	453522.6333	24	DIP	RCW	1/10/2013
26	23	11.230	1132474.6720	453505.1099	30	DIP	RCW	1/10/2013
27	4	7.430	1132454.0680	453521.5953	18	DIP	WATER	1/10/2013
28	6	9.770	1132512.5860	453547.2238	8	DIP	WATER	1/10/2013
29	7	9.650	1132553.6160	453533.6501	8	DIP	FM	1/10/2013
30	8	14.020	1132568.1480	453533.6330	1	PE	ATMS	1/10/2013
31	BA	12.070	1132582.6010	453533.6525	4	PVC	VERIZON	1/10/2013
32	24	10.610	1132443.6170	453582.2483	20	DIP	RCW	1/10/2013
33	1	10.590	1132505.7500	453582.9024	20	DIP	FM	1/10/2013
34	21	6.790	1132496.4500	450790.8930	6	PE	GAS	1/10/2013
35	30	11.370	1132384.1200	458153.6107	18	DIP	WATER	1/10/2013
36	1	13.010	1132593.7410	452248.9400	1.25	PVC	ATMS	5/20/2014
37	2	11.160	1132500.1860	457456.5330	15	PVC	RCW	5/20/2014
38	3	13.090	1132516.1700	457562.5900	2	PVC	FIBER	5/20/2014
39	4	14.210	1132517.5780	457562.2690	2	PVC	BE	5/20/2014
40	5	13.930	1132520.6930	457562.4560	2	PVC	BE	5/20/2014
41	2A	14.820	1132445.0760	453374.0016	Concrete	CONC	UNK	1/27/2014
42	2AA	12.540	1132443.5140	453394.0403	18	DIP	WATER	1/27/2014
43	1A	14.650	1132465.4020	452877.0493	18	DIP	WATER	1/27/2014
44	3A	11.990	1132422.5340	455377.2386	18	DIP	WATER	1/27/2014
45	4A	12.450	1132404.5690	456576.2214	18	DIP	WATER	1/27/2014
46	5A	12.500	1132397.3450	457015.4782	18	DIP	WATER	1/27/2014
47	6A	12.950	1132393.9980	457176.1946	18	DIP	WATER	1/27/2014
48	2-5	11.160	1132485.9760	457869.9457	15	PVC	RCWM	5/20/2014

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LEGEND

EXISTING

BENCH MARK
CONCRETE MONUMENT
IRON PIPE
IRON ROD
HUB
NAIL & DISK
ELEVATION, EXISTING
PARCEL ID NO.
PARCEL ID NO.
LOT NO.
GUY WIRE
POWER POLE
LIGHT POLE
MAIL BOX
SIGN
REFLECTOR
SPRINKLER
GAS MARKER
BACKFLOW PREVENTER
BLOW OFF VALVE
FIRE HYDRANT
WATER VALVE
AIR RELEASE VALVE
WATER METER
SANITARY SEWER MANHOLE
SANITARY SEWER CLEAN OUT
SOIL BORING LOCATION
TELEPHONE SERVICE BOX
FLOW DIRECTION
GRATE INLET
MITERED END SECTION

BUSH
TREE
OAK TREE
PALM TREE
PINE TREE
EDGE OF VEGETATION
CHAIN LINK FENCE
WOOD FENCE
BARBED WIRE FENCE
FORCE MAIN
POTABLE WATER
RECLAIMED WATER
SANITARY SEWER
STORM DRAIN
GAS LINE
OVERHEAD_CABLE_TV
BURIED_CABLE_TV
OVERHEAD ELECTRIC
BURIED_ELECTRIC
OVERHEAD VERIZON
BURIED VERIZON
VERIZON
BURIED_UTILITY
OVERHEAD UTILITY
RAIL ROAD TRACKS
EDGE OF CONCRETE
EDGE OF ROAD
TOE OF SLOPE
TOP OF BANK
PROPERTY LINE
RIGHT OF WAY

ABBREVIATIONS

R/W	RIGHT OF WAY
CONC	CONCRETE
ASPH	ASPHALT
DRWY	DRIVEWAY
SWK	SIDEWALK
EP	EDGE OF PAVEMENT
BOC	BACK OF CURB
FTB	FLOATING TURBIDITY BARRIER
UP	UTILITY POLE

PROPOSED

MAIN
SERVICE LINE
PROPOSED EASEMENT
SILT FENCE
FIRE HYDRANT
VALVE
SANITARY SEWER MANHOLE
BLOW OFF ASSEMBLY
REDUCER
TEE
HORIZONTAL BEND
VERTICAL BEND
PLUG
MASTER METER ASSEMBLY
SERVICE LINE & METER
DOUBLE SERVICE
ELEVATION PROPOSED

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES

1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST
43RD ST. W. TO ROUNDABOUT
GENERAL NOTES & LEGEND

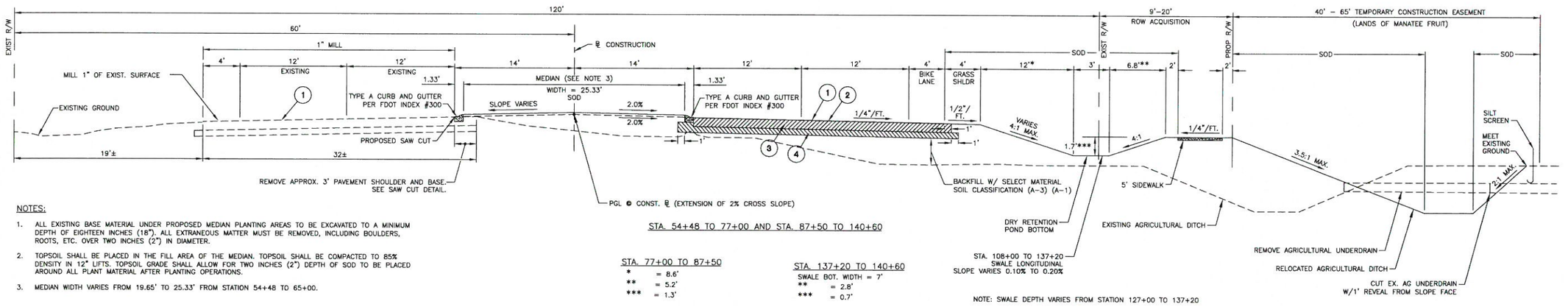
NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	383-6082960
SURVEY #	3825
SEC./TWN./RGE	16,17,18/35/17
VERT. SCALE	N.T.S.
HORIZ. SCALE	N.T.S.

	BY	DATE
SURVEYED	LSH	02/02/01
DESIGNED	JP	02/02/12
DRAWN	TMF	01/14/13
CHECKED	JP	01/14/13

JOHN KENNEDY PARI, P.E.
FLORIDA P.E. # 56368
10/20/14
Signature & Date

SHEET 04 OF 85



NOTES:

1. ALL EXISTING BASE MATERIAL UNDER PROPOSED MEDIAN PLANTING AREAS TO BE EXCAVATED TO A MINIMUM DEPTH OF EIGHTEEN INCHES (18"). ALL EXTRANEOUS MATTER MUST BE REMOVED, INCLUDING BOULDERS, ROOTS, ETC. OVER TWO INCHES (2") IN DIAMETER.
2. TOPSOIL SHALL BE PLACED IN THE FILL AREA OF THE MEDIAN. TOPSOIL SHALL BE COMPACTED TO 85% DENSITY IN 12" LIFTS. TOPSOIL GRADE SHALL ALLOW FOR TWO INCHES (2") DEPTH OF SOD TO BE PLACED AROUND ALL PLANT MATERIAL AFTER PLANTING OPERATIONS.
3. MEDIAN WIDTH VARIES FROM 19.65' TO 25.33' FROM STATION 54+48 TO 65+00.

STA. 54+48 TO 77+00 AND STA. 87+50 TO 140+60

STA. 77+00 TO 87+50
* = 8.6'
** = 5.2'
*** = 1.3'

STA. 137+20 TO 140+60
SWALE BOT. WIDTH = 7'
** = 2.8'
*** = 0.7'

NOTE: SWALE DEPTH VARIES FROM STATION 127+00 TO 137+20

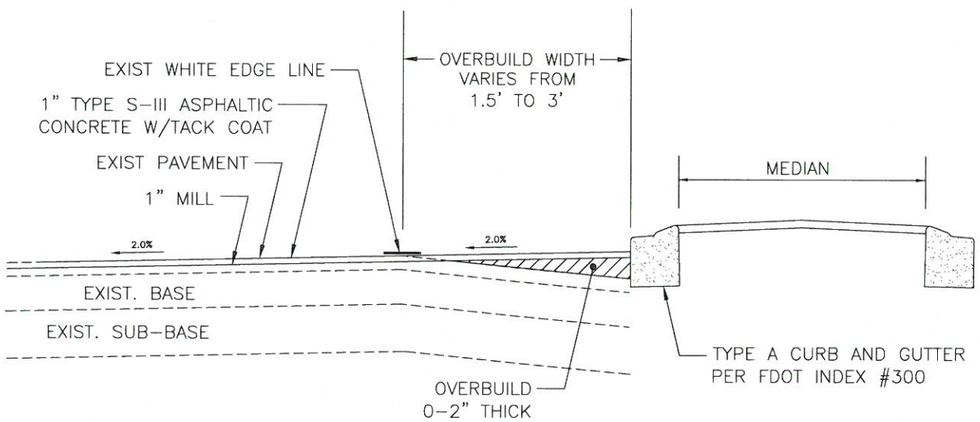
STA. 108+00 TO 137+20
SWALE LONGITUDINAL SLOPE VARIES 0.10% TO 0.20%

PAVEMENT DESIGN

1. 1" S–III ASPHALTIC CONCRETE
2. 2" S–I ASPHALTIC CONCRETE
3. OPTIONAL BASE GROUP 9
4. 12" STABILIZED SUB–BASE MIN. LBR 60

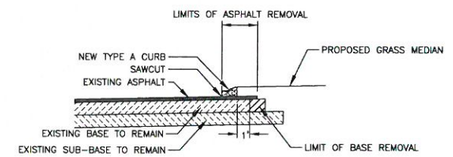
TYPICAL ROADWAY SECTION

DESIGN SPEED LIMIT=POSTED SPEED LIMIT=50 MPH
N.T.S.



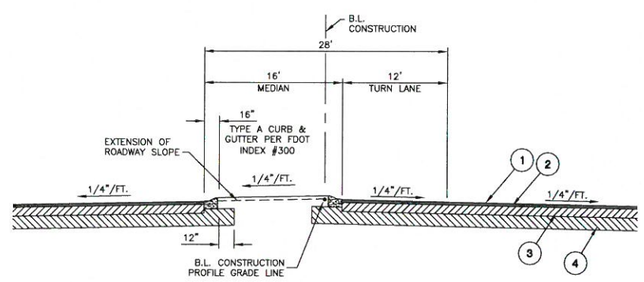
PAVEMENT OVERBUILD DETAIL
STA 88+00 TO 95+50

N.T.S.



SAW CUT DETAIL

N.T.S.



NOTE:
REFER TO "TYPICAL ROADWAY SECTION", THIS SHT, FOR PAVEMENT DESIGN INFO

TYPICAL LEFT TURN LANE SECTION

N.T.S.

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST
43RD ST. W. TO ROUNDABOUT
TYPICAL SECTIONS

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #		383–6082960
SURVEY #		3825
SEC./TWN./RGE		16,17,18/35/17
VERT. SCALE		N.T.S.
HORZ. SCALE		N.T.S.
	BY	DATE
SURVEYED	LSF	02/02/01
DESIGNED	JP	02/02/12
DRAWN	TMF	02/02/12
CHECKED	JP	02/02/12

JOHN KENNEDY PARI, P.E.
FLORIDA P.E. # 56368
10/20/14
Signature & Date

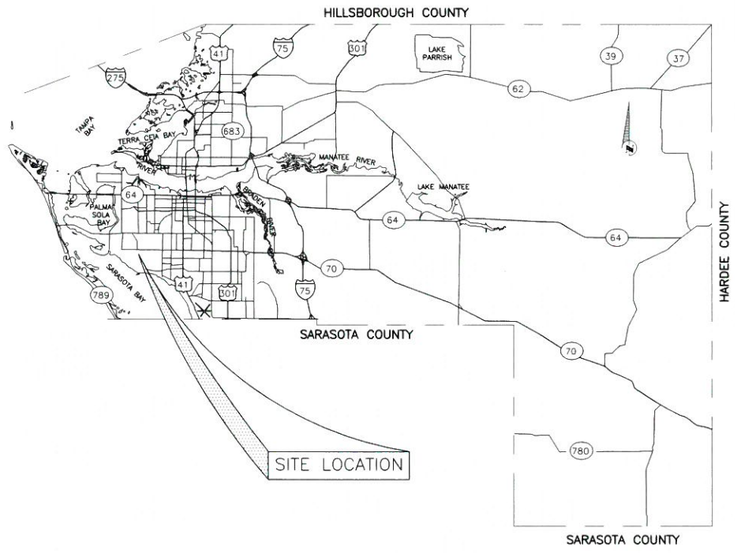
SHEET 05 OF 85

MANATEE COUNTY, FLORIDA
53RD AVENUE WEST WIDENING

JULY 2012

LEGEND

●	IRON ROD		FIRE HYDRANT
■	CONCRETE MONUMENT		WATER VALVE
IRC	IRON ROD W/ CAP LB 7203		UTILITY POLE
PKD	PK NAIL W/DISC LB 7203		GAS MARKER
	BENCHMARK		SIGN
ORB	OFFICIAL RECORD BOOK	TED	TELEPHONE UTILITY
PG	PAGE		RECLAIMED VALVE
PARCEL ID	PID 6146500159 (TYP.)		SANITARY VALVE
R/W	RIGHT OF WAY		MITERED END SECTION
INV	INVERT		CATCH BASIN
√a¹	SPOT ELEVATION (TYP.)		GRATE
BVER	BURIED VERIZON		
PW	POTABLE WATER		PALM TREE
OE	OVERHEAD ELECTRIC		
RCW	RECLAIMED WATER		OAK TREE
SS	SANITARY SEWER		
BCATV	BURIED TV		PINE
BE	BURIED ELECTRIC		TREE



PROJECT DESCRIPTION

TO SUPPLEMENT AND PROVIDE EXISTING SURVEY CONDITIONS ALONG THE 53RD AVENUE WEST R/W CORRIDOR FROM A POINT 500 FEET EAST OF THE 75TH STREET WEST ROUNDABOUT EASTERLY TO 43TH STREET WEST FOR THE CONSTRUCTION OF TWO EASTBOUND LANES AND ASSOCIATED STORMWATER FACILITIES.

GENERAL NOTES

1. THE VERTICAL PROJECT CONTROL (NGVD 1929) AND SURVEY BASELINE ARE PER A PRIOR SURVEY COMPLETED BY LOMBARDO, SKIPPER AND FOLEY FURNISHED BY MANATEE COUNTY. RIGHT-OF-WAY LINES INDICATED HEREIN HAVE BEEN DETERMINED FROM SAID SURVEY TOGETHER WITH PROVIDED TITLE WORK. THIS IS NOT A BOUNDARY SURVEY.
2. THIS SURVEY IS REFERENCED TO A PROJECTION OF THE FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE NAD 1983/2007 ADJUSTMENT).
3. THIS SURVEY IS SUBJECT TO PERTINENT EASEMENTS, RIGHTS-OF-WAY AND RESTRICTIONS OF RECORD, IF ANY.
4. GROUND PENETRATING RADAR WAS UTILIZED BY GEOMASTERS, INC TO PROVIDE A GENERAL LOCATION OF THE SUBSURFACE UTILITIES WITHIN THE PROJECT SITE.
5. THIS SURVEY DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF THE PARTY OR PARTIES CERTIFIED TO BELOW FOR THE EXPRESS PURPOSE STATED HEREON AND/OR CONTAINED IN THE CONTRACT BETWEEN HYATT SURVEY SERVICES, INC. AND THE CLIENT FOR THIS PROJECT. COPYING, DISTRIBUTING AND/OR USING THIS DRAWING, IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT WRITTEN CONSENT FROM HYATT SURVEY SERVICES, INC. IS STRICTLY PROHIBITED AND RENDERS THE SURVEYOR'S CERTIFICATION, SIGNATURE AND SEAL NULL AND VOID. ANY QUESTIONS CONCERNING THE CONTENT OR PURPOSE OF THIS DRAWING SHOULD BE DIRECTED TO HYATT SURVEY SERVICES, INC.

NO.	INDEX OF SHEETS
1	COVER SHEET
2-23	PLAN SHEETS

Hyatt Survey Services, Inc.
LB No.: 7203 Geographic Data Specialists
11007 8th Avenue East Bradenton, Florida 34212
Phone: (941) 748-4693 Fax: (941) 744-1643

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

RUSSELL P. HYATT, PSM
FLORIDA SURVEYORS REGISTRATION NO. 5303

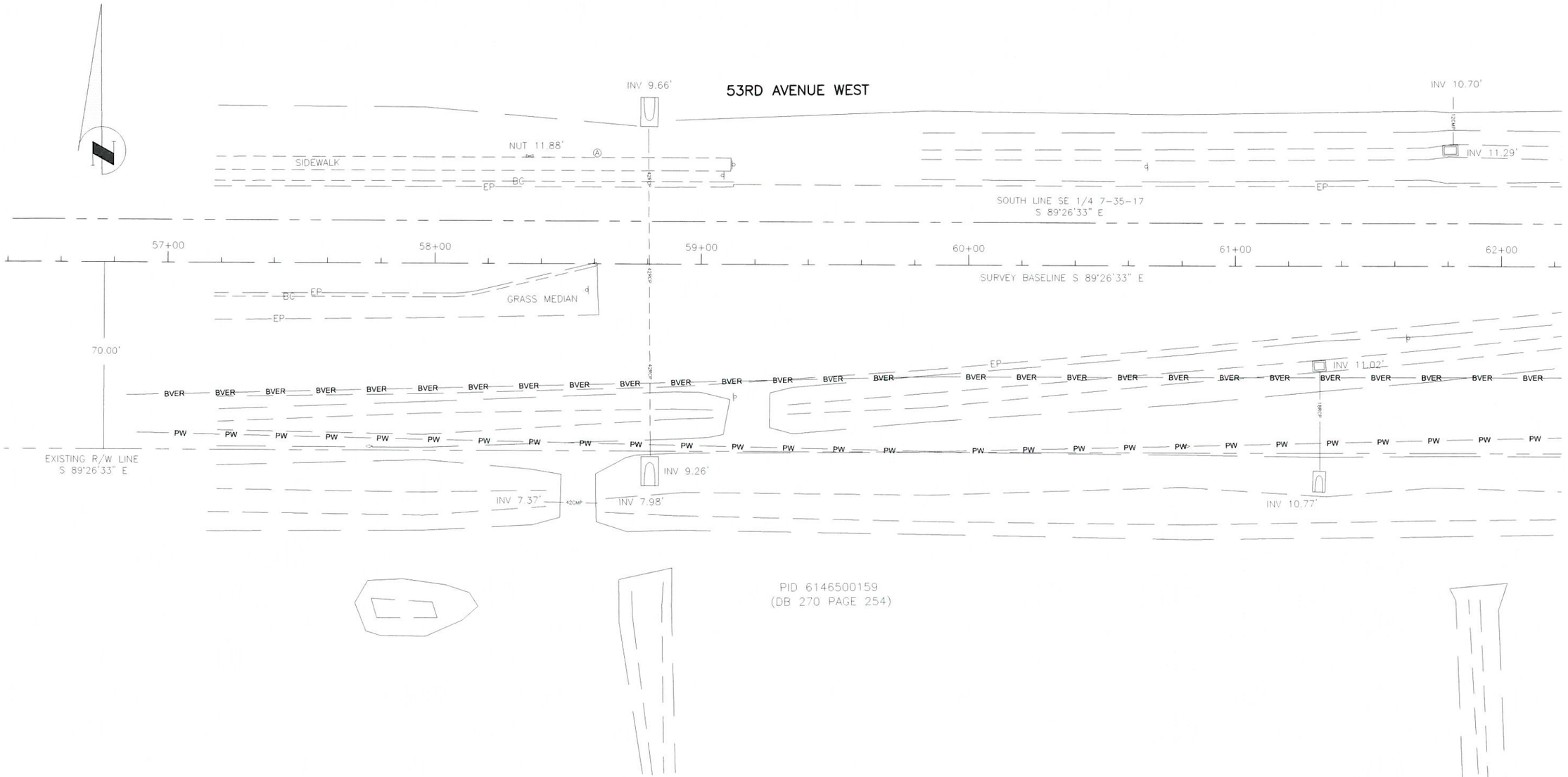
MANATEE COUNTY, FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST WIDENING
MANATEE COUNTY, FLORIDA
COVER SHEET

NO.	REVISION DESCRIPTION	BY	DATE

SURVEY #		12-1678
SECTIONS TWN./RGE.		7,8,9,16,17&18 35-17
SCALE		N/A
	BY	DATE
SURVEYED	HYATT	7/2012
DESIGNED		
DRAWN	JLM	7/26/12
CHECKED	RPH	7/26/12

SH. 06 OF 85



MANATEE COUNTY, FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES

1022 26th Avenue East
Bradenton, FL 34208

53RD AVENUE WEST WIDENING
MANATEE COUNTY, FLORIDA
PLAN SHEET

NO.	REVISION DESCRIPTION	BY	DATE

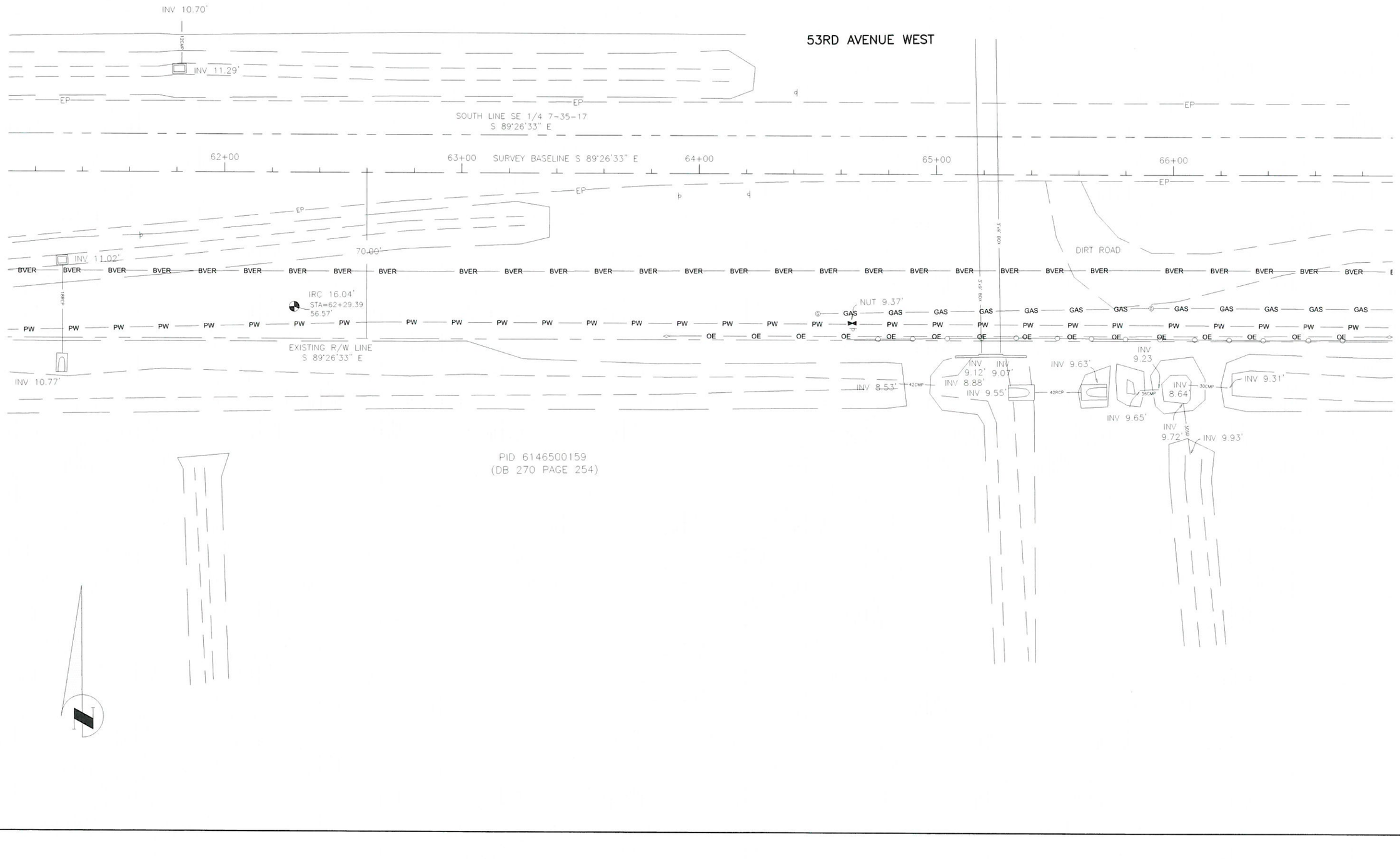
SURVEY #	12-1678
SECTIONS TWN./RGE.	7,8,9,16,17&18 35-17
SCALE	1"=40'

	BY	DATE
SURVEYED	HYATT	7/2012
DESIGNED		
DRAWN	JLM	7/26/12
CHECKED	RPH	7/26/12

SH. 07 OF 85

2/23

S:\PWD_Engineering_Share\Highway_Engineering\ROADS\53rd Ave W.DWG\Survey\4 Fourth Survey from Hyatt 08022012\12-1678_2012 renumbered.dwg 3 Survey, 7/17/2014 7:15 AM Bruce Robertson, 1:1, ANSI full bleed D (34.00 x 22.00 Inches)



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53RD AVENUE WEST WIDENING
MANATEE COUNTY, FLORIDA
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DESIGNED		
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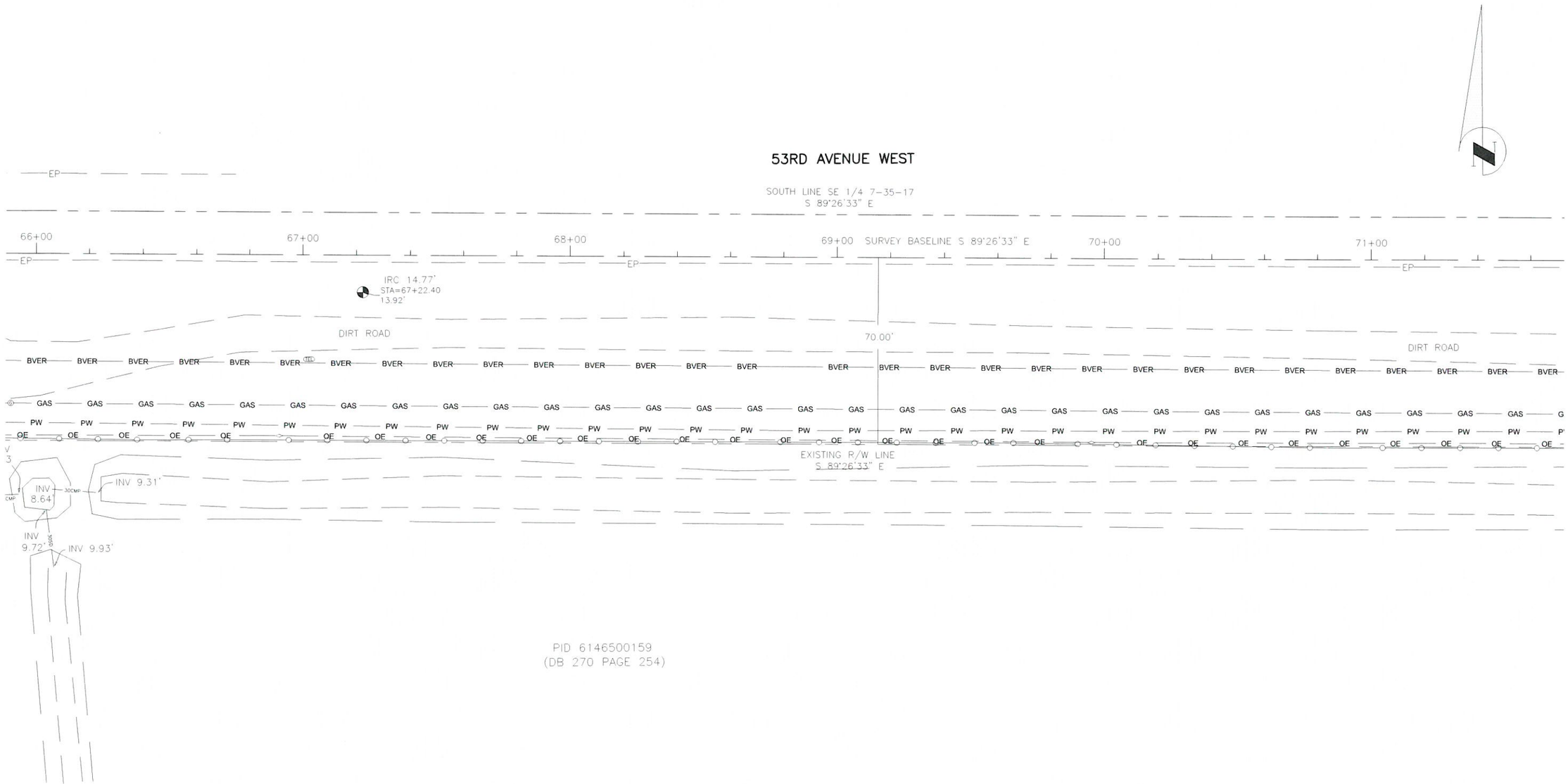
SH. 08 OF 85

2/23

S:\PWD_Engineering_Share\Highway Engineering\ROADS\53rd Ave W\DWG\Surveys\4 Fourth Survey from Hyatt 08022012\12-1678_2012 renumbered.dwg,3 Survey, 7/17/2014 7:16 AM Bruce Robertson, 1:1, ANSI full bleed D (34.00 x 22.00 Inches)



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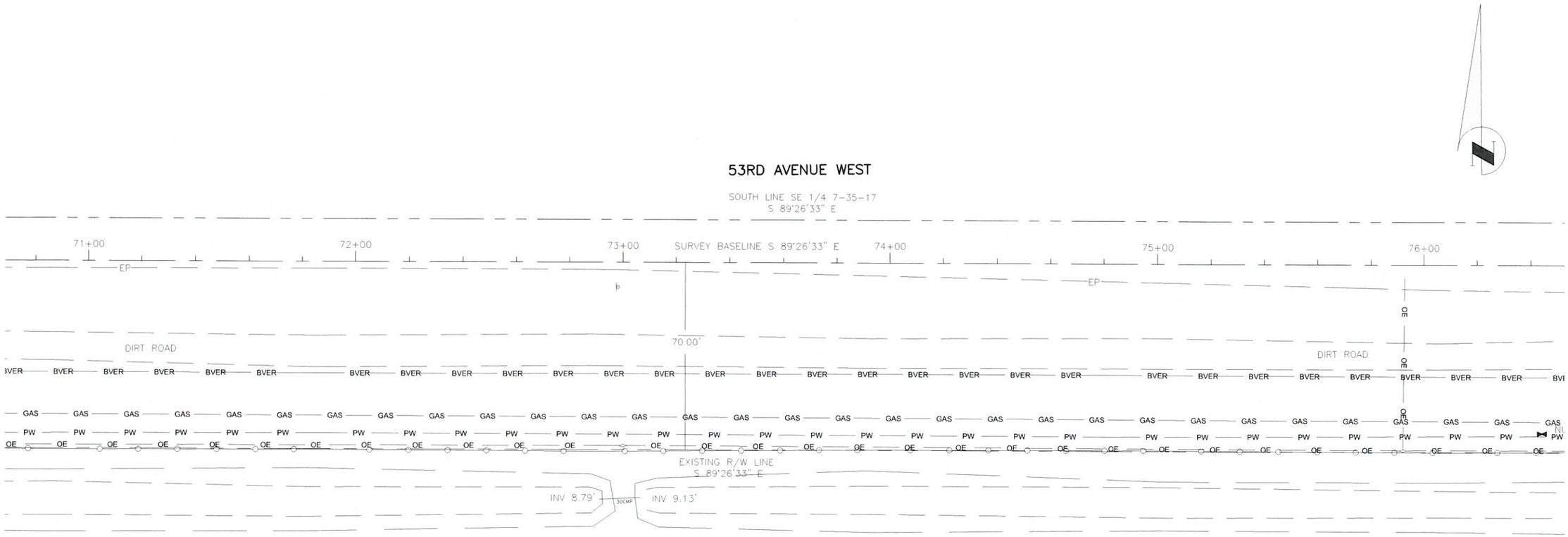

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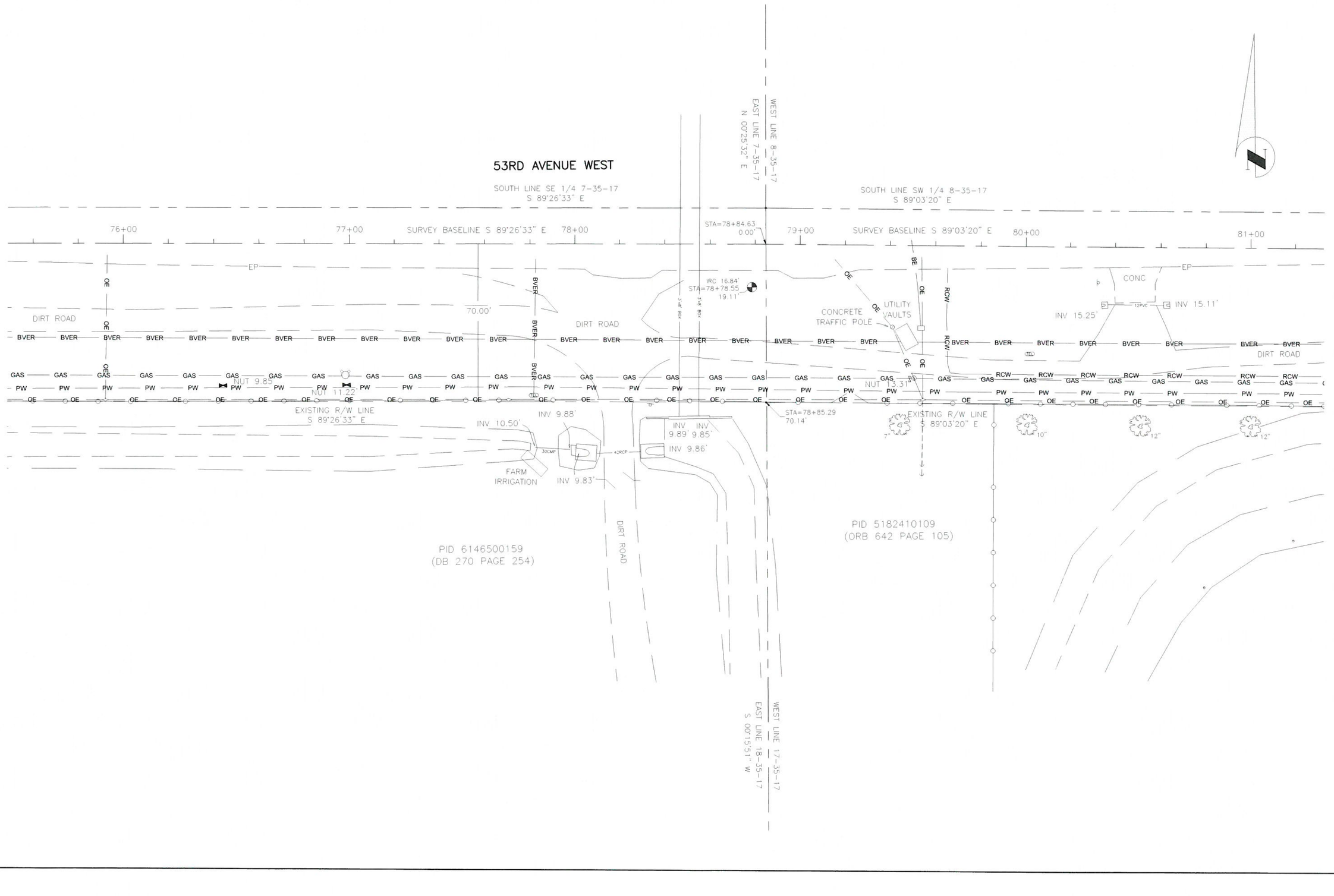

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